East Ayrshire Council
2023 Annual Status Report

Bureau Veritas

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Document Control Sheet

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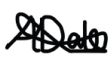
Reviewed By	Alicia Dale	Senior Air Quality Consultant	

Annual Progress Report (APR)

East Ayrshire Council
Comhairle Siorrachd Àir an Ear

2023 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

Date: September 2023

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Executive Summary: Air Quality in Our Area

Air Quality in East Ayrshire Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, 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[1,2]. The mortality burden of air pollution within the United Kingdom (UK) is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the National Health Service (NHS) and social care of £157 million in 2017[4].

East Ayrshire is one of 32 Council areas designated in Scotland, with the western Council boundary situated approximately 5km from the western coast of Scotland. The area shares borders with Dumfries and Galloway, East Renfrewshire, North Ayrshire, South Ayrshire and South Lanarkshire.

The Council area is one of Scotland's longest established visitor destinations and includes several holiday and caravan parks as well as the seasonal day trip influx attracted by the various beaches. The area is also a popular historical centre, focused on Kilmarnock, and seeks to encourage tourism by promoting the 'Gillian's Walks' coastal footpaths and long-distance trails for the wider Ayrshire region.

The area occupies a key strategic position in the western Scotland, acting as a gateway for many to both the Scottish coastline and mainland Scotland, towards the north the '1990 City of Culture' Glasgow, as well as wider Britain with a multitude of vehicular journeys per day between Scotland and mainland English cities such as Liverpool, Newcastle, and Manchester that can provide onward travel resources such as flights, trains and ferry ports. The Council area is approximately 487 square miles and boasts a rich variety of charming landscape. 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). There

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. Further information regarding East Ayrshire's ecological and natural attractions can be found in the East Ayrshire Council State of the Environment Report Chapter 3: Ecology and Nature Conservation.

The Council area is a mixture of rural and urban environments, with approximately 121,600 people residing there (2020 estimated census statistic), thus it is the 16th most habituated local authority in Scotland of the 32 unitary council areas. 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 Hulford.

The main source of pollution in the Council area is from road traffic emissions originating from the extensive road network, with heavily trafficked locations in the more urban, northern areas of the Council district, particularly Kilmarnock, contributing significantly. Additionally, car ownership in households in East Ayrshire is higher than the national average; in 2021, 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. 2022 statistics were not yet available. It is noted that major congestion does not occur often in the Council area, excluding the densely populated area of Kilmarnock, with the majority of the vehicles starting and/or ending journeys elsewhere and are therefore through-flow traffic, with the Department for Transport (DfT) reporting that 698.4 million vehicle miles were travelled on roads in East Ayrshire in 2022, compared to 645.6 million and 553.7 million in 2021 and 2020 respectively. Other pollution sources for East Ayrshire include commercial, industrial, and domestic sources contributing to pollutant concentrations in the Council area as well as more specific sources:

- General increase in the number of road vehicles and volume of journeys travelled;
- Tyre and break-wear dust (non-tailpipe emissions) forming an increasing proportion of total vehicular particulate emissions;
- Transboundary migration of pollutants;

- Increased biomass combustion from log burners and incorrectly operated biomass boilers;
- A disparity between laboratory and real-world emissions from vehicle engines, although real driving conditions are now part of vehicle emission assessments;
- Topography and spatial planning of urban areas creating street canyons, which can trap air pollution close to ground level; and
- Limited integration of air quality with other policies related to climate change and planning, although progress is being made.

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. 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. However, it is noted that in specific circumstances, a formal objection may be considered where grounds support although plans likely to encourage air quality nuisance complaints are indicative of 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.

The 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. East Ayrshire Council have a sound relationship with Scottish Environment Protection Agency (SEPA) and Transport Scotland as well as neighbouring local authorities, often acting as joint consultees or working on an ad-hoc basis. The Council often undertakes pre-planning discussions with SEPA when air quality issues arise during planning processes to agree a response to the application. As

an example, in 2016 East Ayrshire Council Environmental Health had pre-planning discussions with SEPA for the planning application at Killoch, Ochiltree, involving energy from waste plant. It was confirmed that applicant was required to undertake background monitoring of Particulate Matter (PM) in support of the application.

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. The Council continues to review its monitoring network, having reduced the number of deployed tubes in 2022 monitoring year, removing 7 tubes (DT45, DT46, DT52, DT53, DT54, DT55, DT57) compared to 2021 due to consistently low concentrations reported in those locations and alternate sites located within reasonable proximity. It is noted that DT7 and DT9 have been implemented for the 2022 monitoring year, thus the total number of tubes removed from 2021 monitoring year to 2022 monitoring year is 5.

During 2022, there were no reported exceedances of the annual mean NO_2 AQS; this continues the trend of no exceedances since 2017, with the exception of DT45 and DT56 that exceeded the AQS in 2017 only, therefore there is no requirement to declare an AQMA. The maximum reported NO_2 concentration was 26.3µg/m^3 at passive monitoring location DT2, a roadside location in Kilmarnock.

An increase in concentrations from 2021 to 2022 is highlighted within this report, with 15 passive monitoring sites recording an increase, although two less sites than the previous reporting year. It is noted two new passive sites, DT7 and DT9, did not record an annual mean NO_2 concentration prior to 2022 due to the deployment timeframe, thus are excluded from the comparison above. The reduction in the number of increases reported compared to 2021 is likely due to the establishment of a 'new normal' in traffic volumes, with organisations remaining to facilitate 'Working From Home' (WFH) post COVID-19 pandemic restrictions relieving, thus reducing the number of vehicles comparative to pre-pandemic periods. Despite the overall reduction in the number of sites reporting a concentration increase, some identified increases are attributable to the 2022 monitoring year experiencing periods reflective of pre-pandemic traffic volumes, with UK COVID-19 restrictions lifting, therefore subject to increases in NO_2 concentrations from 2020 and 2021.

There are no diffusion tube monitoring sites where the NO_2 annual mean is greater than

60µg/m^3, therefore in accordance with Defra LAQM.TG(22) there are no sites likely to be at risk of exceeding the 1-hour mean AQS.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

Within East Ayrshire Council, since the initiation of the passive monitoring network, there has been only two sites (DT45 and DT56) that have exceeded the AQS annual mean objective of 40µg/m^3 for NO_2 in 2017, of which have since fallen significantly below the AQS. As a result, there are currently no designated Air Quality Management Areas (AQMAs) therefore an Air Quality Action Plan (AQAP) is not required. Additionally, there are currently no plans to produce an Air Quality Strategy for the area.

The air quality across East Ayrshire is considered to be good, with air quality in 2022 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. In 2021, East Ayrshire Council developed the Climate Change Strategy, setting out various actions within 4 core themes (Energy, Transport, Waste and Natural Environment), to reduce CO_2 emissions, of which also have shared benefits in improving air quality through reducing both NO_2 and PM emissions.

The Council is developing and has implemented the following measures as part of the strategy in 2022:

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

- Promote active transportation methods to limit vehicular usage and associated emissions;
- Enhance 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,
- Build 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 2021 standard where possible, and agreed to improve the fabric of existing housing stock with the emphasis being on energy efficiency.

The 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 and North Ayrshire Council, via the Ayrshire Roads Alliance, and new partnering with an experienced commercial supplier through a concession contract to 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.

The East Ayrshire Council has encouraged active travel across the area and subsequent reduction in vehicular usage, through its established ‘Mission to the Moon’ initiative in primary schools. School children are encouraged to engage in active transportation methods such as walking, cycling, scooting to school, parking and striding. Overall, the

scheme is estimated to have prevented usage of approximately 4,500 gallons of fuel and 50 tonnes of carbon being emitted to the atmosphere.

The Council has established a collaborative relationship with the bicycle mechanic business 'CycleStation' 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. CycleStation also offer an innovative bike sharing service with a bike hire fleet to encourage active transportation. In addition, All-Ability Bikes launched an initiative in 2022 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 has maintained to promote the Kilmarnock Active Travel Hub, an innovative service that encouraged sustainable travel such as walking, cycling, and public transport, throughout the area and launched in 2017. 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.

The 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' 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.

The Council are committed to further reducing air pollution emissions through enhancing its active transportation availability in East Ayrshire as well as creating enjoyable and fair environments for locals and visitors by producing a draft 'Active Travel Strategy' that went through consultation in October 2021 and cabinet review in June 2022. The document seeks to work in conjunction with the established Climate Change Strategy and be a companion document for the Local Transport Strategy. The Strategy identifies three key aims and five core objectives 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.

East Ayrshire Council requests that new, sizeable developments provide a Travel Plan in support of the planning application, to mitigate against air pollution impacts during and post construction. Where developments include biomass, the 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. Furthermore, where biomass burners are proposed in planning applications, the 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

East Ayrshire is committed to addressing challenges in the air quality sector, adhering to statutory monitoring and reporting requirements whilst seeking improvements that benefit wider climate change as well as promoting sustainable, economic development. The principal challenges and barriers to implementation of initiatives that East Ayrshire Council anticipates facing are funding and resource availability.

The Council acknowledges that the advancement towards and uptake of biomass based renewable technologies to mitigate climate change broadly are likely to deteriorate air quality specifically. It is recognised that historic UK road taxation policies were biased in favour of climate change and has recently encouraged procurement of diesel vehicles comparative to petrol, thus increasing concentrations of PM and NO_x emissions. However, this increasing trend is in decline, with East Ayrshire Council focussed on purchasing EVs for fleet, anticipating having an all-electric fleet of cars and small vans by 2023. Therefore, seeking to improve air quality for the area and promote sustainable travel, aligned with its Climate Change Strategy. However, it is acknowledged that procurement of such vehicle volume is beyond Council control to an extent, with financing a legitimate concern.

East Ayrshire Council have also identified a priority with regards to upscaling the differential parking charges to further encourage vehicle use with cleaner fuels, seeking to

discourage Council employees vehicle usage in town centres and associated car parks instead promoting alternative forms of active travel such as cycling and public transport, as well as encouraging walking for short journeys. The Council also acknowledge the challenges faced with the proposed enhancement of the EV charging network across the area with regards to secured funding, time constraints, and resource availability.

East Ayrshire Council are prioritising and expect the following measures to be completed over the course of the next reporting year:

- EV Charging Infrastructure – The collaborative relationship between the Council and neighbouring local authorities South Ayrshire Council and North Ayrshire Council to enhance the programme of EV charging points across the area has been successful in the 2022 monitoring year with over 5 EV charging points being implemented already, although more are required with formulation of a strategy to support increased roll-out of infrastructure that is scheduled to be implemented in 2023-2024;
- EV Council Fleet – Improvement in the adoption of EVs as Council fleet across the area, to reduce vehicular emissions and overall pollutant concentrations. The Council is anticipating having an all-electric fleet of cars and small vans by 2023; and
- Net-Zero Housing – Provision of 18 net-zero homes in Bonnyton, Kilmarnock, by June 2023 and approval for the development of additional net-zero homes in Bellvue Gardens, Kilmarnock.

Progress on the following measures has been slower than expected due to:

- EV Council Fleet – Extensive costs, funding requirements, resource availability and load carrying requirements have slowed progress on larger van fleet replacement by electric vehicles;
- Active Travel Strategy – Extensive consultation periods with stakeholders and wider public body as well as confirmation with regards to the definitive final design and items for development;
- EV Charging Points – Requirement for an infrastructure strategy and increased funding to implement a greater volume of EV charging points.

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 have progressed additional public engagement work in 2022 through the below schemes, although the engagement schemes in 2021 are still active:

- 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 'Mission to the Moon' that 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 and North 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; and,
- Established relationships with local active transport business All-Ability Bikes and CycleStation 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.

The following measures are possible alternatives to private travel and actions that everyone can complete that would contribute to improving air quality within the area:

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentration through the volume of vehicles and limits congestion;

- Walk or cycle if your journey allows – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added health benefits through exercise;
- Car/lift sharing – Where a number of individuals are making similar journeys, such as travelling to work or to school car sharing reduces the volume of vehicles on the road and therefore the amount of emissions being released. This can be promoted via travel plans through the workplace and within schools;
- Alternative fuel / more efficient vehicles – Choosing a vehicle that meets the specific needs of the owner, fully electric, hybrid fuel and more fuel efficient cars are available, and all have different levels benefits by reducing the amount of emissions being released; and
- Asking your employer, school or college about the possibility of developing a green travel plan.

Further information about air quality and pollutants can be found on the Council's website. Additional information on air quality monitoring data, details on the main pollutants associated with air quality, alongside an air quality/pollution control email service available on the East Ayrshire website.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in East Ayrshire Council 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 East Ayrshire Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective 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 does not have any declared AQMAs. A map of monitoring locations within the area is presented in Appendix D: Maps of Monitoring Locations.

Due to the improvement in air quality within East Ayrshire Council area, the Council has no plans to declare an AQMA. Measures to mitigate and improve air quality have been undertaken consistently for numerous years and various measures have been enhanced and expanded, with new, improved measures continually being added (Table 2.2). East Ayrshire Council Environmental Health has significant involvement in planning processes, which ensures that air quality is a paramount consideration when new developments are planned. The Council acknowledge this approach is functioning and has enabled improvements in local air quality. It must be noted that East Ayrshire Council has two Smoke Control Areas (SCAs) in operation, Grange Estate, Kilmarnock, and Crossdene Estate, Crosshouse, both of which have improved air quality in these areas (Figure C.2).

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 East 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.

East Ayrshire Council agreed to submit a 'Local Development Plan 2' (LDP2) for its area in December 2022 to the Scottish Government's Planning and Environmental Appeals Division (DPEA), which encompasses air quality policies and strategies primarily informed by the wording of the Draft National Planning Framework 4 (NPF4). Thus, ensuring that the LDP2 is in compliance. To determine the effectiveness and extent to which air quality is a priority and embedded within the proposed LDP2, as objective NE12 'Water, air, light and noise pollution', the document is subject to examination by a Scottish Ministers-appointed Reporter, who ensures that the document is in compliance with national policy. The examination period will include recommendations to the Council on changes required to the LDP2, prior to adoption. The outcome of LDP2 examination and likely Council adoption is due in 2023.

Air quality is embedded in the current local plan 'East Ayrshire Council Local Development Plan (2017)' under policy objective ENV12: Water, air, light and noise pollution. This criterion is used to assess planning applications with respect to air quality as follows:

- All developers will be required to ensure that their proposals have minimal adverse impact on air quality;
- Air quality assessments will be required for any proposed development which the Council considers may significantly impact upon air quality, either on its own, or cumulatively;
- Air quality mitigation measures may be required through planning conditions and/or Section 75 Obligations;

- Development that will have a significant adverse impact on air quality will not be supported; and
- In terms of implementation, this policy will be implemented in an ongoing manner over the next 5 years (from 3rd April 2017).

East Ayrshire also adopt the 'Minerals Local Development Plan' (MLDP), which embeds and focusses on air quality within strategic policies MIN: SS9, SS10, ENV10, and PPL2. These criteria are used to assess planning applications with respect to air quality as follows:

- Policy MIN-SS9: Carbon Sequestration
    - Aim: To protect the environment and residential amenity
    - Assessment Criteria
        - Impacts in terms of dust and air quality;
        - Impacts upon transport; and
        - The suitability of the restoration and aftercare proposals for the site.
- Policy MIN-SS10: Construction Aggregates
    - Overview: The extraction of construction aggregates will be supported where there will be no unacceptable and significant adverse impact on local communities and the environment.
    - Assessment Criteria:
        - Impacts in terms of dust and air quality; and
        - Impacts upon transport.
- Policy MIN-ENV10: Protection of Built and Natural Environment Resources
    - Aim: To protect the built and natural environment
    - Overview: The Council recognise the importance of natural and built heritage assets in the assessment of development proposals.
    - Assessment Criteria:
        - Council will not support proposals where they would adversely affect air quality or create air pollution issues.
- Policy MIN-PPL2: Protecting Residential Amenity
    - Aim: To give appropriate weight to impacts on residential amenity in the determination of planning applications.
    - Overview: The Council will seek to ensure that all applications for mineral development will not create an unacceptable impact, with regard to air

quality, through the generation of dust and air pollution particularly where they affect local communities and individual houses.

- Assessment Criteria:
  - Consideration, minimisation and necessary mitigation of potential effects of the operational working of the site on existing residential properties and nearby communities, including dust.

The discussed policies seek to ensure that developers minimise impact on air quality through new development, and if necessary, enter into a legal agreement with East Ayrshire Council to ensure this is the case.

In addition to the discussed policies East Ayrshire Council has produced a Supplementary Planning (SPG) Guidance document for Renewable Heat Generation. The purpose of the guidance in line with the requirements of Scottish Planning Policy (SPP), outlines in detail the Council's approach to renewable heat generation and provides further information on the criteria which all renewable sources of heat generation will be assessed, underpinning 'Policy RE 2: Heat Generation' of the existing Local Development Plan (LDP). This guidance does not direct renewable heat generation to specific locations but is intended to guide development as a starting point for investigating the potential for proposals in conjunction with Scotland's Heat Map. It is essential that background research is undertaken in conjunction this reviewing the guidance as renewable heat technology and legislation is recognised as evolving. This guidance is aimed at;

- Developers exploring the feasibility of renewable energy as part of proposed or existing development in line with LDP policy;
- Developers exploring the feasibility of commercial projects; and,
- Community organisations considering the potential for renewable energy schemes.

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 Low Emission Zones (LEZs) structure.

East Ayrshire Council has no LEZs established within the Local Authority area. However, the Council is committed to increasing availability of active transportation throughout the area to promote healthy lifestyles and reduce air pollution, having continued to endorse the Active Travel Hub in Kilmarnock that encourages cycling, walking, adoption of public

transportation and car sharing as well as ensuring all new developments provide a Travel Plan during planning processes.

The Council are also developing an 'Active Travel Strategy' in partnership with Ayrshire Roads Alliance (ARA), which will work in conjunction with the established Climate Change Strategy and be a companion document for the Local Transport Strategy. The Active Travel Strategy identifies three key aims and five core objectives 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 –new or improved Active Travel routes suggested by those responding to the engagement;
- Infrastructure – physical interventions that aim to increase rates of active travel – improving safety and/or accessibility;
- Policy – identifying ways in which adoption of specific policy measures may be able to positively encourage active travel;
- Education – identifying ways to achieve positive behaviour change among all road users with respect to active travel; and
- Campaigns – which may include specific initiatives such as bike loans, active travel tourism, and bike-to-work schemes.

The ATAP would be implemented for a 10-year period, with proposed items funded by grants. It has been confirmed that a second stage of stakeholder engagement on the draft Strategy is required to identify opportunities for emphasis and development of the core themes and items suggested for implementation. Overall, East Ayrshire Council are committed to improving air quality within the area by actions that also support the core themes of the Climate Change Strategy.

2.2.3 Climate Change and Air Quality

East Ayrshire Council are commitment to effective coordination between climate change and air quality policies and documentation to deliver co-benefits. The Council has an established Energy Strategy and Carbon Management Programme as well as a Climate Change Strategy, with air quality a core consideration of the documentations, thus air quality policies and associated sustainable development are recognised as integral outcomes. East Ayrshire Council have a recognised vision statement, with the Council

"committed to reducing its Carbon Emissions and will put CO_2 emissions reduction at the core of its business activities."

The Council has also produced a 'State of the Environment Report' in support of a proposed Minerals Development Plan (MDP), which details considerations of climate change and air quality, as well as alternate geographical items and concepts such as geology and soils, landscape and ecology, water environments, cultural heritage, population and human health, noise and material assets. The MDP also includes proposals to assist in repairing environmental damage induced by the liquidation of two open cast coal operators in 2013-2014. The 'State of the Environment Report' was scheduled for update in 2022 but is likely to occur in 2023.

East Ayrshire Council is committed to addressing air quality concerns at the planning stage, as discussed, however it is acknowledged that a balance is required between measures seen to positively impact climate change yet deteriorate air quality. Biomass combustion has been identified by the Council as a topic blending the two environmental sectors, climate change and air quality, with East Ayrshire Council's Environmental Health preference to align with Scottish Government advice regarding the limitation and/or eradication of biomass usage in urban areas where mains gas is available. The Council seek to establish a common goal with all development parties in East Ayrshire; improve air quality subsequently inducing improvement in climate change status.

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 Air Quality Action Plan (AQAP) by the timescales stated within that plan, the Scottish Government expects authorities to submit updates on progress through the APR process. East Ayrshire Council does not have an AQMA nor an AQAP but has taken forward a number of measures during the current reporting year of 2022 in pursuit of improving local air quality and continuing to meet the air quality objectives. Details of all measures completed, in progress or planned are set out in

Table 2.1. More detail on these 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.

East Ayrshire Council continues to use its monitoring network to review air quality is at a safe level, and to ensure that all residents have access to safe levels of air quality. The review and removal of monitoring locations in areas of relevant public exposure as consequence of the Council identifying continuous low NO_2 concentration recordings highlights a proactive nature which ensures that the Council are frequently reviewing monitoring locations and are able to identify areas that may/may not be of potential concern at the nearest possible opportunity so that, if required, effective mitigation measures can be implemented. This ensures that compliant levels of air quality are available to all of its residents.

The Council are employing many additional measures to help improve and progress air quality within their respected area. The 2022 ASR outlines the schemes and partnerships that East Ayrshire Council are involved in, these measures are still active for the 2022 reporting year. There have also been additional measures and initiatives implemented in the 2022 reporting year such as the commitment to invest £6 million to support the Council's Net Zero Action Plan as well as voluntarily adopting the Net Zero Public Sector Building 2021 standard where possible and agreed to expenditure of £93.6 million over the next five years to improve the fabric of existing housing stock with the emphasis being on energy efficiency. In addition, a net zero housing project to provide 18 net zero homes in Bonnyton, Kilmarnock was commenced in 2022, with aims of completion in June 2023, and a further net zero project for additional homes is scheduled for Bellvue Gardens, Kilmarnock. These schemes reinforce East Ayrshire's commitment to achieving net-zero and reducing pollutant emissions from various outputs, thus improving air quality for the area.

The 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 and North Ayrshire Council, via the Ayrshire Roads Alliance, and new partnering with an experienced commercial supplier through a concession contract to enhance its programme of publicly funded and managed charging points for Electrical Vehicles (EV) across the area. Currently there are 63 publicly accessible EV charging points in East Ayrshire, 8 of which were commissioned in 2022, and 24 EV Council fleet chargers, 7 of which were commissioned in 2022, with 146 publicly accessible EV charging points scheduled to be implemented through the initiative with approximately 99% of Ayrshire properties without off-street parking to be within a 10-

minute drive of an EV charging point. 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. More information regarding the location of EV charging points in East Ayrshire and the overall EV charging initiative can be found here: https://www.east-ayrshire.gov.uk/News/article/council-agrees-plans-to-expand-electric-vehicle-infrastructure

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. As such, 101 fleet cars and small vans are electric and the Council is anticipated to have fully electric fleet by 2023. Therefore, improving air quality for the local area by reducing vehicles emitting pollutants via tail-pipe emissions and succeeding in acquiring a net-zero Council fleet adhering to the Climate Change Strategy objectives in advance of the target date.

The East Ayrshire Council has encouraged active travel across the area and subsequent reduction in vehicular usage, through its established 'Mission to the Moon' initiative in primary schools. The scheme is funded by the Climate Change Fund, and primary schools are invited by Mission Control to help launch an environmentally friendly Clean Green Rocket that is powered by School Miles, known as S-Miles. Participating schools are able to send the rocket from Earth to the Moon once 238,855 S-Miles have been acquired. School children are encouraged to collect S-Miles as part of Active Traveller Crews through various active transportation methods such as walking, cycling, scooting to school, parking and striding, and walking the S-Miles Circuit at school by calculating the distance from the school to a known location (e.g. Edinburgh Castle, Disneyland Paris) and the associated number of S-Miles required to get there. Mission Control will count and record S-Miles earned on a S-Mile-ometer, which will add power to the Clean Green Rocket and issue monthly updates to schools. Mission Control can also add bonus S-Miles to Active Traveller Crews that impress with their commitment and determination to complete their mission. Overall, the scheme is estimated to have prevented usage of approximately 4,500 gallons of fuel and 50 tonnes of carbon being emitted to the atmosphere. Therefore,

reducing vehicle emissions and contribution to air quality by promoting the area as an enabler of active travel and focussing on education of future generations, a core objective of the Council's Climate Change Strategy to improve air quality.

The Council has established a collaborative relationship with the bicycle mechanic business 'CycleStation' 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. CycleStation also offer an innovative bike sharing service with a bike hire fleet to encourage active transportation. The scheme replicates notable cycle sharing schemes found in large metropolitan areas (e.g., Santander Cycles, Mobike, Lime) and compliments the areas extensive cycling routes. It also attempts to promote alternative and accessible forms of travel between neighbouring towns and cities across Ayrshire regions to help its residents lead active lifestyles and limit vehicular emissions. The relationship between East Ayrshire Council and CycleStation promotes the use and benefits of active transport on air quality comparative to vehicle use and encourages locals to support the establishment of a greener, cleaner area. In addition, All-Ability Bikes launched an initiative in 2022 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 has maintained to promote the Kilmarnock Active Travel Hub, an innovative service that encouraged sustainable travel such as walking, cycling, and public transport, throughout the area and launched in 2017. The initiative is a partnership project between Sustrans Scotland and East Ayrshire Council, funded by Smarter Choices Smarter Places, which is Paths for All's programme to increase active and sustainable travel throughout Scotland. The programme is also grant-funded by Transport Scotland.

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. Thus, attempting to promote alternative and accessible forms of travel across East Ayrshire region to help its residents and workers lead active lifestyles and limit vehicular emissions contributing to air pollution.

The Council have been improving existing active travel walking and cycling routes as well as building new multi-use routes that connect local communities and make commuting to school, work and for leisure and tourism via walking, running, cycling, horse-riding much safer and more enjoyable for people irrespective of age and ability. 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. Thus, highlighting the Council's commitment to improve local air quality within the area by focussing investment into active transportation facilities and helping its residents lead active lifestyles and limit vehicular emissions.

The Council are committed to further reducing air pollution emissions through enhancing its active transportation availability in East Ayrshire as well as creating enjoyable and fair environments for locals and visitors by producing a draft 'Active Travel Strategy' that went through consultation in October 2021 and cabinet review in June 2022. The document seeks to work in conjunction with the established Climate Change Strategy and be a companion document for the Local Transport Strategy. The Strategy identifies three key aims and five core objectives 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 –new or improved Active Travel routes suggested by those responding to the engagement;
- Infrastructure – physical interventions that aim to increase rates of active travel – improving safety and/or accessibility;
- Policy – identifying ways in which adoption of specific policy measures may be able to positively encourage active travel;
- Education – identifying ways to achieve positive behaviour change among all road users with respect to active travel; and
- Campaigns – which may include specific initiatives such as bike loans, active travel tourism, and bike-to-work schemes.

The ATAP would be implemented for a 10-year period, with proposed items funded by grants. It has been confirmed that a second stage of stakeholder engagement on the draft Strategy is required to identify opportunities for emphasis and development of the core themes and items suggested for implementation. Overall, East Ayrshire Council are

committed to improving air quality within the area by actions that also support the core themes of the Climate Change Strategy.

East Ayrshire Council requests that new, sizeable developments provide a Travel Plan in support of the planning application, to mitigate against air pollution impacts during and post construction. Where developments include biomass, the 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. Although, the screening process has since successfully mitigated air quality impacts. Furthermore, where biomass burners are proposed in planning applications, the 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. Thus, seeking technological advancements and adaptations in planning applications to improve air quality in the local area. These modern technologies for air quality improvements are exemplified by the development at the old Johnnie Walker whiskey bottling plant in Kilmarnock. 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, preventing problems and encouraging sustainable development with a focus on air quality.

Key completed measures for this reporting year are:

- Electric Vehicle Infrastructure Strategy (EVIS) - The Ayrshire Roads Alliance (ARA) has produced the EVIS and an 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.
- Electric Vehicle (EV) Charging Infrastructure – The collaborative relationship between the Council and various neighbouring local authorities as well as onboarding an experienced commercial supplier through a concession contract, to roll out a programme of EV charging points across the area has been successful in the 2022 monitoring year with 15 EV charging points, 8 publicly available and 7 Council fleet owned, being implemented already, although more are required with

formulation of a strategy to support increased roll-out of infrastructure, with 146 more charging points scheduled to be implemented in 2023.

The East Ayrshire Council worked to implement measures in the 2022 monitoring year in partnership with the following stakeholders:

- Neighbouring local authorities;
- Local businesses;
- Charities;
- Educational centres; and
- Ayrshire Roads Alliance (ARA).

The Council has identified the following new measures since the last reporting year:

- Mission to the Moon – Active travel initiative funded by the Climate Change Fund and promoted in primary schools to promote healthy lifestyles whilst reducing air pollution through the encouragement of active transportation uptake such as walking, cycling, scooting to school, parking and striding. Overall, the scheme is estimated to have prevented usage of approximately 4,500 gallons of fuel and 50 tonnes of carbon being emitted to the atmosphere. Therefore, reducing vehicle emissions and contribution to air quality by promoting the area as an enabler of active travel and focussing on education of future generations, a core objective of the Council's Climate Change Strategy to improve air quality.
- Net-Zero Housing and Investment Opportunities – In support of the Climate Change Strategy, East Ayrshire Council have committed to a net zero housing project to provide 18 net zero homes in Bonnyton, Kilmarnock. The development was commenced in 2022, with aims of completion in June 2023, and a further net zero project for additional homes is scheduled for Bellvue Gardens, Kilmarnock. These schemes reinforce East Ayrshire's commitment to achieving net-zero and reducing pollutant emissions from various outputs, thus improving air quality for the area. The Council have also agreed to invest £6 million to support the Council's Net Zero Action Plan as well as voluntarily adopting the Net Zero Public Sector Building 2021 standard where possible and agreed to expenditure of £93.6 million over the next five years to improve the fabric of existing housing stock with the emphasis being on energy efficiency.

Progress on the following measures this reporting year has been slower than expected due to:

- EV Council Fleet – Extensive costs, funding requirements, resource availability and load carrying requirements have slowed progress on larger van fleet replacement by electric vehicles;
- Active Travel Strategy – Extensive consultation periods with stakeholders and wider public body as well as confirmation with regards to the definitive final design and items for development;
- EV Charging Points – Requirement for an infrastructure strategy and increased funding to implement a greater volume of EV charging points.

East Ayrshire Council are prioritising and expect the following measures to be completed over the course of the next reporting year:

- EV Charging Infrastructure – The collaborative relationship between the Council and neighbouring local authorities South Ayrshire Council and North Ayrshire Council to enhance the programme of EV charging points across the area has been successful in the 2022 monitoring year with over 5 EV charging points being implemented already, although more are required with formulation of a strategy to support increased roll-out of infrastructure that is scheduled to be implemented in 2023-2024;
- EV Council Fleet – Improvement in the adoption of EVs as Council fleet across the area, to reduce vehicular emissions and overall pollutant concentrations. The Council is anticipating having an all-electric fleet of cars and small vans by 2023; and
- Net-Zero Housing – Provision of 18 net-zero homes in Bonnyton, Kilmarnock, by June 2023 and approval for the development of additional net-zero homes in Bellvue Gardens, Kilmarnock.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/ Actual Completion year	Measure Status	Funding Status/ Lead Authority	Key Milestones	Focus/Progress	Barriers to implementation
1	Walking and Cycling Networks	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities	2014	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 now has 40 km of cycle lanes (2014 year). 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	Walking and Cycling Facilities	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities, Economy and Skills, ScotRail, Stagecoach	-	Provision of cycle parking in schools and all local authority buildings. Cycle lockers are also available at Kilmarnock and Cumnock bus stations and are also provided at Kilmarnock railway station.	-

3	Pool bike hire scheme	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities and Partner Businesses.	"Employee hire scheme underway in 2016. Four unisex electric assisted bikes and standard bikes available. 2018: Business pool bike scheme introduced in Kilmarnock. 2019: Pool Bike Hub set up in Crookedholm. 2020: Pool Bike Hub now available in JWB, Kilmarnock and London Road, Kilmarnock. 2021: Cycling Friendly Employer Award 2022: Launched all-ability bikes	A pool bike hire scheme is being rolled out for council employees for work related short journeys. Pannier top boxes are available to carry documents. Bikes are fitted with GPS trackers to determine which routes are most frequently used to allow targeting of new cycle lanes and plans are in place to roll out a bike hire scheme for the general public. Discounts are available for council employees to purchase bikes for home to work use. 2018: A business pool bike scheme has been recently introduced in central Kilmarnock via the Council office, and it is hoped this can be rolled out to other towns. 2019: Pool Bike Hub; A pool bike scheme has been set up at Crookedholm Transport Depot, with the provision of 2 electric bikes and 2 manual bikes along with safety equipment for use by employees for work related journeys. 2020: The Active Travel Hub continues to promote walking and cycling. EAC has also launched a pool bike scheme at London Rd HQ, Kilmarnock similar to the one at the JWB, Kilmarnock and will be launching a similar project at Rothesay House, Cumnock. Kilmarnock	-

							Active Travel Hub are also offering a trial of free bike loans to EAC employees for leisure use. As well as being a great way to keep active and improve health and wellbeing it improves air quality, reduces traffic congestion and lowers carbon emissions. 2021: Cycling friendly Employer Award: East Ayrshire Council has now achieved the prestigious Cycling Friendly Employer Award. This nationally recognised award, from Cycle Scotland, is a recognition of the effort and hard work undertaken by an organisation to support people to cycle. We have achieved this because of our successful Cycle to Work scheme, Pool Bike Scheme, the ongoing promotion of the benefits of cycling through our HWL bulletins and the new addition to our mileage scheme to include business bike. 2022: CycleStation set up to 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. CycleStation also offer an innovative bike sharing service with a bike hire fleet to encourage active transportationand All-Ability Bikes launched at Cumnock Juniors Football Park. The bikes 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."	
4	Active Travel Hub	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities, Economy and Skills	-	The 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	-

							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.	
5	Walking	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities, Economy and Skills	-	The Scottish Outdoor Code means everyone has a right to be on most land and inland water for recreation, education and for going from place to place providing they act responsibly. Improve connectivity between houses, schools, shops places of work and public transport interchanges.	-
6	Travel Infrastructure Improvements	Alternative to Private Vehicle Use/Promoting Travel Alternatives/Public Information/Transport Planning and Infrastructure	-	Ongoing	Safer Communities	-	The Council has implemented a number of infrastructure improvements to promote public transport, walking and cycling. These include: upgraded bus stop facilities including shelters and real-time passenger displays; on and off-road cycle routes; pedestrian improvement schemes. Train and bus usage is promoted over car use.	-
7	Active Travel Strategy	Alternative to Private Vehicle Use/Promoting Travel Alternatives	-	Ongoing	Safer Communities	-	An Active Travel Strategy is also under preparation which will set out an action plan to deliver greater levels of active travel.	-
8	Park and Ride Schemes	Alternative to Private Vehicle Use/Promoting Low Emission	-	Ongoing	Safer Communities, Railway Station Operators	-	Park and Ride facilities are car parks with connections to public transport that allow commuters and	-

		Transport/Promoting Travel Alternatives					others wishing to travel to leave their personal vehicles in a car park and transfer to public transport for the rest of their journey. Park and Ride is currently operated in East Ayrshire by Scot Rail at New Cumnock, Auchinleck, Kilmarnock, Kilmaurs, Stewarton and Dunlop railway stations.	
9	Car Sharing	Promoting Travel Alternatives/Public Information	-	Ongoing	Safer Communities	-	East Ayrshire Council promotes car sharing to minimise emissions of carbon dioxide (climate change) and reduce emissions of pollutants.	-
10	Bus and rail network service improvements	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure	-	Ongoing	Safer Communities Train and Bus Operators	-	Improvement to rail stock and bus renewal and upgrade, bus and rail station upgrades including lowered bus floors to ease access. Encourages use of public transport over private car usage.	Funding, Resource Availability, Infrastructure Implementation
11	Bus and rail network service improvements	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure	-	Ongoing	Safer Communities, Train and Bus Operators	-	Increasing bus and rail frequency such as the half hourly service between Kilmarnock and Glasgow. Improving railway infrastructure maintenance to reduce delays.	-
12	Improved bus services	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure	-	Operational	Safer Communities, Bus Operators	-	Bus services provided to supermarkets located out of town centre.	-

13	Quality Bus Corridors	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure	-	Ongoing	Safer Communities, Bus Operators	-	Quality bus corridors and bus priority at traffic lights in Kilmarnock speed up public transport. Encourage usage by use of high quality bus shelters, timetable information panels and improved walking links from residential areas to the bus stops. Introduction of bus stop clearways at all marked bus stops to ensure parked vehicles do not obstruct the bus stops.	-
14	Use of new technology/ real time passenger information system	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure/Public Information	-	Ongoing	Safer Communities, Bus Operators	-	Electronic bus timetables and easily accessible electronic travel information (e.g. Downloadable timetables to smart phones encourage public transport usage).	-
15	Public Transport Ticket purchasing and discounts	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Public Information	-	Operational	Bus and Train Operators	-	Public transport tickets are easily purchased online and discounts are available for advance booking and multi journeys.	-
16	Partnership Working	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Public Information/Transport Planning and Infrastructure	-	Operational	Safer Communities and Partner Organisations,	-	Work with Strathclyde Partnership, NHS Ayrshire an Arran, public transport operators and community transport operators to improve and enhance public transport links to hospitals and other healthcare facilities and to improve the physical integration of public transport services.	-

17	School Travel Plans and Safer Routes to School Initiatives	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Public Information/Transport Planning and Infrastructure/Policy Guidance and Development Control	-	Operational and Ongoing	Safer Communities and Economy and Skills	-	School Travel Plans reduce car use and promote more sustainable transport options for school journeys and identify ways to enable and encourage more walking, cycling and use of public transport.	-
18	Travel Plans for new developments	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Public Information/Transport Planning and Infrastructure/Policy Guidance and Development Control	-	Operational and Ongoing	Safer Communities, Economy and Skills and developers.	-	Travel Plans are specific to each location, taking account of the nature of the business, existing alternatives, and the types of journey that visitors and the workforce make. Travel plans typically include cycle parking; lockers and changing facilities; public transport timetable information on site; offering discounted public transport tickets; car sharing schemes; teleconferencing and working from home. Travel plans are required for all significant new developments, and large, existing employers are encouraged to adopt Travel Plans. The Council has appointed a Travel Co-ordinator to assist in the development of travel plans.	-
19	Fleet Review and Upgrading	Promoting Low Emission Transport/Vehicle Fleet Efficiency	-	Operational and Ongoing	Safer Communities	-	A Fleet Review was carried out by the Energy Savings Trust on behalf of the Council in August 2015, which recommends savings in a number of areas including utilisation of electric vehicles,	Extensive costs, funding requirements, resource availability and load carrying requirements have slowed progress on larger van fleet

							upgrading to best-in- class models, activating rev limiters and undertaking fuel efficient driver training. All recommendations are currently being implemented. 76 new vans are currently on order, which comply with Euro 6 engine standards on emissions. The Transport Unit is also engaged in a number of other initiatives, including fuel efficiency programmes, green fleet management and driver awareness training. All new vehicles will be limited to a maximum of 60mph but depending on the size of the vehicle this lowers to 50mph and 40 mph.	replacement by electric vehicles;
20	Driver Training	Vehicle Fleet Efficiency	-		Safer Communities	-	200+ feelgood driver training places have been received by the energy saving trust, due to start in August. This will promote fuel efficient driving among council drivers. The Council is currently installing a new vehicle telematics system which includes feedback on driver behaviour. This should result in a reduction in vehicle emissions as it encourages drivers to drive more fuel efficiently.	-
21	Electric Vehicle Infrastructure	Promoting Low Emission Transport/Vehicle Fleet Efficiency	-	Operational and Ongoing	Safer Communities, funded by Transport Scotland	-	Additional funding has recently been secured from Transport Scotland to develop the infrastructure required to support electric vehicles (including	Funding, Resource Availability, Delayed Infrastructure Strategy Implementation; New partnering with an

							charging points and bike racks) The Ayrshire Roads Alliance is currently investigating options in this area. Currently there are 63 publicly accessible EV charging points in East Ayrshire, 8 of which were commissioned in 2022, and 24 EV Council fleet chargers, 7 of which were commissioned in 2022, with 146 publicly accessible EV charging points scheduled to be implemented through the initiative with approximately 99% of Ayrshire properties without off-street parking to be within a 10-minute drive of an EV charging point.	experienced commercial supplier through a concession contract
22	Purchase of Electric and diesel electric vans	Promoting Low Emission Transport/Vehicle Fleet Efficiency	-	Ongoing	Safer Communities	2023 – Cars and small van fleet all electric	Vehicle fleet - the Council has purchased a number of electric vehicles (7 vans (replaced diesel vans), 1 street sweeper, 8 walk-behind sweepers) and 2 hybrid (diesel/electric) 7.5 tonne vans, resulting in a significant fuel saving and lower emissions. Funding has been received for further electric vehicles and EAC Transport section is looking to maximise the amount of new electric vehicles they can procure. An added benefit of increasing numbers of electric vehicles are a reduction in noise levels. East Ayrshire Council anticipate having an all-	Funding, resource availability, infrastructure to support EVs

							electric fleet of cars and small vans by 2023.	
23	Urban Traffic Control	Traffic management/Transport Planning and Infrastructure	-	Operational	Safer Communities	-	The Council has a 'SCOOT' Urban Traffic Control system to manage 35 traffic signals in Kilmarnock town centre. SCOOT can reduce queuing and delays by up to 20% therefore reducing emissions. The system also incorporates priority for buses. The system will be upgraded in 2016 and will be further expanded to Cumnock town centre. The Council is also undertaking a programme of introducing 20mph areas. The Council also has decriminalised parking enforcement powers which are used to ensure effective traffic management by reducing indiscriminate and obstructive parking.	-
24	Improvements to interchanges and junctions etc.	Traffic management/Transport Planning and Infrastructure	-	Ongoing	Safer Communities	-	Improve traffic flow.	-
25	Provide a high standard of road maintenance and winter gritting	Traffic Management/Transport Planning and Infrastructure	-	Ongoing	Safer Communities	-	Ensure traffic is free flowing.	-
26	Electronic car park direction.	Traffic Management/Public Information/Transport Planning and Infrastructure	-	Operational	Safer Communities	-	Electronic car park direction signing scheme incorporates eight Variable Message Signs (VMS) are operational at key locations to reduce congestion.	-
27	Road closures, traffic delays and rail transport delays	Traffic Management/Public Information	-	Operational and Ongoing	Safer Communities	-	Information on transport delays is now easily available online to inform	-

	information available to public.						the public to prevent unnecessary journeys.	
28	Adequate car parking provision	Traffic management/Transport Planning and Infrastructure	-	Operational and Ongoing	Safer Communities	-	Prevent unnecessary vehicle use finding a parking space and prevents inconsiderate on street parking.	-
29	Parking Attendants	Traffic Management	-	Operational and Ongoing	Safer Communities	-	Discourages inconsiderate parking which reduces congestion and hence reduces vehicle emissions and improves air quality.	-
30	Speed reductions on some routes. Enforcement of speed limits with speed cameras, traffic calming measures, speed traps etc.	Traffic management/Transport Planning and Infrastructure	-	Operational and Ongoing	Safer Communities Police Scotland	-	Speed reductions in general lowers vehicle emissions.	-
31	Construction and promotion of road by-passes on strategic routes	Traffic management/Transport Planning and Infrastructure	-	Ongoing	Safer Communities and Transport Scotland	-	To improve air quality in congested towns	-
32	Loading Bays	Freight and delivery management	-	Operational	Safer Communities	-	Key locations on busy roads are provided with loading bays to ensure opportunities for effective servicing.	-
33	Rail Passenger and Freight Transport	Freight and Delivery Management/Policy Guidance and Development Control/Promoting Low Emission Transport/ Promoting Travel Alternatives/Transport Planning and Infrastructure	-	Ongoing	Safer Communities, Economy and Skills and Partner Organisations.	-	Promote re-opening of closed railway stations to encourage public transport use. Sustainable Freight Transport is encouraged by maximising the use of rail transport.	-
34	Local Transport Strategy/Regional Transport	Transport Planning and Infrastructure	-	Ongoing	Safer Communities and Economies and Skills	-	Ensure LTS is linked to RTS and NTS and national outcomes.	-

	Strategy/National Transport Strategy Linkage							
35	Roads guide and street design	Policy guidance and development control	-	Adopted	Safer Communities and Economy and Skills	-	The Council has formally adopted the National Roads Development Guide and Designing Streets, and planning for sustainable modes is at the forefront of development control and planning for new developments.	-
36	Minimising adverse impact on air quality	Policy guidance and development control	-	Adopted	Economy and Skills	-	All developers will be required to ensure that their proposals have minimal adverse impact on air quality. Air quality assessments will be required for any proposed development which the Council considers may significantly impact upon air quality, either on its own or cumulatively. Development that will have a significant adverse impact on air quality will not be supported.	-
37	Minimising noise nuisance	Policy guidance and development control	-	Adopted	Economy and Skills	-	All new development must take full account of any Noise Action Plan and Noise Management Areas that are in operation in the area and ensure that significant adverse noise impacts on surrounding properties and uses are avoided. A noise impact assessment may be required in this regard and noise mitigation measures may be required through planning conditions and/or Section 75 Obligations.	-

38	Smoke Control Areas	Policy guidance and development 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.	-
39	Minimising dust from coal extraction	Policy guidance and development control	-	Adopted	Economy and Skills	-	As part of the Environmental Statement an Environmental Impact Assessment is undertaken of all impacts that coal extraction will have on the environment. Part of the Environmental Assessment includes an Air Quality Assessment. They are all similar in nature. The potential rise in PM is assessed from coal extraction, handling and transport. Coal handling processes at the mines are subject to control under Section 3.4 Part B of Schedule 1 of the Pollution Prevention and Control (Scotland) Regulations 2000. Mine support area and coal handling operations are subject to "Part B" regulation by SEPA and authorisation is required to be varied when any of the extensions to currently operating surface mines are approved. All applications have submitted an Environmental Impact Assessment incorporating an Air Quality Assessment as part of the planning application. Proposed dust mitigation measures are also submitted as part of	-

							the application. With these mitigation measures in place, the majority of dust will be controlled at source. East Ayrshire Council have a transportation of coal by road protocol which addresses issues such as dust suppression measures in terms of the use of wheel and body washing, sweeping of public roads and the dampening of internal haul roads during dry and windy weather conditions.	
40	Council's Energy Team	Promoting Low Emission Plant/ Promoting Low Emission Transport	-	Operational and Ongoing	Safer Communities	-	Remit to focus on delivery of the energy efficiency savings set out within the Council's Transformation Strategy. Energy Management Strategy and Climate Change. The Head of Facilities and Property Management acts as the Council's "Energy Champion".	-
41	Low energy street and building lighting, reducing energy in buildings and housing stock.	Promoting Low Emission Plant	-	Ongoing	Safer Communities	-	Reducing electricity consumption from the national grid and reducing energy consumption hence reducing emissions from power stations and boilers which reduces background pollutant levels. Reducing water and waste water consumption. Raising energy awareness with Council staff and members of the public. As an example pool covers were installed a cost of £24,000 (10 year lifetime) leading to a saving of approximately £28,000 per year.	-

42	Procurement	Promoting Low Emission Plant	-	Ongoing	Governance	-	Ensure procurement of goods and services that are energy efficient.	-
43	Renewable Energy	Promoting Low Emission Plant	-	Operational and Ongoing	Safer Communities	-	Develop the use of renewable energy including solar, biomass, wind and other renewable solutions including district heating systems.	-
44	Update to Local Transport Strategy	Policy guidance and development control	-	Due for Updating	Safer Communities	-	To provide a local transport strategy fit for the forthcoming years and building on the progress achieved to date.	-
45	Environmental Permits	Environmental Permits	-	Ongoing	SEPA	-	Environmental Permits are issued by SEPA but in consultation with Environmental Health as joint consultees.	-
46	Community Renewable Energy (CoRE)	Community Renewable Energy	2034	Operational and Ongoing (2019 – 15 year project)	East Ayrshire Council and Strathclyde University	2034	Community Renewable En ergy (CoRE) Centre of Excellence: With an academic and business Centre of Excellence at Knockroon as the centre piece of an ambitious 15 year scheme.	-
47	Active Transportation and Education – School Initiative Mission to the Moon	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure/Public Information	-	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 ‘Mission to the Moon’ initiative in primary schools. The scheme is funded by the Climate Change Fund. and primary schools are invited by Mission Control to help launch an environmentally friendly Clean Green Rocket that is powered by School Miles, known as S-Miles. Participating schools are able to send the rocket	-

							from Earth to the Moon once 238,855 S-Miles have been acquired. School children are encouraged to collect S-Miles as part of Active Traveller Crews through various active transportation methods such as walking, cycling, scooting to school, parking and striding, and walking the S-Miles Circuit at school by calculating the distance from the school to a known location (e.g. Edinburgh Castle, Disneyland Paris) and the associated number of S-Miles required to get there. Overall, the scheme is estimated to have prevented usage of approximately 4,500 gallons of fuel and 50 tonnes of carbon being emitted to the atmosphere. Therefore, reducing vehicle emissions and contribution to air quality by promoting the area as an enabler of active travel and focussing on education of future generations, a core objective of the Council's Climate Change Strategy to improve air quality.	
48	Net Zero Housing – Bonnyton, Kilmarnock	Planning and Infrastructure	2023	Operational and Ongoing	East Ayrshire Council	2023	Building 18 net-zero homes commenced in 2022 with scheduled completion June 2023.	Funding, Resource Availability
49	Net Zero Housing – Belvue Gardens, Kilmarnock	Planning and Infrastructure	-	Planned	East Ayrshire Council	-	Building net-zero homes to improve the environment and promote energy efficiency.	Funding, Resource Availability

50	Net Zero Investment – Action Plan	Policy guidance and development control	-	Planned	East Ayrshire Council - invest £6 million to support the Council's Net Zero Action Plan.	-	East Ayrshire Council - invest £6 million to support the Council's Net Zero Action Plan.	-
51	Net Zero Investment – Public Sector Building Standard 2021	Policy guidance and development control	2022 onwards	Adopted	East Ayrshire Council	2022	East Ayrshire Council – Adopt the 2021 Public Sector Building Standard to support and improve net zero efficiency.	-
52	Net Zero Housing – Refurbishment	Planning and Infrastructure	2027-2028	Planned	East Ayrshire Council - £93.6 million over 5 years to improve the fabric of existing housing stock with the emphasis being on energy efficiency.	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.	-
53	Active Transportation	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure/Public Information	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.	Developing an infrastructure plan
54	Electric Vehicle Infrastructure Strategy (EVIS)	Alternative to Private Vehicle Use/Promoting Low Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure/Public Information	-	Operational and Ongoing	Ayrshire Roads Alliance (ARA) and East Ayrshire Council	-	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.	-
55	Active Travel Strategy and	Alternative to Private Vehicle Use/Promoting Low	10-year period	Planned/ Ongoing	Ayrshire Roads Alliance (ARA) and East Ayrshire Council	Consultation October 2021;	The Council are committed to further reducing air pollution emissions through	Extensive consultation periods with stakeholders and

	Active Travel Action Plan	Emission Transport/Promoting Travel Alternatives/Transport Planning and Infrastructure/Public Information				Cabinet Review June 2022	enhancing its active transportation availability in East Ayrshire as well as creating enjoyable and fair environments for locals and visitors by producing a draft 'Active Travel Strategy' that went through consultation in October 2021 and cabinet review in June 2022. The document seeks to work in conjunction with the established Climate Change Strategy and be a companion document for the Local Transport Strategy. The Strategy identifies three key aims and five core objectives 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. It has been confirmed that a second stage of stakeholder engagement on the draft Strategy is required to identify opportunities for emphasis and development of the core themes and items suggested for implementation.	wider public body as well as confirmation with regards to the definitive final design and items for development;

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

This section sets out the monitoring undertaken within 2022 by East Ayrshire Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

Monitoring data is provided in Appendix A and Appendix B, with details on how the monitors are calibrated and data adjustment included in Appendix C. Maps showing the location of the monitoring sites are provided in Appendix D. Automatic monitoring data and NO_2 diffusion data is given to one decimal place.

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.

East Ayrshire Council undertook automatic (continuous) monitoring at two sites during 2022: East Ayrshire Kilmarnock St Marnock Street (A3) and Barony Campus in Cumnock (A5). The Holmhead Road in Cumnock (A4) automatic monitor was relocated to Barony Campus (A5) in October 2021. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at: http://www.scottishairquality.co.uk/

Maps showing the location of the monitoring sites are provided in Appendix D. 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

East Ayrshire Council undertook non-automatic (passive) monitoring of NO_2 at 19 sites during 2022, including a triplicate site. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. 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 bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the AQS of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant. Additionally, the National Bias Adjustment Factor assumes monitoring is undertaken in accordance with the Defra calendar dates. It is noted that the monitoring dates do not coincide with the Defra calendar dates during the survey period, whereby changeovers conducted throughout the monitoring year in January, April, May, November and December were not in line with Defra guidance. As such, there is a degree of certainty surrounding the monitoring results provided.

All passive monitoring sites within the East Ayrshire Council continue to report annual mean NO_2 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. Following bias adjustment and annualisation where necessary, the maximum reported concentration in 2022 is 26.3 µg/m^3 at diffusion tube monitoring location DT2, a roadside site in Kilmarnock. This location did not report the maximum concentration (24.8µg/m^3) in the 2022 report, instead DT14, an alternate roadside location. It is noted that no passive monitoring sites are within 10% of the AQS, highlighting the effectiveness of any air quality

mitigation techniques East Ayrshire Council have implemented to ensure consistent compliance with the AQS is achieved and protection of public health.

Figures A.1 and A.2 present the 2022 annual mean NO_2 concentrations at East Ayrshire Council's monitoring sites. Concentrations at sites DT32 and DT33 decreased slightly during 2022 in comparison to 2021. Sites DT7 and DT9 were unable to be compared to 2021 concentrations due to lack of data. Concentrations at the remaining locations (15 – including the triplicate site) increased during 2022 in comparison to 2021. The overall increase in concentrations is most likely attributable to the re-establishment of pre-COVID-19 pandemic traffic volume and the return to business as usual following the COVID-19 pandemic, where Government advice was given to stay at home where possible. This resulted in decreased levels of traffic observed across the UK, and as such, reduced NO_2 concentrations recorded during 2020 and 2021.

It is possible to infer the risk of exceedances of the 1-hour mean NO_2 AQS objective at diffusion tube monitoring sites. LAQM.TG(22) provides an empirical relationship that states exceedances of the 1-hour objective are unlikely when the annual mean concentration is below 60µg/m^3. Given that the highest recorded annual mean concentration at any of the diffusion tube monitoring sites is 26.3µg/m^3 in 2022, and 28.0µg/m^3 since 2018, it is possible to conclude that there have been no exceedances of the hourly mean NO_2 objective at all monitoring locations in the last five years.

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

3.2.2 Nitrogen Dioxide (NO_2) In Schools and Colleges

East Ayrshire Council have received public concerns regarding air quality around schools and colleges adjacent to roads. As such, Environmental Health deployed NO_2 diffusion tubes in 2017 within close proximity to Ayrshire College, Kilmarnock Campus, Hill Street Kilmarnock, William McIlvanney Campus, Sutherland Drive Kilmarnock, Barony Campus, Cumnock and Burns Bairns Nursery School at Mauchline Cross. Monitoring at Ayrshire College, Kilmarnock Campus and William McIlvanney has been discontinued as roadside NO_2 concentrations monitored were signfiicantly below the annual AQS of 40µg/m^3 with concentrations reported <19µg/m^3. Discontinuation was further supported through the evaluation that concentrations within the school/college grounds would be considerably

lower due to restriction of vehicles as well as long-term trends indicating a downward trajectory in NO_2 concentrations reported.

Passive monitoring undertaken at Barony Campus to determine NO_2 emissions prior to, during construction, and post construction of the new campus was discontinued between 2021and 2022, with concentrations recorded by four NO_2 diffusion tubes placed at school entrances/exits showing a decline from those reported at intial deployment. Results in 2018 and 2019 reported NO_2 concentrations between 10-17µg/m^3, with 2020 and 2021 reporting values between 7.9-13.2µg/m^3. A mesh automatic monitor (A4/A5) that measures gas and particulate monitor was deployed in a close proximity residential area north-west of Barony Campus in 2019 to assess pollutant emissions particularly from the school biomass boiler. The instrument reported roadside NO_2 concentrations in 2019 of 14µg/m^3, similar to the NO_2 diffusion tube results in 2020 of 16µg/m^3 and January - March 2021 period mean levels (not annualised as less than 3 months data) at 19µg/m^3. In October 2021 the AQMesh monitor was re-located within the Barony Campus Grounds (A5), with October to December NO_2 period mean concentrations reported at 12µg/m^3. The 2022 annual mean for NO_2 at Barony Campus (A5) is 12µg/m^3. It is noted that the instrument previously at Holmhead Road, Cumnock, and now located at Barony Campus, Cumnock, is AQMesh thus behaves as a screening monitor and is regarded as less accurate than traditional automatic monitors which have gained equivalence status. It is acknowledged that the automatic monitor A4/A5 has had significant reliability issues and with the resultant poor data capture, results should be regarded as indicative only. Results from the automatic station located previously at Holmhead Road, Cumnock, and in 2022 at Barony Campus, Cumnock, require greater discussion in future APRs as a period of occupation at the new school campus is required until they can be contextualised.

An NO_2 diffusion tube (DT57) was placed at The Cross, Mauchline, between September 2021 to December 2021 due to public concerns regarding air pollution at Burns Bairns Nursey School. The bias adjusted, annualised NO_2 concentrations was 19.80µg/m^3 and the nursery façade distance corrected NO_2 concentration was 12.50µg/m^3, between a quarter to half the Scottish annual AQS thus compliant. Data was relayed to Burns Bairns Nursery School staff and as NO_2 concentrations are decreasing, with evaluation that concentrations within the nursery grounds would be considerably lower due to restriction of vehicles, the diffusion tube monitoring was discontinued at this location.

3.2.3 Particulate Matter (PM_{10})

Concentrations of PM_{10} have decreased steadily in East Ayrshire since 2018 with no exceedances of the annual mean 18µg/m^3 AQS at the automatic monitoring stations: St Marnock Street in Kilmarnock, Holmhead Road in Cumnock and Barony Campus in Cumnock. It is noted that the Council plan to revoke PM_{10} monitoring at automatic monitor Barony Campus in Cumnock in 2023 (formerly deployed at Holmhead Road in Cumnock until October 2021) as the instrument has provided enough data for the deployed purpose. St Marnock Street and Barony Campus automatic monitors reported annual mean PM_{10} concentrations in 2022 of 11.4µg/m^3 and 13.0µg/m^3 respectively. All PM_{10} annual concentrations reported in East Ayrshire are below the PM_{10} annual objective of 40µg/m^3. The automatic instrument at Barony Campus reported two exceedances of the PM_{10} daily mean value 50µg/m^3, with a maximum daily mean concentration reported of 70µg/m^3 and provided annual data capture of 89.9%. St Marnock Street in Kilmarnock reported a maximum PM_{10} daily mean concentration of 47.8µg/m^3 and annual data capture of 98%. It is noted that the automatic monitor at St Marnock Street in Kilmarnock was 2.2µg/m^3 below the PM_{10} daily AQS thus within 10%, as such it is recommended that automatic monitoring continues at this location as well as Barony Campus for the next monitoring year to ensure greater compliance with the AQS.

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the AQS 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 AQS of 50µg/m^3, not to be exceeded more than seven times per year.

3.2.4 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 AQS of 10µg/m^3. The results for these years provided little variation in $PM_{2.5}$ concentrations, with concentrations maintained below the AQS with St Marnock Street station reporting an annual mean $PM_{2.5}$ concentration in 2022 of 5.5 µg/m^3, and Barony Campus reporting $PM_{2.5}$ annual mean concentration for 2022 of 7 µg/m^3. Highlighting that the sites are in compliance and that a significant proportion of $PM_{2.5}$ in East Ayrshire originates from local sources instead of being transported into the area from alternate sources and through processes such as transboundary migration.

3.2.5 Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2) is not montiored 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.

3.2.6 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 2022. Historic monitoring and assessments concluded that no exceedances of AQS were found or predicted, thus monitoring was discontinued.

4 New Local Developments

East Ayrshire Council has identified two potential new sources relating to air quality within the reporting year of 2022. Egger Ltd, Barony Road, Auchinleck, (Planning Application No: 21/0616/PP) is 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 is noted that this application is referred to in Chapter 5: Planning Applications. 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 in due course and review it in the 2023 APR. This documentation is still outstanding on East Ayrshire's planning portal, thus it will be reviewed in the 2024 APR.

4.1 Road Traffic Sources

East Ayrshire Council confirms that there are no new or newly identified Road Traffic Sources, since the 2022 APR, which may have a significant 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 2022 APR, which may have a significant impact on air quality within the Local Authority area.

4.3 Industrial Sources

East Ayrshire Council confirms that there are no new or newly identified Industrial Sources, since the 2022 APR, which may have a significant impact on air quality within the Local Authority area.

4.4 Commercial and Domestic Sources

East Ayrshire Council confirms that there are no new or newly identified Commercial and Domestic Sources, since the 2022 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 confirms that there is no New Development with Fugitive or Uncontrolled Sources, which has been submitted since the 2022 APR, with the potential to have a significant effect on air quality. However, there remains to be the existing proposed potential installation of a 35.5MW biomass combined heat and power plant at the chipboard plant at Egger Ltd, Barony Road, Auchinleck (Planning Application No: 21/0616/PP).

East Ayrshire Council Environmental Health review retrospective planning applications for mainly rural biomass boilers that are 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. The following standard condition is added:

- ‘All cowls or top hats, if installed, should be removed from the flue terminals. This follows guidance from The Chartered Institution of Building Services Engineers, Biomass Heating Document CIBSE AM15:2014. The applicant should ensure adequate rainwater drainage from the flues’.

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 on 17th May 2022, 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 2nd November 2022. 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. The extension was covered in the original AQA document submitted to East Ayrshire Council.

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 and strategy documents include, but are not limited to:

- 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; and
- Environmental Protection United Kingdom (EPUK)/IAQM: Land-Use Planning and Development Control.

East Ayrshire Council has identified two large scale planning applications within the reporting year of 2022, with the potential to impact local air quality. The Egger Ltd, Barony Road, Auchinleck, development (Planning Application No: 21/0616/PP) will involve 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. The Council consulted with the Scottish Environment Protection Agency (SEPA) and provided the following planning consultation response:

“Local Air Quality Management comes under the responsibility of Environmental Health and as such any development which may have an effect on local air quality has to be assessed for impact on local air quality. Due to the size of the Combined Heat and Power Plant (CHP Plant) (>20MW) the biomass boiler falls under the remit of SEPA and will be assessed as a PPC Permit Variation Application (PPC Part A).

SEPA PPC Permit Variation Application: To operate the proposed CHP plant the operator must apply for a variation of the permit to include the operation of the CHP Plant. In doing so they must demonstrate to SEPA’s satisfaction that the activities carried out will be operated in such a way that all the appropriate preventative measures are taken against pollution, in particular through application of the best available techniques, and that no

significant pollution is caused. This includes meeting the stringent emission limits set under European legislation, which must be adhered to. In addition, the application must demonstrate, with detailed modelling, that there will be no significant impact on the environment or on human health. This will result in a more technical and comprehensive submission than that provided at the planning stage. Given the size of the proposed CHP plant it will also require to comply with the requirements of the Medium Combustion Plant Directive.

Where SEPA determines at planning that a development is potentially consentable or where planning permission is granted, this does not guarantee that a PPC Permit will be varied to include the new activity. SEPA's subsequent determination of the variation application is to a greater depth and cannot be started until such time that a valid PPC application has been received. SEPA will, therefore, only comment in general terms on generic topics at the planning stage rather than provide specific comments on any aspect of the proposed development. Also, the details of the installation, as well as the regulation and guidance governing such installations, may be subject to changes between the planning application and the PPC Permit application.

Upon receipt of a valid PPC application by SEPA, there will be a process of statutory consultation, and East Ayrshire Council will be further consulted at this point. Environmental Health have, therefore, no objection in principle to the application and will consult with SEPA at the time when Egger applies for a variation of their present permit to include the CHP Plant. Also, in general terms, this permission does not exempt the applicant, or those responsible for the future management of this facility, from the powers of nuisance control currently available to the local authority under sections 79 and section 80 of the Environmental Protection Act 1990. All users of the development should take the best practicable means at all times to minimise pollution being emitted from the development and impacting adversely on nearby properties or receptors."

In addition to the above, an air quality modelling statement will be expected to be submitted by the applicant in advance of any modelling work being carried out as part of an Air Quality Impact Assessment (AQIA) to support a planning application, detailing relevant modelling parameters to be agreed by Environmental Health and SEPA. It is also worth noting that a previous planning application at Egger (Planning Application No: 21/0137/PP) for a new emissions stack, new extraction and cleaning process, would lead to reduced overall emissions from the plant.

East Ayrshire Council Environmental Health and SEPA submitted a similar response for an application for a crematorium incinerator at the Meadows, Galston (Planning Application No: 21/0721/PPP), which in 2022 was still pending a planning decision outcome:

"East Ayrshire Local Air Quality Management (LAQM) comes under the responsibility of Environmental Health and as such any development which may have an effect on local air quality has to be assessed for impact on local air quality. Crematorium Incinerators fall under the remit of SEPA and will require a Part B PPC Permit. SEPA PPC Permit Application to operate the proposed Crematorium Incinerator the operator must apply for a Part B permit. In doing so they must demonstrate to SEPA's satisfaction that the activities carried out will be operated in such a way that all the appropriate preventative measures are taken against pollution, in particular through application of the best available techniques and that no significant pollution is caused. This includes meeting the stringent emission limits set under European legislation, which must be adhered to. In addition, the application must demonstrate, with detailed modelling, that there will be no significant impact on the environment or on human health. This will result in a more technical and comprehensive submission than that provided at the planning stage. Environmental Health will require an air quality assessment to be carried out to ensure there are no issues with public health and all Local Air Quality Objectives are met. This assessment can be carried out in conjunction with the assessment required by SEPA and the applicant should consult with both SEPA and Environmental Health. Subject to a satisfactory air quality assessment, Environmental Health would have no objection to the Incinerator with regards to LAQM. Also, in general terms, this permission does not exempt the applicant, or those responsible for the future management of this facility, from the powers of nuisance control currently available to the local authority under sections 79 and section 80 of the Environmental Protection Act 1990.

All users of the development should take the best practicable means at all times to minimise pollution being emitted from the development and impacting adversely on nearby properties or receptors. Please note this response purely deals with LAQM and is in addition to the previous responses from my other colleague in Environmental Health."

Alternate planning applications received by East Ayrshire Council in 2022 have included retrospective installation of biomass boilers, mainly in rural areas, or edge of town developments, with negligible effect on LAQM.

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 in due course and review it in the 2023 APR. This documentation is still outstanding on East Ayrshire's planning portal, thus it will be reviewed in the 2024 APR.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Monitoring, both passive and automatic, in East Ayrshire Council area during 2022 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 19.2µg/m^3 for 2022, which is 20.8µg/m^3 below/ the AQS of 40µg/m^3 (see Table A.3; Figure A.1). As such, this is the 10th consecutive year whereby the reported concentration is at or below 30µg/m^3, highlighting the significant achievement and commitment of East Ayrshire Council to implement air quality measures that ensure maintained compliance with AQS. Table A.4 highlights that there were no hourly means greater than 200µg/m^3 reported at the automatic station St Marnock Street in Kilmarnock during 2022 monitoring year, therefore, the Council have achieved an 8th successive year without any hourly mean NO_2 exceedances.

Diffusion tube NO_2 monitoring conducted in 2022 reported a maximum concentration of 26.3µg/m^3 at site DT2, 13.7µg/m^3 below the AQS of 40µg/m^3 – a significant difference (see Table A.3; Figure A.2). All remaining NO_2 diffusion tubes in the LAQM area of East Ayrshire reported concentrations below 26.3µg/m^3, thus lower than the 40µg/m^3 AQS and identifying a reduced risk to human health. The maximum NO_2 concentration reported from a diffusion tube in 2022 was 1.5µg/m^3 higher than recorded in monitoring year 2021. This is likely due to the re-establishment of pre-COVID-19 pandemic traffic volume and the return to business as usual following the COVID-19 pandemic, where Government advice was given to stay at home where possible. This resulted in decreased levels of traffic observed across the UK, and as such, reduced NO_2 concentrations recorded during 2020 and 2021.

PM_{10} monitoring at the automatic monitor on St Marnock Street in Kilmarnock reported an annual mean of 11.4µg/m^3, significantly below/above the AQS of 18µg/m^3 by 6.6µg/m^3 (see Table A.5; Figure A.3). As such, this is the 8th consecutive year whereby the reported concentration is below the 18µg/m^3 AQS, highlighting the significant achievement and commitment of East Ayrshire Council to implement air quality measures that ensure

maintained compliance with AQS. There are no reported exceedances in 2022 of the 50 µg/m^3 PM_{10} daily mean (Table A.6).

$PM_{2.5}$ monitoring at the automatic monitor on St Marnock Street in Kilmarnock reported an annual mean of 5.5µg/m^3, significantly below the AQS of 10µg/m^3 by 4.5µg/m^3 (see Table A.7). Thus, reinforcing the significant achievement and commitment of East Ayrshire Council to implement air quality measures that ensure maintained compliance with AQS.

Between 2018 and 2022 there is a notable downwards trajectory for monitored NO_2 and PM_{10} concentrations in East Ayrshire (see Table A.3 and Table A.5), with no exceedances of the NO_2 40µg/m^3 annual mean AQS since 2010 and PM_{10} 18µg/m^3 annual mean AQS since 2013 (see previous East Ayrshire APRs). Given NO_2 and PM_{10} concentrations have historically exceeded respective annual mean AQS, continuation of monitoring is required to ensure compliance is maintained, although it is acknowledged that this has occurred since 2010 and 2013 respectively, as well as within the last 5 years (see Table A.3; Table A.5; Figure A.1; Figure A.2; Figure A.3). The extent of $PM_{2.5}$ monitoring is limited compared to alternate pollutants, however, between 2018 and 2022 $PM_{2.5}$ concentrations are noted to decline (see Table A.7). Although, all reported concentrations for the pollutant within East Ayrshire have been below the AQS annual mean of 10µg/m^3. Therefore, affirming the significant 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

East Ayrshire Council has identified two new local proposed developments within the reporting year of 2022, with the potential to impact local air quality. The Egger Ltd, Barony Road, Auchinleck, development (Planning Application No: 21/0616/PP) will involve 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. The Halo Development (Planning Application No: 17/0865/PPP) had an Air Quality Impact Assessment outstanding, as noted in the 2022 APR, and Environmental Health hoped to receive this in due course and review it in the 2023 APR. This documentation is still outstanding on East Ayrshire's planning portal, thus it will be reviewed in the 2024 APR.

The air quality impact from both 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; and
- New developments with fugitive or uncontrolled sources.

Planning applications boding 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 2022 has not identified any new exceedances of the AQS for any pollutant. Automatic monitoring at St Marnock Street, Kilmarnock, will continue into 2023 monitoring year for NO_2, PM_{10} and $PM_{2.5}$ to ascertain whether pollutant concentrations are incurring a downwards trajectory and to affirm that compliance with AQS is maintained in East Ayrshire. The automatic station will also continue to act as a resource enabling regional data collection for Scottish Statistics. The Council will maintain its passive NO_2 monitoring network, continuing to review the extent of it and locations of deployed tubes to determine whether tube 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.

The 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.

Automatic monitoring will be maintained during 2023 monitoring period at Barony Campus due to air quality concerns received by East Ayrshire Council from local residents. The

AQMesh gas and particulate matter monitor will determine pollutant concentrations in the area as a consequence of the biomass boiler embedded in the new school campus. As the instrument is relatively mobile, it will be deployed elsewhere within East Ayrshire post study completion at Barony Campus to ascertain potential areas where pollutant concentrations may be of concern.

East Ayrshire Council are committed to:

- Continue its passive and automatic monitoring network of NO_2 and PM to further enable understanding of air pollution in the local area and derive pollutant trends to ensure compliance with AQS;
- Complete air quality measures delayed during the 2022 monitoring year;
- Initiate development of and/or implement measures proposed; and
- Prepare the 2024 APR for submission.

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)
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
A4	Holmhead Road, Cumnock	Roadside	256229	620539	NO_2; PM_{10}	No	AQMesh (implemented 2019 until October 2021)	0	1.40	2.50; 2.50
A5	Barony Campus, Cumnock	Other	256096	620950	NO_2; PM_{10}	No	AQMesh (Implemented October 2021 onwards)	0	N/A	2.50; 2.50

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	Fowlds Street Kilmarnock	Kerbside	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 Junction 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

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)
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	Junction 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	St Marnock Street Monitoring Site	Roadside	242742	637705	NO_2	No	0.0	3.2	Yes	2.1
DT44B	St Marnock Street	Roadside	242742	637705	NO_2	No	0.0	3.2	Yes	2.1

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)
	Monitoring Site									
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 ($\mu g/m^3$)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
A3	Roadside	Automatic	99.8	99.8	30	24	19	20.3	19.2
A4	Roadside	Automatic	N/A	N/A	-	14	16	19.0 (3)	RELOCATED
A5	Other	Automatic	85.3	85.3	-	-	-	12.0 (4)	12.0
DT1	Kerbside	Diffusion Tube	100	98.4	24.1	23.9	14.5	20.4	23.0
DT2	Roadside	Diffusion Tube	91.7	89.8	23.0	26.5	15.6	18.6	26.3
DT3	Roadside	Diffusion Tube	75	71.7	21.4	22.8	15.1	17.9	21.9
DT4	Roadside	Diffusion Tube	100	98.4	21.0	21.2	15.4	15.7	16.1
DT6	Roadside	Diffusion Tube	100	98.4	19.4	21.7	13.5	14.8	16.2
DT7	Roadside	Diffusion Tube	58.3	57.4	-	-	-	-	12.6
DT9	Roadside	Diffusion Tube	83.3	83.8	-	-	-	-	9.4
DT11	Roadside	Diffusion Tube	100	98.4	22.7	22.3	15.3	17.2	22.2
DT12	Roadside	Diffusion Tube	91.7	90.7	24.3	25.5	18.8	20.3	23.7
DT14	Roadside	Diffusion Tube	100	98.4	25.6	28.0	20.5	24.8	26.1
DT15	Roadside	Diffusion Tube	91.7	90.7	25.1	25.7	19.9	23.1	25.4
DT17	Roadside	Diffusion Tube	100	98.4	22.4	21.3	14.8	17.4	18.8
DT24	Roadside	Diffusion Tube	100	98.4	22.3	23.7	15.7	21.6	22.5
DT27	Kerbside	Diffusion Tube	100	98.4	24.3	25.8	15.8	23.0	25.6
DT32	Urban Background	Diffusion Tube	100	98.4	9.8	11.3	8.0	8.7	8.5
DT33	Urban Background	Diffusion Tube	100	98.4	10.8	13.2	8.2	9.0	8.5
DT44A, DT44B, DT44C Average	Roadside	Diffusion Tube	97.2	98.4	21.2	22.0	16.8	19.8	20.4
DT45	N/A	Diffusion Tube	N/A	N/A	26.3	24.6	16.9	22.1	CLOSED
DT46	N/A	Diffusion Tube	N/A	N/A	32.1	25.4	17.3	24.2	CLOSED
DT52	Roadside	Diffusion Tube	N/A	N/A	10.0	14.5	8.5	8.7	CLOSED
DT53	Roadside	Diffusion Tube	N/A	N/A	11.5	13.4	9.6	9.7	CLOSED
DT54	Roadside	Diffusion Tube	N/A	N/A	11.3	10.3	7.9	9.4	CLOSED
DT55	Roadside	Diffusion Tube	N/A	N/A	10.4	11.4	11.3	13.2	CLOSED
DT57	Roadside	Diffusion Tube	N/A	N/A	-	-	-	19.8	CLOSED

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. Results shown in blue have been bias corrected and annualised.

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

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

(3) Due to the short period of monitoring and poor data capture (< 25%), no annualisation was carried out at this site and the results are indicative only.

(4) Due the short monitoring period (< 25%), no annualisation was carried out at this site and the results are indicative only.

Figure A.1 - Trends in Annual Mean NO_2 Concentrations – Automatic Sites

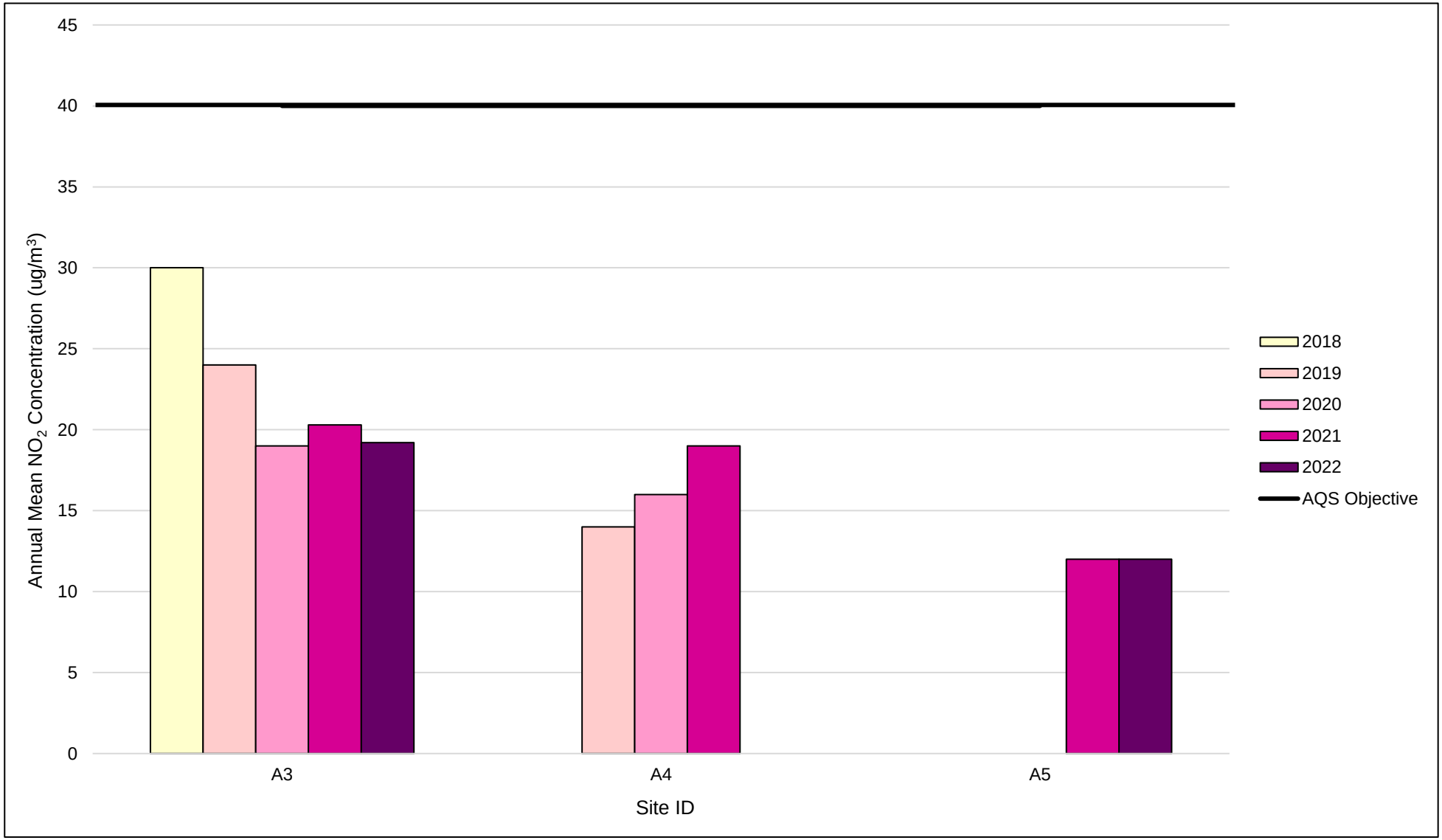


Figure A.2 - Trends in Annual Mean NO_2 Concentrations – Non-Automatic Sites

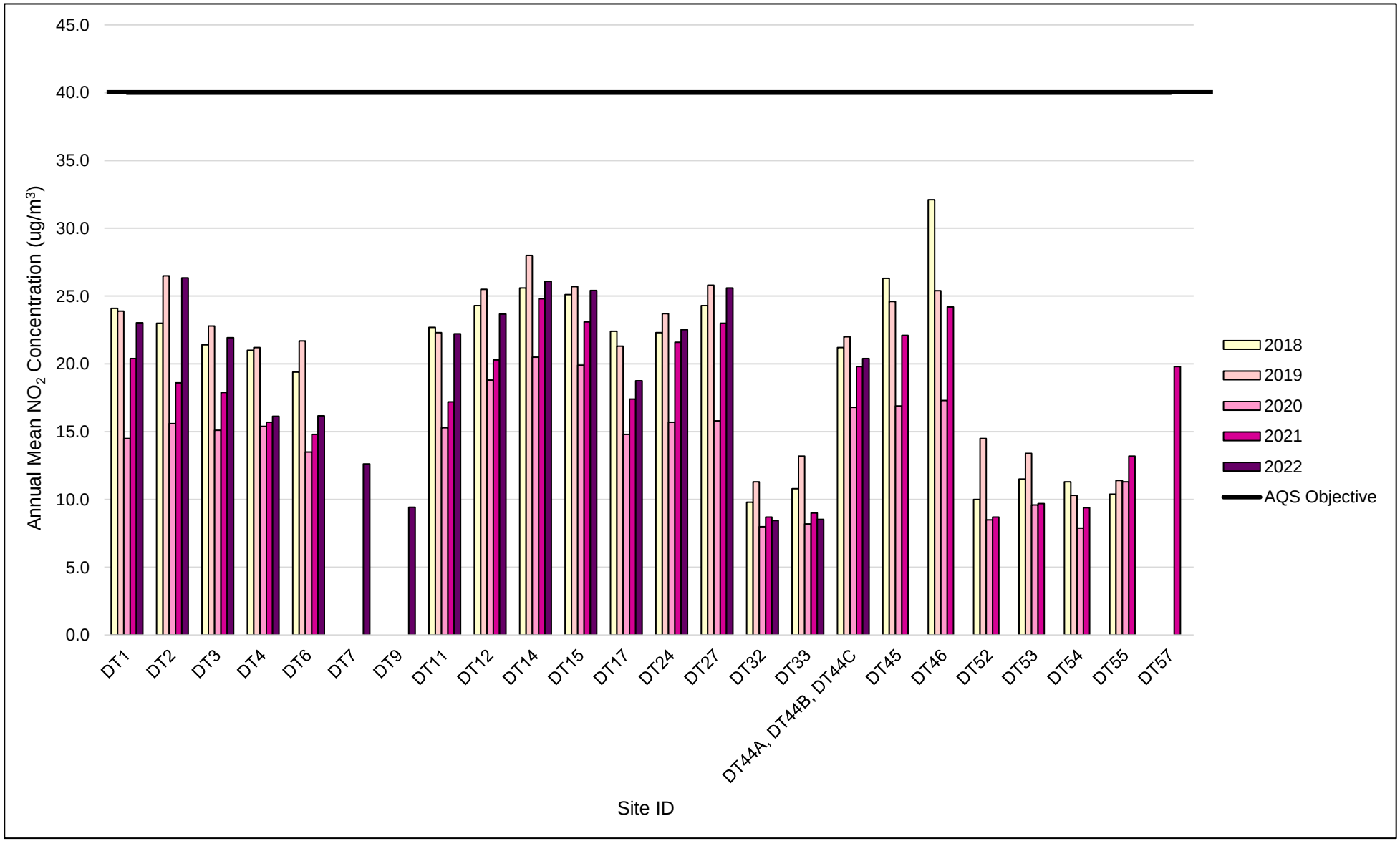


Table A.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
A3	Roadside	Automatic	99.8	99.8	0	0	0	0	0
A4	Roadside	Automatic	N/A	N/A	-	0	0	0 (56 µg/m^3)	RELOCATED
A5	Other	Automatic	85.3	85.3	-	-	-	0 (72 µg/m^3)	1

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 ($\mu g/m^3$)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
A3	Roadside	98	98	11.8	12.4	11.1	10.8	11.4
A4	Roadside	N/A	N/A	-	9	9	N/A (3)	RELOCATED
A5	Other	89.9	89.9	-	-	-	12.0 (4)	13.0

Notes:

Exceedances of the PM_{10} annual mean objective of 18 $\mu g/m^3$ 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% (shown in blue).

All means at A3 have been corrected (PM_{10} divided by 0.909) in line with the Scottish Government Equivalence Study To Investigate Particulate Matter Monitoring In Scotland Using The Fidas 200.

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%).

(3) Due to technical issues with the AQMesh Monitor no PM_{10} data was obtained for this site.

(4) Due to the short period of monitoring (< 25%), no annualisation was carried out at this site and the results are indicative only.

(5)

Figure A.3 - Trends in Annual Mean PM_{10} Concentrations

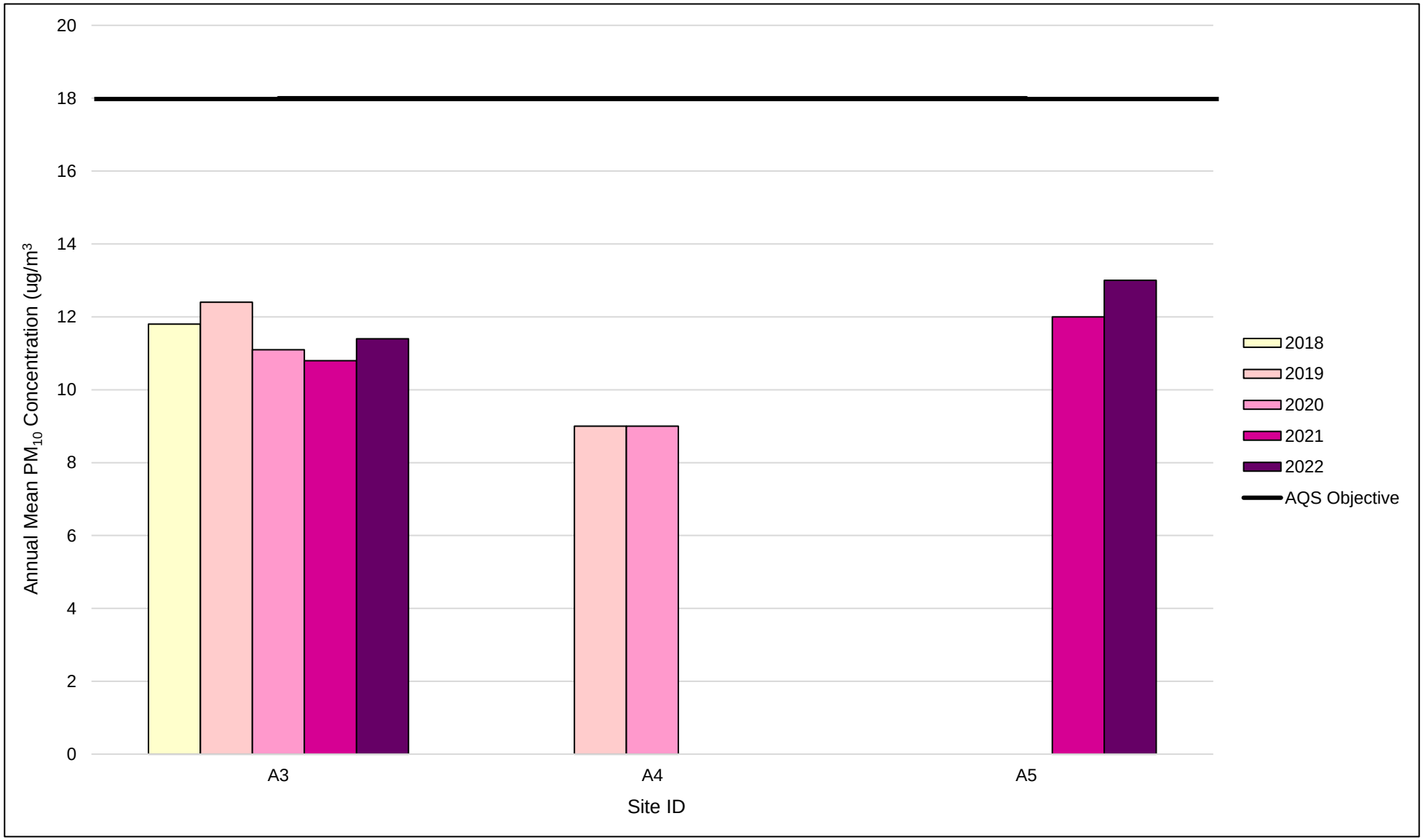


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
A3	Roadside	98	98	0	2	0 (25 µg/m^3)	0	0
A4	Roadside	N/A	N/A	-	1	0	N/A (3)	RELOCATED
A5	Other	89.9	89.9	-	-	-	0 (36 µg/m^3) (4)	2

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%).

(3) Due to technical issues with the AQMesh Monitor no PM_{10} data was obtained for this site.

(4) Due to the short period of monitoring (< 25%), no annualisation was carried out at this site and the results are indicative only.

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
A3	Roadside	98	98	6.6	7.0	6.1	5.9	5.5
A4	Roadside	N/A	N/A	-	8	5	N/A (3)	RELOCATED
A5	Other	90.1	90.1	-	-	-	5.0 (4)	7.0

Notes:

Exceedances of the $PM_{2.5}$ annual mean objective of 10 $\mu g/m^3$ 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% (shown in blue).

All means at A3 have been corrected ($PM_{2.5}$ multiplied by 1.06) in line with the Scottish Government Equivalence Study To Investigate Particulate Matter Monitoring In Scotland Using The Fidas 200.

See Appendix C for details.

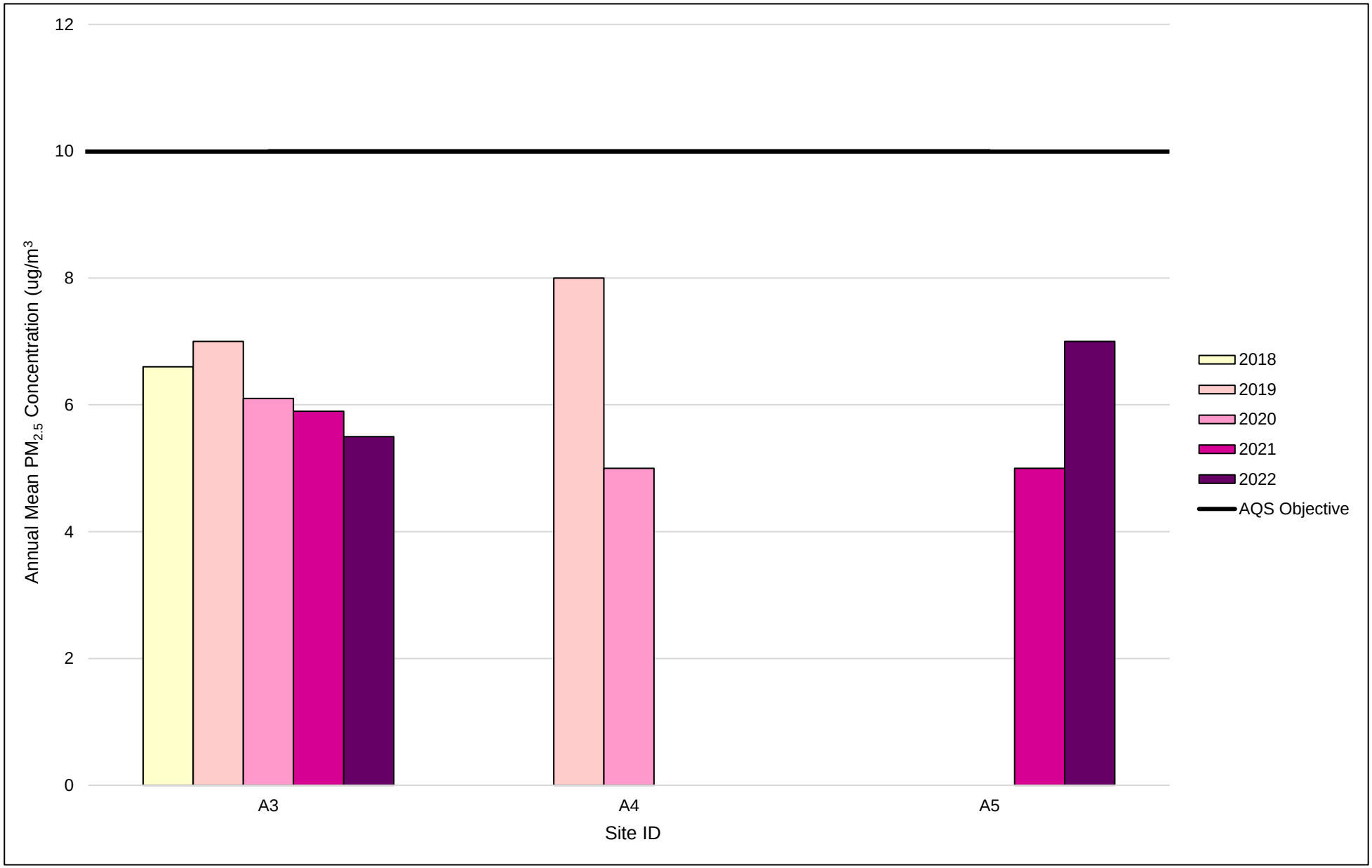
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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%).

(3) Due to technical issues with the AQMesh Monitor no $PM_{2.5}$ data was obtained for this site.

(4) Due to the short period of monitoring (< 25%), no annualisation was carried out at this site and the results are indicative only.

Figure A.4 - Trends in Annual Mean $PM_{2.5}$ Concentrations



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)	Comments
DT1	15.6	16.1	29.3	10.9	15.4	10.1	13.3	16.3	21.5	21.3	22.5	27.1	18.3	23.0	
DT2	15.4	21.2	30.0	10.6	8.2	10.5	8.2	28.0	27.0	38.3	-	32.6	20.9	26.3	
DT3	17.6	16.6	27.9	-	-	11.5	6.6	21.0	-	14.3	20.4	20.8	17.4	21.9	
DT4	15.2	18.4	21.5	8.5	5.9	10.3	6.3	6.7	17.5	14.0	15.8	13.6	12.8	16.1	
DT6	9.3	12.1	21.9	12.3	7.2	11.1	6.3	12.7	16.3	13.6	13.6	17.6	12.8	16.2	
DT7	-	-	-	-	-	6.6	5.2	9.1	11.2	10.8	14.3	11.9	9.9	12.6	
DT9	-	9.3	11.9	4.2	2.3	3.2	4.9	-	8.8	8.4	9.6	12.3	7.5	9.4	
DT11	11.4	16.1	27.0	11.7	14.6	15.0	11.2	19.7	17.8	16.4	22.4	28.3	17.6	22.2	
DT12	13.8	19.8	28.5	15.3	16.4	11.4	12.2	21.3	-	21.3	25.4	21.3	18.8	23.7	
DT14	20.8	26.2	28.4	13.3	16.6	17.3	13.2	23.4	17.5	18.8	23.1	29.9	20.7	26.1	
DT15	18.0	26.3	30.2	13.6	9.5	14.1	17.3	19.4	-	20.7	24.0	28.7	20.2	25.4	
DT17	18.0	15.4	21.2	12.6	7.0	12.9	7.3	17.3	14.7	14.5	20.4	17.4	14.9	18.8	
DT24	13.6	15.6	26.8	18.2	9.8	12.3	13.8	20.5	26.8	16.9	19.0	21.2	17.9	22.5	
DT27	13.5	17.3	29.9	14.9	18.7	17.7	17.0	23.1	26.1	18.1	25.5	22.0	20.3	25.6	
DT32	6.7	9.8	7.7	3.0	2.6	4.0	5.4	6.3	4.3	7.6	10.4	12.7	6.7	8.5	
DT33	4.4	8.3	14.3	4.0	5.8	2.8	2.7	6.3	2.1	6.9	12.0	11.6	6.8	8.5	
DT44A	16.2	19.1	23.6	12.4		13.1	7.9	12.6	16.1	15.9	19.7	18.4	-	-	Triplicate Site with DT44A, DT44B and DT44C - Annual data provided for DT44C only

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)	Comments
DT44B	19.1	18.9	25.6	10.5	16.1	26.8	9.0	17.3	12.1	17.0	21.7	13.5	-	-	Triplicate Site with DT44A, DT44B and DT44C - Annual data provided for DT44C only
DT44C	17.4	19.7	27.8	11.2	7.4	14.7	9.0	19.9	13.6	11.8	19.8	15.9	16.2	20.4	Triplicate Site with DT44A, DT44B and DT44C - Annual data provided for DT44C only

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 Within East Ayrshire Council During 2022

East Ayrshire Council has identified two new potential developments or biomass plant sources that required an Air Quality Assessment (AQA) within the reporting year of 2022. Egger Ltd, Barony Road, Auchinleck, (Planning Application No: 21/0616/PP) is 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 is acknowledged that this application is referred to in Chapter 5: Planning Applications. 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 in due course and review it in the 2023 APR. This documentation is still outstanding on East Ayrshire's planning portal, thus it will be reviewed in the 2024 APR.

Additional Air Quality Works Undertaken by East Ayrshire Council During 2022

East Ayrshire Council has located two additional NO_2 diffusion tubes, DT7 and DT9, to the existing passive monitoring network in 2022. The tubes are located at Ochiltree Junction at Main Street and A70, and Townhead/ Glaisnock Street Junction Cumnock, respectively.

QA/QC of Diffusion Tube Monitoring

East Ayrshire Council's diffusion tubes in 2022 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. In the AIR-PT intercomparison scheme for comparing spiked NO_2 diffusion tubes, GSS obtained 4 rounds graded 100% and 1 round at 50% between September 2020 and February 2022. Therefore, calculating a combined score of 90% which is subsequently determined to be 'satisfactory' based on the z-score system.

Local authority co-location studies which use tubes supplied by GSS with the 20% TEA in water preparation method in 2022, with 3 studio rated as 'good', as shown by the precision summary results. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Tubes are considered to have a 'good' precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

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 2022 throughout East Ayrshire was not completed in adherence with the 2022 Diffusion Tube Monitoring Calendar, therefore changeovers conducted in January, April, May, November and December were not in line with Defra guidance. As such, there is a degree of certainty surrounding the monitoring results provided.

Diffusion Tube Annualisation

The LAQM.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 DT7 required annualisation due to insufficient data capture in 2022. The site reported data capture of 58.3% with over 3 months of data during the 2022 monitoring period in line with the Diffusion Tube Monitoring Calendar which was sufficient for annualisation.

Annualisation was completed using version 3.0 of the 'Diffusion Tube Data Processing Tool'. Four long-term, established continuous monitoring stations were used to annualise the data:

- Edinburgh St Leonards;

- Glasgow Townhead;

- Peebles; and

- Grangemouth Moray.

The continuous background monitoring sites were suitable to use as they all had >85% data capture and therefore could be used for annualisation. Table C.1 presents the annualisation summary, taken from the 'Diffusion Tube Data Processing Tool'.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Edinburgh St Leonards	Annualisation Factor Glasgow Townhead	Annualisation Factor Peebles	Annualisation Factor Grangemouth Moray	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT7	1.1097	1.0123	0.9688	0.9695	1.0151	9.9	10.0

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

East Ayrshire Council have applied a local bias adjustment factor of 1.26 to the 2022 monitoring data. A summary of bias adjustment factors used by East Ayrshire Council over the past five years is presented in Table C.. The local bias adjustment factor was applied to the 2022 monitoring data for East Ayrshire Council due to:

- East Ayrshire Council co-location site had 'good' overall precision for the diffusion tubes, 'good' overall data capture and also had high quality chemiluminescence results (i.e.to national AURN standards);
- Half (3 out of 6) sites used for the national bias adjustment had 'poor precision';
- A reduced number of sites used for national bias adjustment were located in Scotland, compared to previous years; and
- Local bias adjustment factor is deemed more representative for East Ayrshire.

One co-location study is carried out by East Ayrshire Council Council, triplicate site DT44A, DT44B and DT44C, alongside automatic monitor St Marnock Street in Kilmarnock. The results from the co-location study are submitted to the Local Air Quality Management (LAQM) Helpdesk for inclusion in the national co-location studies database. The output from the local bias adjustment spread sheet is shown in Table C.3. The national factor for GSS 20% TEA in water, as presented in the Diffusion Tube Bias Factors Spreadsheet v06/23, was 1.05 based on 6 studies. The National Bias Adjustment Spreadsheet is presented in Figure C.1.

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	Local	-	1.26
2021	Local	-	1.06
2020	National	03/21	0.96
2019	National	03/20	0.86
2018	National	03/19	0.86

Table C.3 – Local Bias Adjustment Calculation

Variables	Local Bias Adjustment Input 1
Periods used to calculate bias	9
Bias Factor A	1.26 (1.08 - 1.51)
Bias Factor B	-21% (-34% - -7%)
Diffusion Tube Mean (µg/m^3)	16.4
Mean CV (Precision)	9.8%
Automatic Mean (µg/m^3)	20.7
Data Capture	100%
Adjusted Tube Mean (µg/m^3)	21 (18-25)
Overall Diffusion Tube Precision	Good Overall Precision
Overall Continuous Monitor Data Capture	Good Overall Data Capture
Local Bias Adjustment Factor	1.26

NO_2 Fall-off with Distance from the Road

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

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 respectively, with both also undertaking the Local Site Operative (LSO) duties involving routine servicing and provision for emergency callouts as required. East Ayrshire Council do undertake LSO duties where necessary, often with regards to 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 the Environmental Health Team at East Ayrshire Council or 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 NO_X 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, alongside East Ayrshire Council, with a monthly data validation assessment conducted. Copies of the calibration reports, calibration gas logs and engineer's reports

are retained on file. These can be obtained by contacting the Environmental Health at the Council.

Data is examined by Ricardo and East Ayrshire Council on a daily basis to ensure faults are reported and to screen out erroneous and unusual measurements, with increased concentrations, defined by peaks, investigated further in accordance with the guidance in Chapter 7 of LAQM.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, involving a critical review of all information relating to a particular data set in order to verify, amend or reject the data ensuring it is reliable and consistent. Post data ratification, Ricardo present the final data set to be used in 'Review and Assessment Processes.'

The data presented in the report has been ratified by Ricardo and East Ayrshire Council, and data is available upon request to the Environmental Health Team at the Council as well as via the Scottish Air Quality Website.

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

Data analysis in 2022 for automatic monitors St Marnock Street in Kilmarnock (A3) and Barony Campus in Cumnock (A5) is undertaken by Ricardo. PM_{10} and $PM_{2.5}$ data have been corrected using factors (PM_{10} divided by 0.909 and $PM_{2.5}$ multiplied by 1.06) identified by the 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 2022.

Figure C.1 – National Bias Adjustment Factor Spreadsheet (06/23)

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 06/23

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2023

LAQM Helpdesk Website

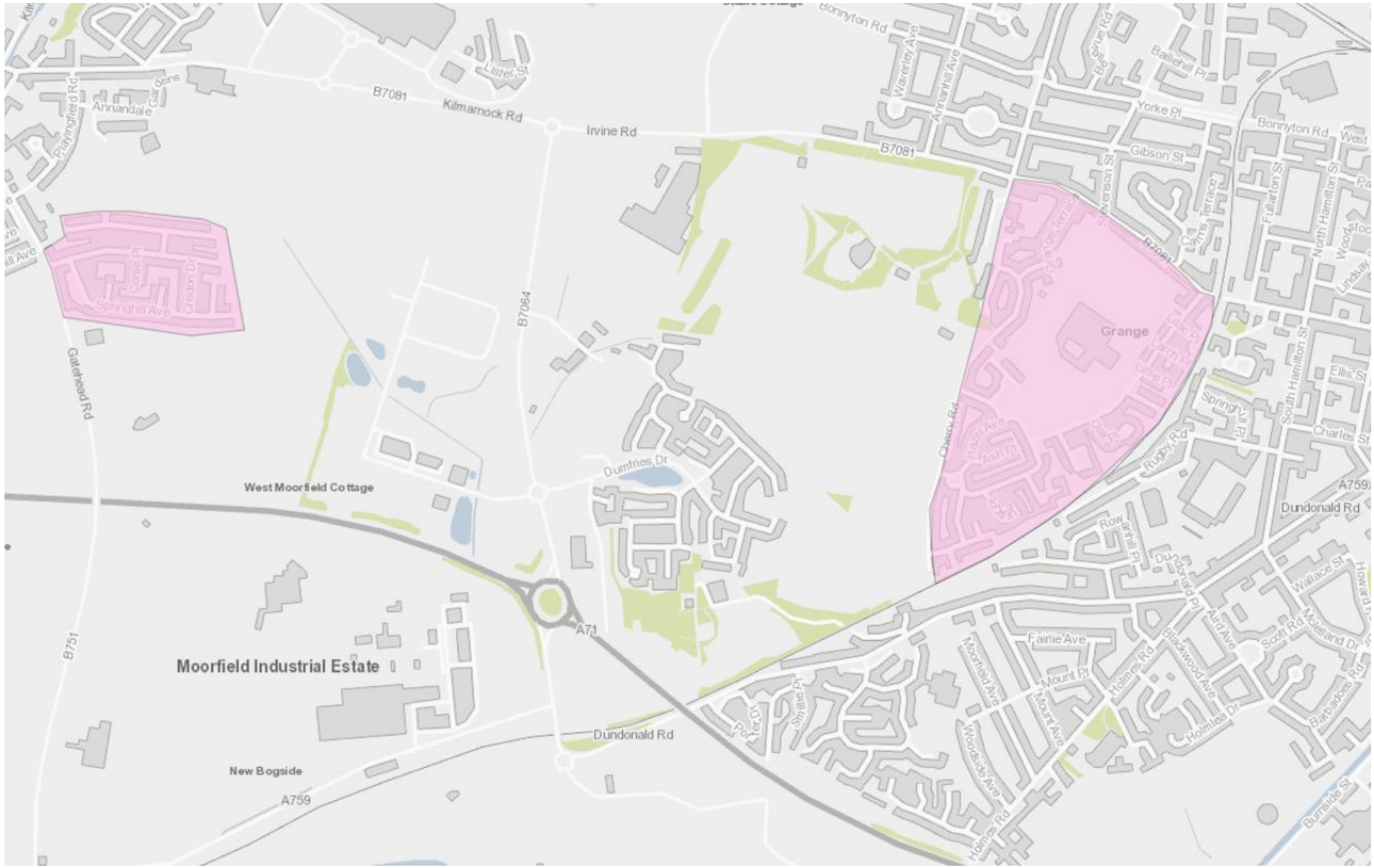
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	**Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.**
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

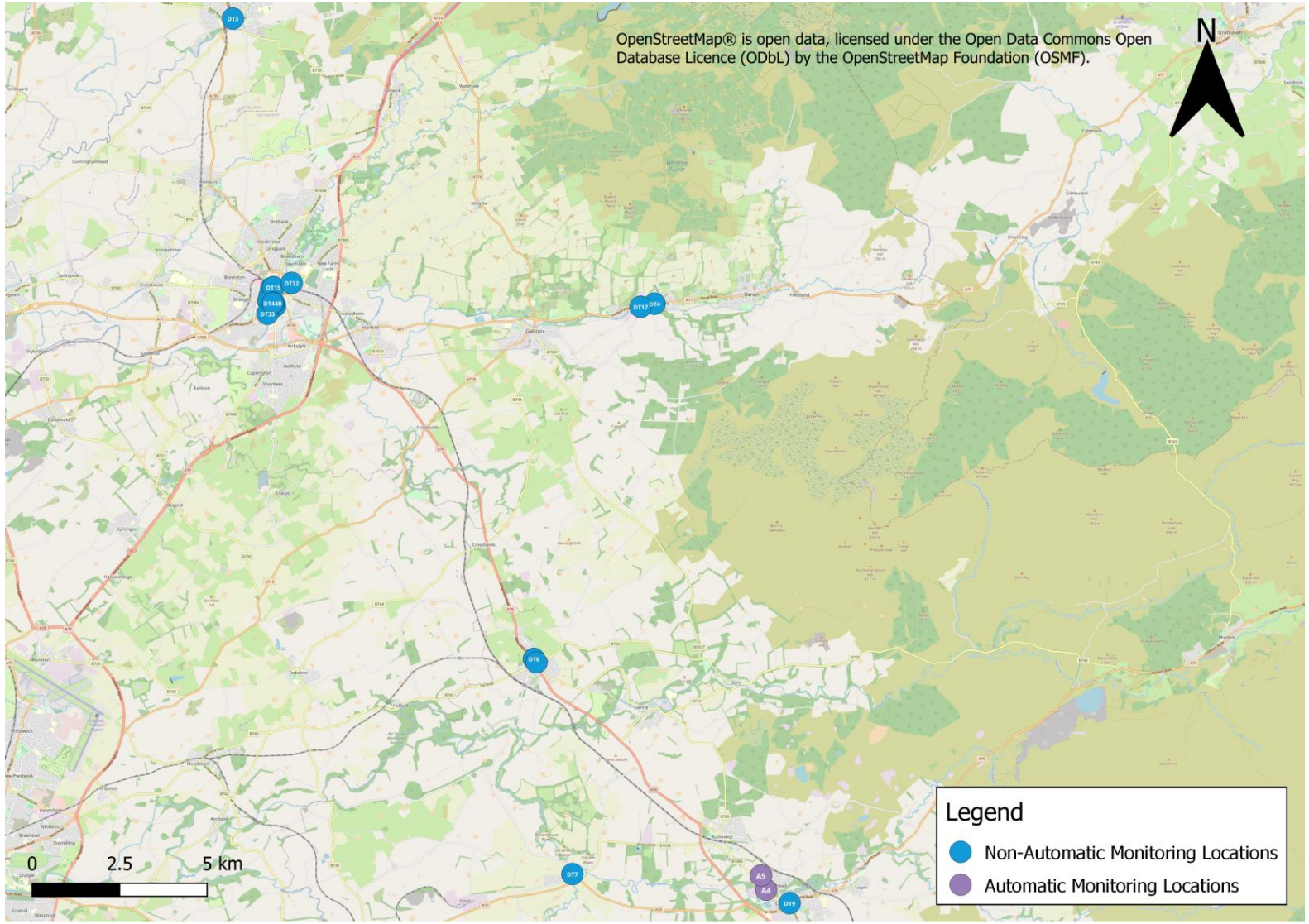
Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	12	30	27	11.9%	G	0.89
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	11	14	19	-24.3%	P	1.32
Glasgow Scientific Services	20% TEA in Water	2022	KS	Glasgow City Council	12	41	39	6.6%	G	0.94
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	12	16	21	-25.1%	P	1.33
Glasgow Scientific Services	20% TEA in Water	2022	UB	Glasgow City Council	12	14	17	-15.8%	P	1.19
Glasgow Scientific Services	20% TEA in water	2022	KS	Marylebone Road Intercomparison	12	55	42	28.6%	G	0.78
Glasgow Scientific Services	20% TEA in water	2022		**Overall Factor[3] (6 studies)**				Use		1.05

Figure C.2 – Smoke Control Areas (SCAs) in Kilmarnock and Crosshouse



Appendix D: Maps of Monitoring Locations

Figure D.1 – Map of All Monitoring Sites in East Ayrshire

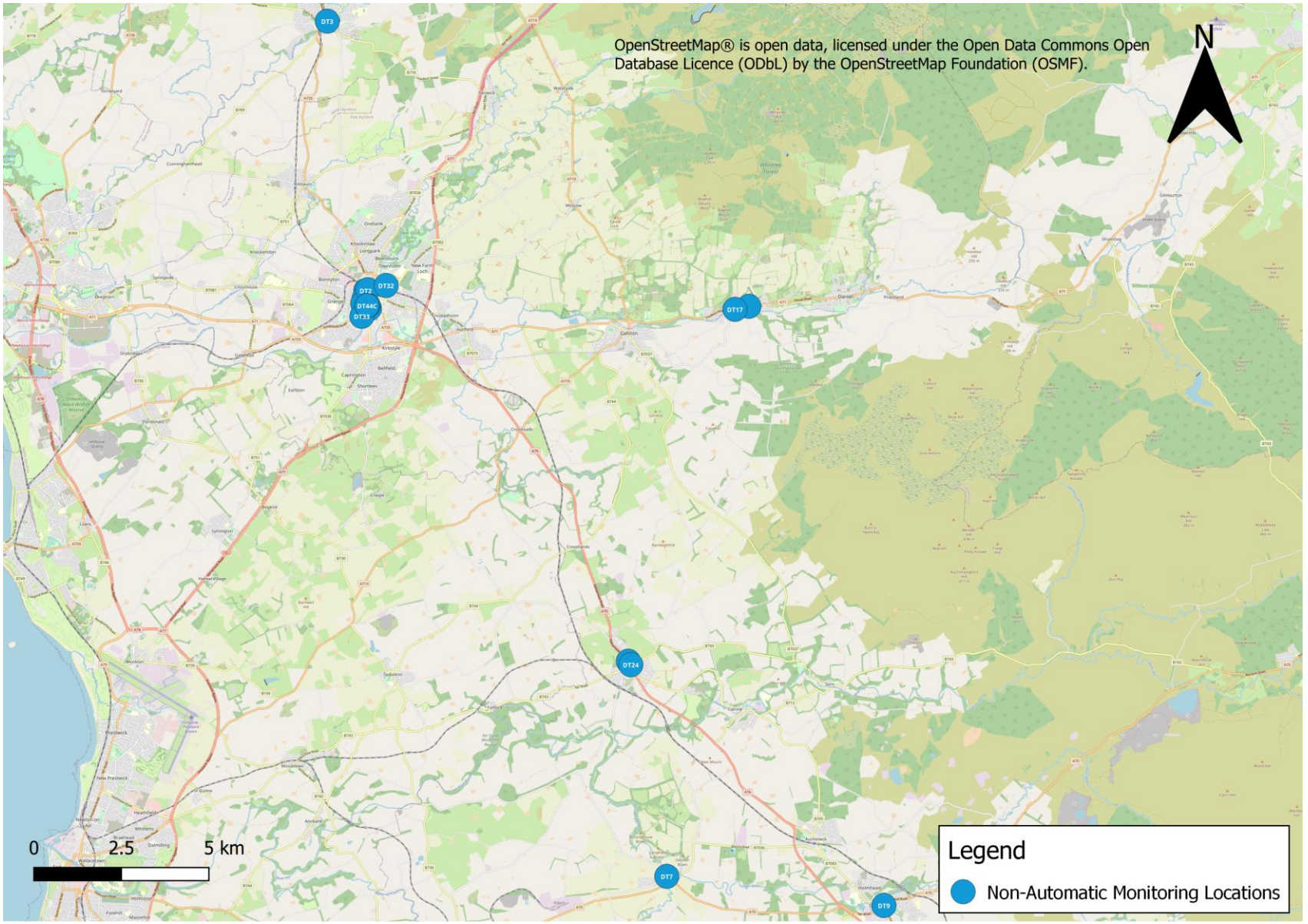


NOTE: Automatic stations paired with non-automatic monitoring stations, thus overlap on Figure D.1:

- A3 – DT44A; DT44B; DT44C

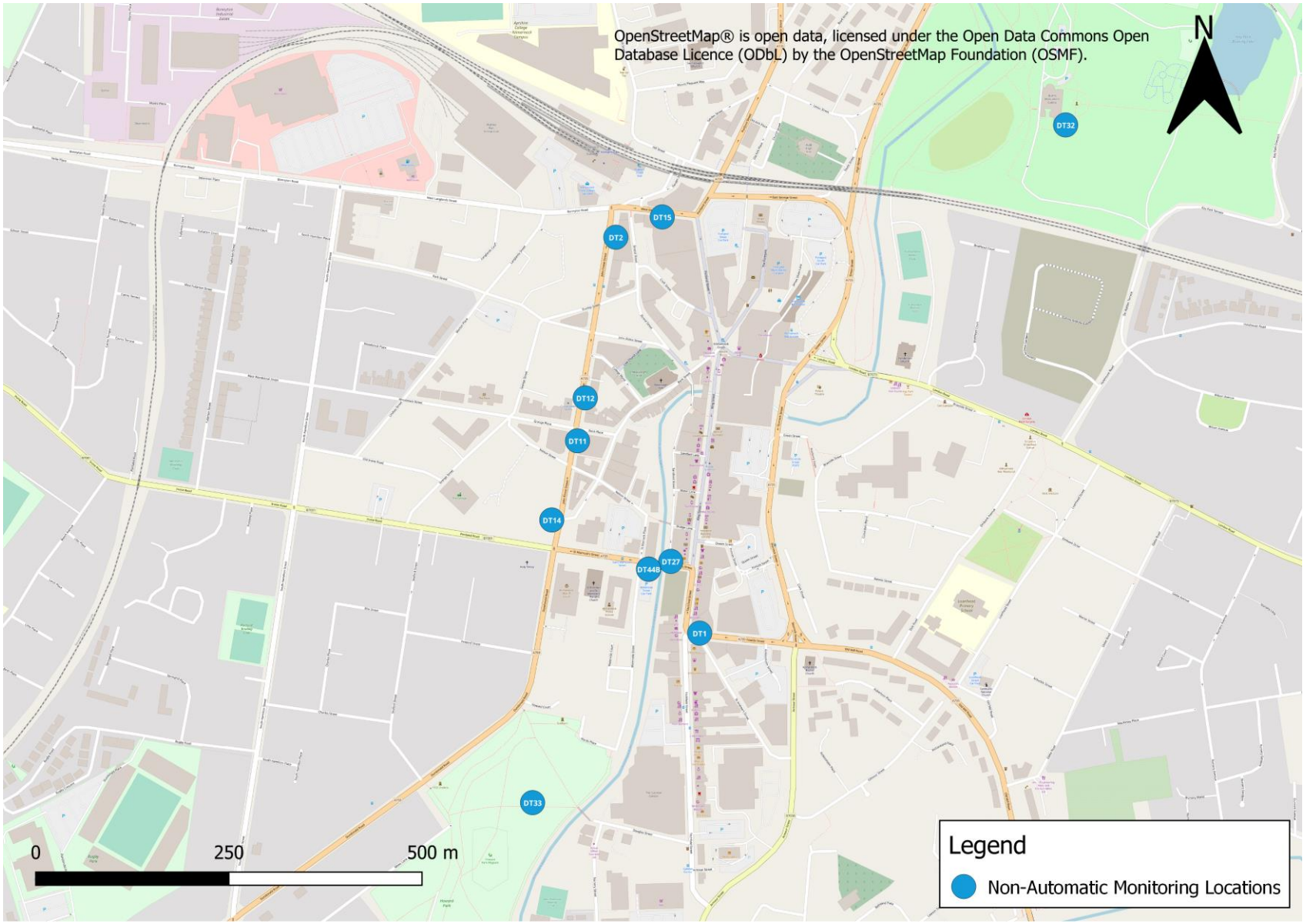
Figure D.2 – Map of All Automatic Sites in East Ayrshire

Figure D.3 – Map of All Non-Automatic Sites in East Ayrshire



NOTE: Non-automatic monitoring stations overlap on Figure D.3 due to close proximity and map scale, thus labels are not all shown. Individual area maps are below for clarity.

Figure D.4 – Map of Non-Automatic Monitoring Sites – Kilmarnock



NOTE: DT44 is a triplicate site (DT44A, DT44B, DT44C) thus only the label for DT44B is shown in Figure D.4 due to identical coordinates.

Figure D.5 – Map of Non-Automatic Monitoring Sites – Cumnock and Ochiltree

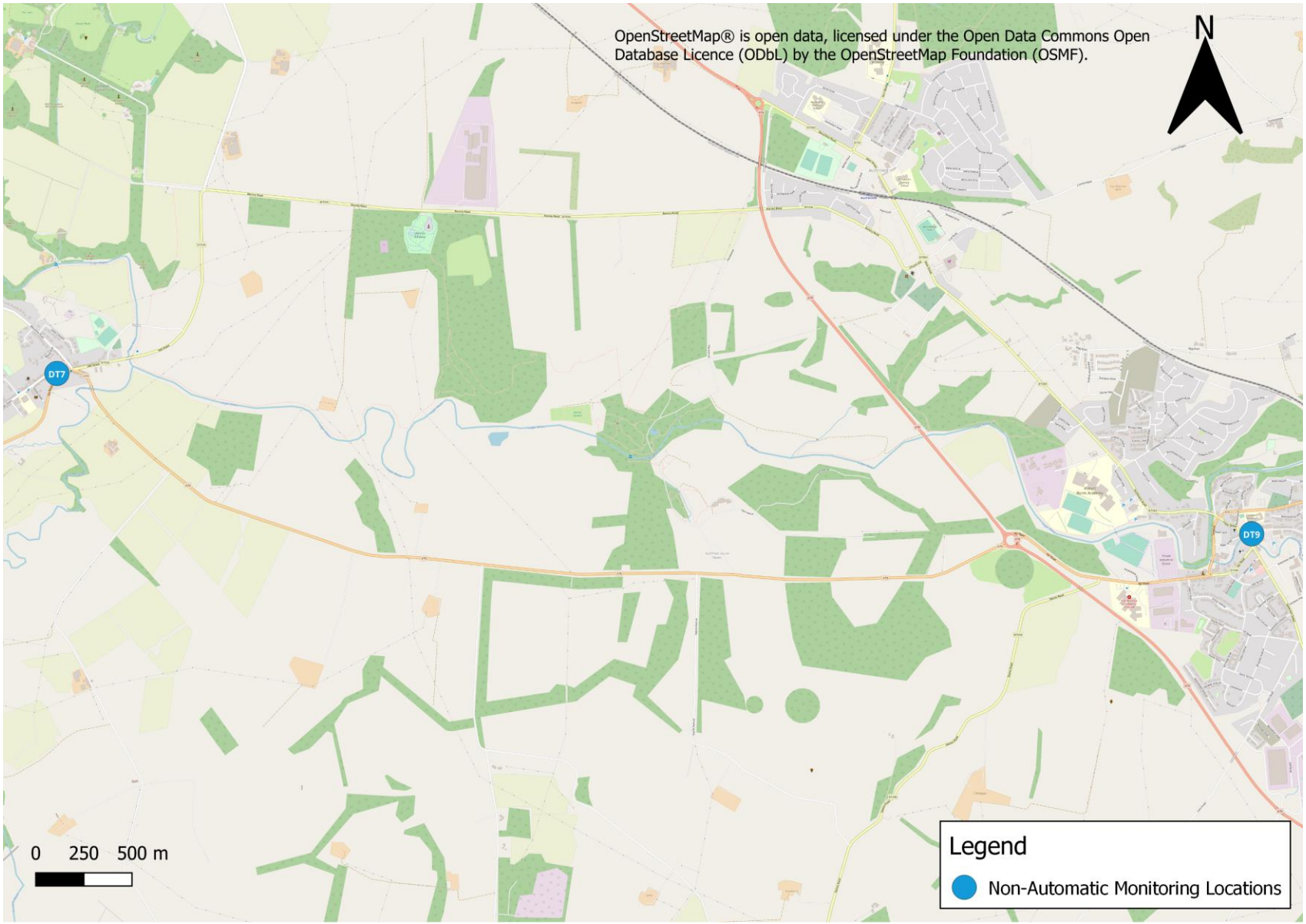


Figure D.6 – Map of Non-Automatic Monitoring Sites – Mauchline

Figure D.7 – Map of Non-Automatic Monitoring Sites – Newmilns

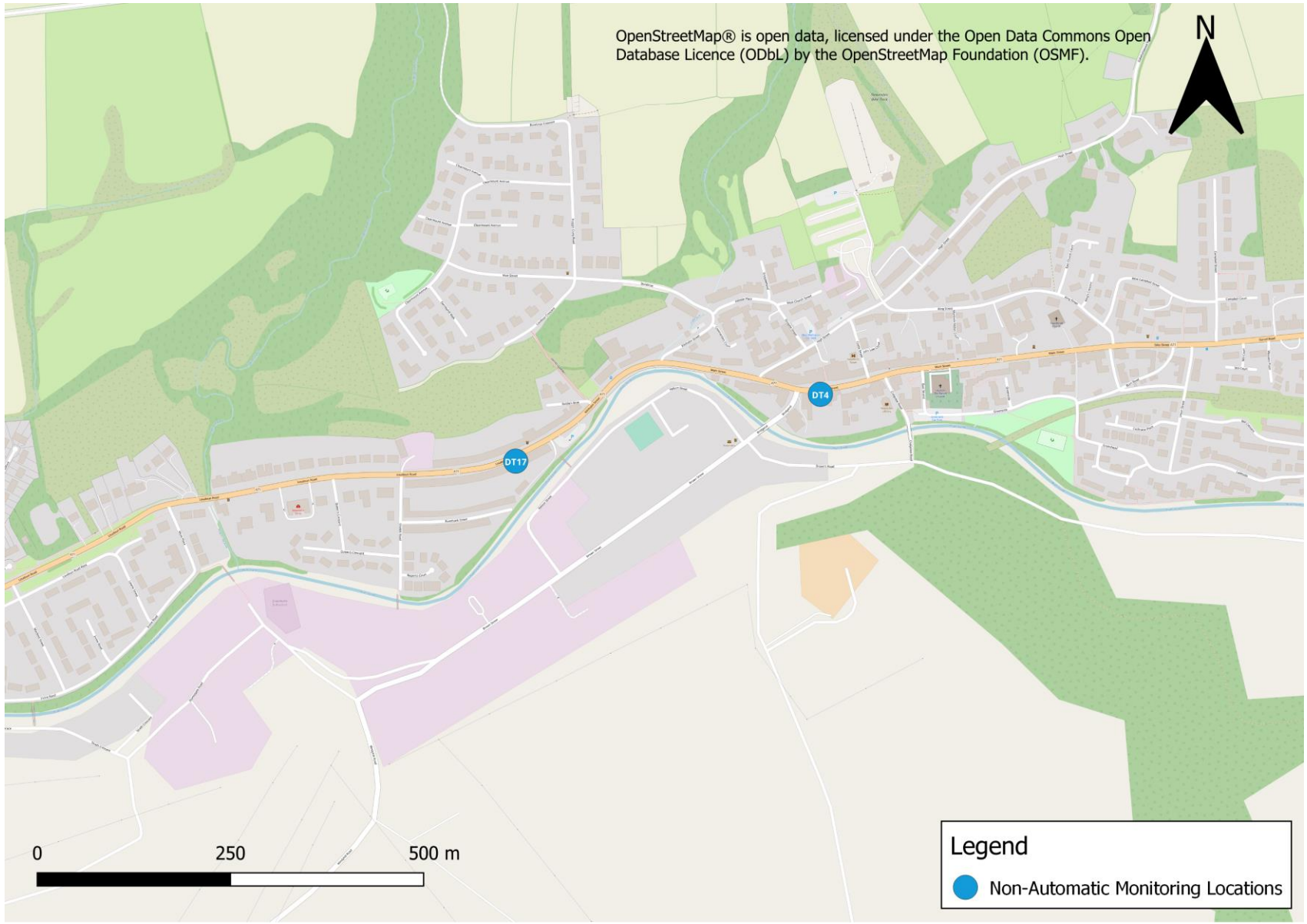
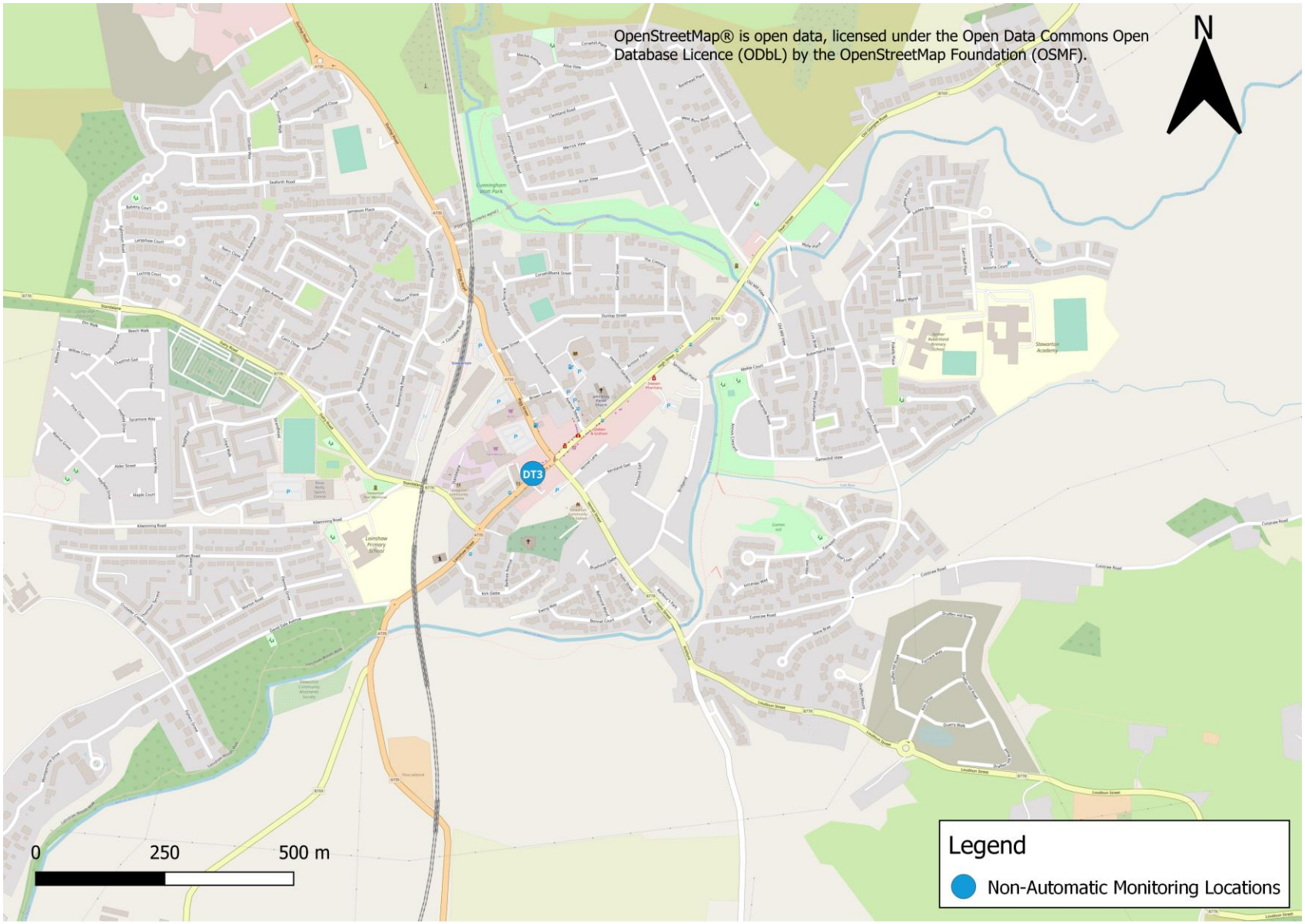


Figure D.8 – Map of Non-Automatic Monitoring Sites – Stewarton



Glossary of Terms

Abbreviation	Description
A3	Automatic Monitor - Kilmarnock St Marnock Street
A4	Automatic Monitor - Holmhead Road in Cumnock
A5	Automatic Monitor - Barony Campus in Cumnock
APR	Annual Progress Report
AQA	Air Quality Assessment
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'.
AQIA	Air Quality Impact Assessment
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.
AQ Mesh	Type of automatic monitoring instrument
AQS	Air Quality Standard
ARA	Ayrshire Roads Alliance
ATAP	Active Travel Action Plan
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
CAFS	Cleaner Air for Scotland – The Road to a Healthier Future
CAFS2	Cleaner Air for Scotland 2 – Towards a Better Place for Everyone
CHP	Combined Heat and Power
CO_2	Carbon Dioxide
COVID-19	Coronvarius-19
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport

DMP	Dust Management Plan
DPEA	Scottish Government Planning and Environmental Appeals Division
DT	Diffusion Tube
EPS	Environmental Protection Scotland
EPUK	Environmental Protection United Kingdom
EV	Electric Vehicle
EVIS	Electric Vehicle Infrastructure Strategy
GSHP	Ground Source Heat Pump
GSS	Glasgow Scientific Services
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDP	Local Development Plan
LDP2	Local Development Plan 2
LEZ	Low Emission Zone
LLA	Local Landscape Area
LNR	Local Nature Reserve
LSO	Local Site Operative
MDP	Minerals Development Plan
MLDP	Minerals Local Development Plan
NHS	National Health Service
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPF4	National Planning Framework 4
PM	Particulate Matter
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
RTPI	Royal Town Planning Institute
SCA	Smoke Control Area
SEPA	Scottish Environment Protection Agency
SLCA	Sensitive Landscape Character Area
S-Miles	School Miles
SO_2	Sulphur Dioxide
SPG	Supplementary Planning Guidance
SPP	Scottish Planning Policy
SSSI	Sites of Special Scientific Interest
SWT	Scottish Wildlife Trust
TEA	Triethanolamine
UK	United Kingdom
UKAS	United Kingdom Accreditation Service
WFH	Working From Home

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