Annual Progress Report (APR)

2023 Air Quality Annual Progress Report (APR) for South Ayrshire Council

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

June 2023

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Executive Summary: Air Quality in Our Area

Air Quality in South Ayrshire

The air quality within South Ayrshire remains very good. The majority of air pollution present is as a result of transport sources primarily road traffic fuelled with petrol or diesel. With the gradual move away from those fuel sources to electric vehicles it is expected we will continue to enjoy an improvement in air quality.
South Ayrshire has no air quality management areas (AQMA's) or action plans.

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Actions to Improve Air Quality

During 2022, we were only able to carry out limited idling enforcement patrols throughout the district. These were targeted around schools in an attempt to reduce drivers allowing their vehicles to idle unnecessarily. We are hoping to carry out more of these patrols in 2023 should resources allow.
In 2022 we delivered a number of talks to primary school children on air quality and the importance of using active forms of travel where possible. We are intending to offer this to the primary schools in 2023

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 reduce the impact, we intend to carry out vehicle idling enforcement over the coming year. With the assistance of funding from the Scottish Government in 2016 we fitted our two real-time TEOM monitors with $PM_{2.5}$ inlets in order to assess the levels of that pollutant within SAC. Results of monitoring for that pollutant are now available. In 2021 we secured funding from the Scottish Government to update our two TEOM FDMS monitors to FIDAS monitors. This new equipment permits us to accurately monitor $PM_{2.5}$ and PM_{10} levels simultaneously.

How to Get Involved

Members of the Public Can Assist to Improve Air Quality by:

- using active transport or public transport where possible instead of driving. If it is necessary to drive, consider changing to a low polluting vehicle or using an electric vehicle

- ensuring if you do drive that you don't leave your engine idling any longer than necessary. In addition to polluting the air and producing greenhouse gases you could be served with a fixed penalty notice and make sure your car is well maintained

- avoiding garden bonfires – instead recycle or utilise your brown refuse bin for garden waste

- reporting badly polluting buses or lorries as follows: https://www.gov.uk/report-smoky-vehicle

- using electric powered lawn and garden equipment instead of petrol.

Our website has links to the two real time monitors results for PM_{10}, $PM_{2.5}$ and NO_2. These can be accessed as follows:
Ayr High Street site: https://www.scottishairquality.scot/latest/site-info/AYR
Ayr Harbour Site: https://www.scottishairquality.scot/latest/site-info/HARB
Previous air quality reports are also available from our website as follows:
https://archive.south-ayrshire.gov.uk/environmentalhealth/publichealth/airquality.aspx

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1 Local Air Quality Management

This report provides an overview of air quality in South Ayrshire during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 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 Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2021
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Sulphur dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003

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 publish and implement an Air Quality Action Plan (AQAP) within the shortest possible time and no later than 12 months of the date of AQMA Designation Order. The AQAP must set out measures the local authority intends to put in place in pursuit of the objectives within the shortest possible time Measures should be provided with milestones and a final date for completion. The action plan itself should have a timescale for completion and for revocation of the AQMA. Where measures to reduce air pollution may require a longer timescale an action plan shall be reviewed and republished within five years of initial publication and then five-yearly thereafter.

South Ayrshire Council currently does not have any AQMAs. nor have there been any within South Ayrshire in the past.

2.2 Cleaner Air for Scotland 2

Cleaner Air for Scotland 2 – Towards a Better Place for Everyone (CAFS2) is Scotland's second air quality strategy. CAFS2 sets out how the Scottish Government and its partner organisations propose to further reduce air pollution to protect human health and fulfil Scotland's legal responsibilities over the period 2021 – 2026. CAFS2 was published in July 2021 and replaces Cleaner Air for Scotland – The Road to a Healthier Future (CAFS), which was published in 2015. CAFS2 aims to achieve the ambitious vision for Scotland "to have the best air quality in Europe". A series of actions across a range of policy areas are outlined, a summary of which is available on the Scottish Government's website.

Progress by South Ayrshire Council against relevant actions for which local authorities are the lead delivery bodies within this strategy is demonstrated below.

2.2.1 Placemaking – Plans and Policies

Local authorities with support from the Scottish Government will assess how effectively air quality is embedded in plans, policies, City Deals and other initiatives, and more generally in cross departmental working, identifying and addressing evidence, skills, awareness and operational gaps.

South Ayrshire Council has been working closely with the local community to produce place plans. The plans can be found here: www.south-ayrshire.gov.uk/thriving-places/ within those plans there are a number of measures designed to increase the use of "green transport" eg " Ayr North should be a place that is safe and welcoming to move around on foot and by cycle. Traffic and parking arrangements should allow people to move around safely. It should have a public transport network that meets the needs of the community."

South Ayrshire Council has introduced a carbon budget tracker for each service with a view to reducing the carbon footprint of the organisation.

2.2.2 Transport – Low Emission Zones

Local authorities working with Transport Scotland and SEPA will look at opportunities to promote zero-carbon city centres within the existing LEZs structure.

South Ayrshire Council has no Low Emission Zones established within the Local Authority area. Within South Ayrshire, part of the ruling Conservative party's manifesto was that they would look at introducing such a zone within Ayr Town Centre.

Part of the Stagecoach bus fleet has been replaced with Electric buses and this should reduce the impact on air quality

2.3 Implementation of Air Quality Action Plan(s) and/or measures to address air quality

In order to ensure that local authorities implement the measures within an action plan by the timescales stated within that plan, the Scottish Government expects authorities to submit updates on progress through the APR process. South Ayrshire Council has taken forward a number of measures within the action plan during the current reporting year of 2022 in pursuit of improving local air quality and meeting the air quality objectives within the shortest possible time. Details of all measures completed, in progress or planned are set out in

Table 2.1.

Key completed measures for this reporting year are:

- Electric bin lifting equipment where possible will be fitted to all heavy RCVs
- Fleet Management Review is developing and putting in place a hierarchy of travel guidelines

South Ayrshire Council expects the following measures to be completed over the course of the next reporting year:

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/ Actual Completion year	Measure Status	Funding Status	Key Milestones	Progress	Barriers to implementation
1	Active Travel Hub project	Alter-natives to private vehicle use	Ongoing	In progress	<Not funded		Operational ongoing project	There are concerns over the funding for the active travel hubs and they may cease in the near future
2	Introduction of a car club	Alter-natives to private vehicle use	2024	In progress	Not funded		Report commissioned into feasibility. Feedback very positive	This action area was paused during the COVID pandemic however is now being picked up by way of new actions in the proposed Fleet Strategy which was approved by Leadership Panel last year.
3	Bicycle Rental	Alter-natives to private vehicle use	Ongoing	In progress	Not funded		ongoing project	The abellio bikes are no longer being rented via the hub as the hub were asked to pay for providing this service. Abellio still have a contractual requirement to provide this bike service from the station, so it is hoped they will do so in future. Alternative ways to make the hub fleet of bikes / bikes generally available to workplaces and the public at other

								locations are now being investigated and arrangements being made through the hub project.
4	Green Champions promote active travel and the council's travel hierarchy.	Alter-natives to private vehicle use	Ongoing	Delayed	Not funded		Paused	The green champions is essentially more or less paused just now due to lack of interest and resourcing issues.
5	Promotion of renewable Energy	Promoting low emission plants	Ongoing	In progress	Not funded		ongoing	
6	Vehicle fleet efficiency Several electric vehicles are being procured for use by council staff. In addition a number of charging points are being installed throughout the district	Promoting low emission transport	2025	In progress	Not funded		ongoing	To update to newer EVs wherever a departments budget allows. However, some departments are already claiming they cannot fund EVs which were previously grant funded.
7	Electric bin lifting equipment where possible will be fitted to all heavy RCVs. This results in the vehicle engine operating at lower revs (when lifting bins) which reduces fuel consumption, vehicle exhaust emissions and noise levels.	Promoting low emission plant	Ongoing	In progress	Not funded		ongoing	Where possible Electric Bin Lift Equipment will continue to be specified for all RCVs.
8	Vehicle fleet efficiency Large Goods Vehicles (LGVs) over 3500kg GVW will also be fitted where possible with the latest technology to reduce fuel consumption and exhaust emissions	Promoting low emission transport	Ongoing	In progress	Not funded		ongoing	This fuel saving equipment is now standard requirement on all vehicle specifications in this class. And will continue to be fitted where possible

9	Vehicle fleet efficiency 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	Promoting low emission transport	Ongoing	In progress	Not funded		ongoing	All new vehicles South Ayrshire Council procure will continue to be to the latest European exhaust emissions standards. Alternative fuel will also always be considered where possible
10	Vehicle fleet efficiency 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. It is hoped car fleet to fully electric or hybrid by 2025	Promoting low emission transport	2025	In progress	Not funded		ongoing	This fuel saving equipment is now standard requirement on all vehicle specifications in this class. And will continue to be fitted where possible. South Ayrshire Council now have 60 full EVs & 8 PHEVs on our Fleet.
11	Vehicle fleet efficiencyDepartments be asked to use smaller vans to replace larger vans where practical and small vehicles will be transitioned to electric vehicles (EVs) between now and 2025. Although unfortunately at this time the infrastructure of charging points will restrict the number of EVs we can put into our fleet, however the use of charging points is being assessed to ensure efficiency	Promoting low emission transport	2025	In progress	Not funded		ongoing	Our Property Maintenance Service have recently added EVs to their Fleet. These EVs have replaced diesel vans and cars. Due to costs there has been a reduced requirement for vehicles The depot at McCalls Avenue hast a new, grant funded, rapid charger (50 KWH) This will begin trials later when the circumstanced allow to see how feasible it

								is to rotate multiple vehicles based on sharing the one rapid charger available.
12	Vehicle fleet efficiencyPart 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	Promoting low emission transport		Completed				
13	Vehicle fleet efficiency 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. The vehicle tracking system was being improved in 2020 which will further the benefits it can provide.	Promoting low emission transport		In progress	Not funded		ongoing	Department to monitor and review journeys which overlap. Vehicle utilisation reports are being created to assess whether the number of vehicles supplied is suitable for our needs.
14	Vehicle Idling Patrols vehicle idling work which we carried out in 2022.. We also put out communications to social media reminding members of the public to switch off their engines	Promoting low emission transport		In progress	Funded Scottish Government Grant		ongoing	Well received by members of the public Main source of air pollution in SA is road traffic

	when stationary for more than 5 minutes							

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 2022. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at http://www.scottishairquality.scot/

Maps showing the location of the monitoring sites are provided in Figure 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_2 at 20 sites during 2022. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 1 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

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_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3.

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 18µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than seven times per year.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A compares the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years with the air quality objective of 10µg/m^3.

There were no exceedances of the air quality objectives reported for $PM_{2.5}$ in 2022 at either of our two continuously monitored sites

3.2.4 Sulphur Dioxide (SO_2)

Table A.8 in Appendix A compares the ratified continuous monitored SO_2 concentrations for year 2022 with the air quality objectives for SO_2.

We did not monitor SO2 concentrations during 2022 within SAC. We are not aware of any changes that have occurred in their status since submission of the previous 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 2021. 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 new road traffic sources within SAC that have the potential to affect air quality.

4.3 Industrial Sources

We are not aware of any new industrial sources 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 are no new planning applications in 2022 we are aware of within SAC that would have the potential to affect air quality.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

There were no exceedances of the air quality objectives identified within SAC in 2022. 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 2024.

6.2 Conclusions relating to New Local Developments

There were no local developments during 2022 in SAC that required consideration

6.3 Proposed Actions

There were no exceedances of the air quality objectives identified within SAC in 2022. 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 2024.

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? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	High St Ayr	Roadside	337223	221162	NO_2; PM	N	Chemiluminescent; FDMS	5	2	2.0
CM2	Taylor St (Harbour) Ayr	Roadside	233608	622750	NO_2; PM	N	Chemiluminescent FDMS	10	1	2.0

Notes:

(1) 0m 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? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT1	147 Whitletts Road, Ayr	Roadside	234392	622366	NO_2	N	20	1	N	2.5
DT2	Dundonald Road, Troon	Roadside	232588	631277	NO_2	N	10	2	N	2.5
DT3	2 Portland Street, Troon	Roadside	232292	631235	NO_2	N	1	2	N	2.5
DT4	2 Walker Rd Ayr	Roadside	234892	622730	NO_2	N	5	1	N	2.5
DT5	3 The Cross, Prestwick	Roadside	235229	626228	NO_2	N	5	2	N	2.5
DT6	141 Main St Prestwick	Roadside	235142	625816	NO_2	N	2	2	N	2.5
DT7	Heathfield Rd/ P/wick Rd Ayr	Roadside	234641	624159	NO_2	N	2	1	N	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT8	Station Taxi Rank, Smith St Ayr	Roadside	240194	624754	NO_2	N	5	1	N	2.5
DT9	Morrison's Castlehill Rd Ayr	Roadside	234126	621201	NO_2	N	5	2	N	2.5
DT10	39 Whitlett's Rd Ayr	Roadside	234605	622412	NO_2	N	2	N/A	N	2.5
DT11	Tesco, Whitlett's Road, Ayr	Roadside	235150	622528	NO_2	N	10	2	N	2.5
DT12	King's St Ayr	Roadside	233830	622352	NO_2	N	2	1	N	2.5
DT13	Town Buildings Ayr	Roadside	233691	622093	NO_2	N	2	2	N	2.5
DT14	Corner of Waggon Rd & Back Peebles St Ayr	Roadside	233876	622838	NO_2	N	5	2	N	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT15	Corner of Waggon Rd & Green St Ayr	Roadside	233744	622882	NO_2	N	5	2	N	2.5
DT16	Ayr Bus Station	Roadside	233576	621805	NO_2	N	10	2	N	2.5
DT17	Rozelle Park Ayr	Urban Back-ground	233763	618944	NO_2	N	10	N/A	N	2.5
DT18	Minishant Inn, A77	Roadside	232983	614277	NO_2	N	10	1	N	2.5
DT19	133 Whitlett's Rd Ayr	Roadside	235099	622542	NO_2	N	10	1	N	2.5
DT20	Roxy Bar Bridge St Girvan	Roadside	281549	598064	NO_2	N	5	1	N	2.5

Notes:

(1) 0m 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_2 Monitoring Results (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	Automatic	100	92	11	11	10	12	10.3
CM2	Roadside	Automatic	100	75	9	11	(8)	8	8.6
DT1	Roadside	Diffusion Tube	100	100	N/A	N/A	15	22	24
DT2	Roadside	Diffusion Tube	100	100	13	14	8	12	11.1
DT3	Roadside	Diffusion Tube	100	67	17	15	9	11	12.6
DT4	Roadside	Diffusion Tube	100	92	N/A	N/A	8	11	9.45
DT5	Roadside	Diffusion Tube	100	100	25	26	18	20	22.17
DT6	Roadside	Diffusion Tube	100	100	19	21	11	15	14.64
DT7	Roadside	Diffusion Tube	100	100	24	27	16	22	22.44
DT8	Roadside	Diffusion Tube	100	92	19	30	10	15	13.8
DT9	Roadside	Diffusion Tube	100	100	21	21	14	17	18.33
DT10	Roadside	Diffusion Tube	100	100	26	28	16	19	23.05
DT11	Roadside	Diffusion Tube	100	100	23	31	12	19	21.37
DT12	Roadside	Diffusion Tube	100	92	27	30	16	22	27.37
DT13	Roadside	Diffusion Tube	100	92	26	30	18	23	21
DT14	Roadside	Diffusion Tube	100	100	N/A	20	11	11	8.35
DT15	Roadside	Diffusion Tube	100	100	N/A	13	7	10	10.76
DT16	Roadside	Diffusion Tube	100	92	23	22	16	16	18.03
DT17	Urban Background	Diffusion Tube	100	83	4	4	4	3	3
DT18	Roadside	Diffusion Tube	100	100	15	16	11	13	12.93
DT19	Roadside	Diffusion Tube	100	100	N/A	23	13	22	21.68
DT20	Roadside	Diffusion Tube	100	100	24	23	14	22	20.88

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in bold.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG(22) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Table A.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	Automatic		34.5	0 (746)	0 (57)	0	0	0
CM2	Roadside	Automatic		58.6	0	0	0 (54)	0 (57)	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200 µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table A.5 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside		90	**Not Monitored**	**Not Monitored**	**Not Monitored**	**Not Monitored**	**7**
CM2	Roadside		79	**Not Monitored**	**Not Monitored**	**Not Monitored**	**Not Monitored**	**1**

Notes:

Exceedances of the PM_{10} annual mean objective of 18 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside		90				**16.7**	**9.6**
CM2	Roadside		79				**12.5 (55)**	13.8 (35)

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 not to be exceeded more than seven times/year) are shown in bold.

If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

(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%).

Table A.7 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside		90	**7.8**	**6.3**	**4.9**	**5.1**	6.6
CM2	Roadside		79	8.2	6.7	6.3	6.1	6.6

Notes:

Exceedances of the $PM_{2.5}$ annual mean objective of 10 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Table A.8 – SO_2 2022 Monitoring Results, Number of Relevant Instances

Site ID	Site Type	Valid Data Capture for monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	Number of 15-minute Means > 266 µg/m	Number of 1-hour Means > 350 µg/m	Number of 24-hour Means > 125 µg/m
N/A						
N/A						

Notes:

Exceedances of the SO_2 objectives are shown in bold (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

If the period of valid data is less than 85%, the relevant percentiles are provided in brackets (15-Minute means: 99.9th percentile, 1-hour means: 99.7th percentile, 24-hour means: 99.2nd percentile).

(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%).

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Monthly Diffusion Tube Results (µg/m^3)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
DT1	29	25.7	25	26.6	35.8	23.4	20.7	15.3	16.2	21.2	22.6	13.6	22.9	24
DT2	15.9	11.4	9.7	16.8	8.3	9	8.5	6.3	6.8	10.6	10.9	12.8	10.58	11.1
DT3	16.7	12.5	12.7		11.3			5.8	14.8	10.9	11.4		12	12.6
DT4	12.8	16.6	8		6.7	6.4	4	5.6	11.3	10.1	7	10.7	9	9.45
DT5	27.7	26.6	17.9	28.6	22	17.4	11.9	11.9	21.9	20	21.8	25.6	21.11	22.17
DT6	18.7	17.4	12	16.4	15.8	9.6	8.8	8.5	16.6	12.6	13.8	17.1	13.94	14.64
DT7	26.5	26	19.7	24	23.2	19.2	15.2	11.2	25.5	16.9	20.9	28.1	21.37	22.44
DT8	17.4	16.8	12.8	16.6	14.3	9.5		6.3	12.2	12.4	10.7	15.8	13.16	13.8
DT9	20.8	21.9	18.6	24	16.5	13.1	10.2	10.1	21.1	16.9	14.4	21.9	17.46	18.33
DT10	28.7		18.6	25.4	22.3	19.5	16.7	12.8	31.2	21.2	21	24.1	21.95	23.05
DT11	24.3	25	24.1	22.8	18.7	17.7	17.4	12.2	23.1	19.8	17.5	21.6	20.35	21.37
DT12	30.4	33.6	23.2	31.6	29.2	24.4	18.6	15.8	32.5	27.9	25.6	31.4	27.02	27.37
DT13		14.9	18.3	26.4	21.1	18.5	19.2	13.9	28.3	19.6	19.8		20	21
DT14	1.4	7.8	7.4	13.6	8.2	6.1	7.2	5.9	8.8	8.3	7.9	12.8	7.95	8.35
DT15	12.6	9.5	10	14.6	11.9	6.8	6.2	6	11.5	11.2	8.9	13.8	10.25	10.76
DT16	24.2	13.2	16.4	21.1		17.4	13.1	11.5	19.6	16.1	16.5	19.8	17.17	18.03
DT17	4	2.5	3.7	4.3	3.1	1.8	1.9	1.8	3.2	2.4	2.1	3.5	2.86	3
DT18	14.4	9.2	14.4	13.8	13.9	10.8	9.5	10.9	17		10.1	11.5	12.32	12.93
DT19	26.9	17.2	20	29.6	20.1	18.9	11.9	12.1	23	19.5	22.3	26.3	20.65	21.68
DT20	21.9	14.4	19.8	24.5	26	19.2	18.1	20.1	24	20.2	17.2	13.1	19.88	20.88

Notes:

(1) See Appendix C for details on bias adjustment

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

New or Changed Sources Identified South Ayrshire Council During 2022

South Ayrshire Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by South Ayrshire Council During 2022

South Ayrshire Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Within South Ayrshire, diffusion tubes are supplied, changed and analysed by Glasgow Scientific Services which is operated by Glasgow City Council. The method of preparation is 20% TEA in water. Monitoring was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

GSS Scored the following results for 2022 in the laboratory summary performance for AIR NO_2 PT: Jan/March 50%, April – December no results were available.

Diffusion Tube Annualisation

Annualisation was required for non-automatic monitoring sites DT3, details of the calculation method undertaken provided in Table C.2. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Diffusion Tube Bias Adjustment Factors

South Ayrshire Council have applied a national bias adjustment factor of 1.12 to the 2022 monitoring data. A summary of bias adjustment factors used by South Ayrshire Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23- (6 studies)	1.05
2021	National	03/22- (8 studies)	1.12
2020	National	03/21 (10 studies)	0.96
2019	National	03/20 (4 studies)	0.86
2018	National	03/19 (9 studies)	0.86

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within South Ayrshire Council required distance correction during 2022.

QA/QC of Automatic Monitoring

Both of the automatic sites within South Ayrshire are part of the Scottish Air Quality Programme and are audited twice per year by Ricardo- AEA. Ricardo also carried out 12 months of fortnightly LSO calibration of the NOx and PM analysers at both of our automatic sites. All data is ratified and scaled by Ricardo before being finalised. Servicing and repairs are carried out by Acoem UK.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM_{10}/$PM_{2.5}$ monitor(s) utilised within South Ayrshire Council do not required the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within South Ayrshire Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within South Ayrshire Council required distance correction during 2022.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor DT1	Annualisation Factor DT2	Annualisation Factor DT5	Annualisation Factor DT6	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT3	0.96	1.06	0.99	0.92	0.98	12	11.76	

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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_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	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: Location of NO_2 Diffusion Tubes

Number	Tube Number	Location
1	DT1	147 Whitlett's Rd, Ayr
2	DT2	Dundonald Rd, Troon
3	DT3	2 Portland St, Troon
4	DT4	2 Walker Rd, Ayr
5	DT5	3 The Cross, Prestw ick
6	DT6	141 Main St, Prestw ick
7	DT7	Heathfield Rd/ P/w ick Rd, Ayr
8	DT8	Station Taxi Rank, Smith St, Ayr
9	DT9	Morrison's Castlehill Rd, Ayr
10	DT10	39 Whitlett's Rd, Ayr
11	DT11	Tesco, Whitletts Rd, Ayr
12	DT12	King's St, Ayr
13	DT13	Tow n Buildings, Ayr
14	DT14	Waggon Rd/Back Peebles St, Ayr
15	DT15	Waggon Rd/Green St, Ayr
16	DT16	Ayr Bus Station, Ayr
17	DT17	Rozelle Park, Ayr
18	DT18	Minishant Inn, A77
19	DT19	133 Whitletts Road, Ayr
20	DT20	Roxy Bar Bridge St, Girvan

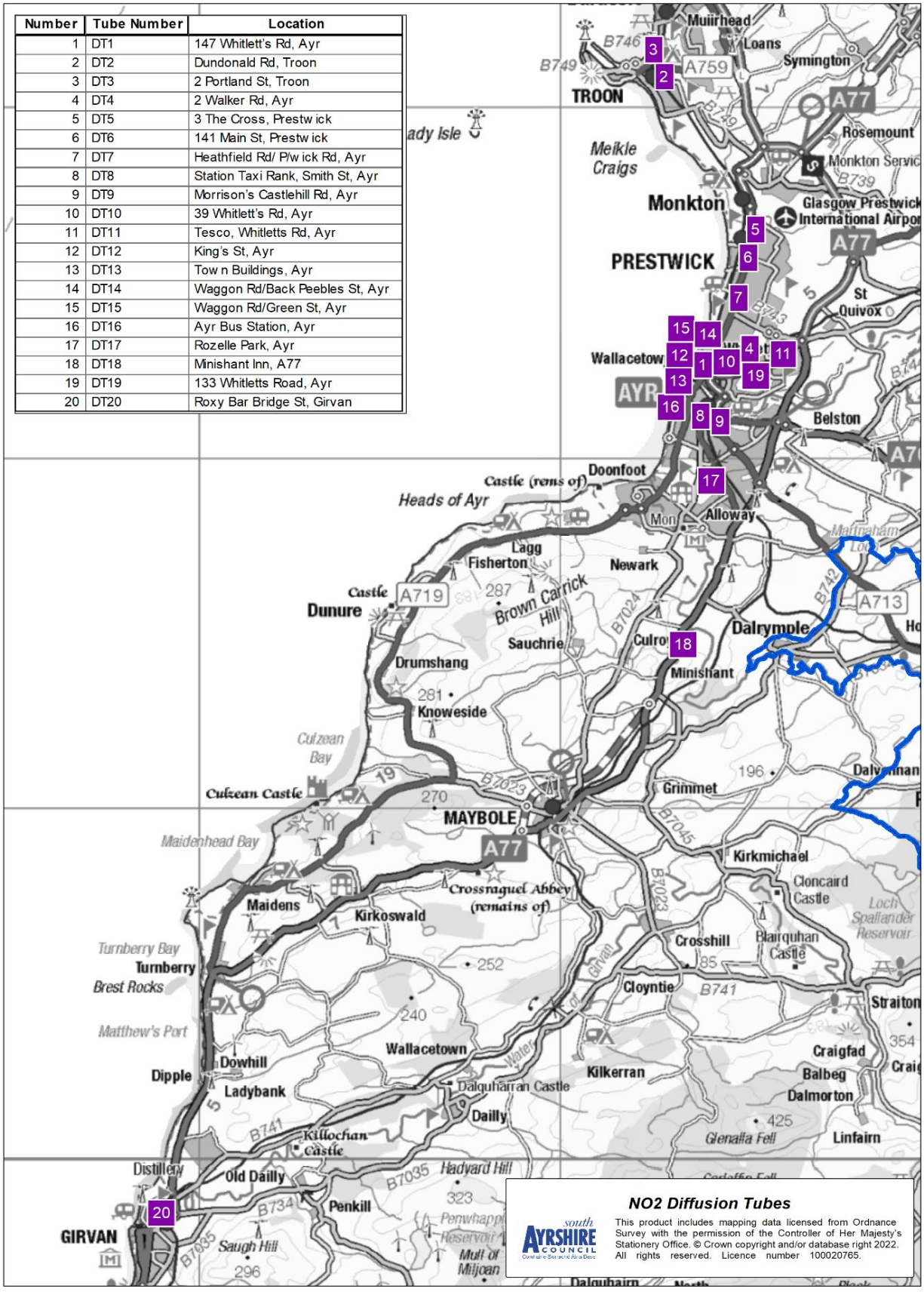

Figure 1: Location of Continuous monitors

CM1 High Street Ayr

CM2 Taylor Street (Harbour) Ayr