



2014 Air Quality Progress Report for **North Lanarkshire Council**

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

June, 2014



Local Authority Officer	Fiona Maguire
Department	Pollution Control, Environmental Health
Address	453 Main Street, Coatbridge, ML5 3RS
Telephone	01236 638622
e-mail	maguiref@northlan.gov.uk
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Executive Summary

In line with the Council's statutory obligations the report considered local air quality monitoring within North Lanarkshire and reviewed local sources of atmospheric emissions to identify changes which have potential to significantly affect local air quality. The report assessed whether air quality levels throughout North Lanarkshire are compliant with National Air Quality Strategy (NAQS) objectives.

The Council operates an extensive air quality monitoring network, including automatic monitoring for nitrogen dioxide (NO₂) and fine particulates (PM₁₀), as well as an extensive network of passive monitoring of NO₂.

Analysis of monitoring data indicates that measured NO₂ concentrations in 2013 were in line with measured levels from previous years. Measured concentrations at Urban Background sites were typically lower than preceding years, whilst roadside sites experienced a slight increase in concentrations overall. Measured NO₂ concentrations at all automatic monitoring sites were below the NAQS objective levels.

There were measured exceedences of the NAQS annual mean objective for NO₂ at seven diffusion tubes monitoring sites in 2013. Two of the monitoring sites were at kerbside sites in Cumbernauld with no relevant long term public exposure. Measured levels were below that which would be considered likely to indicate potential exceedence of short term (hourly) NO₂ objectives.

The other locations were within Monklands, and were each considered within the 2013/14 Monklands Detailed Assessment, including Kirkshaws, Chapelhall and Airdrie town centre. Measures are currently being progressed to reflect the conclusions of this study including amendment of Chapelhall and Whifflett AQMAs and further proposed monitoring in Airdrie town centre.

Measured concentrations at a further ten sites were considered close to the objective level (36 - 40 $\mu\text{g}/\text{m}^3$). All locations were within existing AQMAs, or at locations currently being considered with respect to future monitoring.

Measured NO_2 concentrations in Moodiesburn in 2013 were below NAQS objective levels and supported the proposal to revoke the Moodiesburn AQMA in 2014.

Measured PM_{10} concentrations in 2013 were higher than measured in 2012. There were two measured exceedences of annual PM_{10} objectives at the Motherwell and Chapelhall monitoring sites respectively suggesting that concentrations within these AQMAs still exceed the annual objective and therefore the AQMAs should remain in force.

Measured concentrations at Croy had increased significantly on 2012 levels, reflecting the re-opening of the quarry in 2013, however levels remained below the objective level.

Measured concentrations at Kirkshaws and Whifflett in 2013 were below the annual mean objective level, with measured levels slightly lower than that predicted at each location in the Monklands Detailed Assessment, but reflected the conclusions of the study.

Measured NO_2 concentrations in Moodiesburn in 2013 were below NAQS objective levels and supported the proposal to revoke the Moodiesburn AQMA in 2014.

There were no new local developments identified that will have an impact on air quality. It is noted that preliminary works for the M8 Completion road scheme were planned in 2013 and commenced in 2014. Effects on local air quality levels during the construction period should be noted through 2014 and future years.

Based on the study findings the following conclusions were reached regarding proposed actions by the Council in relation to LAQM in 2014:

- Consultation on intention for revocation of the AQMA at Moodiesburn (submitted April 2014) and revocation order to be drafted late 2014.

North Lanarkshire

- The AQMA for PM₁₀ in Motherwell to be maintained. Further consideration to be given to the Motherwell area in 2014/15 regarding the areas of exceedence and thus AQMA boundary. Further examination of reasons for increase in measured concentrations in 2013 and sources of PM₁₀ to support next round of Action Plan development.
- AQMA in Chapelhall to be maintained for PM₁₀ and order to be amended to include NO₂ with respect to the annual mean NAQS objective.
- AQMA in Croy to be maintained and activity levels at the quarry to be monitored alongside any change in measured PM₁₀ concentrations.
- Whifflett AQMA to be amended to include for NO₂ and boundary changed to include measured and predicted exceedences in Shawhead and Kirkshaws area. Consideration to be given to reducing the extent of the AQMA to the north in line with measured concentrations and the findings of the Monklands Detailed Assessment.
- Automatic monitoring to be commissioned in Airdrie town centre to verify diffusion tube measured levels and predicted exceedences of both NO₂ and PM₁₀ objectives in the Monklands Detailed Assessment.

In addition, in line with the conclusions of the Monklands Detailed Assessment, an additional automatic monitoring site is proposed at Banks Street / Sunnyside Road Coatbridge.

The study outlined the Council's ongoing work relating to improving air quality within each of the four current Air Quality Management Areas in North Lanarkshire. Of the thirty-eight proposed actions, eleven have been completed and work is ongoing on a further fifteen.

Table of Contents

1	Introduction	8
1.1	Description of Local Authority Area	8
1.2	Purpose of Progress Report	9
1.3	Air Quality Objectives	9
1.4	Summary of Previous Review and Assessments	11
2	New Monitoring Data	21
2.1	Summary of Monitoring Undertaken	21
2.2	Comparison of Monitoring Results with Air Quality Objectives	33
3	New Local Developments	62
3.1	Road Traffic Sources	62
3.2	Other Transport Sources	62
3.3	Industrial Sources	62
3.4	Commercial and Domestic Sources	63
3.5	New Developments with Fugitive or Uncontrolled Sources	63
4	Planning Applications	64
5	Air Quality Planning Policies	65
6	Local Transport Plans and Strategies	66
7	Implementation of Action Plans	67
8	Conclusions and Proposed Actions	71
8.1	Conclusions from New Monitoring Data	71
8.2	Conclusions relating to New Local Developments	72
8.3	Proposed Actions	73
9	References	74

List of Tables

Table 1.1	Air Quality Objectives included in Regulations for the purpose of LAQM in Scotland
Table 1.2	Summary of Previous Reviews and Assessments
Table 2.1	Details of Automatic Monitoring Sites
Table 2.2	Details of Non-Automatic Monitoring Sites
Table 2.3	Results of Automatic Monitoring for NO ₂ : Comparison with Annual Mean Objective
Table 2.4	Results of Automatic Monitoring for NO ₂ : Comparison with 1-hour Mean Objective
Table 2.7	Results of “NO ₂ fall-off with distance” calculations
Table 2.5	Results of NO ₂ Diffusion Tubes 2013
Table 2.6	Results of NO ₂ Diffusion Tubes (2009 to 2013)
Table 2.8	Results of Automatic Monitoring for PM ₁₀ : Comparison with Annual Mean Objective
Table 2.9	Results of Automatic Monitoring for PM ₁₀ : Comparison with 24-hour Mean Objective
Table 2.10	Results of Automatic Monitoring for SO ₂ : Comparison with Objectives
Table 2.11	Results of Automatic Monitoring for CO: Comparison with Objectives
Table 3.1	New or Altered PPC Installations Identified in North Lanarkshire

North Lanarkshire updated its overarching air quality Action Plan for its designated AQMAs in 2013. Progress relating to the implementation of the Action Plan measures is outlined in Table 7.1.

Table 7.1	Action Plan Progress
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List of Figures

Figure 1.1	Map of Whifflet Coatbridge AQMA Boundary
Figure 1.2	Map of Motherwell AQMA Boundary
Figure 1.3	Map of Chapelhall AQMA Boundary
Figure 1.4	Map of Moodiesburn AQMA Boundary
Figure 1.5	Map of Croy AQMA Boundary
Figure 2.1	Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Automatic Monitoring Sites
Figure 2.2	Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Urban Background Diffusion Tube Monitoring Sites
Figure 2.3	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

Figure 2.5 Trends in Annual Mean PM10 Concentrations

Appendices

Appendix A Quality Assurance / Quality Control (QA/QC) Data

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. 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 bisected 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.

Location maps of currently declared AQMAs are shown in Figure 1.1, Figure 1.2, Figure 1.3, Figure 1.4 and Figure 1.5.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the LAQM process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

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 µg/m ³	Running annual mean	31.12.2003
	3.25 µg/m ³	Running annual mean	31.12.2011
1,3-Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m ³	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m ³	Annual mean	31.12.2004
	0.25 µg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2011
	18 µg/m ³	Annual mean	31.12.2011
Sulphur dioxide	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/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 1.2: 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	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 evaluated 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>
Harthill Further Assessment	2011	Revocation of AQMA

Review / Assessment	Year	Outcome
Updating and Screening Assessment	2012	<p>Measured PM₁₀ concentrations in the Chapelhall and Motherwell AQMAs remain above objective levels and as such the AQMA designations remain valid. Exceedences of the NO₂ annual mean objective were also measured in both areas.</p> <p>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 Coatbridge AQMA boundaries may be required.</p> <p>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.</p> <p>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.</p> <p>Potential exceedence of NO₂ (and PM₁₀) objectives has been identified in the A73 corridor in Airdrie. A Detailed Assessment is proposed.</p>

Review / Assessment	Year	Outcome
Progress Report	2013	<p>Annual mean concentrations of PM₁₀ fell below the objective at all monitoring locations in 2012. Annual mean NO₂ concentrations recorded at all automatic monitoring locations were below the annual mean objective.</p> <p>Measured annual mean NO₂ concentrations in excess of the objective were recorded at five diffusion tube monitoring locations.</p> <p>Exceedences at Cumbernauld are addressed by the use of the “NO₂ fall-off with distance” calculator and the three remaining sites at Coatbridge will need to be considered in the 2013 Detailed Assessment of the wider Airdrie-Coatbridge area looking at potential exceedences of both NO₂ and PM₁₀.</p> <p>The following actions are proposed by the Council in 2013-14, in response to the analysis of local monitoring data:</p> <p>The AQMA in Moodiesburn will be revoked after discussions with the Scottish Government on the basis of the reduction in measured concentrations since the by-pass road was opened; and</p> <p>A Detailed Assessment of Airdrie-Coatbridge will be conducted for NO₂ and PM₁₀, to include all monitoring locations that exceed annual mean objectives and assess the need to include PM₁₀ in any existing AQMA declarations, and be submitted by March 2014.</p>

Review / Assessment	Year	Outcome
Monklands Detailed Assessment	2013 - 2014	<p>The current Whifflet AQMA should be maintained, although subject to sufficient data capture, monitoring data for 2013 may provide sufficient evidence to amend the existing AQMA boundary.</p> <p>Further targeted monitoring of annual mean NO₂ concentrations at Whifflet should also be undertaken to demonstrate compliance with NO₂ objectives at the worst case locations.</p> <p>The current Chapelhall AQMA for PM₁₀ should be maintained. No exceedence of the annual mean NO₂ objective was predicted; therefore further designation of the AQMA for NO₂ is not required. Measured hourly mean NO₂ concentrations should be considered on an ongoing basis to ensure compliance with the NAQS objective.</p> <p>The study predicted exceedence of both the annual mean NO₂ and PM₁₀ objectives alongside the A8 at the rear of receptors on Kirkshaws Road. An AQMA was recommended in this area with respect to the annual mean objective for both pollutants. .</p> <p>It was recommended that an automatic monitor be located within Airdrie to verify the predicted exceedence of NO₂ objectives in the town. Further investigation of locations of relevant public exposure within the town centre was also recommended.</p>

Figure 1.1: Map of Whifflet Coatbridge AQMA Boundary

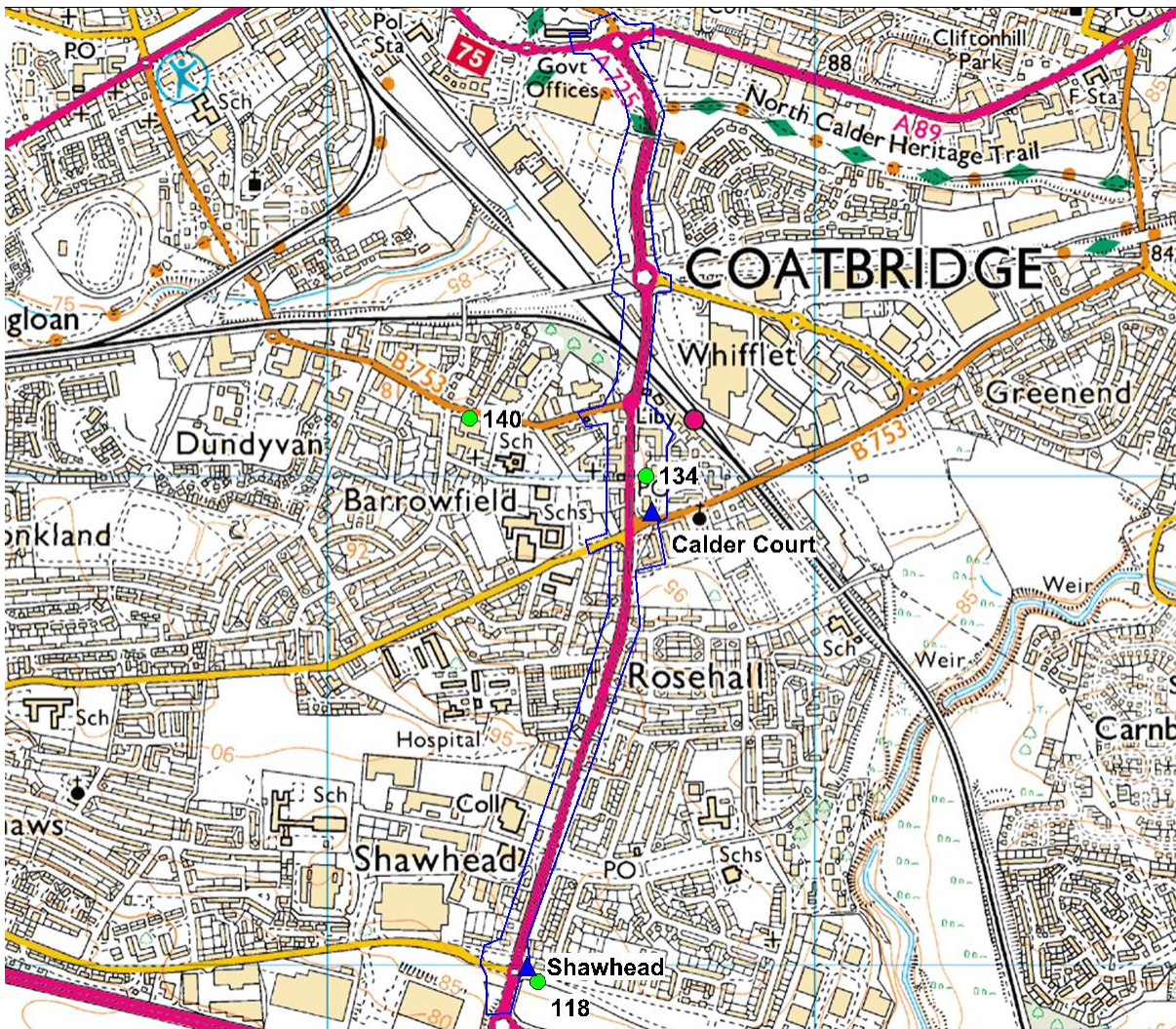


Figure 1.2: Map of Motherwell AQMA Boundary

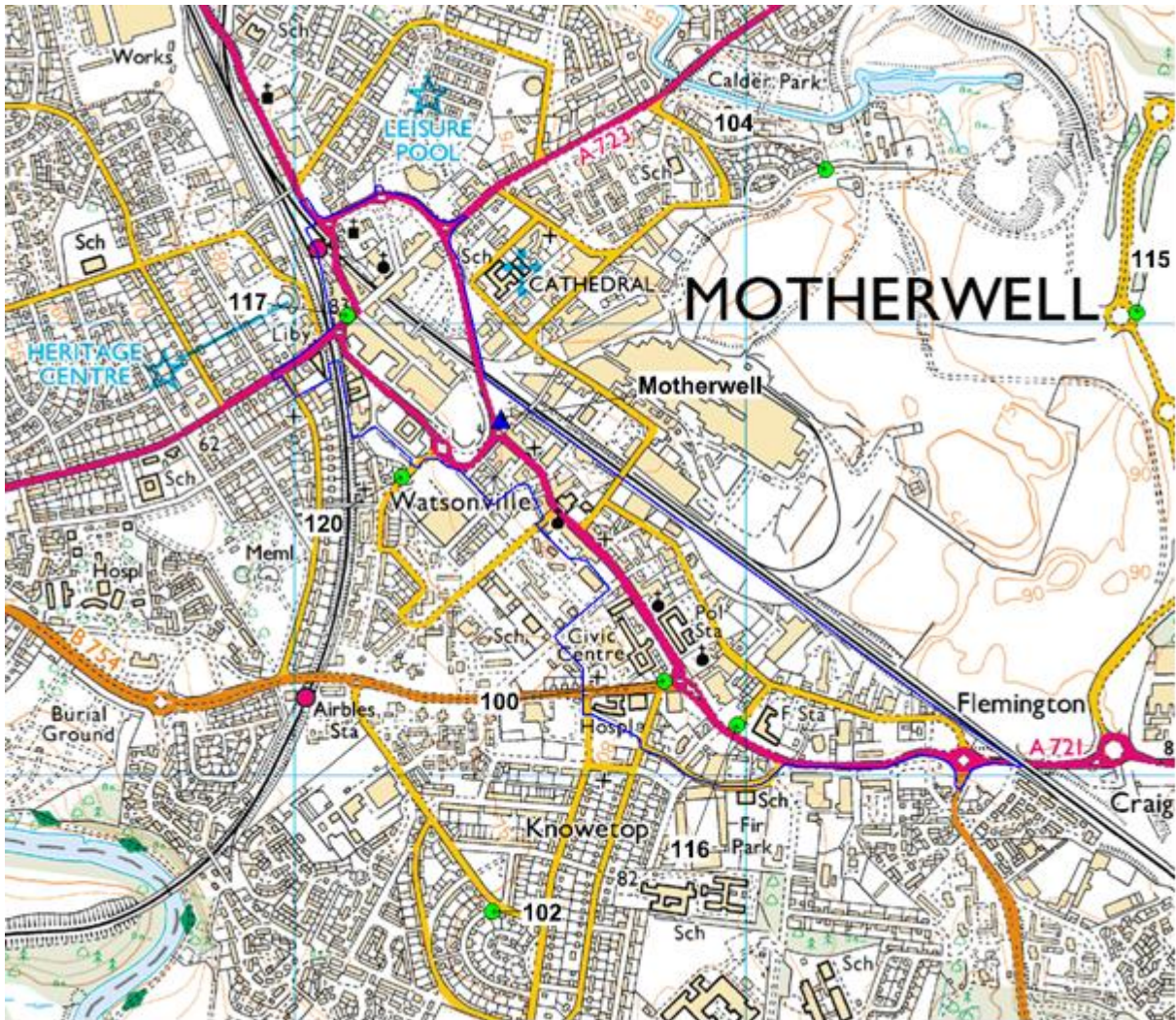


Figure 1.3: Map of Chapelhall AQMA Boundary

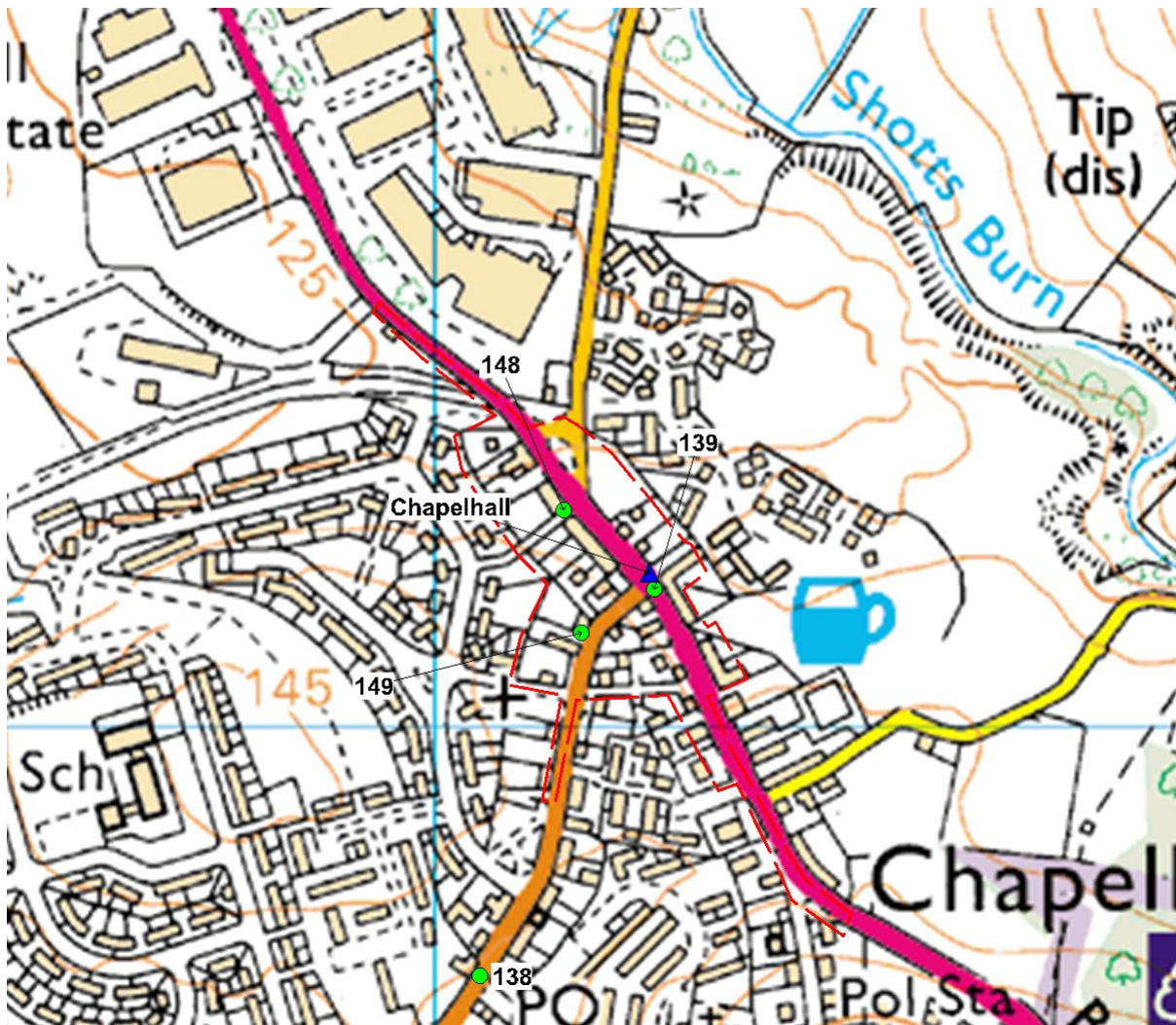


Figure 1.4: Map of Moodiesburn AQMA Boundary

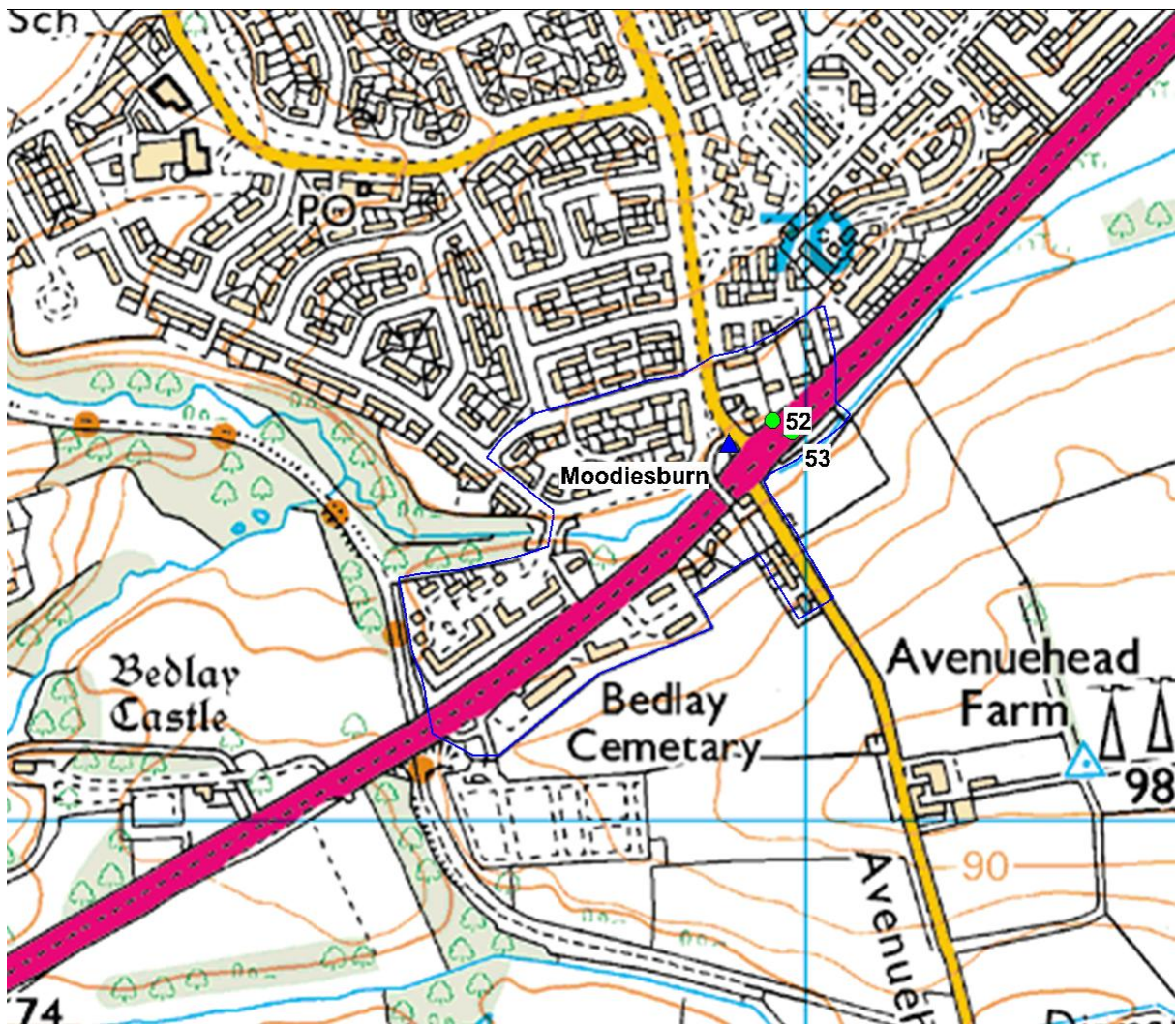


Figure 1.5: Map of Croy AQMA Boundary



2 New Monitoring Data

During 2013 the Council monitored ambient NO₂ and PM₁₀ concentrations at several locations within its area using both automatic and non-automatic sampling methods.

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

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.

North Lanarkshire Council currently conduct automatic monitoring at eight locations. No additional automatic monitoring sites were established or closed in 2013. An inventory of the monitoring sites and the pollutants measured are presented in Table 2.1.

The automatic monitoring results for NO₂ and PM₁₀ are presented in Table 2.3, Table 2.4, Table 2.8, and Table 2.9

Table 2.1: Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CM1	Chapelhall	Roadside	278174	663124	2.0	NO ₂ , PM ₁₀	Yes (PM ₁₀)	Chemiluminescence, TEOM	Y (20m)	5m	No
CM2	Croy	Special – By Quarry	272775	675738	2.0	NO ₂ , PM ₁₀ , SO ₂	Yes (PM ₁₀)	Chemiluminescence, TEOM	Y (30m)	10m	No
CM3	Whifflet Coatbridge	Urban Background	273674	663927	2.0	PM ₁₀	Yes (PM ₁₀)	TEOM	N (20m)	30m	No
CM4	Cumbernauld	Roadside	274240	674158	2.0	NO ₂ , PM ₁₀ , SO ₂	No	TEOM	Y (50m)	2m, 50m to A80	No
CM5	Motherwell	Roadside	275458	656792	2.0	PM ₁₀	Yes (PM ₁₀)	TEOM	Y (20m)	10m	No
CM6	Moodiesburn	Roadside	269921	670389	2.0	NO ₂ , PM ₁₀	Yes (PM ₁₀)	Chemiluminescence, BAM	N (50m)	5m	No
CM7	Shawhead Coatbridge	Roadside	273411	662997	2.0	NO ₂ , PM ₁₀	Yes (PM ₁₀)	Chemiluminescence, BAM	Y (22m)	9m	Yes

2.1.2 Non-Automatic Monitoring Sites

At present North Lanarkshire Council operate a network of seventy nine NO₂ diffusion tube sites, located across the Council area. Four new monitoring locations have been established in 2013:

- Bridgend Crescent, Moodiesburn at representative residential properties closest to the new M80 by-pass;
- Auchengeich Road, Moodiesburn at relevant receptors close to new M80 by-pass;
- 191 Carfin Street, Newstevenson, close to areas of new residential development and redeveloped A723 M8:Ravenscraig access road; and
- Deeds Street Airdrie, at roadside receptors on A89.

The monitoring sites represent public exposure and areas of high pollution concentrations at a variety of kerbside, roadside and urban background locations. Site details are presented in Table 2.2. Measured NO₂ concentrations during 2013 are presented in Table 2.5. The Quality Assurance and Quality Control (QA/QC) procedures followed by the Council and Glasgow Scientific Services and details of the bias correction factors used are presented in Appendix A.

Table 2.2: Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
10	Castle court Castlecary	Roadside	278528	677864	3.0	NO ₂	No	N	Y 10m (house)	2m	Y
47	Layby in Stand	Roadside	276538	668899	3.0	NO ₂	No	N	Y 10m	2m	Y
48	Bus Stop, Bron Way, Cumbernauld	Kerbside	275920	674203	3.0	NO ₂	No	N	Y 10m	2m	N
49	Swimming Pool, Kilsyth	Kerbside	271514	678040	3.0	NO ₂	No	N	Y 50m	2m	Y
50	House No 1791, Cumbernauld Road, Stepps	Kerbside	265198	668024	3.0	NO ₂	No	N	Y 25m	2m	Y
51	House No 131, Cumbernauld Road, Stepps	Kerbside	265971	668567	3.0	NO ₂	No	N	Y 30m	2m	Y
52	Traffic Lights, A 80 Eastbound, Moodiesburn	Kerbside	269966	670412	3.0	NO ₂	Yes (PM ₁₀)	N	Y 30m	30m	Y
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Kerbside	269986	670400	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
54	Gartcosh Lochend Rd & Cb Jct A752	Urban Background	269828	668354	3.0	NO ₂	No	N	Y 20m	2m	Y
55	Glenboig Whitelaw Road End	Urban Background	272614	668138	3.0	NO ₂	No	N	Y 50m	2m	Y
56	Glenboig Garnqueen Ave 1st Post Left Side	Urban Background	271751	668432	3.0	NO ₂	No	N	Y 50m	2m	Y
57	Glenboig Main St Jct Carrick view L/H First Post	Urban Background	272030	668564	3.0	NO ₂	No	N	Y 10m	2m	Y
58	Glenboig Road Post Nr House No 115	Urban Background	272743	668103	3.0	NO ₂	No	N	Y 2m	2m	Y
59	Mount Ellen Coronation Place Adjacent House Nos 10-16	Urban Background	269356	669173	3.0	NO ₂	No	N	Y 20m	2m	Y
61	Under Bridge Central Way East Bound Cumbernauld	Roadside	275778	674440	3.0	NO ₂	No	N	Y 10m	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
62	Central Way West Bound Cumbernauld	Roadside	275920	674511	3.0	NO ₂	No	N	Y 10m	2m	Y
63	Central Way West Bound Cumbernauld	Roadside	275642	674271	3.0	NO ₂	No	N	Y 10m	2m	Y
100	Civic Centre, Motherwell	Roadside	275820	656208	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m (hospital)	2m	Y
101	Shields Road, Motherwell	Roadside	276594	655113	3.0	NO ₂	No	N	Y 15m	2m	Y
102	Emily Drive, Motherwell	Urban Background	275437	655696	3.0	NO ₂	No	N	Y 15m	2m	N
103	Kethers Lane, Motherwell	Urban Background	273986	656985	3.0	NO ₂	No	N	Y 10m	2m	N
104	Coursington Road, Motherwell	Urban Background	276178	657344	3.0	NO ₂	No	N	Y 20m	2m	N
105	Craigneuk Road, Carfin	Urban Background	277244	658415	3.0	NO ₂	No	N	Y 10m	2m	N
106	Camp Street, Motherwell	Urban Background	275654	656342	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	N
107	Braehead Farm, Bargeddie	Roadside	270929	663464	3.0	NO ₂	No	N	N	50m to A8	Y
108	Shawhead, MSA Factory	Roadside	273830	662676	3.0	NO ₂	No	N	N	50m to A8	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
109B	Carnboe Landfill, A8 East	Roadside	274274	662961	3.0	NO ₂	No	N	Y 0m	10m	Y
110	New Edinburgh Road (1), M74 Uddingston	Roadside	272789	675735	3.0	NO ₂	No	N	Y 30m to 40m to nearest house	2m to Hamilton Road 30m M74	Y
111	New Edinburgh Road (2), M74 Uddingston	Roadside	272789	675735	3.0	NO ₂	No	N	Y 15m	2m	Y
112	New Edinburgh Road (3), M74 Uddingston	Roadside	272789	675735	3.0	NO ₂	No	N	Y 10m	2m	Y
113	Tinkers Lane, Motherwell	Roadside	274305	656466	3.0	NO ₂	No	N	Y 20m	2m	Y
114	Main Street, Overtown	Kerbside	280370	653072	3.0	NO ₂	No	N	Y 15m	2m	Y
115	Ravenscraig By-Pass	Roadside	276868	657027	3.0	NO ₂	No	N	N	2m	N
116	Delburn Street, Motherwell	Urban Background	275981	656111	3.0	NO ₂	Yes (PM ₁₀)	N	Y 80m	2m	Y
117	Hamilton Road Motherwell	Urban Background	275091	656968	3.0	NO ₂	No	N	Y 20m (house)	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
118	Shawhead roundabout, Coatbridge	Kerbside	273432	662965	3.0	NO ₂	No	N	Y 50m	2m	Y
119	Kirkshaws Road, Coatbridge	Roadside	271939	663179	3.0	NO ₂	No	N	Y 25m	2m	N
120	Watsonville, Motherwell	Kerbside	275237	656662	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
121	Flannigan Grove, Bellshill	Urban Background	273180	660350	3.0	NO ₂	No	N	Y 30m	30m	Y
122	Main Street, Mossend	Roadside	274082	660308	3.0	NO ₂	No	N	Y 50m	2m	Y
123	Hamilton Road, Orbiston, Bellshill	Kerbside	272687	659512	3.0	NO ₂	No	N	Y 20m	2m	N
124	Scotmid, Tannochside	Kerbside	270073	661870	3.0	NO ₂	No	N	Y 20m	2m	N
125	Main Street, Near Bellshill Academy	Kerbside	273767	660281	3.0	NO ₂	No	N	Y 5m	5m	Y
126	Main Street, Near/at Motherwell Rd Junction	Roadside	273133	660117	3.0	NO ₂	No	N	Y 20m	5m	N

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
127	Main Street, near/at Tesco delivery road	Roadside	273541	660339	3.0	NO ₂	No	N	Y 1m	2m	Y
128	Matalan, Wishaw	Roadside	278059	655368	3.0	NO ₂	No	N	Y 10m	2m	Y
129	Newmains Police Station	Roadside	282392	656016	3.0	NO ₂	No	N	Y 7m	2m	Y
130	Main Street (Bottom), Wishaw	Roadside	279118	655327	3.0	NO ₂	No	N	Y 5m	2m	Y
133	Coatbridge 1, Bank Street	Roadside	272887	664991	3.0	NO ₂	No	N	Y 2m	2m	Y
134	Coatbridge 2, Whifflet Court	Kerbside	273655	664003	3.0	NO ₂	No	N	Y 10m	20 m	N
135	Grahamshill Street, Airdrie	Kerbside	277276	665615	3.0	NO ₂	No	N	N	2m	Y
136	Airdrie 3, Springwells Crescent	Roadside	277162	665650	3.0	NO ₂	No	N	Y 10m	2m	N
137	Auchenkilns, Cumbernauld	Roadside	274164	674130	3.0	NO ₂	No	N	Y 30m	2m	Y
138	Chapellhall Main street, (Near shops)	Roadside	278037	662798	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
139	Lauchope Street, Chapelhall Junction	Roadside	278178	663111	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
140	Coatbridge, Dundy Van Rd	Kerbside	273293	664120	3.0	NO ₂	No	N	Y 5m	1m	Y
141	Harthill Main Street(1), (Near shops)	Kerbside	290652	664493	3.0	NO ₂	No	N	Y 10m	2m	Y
142	Salsburgh, (house number 337), R15.	Roadside	283850	663082	3.0	NO ₂	No	N	Y 15m	30m	N
143	Harthill Main Street(2), (Near shops)	Roadside	290482	664386	3.0	NO ₂	No	N	Y 10m	2m	Y
144	Lab 1 Constarry Road, Croy 1	Roadside	272789	675735	3.0	NO ₂	No	Y	Y 100m	5m	Y
145	Lab 2 Constarry Road, Croy 2	Roadside	272789	675735	3.0	NO ₂	No	Y	Y 100m	5m	Y
146	Lab 3 Constarry Road, Croy 3	Roadside	272789	675735	3.0	NO ₂	No	Y	Y 100m	5m	Y
147	Bank St, Coatbridge (Nearest house)	Roadside	272947	665037	3.0	NO ₂	No	N	Y 15m	0m	Y
148	Main Street, Chapelhall R32	Kerbside	278105	663174	3.0	NO ₂	Yes (PM ₁₀)	N	Y 15m	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
149	Main Street, Chapelhall R33	Kerbside	278119	663075	3.0	NO ₂	Yes (PM ₁₀)	N	Y 15m	2m	Y
150	Eastfield Road, Cumbernauld. (Lamppost R6P783)	Kerbside	275160	676210	3.0	NO ₂	Yes (PM ₁₀)	N	Y 25m	2m	N
151	Holytown, Main Street	Urban Background	276635	660569	3.0	NO ₂	No	N	Y 10m	2m	Y
152	Coatbridge Road shops, Townhead	Roadside	272391	665824	3.0	NO ₂	No	N	Y 10m	2m	Y
153	House Number 72, Townhead Road, Coatbridge	Roadside	271720	666053	3.0	NO ₂	No	N	Y 20m	2m	N
154	Sunnyside Road, Coatbridge	Roadside	273042	665176	3.0	NO ₂	No	N	Y 20m	2m	Y
156	Stirling Street, Airdrie	Roadside	276005	665406	3.0	NO ₂	No	N	N	2m	Y
157	31 Station Road, Muirhead	Roadside	268442	669262	3.0	NO ₂	No	N	Y 15m	2m	Y

North Lanarkshire

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
158	Croftmoraig Crescent, Moodiesburn	Roadside	270281	671715	3.0	NO ₂	No	N	Y 15m	2m	Y
159	Croftmoraig Avenue	Roadside	270311	671702	3.0	NO ₂	Yes	N	Y 10m	2m	N
160	Glenview Crescent	Roadside	270391	671505	3.0	NO ₂	Yes	N	Y 10m	2m	N
161	Bridgend Crescent	Roadside	269071	670889	3.0	NO ₂	No	N	Y 1m	1m	Y
162	Auchingoch Road	Roadside	269022	670979	3.0	NO ₂	No	N	Y 2m	1m	Y
163	191 Carfin Street, Newstevenson	Roadside	276700	658972	3.0	NO ₂	No	N	Y 12m	2m	Y
164	Deeds Street Airdrie	Roadside	274819	665005	3.0	NO ₂	No	N	Y 7m	2m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO₂)

Automatic Monitoring Data

Ambient NO₂ concentrations were measured at all of the automatic monitoring sites during 2013.

The annual mean and 1-hour mean NO₂ automatic monitoring data for 2013 and previous years are presented in Table 2.3 and Table 2.4 respectively.

Measured annual mean NO₂ concentrations were below the 40 µg/m³ objective at all automatic monitoring locations. Measured concentrations have decreased since 2012. There appears to be a downward trend in annual mean concentrations at all automatic monitoring sites as shown in Figure 2.1.

Analysis of the measured data indicates that there were no recorded exceedences of the 1-hour mean and 200 µg/m³ short-term objectives during 2013.

Table 2.3: Results of Automatic Monitoring for NO₂: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Annual Mean Concentration (µg/m ³)				
					2009 ^c	2010 ^c	2011 ^c	2012 ^c	2013 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	95.7	95.7	40	38	41	35	33.8
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	95.4	95.4	24	31	21	23	20.6
CM4 – Cumbernauld	Roadside	N	91.8	91.8	Commenced 2012			31	25.9
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	99.9	99.9	37	43	25	25	20.2
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	98.8	98.8	37	41	36	35	34.3

In bold, exceedence of the NO₂ annual mean AQS objective of 40 µg/m³

^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\(09\) \(http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%

Figure 2.1: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Automatic Monitoring Sites

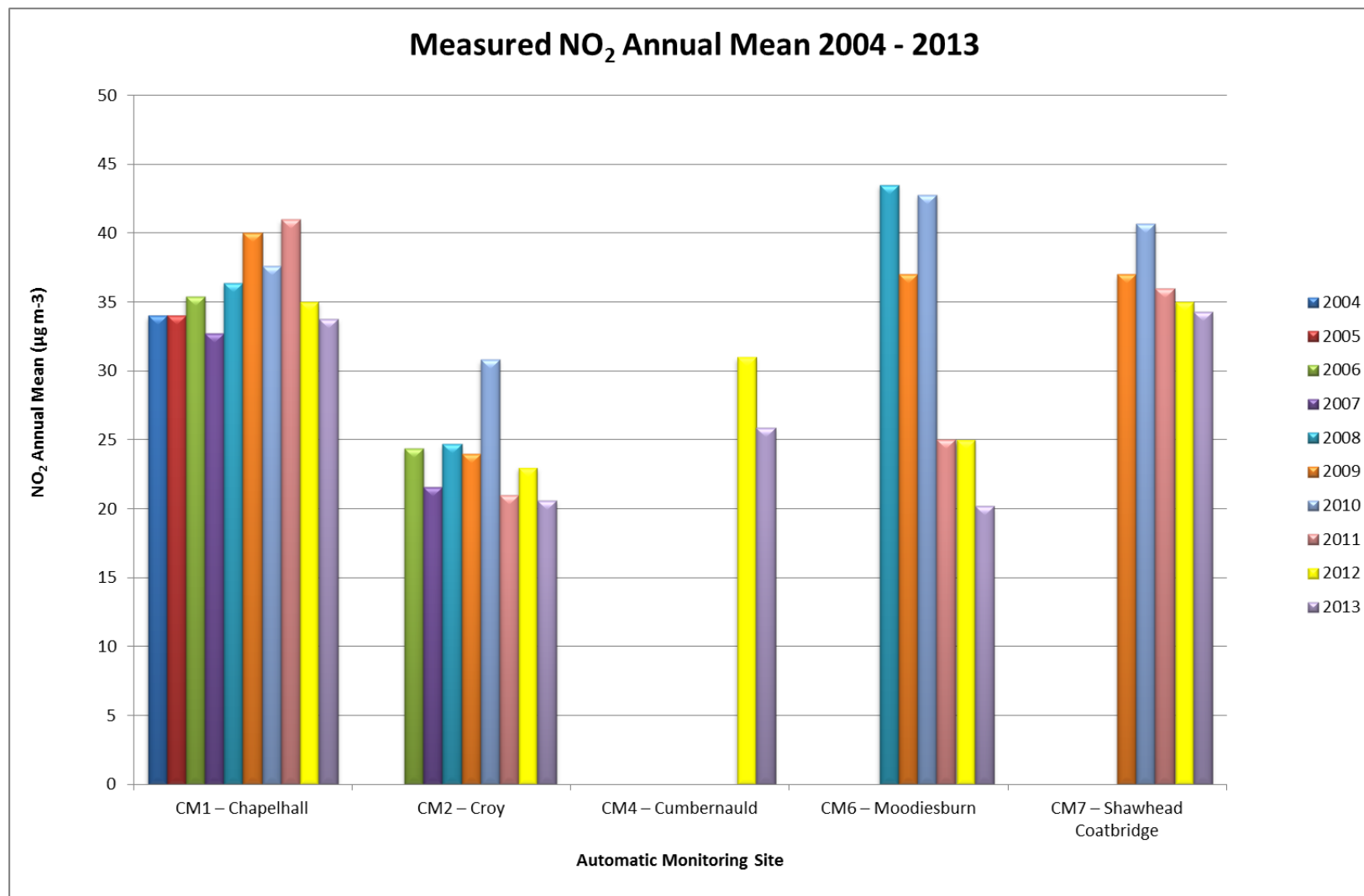


Table 2.4: Results of Automatic Monitoring for NO₂: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Number of Hourly Means > 200µg/m ³				
					2009 ^c	2010 ^c	2011 ^c	2012 ^c	2013 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	95.7	95.7	1 (145)	6 (170)	2	0	0
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	95.4	95.4	0 (120)	0 (172)	0	0	0
CM4 – Cumbernauld	Roadside	N	91.8	91.8	N/A	N/A	N/A	1	0
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	99.9	99.9	0 (130)	0 (151)	0	0	0
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	98.8	98.8	0 (109)	0 (149)	0	0	0

In bold, exceedence of the NO₂ hourly mean AQS objective (200 µg/m³ – not to be exceeded more than 18 times per year)

^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 data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

Measured NO₂ concentrations across the diffusion tube network from 2009 to 2013 are presented in Table 2.6. Measured concentrations in excess of the 40 µg/m³ NAQS objective are in bold.

Trend charts of historic diffusion tube data are presented in Figure 2.2, Figure 2.3, and

Figure 2.4.

For sites where the data capture was below 75% the measured concentrations have been annualised following the method described in Local Air Quality Management technical guidance. Further details of the annualisation, laboratory bias adjustment and QA/QC are provided in Appendix A.

Table 2.5: Results of NO₂ Diffusion Tubes 2013

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration (µg/m ³) - Bias Adjustment factor = 0.99 ^b
10	Castle Court, Castlecary	Roadside	No	No	75%	27.0
47	Layby in Stand	Roadside	No	No	92%	23.0
48	Bus Stop, Bron Way, Cumbernauld	Kerbside	No	No	92%	33.8
49	Swimming Pool, Kilsyth	Kerbside	No	No	92%	21.3
50	House No 1791, Cumbernauld Road, Stepps	Kerbside	No	No	92%	22.7
51	House No 131, Cumbernauld Road, Stepps	Kerbside	No	No	92%	27.5
52	Traffic Lights, A80 Eastbound, Moodiesburn	Kerbside	No	No	92%	24.5
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Kerbside	No	No	92%	19.2
54	Gartcosh lochend rd	Urban Background	No	No	92%	24.6
55	Glenboig Whitelaw Rd	Urban Background	No	No	92%	21.3
56	Glenboig Garnqueen Ave	Urban Background	No	No	92%	16.0
57	Glenboig main St	Urban Background	No	No	92%	18.4

North Lanarkshire

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.99 ^b
58	Glenboig Cb Road post nr house no 115	Urban Background	No	No	92%	17.7
59	Mount Ellen Coronation Place	Urban Background	No	No	92%	19.8
61	Under bridge Central Way E	Roadside	No	No	92%	56.0
62	A Central Way West Bound	Roadside	No	No	92%	41.4
63	B Central Way West Bound	Roadside	No	No	92%	37.3
100	Civic Centre, Motherwell	Roadside	No	No	83%	34.1
101	Shields Rd, Motherwell	Roadside	No	No	83%	28.9
102	Emily Drive, Motherwell	Urban Background	No	No	92%	12.2
103	Kethers Lane, Motherwell	Urban Background	No	No	83%	17.0
104	Coursington Road, Motherwell	Urban Background	No	No	83%	10.5
105	Craigneuk Road, carfin	Urban Background	No	No	92%	17.3
106	Camp street, Motherwell	Urban Background	No	No	92%	19.5
107	Braehead Farm, Bargeddie	Roadside	No	No	83%	44.4
108	Shawhead, MSA Factory	Roadside	No	No	92%	40.0

North Lanarkshire

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.99 ^b
109B	Carnboe Landfill, A8 East	Roadside	No	No	50%	73.8
110	New Edinburgh Rd (1), M74 Uddingston	Roadside	No	No	92%	35.6
111	New Edinburgh Rd (2) M74 Uddingston	Roadside	No	No	83%	39.2
112	New Edinburgh Rd (3) M74 Uddingston	Roadside	No	No	83%	37.7
113	Tinkers Lane	Roadside	No	No	92%	24.5
114	Castlehill Rd, Overtoun	Kerbside	No	No	92%	21.6
115	Ravenscraig By-pass	Roadside	No	No	92%	16.5
116	Delburn St, Motherwell	Urban Background	Yes (PM ₁₀)	No	92%	28.1
117	Hamilton Road, Motherwell	Urban Background	Yes (PM ₁₀)	No	75%	35.9
118	Shawhead roundabout	Kerbside	No	No	92%	35.3
119	Kirkshaws Rd, Coatbridge	Roadside	No	No	83%	39.9
120	Watsonville (ASDA) Motherwell	Kerbside	Yes (PM ₁₀)	No	83%	26.9
121	Flannigan Grove, Bellshill	Urban Background	No	No	92%	25.0
122	Main Street Mossend	Roadside	No	No	92%	35.7
123	Hamilton Rd, Orbiston, Bellshill	Kerbside	No	No	92%	29.6
124	Scotmid, Tannochside	Kerbside	No	No	92%	38.7

North Lanarkshire

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.99 ^b
125	Main Street, Near Bellshill Academy	Kerbside	No	No	92%	20.8
126	Main Street Near / at Motherwell Rd	Roadside	No	No	83%	28.7
127	Main Street, near /at Tesco delivery road	Roadside	No	No	83%	23.7
128	Matalan Wishaw	Roadside	No	No	92%	29.3
129	Newmains Police Station	Roadside	No	No	92%	34.7
130	Main St (Bottom) Wishaw	Roadside	No	No	83%	17.9
133	Coatbridge 1, Bank Street	Roadside	No	No	83%	37.2
134	Coatbridge 2, Bank Street	Kerbside	No	No	92%	25.5
135	Grahamshill Street Airdrie	Kerbside	No	No	75%	37.9
136	Airdrie 3, Springwells Cres	Roadside	No	No	92%	18.5
137	Auchenkilns, Cumbernauld	Roadside	No	No	92%	22.0
138	Chapelhall Main Street	Roadside	Yes (PM ₁₀)	No	75%	27.9
139	Lauchope Street, Chapelhall	Roadside	Yes (PM ₁₀)	No	83%	42.9
140	Coatbridge, Dundyvan Rd	Kerbside	No	No	83%	29.4
141	Harthill main Street (1)	Kerbside	No	No	92%	20.3
142	Salsburgh (House no 337), R15	Roadside	No	No	83%	26.0

North Lanarkshire

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.99 ^b
143	Harthill Main Street (2)	Roadside	No	No	83%	21.1
144	Constarry Road, Croy 1	Roadside	No	Yes	92%	19.2
145	Constarry Road, Croy 2	Roadside	No	Yes	92%	19.9
146	Constarry Road, Croy 3	Roadside	No	Yes	92%	18.5
147	Bank St, Coatbridge	Roadside	No	No	92%	30.9
148	Main St, Chapelhall R32	Kerbside	No	No	83%	37.7
149	Main St, Chapelhall R33	Kerbside	No	No	83%	36.4
150	Eastfield Rd, Cumbernauld	Kerbside	No	No	92%	29.6
151	Holytown Main Street	Urban Background	No	No	92%	26.4
152	Coatbridge Road Shops Townhead	Roadside	No	No	92%	32.2
153	House Number 72, Townhead Rd	Roadside	No	No	92%	23.5
154	Sunnyside Road Coatbridge	Roadside	No	No	75%	37.3
156	Stirling Street Airdrie	Roadside	No	No	92%	42.2
157	31 Station Road Muirhead	Roadside	No	No	92%	24.2
158	Croftmoraig Avenue	Roadside	No	No	92%	21.7
159	Glenview Crescent	Roadside	No	No	92%	20.1
160	The Cuillins	Roadside	No	No	75%	21.5
161	Bridgend Crescent	Roadside	No	No	58%	18.5

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) ^a	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.99 ^b
162	Auchingoch Road	Roadside	No	No	75%	21.4
163	191 Carfin Steet, Newstevenson	Roadside	No	No	67%	16.3
164	Deeds Street Airdrie	Roadside	No	No	17%	28.8

In bold, exceedence of the NO₂ annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedence of the NO₂ hourly mean AQS objective

^a Means have been “annualised” as in Box 3.2 of TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%, full details can be found in Appendix A

^b If an exceedence is measured at a monitoring site not representative of public exposure, NO₂ concentration at the nearest relevant exposure should be estimated based on the “NO₂ fall-off with distance” calculator (<http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>), and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=30>).

Table 2.6: Results of NO₂ Diffusion Tubes (2009 to 2013)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias ^a					
			2009 (Bias Adjustment Factor = 1.07)	2010 (Bias Adjustment Factor = 1.10)	2011 (Bias Adjustment Factor = 1.02)	2012 (Bias Adjustment Factor = 0.96)	2013 (Bias Adjustment Factor = 0.99)	
10	Roadside	No	<i>Deployed 2012</i>				29.0	27.0
47	Roadside	No	26.8	27	25.9	23.0	23.0	
48	Kerbside	No	35.8	37.4	39.8	32.4	33.8	
49	Kerbside	No	21.5	21.9	23.3	24.5	21.3	
50	Kerbside	No	29.4	28.5	34.7	27.1	22.7	
51	Kerbside	No	34.5	30.6	34.1	30.2	27.5	
52	Kerbside	No	64.4	55.2	30.8	28.5	24.5	
53	Kerbside	No	59.5	52	28.4	22.6	19.2	
54	Urban Background	No	23.9	30.4	23.3	30.8	24.6	
55	Urban Background	No	15.0	19.3	15.3	16.2	21.3	
56	Urban Background	No	14.6	23.6	15.5	17.0	16.0	
57	Urban Background	No	15.8	23.5	16.3	20.4	18.4	
58	Urban Background	No	17.9	21.6	18.3	18.4	17.7	
59	Urban Background	No	21.1	32.0	22.3	24.7	19.8	
61	Roadside	No	53.8	57.9	47.8	47.2	56.0	
62	Roadside	No	56.5	49.1	40.2	40.8	41.4	
63	Roadside	No	47.7	40.8	39.6	34.7	37.3	
100	Roadside	No	39.3	37.1	32.9	30.0	34.1	

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias ^a				
			2009 (Bias Adjustment Factor = 1.07)	2010 (Bias Adjustment Factor = 1.10)	2011 (Bias Adjustment Factor = 1.02)	2012 (Bias Adjustment Factor = 0.96)	2013 (Bias Adjustment Factor = 0.99)
101	Roadside	No	19.5	29.6	29.2	26.7	28.9
102	Urban Background	No	13.7	14.4	13.6	13.7	12.2
103	Urban Background	No	17.5	16.5	17.1	15.8	17.0
104	Urban Background	No	13	14.1	12.4	13.0	10.5
105	Urban Background	No	16.6	18	17.9	16.1	17.3
106	Urban Background	No	21.7	22.3	22.8	22.2	19.5
107	Roadside	No	41.2	43	40.8	40.9	44.4
108	Roadside	No	44.7	43.2	48.9	38.2	40.0
109B	Roadside	No	<i>Deployed 2011</i>		75.8	50.1	73.8
110	Roadside	No	<i>Deployed 2010</i>	40.0	43.4	38.1	35.6
111	Roadside	No	<i>Deployed 2010</i>	38.6	35.2	38.6	39.2
112	Roadside	No	<i>Deployed 2010</i>	44.8	38.6	39.6	37.7
113	Roadside	No	23.8	26.9	28.3	24.3	24.5
114	Kerbside	No	<i>Deployed 2010</i>	37.8	22.4	23.3	21.6
115	Roadside	No	17.3	20.5	20.7	19.5	16.5
116	Urban Background	Yes (PM ₁₀)	24.2	30.2	28.8	24.6	28.1
117	Urban Background	Yes (PM ₁₀)	36.2	41.1	44	39.0	35.9
118	Kerbside	No	37.6	38.3	37.5	34.2	35.3
119	Roadside	No	39.5	40.3	46.2	41.5	39.9

North Lanarkshire

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias ^a				
			2009 (Bias Adjustment Factor = 1.07)	2010 (Bias Adjustment Factor = 1.10)	2011 (Bias Adjustment Factor = 1.02)	2012 (Bias Adjustment Factor = 0.96)	2013 (Bias Adjustment Factor = 0.99)
120	Kerbside	Yes (PM ₁₀)	22.4	27	25.3	28.5	26.9
121	Urban Background	No	24.8	31.6	26.6	24.1	25.0
122	Roadside	No	29.5	37.5	38.7	34.3	35.7
123	Kerbside	No	30.1	30.5	26.2	27.0	29.6
124	Kerbside	No	32.2	33	33.8	30.2	38.7
125	Kerbside	No	<i>Deployed 2010</i>	31.7	26.9	21.1	20.8
126	Roadside	No	<i>Deployed 2010</i>	35.8	28.9	25.6	28.7
127	Roadside	No	<i>Deployed 2010</i>	26.6	24.4	24.1	23.7
128	Roadside	No	<i>Deployed 2010</i>	31.1	31.2	31.1	29.3
129	Roadside	No	<i>Deployed 2010</i>	36.3	37.6	29.6	34.7
130	Roadside	No	<i>Deployed 2010</i>	35.6	18.5	19.6	17.9
133	Roadside	No	49.5	39.7	44.3	34.3	37.2
134	Kerbside	No	33.1	30	28.5	28.9	25.5
135	Kerbside	No	26	41	45.9	38.3	37.9
136	Roadside	No	21.6	20.2	22.2	24.5	18.5
137	Roadside	No	33.5	30.4	25.9	25.0	22.0
138	Roadside	Yes (PM ₁₀)	<i>Deployed 2010</i>	46.3	33	29.8	27.9
139	Roadside	Yes (PM ₁₀)	46.2	45.5	48.2	34.3	42.9
140	Kerbside	No	29.8	28.5	31.7	31.4	29.4
141	Kerbside	No	<i>Deployed 2010</i>	23.1	22.1	21.4	20.3
142	Roadside	No	23.6	27.7	27.4	23.6	26.0
143	Roadside	No	<i>Deployed 2010</i>	22.7	23.1	22.6	21.1
144	Roadside	No	25.8	27.6	23.5	20.2	19.2
145	Roadside	No	26.2	24.2	23.9	20.7	19.9

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias ^a				
			2009 (Bias Adjustment Factor = 1.07)	2010 (Bias Adjustment Factor = 1.10)	2011 (Bias Adjustment Factor = 1.02)	2012 (Bias Adjustment Factor = 0.96)	2013 (Bias Adjustment Factor = 0.99)
146	Roadside	No	25.7	24.2	20.9	19.4	18.5
147	Roadside	No	50.4	45.1	51.3	36.1	30.9
148	Kerbside	No	36.7	37.6	48.3	37.2	37.7
149	Kerbside	No	33.2	33.7	39.6	34.8	36.4
150	Kerbside	No	33.2	32.5	34.1	28.7	29.6
151	Urban Background	No	<i>Deployed 2010</i>	28.2	26.2	25.1	26.4
152	Roadside	No	<i>Deployed 2010</i>	40.4	36.3	33.6	32.2
153	Roadside	No	28.7	30.9	32.4	26.9	23.5
154	Roadside	No	<i>Deployed 2010</i>	42.1	42.6	32.9	37.3
156	Roadside	No	<i>Deployed 2010</i>	47.4	46.4	39.4	42.2
157	Roadside	No	<i>Deployed 2010</i>	38.0	30.2	27.1	24.2
158	Roadside	No	<i>Deployed 2011</i>		39.5	24.2	21.7
159	Roadside	No	<i>Deployed 2011</i>		32.5	21.5	20.1
160	Roadside	No	<i>Deployed 2012</i>			21.5	21.5
161	Roadside	No	<i>Deployed 2013</i>				18.5
162	Roadside	No	<i>Deployed 2013</i>				21.4
163	Roadside	No	<i>Deployed 2013</i>				16.3
164	Roadside	No	<i>Deployed 2013</i>				28.8

In bold, exceedence of the NO₂ annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedence of the NO₂ hourly mean AQS objective

^a Means have been “annualised” [as in Box 3.2 of TG\(09\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%, full details can be found in Appendix A

Figure 2.2: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Urban Background Diffusion Tube Monitoring Sites

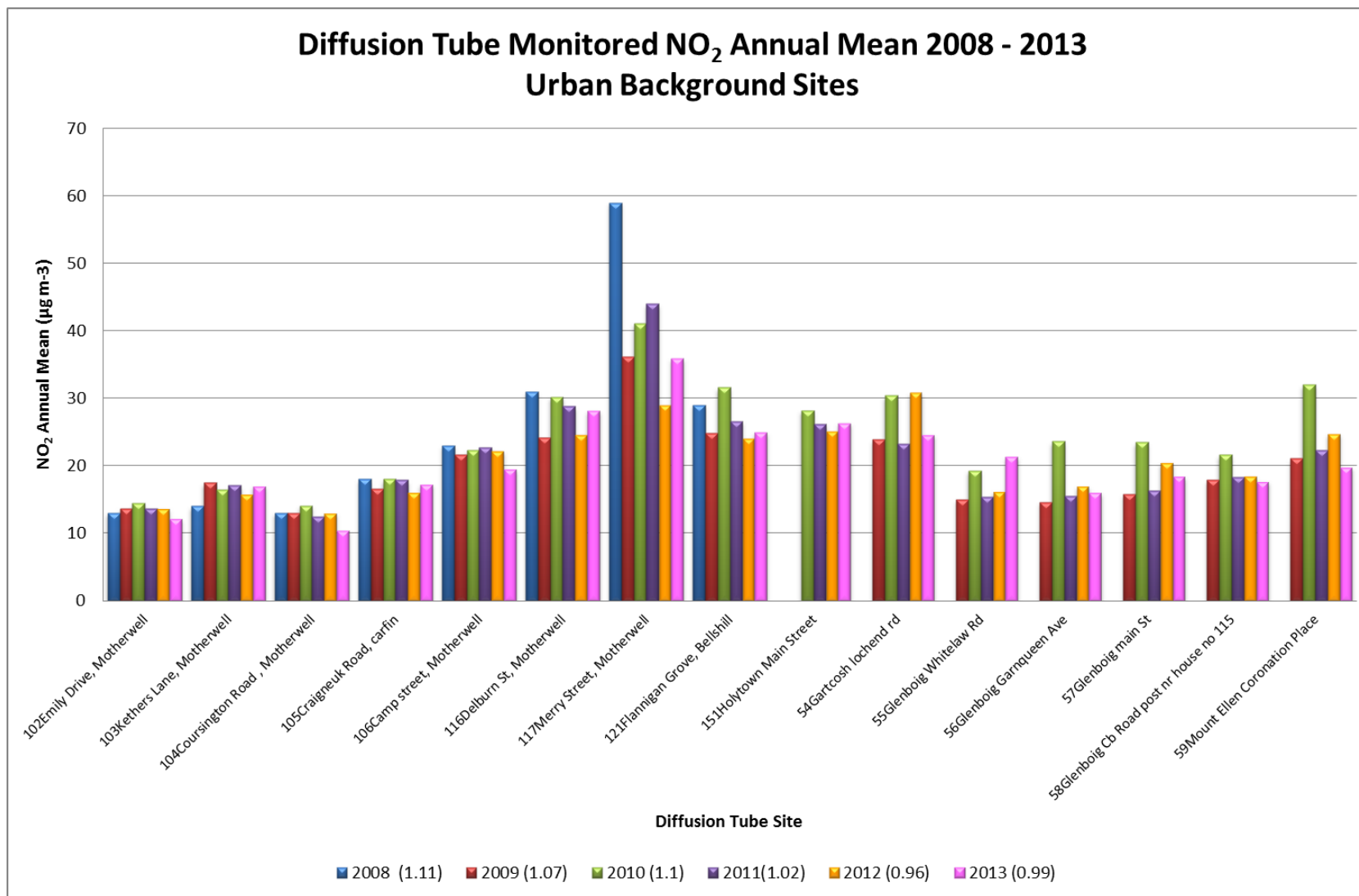


Figure 2.3: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Roadside Diffusion Tube Monitoring Sites

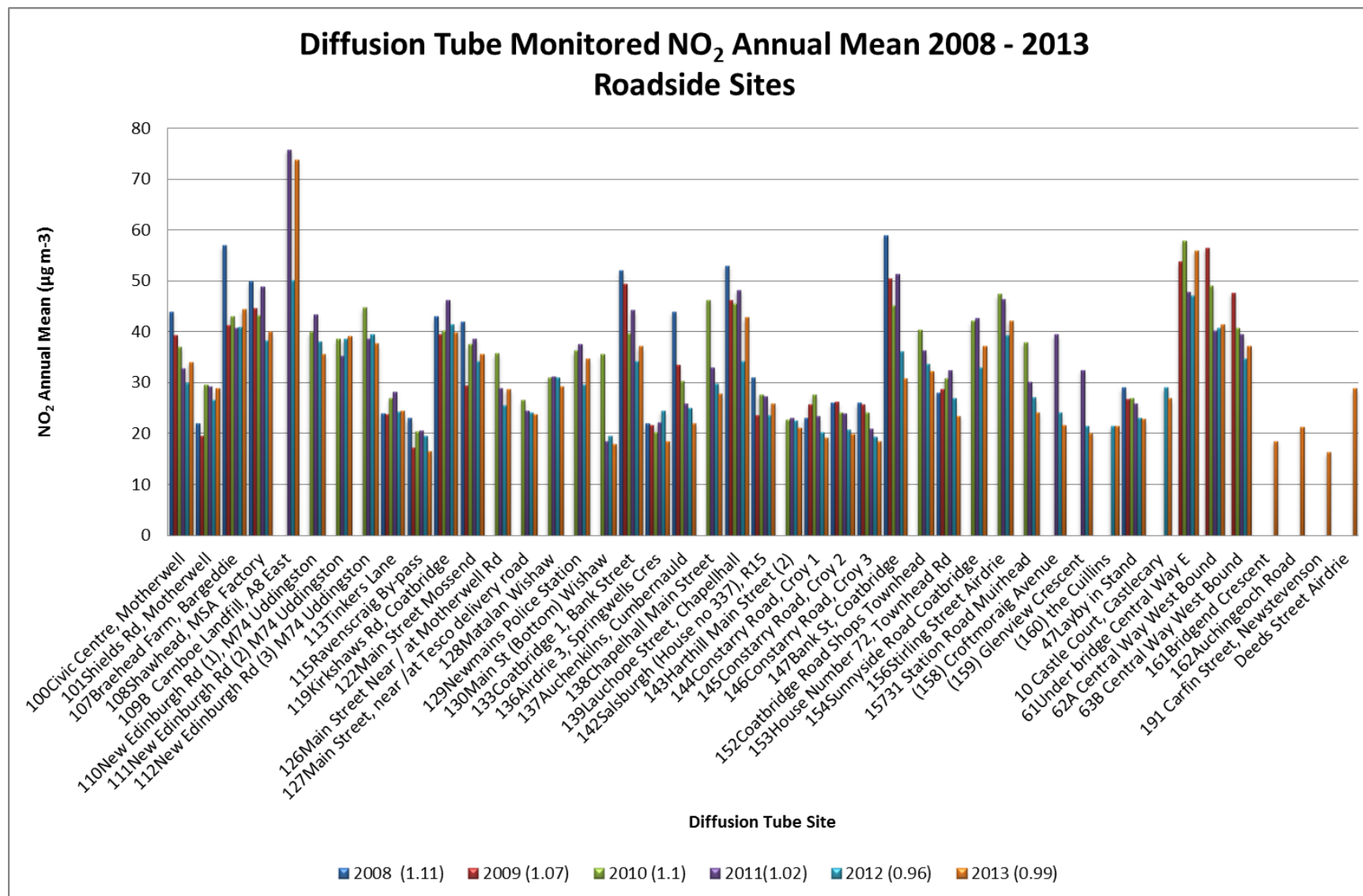
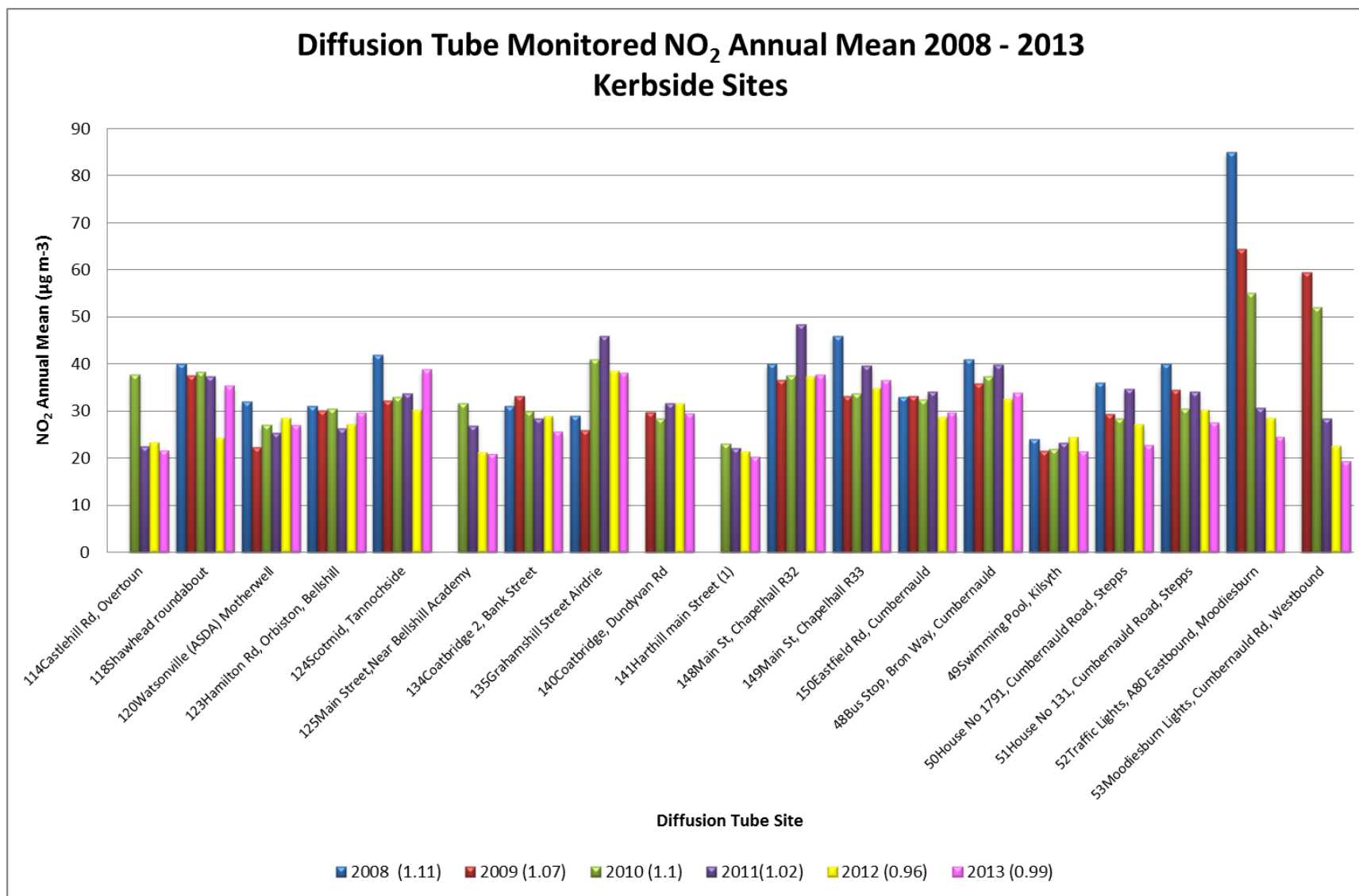


Figure 2.4: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Kerbside Diffusion Tube Monitoring Sites



The results indicate that the overall trends in measured annual mean NO₂ concentrations are:

- A slight decrease in measured concentrations at Urban Background sites between 2012 and 2013;
- An increase in measured concentrations at Roadside sites between 2012 and 2013; and
- A slight decrease in measured concentrations at Kerbside sites between 2012 and 2013.

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

- Cumbernauld, at Central Way Eastbound (61) and Central Way Westbound (62). There is no relevant exposure at this location.
- Coatbridge, at Bargeddie (107), MSA (108), and Carnbroe (109B). All sites are located within 50 m of the edge of the A8, between Ballieston and Eurocentral. The 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. Detailed Modelling of the wider Monklands area in 2013 also recommended the declaration of an AQMA for NO₂ along this section of the A8 and adjacent housing.
- Chapelhall, at Lauchope Street (139). This site is situated within an AQMA for PM₁₀.
- Airdrie, at Stirling Street (156). Not currently situated within an AQMA, the 2013 Monklands Detailed Assessment predicted exceedences and advocated further investigation before declaration of an AQMA covering Airdrie town centre.

Diffusion tubes that are close to the objective (36 - 40 µg/m³) and would have recorded an exceedance if the local co-location bias adjustment factor had been used in preference to the GSS factor include:

- B Central Way, Westbound (63);
- New Edinburgh Road (2), M74 Uddingston (111);
- New Edinburgh Road (3), M74 Uddingston (112);

- Kirkshaws Road, Coatbridge (119);
- Scotmid, Tannochside (124);
- Coatbridge 1, Bank Street (133);
- Grahamshill Street, Airdrie (135);
- Main Street, Chapelhall R32 (148);
- Main Street, Chapelhall R33 (149); and
- Sunnyside Road, Coatbridge (154).

The identified monitoring locations are all in areas with no relevant exposure (Cumbernauld) or remain under consideration as existing or potential AQMAs.

For the justification behind the choice of bias adjustment factor used see Appendix A.

NO₂ Drop Off with Distance

There were three diffusion tube monitoring locations where the measured annual mean was above the objective and not located at relevant public exposure for which it is appropriate to use the “NO₂ fall-off with distance” calculator.

The results have been corrected using “NO₂ fall-off with distance” calculator (<http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>) and the results are presented in Table 2.7.

Table 2.7: Results of “NO₂ fall-off with distance” calculations

Site ID	Monitoring Location to Kerb Distance (m)	Receptor to Kerb Distance (m)	2013 Background NO ₂ (µg/m ³)	2013 Annual Mean NO ₂ (µg/m ³)	Corrected 2013 Annual Mean NO ₂ (µg/m ³)
61	2	10	15.3	56.0	40.7
62	2	10	15.3	41.4	31.6
139	2	10	13.1	42.9	31.7

Three sites have undergone correction for drop off. The sensitive receptor close to Site 61 remains in exceedence of the objective, the remaining sites are now below the annual mean NO₂ objective.

Monitoring site 107 is located 50 m from the A8 and does not have an appropriate receptor within close proximity, monitoring sites 108 and 156 also do not have appropriate receptors within close proximity and consequently have not been

considered a relevant exposure and assessed by the “NO₂ fall-off with distance” calculator.

Monitoring site 109B is located with 2 m of Sweethill Terrace and 30 m of the M8. The location of the worst case sensitive receptor lies between Sweethill Terrace and the M8 and is within 3 m of the M8. It is therefore not appropriate to use the calculator for this site.

2.2.2 Particulate Matter (PM₁₀)

PM₁₀ was measured at all of the Council’s automatic air quality monitoring sites during 2013. All measured data were ratified by Ricardo-AEA on behalf of the 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 Ricardo-AEA on behalf of Scottish Government.

Concentrations are presented in Table 2.8 and Table 2.9 and trends shown in Figure 2.5.

The results indicate a general increase in measured PM₁₀ concentrations between 2012 and 2013.

Measured concentrations at Chapelhall and Motherwell were both in exceedence of the annual mean PM₁₀ objective. Measured concentrations at Croy were marginally below the objective and significantly increased on 2012 levels.

Measured concentrations at Whifflett, Auchenkilns (Cumbernauld), Moodiesburn and Shawhead were comfortably below the annual mean PM₁₀ objective.

Table 2.8: Results of Automatic Monitoring for PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m ³)				
						2009* ^c	2010* ^c	2011* ^c	2012* ^c	2013 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	90.6	90.6	Y	19	19	19	16	19.1
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	58.0	58.0	Y	19	20.5	15	13	17.6 ^c
CM3 – Whifflet Coatbridge	Urban Background	Yes (PM ₁₀)	91.3	91.3	Y	14	14.6	15	13	15.1
CM4 – Cumbernauld	Roadside	No	89.2	89.2	Y	<i>Deployed in 2011</i>		14	13	15.7
CM5 – Motherwell	Roadside	Yes (PM ₁₀)	80.9	80.9	Y	17	19.3	19	15	18.2
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	86.1	86.1	Y	20.5	20.2	17	16	15.5
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	81.4	81.4	Y	18	18.5	19	11	14.0

In bold, exceedence of the PM₁₀ annual mean AQS objective of 18 µg/m³

^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\(09\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if valid data capture is less than 75% - Croy 2013 annualised using other continuous measurements to produce an adjustment factor of 1.05

Figure 2.5: Trends in Annual Mean PM₁₀ Concentrations

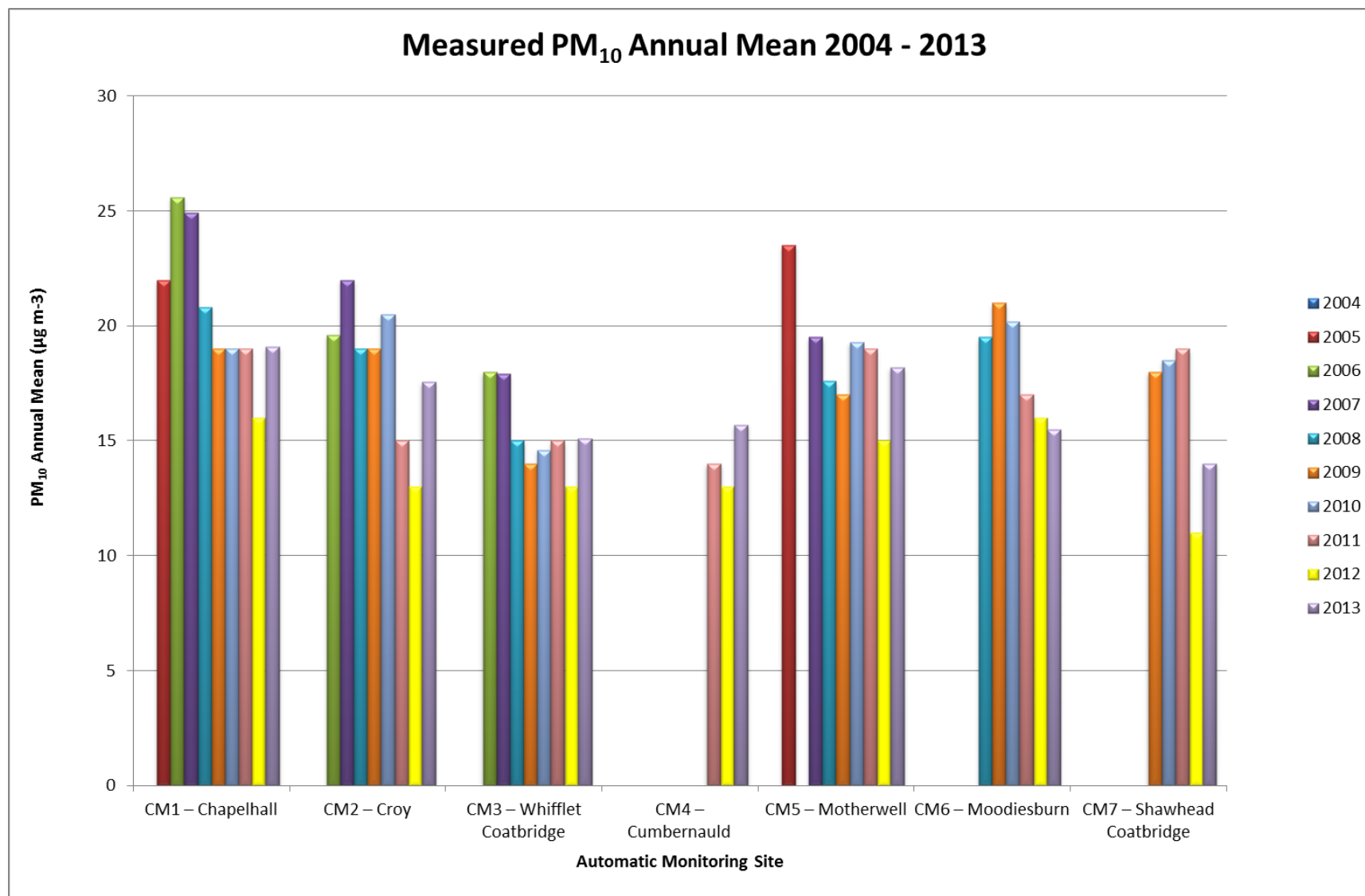


Table 2.9: Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50 µg/m ³				
						2009 ^c	2010 ^c	2011 ^c	2012 ^c	2013 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	90.6	90.6	Y	4 (45)	0 (41)	6	0 (46)	0
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	58.0	58.0	Y	15 (60)	9	1 (36)	1 (39)	4(46)
CM3 – Whifflet Coatbridge	Urban Background	Yes (PM ₁₀)	91.3	91.3	Y	0	0	1	1	0
CM4 – Cumbernauld	Roadside	No	89.2	89.2	Y	Deployed in 2011		1 (37)	1	0(33)
CM5 – Motherwell	Roadside	Yes (PM ₁₀)	80.9	80.9	Y	2	0	5 (49)	0 (35)	2(38)
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	86.1	86.1	Y	2 (37)	3	4 (45)	3 (38)	2 (37)
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	81.4	81.4	Y	0 (39)	4	3 (43)	0 (31)	1 (31)

In bold, exceedence of the PM₁₀ daily mean AQS objective (50 µg/m³ – not to be exceeded more than 7 times per year)

^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 for full calendar year is less than 90%, include the 98.1th percentile of 24-hour means in brackets

2.2.3 Sulphur Dioxide (SO₂)

North Lanarkshire Council undertake automatic monitoring of sulphur dioxide (SO₂) concentrations at two locations, Croy and Cumbernauld. The results are presented in Table 2.10. All measured SO₂ concentrations are significantly below the NAQS objectives.

Table 2.10: Results of Automatic Monitoring for SO₂: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Number of: ^c		
					15-minute Means > 266 µg/m ³	1-hour Means > 350 µg/m ³	24-hour Means > 125 µg/m ³
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	93.0	93.0	0	0	0
CM4 – Cumbernauld	Roadside	No	92.5	92.5	0	0	0

In bold, exceedence of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)

^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 for full calendar year is less than 90%, include the relevant percentile in bracket (in µg/m³): 15-min mean = 99.9th; 1-hour mean = 99.7th; 24-hour mean = 99.2th percentile

2.2.4 Benzene

Benzene is not currently monitored by North Lanarkshire Council.

2.2.5 Carbon Monoxide

Carbon monoxide concentrations are measured at the Croy automatic monitoring site, the results for 2013 are presented in Table 2.11. The maximum rolling 8-hour mean concentration is significantly below the NAQS objective value of 10 mg/m³.

Table 2.11: Results of Automatic Monitoring for CO: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Running 8-hour Mean mg/m ³
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	34.7	34.7	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%)

2.2.6 Summary of Compliance with AQS Objectives

North Lanarkshire Council has measured concentrations of NO₂ above the annual mean objective at relevant locations outside of currently established NO₂ AQMAs, including receptors close to the A8 Kirkshaws Coatbridge, Chapelhall and Airdrie Town Centre. All locations were considered in 2013 Detailed Assessment of the Monklands area and are currently under consideration for amendment of existing AQMA (Chapelhall and Kirkshaws) or in view of monitoring to confirm predicted concentrations (Airdrie town centre).

Other measurements of NO₂ above the annual mean objective have either been reduced below the objective.

PM₁₀ results from monitoring in North Lanarkshire suggest that concentrations within AQMAs still exceed the annual objective for PM₁₀ at Chapelhall and Motherwell and these AQMAs should remain.

Measured PM₁₀ concentrations at Whifflett and Kirkshaws are significantly below the annual mean objective, and below predicted levels at each location within the 2013 Monklands Detailed Assessment. There are other hot spots locations within the Whifflett/Kirkshaws area where higher PM₁₀ concentrations were predicted in the Detailed Assessment thus it is recommended that the AQMA remains, although the boundary could be modified.

North Lanarkshire Council has examined the results from SO₂ and CO monitoring in the area and concentrations are all well below the objectives.

3 New Local Developments

Updated information on local emission sources were collated from the Planning and Roads Services department of North Lanarkshire Council, the Scottish Environmental Protection Agency (SEPA) and Transport Scotland.

3.1 Road Traffic Sources

Transport Scotland and North Lanarkshire Council Roads department advised that there were no significant changes to road traffic sources within the region, although further desk work and procurement activities progressed for the M8 Completion project, works for which commenced in February 2014.

3.2 Other Transport Sources

There have not been any new identified air quality emissions from rail, shipping or aircraft operations in North Lanarkshire in 2013.

3.3 Industrial Sources

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.

Presented in **Table 3.1** is a list of new permits or permit variations granted in 2013.

Table 3.1: New or Altered PPC Installations Identified in North Lanarkshire

Site Name	Permit Number	Application Type	Authorised Activity
Caledonian Proteins, Omoa Works, Newarthills	PPC/A/1036676	Variation	Rendering of Animal Carcasses and Animal By-products
Northburn Industrial Services, Coatbridge	PPC/A/1048515	Variation	Recovery of Waste Oils
Calder Service Station, Merry Street, Motherwell	PPC/B/1014479	Surrendered	Petrol Vapour Recovery permit

North Lanarkshire

Site Name	Permit Number	Application Type	Authorised Activity
Kelvin KBB Limited, Orchardton, Cumbernauld	PPC/B/1019465	Variation	Manufacturing and Biomass Burning
Sinkro Inks, Cumbernauld	PPC/B/1111986	New	Manufacture of Inks Containing Organic Solvents
Patersons of Greenoak Hill Limited, Coatbridge	PPC/B/1112108	New	Mobile Crusher
Aggregate Industries UK Limited	PPC/W/30163	Surrendered	Mobile Crusher

3.4 Commercial and Domestic Sources

North Lanarkshire Council were consulted with regards to any new or changed commercial and domestic sources. No central register of biomass combustion plant is held by the Council however no new significant commercial biomass combustion sources or areas of domestic fuel burning are thought to contribute to air quality since the last Progress Report.

3.5 New Developments with Fugitive or Uncontrolled Sources

SEPA were consulted in relation to any changed waste, landfill or quarry processes identified in the public registers. There have been no new licensees or changes to Waste Management Licenced facilities or quarrying activities subject to SEPA authorisation which would have had an impact on emissions to air in 2013.

North Lanarkshire Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

North Lanarkshire Council confirms that all the following have been considered:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

4 Planning Applications

A review of planning applications granted since the 2013 Progress Report were carried out in order to identify any developments which may have a significant impact upon the local air quality.

No applications were identified which may have a significant impact on local air quality.

5 Air Quality Planning Policies

There have been no changes to North Lanarkshire Council's Local Plan Policy Document, which covers Air Quality, since the 2013 Progress Report.

6 Local Transport Plans and Strategies

There has been no change to the Council's 2010 Local Transport Plan since the 2013 Progress Report.

7 Implementation of Action Plans

North Lanarkshire updated its overarching air quality Action Plan for its designated AQMAs in 2013. Progress relating to the implementation of the Action Plan measures is outlined in Table 7.1.

Table 7.1: Action Plan Progress

No.	Measure	Lead Authority	Implementation Phase	Progress to Date
1	Purchase and installation of rev-limiters on Council vehicles to ensure more efficient driving and reduced emissions. Initial batch of 30 vehicles to be trialled and measures to be rolled out across Council fleet if successful.	Transport Manager	2013-16	Ongoing
2	Implement a programme of emissions diagnostic testing on Council vehicles during servicing and of mobile emissions diagnostic testing where appropriate	Transport Manager	2013-16	Completed
3	Purchase and introduction of electric powered minibus for transport for school within AQMA. Performance of vehicle to be assessed with view to future purchasing strategy.	Transport Manager	2013-16	Completed
4	Extension of Council pool car fleet by 2015 to reduce private car use for Council business.	Transport Manager	2013-16	Completed
5	Introduction of electric powered road sweepers for use in AQMAs (Whifflett and Chapelhall)	Transport Manager	2013-16	Completed
6	Introduction of emissions standards to Council vehicle procurement policy. By 2014 50% vehicles to be Euro 5 standard.	Transport Manager	2013-16	None
7	Introduction of Automatic Vehicle Logging System (AVLS) in 20% of Council vehicles as advanced feasibility study.	Transport Manager	2013-16	Ongoing

North Lanarkshire

No.	Measure	Lead Authority	Implementation Phase	Progress to Date
8	Council roll-out of electric vehicles in fleet. Roll-out to be extended following evaluation of first batch performance.	Transport Manager	2013-16	None
9	Introduction of electric vehicle charging points in Council car parks for use by Council and general public	Roads Department	2013-16	Completed
10	Memberships of Scotland Transport Emissions Partnership (STEP) to ensure air emissions from trunk roads in North Lanarkshire are adequately considered.	Protective Services	2013-16	Ongoing
11	Continued emissions testing programme, focussed on AQMAs	Protective Services	2013-16	Ongoing
12	Continued vehicle idling enforcement within AQMAs	Protective Services	2013-16	Ongoing
13	Undertake continued review of air quality monitoring network to ensure appropriate coverage of Council area and identified hotspots	Protective Services	2013-16	Ongoing
14	LAQM included as a standing item on the Council's sustainability and climate change group	Environmental Services	2013-16	Ongoing
15	Introduction of programme of upgraded energy provision in schools and council buildings within AQMAs, changeover from HFO to gas and PV.	Learning and Leisure	2013-16	Ongoing
16	Council LAQM emission inventory to be extended to cover carbon emissions. Greater linkage between corporate reporting and LAQM	Corporate Services / Environmental Services	2013-16	Completed
17	Council will prepare and publish a web-based learning tool on air quality for senior Primary School children (P5-7) and roll-out across schools in area	Learning and Leisure	2013-16	Completed

North Lanarkshire

No.	Measure	Lead Authority	Implementation Phase	Progress to Date
18	Update Guidance for Developers on air quality	Environmental Services	2013-16	None
19	Environmental health represented on Council town centre improvement programme stakeholder group to ensure redevelopment programmes take cognisance of air quality concerns.	Environmental Services	2013-16	Ongoing
20	Introduction of air quality training programme for local authority planners to raise awareness of air quality issues.	Environmental Services	2013-16	None
21	Council Work place travel plan	Roads	2013-16	None
22	Cycling promotion initiative	Roads	2013-16	None
23	School Travel plan / walk to school week	Education	2013-16	None
24	Feasibility study in relation to the potential development and introduction of a Statutory Quality Bus Partnership	Environmental Services	2013-16	None
25	Investigate potential excessive lay-over times of bus companies in and around the Muir Street area of Motherwell, adjacent to Motherwell Station	Environmental Services	2013-16	Completed
26	Two new park and ride facilities at strategic points in Motherwell Town Centre in order to ease congestion caused by rail travellers	Roads	2013-16	Completed
27	Widening of Windmillhill Street	Roads	2013-16	Ongoing
28	Extension to the existing Airbles Road to form a new access road into the Ravenscraig site.	Roads	2013-16	None
29	Proposed dualling of the A723 road to the north of Motherwell	Roads	2013-16	Ongoing

North Lanarkshire

No.	Measure	Lead Authority	Implementation Phase	Progress to Date
30	Work with Strathclyde Partnership for Transport (SPT) to secure funding to take forward proposed junction improvements within the Chapelhall AQMA	Roads	2013-16	Ongoing
31	Detailed Assessment of A73 corridor from Chapelhall through to Airdrie, to identify pinch-points which could be impacting on the AQMA	Environmental Services	2013-16	Completed
32	Introduction of Ecostars Fleet Recognition Scheme	Environmental Services	2013-16	Completed
33	Ongoing monitoring will continue within the Whifflet AQMA. This AQMA will shortly be extended to include the Shawhead area of Coatbridge	Environmental Services	2013-16	None
34	Installation of NO ₂ analyser	Environmental Services	2013-16	Ongoing
35	Optimisation of traffic signals for Stoneyetts Road and Avenuehead Road	Roads	2013-16	None
36	Planning restrictions on land adjacent to the new M80.	Development Control	2013-16	None
37	Continue to Monitor PM ₁₀ concentrations in AQMA.	Environmental Services	2013-16	Ongoing
38	Extensive liaison with SEPA regarding conditions to be attached to the quarry should operation restart.	Environmental Services	2013-16	Ongoing

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

8.1.1 Nitrogen dioxide

Overall, measured NO₂ concentrations in North Lanarkshire in 2013 were in line with measured levels from previous years. Measured concentrations at Urban Background sites were typically lower than preceding years, whilst roadside sites experienced a slight increase in concentrations overall.

Measured NO₂ concentrations at all automatic monitoring sites were below the annual mean objective level.

There were measured exceedences of the annual NO₂ objective at seven diffusion tubes monitoring sites in North Lanarkshire in 2013.

Two of the monitoring sites at which exceedence of the objective were recorded were at kerbside sites in Cumbernauld with no relevant long term public exposure. Measured levels were below that which would be considered likely to indicate potential exceedence of short term (hourly) NO₂ objectives.

Other locations of measured exceedence were located within the study area of the Monklands Detailed Assessment, including Kirkshaws, Chapelhall and Airdrie town centre. Measures are currently being progressed to reflect the conclusions of this study including amendment of Chapelhall and Whifflett AQMAs and further proposed monitoring in Airdrie town centre.

Measured concentrations at a further ten sites were considered close to the objective level (36 - 40 µg/m³). All locations were within existing AQMAs, or at locations currently being considered with respect to future monitoring.

Measured NO₂ concentrations in Moodiesburn in 2013 were below NAQS objective levels and supported the proposal to revoke the Moodiesburn AQMA in 2014.

8.1.1 PM₁₀

Measured PM₁₀ concentrations in 2013 were higher than measured in 2012. There were two measured exceedences of annual PM₁₀ objectives at the Motherwell and Chapelhall monitoring sites respectively suggesting that concentrations within these AQMAs still exceed the annual objective and therefore the AQMAs should remain in force.

Measured concentrations at Croy had increased significantly on 2012 levels, however remained below the objective level. It is understood that the Croy quarry experienced low levels of activity in 2013, therefore concentrations should continue to be monitored and activity levels noted during 2014.

Measured concentrations at Kirkshaws and Whifflett in 2013 were below the annual mean objective level, with measured levels slightly lower than that predicted at each location in the Monklands Detailed Assessment. As the Detailed Assessment predicted other hotspot locations within or just outside the existing AQMA it is recommended that the AQMA is maintained, however amendments to the boundary could be made to reflect updated understanding of the air quality levels in this part of Coatbridge.

Measured NO₂ concentrations in Moodiesburn in 2013 were below NAQS objective levels and supported the proposal to revoke the Moodiesburn AQMA in 2014.

8.1.1 Other pollutants

No exceedences of SO₂ or CO objectives were identified in the monitoring data.

8.2 Conclusions relating to New Local Developments

There were no new local developments identified that will have an impact on air quality. It is noted that preliminary works for the M8 Completion road scheme were planned in 2013 and commenced in 2014. Effects on local air quality levels during the construction period should be noted through 2014 and future years.

8.3 Proposed Actions

Based on measured pollutant concentrations in 2013 the following actions are proposed:

- Consultation on intention for revocation of the AQMA at Moodiesburn (submitted April 2014) and revocation order to be drafted late 2014.
- The AQMA for PM₁₀ in Motherwell to be maintained. Further consideration to be given to the Motherwell area in 2014/15 regarding the areas of exceedence and thus AQMA boundary. Further examination of reasons for increase in measured concentrations in 2013 and sources of PM₁₀ to support next round of Action Plan development.
- AQMA in Chapelhall to be maintained for PM₁₀ and order to be amended to include NO₂ with respect to the annual mean NAQS objective.
- AQMA in Croy to be maintained and activity levels at the quarry to be monitored alongside any change in measured PM₁₀ concentrations.
- Whifflett AQMA to be amended to include for NO₂ and boundary changed to include measured and predicted exceedences in Shawhead and Kirkshaws area. Consideration to be given to reducing the extent of the AQMA to the north in line with measured concentrations and the findings of the Monklands Detailed Assessment.
- Automatic monitoring to be commissioned in Airdrie town centre to verify diffusion tube measured levels and predicted exceedences of both NO₂ and PM₁₀ objectives in the Monklands Detailed Assessment.

In addition, in line with the conclusions of the Monklands Detailed Assessment, an additional automatic monitoring site is proposed at Banks Street / Sunnyside Road Coatbridge.

9 References

North Lanarkshire Council. (2013) Air Quality Action Plan 2013-2016.

North Lanarkshire Council. (2013) Monklands Detailed Assessment.

Appendices

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The laboratory analysis of the passive diffusion tubes used by North Lanarkshire Council was 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 from version 03/14 of the spreadsheet are presented in Table A.1.

Table A.1: Diffusion Tube Bias Adjustment Factors from Glasgow Scientific Services in 2013

Local Authority	Site Type	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (mg/m ³)	Automatic Monitor Mean Conc. (Cm) (mg/m ³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
East Dunbartonshire Council	R	12	29	31	-4.1%	P	1.04
East Dunbartonshire Council	R	12	40	36	9.1%	G	0.92
East Dunbartonshire Council	R	10	33	36	-8.9%	P	1.10
East Dunbartonshire Council	R	11	25	27	-4.7%	G	1.05
Marylebone Road Intercomparison	KS	12	95	81	17.6%	G	0.85
Glasgow Scientific Services			20% TEA in water		2013	Overall Factor	0.99

Factor from Local Co-location Studies (if available)

North Lanarkshire Council undertake co-location measurements at Croy automatic monitoring site.

The annual mean at this site is $20.6 \mu\text{g}/\text{m}^3$ at this Special site by the quarry, and the results of this co-location study produces a bias correction factor of 1.1.

Discussion of Choice of Factor to Use

The national co-location bias adjustment factor was considered more appropriate as it was not based on a single co-location study and included both roadside and kerbside sites. In contrast the Croy co-location site is specially sited close to a quarry and would be best described as urban (semi-rural) background site on the edge of Croy village. Consequently, it is judged the national bias adjustment factor more adequately reflects the majority of the urban environment within North Lanarkshire. Where exceedences would have been recorded using the local bias adjustment factor these have been highlighted accordingly.

PM Monitoring Adjustment

North Lanarkshire Council monitor PM_{10} 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 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 PM_{10} 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.

For diffusion tube sites where the data capture is below 75% the measured concentrations have been annualised following the method described in technical guidance and adjustment ratios used are detailed in Tables A.2, A.3, A.4 and A.5. All appropriate diffusion tube data were used to calculate the Am/Pm ratio for adjustment.

Table A.2: Short-Term to Long-Term Monitoring Data Adjustment for Diffusion Tube 109B

Site	Site Type	Annual Mean ($\mu\text{g}/\text{m}^3$)	Period Mean ($\mu\text{g}/\text{m}^3$) Feb-Jul	Ratio
Glasgow Waulkmillglen Reservoir	Rural Background	10.99	10.73	1.02
Falkirk Grangemouth MC	Urban Background	20.23	19.73	1.03
Grangemouth Moray	Urban Background	16.56	17.16	0.96
Average				1.00

Table A.3: Short-Term to Long-Term Monitoring Data Adjustment for Diffusion Tube 161

Site	Site Type	Annual Mean ($\mu\text{g}/\text{m}^3$)	Period Mean ($\mu\text{g}/\text{m}^3$) Apr-Jun, Aug-Nov	Ratio
Glasgow Waulkmillglen Reservoir	Rural Background	10.99	9.33	1.18
Falkirk Grangemouth MC	Urban Background	20.23	17.61	1.15
Grangemouth Moray	Urban Background	16.56	14.23	1.16
Average				1.16

Table A.4: Short-Term to Long-Term Monitoring Data Adjustment for Diffusion Tube 191 Carfin Street

Site	Site Type	Annual Mean ($\mu\text{g}/\text{m}^3$)	Period Mean ($\mu\text{g}/\text{m}^3$) Feb-Jun, Sep-Nov	Ratio
Glasgow Waulkmillglen Reservoir	Rural Background	10.99	11.63	0.95
Falkirk Grangemouth MC	Urban Background	20.23	21.15	0.96
Grangemouth Moray	Urban Background	16.56	17.89	0.93
Average				0.94

Table A.5: Short-Term to Long-Term Monitoring Data Adjustment for Diffusion Tube Deeds Street

Site	Site Type	Annual Mean ($\mu\text{g}/\text{m}^3$)	Period Mean ($\mu\text{g}/\text{m}^3$) Oct-Nov	Ratio
Glasgow Waulkmillglen Reservoir	Rural Background	10.99	13.17	0.83
Falkirk Grangemouth MC	Urban Background	20.23	30.26	0.67
Grangemouth Moray	Urban Background	16.56	25.42	0.65
Average				0.72

QA/QC of Automatic Monitoring

Quality Assurance/Quality Control (QA/QC) audits are carried out by Ricardo-AEA twice a year at all automatic monitoring sites.

