



2013 Air Quality Progress Report for South Ayrshire Council



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

April, 2013

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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 Progress Report (PR) of the fifth round of the Review and Assessment process and includes latest available data up to the end of 2012. 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 PR concludes that concentrations of the various air quality objectives are unlikely to be exceeded.

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

A further progress report will be submitted to the Scottish Executive by the end of April 2014.

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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.

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.

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

1.3 Air Quality Objectives

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

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	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 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 $\mu\text{g}/\text{m}^3$	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
Particulate Matter (PM ₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	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

Table 1.2 summarises previous rounds of R&A and the exceedences identified or predicted. No air quality management areas (AQMA's) have been declared nor are there any locations where exceedences of objective concentrations have previously been identified. Finally no AQMA's have been revoked.

Table 1.2 Summary 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 PM ₁₀ 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
April 2012	2012 Updating and Screening Assessment Report	No exceedences of air quality objectives

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

South Ayrshire Council currently operate two automatic monitoring sites. These are located at High Street and Taylor St (Harbour), Ayr.

PM₁₀ 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 results. NO₂ is also measured at both sites utilising chemiluminescent NO_x analysers.

Both monitors are fitted with web logger functionality.

The monitoring station which was previously located at Carrick Academy in Maybole was moved to Ayr Harbour in May 2012 as the levels being recorded at the Carrick site were well within the objective levels. In addition, residents in the vicinity of the harbour had complained of dusty events associated with activities at Ayr harbour (primarily from the handling of scrap metal and the unloading of dusty cargo).

The maintenance of the two monitoring stations 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 stations are part of the Scottish Air Quality network and are audited by Ricardo-AEA. The data is checked to ensure that it is being recorded correctly, the analysers are stable and there are no faults with the analysers. All data is then re-scaled using the results of the auto calibration and span checks which are carried out by the analyser automatically. In addition manual calibration is carried out routinely.

Ricardo-AEA also carry out the data management for both sites and carry out QA/QC on the data before it is ratified.

Figure 2.1:Location Of Automatic Monitoring Site at High Street, Ayr (Ref: AM1)



Figure 2.2: Location Of Automatic Monitoring Site at Taylor Street (Harbour) Ayr (Ref: AM 2)

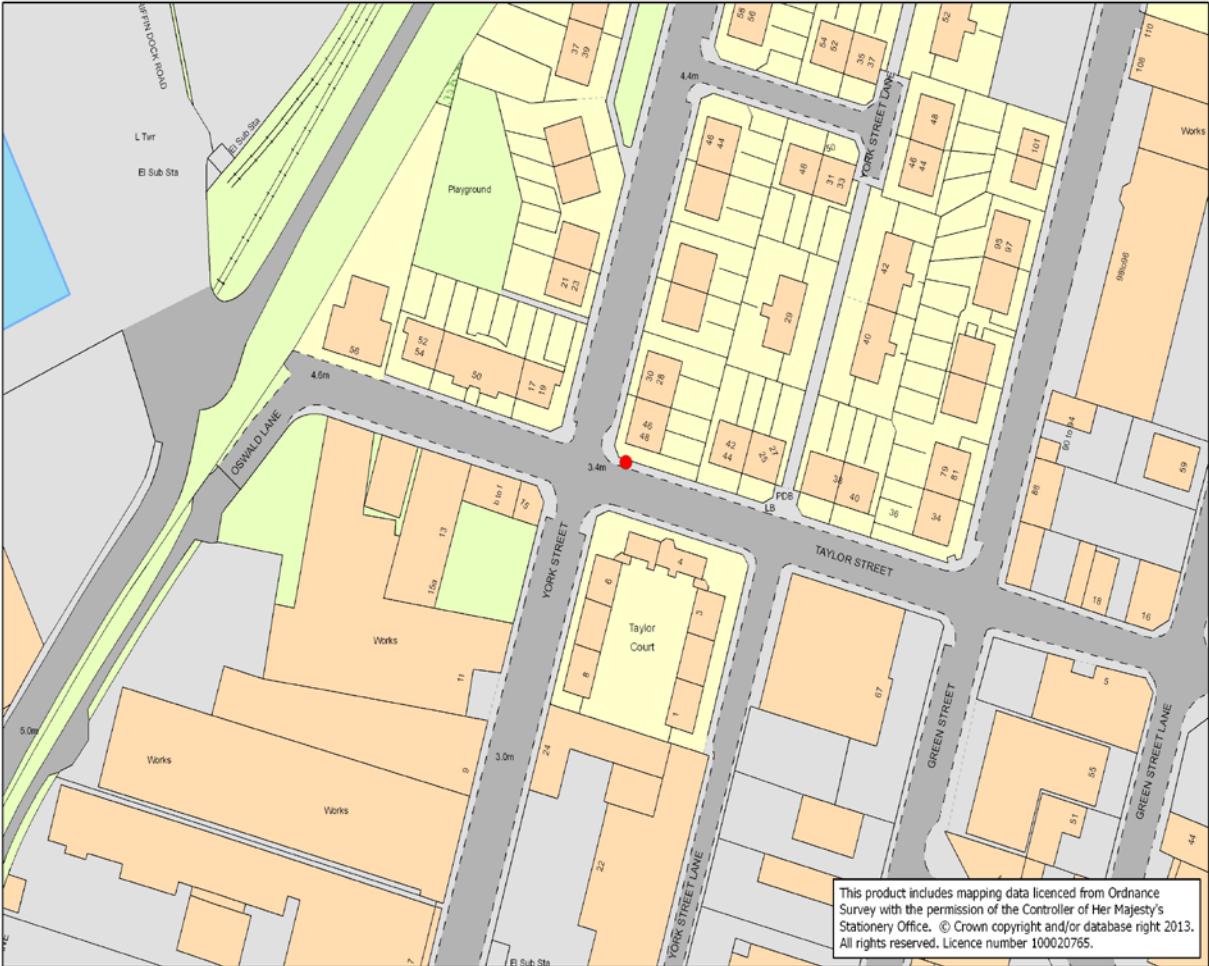


Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
AM1	High St Ayr	Roadside	233701	622114	2.0	NO ₂ & PM ₁₀	N	Chemiluminescent NOX analyser & TEOM with FDMS for PM10	5	2	Y
AM2	Taylor Street Ayr	Roadside	233608	622750	2.0	NO ₂ & PM ₁₀	N	Chemiluminescent NOX analyser & TEOM with FDMS for PM10	10	1	Y

2.1.2 Non-Automatic Monitoring Sites

Monitoring of nitrogen dioxide using passive diffusion tubes was undertaken at 22 separate locations in South Ayrshire during 2012. The diffusion tube locations are described in Table 2.2.

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 – March 2012 and July – December 2012. For the period April – June 2012 a 50% result for accuracy was awarded.

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)

Although co-location tubes were fitted to our real time analyser at High St Ayr, due to the fact that valid data capture for 2012 was only 85% it was decided to determine the bias correction factor utilising the excel spreadsheet version no 03/13 from the review and assessment helpdesk website. The bias factor was calculated for GSS in 2012 at 0.95 Cm/Dm and was applied to all sites.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
DT1	39 Whitletts Rd Ayr	Roadside	234605	622412	2m	NO ₂	N	N	Y (2m)	N/A	N
DT2	Rozelle Park Ayr	Urban back-ground	233763	618944	2m	NO ₂	N	N	Y (10m)	N/A	N
DT3	Town Buildings Ayr	Roadside	233691	622093	2m	NO ₂	N	N	Y (2m)	2m	Y
DT4	12 Craigie Road Ayr	Roadside	234601	622314	2m	NO ₂	N	N	Y (5m)	1m	Y
DT5	King Street Ayr	Roadside	233830	622352	2m	NO ₂	N	N	Y (2m)	1m	Y
DT6	Heathfield Rd/ Prestwick Rd Ayr	Roadside	234641	624159	2m	NO ₂	N	N	Y (2m)	1m	Y
DT7	Beresford Terr -Parkhouse St Ayr	Roadside	233859	621296	2m	NO ₂	N	N	Y (3m)	2m	Y

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Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
DT8	Tesco Whitletts Rd Ayr	Roadside	235150	622528	2m	NO ₂	N	N	Y (10m)	2m	Y
DT9	86 Main St Prestwick	Roadside	235148	625848	2m	NO ₂	N	N	Y (5m)	1m	Y
DT10	RBS Main St Prestwick	Roadside	235177	625785	2m	NO ₂	N	N	Y (5m)	1m	Y
DT11	Shaw Farm Gdns Prestwick	Roadside	235622	626548	2m	NO ₂	N	N	Y (5m)	1m	Y
DT12	Main Street Dundonald	Roadside	236577	634533	2m	NO ₂	N	N	Y (20m)	1m	N
DT13	1 AQ Station High St Ayr (N)	Roadside	233701	622114	2m	NO ₂	N	Y	Y (5m)	2m	Y
DT14	Church Street Troon	Roadside	232175	631043	2m	NO ₂	N	N	Y (5m)	2m	Y
DT15	Dundonald Road Troon	Roadside	232588	631277	2m	NO ₂	N	N	Y (10m)	2m	N
DT16	Morrisons Ayr	Roadside	232135	621149	2m	NO ₂	N	N	Y (5m)	2m	Y
DT17	Ayr Rd/ Hole Rd CoyltonS	Roadside	240843	619686	2m	NO ₂	N	N	Y (5m)	1m	Y

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Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
DT18	Station Taxi Rank Ayr	Roadside	240194	624754	2m	NO ₂	N	N	Y (5m)	1m	Y
DT19	1 AQ Station High St Ayr (W)	Roadside	233701	622114	2m	NO ₂	N	Y	Y (5m)	2m	Y
DT20	Bridge St Girvan	Roadside	218549	598064	2m	NO ₂	N	N	Y (5m)	1m	Y
DT21	1 AQ Station High St Ayr (S)	Roadside	233701	622114	2m	NO ₂	N	Y	Y (10m)	2m	Y
DT22	CO-OP, High St, Maybole	Roadside	230099	609965	2m	NO ₂	N	N	Y (15m)	1m	N

2.1 Comparison of Monitoring Results with Air Quality Objectives

2.1.1 Nitrogen Dioxide (NO₂)

Automatic Monitoring Data

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2012 % ^b	Annual Mean Concentration (µg/m ³)				
					2008* ^c	2009* ^c	2010* ^c	2011* ^c	2012 ^c
CM 1 (High St, Ayr)	Roadside	N	84.9	84.9	21	20	24	9	20
CM 2 (Ayr Harbour)	Roadside	N	64	42	N/A	N/A	N/A	N/A	15*

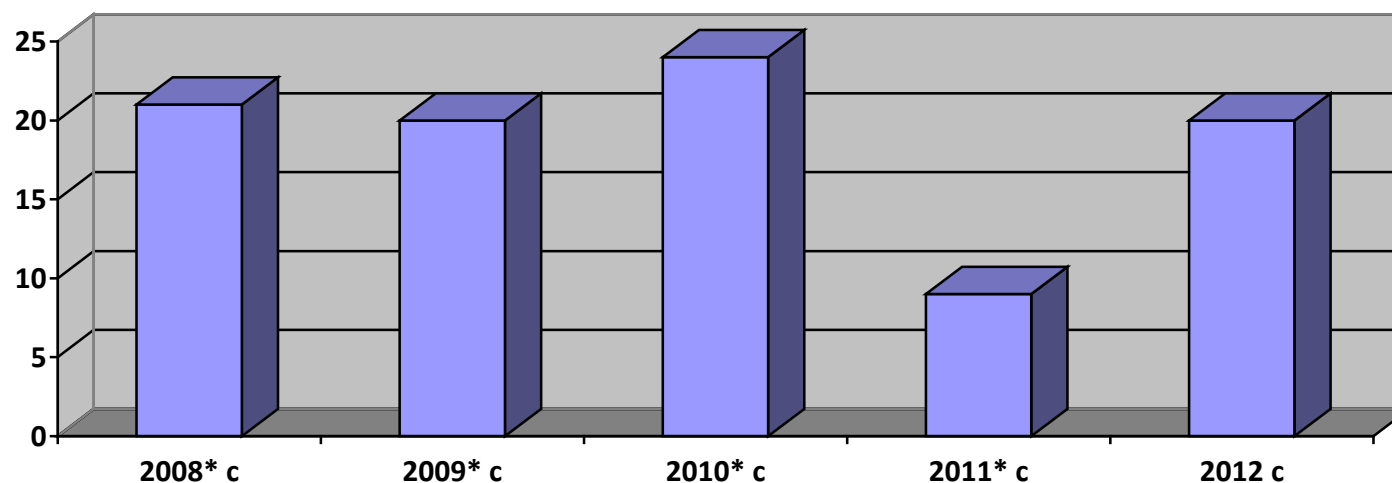
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^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 The Annual Mean Concentration For Ayr Harbour Site has been “annualised” as valid data capture was less than 75%

Figure 2.3 Trends in Annual Mean NO₂ Concentrations (µg/m³) Measured at High Street Ayr since 2008

(Annual mean concentrations for previous years at Ayr Harbour are not available as the monitor was only installed at that site in May 2012).



The trend in NO₂ measured at High Street Ayr is unclear, there being a slight increase in 2010 but a large drop in 2011 then back to 2009 levels in 2012. However on all occasions the levels were well below the permitted annual mean of 40 µg/m³

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2012 % ^b	Number of Hourly Means > 200µg/m ³				
					2008* ^c	2009* ^c	2010* ^c	2011* ^c	2012 ^c
CM 1 (High St, Ayr)	Roadside	N	84.9	84.9	0	0	0	0	0 (88)
CM 2 (Ayr Harbour)	Roadside	N	64	42	N/A	N/A	N/A	N/A	0 (50)

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

Diffusion Tube Monitoring Data

The bias adjustment factor of 0.95 was obtained from the spreadsheet located on the Scottish Air Quality website. The 0.95 bias adjustment was applied to all NO₂ diffusion tube results.

All tubes were below the objective limit of 40 µg/m³

Results are displayed in table 2.5.

Table 2.5 Results of NO₂ Diffusion Tubes in 2012

Site ID	Location	Site Type	Within AQMA	Triplicate or Co-located Tube	Full Calendar Year Data Capture (%)	2012 Annual Mean Concentration (µg/m ³) Bias Adjustment factor = 0.95 ^b
N1	39 Whitletts Road, Ayr	Roadside	N	N	100	29
N2	Rozelle Park, Ayr	Woodland	N	N	100	4
N3	Town Buildings, Ayr	Roadside	N	N	100	33
N4	12 Craigie road, Ayr	Roadside	N	N	92	15
N5	King St Ayr	Roadside	N	N	100	39
N6	Heathfield Rd/Prestwick Rd	Roadside	N	N	100	31
N7	Beresford Terr/Parkhouse St	Roadside	N	N	100	30
N8	Tesco Whitletts Rd Ayr	Roadside	N	N	100	29
N9	86 Main Street, Prestwick	Roadside	N	N	92	30
N10	RBS Main Street, Prestwick	Roadside	N	N	100	29
N11	Shaw Farm Gdns Prestwick	Roadside	N	N	100	15
N12	Pharmacy, Main St, Dundonald	Roadside	N	N	92	14
N13	1 AQ Station, Ayr (N facing)	Roadside	N	Y	100	19
N14	Church St/ Portland St, Troon	Roadside	N	N	92	17
N15	Dundonald Road Troon	Roadside	N	N	100	16
N16	Morrisons, Ayr	Roadside	N	N	100	24
N17	Ayr Road/ Hole Road, Coylton	Roadside	N	N	92	17
N18	Station Taxi Rank, Ayr	Roadside	N	N	100	24
N19	2 AQ Station, Ayr (W facing)	Roadside	N	Y	100	18
N20	Roxy, Bridge Street, Girvan	Roadside	N	N	92	32
N21	3 AQ Station, Ayr (S facing)	Roadside	N	Y	100	18
N22	Safeway, Maybole	Roadside	N	N	100	24

Table 2.6 Results of NO₂ Diffusion Tubes (2008 to 2012)

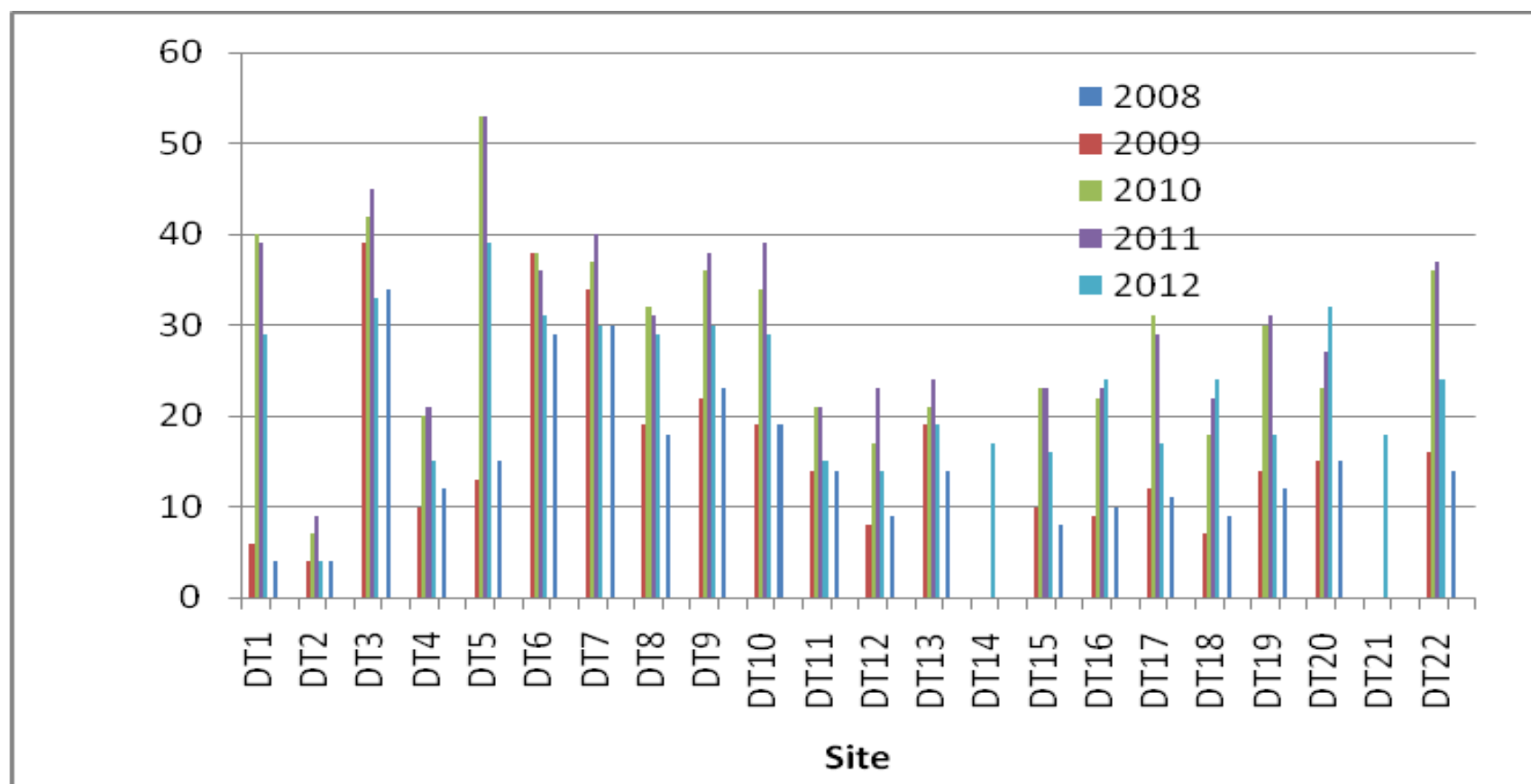
Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m ³) - Adjusted for Bias ^a				
			2008 (Bias Adjustment Factor = 0.97)	2009 (Bias Adjustment Factor = 1.23)	2010 (Bias Adjustment Factor = 1.1)	2011 (Bias Adjustment Factor = 0.94)	2012 (Bias Adjustment Factor = 0.95)
DT1	Roadside	N	4	6	40	39	29
DT2	Woodland	N	4	4	7	9	4
DT3	Roadside	N	34	39	42	45	33
DT4	Roadside	N	12	10	20	21	15
DT5	Roadside	N	15	13	53	53	39
DT6	Roadside	N	29	38	38	36	31
DT7	Roadside	N	30	34	37	40	30
DT8	Roadside	N	18	19	32	31	29
DT9	Roadside	N	23	22	36	38	30
DT10	Roadside	N	19	19	34	39	29
DT11	Roadside	N	14	14	21	21	15
DT12	Roadside	N	9	8	17	23	14
DT13	Roadside	N	14	19	21	24	19

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias ^a				
			2008 (Bias Adjustment Factor = 0.97)	2009 (Bias Adjustment Factor = 1.23)	2010 (Bias Adjustment Factor = 1.1)	2011 (Bias Adjustment Factor = 0.94)	2012 (Bias Adjustment Factor = 0.95)
DT14	Roadside	N	*	*	*	*	17
DT15	Roadside	N	8	10	23	23	16
DT16	Roadside	N	10	9	22	23	24
DT17	Roadside	N	11	12	31	29	17
DT18	Roadside	N	9	7	18	22	24
DT19	Roadside	N	12	14	30	31	18
DT20	Roadside	N	15	15	23	27	32
DT21	Roadside	N	*	*	*	*	18
DT22	Roadside	N	14	16	36	37	24
District Average	N/A	N/A	15	16	27	29	22

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

A trend chart providing NO₂ annual mean results over the past 5 years is shown below.

There appears to have been a slight increase from 2008 to 2011 and then a marked decrease during 2012.



2.1.2 Particulate Matter (PM₁₀)

Results of PM₁₀ Automatic Monitoring obtained from TEOM's fitted with FDMS and web logger functionality at High Street/New Bridge St Ayr and Taylor Street, Ayr (Ayr Harbour) are displayed in Table 2.7 and 2.8. Collected data did not show any exceedences of either annual mean or 24-hour mean PM₁₀ objectives in 2012

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2012 % ^b	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m ³)				
						2008* ^c	2009* ^c	2010* ^c	2011* ^c	2012 ^c
CM1 (High St Ayr)	Roadside	N	81	81	N/A	15.2	17	16	13	13
CM2 (Ayr Harbour)	Roadside	N	93	61.9	N/A	N/A	N/A	N/A	N/A	13*

* This figure has been annualised as per calculations detailed in Appendix E

Figure 2.5 Trends in Annual Mean PM₁₀ Concentrations 2008 - 2012 at High Street Ayr

A trend chart providing PM₁₀ annual mean results in µg/m³ over the past 5 years for High Street Ayr is shown below. Monitoring only commenced in 2012 at Taylor St Ayr (Ayr Harbour) site so no earlier results are available. Results at High Street peaked in 2009 and have shown a gradual decrease since then.

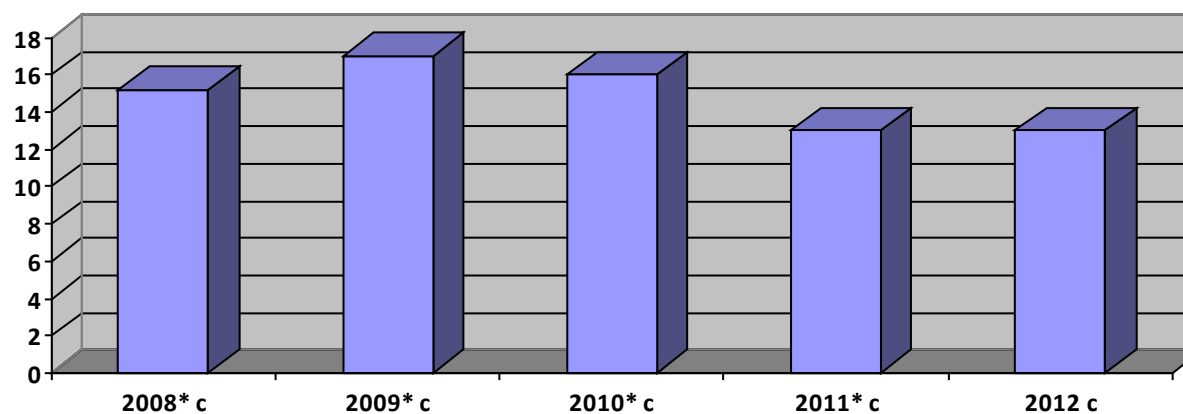


Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2012 %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m ³				
						2008* ^c	2009* ^c	2010* ^c	2011* ^c	2012 ^c
CM1 (High St Ayr)	Roadside	N	81	81	N/A	0	4	0	0	3 (35)
CM2 (Ayr Harbour)	Roadside	N	93	61.9	N/A	N/A	N/A	N/A	N/A	0 (29)

^c since data capture for full calendar year is less than 90%, the 98.1th percentile of 24-hour means is included in brackets

2.1.3 Sulphur Dioxide (SO₂)

No Sulphur Dioxide monitoring was carried out in South Ayrshire in 2012.

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 be no exceedences of the objective standard as was reported in South Ayrshire Council's 2008 Progress Report.

2.1.4 Benzene

No Benzene monitoring was carried out in South Ayrshire in 2012.

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

2.1.5 Other Pollutants Monitored

No other pollutants were monitored during 2012.

2.1.6 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 New Local Developments

South Ayrshire 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 Ayrshire 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 Transport Plans and Strategies

South Ayrshire Council's transport strategy and associated documents can be accessed under the following link:

<http://www.south-ayrshire.gov.uk/council/transport/>

5 Conclusions and Proposed Actions

South Ayrshire Council's Progress Report 2013 identified no exceedences of the air quality objectives and we will therefore not be proceeding with a detailed assessment.

Monitoring will continue and a further Progress Report will be submitted in 2014.

6 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 03/13, March 2013

Appendices

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

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 Ricardo-AEA. Servicing and repair is carried out by Air monitors

QA/QC of diffusion tube monitoring

In the Workplace Analysis Scheme for Proficiency (WASP) Glasgow Scientific Services scored 100% Jan – March 2012 and July – December 2012. For the period April – June 2012 a 50% result for accuracy was awarded.

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 0.95 was obtained from the LAQM Support website spreadsheet version 03/13 and was applied to all Nox diffusion tubes

QA/QC of Automatic Monitoring

Ricardo – AEA carry out QA/QC on results. Servicing and maintenance is carried out by Air monitors.

Appendix B: Full Set Of Results For Diffusion Tubes 2012

Nox Site Results 2012 (ug/m3)

Bias correction 0.95

Site	J	F	M	A	M	J	J	A	S	O	N	D	Total	Data Capture months	Average Annual Mean (ug/m3)	Bias Corrected Figure
01 39 Whitletts Road, Ayr	39.2	28.3	29.4	33.9	28.5	30.2	<1.6	28	31.5	36.2	39.6	40.6	365.4	12	30.45	29
02 Rozelle Park Ayr	4.8	7.4	2.6	4.9	3.7	3.3	2.6	5.4	2	4.6	4.1	9.4	54.8	12	4.57	4
03 Town Buildings Ayr	36.8	31.7	34.8	34.6	35.4	33.1	19.6	41.5	30.6	47.9	33.2	39.1	418.3	12	34.86	33
04 12 Craigie Road, Ayr	20.1	15.9	12.7	X	13.1	14	11.1	12.9	12.6	19.4	15.6	25.8	173.2	11	15.75	15
05 King St, (CCTV pole), Ayr	52.9	49.2	33.4	33.8	34.9	29.9	31.8	50.2	38.4	45.9	48.6	41.3	490.3	12	40.86	39
06 Heathfield Rd/Prestwick Rd Ayr	37.9	43.2	25.3	28.1	23.3	27.9	22.7	31.2	25.9	45.7	32.3	43.6	387.1	12	32.26	31
07 Beresford Terr./Parkhouse St Ayr	29.5	34.8	35.9	32.8	23.7	28.3	25.7	36.9	10.1	32.3	35.3	47.5	372.8	12	31.07	30
08 Tesco Whitletts Rd Ayr	27.9	31.7	43.1	27	26	29.2	20.6	24.3	25.8	37.7	35.6	34.4	363.3	12	30.28	29
09 86 Main Street, Prestwick	30.6	33.4	25.8	X	28.4	31.7	31.3	31.1	36.8	37.4	30	28.2	344.7	11	31.34	30
10 RBS Main Street, Prestwick	28.6	26.3	18.5	35.2	30.1	28.3	24.3	31.5	20.5	42.6	40.4	41.5	367.8	12	30.65	29
11 Shaw Farm Gardens Prestwick	12.5	18.6	11.1	17.5	9.7	15	12.1	12.7	13.3	18.8	22.2	27.4	190.9	12	15.91	15
12 Pharmacy, Main Street, Dundonald	16.9	16.7	12.8	X	12.3	12.2	12	12.3	12.5	18.6	20	17.6	163.9	11	14.90	14
13 1 AQ Station, Ayr (North facing)	22.8	19.7	29	23.2	10.4	16.3	17.5	18.3	21.1	19.7	23.2	24.1	245.3	12	20.44	19
14 Church Street/ Portland Street, Troon	18.5	15	12.9	19.6	15.3	15	11	16.8	12.5	24.5	X	31.4	192.5	11	17.50	17
15 Dundonald Road Traffic Lights, Troon	19	18	17.6	16.7	13.9	15.8	11.9	16.5	14.8	20.8	18.4	24.5	207.9	12	17.33	16
16 Morrisons, Ayr	25.4	26.3	31.6	28.7	13.6	15.9	18.9	23.1	21.2	17.9	53.1	30.1	305.8	12	25.48	24
17 Ayr Road/ Hole Road, Coylton	13.5	18.6	10.2	17.5	13.4	14	X	11.3	9.9	37.9	16.5	36	198.8	11	18.07	17
18 Station Taxi Rank, Ayr	21.5	32.5	25.3	29.7	20.7	22.6	21.8	22.2	18.4	20.9	32.2	39.8	307.6	12	25.63	24
19 2 AQ Station, Ayr (West facing)	25.2	27.9	30.5	23.2	17.6	17.6	<1.6	12	23.6	1.7	23.6	23.2	226.1	12	18.84	18
20 Roxy, Bridge Street, Girvan	32.7	11.7	27.7	39.9	47.1	41.6	38.2	29.6	37.9	X	32.5	37.4	376.3	11	34.21	32
21 3 AQ Station, Ayr (South facing)	21.7	24	21.6	17.4	12.6	16.3	17.4	16	20.4	17.6	25.4	21.9	232.3	12	19.36	18
22 Safeway, Maybole	22.6	32.1	18.7	25.6	14.5	24.7	25.1	24.6	29.7	30.7	23.5	32.8	304.6	12	25.38	24

Appendix C: Report Of Continuous Monitors Ayr Harbour (Taylor St Ayr) 2012
Produced by Ricardo-AEA on behalf of the Scottish Government

SOUTH AYRSHIRE AYR HARBOUR
1st January to 31st December 2012

These data have been fully ratified by Ricardo-AEA

POLLUTANT	PM ₁₀ *	NO ₂	NO _x
Maximum hourly mean	147 µg m ⁻³	55 µg m ⁻³	395 µg m ⁻³
Maximum daily mean	38 µg m ⁻³	41 µg m ⁻³	111 µg m ⁻³
99.8th percentile of hourly means	-	50 µg m ⁻³	-
98.08th percentile of daily means	29 µg m ⁻³	-	-
Average	12 µg m ⁻³	14 µg m ⁻³	22 µg m ⁻³
Data capture	61.9 %	42.0 %	42.0 %

* PM₁₀ instruments:

FDMS using a gravimetric factor of 1 from 5th May 2012

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 NO₂ µg m⁻³

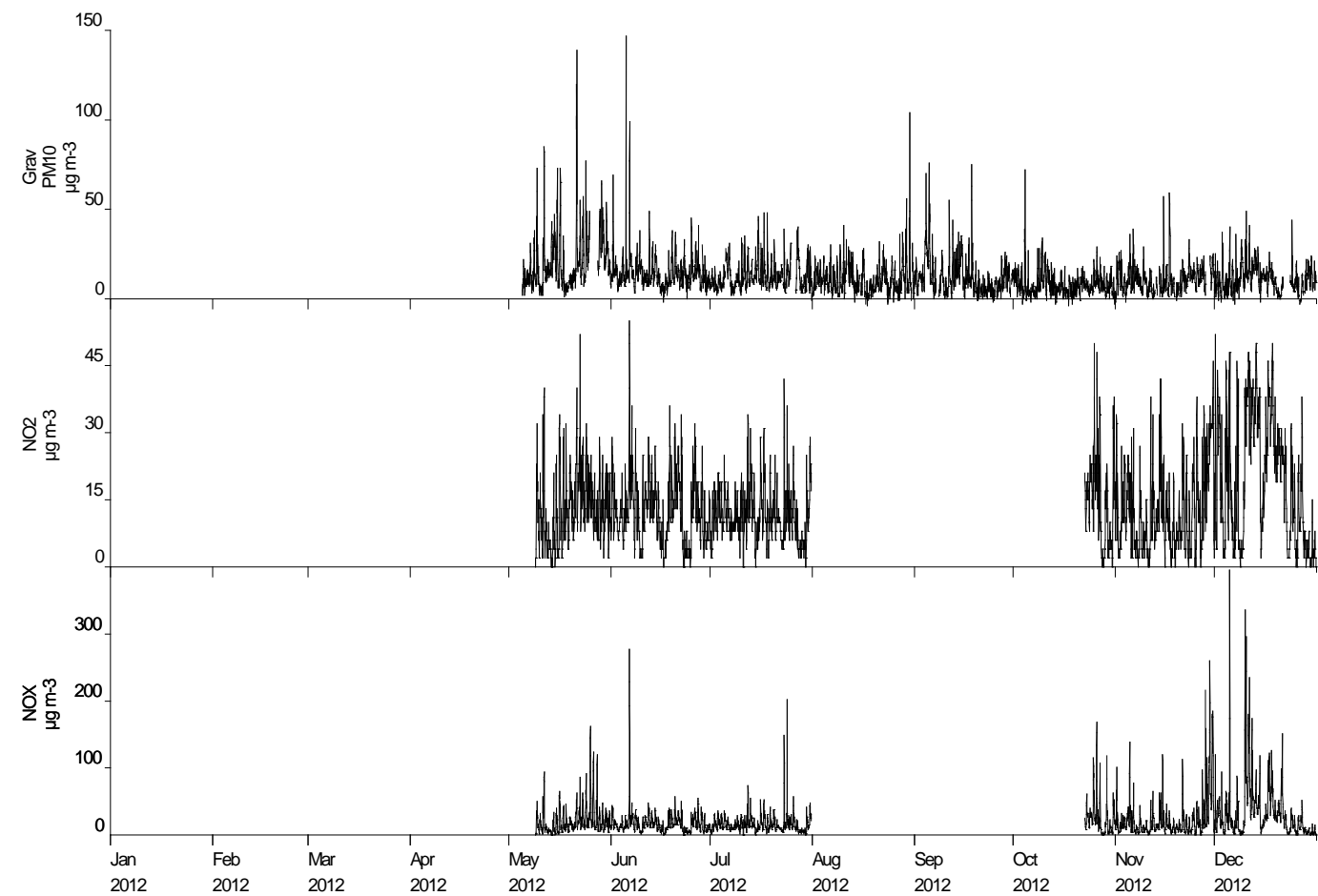
Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	0	0
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 18 µg m ⁻³	0	-
Nitrogen Dioxide	Annual mean > 40 µg m ⁻³	0	-
Nitrogen 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 Ricardo-AEA on behalf of the Scottish Government

South Ayrshire Ayr Harbour
Hourly Mean Data for 1st January to 31st December 2012

Date Created: 27/03/2013



Appendix D: Report Of Continuous Monitor Ayr High Street 2012
Produced by Ricardo-AEA on behalf of the Scottish Government

SOUTH AYRSHIRE AYR HIGH ST
1st January to 31st December 2012

These data have been fully ratified by Ricardo-AEA

POLLUTANT	PM ₁₀ [*]	NO ₂	NO _x
Maximum hourly mean	93 µg m ⁻³	113 µg m ⁻³	281 µg m ⁻³
Maximum daily mean	73 µg m ⁻³	54 µg m ⁻³	106 µg m ⁻³
99.8th percentile of hourly means	-	88 µg m ⁻³	-
98.08th percentile of daily means	35 µg m ⁻³	-	-
Average	13 µg m ⁻³	20 µg m ⁻³	37 µg m ⁻³
Data capture	81.0 %	84.9 %	84.9 %

* PM₁₀ instruments: FDMS using a gravimetric factor of 1 from 1st January 2012
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 NO₂ µg m⁻³

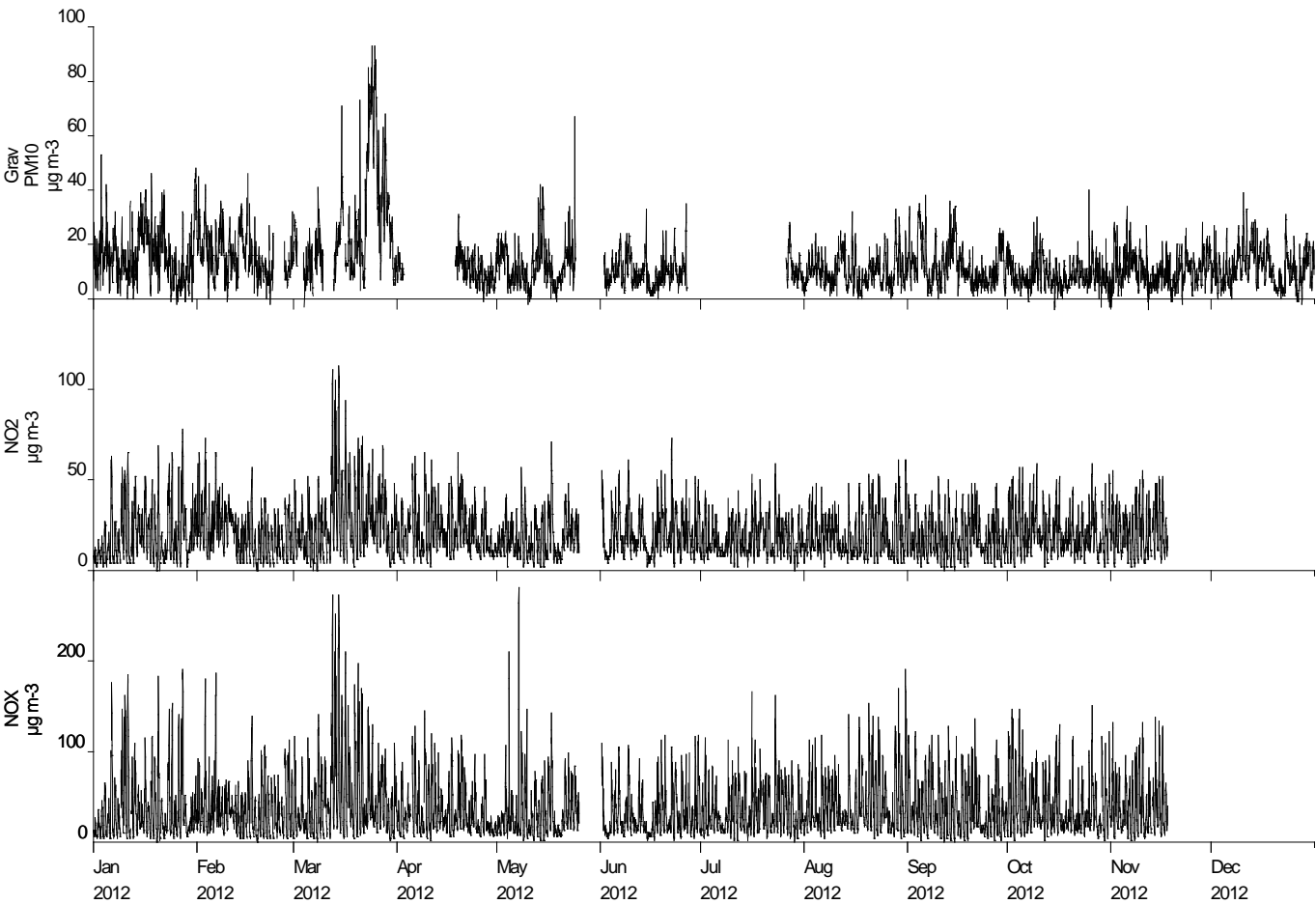
Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	3	3
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 18 µg m ⁻³	0	-
Nitrogen Dioxide	Annual mean > 40 µg m ⁻³	0	-
Nitrogen 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 Ricardo-AEA on behalf of the Scottish Government

South Ayrshire Ayr High St
Hourly Mean Data for 1st January to 31st December 2012

Date Created: 27/03/2013



Appendix E: Annualisation Calculations for Ayr Harbour Automatic Monitor

NO2 (ug/m3)								
Site		Annual (A)	Period 1 (P1)	Period 2 (P2)	Period 3 (P3)	Adj Factor 1	Adj Factor 2	Adj Factor 3
		2012	05/05/12 - 31/08/12	23/10/12 - 31/12/12	05/05/12 - 31/12/12	A/P1	A/P2	A/P3
Rural	Glasgow Waulkmillglen Reservoir	12	8	18	12	1.50	0.67	1.00
Urban								
Background	N Lanarkshire Cumbernauld	31	23	44	30	1.35	0.70	1.03
Airport	Paisley Glasgow Airport	22	14	32	21	1.57	0.69	1.05
Roadside	South Lanarkshire Lanark	29	23	34	27	1.26	0.85	1.07
Average Factor:						1.42	0.73	1.04
Adjusted Annual Means								
						1	2	3
	South Ayrshire Ayr Harbour		12	16	14	17	12	15
PM10 (ug/m3)								
Site		Annual (A)	Period 1 (P)	Adj Factor (A/P)				
		2012	05/05/12 - 31/12/12					
Rural	Glasgow Waulkmillglen Reservoir	11	11	1.00				
Roadside	Inverclyde Greenock Dunlop St	13	12	1.08				
Urban								
Background	N Lanarkshire Cumbernauld	13	12	1.08				
Roadside	South Lanarkshire Glespin	9	8	1.13				
Roadside	South Ayrshire Ayr High St	13	11	1.18				
Average Factor:				1.09				
				Adjusted Annual Mean				
	South Ayrshire Ayr Harbour		12	13				