

## Annual Progress Report (APR)



2016 Air Quality Annual Progress Report (APR) for  
South Ayrshire Council

In fulfilment of Part IV of the  
Environment Act 1995

Local Air Quality Management

Date June 2016

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## **Executive Summary: Air Quality in Our Area**

South Ayrshire Council (SAC) 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(16), (Reference1), issued by the Scottish Government to assist Local authorities in their Review and Assessment of air quality.

The report forms our 2016 Progress Report (PR) and includes latest available data up to the end of 2015. 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 Progress Report 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 June,2017.

### **Air Quality in South Ayrshire Council**

Fortunately, the air quality in South Ayrshire is generally very good. This is mainly due to the fact that there is little in the way of heavy industry, the majority of the pollution arising from road vehicles. There are no designated air quality management areas (AQMA's) in South Ayrshire, However we are not complacent and continue to carry out monitoring using two real time monitors for NO<sub>2</sub> and PM<sub>10</sub> and a network of 20 NO<sub>2</sub> diffusion tubes. With the assistance of our partners at Police Scotland and Glasgow City Council, we also undertake roadside vehicle emission monitoring throughout the district each year in an attempt to have the most polluting vehicles removed from our roads.

### **Actions to Improve Air Quality**

In conjunction with our partners at North Lanarkshire Council, Glasgow City Council, Police Scotland and VOSA, We carried out vehicle emission testing on 20 days in 2015. SAC has no AQMAs or action plans.

### **Local Priorities and Challenges**

The majority of the air quality pollutants arising within SAC are as a result of road traffic. Therefore, in order to remove the most polluting vehicles from our roads, we intend to carry out further vehicle emission testing over the coming year. With the assistance of funding from the Scottish Government we plan on fitting our two real

time TEOM monitors with PM2.5 inlets in order to assess the levels of that pollutant within SAC.

**How to Get Involved**

Our website has links to the two real time monitors results for PM10 and NO<sub>2</sub>. This can be accessed as follows: <http://www.south-ayrshire.gov.uk/environmentalhealth/publichealth/airqualitylive.aspx>

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## 1. Local Air Quality Management

This report provides an overview of air quality in South Ayrshire Council during 2015. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 an exceedance is considered likely the local authority must 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. This Annual Progress Report (APR) summarises the work being undertaken by South Ayrshire Council to improve air quality and any progress that has been made.

**Table 1.1 – Summary of Air Quality Objectives in Scotland**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m <sup>3</sup>	Annual Mean	31.12.2008

## **2. Actions to Improve Air Quality**

### **2.1 Air Quality Management Areas**

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

South Ayrshire Council currently does not have any AQMAs.

### **2.2 Progress and Impact of Measures to address Air Quality in South Ayrshire**

South Ayrshire Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Key completed measures are: introduction of electric vehicles and charging points to the council fleet.

South Ayrshire Council expects the following measures to be completed over the course of the next reporting year: new active travel hub to be installed at Ayr railway station which will promote sustainable transport.



**Table 2.1 – Progress on Measures to Improve Air Quality**

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.	Active Travel Hub project	Alternatives to private vehicle use	in partnership with ARA, Sustrans, Community Transport and others this initiative has promoted modal shift in particular to walking and cycling,	Sustainability section, Neighbourhood Services				Potential reduction in private vehicle use so this project is seeking to actively reduce air pollution In particular NOX and PM		July 2016	actively reducing air pollution
2.	Introduction of a car club	Alternatives to private vehicle use	The feasibility of a car club in South Ayrshire. Initial results are very positive and demonstrate that moving to a car club would reduce air pollution as it shows that replacing both council grey fleet miles and / or residential miles with car club miles would mean more efficient cars in terms of pollution (as well as safety and emissions) would be travelling those miles.	Sustainability section, Neighbourhood Services				PM and NOX	Report commissioned into feasibility. Feedback very positive	2017	Analysis suggests that introduction would lead to an overall reduction in miles and the possibility that some people would no longer run a car or second car, which would also be positive for air quality

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Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3.	Bicycle Rental	Alternatives to private vehicle use	the aim of having a hub in place at Ayr Station by July 2016 which will rent out bikes, and provide information about all forms of active travel and alternatives to private car use	Sustainability section, Neighbourhood Services				PM and NOX		July 2016	
4.	Green Champions	Alternatives to private vehicle use	Within the Council our Green Champions Network continues to promote active travel and the council's travel hierarchy. Active travel is also being promoted to our 9 secondary schools through the Provost's School Footprint Challenge and to our primary schools through our joint work with the Energy Agency to provide energy lessons and run the calendar competition	Sustainability section, Neighbourhood Services					ongoing	2017	
5.	Promotion of renewable Energy	Promoting low emission plants	The Energy Agency, who we work in partnership with, have been working with us on the promotion of renewable energy and energy efficiency..	Sustainability section, Neighbourhood Services					ongoing	ongoing	This contributes to a move away from the burning of fossil fuels and any air quality detriment associated with this
6.	Vehicle fleet efficiency	Promoting low emission transport	Several electric vehicles are being procured for use by council staff. In addition a number of charging points are being installed throughout the district	Fleet section, Neighbourhood Services							

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Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
7.	Vehicle fleet efficiency	Promoting low emission plant	Electric bin lifting equipment where possible will be fitted to all RCVs. This results in the vehicle engine operating at lower revs (when lifting bins) which reduces fuel consumption, vehicle exhaust emissions and noise levels.	Fleet section, Neighbourhood Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	
8.	Vehicle fleet efficiency	Promoting low emission transport	Large Goods Vehicles (LGVs) over 3500kg GVW will also be fitted where possible with the latest technology to reduce fuel consumption and exhaust emissions. Certain vehicles will be fitted with in-cab heaters to stop the practice of vehicles idling in cold weather to defrost windows etc. This practice greatly increases fuel consumption and results in exhaust gases being emitted unnecessarily.					PM10, NO2	Ongoing	Phased rollout	
9.	Vehicle fleet efficiency	Promoting low emission transport	HGV's will have engines which are all built to the latest European legal limits on exhaust gases (Euro 6) specification. Which will result in the vehicles emitting the lowest possible exhaust gases.	Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	
10.	Vehicle fleet efficiency	Promoting low emission transport	Cars, minibuses, vans & pick-ups up to 3500GVW where possible will be fitted with speed limiters, rev limiters and stop/start technology to maximise fuel efficiency and reduce exhaust emissions.	Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	

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Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
11.	Vehicle fleet efficiency	Promoting low emission transport	Departments will also be asked to identify where smaller vans can replace larger vans and if using electric vehicles (EVs) could be an option. Although unfortunately at this time the infrastructure of charging points will restrict the number of EVs we can put into our fleet.	Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	
12.	Vehicle fleet efficiency	Promoting low emission transport	Part of the Fleet Management Review is developing and putting in place a hierarchy of travel guidelines. This will advise our staff the most economical and environmental friendly way of travel mode. This should identify and reduce unnecessary journeys and again reduce the Councils carbon usage.	Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	
13.	Vehicle fleet efficiency	Promoting low emission transport	The vehicle tracking system has also help reduce our fuel usage by identify routes where vehicles were passing each other on journeys to jobs. In particular this applied to our Property Maintenance section. The system now allows the nearest vehicle to attend call-outs etc.	Fleet section, Neighbourhood Services				PM10, NO2	Ongoing	Phased rollout	

⋮

### **3. Air Quality Monitoring Data and Comparison with Air Quality Objectives**

#### **3.1 Summary of Monitoring Undertaken**

##### **3.1.1 Automatic Monitoring Sites**

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

South Ayrshire Council undertook automatic (continuous) monitoring at 2 sites during 2015. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at: <http://www.scottishairquality.co.uk/>

Maps showing the location of the automatic monitoring sites are provided in Figures 1 and 2. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

##### **3.1.2 Non-Automatic Monitoring Sites**

South Ayrshire Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 20 sites during 2015. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 3. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

#### **3.2 Individual pollutants**

Appendices D, E and F display trends of monitoring over the last 5 years.

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

##### **3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

There were no exceedances of the air quality objectives for NO<sub>2</sub> within SAC during 2015. Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2015 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

There were no exceedances of the air quality objectives for PM<sub>10</sub> within SAC for 2015. Table A.5 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past 5 years with the air quality objective of 18µg/m<sup>3</sup>.

Table A.6 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for the past 5 years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 7 times per year.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

We do not currently monitor PM<sub>2.5</sub> levels in SAC however we are planning on changing the inlets on our two real time TEOM PM<sub>10</sub> monitors to enable them to monitor PM<sub>2.5</sub> levels instead.

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

We did not monitor SO<sub>2</sub> concentrations during 2015 within SAC.

We are not aware of any changes that have occurred in their status since submission of the previous report 2.2.3 Sulphur Dioxide

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 exceedances of the objective standard as was reported in South Ayrshire Council's 2008 Progress Report.

**3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene**

We did not undertake any monitoring for Carbon Monoxide, Lead or 1,3-Butadiene within SAC in 2015.

We are not aware of any changes that have occurred in their status since submission of the previous report

#### **4. New Local Developments**

We are not aware of any new local developments within SAC that may affect air quality.

##### **4.1 Road Traffic Sources**

We are not aware of any new road traffic sources within SAC that have the potential to affect air quality.

##### **4.2 Other Transport Sources**

We are not aware of any other transport sources within SAC that has the potential to affect air quality.

##### **4.3 Industrial Sources**

There are no new industrial installations or substantially changed industrial installations that we are aware of within SAC that has the potential to affect air quality.

##### **4.4 Commercial and Domestic Sources**

There are no new commercial or domestic sources we are aware of within SAC that would have the potential to affect air quality.

##### **4.5 New Developments with Fugitive or Uncontrolled Sources**

There are no new developments we are aware of within SAC that would have the potential to produce a source of fugitive or uncontrolled particulate matter.



## **5. Planning Applications**

There is currently a planning application pending for a CHP plant in Troon. We have requested an air quality impact assessment be carried out for that development.

## **6. Conclusions and Proposed Actions**

### **6.1 Conclusions from New Monitoring Data**

There were no exceedances of the air quality objectives identified within SAC during 2015.

### **6.2 Conclusions relating to New Local Developments**

There were no local developments during 2015 in SAC that required consideration.

### **6.3 Proposed Actions**

There were no exceedances of the air quality objectives identified within SAC in 2015. Therefore there is no need to progress to a detailed assessment nor is there any need to consider air quality management areas.

Our next Progress Report is due by the end of June 2017.

## Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
CM1	High St Ayr	Roadside	337223	221162	NO <sub>2</sub> ; PM <sub>10</sub>	N	Chemiluminescent; FDMS	5	2	2.0
CM2	Taylor St (Harbour) Ayr	Roadside	233608	622750	NO <sub>2</sub> ; PM <sub>10</sub>	N	Chemiluminescent; FDMS	10	1	2.0

(1) 0 if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

**Table A.2 – Details of Non-Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
DT1	30 Main Street Loans	Roadside	2334529	631708	NO <sub>2</sub>	N	10	2	N
DT2	Dundonald Rd Troon	Roadside	232588	631277	NO <sub>2</sub>	N	10	2	N
DT3	2 Portland St Troon	Roadside	232292	631235	NO <sub>2</sub>	N	10	2	N
DT4	Shawfarm Gardens Prestwick	Roadside	235622	626548	NO <sub>2</sub>	N	5	1	N
DT5	3 The Cross Prestwick	Roadside	235229	626228	NO <sub>2</sub>	N	5	2	N
DT6	141 Main St Prestwick	Roadside	235142	625816	NO <sub>2</sub>	N	2	2	N

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Ref</b>	<b>Y OS Grid Ref</b>	<b>Pollutants Monitored</b>	<b>In AQMA ?</b>	<b>Distance to Relevant Exposure (m) <sup>(1)</sup></b>	<b>Distance to kerb of nearest road (m) <sup>(2)</sup></b>	<b>Tube collocated with a Continuous Analyser?</b>
DT7	Heathfield Rd / Prestwick Road Ayr	Roadside	234641	624159	NO2	N	2	1	N
DT8	Station Taxi Rank Smith St Ayr	Roadside	240194	624754	NO2	N	5	1	N
DT9	Morrisons Castlehill Rd Ayr	Roadside	232153	621149	NO2	N	5	2	N
DT10	39 Whitletts Road Ayr	Roadside	234605	622412	NO2	N	2	N/A	N
DT11	Tesco Whitletts Rd Ayr	Roadside	235150	622528	NO2	N	10	2	N

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Ref</b>	<b>Y OS Grid Ref</b>	<b>Pollutants Monitored</b>	<b>In AQMA ?</b>	<b>Distance to Relevant Exposure (m) <sup>(1)</sup></b>	<b>Distance to kerb of nearest road (m) <sup>(2)</sup></b>	<b>Tube collocated with a Continuous Analyser?</b>
DT12	King St. Ayr	Roadside	233830	622352	NO2	N	2	1	N
DT13	Town Buildings Ayr	Roadside	233691	622093	NO2	N	2	2	N
DT14	1 AQ (N) Station, Ayr	Roadside	233701	622114	NO2	N	5	2	Y
DT15	2 AQ (W) Station, Ayr	Roadside	233701	622114	NO2	N	5	2	Y
DT16	3 AQ (S) Station, Ayr	Roadside	233701	622114	NO2	N	10	2	Y
DT17	Rozelle Park Ayr	Urban Background	233763	618944	NO2	N	10	N/A	N

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Ref</b>	<b>Y OS Grid Ref</b>	<b>Pollutants Monitored</b>	<b>In AQMA ?</b>	<b>Distance to Relevant Exposure (m) <sup>(1)</sup></b>	<b>Distance to kerb of nearest road (m) <sup>(2)</sup></b>	<b>Tube collocated with a Continuous Analyser?</b>
DT18	Minishant Inn (A77)	Roadside	232983	614277	NO2	N	10	1	N
DT19	Post Office High St Maybole	Roadside	230110	609984	NO2	N	10	1	N
DT20	Roxy, Bridge St Girvan	Roadside	281549	598064	NO2	N	5	1	N

(1) 0 if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2011	2012	2013	2014	2015
CM1	Kerbside	Automatic	93	93	9	20	23	17	18
CM2	Kerbside	Automatic	91	91	n/a	15	14	9	10
DT1	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	9	10
DT2	Roadside	Diffusion Tube	100	100	23	24	25	13	15
DT3	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	16	17
DT4	Roadside	Diffusion Tube	92	92	21	15	15	12	13
DT5	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	24	29
DT6	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	20	22
DT7	Roadside	Diffusion Tube	100	100	36	31	35	26	27
DT8	Roadside	Diffusion Tube	100	100	31	18	22	19	20
DT9	Roadside	Diffusion Tube	100	100	N/A	N/A	15	19	21
DT10	Roadside	Diffusion Tube	100	100	39	29	31	24	27
DT11	Roadside	Diffusion Tube	100	100	31	29	26	24	25
DT12	Roadside	Diffusion Tube	100	100	53	39	38	31	32



Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2011	2012	2013	2014	2015
DT13	Roadside	Diffusion Tube	100	100	45	33	36	29	29
DT14	Roadside	Diffusion Tube	92	92	N/A	17	16	15	19
DT15	Roadside	Diffusion Tube	92	92	N/A	18	20	14	19
DT16	Roadside	Diffusion Tube	100	100	39	29	31	14	17
DT17	Urban Background	Diffusion Tube	92	92	9	4	5	4	3
DT18	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	16	21
DT19	Roadside	Diffusion Tube	75	75	N/A	N/A	N/A	23	23
DT20	Roadside	Diffusion Tube	75	75	37	24	25	24	29

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2011	2012	2013	2014	2015
CM1	Roadside	Automatic	93	93	0	0	0	0	0
CM2	Roadside	Automatic	91	91	N/A	0	0	0	0

Notes: Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2015 (%) <sup>(2)</sup>	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2011	2012	2013	2014	2015
CM1	Roadside	88	88	13	13	15	14	15
CM2	Roadside	85	85	N/A	13	17	13	13

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 18µg/m<sup>3</sup> are shown in **bold**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) All means have been “annualised” as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> (3)				
				2011	2012	2013	2014	2015
CM1	Roadside	88	88	0	3	2	0	1
CM2	Roadside	85	85	N/A	0	1	0	1

Notes: Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 7 times/year) are shown in **bold**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.

**Appendix B: Full Monthly Diffusion Tube Results for 2015**

**Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2015**

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted <sup>(1)</sup>
DT1	14.6	16.9	6	8.1	5.4	10.8	5.9	6.3	10	17	9.9	8.3	9.93	10
DT2	17	22.5	14	9.9	8.5	14.5	15.2	15.3	14.9	25.9	16.4	14.8	15.74	15
DT3	16.5	22.3	16.2	9.9	9	17.2	18.1	17.8	15.5	28.7	15.9	17.4	17.04	17
DT4	16	20.7	8.5	11.5	5.3	13.2	9.7	12.8	NR	23.3	11.3	8.8	12.83	13
DT5	27.4	48.8	22.3	20.8	13.3	27.5	32.5	31.4	27.3	45.4	26.7	28.9	29.36	29
DT6	20.9	35.1	22.5	12.9	7.9	21.6	18.7	20.3	24.2	41	22.8	22.2	22.51	22
DT7	30.1	45	22.5	16.3	13	30.3	18.1	24.8	25.1	48.9	25.8	28.5	27.37	27
DT8	25.7	30.4	14	18.9	11.3	18.6	16.6	16.4	19.4	30.4	23.3	18	20.25	20
DT9	23.6	31.8	18.5	13.1	13.6	21.3	18.9	21.4	22.7	31.8	19	18.3	21.17	21
DT10	31.1	36.1	22.8	22.3	14.8	31	22.5	28.9	25.4	43.5	34.7	22.3	27.95	27
DT11	36.8	36.3	16.3	23.1	14.6	26.8	14.1	18.7	22.8	33.7	33.2	32.7	25.76	25
DT12	28	50.9	27.2	30.4	15.9	35.4	31.1	29.8	35.6	44.9	26.9	30.9	32.25	32
DT13	22.1	33.6	23.2	25.7	13.1	34.3	30.4	35.8	32.8	47.3	29.1	28	29.62	29
DT14	20.9	28.4	NR	19.2	11.1	22	14.9	19.4	20.2	25.2	11.5	16.3	19.01	19

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	DT15	21.3	25	NR	19.5	12	20.4	12.8	17.4	19.9	24	21.1			18.3
DT16	19	25.5	20.9	7.5	9.5	20.9	14.4	17.7	18.4	26.1	23.7	1.6	17.10	17	
DT17	3.3	5.1	2.4	2.1	NR	2.1	2.1	4	3.1	6.5	4	4	3.52	3	
DT18	29.7	29.9	13.8	16.5	12.9	24.5	17.9	18.2	26.2	24.4	28.5	17.4	21.66	21	
DT19	27.8	38.2	10.9	18	14.7	NR	30.9	24.8	26.7	NR	NR	23.3	23.92	23	
DT20	32	43.6	24.1	24.2	14.1	37.8	NR	NR	NR	40.8	23.2	26.1	29.54	29	

(1) See Appendix C for details on bias adjustment

## **Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC**

### **Diffusion Tube Bias Adjustment Factors**

Diffusion tubes are supplied and analysed by Glasgow Scientific Services which is operated 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 diffusion tubes.

GSS scored 100% January – December 2015 in the Workplace Analysis Scheme for Proficiency (WASP).

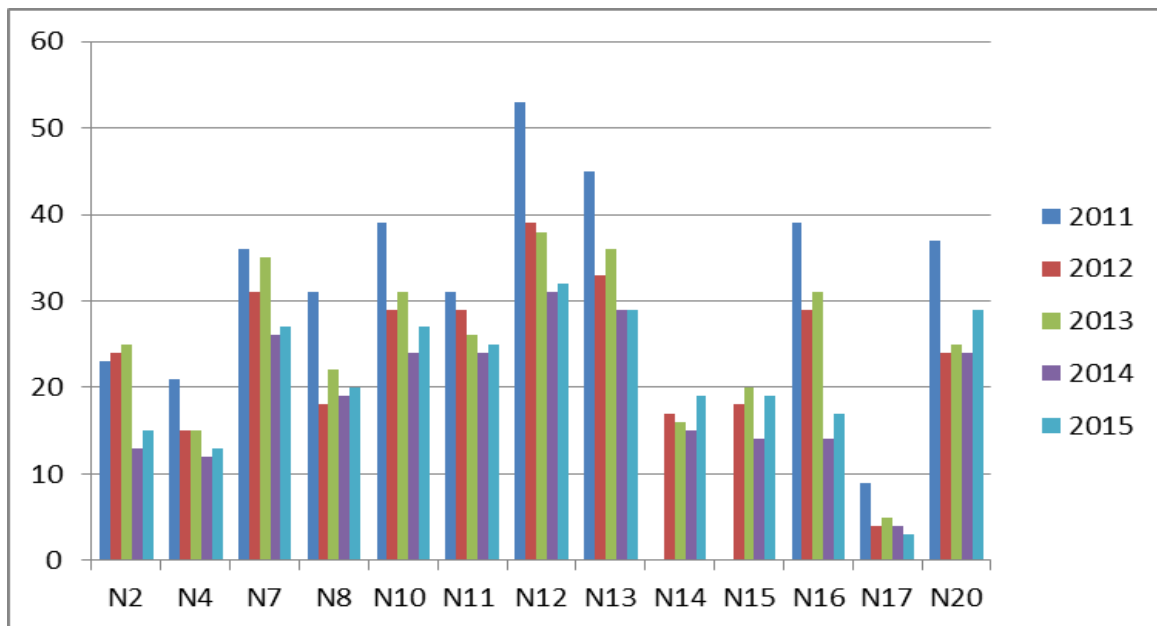
### **PM Monitoring Adjustment**

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. All data is ratified and scaled by Ricardo before being finalised. Servicing and repair is carried out by Air monitors.

Appendix D: Trend of Non Automatic NO<sub>2</sub> Results 2011 - 2015



Levels of NO<sub>2</sub> are measured as an annual average and displayed in µg/m<sup>3</sup> of air.

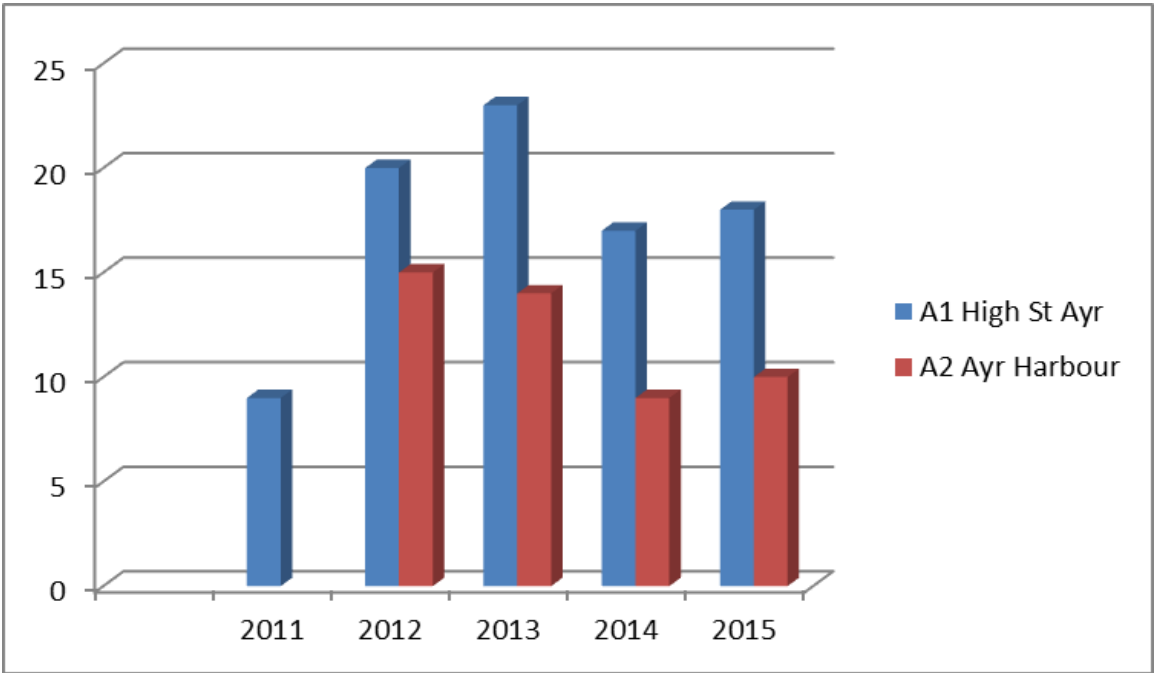
In general, there is a gradual downward trend in the NO<sub>2</sub> diffusion tube results with 2011 being the highest recorded year at most sites.

2015 did show a slight increase at some sites and the reason for this is not entirely clear however the bias adjustment was slightly lower in 2014 which could have made a difference to the final result.

Not all sites are displayed in the graph as the location of a number of the lower recording sites have been changed over the five year period.



Appendix E: Trend of Automatic NO<sub>2</sub> Results 2011 – 2015

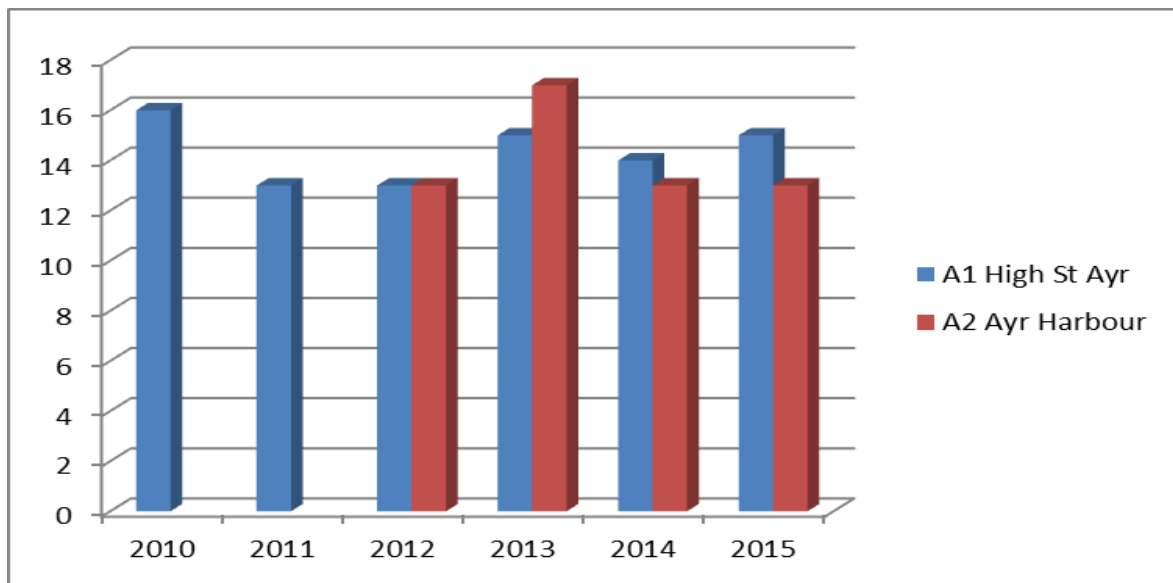


Levels of NO<sub>2</sub> are measured as an annual average and displayed in µg/m<sup>3</sup> of air.

Monitoring commenced in 2012 at Taylor Street Ayr. This was as a result of complaints from the residents of dust from the adjacent scrap yard.

High Street showed an increase from 2011 to 2013 then a reduction in 2014 and a slight increase in 2015. Taylor Street shows a gradual reduction since monitoring commenced in 2013 with a small blip last year where the level increased from 9 to 10 µg/m<sup>3</sup>. The reason for these trends is unclear but all results were well within the limit of 40 µg/m<sup>3</sup> of air.

Appendix F: Trend of Automatic PM<sub>10</sub> Results 2010 - 2015



Levels of PM<sub>10</sub> are measured as an annual average and displayed in µg/m<sup>3</sup> of air

Monitoring commenced in 2012 at Taylor Street Ayr. This was as a result of complaints from the residents of dust from the adjacent scrap yard.

High Street has been fairly constant since monitoring commenced. Taylor Street did show a small spike in 2013 but has since reverted back to 13 µg/m<sup>3</sup>

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## **References**

Reference1: Technical guidance LAQM.TG(16), issued by the Scottish Government.

Reference 2: Policy Guidance LAQM PG(S) (16), issued by the Scottish Government

Figure 1: Map showing Location of High Street Ayr Real Time Continuous Monitoring Station



Figure 2: Map showing Location of Taylor Street, Ayr Real Time Continuous Monitoring Station

