

2013 Air Quality Progress Report for South Lanarkshire Council

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

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Executive Summary

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

A review of monitoring data from 2012 has concluded that:

- An NO₂ annual mean concentration of 56 μg.m⁻³ which in excess of the 40 μg.m⁻³ UK wide objective was measured at the Raith Interchange automatic monitoring site. The annual mean PM₁₀ concentration of 26 μg.m⁻³ measured during 2012 was also in excess of the Scottish PM₁₀ objective with 16 exceedances of the 50 μg.m⁻³ daily-mean objective. This site is however located at the roadside approximately 60m from the façade of the nearest residential property. Based on a distance correction calculation to predict the annual mean NO₂ concentration at the nearest location of relevant exposure; and DMRB screening calculation conducted for the 2012 Updating and Screening assessment it is considered unlikely that either the NO₂ or PM₁₀ annual mean objectives are being exceeded at locations of relevant exposure close to Raith Interchange.
- The reported NO₂ annual mean of 42 μg.m⁻³ at the Hamilton automatic analyser site was also in excess of the 40 μg.m⁻³ objective; however data from this site has not been not been reported as ratified and is presented as a provisional result only. Annual mean NO₂ concentrations were also measured at two diffusion tube locations in Hamilton where the predicted annual mean at the nearest location of relevant exposure was in excess of the 40 μg.m⁻³ objective. A Detailed Assessment of NO₂ in Hamilton is scheduled for completion in early in 2014 when sufficient ratified automatic monitoring data will be available to inform the study.
- An annual mean PM₁₀ concentration in excess of the 18 μg.m⁻³ objective was measured at the Rutherglen automatic monitoring site. South Lanarkshire Council is currently in the process of declaring an AQMA for PM₁₀ at Rutherglen.

The review of local developments has not identified any locations where there may be a risk of the air quality objectives being exceeded; no additional air quality assessment is recommended at this time.

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1 Introduction

1.1 Description of Local Authority Area

South Lanarkshire is a diverse area containing both densely populated industrial towns and large expanses of rural landscapes. It stretches from the Glasgow suburbs south to the open moorlands of the Leadhills via the Clyde Valley. The South Lanarkshire district shares its borders with a number of authorities from Dumfries and Galloway and Scottish Borders in the south, to East Ayrshire, East Renfrewshire, City of Glasgow, North Lanarkshire and West Lothian to its North, East and West boundaries.

The Council District can be described in four distinct areas:

- Cambuslang and Rutherglen area;
- Clydesdale.
- East Kilbride area; and
- Hamilton area;

The Cambuslang and Rutherglen areas are situated at the north-western tip of South Lanarkshire, bordering Glasgow City. The towns are commonly considered part of greater-Glasgow which is made up of a mix of both densely populated area suburbs and areas of large scale former industrial land use. The Hamilton area includes Blantyre, Bothwell, Larkhall and Stonehouse as well as the county town of Hamilton and many surrounding villages.

The East Kilbride area takes in the new town of East Kilbride and its surrounding villages as well as the small town of Strathaven. East Kilbride is a large new-town with high-technology industrial and extensive commercial activity, whilst Strathaven and the surrounding area is largely rural and agricultural.

The Clydesdale area forms the largest region in South Lanarkshire, and incorporates the southern and eastern areas of the district. The areas are largely rural and agricultural, dotted with several market towns, including Carluke, Lanark, Lesmahagow and Biggar as well as numerous villages.

There are a number of industrial sites located within South Lanarkshire, however most manufacture higher technology products and do not generate significant emissions to the air. The South Lanarkshire Council area is well served by an extensive road and rail network, including the M74 motorway, passing north to south through the council area.

1.2 Purpose of Progress Report

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

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Scotland** are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre μ g/m³ (milligrammes per cubic metre, mg/m³ for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Pollutant	Concentration	Measured as	Date to be achieved by
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 μ g.m ⁻³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	50 μg.m ⁻³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	40 μg.m ⁻³	Annual mean	31.12.2004
	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

Table 1.1: Air Quality Objectives included in Regulations for the purpose of LAQM in Scotland

1.4 Summary of Previous Review and Assessments

South Lanarkshire Council has completed a number of LAQM Review and Assessment reports. A brief summary of all previous reviews and assessments of local air quality in South Lanarkshire is presented in Table 1.2. A map showing the location and boundary of the existing air quality management area (AQMA) at Whirlies Roundabout in East Kilbride is presented in Figure 1.1.

Review/Assessment	Year	Outcome
Updating and screening assessment	2003	AQS objectives were likely to be met for all pollutants except for particulate matter (PM_{10}). Potential exceedances of the 2010 PM_{10} objective were identified at some busy roads and junctions.
Detailed Assessment of PM ₁₀ concentrations at Whirlies roundabout, East Kilbride	2005	Concluded that neither the annual mean objective nor the 24-hour objectives were likely to be exceeded in 2010.
Progress Report	2006	Reported monitoring data and local developments relevant to LAQM
Updating and screening assessment	2007	Concluded that the measured PM_{10} annual mean at Whirlies roundabout was in excess of the 2010 objective. Annual mean NO_2 diffusion tube measured close by was also in excess of the NO_2 objective. A detailed assessment of PM_{10} and NO_2 was recommended at Whirlies Roundabout.
Detailed assessment	2007	PM_{10} annual mean objective likely to be exceeded close to Whirlies Roundabout and that declaration of an AQMA be considered.
AQMA declaration at Whirlies Roundabout, East Kilbride	2008	Based on the conclusions of the 2007 detailed assessment an AQMA for PM_{10} was declared at Whirlies roundabout effective from the 28 th November 2008
Progress Report	2008	Measured annual mean NO ₂ was in excess of the 40 μ g.m ⁻³ objective at three locations; further monitoring was recommended at these locations. The annual mean PM ₁₀ measured at Whirlies Roundabout was in excess of the 2010 objective of 18 μ g.m ⁻³
Updating and screening assessment	2009	 Based on the measured PM₁₀ and NO₂ concentrations and a review of roads within South Lanarkshire the report recommended: A further assessment of PM₁₀ in the Whirlies AQMA; A detailed assessment of PM₁₀ and NO₂ at Rutherglen; A detailed assessment of PM₁₀ and NO₂ at Hamilton town centre; A detailed assessment of NO₂ in Lanark town centre; A detailed assessment of NO₂ at Main Street, Uddingston.
Progress Report	2010	Measured annual mean NO ₂ was in excess of the 40 μ g.m ⁻³ objective at three locations; further monitoring was recommended at these locations which has already been highlighted in 2009's U&SA. The annual mean PM ₁₀ measured at Main Street Rutherglen was in excess of the 2010 objective of 18 μ g.m ⁻³
Detailed Assessment at Rutherglen	2010	Annual mean PM_{10} concentrations in excess of the 2010 objective were predicted at multiple locations of relevant human exposure across the study area. Based on the modelling predictions it was considered necessary to declare an Air Quality Management Area (AQMA) within this area of Rutherglen for PM_{10} .
Further Assessment at Whirlies Roundabout	2010	Modelling predictions of PM_{10} concentrations confirmed that the declaration of the AQMA was valid and that the boundary should be maintained. Annual mean PM_{10} concentrations were predicted to exceed the 2010 objective at many locations of relevant human exposure which

Table 1.2: Summary of previous reviews and assessments

Review/Assessment	Year	Outcome
		close to the roads assessed. Source apportionment indicated that volume sources i.e. local background, are the most significant source of PM_{10} concentrations at this location.
Progress Report	2011	Measured annual mean NO_2 concentrations increased across the monitoring network when compared to the previous year, it was noted that this could be attributable to the meteorological conditions during 2010. The 2010 NO ₂ monitoring data confirmed the conclusions of the 2009 Updating and Screening Assessment and 2010 Progress Report which recommended proceeding with Detailed Assessments of NO_2 concentrations at Bannatyne Street, Lanark and at Brandon Street, Hamilton. Both Detailed Assessments were planned for completion in 2011.
Updating and Screening assessment	2012	The review of new monitoring data and screening of new sources did not identify any new locations where a detailed assessment was required for any pollutant. The 2011 annual mean NO_2 concentration measured in Hamilton confirmed the requirement to conduct a Detailed Assessment of NO_2 in Hamilton town centre; the report noted that this assessment will be conducted when there is sufficient automatic monitoring data available to inform the study



Figure 1.1: Whirlies Roundabout AQMA

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

South Lanarkshire Council measured air quality at seven automatic continuous monitoring sites during 2012. Details of the automatic monitoring sites are presented in Table 2.1. The locations of the automatic monitoring sites are presented along with the location of the diffusion tube sites in Figures 2.1 to 2.13.

Table 2.1: Details of Automatic Monitoring Sites

Site Name	Site Type	OS Gri	d Ref	Pollutants Monitored	Monitoring technique	In AQMA?	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?
Glespin	Roadside	280492	628150	PM ₁₀	FDMS	Ν	Y (10m)	5m	Y
Rutherglen	Roadside	261128	661703	NO ₂ , PM ₁₀	FDMS	N	Y (10m)	2-3m	Y
Whirlies	Roadside	264370	655670	NO ₂ , PM ₁₀	FDMS	Y	Y(10m)	1m	Y
Raith Interchange	Roadside	271125	658320	NO ₂ , PM ₁₀	FDMS	Ν	N(60m)	1-2m	Y
Lanark	Roadside	288426	643704	NO _x	Chemiluminescense	Ν	Y (2m)	1-2m	Y
Hamilton	Roadside	272310	655276	NO _x	Chemiluminescense	N	Y(2m)	1-2m	Y
Uddingston	Roadside	269663	660304	NO _x	Chemiluminescense	N	Y(2m)	2-3m	Y

2.1.2 Non-Automatic Monitoring Sites

NO₂ concentrations were measured at 37 diffusion tube sites across the South Lanarkshire Council area during 2012. Based on a review of the existing diffusion tube network and locations where additional measurements will benefit upcoming Detailed Assessments; in September 2012 a number of changes were made to the network, and some additional tubes deployed.

Diffusion tube monitoring was discontinued at the following site in September 2012:

- Stewartfield, EK;
- Eaglesham Rd, EK;
- Strathaven Rd, Hamilton;
- Orchard St, Hamilton;
- Canderside Toll, Stonehouse;
- Newton Station Rd, Halfway
- Brandon Street, Hamilton

Some sites were relocated to nearby more relevant locations; these were:

- Wordsworth Way, Bothwell
- Clydeford Road, Cambuslang

The new sites added to the network were:

- 179 Quarry St, Hamilton;
- 129 Quarry St, Hamilton;
- Duke St / Low Patrick Street, Hamilton;
- Gateside, Hamilton;
- Almada St, Hamilton;
- Bothwell Rd, Hamilton;
- Low Quarry Gardens, Hamilton;
- 4 High St, Lanark;
- 51 High St Lanark;
- 73 Main St, Uddingston;
- 86 Main St, Uddingston;
- 263 Main St, Rutherglen;
- Mill St, Rutherglen.

Details of the diffusion tube monitoring locations where measurements were conducted in 2012 are presented in Table 2.2. The locations include kerbside, roadside and urban background sites. Maps showing the locations of the diffusion tube monitoring sites are presented in Figures 2.1 to 2.13.

South Lanarkshire Council currently operates two diffusion tube co-location studies at the Whirlies Roundabout, East Kilbride; and Main Street, Rutherglen NO_2 automatic analyser sites. Full details of the co-location studies and diffusion tube QA/QC are presented in Appendix A.

Table 2.2: Details of Non- Automatic Monitoring Sites

Site Name	Site Type	e OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
(1) Civic Centre, East Kilbride	Roadside	263600	654194	NO ₂	No	No	4m	Yes
(2) Kingsway, East Kilbride	Roadside	264378	655383	NO ₂	Yes	No (20m)	8m	Yes
(3) Scott Hill, East Kilbride	Roadside	264424	655363	NO ₂	No	Yes (5m)	2m	No
(4) Townhead Street, Srathaven	Roadside	270081	644523	NO ₂	No	Yes (12m)	2m	No
(5) 179 Quarry Street, Hamilton	Roadside	272246	655099	NO ₂	No	Yes (0m)	1.5m	Yes
(6) 129 Quarry Street, Hamilton	Roadside	272325	655258	NO ₂	No	Yes (0.5m)	2.5m	Yes
(7) Cadzow Street, Hamilton	Roadside	272461	655556	NO ₂	No	No	4m	Yes
(8) Duke Street/Low Patrick Street, Hamilton	Roadside	272606	655212	NO ₂	No	Yes(1m)	1.5m	Yes
(9) Gateside Street, Hamilton	Roadside	272264	655077	NO ₂	No	Yes (0m)	2.5m	Yes
(10) Almada Street, Hamilton	Roadside	271460	655778	NO ₂	No	Yes (0m)	3m	Yes
(11) Muir Street/Bothwell Road	Roadside	271854	655980	NO ₂	No	Yes (0m)	6m	Yes
(12) Low Quarry Gardens, Hamilton	Background	271942	654958	NO ₂	No	n/a	n/a	n/a
(13) London Street, Larkhall	Kerbside	276090	651564	NO ₂	No	Yes (1m)	0.5m	Yes
(14) Kirkton Street, Carluke	Roadside	284550	650579	NO ₂	No	Yes (2m)	2m	Yes
(15) Hospitland Drive, Lanark	Background	289035	643842	NO ₂	No	Yes (5m)	2m	No
(16) Bannatyne Street, Lanark	Roadside	288475	643675	NO ₂	No	Yes (façade)	1m	Yes
(17) Wellgate, Lanark	Roadside	288173	643651	NO ₂	No	Yes (5m)	2m	Yes
(18) 4 High Street/Bloomgate, Lanark	Roadside	288122	643685	NO ₂	No	Yes (1m)	3m	Yes
(19) 51 High Street, Lanark	Roadside	288238	643675	NO ₂	No	Yes(0m)	3m	Yes
(20) Main Street, Bothwell	Roadside	270574	658508	NO ₂	No	Yes (2m)	2m	Yes
(21) Wordsworth Way, Bothwell (Moved Sep 2012)	Background	270933	659115	NO ₂	No	Yes (5m)	2m	No
(21) Wordsworth Way, Bothwell (New location from Sep 2012)	Background	270924	659109	NO ₂	No	Yes (5m)	2m	No
(22) North British Road, Uddingston	Background	270180	660753	NO ₂	No	Yes (5m)	3m	No
(23) Burnpark Avenue, Uddingston	Roadside	268948	661476	NO ₂	No	Yes (5m)	30-40m (M74)	Yes
(24) 73 Main Street (St Andrews Hospice), Uddingston	Roadside	269620	660425	NO ₂	No	Yes (0m)	5m	Y
(25) 86 Main Street (Ding's express), Uddingston	Roadside	269571	660654	NO ₂	No	Yes(0m)	3m	Y
(26) Clydeford Road, Cambuslang (Moved Sep 2012)	Roadside	264482	661160	NO ₂	No	Yes (30m)	1m	Yes

Site Name	Site Type	OS Gr	id Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
(26) Clydeford Road, Cambuslang (New location from Sep 2012)	Roadside	264386	661119	NO ₂	No	Yes (5m)	2m	Yes
(27) Cambuslang Road, Rutherglen	Roadside	263524	661835	NO ₂	No	No	2m	No
(28) Farmeloan Road, Rutherglen	Roadside	261643	661689	NO ₂	No	Yes (25m)	2m	Yes
(29) Stonelaw Road, Rutherglen	Roadside	261688	661174	NO ₂	No	Yes (21m)	2m	Yes
(30) 263 Main Street, Rutherglen	Roadside	261688	661681	NO ₂	No	Yes (0m)	2m	Yes
(31) Mill Street, Rutherglen	Roadside	261302	660734	NO ₂	No	Yes (4m)	2.5m	Yes
(32) Main Street, Rutherglen Co Loc 1	Roadside	261116	661699	NO ₂	No	Yes (10m)	2-3m	Yes
(33) Main Street, Rutherglen Co Loc 2	Roadside	261116	661699	NO ₂	No	Yes (10m)	2-3m	Yes
(34) Main Street, Rutherglen Co Loc 3	Roadside	261116	661699	NO ₂	No	Yes (10m)	2-3m	Yes
(35) Whirlies Roundabout,EK Co Loc 1	Roadside	264383	655663	NO ₂	Yes	Yes (10m)	1m	Yes
(36) Whirlies Roundabout, EK Co Loc 2	Roadside	264383	655665	NO_2	Yes	Yes(10m)	1m	Yes
(37) Whirlies Roundabout, EK Co Loc 3	Roadside	264383	655667	NO ₂	Yes	Yes(10m)	1m	Yes
Sites discont	inued during 2	012 (result	ts available	e to Septembe	er 2012)			
Stewartfield, East Kilbride	Roadside	262490	655726	NO ₂	No	Yes (11m)	2m	No
Eaglesham Road, East Kilbride	Roadside	260882	654261	NO ₂	No	Yes (18m)	2m	Yes
Strathaven Road, Hamilton	Roadside	271390	652685	NO ₂	No	No	2m	Yes
Orchard Street, Hamilton	Roadside	272014	655249	NO ₂	No	Yes (2m)	2m	No
Canderside Toll, Stonehouse	Roadside	277134	648054	NO ₂	No	No	2m	Yes
Newton Station Road, Halfway	Roadside	266401	660407	NO ₂	No	Yes (11m)	2m	No
Brandon Street, Hamilton	Roadside	272317	655297	NO ₂	No	Yes (5m)	3m	No



Figure 2.1: Monitoring locations (East Kilbride – Whirlies)



Figure 2.2: Monitoring locations (East Kilbride – West)



Figure 2.3: Monitoring locations (Strathaven)



Figure 2.4: Monitoring locations (Hamilton centre)



Figure 2.5: Monitoring locations (Hamilton South)



Figure 2.6: Monitoring locations (Larkhall)



Figure 2.7: Monitoring locations (Carluke)



Figure 2.8: Monitoring locations (Lanark)



Figure 2.9: Monitoring locations (Bothwell/Raith interchange)



Figure 2.10: Monitoring locations (Uddingston)



Figure 2.11: Monitoring locations (Cambuslang)



Figure 2.12: Monitoring locations (Rutherglen)

Figure 2.13: Monitoring locations (Glespin)



2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO₂)

Automatic Monitoring Data

The annual mean NO₂ concentrations measured at the automatic monitoring sites in South Lanarkshire from 2008 to 2012 are presented in Table 2.3. Concentrations in excess of the 40 μ g.m⁻³ objective are highlighted in bold.

	Within	Data Capture	Annual mean concentrations (μg.m ⁻³)						
Site name	AQMA?	2012 (%)	2008	2009	2010	2011	2012		
Rutherglen	No	99.9%	53.3	40.3	24	37	39		
Whirlies	Yes	66.4%	38.8	37.5	49	41	34 [#]		
Raith Interchange	No	99.9%	-	-	61	56	56		
Lanark	No	99.9%	-	-	17	30	29		
Hamilton	No	92.6%	-	-	-	41*	42 ^{\$}		
Uddingston	No		-	-	-	24*	31 ^{\$}		

Table 2.3: NO₂ Automatic monitoring results: Comparison with annual mean objective

*Results presented were provisional and no short to long term adjustment was applied

[#]Short-term to long-term adjustment applied as data capture < 75%

^SPlease note that these data are not reported as ratified due to insufficient calibration data; a scaling factor of 1.000 ppb/mV has been assumed throughout 2012. As a result, these data should be used for indicative purposes only, similar to NO₂ diffusion tube data

An NO₂ annual mean concentration in excess of the 40 μ g.m⁻³ objective was measured at the Raith Interchange automatic monitoring site. This site is located at the roadside approximately 60m from the façade of the nearest residential property; a distance correction calculation was conducted to predict the annual mean NO₂ concentration at the nearest location of relevant exposure. The annual mean concentration predicted at 50 m from the kerbside (the maximum distance that can be input into the distance correction calculator) was 35 μ g.m⁻³; It's therefore considered unlikely that the 40 μ g.m⁻³ NO₂ annual mean objective is being exceeded at locations of relevant exposure close to Raith Interchange.

The NO_2 annual mean measured at Whirlies Roundabout was adjusted to account for the low data capture rate due to a period of missing data between 2nd February and 22nd May 2012. The low data capture during 2012 was due to an analyser fault and unstable data that could not be scaled. Details of the short-term to long-term adjustment calculation are presented in Appendix A.

The reported NO₂ annual mean at the Hamilton automatic analyser site was also in excess of the 40 μ g.m⁻³ objective. As stated in the footnotes for Table 2.3 above, data from the Hamilton and Uddingston sites are not reported as ratified and presented as provisional results only. A Detailed Assessment of NO₂ in Hamilton is scheduled for completion in early in 2014 when sufficient ratified automatic monitoring data will be available to inform the study.

A bar chart showing the trends in annual mean NO_2 concentrations measured at the automatic sites over the last four years is presented in Figure 2.14. The chart shows annual mean NO_2 concentrations have decreased slightly at Whirlies Roundabout and Raith Interchange in 2011 compared to the previous year. Measured annual mean concentrations have increased at the Rutherglen and Lanark

sites during 2011 when compared to 2010. Continued monitoring at these sites will help establish if this is an on-going trend.



Figure 2.14: Trends in annual mean NO₂ concentration measured at automatic monitoring sites

The numbers of measured 1-hour mean NO₂ concentrations in excess of the 200 μ g.m⁻³ short-term objective at each of the automatic monitoring sites are presented in Table 2.4. All sites were compliant with the short-term objective except for Whirlies Roundabout in East Kilbride where due to low data capture the result was presented as the 99.79th percentile of 1-hour means; the resulting concentration of 226 μ g.m⁻³ is in excess of the 200 μ g.m⁻³ objective; the short-term objective may therefore have been exceeded at this location during 2012. The monitoring site is however located close to a busy roundabout where there are no shops, it's considered unlikely that people will spend an hour or more there.

Site name	Within AQMA?	Data Capture 2012 (%)	Number of exceedences of hourly mean objective (200 µg.m ⁻³) For data capture < 90%, the 99.79th %ile of 1-hr means is shown in brackets (µg.m ⁻³)							
			2008	2009	2010	2011	2012			
Rutherglen	No	99.9%	4(169)	0 (74)	0 (101)	0	1			
Whirlies	Yes	66.4%	9(179)	4	27(201)	12	21(226)			
Raith Interchange	No	99.9%	-	-	38(227)	0	4			
Lanark	No	99.9%	-	-	0 (66)	0(120)	0			
Hamilton	No	92.6%	-	-	-	1(124)*	0 ^{\$}			
Uddingston	No	100%	-	-	-	0(107)*	1\$			
NB: For data capture < 90%, the 99.79 th %ile of 1-hr means is shown in brackets (μ g.m ⁻³)										

TUDIE 2.4. NO2 UUUIIIUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	Table 2.4	4: NO ₂	automatic n	nonitorina ı	results 201	1: Compar	ison with 1	I-hour mean	obiective
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^{\$} Please note that these data are not reported as ratified due to insufficient calibration data

Diffusion Tube Monitoring Data

Details of the annual mean NO_2 concentrations measured at diffusion tube sites during 2011 are presented in Table 2.5. The time series of results measured from 2007 to 2011 are presented in Table 2.6. Bar charts showing the trends in measured NO_2 annual mean concentrations are presented in Figure 2.15. For diffusion tube sites where data capture was less than 75%, short-term to long-term adjustment calculations have been applied. Details of the calculations are presented in Appendix A.

The bias adjustment factor of 0.74 from the co-location study conducted at Rutherglen in 2012 was used to adjust to adjust the diffusion tube results. A discussion of the choice of factor used is included in Appendix A.

At locations where measured annual mean concentrations were in excess of the 40 μ g.m⁻³ objective; distance correction calculations have been conducted to predict the annual mean concentration at the nearest location of relevant exposure. The calculation was conducted using the 'NO₂ with distance from road calculator' available to download on the Defra LAQM support website. The predicted annual mean concentrations at the nearest relevant exposure are presented in brackets in Table 2.5 at relevant tube locations.

Annual mean NO₂ concentrations in excess of the 40 μ g.m⁻³ objective were measured at seven diffusion tube sites during 2012 (excluding the sites co-located with automatic analysers). The predicted NO₂ annual mean at the nearest location of relevant exposure was in excess of the 40 μ g.m⁻³ objective at three sites as follows:

- (6) 129 Quarry Street, Hamilton
- (8) Duke Street/Low Patrick Street, Hamilton
- (16) Bannatyne Street, Lanark

A Detailed Assessment of NO_2 in Hamilton is scheduled for completion in early 2014 when sufficient ratified automatic monitoring data will be available to inform the study. The 2012 diffusion tube measurements provide further evidence that a Detailed Assessment is required within the Quarry Street area of Hamilton town centre.

A Detailed Assessment of NO_2 was conducted in Lanark in 2012; the assessment concluded that NO_2 annual mean concentration in excess of the objective were likely occurring on Bannatyne Street at residential properties, if present, at first floor level. South Lanarkshire Council are currently investigating if there are residential properties at this location to inform the extent of the AQMA, if required.

No annual mean NO_2 concentrations in excess of 60 μ g.m⁻³ were measured at any of the diffusion tube sites; it is therefore considered unlikely that there is a risk of the 1-hour mean NO_2 objective being exceeded at any of the tube locations.

No further action is required based on the 2012 NO_2 diffusion tube results.

Table 2.5: Results of NO₂ Diffusion Tubes 2012

Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean conc. 2012 (μg.m ⁻³) (Bias Adj. factor = 0.74)
(1) Civic Centre, East Kilbride	Roadside	No	Ν	100%	Ν	N	21
(2) Kingsway, East Kilbride	Roadside	Yes	Ν	100%	Ν	Y	50 (37.6)
(3) Scott Hill, East Kilbride	Roadside	No	Ν	92%	N	N	18
(4) Townhead Street, Srathaven	Roadside	No	Ν	100%	Ν	N	26
(5) 179 Quarry Street, Hamilton	Roadside	No	Ν	33%	Y	N	31
(6) 129 Quarry Street, Hamilton	Roadside	No	Ν	33%	Y	Y	46 (45)
(7) Cadzow Street, Hamilton	Roadside	No	Ν	92%	Ν	N	28
(8) Duke Street/Low Patrick Street, Hamilton	Roadside	No	N	33%	Y	Y	50 (47.1)
(9) Gateside Street, Hamilton	Roadside	No	Ν	33%	Y	N	32
(10) Almada Street, Hamilton	Roadside	No	Ν	33%	Y	N	36
(11) Bothwell Road / Bothwell Road	Roadside	No	Ν	33%	Y	N	23
(12) Low Quarry Gardens, Hamilton	Background	No	Ν	33%	Y	N	13
(13) London Street, Larkhall	Kerbside	No	N	100%	N	N	28
(14) Kirkton Street, Carluke	Roadside	No	Ν	100%	Ν	N	33
(15) Hospitland Drive, Lanark	Background	No	N	83%	N	N	15
(16) Bannatyne Street, Lanark	Roadside	No	Ν	100%	Ν	Y	42 (42)
(17) Wellgate, Lanark	Roadside	No	Ν	100%	Ν	N	21
(18) 4 High Street/Bloomgate, Lanark	Roadside	No	N	33%	Y	N	34
(19) 51 High Street, Lanark	Roadside	No	Ν	25%	Y	N	22
(20) Main Street, Bothwell	Roadside	No	Ν	100%	N	N	29
(21) Wordsworth Way, Bothwell (Moved Sep 2012)	Background	No	Ν	33%	Y	N	27
(21) Wordsworth Way, Bothwell (New location from Sep 2012)	Background	No	Ν	33%	Y	N	18
(22) North British Road, Uddingston	Background	No	Ν	92%	N	N	30
(23) Burnpark Avenue, Uddingston	Roadside	No	N	92%	N	N	31

Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean conc. 2012 (μg.m ⁻³) (Bias Adj. factor = 0.74)
(24) 73 Main Street (St Andrews Hospice), Uddingston	Roadside	No	N	33%	Y	N	29
(25) 86 Main Street (Ding's express), Uddingston	Roadside	No	N	25%	Y	Ν	23
(26) Clydeford Road, Cambuslang (Moved Sep 2012)	Roadside	No	N	67%	Y	N	31
(26) Clydeford Road, Cambuslang (New location from Sep 2012)	Roadside	No	N	33%	Y	N	19
(27) Cambuslang Road, Rutherglen	Roadside	No	N	100%	N	N	29
(28) Farmeloan Road, Rutherglen	Roadside	No	N	100%	N	N	38
(29) Stonelaw Road, Rutherglen	Roadside	No	N	100%	N	N	25
(30) 263 Main Street	Roadside	No	N	33%	Y	N	36
(31) Mill Street	Roadside	No	N	33%	Y	N	27
(32) Main Street, Rutherglen Co Loc 1	Roadside	No	Y	92%	N	N	42 (34)
(33) Main Street, Rutherglen Co Loc 2	Roadside	No	Y	75%	N	Ν	37
(34) Main Street, Rutherglen Co Loc 3	Roadside	No	Y	75%	N	Ν	33
(35) Whirlies Roundabout,EK Co Loc 1	Roadside	Yes	Y	100%	N	Ν	38
(36) Whirlies Roundabout,EK Co Loc 2	Roadside	Yes	Y	100%	N	Ν	36
(37) Whirlies Roundabout, EK Co Loc 3	Roadside	Yes	Y	92%	N	N	38
	Sites o	liscontinued du	uring 2012				
Stewartfield, East Kilbride	Roadside	No	N	67%	Y	N	32
Eaglesham Road, East Kilbride	Roadside	No	N	67%	Y	Ν	26
Strathaven Road, Hamilton	Roadside	No	N	67%	Y	Ν	14
Orchard Street, Hamilton	Roadside	No	N	67%	Y	Ν	31
Canderside Toll, Stonehouse	Roadside	No	N	67%	Y	N	29
Newton Station Road, Halfway	Roadside	No	N	58%	Y	N	21
Brandon Street, Hamilton	Roadside	No	N	92%	N	N ^{\$}	49 ^{\$}

^{\$} The Brandon Street, Hamilton diffusion tube measurement has not been distance corrected as it was located on a paved island in the centre of a three road intersection – the distance correction is not considered applicable in this case.

Table 2.6: Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2012)

Location	Site Type	Within		Annual mean cond	entration (adjuste	ed for bias) μg/m ⁸	3
		AQMA?	2008 (Bias Adj. Factor = 0.93)	2009 (Bias Adj. Factor = 0.98)	2010 (Bias Adj. Factor = 0.82)	2011 (Bias Adj. Factor = 0.84)	2012 (Bias Adj. Factor = 0.74)
(1) Civic Centre, East Kilbride	Roadside	No	31.7	24.7	21.3	19.2	21
(2) Kingsway, East Kilbride	Roadside	Yes	45.8	53.8	43.1	48.6	50 (37.6)
(3) Scott Hill, East Kilbride	Roadside	No	-	13.9	21.1	17.3	18
(4) Townhead Street, Srathaven	Roadside	No	-	-	-	23.4	26
(5) 179 Quarry Street, Hamilton	Roadside	No	-	-	-	-	31
(6) 129 Quarry Street, Hamilton	Roadside	No	-	-	-	-	46 (45)
(7) Cadzow Street, Hamilton	Roadside	No	37.7	32.9	39.4	27.5	28
(8) Duke Street/Low Patrick Street, Hamilton	Roadside	No	-	-	-	-	50 (47.1)
(9) Gateside Street, Hamilton	Roadside	No	-	-	-	-	32
(10) Almada Street, Hamilton	Roadside	No	-	-	-	-	36
(11) Bothwell Road / Bothwell Road	Roadside	No	-	-	-	-	23
(12) Low Quarry Gardens, Hamilton	Background	No	-	-	-	-	13
(13) London Street, Larkhall	Kerbside	No	-	-	-	27.2	28
(14) Kirkton Street, Carluke	Roadside	No	-	-	-	35.7	33
(15) Hospitland Drive, Lanark	Background	No	23.8	19.4	18.2	16.3	15
(16) Bannatyne Street, Lanark	Roadside	No	37.1	47.2	40	38.7	42 (42)
(17) Wellgate, Lanark	Roadside	No	-	-	-	19.8	21
(18) 4 High Street/Bloomgate, Lanark	Roadside	No	-	-	-	-	34
(19) 51 High Street, Lanark	Roadside	No	-	-	-	-	22
(20) Main Street, Bothwell	Roadside	No	-	-	-	-	29
(21) Wordsworth Way, Bothwell (Moved Sep 2012)	Background	No	21.8	24.6**	22.1	19.5	27
(21) Wordsworth Way, Bothwell (New location from Sep 2012)	Background	No	-	-	-	-	18
(22) North British Road, Uddingston	Background	No	27.2	31.4	33.4	25.5	30
(23) Burnpark Avenue, Uddingston	Roadside	No	30.9	31.9	32.5	25.4	31

Location	Site Type	Site Type Within Annual mean concentration (adjusted for bias) µg/m ³							
		AQMA?	2008 (Bias Adj. Factor = 0.93)	2009 (Bias Adj. Factor = 0.98)	2010 (Bias Adj. Factor = 0.82)	2011 (Bias Adj. Factor = 0.84)	2012 (Bias Adj. Factor = 0.74)		
(24) 73 Main Street (St Andrews Hospice), Uddingston	Roadside	No	-	-	-	-	29		
(25) 86 Main Street (Ding's express), Uddingston	Roadside	No	-	-	-	-	23		
(26) Clydeford Road, Cambuslang (Moved Sep 2012)	Roadside	No	-	-	-	27.2	31		
(26) Clydeford Road, Cambuslang (New location from Sep 2012)	Roadside	No	-	-	-	-	19		
(27) Cambuslang Road, Rutherglen	Roadside	No	-	-	-	21.0	29		
(28) Farmeloan Road, Rutherglen	Roadside	No	-	-	-	32.9	38		
(29) Stonelaw Road, Rutherglen	Roadside	No	-	-	-	21.0	25		
(30) 263 Main Street	Roadside	No	-	-	-	-	36		
(31) Mill Street	Roadside	No	-	-	-	-	27		
	Sites disc	continued in	September 2012	2					
Stewartfield, East Kilbride	Roadside	No	-	-	-	27.8	32		
Eaglesham Road, East Kilbride	Roadside	No	-	-	-	21.3	26		
Strathaven Road, Hamilton	Roadside	No	-	18.6	19.4	11.8	14		
Orchard Street, Hamilton	Roadside	No	-	-	-	18.3	31		
Canderside Toll, Stonehouse	Roadside	No	-	-	-	24.5	29		
Newton Station Road, Halfway	Roadside	No	-	-	-	17.0	21		
Brandon Street, Hamilton	Roadside	No	-	49.4	47.0	42.8	49		



Figure 2.15: Trends in NO₂ annual mean concentrations measured with diffusion tubes

2.2.2 Particulate Matter (PM₁₀)

The annual mean PM_{10} concentrations measured from 2008 to 2012 are presented in Table 2.7 and Figure 2.16. The number of 24-hour mean PM_{10} concentrations in excess of the 50 µg.m⁻³ short-term objective; measured from 2008 to 2012 are presented in Table 2.8.

 PM_{10} concentrations measured at Whirlies and Glespin were below both the annual mean Scottish objective of 18µg m⁻³ and hourly objective of less than seven exceedances per year.

An annual mean PM_{10} concentration in excess of the 18 µg.m⁻³ objective was measured at the Rutherglen automatic monitoring site. South Lanarkshire Council is currently in the process of declaring an AQMA for PM_{10} at Rutherglen. Five daily mean concentrations in excess of the 50 µg.m⁻³ short-term objective were measured during 2012 which is within the seven exceedances permitted in the Scottish PM_{10} objectives. Examination of the last five years measurements indicates that annual mean PM_{10} concentrations have been decreasing at this location. This may be attributable to traffic which previously used the local roads now using the M74 extension which opened in June 2011.

At the Raith Interchange site an annual mean PM_{10} concentration of 26 µg.m⁻³ was measured during 2012 with 16 exceedances of the 50 µg.m⁻³ daily-mean objective. The monitoring site is however

located approximately 60m from the nearest relevant exposure. Based on DMRB screening calculation conducted for the 2012 Updating and Screening assessment; and that measured PM_{10} concentrations have not increased since 2012; it is considered very unlikely that the PM_{10} objectives are being exceeded at the nearest relevant exposure to the monitoring site.



Figure 2.16: Trends in measured PM₁₀ annual mean concentrations

Site name	Site Type	Within	Valid Data Capture for	Valid Data	Confirm	Annual Mean Concentration (µg.m		⁻³)		
		AQMA?	monitoring Period %	Capture 2011 % ^b	Gravimetric Equivalent	2008	2009	2010	2011	2012
Glespin	Roadside	Ν	79%	79%	Y	-	10	13	9	9
Rutherglen	Roadside	Ν	88%	88%	Y	26	23	25	21	18
Whirlies	Roadside	Y	84%	84%	Y	23	15	17	16	13
Raith Interchange	Roadside	Ν	88%	88%	Y	-	-	26	26	26

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

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

Site name	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2011	Confirm Gravimetric	Number of (98.1th pe	exceedeno ercentile in	ces of 24-⊦ bracket if	lour mean (§ data captur	50 μg.m ⁻³) e < 75%)
				%	Equivalent	2008	2009	2010	2011	2012
Glespin	Roadside	N	79%	79%	Y	-	0	0	0	0
Rutherglen	Roadside	N	88%	88%	Y	-	-	5	13	5
Whirlies	Roadside	Y	84%	84%	Y	11 (59)	5	5(81)	2	4
Raith Interchange	Roadside	N	88%	88%	Y	9(54)	8 (56)	21	21	16

2.2.3 Sulphur Dioxide (SO₂)

South Lanarkshire Council do not currently measure SO_2 concentrations.

2.2.4 Summary of Compliance with AQS Objectives

South Lanarkshire Council has measured concentrations of NO_2 above the annual mean objective at relevant locations in Hamilton, and **will need to proceed to a Detailed Assessment**. This requirement has been identified previously. A Detailed Assessment of NO_2 in Hamilton is scheduled for completion in early 2014 when sufficient ratified automatic monitoring data will be available to inform the study.

3 New Local Developments

3.1 Road Traffic Sources

No new road traffic sources have been identified within the South Lanarkshire Council area since the last Updating and Screening assessment.

3.2 Other Transport Sources

No other transport sources have been identified within the South Lanarkshire Council area since the last Updating and Screening assessment.

3.3 Industrial Sources

No new industrial sources have been identified within the South Lanarkshire Council area since the last Updating and Screening assessment.

3.4 Commercial and Domestic Sources

No new commercial and domestic sources have been identified within the South Lanarkshire Council area since the last Updating and Screening assessment.

3.5 New Developments with Fugitive or Uncontrolled Sources

No new developments with fugitive or uncontrolled sources have been identified during 2012.

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

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

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

4 Local / Regional Air Quality Strategy

A draft air quality strategy is presently going through a Strategic Environmental Assessment and has been subject to internal consultation within the Council. It is hoped that the public consultation stage will commence shortly. A target of March 2014 for publication of the Strategy in included in the current South Lanarkshire Council service plan.

5 Planning Applications

Planning applications during 2012 for which an air quality assessment was submitted were:

EK/13/0046 - Demolition of existing building and erection of retail development (Class 1) and associated access, car parking and works (Planning Permission in Principle)

The air quality impact assessment submitted assessed both NO_2 and PM_{10} during the operational phase of the development concluded that air quality impact of traffic attributable to the development will be negligible at location of relevant exposure. The assessment also recommended a number of dust mitigation measures during the construction phase of the development. Application at appeal (14.06.2013) on grounds of non-determination.

HM/13/0127 - Erection of 44 dwelling houses with associated works, Bellshill Road, Uddingston, G71 6NY; and HM/13/0128 - Erection of 26 dwelling houses and 15 flatted dwellings with associated works, Bellshill Road, Uddingston, G71 6NY: As the site is located adjacent to the M74 motorway, an air quality impact assessment was required as the development could result in the introduction of new exposure into an area of potentially poor air quality. The assessment indicated that no additional people are expected to be exposed to air pollutant concentrations exceeding the relevant objective values as a result of the site being used for residential use.

CL/12/0530 - Planning Permission in Principle for co-operative sustainable settlement including housing, mixed commercial uses, industry, leisure and community uses and associated landscaping, infrastructure and access works, Owenstown, Land East of A70, South of A73, North of B7055, By Rigside. The air quality assessment included in the environmental statement for the development concluded that the main impact on local air quality at existing residential receptors following completion of Owenstown will be a small increase in concentrations of PM₁₀, PM_{2.5} and NO₂ due to increased traffic flow on local roads including routes through Rigside, Uddingston and Lanark.

The predicted increase in pollutant concentrations were of negligible significance. Within the area of Owenstown itself, the change in pollutant concentrations relative to the existing rural background arising from the combination of emissions from traffic, space heating, a combined heat and power plant and industrial sources would be rated as being slight adverse for NOx (Nitrogen Oxide), NO₂ and PM₁₀ using the EPUK (Environmental Protection UK) criteria.

The following planning applications have been granted but the Council are still awaiting submission of an air quality assessment:

CR/12/0110 - Planning permission in principle to permit Class 4, 5 & 6 uses across the site, Farmeloan Road, Rutherglen: Granted - 05/12/2012. Condition attached requiring applicant to undertake and submit AQIA.

CR/12/0111 - Infrastructure works required to facilitate future plot development, to include roads, footpaths, retaining structures, verges, primary service routes and site levelling, Farmeloan Road Rutherglen. Granted - 05/12/2012. Condition attached requiring applicant to undertake and submit AQIA.

CR/12/0112 - New office building and associated landscaping and parking, office building 4 storeys' with accessible roof for plant and gross internal floorspace of 3,900 sqm. Farmeloan Road Rutherglen. Granted - 05/12/2012. Condition attached requiring applicant to undertake and submit AQIA.

6 Air Quality Planning Policies

Planning and building standards air quality information webpage

South Lanarkshire Council does not currently have any formal supplementary planning guidance relevant to air quality; the planning and building standards section of the council website does however contain a webpage¹ with lots of useful information for developers relating to air quality and how it will be considered within the planning process. There is also a link to this webpage from the Environmental Health pages of the council website.

The webpage summarises the potential health impacts of poor air quality; suggests ideas that developers should consider about their proposal in relation to air quality; and also provides some reasons why an air quality impact assessment may be required in support of a planning application.

Planning conditions relevant to air quality

South Lanarkshire Council uses the triggers detailed in the EPUK Planning for Air Quality Guidance² and have a number of planning conditions which are relevant to air quality.

The planning conditions are as follows:

AQ01. Proposed Air Pollution Sources [Deferment]

The applicant should be required to undertake and submit an air quality impact assessment which satisfies the Planning Authority that the Local Air Quality Management Objectives for the pollutants specified in the Air Quality Regulations, made under Part IV of the Environment Act 1995, will not be exceeded at (any location in the vicinity of the development where public exposure is relevant) AND/OR residential properties in the vicinity of the development due to the impacts of the proposed development and, or the potential increase in traffic associated with the development. The survey and report should use a method based on the principles set out in the Environmental Protection UK document Development Control: Planning for Air Quality (2010 Update) and Scottish Government publication "Local Air Quality Management Technical Guidance LAQM.TG(09)" or a method that has been agreed with the Planning Authority. [Ensure appropriate explanation is given so as to justify why the air quality impact assessment is necessary, guidance for scale of development that would fall into this is given Pg14 EPUK guide]

AQ02. Proposed Air Pollution Receptors [Deferment]

The applicant should be required to undertake and submit an air quality impact assessment which satisfies the Planning Authority that the Local Air Quality Management Objectives for the pollutants specified in the Air Quality Regulations, made under Part IV of the Environment Act 1995, will not be exceeded at the proposed development. The survey and report should use a method based on the principles set out in the Environmental Protection UK document Development Control: Planning for Air Quality (2010 Update) and Scottish Government publication "Local Air Quality Management Technical Guidance LAQM.TG(09)" or a method that has been agreed with the Planning Authority. [Ensure appropriate explanation is given so as to justify why the air quality impact assessment is necessary]

¹ South Lanarkshire Council (2013) <u>http://www.southlanarkshire.gov.uk/info/161/planning and building standards/854/air quality information for developers</u>

² Environmental Protection UK (2010) Development Control: Planning For Air Quality (2010 Update)

AQ03 Air Quality Mitigation Measures [Approved Scheme] [Condition] Any proposed scheme of mitigation measures designed to reduce the impacts from pollution sources or the effects upon any potential receptors shall require to be approved by the Council as Planning Authority and shall be implemented prior to the development being brought into use and where appropriate, shall be retained in accordance with the approved scheme to the satisfaction of the Council as Planning Authority.

Dust Control

D01. Dust mitigation/control [Condition]

Prior to development commencing on site, a scheme for the control and mitigation of dust shall be submitted to and approved in writing by the Council as Planning Authority. No changes to the approved scheme shall take place unless agreed in writing by the Council as Planning Authority. The scheme shall thereafter be implemented in accordance with a programme to be agreed in writing with the Council as Planning Authority.

[when determining if the proposed dust mitigation or control measures are appropriate regard shall be given to the principles of best practicable means to minimise the impact of dust, this will change depending on the development. e.g. EPUK Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance 2012 may be a starting reference, however there arte other guides]

D02. Dust Monitoring [Condition]

Prior to development commencing on site, a dust management and monitoring scheme shall be submitted to and approved in writing by the Council as Planning Authority. The scheme shall thereafter be implemented in accordance with a programme to be agreed in writing with the Council as Planning Authority. Monitoring results shall be readily available to Officers of the Council investigation adverse comments.

[when determining if the proposed dust monitoring and management is appropriate regard shall be given to the principles of best practicable means to minimise the impact of dust, this will change depending on the development. e.g. EPUK Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance 2012 may be a starting reference, however there are other guides.]

ADV NOTE 4 Formal action may be taken if nuisance occurs.

None of the above conditions will preclude formal action being taken by the Executive Director of Community & Enterprise Resources against the person responsible for any nuisance which may arise due to the operation of the proposed development.

7 Local Transport Plans and Strategies

South Lanarkshire Council's draft Local Transport Strategy (LTS) for 2013 – 2023 is currently out for consultation. The policies in relation to air quality are as follows:

- LTP 21
- LTP 22 The Council will require that major new developments are accessible by walking , cycling and public transport.
- **LTP 37** The Council will aim to increase the proportion of journeys that are made by foot in South Lanarkshire.
- **LTP 38** The Council will contribute towards the achievement of the national cycling target of 10% of all trips being made by bike by the year 2020.
- **LTP 39** The Council will actively support and encourage children to travel actively with the aim of increasing the proportion of journeys that are made to school on foot or by bike.
- **LTP 45** The council will support the introduction of low carbon vehicles as a sustainable alternative to internal combustion vehicles.
- LTP 46 The Council will continue to monitor and work to meet statutory requirements as appropriate.
- LTP 47 The council will continue to integrate air quality considerations into its strategic policies and plans.

The council LPS also includes the following actions with regard to air quality:

- LTA 21 The Council will monitor the implementation of Travel Plans for developments and will carry out enforcement through the planning process.
- LTA 28 The Council will seek to extend our cycling network including further development of the National Cycle network and development of the local South Lanarkshire network
- LTA 29 Specific routes will be identified and prioritised for implementation.
- LTA 30 The Council will increase the number of schools that develop travel plans
- LTA 35 We will develop a network of 'fast' charging stations in Council car parks throughout South Lanarkshire to facilitate public electric vehicle charging.
- **LTA36** We will investigate the provision of 'rapid' charging stations at strategic locations to extend the range of electric vehicles.

- **LTA 37** We will require the provision of electric vehicle recharging infrastructure in all new developments.
- LTA 39 Recent air quality reports concluded that an Air Quality Management Area is required at Main Street, Rutherglen and other potential AQMA's would require Detailed Assessments to be carried out including assessment of PM₁₀ and NO₂ at Hamilton town centre and NO₂ in Lanark Town centre and Main Street, Uddingston.
- **LTA 40** The Council will operate their continuous monitoring equipment in the areas which are most likely to be closest to breaching the 2010 objectives for PM₁₀.
- LTA 41 Consideration is given to the deployment of additional monitoring sites along the new M74 extension to inform future review and assessment if air quality. Monitoring of traffic flows and speeds to be carried out to assess the impact of the M74 completion to ensure that the predicted impacts on air quality are realistic and do not breach air quality objectives.

To increase more sustainable travel options the draft strategy also includes

10.20 Bus services in South Lanarkshire could provide a more attractive alternative to the car if waiting facilities and timetable information were improved. The Council, in partnership with SPT, has been improving facilities at bus stops including providing high quality bus shelters, making bus stops more accessible with the installation of high kerbs that are at the same height as the floor of buses and providing timetabled information at all bus stops. we are also installing real time passenger information along some of our strategic bus routes.

8 Implementation of Action Plans

The Whirlies Roundabout AQMA action plan is still in draft status; public consultation on the draft report is scheduled for November 2013. Some work has however already commenced to implement the actions within the plan.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

An NO₂ annual mean concentration of 56 μ g.m⁻³ which in excess of the 40 μ g.m⁻³ UK wide objective was measured at the Raith Interchange automatic monitoring site. The annual mean PM₁₀ concentration of 26 μ g.m⁻³ measured during 2012 was also in excess of the Scottish PM₁₀ objective with 16 exceedances of the 50 μ g.m⁻³ daily-mean objective. This site is however located at the roadside approximately 60m from the façade of the nearest residential property. Based on a distance correction calculation to predict the annual mean NO₂ concentration at the nearest location of relevant exposure; and DMRB screening calculation conducted for the 2012 Updating and Screening assessment it is considered unlikely that the either the NO₂ or PM₁₀ annual mean objectives are being exceeded at locations of relevant exposure close to Raith Interchange.

The reported NO₂ annual mean of 42 μ g.m⁻³ at the Hamilton automatic analyser site was also in excess of the 40 μ g.m⁻³ objective; however data from this site has not been not been reported as ratified and is presented as a provisional result only. Annual mean NO₂ concentrations were also measured at two diffusion tube locations in Hamilton where the predicted annual mean at the nearest location of relevant exposure was in excess of the 40 μ g.m⁻³ objective. A Detailed Assessment of NO₂ in Hamilton is scheduled for completion in early 2014 when sufficient ratified automatic monitoring data will be available to inform the study.

An annual mean PM_{10} concentration in excess of the 18 µg.m⁻³ objective was measured at the Rutherglen automatic monitoring site; this site is however at a roadside location 10m from the nearest relevant exposure. South Lanarkshire Council is currently in the process of reassessing baseline air quality at this location as traffic numbers have declined significantly since the opening of the M74 extension in 2011.

9.2 Conclusions relating to New Local Developments

The review of local developments has not identified any locations where there may be a risk of the air quality objectives being exceeded; no additional air quality assessment is recommended at this time.

9.3 Outstanding actions and report submissions

As described in Section 1.4 there are a number of locations within South Lanarkshire where LAQM review and assessment work conducted in previous years has identified the requirement for Detailed Assessments or other actions to be conducted to fulfil the council's LAQM requirements. The following provides an update on all currently outstanding actions.

Hamilton and Uddingston Detailed Assessments

A requirement to conduct a Detailed Assessment of NO_2 at Main Street Rutherglen; and a Detailed Assessment of NO_2 and PM_{10} at Hamilton was identified in the 2009 Updating and Screening assessment.

Monitoring commenced at the Hamilton and Uddingston sites during 2011. Due to problems with site calibrations during the initial period of operation, it was not possible to ratify the data captured during 2011. Unfortunately another unforeseen problem with the automatic-calibration system on each analyser during 2012 meant that again it was not possible to ratify the 2012 monitoring data. Manual calibrations have been in place at each site since March 2013; therefore sufficient ratified monitoring data should be available for the 2013 calendar year. Additional NO₂ diffusion tubes were also deployed in each area during September 2012 to supplement the monitoring data available for each study.

Both the Hamilton and Uddingston Detailed Assessments are scheduled for completion early in 2014 when sufficient ratified automatic monitoring data; and a full calendar year of diffusion tube results from the new sites will be available to inform a robust study at each location.

Lanark Detailed Assessment

The 2009 Updating and Screening assessment identified a requirement to conduct a Detailed Assessment of NO_2 in Lanark. Monitoring of NO_2 at the automatic analyser in Lanark commenced in 2010.

A detailed assessment conducted in 2012 concluded that, based on the available monitoring data, South Lanarkshire Council should declare an Air Quality Management area encompassing all areas of exceedance of the NO₂ annual mean objective predicted in the study. It also recommended that the council should expand their diffusion tube network so that more monitoring data is available for the Further Assessment. South Lanarkshire Council subsequently concluded that more reliable, automatic monitoring data was required before declaring an AQMA. At the time of conducting the Detailed Assessment, data capture from the automatic monitoring site was too low to provide an annual mean NO₂ concentration that could be used to verify the modelling results. The council therefore concluded that the Detailed Assessment should be reviewed when more recent and robust monitoring data is available.

A re-run of the detailed assessment, which utilised both automatic and diffusion tube measurements with good data capture was conducted in 2013; the Detailed Assessment is currently being finalised by South Lanarkshire Council and will be submitted to the Scottish Government later this year.

Declaration of Rutherglen AQMA

The 2010 Detailed Assessment of NO₂ and PM₁₀ in Rutherglen concluded that annual mean PM₁₀ concentrations in excess of the 2010 objective were predicted at multiple locations of relevant human exposure across the study area. Based on the modelling predictions it was considered necessary to declare an Air Quality Management Area (AQMA) within this area of Rutherglen for PM₁₀. Since the Detailed Assessment was conducted, the M74 extension has opened. This has displaced traffic that previously used Rutherglen as a route into Glasgow city from the south east;

and observed daily traffic flows through Rutherglen have decreased significantly. It was also recognised that areas out-with the original study area were affected by traffic congestion adjacent to areas of relevant exposure and as a result an expansion in the NO₂ network area was undertaken to further inform any future decisions regarding the AQMA and appropriate boundary.

Although the AQMA has not been formally declared yet, another air quality modelling study of current road traffic emissions is being conducted to establish the current baseline and extent of any exceedances based on the now reduced traffic flows through the area. The modelling study is due for completion in late 2013. Should this identify that exceedances of the NO₂ or PM₁₀ objectives are still occurring at relevant locations, the AQMA will be declared as planned and the baseline modelling will be used for the Further Assessment.

9.4 Proposed Actions

The new monitoring data has confirmed the requirement for a Detailed Assessment of NO_2 at Hamilton Town Centre. The Detailed Assessment is planned for completion in early 2014.

No changes to the existing boundary of the Whirlies roundabout AQMA are recommended based on the 2012 monitoring results.

The next LAQM requirements for South Lanarkshire Council are:

- Complete the public consultation process for the Whirlies Roundabout AQMA action plan and produce the finalised action plan
- Conduct baseline modelling for Further Assessment at Rutherglen to establish if AQMA is still required. Declare AQMA if still required and complete the Further Assessment within the next 12 months.
- Conduct the Detailed Assessments for Hamilton town centre and Uddingston in early 2014 once there is sufficient ratified data from the automatic monitoring sites to inform the study.
- Finalise the revised Lanark Detailed Assessment and submit for appraisal.

10 References

Department for Environment, Food and Rural Affairs, (2009) Local Air Quality Management Technical Guidance LAQM.TG (09).

Department for Environment, Food and Rural Affairs, Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007.

Spreadsheet of Diffusion Tube Bias Adjustment Factors accessed at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Appendices

Appendix A: QA:QC Data

QA/QC of automatic monitoring

All of South Lanarkshire Council's automatic monitoring sites are calibrated and audited by Ricardo-AEA Ltd whereby monitoring data are managed to the same procedures and standards as AURN sites.

PM Monitoring Adjustment

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

All TEOM FDMS data were fully ratified by Ricardo-AEA to AURN standards.

QA/QC of diffusion tube monitoring

All passive diffusion tubes (PDT) for NO₂ measurement were prepared and analysed by Edinburgh Scientific Services. The PDTs were prepared using the 50% triethanolamine (TEA) in water method. Edinburgh Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis.

Edinburgh Scientific Services participates in the HSL WASP NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory during the previous five rounds in 2011 and 2012 based upon a z-score of $< \pm 2$ were as follows:

- Jan Mar 2012:100%
- Apr Jun 2012: 100%
- July Sep 2012: 100%
- Oct Dec 2012: 100%
- Jan Mar 2012: 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 is 100%.

Diffusion Tube Bias Adjustment Factors

Two co-location studies were conducted during 2012 at the Whirlies Roundabout and Rutherglen monitoring sites where NO_2 concentrations are measured using automatic analysers. Bias factors have been calculated for each site. Details of the co-location factor calculations, including the precision checks are presented in Figures A.1 to A.2.. The bias factor from the national database is presented in Fig A.4.

Checking Precision and Accuracy of Triplicate Tubes														
			Diffu	ision Tu	bes Mea	surement	S				Automa	tic Method	Data G	uality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm ⁻³	Tube 2 µgm ⁻³	Tube 3 µgm ⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean		Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	04/01/2012	01/02/2012	48.0	46.0	47.0	47	1.0	2	2.5		48.6	100.0	Good	Good
2	01/02/2012	29/02/2012	59.0	50.0	47.0	52	6.2	12	15.5		74.4	29.0	Good	Poor Data Capture
3	29/02/2012	28/03/2012	33.0	42.0	45.0	40	6.2	16	15.5			0.0	Good	Poor Data Capture
4	28/03/2012	25/04/2012	56.0	55.0	57.0	56	1.0	2	2.5			0.0	Good	Poor Data Capture
5	25/04/2012	30/05/2012	62.0	60.0	62.0	61	1.2	2	2.9		19.9	20.0	Good	Poor Data Capture
6	30/05/2012	27/06/2012	45.0	48.0	46.0	46	1.5	3	3.8		28.8	100.0	Good	Good
7	27/06/2012	01/08/2012	53.8	26.2		40	19.5	49	175.3		24.2	100.0	Poor Precision	Good
8	01/08/2012	29/08/2012	43.8	44.3	46.7	45	1.6	3	3.9		29.2	100.0	Good	Good
9	29/08/2012	26/09/2012	46.9	43.8	46.3	46	1.6	4	4.1		26.8	100.0	Good	Good
10	26/09/2012	31/10/2012	55.9	55.9	62.1	58	3.6	6	8.9		47.5	83.0	Good	Good
11	31/10/2012	28/11/2012	53.1	55.6	53.5	54	1.3	2	3.3		28.1	68.0	Good	Poor Data Capture
12	28/11/2012	02/01/2013	53.1	55.6	53.5	54	1.3	2	3.3		46.2	87.0	Good	Good
13														
lt is r	ecessary to hav	e results for at I	least two tu	bes in orde	er to calcul	ate the precis	ion of the meas	surements		-	Overa	ll survey>	Good precision	Poor Overall DC
Site	e Name/ ID:	Whirlies Ro	undabo	ut, East	Kilbride		Precision	11 out of 1	2 periods h	ave a C	V smaller t	han 20%	(Check average	CV & DC from Accuracy alculations)
	Accuracy	(with 9	5% con	fidence	interval)		Accuracy	(with 9	95% conf	idence	interval)			,
	without pe	riods with C	V larger	than 20	%		WITH ALL	DATA			,		50%	
	Bias calcula	ated using 6	periods	of data			Bias calcu	lated using 7	periods	of data	1	m	•	†
	В	ias factor A	0.7	7 (0.62 -	(1)			Bias factor A	0.75	(0.63 -	0.92)	Sias	25%	
		Bias B	30%	(0% - 6	51%)			Bias B	34%	(9% -	59%)	beE	1	
	Diffusion T	uboo Mooni	40		·····		Diffusion	Fubaa Maanu	40	·······		1 Te	Without CV>20	1% With all data
	Moon CV	(Procision):	49	µgm			Moon C	(Procision):	40	µgm		IS IOI	-25%	
	Automotic Magna 20 umm ⁻³						Auto	matic Moan:	26	uam-3		Diff.	-50%	
	Data Can	hure for perio	de used:	95%			Data Ca	nture for peri	nds used:	96%				
	Adjusted	where Marrie	20 49	4 40)			Adiusta		20. (22	44				Journo Targa, for AEA
	Adjusted 1	ubes Mean:	- 38 (3	1 - 49)	µgm		Adjusted	upes Mean:	30 (30	- 44)	μαιη	l.	Vensie	

Figure A.1: Co-location study – Whirlies Roundabout East Kilbride

Figure A.2: Co-location study – Rutherglen

CI	Checking Precision and Accuracy of Triplicate Tubes AEA Energy & Environment													
			Diffu	usion Tu	bes Mea	surements	5				Automa	ic Method	Data Quali	ty Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm ⁻³	Tube 2 μgm ⁻³	Tube 3 µgm ⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean		Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	04/01/2012	01/02/2012	50.0	50.0	55.0	52	2.9	6	7.2		44.9	99.0	Good	Good
2	01/02/2012	29/02/2012	57.0	58.0	66.0	60	4.9	8	12.3		39.9	100.0	Good	Good
3	29/02/2012	28/03/2012	59.0	52.0	49.0	53	5.1	10	12.7		38.4	100.0	Good	Good
4	28/03/2012	25/04/2012	57.0	54.0	56.0	56	1.5	3	3.8		39.3	100.0	Good	Good
5	25/04/2012	30/05/2012	55.0	49.0	56.0	53	3.8	7	9.4		35.6	100.0	Good	Good
6	30/05/2012	27/06/2012	34.0	34.0	30.0	33	2.3	7	5.7		33.4	100.0	Good	Good
7	27/06/2012	01/08/2012	44.4	44.1	44.0	44	0.2	0	0.5		30.3	100.0	Good	Good
8	01/08/2012	29/08/2012									33.2	100.0		Good
9	29/08/2012	26/09/2012	44.1	47.6	45.5	46	1.8	4	4.4		28.5	100.0	Good	Good
10	26/09/2012	31/10/2012	61.0	64.4		63	2.4	4	21.6		44.7	100.0	Good	Good
11	31/10/2012	28/11/2012	84.7								45.6	100.0		Good
12	28/11/2012	02/01/2013	84.7								58.8	100.0		Good
13														
It is	necessary to hav	e results for at	least two tu	ibes in orde	er to calcul	ate the precisi	on of the meas	surements			Overal	l survey>	Good precision	Good Overall DC
Sit	e Name/ ID:	Main	Street, R	uthergle	en		Precision	9 out of 9	periods ha	ve a CV	smaller th	an 20%	(Check average	CV & DC from
							-						Accuracy ca	lculations)
	Accuracy	(with S	95% con	fidence	interval)		Accuracy	(with 9	95% confi	dence	interval)			
	without pe	riods with C	V larger	than 20	%		WITH ALL	DATA				50%		
	Bias calcula	ated using 9	periods	of data			Bias calcu	lated using 9) periods	of data	l i	± ≤25%	L I	
	B	ias factor A	0.73	3 (0.66 - 0).82)			Bias factor A	0.73	(0.66 -	0.82)	B		
		Bias B	37%	(22% -	52%)			Bias B	37%	(22% -	52%)	ğ 0%	Without CVs 20%	With all data
	Diffusion T	ubes Mean:	51	µgm ⁻³			Diffusion 1	Fubes Mean:	51	µgm ⁻³		5	Willing CV22078	with an data
Mean CV (Precision): 5 Mean CV (Precision): 5														
	Autor	matic Mean:	37	µgm ⁻³			Auto	matic Mean:	37	µgm ⁻³		د -50%		
	Data Cap	ture for peric	ds used:	100%			Data Ca	pture for perio	ods used:	100%				
	Adjusted T	ubes Mean:	37 (3	4 - 42)	µgm ⁻³		Adjusted 1	Tubes Mean:	37 (34	- 42)	µgm ⁻³		Jaume Tar	ga, for AEA
						-						Ver	sion 04 - Feb	ruary 2011

National Diffusion Tube Bias Adjustment Factor Spreadsheet Spreadsheet Version Number: 06/13												
Follow the steps below in the correct order Data only apply to tubes exposed monthly and Whenever presenting adjusted data, you shou This spreadhseet will be updated every few m	to show the results o d are not suitable for uld state the adjustme nonths: the factors ma	f <u>relevant</u> co- correcting indiv ent factor used ay therefore be	locatio vidual s and th subje	n studies short-term monitoring periods e version of the spreadsheet ct to change. This should not discourage	their imme	diate use.		This spr at the e	eadsheet w and of Sept M Helpdesl	ill be updated ember 2013 «Website		
The LAQM Helpdesk is operated on behalf of Defra a AECOM and the National Physical Laboratory.	and the Devolved Admini	strations by Bure	eau Veri	itas, in conjunction with contract partners	Spreadshe compiled I	eet maintained b by Air Quality Co	y the National F Insultants Ltd.	Physical L	_aboratory.	Original		
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 If a preparation method is not shown, we have no	Select a Year from the Drop- Down List If a year is not shown, we have	ar 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 ³ shown in Blue at the foot of the final column. ar If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk									
laboratory.	laboratory.	no data ²		at LAQMHelp	odesk@uk.bu	reauveritas.com or	r 0800 0327953					
Analysed By ¹	Method To undo your selection, thoose (All) from the pop-up list	Year ⁵ To undo your selection, choose, (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁶	Bias Adjustment Factor (A) (Cm/Dm)		
J		T.	140	Needebaar Deedleber enverien	40	440	05	40.0%		0.00		
Edinburgh Scientific Services	50% TEA in acetone	2012	RS D	Stirling Council	12	20	95	10.0%	G	0.86		
Edinburgh Scientific Services	50% TEA in acetone	2012	R	City Of Edinburgh Council	11	30	29	4.376	6	0.86		
Edinburgh Scientific Services	50% TEA in acetone	2012	R	City Of Edinburgh Council	10	73	52	41 3%	G	0.00		
Edinburgh Scientific Services	50% TEA in acetone	2012	R	City Of Edinburgh Council	12	43	28	52.8%	G	0.65		
Edinburah Scientific Services	50% TEA in acetone	2012	R	City Of Edinburgh Council	12	38	30	24.9%	G	0.80		
Edinburgh Scientific Services	50% TEA in acetone	2012	KS	City Of Edinburgh Council	11	76	56	34.5%	G	0.74		
Edinburgh Scientific Services	50% TEA in acetone	2012		Overall Factor ² (7 studies) Use 0.78								

Figure A.3: Edinburgh Scientific Services – National average bias adjustment factor

Discussion of Choice of Factor to Use

The bias adjustment factor of 0.74 from the co-location study conducted at Rutherglen in 2012 was used to adjust to adjust the diffusion tube results. This adjustment factor was considered most appropriate because:

- There was poor data capture at the Whirlies Roundabout, East Kilbride automatic monitoring site during 2012
- Although there has been an increase in measured NO₂ annual mean concentrations across many
 of the diffusion tube sites since 2011; the locally derived adjustment factor of 0.74 provides
 results reasonably consistent with recent years across the South Lanarkshire Council diffusion
 tube network. Using the national average factor of 0.78 would result in a large increase in
 measured concentration across all sites, which does not seem realistic when compared with the
 change in automatic monitoring results.

Short-term to Long-term Data adjustment

A short to long term data adjustment was applied to annual mean NO_2 measurements where the data capture was less than 75%. Five separate adjustment ratios were calculated as presented in Tables A.1 to A.5.

Site Name	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Peebles	Urban Background	8	8.8	0.904
Edinburgh St Leonards	Urban Background	24.1	24.5	0.984
			Average ratio (Am/Pm)	0.944

Table A.1: Short-Term to Long-Term Monitoring Data Adjustment – Whirlies Roundabout NO₂

Table A.2: Short-Term to Long-Term Adjustment – Diffusion tubes deployed in September 2012

Site Name	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Peebles	Urban Background	8	11.5	0.694
Edinburgh St Leonards	Urban Background	24.1	28.5	0.846
			Average ratio (Am/Pm)	0.77

 Table A.3: Short-Term to Long-Term Adjustment – Diffusion tube discontinued in September 2012

Site Name	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Peebles	Urban Background	8	6.2	1.290
Edinburgh St Leonards	Urban Background 24.1		21.9	1.102
			Average ratio (Am/Pm)	1.196

Table A.4: Short-Term to Long-Term Adjustment – Diffusion tube at 86 Main Street, Uddingston

Site Name	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Peebles	Urban Background	8	13.8	0.577
Edinburgh St Leonards	Urban Background	24.1	31.4	0.768
			Average ratio (Am/Pm)	0.673

Table A.5: Short-Term to Long-Term Adjustment – Diffusion tube at Wordsworth Way Bothwell

Site Name	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Peebles	Urban Background	8	10.1	1.116
Edinburgh St Leonards	Urban Background	24.1	22.6	1.067
			Average ratio (Am/Pm)	1.091

Table A.6: NO ₂ monthly mean concentrations measured at diffusion tubes sites 2012	able A.6: NO ₂ month	mean concentrations	measured at diffusion	n tubes sites 2012
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Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	Data Capture	Requires annualised?	Bias adjusted
																annual mean (μg.m ⁻³) (0.74 adj factor)
(1) Civic Centre, East Kilbride	36	31	27	30	31	19	21	22	22	37	32	32	28	100%	No	21
(2) Kingsway, East Kilbride	65	75	62	70	76	42	79	64	56	80	74	74	68	100%	No	50
(3) Scott Hill, East Kilbride	37	29	29		25	16	20	1	37	32	24	24	25	92%	No	18
(4) Townhead Street, Srathaven	41	44	35	43	41	20	27	27	28	43	39	39	36	100%	No	26
(5) 179 Quarry Street, Hamilton	-	-	-	-	-	-	-	-	27	49	46	46	42	33%	Yes	31
(6) 129 Quarry Street, Hamilton	-	-	-	-	-	-	-	-	38	60	76	76	62	33%	Yes	46
(7) Cadzow Street, Hamilton	40	41		47	36	32	28	33	28	49	40	40	38	92%	No	28
(8) Duke Street/Low Patrick Street, Hamilton	-	-	-	-	-	-	-	-	60	99	95	95	87	33%	Yes	50
(9) Gateside Street, Hamilton	-	-	-	-	-	-	-	-	42	63	60	60	56	33%	Yes	32
(10) Almada Street, Hamilton	-	-	-	-	-	-	-	-	51	69	66	66	63	33%	Yes	36
(11) Bothwell Road / Bothwell Road	-	-	-	-	-	-	-	-	29	44	43	43	40	33%	Yes	23
(12) Low Quarry Gardens, Hamilton	-	-	-	-	-	-	-	-	13	27	25	25	23	33%	Yes	13
(13) London Street, Larkhall	39	45	36	45	34	27	33	35	33	41	45	45	38	100%	No	28
(14) Kirkton Street, Carluke	45	52	48	41	40	31	43	44	34	50	55	55	45	100%	No	33
(15) Hospitland Drive, Lanark	26	33	21	25	19	11	11	-	-	14	19	19	20	83%	No	15
(16) Bannatyne Street, Lanark	50	48	45	74	71	55	52	39	46	65	64	64	56	100%	No	42
(17) Wellgate, Lanark	25	30	27	35	35	24	21	24	23	31	33	33	28	100%	No	21
(18) 4 High Street/Bloomgate, Lanark	-	-	-	-	-	-	-	-	53	58	63	63	59	33%	Yes	34
(19) 51 High Street, Lanark	-	-	-	-	-	-	-	-	35	-	41	41	39	25%	Yes	22

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Data	Requires	Bias
													Weall	Capture	annuanseu:	annual
																mean (ug.m ⁻³)
																(0.74 adj
																factor)
(20) Main Street, Bothwell	39	43	38	41	37	27	37	31	29	45	50	50	39	100%	No	29
(21) Wordsworth Way, Bothwell (Moved Sep 2012)	31	33	-	-	-	39	32	-	-	-	-	-	34	33%	Yes	27
(21) Wordsworth Way, Bothwell (New location from Sep 2012)	-	-	-	-	-	-	-	-	20	36	36	36	32	33%	Yes	18
(22) North British Road, Uddingston	36	39	32	52	47		39	29	24	47	48	48	40	92%	No	30
(23) Burnpark Avenue, Uddingston	44	47	31	47	54	13		33	1	83	52	52	42	92%	No	31
(24) 73 Main Street (St Andrews Hospice), Uddingston	-	-	-	-	-	-	-	-	37	54	57	57	51	33%	Yes	29
(25) 86 Main Street (Ding's express), Uddingston	-	-	-	-	-	-	-	-	-	45	46	46	45	25%	Yes	23
(26) Clydeford Road, Cambuslang (Moved Sep 2012)	38	39	36	37	39	30	29	31	-	-	-	-	35	67%	Yes	31
(26) Clydeford Road, Cambuslang (New location from Sep 2012)	-	-	-	-	-	-	-	-	21	34	38	38	33	33%	Yes	19
(27) Cambuslang Road, Rutherglen	45	52	34	37	33	29	37	31	31	49	47	47	39	100%	No	29
(28) Farmeloan Road, Rutherglen	43	61	47	51	58	46	34	43	41	62	63	63	51	100%	No	38
(29) Stonelaw Road, Rutherglen	36	35	40	35	29	25	26	24	22	41	47	47	34	100%	No	25
(30) 263 Main Street	-	-	-	-	-	-	-	-	39	70	71	71	63	33%	Yes	36
(31) Mill Street	-	-	-	-	-	-	-	-	27	48	57	57	48	33%	Yes	27
(32) Main Street, Rutherglen Co Loc 1	50	57	59	57	55	34	44	-	44	61	85	85	57	92%	No	42
(33) Main Street, Rutherglen Co Loc 2	50	58	52	54	49	34	44	-	48	64	-	-	50	75%	No	37
(34) Main Street, Rutherglen Co Loc 3	55	66	49	56	56	30	44	-	46	1	-	-	45	75%	No	33
(35) Whirlies Roundabout,EK Co Loc 1	48	59	33	56	62	45	54	44	47	56	53	53	51	100%	No	38
(36) Whirlies Roundabout,EK Co Loc 2	46	50	42	55	60	48	26	44	44	56	56	56	49	100%	No	36
(37) Whirlies Roundabout, EK Co Loc 3	47	47	45	57	62	46	-	47	46	62	54	54	51	92%	No	38

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	Data Capture	Requires annualised?	Bias adjusted annual mean (μg.m ⁻³) (0.74 adj factor)
		Sites	dis-co	ontin	ued dı	uring	2011									
Stewartfield, East Kilbride	41	43	33	42	36	23	37	35	-	-	-	-	36	67%	Yes	32
Eaglesham Road, East Kilbride	36	37	33	33	36	17	21	26	-	-	-	-	30	67%	Yes	26
Strathaven Road, Hamilton	18	20	15	19	16	12	14	13	-	-	-	-	16	67%	Yes	14
Orchard Street, Hamilton	35	43	33	41	41	26	41	20	-	-	-	-	35	67%	Yes	31
Canderside Toll, Stonehouse	35	42	31	36	32	24	30	30	-	-	I	-	32	67%	Yes	29
Newton Station Road, Halfway	29	33	25	26		13	20	19	-	-	-	-	24	58%	Yes	21
Brandon Street, Hamilton	58	66	51	63	60	44	60	46	-	-	-	-	56	67%	Yes	49