2012 Air Quality Updating and Screening Assessment for South Ayrshire Council

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

April 2012

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Executive Summary

South Ayrshire Council has carried out a review of air quality within South Ayrshire which 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 report follows technical guidance LAQM.TG(09), (Reference1), issued by the Scottish Executive to assist Local authorities in their Review and Assessment of air quality.

The report forms the Updating and Screening Assessment (USA) of the fourth round of the Review and Assessment process and includes latest available data up to the end of 2011. It also considers the conclusions of the previous rounds of Review and Assessment and any changes that have occurred since then that would have an effect on local air quality.

The report sets out the results of air quality monitoring carried out by South Ayrshire Council and considers the potential impacts from a range of sources such as road traffic and other transport emissions, industrial processes, commercial and domestic fuel use and fugitive emission sources.

The USA concluded that concentrations of the various air quality objectives are unlikely to be exceeded.

A detailed assessment is therefore not required for South Ayrshire Council.

An annual progress report will be submitted to the Scottish Executive by the end of April,2013.

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1 Introduction

1.1 Description of Local Authority Area

South Ayrshire Council is situated to the south-west of Scotland, on the coast of the mouth of the Firth of Clyde and the Irish Sea. The eastern boundary of the council area lies approximately 30 kilometres inland.

South Ayrshire is neighboured by East Ayrshire to the east, North Ayrshire to the north and Dumfries and Galloway Council to the south.

The main commercial and residential centre of South Ayrshire is Ayr, which is situated on the west coast. The other main populated towns of Prestwick, Troon and Girvan are also situated on the west coast. The inland towns and villages are predominantly small communities, with the exception of Maybole which is a busy town.

The main transportation route within South Ayrshire is the A77. The A77 connects the port of Stranraer, which is in the Dumfries and Galloway Council area to Glasgow. The A77 passes through the main west coast towns and villages from Stranraer to Turnberry at which point it heads inland, through Kirkoswald and Maybole, by-passing the outskirts of Ayr and Prestwick before heading north to Glasgow via Kilmarnock.

Glasgow Prestwick International Airport is situated within South Ayrshire to the outskirts of Ayr and Prestwick. Glasgow Prestwick International Airport serves both international and domestic passenger flights as well as a large amount of freight transportation flights.

A map of the area is included in Figure 2.

1.2 Purpose of Report

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

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

1.4 Summary of Previous Review and Assessments

Table 1.2 summarises previous rounds of R&A and the exceedences identified or predicted. No AQMA's have been declared nor are there are any locations where exceedences of objective concentrations have previously been identified but reports have judged that no AQMA. Finally no AQMA's have been revoked.

Table 1.2 Conclusions Of Previous Rounds Of Review And Assessment

Date & Title Of Report Produced By South Ayrshire		Brief Outcome
April 2000	Stage 1 Review and Assessment	No exceedences of air quality objectives
June 2003	2003 Updating and Screening Assessment Report	No exceedences of air quality objectives however $PM_{10\ levels}$ in Dailly village predicted to be high to due to high density of domestic coal burning properties. Requested to proceed with a detailed assessment
June 2004	2004 Detailed Assessment PM_{10} levels in Dailly village	No exceedences of PM_{10} levels in Dailly village
April 2005	2005 Progress Report	No exceedences of air quality objectives
April 2006	2006 Updating and Screening Assessment report	No exceedences of air quality objectives however PM10 levels in Ayr town Centre predicted at being near objective limit. Requested to proceed with a detailed assessment.
August 2007	2007 Detailed Assessment PM_{10} levels in Ayr town centre	No exceedences of PM_{10} levels in Ayr town centre
April 2008	2008 Progress Report	No exceedences of air quality objectives
April 2009	2009 Updating and Screening Assessment Report	No exceedences of air quality objectives
April 2010	2010 Progress Report	No exceedences of air quality objectives
April 2011	2011 Progress report	No exceedences of air quality objectives

There are currently no air quality management areas within South Ayrshire

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

South Ayrshire Council operates two automatic monitoring stations. Both stations are fitted with a real l time Chemiluminescent NOX analyser and a TEOM PM10 monitor fitted with FDMS. Both monitors are fitted with web logger functionality.

One station is located in Ayr town centre at the junction of High Street and New Bridge Street and the other station is located at Carrick Academy, Kirkoswald Road, Maybole.

Further details of the monitoring stations are provided in Table 2.1. The location of the Ayr and Maybole monitoring stations are shown in Figures 1 and 2, respectively.

Table 2.1 Details of 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 ?**
High St Ayr	Kerbside	X 337223 Y 221162	NO_2 PM10	N	Y (1m)	3m	Y
Carrick Academy Maybole	Kerbside	X 229283 Y 609636	NO_2 PM 10	N	Y (1m)	20m	Y

The maintenance of the two monitoring stations at Ayr and Maybole is carried out by Air Monitors. This involves two routine services per year and also provision for emergency callouts. Automatic calibration and span checks are carried out daily.

Both sites are part of the Scottish Air Quality network and are audited by AEA Technology. They also carry out the data management for this site. The data is checked to ensure that it is being recorded correctly, the analysers are stable and there are no faults with the analysers. The data is then re-scaled using the results of the calibration and span checks which are carried out automatically by the analyser.

PM_{10} is measured at both monitoring stations using TEOM FDMS units. Since both units are fitted with FDMS there is no need to apply a correction factor to the recorded result.

2.1.2 Non-Automatic Monitoring Sites

Monitoring of nitrogen dioxide was undertaken using passive diffusion tubes at 22 separate locations in South Ayrshire during 2011.The diffusion tube locations are described in Table 2.2.

Monitoring of benzene is no longer undertaken by south Ayrshire council due to previous years monitoring only yielding very low results.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQ MA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
01. 39 Whitletts Road, Ayr	Urban background	X Y	NO_2	N	2m	N/A	N
02. Rozelle Park Ayr	Urban background	X 233763 Y 618944	NO_2	N	10m	N/A	N
03. Town Buildings Ayr	Roadside	X233691 Y 622093	NO_2	N	2m	2m	Y
04. 12 Craigie Road, Ayr	Roadside	X Y	NO_2	N	5m	1m	Y
05. King St. (cctv pole), Ayr	Roadside	X Y	NO_2	N	2m	1m	Y
06. Heathfield Rd/Prestwick Rd Ayr	Roadside	X 234641 Y624159	NO_2	N	2m	1m	Y
07. Beresford Terr./Parkhouse St Ayr	Roadside	X 233859 Y 621296	NO_2	N	3m	2m	Y
08. Tesco Whitletts Rd Ayr	Roadside	X 235150 Y 622528	NO_2	N	10m	2m	Y
09. 86 Main Street, Prestwick	Roadside	X Y	NO_2	N	5m	1m	Y
10. RBS Main Street, Prestwick	Roadside	X Y	NO_2	N	5m	1m	Y
11. Shaw Farm Gardens Prestwick	Roadside	X 235622 Y 626548	NO_2	N	5m	1m	Y
12. Pharmacy, Main St. Dundonald	Roadside	X Y	NO_2	N	20m	1m	N
13. 1 AQ Station, Ayr (N facing)	Roadside	X Y	NO_2	N	5m	2m	Y
14. Church St/ Portland St. Troon	Roadside	X Y	NO_2	N	5m	2m	Y
15. Dundonald Road Traffic lights, Troon	Roadside	X Y	NO_2	N	10m	2m	N
16. Morrisons, Ayr	Roadside	X Y	NO_2	N	5m	2m	Y
17. Ayr Rd/ Hole Rd. Coylton	Roadside	X Y	NO_2	N	5m	1m	Y
18. Station Taxi Rank, Ayr	Roadside	X Y	NO_2	N	5m	1m	Y
19. 2 AQ Station, Ayr (W facing)	Roadside	X Y	NO_2	N	5m	2m	Y
20. Roxy, Bridge St Girvan	Roadside	X Y	NO_2	N	5m	1m	Y
21. 3 AQ Station, Ayr (S facing)	Roadside	X Y	NO_2	N	10m	2m	Y
22. Safeway, Maybole	Roadside	X Y	NO_2	N	15m	1m	N

The nitrogen dioxide diffusion tubes are placed at each location by South Ayrshire Council for a period of approximately one month. At the end of each monthly period, the exposed tubes are replaced with new tubes and the exposed tubes are sent to the laboratory for analysis. Laboratory analysis of the passive diffusion tubes is undertaken by Glasgow Scientific Services (GSS) - part of the City of Glasgow Council. The laboratory is UKAS accredited for the analysis.

GSS prepares the diffusion tubes using the technique of 20% TEA in water.
The laboratory undertakes the analysis of diffusion tubes from Glasgow City Council, which undertakes an annual co-location study of diffusion tubes from automatic monitoring stations in the city for the purposes of validation.

GSS follow the procedures set out in the harmonisation panel guidance and participate in the AEA Technology laboratory inter -comparison scheme and scored a 100% result for accuracy in the WASP scheme for analysis of NO2 diffusion tubes, Jan 2011 – June 2011.

The scheme whilst assessing the analytical performance of laboratories, also allows for the performance of the laboratory against chemiluminescence techniques to be determined.

A laboratory bias for GSS was therefore determined using the methodology contained in the LAQM technical guidance document LAQM TG(09)

The bias factor was determined utilising the excel spreadsheet from the review and assessment helpdesk website (Reference 2) the bias factor was calculated for GSS in 2011 at 0.94 and was applied to all sites.

2.2 Comparison of Monitoring Results with AQ Objectives

This section sets out the results of all the monitoring carried out by South Ayrshire Council in 2011 and where relevant, provides results from previous years to identify any trends.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The results of the automatic monitoring for Nitrogen Dioxide carried out in 2011 at High Street / New Bridge Street Ayr and Carrick Academy, Maybole are displayed in Tables 2.3 and 2.4

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

Site ID	Location	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Annual Mean Concentration μg/m^3				
					2007*[c]	2008* [c]	2009* [c]	2010* [c]	2011 [c]
A1	High St Ayr	N	92.6	92.6	14.8	21	20	24	9
A2	Carrick Academy, Maybole	N	83.5	83.5	N/A	N/A	N/A	10	20
A3	Tarbolton Primary School	N	N/A	N/A	N/A	15.8	8	19	N/A

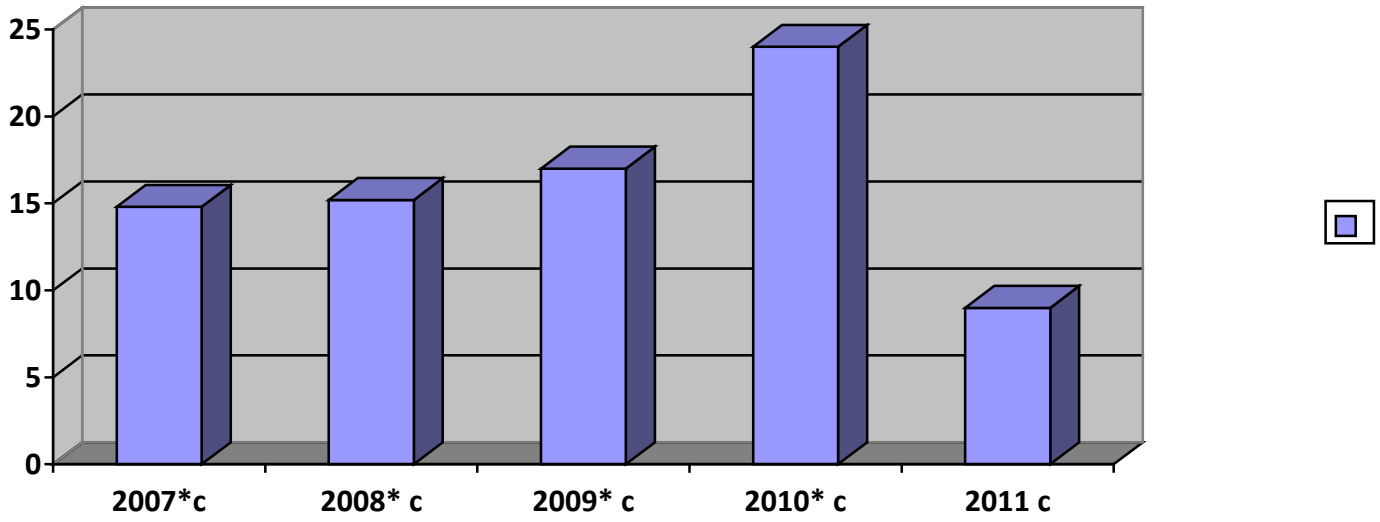


Chart 1 Annual Mean NOX ($\mu g/m^3$) at High St, Ayr

Annual mean NO_X Levels at Ayr rose gradually between 2007 and 2010 but dropped significantly in 2011. The reason for this is unknown. Conversely, levels rose at Carrick Academy in 2011 but were still well below the objective level of 40 $\mu g/m^3$

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

Site ID	Location	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2007*[c]	2008* [c]	2009* [c]	2010* [c]	2011 [c]
A1	High St Ayr	no	92.6	92.6	0	0	4	0	0
A2	Carrick Academy, Maybole	no	83.5	83.5 (32)	N/A	N/A	N/A	0	0
A3	Tarbolton Primary School, Tarbolton	no	N/A	N/A	N/A	0	0	0	N/A

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

The bias adjustment factor of 0.94 was obtained from the spreadsheet located on the Scottish Air Quality website. The 0.94 bias adjustment was applied to all NO_2 diffusion tube results.

The site at King Street, Ayr exceeded the 40μg/m^3 objective limit. All other tubes were well below the objective limit.

However when the NO_2 with distance from roads calculator was utilised from the Scottish Air Quality website, all levels were found to fall below the objective annual mean of 40μg/m^3 as follows:

Site ID	Location	Distance from Kerb to Diffusion Tube (m)	Distance from Kerb to Receptor (m)	Local mean Background NO2 μg/m3	Measured Annual Mean μg/m^3	Predicted Annual Mean μg/m^3
5	King Street Ayr	0.1	2	7.03	44.2	**28.9**

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.94) 2011 ($\mu g/m^3$)
N1	39 Whitletts Road, Ayr	Roadside	N	N	100	N	N	35.80
N2	Rozelle Park, Ayr	Woodland	N	N	100	N	N	6.00
N3	Town Buildings, Ayr	Roadside	N	N	91.66	N	N	32.77
N4	12 Craigie road, Ayr	Roadside	N	N	83.33	N	N	13.68
N5	King Street, Ayr	Roadside	N	N	100	N	Y	**44.23**
N6	Heathfield rd/Prestwick road	Roadside	N	N	100	N	N	35.09
N7	Beresford Terrace/Parkhouse Street	Roadside	N	N	100	N	N	31.24
N8	Tesco. Whitletts road Ayr	Roadside	N	N	100	N	N	29.33
N9	86 Main street Prestwick	Roadside	N	N	100	N	N	33.59
N10	RBS Main street Prestwick	Roadside	N	N	91.66	N	N	26.30
N11	Shaw Farm Gardens	Roadside	N	N	100	N	N	16.64

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.94) 2011 ($\mu g/m^3$)
N12	Pharmacy, Main Street, Dundonald	Roadside	N	N	91.66	N	N	14.85
N13	1 AQ Station, Ayr (North facing)	Roadside	N	Y	83.33	N	N	17.67
N14	Church street/ Portland st Troon	Roadside	N	N	91.66	N	N	15.24
N15	Dundonald Road, Troon	Roadside	N	N	100	N	N	16.22
N16	Morrisons, Ayr	Roadside	N	N	100	N	N	26.12
N17	Ayr road, Coylton	Roadside	N	N	100	N	N	16.97
N18	Station Taxi Rank, Ayr	Roadside	N	N	58.33	Y	N	15.18
N19	2 AQ Station, Ayr (West facing)	Roadside	N	Y	83.33	N	N	18.91
N20	Bridge Street, Girvan	Roadside	N	N	100	N	N	33.14
N21	3 AQ Station, Ayr(South facing)	Roadside	N	Y	91.66	N	N	18.88
N22	Safeways, Maybole	Roadside	N	N	100	N	N	25.30

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

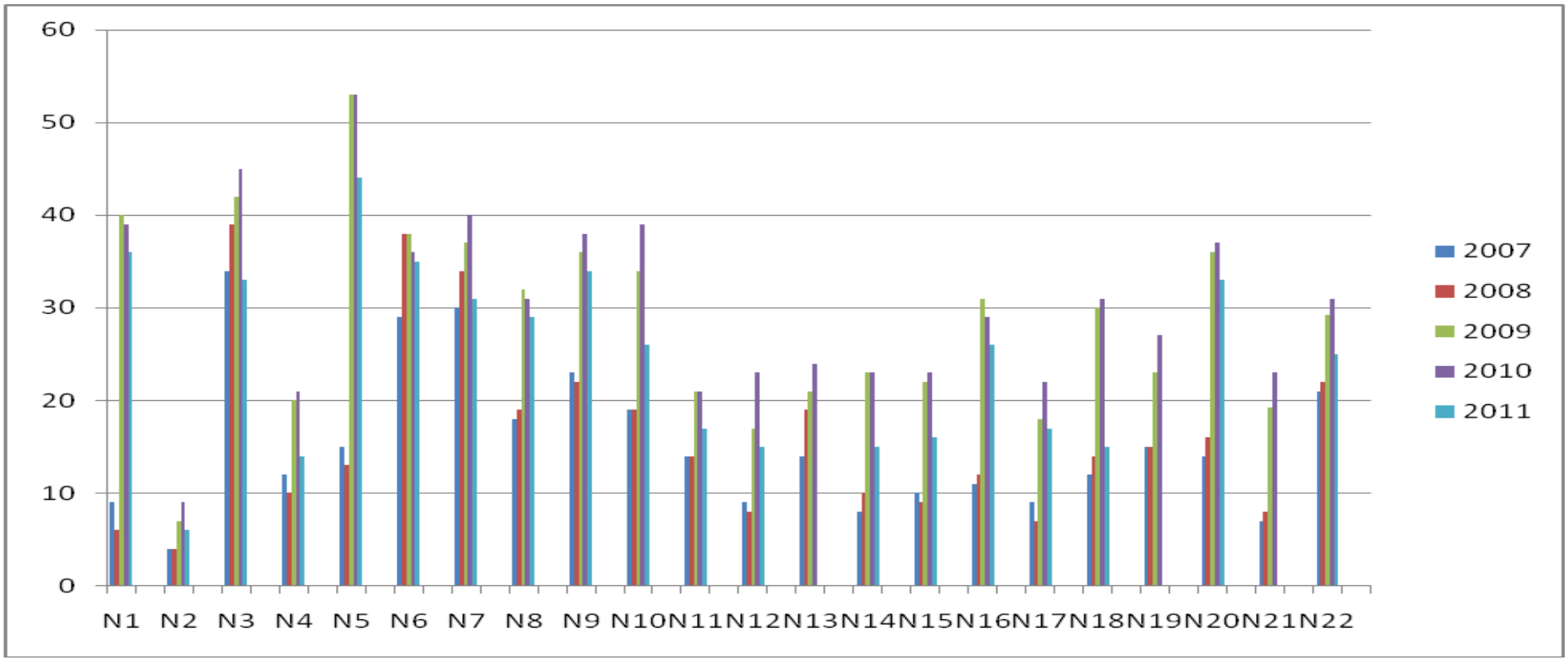
Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2007* (Bias Adjustment Factor = XX)	2008* (Bias Adjustment Factor = XX)	2009* (Bias Adjustment Factor = XX)	2010* (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)
N1	39 Whitletts Road, Ayr	N	4	6	40	39	36
N2	Rozelle Park, Ayr	N	4	4	7	9	6
N3	Town Buildings, Ayr	N	34	39	42	45	33
N4	12 Craigie road, Ayr	N	12	10	20	21	14
N5	King Street, Ayr	N	15	13	53	53	44
N6	Heathfield rd/Prestwick road	N	29	38	38	36	35
N7	Beresford Terrace /Parkhouse St	N	30	34	37	40	31
N8	Tesco. Whitletts road Ayr	N	18	19	32	31	29
N9	86 Main street Prestwick	N	23	22	36	38	34
N10	RBS Main street Prestwick	N	19	19	34	39	26
N11	Shaw Farm Gardens	N	14	14	21	21	17
N12	Pharmacy, Main Street, Dundonald	N	9	8	17	23	15
N13 (up to 2010)	TSB, Ayr Street, Troon	N	14	19	21	24	*

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2007* (Bias Adjustment Factor = XX)	2008* (Bias Adjustment Factor = XX)	2009* (Bias Adjustment Factor = XX)	2010* (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)
N13 (2011)	1 AQ Station, Ayr (North facing)	N	*	*	*	*	18
N14	Church stt/ Portland st Troon	N	8	10	23	23	15
N15	Dundonald Road, Troon	N	10	9	22	23	16
N16	Morrisons, Ayr	N	11	12	31	29	26
N17	Ayr road, Coylton	N	9	7	18	22	17
N18	Station Taxi Rank, Ayr	N	12	14	30	31	15
N19 (up to 2010)	High Road, Whitletts, Ayr	N	15	15	23	27	*
N19 (2011)	2 AQ Station, Ayr (West facing)	N	*	*	*	*	19
N20	Bridge Street, Girvan	N	14	16	36	37	33
N21 (up to 2010)	2 Hunters Avenue, Ayr	N	7	8	19.2	23	*
N21 (2011)	3 AQ Station, Ayr (South facing)	N	*	*	*	*	19
N22	Safeways, Maybole	N	21	22	29.2	31	25

Bias adjustment factor utilised is as follows: 2007: 0.97, 2008: 0.97, 2009: 1.23, 2010: 1.1 and 2011: 0.94

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations (μg/m$^{3)}$ measured at Diffusion Tube Monitoring Sites

The majority of the tubes appear to show a gradual increase between 2007 and 2010 but all diffusion tubes showed a marked decrease in 2011.



2.2.2 PM_{10}

Results of PM_{10} Automatic Monitoring obtained from TEOM's fitted with FDMS and web logger fiunctionality at High Street/New Bridge St Ayr and Carrick Academy, Maybole are displayed in Table 2.5a and 2.5b. Collected data did not show any exceedences of either annual mean or 24-hour mean PM_{10} objectives in 2010

South Ayrshire Council previously monitored PM_{10} at New Bridge Street Ayr using a tapered element oscillated microbalance (TEOM) analyser. The results from this were reported in the detailed assessment, which was submitted in September 2007. The conclusions of that report were that it was unlikely that there would be in exceedence of either annual mean or 24-hour mean PM_{10} objectives in 2010 however further monitoring should be carried out.

Table 2.7 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2007*[c]	2008* [c]	2009* [c]	2010* [c]	2011 [c]
A1 High St Ayr	Roadside	N	53	53	N/A	N/A	15.2	17	16	13
A2 Carrick Academy, Maybole	Roadside	N	87.5	87.5	N/A	N/A	N/A	N/A	12	13
A3 Tarbolton Primary School, Tarbolton	Roadside	N	N/A	N/A	N/A	N/A	12.5	12	14	N/A

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

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
* Optional

Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2007*	2008*	2009*	2010*	2011
A1 High St Ayr	Roadside	N	53	53	N/A	0	0	4	0	0
A2 Carrick Academy, Maybole	Roadside	N	87.5	87.5	N/A	N/A	N/A	N/A	0	0
A3 Tarbolton Primary School, Tarbolton	Roadside	N	N/A	N/A	N/A	N/A	0	0	0	N/A

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] if data capture is less than 90%, include the 90th percentile of 24-hour means in brackets
* Optional

Figure 2.5 Trends in Annual Mean PM_{10} Concentrations

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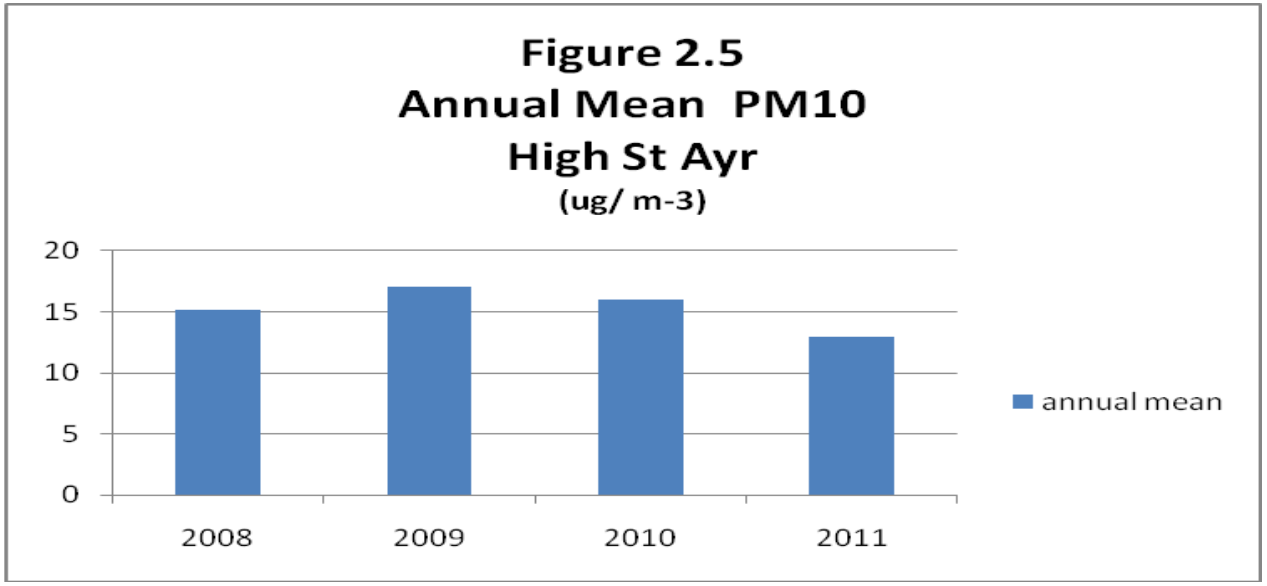
Figure 2.5 displays the annual mean PM10 levels at High St Ayr. Levels appear to have increased from 2008 to 2009 but gradually decreased since then.



2.2.3 Sulphur Dioxide

No Sulphur Dioxide monitoring was carried out in South Ayrshire in 2010.

Previously monitoring was by means of two eight port bubblers, one at Dundonald Activity Centre and the other at the Road Depot within Grangeston Industrial Estate Girvan. Analysis of the solution took place at Glasgow Scientific Services.

Monitoring ceased at Dundonald at the end of 2006 and at Girvan at the end of 2007.

The results of that monitoring indicated that there would no exceedances of the objective standard as was reported in South Ayrshire Council's 2008 Progress Report.

2.2.4 Benzene

Benzene monitoring has not been carried out in South Ayrshire since 2008. The results of that monitoring indicated that there would no exceedances of the objective standard as was reported in South Ayrshire Council's 2009 Updating and Screening Assessment.

2.2.5 Summary of Compliance with AQS Objectives

South Ayrshire Council has examined the results from monitoring in the district.

Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

In order to provide an assessment of road traffic sources for this report, the most up to date information on traffic flows on several roads within South Ayrshire was obtained from the Roads section at South Ayrshire Council and Transport Scotland. The updated traffic information is shown in Appendix

The towns of Ayr and Maybole were identified as areas where there are narrow congested streets with residential properties within 5m of the kerb. Both areas were assessed in previous rounds of review and assessment and do not require further consideration.

South Ayrshire Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

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

The busy streets of Ayr and Maybole were assessed at previous rounds of review and assessment.

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

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

Roads with a high flow of buses and/or HGV's were assessed at previous rounds of review and assessment.

South Ayrshire Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Busy roads and junctions (greater than 5,000 vehicles per day) with relevant exposure in South Ayrshire were assessed in previous rounds of review and assessment.

South Ayrshire Council confirms that there are no new/newly identified busy junctions/busy roads.

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

No new roads with relevant exposure have been constructed in South Ayrshire since last round of review and assessment.

South Ayrshire Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

There is only one bus station within South Ayrshire and that is situated off Fullarton Street in Ayr however there is less than 2,500 movements per day.

South Ayrshire Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

There is one airport situated within South Ayrshire – namely Prestwick however the total equivalent passenger numbers in million passengers per annum (mppa) is less than 10. Likewise, the background NOx concentration is less than 25 $\mu g/m^3$

South Ayrshire Council confirms that there are no relevant airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

The main Ayr – Glasgow passenger line passing through South Ayrshire is electrified. Freight trains are much fewer in number and are diesel powered. There are currently no steam trains operating within South Ayrshire.

4.2.1 Stationary Trains

The only rail yard within South Ayrshire where diesel trains are stationary for more than 15 minutes is Falkland Junction in Ayr however there are no potential for relevant exposure within 15m.

South Ayrshire Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

Troon Harbour previously operated a roll on –roll off ferry to Belfast once per day throughout the year however this service has now ceased. A fast ferry (Seacat) still operates twice per day to Belfast for 6 months during the summer months. In addition last year Troon saw 276 movements of cargo ships carrying logs. This totals at 1,076 movements for 2011.

Ayr Harbour saw a total of 326 cargo ship movements in 2011.

(This information was supplied by Mr Stuart Creswell, of Associated British Ports)

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

We have relocated one of our real time PM10 and Nox monitors to Ayr Harbour area and results obtained from this will reported in our 2013 Progress Report.

5 Industrial Sources

5.1 Industrial Installations

Information on installations regulated under the Pollution Prevention and Control (Scotland) Regulations 2000 as either Part A or Part b processes was obtained from SEPA. The list of authorised processes is set out in Appendix 3.

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

Information on any new or proposed installations for which an air quality assessment has been carried out was obtained from SEPA.

South Ayrshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

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

Information obtained from SEPA indicates that there are no existing industrial installations where emissions have substantially increased.

South Ayrshire Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

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

Information obtained from SEPA indicates that there are no new or significantly changed installations with no previous air quality assessment.

South Ayrshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

According to Appendix E of LAQM TG(09) and information from SEPA, there are no major fuel storage depots within South Ayrshire

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

5.3 Petrol Stations

A survey of all major petrol stations in the area did not reveal any where there was relevant exposure within 10m of the pumps.

South Ayrshire Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

There are only three known poultry farms in South Ayrshire as follows;

- Auchincruive Agricultural College by Ayr which houses a maximum of 35,000 chickens and a few hundred turkeys part of the year.
- Auld Byres Farm, by Coylton which houses a maximum of 16,000 chickens.
- Brochniel Farm, by Girvan which houses a maximum of 3,000 chickens.

  (This information was supplied by the Animal Health Division, Agriculture, Environment and Fisheries Department, Russell House, Ayr)

South Ayrshire Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

A new community hospital in Girvan has a biomass combustion plant. The boiler is a 700kW auto de-ashing Broag Remeha fed from two 30m3 silos with on board sawdust cyclones.

Utilising the nomograms in figure 5.19 (PM_{10}) and 5.20 (NO_2), the indication is that there should be no increase in the emission rates for these pollutants.

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

6.2 Biomass Combustion – Combined Impacts

We are not aware of any biomass combustion plant within the area other than that assessed at the new Girvan Community hospital (above).

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

6.3 Domestic Solid-Fuel Burning

Domestic properties burning solid fuel was assessed in previous rounds of review and assessment and it was found that in two areas the number of residential properties exceeded 100 per 500m square area. These were the villages of Dailly and Tarbolton. Pm_{10} and No_2 monitoring at those areas did not show any exceedance of the relevant air quality objective standard. No further assessment of residential properties burning solid fuel is required.

South Ayrshire Council has assessed areas of significant domestic solid fuel use, and concluded that it will not be necessary to proceed to a Detailed Assessment.

7 Fugitive or Uncontrolled Sources

There are no new fugitive sources since the previous Upgrading and Screening Assessment in 2009.

There have been no complaints of dust from existing quarries or landfills.

South Ayrshire Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Continuous monitoring of Nox and PM_{10} levels at High Street Ayr and Carrick Academy, Maybole did not show any exceedences of the relevant air quality objectives.

Likewise, diffusion tube monitoring of Nox throughout the district did not reveal any exceeedences of the relevant air quality objectives.

All new monitoring data is within the air quality objectives.

8.2 Conclusions from Assessment of Sources

Road Traffic Sources

The Updating and Screening Assessment did not identify the need for a Detailed Assessment in respect of nitrogen dioxide or PM_{10}.

Other Transport Sources

No issues were identified in relation to the other transport sources.

Industrial Sources

No issues were identified in relation to industrial sources.

Commercial and Domestic Sources

No issues were identified in relation to commercial and domestic sources. Assessment of the proposed biomass plant at the proposed community hospital will be carried out in future LAQM assessments.

Fugitive and Uncontrolled Sources

No issues were identified in relation to fugitive and uncontrolled sources

8.3 Proposed Actions

South Ayrshire Council's Updating and Screening Assessment for 2012 identified no exceedences of the air quality objectives and we will therefore not be proceeding with a detailed assessment.

A Progress Report will be submitted in 2012

9 References

1. Defra and the Devolved Administrations, Local Air Quality Management, Technical Guidance LAQM.TG (09), February 2009.
2. Defra and the Devolved Administrations, Spreadsheet of Bias Adjustment Factors, version 03/12, April 2012 accessed at:

http://laqm.defra.gov.uk/documents/diffusiontube300910.xls

Figures

Figure 1: Location of South Ayrshire

Figure 2: Map Of South Ayrshire District

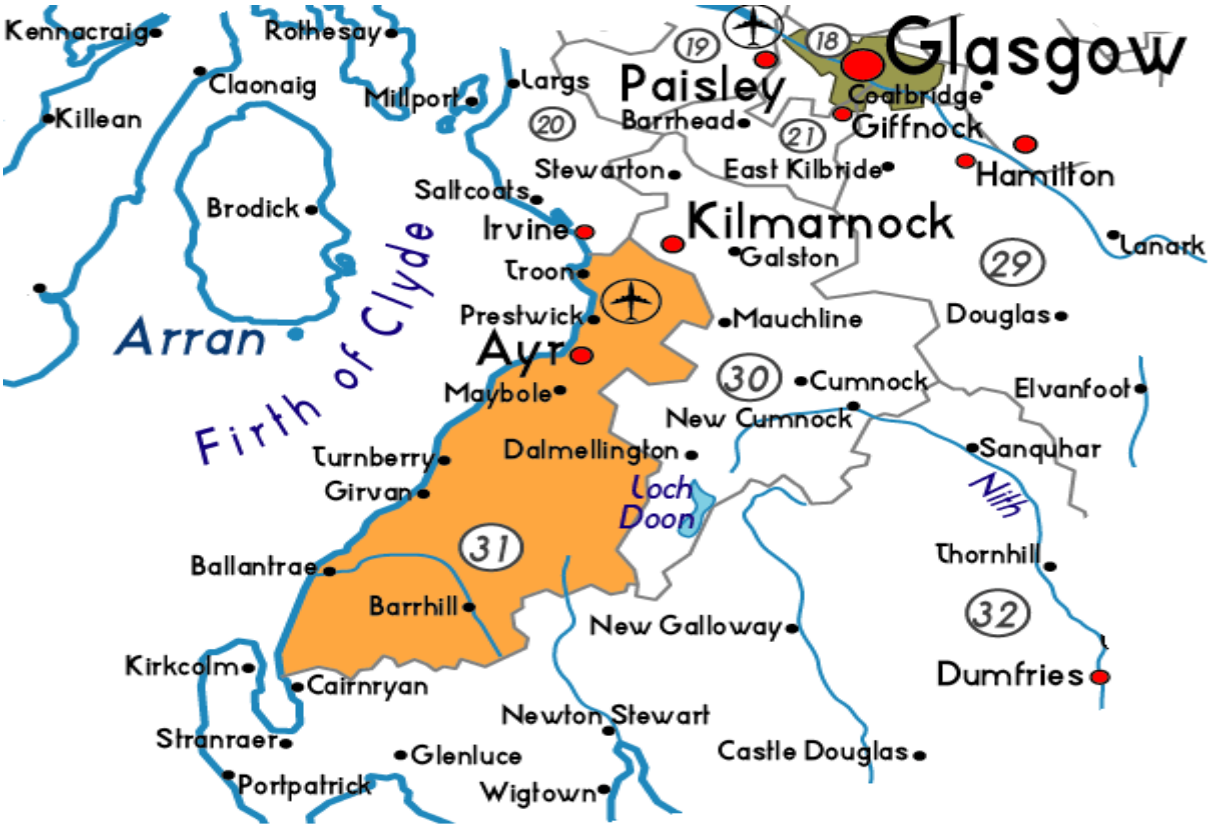


Figure 3: Location of Ayr High Street Monitoring Station

Figure 4: Location of Carrick Academy, Maybole Monitoring Station

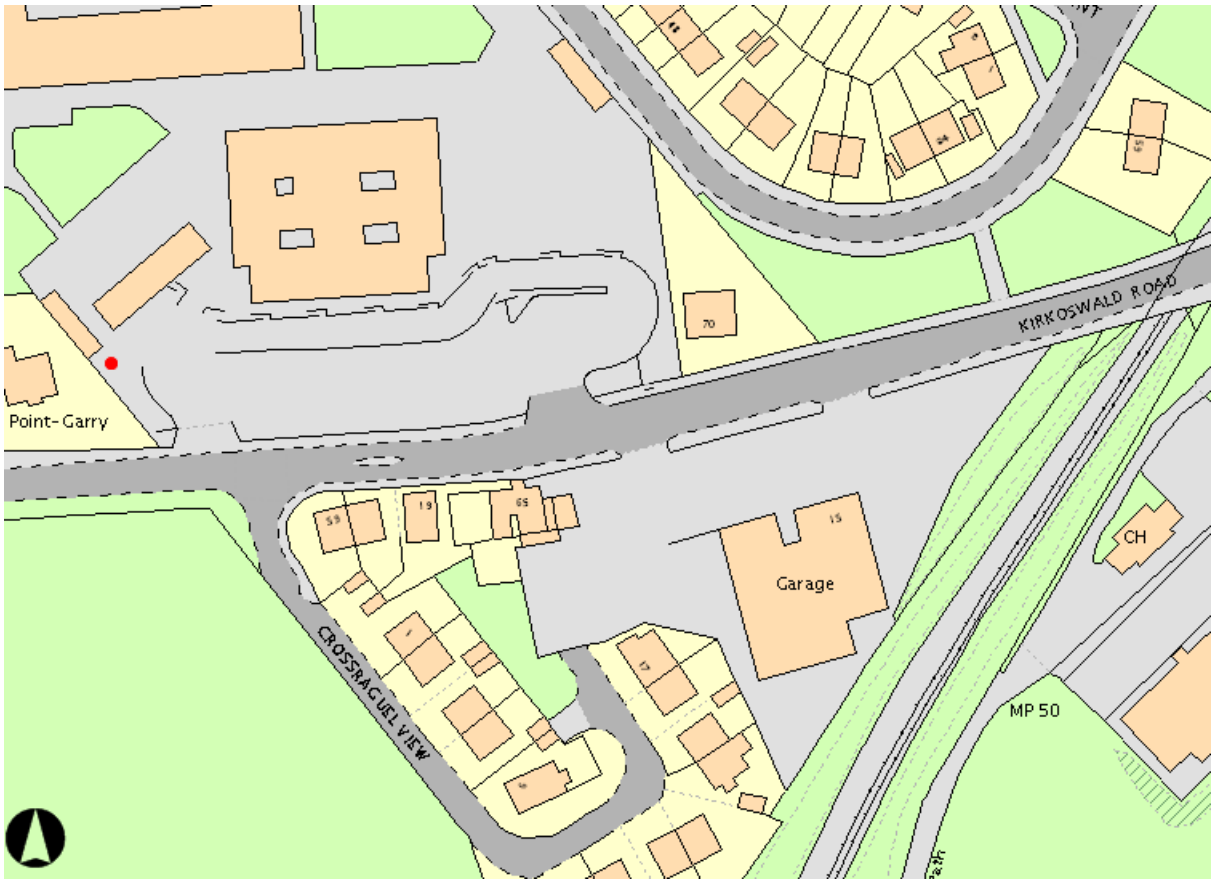


Figure 5: Location of Tarbolton Primary School, Tarbolton Monitoring Station

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tubes are supplied and analysed by Glasgow Scientific Services which is run by Glasgow City Council. The diffusion tube bias adjustment value of 0.94 was obtained from the LAQM Support website at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html and was applied to all Nox diffusion tubes.

PM Monitoring Adjustment

No correction is required as both monitors are equipped with FDMS.

QA/QC of automatic monitoring

Both sites are part of the Scottish Air Quality Programme and are audited twice per year by AEAT. Servicing and repair is carried out by Air monitors

QA/QC of diffusion tube monitoring

Glasgow Scientific Services (GSS) had 4 good results and 2 poor in 2011 for the precision of results for Nox collocation studies.

GSS scored 100% January – December 2011 in the Workplace Analysis Scheme for Proficiency (WASP).

Appendix B: Automatic Monitoring Results Produced By AEAT

Produced by AEA on behalf of the Scottish Government

SOUTH AYRSHIRE MAYBOLE
1st January to 31st December 2011

These data have been fully ratified by AEA

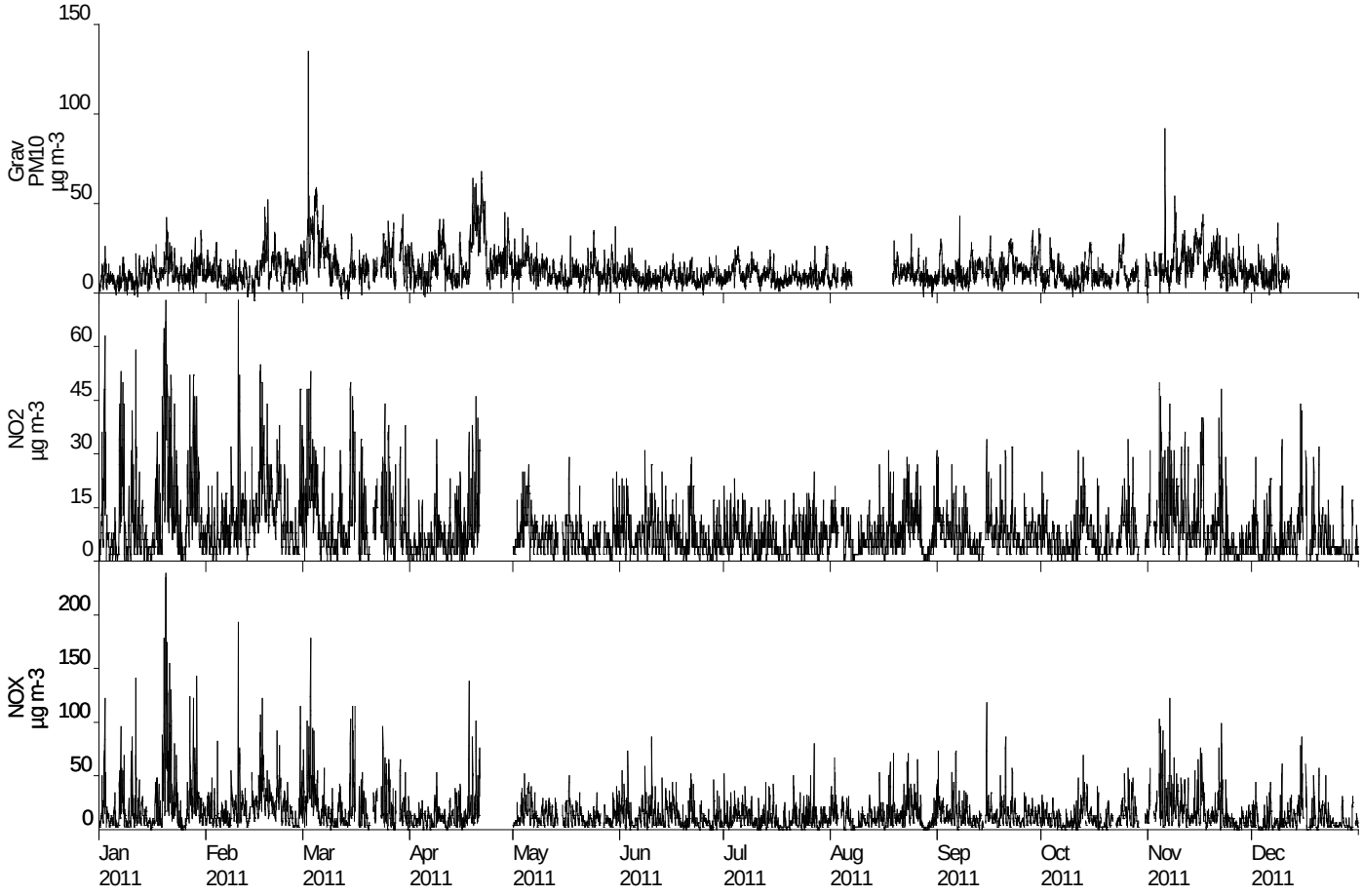
POLLUTANT	PM_{10}+	NO_2	NO_X
Maximum hourly mean	135 µg m^{-3}	73 µg m^{-3}	239 µg m^{-3}
Maximum running 24-hour mean	51 µg m^{-3}	41 µg m^{-3}	91 µg m^{-3}
Maximum daily mean	46 µg m^{-3}	38 µg m^{-3}	86 µg m^{-3}
98.08th percentile of daily means	32 µg m^{-3}	-	-
Average	13 µg m^{-3}	9 µg m^{-3}	15 µg m^{-3}
Data capture	87.5 %	92.6 %	92.6 %

+ PM_{10} instruments:
FDMS using a gravimetric factor of 1 from 1st January 2011
All gaseous pollutant mass units are at 20°C and 1013 mb. Particulate matter concentrations are reported at ambient temperature and pressure.
NO_X mass units are NO_X as NO_2 µg m^{-3}

Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 18 µg m^{-3}	0	-
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0	0

Produced by AEA on behalf of the Scottish Government

South Ayrshire Maybole
Hourly Mean Data for 1st January to 31st December 2011



Date Created: 30/03/2012

Produced by AEA on behalf of the Scottish Government

SOUTH AYRSHIRE AYR HIGH ST
1st January to 31st December 2011

These data have been fully ratified by AEA

POLLUTANT	PM_{10}+	NO_2	NO_X
Maximum hourly mean	111 µg m^{-3}	99 µg m^{-3}	260 µg m^{-3}
Maximum running 24-hour mean	51 µg m^{-3}	54 µg m^{-3}	114 µg m^{-3}
Maximum daily mean	49 µg m^{-3}	52 µg m^{-3}	108 µg m^{-3}
99.8th percentile of hourly means	-	78 µg m^{-3}	-
98.08th percentile of daily means	33 µg m^{-3}	-	-
Average	13 µg m^{-3}	20 µg m^{-3}	37 µg m^{-3}
Data capture	52.7 %	83.5 %	83.5 %

+ PM_{10} instruments:
FDMS using a gravimetric factor of 1 from 1st January 2011

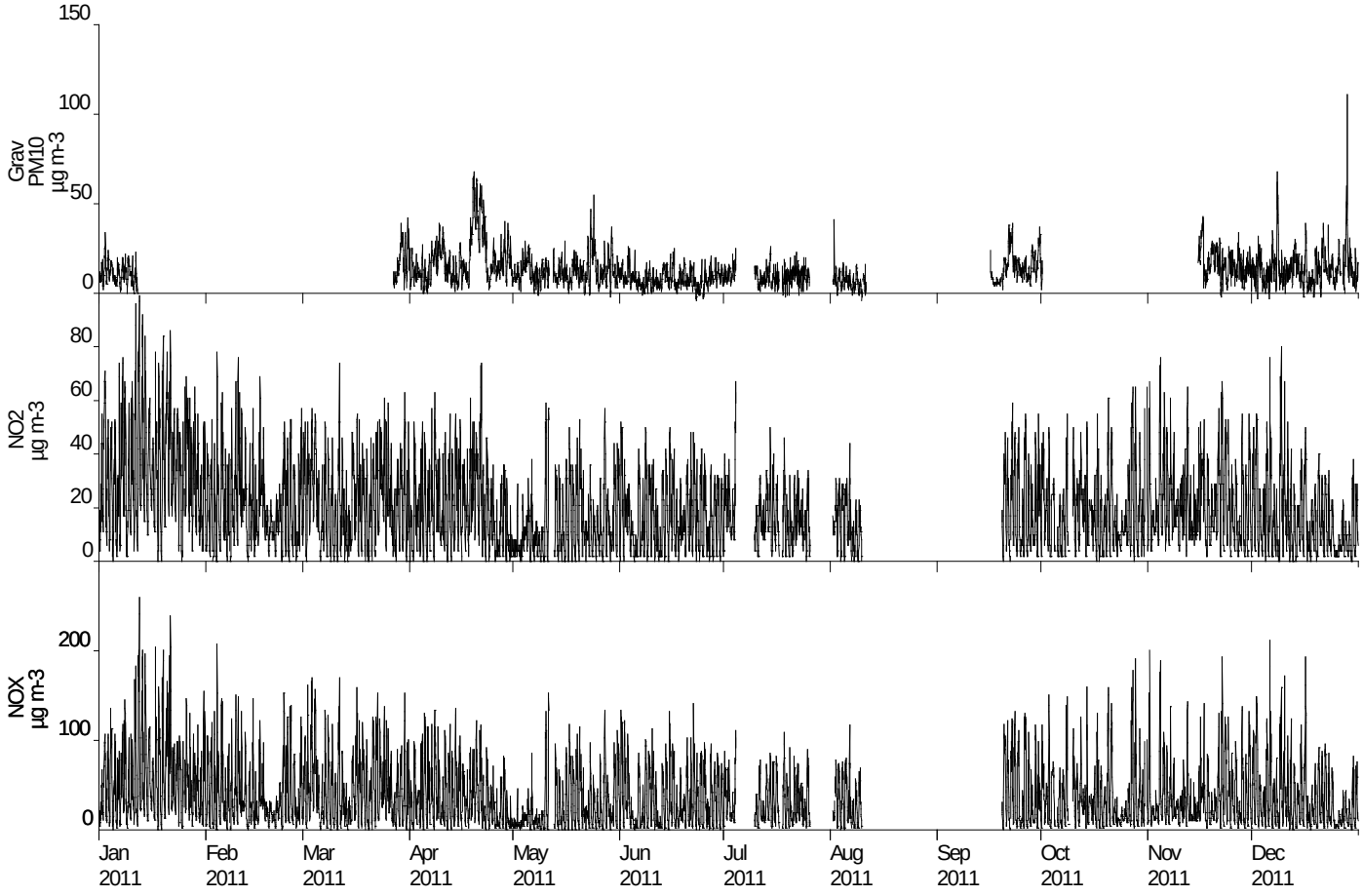
All gaseous pollutant mass units are at 20°C and 1013 mb. Particulate matter concentrations are reported at ambient temperature and pressure.
NO_X mass units are NO_X as NO_2 µg m^{-3}

Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 18 µg m^{-3}	0	-
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0	0

Note: For a strict comparison against the objectives there must be a data capture of >90% throughout the calendar year

Produced by AEA on behalf of the Scottish Government

South Ayrshire Ayr High St
Hourly Mean Data for 1st January to 31st December 2011



Date Created: 30/03/2012

Appendix C: Full data Set Of NOx Tube Results for 2011

Site	J	F	M	A	M	J	J	A	S	O	N	D	Total	Data Capture (months)
01 39 Whitletts Road, Ayr	48	44	50	42	33	37	34	26	36	37	43	27	457	12
02 Rozelle Park Ayr	17	16	8.1	4	4	3	4	3	3	3	8	5	77	12
03 Town Buildings Ayr	35	x	52	42	38	42	36	26	42	40	31	33	418	11
04 12 Craigie Road, Ayr	32	25	27	13	14	x	14	7	13	x	16	14	175	10
05 King St, (CCTV pole), Ayr	45	78	60	44	42	49	47	21	46	50	48	37	565	12
06 Heathfield Rd/Prestwick Rd Ayr	58	46	52	36	27	41	32	17	28	32	46	32	448	12
07 Beresford Terr/Parkhouse St Ayr	47	41	43	26	32	31	29	16	32	32	43	28	399	12
08 Tesco Whitletts Rd Ayr	41	40	40	37	29	32	23	13	24	29	36	31	375	12
09 86 Main Street, Prestwick	36	37	46	36	29	41	36	22	40	36	35	36	429	12
10 RBS Main Street, Prestwick	41	42	43	24	26	30	x	21	24	25	42	18	336	11
11 Shaw Farm Gardens Prestwick	25	24	27	15	16	17	11	8	14	17	26	12	212	12
12 Pharmacy, Main St, Dundonald	26	x	21	16	14	17	13	16	15	19	18	14	190	11
13 1 AQ Station, Ayr (North facing)	29	27	32	22	x	23	x	10	23	18	24	19	226	10
14 Church St/ Portland St, Troon	16	23	25	14	x	24	19	9	15	16	21	14	195	11
15 Dundonald Rd , Troon	18	24	27	16	16	15	16	7	16	14	26	12	207	12
16 Morrisons, Ayr	26	33	38	28	24	31	25	16	25	30	32	26	334	12
17 Ayr Road/ Hole Road, Coylton	26	30	22	27	12	16	16	13	11	15	21	9	217	12
18 Station Taxi Rank, Ayr	29	x	x	x	x	26	26	x	26	28	30	28	194	7
19 2 AQ Station, Ayr (West facing)	33	26	31	27	x	21	20	x	23	14	25	21	242	10
20 Roxy, Bridge Street, Girvan	36	35	44	45	33	40	47	15	35	32	35	26	423	12
21 3 AQ Station, Ayr (South facing)	24	30	27	21	x	23	18	8	20	20	26	24	241	11
22 Safeway, Maybole	40	37	33	24	21	30	27	14	35	26	16	21	323	12

Appendix D: Part B Prescribed Processes Licensed by SEPA in South Ayrshire

AUTHORISATION REFERENCE	SITE ADDRESS DETAILS
PPC/A/1000105	Tarbolton SOUTH AYRSHIRE KA5 5LZ
PPC/A/1000116	Straid Farm Lendalfoot Girvan South Ayrshire KA26 0JF
PPC/W/0020050	Old Farm Road Heathfield Industrial Estate Heathfield South Ayrshire KA8 9ST
PPC/W/0020056	Sandyford Toll Sandyford Prestwick South Ayrshire KA9 2SY
PPC/W/0020060	Glenburn Road Shaw Farm Industrial Estate Prestwick South Ayrshire KA9 2NS
PPC/A/1003144	Ladywell Avenue Grangestone Industrial Estate Girvan South Ayrshire KA26 9PT
PPC/A/1034906	GRANGESTONE INDUSTRIAL ESTATE LADYWELL GIRVAN , AYRSHIRE KA26 9PL