Annual Progress Report (APR)

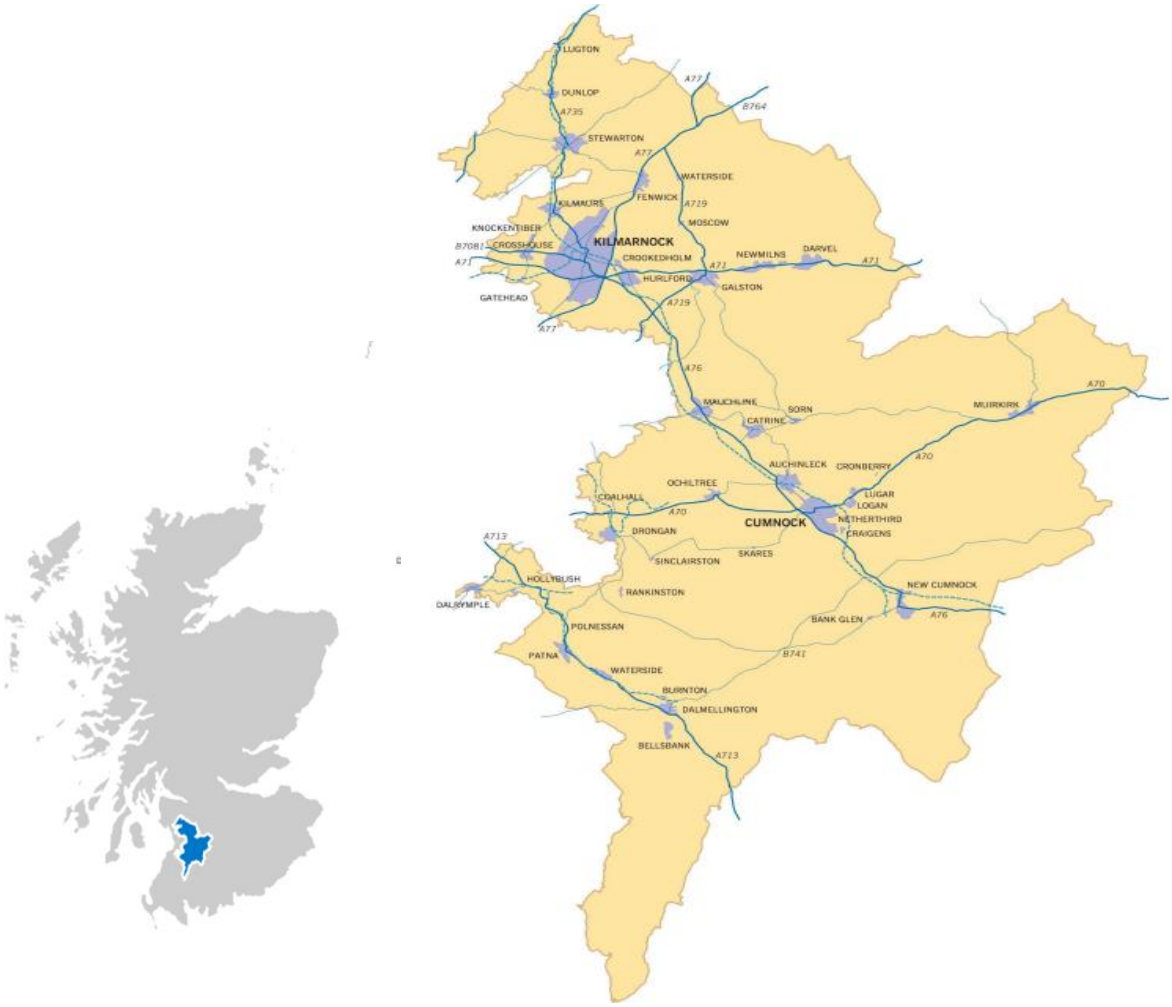
East Ayrshire Council
Comhairle Siorrachd Àir an Ear

2025 Air Quality Annual Progress Report (APR) for East Ayrshire Council

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

Local Air Quality Management

Dec 2025



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Executive Summary: Air Quality in Our Area

Air Quality in East Ayrshire Council

East Ayrshire is one of 32 Council areas designated in Scotland. The area shares borders with Dumfries and Galloway, East Renfrewshire, North Ayrshire, South Ayrshire and South Lanarkshire. Situated in southwest Scotland, East Ayrshire has a varied natural environment, a rich and high-profile cultural heritage, a proud industrial history and a range of activities, recreation and hospitality, which attract residents and visitors alike.

East Ayrshire is located between the M77 corridor from Glasgow and the M74 from Glasgow to the north of England. Kilmarnock is 20 minutes by car from Glasgow and 40 minutes from Glasgow Airport. It is also only 15 minutes from Prestwick Airport, which has much to offer in terms of business and leisure travellers, and its freight operation.

The Council area is approximately 490 square miles and boasts a variety of inland landscapes and waterways. Approximately 37% of the Council area falls within the Local Landscape Area (LLA)/ Sensitive Landscape Character Areas (SLCAs), there are 20 Sites of Special Scientific Interest (SSSI), and 4 internationally important designated nature conservation sites, namely Airds Moss and Merrick Kells Special Areas of Conservation (SAC) and the Muirkirk and North Lowther Uplands Special Protection Area (SPA) are 2 reserves in East Ayrshire managed by the Scottish Wildlife Trust (SWT), Knockshinnoch and Dalmellington Moss, and one Local Nature Reserve (LNR) in the Council area, Catrine Voes and Woodlands, which includes a series of reservoirs, broad leaved woodland and scrubland as well as archaeological and cultural interest.

The Council area is a mixture of rural and urban environments, and it is the 16th most inhabited local authority in Scotland. The largest urban area is the town of Kilmarnock where approximately 47,040 people live, followed by Cumnock with approximately 8,830 people residing there. Other population centres across the Council area are Stewarton, Darvel and Hurlford.

The main source of pollution in the Council area is from road traffic emissions originating from the extensive road network, with heavy traffic locations in the urban, northern areas of the Council district, particularly Kilmarnock, contributing significantly.

Due to East Ayrshire Council's consistent years of no reported exceedances of the annual mean NO_2 Air Quality Standard (AQS) of 40µg/m^3, the area is considered to have good air quality. As a result of this, there are no declared Air Quality Management Areas (AQMAs) within the Council area.

That said air pollution remains of grave concern to the authority and its residents as it is associated with numerous adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Short-term increases in levels of air pollution can also cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas. The annual mortality of human-made air pollution in the UK is roughly equivalent to between 28,000 and 43,000 deaths every year. There were an estimated **17,100** premature deaths linked to air pollution in the United Kingdom in 2021. It is estimated that between 2017 and 2025 the total cost to the NHS and social care system of air pollutants (fine particulate matter and nitrogen dioxide), for which there is more robust evidence for an association, will be £1.6 billion.

Car ownership in households in East Ayrshire is higher than the national average; in 2022, 15% of the population reported not having access to a car in East Ayrshire compared to 20% for Scotland respectively, as reported by the Scottish Government Road Vehicles Statistics.

General pollution sources in East Ayrshire include commercial, industrial, and domestic sources all contributing to pollutant concentrations in the area.

East Ayrshire Council's Environmental Health Service have an established relationship with the Planning Department given air quality is a material consideration in planning processes, thus applicants must ensure that developments or installations will improve air quality or have a minimum impact on air quality. Planning officers require applicants to engage in pre-planning discussions with the Environmental Health Service, seeking to improve awareness and understanding of upcoming developments in the Council area and limit planning refusals on air quality grounds.

East Ayrshire Council's Environmental Health Team have an established relationship with the Transport Department, where changes in traffic flow are considered and new developments are reviewed for the impact on air quality. Road improvements introduced by the Transport Department have had positive impact on air quality in the Council area, for example implementation of smart traffic lights.

The Council continues to review its monitoring network and has removed the AQ Mesh automatic monitor in Cumnock after it broke down during this monitoring period. It was not deemed necessary to replace it as the project in that area was long since completed.

Actions to Improve Air Quality

As a result of results in previous years there are currently no designated Air Quality Management Areas (AQMAs) within East Ayrshire and an Air Quality Action Plan (AQAP) is not required. There are currently no plans to produce an Air Quality Strategy for the area.

The air quality across East Ayrshire is considered good, with air quality in 2024 displaying complete compliance with the AQS and following the same trend for previous years of monitoring. The Council continue to monitor and assess the results for the coming year within the NO_2 diffusion tube network.

As part of the East Ayrshire Council's commitment to reduce the impacts of, and tackle climate change, the Council continues to progress and aim to hit net-zero carbon emissions by 2030 and by 2045 for wider communities across the area. East Ayrshire Council's Climate Change Strategy sets out various actions within four core themes (Energy, Transport, Waste and Natural Environment), to reduce CO2 emissions, of which also have shared benefits in improving air quality through reducing both NO_2 and PM emissions.

East Ayrshire Council is developing and has implemented the following measures as part of the strategy:

- Implementation of publicly accessible and Council fleet Electric Vehicle (EV) charging points.
- Adoption more frequent circular economy approaches to minimise waste and emissions released from landfill sites.

- Promotion of active transportation methods to limit vehicular usage and associated emissions.
- Enhanced community resilience through encouraging businesses, third sector organisations and charities to adopt sustainable procurement policies and encourage people to grow their own produce in community allotments to cut food miles; and.
- Building greener communities that consider appropriate planting strategies, conserving and expanding natural habitats to offset pollutant emissions.

In support of the Climate Change Strategy, East Ayrshire Council have committed to support the Council's Net Zero Action Plan, as well as adopting the Net Zero Public Sector building standard where possible and agreed to improve the fabric of existing housing stock with the emphasis being on energy efficiency.

East Ayrshire Council actively encourages developers at the pre-planning and planning stages to install electric charging points or consider suitable infrastructure to allow for future cost-efficient installations.

East Ayrshire Council confirms the collaborative relationship with neighbouring local authorities South Ayrshire Council via the Ayrshire Roads Alliance. Through this collaboration they have partnered with an experienced commercial supplier enhance its programme of publicly funded and managed charging points for Electric Vehicles (EV) across the area.

The Ayrshire Roads Alliance (ARA) has also produced an Electric Vehicle Infrastructure Strategy (EVIS) and action plan for East Ayrshire that will: develop a widespread EV charging network to support communities, businesses and visitors using EVs; identify and provide solutions where no off-road parking exists; and work on solutions to improve air quality.

Aligned with Scottish Government climate change targets, East Ayrshire Council are required to ensure that new fleet vehicles (i.e., cars and vans) are zero-emission from 2025, with all new Heavy Goods Vehicles (HGVs) reaching the same target by 2030. The Council have produced a Transformation Strategy to assist with the phase-out of petrol/diesel powered fleet vehicles and have been replacing fleet vehicles since February 2019 supported by their collaborative relationship with Transport Scotland.

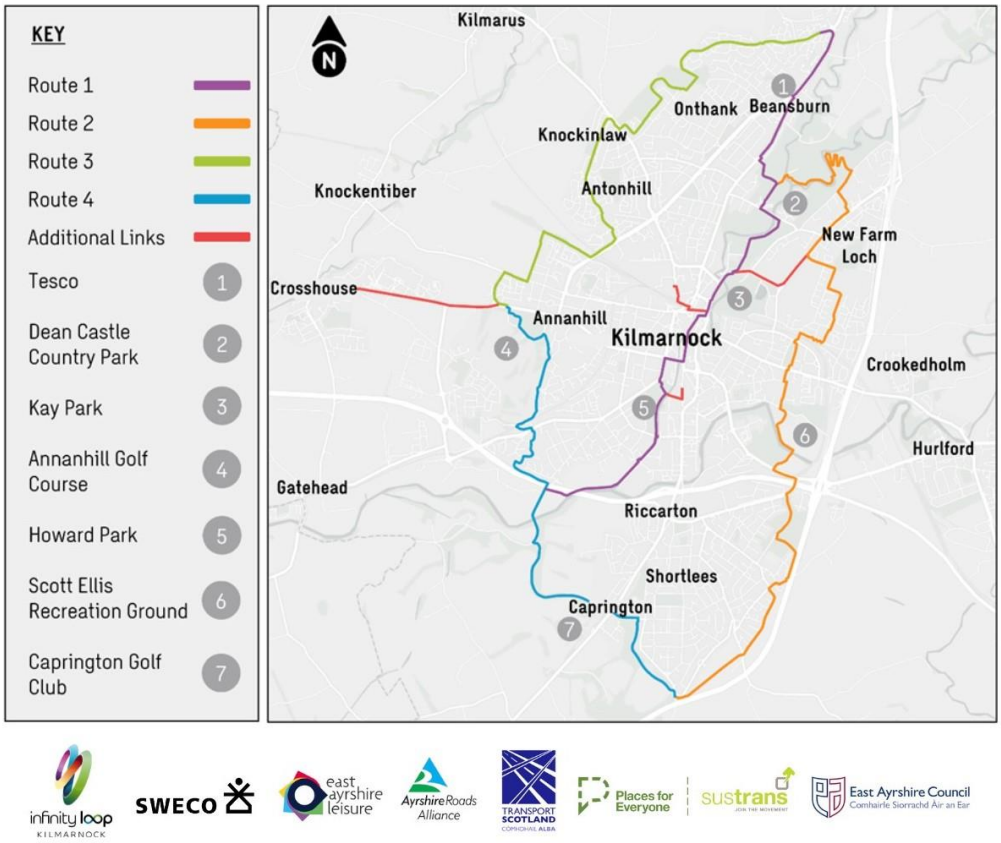
East Ayrshire Council has encouraged active travel across the area and subsequent reduction in vehicular usage, through its established Clean Green awards and this years' 'Shoot to Saturn' initiative in primary schools. As in previous years, Shoot to Saturn is an active travel initiative funded by the Climate Change Fund and involves Early Years Centres and schools. The aim of the project is to get young people walking to school, in a bid reduce carbon emissions in East Ayrshire, while also decreasing congestion at school gates and promoting active travel. The latest round of this project runs from September 24 until June 2025. All the centres and schools participating earned S-Miles to send a rocket all the way to Saturn. Unlike other national initiatives that focus on a single week of effort, this initiative runs for the full school year and has been developed fully in house by education colleagues in Easy Ayrshire. The figures for this year have not been announced at time of reporting but last year 724724 S-miles were covered by the participating schools exceeding the target for the year and preventing around 200MT of CO_2 being released into the atmosphere. 64% of children walk/cycle to school in East Ayrshire, which is higher than the Scottish average of 53.7%.

East Ayrshire Council has established a collaborative relationship with the bicycle repair business 'Cycle Station' (Cycle Station) who host free sessions for locals to check that their bikes are safe and make minor maintenance adjustments to get them on the road. The company also provide a recycling bike service to limit waste, breakdown and recovery service and community outreach projects for schools to teach bicycle maintenance and cycling proficiency. Cycle Station also offer an innovative bike sharing service with a bike hire fleet to encourage active transportation.

In addition, All Ability bikes (LDAW All Ability Bikes) continues at Cumnock Juniors Football Park and offer children, young people and adults who have a physical or learning disability, or have impaired balance, the chance to fully participate in the fun and freedom of cycling.

East Ayrshire Council promotes the Kilmarnock Active Travel Hub (Kilmarnock Active Travel Hub), an innovative service that encouraged sustainable travel such as walking, cycling, and public transport, throughout the area. The Hub run events and activities to engage the local public as well as tourists, promoting 'Cycle to Work' schemes with support offered on developing a workplace pool bike initiative and advice on funding, training and active travel awards available to workplaces.

East Ayrshire Council have been improving existing active travel walking and cycling routes as well as building new multi-use routes that connect local communities. In Kilmarnock the 'Kilmarnock Green Infinity Loop' (Kilmarnock Infinity Loop) which will encompass 26km of active travel routes, green infrastructure and signage across the town by 2025. This route will also provide connections to the wider path network including the Core Path Network and the National Cycle Network.



East Ayrshire Council are committed to further reducing air pollution emissions through enhancing its active transportation availability as well as creating enjoyable and fair environments for locals and visitors as part of work within the Climate Change Strategy and Local Transport Strategy. The Strategies identify key aims to encourage active travel in East Ayrshire: Safety, Leisure and Tourism, Developments, Connectivity, and Workplaces and Schools, as well as providing the basis for an Active Travel Action Plan (ATAP) that focuses on: Routes, Infrastructure, Policy, Education and Campaigns. The ATAP would be implemented for a 10-year period, with proposed items funded by grants.

Where developments include biomass, East Ayrshire Council screens proposals and request the applicant(s) to undertake dispersion modelling including flue height sensitivity, with low flue heights in urban areas proving problematic. It is acknowledged that the

preference of the Environmental Health Service is that biomass should not be used in urban areas connected to the gas grid, aligned with Scottish Government guidance. It is noted that in specific circumstances, a formal objection may be considered where grounds support. Plans likely to encourage air quality nuisance complaints are likely for refusal, such as poorly sited log burners and certain types of biomass boilers. Applications for biomass boilers that replace oil or coal installations, and which may lead to an improvement in air quality, will be considered favourable. However, screening using the biomass-screening tool is to be completed, and if necessary, the applicant will be required to undertake dispersion modelling for the application. Similar screening processes are also required for new installations off the gas grid.

Furthermore, where biomass burners are proposed in planning applications, East Ayrshire Council have supported the transition and decisional use of geothermal wells and technology such as Ground Source Heat Pumps (GSHPs) for mixed use housing, retail and leisure development. East Ayrshire Council also assess micro-location of biomass burners, for example close to trees and ground hollows, which can lead to localised nuisance issues. Applicants are required to include a planning statement of best practice operation, with actions allowing applicants to mitigate air quality impacts before development proceeds.

Local Priorities and Challenges

The principal challenges and barriers to implementation of initiatives that East Ayrshire Council anticipates facing are funding and resource availability.

How to Get Involved

Given the main source of air pollution within East Ayrshire is from transport sources, the public can support the reduction in air pollutant(s) release and improve air quality within the district by participating in active travel.

East Ayrshire Council continue public engagement work in 2024 through the below schemes:

- The collaborative relationship between local public, stakeholders and the Council with regards to consultation on the East Ayrshire ‘Active Travel Strategy’ to improve accessibility to and encourage uptake of active transportation modes, although still in development.
- The educational initiative ‘Shoot to Saturn’ seeks to encourage the uptake of active transportation methods by school children and parent/guardians whilst educating them on the importance of a healthy lifestyle and aligning with objectives embedded in Climate Change Strategy.
- The collaborative relationship with neighbouring local authorities South Ayrshire Council to enhance the programme of charging points for EVs across the districts, resulting in 146 more EV charging points scheduled to be implemented.
- Investment into phasing out petrol/diesel powered Council fleet vehicles and purchasing EVs, East Ayrshire Council currently have 104 electric vehicles in the fleet which is only 27%
- Established relationships with local active transport business All-Ability Bikes and Cycle Station to host free bike workshops for locals to ensure bikes are safe and road worthy as well as endorsement of the innovative bike sharing service further encouraging active transport and supporting the establishment of a greener, cleaner area.
- Information on air quality monitoring data available on national websites

Table of Contents

List of Tables, Charts & Figures

1 Local Air Quality Management

This report provides an overview of air quality in East Ayrshire Council during 2024. 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 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 East Ayrshire Council 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
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.

East Ayrshire Council currently does not have any AQMAs due to the maintained good air quality within East Ayrshire Council area, The authority therefore has no plans to declare an AQMA or produce an Air Quality Strategy currently.

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

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. East Ayrshire Council has taken forward several measures within the action plan during the current reporting year of 2024 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.

More detail on related measures can also be found in the East Ayrshire Climate Change Strategy, Local Development Plan, and Transport Strategy documentation as well as previous APRs submitted.

Key completed measures for this reporting year are:

- Completion of the refurbished Kilmarnock bus station with the installation of a pantograph at stance 10 which will be used to charge EV buses to meet net zero targets. Stagecoach also has plans to install more chargers at the other stances and accommodate more EV buses in future
- The pan-Ayrshire EV Strategy setting out a plan for the installation of EV charging points in key locations has made positive strides forward. Since the launch of the Ayrshire-wide strategy, the three Ayrshire councils have worked collaboratively to align objectives and pool resources and oversee the procurement process. The joint working group is currently at the stage of developing a detailed tender document, outlining the technical specifications, geographical distribution of charging points and operational requirements. A critical element of the procurement strategy was securing funding from multiple sources to support the large-scale deployment of the EV infrastructure. The three councils have successfully applied for and received partial funding from the Scottish Government's EVIF fund which specifically supports the development of EV charging networks across the area.
- Affordable net zero homes for local communities are being completed on target and include energy reduction for tenants to help with cost of living and meet wider climate change ambitions
- East Ayrshire Council anticipates another impactful year for our schools as they participate in the Clean Green Awards by taking part in active travel, air quality initiatives and power down challenges. Results of their endeavours will be released after reporting but last year the active travel element alone saw children from all ages actively travel 724724 miles and preventing around 200MT of CO_2 being released into the atmosphere.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/ Actual Completion year	Organisations Involved	Measure Status	Funding Status	Key Milestones	Progress	Barriers to implementation
1	Walking and Cycling Networks	Alternative to Private Vehicle Use/ Promoting Travel Alternatives	-		Ongoing	Safer Communities	2023	Provision of safe cycle lanes and pedestrian routes (Both dedicated and dual use) including East Ayrshire Strategic Cycle Network linked to National Cycle Network and East Ayrshire Core Paths Plan. EAC has 40km of cycle lanes. Improved walking facilities between Kilmarnock bus and railway stations. Former railway lines have been converted to footpaths and cycle lanes Bring unadopted footways controlled by EAC up to an adoptable standard. Require developers to provide cycle facilities and links to the public network and/or the EAC Cycle Network as part of their developments (where appropriate).	-
2	Active Travel	Alternative to Private Vehicle Use/ Promoting Travel Alternatives	-		Ongoing	Safer Communities Economy and Skills	-	Council has established an Active Travel Hub in Kilmarnock to promote cycling and walking as an alternative to the car. Promote cycling through advertising, leaflets and maps to encourage cycling as an alternative to short car journeys and promote the health benefits of cycling. As part of this initiative, the Council is introducing a Pool Bike Scheme to promote business cycle use and complement the Cycle to Work Scheme. Develop and adopt an EAC Travel Plan to encourage staff to use sustainable modes of transport in their work-related travel. The Active Travel Officer will work with employers to promote cycling and walking as an alternative to commute by car. Requirement for the adoption of Travel Plans at – 19 all significant new retail, commercial and residential developments. In the selection of locations for future development, preference will be given to areas that are, or have the potential to be, well integrated with walking, cycling and public transport networks.	-

Measure No.	Measure	Category	Expected/ Actual Completion year	Organisations Involved	Measure Status	Funding Status	Key Milestones	Progress	Barriers to implementation
3	Active Travel Hub	Alternative to Private Vehicle Use/ Promoting Travel Alternatives	-		Ongoing	Safer Communities Economy and Skills	-	Promote cycling through advertising, leaflets and maps to encourage cycling as an alternative to short car journeys and promote the health benefits of cycling. As part of this initiative, the Council has Pool Bikes. EAC promote the Cycle to Work Scheme. Transport Strategy in place encouraging use of sustainable modes of transport in all travel. Business development and Planning will work with employers/ developers to promote cycling and walking as an alternative to commute by car. Requirement for the adoption of Travel Plans at all significant new retail, commercial and residential developments. In the selection of locations for future development, preference will be given to areas that can be well integrated with walking, cycling and public transport networks	-
4	Active Transport and Education – School Initiative Shoot to Saturn	Promote Travel Alternatives	-		Ongoing	East Ayrshire Council and Schools – Funded by Climate Change Fund	-	East Ayrshire Council has encouraged active travel across the area and subsequent reduction in vehicular usage, through its established 'Shoot to Saturn' initiative in primary schools. The scheme is funded by the Climate Change Fund. School children are encouraged to collect miles as part of Active Travel through various transportation methods such as walking, cycling, scooting to school, parking and striding, and walking a circuit at school. In 2024, the scheme prevented usage of approximately 200MT of carbon being emitted to the atmosphere.	-
5	Active Transport	Promoting Travel Alternatives	2025		Planned	East Ayrshire Council	2025	In Kilmarnock, the 'Kilmarnock Green Infinity Loop' is being developed which will encompass 26km of active travel routes, green infrastructure and signage across the town by 2025. This route will also provide connections to the wider path network including the Core Path Network and the National Cycle Network	Development and infrastructure plan
6	Smoke Control Areas	Policy guidance and developme nt control	-		Adopted	Economy and Skills	-	East Ayrshire has two smoke control areas the Grange Estate, Kilmarnock and the Crossdene Estate, Crosshouse. Reduces smoke emissions in residential areas.	-

Measure No.	Measure	Category	Expected/ Actual Completion year	Organisations Involved	Measure Status	Funding Status	Key Milestone	Progress	Barriers to implementation
7	Net Zero Housing – Refurb	Housing	2027 – 2028		Planned	EAC £93.6 million over 5 years	2027 - 2028	East Ayrshire Council - £93.6 million over 5 years to improve the fabric of existing housing stock with the emphasis being on energy efficiency	-
8	Community Renewable Energy (CoRE)	Community Renewable Energy	2034		Operational and Ongoing	East Ayrshire Council / Strathclyde University	2034	Community Renewable Energy (CoRE) Centre of Excellence: With an academic and business Centre of Excellence at Knockroon as the center piece of an ambitious 15 year scheme.	-
9	Vehicle Idling	Public Information	-		Ongoing	-	Not Funded	Raise awareness of issues with idling vehicles, air quality and health to promote a change in behaviour, at events such as clean air day	-
10	Permits	Permits	-		Ongoing	SEPA	-	Environmental Permits are issued by SEPA but in consultation with Environmental Health as joint consultees.	--
11	Low energy lighting	Promote Low Emission Plant	-		Ongoing	Safer Communities - Governance	-	Reducing electricity consumption from the national grid therefore reducing emissions. Raising energy awareness with Council staff and the public. Remit to deliver on delivery of the energy effectiveness savings set out in the Council Transformation Strategy.	-

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Site

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

East Ayrshire Council undertook automatic (continuous) monitoring at one site during 2024. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at Scottish Air Quality.

A map showing the location of the monitoring site is provided in Figure 2. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

EAC installed an AQMesh automatic gas and particulate monitor in 2019, in a residential area close to the Barony School Campus (a super school) to gauge pollutant levels, due to concerns raised by residents about from emissions from the school biomass boiler. Over preceding years, it has been proven that there is issue of concern at this site. In 2024 the AQMesh broke down and it has not been deemed necessary to replace it for this location as the project in that area was long since completed. No other projects have been identified where procurement of similar equipment may be useful at this time.

3.1.2 Non-Automatic Monitoring Sites

East Ayrshire Council undertook non- automatic (passive) monitoring of NO_2 at 17 sites during 2024 (three tubes co-located). Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 3-7. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.1.3 Other Monitoring Activities

As discussed in last year's APR East Ayrshires Student Environmental Health Officer completed her dissertation on the topic of air pollution at school and "Does the school street initiatives improve air quality?".

This focused on the effectiveness of the school initiative aimed at reducing air pollution at schools. Her study provided insight into the success and limitations of current initiatives, offering recommendations for future improvements. She carried this out using the AQMesh and NO_2 tubes at various schools throughout the district. Many of the readings were however compromised due to the condition of the monitor and adaptations needed to be made to complete the project.

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 monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at automatic monitoring sites. Also illustrated in Chart A.1 in Appendix A.

Table A.4 in Appendix A compares the adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at non automatic monitoring sites. Also illustrated in Chart A.2 in Appendix A.

For diffusion tubes, the 2024 dataset of monthly mean values is provided in Appendix B.

All passive monitoring sites within the East Ayrshire Council continue to report annual mean NO2 concentrations below the AQS, therefore all passive monitoring sites are compliant and not expected to exceed or be an area of concern. Due to the low monitored concentrations, fall-off with distance correction was not required.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

3.2.2 Particulate Matter (PM_{10})

Table A.6 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 18 µg/m^3. Also illustrated in Chart A.3 in Appendix A.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50 µg/m^3, not to be exceeded more than seven times per year.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 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 10 µg/m^3. Also illustrated in Chart A.4 in Appendix A.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2) is not monitored in East Ayrshire Council. Historic monitoring discontinued in 2005, reported concentrations significantly below AQS and source assessments concluded that no exceedances of AQS were likely for SO_2 due to the reduction in domestic coal usage and industrial sources.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Alternate pollutants included in the Regulations for the purpose of Local Air Quality Management (LAQM) in Scotland were not monitored by East Ayrshire Council in 2024.

4 New Local Developments

East Ayrshire Council has identified potential new sources relating to air quality within the reporting year of 2024 as follows.

4.1 Road Traffic Sources

East Ayrshire Council confirms that Stagecoach Buses are currently renovating the bus station at Green Street, Kilmarnock, KA1 1JU. This is to ease congestion and make room for more electric vehicles (EVs) and charging point. This was expected to finish in 2022 by due to outside factors has now been completed at the start of 2025.

This renovation is a significant step in the transition to cleaner, more sustainable public transport and promote greener energy. The electric buses produce zero tailpipe emission thus significantly reducing pollution at the bus garage and on the bus routes, having a positive impact on air quality within the Local Authority area.

4.2 Other Transport Sources

East Ayrshire Council confirms that there are no new or newly identified Other Transport Sources, since the 2024 APR, which may have a significant impact on air quality within the Local Authority area.

There are no new petrol stations that have opened in 2024.

4.3 Industrial Sources

SEPA have notified of no new Waste Management Licences or industrial sources in 2024.

4.4 Commercial and Domestic Sources

East Ayrshire Council confirms that there are no new or newly identified Commercial and Domestic Sources, since the 2024 APR, which may have a significant impact on air quality within the Local Authority area.

4.5 New Developments with Fugitive or Uncontrolled Sources

East Ayrshire Council has identified two potential new sources relating to air quality within the reporting year of 2024.

Egger Ltd, Barony Road, Auchinleck, (Planning Application No: 21/0616/PP) remains in the pre-planning stage for construction of lamination plant at their chipboard factory, which will allow the production of finished worktops and other similar products for the construction industry. The development proposes potential installation of a 35.5MW biomass combined heat and power plant at the chipboard plant to generate electricity and hot gas.

It was noted in the 2022 East Ayrshire APR that the Halo Development (Planning Application No: 17/0865/PPP) had an Air Quality Impact Assessment outstanding and Environmental Health hoped to receive this but documentation is still outstanding.

East Ayrshire Council confirms that there is no other new Development with Fugitive or Uncontrolled Sources identified with the potential to have a significant effect on air quality.

East Ayrshire Council Environmental Health review retrospective planning applications for biomass boilers that are usually small scale for heating farmhouses, cottages and drying floors on farms. Such works are screened out using the biomass-screening tool or addressed by requesting the flue heights are raised to ensure adequate dispersion. Most applications have capped flues and Environmental Health request these to be removed to allow adequate dispersion of flue gases and to prevent a potential build-up of gases within the appliance. This follows guidance from The Chartered Institution of Building Services Engineers, Biomass Heating Document CIBSE AM15:2014.

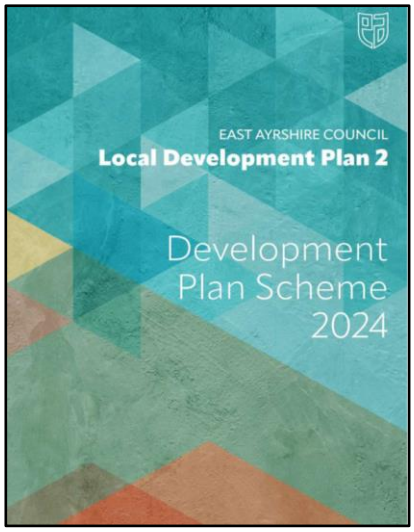
Quarries

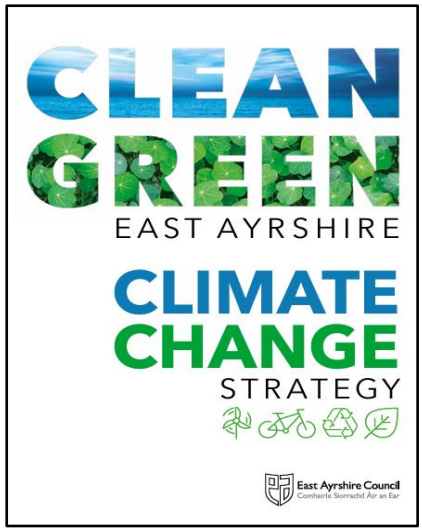
All quarry or construction developments require a Dust Management Plan (DMP) to be submitted in conjunction with the application, which refers to the Institute of Air Quality Management (IAQM) guidance. The DMP must be approved by the Local Authority prior to commencement of operation.

Dareduff by Dunlop Quarry, Neilston Road, Uplawmoor (Planning Application No: 19/0262/PP), was granted planning permission in 2024, with conditions still being considered and discharged. Prior to planning permission approval, East Ayrshire

Council Environmental Health and the applicant's agent had a pre-planning discussion to agree the Air Quality Assessment (AQA) methodology required to be undertaken in conjunction with the application. The AQA concluded that the potential dust impact on sensitive receptors would be negligible, and that fine particulate matter does not pose a significant impact, with AQS not exceeded. To ensure this, the applicant submitted an updated DMP.

A planning application for the extension of an existing quarry, Garpel Quarry, Sorn Road, Muirkirk (Planning Application No: 20/0496/PP) was approved on 20th February 2023. Air quality concerns arising from the expansion project were addressed at the original planning application and covered in previous air quality reports, concluding that air quality impacts were not significant.





East Ayrshire Council will continue to consider the Council Strategic Plan, Local Development Plan and Climate Change Strategy when assessing all applications to ensure they meet the needs of the community whilst considering the local environment and air quality.

5 Planning Applications

East Ayrshire Council Environmental Health refer to various guidance and strategy documents when assessing air quality impacts from proposed new developments through planning applications.

Guidance/strategy documents include:

- Climate Change Strategy
- Local Development Plans
- Transport Plans
- Environmental Protection Scotland (EPS) and Royal Town Planning Institute (RTPI) Scotland: Delivering Cleaner Air for Scotland – Development and Planning Management
- Environmental Protection United Kingdom (EPUK)/IAQM: Land-Use Planning and Development Control

East Ayrshire Council has identified planning applications within the reporting year of 2024 with the potential to impact local air quality as detailed in Section 4.5

In March 2024 an application (24/0122/PP) has also been applied for a New Petrol Filling Station, Jetwash and Shop at Land at Kilmarnock Road, Mauchline. This is still outstanding and will be reviewed in subsequent APR. The site was historically a petrol station and is being restored from brownfield.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Monitoring, both passive and automatic, in East Ayrshire Council area during 2024 has not identified any new exceedances of the AQS for any pollutant (see Appendix A).

Automatic monitor, St Marnock Street in Kilmarnock, reported an annual mean NO_2 concentration of 13µg/m^3 for 2024, which is 27µg/m^3 below/ the AQS of 40µg/m^3 (see Table A.3; Chart A.1). As such, this is the 11th consecutive year whereby the reported concentration is below target.

Table A.5 highlights that there were no hourly means greater than 200µg/m^3 reported at the automatic station St Marnock Street in Kilmarnock during 2024 monitoring year, therefore, the Council have achieved an 11th successive year without any hourly mean NO_2 exceedances.

PM_{10} monitoring at the automatic monitor on St Marnock Street in Kilmarnock reported an annual mean of 10µg/m^3, significantly below the AQS of 18µg/m^3 by 8µg/m^3 (see Table A.6; Chart A.3). As such, this is the 10th consecutive year whereby the reported concentration is below the 18µg/m^3 AQS. There are no reported exceedances are 2024 of the 50 µg/m^3 PM_{10} daily mean (Table A.7).

$PM_{2.5}$ monitoring at the automatic monitor on St Marnock Street in Kilmarnock reported an annual mean of 6µg/m^3, significantly below the AQS of 10µg/m^3 by 4µg/m^3 (see Table A.8, Chart A.4).

These results reinforce the achievement and commitment of East Ayrshire Council to implement air quality measures that ensure maintained compliance with AQS.

6.2 Conclusions relating to New Local Developments

The air quality impact from proposed developments will be assessed when the relevant air quality modelling and assessments are submitted for review.

The following criteria have been considered for any proposed new development:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

Planning applications that include sources that have potential to impact local air quality will be screened using appropriate guidance, including but not limited to: LAQM.TG (22), EPUK/IAQM, and the RTPI Scotland. Where screening outcomes indicate likelihood of significant air quality issues, the applicant will be asked to submit a detailed assessment inclusive of modelling.

6.3 Proposed Actions

Monitoring in East Ayrshire Council area during 2024 has not identified any new exceedances of the AQS for any pollutant. Automatic monitoring at St Marnock Street, Kilmarnock, will continue into 2025 monitoring year for NO_2, PM_{10} and $PM_{2.5}$ to confirm that compliance with AQS is achieved in East Ayrshire.

The automatic station will also continue to act as a resource enabling regional data collection for Scottish Statistics. The automatic monitor was upgraded in 2024 to continue with this aim.

The Council will maintain its passive NO_2 monitoring network, continuing to review the extent and locations of deployed tubes to determine whether relocation is required to provide better spatiotemporal coverage or whether de-commission is necessary in areas where monitoring has reported concentrations significantly below AQS, thus posing a significantly reduced risk to human health.

East Ayrshire Council is committed to using its passive monitoring network of NO_2 diffusion tubes as a screening tool in support of AQAs, where locations within East Ayrshire are subject to substantial change, for example, increased traffic flows.

East Ayrshire Council are also committed to complete air quality measures delayed during the 2024 monitoring year.

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)	Inlet Height (m)
A3	St Marnock Street, Kilmarnock	Roadside	242742	637705	NO_2; PM_{10}; $PM_{2.5}$	NO		Chemiluminescent; BAM (until Jul 2016) FIDAS (Aug 2016 onwards)	0	3.18; 3.54	2.13; 2.30

Notes:

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

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) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT1	Fowlds Street, Kilmarnock	Roadside	242805	637620	NO_2	No	2.6	0.4	No	3.0
DT2	8 John Finnie Street Kilmarnock	Roadside	242715	638135	NO_2	No	0.2	3.4	No	3.0
DT3	23 Lainshaw Street, Stewarton	Roadside	241901	645818	NO_2	No	2.4	0.7	No	3.0
DT4	40 Main Street, Newmilns	Roadside	253601	637310	NO_2	No	0.6	2.5	No	3.0
DT6	8A Kilmarnock Road, Mauchline	Roadside	249826	627335	NO_2	No	2.3	0.4	No	3.0
DT7	Ochiltree Junction at Main Street and A70	Roadside	250714	621170	NO_2	No	10.0	1.0	No	3.0
DT9	Townhead/ Glaisnock Street Cumnock	Roadside	256889	620133	NO_2	No	10.0	1.0	No	2.8
DT11	96 John Finnie Street, Kilmarnock	Roadside	242656	637874	NO_2	No	3.7	0.5	No	3.0
DT12	74 John Finnie Street, Kilmarnock	Roadside	242668	637929	NO_2	No	3.0	0.7	No	3.0
DT14	95/97 John Finnie Street, Kilmarnock	Roadside	242619	637773	NO_2	No	0.6	3.0	No	3.0
DT15	16 George Street Kilmarnock	Roadside	242776	638159	NO_2	No	0.9	1.6	No	3.0
DT17	23/25 Loudon Road Newmilns	Roadside	253204	637237	NO_2	No	0.5	1.5	No	3.0
DT24	5/7 Earl Grey Street Mauchline	Roadside	249894	627233	NO_2	No	0.7	3.6	No	3.0
DT27	King Street/ Saint Marnock Street, Kilmarnock	Kerbside	242771	637714	NO_2	No	2.1	0.5	No	3.0
DT32	Kay Park Kilmarnock	Urban Background	243302	638259	NO_2	No	N/A	N/A	No	3.0
DT33	Howard Park, Kilmarnock	Urban Background	242581	637409	NO_2	No	N/A	N/A	No	3.0
DT44A DT44B DT44C	St Marnock Street Monitoring Site	Roadside	242742	637705	NO_2	No	0.0	3.2	Yes	2.1

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: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A3	242742	637705	Roadside		86.2	19	20.3	19.2	18.2	13

Notes:

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 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%).

Chart A.1 - Trends in Annual Mean NO_2 Concentrations – Automatic Site

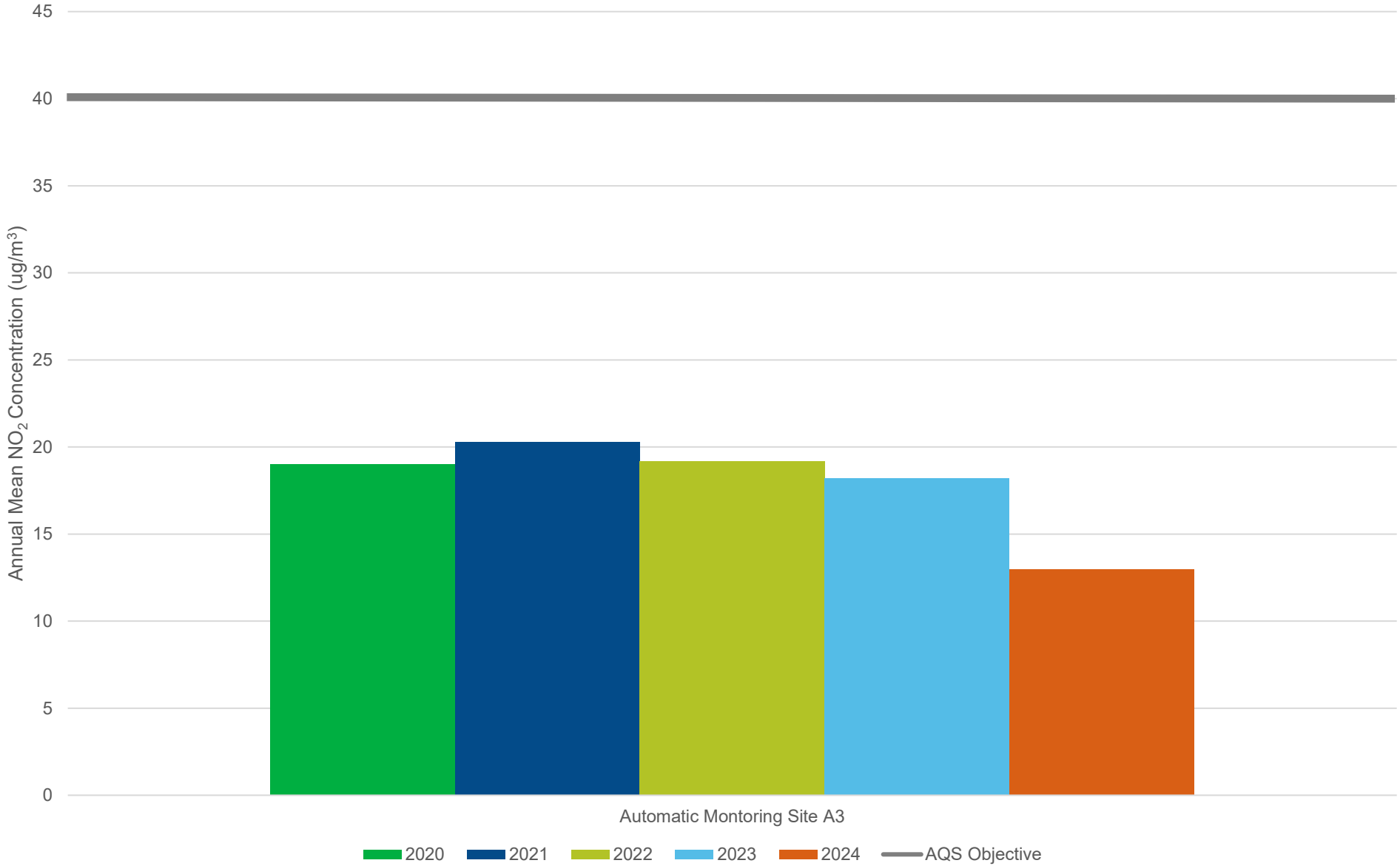


Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT1	242805	637620	Roadside	33	39.0	14.5	20.4	23.0	18.6	5.2
DT2	242715	638135	Roadside	17	19.1	15.6	18.6	26.3	29.2	3.2
DT3	241901	645818	Roadside	50	54.2	15.1	17.9	21.9	17.1	8.4
DT4	253601	637310	Roadside	50	54.2	15.4	15.7	16.1	15.0	8.7
DT6	249826	627335	Roadside	50	54.2	13.5	14.8	16.2	14.9	6.3
DT7	250714	621170	Roadside	33	35.1			12.6	10.2	5.2
DT9	256889	620133	Roadside	50	54.2			9.4	9.0	4.4
DT11	242656	637874	Roadside	50	54.2	15.3	17.2	22.2	17.7	4.3
DT12	242668	637929	Roadside	42	46.6	18.8	20.3	23.7	18.4	8.4
DT14	242619	637773	Roadside	33	37.1	20.5	24.8	26.1	20.8	10.2
DT15	242776	638159	Roadside	50	54.2	19.9	23.1	25.4	23.7	10.0
DT17	253204	637237	Roadside	33	37.1	14.8	17.4	18.8	17.1	4.6
DT24	249894	627233	Roadside	50	54.2	15.7	21.6	22.5	18.9	6.7
DT27	242771	637714	Kerbside	50	54.2	15.8	23.0	25.6	20.1	9.0
DT32	243302	638259	Urban Background	42	46.6	8.0	8.7	8.5	8.3	3.8
DT33	242581	637409	Urban Background	25	28.6	8.2	9.0	8.5	8.8	0.6
DT44A, DT44B, DT44C	242742	637705	Roadside	50	54.2	16.8	19.8	20.4	17.2	9.5

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22

Diffusion tube data has been bias adjusted

Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction

There are no exceedances of the NO_2 annual mean objective of 40 µg/m^3

There are no NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective

Chart A.2 - Trends in Annual Mean NO_2 Concentrations – Non-Automatic Sites

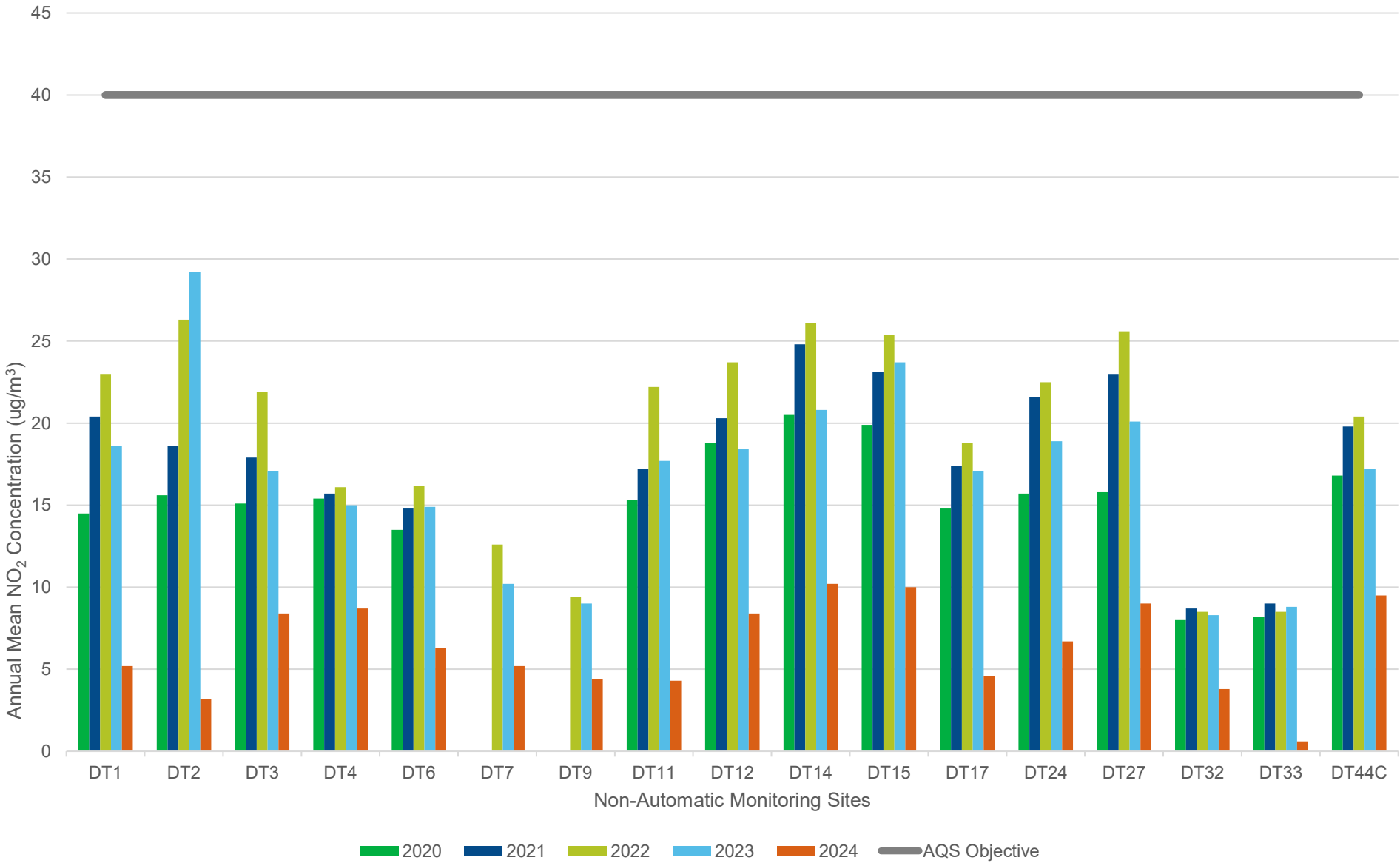


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A3	242742	637705	Roadside		86.2	0	0	0	0	0

Notes:

(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 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A3	242742	637705	Roadside		84.6	11.1	10.8	11.4	10.5	10.0

Notes:

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%).

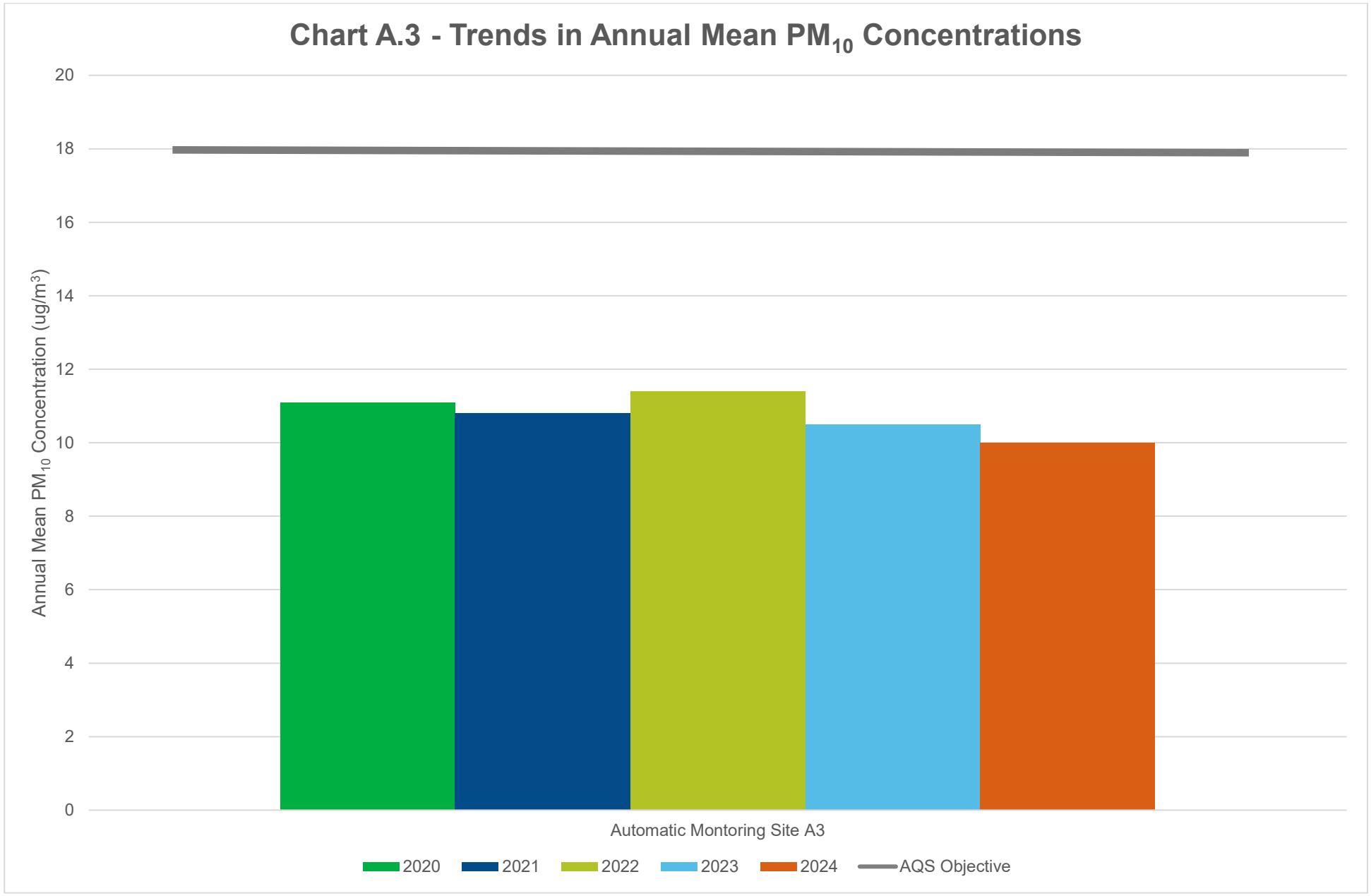


Chart A.3 - Trends in Annual Mean PM10 Concentrations
20
18
16
14
12
10
8
6
4
2
0
Annual Mean PM10 Concentration (ug/m3)
Automatic Montoring Site A3
2020
2021
2022
2023
2024
AQS Objective

Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A3	242742	637705	Roadside		84.6	0	0	0	0	0

Notes:

(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 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A3	242742	637705	Roadside		84.6	6.1	5.9	5.5	5.5	6

Notes:

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%).

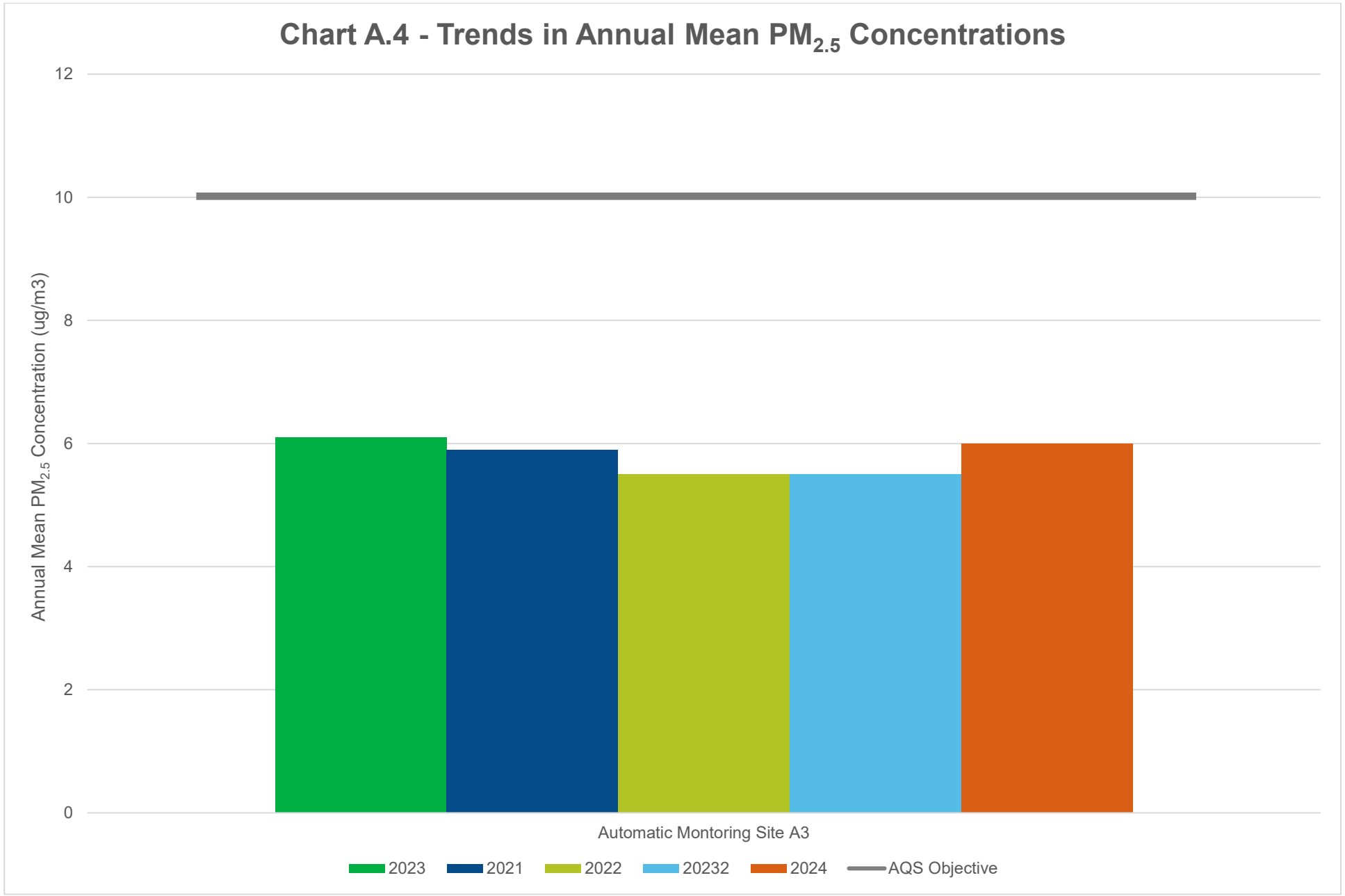


Chart A.4 - Trends in Annual Mean PM2.5 Concentrations
12
10
8
6
4
2
0
Annual Mean PM2.5 Concentration (ug/m3)
Automatic Montoring Site A3
2023
2021
2022
20232
2024
AQS Objective

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Monthly Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised & Bias Adjusted	Comment
DT1	242805	637620		9.4								17.1	20.4	14.8	14.9	5.2	
DT2	242715	638135		10.2									4.2		7.8	3.2	
DT3	241901	645818	26.5	1.4							93.4	17.4	2.1	16.7	23.7	8.4	
DT4	253601	637310	29.9	1.4							2.0	60.8	18.1	34.3	24.6	8.7	
DT6	249826	627335	28.6	1.4							35.2	16.1	27.5	10.0	17.9	6.3	
DT7	250714	621170									12.1	11.4	20.6	10.5	13.3	5.2	
DT9	256889	620133	19.3	6.3							19.9	10.1	13.7	9.7	12.4	4.4	
DT11	242656	637874	2.1	1.4							22.8	20.0	9.3	18.7	12.2	4.3	
DT12	242668	637929	41.3	34.5								19.4	26.0	6.0	24.8	8.4	
DT14	242619	637773	2.1	39.7							57.1			17.3	29.3	10.2	
DT15	242776	638159	42.0	22.6							51.5	19.8	21.9	20.2	28.3	10.0	
DT17	253204	637237	34.0	1.4							2.0			18.9	13.1	4.6	
DT24	249894	627233	9.2	1.4							48.2	17.7	27.7	18.8	19.0	6.7	
DT27	242771	637714	42.6	1.4							58.6	19.5	25.9	20.2	25.5	9.0	
DT32	243302	638259	2.1	16.4								1.6	28.8	7.5	11.1	3.8	
DT33	242581	637409	2.1	1.4								1.6			1.7	0.6	
DT44A	242742	637705	42.3	15.4							51.4	18.4	45.3	15.2	-	-	Triplicate Site with DT44B & DT44C - Annual data provided for DT44C only
DT44B	242742	637705	40.2	13.5							58.9	16.9	22.8	17.1	-	-	Triplicate Site with DT44B and DT44C - Annual data provided for DT44C only
DT44C	242742	637705	45.0	21.2							40.1	12.4	22.3	19.7	26.9	9.5	Triplicate Site with DT44B and DT44C - Annual data provided for DT44C only

Notes:

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within East Ayrshire Council During 2024

East Ayrshire Council has not identified any new sources relating to air quality within the reporting year of 2024

Additional Air Quality Works Undertaken by East Ayrshire Council During 2024

East Ayrshire Council has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

East Ayrshire Council's diffusion tubes in 2024 were supplied and analysed by Glasgow Scientific Services (GSS), using the 20% Triethanolamine (TEA) in water preparation method. GSS laboratory is UKAS accredited, participating in the Workplace AIR-PT Scheme for NO_2 tube analysis and the Monthly Field Inter-Comparison Exercise managed by Bureau Veritas UK Ltd. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance.

East Ayrshire Council deploys NO_2 diffusion tubes throughout the area on an approximately monthly basis. Post a four to five-week exposure period, the tubes are replaced and collected tubes are sent to the GSS laboratory for analysis alongside documentation collating recorded exposure times and dates. The Council also sends one unexposed tube (a blank) with each batch to ensure that there has been no contamination while in transit or storage.

Monitoring in 2024 throughout East Ayrshire could not completed in adherence with the 2024 Diffusion Tube Monitoring Calendar, therefore changeovers conducted in February, March, April and May were not in line with Defra guidance. As such, there is a degree of certainty surrounding the monitoring results provided.

It is also noted that some of the NO_2 tube results were hampered this year with accessibility due to prolonged road works at locations during change over times. An upgrade to street lighting also unfortunately saw some tubes being disposed of by technicians who weren't aware of their intended use.

Four months (March, June, July, August) of the data acquired using the diffusion tubes also appeared to be anomalous upon review although not reported as such by the approved laboratory. In consultation with SEPA and Scottish Government we have removed these results from our report.

Diffusion Tube Annualisation

TG22 states that annualisation is required for any site, which has a data capture of less than 75%, but greater than 25%, or has 3 months of data collected for the monitoring year in line with the Diffusion Tube Monitoring Calendar. Diffusion tube site DT1, DT2, DT7, DT14, DT17 & DT33 required annualisation due to insufficient data capture in 2024. The sites reported data capture of between 50.7% & 68.7% during the 2024 monitoring period in line with the Diffusion Tube Monitoring Calendar, which therefore required annualisation.

Annualisation was completed using the Diffusion Tube Data Processing Tool using continuous monitoring station at Irvine High Street, North Ayrshire. The continuous background monitoring sites were suitable to use as they had >85% data capture and therefore could be used for annualisation.

Table C.1 - Annualisation summary (concentrations presented in µg/m3)

Diffusion Tube ID	Annualisation Factor Marnock Street	Annualisation Factor Irvine High Street	Average Annualisation Factor	Raw Data Simple Annual Mean	Annualised Data Simple Annual Mean
DT1	0.8914	0.7981	0.8447	14.9	12.6
DT3	0.8561	0.8508	0.8535	23.7	20.2
DT4	0.8561	0.8508	0.8535	24.6	21.0
DT6	0.8561	0.8508	0.8535	17.9	15.3
DT7	0.9976	0.8893	0.9435	13.3	12.5
DT9	0.8561	0.8508	0.8535	12.4	10.6
DT11	0.8561	0.8508	0.8535	12.2	10.4
DT12	0.8349	0.8076	0.8213	24.8	20.4
DT14	0.8010	0.8797	0.8403	29.3	24.6
DT15	0.8561	0.8508	0.8535	28.3	24.2
DT17	0.8010	0.8797	0.8403	13.1	11.0
DT24	0.8561	0.8508	0.8535	19.0	16.2
DT27	0.8561	0.8508	0.8535	25.5	21.7
DT32	0.8349	0.8076	0.8213	11.1	9.1
DT33	0.8097	0.8819	0.8458	1.7	1.4
DT44(ABC)	0.8561	0.8508	0.8535	26.9	23

Diffusion Tube Bias Adjustment Factors

East Ayrshire Council have applied a local bias adjustment factor of 0.75 to the 2024 monitoring data. A summary of bias adjustment factors used by East Ayrshire Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	-	0.75
2023	Local	-	1.14
2022	Local	-	1.26
2021	Local	-	1.06
2020	National	03/21	0.96

Table C.3 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input
Periods used to calculate bias	8
Bias Factor A	0.41 (0.19 - -1.77)
Bias Factor B	142% (-157% - 440%)
Diffusion Tube Mean (µg/m^3)	
Mean CV (Precision)	36.2
Automatic Mean (µg/m^3)	14.7%
Data Capture	
Adjusted Tube Mean (µg/m^3)	15.0

A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results as:

- East Ayrshire Council co-location site had ‘poor’ overall precision for the diffusion tubes, ‘poor’ overall data capture but had high quality chemiluminescence results (i.e.to national AURN standards).
- Local bias adjustment factor is deemed more representative for East Ayrshire.

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within East Ayrshire Council required distance correction during 2024.

QA/QC of Automatic Monitoring

East Ayrshire Council outsources the maintenance and data management of automatic monitoring data at St Marnock Street in Kilmarnock to AECOM and Ricardo, with both also undertaking the Local Site Operative (LSO) duties involving routine servicing and provision for emergency callouts as required.

East Ayrshire Council would undertake LSO duties where necessary, often concerning instrumentation faults detected, with rectification support provided via email or telephone call from AECOM and Ricardo. AECOM will attend site post consultation with East Ayrshire Council if issues are unable to be rectified.

The automatic station, St Marnock Street in Kilmarnock, is covered by a service contract provided by AECOM and servicing of the instrumentation is conducted every 6 months by an engineer in accordance with the manufacturer's instructions and warranty conditions. AECOM, alongside Ricardo, also provide an emergency call out response to cover breakdowns.

The site is audited biannually by Ricardo on behalf of the Scottish Government, as part of the Scottish Air Quality Network. A site visit is conducted each month by AECOM to the automatic monitoring location to undertake routine filter changes, inlet cleaning, and undertake a manual calibration as recommended by Ricardo and aligned with the instruction manual technique.

Zero and span checks, which are compared to the automatic daily calibrations. The monitor is calibrated using on site calibration gases, which involves feeding zero air gas, followed by a span gas containing a known concentration of NO_2 through the NOX analyser, with the measured concentration recorded for rescaling. A correction factor is then applied based on the analyser's response. Regular site visits to the monitoring station highlight 'best practice' and allow for the identification and rectification of faults that may occur. Data is stored in both raw and corrected form and Ricardo analyses and corrects it where necessary with a monthly data validation assessment conducted.

Copies of the calibration reports, calibration gas logs and engineers are retained on file. These can be obtained by contacting the Environmental Health at the Council. Data is examined by Ricardo daily to ensure faults are reported and to screen out erroneous and unusual measurements, with increased concentrations, defined by peaks, investigated further in accordance with guidance.TG22 and equivalent to processes used at UK National Network monitoring sites (i.e. Automatic Urban and Rural Network (AURN)).

This gives a high degree of confidence in the data obtained for reliable concentrations at the automatic site as well as processes to ensure minimisation of data loss and achieve the required data capture. Every 3-months the data is ratified by Ricardo, which involves a critical review of all information relating to a particular data set to verify, amend or reject the data ensuring it is reliable and consistent. Post data ratification, Ricardo presents the final data set to be used in 'Review and Assessment Processes.'

The data presented in the report has been ratified by Ricardo and is available upon request to the Environmental Health Team or via the Scottish Air Quality Website.

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

2024 statistics for PM_{10} and $PM_{2.5}$ that have been corrected using correction factors as detailed within LAQM.TG22 Chapter 7: Particulate Matter Monitoring & "Scottish Government Equivalence Study to Investigate Particulate Matter Monitoring in Scotland Using the Fidas 200."

Automatic Monitoring Annualisation

All automatic monitoring locations within East 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 East Ayrshire Council required distance correction during 2024.

Figure 1- Map of Smoke Free Zones

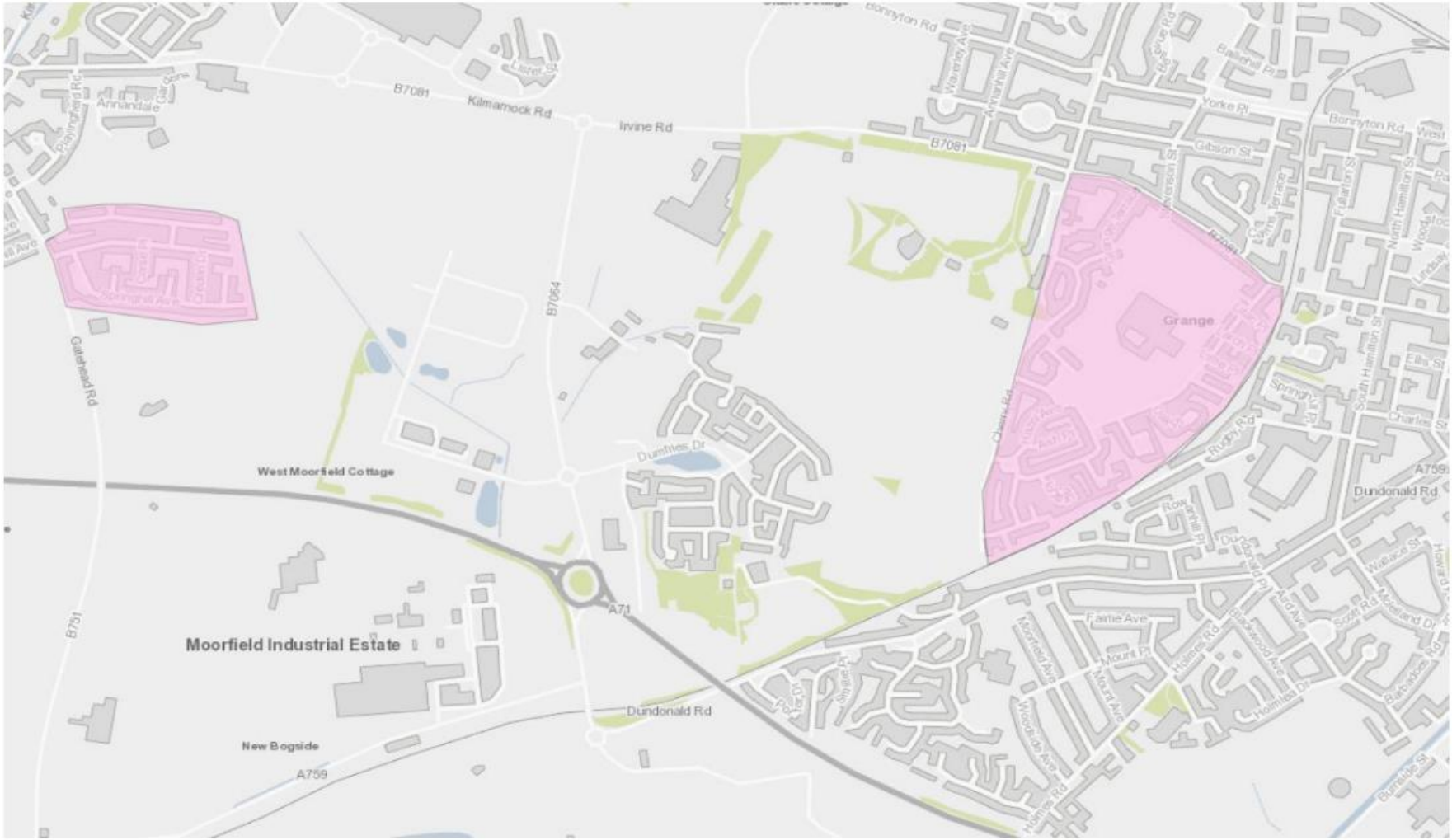


Figure 2 - Location of Automated Site in East Ayrshire

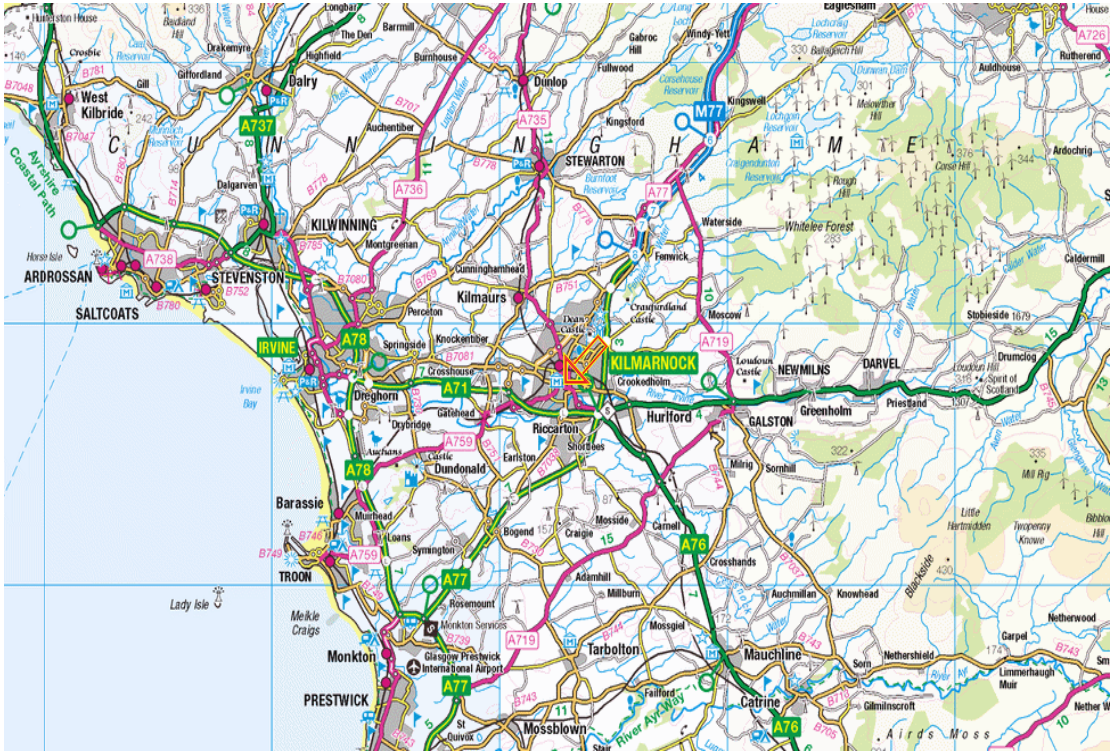


Figure 3 - Map of all non-automated sites in East Ayrshire

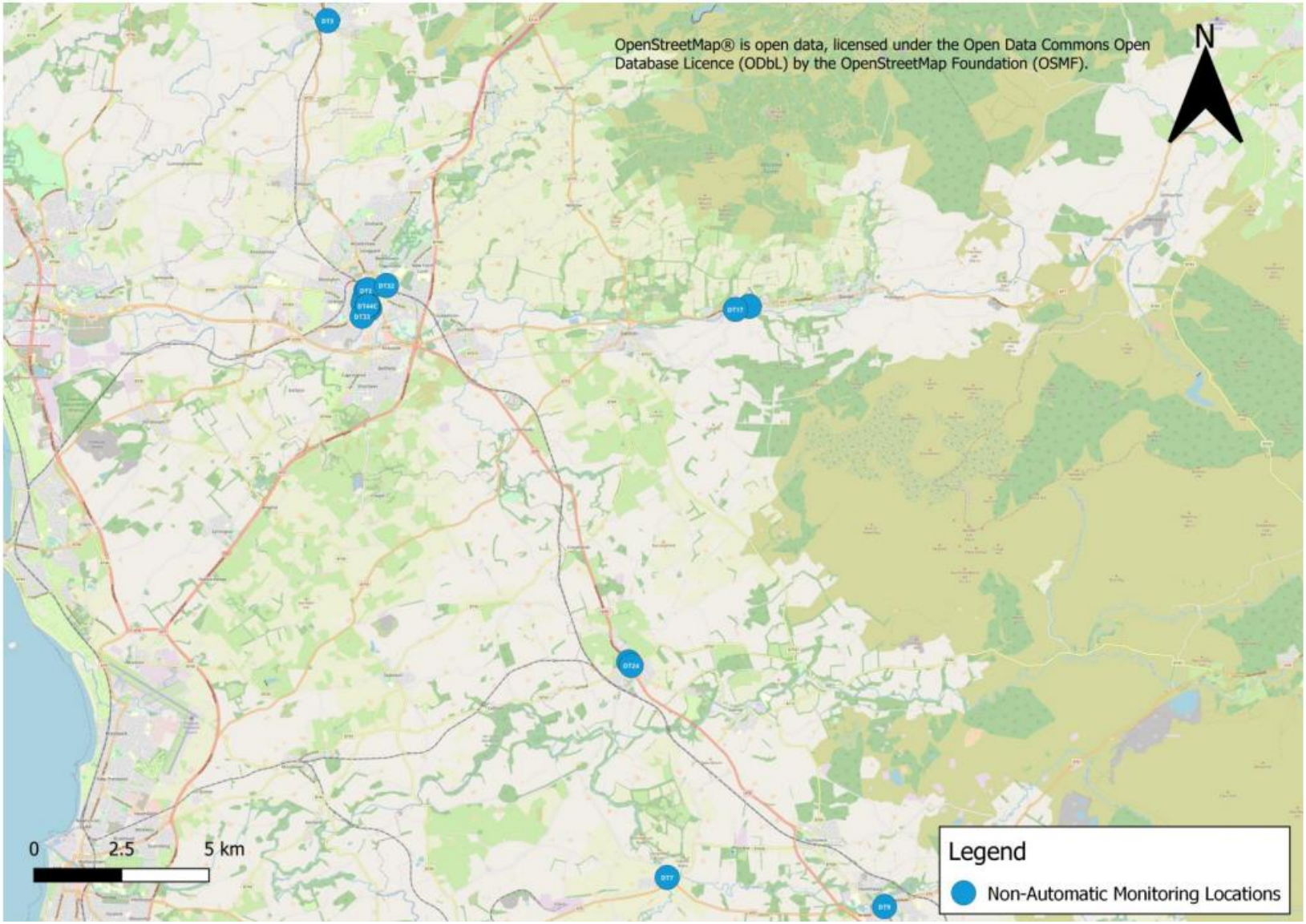


Figure 4 - Map of Non - Automated Sites – Kilmarnock

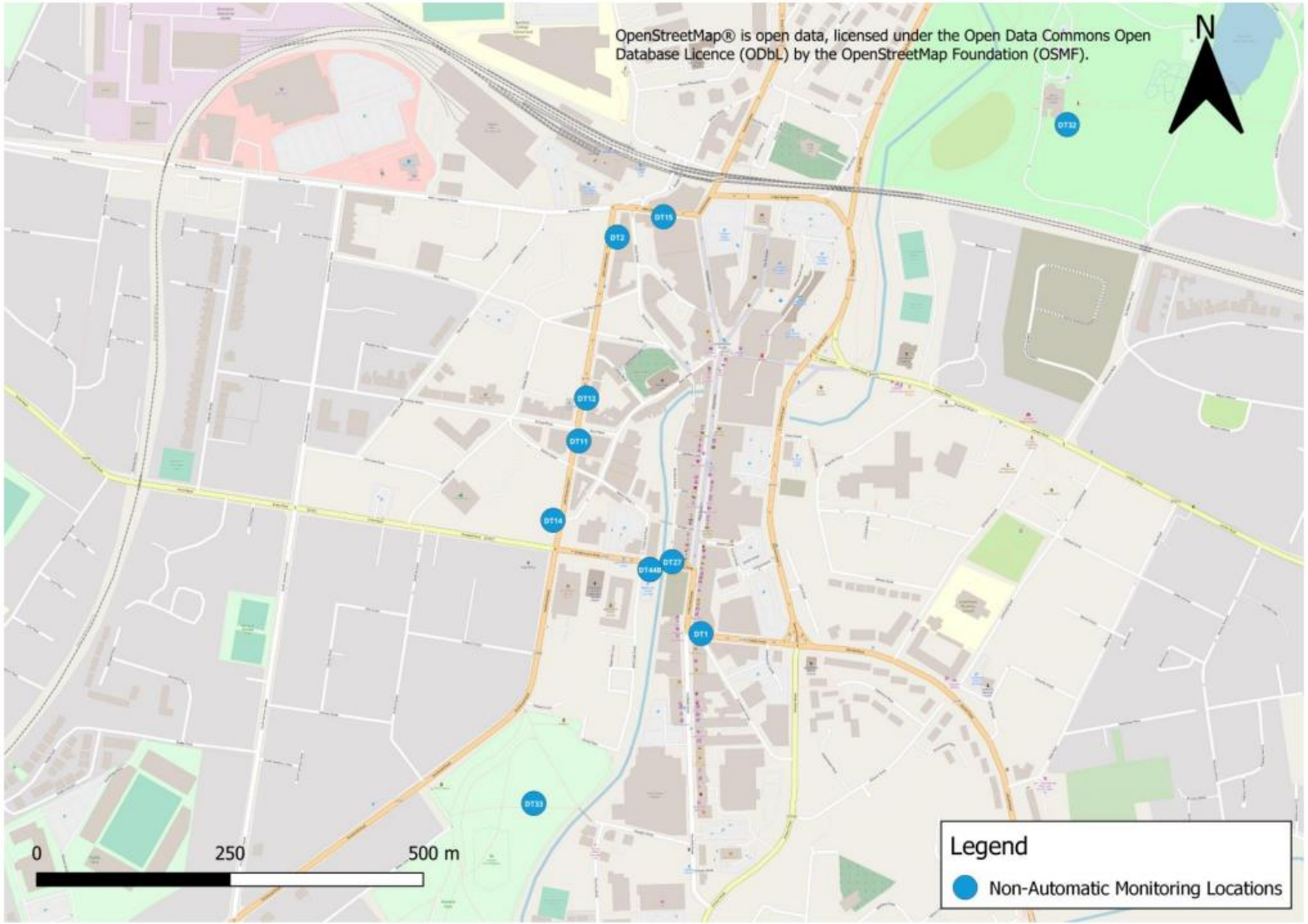


Figure 5 - Map of Non-Automatic Sites - Ochiltree and Cumnock

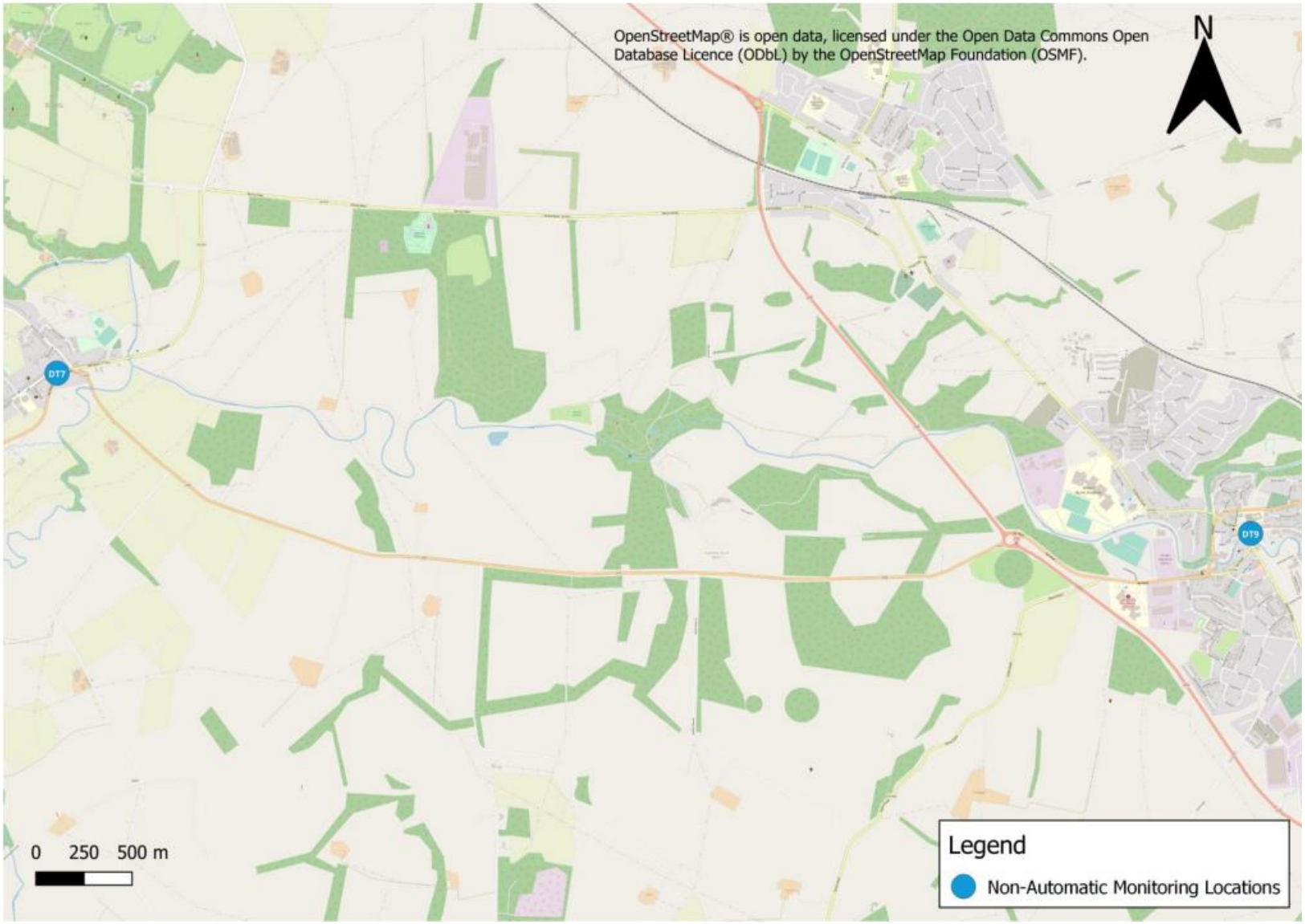


Figure 6 - Map of Non-Automatic Sites – Mauchline

Figure 7 - Map of Non-Automatic Sites - Newmilns

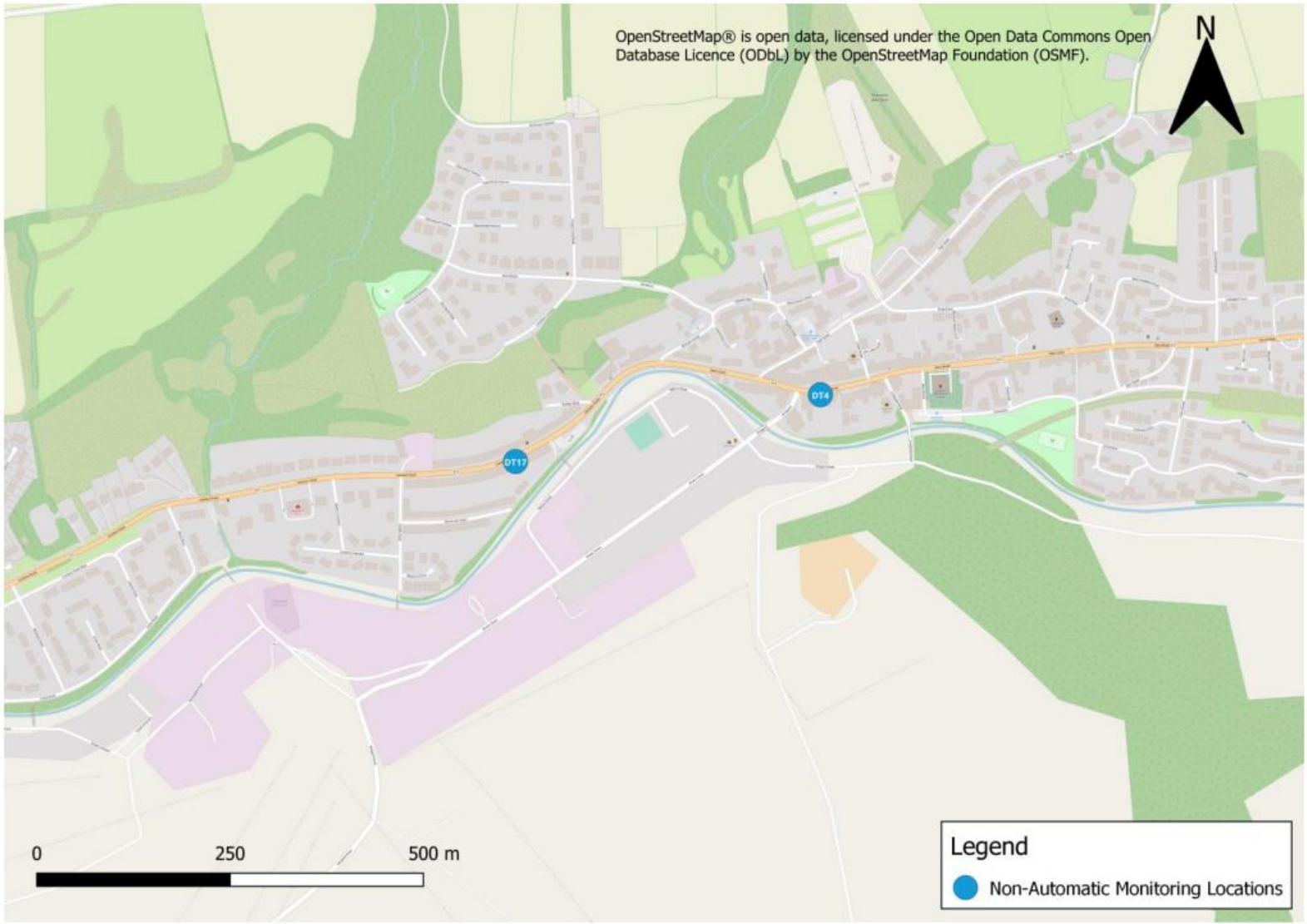
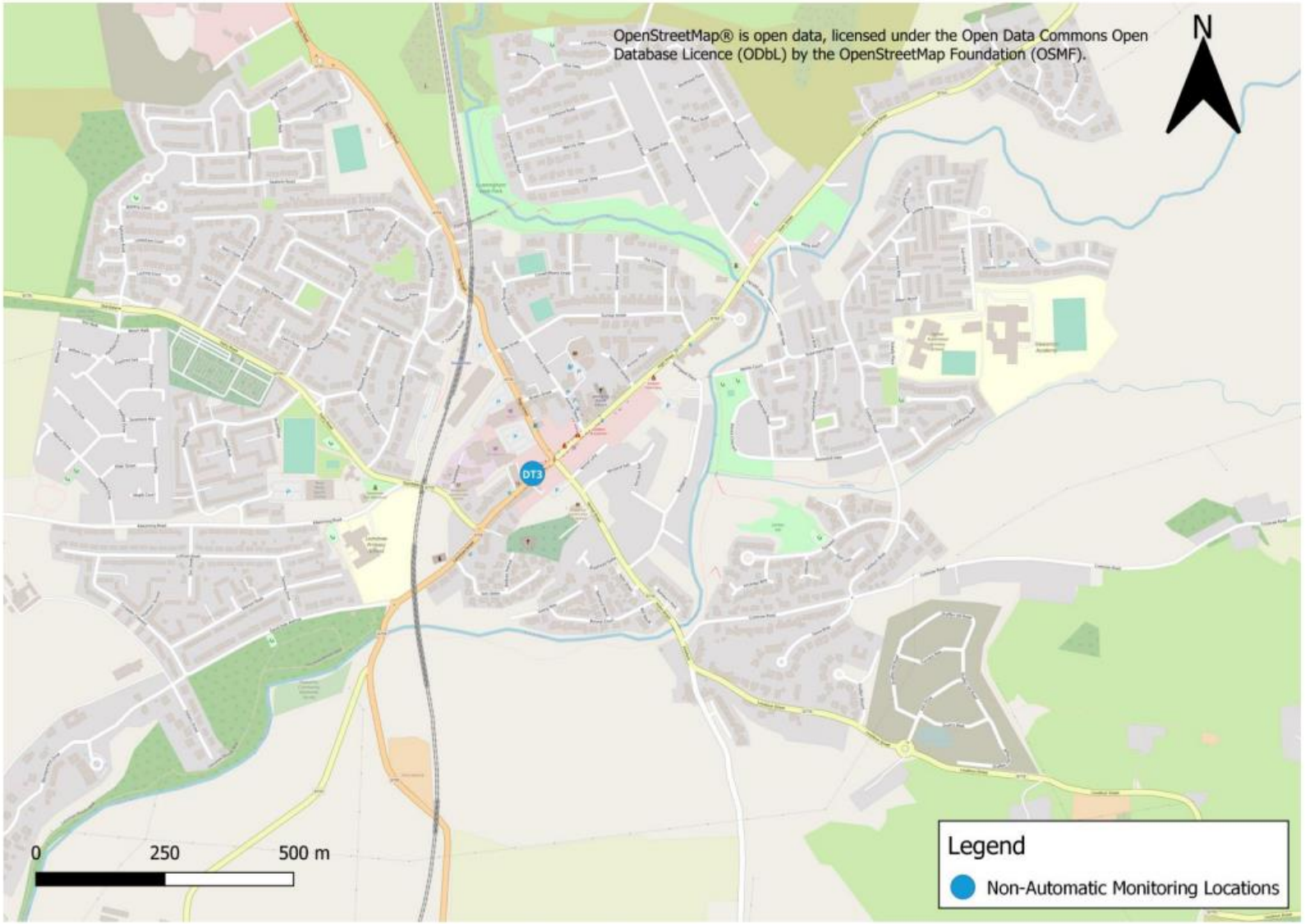


Figure 8 - Map Non-Automatic Site - Stewarton



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	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
DT	Diffusion Tube
EPUK	Environmental Protection UK
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
IQAM	Institute of Air Quality Management
RTPI Scotland	Royal and Town Planning Institution Scotland
SO_2	Sulphur Dioxide
SHIP	Strategic Housing Investment Plan

References

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2. Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
3. Defra. Air quality appraisal: damage cost guidance, January 2023
4. Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018