



2010 Air Quality Progress Report for *South Lanarkshire Council*

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

Date (August, 2010)



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Executive Summary

A review of new pollutant monitoring data and atmospheric emission sources within the South Lanarkshire Council area has been undertaken. The assessment compared the available monitoring data to national air quality standards in order to identify any existing exceedences of the standards.

Data was gathered from various national and local sources with regard 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 exceedence of national air quality standards.

The review of new and changed emission sources identified no sources that were likely to result in an exceedence of the NAQS objectives.

The measured NO₂ annual mean concentration at Bannatyne Street, Lanark, Brandon Street, Hamilton and the automatic monitoring station in Rutherglen were in excess of the 40 µg/m³ objective.

It is concluded that South Lanarkshire Council should proceed to a Detailed Assessment for NO₂ at Bannatyne Street, Lanark and at Brandon Street, Hamilton

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1 Introduction

1.1 Description of Local Authority Area

South Lanarkshire is one of Scotland's most diverse areas containing both densely populated industrial towns and large expanses of rural landscapes. The Council area forms the south and eastern boundary of the River Clyde from close to Glasgow City Centre to its source in the Southern Uplands.

The Council area can be described in four distinct areas:

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

The Cambuslang and Rutherglen areas are situated at the north-western tip of South Lanarkshire, bordering Glasgow City. Formerly within the Glasgow City boundary, the towns are commonly considered part of greater-Glasgow and are both densely populated 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 little town of Strathaven. East Kilbride is a large new-town with extensive commercial and high-technology industrial activity, whilst Strathaven and the surrounding area is a largely rural and agricultural area.

The Clydesdale area forms the largest area by land, and incorporates the southern and eastern areas of South Lanarkshire. The areas are largely agricultural, although there are several market towns located in Clydesdale, including Carluke, Lanark, Lesmahagow and Biggar as well as numerous villages.

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

1.2 Purpose of Progress Report

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, $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	18 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Since the commencement of the second round of the review and assessment process, South Lanarkshire Council has completed the following Review and Assessment reports:

- Updating and Screening Assessment (2003)
- Detailed Assessment (2005)
- Progress Report (2006)
- Updating and Screening Assessment (2007)
- Detailed Assessment (2007)
- Progress Report (2008)
- Updating and Screening Assessment (2009)

A brief summary of all previous reviews and assessments of local air quality in South Lanarkshire are presented in Table 2 and described further in the following texts.

Table 2: Summary of previous reviews and assessments

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 exceedences 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. NO ₂ annual mean was not likely to be exceeded in the study area
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 µg/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 µg/m ³

Updating and screening assessment	2009	<p>Based on the measured PM₁₀ and NO₂ concentrations and a review of roads within South Lanarkshire the report recommended:</p> <ul style="list-style-type: none"> • 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.
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Updating and Screening Assessment (2003)

South Lanarkshire's Updating and Screening Assessment (U&SA) concluded that the AQS objectives were likely to be met for all pollutants except for particulate matter (PM₁₀). Potential exceedences of the 2010 PM₁₀ objective were identified at some busy roads and junctions. The assessment specified that potential PM₁₀ concentrations in excess of the 18 µg m⁻³ annual mean objective may occur at the junction of the A730 and the B768 in Rutherglen; the junction of the A726 and the B761 in East Kilbride; the Hamilton and Bothwell motorway junctions where the M74 meets the A723 and the A725 respectively; and at the Whirlies roundabout in East Kilbride.

Detailed Assessment (2005)

A Detailed Assessment of PM₁₀ concentrations at Whirlies roundabout, East Kilbride was undertaken in 2005. The Detailed Assessment concluded that neither the annual average objective nor the 24-hour objectives were likely to be exceeded around the Whirlies roundabout in 2010. The predicted concentrations close to the roundabout were however close to the objective.

Progress Report (2006)

A Progress Report was produced in 2006. This reported trends in diffusion tube monitoring data and listed developments with the potential to impact upon air quality in the local authority area.

Updating and Screening Assessment (2007)

The 2007 U&SA concluded that the measured annual average PM₁₀ concentrations at the Whirlies roundabout were in excess of the 2010 PM₁₀ annual mean objective. The Whirlies junction was considered representative of other "busy junctions" in South Lanarkshire; it was therefore decided to undertake further Detailed Assessment of PM₁₀ at the following junctions:

- Whirlies roundabout, East Kilbride

- A730/B768, Rutherglen;
- A726/B764, East Kilbride;
- A726/B761, East Kilbride;
- M74/A723, Hamilton and
- M74/A725, Bothwell.

Measured NO₂ concentrations at monitoring location “East Kilbride 5N” were in excess of the annual mean objective, this location was considered to be one of relevant public exposure; the U&SA therefore concluded that a detailed assessment of NO₂ at this location should be conducted.

Detailed Assessment (2007)

The Detailed Assessment completed in 2007 concluded:

- The 2010 PM₁₀ annual average objective is likely to be exceeded in the area around the Whirlies roundabout. It was recommended that air quality at this location was kept under review by South Lanarkshire Council and that the declaration of an AQMA be considered.
- Predicted NO₂ annual mean concentrations were not in excess of the objective at, and in the vicinity of the “East Kilbride 5N” monitoring location at locations of relevant public exposure.

The Detailed Assessment also recommended that the Council reviewed their monitoring systems and considered additional PM₁₀ monitoring at the following locations: A730/B768, Rutherglen; A726/B764, East Kilbride; and A726/B761, East Kilbride.

Based on the conclusions of the Detailed Assessment, an AQMA for PM₁₀ was declared at Whirlies roundabout effective from the 28th November 2008. A map showing the location of the AQMA is presented in Figure 1.

Progress Report (2008)

The 2008 progress report concluded that measured annual mean NO₂ concentrations were in excess of the 2005 objective at three diffusion tube locations:

- East Kilbride 1N, a roadside monitoring location;
- East Kilbride 5N, a roadside monitoring location; and
- Lanark 1N, a roadside location within a narrow, congested, street canyon.

Further monitoring was recommended at other locations of relevant public exposure near each site. Automatic monitoring of PM₁₀ concentrations conducted from February to May 2007 at Whirlies roundabout were adjusted to determine an estimated annual mean PM₁₀ concentrations using an adjustment factor derived with PM₁₀ measurement data from two Scottish AURN urban background sites. The estimated annual mean PM₁₀ concentration of 23.1 µg m⁻³ was determined to be in excess of the 2010 objective.

Automatic monitoring of PM₁₀ was undertaken at Glespin between February and May 2007 in response to a complaint received regarding an opencast mine in the area. The results of the two months monitoring were adjusted to an estimated annual mean using factors derived from the Scottish AURN sites. The resulting annual mean PM₁₀ concentration of 7.44 µg m⁻³ at Glespin was significantly below the 2010 objective and no further action was recommended.

Updating and Screening Assessment (2009)

Measured annual mean NO₂ concentration from eleven months of automatic measurements at Whirlies Roundabout were very close to exceeding the NAQS annual mean objective and exceeded the objective at Main Street, Rutherglen. Data capture at Rutherglen (59.8%) was low, and insufficient to derive firm conclusions for the site. The short-term NO₂ objective was not exceeded at either of the monitoring locations.

Annual mean NO₂ concentrations measured in 2008 increased at many of the diffusion tube sites when compared to the previous two years and were in excess of the NAQS objective at Glen Esk, East Kilbride 3N; and at Cadzow Street, Hamilton 1N. Measured annual mean NO₂ concentrations at Bannatyne Street, Lanark exceeded the annual mean objective level for the third year in a row, thus it was considered likely that the objective is being exceeded within that narrow street canyon.

Annual mean PM₁₀ concentrations measured at Whirlies Roundabout, East Kilbride and Main Street, Rutherglen were less than the 2004 annual mean PM₁₀ objective. Predicted annual mean PM₁₀ concentrations at both sites were, however, in excess of the 2010 annual mean objective of 18 µg m⁻³. Both sites were however noted to be at roadside locations and are not representative of relevant long-term exposure, although residential properties are located close to each monitoring station. The 24-hour mean PM₁₀ objective was also exceeded at both sites.

A review of roads within the South Lanarkshire Council area identified two narrow congested streets that require Detailed Assessment at:

- Main Street, Rutherglen (including both Faremloan and Glasgow Road junctions); and
- The section of Main Street, Uddingston, between the junctions with Church St/Spindlerow Road and the junction with Bellshill Road.

A review of all other roads identified that annual mean PM₁₀ concentrations at two road junctions in Hamilton town centre, the Almada Street / Bothwell Road junction, and Quarry Street / Duke Street junction may exceed the annual mean PM₁₀ objective. The report also noted that one road with a predicted traffic flows greater than 10,000 AADT is currently under construction within South Lanarkshire; the M74 extension project. The report recommended that a Detailed Assessment of road traffic emissions from the new road is conducted for the section of the road passing through Rutherglen.

The U&SA recommendations were:

- A Further Assessment of PM₁₀ concentrations within the Whirlies AQMA in East Kilbride is required as part of the Action planning process. The Further Assessment should take cognisance of the measured exceedences of the 24-hour mean PM₁₀ objective and review the extent of the AQMA accordingly.
- A Detailed Assessment of both NO₂ and PM₁₀ concentrations in Rutherglen should be undertaken, extending beyond the junction previously considered to include the Farmloan Road junction. The Detailed Assessment should include for the effect of the opening of the M74 extension.
- A Detailed Assessment of both NO₂ and PM₁₀ concentrations in Hamilton town centre should be undertaken, accounting for the effect of street canyons and exposure at receptor locations above ground level.
- A Detailed Assessment of NO₂ concentrations in Lanark town centre should be undertaken, accounting for the influence of the narrow streets and queuing traffic.
- A Detailed Assessment of NO₂ concentrations at Main Street, Uddingston between the junctions with Church St/Spindlerow Road and the junction with Bellshill Road.

It also recommended that the Council review the NO₂ diffusion tube monitoring network in light of the findings of this assessment and target additional monitoring at locations of public exposure.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

During 2009, South Lanarkshire Council operated three automatic continuous monitoring sites, located at Whirlies Roundabout, East Kilbride, Main Street, Rutherglen and Glespin. Monitoring at Whirlies and Rutherglen commenced in 2008 and both NO_x and PM₁₀ concentrations are measured at each site. Monitoring at Glespin began in May 2009 this site measure PM₁₀ only. Details of the automatic monitoring sites are presented in Table 2.1. The locations of the automatic monitoring sites are annotated in Figure 2. The 2009 monitoring at the Rutherglen site commenced on 27th January due to power supply problems at the beginning of the year.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid 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	280677	628254	PM ₁₀	FDMS	N	Y(10)m	2-3m	N
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)	10m	Y

2.1.2 Non-Automatic Monitoring

South Lanarkshire Council operate an extensive network of diffusion tubes. An inventory of the monitoring sites is presented in Table 2.2 detailing the locations and other relevant details. Maps showing the locations of the diffusion tube sites are presented in Figures 3.

Details of QA/QC for the 2008 diffusion tubes results are presented in Appendix A.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Bannatyne Street, Lanark 1N	Roadside	288476	643672	NO ₂	No	Yes (façade)	1m	Yes
Ridgepark Drive, Lanark 5N	Background	287900	644200	NO ₂	No	Yes (5m)	2m	No
Hospitland Drive, Lanark 6N	Background	289000	643900	NO ₂	No	Yes (5m)	2m	No
Civic Centre, East Kilbride 1N	Roadside	263634	654186	NO ₂	No	No	4m	Yes
Kingsway, East Kilbride 5N	Roadside	264373	655354	NO ₂	No	No	8m	Yes
Vancouver Drive, East Kilbride 4N	Background	261700	654200	NO ₂	No	Yes (5m)	2m	No
Glen Esk, East Kilbride 3N	Background	265500	654900	NO ₂	No	Yes (5m)	2m	No
Brouster Hill, East Kilbride	Kerbside	263466	654245	NO ₂	No	Y(5m)	1m	Yes
Scott Hill, East Kilbride	Kerbside	264427	655362	NO ₂	No	Y(5m)	1m	Yes
Cadzow Street, Hamilton 1N	Roadside	272400	655500	NO ₂	No	No	4m	Yes
Strathaven Road, Hamilton	Roadside	271397	652701	NO ₂	No	Y(5m)	2m	Y
Brandon Street, Hamilton	Roadside	272317	655299	NO ₂	No	Y(5m)	2m	Y
Burnpark Avenue, Uddingston 1N	Roadside	269011	661451	NO ₂	No	Yes (5m)	30-40m (M74)	Yes
North British Road, Uddingston 2N	Background	269967	660703	NO ₂	No	Yes (5m)	3m	No
Wordsworth Way, Bothwell 1N	Background	270864	659287	NO ₂	No	Yes (5m)	2m	No
Donaldson Road, Larkhall 1N	Roadside	277366	650224	NO ₂	No	Yes (7m)	60m (M74)	Yes

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Automatic monitoring data recorded at Whirlies Roundabout during all of 2009 are available for comparison with the air quality objectives. Automatic monitoring data from Main Street, Rutherglen are available from 27th January to 31st December 2009.

The annual mean NO₂ concentrations measured at each location from 2007 to 2009 are presented in Table 2.3.

Table 2.3 NO₂ automatic monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³)		
					2007	2008	2009
Rutherglen	Main Street, Rutherglen	N	88.7	88.7%	-	53.3	40.3
Whirlies	Whirlies Rdbt, East Kilbride	Y	99.9	99.9%	-	38.8	37.5

The measured annual mean NO₂ concentration at Main Street Rutherglen has decreased since 2008 but is still in excess of the NAQS objective of 40 µg/m³. The measurements are however made at a roadside site which is not considered a location of relevant human exposure.

Annual mean NO₂ concentrations measured at Whirlies Roundabout in 2009 have decreased slightly when compared with 2008 and are below the 40 µg/m³ NAQS objective.

The measured 1-hour mean concentrations at each monitoring location, in comparison with the 1-hour mean objectives, are presented in Table 2.4.

Table 2.4 NO₂ automatic monitoring: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Number of Exceedences of 1-hr mean objective (200 µg/m ³)		
					2007	2008	2009
Rutherglen	Main Street, Rutherglen	N	-	88.7%	-	4(169)	0 (74)
Whirlies	Whirlies Rdbt, East Kilbride	Y	-	99.9%	-	9(179)	4

NB: For data capture < 90%, the 99.79th %ile of 1-hr means is shown in brackets (µg/m³)

Measured 1-hour mean concentrations in excess of the 200 $\mu\text{g}/\text{m}^3$ short-term objective were recorded four times at the Whirlies monitoring site and zero were recorded at the Rutherglen site.

At Rutherglen, the annual data capture was less than the preferred 90%. It is therefore appropriate to assess the 99.79th percentile of measured hourly mean NO_2 concentrations in relation to the 1-hour mean NO_2 objective. The 99.79th percentile of 1-hour mean concentrations measured at Rutherglen during 2009 was 74 $\mu\text{g}/\text{m}^3$, which is less than the 200 $\mu\text{g}/\text{m}^3$ NAQS objective.

Diffusion Tube Monitoring Data

Measured NO_2 concentrations across the diffusion tube network in 2009 and the previous two years are presented in Table 2.5. Measured concentrations in excess of the NAQS objective of 40 $\mu\text{g}/\text{m}^3$ are highlighted in bold. A bias adjustment factor of 0.95 has been applied to all of the reported diffusion tube results as specified on the summary spreadsheet of co-location studies v310310 (Air Quality Consultants, 2010).

Data capture rates are below the preferred 90% at seven locations, of which three are below 75%. As advised in paragraph 3.15 of TG (09) the results with a data capture rate below 75% should be treated with caution. Where the data capture is less than 75% the data have been annualised following the method described in technical guidance

At two of the monitoring locations, Houston Street, Hamilton 7N; and, Balfroon Crescent, Hamilton 6N; only one month of measured data are available. These results therefore represent a period mean only, and are not relevant for comparison with the annual mean NO_2 objective.

A comparison of the 2006-2009 diffusion tube measurements is presented in Figure 2.4. The following observations have been made based on the 2006 to 2009 diffusion tube NO_2 annual mean measurements:

- No clear trend in annual mean NO_2 concentration across the diffusion tube network is apparent from the 2009 results. Annual mean concentrations have increased at five locations and decreased at five locations when compared with the 2008 measurements. 2009 was the first year diffusion tubes were deployed at four of the sites; these new sites cannot therefore be compared to the previous years.
- Annual mean NO_2 concentrations have increased steadily over the last four years at both diffusion tube locations in Uddingston, the measured concentrations are however significantly below the NAQS annual mean objective of 40 $\mu\text{g}/\text{m}^3$
- The measured NO_2 annual mean at Kingsway, East Kilbride 5N is above the 40 $\mu\text{g}/\text{m}^3$ objective and has increased since 2008. It should be noted that the diffusion tube site is at a roadside location and is not therefore at a location of relevant public exposure.
- The measured NO_2 annual mean concentration at Bannatyne Street, Lanark was in excess of the 40 $\mu\text{g}/\text{m}^3$ objective and has increased since 2008. This monitoring data reinforces the recommendation of the 2009 U&SA to conduct a detailed assessment of NO_2 in Lanark town centre.

- The first year of diffusion tube monitoring at Brandon Street, Hamilton has reported an annual mean NO₂ concentration in excess of the 40 µg/m³ objective. This reinforces the recommendation of the 2009 U&SA to conduct a detailed assessment of NO₂ within the Hamilton town centre.

Figure 2.4 Trends in annual mean NO₂ concentrations measured at diffusion tube monitoring sites.

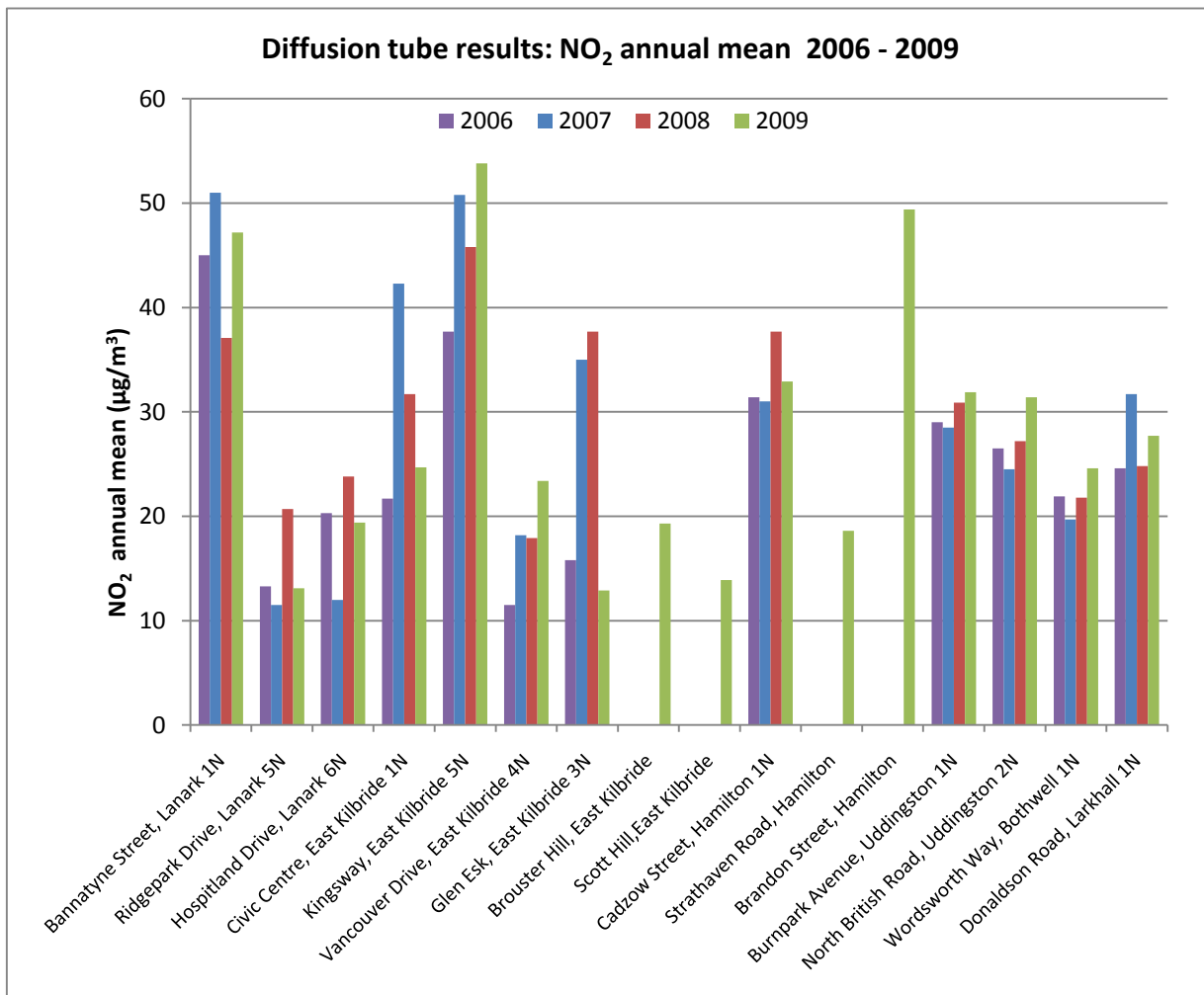


Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes

Location and site ID	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)			
			2006	2007	2008	2009
Bannatyne Street, Lanark 1N	No	100.0%	45.0	51.0	37.1	47.2
Ridgepark Drive, Lanark 5N	No	100.0%	13.3	11.5	20.7	13.1
Hospitland Drive, Lanark 6N	No	91.7%	20.3	12.0	23.8	19.4
Civic Centre, East Kilbride 1N	No	100.0%	21.7	42.3	31.7	24.7
Kingsway, East Kilbride 5N	No	100.0%	37.7	50.8	45.8	53.8
Vancouver Drive, East Kilbride 4N	No	41.7%	11.5*	18.2	17.9	20.5**
Glen Esk, East Kilbride 3N	No	91.7%	15.8	35.0	37.7	12.9
Brouster Hill, East Kilbride	No	91.7%	-	-	-	19.3
Scott Hill, East Kilbride	No	83.3%	-	-	-	13.9
Cadzow Street, Hamilton 1N	No	100.0%	31.4	31.0	37.7	32.9
Strathaven Road, Hamilton	No	83.3%	-	-	-	18.6
Brandon Street, Hamilton	No	91.7%	-	-	-	49.4
Burnpark Avenue, Uddingston 1N	No	100.0%	29.0	28.5	30.9	31.9
North British Road, Uddingston 2N	No	91.7%	26.5	24.5	27.2	31.4
Wordsworth Way, Bothwell 1N	No	66.7%	21.9	19.7	21.8	24.6**
Donaldson Road, Larkhall 1N	No	75.0%	24.6	31.7	24.8	27.7
	* Based on 1-months data only - January 2009; as less than 3 months monitoring period data has not been annualised.					
	** Annualised data as data capture <75%					

2.2.2 PM₁₀

Annual mean PM₁₀ concentrations measured in 2008 and 2009 are presented in Table 2.6 and the number of 24-hr mean PM₁₀ concentrations in excess of the 50µg/m³ at each site is presented in Table 2.7.

Table 2.6 PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³)		
					2007	2008	2009
Glespin	Glespin	N	99.2	70.5	-	-	10
Rutherglen	Main Street, Rutherglen	N	83.3%	83.3%	-	26	23
Whirlies	Whirlies Rdbt, East Kilbride	Y	98.2%	98.2%	-	23	15

Table 2.7 PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Number of Exceedences of daily mean objective (50 µg/m ³)		
					2007	2008	2009
Glespin	Glespin	N	99.2	70.5%	-	-	0
Rutherglen	Main Street, Rutherglen	N	83.3%	83.3%	-	9(54)	8 (56)
Whirlies	Whirlies Rdbt, East Kilbride	Y	98.2%	98.2%	-	11 (59)	5

NB: For data capture < 90%, the 98th %ile of 24-hr means is shown in brackets (µg/m³)

The 2009 PM₁₀ measured annual mean was in excess of the 2010 Scottish objective of 18µg/m³ at the Main Street, Rutherglen site and less than the objective at the Whirlies Roundabout monitoring site. The number of 24-hour mean PM₁₀ concentrations in excess of the 50µg/m³ short-term objective at Rutherglen was greater than the seven times per year specified by the Scottish air quality objectives.

It should be noted that both sites are at roadside locations and are not therefore representative of relevant long-term exposure.

The 2009 PM₁₀ measurements do confirm the conclusion of the 2009 U&SA which recommended that a detailed assessment of PM₁₀ should be conducted at the Main Street/Glasgow Road junction in Rutherglen.

2.2.3 Sulphur Dioxide

South Lanarkshire council do not undertake monitoring of Sulphur Dioxide.

2.2.4 Benzene

South Lanarkshire council do not undertake monitoring of Benzene.

2.2.5 Other pollutants monitored

South Lanarkshire council do not undertake monitoring of any other pollutants

2.2.6 Summary of Compliance with AQS Objectives

South Lanarkshire Council has measured concentrations of Nitrogen Dioxide above the annual mean objective at relevant locations at Bannatyne Street, Lanark; and at Brandon Street, Hamilton. **And will need to proceed to a Detailed Assessment** at both locations. This requirement was identified previously in the 2009 Updating and Screening Assessment

With the exception of locations within currently designated AQMAs and locations at which detailed assessments have already been conducted, all measured PM₁₀ concentrations are below the objectives at relevant locations.

3 New Local Developments

Updated data on local emissions sources were collated from Planning and Roads Services of South Lanarkshire Council, the Scottish Environmental Protection Agency (SEPA) and Transport Scotland.

3.1 Road Traffic Sources

Updated traffic count data for 2009 were obtained from Transport Scotland and South Lanarkshire Council Roads Services. The data were reviewed to identify any roads with significant increases or new sections of road that have not previously been assessed that fit the screening criteria. It was determined that there have been no significant changes to emissions from traffic sources within the South Lanarkshire Council area since the 2009 Updating and Screening Assessment.

3.2 Other Transport Sources

There have been no significant changes to emissions from rail, shipping or aircraft operations within the South Lanarkshire Council area since the 2009 Updating and Screening Assessment.

3.3 Industrial Sources

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

The register of Pollution Prevention and Control (PPC) processes included 14 Part A PPC processes and 100 Part B processes that are operated in the South Lanarkshire Council area.

A full inventory of Industrial installation permitted under the Pollution Prevention and Control (Scotland) Regulations which emit pollutants relevant to the NAQS objectives is presented in Appendix C

Two installations have been identified that commenced operation since the last round of review and assessment as follows:

Company	Process	Location	Date of last permit and/or variation	Atmospheric Pollutants
Grampian Country Chickens (Rearing) Ltd	Poultry Farm,	Cleughmill Poultry Farm, Forth, Lanarkshire	23-Feb-2010	PM ₁₀

Company	Process	Location	Date of last permit and/or variation	Atmospheric Pollutants
VION Agriculture Ltd.	Poultry Farm	Throughburn Poultry Farm, Forth, Lanarkshire	23-Feb-2010	PM ₁₀

As both poultry farms have mechanical ventilation and the potential to house less than 100,000 birds, they do not meet the requirement to proceed with a Detailed Assessment as per the guidance in Box C.4 of TG (09).

3.4 Commercial and Domestic Sources

A review of commercial and domestic combustion sources within the South Lanarkshire area has not identified any new commercial biomass combustion sources or new areas of domestic fuel burning.

3.5 New Developments with Fugitive or Uncontrolled Sources

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

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.

4 Local / Regional Air Quality Strategy

South Lanarkshire Council does not have a local or regional air quality strategy.

5 Planning Applications

A review of planning applications granted since the 2009 USA was carried out in order to identify any developments which may have a significant impact upon the local air quality.

The following applications were identified which may have an impact on local air quality and have been requested to provide an Air Quality Impact Assessment:

- Hamilton South West Community Growth Area;
- Newton Farm Community Growth Area;
- Jackton/Lindsayfield Community Growth Area;
- Larkhall Community Growth Area;

There are also plans in progress for further community growth areas at Carluke; Lesmahagow/Blackwood, and the new town planned at Owenstown. The plans have not been submitted as yet for these developments; it is however likely that an Air Quality Impact Assessment will be required for all of them.

6 Air Quality Planning Policies

South Lanarkshire Council uses the triggers detailed in the EPUK Planning for Air Quality Guidance¹ and have a number of planning conditions which are relevant to air quality.

The planning conditions are as follows:

COND 06.21: Air Quality – Control of Pollutants

Prior to development commencing on site, a scheme to control and minimise the emission of pollutants from and attributable to the development, shall be submitted to and approved in writing by the Council as Planning Authority. The scheme shall set out measures which will be implemented to ensure that the emission of pollutants shall meet the requirements of the Air Quality (Scotland) Regulations 2000 and Air Quality (Amendment) Regulations 2002. The approved scheme shall thereafter be implemented prior to the development being brought into use and shall thereafter be implemented in accordance with the approved scheme to the satisfaction of the Council as Planning Authority.

Reason: To minimise the risk of nuisance from pollutants to nearby occupants.

COND 06.22: Air Quality – Control of Vehicle Emissions

Prior to the [commencement of use/occupation of the development] hereby approved, a scheme for controlling emissions from vehicles used in connection with the development, shall be submitted to and approved in writing by the Council as Planning Authority. The approved scheme shall thereafter be implemented prior to the development being brought into use and shall thereafter operated to the satisfaction of the Council as Planning Authority.

Reason: To minimise the risk of nuisance from pollutants to nearby occupants.

COND 06.23: Dust Mitigation/Control

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.

Reason: To minimise the risk of nuisance from dust to nearby occupants.

COND 06.24: Dust Monitoring

Prior to development commencing on site, a scheme of dust monitoring shall be submitted to and approved in writing by the Council as Planning Authority. The scheme shall thereafter be

¹ Environmental Protection UK (2010) Development Control: Planning For Air Quality (2010 Update)

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implemented in accordance with a programme to be agreed in writing with the Council as Planning Authority.

Reason: To minimise the risk of nuisance from dust to nearby occupants.

ADV NOTE ES 6 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 Resources against the author of any nuisance, which may arise due to the operation of the proposed development

7 Local Transport Plans and Strategies

South Lanarkshire Council's Local Transport Strategy (LTS) was updated in 2006. The policy in relation to air quality is as follows:

- **LTP 95** The Council will continue to monitor and work to meet statutory requirements as appropriate.

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

- **LTA 138** Assessment be made of industrial, transport related new developments, or any changes in domestic fuel use to ensure that air quality continues to meet exceed air quality objectives for Scotland
- **LTA 139** Monitoring of traffic flows and speeds be carried out to assess the impact of M74 completion to ensure that the predicted impacts on air quality are realistic and do not breach air quality objectives.
- **LTA 140** 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 141** New sites to be pursued at Whirlies roundabout in East Kilbride and the new motorway junctions when the M74 is completed.

8 Implementation of Action Plans

South Lanarkshire Council declared the Whirlies AQMA in November 2008 and are currently working towards completing their action plan for submission in May 2011

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

The measured annual mean NO₂ concentration at Main Street Rutherglen has decreased since 2008 but is still in excess of the NAQS objective of 40 µg/m³. Annual mean NO₂ concentrations measured at Whirlies Roundabout in 2009 have decreased slightly when compared with 2008 and are below the 40 µg/m³ NAQS objective.

No clear trend in annual mean NO₂ concentration across the diffusion tube network is apparent from the 2009 results. Annual mean concentrations have increased at five locations and decreased at five locations when compared with the 2008 measurements.

The measured NO₂ annual mean concentration at Bannatyne Street, Lanark was in excess of the 40 µg/m³ objective and has increased since 2008. This monitoring data reinforces the recommendation of the 2009 U&SA to conduct a Detailed Assessment of NO₂ in Lanark town centre.

The first year of diffusion tube monitoring at Brandon Street, Hamilton has reported an annual mean NO₂ concentration in excess of the 40 µg/m³ objective. This reinforces the recommendation of the 2009 U&SA to conduct a Detailed Assessment of NO₂ within the Hamilton town centre.

South Lanarkshire Council has been awarded additional funding from the Scottish Government to install automatic monitoring stations at a location close to Bannatyne Street, Lanark and Brandon Street, Hamilton.

9.2 Conclusions relating to New Local Developments

No new local developments were identified for which there was a need to proceed to a Detailed Assessment.

9.3 Other Conclusions

9.4 Proposed Actions

The 2009 NO₂ monitoring data have confirmed the conclusions of the 2009 Updating and Screening Assessment which recommended proceeding with Detailed Assessments of NO₂ concentrations at Bannatyne Street, Lanark and at Brandon Street, Hamilton. Both Detailed Assessments will be completed prior to submission of the Progress Report 2011.

A Further Assessment of NO₂ and PM₁₀ concentrations has been conducted at Whirlies Roundabout, East Kilbride in June 2009. The report is currently with the Scottish Government.

A Detailed Assessment of NO₂ and PM₁₀ concentrations at Main Street, Rutherglen is currently being conducted. The new monitoring data have not identified any locations where additional monitoring should be conducted. No requirements to change any of the existing AQMAs within the South Lanarkshire Council area have been identified.

The next LAQM requirement for South Lanarkshire Council will be submission of the Detailed Assessments of air quality in Rutherglen, Bannatyne Street Lanark and at Brandon Street Hamilton.

10 References

DEFRA (2009) Part IV of the Environment Act 1995 Local Air Quality Management Technical Guidance LAQM.TG(09) February 2009

Appendices

Appendix A: QA:QC Data**Diffusion Tube Bias Adjustment Factors**

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 WASP scheme that is managed by the Health & Safety Laboratory and a monthly inter-comparison exercise that is managed by AEA. The performance of Edinburgh Scientific Services in the WASP scheme is shown in Table A1 below.

Table A.1 Details of the performance of Glasgow Scientifics in the WASP scheme

	Performance on basis of RPI, OLD CRITERIA, best 4 out of the 5 rounds 98 – 102	Performance on basis of RPI, NEW CRITERIA, best 4 out of the 5 rounds 98 – 102
Edinburgh scientific services	Good	Good

The tube precision for Edinburgh Scientific Services for the only co-location study conducted during 2009 is shown in Table A.2. The results show good precision in the study. The most recently available bias adjustment factor for this laboratory based on the AEA Intertech comparison and the West Lothian Council co-location study was 0.95. The averaged laboratory bias factor taken from both studies is presented in Table A2.

Table A.2: Details of the 2009 bias correction factors for NO₂ diffusion tubes

Site Name	Study duration (months)	Tube precision	Bias correction factor
West Lothian Council	12	Good	0.93
AEA Intertech Comparison	10	Good	0.96
Overall factor (2 studies)			0.95

Factor from Local Co-location Studies (if available)

No local co-location study was conducted in South Lanarkshire during 2008

PM₁₀ Monitoring Adjustment

All automatic monitoring of PM₁₀ was conducted using TEOM FDMS instruments, therefore no adjustments have been applied to the data to account for loss of volatile PM₁₀ components.

Short-term to Long-term Data adjustment

South Lanarkshire Council had 2 locations where data capture was below 75%. An adjustment factor was calculated for each location using all other diffusion tube results for the Council area.

Location	Data capture	Factor
Wordsworth Way	66.7%	0.876
Vancouver Drive	41.7%	1.108

QA/QC of automatic monitoring

AEA Technology currently carries out all data ratification on behalf of Scottish Government for South Lanarkshire Council at Whirlies Roundabout, East Kilbride.

This consists of:

- Polling the data on a daily basis
- 6 month site audit

South Lanarkshire Council does not currently carry out manual calibrations on the NO_x analysers; each analyser carries out an automatic calibration overnight daily. The automatic calibrations are used by AEA to scale and ratify the data.

South Lanarkshire Council currently carries out its own filter changes.

Appendix B: Inventory of Industrial Activities

Company	Process	Location	Date of last permit and/or variation	Atmospheric Pollutants
PPC Part A Regulated Processes				
Intense Photonics Ltd,	Manufacture of small semiconductor devices	High Blantyre	12-Dec-2002	VOCs
Atmel Smart Card Ics,	Microelectronics	East Kilbride	7-Aug-2006	VOCs
Caradale Brick Limited	Ceramic Production	Carlisle	22-Jan-2007	PM ₁₀ , NO ₂ , CO
Raeburn Brick Limited	Ceramic Production	Blantyre	20-Apr-2005	PM ₁₀ , NO ₂ , CO
Glasgow City Council Environmental Protection Services	Landfill	South Cathkin Landfill Site, East Kilbride	27-Nov-2006	PM ₁₀
Grampian Country Chickens (Rearing) Ltd	Poultry Farm	Lanark	23-Feb-2010	PM ₁₀
Freescall Semiconductor UK Ltd	Inorganic Chemicals	East Kilbride	30-Nov-2006	VOCs
Philips Lighting	Inorganic Chemicals	Hamilton	14-Jul-2005	VOCs
Robert Wiseman Dairies	Treating and processing milk the quantity of which received being greater than 200 tonnes per day.	East Kilbride		PM ₁₀ , NO ₂ , CO
Coca-Cola Enterprises Ltd	Treating and processing of raw materials required for the production of soft drinks from fruit/vegetable based materials.	East Kilbride	20-Feb-2006	PM ₁₀ , NO ₂ , CO
VION Agriculture Ltd.	Poultry Farm	Lanark	23-Feb-2010	PM ₁₀
Viridor Waste Management Ltd	Landfill Site	East Kilbride	28-Sep-2007	PM ₁₀
William Hamilton & Sons (Contractors) Ltd	Landfill	Dovesdale Farm Landfill Site, Carlisle Road		PM ₁₀
PPC Part B Processes				
Arnold Clark Automobiles Ltd	Coating of road vehicles.	East Kilbride	05-May-04	VOC's, PM ₁₀
Bennetts Scotland Ltd	Vehicle Respraying	Uddingston	16-Jun-04	VOC's, PM ₁₀

Company	Process	Location	Date of last permit and/or variation	Atmospheric Pollutants
BHC Ltd	Coating Activities - spray painting of steel	Carnwath	06-Apr-05	VOC's, PM ₁₀
Blantyre Castings	Casting	Blantyre	30-Oct-06	PM ₁₀ , NO ₂ , CO
CEMEX UK Materials Ltd	Bulk cement	Thankerton Quarry Biggar	07-Nov-06	PM ₁₀
CEMEX UK Materials Ltd (previously RMC Concrete UK Ltd)	Cement process	Hyndford Quarry Lanark	11-Dec-06	PM ₁₀
Cemex UK Materials Ltd	Cement process	Rutherglen	30//10/06	PM ₁₀
CEMEX UK Materials Ltd,	Concrete Batching	East Kilbride	07-Nov-06	PM ₁₀
Cloburn Quarry Company Limited	Quarrying Processes	Cloburn Quarry, Lanark	02-Mar-06	PM ₁₀
CORUS UK Ltd	Heat treatment - Combustion	Cambuslang	30-Oct-03	PM ₁₀ , NO ₂ , CO
CPI - Glasgow	Coating Activities, Printing and Textile Treatments	Blantyre	24-Oct-03	VOC's, PM ₁₀
D Marshall & Sons Ltd	Cement process	Rutherglen	19-Jul-06	PM ₁₀
Field Packaging	Coating	East Kilbride	12-Aug-08	VOC's PM ₁₀
FP Castings	Ferrous metal casting and foundry	East Kilbride	11-Feb-04	PM ₁₀ , NO ₂ , CO
Fuji Electric (Scotland) Limited	Solvent Emissions F1 Ultrasonic Wash	East Kilbride	29-Dec-04	VOCs
George Raeburn (Minerals) Ltd	Coal Crushing	East Kilbride	20-Mar-06	PM ₁₀
George Taylor & Co	Foundry process	Hamilton	30-Oct-06	PM ₁₀ , NO ₂ , CO
H Macartney	Respraying of road vehicles	East Kilbride	04-Feb-04	VOC's, PM ₁₀
Hall Construction Services Ltd	Opencast Coal Site	Wilsontown Opencast Coal Site Near Forth	07-Aug-06	PM ₁₀
Hanson Aggregates Ltd	Concrete	Rutherglen	24-Oct-05	PM ₁₀
Hanson Aggregates Ltd	Roadstone coating processes	Rutherglen,	29-Nov-06	PM ₁₀
Heraeus QuartzTech Limited,	Polishing/etching glass products	East Kilbride	20-Oct-04	PM ₁₀
Hrabro Ltd	Animal feed manufacture	Coalburn		PM ₁₀ , NO ₂ , CO
Ireland Alloys Ltd	Solvent Emissions Surface cleaning using trichloroethylene	Blantyre	20-Apr-05	VOCs

Company	Process	Location	Date of last permit and/or variation	Atmospheric Pollutants
M & A Thomson Litho Ltd	Coating and printing	East Kilbride	21-Jul-04	VOC's, PM ₁₀
Nationwide Crash Repair Centre	Vehicle Respraying	Hamilton	11-Feb-04	VOC's, PM ₁₀
Parks of Hamilton	Vehicle Respraying	East Kilbride	16-May-08	VOC's, PM ₁₀
Patersons of Greenoakhill	Hard rock quarry process	Dunduff Quarry Boghead		PM ₁₀
Patersons of Greenoakhill Limited	Concrete Batching	Rigside	03-Apr-09	PM ₁₀
Paver Systems Ltd	Production of Cement and Lime	Carlisle	28-Apr-08	PM ₁₀
Polestar East Kilbride Ltd	Offset Heatset Litho Printing	East Kilbride		VOCs
Richmond Coachworks Ltd	Re-spraying of vehicles	Cambuslang	21-Aug-06	VOC's, PM ₁₀
Rosti Scotland	Coating	Larkhall	11-Feb-04	VOC's, PM ₁₀
Scottish Coal Co Ltd	Opencast Coal Mining	Broken Cross Opencast Coal Site Near Rigside	16-Jun-04	PM ₁₀
Scottish Coal company Ltd	Crushing & screening of coal	Glentagart Opencast Coal Site, Glespin	04-May-05	PM ₁₀
Scottish Coal company Ltd,	Crushing, screening, grading, loading, unloading and storage of coal.	Poniel Opencast Coal Site, Douglas, Lanark	06-Feb-08	PM ₁₀
Scottish Power	Crushing, grinding and screening of coal.	Climpy, Near Forth Lanark	10-Mar-04	PM ₁₀
Somerville & Morrison Ltd	Tar and bitument processes	Rutherglen	02-Nov-04	PM ₁₀ , NO ₂ , CO
Surface Technology	coating process	East Kilbride	26-Mar-08	VOC's, PM ₁₀
Tarmac Ltd	Roadstone coating processes	Lanark	19-Jul-06	PM ₁₀
Tarmac Northern Ltd	Concrete Batching	Cambuslang	28-Jun-06	PM ₁₀
Tarmac Northern Ltd	Dry Mortar Plant	Uddingston	21-Jan-04	PM ₁₀
The Pet Crematorium Ltd	Crematorium	Larkhall	12-Sep-08	PM ₁₀ , NO ₂ , CO
The Scottish Coal Company Ltd	Crushing & screening	Ravenstruther	30-Jan-06	PM ₁₀
The Verve Bodyshop Wildman Road Law	Vehicle Respraying	Law	21-Jan-04	VOC's, PM ₁₀

In addition, 37 Petrol Stations and 1 dry cleaner are reported as regulated as PPC Part B processes by SEPA in the South Lanarkshire area.

Appendix C: Maps of Locations