Annual Progress Report (APR)

2022 Air Quality Annual Progress Report (APR) for
South Lanarkshire Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

July 2022

Customer:
South Lanarkshire Council

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Contact:
Andrew Lewin, Gemini Building, Fermi Avenue, Harwell, Didcot, OX11 0QR, UK

T: +44 (0) 1235 753 189
E: Andrew.Lewin@ricardo.com

Author:
Eilidh Morrison

Approved by:
Andy Lewin

Signed

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Ref: ED15600107

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Information	South Lanarkshire Council Details
Local Authority Officer	Bronah Byrne
Department	Fleet and Environmental Services
Address	Ground Floor Montrose House 154 Montrose Crescent Hamilton ML3 6LB
Telephone	01698 455 373
E-mail	Bronah.Byrne@southlanarkshire.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in South Lanarkshire Council

Air Quality is generally good in most parts of South Lanarkshire. Monitoring network data collected during 2021 shows an overall downward trend in the measured concentrations of the main pollutants of concern. Whilst the concentrations measured in 2021 are not as low as in 2020, which experienced a large decrease due to the impact of the COVID measures, all of the concentrations measured remain lower than those from 2019.

There are some locations where local sources of pollution contribute to poor air quality and action is required. Three Air Quality Management Areas (AQMA) have been declared in South Lanarkshire at Whirlies East Kilbride, Lanark and Rutherglen.

South Lanarkshire Council is committed to working towards achieving compliance with health-based air quality objectives. The main source of localised air pollution in South Lanarkshire is road traffic emissions; and to a lesser extent, emissions from industrial processes and commercial/domestic fuel combustion. The main pollutants of concern are nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$).

This Annual Progress Report provides a summary of the air quality measurements conducted across South Lanarkshire in 2021; it also considers any new potential sources of air pollution and if any further action is required to protect or improve air quality within South Lanarkshire.

All annual mean Nitrogen Dioxide (NO_2) concentrations measured at automatic monitoring sites within South Lanarkshire were below the annual mean objective of 40 µg/m^3 during 2021. The last five years' measurements indicate a downward trend in measured NO_2 concentrations at all automatic sites; with a sharp decline between 2019 and 2020 attributable to reduced road traffic emissions during the nationwide pandemic restrictions in 2020.

Only four 1-hour mean NO_2 concentrations in excess of 200 µg/m^3 objective were measured at East Kilbride Whirlies during 2021; all measurement sites were therefore compliant with the permitted number of exceedances of the 1-hour short-term mean objective[1].

The 18 µg/m^3 Scottish PM_{10} annual mean objective was not exceeded at any of South Lanarkshire Council's seven automatic monitoring sites in 2021. All measured PM_{10} concentrations were higher in 2021 when compared to 2020 (also attributable to reduced road traffic emissions during the nationwide pandemic restrictions in 2020).

No PM_{10} daily means greater than 50 µg/m^3 were measured at any monitoring site during 2021. All measurement sites were therefore compliant with the 24-hour short-term mean objective[2].

South Lanarkshire Council measured $PM_{2.5}$ concentrations at eight of their automatic sites in 2021. No exceedances of the Scottish $PM_{2.5}$ annual mean objective[3] was measured.

Based on available information regarding planned developments, South Lanarkshire Council have not identified any locations where there may be a risk of the air quality objectives being exceeded.

[1] 1-hr mean 200 µg/m^3 standard is not to be exceeded more than 18 times per year

[2] 24-hr mean 50 µg/m^3 not to be exceeded more than 7 times a year

[3] Exceedances of the $PM_{2.5}$ annual mean objective of 10µg/m^3

Actions to Improve Air Quality

Active Travel

The **WALKCYCLE4AIR App** and competition was launched in partnership with North Lanarkshire Council. The App aims to encourage people out of their cars whilst enjoying fresh air and cutting their emissions at the same time. The App was downloaded over 1,100 times last summer. More information is available here: Treasure trail helps address air pollution - South Lanarkshire View

Lanark on the Move project was piloted – primary schools and communities around Lanark worked together to inspire locals to travel responsibly for the environment. More information is available here: On the Move to cleaner air in Lanark - South Lanarkshire View *(Air Quality Action Plan South Lanarkshire Council: S15 – Investigate behaviour change initiatives)*

Love to Ride South Lanarkshire – cycling behaviour change project. This is a tailored online behaviour change programme and platform which has been proven to monitor and get more people on bikes. Love to Ride South Lanarkshire uses a combination of incentives, peer encouragement, tailored information, and community advocacy to address barriers and support inclusive cycling. A 12-month calendar of engagement and support, including 4 seasonal interventions commenced in October 2021. *(Air Quality Action Plan South Lanarkshire Council: S15 – Investigate behaviour change initiatives)*

Beat the Street Hamilton and Blantyre ran from 17th March to 28th April 2021. 10% of the local population (8,428) travelled over 133,000 miles sustainably across their local towns as part of the active and sustainable travel promotion initiative. *(Air Quality Action Plan South Lanarkshire Council: S15 – Investigate behaviour change initiatives)* An award celebration was held for David Livingston Memorial primary school.

Beat the Street Cambuslang and Rutherglen ran between 17th September and 27th October 2021 when 8,535 of the local population participated. Post-game analysis indicated that 80% of participants are likely or very likely to continue to walk, cycle or wheel for local journeys. *(Air Quality Action Plan South Lanarkshire Council: S15 – Investigate behaviour change initiatives)*

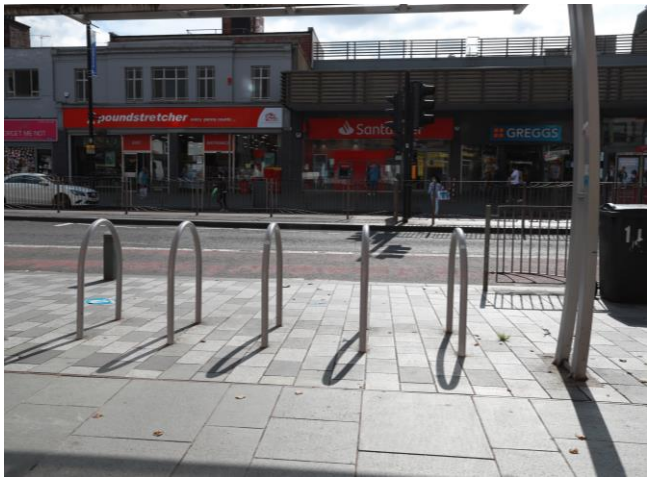
South Lanarkshire Council worked in partnership with South Lanarkshire College to support the **expansion of their cycle hire scheme**. SLC supported the college in their purchase of new equipment as well as assisting with training to help promote cycling for both students and staff at the College. (*Air Quality Action Plan South Lanarkshire Council: S15 – Investigate further behaviour change initiatives)*

South Lanarkshire runs an annual **Cycle-To-Work** scheme and in 2021 this took place between 30th April and 30th July. In recognition of COP26, a second application period was made available to staff for the month of November 2021.

South Lanarkshire also runs **Walk to School** initiatives and works on expanding the number of schools participating in this initiative. In this academic year 58 schools delivering training to Level 1 and 49 schools training to Level 2 on-road with a further 8 schools delivering Level 2 style training in the playground

Ongoing improvements and expansion of the cycling and walking network continued throughout 2021 and a link to the current network is available via the **Air That We Breathe GIS Story map** resource: The air that we breathe (arcgis.com).

Information on some of the improvements is available via: Investing in Active Travel in EK - South Lanarkshire View. These improvements include segregated cycle and pedestrian paths and new cycle parking installed across South Lanarkshire.



Tackling Engine Idling

An **engine idling** promotion campaign was launched for Clean Air Day 2021, with graphics being developed and distributed at suitable locations such as streetlamp post banners at schools, school railing banners and lamp post posters throughout the council area. The campaign put the emphasis on those being affected by poor air quality from engine idling – whether that be school children, children playing sports or staff and customers at hot food takeaway outlets. The campaign branding has now been refreshed with '30 good reasons to switch off your engine' for use around schools as well as '11 good reasons to turn off your engine' around sports centres. The new branding has been very well received.

Improvements to Vehicle Emissions

SLC has facilitated the **expansion of the electric vehicle charging network**. 'Project PACE' significantly increased the number of electric vehicle charging hubs during 2021. Read more here: Electric Vehicle charging hits new milestone - South Lanarkshire View

The ECO Stars scheme was extended in 2021 to include taxis. The scheme aims to raise awareness among companies of the important role they can play in helping improve local air quality by enhancing the performance of their fleet. More information is available here: Commercial vehicle operators save costs and save the planet - South Lanarkshire View. *(Air Quality Action Plan South Lanarkshire Council: S9 – Encourage the uptake of low emission vehicles; L10 – Engage local businesses in eco fleet initiatives and travel planning)*

Greening of Public Spaces

Working in partnership with a local community gardening group 'Grow 73' a number of large wooden **planters with pollution fighting plants** were installed adjacent to a busy junction. The project has been running for several years now and Grow 73 continue to maintain the planters and they have also engaged with the Royal Horticultural Society who have supported the project by providing advice, compost and additional plants.

Local Priorities and Challenges

Blantyre

A detailed assessment of air quality at Glasgow Road, Blantyre indicated that there may be exceedances of the NO_2 annual mean concentration at locations where there is relevant exposure at first floor height above commercial properties in Blantyre town centre. The maximum NO_2 annual mean concentration is 40.8 μ/m^3 which is considered a marginal exceedance of the 40 μ/m^3 objective and modelling indicates that the area of exceedance is very localised.

The conclusion from the modelling is uncertain based on the available evidence; as assumptions regarding emission from vehicles using parking bays in the town centre were required to achieve reasonable model agreement with the available NO_2 measurements. It is therefore uncertain if the modelling has represented road traffic emissions throughout the town

On the basis of the uncertainties described above: At this time South Lanarkshire Council do not consider that there is sufficient evidence to confirm if an Air Quality Management Area (for exceedances of the NO_2 annual mean objective) should be declared at the location of the Glasgow Road/Station Road junction in Blantyre.

South Lanarkshire Council has deployed additional NO_2 monitoring in Blantyre to provide better evidence regarding the potential extent of localised NO_2 exceedances. Additional NO_2 monitoring began in January 2022 and will run until January 2023. This monitoring utilises an AQMesh sensor to obtain high resolution data at DT32, as well as passive monitoring diffusion tubes at ten locations throughout Glasgow Road. The diffusion tube locations include co-location at the DT32 site, co-location with the AQMesh sensor and triplicate diffusion tubes at first floor height.

If appropriate following review of NO_2 measurement data in future years; South Lanarkshire Council will repeat the detailed assessment with the intention that the additional measurement data will support a more robust modelling assessment and associated model verification. Measures to discourage vehicle idling are also being investigated in the meantime to reduce localised vehicle emissions.

Hamilton

A detailed assessment of NO_2, PM_{10} and $PM_{2.5}$ was submitted to Defra for review in July 2021. The results of the dispersion modelling study indicated that:

- NO_2 annual mean concentrations in excess of the 40 µg/m^3 were modelled (2019 assessment year) at the window of one ground floor residential property on Low Patrick Street where there may be relevant human exposure.
- There were no exceedances of the PM_{10} or $PM_{2.5}$ air quality objectives during 2019.

There were however uncertainties regarding the NO_2 measurement data at Low Patrick Street used to verify the dispersion model outputs. During 2019, the diffusion tube sampler was located close to operational boiler flue pipes on the adjacent building, so may not be measuring NO_2 concentrations representative of other nearby roadside locations. The Detailed Assessment concluded that, at this time, South Lanarkshire Council are not certain that there is sufficient evidence to confirm if an Air Quality Management Area (for exceedances of the NO_2 annual mean objective) should be declared at Low Patrick Street in Hamilton.

The Low Patrick Street diffusion tube site was re-located in 2021. Measured NO_2 concentrations immediately decreased; it is however likely that measured concentrations in both 2020 and 2021 are lower than historic concentrations given the impact of the COVID-19 pandemic. Traffic activity may return to 'business as usual' levels in 2022.

No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ air quality objectives were measured at locations where there is relevant exposure during 2021. South Lanarkshire Council will continue to measure NO_2 at this location; and review and assess air quality in Hamilton.

How to Get Involved

The public can obtain further information relating to air quality in South Lanarkshire on the Council Website (Air quality - South Lanarkshire Council).

More information about air quality in Scotland and actions that members of the public can take to help reduce air pollution is available at http://www.scottishairquality.scot/.

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1 Local Air Quality Management

This report provides an overview of air quality in South Lanarkshire Council during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by South Lanarkshire 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 an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by South Lanarkshire Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=386 and in Appendix D.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Whirlies Roundabout	PM_{10} annual mean	East Kilbride	An area encompassing the Whirlies Roundabout, East Kilbride between the A725, A749 and B783 and extending along all the roads leading in to the roundabout.	Whirlies AQMA, details available at: http://www.scottishairquality.co.uk/laqm/aqma?id=386
Rutherglen	PM_{10} annual mean	Rutherglen	An area encompassing all areas of Rutherglen is designated.	Rutherglen AQMA, details available at: http://www.scottishairquality.co.uk/laqm/aqma?id=386
Lanark Town Centre	NO_2 annual mean	Lanark	An area encompassing all areas of Lanark is designated. SLC are working towards the revocation of the Lanark AQMA, supported by a Detailed Assessment submitted in 2022.	Lanark AQMA, details available at: http://www.scottishairquality.co.uk/laqm/aqma?id=386

2.2 Cleaner Air for Scotland 2

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

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

2.2.1 Placemaking – Plans and Policies

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

South Lanarkshire Council Environmental Services has a representative at the Council's Strategic Environmental Assessment Working Group. This group reviews all new and revised policies, plans and strategies introduced by the Council. This has proved invaluable in promoting awareness of air quality issues and embedding measures to support the improvement and protection of air quality going forward. Through previous air quality action planning projects Environmental Services have developed a strong working partnership with South Lanarkshire Leisure and Culture Services (SLLC), particularly the Active Schools teams. Projects such as Beat the Street and the E-Bike Physical Activity Prescription Trial have resulted in an environmental working group being set up within SLLC. Lanark on the Move project was developed by SLLC as a result of successful partnership working.

2.2.2 Transport – Low Emission Zones

Local authorities working with Transport Scotland and SEPA will look at opportunities to promote zero-carbon city centres within the existing LEZs structure. Following the Scottish National Low Emission Framework (NLEF) Screening Determination compiled in 2020, and on the basis of a continuing decline in pollutant concentrations, South Lanarkshire Council's

opinion that a Low Emission Zone is neither required or a suitable option for improving ambient air quality in the Council area.

2.2.3 Local Transport Strategy

South Lanarkshire Council is due to renew the Local Transport Strategy in 2023 and it is anticipated that zero carbon ambitions will be embedded within the revised Strategy to reflect the Councils strong commitment to a zero-carbon future. A Climate Change and Sustainability Committee has made available a Climate Emergency Fund and this has been used to support some of SLC's sustainable travel projects in alignment with air quality action planning.

2.3 Progress and Impacts of Measures to address Air Quality in South Lanarkshire Council

South Lanarkshire Council has taken forward a number of measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. South Lanarkshire Council have adopted a combined Air Quality Action Plan for the three AQMAs in South Lanarkshire and this can be accessed here:

https://www.southlanarkshire.gov.uk/downloads/file/12278/air_quality_action_plan

Progress on the following measures has been slower than expected due to Covid-19 lockdowns, traffic patterns have been disrupted and annual trends were very different to usual. Monitoring will continue in this locality with 2022 anticipated to be a more reflective year of traffic journeys.

- Lanark 5 – Review traffic and air quality patterns
- Rutherglen 4 – Air quality modelling to assist understanding of current picture

Table 2.2 – Progress on Measures to Improve Air Quality

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Strategic 1	Strengthen links with Local Transport Strategy Implementation Phase: Ongoing	Transport planning and infrastructure	Measures to ensure the air quality in the AQMAs is improved where possible and to avoid future problems are implemented via the Local and Regional Transport Strategies.	Reference to AQMAs and measures included in South Lanarkshire Council AQAP. Integration of plan with Local and Regional Transport Strategies.	Air quality is integral to South Lanarkshire's Local Transport Strategy 2013 -2023 with a commitment to improve air quality through the provision of enhanced public transport infrastructure and supporting the introduction of electric and hybrid vehicles. In addition, the Strategy outlines a commitment to encourage and facilitate uptake of active travel.	This is an ongoing measure and will be reviewed at the 2023 refresh of the Strategy.
Strategic 2	Strengthen links with Local Planning and Economic Development Implementation Phase: Ongoing	Policy guidance and development planning	Local planning considerations aim to mitigate the cumulative negative air quality impacts of new development via the Local Development Plan	Integration of South Lanarkshire Council AQAP within future versions of Local Development Plan.	South Lanarkshire Local Development Plan 2 will replace the current LDP which was adopted in 2015. LDP2 contains a clear commitment that any new development proposals will not result in, or can mitigate against, any significant adverse impact on air quality. The use of the green network and greenspace to help improve air quality is recognised within LDP2 as well as ensuring development has sustainable travel options by encouraging less reliance on private vehicles and facilitating cycling, walking and the use of public transport.	This is an ongoing measure and will continue as local policy guidance on development plans and measures evolve.
Strategic 3	Integrate Air Quality with other Council Strategies	Policy guidance and development control	Encourage opportunity for contributions towards improving local air quality and minimising negative	Inclusion of air quality outcomes in the Sustainable Development and Climate Change	The Sustainable Development and Climate Change Strategy 2017 – 2022 includes a strategic outcome to protect, enhance and respect South Lanarkshire's natural	Ongoing measure that will continue to be considered as existing and new Strategies are

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		impacts from existing and future Council strategies. Increase awareness of local air quality.	Strategy 2017 – 2022. Inclusion of air quality outcomes in the Biodiversity Implementation Plan 2018 – 2022. Inclusion of air quality outcomes in the Cycling Strategy 2015 – 2020. Inclusion of air quality outcomes in the Park and Ride Strategy 2018 – 2027.	environment with air quality integral to that outcome. The Strategy includes a case study on the air quality and active travel workshops which focused on raising awareness of air quality issues as well as the benefits of active and sustainable travel. This included related issues such as car parking and engine idling near schools. The South Lanarkshire Biodiversity Duty Implementation Plan 2018-2022 includes an action to investigate the use of green infrastructure to improve air quality. South Lanarkshire recognises the benefits of encouraging cycling and have developed a South Lanarkshire Council Cycling Strategy 2015-2020. This strategy aims to improve air quality by getting more people cycling and travelling actively. The Council has a Park and Ride Strategy 2018 - 2027 which focuses on making the rail network attractive and accessible by providing park and ride facilities. Improving air quality is one of the key benefits and outcomes of this strategy.	developed and updated.
Strategic 4	Revise and adopt an Air Quality Strategy for South Lanarkshire	Policy guidance and development control	Increase focus on air quality in Council services and local businesses,	Develop and adopt an Air Quality Strategy for South Lanarkshire	A revision to the draft Air Quality Strategy will be undertaken and will detail high level guidance to help inform other strategies and policies	2023

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		organisations and the general public		across the Council. The policy will be aimed at Council staff as well as local businesses, organisations and the general public.	
Strategic 5	Develop air quality guidance note Implementation Phase: Completed	Policy guidance and development control	Provision of tools and resources to improve local air quality	Maintain and make available an air quality guidance note	South Lanarkshire has developed a GIS based story map 'The air that we breathe' which contains guidance and links to resources and advice to help improve air quality and encourage a 'be part of the solution, not the pollution' approach.	Completed with period review of content undertaken.
Strategic 6	Lobby government for additional national policy Implementation Phase: Ongoing	Policy guidance and development control	Increase focus on air quality and encourage national action	Maintain contact with the Scottish Government regarding the adoption of national air quality measures.	South Lanarkshire has contributed to consultation on Low Emission Zone and will continue to contribute to relevant air quality consultations.	Ongoing
Strategic 7	Review traffic studies Implementation Phase: Ongoing	Transport planning and infrastructure	To adopt a strategic approach to air quality and undertake a detailed assessment of the feasibility and impacts of proposed infrastructure and traffic management measures.	Undertake a review of traffic to assess the potential impact traffic management optimisation on air quality	Air quality action planning funds have supported review of traffic within the Lanark area as part of a Scottish Transport Appraisal Guidance (STAG) based study particularly in relation to traffic flow and layout review in this area. The aim is to develop a scheme which reduces congestion and so improve air quality particularly within the hot spot location of Bannatyne Street. The STAG is currently in final stages of completion.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Strategic 8	SCOOT or other intelligent traffic system – continue expansion of system Implementation Phase: Ongoing	Traffic management	Reduce traffic queuing within the AQMAs through the optimisation of the Traffic management system.	Optimisation of the traffic management system	Environmental Services works in partnership with Traffic and Transportation Services and continue to expand the intelligent traffic signal network with a primary focus on prioritising those key signals that can impact the hot spot locations and wider air quality management areas. Recent funding has supported works in the Rutherglen and wider Cambuslang and Burnside areas which contribute to main traffic flows through the Rutherglen AQMA.	Ongoing
Strategic 9	Encourage the uptake of low emission vehicles Implementation Phase: Ongoing	Promoting travel alternatives	Target reduced emissions from vehicles	Number of low emission vehicles	To support the transition to low emission vehicles across the wider community South Lanarkshire continues to expand the network of electric charging points. Information on the location of the charging points is available via the air quality storymap. South Lanarkshire has taken delivery of the largest order for electric pool and fleet vehicles in Scotland. Once full delivery is taken this will mean that all of the Council's pool cars will be electric with other Services having their own electric vehicles embedded within their departments. South Lanarkshire Scheme Council have recently introduced the Eco Stars Taxi and Private Hire to augment the existing Eco Stars	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					Fleet Scheme. This will further raise awareness within the taxi and private hire sector of the important role they play in helping to improve local air quality. Eco Stars provides tailored guidance to fleet and taxi operators on low emission vehicle options.	
Strategic 10	Expand cycle / pedestrian counters Implementation Phase: Ongoing	Promoting travel alternatives	Support uptake of active travel	Number of cycle and pedestrian counters	A growing network of cycle and pedestrian counters are distributed across South Lanarkshire with action plan funding being used to support the growing network. To date approximately 79 counters are in use.	Ongoing
Strategic 11	Awareness training on air quality issues Implementation Phase: Ongoing	Public information	To increase awareness of local air quality issues and encourage changes in behaviour that will contribute to improving local air quality.	Continue to make training available to relevant Council staff	Air quality and development training has been attended by representatives from Environmental Services and Traffic and Transportation Services. Further refresher training for these officers will be undertaken as well as the provision of air quality training as part of the internal programme of continuing professional development for planning colleagues.	Ongoing
Strategic 12	Train station and bus station improvements Implementation Phase: Ongoing	Promoting travel alternatives	To increase awareness of travel choices and encourage changes in behaviour that will contribute to improving local air quality.	Upgrade and expansion at bus and train stations to include active travel hub options. Improved integration between cycling,	South Lanarkshire Council continues to work in Partnership with Scotrail to increase awareness and facilities to support active travel connectivity with rail stations. In addition, Environmental Services work closely with Traffic and Transportation colleagues to	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
				walking and public transport.	identify priority areas that can support and improve facilities at bus and train stations. Enhancement of park and ride facilities for rail stations to reflect the significant increase in rail travel is a particular area of focus with a Park and Ride Strategy being implemented. The Council have recently opened a new park and ride facility at Cambuslang Train Station. The new facility offers 265 parking spaces including new electric vehicle charging infrastructure which will provide further sustainable transport options to local residents and the surrounding community Plans are also moving forward to re-locate Hairmyres Train Station and provide an expanded transport hub. The work is due to commence in 2024 and will develop a major transport interchange with park and ride facilities. It will also have significant electric vehicle charging provisions, active travel improvements and new bus interchange.	
Strategic 13	Investigate integration of air quality awareness within Education	Public information	To increase awareness of local air quality issues and encourage changes in behaviour that will	Continue to make training available to relevant Council staff	Air quality and sustainable active travel workshops have previously been undertaken within a number of primary schools within South Lanarkshire. An online active travel	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		contribute to improving local air quality.		resource for primary schools has been developed and was piloted during school academic year 2021/22.	
Strategic 14	Improve cycle routes Implementation Phase: Ongoing	Transport planning and infrastructure	To encourage a shift to more sustainable forms of travel and reducing traffic	Improvement of cycle routes	South Lanarkshire Council continues to invest in the maintenance, upgrading and expansion of cycling infrastructure across the area. Active travel studies have been completed for East Kilbride, Cambuslang, Rutherglen Hamilton, Lanark, Carluke, Larkhall, Strathaven, Bothwell, Blantyre and Uddingston. Further studies are due to commence within the Clydesdale area. These studies underpin applications for funding to support infrastructure investment and help identify areas were further works would be of most benefit. Following on from the active travel study, East Kilbride has the completed the first stage of segregated cycle infrastructure. Further work has been undertaken on the joint project with North Lanarkshire Council which supports the promotion of walking and cycling access routes to Strathclyde Park. A treasure Trail App is now available to encourage more walking, cycling and wheeling, with the hopes that this will transcend into everyday journeys.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					A new cycling infrastructure project which will regenerate a derelict brownfield site in Cambuslang into a major new cycling venue has commenced. One of the main aims of this project is encourage more people in the local community to switch from car use to cycling.	
Strategic 15	Investigate further behaviour change initiatives Implementation Phase: Ongoing	Public information	To increase awareness of local air quality issues and encourage changes in behaviour that will contribute to improving local air quality.	Continue to focus on air quality initiatives	8,428 players participated in the Beat the Street Hamilton and Blantyre game and between them travelled an amazing 133,000 miles actively and sustainably. The post-game analysis showed a five percent increase in work based active travel and a six percent increase in school based active travel. A copy of the post-game report is available on request. Beat the Street Cambuslang and Rutherglen had 8,535 participants who travelled over 118,000 miles sustainably. Post-game analysis indicated that 80% of participants are likely or very likely to continue to walk, cycle or wheel for local journeys. An active travel promotional campaign took place in March 2021 – and capitalised on the new active travel infrastructure that has been installed within East Kilbride area. Campaign graphics were designed to show the new alignment of separate walking and cycling pathways that have been	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					developed adjacent to the road network and were showcased in a variety of media outlets, including bus rears, billboards, train panels, phone box wraps, train station billboard, supermarket digitals and all SLC social media outlets. An engine idling promotion campaign took place within the last year and was launched for Clean Air Day 2021. This involved graphics being developed and distributed at suitable locations such as street lamp post banners at schools, school railing banners and lamp post posters throughout the council area. The campaign put the emphasis on those being affected by poor air quality from engine idling – whether that be school children, children playing sports or staff and customers at hot food takeaway outlets.	
Strategic 16	Continue to expand air quality monitoring activities Implementation Phase: Ongoing	Public information	Provision of information required to improve local air quality	Continued provision of appropriate air quality monitoring	AQ Mesh pods, which are more portable forms of real time air quality monitoring kit, have been purchased and will be used to review air quality in three school locations, two of which will be piloted for car free zones. The data will inform future car free zone work around schools.	Ongoing
Strategic 17	Section 75 Town and Country Planning (Scotland)	Policy guidance and development control	Ensure future development does not compromise	Consideration of air quality issues in the development	No Section 75 agreements have been processed this year in terms of air quality.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Act 1997 agreements Implementation Phase: Ongoing		achievement of statutory air quality objectives	management process.		
Whirlies 1	Real time bus passenger information Implementation Phase: Completed	Promoting travel alternatives	Support uptake of public transport	Provision of real time passenger information	The number of real time passenger information systems have been increased over this past year and are in place at key bus stop locations in the East Kilbride area. Bus companies operating in South Lanarkshire have developed an App to provide their customers access to real time information for buses on routes within South Lanarkshire.	Completed
Whirlies 2	Investigate bike hire schemes for key locations Implementation Phase: Ongoing	Promoting travel alternatives	Support uptake of active travel	Provision of bike hire schemes. Progress of this action is dependent on the conclusions of the pilot study.	An initial feasibility study has been undertaken which considered the East Kilbride and Rutherglen areas for potential bike hire schemes. The study supported the Rutherglen area for the operation of a cycle hire scheme with potential to link with the Glasgow bike hire scheme. The study was more cautious in terms of the feasibility of a cycle hire scheme within the East Kilbride area.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Lanark 1	Investigate eco-route signage to encourage alternative routes away from town centre Implementation Phase: Ongoing	Transport planning and infrastructure	To encourage a shift to more sustainable forms of travel and reducing the traffic through the town centre.	Implementation of eco-route signage. Progress of this action is dependent on the conclusions of the traffic review.	A transport appraisal undertaken in terms of Transport Scotland's Scottish Transport Appraisal Guidance (STAG) is nearing completion. This review will influence cycle and walking route signage and also electric charging points for vehicles. . The most up to date information on the Clydesdale STAG is available Clydesdale Scottish Transport Appraisal Guidance (STAG) - South Lanarkshire Council	Ongoing
Lanark 2	Traffic re-routing investigation Implementation Phase: Ongoing	Traffic management	Reduce traffic queuing within the AQMA	Optimisation of the traffic management system. Progress of this action is dependent on the conclusions of the feasibility study.	The Local Transport Strategy 2013 - 2023 recognises that the growth within the market town of Lanark has resulted in traffic problems which in turn is impacting air quality. To alleviate the congestion issues the feasibility of constructing a gyratory system at the east end of the High Street is currently being considered as part of the Clydesdale STAG The traffic review will inform re-routing options going forward.	Ongoing
Lanark 3	Review delivery times Implementation Phase: Ongoing	Traffic management	Reduce delivery vehicle traffic within the AQMA at peak times	Identify which traffic restriction measures considered appropriate to reduce congestion due to delivery vehicles.	Discussions are underway with Traffic and Transportation Services as to the traffic regulation restrictions within the Lanark area. Again the Clydesdale STAG will inform this action going forward.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Lanark 4	Real time bus passenger information Implementation Phase: Ongoing	Transport planning and infrastructure	Support uptake of public transport	Provision of real time passenger information	Again the Clydesdale STAG is reviewing public transport infrastructure. There have been discussions with Traffic and Transportation Services in terms of the planned upgrade to the Lanark bus and train stations. Integral to these discussions is the feasibility of ensuring future infrastructure supports real time bus passenger information.	Ongoing
Lanark 5	Review traffic and air quality patterns Implementation Phase: Ongoing	Traffic management	Identify trends in air quality in relation to peak traffic events	Results of air quality monitoring used to identify times when peak emissions are experienced	The action plan steering group raised a query as to whether higher volumes of traffic are experienced on market days within the town. In addition, it was queried whether higher volumes of LGVs and HGVs are experienced on these days and whether these are having an effect on air quality. To assist with this query an AQ Mesh pod has been fitted within Bannatyne Street. This portable air quality monitoring unit records real time emissions and will allow a review of days and times when peak emissions are being experienced. Unfortunately due to Covid lockdowns traffic patterns have been disrupted and annual trends were very different to usual. Monitoring will continue in this locality and 2022 is anticipated to be more reflective of normal traffic.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Lanark 6	Review and promote awareness of parking restrictions Implementation Phase: Ongoing	Traffic management	Reduce number of journeys by car into and within the AQMA	Implementation of measures to improve awareness of parking restrictions	Initial discussions are underway with Traffic and Transportation Services as to the traffic regulation restrictions within the Lanark area. The Clydesdale STAG will also influence this project going forward.	Ongoing
Lanark 7	Investigate the use of green infrastructure Implementation Phase: Ongoing	Transport planning and infrastructure	Reduce public exposure to air pollution	Introduction of green infrastructure. Progress of this action is dependent on the conclusions of the pilot study in Rutherglen.	Limited progress has been made with this measure. A pilot planting project has been undertaken within the Rutherglen area. The lessons learned from the pilot will be used to shape any progress of this measure within the Lanark area	Ongoing
Lanark 8	Investigate quality bus partnerships (ECO stars) Implementation Phase: Ongoing	Vehicle fleet efficiency	Encouraging local fleet operators to introduce fleet management systems that improve air quality	Number of ECO Stars members	Lanark bus companies have been encouraged to join the ECO Stars fleet recognition scheme which aims to help fleet operators improve efficiency, reduce fuel consumption and emissions and make cost savings. Specialist workshops were arranged specifically tailored to bus operators and a number of attendees opted for additional support from Ecostars to assist with funding applications to encourage transition to cleaner vehicles.	Ongoing
Lanark 9	Investigate the use of traffic regulation conditions Implementation Phase: On hold	Traffic management	Reduce vehicle traffic within the AQMA	Identify which traffic restriction measures considered appropriate to reduce traffic within the AQMA.	At this stage this measure has not been progressed. This will be reviewed going forward.	On Hold

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Lanark 10	Engage local businesses in eco-fleet initiatives and travel planning Implementation Phase: Ongoing	Vehicle fleet efficiency	Encouraging local fleet operators to introduce fleet management systems that improve air quality	Number of fleet operators accessing assessment and guidance from South Lanarkshire Council	South Lanarkshire provide fleet operators free access to assessment and tailored guidance to assist fleet operators in becoming more economic in terms of fuel, emissions and costs.	Ongoing
Lanark 11	Investigate cycle hire feasibility study within the Lanark area Implementation Phase: On hold	Promoting travel alternatives	Support uptake of active travel	Provision of bike hire schemes	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold
Lanark 12	Investigate active travel hub for bus and train stations Implementation Phase: Ongoing	Promoting travel alternatives	To increase awareness of travel choices and encourage changes in behaviour that will contribute to improving local air quality.	Upgrade and expansion at Lanark bus and train station to include active travel hub options. Improved integration between cycling, walking and public transport.	As part of upgrading and expanding the facilities available at the Lanark bus and train stations investigations additional land adjacent to the stations has now been purchased. Plans are at an early stage in terms of development of park and ride facilities to support both of these stations.	Ongoing
Lanark 13	Review pedestrian locations Implementation Phase: On hold	Promoting travel alternatives	To increase awareness of travel choices and encourage changes in behaviour that will contribute to improving local air quality.	Improved provision of pedestrian locations	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Rutherglen 1	Investigate eco-route signage to encourage alternative routes away from town centre Implementation Phase: On hold	Transport planning and infrastructure	To encourage a shift to more sustainable forms of travel and reducing the traffic through the town centre.	Implementation of eco-route signage.	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold
Rutherglen 2	Review parking restriction enforcement and promotion Implementation Phase: On hold	Traffic management	Reduce number of journeys by car into and within the AQMA	Implementation of measures to improve awareness and enforcement of parking restrictions.	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold
Rutherglen 3	Real time passenger information installed Implementation Phase: Completed	Transport planning and infrastructure	Support uptake of public transport	Provision of real time passenger information	One of the main bus companies who are operating in South Lanarkshire have developed an App to provide their customers access to real time information for buses on routes within South Lanarkshire. The App has recently been updated to allow users to determine if there are spaces for wheelchairs as well as if there are seats available. Due to the evolving increased use of Apps to support real time data it is unlikely that further real time passenger information signage will be installed.	Completed

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Rutherglen 4	Air quality modelling to assist understanding of the current picture Implementation Phase: Completed	Traffic Management	Improve understanding of current air quality within AQMA	Carry out Air Quality dispersion modelling to quantify the current air quality status. Results shown in South Lanarkshire's air quality story map.	South Lanarkshire's air quality story map includes the use of air quality modelling data pre and post opening of the M74 extension works. The M74 works reduced traffic travelling through Rutherglen Main Street by in the region of 5,000 vehicles per day. The impact can be seen using the interactive GIS map available via the 'effect of traffic on air quality' page within the story map.	Ongoing
Rutherglen 5	Investigate the utilisation of green infrastructure to target emission reductions in hot spot locations Implementation Phase: Completed	Transport planning and infrastructure	Reduce public exposure to air pollution	Introduction of green infrastructure.	Working in partnership with a local community gardening group 'Grow 73' a number of large wooden planters with pollution fighting plants have been installed adjacent to a busy junction close to areas where exceedance of air quality objectives were modelled. Grow 73 continue to maintain the planters and they have also engaged with the Royal Horticultural Society who have supported the project by providing advice, compost and additional plants.	Completed
Rutherglen 6	Investigate quality bus partnerships Implementation Phase: On hold	Vehicle fleet efficiency	Encouraging local fleet operators to introduce fleet management systems that improve air quality	Number of members of quality bus partnership	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Rutherglen 7	Investigate the use of traffic regulation orders Implementation Phase: On hold	Traffic management	Reduce vehicle traffic within the AQMA	Identify which traffic restriction measures considered appropriate to reduce traffic within the AQMA.	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold
Rutherglen 8	Investigate bike hire schemes for key locations Implementation Phase: Ongoing	Promoting travel alternatives	Support uptake of active travel	Provision of bike hire schemes	In partnership with South Lanarkshire Leisure and Cultural Services (SLLC), an electric bike pilot project commenced pre-pandemic.. The project targeted employees who travel between sites and are replacing conventional car commutes with ebike journeys. In addition a further project included an option for ebike use for patients referred by their GP's to SLLC to increase their activity levels. This project was put on hold during the pandemic and discussions are underway to re-start the project.	Ongoing
Rutherglen 9	Review pedestrian locations Implementation Phase: On hold	Promoting travel alternatives	To increase awareness of travel choices and encourage changes in behaviour that will contribute to improving local air quality.	Improved provision of pedestrian locations	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

South Lanarkshire Council undertook automatic (continuous) monitoring eight sites during 2021. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at http://www.scottishairquality.scot/data/data-selector.

Maps showing the location of the monitoring sites are provided in Appendix D or can be found at http://www.scottishairquality.scot/latest/. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

South Lanarkshire Council undertook non- automatic (passive) monitoring of NO_2 at 40 sites during 2021. 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 or http://www.scottishairquality.scot/latest/. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.1.3 Other Monitoring Activities

AQ Mesh pods are in use at three school locations, two of which will be piloted for car free zones. The car-free pilot commenced April 2022. The data will inform future car free zone work around schools.

An AQ Mesh pod has been fitted within Bannatyne Street in order to ascertain whether higher volumes of traffic, including LGVs and HGVs, are experienced on market days within the town and whether these are having an effect on air quality.

This portable air quality monitoring unit records real time emissions and will allow a review of days and times when peak emissions are being experienced. It will not provide reference quality data but will be useful to ascertain trends in the concentration data.

Unfortunately, due to Covid lockdowns, traffic patterns have been disrupted and annual trends were very different to usual. Monitoring will continue in Bannatyne Street and 2022 is anticipated to be more reflective of normal traffic.

A monitoring study is also being carried out in Blantyre town centre to provide further evidence to confirm if an Air Quality Management Area (AQMA), for exceedances of NO_2 annual mean objective, should be declared at the location of the A724 Glasgow Road/Station Road junction in Blantyre and to provide further insight into the NO_2 concentrations along the northbound carriageway of A724 Glasgow Road. This NO_2 monitoring study began in January 2022 and will run until January 2023 and is utilising AQMesh sensor monitoring to obtain high resolution data at DT32, as well as 17 passive monitoring diffusion tubes throughout Glasgow Road.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

No annual mean NO_2 concentrations in excess of the 40 µg/m^3 air quality objective were measured at **automatic** monitoring sites in South Lanarkshire during 2021.

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

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year. Hourly mean NO_2 concentrations measured at automatic monitoring sites during 2021 were compliant with the NO_2 1-hour objective as there were less than the permitted 18 measured exceedances of the 200µg/m^3 objective during the year. The East Kilbride Whirlies automatic monitoring site measured hourly concentrations in excess of 200 µg/m^3 four times during the year.

The annual mean concentrations measured at roadside, kerbside and urban background monitoring sites over the last five years are presented in Figure A.2, Figure A.3 and Figure A.4 in Appendix A.

3.2.2 Particulate Matter (PM_{10})

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

There were no exceedances of the 18 µg/m^3 annual mean objective at any monitoring locations within South Lanarkshire during 2021. A comparison of PM_{10} annual mean concentrations measured in South Lanarkshire over the past five years are presented in Figure A.5 in Appendix A.

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

No daily means greater than 50 µg/m^3 were measured at any automatic site. Therefore all sites remain compliant with the objective.

3.2.3 Particulate Matter ($PM_{2.5}$)

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

During 2021, $PM_{2.5}$ concentrations measured at all locations in South Lanarkshire were less than the annual mean objective of 10 µg/m^3.

3.2.4 Sulphur Dioxide (SO_2)

South Lanarkshire Council do not currently measure SO_2 concentrations.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

South Lanarkshire Council do not currently measure any of these pollutants.

4 New Local Developments

4.1 Road Traffic Sources

No new or significant changes to road traffic sources have been identified during 2021.

4.2 Other Transport Sources

No other transport sources have been identified that require screening or consideration at this time.

4.3 Industrial Sources

No new or significantly changed industrial sources have been identified during 2021.

4.4 Commercial and Domestic Sources

No new or significantly changed commercial or domestic sources have been identified during 2021.

4.5 New Developments with Fugitive or Uncontrolled Sources

No new or significantly changed fugitive sources have been identified during 2021.

5 Planning Applications

Table 5.1 indicates proposed development projects currently listed in the Local Development Plan 2 (updated May 2022); these developments are likely to require air quality impact assessment in support of the planning application. Further information on these developments will be included in subsequent APRs following submission of planning applications.

Table 5.1 Proposed developments

Type	Project	Description
Development Framework Site	Langlands West, East Kilbride	Different options currently being explored for the area.
Development Framework Site	Redwood Crescent, East Kilbride	Various options currently being explored for the site. Site had planning permission in principle (EK/14/0057) for retail development of a Class 1 superstore, petrol filling station and garden centre which has lapsed. Part of the site is now being developed for residential development Balfour Beatty and West of Scotland Housing Association.
Development Framework Site	St James Centre (North), East Kilbride	Mixed use development including retail, commercial and business use. Part of the site already has consent for retail and student flats (EK/16/0063).
Development Framework Site	Hamilton International Technology Park	Whole site has planning permission in principle (HM/16/0147). Detailed consent (HM/16/0148) for the conversion and change of use of three existing buildings from Class 4 to Class 10 to accommodate the University teaching facilities. Main building opened August 2018. Remainder of the site still to be masterplanned for any new build element, including student's residences, sports facilities and pitches.
Development Framework Site	Former University of West of Scotland Almada Street, Hamilton	Housing led mixed use development. Reuse of a brownfield site. Not yet started.
Development Framework Site	Bridge Street / Somervell Street, Cambuslang	Part of site now under construction for social housing and consent for park and ride for Cambuslang station.
Development Framework Site	Duchess Road, Rutherglen	Part of LDP2 new proposed residential development opportunity, 120 houses.
Residential Masterplan Site	East Whitlawburn, Cambuslang	A masterplan to be brought forward, the scope of which to be agreed with the Council, to demolish

Type	Project	Description
		and redevelop housing at East Whitlawburn. Provision of housing types to accord with SLLDP policies including affordable housing.
Residential Masterplan Site	West of Bellefield Road, Lanark	Housing site added to LDP2 by Reporter – capacity c. 75 units. Not yet consented.
Residential Masterplan Site	Land West of Strathaven Road, Hamilton	Application for a residential development (166 units) with associated roundabout, roads, landscaping and SUDS (P/21/1811)
Residential Masterplan Site	Land West of Strathaven Road Hamilton	Residential development (640 units) with associated roads, landscaping and SUDS. Planning approval under consent HM/10/0052.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

All Nitrogen Dioxide (NO_2) annual mean concentrations measured during 2021 at automatic monitoring sites in South Lanarkshire were less than the 40 µg/m^3 objective. The last five years of measurements indicate a downward trend in measured NO_2 concentrations at all automatic sites. Four exceedances of the NO_2 hourly objective (200 µg/m^3) were measured at the East Kilbride Whirlies automatic site.

No exceedances of the NO_2 annual mean objective were measured at diffusion tube locations.

No exceedances of the PM_{10} annual mean objective were measured during 2021. Measured concentrations at the eight PM_{10} measurement sites in South Lanarkshire ranged from 9 to 12 µg/m^3. Measured PM_{10} concentrations were higher in 2021 when compared to 2020, but not as high as in 2019.

There were no exceedances of the PM_{10} daily short-term air quality objectives at any monitoring site during 2021, as was the case in 2020 and a decrease from several exceedances measured in 2019.

No exceedances of the $PM_{2.5}$ annual mean objective were measured during 2021. Measured concentrations at the eight $PM_{2.5}$ measurement sites in South Lanarkshire ranged from 5 to 6 µg/m^3. Measured $PM_{2.5}$ concentrations decreased or stayed the same at all sites compared to 2020, except the Blantyre site which increased from 5 µg/m^3 to 5.4 µg/m^3.

Hamilton

A detailed assessment of NO_2, PM_{10} and $PM_{2.5}$ was submitted to Defra for review in July 2021. The results of the dispersion modelling study indicated that:

- NO_2 annual mean concentrations in excess of the 40 µg/m^3 were modelled (2019 assessment year) at the window of one ground floor residential property on Low Patrick Street where there may be relevant human exposure.
- There were no exceedances of the PM_{10} or $PM_{2.5}$ air quality objectives during 2019.

There were however uncertainties regarding the NO_2 measurement data at Low Patrick Street used to verify the dispersion model outputs. During 2019, the diffusion tube

sampler was located close to operational boiler flue pipes on the adjacent building, so may not be measuring NO_2 concentrations representative of other nearby roadside locations. The Detailed Assessment concluded that, at this time, South Lanarkshire Council are not certain that there is sufficient evidence to confirm if an Air Quality Management Area (for exceedances of the NO_2 annual mean objective) should be declared at Low Patrick Street in Hamilton.

The Low Patrick Street diffusion tube site was re-located in 2021. Measured NO_2 concentrations immediately decreased; it is however likely that measured concentrations in both 2020 and 2021 are lower than historic concentrations given the impact of the COVID-19 pandemic. Traffic activity may return to 'business as usual' levels in 2022.

No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ air quality objectives were measured at locations where there is relevant exposure during 2021. South Lanarkshire Council will continue to measure NO_2 at this location; and review and assess air quality in Hamilton.

Blantyre

Defra's Appraisal of the 2018 Detailed Assessment at Glasgow Road, Blantyre concluded that the recommendation to declare an Air Quality Management Area was not acceptable, as there was a degree of uncertainty over the dispersion modelling results. Defra suggested that diffusion tube monitoring should be extended in this area; and that a further year's monitoring should be used as a basis to review whether there is evidence to justify declaration of an AQMA. An automatic analyser commenced measurement of NO_2, PM_{10} and $PM_{2.5}$ at this location in January 2019.

A repeat Detailed Assessment was submitted in 2020. The dispersion modelling study (which used up to date traffic, monitoring and meteorological data for the area around Glasgow Road, Blantyre) indicated that there may be exceedances of the NO_2 annual mean objective occurring at locations with relevant exposure at first floor height above commercial properties in Blantyre town centre. The maximum NO_2 annual mean concentration predicted is 40.8 µg/m^3 which could be considered as a marginal exceedance of the 40 µg/m^3 objective. The modelling indicates that the area of exceedance of the NO_2 annual mean objective is very localised and encompasses up to four residential properties at first floor height on the south side of Glasgow Road close to the junction with Station Road. This conclusion regarding the potential extent of exceedances is uncertain based on the available evidence; as assumptions regarding emission from vehicles using parking bays in the town centre were required to achieve reasonable model agreement with the available NO_2 measurements. It is

therefore uncertain if the modelling has represented road traffic emissions throughout the town centre accurately.

No exceedances of the PM_{10} or $PM_{2.5}$ annual mean objectives were predicted.

On the basis of the uncertainties described above, South Lanarkshire Council do not consider that there is sufficient evidence to confirm if an Air Quality Management Area (for exceedances of the NO_2 annual mean objective) should be declared at the location of the Glasgow Road/Station Road junction in Blantyre.

As discussed in Section 3.1.3, South Lanarkshire Council initiated an NO_2 monitoring study in January 2022 which will run until January 2023 and is utilising AQMesh sensor monitoring to obtain high resolution data at DT32, as well as passive monitoring diffusion tubes at ten locations throughout Glasgow Road.

This will provide additional evidence regarding the potential extent of localised NO_2 exceedances. If appropriate following review of NO_2 measurement data in future years; South Lanarkshire Council will repeat the detailed assessment with the intention that the additional measurement data will support a more robust modelling assessment and associated model verification. Measures to discourage vehicle idling are also being investigated in the meantime to reduce localised vehicle emissions.

Air quality measurements reported in 2021 show that NO_2 annual mean measurements at all roadside sites have reduced when compared to the 2019 measurements and have either remained similar or increased slightly in comparison to 2020. This is mainly attributable to traffic activity reducing significantly during the March to June 2020 period due to the COVID-19 lockdown restrictions. Due to the impact of this and lockdown restrictions on traffic activity and emissions during periods in 2021; it may be unclear if another Detailed Assessment is required at this location until annual mean NO_2 measurements from 2022 are available.

6.2 Conclusions relating to New Local Developments

South Lanarkshire Council has not identified any new local developments that required further consideration, or any locations where there may be a risk of the air quality objectives being exceeded. No additional air quality assessment is recommended at this time.

6.3 Proposed Actions

Following the review of all available data it is recommended that South Lanarkshire Council carry out the following actions:

1. Submit the next Air Quality Progress Report in June 2023.
2. Continue to implement the measures outlined in the action plans for East Kilbride, Lanark and Rutherglen AQMAs.
3. Review the current NO_2 diffusion tube monitoring programme and seek to relocate any tubes where appropriate (i.e. where low concentrations have been measured consistently).
4. Continue the additional NO_2 monitoring in Blantyre to provide better evidence regarding the potential extent of localised NO_2 exceedances. If appropriate following review of NO_2 measurement data in future years; South Lanarkshire Council will repeat the detailed assessment with the intention that the additional measurement data will support a more robust modelling assessment and associated model verification. Measures to discourage vehicle idling are in place in the meantime to reduce localised vehicle emissions.
5. Await the outcomes of the Particulate Matter Measurement Study recently commissioned by the Scottish Government due to the current uncertainty regarding PM_{10} concentrations reported by different analyser types. The outcomes of this exercise will help guide future decision making regarding the possible revocation of the current AQMAs.
6. Await the outcome of a detailed assessment of NO_2 at the Lanark AQMA submitted in support of establishing if revocation of the AQMA is appropriate.

South Lanarkshire Council confirms it will undertake these recommended actions.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
SL04	Rutherglen	Roadside	261128	661128	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	60	1	2
EK0	East Kilbride Whirlies	Roadside	264370	655670	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	10	0.5	2
SL03	Lanark	Kerbside	288426	643704	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	2	0.5	1
SL05	Hamilton	Roadside	272310	655276	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	2	8	1.8
SL06	Uddingston	Roadside	269663	660304	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	2	2	1.5
SL07	Cambuslang	Kerbside	264321	660516	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	10	0.5	2
SLC08	Raith Interchange 2	Rural	271063	658087	NO_2; PM_{10}; $PM_{2.5}$	Yes	Chemiluminescent; FIDAS	25	38	2
SLC09	Blantyre	Roadside	268916	657605	NO_2; PM_{10}; $PM_{2.5}$	No	Chemiluminescent; FIDAS	2.6	1.7	1.9

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)
1	3 London Street, Larkhall	Kerbside	276087	651563	NO_2	No	2.3	1	No	2-3
2	Greenhills Road, East Kilbride	Roadside	260052	653785	NO_2	No	20	1.3	No	2-3
3	4 Kirkton Street, Carluke	Kerbside	284538	650572	NO_2	No	2	0.8	No	2-3
4	4 St Leonard Street, Lanark	Kerbside	288438	643694	NO_2	Yes (Lanark)	0.7	4.4	No	2-3
5	32 Friars Lane, Lanark	Urban Background	287860	643685	NO_2	Yes (Lanark)	4.8	3.6	No	2-3
6	4 Bloomgate, Lanark	Roadside	288122	643685	NO_2	Yes (Lanark)	2	0.2	No	2-3
7	218 Eaglesham Road, East Kilbride	Kerbside	260711	654205	NO_2	No	4.7	1.2	No	2-3
8	Whirlies (1), East Kilbride	Kerbside	264374	655673	NO_2	Yes (Whirlies)	6.8	1.9	Yes	2-3
9	Whirlies (2), East Kilbride	Kerbside	264374	655673	NO_2	Yes (Whirlies)	6.8	1.9	Yes	2-3
10	Whirlies (3), East Kilbride	Kerbside	264374	655673	NO_2	Yes (Whirlies)	6.8	1.9	Yes	2-3
11	56 Maxwell Drive, East Kilbride	Roadside	264210	654909	NO_2	No	16	30	No	2-3
12	20 Farmeloan	Kerbside	261662	661789	NO_2	Yes (Rutherglen)	0.6	2.1	No	2-3

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)
	Road, Rutherglen									
13	252 Main Street, Rutherglen	Kerbside	261662	661663	NO_2	Yes (Rutherglen)	3.8	0.1	No	2-3
14	12 Mill Street, Rutherglen	Roadside	261302	660734	NO_2	Yes (Rutherglen)	5.1	2.6	No	2-3
15	Cambuslang Road (Smith Terrace)	Roadside	261858	662142	NO_2	Yes (Rutherglen)	3	1.5	No	2-3
16	Hamilton Road/ Clydefor Road Jct	Kerbside	264492	660497	NO_2	No	15	1.5	No	2-3
17	262 Cambuslang Road, Cambuslang	Roadside	263086	661296	NO_2	Yes (Rutherglen)	0.3	2.3	No	2-3
18	Greenlees Road, Cambuslang	Roadside	264300	660476	NO_2	No	5	1	No	2-3
19	Blackswell Lane, Hamilton	Roadside	272704	655431	NO_2	No	6.9	2.7	No	2-3
20	190 Hamilton Road, Halfway	Kerbside	265561	659788	NO_2	No	3	1.5	No	2-3
21	109 Caird Street, Hamilton	Roadside	271670	656346	NO_2	No	5.7	3.1	No	2-3
22	79 Union Street, Hamilton	Kerbside	271852	655320	NO_2	No	1.2	3.3	No	2-3

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)
23	134 Almada Street, Hamilton	Roadside	271424	655786	NO_2	No	3.7	1.4	No	2-3
24	Almada Street-Muir Street, Hamilton	Roadside	271861	655952	NO_2	No	3.6	0.1	No	2-3
25	289 Glasgow Road (Empire Bar)	Roadside	270013	656436	NO_2	No	2	2.7	No	2-3
26	24 Low Patrick Street, Hamilton	Roadside	272608	655213	NO_2	No	3.3	5.6	No	2-3
27	10 Gateside Street, Hamilton	Roadside	272265	655078	NO_2	No	2.2	0.8	No	2-3
28	28 Low Quarry gardens, Hamilton	Urban Background	271949	654957	NO_2	No	11.9	0.6	No	2-3
29	5 Wordsworth Way, Bothwell	Urban Background	270924	659109	NO_2	No	15.9	1.6	No	2-3
30	93 Main Street, Bothwell	Kerbside	270526	658722	NO_2	No	8.9	2.3	No	2-3
31	25 Main Street, Bothwell	Roadside	270526	658510	NO_2	No	3.1	3.3	No	2-3
32	233 Glasgow Road, Blantyre	Roadside	268902	657591	NO_2	No	0.4	3.6	No	2-3

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)
33	283 Glasgow Road, Blantyre	Roadside	268754	657689	NO_2	No	5.2	3	No	2-3
34	1 Hunthill Road, Blantyre	Roadside	268000	656643	NO_2	No	4.4	2.3	No	2-3
35	Wellhall Road / Hillhouse Roundabout	Urban Background	270065	654918	NO_2	No	12.2	1.3	No	2-3
36	Bardykes Road (West End Bar)	Kerbside	268175	658191	NO_2	No	1.5	0.2	No	2-3
37	Burnpark Avenue, Uddingston	Roadside	268944	661474	NO_2	No	22	29.2	No	2-3
38	81 Main Street, Uddingston	Roadside	269617	660438	NO_2	No	0.2	2.7	No	2-3
39	North British Road, Uddingston	Kerbside	270180	660753	NO_2	No	29	1.1	No	2-3
40	Bannatyne Street, Lanark	Kerbside	288450	643698	NO_2	Yes (Lanark)	1.5	0.2	No	2-3

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 Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
SL04	Rutherglen	Roadside	Automatic	76.3	76.3	N/A	38	36	-	25.5
EK0	East Kilbride Whirlies	Roadside	Automatic	98.5	98.5	29	32	-	22	24.8
SL03	Lanark	Kerbside	Automatic	83.1	83.1	20	19	19	13	16.7
SL05	Hamilton	Roadside	Automatic	75.5	75.5	31	31	29	19	24.2
SL06	Uddingston	Roadside	Automatic	76.7	76.7	27	24	26	15	18.8
SL07	Cambuslang	Kerbside	Automatic	99.6	99.6	36	35	33	21	27.2
SL08	Raith Interchange 2	Rural	Automatic	77.7	77.7	24	24	20	-	14.3
SL09	Blantyre	Roadside	Automatic	99.7	99.7	-	-	28.6	18	21.8
1	3 London Street, Larkhall	Kerbside	Diffusion Tube	100%	100%	23.9	25.9	21.8	16.4	18.2
2	Greenhills Road, East Kilbride	Roadside	Diffusion Tube	83%	83%	-	16.1	22.7	9.9	12.0
3	4 Kirkton Street, Carluke	Kerbside	Diffusion Tube	100%	100%	**27.3***	33.9	36.4	25.5	29.0
4	4 St Leonard Street, Lanark	Kerbside	Diffusion Tube	100%	100%	29.7	30.3	27.8	21.1	23.8
5	32 Friars Lane, Lanark	Urban Background	Diffusion Tube	100%	100%	7.2	6.6	6.1	4.5	4.9
6	4 Bloomgate, Lanark	Roadside	Diffusion Tube	100%	100%	36.1	37.3	31.2	28.4	28.1
7	218 Eaglesham	Kerbside	Diffusion Tube	92%	92%	-	22.4	21.2	15.0	17.0

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
	Road, East Kilbride									
8	Whirlies (1), East Kilbride	Kerbside	Diffusion Tube	100%	100%	36.8	31.7	31.1	21.6	25.4
9	Whirlies (2), East Kilbride	Kerbside	Diffusion Tube	100%	100%	34.2	34.3	30.3	22.1	24.4
10	Whirlies (3), East Kilbride	Kerbside	Diffusion Tube	75%	75%	31.5	35.5	28.5	24.8	25.3
11	56 Maxwell Drive, East Kilbride	Roadside	Diffusion Tube	83%	83%	-	14.8	15.3	10.2	15.1
12	20 Farmeloan Road, Rutherglen	Kerbside	Diffusion Tube	100%	100%	39.6	**42.2 (40.5)**	34.9	27.7	27.9
13	252 Main Street, Rutherglen	Kerbside	Diffusion Tube	100%	100%	25.2	26.0	23.9	17.3	20.1
14	12 Mill Street, Rutherglen	Roadside	Diffusion Tube	100%	100%	**27.2***	32.7	29.4	19.3	22.6
15	Cambuslang Road (Smith Terrace)	Roadside	Diffusion Tube	100%	100%	-	33.7	29.0	21.9	24.2
16	Hamilton Road/ Clydefor Road Jct	Kerbside	Diffusion Tube	100%	100%	-	28.4	29.4	18.4	18.5
17	262 Cambuslang Road, Cambuslang	Roadside	Diffusion Tube	100%	100%	27.6	26.0	25.0	17.3	20.3
18	Greenlees Road, Cambuslang	Roadside	Diffusion Tube	100%	100%	-	37.9	33.6	21.9	23.6

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
19	Blackswell Lane, Hamilton	Roadside	Diffusion Tube	100%	100%	**31.1***	36.7	33.7	25.9	25.9
20	190 Hamilton Road, Halfway	Kerbside	Diffusion Tube	92%	92%	-	23.4	23.5	15.4	17.7
21	109 Caird Street, Hamilton	Roadside	Diffusion Tube	92%	92%	**27.9***	32.4	25.2	16.8	18.4
22	79 Union Street, Hamilton	Kerbside	Diffusion Tube	100%	100%	**26.6***	29.0	27.1	19.1	19.9
23	134 Almada Street, Hamilton	Roadside	Diffusion Tube	100%	100%	**29.9***	29.0	24.7	17.1	20.8
24	Almada Street-Muir Street, Hamilton	Roadside	Diffusion Tube	100%	100%	**31.4***	32.1	28.5	19.3	22.5
25	289 Glasgow Road (Empire Bar)	Roadside	Diffusion Tube	92%	92%	-	36.9	34.1	22.4	24.3
26	24 Low Patrick Street, Hamilton	Roadside	Diffusion Tube	100%	100%	**47.0* (42.3)**	**66.9 (59.2)**	**46.0**	37.1	29.8
27	10 Gateside Street, Hamilton	Roadside	Diffusion Tube	100%	100%	**30.7***	34.6	31.5	21.1	24.3
28	28 Low Quarry	Urban Background	Diffusion Tube	92%	92%	**17.1***	12.7	11.3	8.8	9.4

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
	gardens, Hamilton									
29	5 Wordsworth Way, Bothwell	Urban Background	Diffusion Tube	100%	100%	20.5	20.1	16.5	11.7	13.3
30	93 Main Street, Bothwell	Kerbside	Diffusion Tube	92%	92%	32.9	35.0	29.1	20.8	25.1
31	25 Main Street, Bothwell	Roadside	Diffusion Tube	100%	100%	**29.2***	25.3	27.1	15.7	16.0
32	233 Glasgow Road, Blantyre	Roadside	Diffusion Tube	100%	100%	**49.6 (48.5)**	**54.2 (52.9)**	**46.3**	**46.1**	32.1
33	283 Glasgow Road, Blantyre	Roadside	Diffusion Tube	100%	100%	23.5	25.5	22.6	15.9	19.4
34	1 Hunthill Road, Blantyre	Roadside	Diffusion Tube	100%	100%	19.8	22.8	21.3	14.9	16.1
35	Wellhall Road / Hillhouse Roundabout	Urban Background	Diffusion Tube	100%	100%	-	23.7	20.1	14.4	16.2
36	Bardykes Road (West End Bar)	Kerbside	Diffusion Tube	100%	100%	-	25.4	26.6	16.2	18.0
37	Burnpark Avenue, Uddingston	Roadside	Diffusion Tube	100%	100%	26.3	31.3	22.7	18.1	20.6

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
38	81 Main Street, Uddingston	Roadside	Diffusion Tube	100%	100%	31.7	29.4	24.8	19.7	22.9
39	North British Road, Uddingston	Kerbside	Diffusion Tube	100%	100%	21.1	27.0	29.8	18.4	19.9
40	Bannatyne Street, Lanark	Kerbside	Diffusion Tube	100%	100%	27.7	24.4	20.3	10.6	18.7

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(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Rutherglen	Roadside	Automatic	76.3	76.3	-	**1**	0 (99)	-	0 (89.5)
East Kilbride Whirlies	Roadside	Automatic	98.5	98.5	**1**	0 (138)	-	**2**	**4**
Lanark	Kerbside	Automatic	83.1	83.1	0	0	0	0 (68)	0 (70)
Hamilton	Roadside	Automatic	75.5	75.5	0	0	0	0	0 (100.3)
Uddingston	Roadside	Automatic	76.7	76.7	0	0	0	0 (50)	0 (70.1)
Cambuslang	Kerbside	Automatic	99.6	99.6	**1**	0	**1**	0	0
Raith Interchange 2	Rural	Automatic	77.7	77.7	0	0	0 (71)	-	0 (65.8)
Blantyre	Roadside	Automatic	99.7	99.7	-	**-**	0 (98)	0	0

Notes:

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

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

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

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Rutherglen	Roadside	69	69	12	13	14	10	11.9
East Kilbride Whirlies	Roadside	98	98	10	10	10	9	9.8
Lanark	Kerbside	100	100	10	11	10	8	8.8
Hamilton	Roadside	96	96	11	11	11	9	10
Uddingston	Roadside	90	90	11	12	12	10	9.8
Cambuslang	Kerbside	98	98	12	12	13	10	10.7
Raith Interchange 2	Rural	99	99	13	11	10	8	9.1
Blantyre	Roadside	92	92	-	-	11	9	12.1

Notes:

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

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

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

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Rutherglen	Roadside	69	69	**1**	0	**4**	0	0 (35.3)
East Kilbride Whirlies	Roadside	98	98	0	0	**1**	0	0
Lanark	Kerbside	100	100	0	**1**	**1**	0	0
Hamilton	Roadside	96	96	0	0	**1 (35)**	0	0
Uddingston	Roadside	90	90	0	0	**2 (45)**	0	0
Cambuslang	Kerbside	98	98	0	**2**	**7**	0 (25)	0
Raith Interchange 2	Rural	99	99	0	0	**1**	0	0
Blantyre	Roadside	92	92	-	-	**2**	0	0

Notes:

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

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

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

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Rutherglen	Roadside	69	69	6	7	8	6	5.9
East Kilbride Whirlies	Roadside	98	98	4	5	6	5	4.7
Lanark	Kerbside	100	100	6	6	6	5	4.7
Hamilton	Roadside	96	96	5	6	6	5	4.9
Uddingston	Roadside	90	90	6	7	7	5	5
Cambuslang	Kerbside	98	98	5	7	7	5	5.3
Raith Interchange 2	Rural	99	99	-	5	6	5	5.0
Blantyre	Roadside	92	92	-	-	6	5	5.4

Notes:

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

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Monthly Diffusion Tube Results ($\mu g/m^3$)

Site ID	Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
1	3 London Street, Larkhall	28.1		28.6	20.2	17.2	12.9	18.7	17.9	22.2	16.6	25.1	22.1	20.9	18.2
2	Greenhills Road, East Kilbride	23.3	13.4	9.7	11.2	12.8	11.5		14.8	14.1	14.6	13.1		13.9	12.0
3	4 Kirkton Street, Carluke	39.2	23.7	29.4	40.4	32.4	26.8	32.5	31.0	37.3	35.0	42.3	29.4	33.3	29.0
4	4 St Leonard Street, Lanark	27.7	22.3	25.5	26.9	26.5	26.0	25.5	28.0	28.8	27.5	32.1	31.9	27.4	23.8
5	32 Friars Lane, Lanark	9.8	5.9	4.6	5.5	4.7	3.9	5.4	5.1	4.6	4.8	7.4	6.5	5.7	4.9
6	4 Bloomgate, Lanark	33.6	22.5	24.7	31.5	34.6	32.1	41.0	33.2	31.9	30.7	40.5	31.3	32.3	28.1
7	218 Eaglesham Road, East Kilbride	31.0	17.7	17.2	15.6	16.4	14.9		19.3	17.0	17.1	23.0	25.4	19.5	17.0
8	Whirlies (1), East Kilbride	34.5	23.7	22.4	30.1	25.2	24.8	22.5	27.8	27.4	26.5	29.1	57.0	29.3	25.4
9	Whirlies (2), East Kilbride	42.1	22.8	21.7	28.5	25.1	23.8		25.3	26.8	26.6	22.9	43.5	28.1	24.4
10	Whirlies (3), East Kilbride	40.3	21.9	21.1		23.8	24.3		26.0	27.4		29.4	47.3	29.1	25.3
11	56 Maxwell Drive, East Kilbride	22.0		37.9	13.5	8.9	9.0		11.0	11.2	14.1	13.7	31.7	17.3	15.1

Site ID	Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
12	20 Farmeloan Road, Rutherglen	36.9	41.3	29.1	32.9	31.1	27.5	29.5	27.1	29.6	30.7	38.3	30.8	32.1	27.9
13	252 Main Street, Rutherglen	37.9	25.7	16.0	27.9	23.9	16.5	14.7	22.5	21.9	21.0	28.6	20.4	23.1	20.1
14	12 Mill Street, Rutherglen	34.3	24.4	19.5	24.0	31.0	21.6	24.3	30.3	25.6	20.4	27.7	28.8	26.0	22.6
15	Cambuslang Road (Smith Terrace)	41.3	26.5	26.9	27.9	26.0	20.5	19.6	25.9	28.7	27.5	34.0	29.0	27.8	24.2
16	Hamilton Road/ Clydefor Road Jct	35.6	17.3	20.2	26.5	24.2	21.3	22.9	21.0	24.1	7.6	8.9	26.2	21.3	18.5
17	262 Cambuslang Road, Cambuslang	34.9	17.8	18.8	25.6	19.2	20.4	20.4	22.5	23.5	22.1	30.9	24.3	23.4	20.3
18	Greenlees Road, Cambuslang	38.5	23.4	21.5	29.6	27.3	22.7	24.2	27.8	26.5	25.1	34.5	24.9	27.2	23.6
19	Blackswell Lane, Hamilton	36.1	30.9	25.7	29.5	32.7	25.1	27.6	30.6	34.7	28.0	31.1	25.3	29.8	25.9
20	190 Hamilton Road, Halfway	28.9	20.0	14.8	22.6	20.1	14.6		32.9	17.1	15.8	21.0	15.9	20.3	17.7
21	109 Caird Street, Hamilton	15.1	18.0	18.6	20.7		15.4	18.5	17.0	24.8	32.7	27.5	24.3	21.1	18.4
22	79 Union Street, Hamilton	29.4	22.4	18.5	21.7	23.6	18.9	22.1	22.7	22.8		23.5	26.3	22.9	19.9
23	134 Almada Street, Hamilton	29.4	20.9	22.0	23.7	21.5	20.7	19.4	21.8	25.9	24.1	31.4	26.5	23.9	20.8

Site ID	Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
24	Almada Street-Muir Street, Hamilton	34.1	24.3	22.1	23.9	26.0	22.1	24.2	24.9	26.5	27.4	27.9	26.7	25.8	22.5
25	289 Glasgow Road (Empire Bar)	41.8	31.1	21.7	28.5		25.2	26.7	28.9	6.7	30.1	34.9	31.4	27.9	24.3
26	24 Low Patrick Street, Hamilton	69.4	48.1	36.3	25.0	26.1	26.4	30.7	31.8	28.2	27.7	36.7	24.3	34.2	29.8
27	10 Gateside Street, Hamilton	40.8	24.5	22.5	24.4	25.8	24.5	27.9	24.4	26.9	30.1	34.9	28.7	28.0	24.3
28	28 Low Quarry gardens, Hamilton	22.8	10.3	8.0			9.4	6.5	9.1	8.8	9.5	13.4	10.7	10.9	9.4
29	5 Wordsworth Way, Bothwell	29.1	15.6	11.0	12.1	14.9	10.1	8.3	16.3	15.2	15.0	18.6	17.5	15.3	13.3
30	93 Main Street, Bothwell	39.6	24.0	23.1		40.1	21.3	25.8	27.3	30.0	29.7	28.5	27.8	28.8	25.1
31	25 Main Street, Bothwell	30.1	16.8	16.0	15.5	17.0	11.8	15.3	17.8	19.0	20.2	21.1	19.7	18.4	16.0
32	233 Glasgow Road, Blantyre	89.4	42.4	38.7	21.4	28.9	25.8	27.2	29.7	34.4	33.1	35.6	35.9	36.9	32.1
33	283 Glasgow Road, Blantyre	41.1	21.0	17.5	23.1	18.2	18.0	17.3	21.5	22.9	19.8	21.7	25.7	22.3	19.4
34	1 Hunthill Road, Blantyre	22.8	20.6	16.6	17.5	17.5	12.6	16.2	17.6	19.2	19.7	22.3	18.9	18.5	16.1
35	Wellhall Road / Hillhouse Roundabout	33.1	16.6	16.1	21.1	17.4	13.0	15.4	19.0	19.3	16.1	18.2	18.6	18.7	16.2

Site ID	Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
36	Bardykes Road (West End Bar)	31.2	22.0	17.8	14.4	22.9	16.3	17.2	20.3	20.3	24.2	20.2	21.4	20.7	18.0
37	Burnpark Avenue, Uddingston	44.7	21.0	18.6	22.1	23.8	12.6	15.8	22.6	22.4	26.8	28.0	25.6	23.7	20.6
38	81 Main Street, Uddingston	39.8	22.5	23.4	21.8	24.1	18.3	18.9	21.2	29.8	30.2	36.2	30.1	26.4	22.9
39	North British Road, Uddingston	35.7	20.5	16.9	27.2	23.1	17.4	18.9	24.8	19.2	23.5	23.9	23.2	22.9	19.9
40	Bannatyne Street, Lanark	24.2	15.2	14.0	19.3	18.5	19.9	28.2	24.9	23.7	21.9	28.6	19.2	21.5	18.7

Notes:

(1) See Appendix C for details on bias adjustment

Figure A 1 Trends in Annual Mean NO_2 Concentrations at Automatic Monitoring Sites (2017 to 2021)

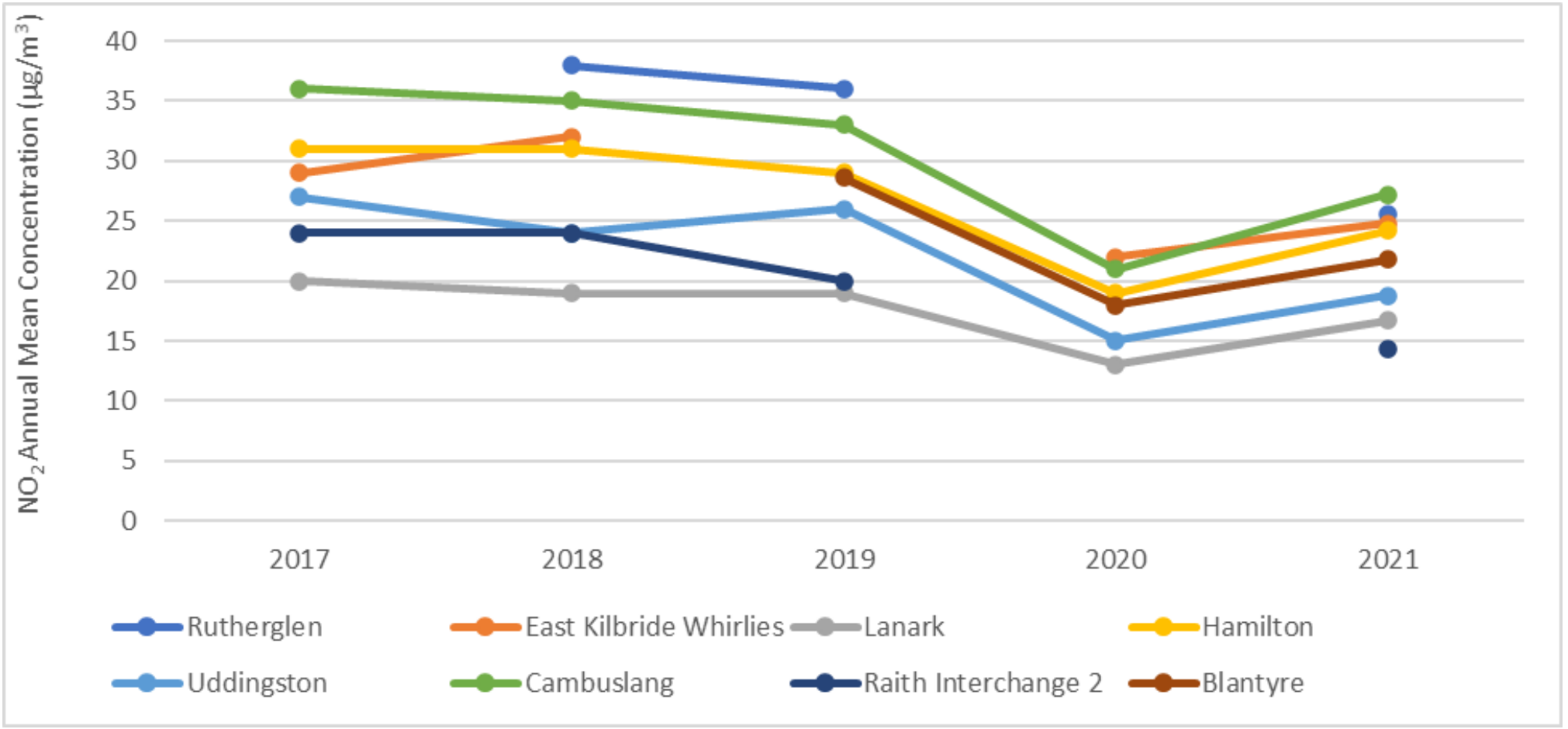


Figure A 2 Trends in Annual Mean NO_2 Concentrations at Roadside Sites (2017 to 2021)

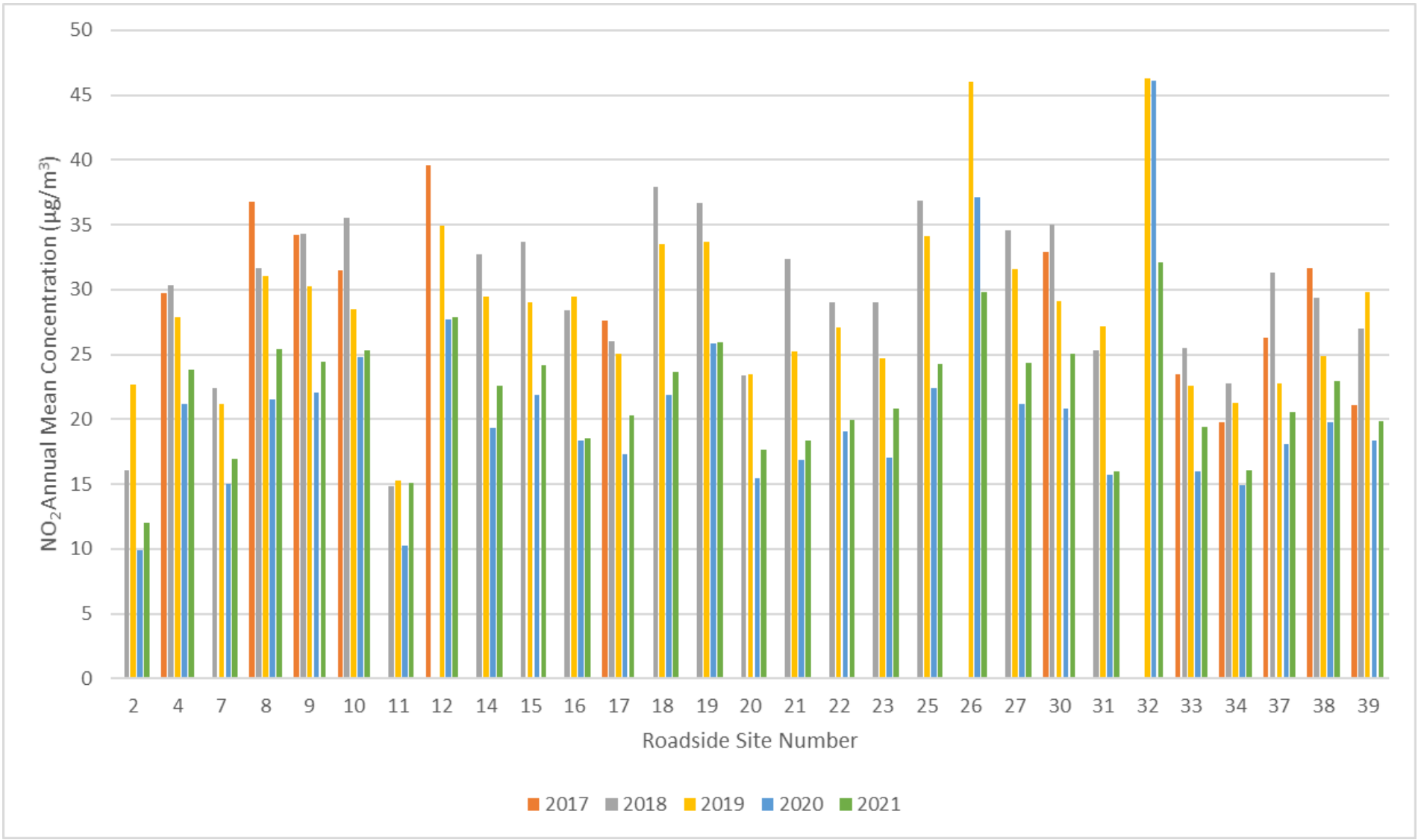


Figure A 3 Trends in Annual Mean NO_2 Concentrations at Kerbside Sites (2017 to 2021)

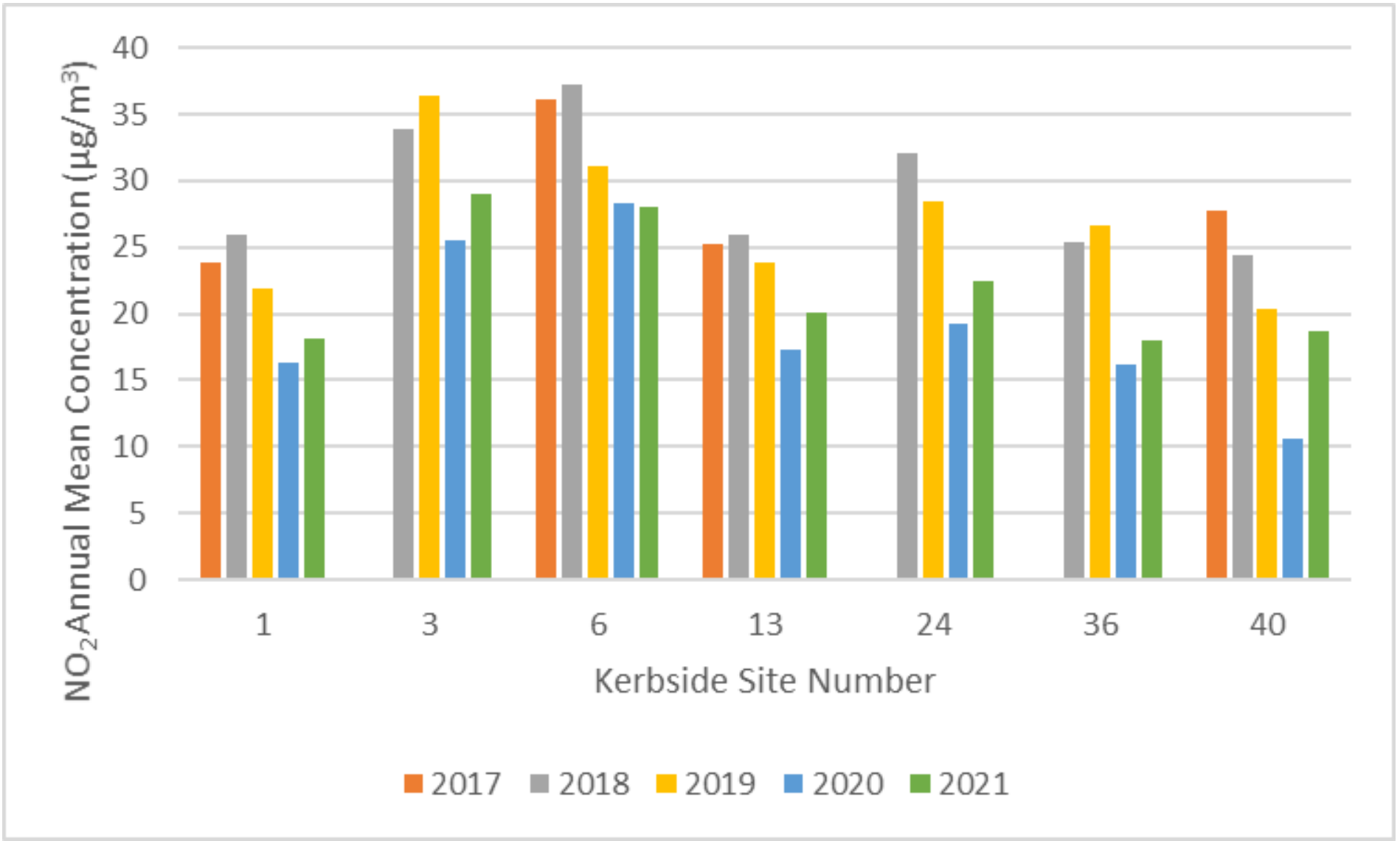


Figure A 4 Trends in Annual Mean NO_2 Concentrations at Urban Background Sites (2017 to 2021)

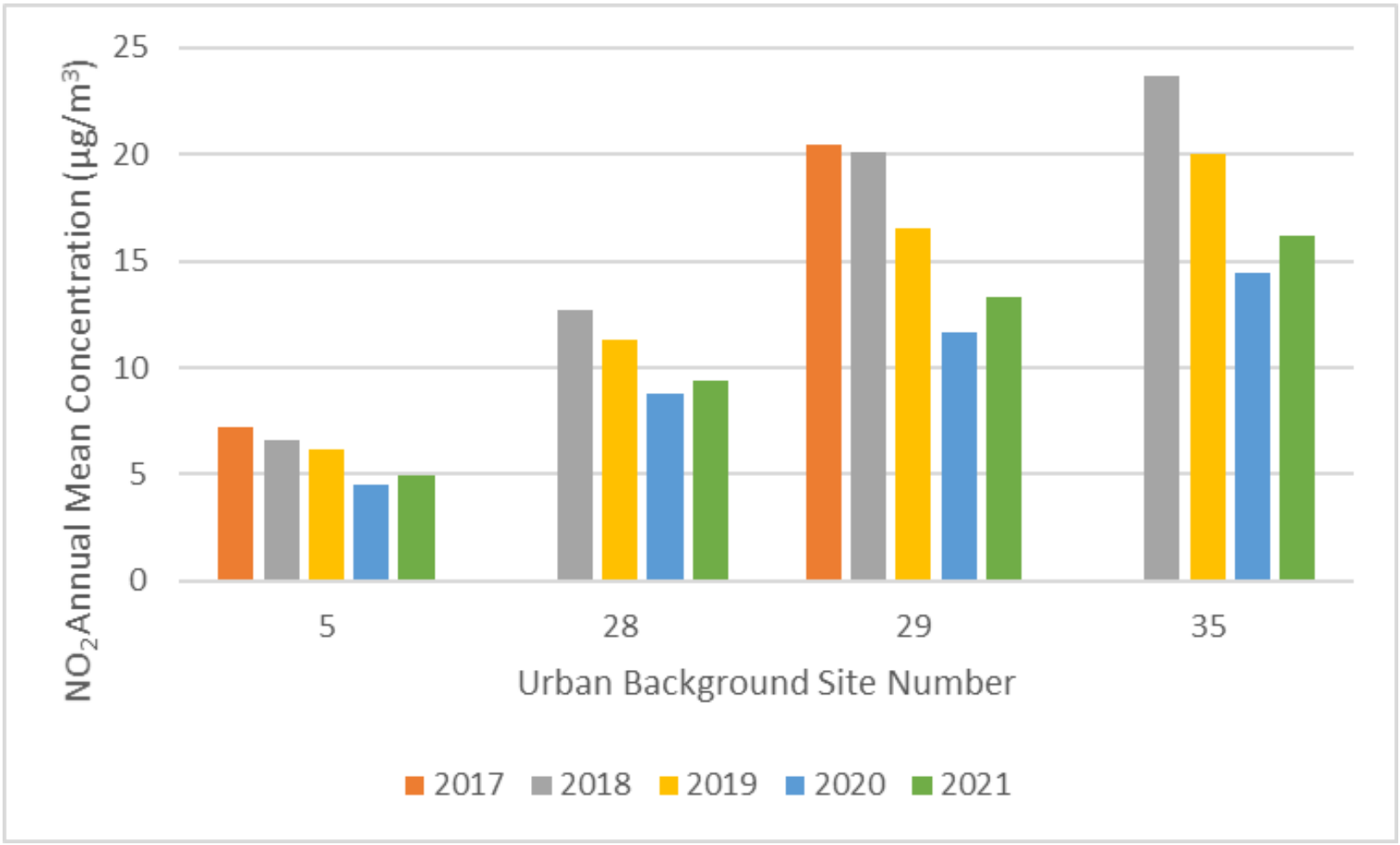


Figure A 5 Trends in Annual Mean PM_{10} Concentrations at Automatic Sites (2017 to 2021)

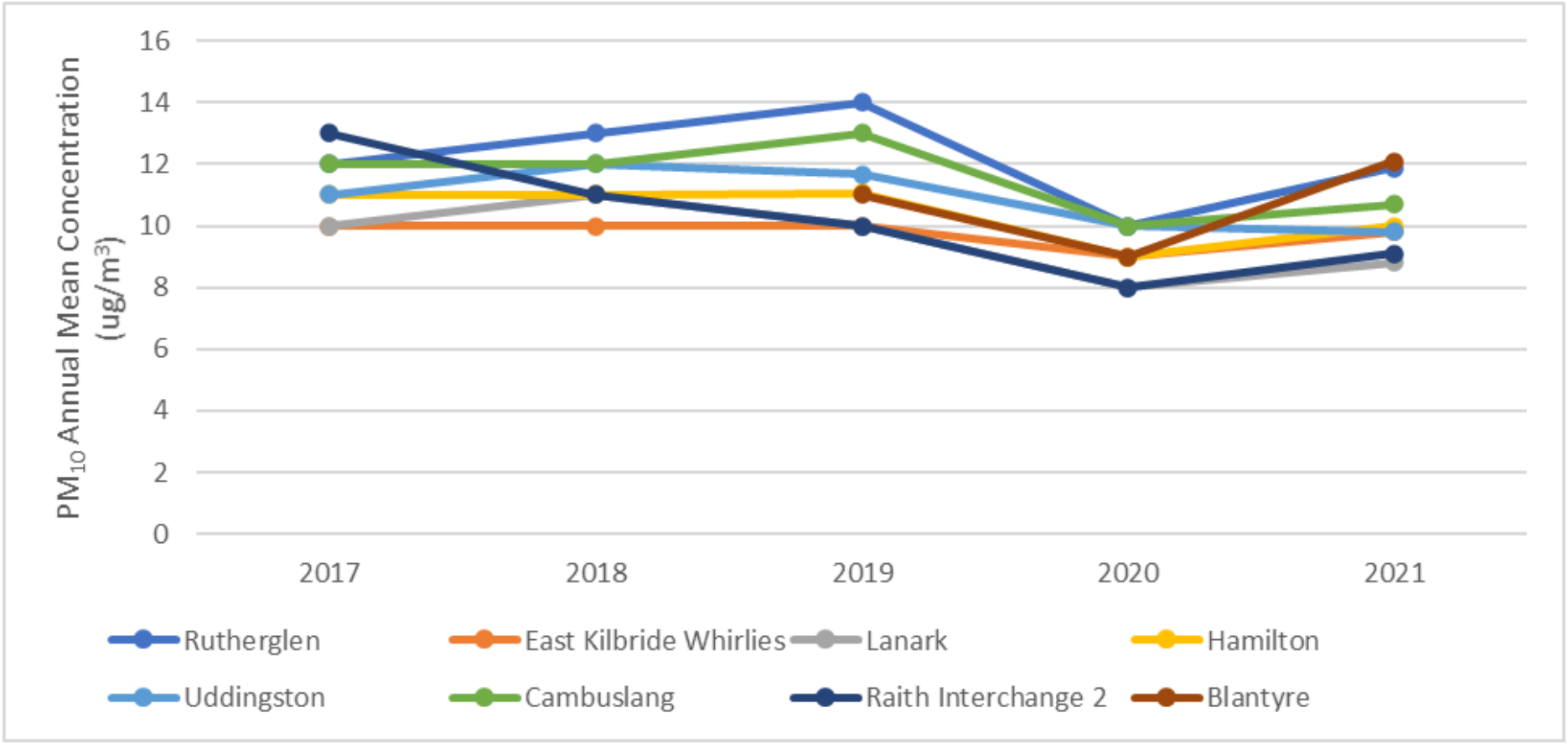
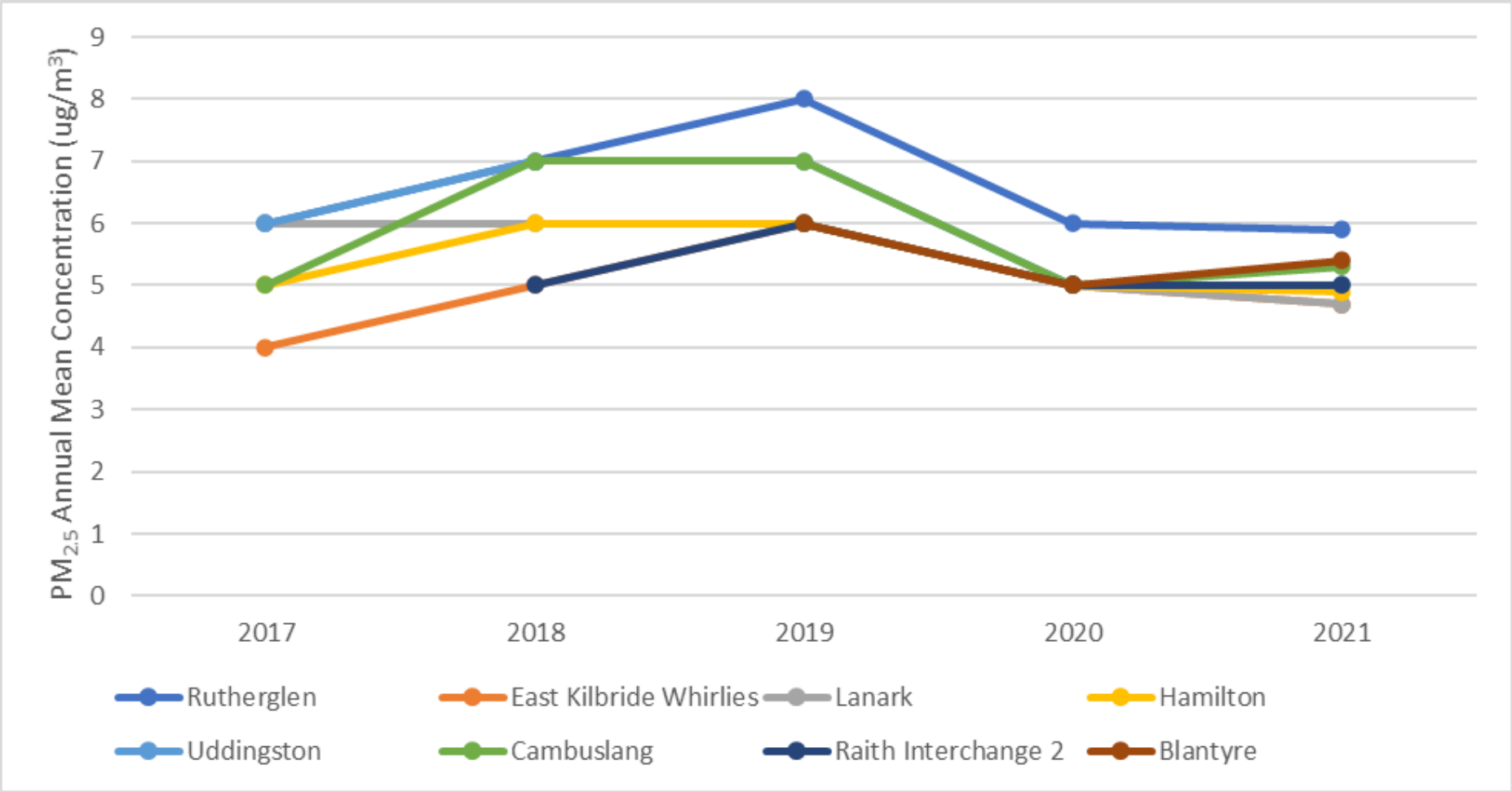


Figure A 6 Trends in Annual Mean $PM_{2.5}$ Concentrations at Automatic Sites (2017 to 2021)



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

New or Changed Sources Identified Within South Lanarkshire Council During 2021

South Lanarkshire Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by South Lanarkshire Council During 2021

South Lanarkshire Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

South Lanarkshire Council maintained the diffusion tube monitoring networks as normal (exposure and analysis in line with diffusion tube calendar). The annual mean NO_2 concentration was calculated using the Diffusion Tube Processing Tool (v2.0), as per LAQM.TG(16). All results have been bias adjusted, annualised (where required) and expressed as an Annual Mean NO_2 concentration as presented in Table B.1.

All passive diffusion tubes (PDT) for NO_2 measurements were prepared and analysed by Edinburgh Scientific Services. The PDTs were prepared using the 50% triethanolamine (TEA) in acetone method. Edinburgh Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within South Lanarkshire Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

South Lanarkshire Council have applied a local bias adjustment factor of 0.87 to the 2021 monitoring data. The locally derived factor is equal to the national bias adjustment factor. The co-location study completed at East Kilbride Whirlies had good overall diffusion tube precision and good overall continuous monitor data capture (details in Table C.3).

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/22

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 June 2022
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/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	11	48	42	14.8%	G	0.87
Edinburgh Scientific Services	50% TEA in acetone	2021		Overall Factor[3] (1 study)				Use		0.87

A summary of bias adjustment factors used by South Lanarkshire Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local/National	03/22	0.87
2020	National	03/21	0.88
2019	National	03/20	0.87
2018	National	03/19	0.96
2017	National	03/18	0.89

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within South Lanarkshire Council required distance correction during 2021.

QA/QC of Automatic Monitoring

All South Lanarkshire Council's automatic monitoring sites are calibrated and audited by Ricardo Energy & Environment whereby monitoring data are managed to the same procedures and standards as Automatic Urban and Rural Network (AURN) sites. All data presented within this APR is ratified. Live/historic data is available at http://www.scottishairquality.scot/.

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

PM_{10} and $PM_{2.5}$ measurements were made using FIDAS analysers. All PM measurement data were fully ratified by Ricardo Energy & Environment to AURN standards.

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

Automatic Monitoring Annualisation

Seven out of eight automatic monitoring locations within South Lanarkshire Council recorded data capture of greater than 75%. One site (Rutherglen) had data capture for particulate matter of less than 75% but greater than 25% and therefore required annualisation. The annualisation data is presented in Table C.2.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within South Lanarkshire Council required distance correction during 2021.

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

Automatic Site ID	Annualisation Factor – Glasgow Waulkmillglen Reservoir	Annualisation Factor – Dundee Mains Loan	Annualisation Factor – Edinburgh St Leonards	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Rutherglen (PM10)	0.98	0.96	0.93	0.96	12.40	11.87	
Rutherglen (PM2.5)	0.94	0.95	0.92	0.94	6.30	5.90	

Table C.3 – Local Bias Adjustment Calculations

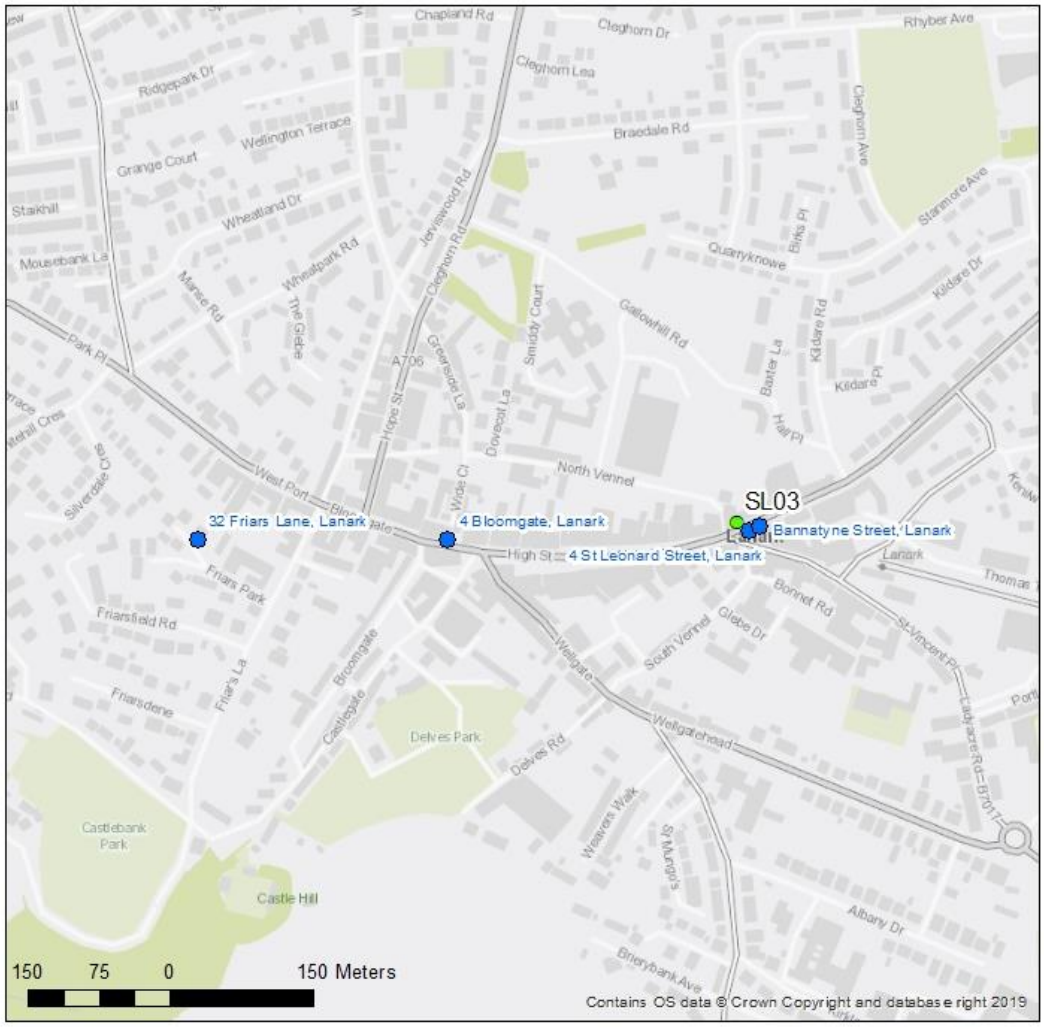
	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	11	-	-	-	-
Bias Factor A	0.87 (0.75 - 1.03)	-	-	-	-
Bias Factor B	15% (-3 % - 34%)	-	-	-	-
Diffusion Tube Mean (µg/m^3)	28.9	-	-	-	-
Mean CV (Precision)	5.5%	-	-	-	-
Automatic Mean (µg/m^3)	25.1	-	-	-	-
Data Capture	99%	-	-	-	-
Adjusted Tube Mean (µg/m^3)	25 (22 - 30)	-	-	-	-

Notes:

A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

Appendix D: Map of the Diffusion Tube Monitoring Network and AQMAs

Figure D 1 Lanark Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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Figure D 2 Carluke Diffusion Tube Site

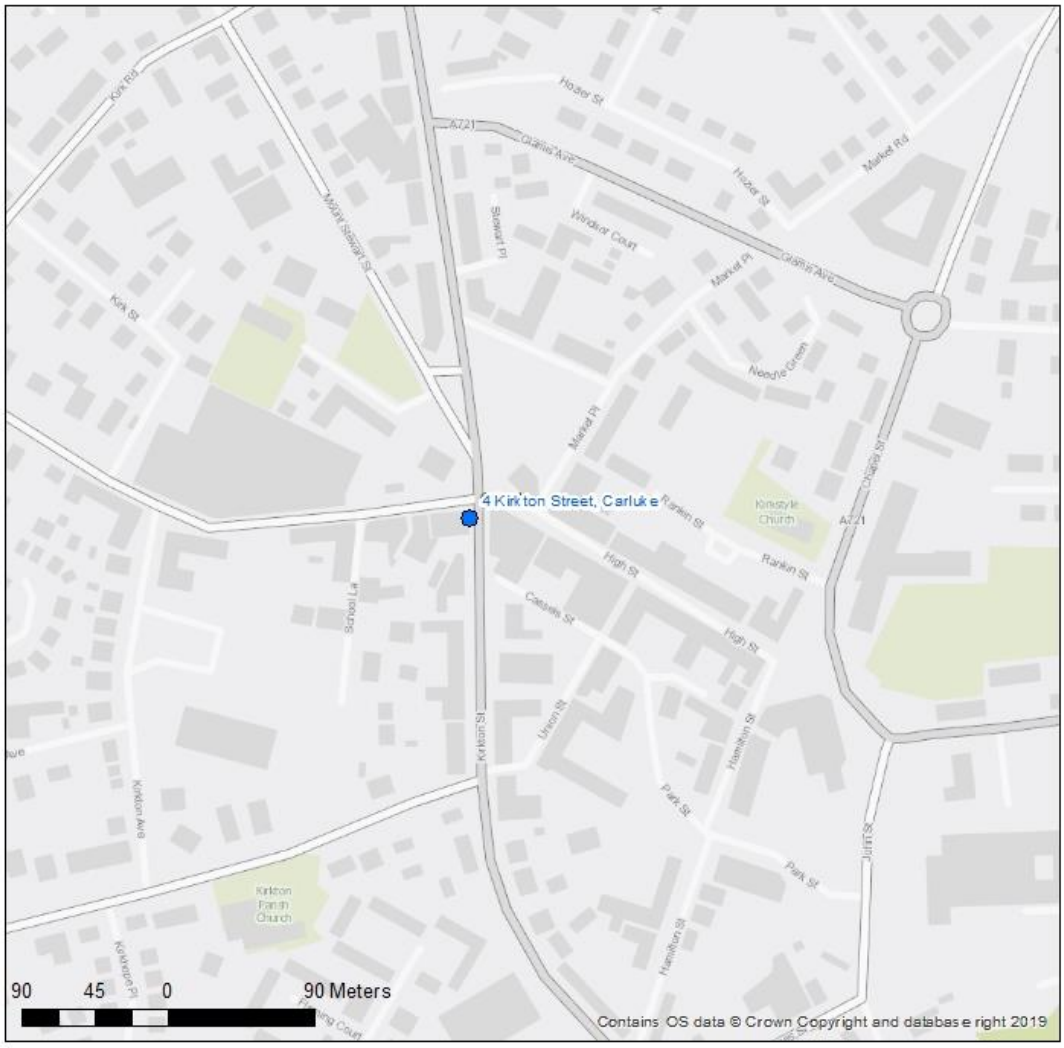
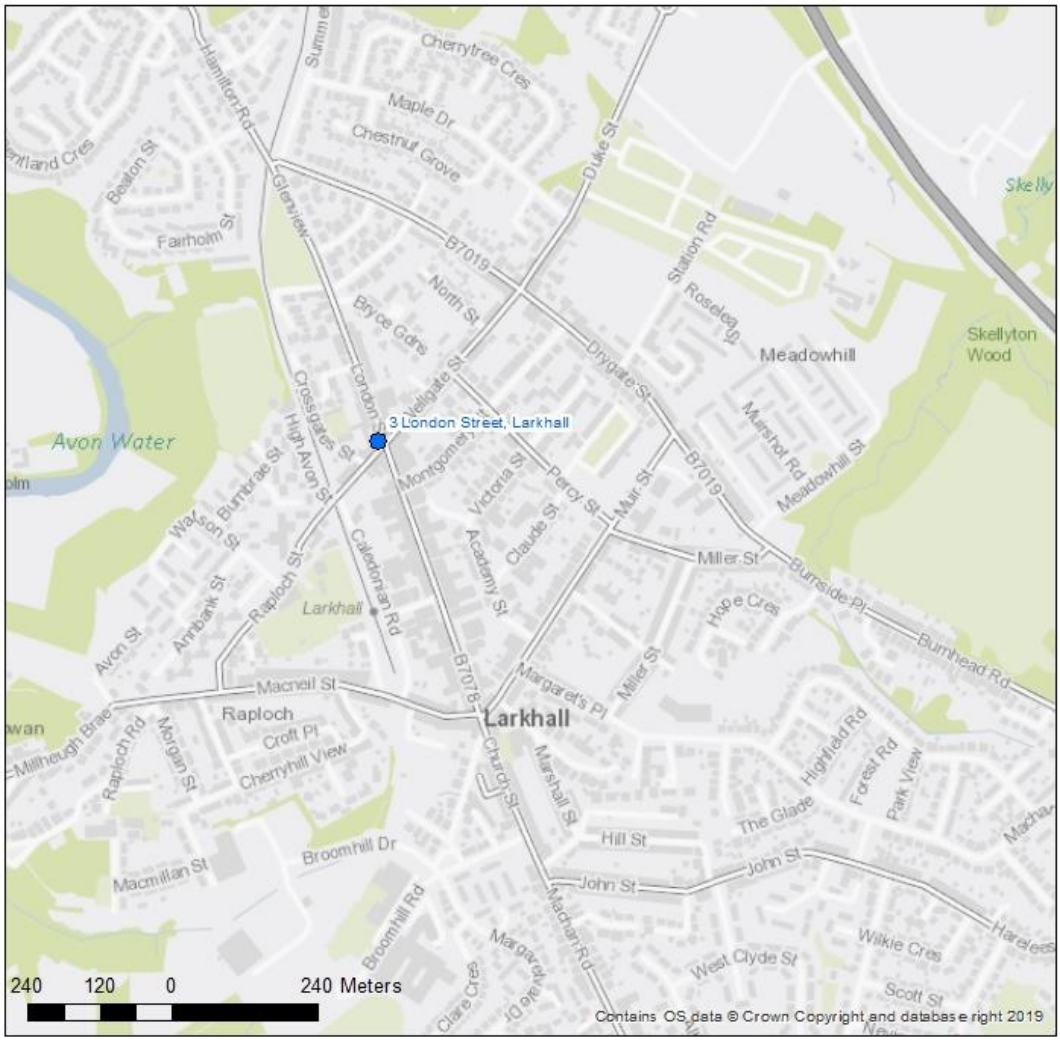


Figure D 3 Larkhall Diffusion Tube Site



N

Legend:

- Diffusion Tube
- Automatic Station

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Figure D 4 Hamilton Monitoring Sites

N

Legend:

- Diffusion Tube
- Automatic Station

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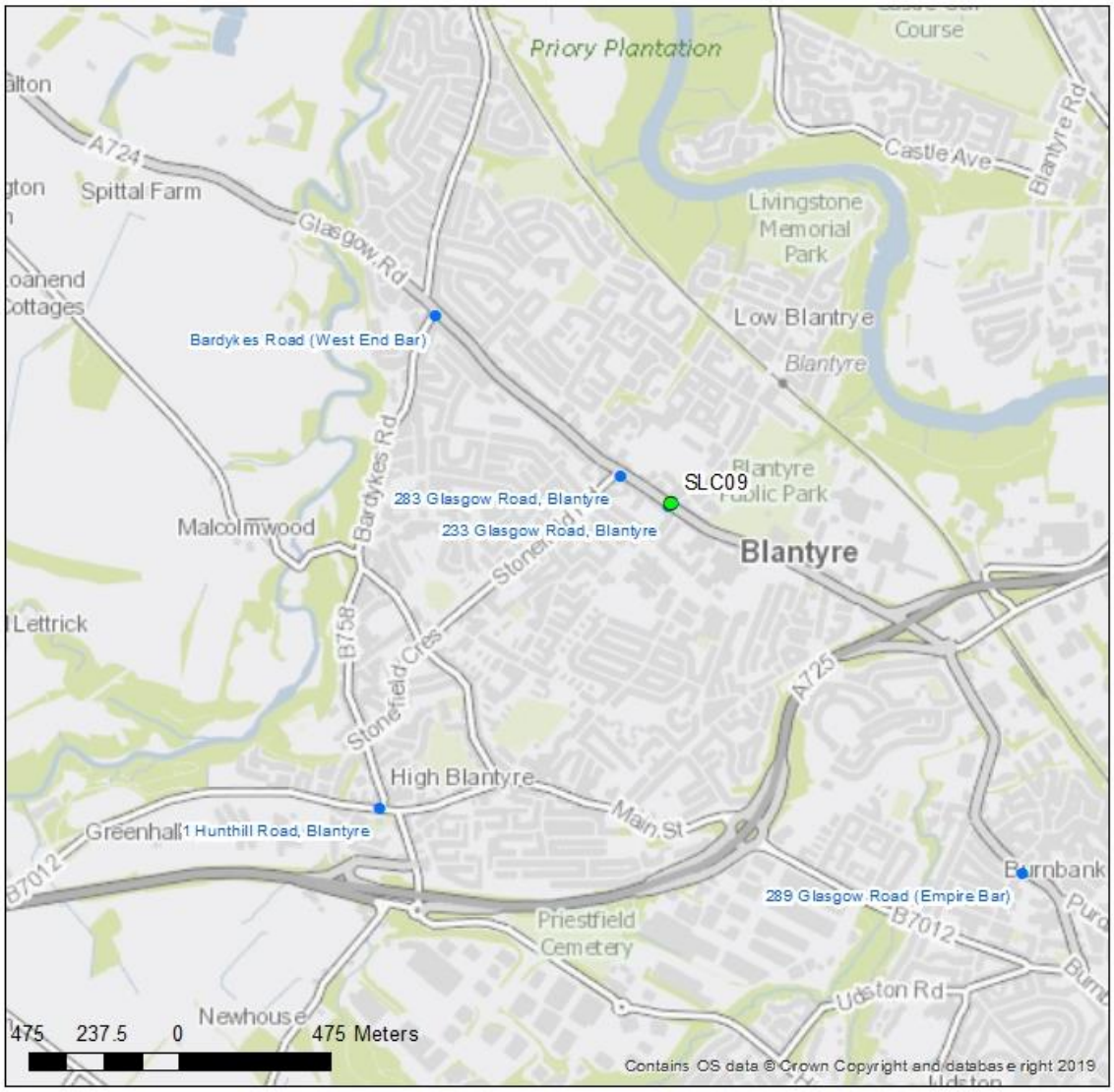
Figure D 5 Blantyre Monitoring Sites



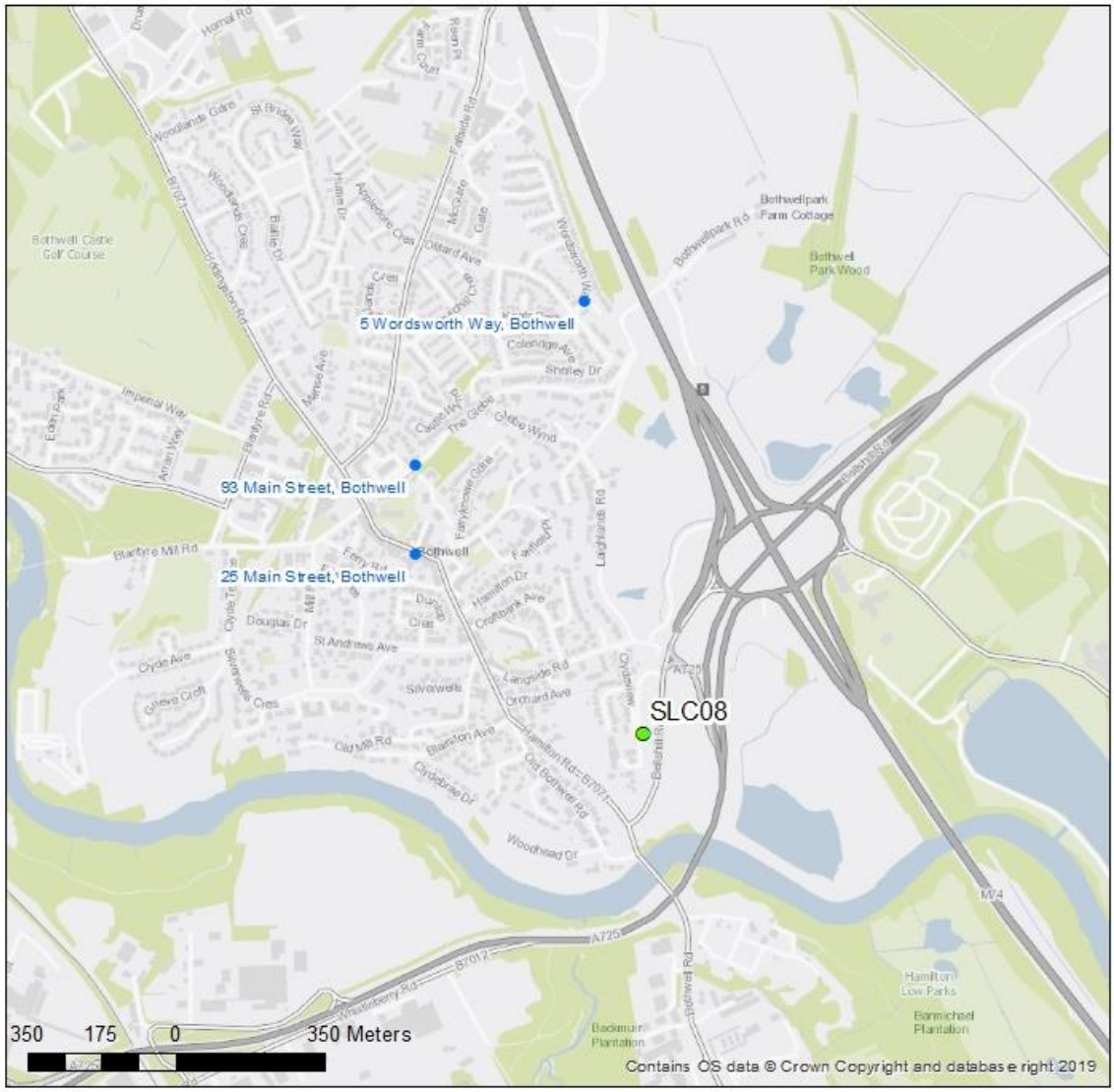
N

Legend:

- Diffusion Tube
- Automatic Station

Ricardo Energy & Environment

Figure D 6 Raith Interchange and Bothwell Monitoring Sites



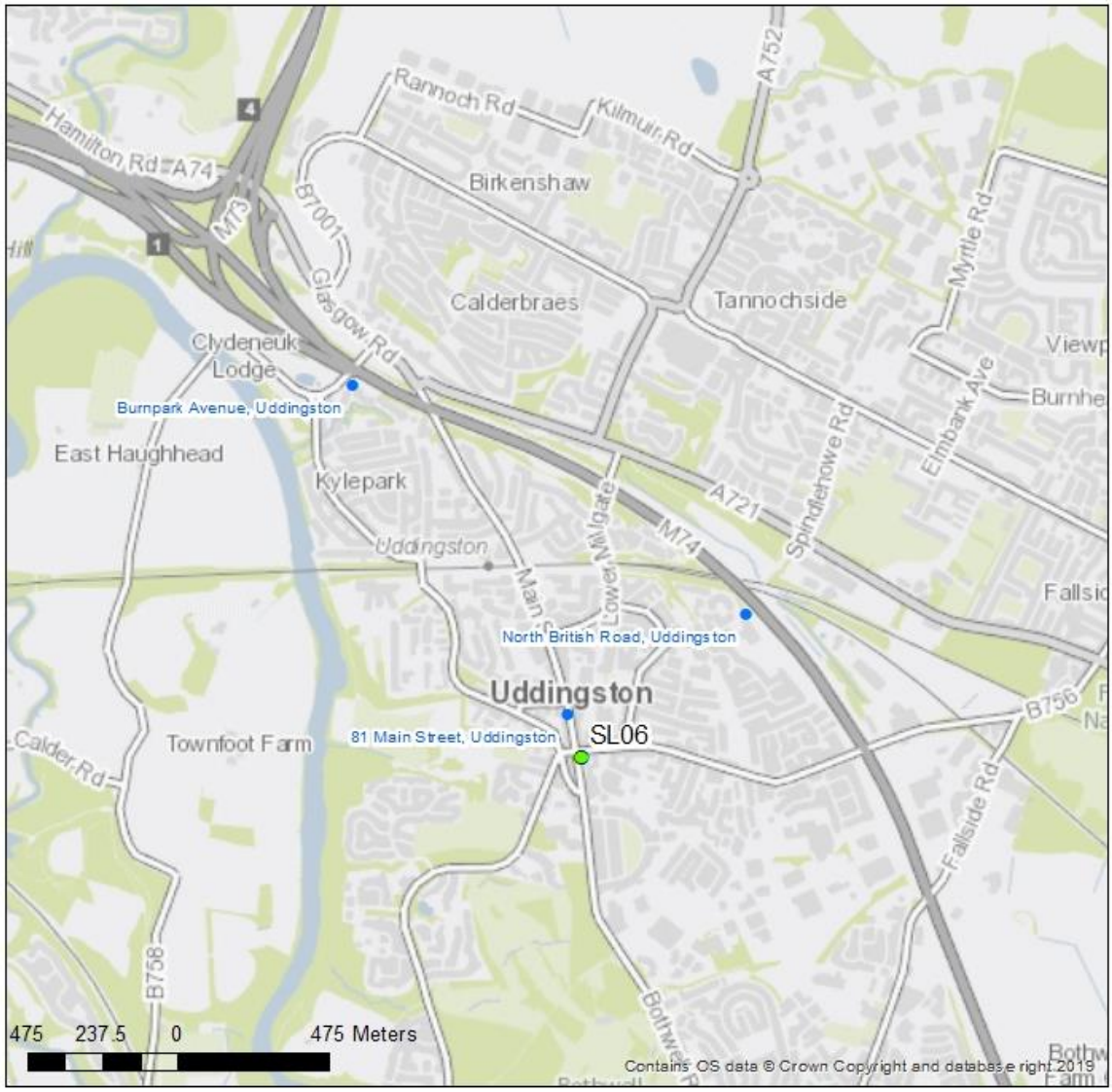
N

Legend:

- Diffusion Tube
- Automatic Station

Ricardo Energy & Environment

Figure D 7 Uddingston Monitoring Sites



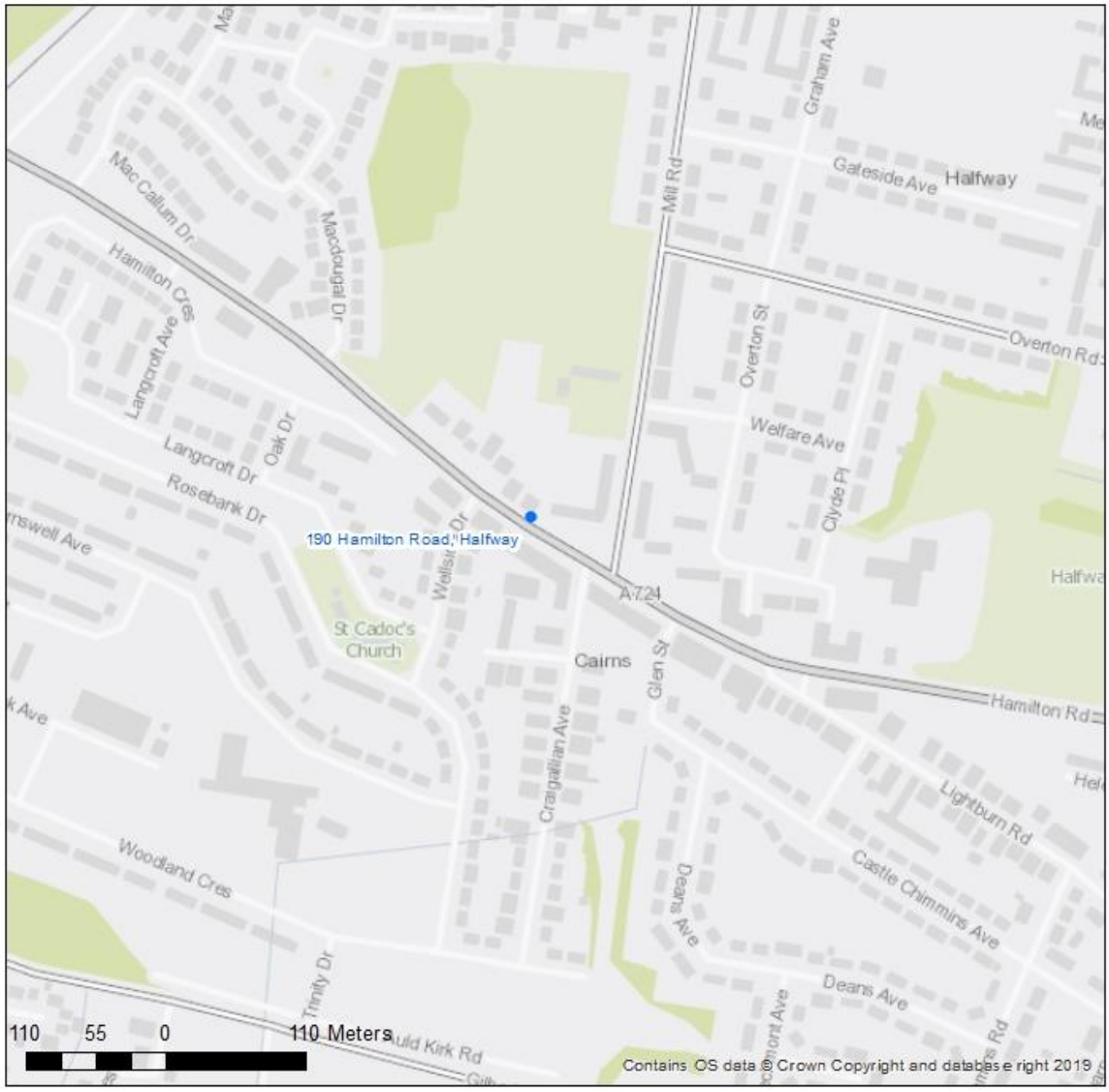
N

Legend:

- Diffusion Tube
- Automatic Station

Ricardo Energy & Environment

Figure D 8 Halfway Diffusion Tube Site



N

Legend:

- Diffusion Tube
- Automatic Station

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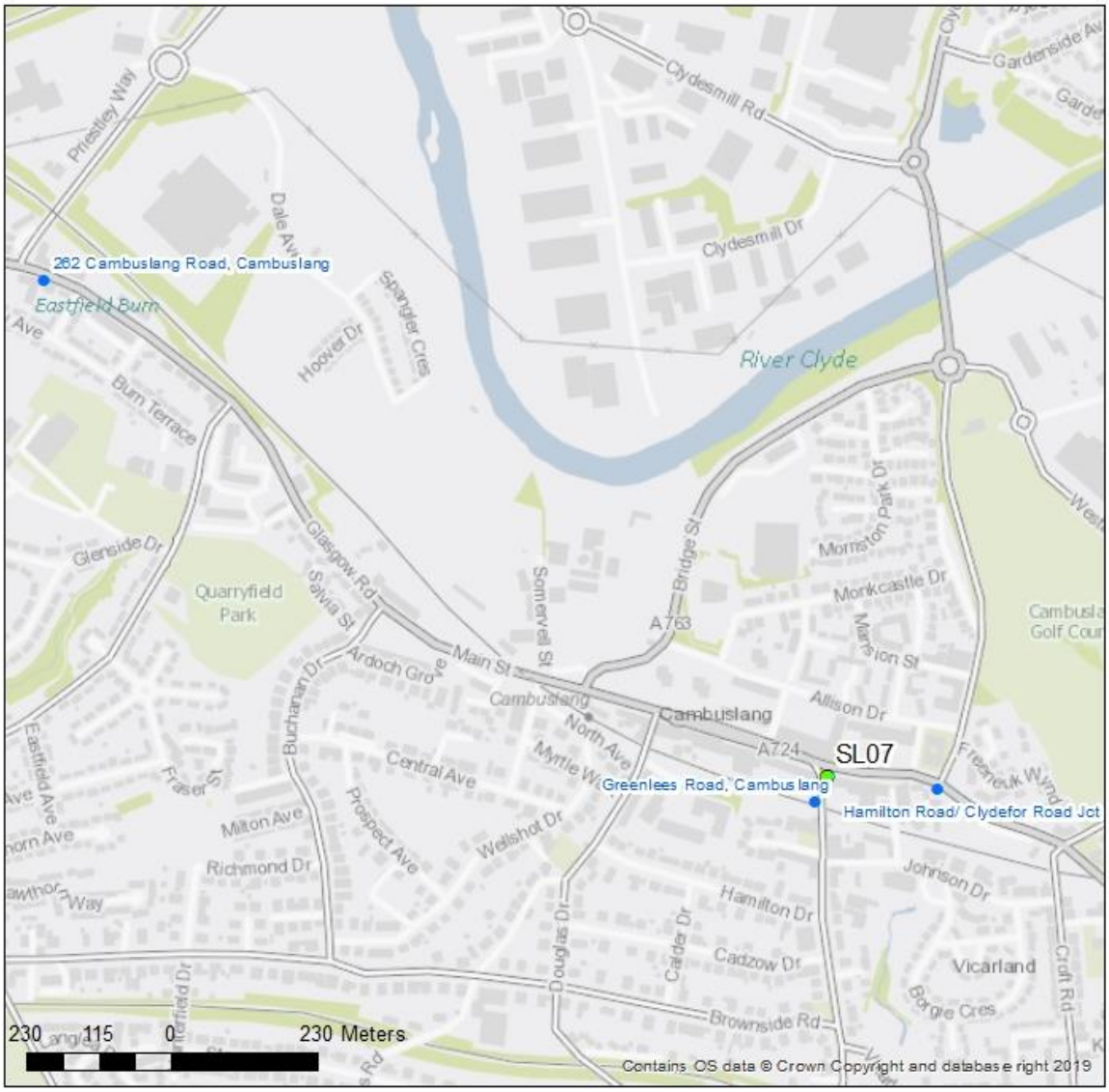
Figure D 9 Cambuslang Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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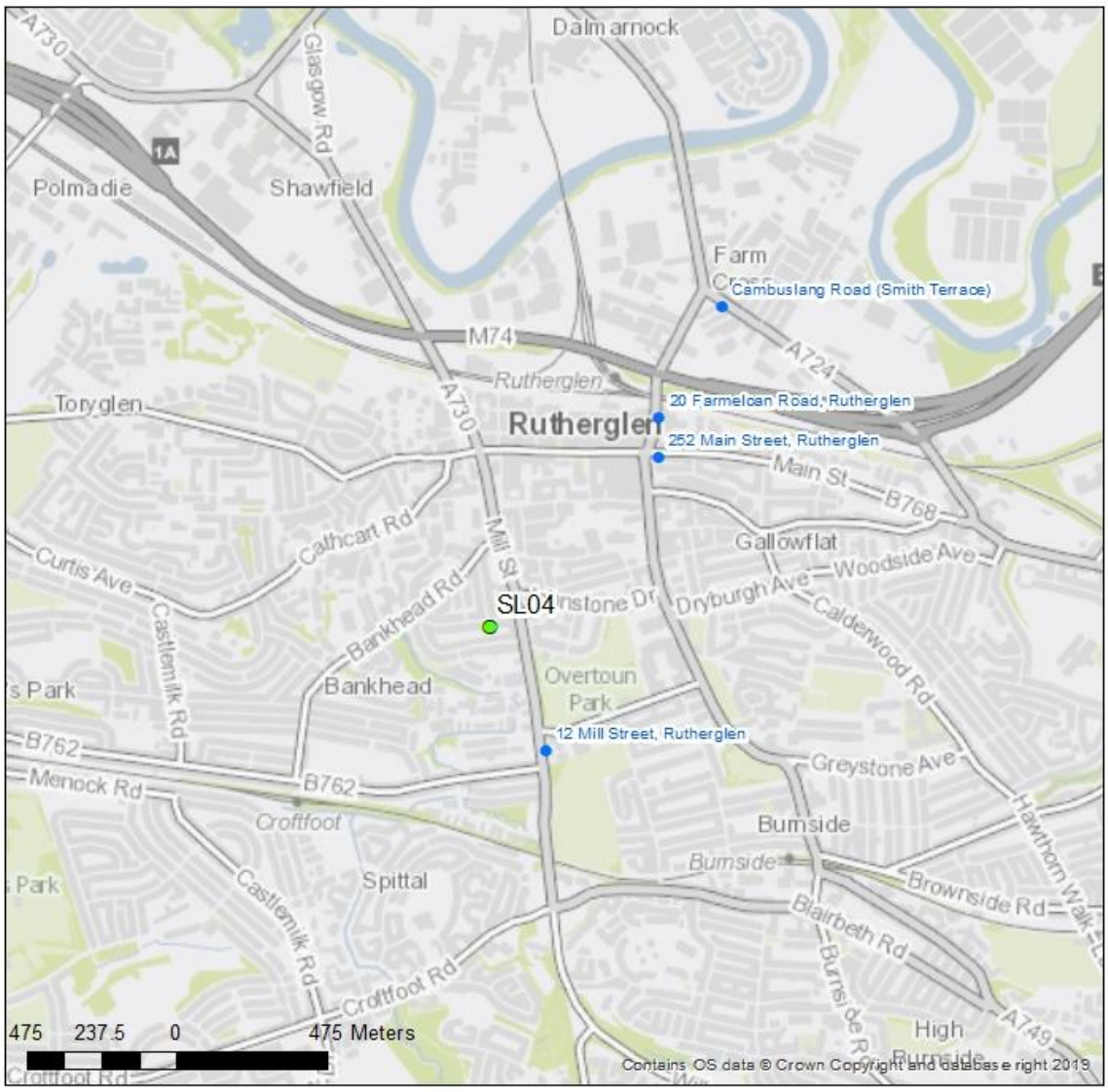
Figure D 10 Rutherglen Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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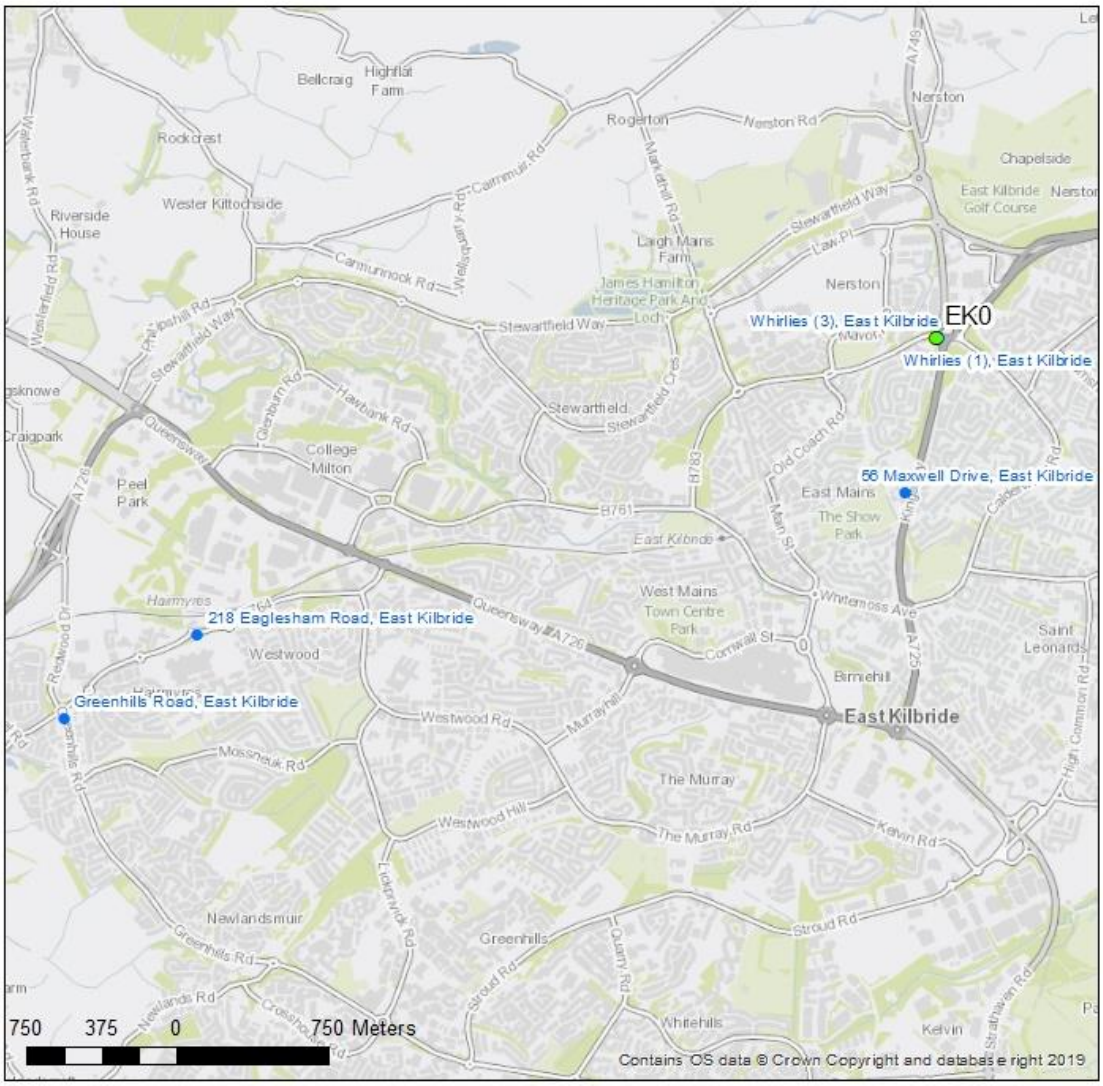
Figure D 11 East Kilbride Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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Figure D 12 Lanark AQMA with monitoring locations

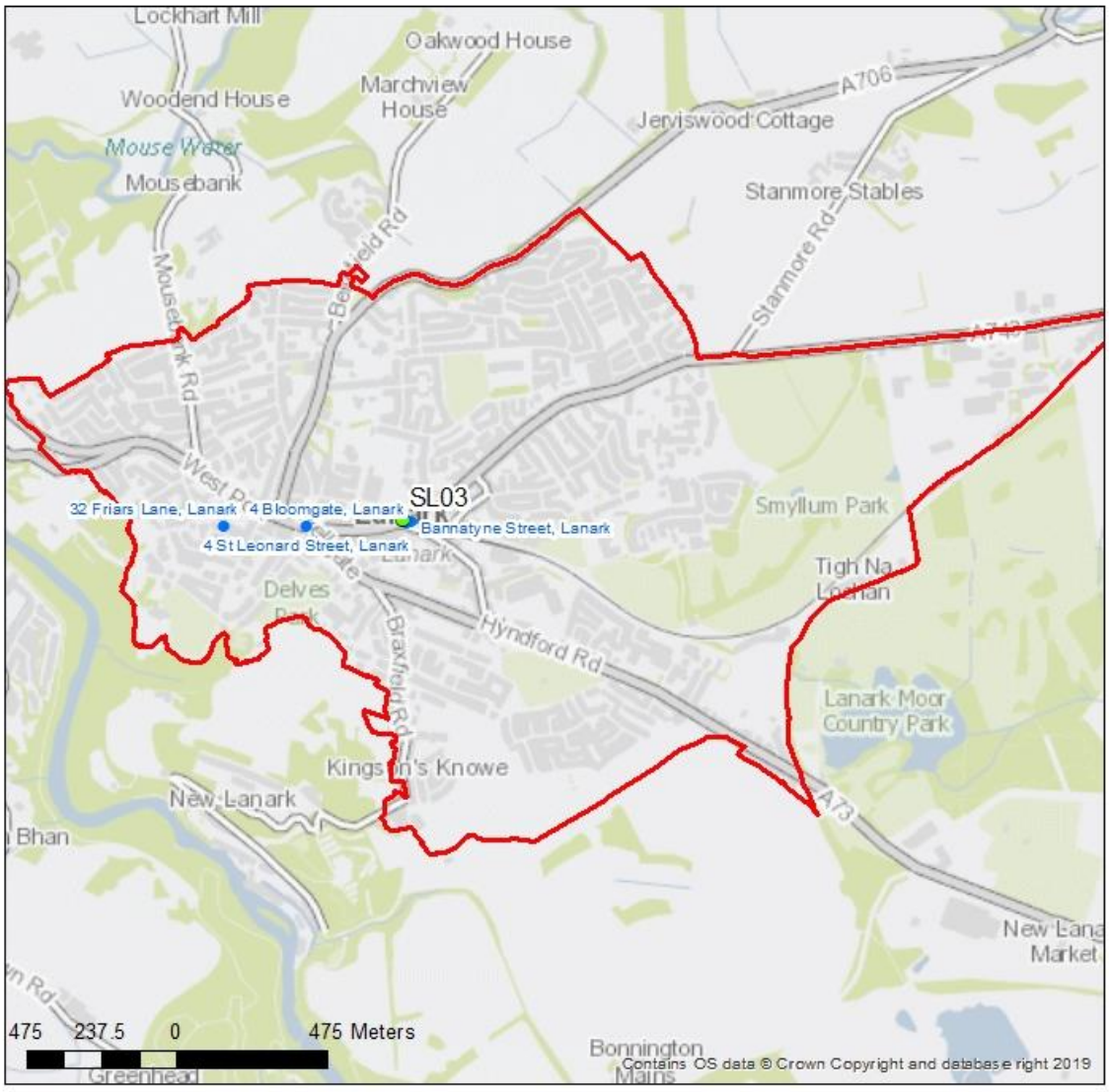

Figure D 13 East Kilbride Whirlies AQMA with monitoring locations

N

Legend:

- Diffusion Tube
- Automatic Station
- AQMA Boundary

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Figure D 14 Rutherglen AQMA with monitoring locations

N

Legend:

- Diffusion Tube
- Automatic Station
- AQMA Boundary

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Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

Defra, TG(16), Local Air Quality Management Technical Guidance, April 2021

Defra UK AIR AQMA interactive map; Download the 2020 AQMA Dataset; available at https://uk-air.defra.gov.uk/aqma/maps

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Scottish Air Quality Database, available at http://www.scottishairquality.scot/