



2015 Updating and Screening Assessment for North Lanarkshire Council

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

October 2015

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Report Reference number	ED61096001
Date	October 2015

Executive Summary

A review of pollutant monitoring data and atmospheric emissions sources within North Lanarkshire Council was undertaken. The assessment compared the available monitoring data to national air quality standards and followed the guidance in LAQM.TG(09) Technical Guidance.

North Lanarkshire Council monitored ambient NO₂ and PM₁₀ concentrations using both automatic monitoring and passive diffusion tubes in 2014.

Annual mean NO₂ concentrations recorded at all automatic monitoring sites were below the annual mean objective in 2014. The 1-hour mean NO₂ objective has been exceeded twice in 2014 at the Chapelhall site, however this is below the 18 exceedances allowed each year.

Exceedances of the NO₂ annual mean objective have been measured at the following locations:

- 61 – Under Bridge Central Way E
- 62 – A Central Way Westbound
- 117 – Hamilton Road, Motherwell
- 164 – Deeds Street, Airdrie

The NO₂ annual mean concentration measured at diffusion tube 61 – Under Bridge Central Way E (65.1 µg.m⁻³) during 2014 was in excess of the 60 µg.m⁻³ threshold at which TG(09) recommends that there may be a risk of the NO₂ 1-hour mean objective being exceeded.

Measured annual mean PM₁₀ concentrations measured during 2014 were below the 18 µg.m⁻³ objective at all automatic monitoring sites; except at Chapelhall where the annual mean objective was exceeded. All PM₁₀ monitoring sites were also compliant with the daily mean objective.

Data were gathered from various national and local sources with regards to atmospheric emissions from : road; traffic; rail; aircraft; shipping; industrial processes; intensive farming operations; domestic properties; biomass plants; and dusty processes. The screening methods outlined in the technical guidance were used to determine the likelihood that a particular source would result in an exceedance of national air quality standards.

The review of new and changed emission sources identified no new sources that were likely to result in an exceedance of the NAQS objectives and that there is no requirement to proceed to a Detailed Assessment for any pollutant contained within the NAQS.

The Updating and Screening Assessment considered new monitoring data and a review of all emissions sources in the area.

The report proposes the following next actions:

- Submission of 2016 Progress Report
- An investigation of the NO₂ exceedances of the tubes at Central Way by visiting and observing bus movements to further understand the causes of the exceedances at this location
- In the case of the investigation not being conclusive, conduct a Detailed Assessment of NO₂ at Central Way, Cumbernauld

Table of contents

1	Introduction	8
1.1	Description of Local Authority Area	8
1.2	Purpose of Report.....	9
1.3	Air Quality Objectives	9
1.4	Summary of Previous Review and Assessments	11
2	New Monitoring Data	19
2.1	Summary of Monitoring Undertaken	19
2.1.1	Automatic Monitoring Sites	19
2.1.2	Non-Automatic Monitoring Sites	26
2.2	Comparison of Monitoring Results with Air Quality Objectives	36
2.2.1	Nitrogen Dioxide	36
2.2.2	PM ₁₀	55
2.2.3	Sulphur Dioxide.....	59
2.2.4	Benzene.....	61
2.2.5	Carbon Monoxide	61
2.2.6	Summary of Compliance with AQS Objectives	61
3	Road Traffic Sources	63
3.1	Narrow Congested Streets with Residential Properties Close to the Kerb	63
3.2	Busy Streets Where People May Spend 1-hour or More Close to Traffic.....	63
3.3	Roads with a High Flow of Buses and/or HGVs.	63
3.4	Junctions	63
3.5	New Roads Constructed or Proposed Since the Last Round of Review and Assessment.....	63
3.6	Roads with Significantly Changed Traffic Flows.....	64
3.7	Bus and Coach Stations	64
4	Other Transport Sources.....	65
4.1	Airports.....	65
4.2	Railways (Diesel and Steam Trains)	65
4.2.1	Stationary Trains.....	65
4.2.2	Moving Trains	66
4.3	Ports (Shipping)	66
5	Industrial Sources.....	67
5.1	Industrial Installations	67
5.1.1	New or Proposed Installations for which an Air Quality Assessment has been Carried Out.....	67
5.1.2	Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced	67

5.1.3	New or Significantly Changed Installations with No Previous Air Quality Assessment.....	67
5.2	Major Fuel (Petrol) Storage Depots.....	67
5.3	Petrol Stations.....	67
5.4	Poultry Farms.....	68
6	Commercial and Domestic Sources.....	69
6.1	Biomass Combustion – Individual Installations.....	69
6.2	Biomass Combustion – Combined Impacts.....	69
6.3	Domestic Solid-Fuel Burning.....	69
7	Fugitive or Uncontrolled Sources.....	71
8	Conclusions and Proposed Actions.....	72
8.1	Conclusions from New Monitoring Data.....	72
8.2	Conclusions from Assessment of Sources.....	73
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 2.1 Details of Automatic Monitoring Sites

Table 2.2 Details of Non-Automatic Monitoring Sites

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

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

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

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

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

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

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

Table 6.1 Biomass Facilities and Relevant Surrounding

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 Map of Automatic Monitoring Sites 1

Figure 2.2 Map of Automatic Monitoring Sites 2

Figure 2.3 Map of Automatic Monitoring Sites 3

Figure 2.4 Map of Automatic Monitoring Sites 4

Figure 2.5 Map of Automatic Monitoring Sites 5

Figure 2.6 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

Figure 2.7 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Urban Background Diffusion Tube Monitoring Sites

Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites - 1

Figure 2.9 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites - 2

Figure 2.10 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Kerbside Diffusion Tube Monitoring Sites

Figure 2.11 Trends in Annual Mean PM10 Concentrations

Appendices

Appendix A	Quality Assurance / Quality Control
Appendix B	Diffusion Tube Locations

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 truck 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 is in the north in 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 exceedances 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 exceedances 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	31.12.2010
1,3-Butadiene	2.25 µg/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 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
Particles (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m ³	Annual mean	31.12.2010
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

Review / Assessment	Year	Outcome
Updating & Screening Assessment	2006	Potential exceedances of NAQS NO ₂ and PM ₁₀ objectives 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 exceedances 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 exceedances 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

Review / Assessment	Year	Outcome
		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.
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.
Harthill Further Assessment	2011	Revocation of AQMA.
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. Exceedances 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.</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 exceedance of NO₂ (and PM₁₀) objectives has been identified in the A73 corridor in Airdrie. A Detailed Assessment is proposed.</p>
LAQM Action Plan	2013	Identified a range of measures to improve air quality within the AQMAs and throughout the wider council area.
Progress Report	2013	Annual mean concentrations of PM ₁₀ fell below the objective at all monitoring locations in 2012.

Review / Assessment	Year	Outcome
		<p>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>Exceedances 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 exceedances 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 bypass 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>
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 exceedance 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 exceedance 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>

Review / Assessment	Year	Outcome
		<p>It was recommended that an automatic monitor be located within Airdrie to verify the predicted exceedance of NO₂ objectives in the town. Further investigation of locations of relevant public exposure within the town centre was also recommended.</p>
<p>Progress Report</p>	<p>2014</p>	<p>Annual mean concentrations of NO₂ fell below the objective at all automatic monitoring locations in 2013.</p> <p>Measured annual mean NO₂ concentrations in excess of the objective were recorded at seven diffusion tube monitoring locations.</p> <p>Measured annual mean PM₁₀ concentrations in excess of the objective were recorded at Chapelhall and Motherwell automatic monitoring sites.</p> <p>It has been proposed by the Council to proceed to a Detailed Assessment for NO₂ for Seafar town centre.</p> <p>Areas of exceedances of the NO₂ annual mean were studied as part of the Detailed Assessment for the wider Monklands study in 2013 and the need of AQMAs declaration has been raised for Kirshaws, Coatbridge and Airdrie town centre.</p>

Figure 1.1 Map of Whifflet Coatbridge AQMA Boundary

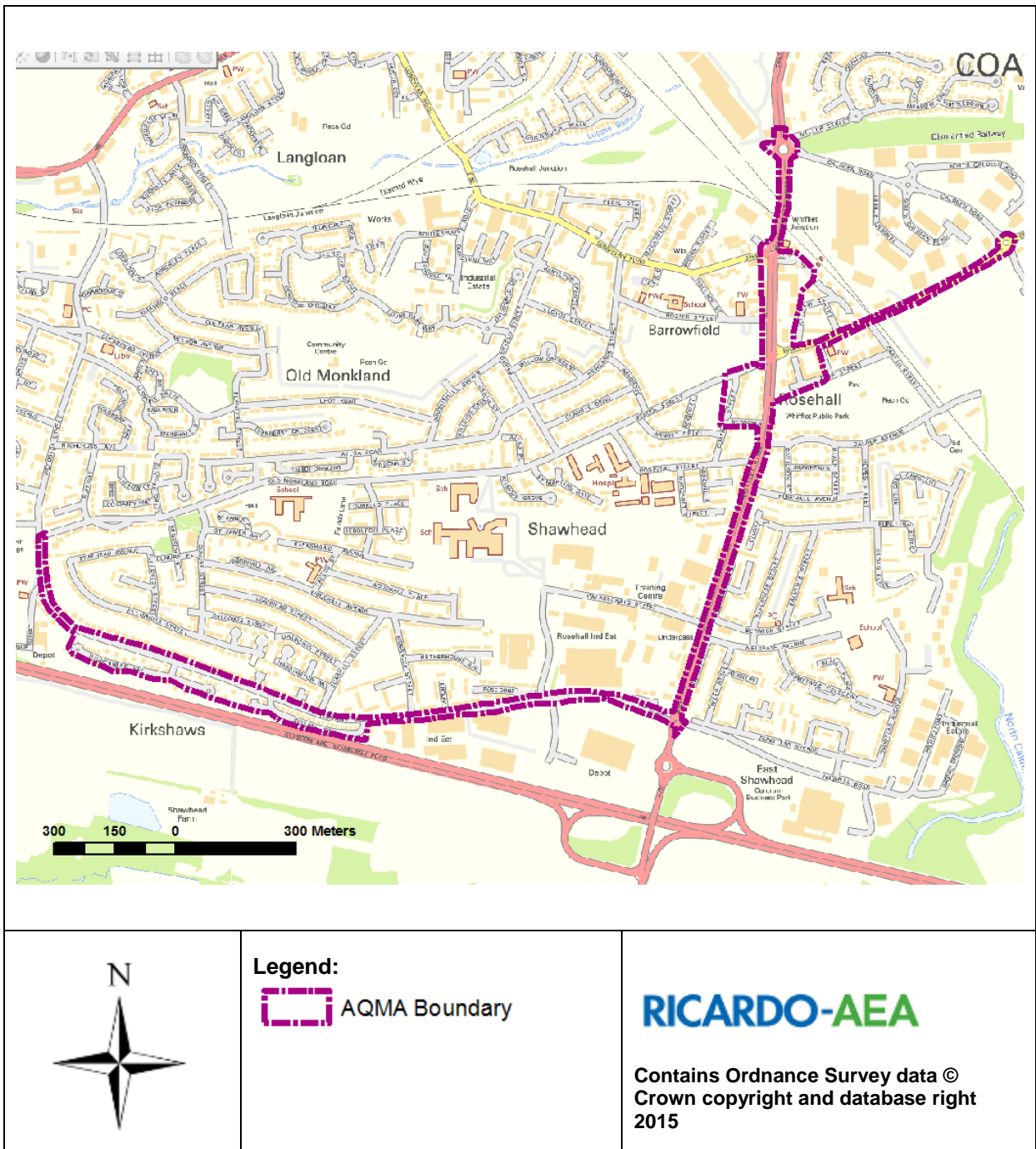


Figure 1.2 Map of Motherwell AQMA Boundary

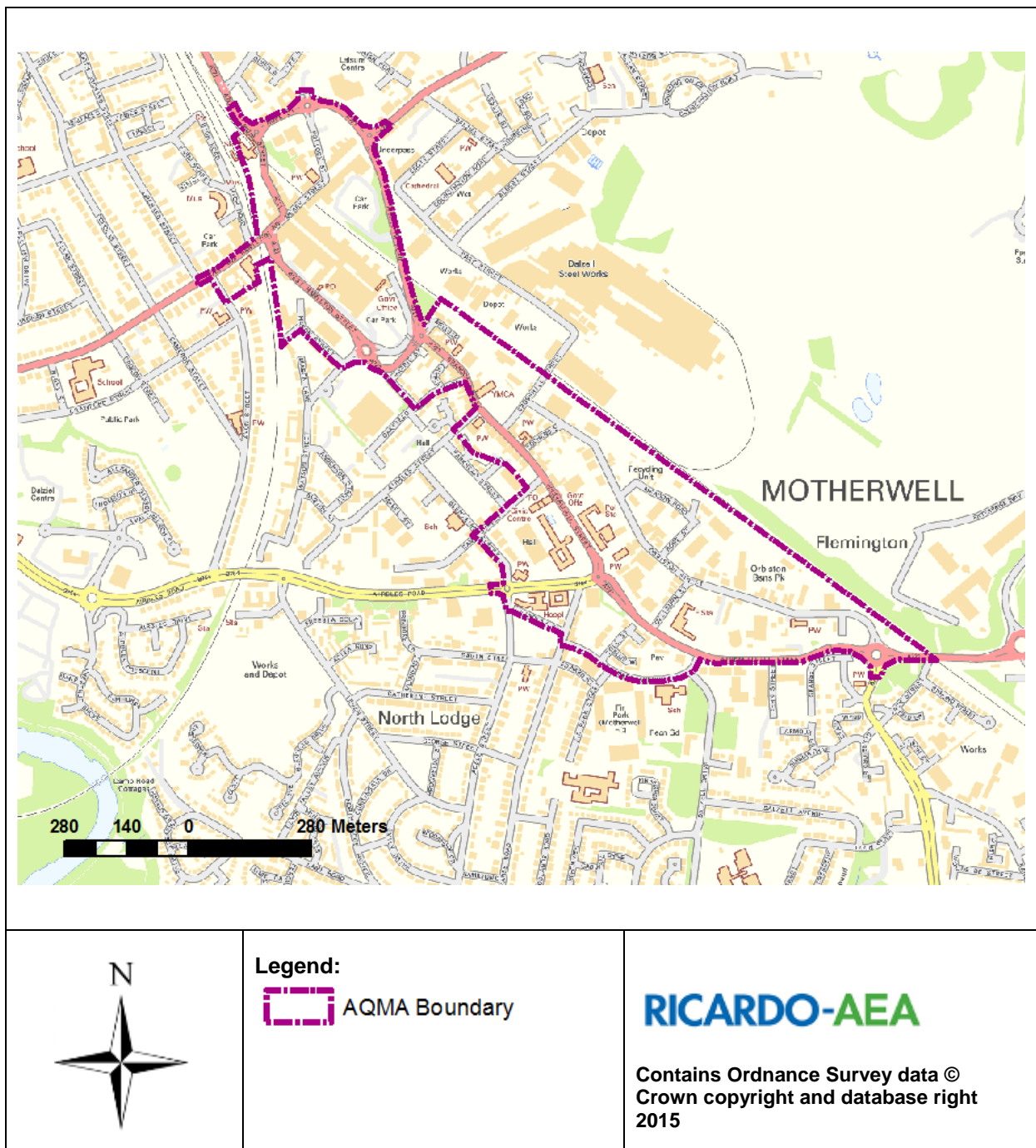


Figure 1.3 Map of Chapelhall AQMA Boundary

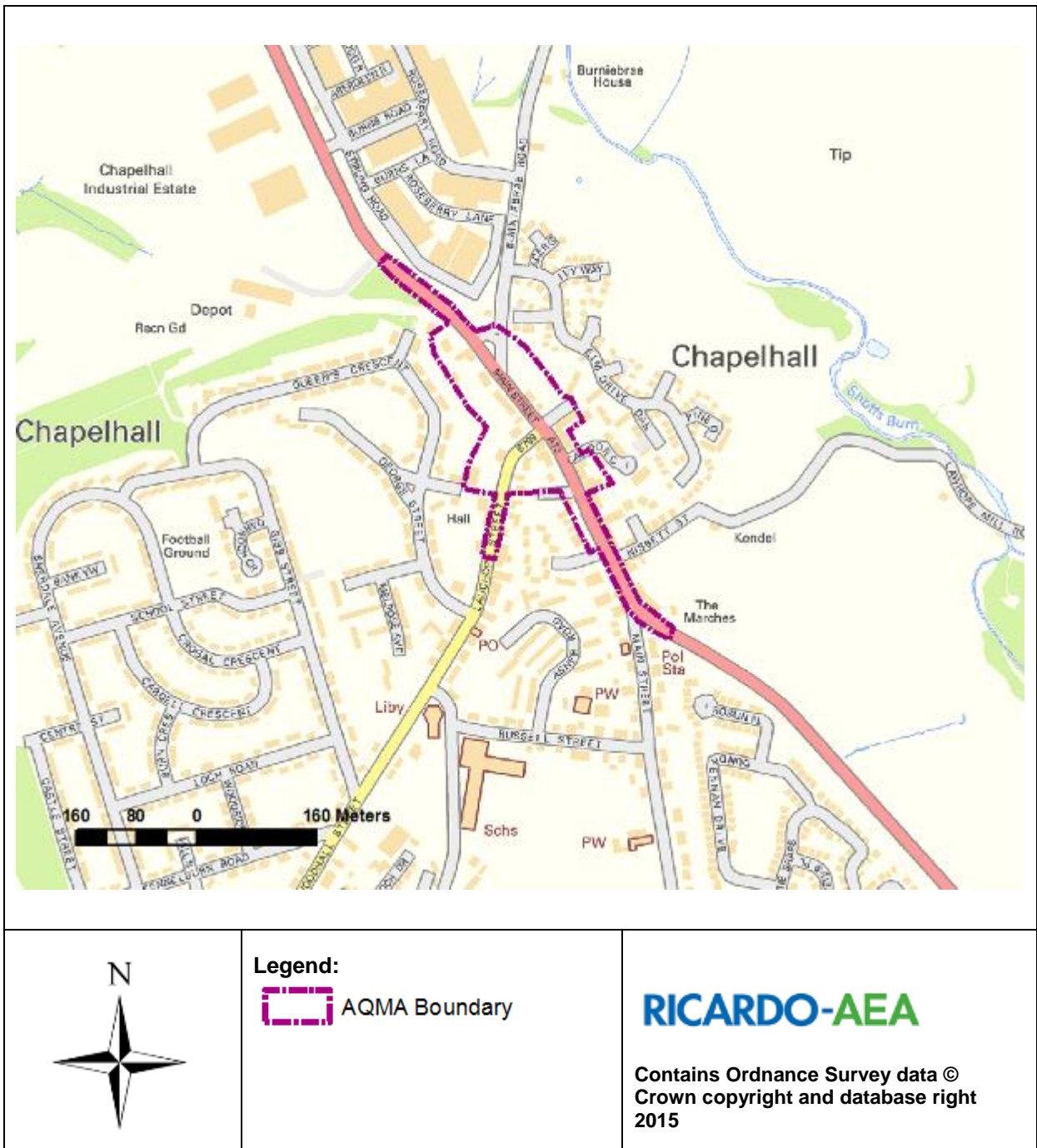
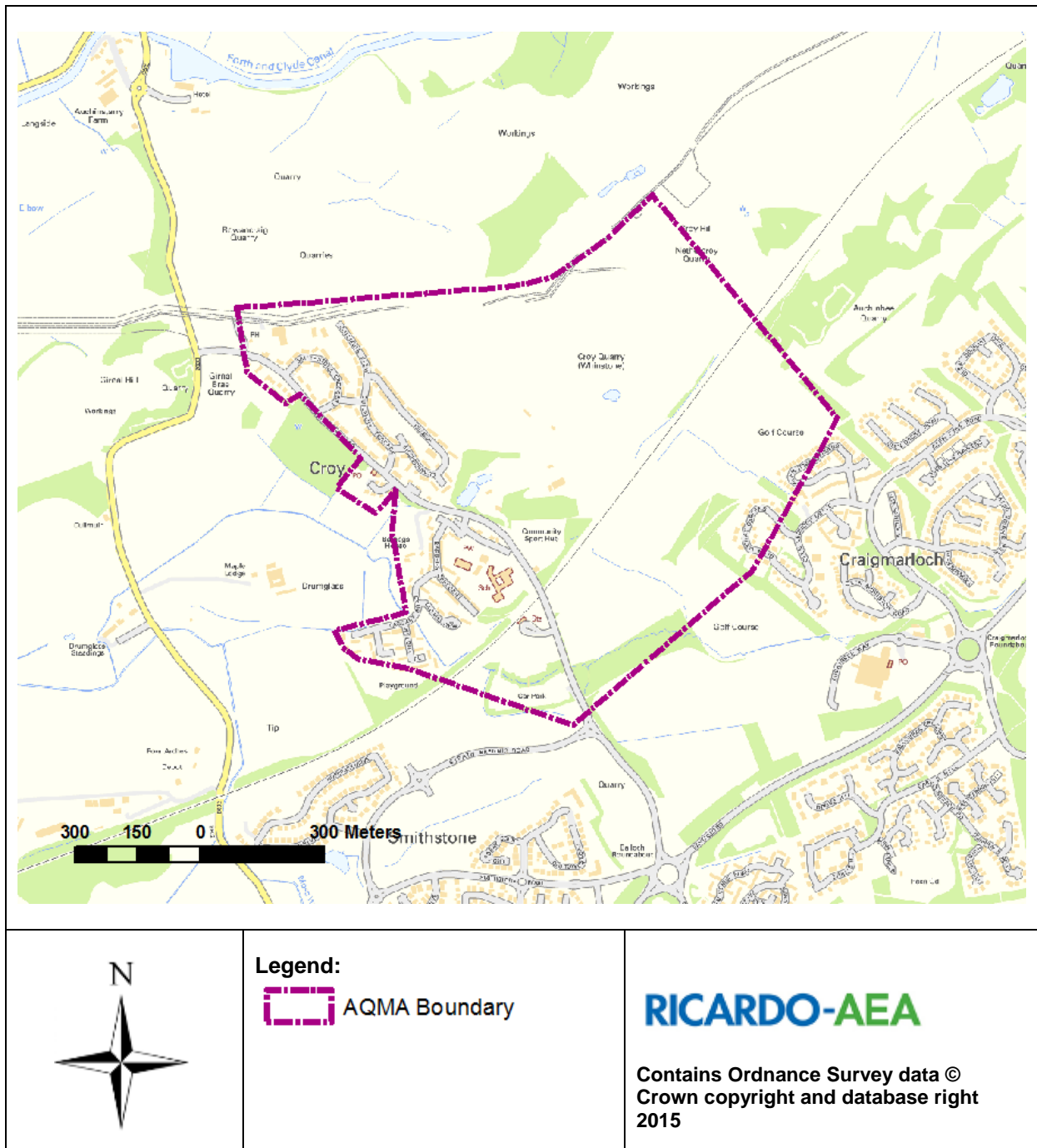


Figure 1.4 Map of Croy AQMA Boundary



2 New Monitoring Data

During 2014 the Council monitored ambient PM₁₀ and NO₂ concentrations at several locations throughout the Council area using both automatic and passive 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 Ricardo-AEA on behalf of the Scottish Government. 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. The Kirshaw automatic site was established in June 2014 and is measuring NO₂ and PM₁₀ concentrations.

Maps showing the locations of the automatic monitoring sites are presented in Figure 2.1 to Figure 2.5. Details of the sites are presented in Table 2.1.

Figure 2.1 Map of Automatic Monitoring Sites 1

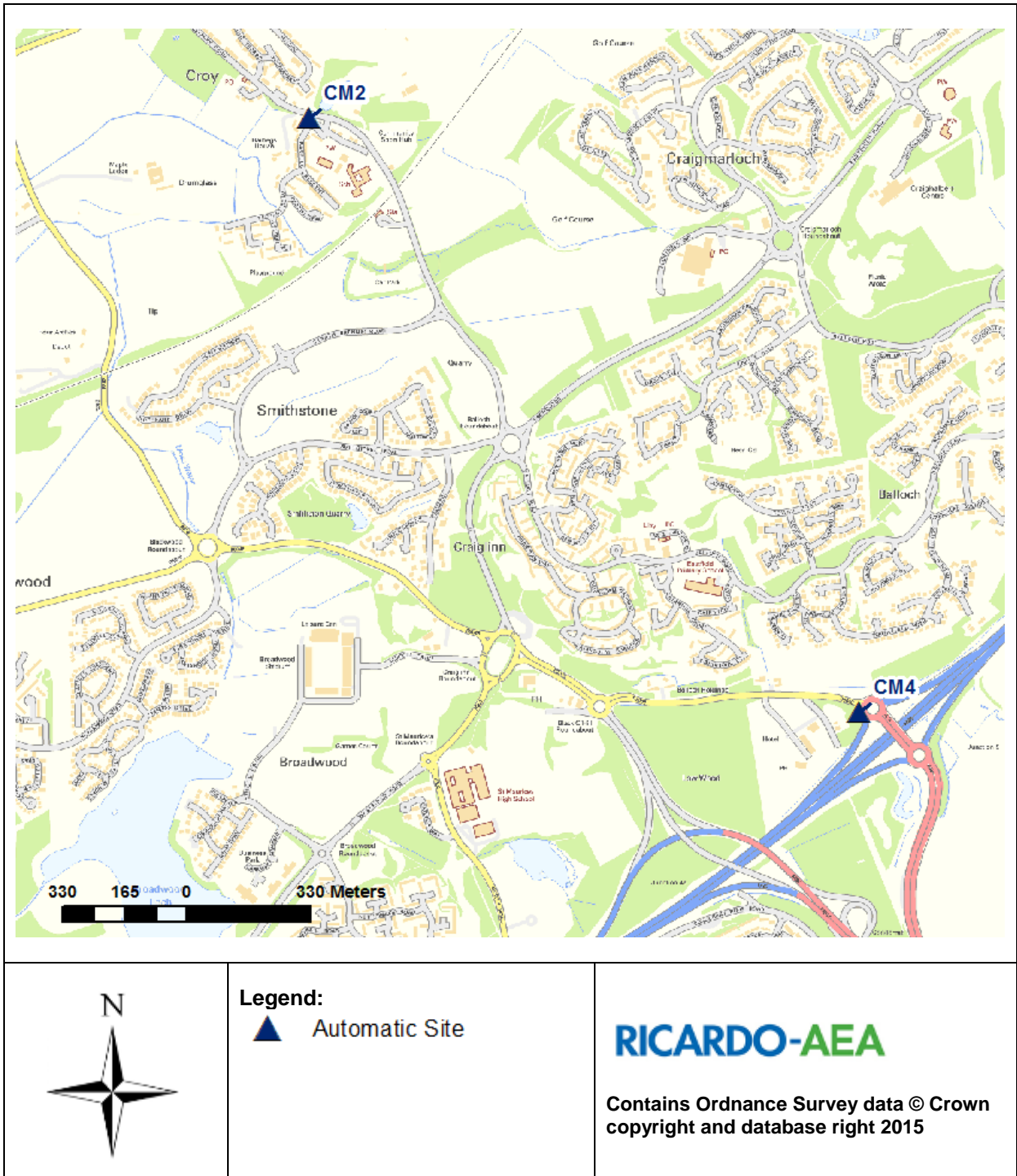


Figure 2.2 Map of Automatic Monitoring Sites 2

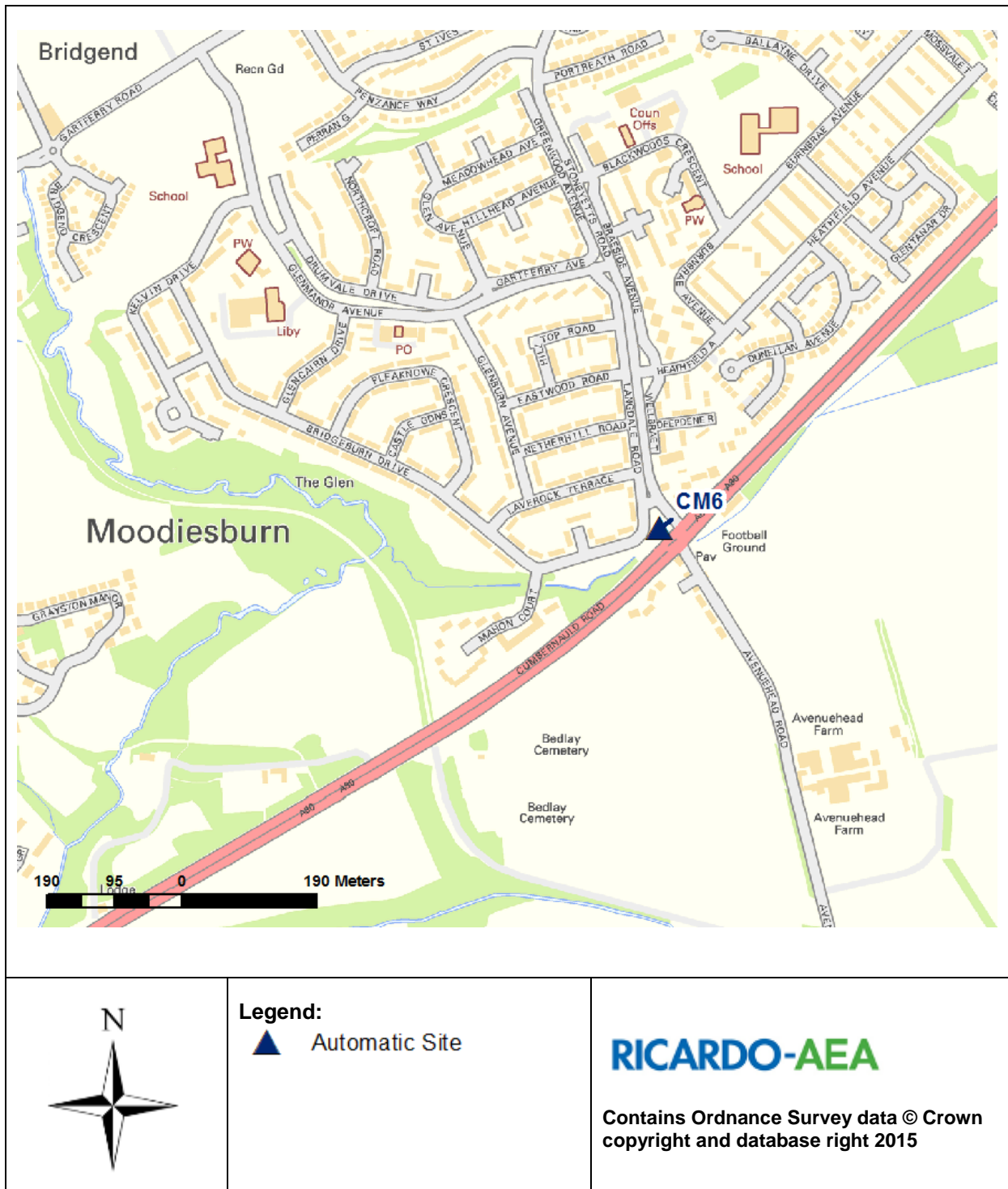


Figure 2.3 Map of Automatic Monitoring Sites 3

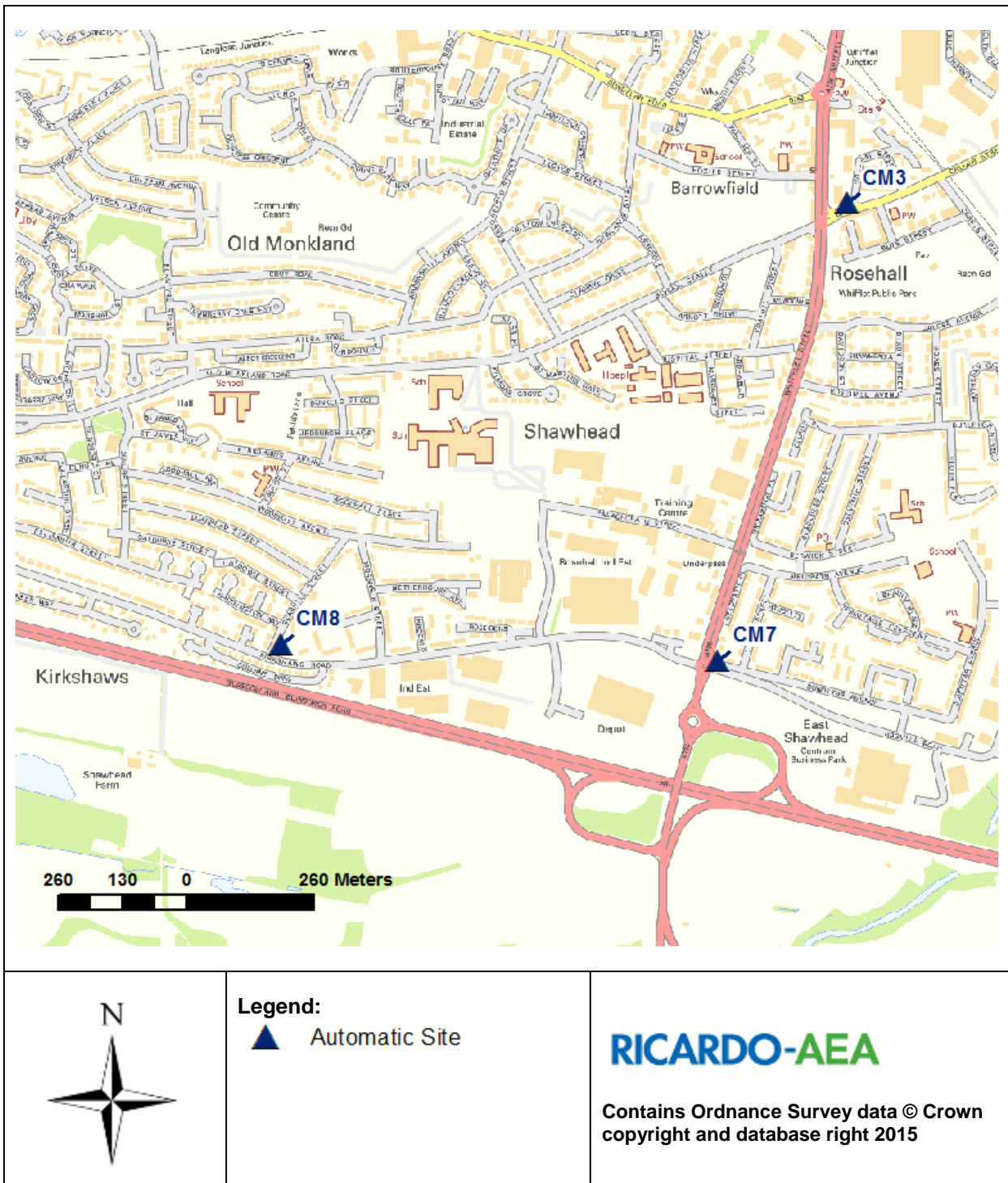


Figure 2.4 Map of Automatic Monitoring Sites 4

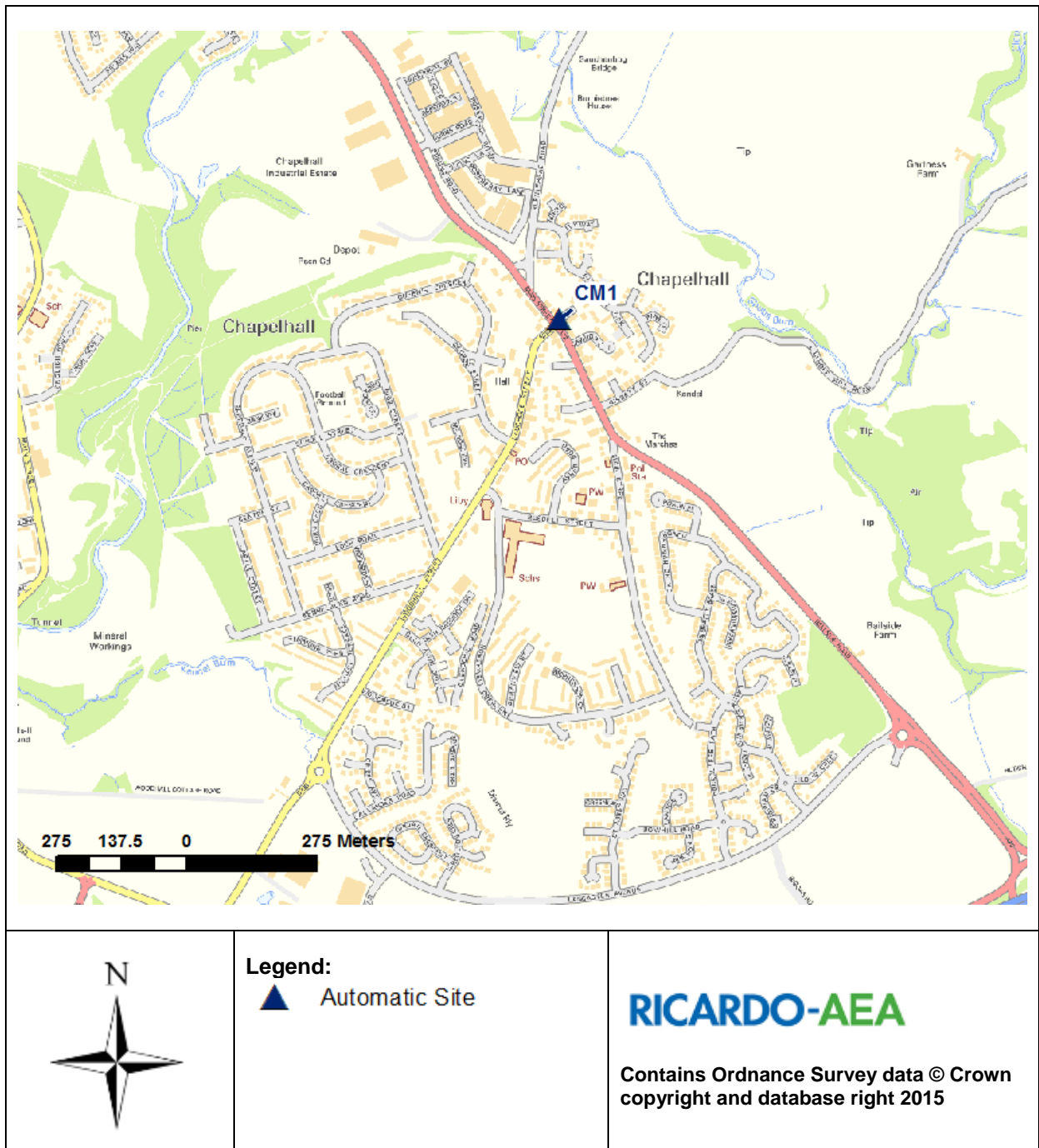


Figure 2.5 Map of Automatic Monitoring Sites 5

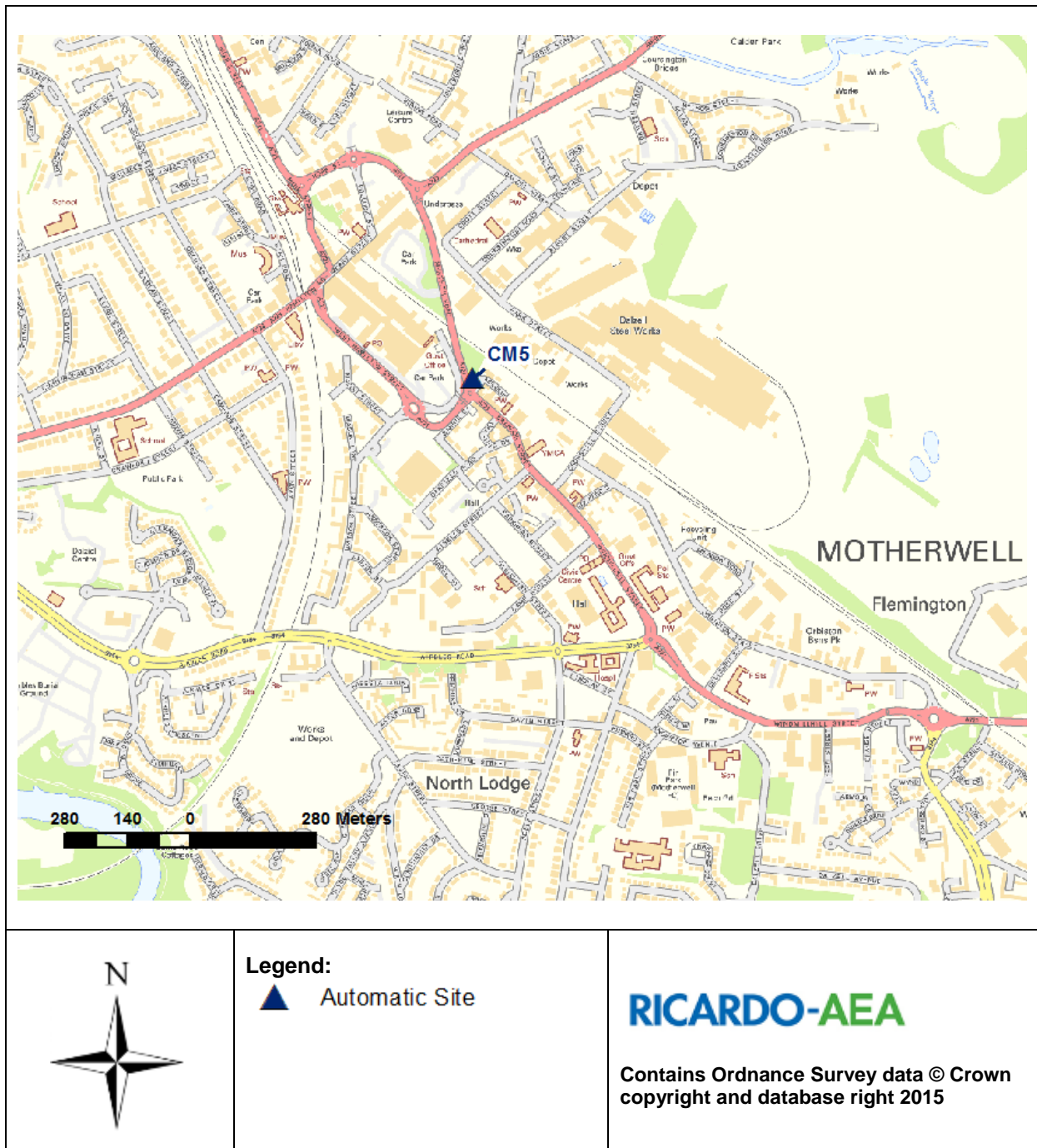


Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Inlet Height (m)	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?
CM1	Chapehall	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	Coatbridge Whifflet	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	266921	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
CM8	Kirkshaw	Roadside	272523	663030	2.0	NO ₂ , PM ₁₀ , SO ₂	Yes (PM ₁₀)	Chemiluminescence, BAM	Y (20m)	8m	No

* This site was located at Cumbernauld until May 2014.

2.1.2 Non-Automatic Monitoring Sites

At present North Lanarkshire Council operate a network of seventy eight NO₂ diffusion tube sites, located across the Council area. Diffusion tube data have been corrected using a combined bias adjustment factor. The factor was calculated using the Glasgow Scientific Services laboratory bias adjustment factor from the national database of co-location studies in combination with the local co-location study at Croy.

One new diffusion tube site was deployed in 2014:

- 12 Morar Way, Carfin

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 and their location is shown in Appendix B. Measured NO₂ concentrations during 2014 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

North Lanarkshire Council

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?
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Kerbside	269986	670400	3.0	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
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

North Lanarkshire Council

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?
61	Under Bridge Central Way East Bound Cumbernauld	Roadside	275778	674440	3.0	NO ₂	No	N	Y 10m	2m	Y
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

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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?
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
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

North Lanarkshire Council

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?
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
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

North Lanarkshire Council

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?
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
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

North Lanarkshire Council

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?
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
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

North Lanarkshire Council

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?
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
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

North Lanarkshire Council

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?
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
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
165	12 Morar Way, Carfin	Roadside	277161	659335	2.5	NO ₂	No	N	Y 10m	1m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Ambient NO₂ concentrations were measured at all of the automatic monitoring sites during 2014.

The annual mean and 1-hour mean NO₂ automatic monitoring data for 2014 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 at all locations since 2012, except at the Shawhead Coatbridge site where there is slight increase in concentration in 2014 compared to 2013. There appears to be a downward trend in annual mean concentrations at all automatic monitoring sites as shown in Figure 2.6.

Analysis of the measured data indicates that the 1-hour mean NO₂ objective has been exceeded twice in 2014 at the Chapelhall site, however this is below the 18 exceedances allowed each year.

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 Monitoring Period % ^a	Valid Data Capture 2014 % ^b	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)					
					2009 ^c	2010 ^c	2011 ^c	2012 ^c	2013 ^c	2014 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	97.5	97.5	40	38	41	35	33.8	32.7
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	89.7	89.7	24	31	21	23	20.6	20.0
CM4 – Cumbernauld	Roadside	N	95.8	31.6	Commenced 2012			31	25.9	19.5
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	99.8	99.8	37	43	25	25	20.2	21.8
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	99.5	99.5	37	41	36	35	34.3	32.4
CM8 - Kirshaw	Roadside	N	97.6	50.1	Commenced in 2014					20.3 ^c

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

^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 2.6 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

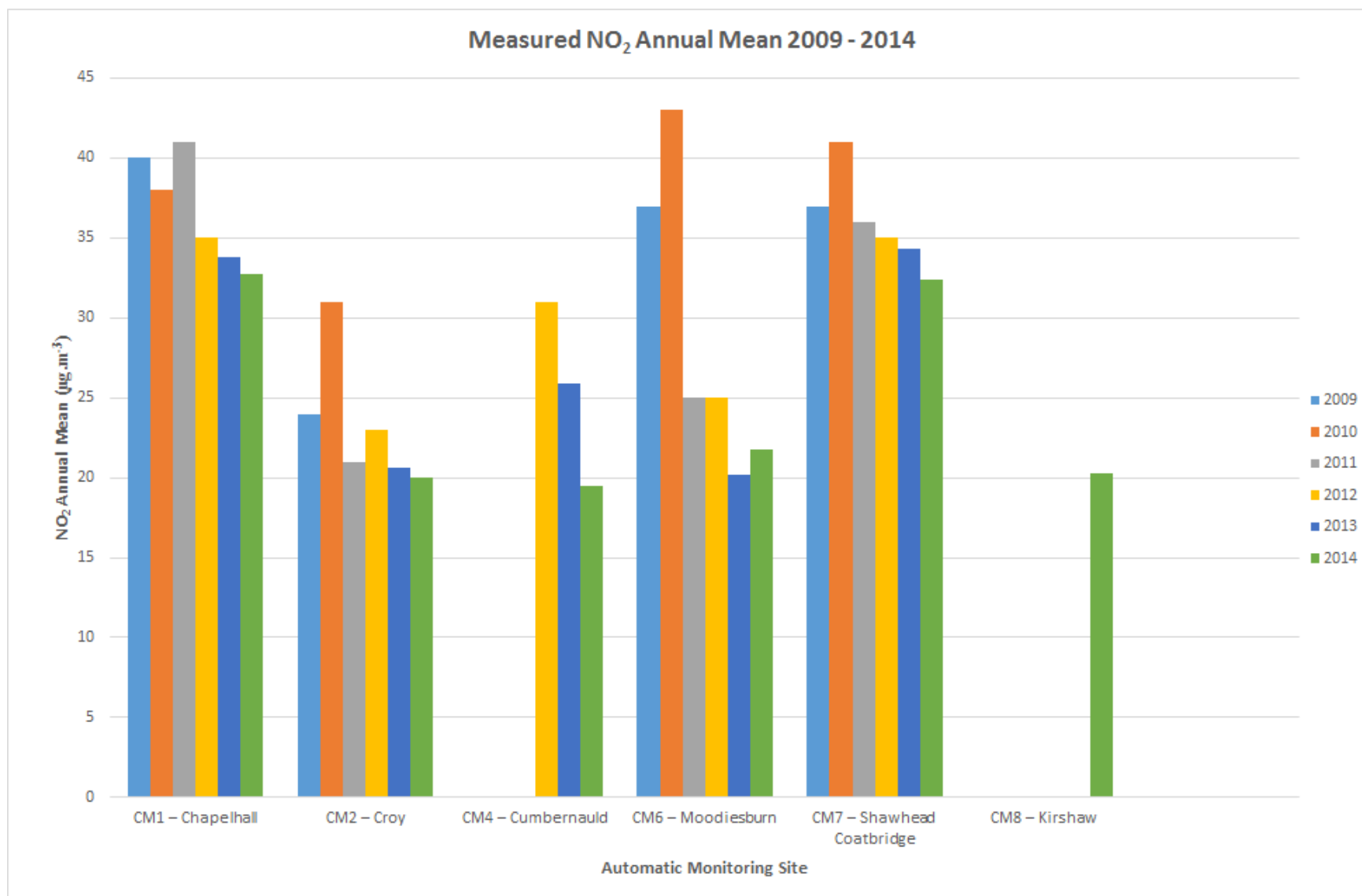


Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2014 % ^b	Number of Hourly Means > 200µg.m ⁻³					
					2009 ^c	2010 ^c	2011 ^c	2012 ^c	2013 ^c	2014 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	97.5	97.5	1 (145)	6 (170)	2	0	0	2
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	89.7	89.7	0 (120)	0 (172)	0	0	0	0
CM4 – Cumbernauld	Roadside	N	95.8	31.6	N/A	N/A	N/A	1	0	0 (100)
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	99.8	99.8	0 (130)	0 (151)	0	0	0	0
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	99.5	99.5	0 (109)	0 (149)	0	0	0	0
CM8 - Kirshaw	Roadside	N	97.6	50.1	N/A	N/A	N/A	N/A	N/A	0 (99)

In bold, exceedance of the NO₂ hourly mean AQS objective (200 µg.m⁻³ – 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 2014 are presented in table 2.6. Measured concentrations in excess of the 40 µg.m⁻³ NAQS objective are in bold.

Trend charts of historic diffusion tubes are presented in Figures 2.7 to 2.10

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.

Exceedances of the NO₂ annual mean objective have been measured at the following locations:

- 61 – Under Bridge Central Way E
- 62 – A Central Way Westbound
- 117 – Hamilton Road, Motherwell
- 164 – Deeds Street, Airdrie

Following distance correction at Hamilton Road and Deeds Street, there were no exceedances of the NO₂ annual mean objective at the nearest residential properties. There is no relevant exposure for the annual mean objective in close proximity to the diffusion tubes 61 and 62, therefore the 40 µg.m⁻³ objective does not apply at these locations.

The NO₂ annual mean concentration measured at diffusion tube 61 – Under Bridge Central Way E (65.1 µg.m⁻³) during 2014 was in excess of the 60 µg.m⁻³ threshold at which TG (09) recommends that there may be a risk of the NO₂ 1-hour mean objective being exceeded.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
10	Castle Court, Castlecary	Roadside	No	No	100	N	N	31.7
47	Layby in Stand	Roadside	No	No	92	N	N	22.5
48	Bus Stop, Bron Way, Cumbernauld	Kerbside	No	No	100	N	N	32.3
49	Swimming Pool, Kilsyth	Kerbside	No	No	100	N	N	22.1
50	House No 1791, Cumbernauld Road, Stepps	Kerbside	No	No	100	N	N	25.2
51	House No 131, Cumbernauld Road, Stepps	Kerbside	No	No	100	N	N	28.6
52	Traffic Lights, A80 Eastbound, Moodiesburn	Kerbside	No	No	100	N	N	25.6
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Kerbside	No	No	92	N	N	22.6
54	Gartcosh lochend rd	Urban Background	No	No	100	N	N	24.5
55	Glenboig Whitelaw Rd	Urban Background	No	No	100	N	N	13.6
56	Glenboig Garnqueen Ave	Urban Background	No	No	100	N	N	14.2
57	Glenboig main St	Urban Background	No	No	100	N	N	17.1

North Lanarkshire Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
58	Glenboig Cb Road post nr house no 115	Urban Background	No	No	100	N	N	16.2
59	Mount Ellen Coronation Place	Urban Background	No	No	92	N	N	20.8
61	Under bridge Central Way E	Roadside	No	No	92	N	Y	65.1
62	A Central Way West Bound	Roadside	No	No	69	N	Y	41.3
63	B Central Way West Bound	Roadside	No	No	84	N	N	31.7
100	Civic Centre, Motherwell	Roadside	No	No	77	N	Y	39.7
101	Shields Rd, Motherwell	Roadside	No	No	100	N	N	23.3
102	Emily Drive, Motherwell	Urban Background	No	No	100	N	N	10.6
103	Kethers Lane, Motherwell	Urban Background	No	No	100	N	N	13.9
104	Coursington Road, Motherwell	Urban Background	No	No	100	N	N	9.6
105	Craigneuk Road, carfin	Urban Background	No	No	100	N	N	15.1
106	Camp street, Motherwell	Urban Background	No	No	92	N	N	18.1
107	Braehead Farm, Bargeddie	Roadside	No	No	100	N	N	37.5
108	Shawhead, MSA Factory	Roadside	No	No	100	N	N	36.5
109B	Carnboe Landfill, A8 East	Roadside	No	No				

North Lanarkshire Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
110	New Edinburgh Rd (1), M74 Uddingston	Roadside	No	No	100	N	N	33.8
111	New Edinburgh Rd (2) M74 Uddingston	Roadside	No	No	100	N	Y	36.5
112	New Edinburgh Rd (3) M74 Uddingston	Roadside	No	No	100	N	Y	35.0
113	Tinkers Lane	Roadside	No	No	92	N	N	22.6
114	Castlehill Rd, Overtoun	Kerbside	No	No	100	N	N	17.8
115	Ravenscraig Bypass	Roadside	No	No	100	N	N	16.4
116	Delburn St, Motherwell	Urban Background	Yes (PM ₁₀)	No	100	N	N	26.1
117	Hamilton Road, Motherwell	Urban Background	Yes (PM ₁₀)	No	92	N	Y	53.8 (35.2)
118	Shawhead roundabout	Kerbside	No	No	100	N	N	30.2
119	Kirkshaws Rd, Coatbridge	Roadside	No	No	100	N	Y	36.2
120	Watsonville (ASDA) Motherwell	Kerbside	Yes (PM ₁₀)	No	100	N	N	22.0
121	Flannigan Grove, Bellshill	Urban Background	No	No	100	N	N	19.6
122	Main Street Mossend	Roadside	No	No	100	N	N	29.3
123	Hamilton Rd, Orbiston, Bellshill	Kerbside	No	No	92	N	N	23.1

North Lanarkshire Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
124	Scotmid, Tannochside	Kerbside	No	No	100	N	N	25.8
125	Main Street, Near Bellshill Academy	Kerbside	No	No	100	N	N	17.3
126	Main Street Near / at Motherwell Rd	Roadside	No	No	92	N	N	21.5
127	Main Street, near /at Tesco delivery road	Roadside	No	No	100	N	N	18.5
128	Matalan Wishaw	Roadside	No	No	100	N	N	24.7
129	Newmains Police Station	Roadside	No	No	100	N	N	32.9
130	Main St (Bottom) Wishaw	Roadside	No	No	100	N	N	15.8
133	Coatbridge 1, Bank Street	Roadside	No	No	77	N	N	32.1
134	Coatbridge 2, Bank Street	Kerbside	No	No	77	N	N	25.0
135	Grahamshill Street Airdrie	Kerbside	No	No	100	N	N	38.7
136	Airdrie 3, Springwells Cres	Roadside	No	No	92	N	N	16.8
137	Auchenkilns, Cumbernauld	Roadside	No	No	100	N	N	20.7
138	Chapelhall Main Street	Roadside	Yes (PM ₁₀)	No	92	N	N	23.6
139	Lauchope Street, Chapelhall	Roadside	Yes (PM ₁₀)	No	92	N	Y	35.6
140	Coatbridge, Dundyvan Rd	Kerbside	No	No	92	N	N	23.9
141	Harhill main Street (1)	Kerbside	No	No	92	N	N	14.9

North Lanarkshire Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
142	Salsburgh (House no 337), R15	Roadside	No	No	92	N	N	20.7
143	Harhill Main Street (2)	Roadside	No	No	100	N	N	19.2
144	Constarry Road, Croy 1	Roadside	No	Yes	100	N	N	15.8
145	Constarry Road, Croy 2	Roadside	No	Yes	92	N	N	17.0
146	Constarry Road, Croy 3	Roadside	No	Yes	100	N	N	18.1
147	Bank St, Coatbridge	Roadside	No	No	100	N	N	31.7
148	Main St, Chapelhall R32	Kerbside	No	No	77	N	N	29.8
149	Main St, Chapelhall R33	Kerbside	No	No	100	N	Y	34.4
150	Eastfield Rd, Cumbernauld	Kerbside	No	No	100	N	N	28.0
151	Holytown Main Street	Urban Background	No	No	85	N	N	20.6
152	Coatbridge Road Shops Townhead	Roadside	No	No	100	N	N	30.0
153	House Number 72, Townhead Rd	Roadside	No	No	100	N	N	21.4
154	Sunnyside Road Coatbridge	Roadside	No	No	100	N	N	32.9
156	Stirling Street Airdrie	Roadside	No	No	92	N	N	37.0
157	31 Station Road Muirhead	Roadside	No	No	100	N	N	27.1
158	Croftmoraig Avenue	Roadside	No	No	100	N	N	20.3

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	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 = 0.9)
								2014 $\mu\text{g.m}^{-3}$
159	Glenview Crescent	Roadside	No	No	92	N	N	21.9
160	The Cuillins	Roadside	No	No	85	N	N	20.4
161	Bridgend Crescent	Roadside	No	No	100	N	N	16.0
162	Auchingoch Road	Roadside	No	No	100	N	N	19.2
163	191 Carfin Steet, Newstevenson	Roadside	No	No	100	N	N	17.2
164	Deeds Street Airdrie	Roadside	No	No	82	N	N	41.3 (32.9)
165	12 Morar Way, Carfin	Roadside	No	No	100	N	N	18.4

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

Underlined, annual mean > 60 $\mu\text{g/m}^3$, indicating a potential exceedance 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 exceedance 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>). Distance corrected NO₂ annual mean predicted at nearest relevant exposure shown in brackets.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g.m}^{-3}$) - 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)	2014 (Bias Adjustment Factor = 0.9)
10	Roadside	No	<i>Deployed 2012</i>			29.0	27.0	31.7
47	Roadside	No	26.8	27	25.9	23.0	23.0	22.5
48	Kerbside	No	35.8	37.4	39.8	32.4	33.8	32.3
49	Kerbside	No	21.5	21.9	23.3	24.5	21.3	22.1
50	Kerbside	No	29.4	28.5	34.7	27.1	22.7	25.2
51	Kerbside	No	34.5	30.6	34.1	30.2	27.5	28.6
52	Kerbside	No	64.4	55.2	30.8	28.5	24.5	25.6
53	Kerbside	No	59.5	52	28.4	22.6	19.2	22.6
54	Urban Background	No	23.9	30.4	23.3	30.8	24.6	24.5
55	Urban Background	No	15.0	19.3	15.3	16.2	21.3	13.6
56	Urban Background	No	14.6	23.6	15.5	17.0	16.0	14.2
57	Urban Background	No	15.8	23.5	16.3	20.4	18.4	17.1
58	Urban Background	No	17.9	21.6	18.3	18.4	17.7	16.2
59	Urban Background	No	21.1	32.0	22.3	24.7	19.8	20.8
61	Roadside	No	53.8	57.9	47.8	47.2	56.0	65.1
62	Roadside	No	56.5	49.1	40.2	40.8	41.4	41.3
63	Roadside	No	47.7	40.8	39.6	34.7	37.3	31.7
100	Roadside	No	39.3	37.1	32.9	30.0	34.1	39.7
101	Roadside	No	19.5	29.6	29.2	26.7	28.9	23.3

North Lanarkshire Council

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g.m}^{-3}$) - 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)	2014 (Bias Adjustment Factor = 0.9)
102	Urban Background	No	13.7	14.4	13.6	13.7	12.2	10.6
103	Urban Background	No	17.5	16.5	17.1	15.8	17.0	13.9
104	Urban Background	No	13	14.1	12.4	13.0	10.5	9.6
105	Urban Background	No	16.6	18	17.9	16.1	17.3	15.1
106	Urban Background	No	21.7	22.3	22.8	22.2	19.5	18.1
107	Roadside	No	41.2	43	40.8	40.9	44.4	37.5
108	Roadside	No	44.7	43.2	48.9	38.2	40.0	36.5
109B	Roadside	No	<i>Deployed 2011</i>		75.8	50.1		
110	Roadside	No	<i>Deployed 2010</i>	40.0	43.4	38.1	35.6	33.8
111	Roadside	No	<i>Deployed 2010</i>	38.6	35.2	38.6	39.2	36.5
112	Roadside	No	<i>Deployed 2010</i>	44.8	38.6	39.6	37.7	35.0
113	Roadside	No	23.8	26.9	28.3	24.3	24.5	22.6
114	Kerbside	No	<i>Deployed 2010</i>	37.8	22.4	23.3	21.6	17.8
115	Roadside	No	17.3	20.5	20.7	19.5	16.5	16.4
116	Urban Background	Yes (PM- ₁₀)	24.2	30.2	28.8	24.6	28.1	26.1
117	Urban Background	Yes (PM- ₁₀)	36.2	41.1	44	39.0	35.9	53.8 (35.2)
118	Kerbside	No	37.6	38.3	37.5	34.2	35.3	30.2
119	Roadside	No	39.5	40.3	46.2	41.5	39.9	36.2
120	Kerbside	Yes (PM- ₁₀)	22.4	27	25.3	28.5	26.9	22.0

North Lanarkshire Council

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g.m}^{-3}$) - 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)	2014 (Bias Adjustment Factor = 0.9)
121	Urban Background	No	24.8	31.6	26.6	24.1	25.0	19.6
122	Roadside	No	29.5	37.5	38.7	34.3	35.7	29.3
123	Kerbside	No	30.1	30.5	26.2	27.0	29.6	23.1
124	Kerbside	No	32.2	33	33.8	30.2	38.7	25.8
125	Kerbside	No	<i>Deployed 2010</i>	31.7	26.9	21.1	20.8	17.3
126	Roadside	No	<i>Deployed 2010</i>	35.8	28.9	25.6	28.7	21.5
127	Roadside	No	<i>Deployed 2010</i>	26.6	24.4	24.1	23.7	18.5
128	Roadside	No	<i>Deployed 2010</i>	31.1	31.2	31.1	29.3	24.7
129	Roadside	No	<i>Deployed 2010</i>	36.3	37.6	29.6	34.7	32.9
130	Roadside	No	<i>Deployed 2010</i>	35.6	18.5	19.6	17.9	15.8
133	Roadside	No	49.5	39.7	44.3	34.3	37.2	32.1
134	Kerbside	No	33.1	30	28.5	28.9	25.5	25.0
135	Kerbside	No	26	41	45.9	38.3	37.9	38.7
136	Roadside	No	21.6	20.2	22.2	24.5	18.5	16.8
137	Roadside	No	33.5	30.4	25.9	25.0	22.0	20.7
138	Roadside	Yes (PM ₁₀)	<i>Deployed 2010</i>	46.3	33	29.8	27.9	23.6
139	Roadside	Yes (PM ₁₀)	46.2	45.5	48.2	34.3	42.9	35.6
140	Kerbside	No	29.8	28.5	31.7	31.4	29.4	23.9
141	Kerbside	No	<i>Deployed 2010</i>	23.1	22.1	21.4	20.3	14.9
142	Roadside	No	23.6	27.7	27.4	23.6	26.0	20.7
143	Roadside	No	<i>Deployed 2010</i>	22.7	23.1	22.6	21.1	19.2
144	Roadside	No	25.8	27.6	23.5	20.2	19.2	15.8
145	Roadside	No	26.2	24.2	23.9	20.7	19.9	17.0

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g.m}^{-3}$) - 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)	2014 (Bias Adjustment Factor = 0.9)
146	Roadside	No	25.7	24.2	20.9	19.4	18.5	18.1
147	Roadside	No	50.4	45.1	51.3	36.1	30.9	31.7
148	Kerbside	No	36.7	37.6	48.3	37.2	37.7	29.8
149	Kerbside	No	33.2	33.7	39.6	34.8	36.4	34.4
150	Kerbside	No	33.2	32.5	34.1	28.7	29.6	28.0
151	Urban Background	No	<i>Deployed 2010</i>	28.2	26.2	25.1	26.4	20.6
152	Roadside	No	<i>Deployed 2010</i>	40.4	36.3	33.6	32.2	30.0
153	Roadside	No	28.7	30.9	32.4	26.9	23.5	21.4
154	Roadside	No	<i>Deployed 2010</i>	42.1	42.6	32.9	37.3	32.9
156	Roadside	No	<i>Deployed 2010</i>	47.4	46.4	39.4	42.2	37.0
157	Roadside	No	<i>Deployed 2010</i>	38.0	30.2	27.1	24.2	27.1
158	Roadside	No	<i>Deployed 2011</i>		39.5	24.2	20.3	20.3
159	Roadside	No	<i>Deployed 2011</i>		32.5	21.5	21.9	21.9
160	Roadside	No	<i>Deployed 2012</i>			21.5	21.5	20.4
161	Roadside	No	<i>Deployed 2013</i>				18.5	16.0
162	Roadside	No	<i>Deployed 2013</i>				21.4	19.2
163	Roadside	No	<i>Deployed 2013</i>				16.3	17.2
164	Roadside	No	<i>Deployed 2013</i>				28.8	41.3 (32.9)
165	Roadside	No	<i>Deployed 2014</i>					18.4

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

Underlined, annual mean > 60 $\mu\text{g.m}^{-3}$, indicating a potential exceedance 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

Figure 2.7 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Urban Background Diffusion Tube Monitoring Sites

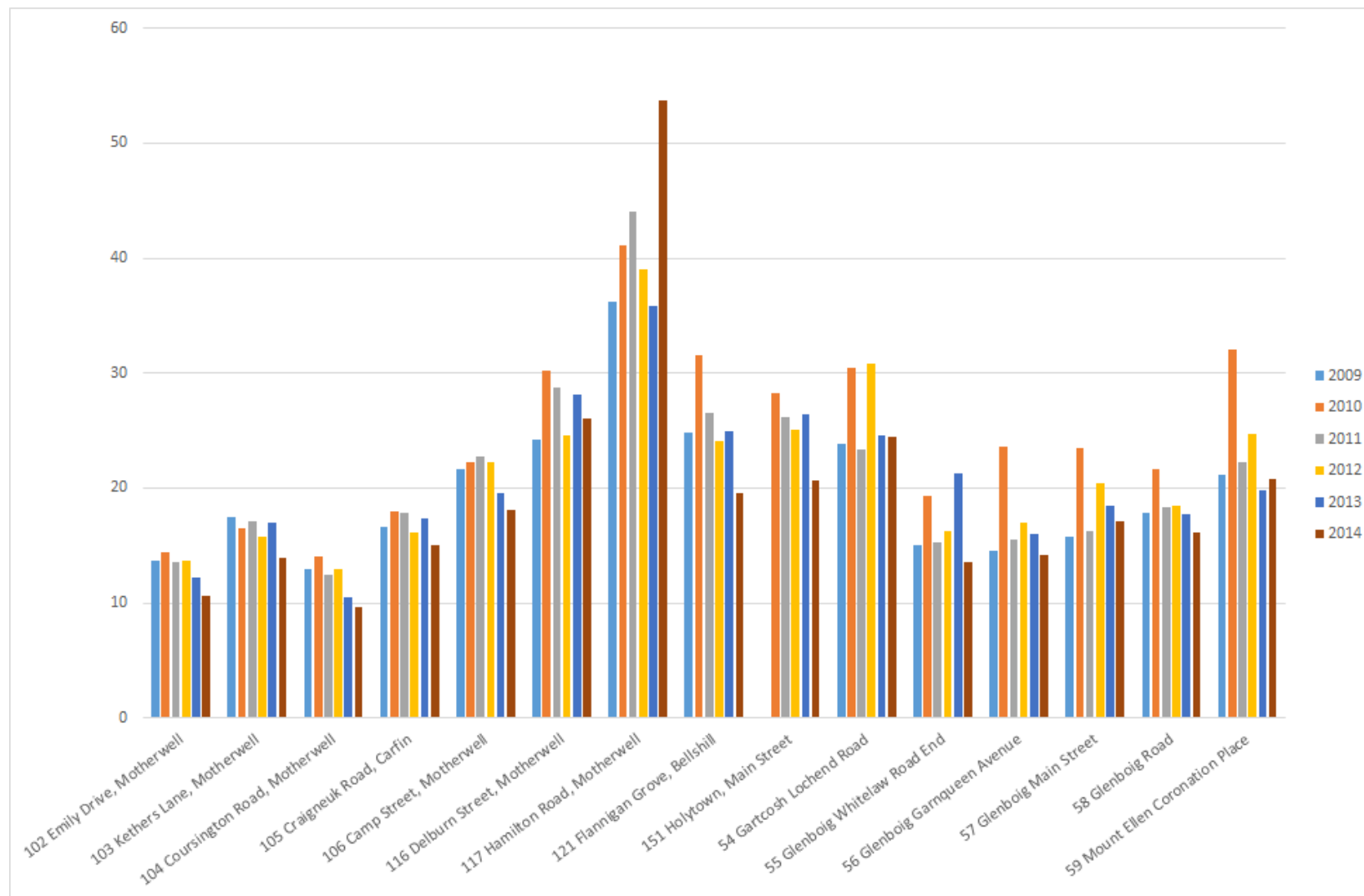


Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites -

1

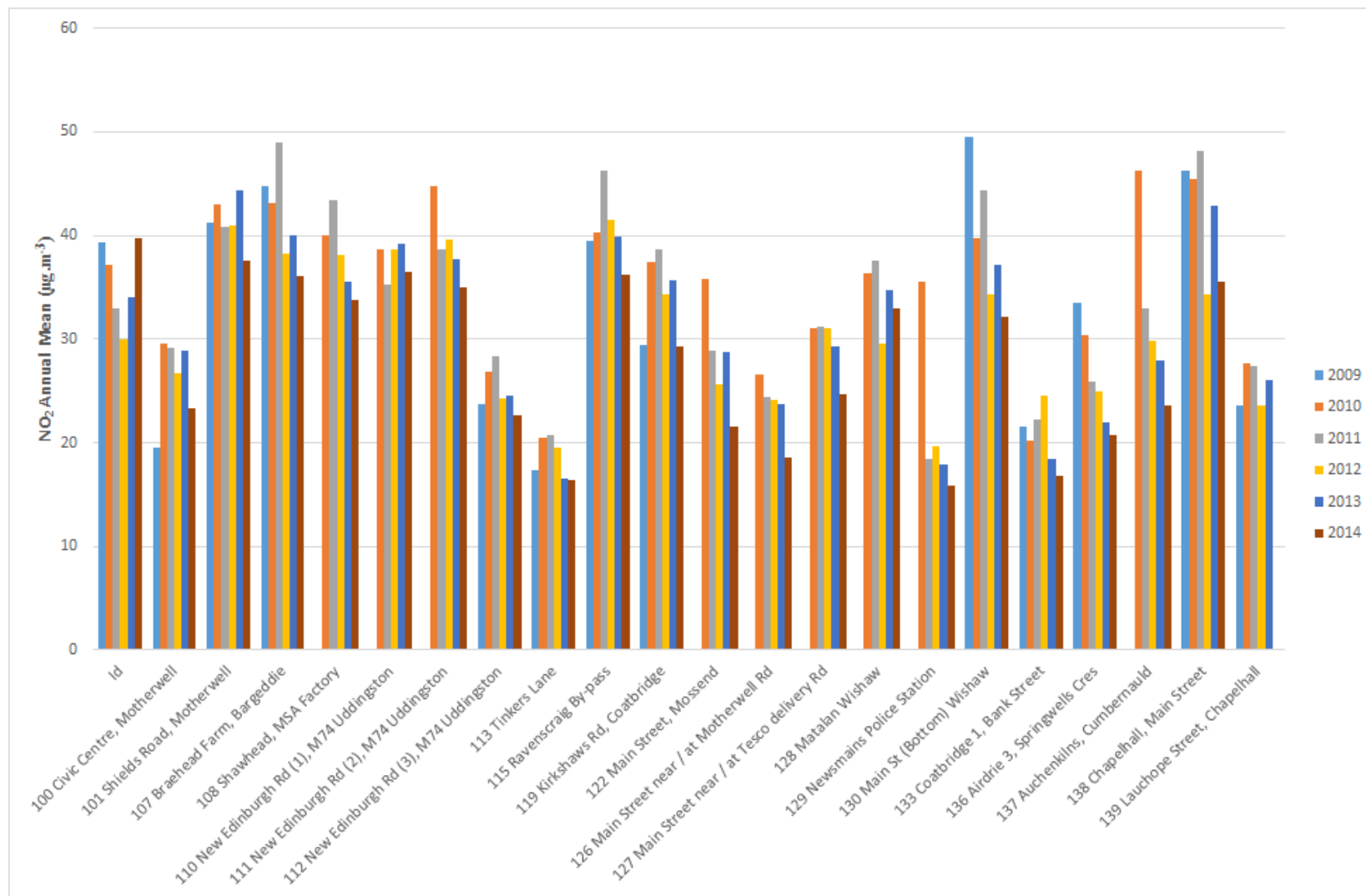


Figure 2.9 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites - 2

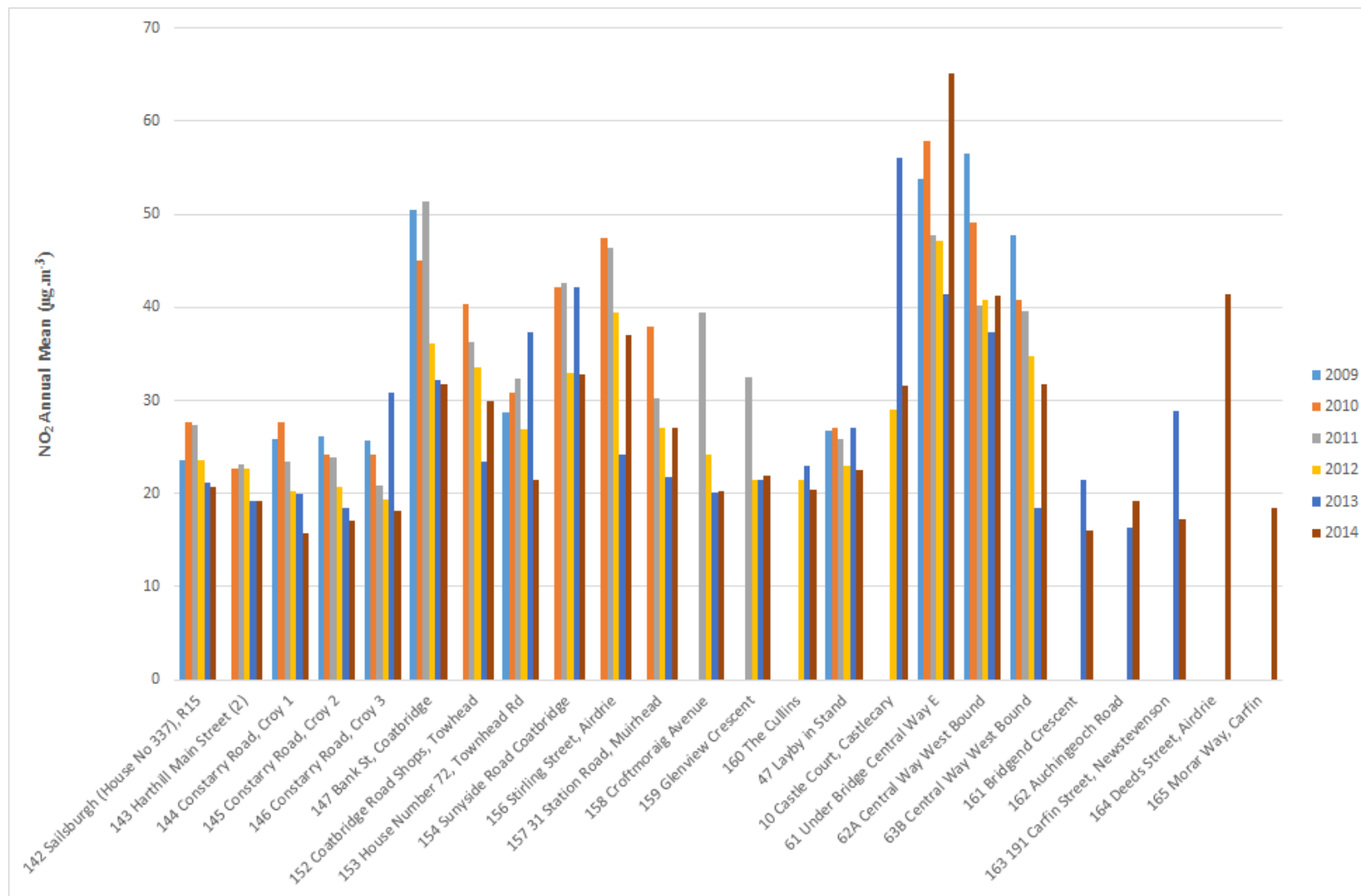
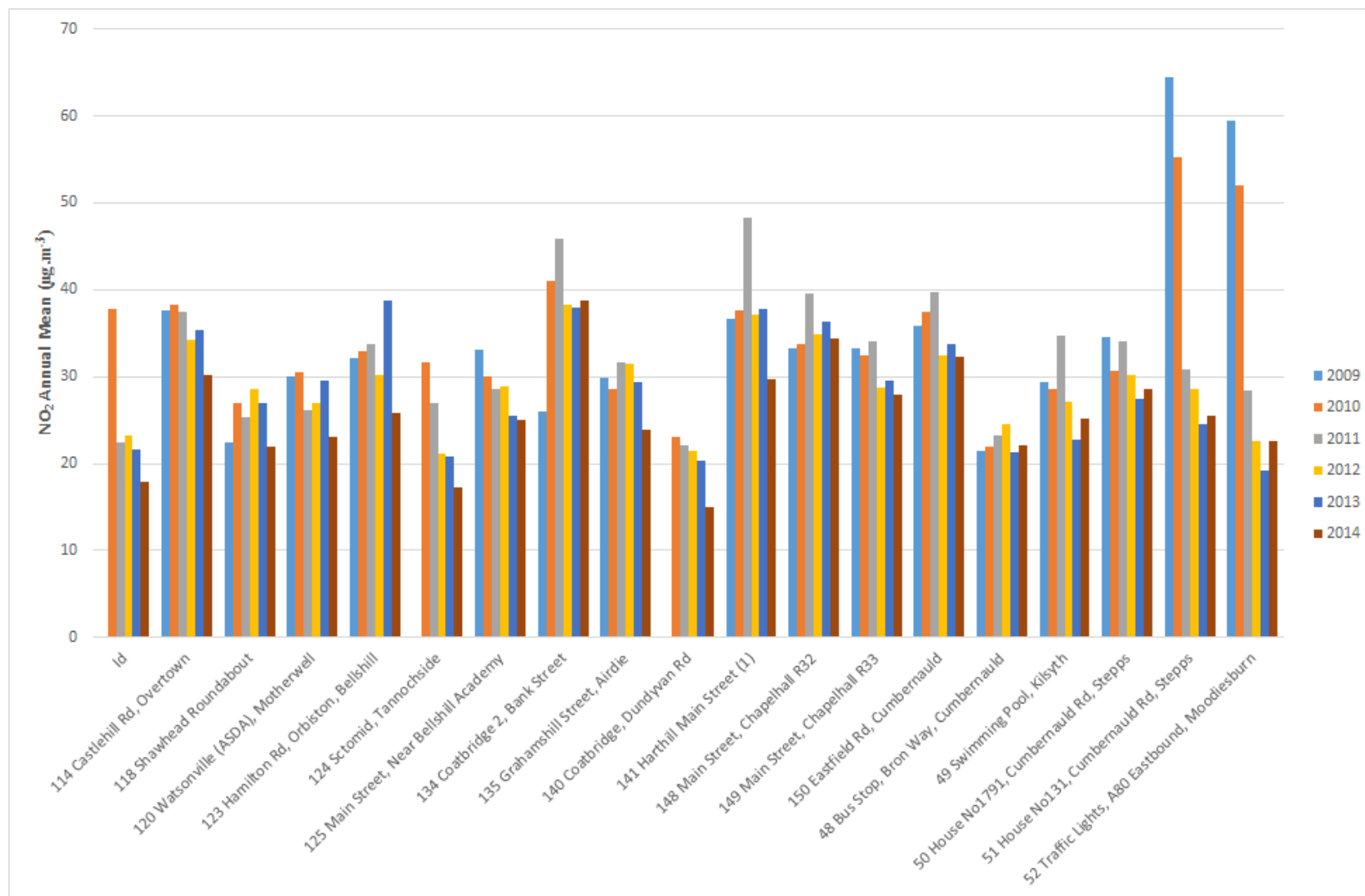


Figure 2.10 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Kerbside Diffusion Tube Monitoring Sites



2.2.2 PM₁₀

PM₁₀ was measured at all of the Council's automatic air quality monitoring sites during 2014. 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 2.7 and Table 2.8 and trends shown in Figure 2.11.

The results indicate a general decrease in measured PM₁₀ concentrations between 2013 and 2014, except at the monitoring site CM1 where there was a slight increase in concentration in 2014 compared to 2013.

Measured concentrations at Chapelhall was in excess of the annual mean PM₁₀ objective.

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 2014 % ^b	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg.m ⁻³)					
						2009 ^{*c}	2010 ^{*c}	2011 ^{*c}	2012 ^{*c}	2013 ^c	2014 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	77.1	77.1	Y	19	19	19	16	19.1	19.2
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	93.2	93.2	Y	19	20.5	15	13	17.6 ^c	15.4
CM3 – Whifflet Coatbridge	Urban Background	Yes (PM ₁₀)	88.5	88.5	Y	14	14.6	15	13	15.1	13.1
CM4 – Cumbernauld	Roadside	No	95.3	31.4	Y	<i>Deployed in 2011</i>		14	13	15.7	15.1
CM5 – Motherwell	Roadside	Yes (PM ₁₀)	88.2	88.2	Y	17	19.3	19	15	18.2	15.1
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	86.1	86.1	Y	20.5	20.2	17	16	15.5	10.8
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	89.0	72.5	Y	18	18.5	19	11	14.0	13.3
CM8 - Kirkshaw	Roadside	No	91.7	47.1	Y	<i>Deployed in 2014</i>					14.8

In bold, exceedance of the PM₁₀ annual mean AQS objective of 18 µg.m⁻³

^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>), if valid data capture is less than 75% - Croy 2013 annualised using other continuous measurements to produce an adjustment factor of 1.05

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 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	2014 ^c
CM1 – Chapelhall	Roadside	Yes (PM ₁₀)	77.1	77.1	Y	4 (45)	0 (41)	6	0 (46)	0	1
CM2 – Croy	Special – By Quarry	Yes (PM ₁₀)	93.2	93.2	Y	15 (60)	9	1 (36)	1 (39)	4(46)	3
CM3 – Whifflet Coatbridge	Urban Background	Yes (PM ₁₀)	88.5	88.5	Y	0	0	1	1	0	0
CM4 – Cumbernauld	Roadside	No	95.3	31.4	Y	<i>Deployed in 2011</i>		1 (37)	1	0(33)	0 (25)
CM5 – Motherwell	Roadside	Yes (PM ₁₀)	88.2	88.2	Y	2	0	5 (49)	0 (35)	2(38)	0
CM6 – Moodiesburn	Roadside	Yes (PM ₁₀)	86.1	86.1	Y	2 (37)	3	4 (45)	3 (38)	2 (37)	0
CM7 – Shawhead Coatbridge	Roadside	Yes (PM ₁₀)	89.0	72.5	Y	0 (39)	4	3 (43)	0 (31)	1 (31)	0 (19)
CM8 - Kirkshaw	Roadside	No	91.7	47.1		<i>Deployed in 2014</i>					0 (21)

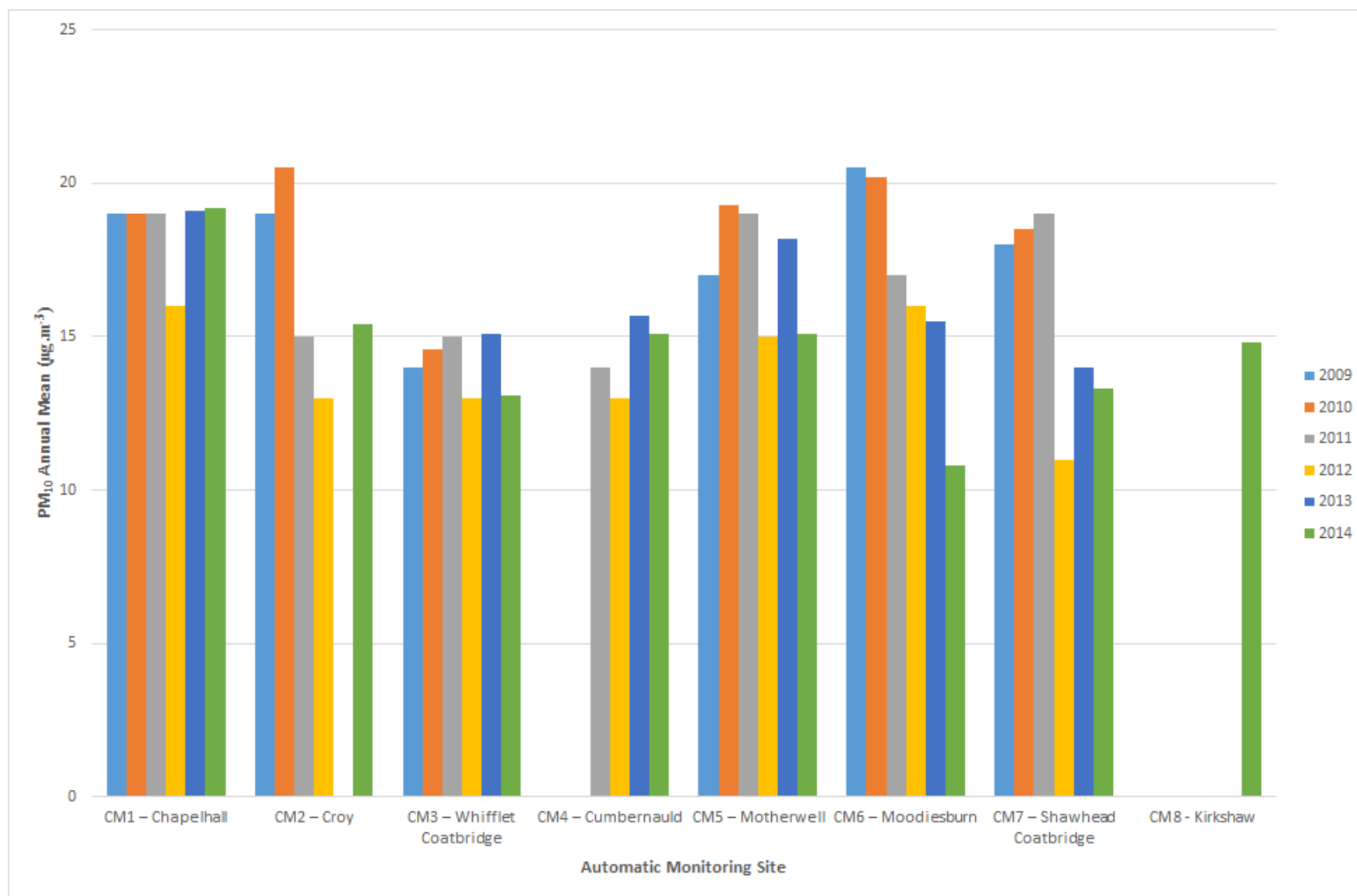
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^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



2.2.3 Sulphur Dioxide

North Lanarkshire Council undertake automatic monitoring of sulphur dioxide (SO₂) concentrations at three locations, Croy, Cumbernauld and Kirkshaw. The Kirkshaw automatic site was deployed in June 2014. The results are presented in Table 2.9. All measured SO₂ concentrations are significantly below the annual mean objective.

Table 2.9 Results of Automatic Monitoring of SO₂: Comparison with Annual Mean 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)	94.0	94.0	0	0	0 (12)
CM4 – Cumbernauld	Roadside	No	32.7	32.7	0 (8)	0 (6)	0 (4)
CM8 - Kirkshaw	Roadside	No	51.0	51.0	0 (13)	0 (8)	0 (3)

In bold, exceedance 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.m⁻³): 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 2014 are presented in

Table 2.. The maximum rolling 8-hour mean concentration is significantly below the NAQS objective value of 10 mg.m⁻³.

Table 2.10: 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)	99.1	99.1	0.2

^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%)

2.2.6 Summary of Compliance with AQS Objectives

Measured annual mean NO₂ concentrations were below the 40 µg.m⁻³ objective at all automatic monitoring locations. Measured concentrations have decreased at all locations since 2012, except at the Shawhead Coatbridge site where there is slight increase in concentration in 2014 compared to 2013.

Analysis of the measured data indicates that the 1-hour mean NO₂ objective has been exceeded twice in 2014 at Chapelhall site, however this is below the 18 exceedances allowed each year.

Exceedances of the NO₂ annual mean objective have been measured at the following diffusion tube sites:

- 61 – Under Bridge Central Way E
- 62 – A Central Way Westbound
- 117 – Hamilton Road, Motherwell

- 164 – Deeds Street, Airdrie

Following distance correction at Hamilton Road and Deeds Street, there were no exceedances of the NO₂ annual mean objective at the nearest residential properties. There is no relevant exposure for the annual mean objective in close proximity to the diffusion tubes 61 and 62, therefore the 40 µg.m⁻³ objective does not apply at these locations.

The NO₂ annual mean concentration measured at diffusion tube 61 – Under Bridge Central Way E (65.1 µg.m⁻³) during 2014 was in excess of the 60 µg.m⁻³ threshold at which TG(09) recommends that there may be a risk of the NO₂ 1-hour mean objective being exceeded. An investigation of the NO₂ exceedances, by observing bus movements at this location, is recommended to further understand the causes of the exceedances of the NO₂ annual mean objective.

Measured PM₁₀ concentrations between 2013 and 2014, except at the monitoring site CM1 where there was a slight increase in concentration in 2014 compared to 2013.

Measured concentration at Chapelhall was in exceedance of the annual mean PM₁₀ objective.

North Lanarkshire Council has examined the results from monitoring in the district. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

The following section has been completed based on the best available information and local knowledge.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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.

3.4 Junctions

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

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

North Lanarkshire Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

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 in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Airports require assessment if there is relevant exposure within 1km of the airport boundary. The only airport in North Lanarkshire is a private airfield, located at Cumbernauld. The airfield does not experience high levels of aircraft traffic, and as such is below the criteria set out in technical guidance.

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

4.2 Railways (Diesel and Steam Trains)

In accordance with the technical guidance, it is necessary to assess emissions from stationary trains in relation to compliance with SO₂ objectives and moving trains for compliance with NO₂ objectives.

There are several rail links within the north Lanarkshire, however, with the exception of a section of track carrying infrequent services between Glasgow and Edinburgh, all passenger train movements are electrified, and therefore do not require further assessment.

4.2.1 Stationary Trains

Stationary trains require assessment for SO₂ emissions and moving trains require assessment for NO₂ emissions. Locations where diesel or steam locomotives are regularly stationary for 15 minutes or more should be identified. Possible locations include signals, goods loops, depots or stations. It should then be identified if there is relevant public exposure within 15m of the stationary locomotives.

Where this is the case, information on the number of trains per day that might be stationary for more than 15 minutes should be gathered. If there are more than 3 or more occasions when there may be a locomotive stationary with its engine running, a Detailed Assessment is required.

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

Sections of track that may have a large number of movements of diesel locomotives should be identified. Further assessment of NO₂ concentrations is required where the background concentration is above 25 µg.m⁻³ and where there is the potential for long-term exposure within 30m of the tracks.

The railway lines experiencing a large number of movements of diesel locomotives were identified in the Technical Guidance LAQM.TG (09). The only line identified which passes through North Lanarkshire is the Glasgow-Edinburgh line which passes through Croy station.

The background NO₂ concentration in Croy is below 25 µg.m⁻³ and therefore no further assessment of NO₂ emissions from moving trains is required.

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)

Ports require assessment for SO₂ concentrations resulting from fuel burning. Ports require assessment where there is relevant public exposure within 250m and 1 km of the berths and main areas of manoeuvring.

North Lanarkshire is landlocked and as such there are no ports or harbours located within the Council area.

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

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

Existing installations require further assessment if they have experienced a substantial increase in emissions. A substantial increase is categorised as more than 30% increase. Existing installations also require assessment if there is new relevant exposure since the previous LAQM assessment.

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

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

5.3 Petrol Stations

Petrol stations require assessment where there is an annual throughput of more than 2000m³ of petrol and with a busy road nearby. A busy road is taken to be one with more than 30,000 vehicles per day. In addition, should the aforementioned criteria be

met, there should also be relevant exposure within 10m before proceeding to detailed assessment.

There are currently thirty authorised petrol stations within North Lanarkshire.

No data is currently available on the throughput of the authorised petrol stations; however, roads with traffic flows greater than 30,000 vehicles per day pass through urban areas in Cumbernauld, Motherwell and Coatbridge. As in the previous round of review and assessment, no petrol stations are located on these roads where there are residential properties within 10 metres of the pumps.

North Lanarkshire Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

One biomass combustion source has been identified for screening within the North Lanarkshire Council area. The screening method described in TG(09), Box 5.8 has been used. Details of the biomass installation are presented in Table 6.1 below. Utilising the maximum permitted emissions by the Renewable Heat Incentive (RHI) for PM₁₀ and the data available for NO₂ emissions of the boiler, the contribution to annual mean concentrations of both pollutant has been calculated.

The maximum contribution from the biomass to the annual mean concentrations are 0.8611µg.m⁻³ and 0.2496µg.m⁻³ respectively for NO₂ and PM₁₀. These contributions are below the relevant thresholds above which a Detailed Assessment would be required. Table 6.1 Biomass Facilities and Relevant Surrounding.

Name of Establishment	Power (kW)	Building height (m)	Stack diameter (m)	Stack height (m)
Biomass Boiler, Parksprings Car Home, Motherwell 13/01246/FUL	65.8	6	0.15	5.1

North Lanarkshire Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

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

6.3 Domestic Solid-Fuel Burning

No new areas of domestic fuel burning have been identified that exceed the property density thresholds specified in the technical guidance TG(09).

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

7 Fugitive or Uncontrolled Sources

Dust emissions from a number of uncontrolled and fugitive sources can give rise to elevated PM₁₀ concentrations. These sources include quarrying/mineral extraction, landfill sites, coal and material handling, major construction works and waste management sites. Since the last round of Review and Assessment Report, no new source has been 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

North Lanarkshire Council monitored ambient NO₂ and PM₁₀ concentrations using both automatic monitoring and passive diffusion tubes in 2014.

Annual mean NO₂ concentrations recorded at all automatic monitoring sites were below the annual mean objective in 2014. The 1-hour mean NO₂ objective has been exceeded twice in 2014 at Chapelhall site, however this is below the 18 exceedances allowed each year.

Exceedances of the NO₂ annual mean objective have been measured at the following locations:

- 61 – Under Bridge Central Way E
- 62 – A Central Way Westbound
- 117 – Hamilton Road, Motherwell
- 164 – Deeds Street, Airdrie

Following distance correction at Hamilton Road and Deeds Street, there were no exceedances of the NO₂ annual mean objective at the nearest residential properties. There is no relevant exposure in close proximity to the diffusion tubes 61 and 62, therefore the annual mean objective does not apply at these locations.

The NO₂ annual mean concentration measured at diffusion tube 61 – Under Bridge Central Way E (65.1 µg.m⁻³) during 2014 was in excess of the 60 µg.m⁻³ threshold at which TG(09) recommends that there may be a risk of the NO₂ 1-hour mean objective being exceeded.

Measured annual mean PM₁₀ concentrations measured during 2014 were below the 18 µg.m⁻³ objective at all automatic monitoring sites; except at Chapelhall where the annual mean objective was exceeded. All PM₁₀ monitoring sites were compliant with the daily mean objective.

8.2 Conclusions from Assessment of Sources

Data were gathered from various national and local sources with regards to atmospheric emissions from : road; traffic; rail; aircraft; shipping; industrial processes; intensive farming operations; domestic properties; biomass plants; and dusty processes. The screening methods outlined in the technical guidance were used to determine the likelihood that a particular source would result in an exceedance of national air quality standards.

The review of new and changed emission sources identified no new sources that were likely to result in an exceedance of the NAQS objectives and that there is no requirement to proceed to a Detailed Assessment for any pollutant contained within the NAQS.

8.3 Proposed Actions

The Updating and Screening Assessment considered new monitoring data and a review of all emissions sources in the area.

The report proposes the following actions:

- Submission of 2016 Progress Report.
- An investigation of the NO₂ exceedances of the tubes at Central Way by visiting and observing bus movements to further understand the causes of the exceedances at this location.
- In the case of the investigation not being conclusive, conduct a Detailed Assessment of NO₂ at Central Way, Cumbernauld.

9 References

Defra (2014) UK Air Local Air Quality Management Support website;
<http://laqm.defra.gov.uk/>

Air Quality in Scotland website (2014); www.scottishairquality.co.uk

National Physical Laboratory (2014) National diffusion tube bias adjustment factor
spread sheet (v 03/14 Final v2)

North Lanarkshire Council (2009) LAQM Updating and Screening assessment

North Lanarkshire Council (2010) LAQM Progress Report

North Lanarkshire Council (2011) LAQM Progress Report

North Lanarkshire Council (2013) LAQM Progress Report

North Lanarkshire Council (2014) LAQM Progress Report

Appendices

Appendix A: Quality Assurance / Quality Control

Appendix B: Diffusion Tube Locations

Appendix A: Quality Assurance / Quality Control

Bias Adjustment Factor

One co-location study was conducted within the North Lanarkshire Council area during 2014 at the site where concentration was measured using an automatic analyser. The bias factor has been calculated for this site. Details of the co-location, including the precision checks are presented in Figure A.1. Details of the calculation of the national average adjustment factor are presented in Figure A.2.

Figure A.1: Co-location Study – Croy

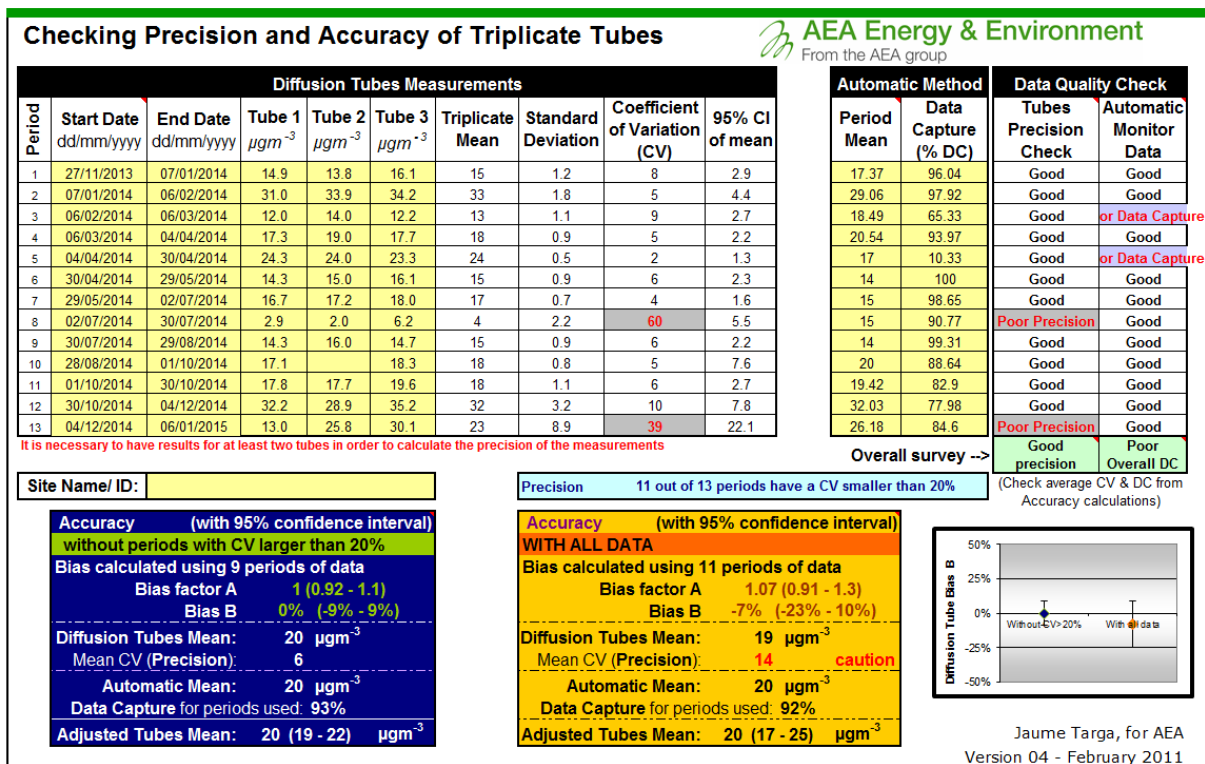


Figure A.2: Glasgow Scientific Services – National Average Bias Adjustment Factor 2014

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 06/15			
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of September 2015			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet			
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.							LAQM Helpdesk Website			
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.				Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.						
Step 1:		Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory		If a preparation method is not shown, we have no data for this method at this laboratory		If a year is not shown, we have no data		If you have your own co-location study then see footnote 1. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953				
Analysed By ¹	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g m}^{-3}$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g m}^{-3}$)	Bias (B)	Tube Precision ²	Bias Adjustment Factor (A) (Cm/Dm)
Glasgow Scientific Services	20% TEA in water	2014	KS	Glasgow City Council	10	75	65	14.6%	P	0.87
Glasgow Scientific Services	20% TEA in water	2014	KS	Marylebone Road Intercomparison	12	101	80	26.4%	G	0.79
Glasgow Scientific Services	20% TEA in water	2014		Overall Factor* (2 studies)					Use	0.83

Discussion of Choice of Factor to Use

Diffusion tube bias adjustment factors for 2014 are available from both the local co-location study and the national database of co-location studies. Historically North Lanarkshire Council have used the local adjustment factor to adjust their diffusion tube results.

The use of the national bias adjustment factor would result in an underestimation of NO₂ concentration, where the use of the local bias adjustment factor would result in an overestimation of NO₂ concentrations.

A combined bias adjustment factor has been calculated following the same method as the one used for the calculation of the national bias adjustment factor. The combined adjustment factor of 0.9 gives diffusion tubes results that are consistent with the previous year's results.

PM Monitoring Adjustment

All PM₁₀ measurements were made using TEOM analysers. The measurements are therefore considered gravimetric equivalent and no adjustments have been applied to the data.

Short-term to Long-term Data Adjustment

Due to annual data capture being less than 75%, a short to long term data adjustment was applied to the annual mean NO₂ and PM₁₀ measurements at one diffusion tube, DT62 – A Central Way Westbound, Cumbernauld. The adjustment ratio calculated is 1.03.

QA/QC of Diffusion Tube Monitoring

NO₂ diffusion tubes are supplied and analysed by Glasgow Scientific Services using a preparation mixture of 20% triethanolamine (TEA) in water. 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 have participated in recent HSL WASP NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory during the previous five rounds in 2013 and 2014 based upon a z-score of $<\pm 2$ were as follows:

- October to December 2013: 100%
- January to March 2014: 100%
- April to May 2014: 100%
- July to August 2014: 100%
- October to November 2014: 100%

Over a rolling five round WASP window, it is expected that 95% of laboratory results should be $\leq \pm 2$. If this percentage is substantially lower than 95% for a particular laboratory, within this five round window, then one can conclude that the laboratory in question may have significant systematic sources of bias in their assay. In this case the average percentage over the last five rounds up to the end of 2014 is 100%.

Table A.1: NO₂ monthly mean measurements measured at diffusion tube sites 2014

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean (µg.m ⁻³)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean (µg.m ⁻³) (0.9 adj factor)
10	Castle Court, Castlecary	32.6	54.6	40.4	34.8	39	30.9	25.4	8.2	22.7	41	35.5	46.7	45.4	35.2	100.0	N	31.7
47	Layby in Stand	27.5	27.3	29.1		23.5	24.4	18.5	18.7	20.9	26.9	23.2	37.2	22.7	25.0	92.3	N	22.5
48	Bus Stop, Bron Way, Cumbernauld	38.4	36.9	35.9	34.4	36.1	31.7	29.6	30.4	27.1	41.2	25.9	60.5	38.3	35.9	100.0	N	32.3
49	Swimming Pool, Kilsyth	24.7	30.3	23.1	36.1	25.3	26.1	15.6	18.2	22.6	18.6	15.9	39.8	22.3	24.5	100.0	N	22.1
50	House No 1791, Cumbernauld Road, Stepps	29.2	25.8	47.9	25.5	24.2	20.5	20.4	21.2	24.3	25.4	19.8	41.9	37.6	28.0	100.0	N	27.1
51	House No 131, Cumbernauld Road, Stepps	40.8	29	53.9	25.7	28.9	22.5	23	20.6	24.5	29.3	23.3	45	46.6	31.8	100.0	N	20.3
52	Traffic Lights, A80 Eastbound, Moodiesburn	32.9	26.2	43.3	25.4	29.5	24.2	17.4	22.5	30.6	29.1	20.8	46.1	21.4	28.4	100.0	N	21.9
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	27.7	21.2	41	16.9	21.2		39.8	13.1	20	22.4	17.3	32.1	29.2	25.2	92.3	N	20.4
54	Gartcosh lochend rd	27.4	30.9	28.4	20.8	27	21.7	21.6	16.6	30.8	26.2	30.9	39.7	31.2	27.2	100.0	N	16.0
55	Glenboig Whitelaw Rd	18	19	16.5	11.6	10.7	11	9.8	9.9	15.5	15.8	14.7	27.2	16.2	15.1	100.0	N	13.6
56	Glenboig Garnqueen	12.9	19.3	18.5	12.5	12.8	12.7	11.6	11.9	17.9	16.5	11.9	26	20	15.7	100.0	N	14.2

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
	Ave																	
57	Glenboig main St	21	21.3	21.1	19.1	16.5	12.6	13.8	16.5	22.3	18.1	12.8	26.5	25.6	19.0	100.0	N	17.1
58	Glenboig Cb Road post nr house no 115	18.9	19.6	18.5	13.5	20.1	13.3	11.5	12.5	19	17.9	17.8	30.5	20.8	18.0	100.0	N	16.2
59	Mount Ellen Coronation Place	30		24.4	17.9	11.8	16.8	18.7	17	20.8	44	15.5	36.5	23.4	23.1	92.3	N	20.8
61	Under bridge Central Way E		64.6	78.8	84.3	46.8	84.6	76.8	73.4	66.8	81.8	37.1	81	92.3	72.4	92.3	N	65.1
62	A Central Way West Bound		43.7	54.6	46.8			43.6	42.3	44.4	47.5	33.6		44.1	44.5	69.2	Y	41.3
63	B Central Way West Bound		39.4	39.8	18.6	44.8	33.8	30.6	27	34.8	43.9	39.3		35.9	35.3	84.6	N	31.7
100	Civic Centre, Motherwell	41.1			49.2	37.2	44.6		33.4	39.8	41	48.6	52.8	53.8	44.2	76.9	N	39.7
101	Shields Rd, Motherwell	23.1	24.3	29.6	20.5	26.9	25.7	24	19.1	25	30.5	25.3	26.7	36.3	25.9	100.0	N	23.3
102	Emily Drive, Motherwell	9	17	11.6	12	12.2	8	11.4	4.6	10.3	12.3	12	17.6	15.3	11.8	100.0	N	10.6
103	Kethers Lane, Motherwell	16.3	20.6	18.2	15.7	14	12.5	13	4.6	8.8	13.9	16.4	25.4	21.8	15.5	100.0	N	13.9
104	Coursington Road, Motherwell	12.2	13	13.4	10.7	9.6	8.9	8.9	2.7	7.2	11.2	11.2	11.1	18.4	10.7	100.0	N	9.6
105	Craigneuk Road, carfin	16.2	18.3	20.7	15.5	15.7	13.1	16.6	7.1	13.3	17.4	16.8	26.6	20.6	16.8	100.0	N	15.1
106	Camp street, Motherwell	21.2	21.8	19.8	20.3	16.8	17.8	17.4	7.2		22.6	21.3	29	26.4	20.1	92.3	N	18.1
107	Braehead	45	39.3	49.6	46.3	40.3	40.4	34.8	28.5	42.1	49.9	41.1	25.6	59.4	41.7	100.0	N	37.5

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
	Farm, Bargeddie																	
108	Shawhead, MSA Factory	53.7	52.3	54.9	48.4	37.4	36.1	34.1	24.1	32.1	40.6	39	16.2	52.5	40.1	100.0	N	36.1
109 B	Carnboe Landfill, A8 East																N	
110	New Edinburgh Rd (1), M74 Uddingston	39	48.2	38.2	35	31.8	33.3	32.6	20.2	35.4	39.2	39.6	43.5	52.7	37.6	100.0	N	33.8
111	New Edinburgh Rd (2) M74 Uddingston	42.6	51.5	47.2	43.7	37.6	33.2	32.4	27.6	41.8	40.7	41	38	49.5	40.5	100.0	N	36.5
112	New Edinburgh Rd (3) M74 Uddingston	36.9	47.2	42.5	40.8	40.9	34.9	36.1	28.9	33.2	36.4	39.5	39.8	48	38.9	100.0	N	35.0
113	Tinkers Lane	25.1	34.1	29.4	22.7	25.5		23.3	15	20.6	23.5	26.2	21.9	34.3	25.1	92.3	N	22.6
114	Castlehill Rd, Overtoun	20.2	23.1	20.8	22.2	22.2	19	18.7	8.8	14.6	20.1	19.7	26	22.2	19.8	100.0	N	17.8
115	Ravenscraig By-pass	17.7	23.6	18.4	16.8	18.8	16.3	12.6	8.9	14	20.4	16.9	30.5	21.4	18.2	100.0	N	16.4
116	Delburn St, Motherwell	31.1	33.6	29.4	26.6	27.4	26.1	21.8	18.1	28.6	30	22.1	41.6	40.6	29.0	100.0	N	26.1
117	Hamilton Road, Motherwell	31.3	44	34.9	37.5	35.8	335	54.3		15.1	31.6	22.4	38.2	36.6	59.7	92.3	N	53.8
118	Shawhead roundabout	38.9	42	44.6	33.5	26.1	30.9	29	21.5	28.4	33.4	20.7	31.5	55.9	33.6	100.0	N	30.2
119	Kirkshaws Rd, Coatbridge	40.9	52.6	47.3	40	35.8	33.2	34.1	29.8	38.8	34.3	34.5	47.5	54.2	40.2	100.0	N	36.2

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
120	Watsonville (ASDA) Motherwell	23.6	34.1	21.8	26.5	30.3	24.6	23.1	14.6	17.6	25.7	17.6	27.6	30	24.4	100.0	N	22.0
121	Flannigan Grove, Bellshill	22.1	20.2	23.7	29.7	21.9	22.7	17.6	11.7	17.5	24.9	19.3	29.7	22.2	21.8	100.0	N	19.6
122	Main Street Mossend	29.7	22.8	30.7	38.8	38.1	38	33.4	29.6	32.7	30.6	20.5	37.9	40.1	32.5	100.0	N	29.3
123	Hamilton Rd, Orbiston, Bellshill	22.6		29.5	35.1	26.4	26.3	28.2	17.9	26.9	26.6	21.1	18.3	28.5	25.6	92.3	N	23.1
124	Scotmid, Tannochside	25	31.1	33.7	33.5	28.6	26.9	25.8	16.1	25.6	33.1	23.6	42.8	26.6	28.6	100.0	N	25.8
125	Main Street, Near Bellshill Academy	19.4	22.8	21.8	23.5	19.3	17.1	17.4	9.9	16.7	19.6	13.9	29.5	18.7	19.2	100.0	N	17.3
126	Main Street Near / at Motherwell Rd	24.6	36.1	28.2	23.2	22.8	29.6	26.6	13.9	22.1		15.5	26.2	18.3	23.9	92.3	N	21.5
127	Main Street, near /at Tesco delivery road	22.4	28.2	24.9	21.8	21	18.8	20.8	9.7	16.4	20.3	16.8	22.2	24.3	20.6	100.0	N	18.5
128	Matalan Wishaw	29.4	31.9	24.2	26.4	27	24.2	29	21.3	27.1	31.5	23.4	27.9	33.4	27.4	100.0	N	24.7
129	Newmains Police Station	30.4	42.6	36.8	35.6	38	41.2	37	26.8	31.1	38.1	40.1	52.7	25.3	36.6	100.0	N	32.9
130	Main St (Bottom) Wishaw	16.1	20.9	19.2	18.1	17.9	17.3	16.1	10.3	18.2	22.2	12.8	24.1	15.4	17.6	100.0	N	15.8
133	Coatbridge 1, Bank Street	40.6	49.9				32.3	35.2	21.7	28.8	18.1	40.8	59.3	30.5	35.7	76.9	N	32.1

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
134	Coatbridge 2, Bank Street	27.8		29.9	28.1	41	19.8	21.7			24	28.3	36.7	20.6	27.8	76.9	N	25.0
135	Grahamshill Street Airdrie	42.6	57.5	37.2	42.9	45.6	34.7	40.4	30	37.9	44.9	42.2	51	52.2	43.0	100.0	N	38.7
136	Airdrie 3, Springwells Cres	21.8	28.3	19.1	19.9	20.5	14.8	12.1	8.9	10.5	16.9	20.8	30.1		18.6	92.3	N	16.8
137	Auchenkilns, Cumbernauld	22.4	29.4	30.3	18.5	28.5	19.5	18.8	13.7	17.2	21.9	23.7	33.9	21.3	23.0	100.0	N	20.7
138	Chapelhall Main Street	27.3	25.3	34.8	24.1	25.8		22.5	16.5	19.6	26.1	28.4	36.6	28.3	26.3	92.3	N	23.6
139	Lauchope Street, Chapelhall	44.7	37.6	20.6	36.4	31.1		36.6	33	40.1	44.5	44.9	52.2	52.6	39.5	92.3	N	35.6
140	Coatbridge, Dundyvan Rd	28.8	33.5	21.7	33.5	29.7	21.9	24.8	5.6	18.4		26.2	45.8	28.6	26.5	92.3	N	23.9
141	Harthill main Street (1)	13.6	19.9	10.2	19.4	19.9	16.7	19	2.8		16.8	19.1	25.4	16.5	16.6	92.3	N	14.9
142	Salsburgh (House no 337), R15	12.6	17.4	9.8	25	29.4	21.5	22.7		38.7	25.8	19	27.7	25.9	23.0	92.3	N	20.7
143	Harthill Main Street (2)	21.2	22.1	17.3	22.6	22.2	17.6	20.4	4.4	19.4	21.5	22.3	39	27.5	21.3	100.0	N	19.2
144	Constarry Road, Croy 1	14.9	31	12	17.3	24.3	14.3	16.7	2.9	14.3	17.1	17.8	32.2	13	17.5	100.0	N	15.8
145	Constarry Road, Croy 2	13.8	33.9	14	19	24	15	17.2	2	16		17.7	28.9	25.8	18.9	92.3	N	17.0
146	Constarry Road, Croy 3	16.1	34.2	12.2	17.7	23.3	16.1	18	6.2	14.7	18.3	19.6	35.2	30.1	20.1	100.0	N	18.1
147	Bank St, Coatbridge	37.7	41	23.7	44	34.8	35.9	33.9	12.7	29.7	33.9	39	47.9	44	35.2	100.0	N	31.7
148	Main St, Chapelhall R32	31.3	47		40.1	31.1	29.1	40.3	9.8	26.5	36.2	39.3			33.1	76.9	N	29.8

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualise d?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
149	Main St, Chapelhall R33	33.2	48.4	28.8	66.6	37.8	31.3	29.6	17.1	29	36.8	39	56.7	42.7	38.2	100.0	N	34.4
150	Eastfield Rd, Cumbernauld	26.4	34.4	30.6	34.5	35.8	27.8	28.6	11.8	25.3	31.7	30.2	42	45.1	31.1	100.0	N	28.0
151	Holytown Main Street	11.3	24.8		27.8	28.8	21.4	21.7	7	21.6		23.9	28.7	35	22.9	84.6	N	20.6
152	Coatbridge Road Shops Townhead	34.8	41.1	23.1	31.8	36.3	29.4	31.3	7.5	29.1	34.2	33.1	50.7	50.5	33.3	100.0	N	30.0
153	House Number 72, Townhead Rd	29.8	33.1	23.2	25.2	21.1	18.5	18.2	4.2	17.7	21.8	22.5	36.4	37.5	23.8	100.0	N	21.4
154	Sunnyside Road Coatbridge	43.6	55.2	22	41.8	47.8	33.4	30.9	10.8	28.5	38.1	31.8	47.8	43	36.5	100.0	N	32.9
156	Stirling Street Airdrie	48.6	61.3	33.9	44.7	40.9	38.6	41.2	12		38.9	46.4	52.3	34.2	41.1	92.3	N	37.0
157	31 Station Road Muirhead	37.3	24.1	49.6	26.3	30.5	24.2	20.5	21	27.9	27.6	21.1	41.8	38.9	30.1	100.0	N	27.1
158	Croftmoraig Avenue	26.2	25.8	35.4	18.2	18.9	15.5	17.3	14.2	22.7	21.5	17.4	30.8	29.1	22.5	100.0	N	20.3
159	Glenview Crescent	28.3	22.6	26.5	21.4	22.2	16.5	14.7		24.3	21.5	21.4	42.2	29.8	24.3	92.3	N	21.9
160	The Cuillins	27.5	23.5	35.5	20.9	19.3		14.5	15.1	20.2	23.2	16.7	32.5		22.6	84.6	N	20.4
161	Bridgend Crescent	16.1	18.3	28.5	19.4	15.6	15	11.9	12.7	17.2	17.6	12.4	23.5	23.6	17.8	100.0	N	16.0
162	Auchingoch Road	28.9	21.3	32.6	16.7	21.6	15.7	14.9	16.1	20.7	20.9	17.6	30.3	19.6	21.3	100.0	N	19.2
163	191 Carfin Steet, Newstevenso n	17.6	22.3	20.8	16.5	15.8	13.8	14	20.4	16.9	29.8	11.6	28.8	20.8	19.2	100	N	17.2

North Lanarkshire Council

Site ID	Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ($\mu\text{g.m}^{-3}$)	Data capture 2014	Requires annualised?	Bias adjusted annual mean ($\mu\text{g.m}^{-3}$) (0.9 adj factor)
164	Deeds Street Airdrie	116			51.4	40.7	44	13.2	36.9	25	36.4	49.7			45.9	81.8	N	41.3
165	12 Morar Way, Carfin	19.3	21.3	23.1	16.4	15.6	16.5	14.1	27.6	17.3	22.3	13	36.1	23.5	20.5	100	N	18.4

Appendix B: Diffusion Tube Locations

Figure B.1 Map of Non-Automatic Monitoring Sites – Cumbernauld 1

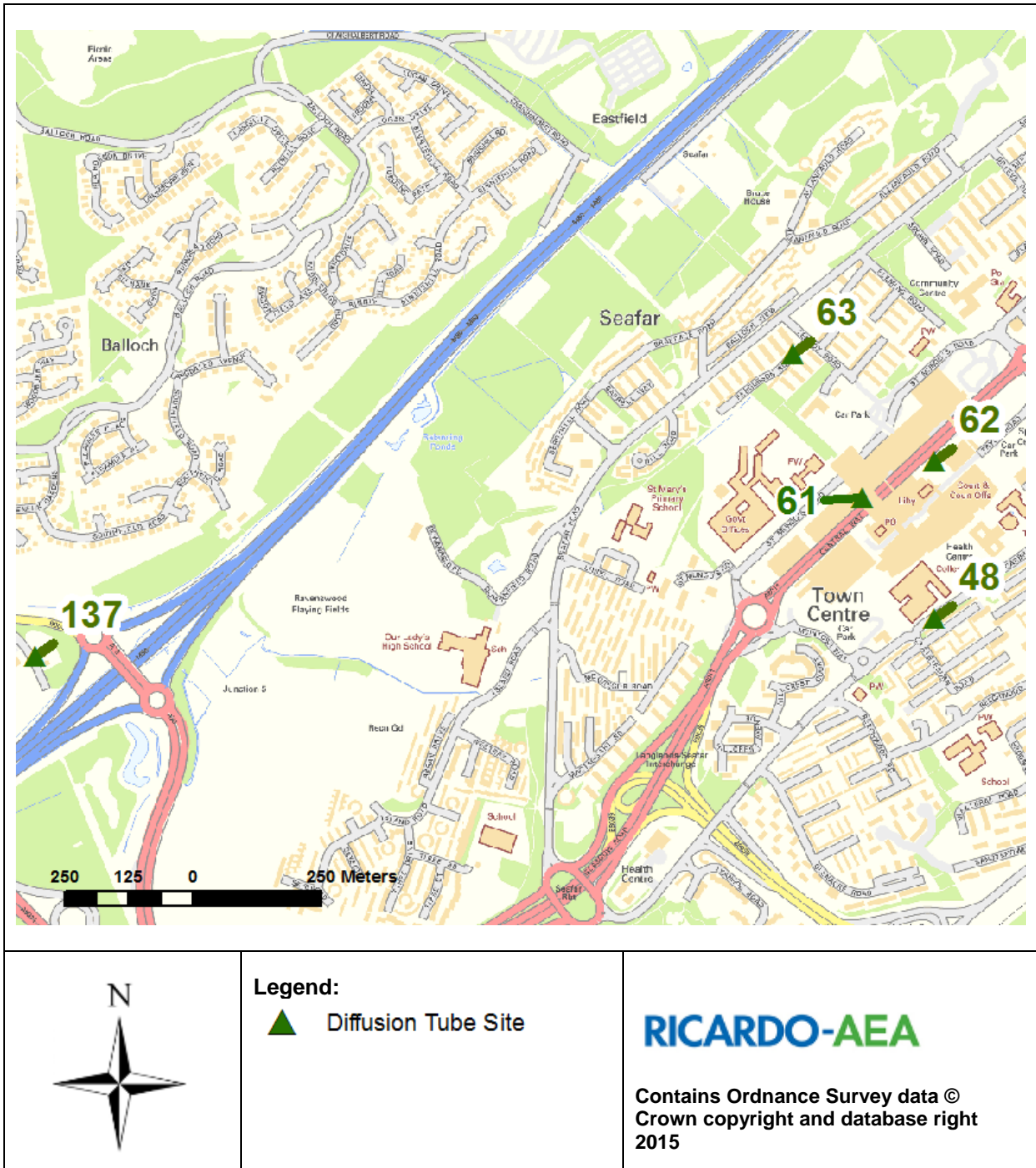


Figure B.2 Map of Non-Automatic Monitoring Sites – Cumbernauld 2

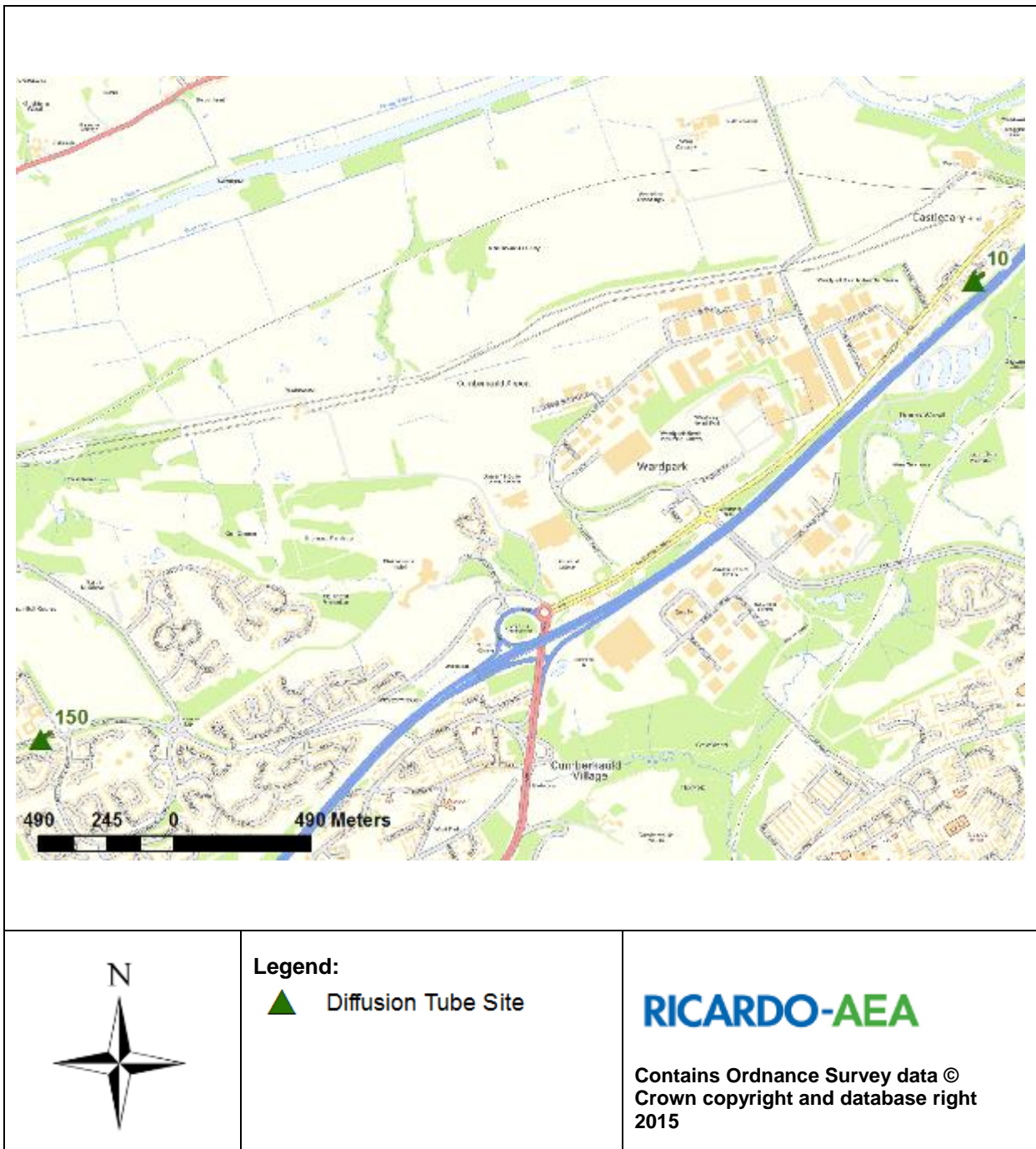


Figure B.3 Map of Non-Automatic Monitoring Sites – Kilsyth and Croy

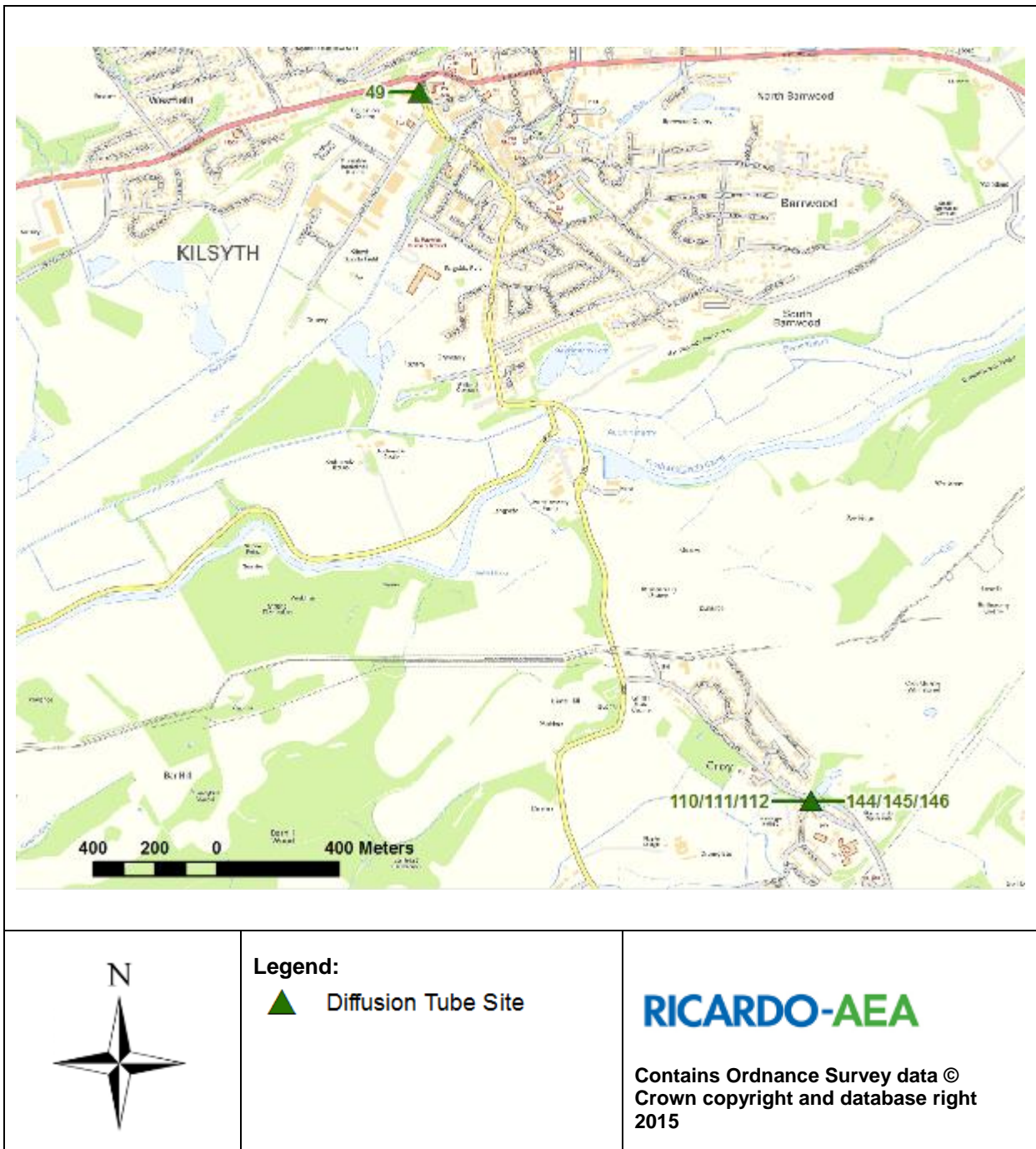


Figure B.4 Map of Non-Automatic Monitoring Sites – Muirhead and Moodiesburn

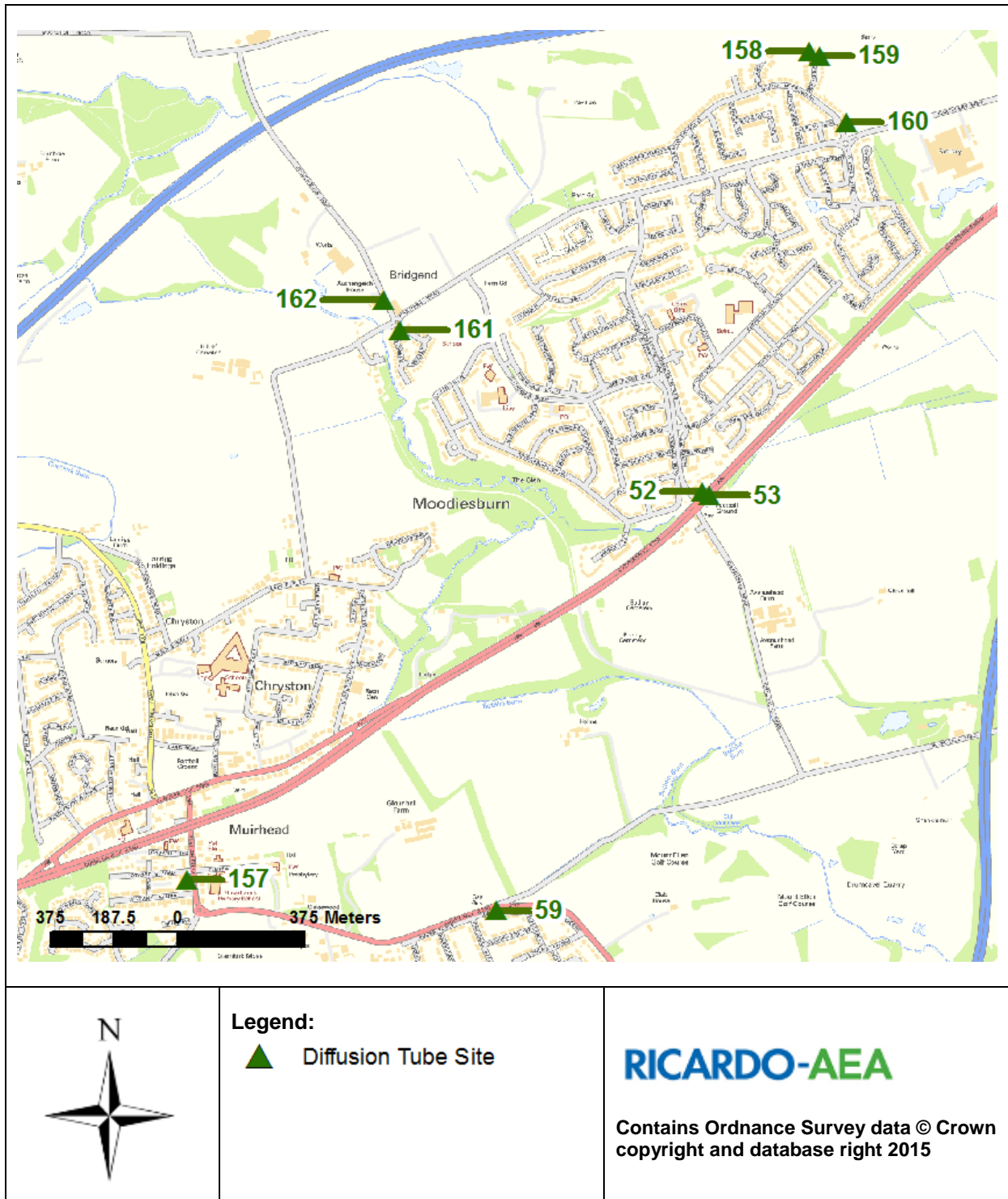


Figure B.5 Map of Non-Automatic Monitoring Sites – Steps

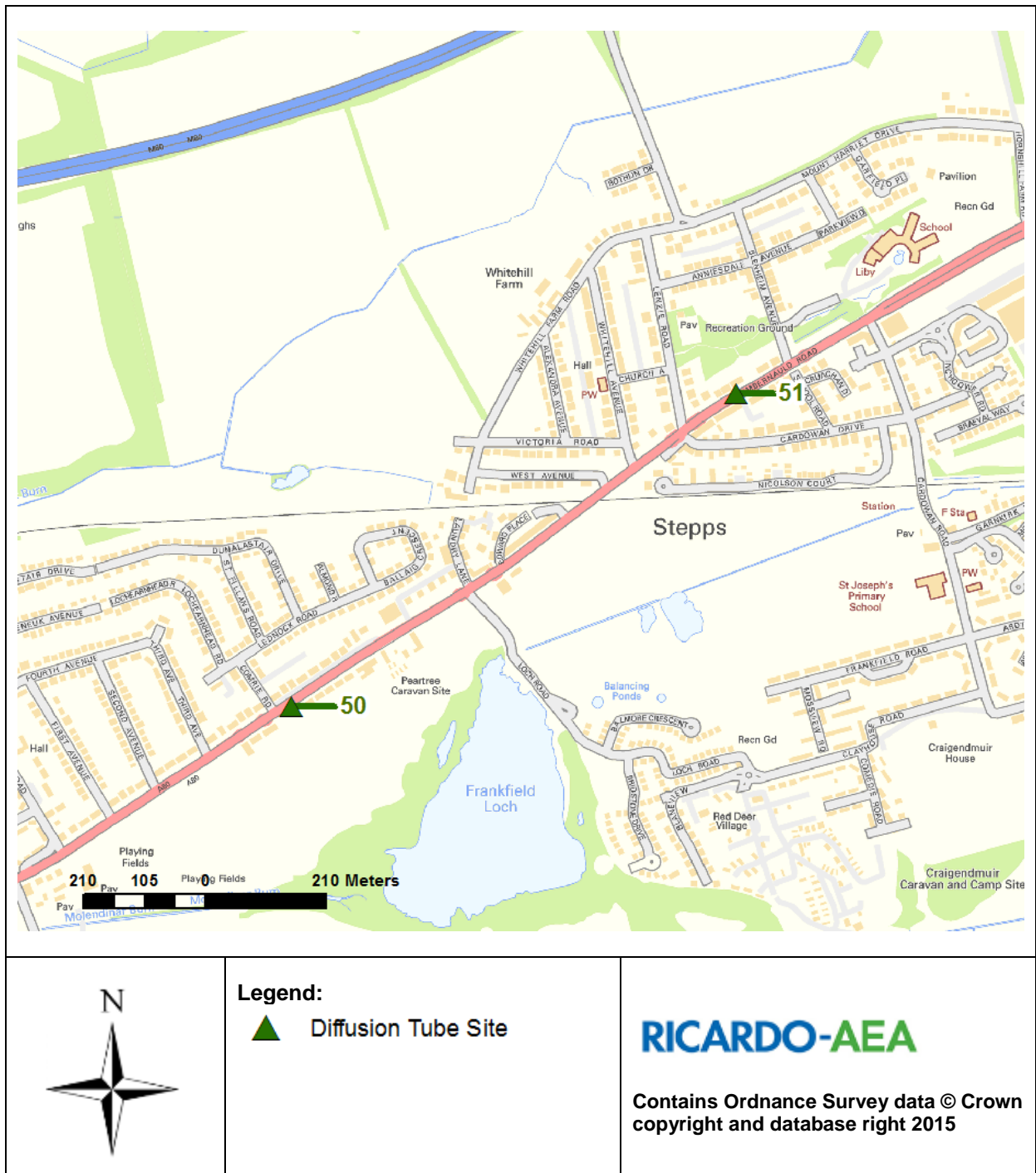


Figure B.6 Map of Non-Automatic Monitoring Sites – Glenboig

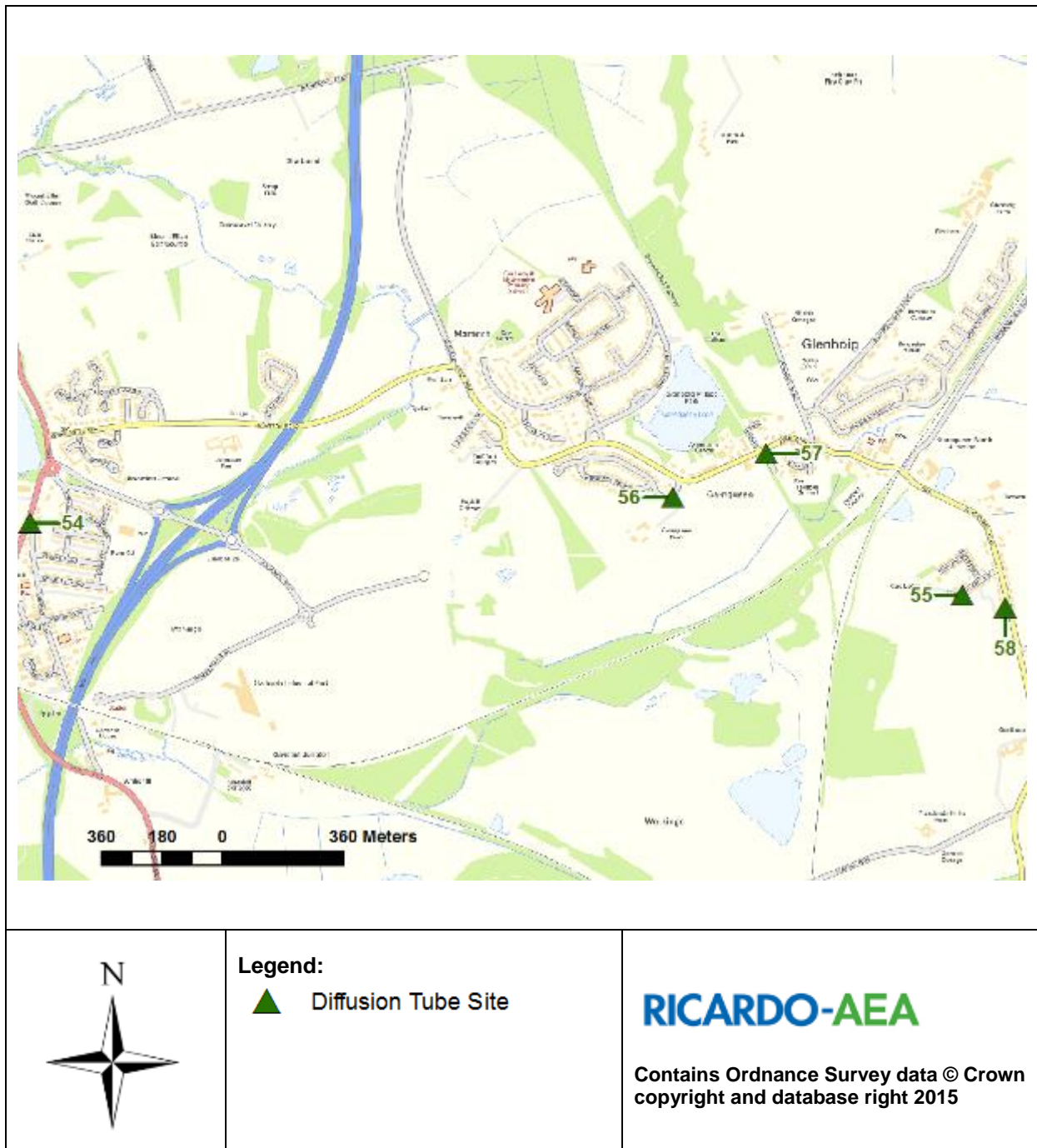


Figure B.7 Map of Non-Automatic Monitoring Sites – Chapelhall

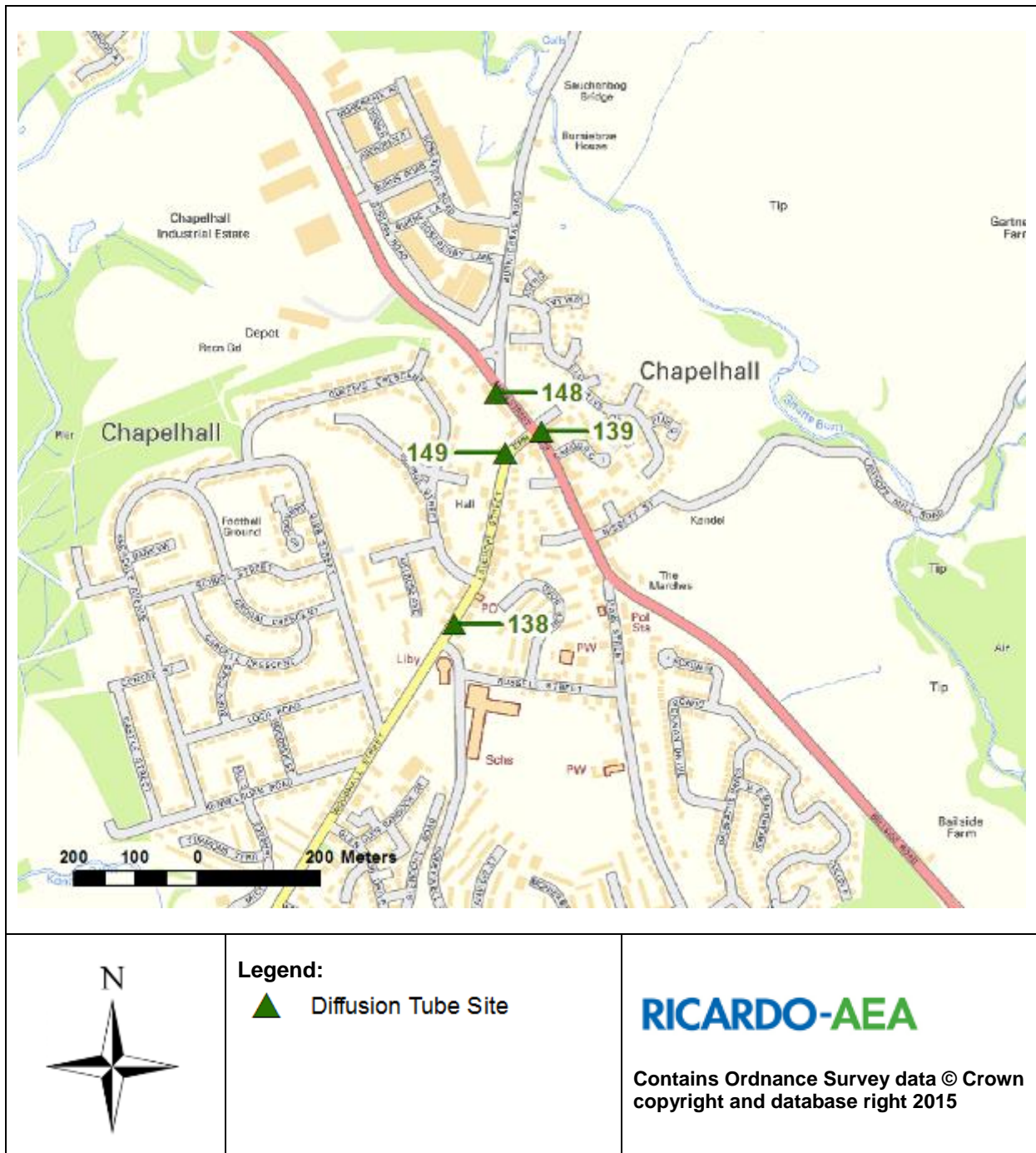


Figure B.8 Map of Non-Automatic Monitoring Sites – Airdrie

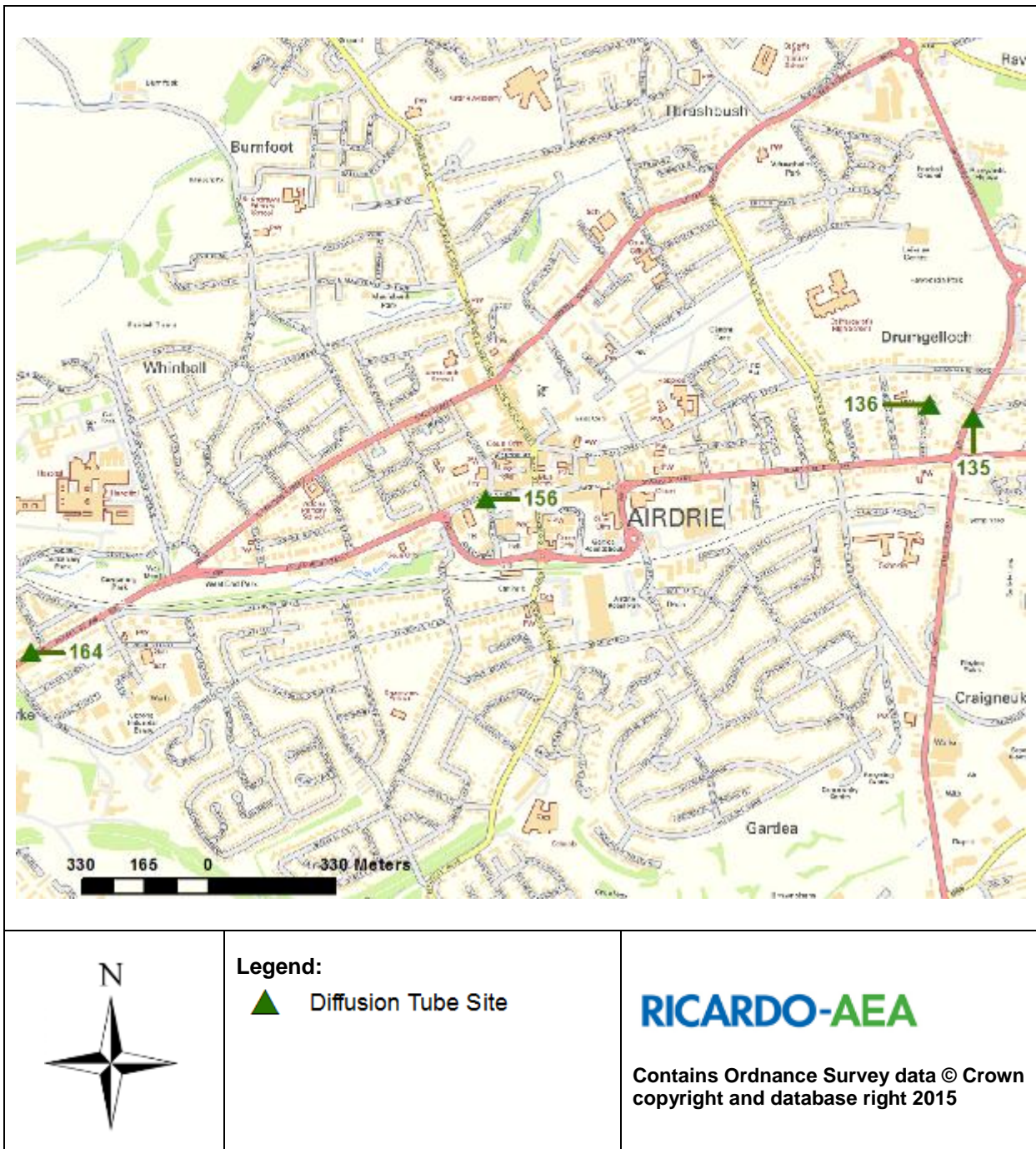


Figure B.9 Map of Non-Automatic Monitoring Sites – Townhead and Coatbridge

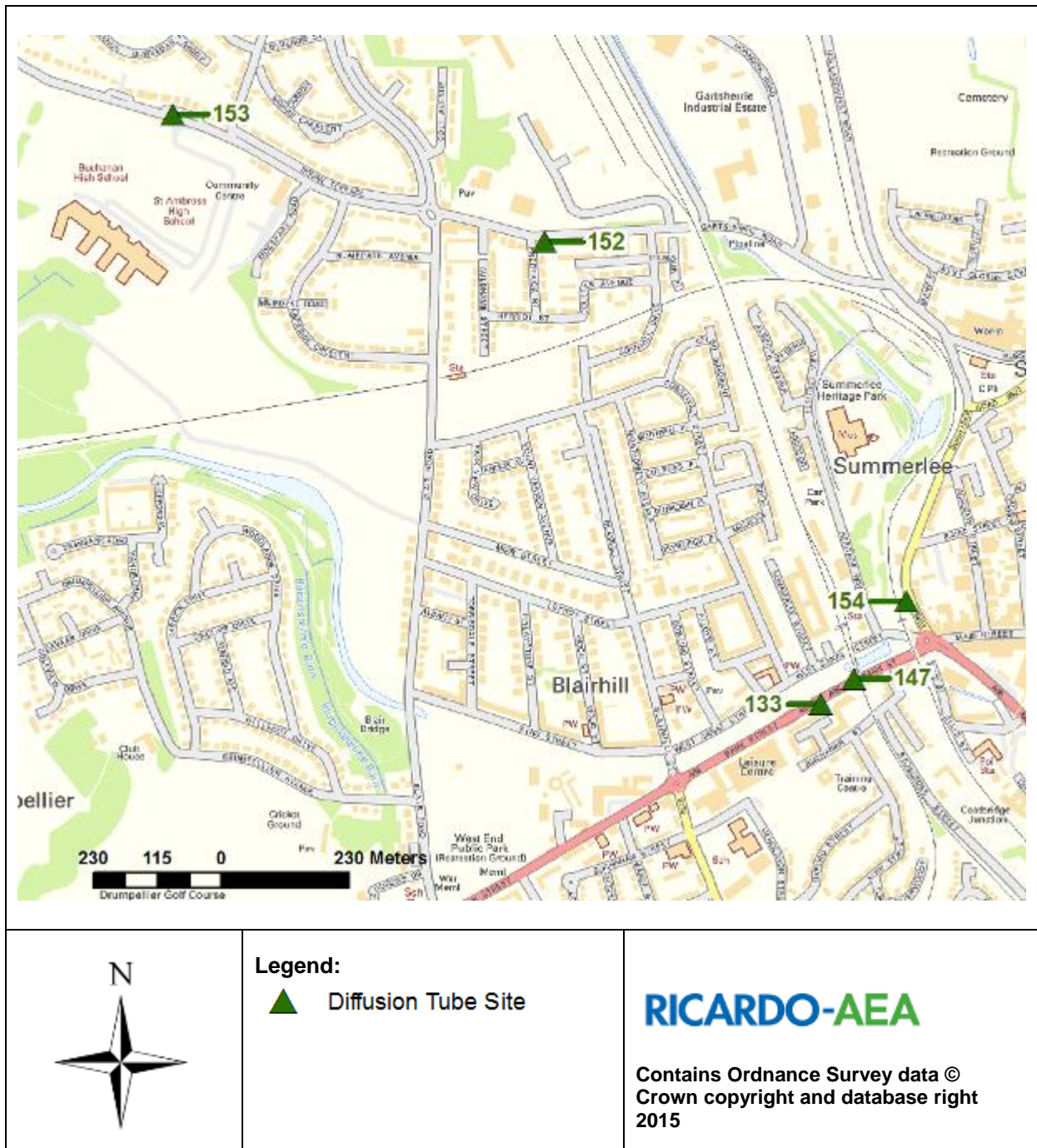


Figure B.10 Map of Non-Automatic Monitoring Sites – Coatbridge 1

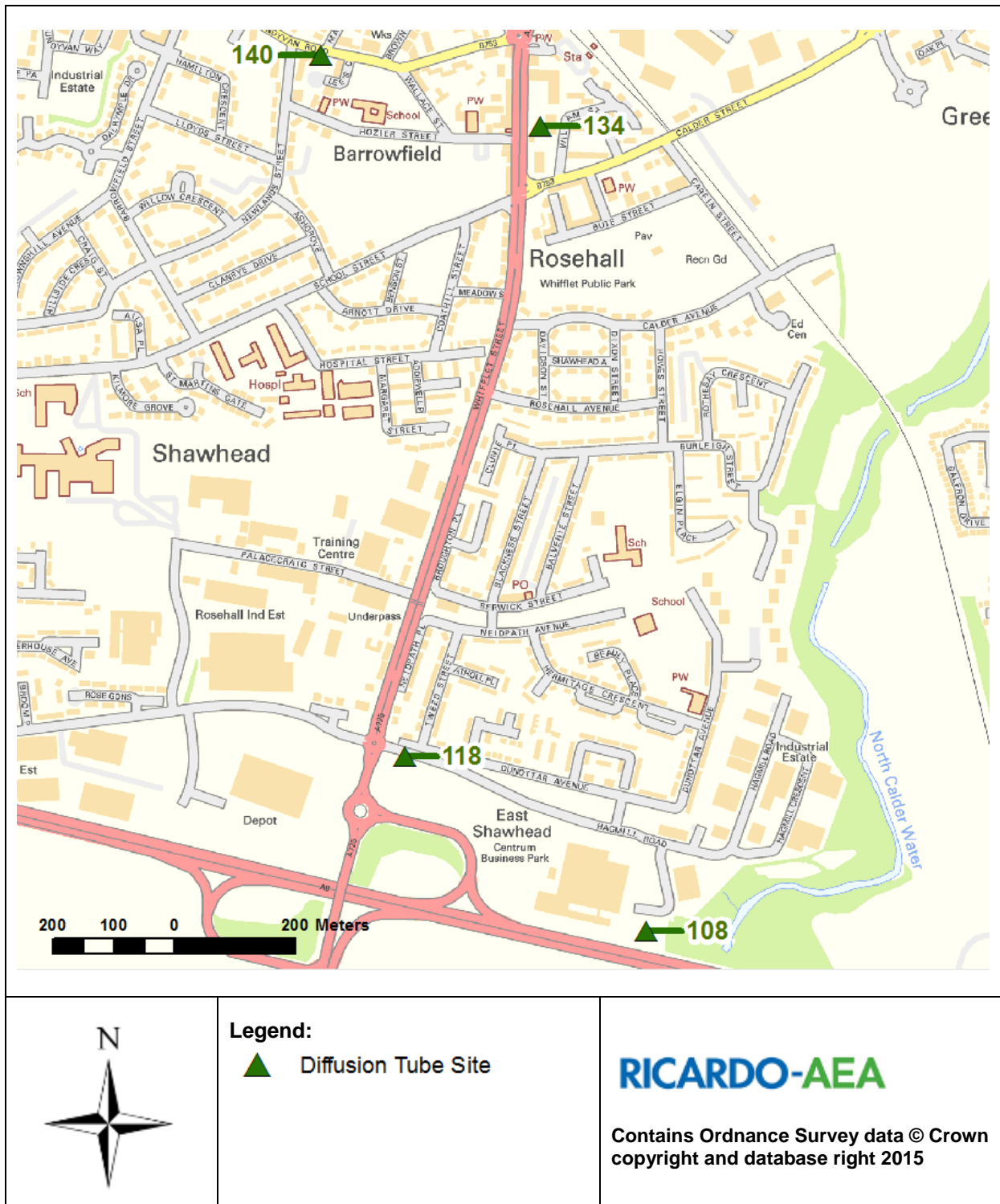


Figure B.11 Map of Non-Automatic Monitoring Sites – Coatbridge 2

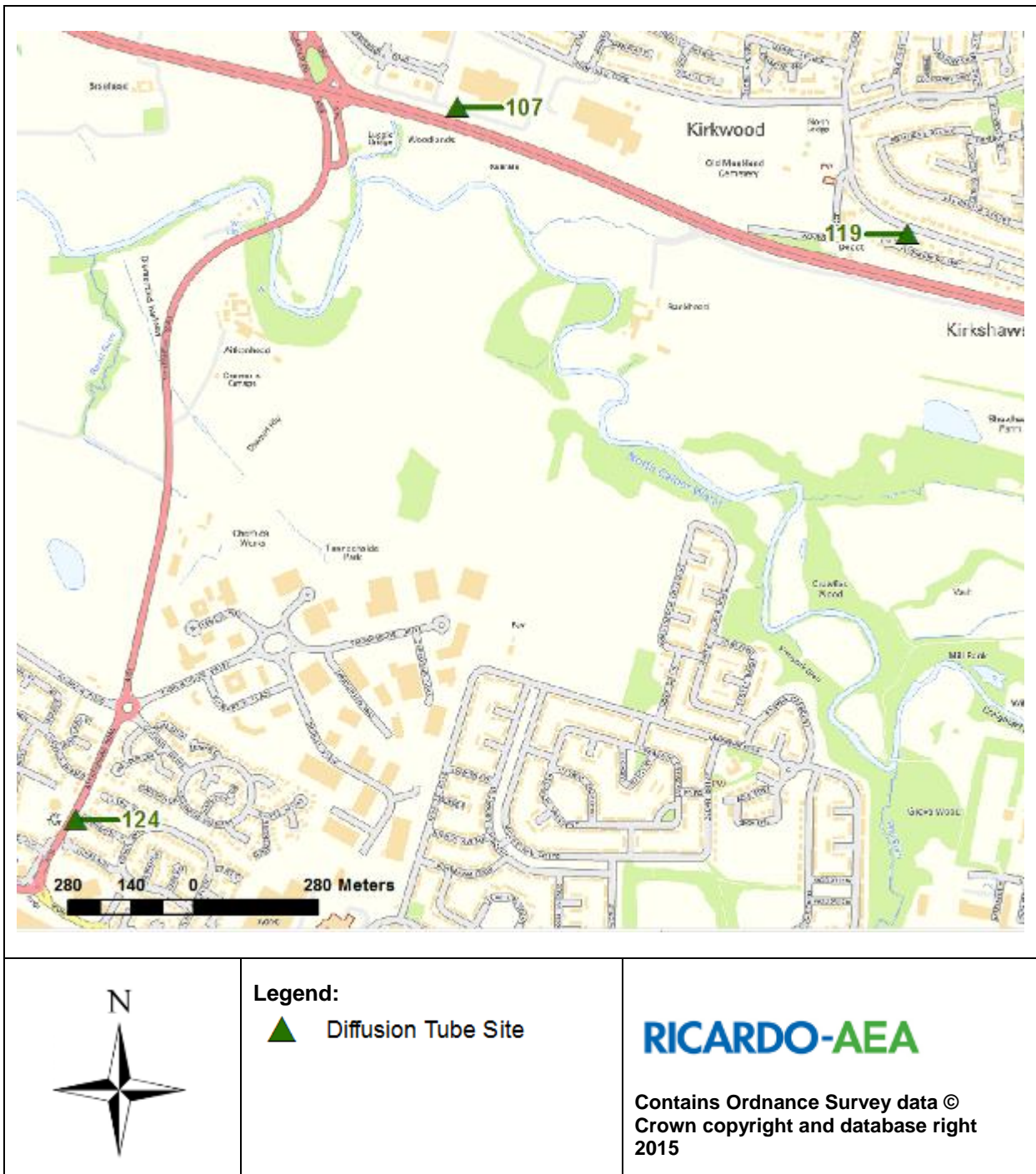


Figure B.12 Map of Non-Automatic Monitoring Sites – Bellshill

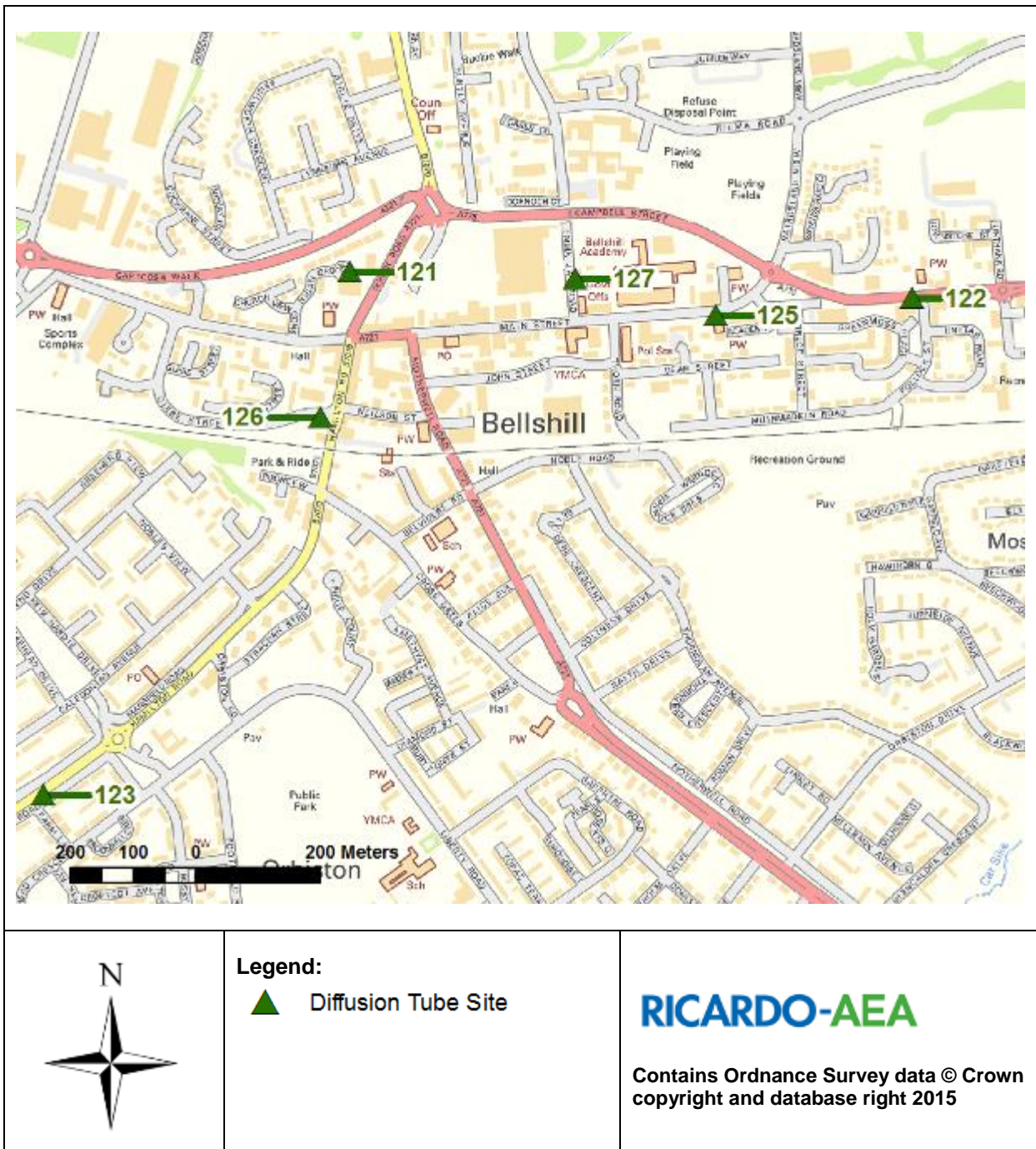


Figure B.13 Map of Non-Automatic Monitoring Sites – New Stevenston

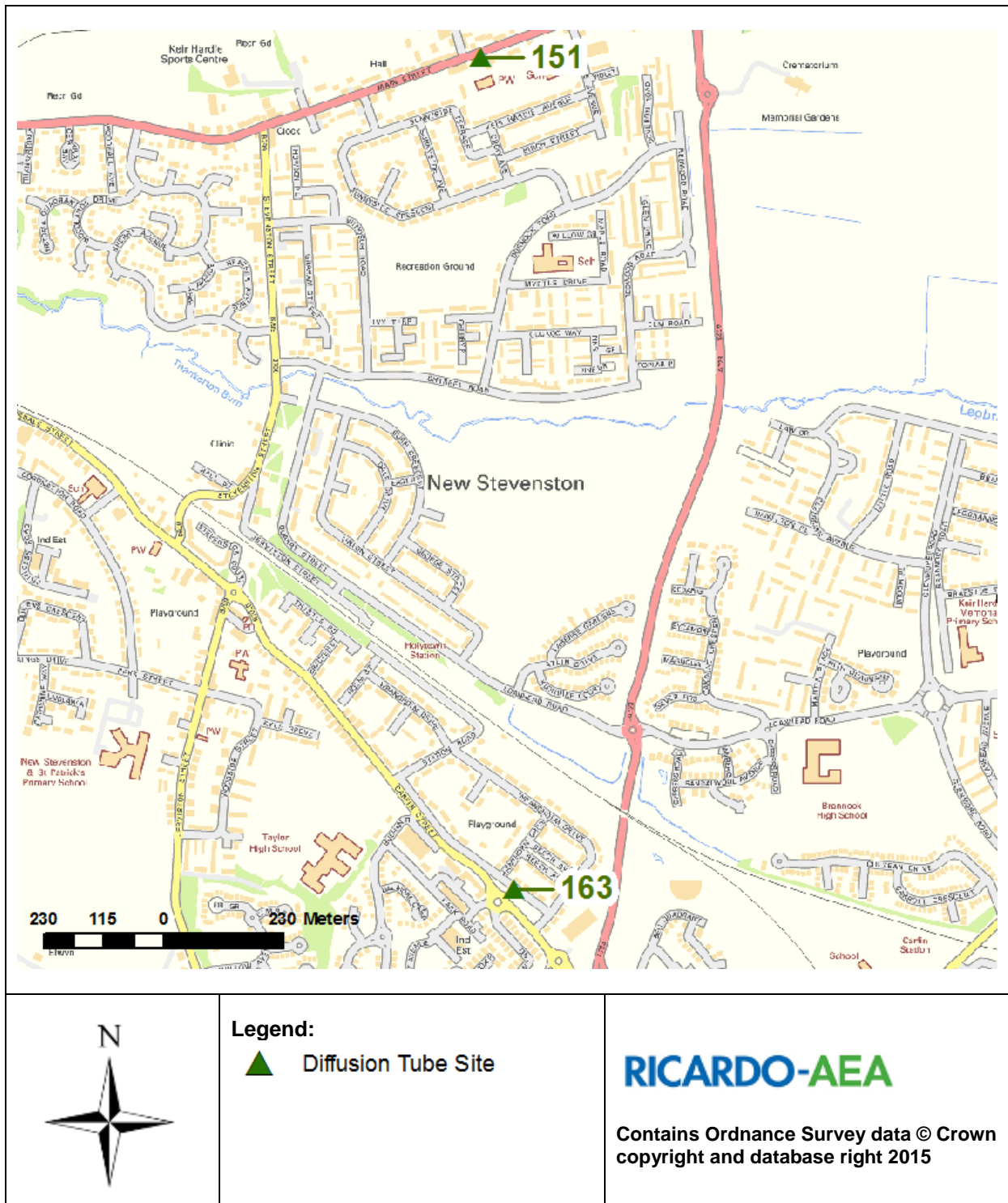


Figure B.14 Map of Non-Automatic Monitoring Sites – Motherwell

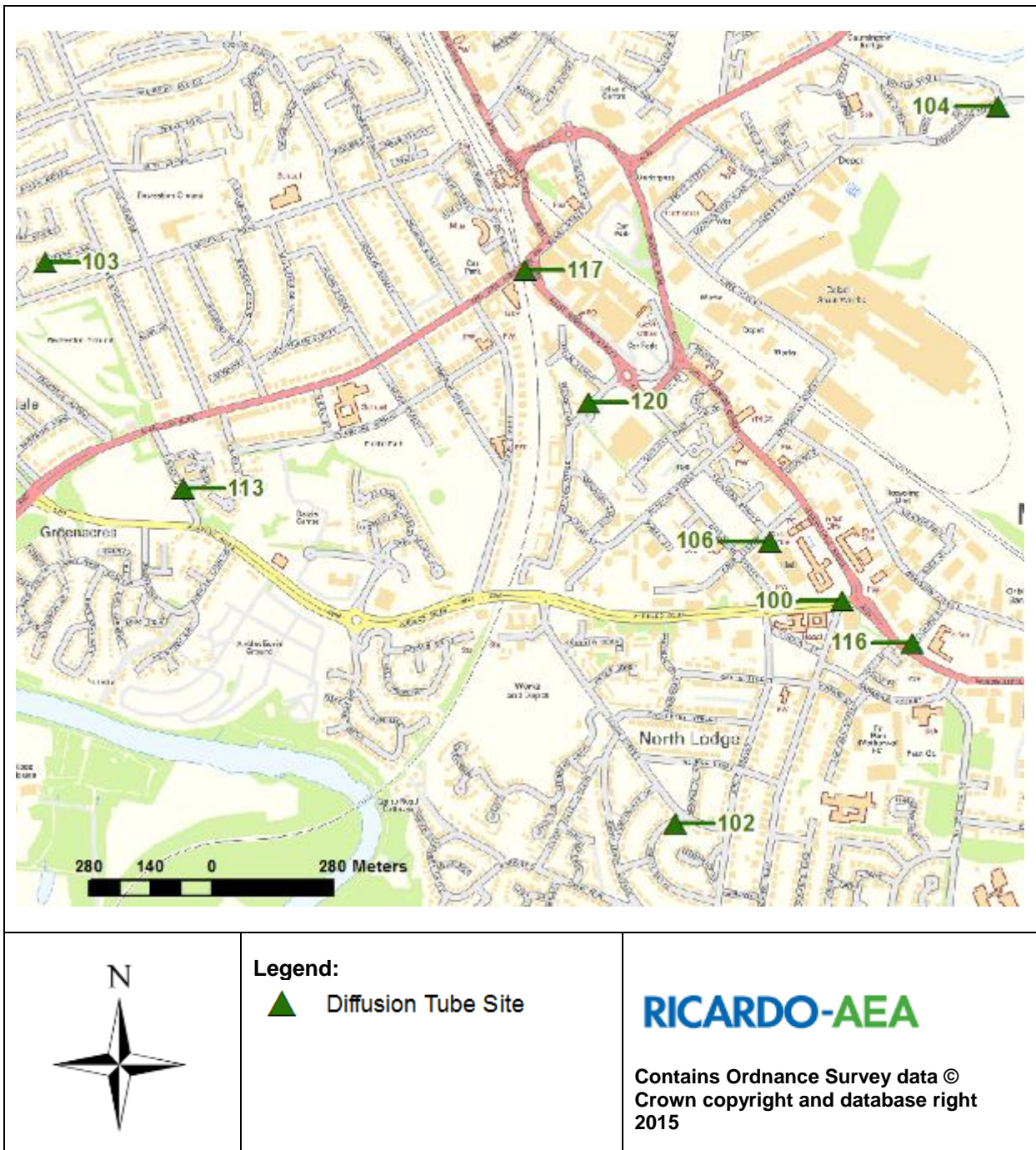


Figure B.15 Map of Non-Automatic Monitoring Sites – Carfin

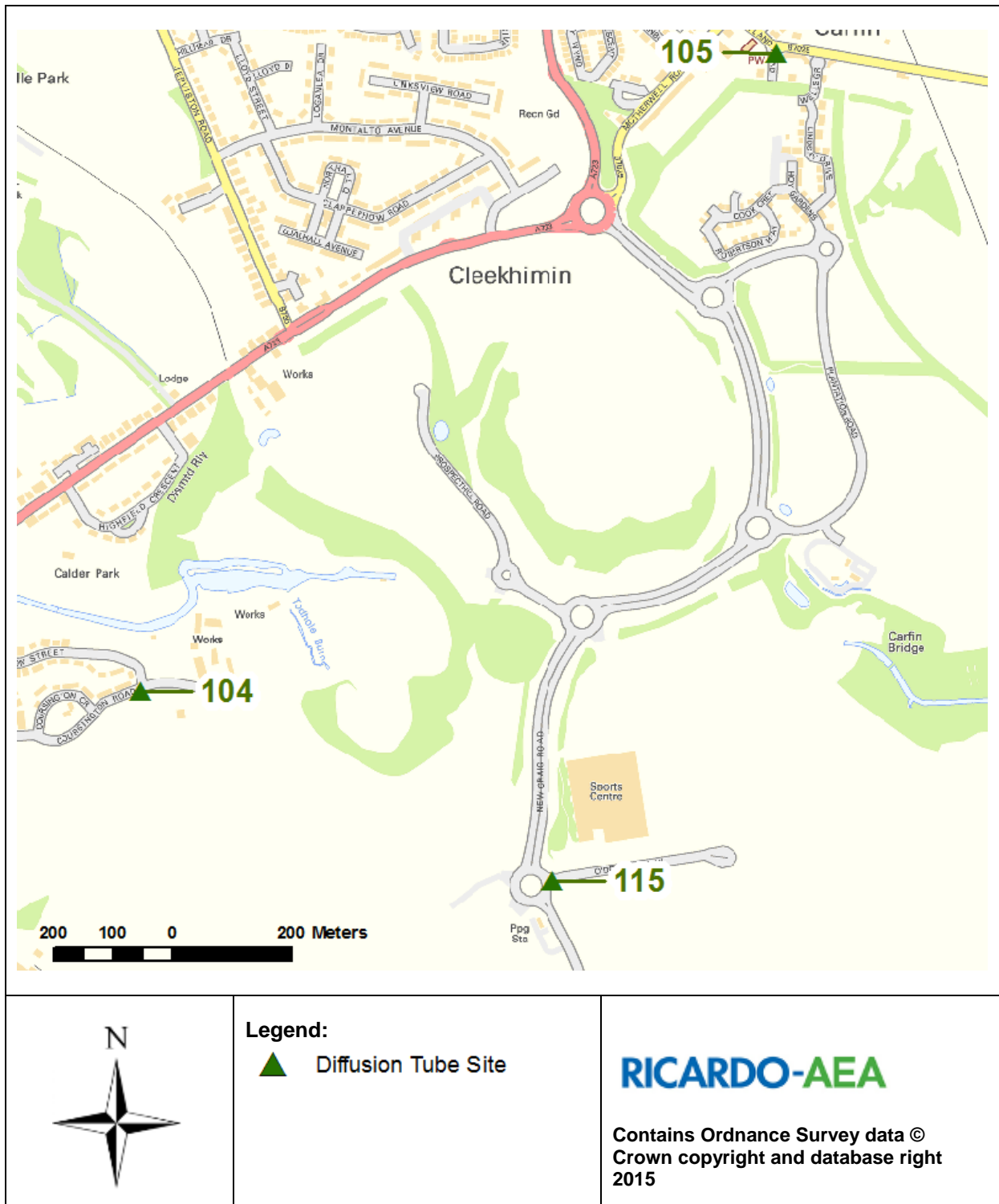


Figure B.16 Map of Non-Automatic Monitoring Sites – Motherwell and Wishaw

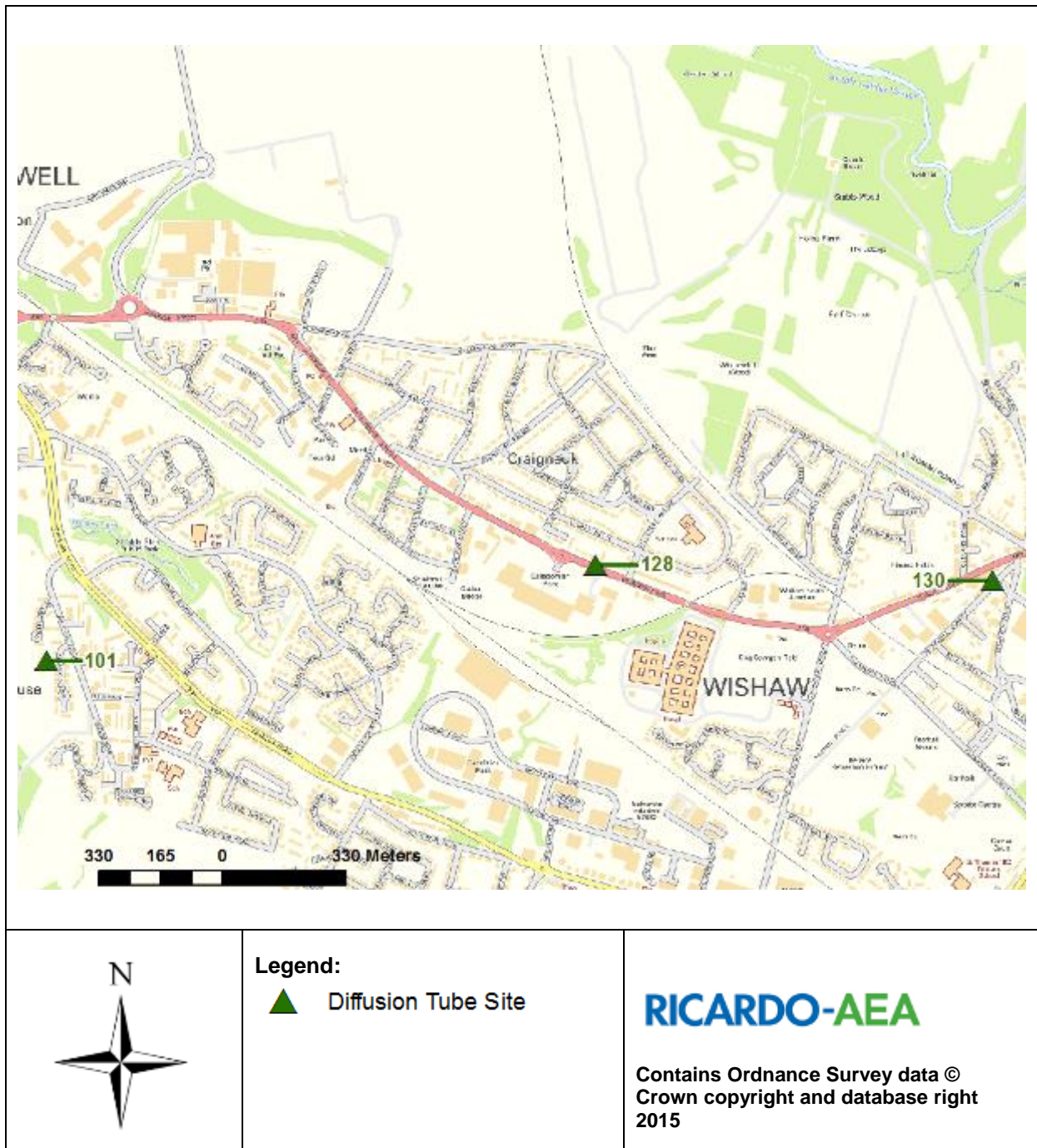


Figure B.17 Map of Non-Automatic Monitoring Sites – Harthill

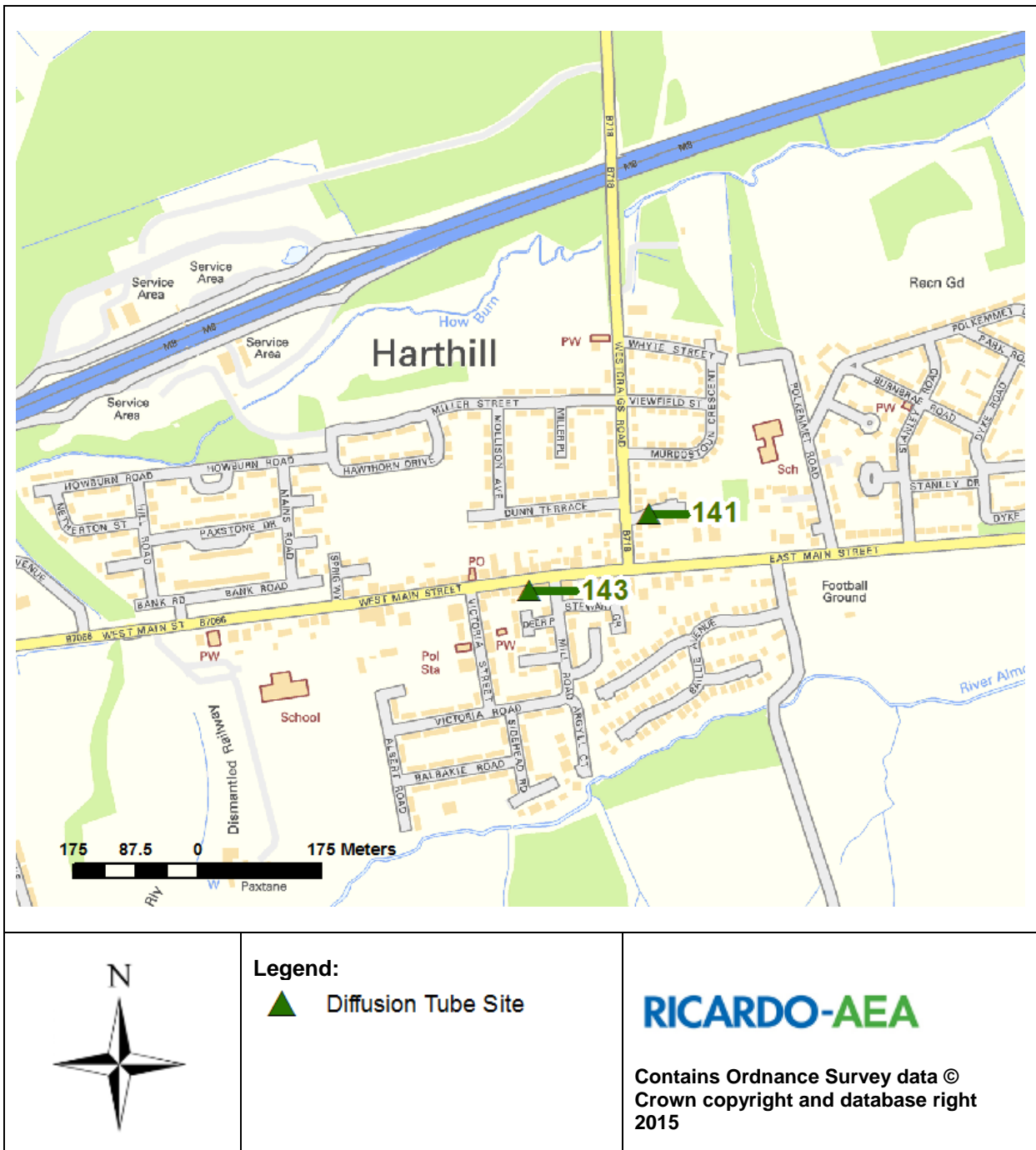


Figure B.18 Map of Non-Automatic Monitoring Sites – Harthill 2

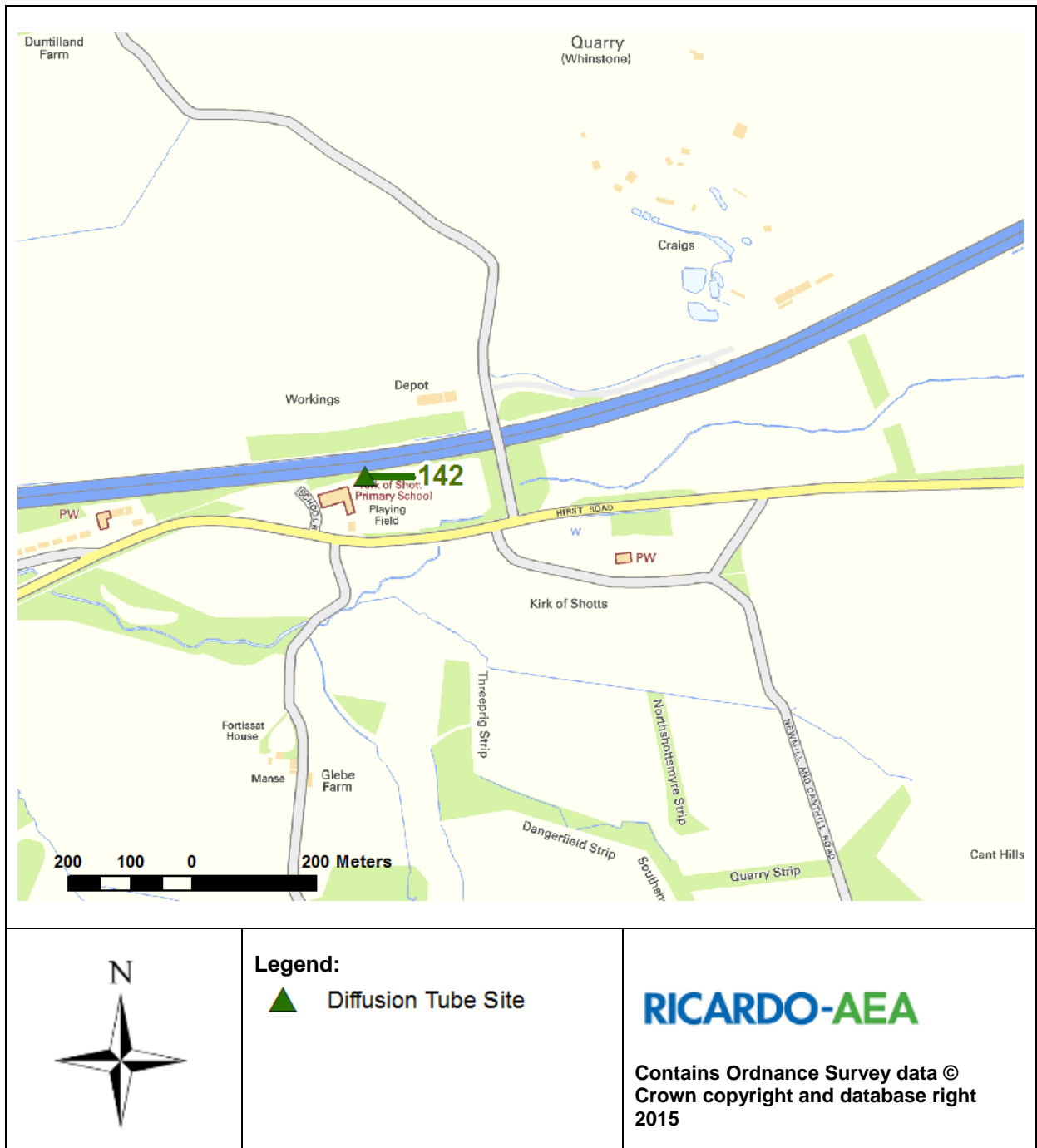


Figure B.19 Map of Non-Automatic Monitoring Sites – Newmains

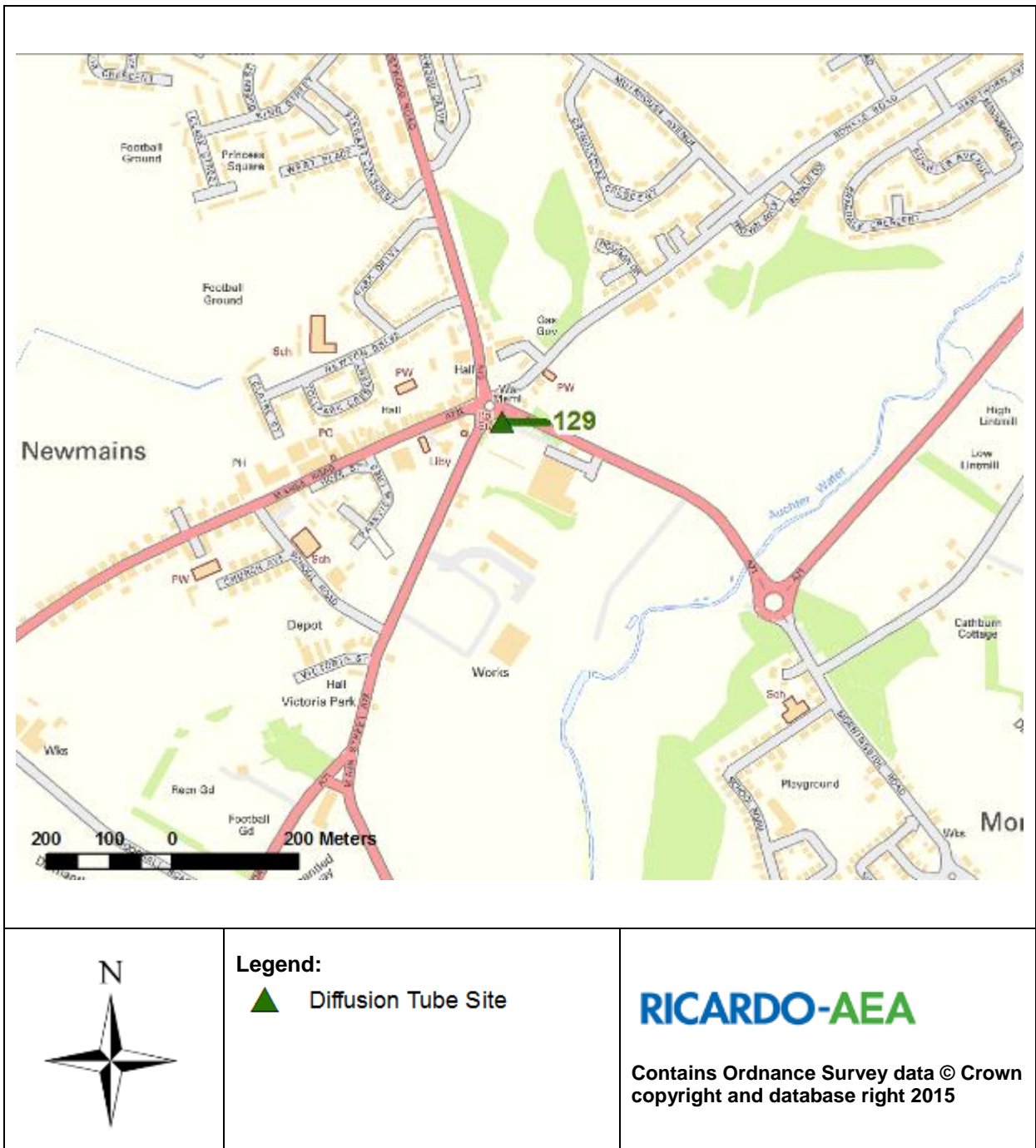


Figure B.20 Map of Non-Automatic Monitoring Sites – Overtown

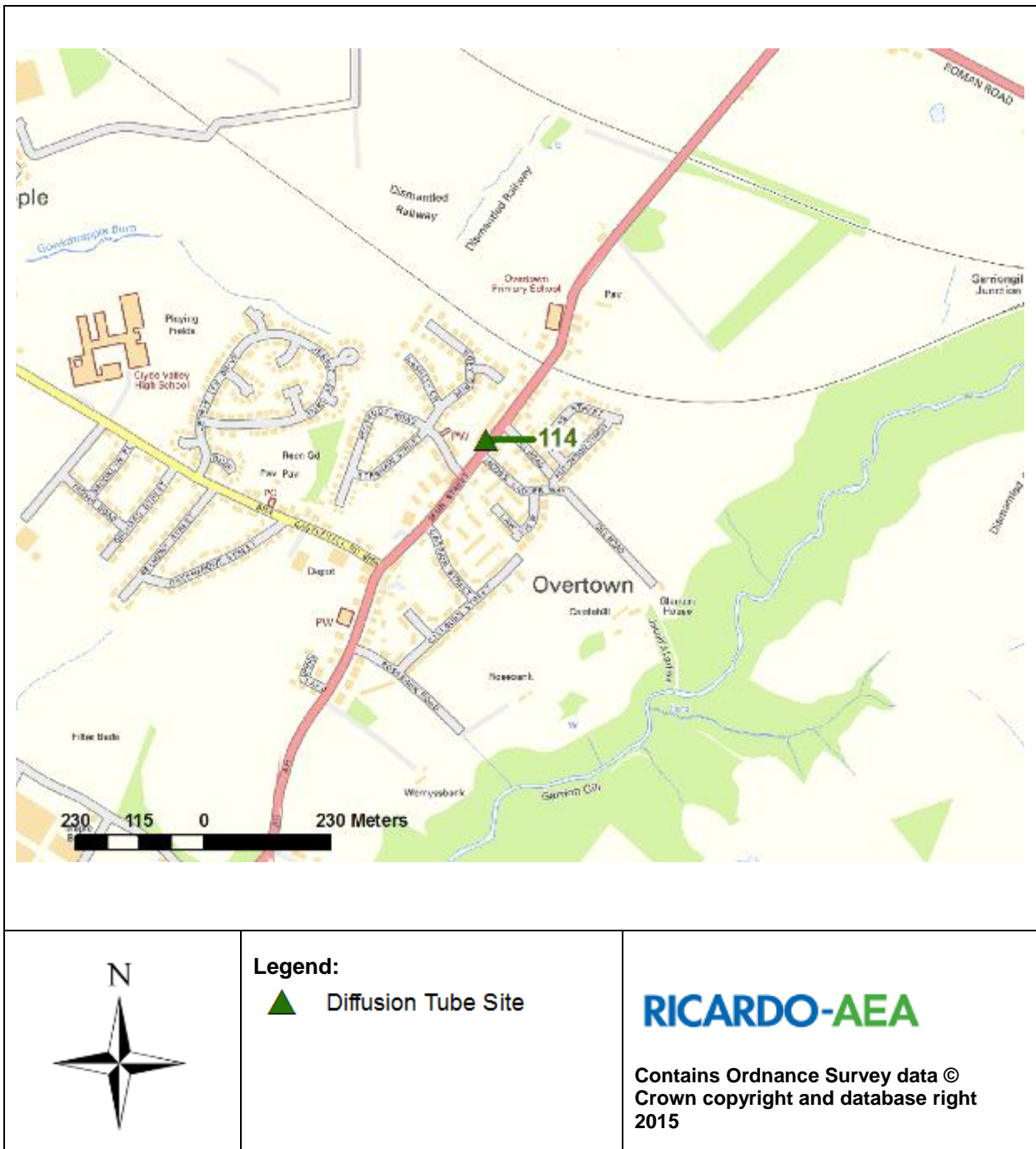


Figure B.21 Map of Non-Automatic Monitoring Sites – Stand

