Annual Progress Report (APR)

2021 Air Quality Annual Progress Report (APR) for
South Lanarkshire Council

In fulfilment of Part IV
of the Environment Act 1995

Local Air Quality Management

September 2021

Customer:
South Lanarkshire Council

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Executive Summary: Air Quality in Our Area

Air Quality in South Lanarkshire

Air Quality is generally good in most parts of South Lanarkshire. Monitoring network data collected during 2020 shows a downward trend in measured concentrations of the main pollutants of concern. There are however 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 2020; 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 $\mu g.m^{-3}$ during 2020. 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.

Exceedances of the NO_2 annual mean objective were measured at one diffusion tube site at 233 Glasgow Road, Blantyre. A (2020) Detailed Assessment of air quality was conducted

at this location in 2020[1], further details are provided in the 'Local Priorities and Challenges' section of this summary below.

Only two 1-hour mean NO_2 concentrations in excess of 200 µg.m^{-3} objective were measured at East Kilbride Whirlies during 2020; all measurement sites were therefore compliant with the permitted number of exceedances of the 1-hour short-term mean objective[2].

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 2020. All measured PM_{10} concentrations were lower in 2020 when compared to 2019 (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 2020. All measurement sites were therefore compliant with the 24-hour short-term mean objective[3].

South Lanarkshire Council measured $PM_{2.5}$ concentrations at eight of their automatic sites in 2020. No exceedances of the Scottish $PM_{2.5}$ annual mean objective[4] 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.

Actions to Improve Air Quality

During the current reporting year of 2020 South Lanarkshire Council has taken forward a number of measures in pursuit of improving local air quality. Section 2 provides details of the progress made on these measures.

[1] South Lanarkshire Council, 2020, Repeat Detailed Assessment of Air Quality at Glasgow Road, Blantyre. Available at: http://www.scottishairquality.scot/assets/documents//South_Lanarkshire_LAQM_Detailed_Assessment_Issue_2.pdf

[2] 1-hr mean 200 µg.m^{-3} standard is not to be exceeded more than 18 times per year

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

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

Local Priorities and Challenges

Blantyre

A detailed assessment of air quality at Glasgow Road, Blantyre has been undertaken and submitted to Defra. The study 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 $\mu.m^{-3}$ which is considered a marginal exceedance of the 40 $\mu.m^{-3}$ objective.

The 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 centre accurately.

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.

Defra's LAQM appraisers have agreed that South Lanarkshire Council should deploy 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 will also be 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 $\mu g.m^{-3}$ were modelled at one ground floor location where there may be relevant human exposure at one residential property on Low Patrick Street.
- There were no exceedances of the PM_{10} or $PM_{2.5}$ air quality objectives during 2019.

There were however uncertainties regarding NO_2 measurement data at Low Patrick Street. During 2019, the diffusion tube sampler was located close to operational boiler flue pipes on the adjacent building.

At this time, South Lanarkshire Council are not therefore 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.

There are no exceedances of the NO_2, PM_{10} or $PM_{2.5}$ air quality objectives at locations of relevant exposure during 2020. NO_2 annual mean concentrations are however close to the 40 $\mu.m^{-3}$ objective at residential properties on Low Patrick Street therefore we will continue to measure NO_2 at this location and review and assess air quality in Hamilton.

COVID -19 Impact

Traffic activity across South Lanarkshire reduced significantly during 2020 due to COVID-19 lockdown restrictions. It is currently uncertain if in the coming year average daily traffic will decrease or increase due to various factors associated with the pandemic guidance and restrictions. For example, increased home working, increased active travel, discourages use of public transport are factors which will impact traffic numbers. We will continue to closely monitor air quality across South Lanarkshire.

How to Get Involved

The public can obtain further information relating to air quality in South Lanarkshire on the Council Website (https://www.southlanarkshire.gov.uk/info/200141/environment).

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 2020. 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 if 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	31.12.2020
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.	Lanark AQMA, details available at: http://www.scottishairquality.co.uk/laqm/aqma?id=386

2.2 Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner

organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. 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 within this strategy is demonstrated below.

2.2.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. South Lanarkshire Council's Employee Travel Plan contains information on reducing the requirement to travel. The Plan provides information on alternative ways of working that can help reduce travel requirements including:

1. Utilising an alternative work location closer to home in line with appropriate service delivery requirements. In addition, there is an option to permanently relocate to reduce commuting distance.
2. Flexible working arrangements are available to reduce pressures on the commute by enabling travel at less busy times and in particular encouraging less travel if a compressed working pattern is adopted.
3. Home working is another option available to employees and is suitable for those able to work from home as well as being dependent on the type of service they deliver.
4. For some roles there is an element of travel required and measures to reduce business travel are encouraged including:

    - Consider if meetings are necessary, could business be discussed over the telephone rather than a face-to-face meeting.
    - Employ technology to accommodate group discussion. Video conferencing, instant messaging or email can be used to facilitate group discussions.
    - Plan meetings at the beginning or end of the day to accommodate commuting commitments.
    - Arrange meetings across different locations on the same day taking into account efficient route planning.
    - Explore the opportunity to work at alternative locations to avoid additional travel back to core business location.

- Arrange meetings at locations that people travel through on their way to work or home from work or where most people are located.
- Share travelling to meetings with colleagues.

5. Digital technologies can impact the need for future travel. South Lanarkshire Council's Local Development Plan, 2015, which is currently being updated, recognises the importance of supporting digital industries through ensuring strategic economic investment locations have been identified for this key growth sector as well as promoting and safeguarding the existing digital sector. The plan also recognises the need to adapt to the changing needs of occupiers of strategic business locations and the advances in technology to ensure that communities are provided for.
6. The Covid-19 pandemic has escalated investment and deployment of technological resources to support home working. Many of these technological methods have proven to be effective and have been beneficial to the council, residents and communities. South Lanarkshire currently has a significant number of council employees working in an agile manner through remote means and, as part of Covid-19 recovery planning, are investigating options to build to build upon this going forward. This way of working has the potential to reduce the council's fleet needs, reduce travel and the costs associated with these, and also increasing productivity.

2.2.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered.

There are a number of plans and policies within South Lanarkshire which impact both climate change and air quality. Both subjects are considered regularly by South Lanarkshire Council's Corporate Strategic Environmental Assessment Working Group which reviews any new or revised strategies, plans or policies. This process has facilitated greater synergy between both subjects. Examples which have a positive impact on both climate change and air quality are detailed as follows:

1. The Local Development Plan seeks to ensure that future development takes place in a sustainable way. The overall strategic vision of the plan is to 'promote the continued growth and regeneration of South Lanarkshire by seeking sustainable economic and

social development within a low carbon economy whilst protecting and enhancing the environment'. This includes a commitment to ensure development is sustainably located to make best use of public transport and has no significant impacts on the environment. Reducing South Lanarkshire's reliance on fossil fuels whilst supporting the use of renewable, low and zero carbon energy generating technologies are also inbuilt within the Plan. This vision and policies benefit both climate change and air quality.

2. South Lanarkshire Council's Local Transport Strategy identifies a number of measures available to the Council and its partners to slow down the rate of traffic growth. The implementation of school travel plans is an example of one such measure. School travel plans aim to increase the number of children walking, cycling and using public transport to travel. As of June 2021, 71 out of 149 schools had implemented a travel plan with a further 65 plans in development.
3. The Local Development Plan's Supplementary Guidance 1: Sustainable Development and Climate Change recognises that planning has a critical role to play in implementing a positive vision for a sustainable future. A key policy is that proposals for new development must, where possible, seek to minimise and mitigate against the effects of climate change by ensuring new development includes opportunities for active travel routes and provisions for public transport which is recognised as having a positive impact on air quality. Development is also required to ensure that there will be no significant impact on air quality. The supplementary guidance also details the provision of electric vehicle recharging infrastructure in new developments to encourage the adoption of low carbon vehicles as another key measure that will have both climate change and air quality benefits.
4. Policy 16 of South Lanarkshire's Local Development Plan requires new development proposals to consider, and where appropriate, mitigate the resulting impacts of traffic growth, particularly development related traffic. The development of walking, cycling and public transport networks which provide a viable and attractive alternative to car travel are supported through this policy. Existing and proposed walking and cycling routes will also be safeguarded through this policy.
5. South Lanarkshire Council's Sustainable Development and Climate Change Strategy recognises that finding a balance between economic, social and environmental objectives to safeguard the wellbeing of future generations is vital for health and wellbeing. The most recent strategy focuses on the environmental aspects of sustainable development. The policy recognises that a key strategy for a sustainable

environment includes the development of South Lanarkshire's Air Quality Action Plan which is presently undergoing consultation prior to being finalised. The review and assessment of air quality is also recognised as an outcome which contributes to quality of the local environment and wellbeing of local communities.

6. The most recent Carbon Management Plan produced in 2016 recognises the benefits renewable technology can have on reducing carbon emissions. The Plan also recognises air quality management as a wider Council consideration when considering such technologies. In particular, the plan stipulates that the installation of any biomass can only be progressed if air quality has been considered.
7. The Council prepares the 'State of the Environment' report biennially which provides quality data that facilitates evaluation of a range of environmental issues, identifies trends and provides an overall picture of the condition or state of South Lanarkshire's environment. There are chapters which consider climate change and also air quality within the report and it provides information on the current status and direction of trend for indicators such as GHG emissions, energy consumption, transport emissions, renewable capacity and environmental awareness.

2.2.3 Local Transport Strategy

South Lanarkshire continues to expand its commitment to supporting active and sustainable travel through access to safe and convenient walking and cycling networks as well as improving public transport links. This has been demonstrated in the last year with the investment on new walking and cycling infrastructure within the East Kilbride area linking East Kilbride train station with the town centre. This was identified as a key priority within the East Kilbride Active Travel Study and the delivery of this has been accelerated after receiving funding from Scottish Government's "Spaces for People" and from Sustrans to support active travel and social distancing work as part of the Covid pandemic response. The new infrastructure is part of the broader East Kilbride Active Travel Network and will create a route between the rail station and the town centre. This route will in turn connect into the wider network with a link to new cycle lanes being further developed. This will support the planned East Kilbride Rail Enhancement investment which is set to deliver significant upgrade of East Kilbride Train Station.

In addition, South Lanarkshire are introducing a trial scheme to implement car free zones at three schools where the streets outside the school are closed to traffic at school opening

and closing times. Closing the streets to vehicles helps achieve a safer, more pleasant environment for everyone using the streets whilst maintaining access for residents, businesses, pedestrians and cyclists.

The 3 schools where this scheme is due to be implemented are:

- Glenlui Avenue, Rutherglen (Burnside Primary School);
- Lochabere Drive (West of Ross Place) and Mar Gardens, Rutherglen (Loch and St Anthony's Primary Schools); and
- Park Lane/Enisfree Road, Blantyre (St Joseph's Primary School)

Another objective of LTS focuses on quality and safety for all by improving the quality of road and footway infrastructure. Almost 90 schools have had new 20 mph mandatory speed limits in place to replace the existing advisory ones. The new limits are designed to make it easier and safer for children and their parents to walk, cycle and wheel to and from school.

A further LTS objective aims to promote accessibility, to key services, job opportunities and community facilities through the development and influencing of public transport improvements. The Council has 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.

2.2.4 Mobile monitoring to help identify pollution hotspots

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.

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.

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 2020 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	An Air Quality Strategy is in draft format which details high level guidance to help inform other strategies and policies across the	2023

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		organisations and the general public		Council. The policy is 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. Due to the pandemic	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		contribute to improving local air quality.		however this year's workshop schedule had to be cancelled. An online active travel resource for primary schools has now been developed and will be 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 and Carluke. Further studies are being undertaken in Larkhall, Strathaven, Bothwell, Blantyre and Uddingston. 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 now 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. 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 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.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					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) Act 1997 agreements Implementation Phase: Ongoing	Policy guidance and development control	Ensure future development does not compromise achievement of statutory air quality objectives	Consideration of air quality issues in the development management process.	No Section 75 agreements have been processed this year in terms of air quality.	Ongoing
Whirlies 1	Real time bus passenger information	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	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Completed				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.	
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. A pilot project is ongoing within the Rutherglen and Cambuslang area with local Active Schools Coordinators travel between local schools on electric bikes. In addition, patients who have received a physical activity prescription referral from their GP's also have access to electric bikes and can hire bikes free of charge for an initial 12 week period.	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 review of traffic signage within the Lanark area is currently underway. This review is considering signage to cycle routes and also electric charging points for vehicles. The review is however awaiting the outcome of traffic review studies currently being undertaken within the Lanark area.	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. The traffic review will inform this project 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 traffic review model 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	Limited progress has been made with this measure. 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 traffic review findings 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. To date 241 companies are members of the schemes, two of which are taxi firms. A total of 9,046 vehicles have been assessed as part of the scheme.	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

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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
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: Ongoing	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.	Ongoing

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. This is currently under review to establish what impact lockdown has had given the significant reduction in volume of traffic.	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.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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
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 is currently underway. The project is targeted at employees who travel between sites and are replacing conventional car commutes with ebike journeys. In addition a further project has been developed which includes an option for ebike use for patients referred by their GP's to SLLC to increase their activity levels.	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 at eight sites during 2020. 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. There were no measurements at the Rutherglen and Raith Interchange 2 sites during 2020 due to ongoing instrument faults.

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 2020. 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.

3.2 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 $\mu g.m^{-3}$ air quality objective were measured at **automatic** monitoring sites in South Lanarkshire during 2020.

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 $\mu g.m^{-3}$.

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. An NO_2 annual mean concentration in excess of the 40 $\mu g.m^{-3}$ objective was measured at one diffusion tube site in South Lanarkshire during 2020. An exceedance of the annual mean objective was measured at tube 32 – 233 Glasgow Road, Blantyre (46.1 $\mu g.m^{-3}$).

This result was adjusted for distance drop off to estimate the annual mean concentration at the nearest location of relevant exposure. A NO_2 annual mean concentration of 45.1 $\mu g.m^{-3}$ was calculated.

Following distance correction, this diffusion tube still measured exceedances of the NO_2 annual mean objective. Further information regarding this location is presented in the conclusions from new monitoring data section of this report (Section 7.1).

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 200 $\mu g.m^{-3}$, not to be exceeded more than 18 times per year.

Hourly mean NO_2 concentrations measured at automatic monitoring sites during 2020 were compliant with the NO_2 1-hour objective as there were less than the permitted 18 measured exceedances of the 200$\mu g.m^{-3}$ objective during the year. The East Kilbride Whirlies automatic monitoring site measured hourly concentrations in excess of 200 $\mu g.m^{-3}$ twice 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 $\mu g.m^{-3}$.

There were no exceedances of the 18 $\mu g.m^{-3}$ annual mean objective at any monitoring locations within South Lanarkshire during 2020. 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 2020, $PM_{2.5}$ 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 2020.

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 2020.

4.4 Commercial and Domestic Sources

No new or significantly changed commercial or domestic sources have been identified during 2020.

4.5 New Developments with Fugitive or Uncontrolled Sources

No new or significantly changed fugitive sources have been identified during 2020.

5 Planning Applications

No planning applications were received during 2020 that required an air quality impact assessment.

Table 5.1 indicates proposed development projects currently listed in the Local Development Plan 2; 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	Uni 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 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.

6 Impact of COVID-19 upon LAQM

With two exceptions, South Lanarkshire Council maintained the diffusion tube monitoring networks as normal (exposure and analysis in line with diffusion tube calendar) during 2020, including over the lockdown period. As a result of lockdown challenges the diffusion tubes were exposed for a two-month period on two occasions, in March to April and in May to June.

South Lanarkshire Council maintained automatic air quality monitoring sites as normal (LSO visits, etc.) during 2020, including over the lockdown period. Two sites, Rutherglen and Raith Interchange 2, were not able to record NO_2 data during the period due to ongoing instrument faults.

There are no ongoing issues with the local air quality monitoring network related to the Covid-19 response.

A full report, 'COVID-19 lockdown effects on air quality', is available online. This detailed investigation compared the concentrations observed specifically during the first lockdown period in April and July 2020 against the predicted business as usual scenario. Measured concentrations of NOx and NO_2 were much lower during lockdown (see Figure 6.1, Figure 6.2 and Figure 6.3).

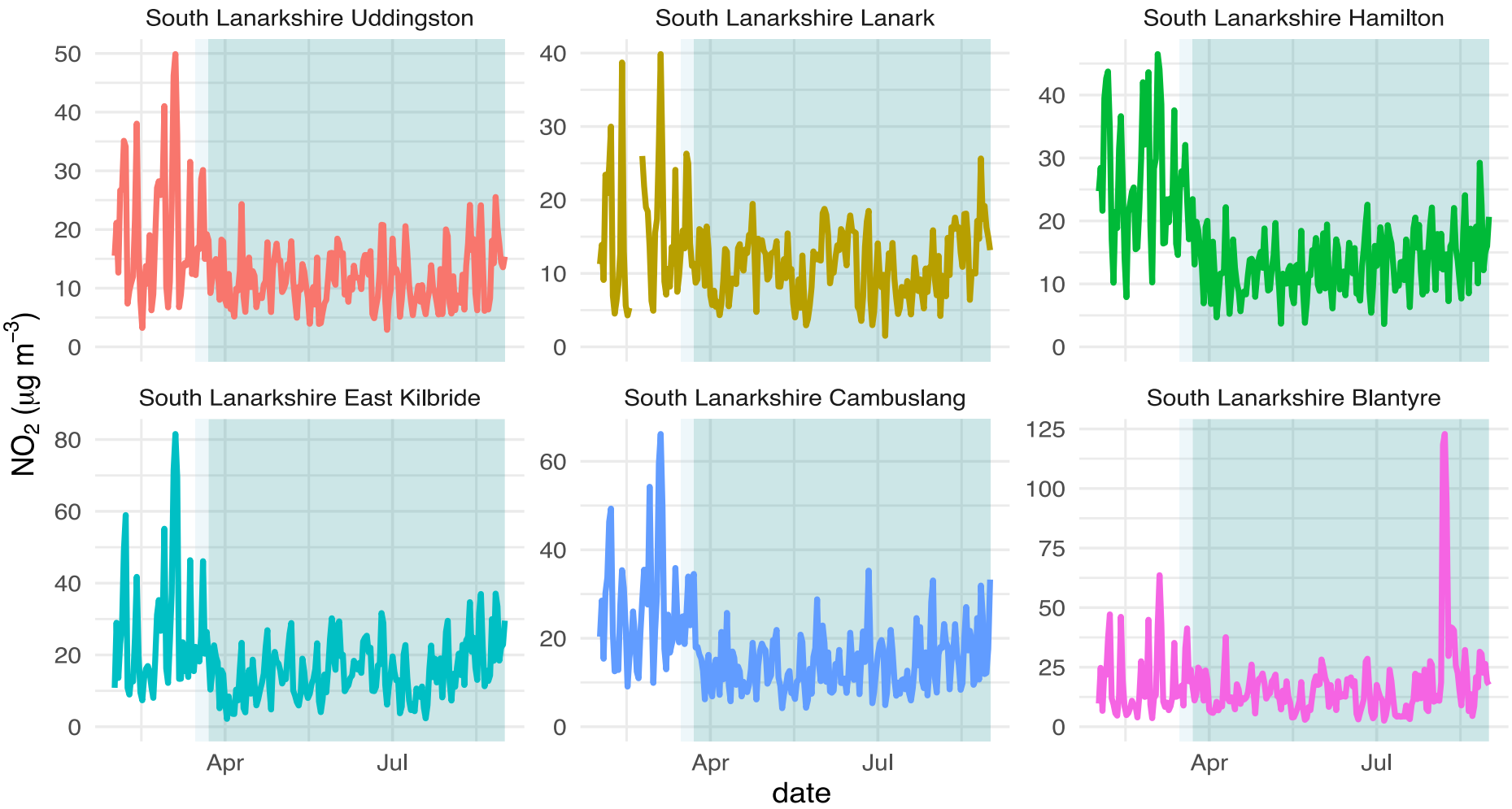


Figure 6.1 NO_2 concentrations measured at Automatic sites before and during lockdown 2020 (period shaded in blue)

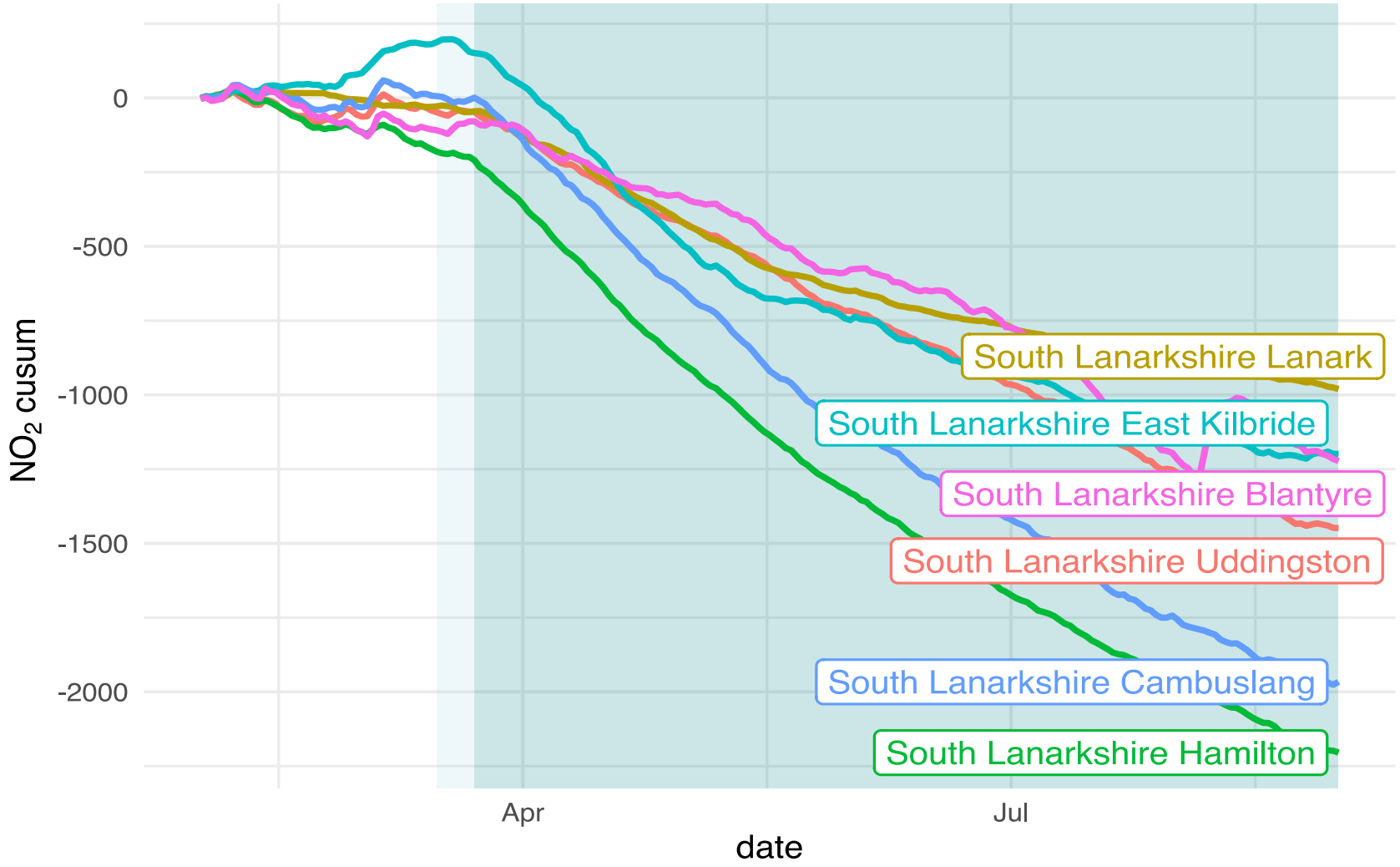


Figure 6.2 Comparison of normalised NO_2 concentrations measured at automatic sites with the predicted 'business as usual' scenario before and during lockdown 2020 (period shaded in blue)

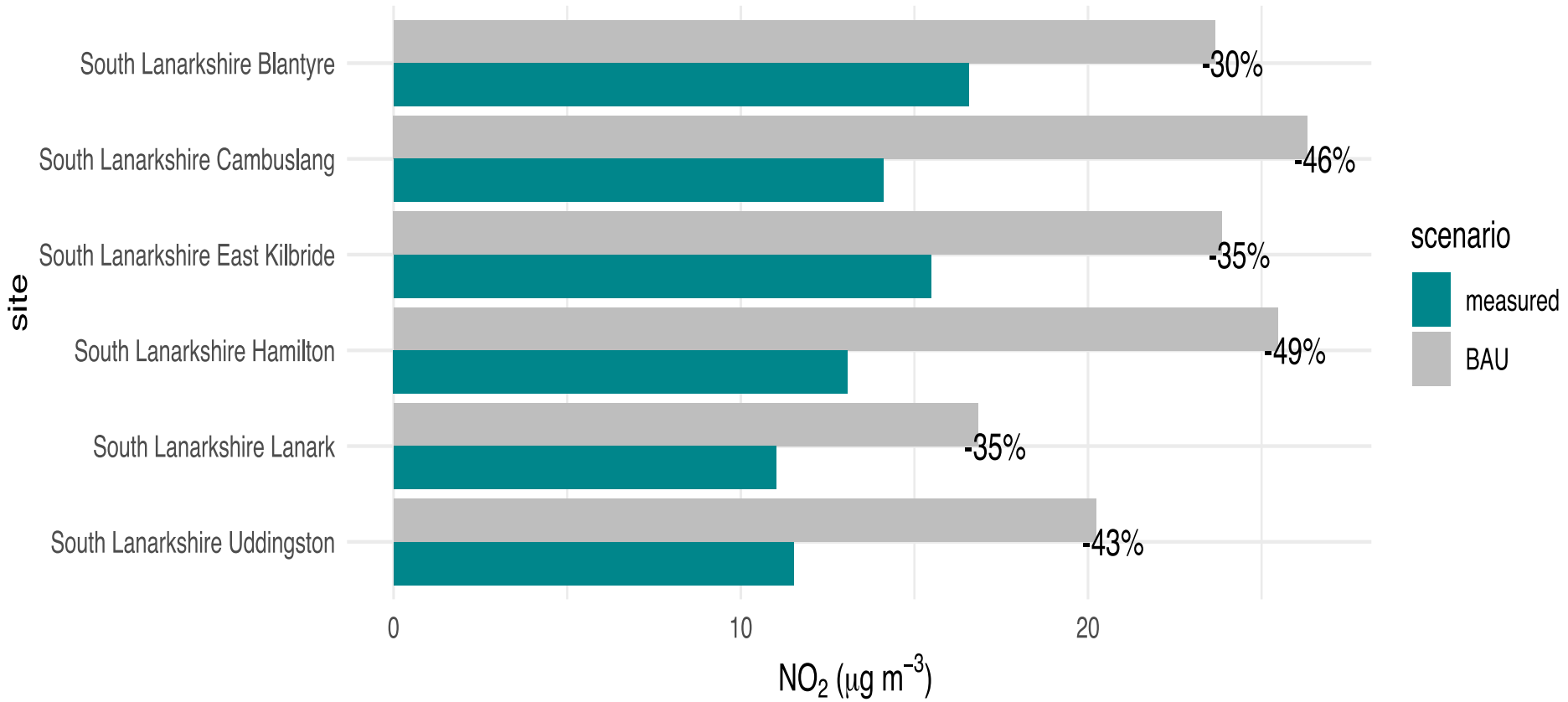


Figure 6.3 Comparison of average NO_2 concentrations measured at automatic sites with the predicted 'business as usual' averages during lockdown 2020, showing that average concentrations of NO_2 are reduced by between 30-49%

7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

All Nitrogen Dioxide (NO_2) annual mean concentrations measured during 2020 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. Two exceedances of the NO_2 hourly objective (200 µg.m-3) were measured at the East Kilbride Whirlies automatic site.

Exceedances of the NO_2 annual mean objective were measured at one diffusion tube location (DT32) at 233 Glasgow Road, Blantyre.

No exceedances of the PM_{10} annual mean objective were measured during 2020. Measured concentrations at the eight PM_{10} measurement sites in South Lanarkshire ranged from 8 to 10 µg.m^{-3}. Measured PM_{10} concentrations were lower in 2020 when compared to 2019.

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

No exceedances of the $PM_{2.5}$ annual mean objective were measured during 2020. 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 at all sites compared to 2019.

Hamilton

A Detailed Assessment for Hamilton will be submitted to DEFRA for review. The findings of this assessment indicate that there are no exceedances of the NO_2, PM_{10} or $PM_{2.5}$ air quality objectives at locations of relevant exposure during 2019. During 2019 and 2020, NO_2 annual mean concentrations were close to the 40 µg.m^{-3} objective at residential properties on Low Patrick Street therefore we will continue to measure NO_2 at this location and review and assess air quality in Hamilton.

Blantyre

233 Glasgow Road, Blantyre – distance drop off calculations estimate an NO_2 annual mean of 45.1 µg.m^{-3} at the nearest location of relevant exposure to this measurement site. 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. South Lanarkshire Council intend to deploy additional NO_2 monitoring in Blantyre to 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 will also be investigated in the meantime to reduce localised vehicle emissions.

Air quality measurements reported in 2020 show that NO_2 annual mean measurements at all roadside sites have reduced when compared to the 2019 measurements. 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.

7.2 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.

7.3 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 2022.
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 will also be investigated 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. Conduct a detailed assessment of NO_2 at the Lanark AQMA to establish 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

(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	364374	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

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)
12	20 Farmeloan Road, Rutherglen	Kerbside	261662	661789	NO_2	Yes (Rutherglen)	0.6	2.1	No	2-3
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

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)
22	79 Union Street, Hamilton	Kerbside	271852	655320	NO_2	No	1.2	3.3	No	2-3
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

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)
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
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

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results ($\mu g/m^3$)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
Rutherglen	Roadside	Automatic	0	0	48	N/A	38	36	-
East Kilbride Whirlies	Roadside	Automatic	95.8	95.8	37	29	32	-	22
Lanark	Kerbside	Automatic	84.13	84.13	24	20	19	19	13
Hamilton	Roadside	Automatic	85.96	85.96	34	31	31	29	19
Uddingston	Roadside	Automatic	84.78	84.78	29	27	24	26	15
Cambuslang	Kerbside	Automatic	98.90	98.90	**40.0** (25.0)	36	35	33	21
Raith Interchange 2	Rural	Automatic	0	0	31	24	24	20	-
Blantyre	Roadside	Automatic	93.04	93.04	-	-	-	28.6	18
1	Kerbside	Diffusion Tube	100.0	100.0	36	23.9	25.9	21.8	16.4
2	Roadside	Diffusion Tube	83.3	83.3	-	-	16.1	22.7	9.9
3	Kerbside	Diffusion Tube	66.7	66.7	**46.0** (37.0)	27.3*	33.9	36.4	25.5
4	Kerbside	Diffusion Tube	100.0	100.0	34	29.7	30.3	27.8	21.1
5	Urban Background	Diffusion Tube	100.0	100.0	12	7.2	6.6	6.1	4.5
6	Roadside	Diffusion Tube	83.3	83.3	36	36.1	37.3	31.2	28.4
7	Kerbside	Diffusion Tube	100.0	100.0	-	-	22.4	21.2	15.0
8	Kerbside	Diffusion Tube	100.0	100.0	-	36.8	31.7	31.1	21.6
9	Kerbside	Diffusion Tube	91.7	91.7	-	34.2	34.3	30.3	22.1
10	Kerbside	Diffusion Tube	83.3	83.3	-	31.5	35.5	28.5	24.8
11	Roadside	Diffusion Tube	83.3	83.3	-	-	14.8	15.3	10.2
12	Kerbside	Diffusion Tube	100.0	100.0	**41.0** (39.0)	39.6	**42.2 (40.5)**	34.9	27.7
13	Kerbside	Diffusion Tube	75.0	75.0	31	25.2	26	23.9	17.3
14	Roadside	Diffusion Tube	91.7	91.7	31	27.2*	32.7	29.4	19.3
15	Roadside	Diffusion Tube	100.0	100.0	-	-	33.7	29.0	21.9
16	Kerbside	Diffusion Tube	91.7	91.7	-	-	28.4	29.4	18.4
17	Roadside	Diffusion Tube	75.0	75.0	30	27.6	26	25.0	17.3
18	Roadside	Diffusion Tube	100.0	100.0	-	-	37.9	33.6	21.9
19	Roadside	Diffusion Tube	100.0	100.0	37	31.1*	36.7	33.7	25.9
20	Kerbside	Diffusion Tube	100.0	100.0	-	-	23.4	23.5	15.4
21	Roadside	Diffusion Tube	100.0	100.0	33	27.9*	32.4	25.2	16.8
22	Kerbside	Diffusion Tube	100.0	100.0	31	26.6*	29	27.1	19.1
23	Roadside	Diffusion Tube	91.7	91.7	35	29.9*	29	24.7	17.1
24	Roadside	Diffusion Tube	100.0	100.0	30	31.4*	32.1	28.5	19.3

25	Roadside	Diffusion Tube	100.0	100.0	-	-	36.9	34.1	22.4
26	Roadside	Diffusion Tube	83.3	83.3	**53.0** (47.0)	**47.0* (42.3)**	**66.9 (59.2)**	**46.0**	37.1
27	Roadside	Diffusion Tube	91.7	91.7	36	30.7*	34.6	31.5	21.1
28	Urban Background	Diffusion Tube	100.0	100.0	14	17.1*	12.7	11.3	8.8
29	Urban Background	Diffusion Tube	83.3	83.3	21	20.5	20.1	16.5	11.7
30	Kerbside	Diffusion Tube	100.0	100.0	**40.0** (29.2)	32.9	35	29.1	20.8
31	Roadside	Diffusion Tube	100.0	100.0	31	29.2*	25.3	27.1	15.7
32	Roadside	Diffusion Tube	100.0	100.0	**56.0** (55.0)	**49.6 (48.5)**	**54.2 (52.9)**	**46.3**	**46.1**
33	Roadside	Diffusion Tube	100.0	100.0	33	23.5	25.5	22.6	15.9
34	Roadside	Diffusion Tube	100.0	100.0	27	19.8	22.8	21.3	14.9
35	Urban Background	Diffusion Tube	83.3	83.3	-	-	23.7	20.1	14.4
36	Kerbside	Diffusion Tube	100.0	100.0	-	-	25.4	26.6	16.2
37	Roadside	Diffusion Tube	100.0	100.0	28	26.3	31.3	22.7	18.1
38	Roadside	Diffusion Tube	83.3	83.3	33	31.7	29.4	24.8	19.7
39	Kerbside	Diffusion Tube	100.0	100.0	27	21.1	27	29.8	18.4
40	Kerbside	Diffusion Tube	41.7	41.7	-	27.7	24.4	20.3	10.6

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%).

(3) Where diffusion tube exposure periods varied beyond the 4 to 5 week recommendation, a time weighted average has been calculated.

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 2020 (%) (2)	2016	2017	2018	2019	2020
Rutherglen	Roadside	Automatic	0	0	0	-	**1**	0 (99)	-
East Kilbride Whirlies	Roadside	Automatic	95.8	95.8	1	1	**0 (138)**	-	**2**
Lanark	Kerbside	Automatic	84.13	84.13	0	0	**0**	0	0 (68)
Hamilton	Roadside	Automatic	85.96	85.96	0	0	**0**	0	0
Uddingston	Roadside	Automatic	84.78	84.78	0	0	**0**	0	0 (50)
Cambuslang	Kerbside	Automatic	98.90	98.90	12	1	**0**	1	0
Raith Interchange 2	Rural	Automatic	0	0	0	0	**0**	0 (71)	-
Blantyre	Roadside	Automatic	93.04	93.04	-	-	**-**	0 (98)	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 2020 (%) (2)	2016	2017	2018	2019	2020
Rutherglen	Roadside	98.67	98.67	17	12	13	14	10
East Kilbride Whirlies	Roadside	95.05	95.05	16	10	10	10	9
Lanark	Kerbside	99.84	99.84	11	10	11	10	8
Hamilton	Roadside	99.74	99.74	n/a	11	11	11	9
Uddingston	Roadside	93.95	93.95	9	11	12	12	10
Cambuslang	Kerbside	82.55	82.55	15	12	12	13	10
Raith Interchange 2	Rural	88.47	88.47	16	13	11	10	8
Blantyre	Roadside	96.48	96.48	-	-	-	11	9

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 2020 (%) (2)	2016	2017	2018	2019	2020
Rutherglen	Roadside	98.67	98.67	1	1	**0**	4	0
East Kilbride Whirlies	Roadside	95.05	95.05	0	0	**0**	1	0
Lanark	Kerbside	99.84	99.84	0	0	**1**	1	0
Hamilton	Roadside	99.74	99.74	0	0	**0**	1 (35)	0
Uddingston	Roadside	93.95	93.95	0	0	**0**	2 (45)	0
Cambuslang	Kerbside	82.55	82.55	0	0	**2**	7	0 (25)
Raith Interchange 2	Rural	88.47	88.47	0	0	**0**	1	0
Blantyre	Roadside	96.48	96.48	-	-	**-**	2	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 2020 (%) (2)	2016	2017	2018	2019	2020
Rutherglen	Roadside	98.67	98.67	-	6	7	8	6
East Kilbride Whirlies	Roadside	95.05	95.05	-	4	5	6	5
Lanark	Kerbside	99.84	99.84	7	6	6	6	5
Hamilton	Roadside	99.74	99.74	-	5	6	6	5
Uddingston	Roadside	93.95	93.95	5	6	7	7	5
Cambuslang	Kerbside	82.55	82.55	-	5	7	7	5
Raith Interchange 2	Rural	88.47	88.47	-	-	5	6	5
Blantyre	Roadside	96.48	96.48	-	-	-	6	5

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 2020

Table B.1 – NO_2 2020 Monthly Diffusion Tube Results ($\mu g/m^3$)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Time Weighted Annual Mean		
													Raw Data	Bias Adjusted (1)	Distance Corrected (2)
1	25.1	25.8	14.6		11.2		14.6	18.3	16.4	16.3	22.5	32.4	18.6	16.4	
2	10.0	11.2	10.2		9.5		6.8	15.0	16.9	11.0	14.7	6.6	10.9	9.9	
3	n/a	n/a	n/a		24.6		26.3	19.2	26.6	33.6	33.9	40.7	28.6	25.5	
4	29.8	26.8	18.2		20.1		21.6	21.4	26.4	23.3	27.7	34.7	24.0	21.1	
5	5.2	5.2	4.1		4.2		3.2	4.5	6.0	4.7	5.2	10.8	5.1	4.5	
6	24.9	28.0	n/a		39.8		21.6	27.9	33.9	29.7	25.1	50.1	32.2	28.4	
7	16.9	22.1	15.9		12.3		10.5	16.6	17.4	16.3	19.6	28.6	17.0	15.0	
8	24.5		28.5		17.1		15.6	23.8	28.4	23.2	28.0	35.8	24.5	21.6	
9	28.9	<1.0			20.6		21.0	23.0	27.6	26.4	24.2	38.8	25.1	22.1	
10	64.7	30.5	N/A		17.9		17.1	24.2	24.4	23.9	25.9	39.3	28.2	24.8	
11	14.1	10.6	9.0		7.6		7.4	9.8	14.3	7.7	15.4	21.6	11.6	10.2	
12	29.5	29.6	28.5		25.7		23.3	36.9	31.7	31.8	35.7	48.9	31.5	27.7	
13	21.6	22.0	16.0		15.8		15.5	17.5	23.7	19.2	20.0	33.9	20.3	17.3	
14	24.9	27.3	18.5		20.2		0.0	14.0	30.0	21.3	1.6	43.5	21.9	19.3	
15	29.5	30.6	18.6		16.7		20.4	22.8	26.1	25.8	30.9	41.9	24.9	21.9	
16	24.0	22.1	18.8		17.7		19.0	20.2	19.5	20.1	23.2	31.4	20.9	18.4	
17	23.0	20.6	14.0		12.6		18.3	20.0	20.1	20.2	21.4	33.0	20.0	17.3	
18	33.5	37.1	24.5		19.7		22.1	20.4	18.3	25.6	18.5	35.6	24.9	21.9	
19	35.5	39.1	25.7		22.6		18.8	32.9	21.9	32.2	35.4	40.8	29.4	25.9	
20	17.3	24.3	16.3		11.7		11.8	18.1	20.5	15.0	25.6	23.0	17.5	15.4	
21	21.9	20.1	18.6		15.6		11.8	18.8	18.2	15.1	25.1	30.0	19.1	16.8	
22	26.5	23.9	19.8		16.6		16.7	20.0	22.9	12.7	26.7	37.5	21.7	19.1	
23	25.4	24.0	20.1		14.8		6.1	18.8	19.8	18.2	24.8	31.8	19.4	17.1	
24	23.7	24.7	21.8		14.1		16.4	15.6	21.5	30.4	29.2	32.2	21.9	19.3	
25	35.9	27.9	21.4		19.7		17.0	27.4	27.6	22.0	36.7	30.6	25.5	22.4	
26	43.3	44.7	N/A		29.4		32.3	45.8	42.6	48.6	46.6	59.4	42.2	37.1	33.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Time Weighted Annual Mean		
													Raw Data	Bias Adjusted (1)	Distance Corrected (2)
27	38.3	33.5	6.6		19.0		22.5	22.8	28.8	28.2	<1.0	38.2	24.0	21.1	
28	9.1	9.4	15.1		4.3		6.1	7.7	8.8	2.4	18.2	19.9	10.0	8.8	
29	15.3	13.0	29.4		7.3		8.2	12.9	16.6	12.2	20.2	23.9	13.7	11.7	
30	27.3	28.5	16.3		15.7		20.2	25.2	27.6	31.1	27.2	33.2	23.7	20.8	
31	21.3	20.1	13.7		11.7		12.2	16.7	18.8	18.5	21.7	33.4	17.8	15.7	
32	72.7	139.7	23.8		25.0		30.2	54.1	47.1	43.6	78.6	71.6	52.4	46.1	45.1
33	14.7	21.2	14.1		13.7		13.8	18.6	22.7	17.0	22.7	30.4	18.1	15.9	
34	19.5	20.9	14.8		10.3		11.8	18.1	17.0	17.5	21.6	26.6	16.9	14.9	
35	16.8	15.7	N/A		9.1		11.8	17.4	18.8	15.1	21.6	28.1	16.4	14.4	
36	23.6	23.6	14.8		15.0		13.7	14.5	20.3	16.3	16.9	32.4	18.4	16.2	
37	24.1	20.7	16.3		15.9		9.3	22.2	20.8	25.0	25.4	35.4	20.6	18.1	
38	37.7	30.3	14.0		16.0		15.8	21.6	22.5	23.9	27.0	17.5	22.4	19.7	
39	18.5	18.6	16.8		15.8		11.6	22.6	21.3	19.5	36.6	35.8	20.9	18.4	
40	n/a	n/a	n/a		N/A		0.0	13.7	15.6	13.2	15.5	16.2	14.8	10.6	

Notes:

(1) See Appendix C for details on bias adjustment

(2) See Appendix C for details on distance correction

Figure A.1 – Trends in Annual Mean NO_2 Concentrations at Automatic Monitoring Sites (2016 to 2020)

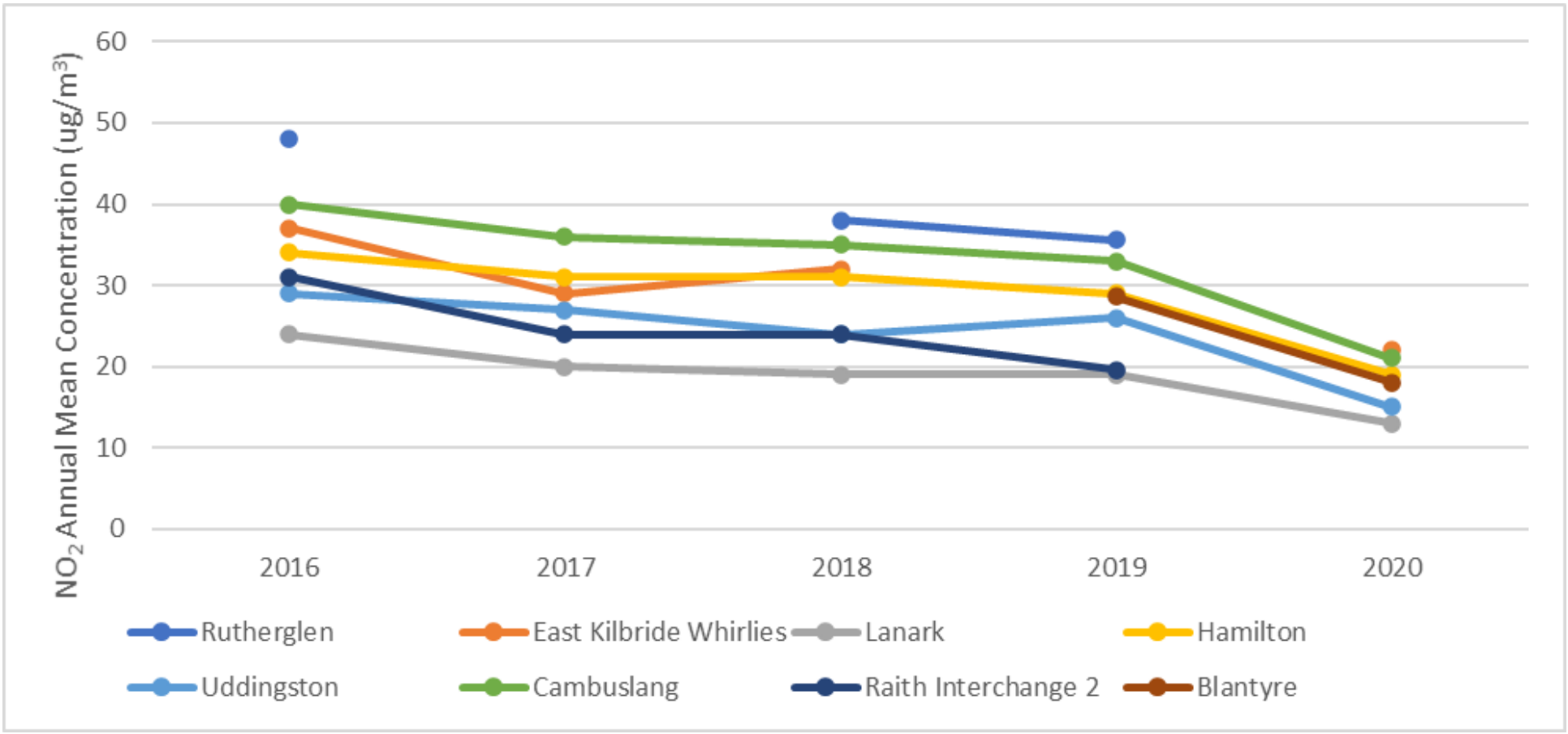


Figure A.2 – Trends in Annual Mean NO_2 Concentrations at Roadside Sites (2016 to 2020)

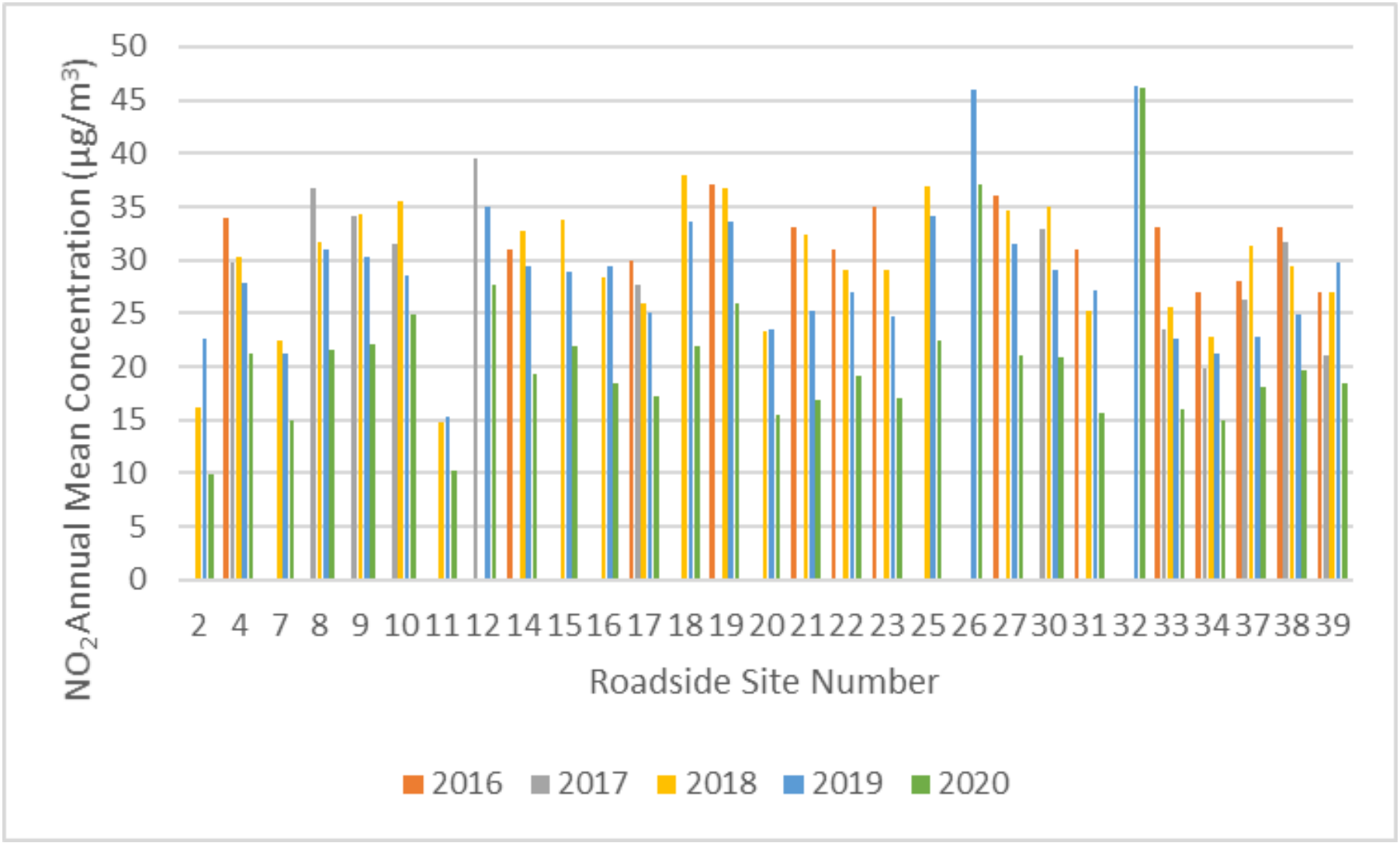


Figure A.3 – Trends in Annual Mean NO_2 Concentrations at Kerbside Sites (2016 to 2020)

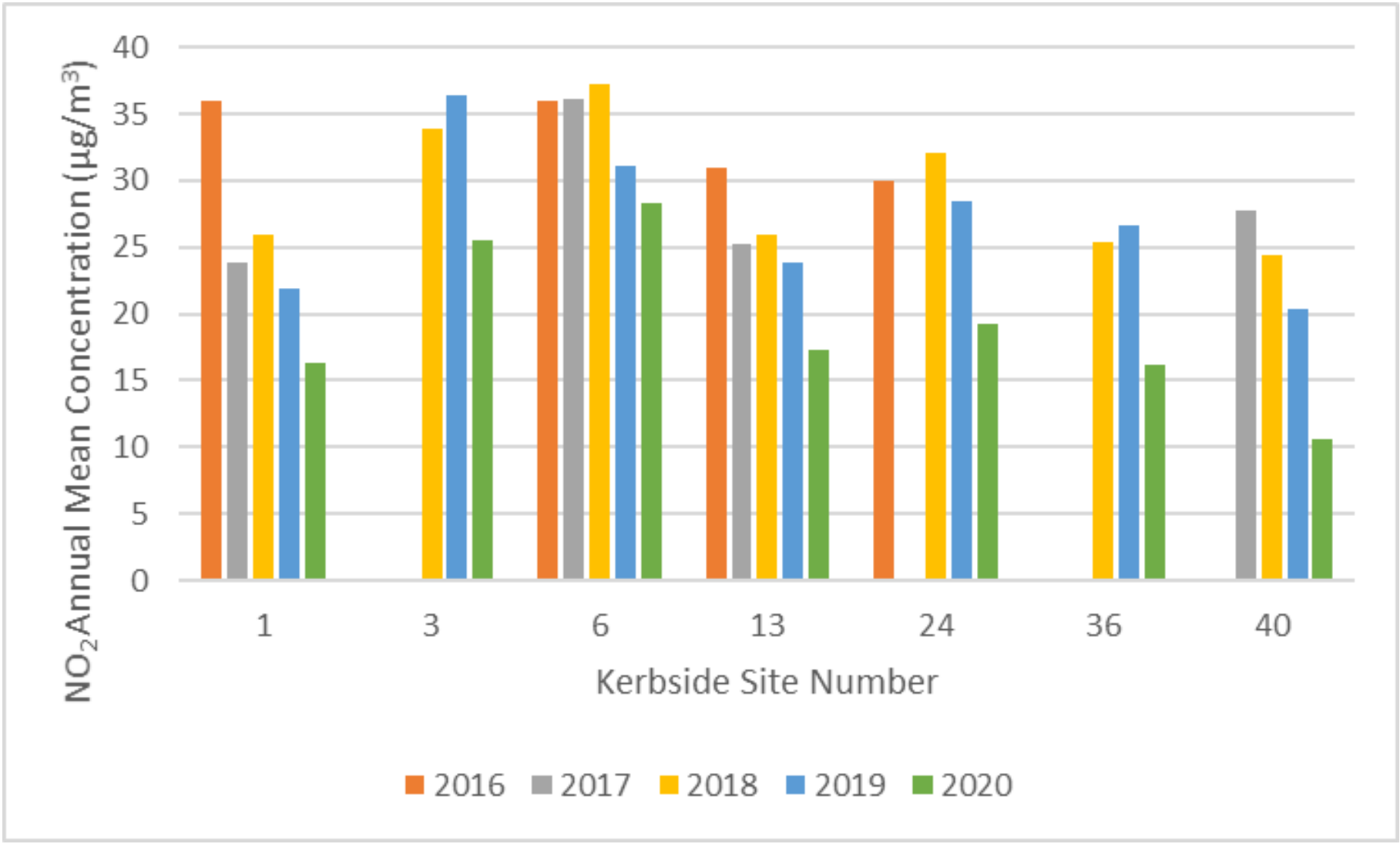


Figure A.4 – Trends in Annual Mean NO_2 Concentrations at Urban Background Sites (2016 to 2020)

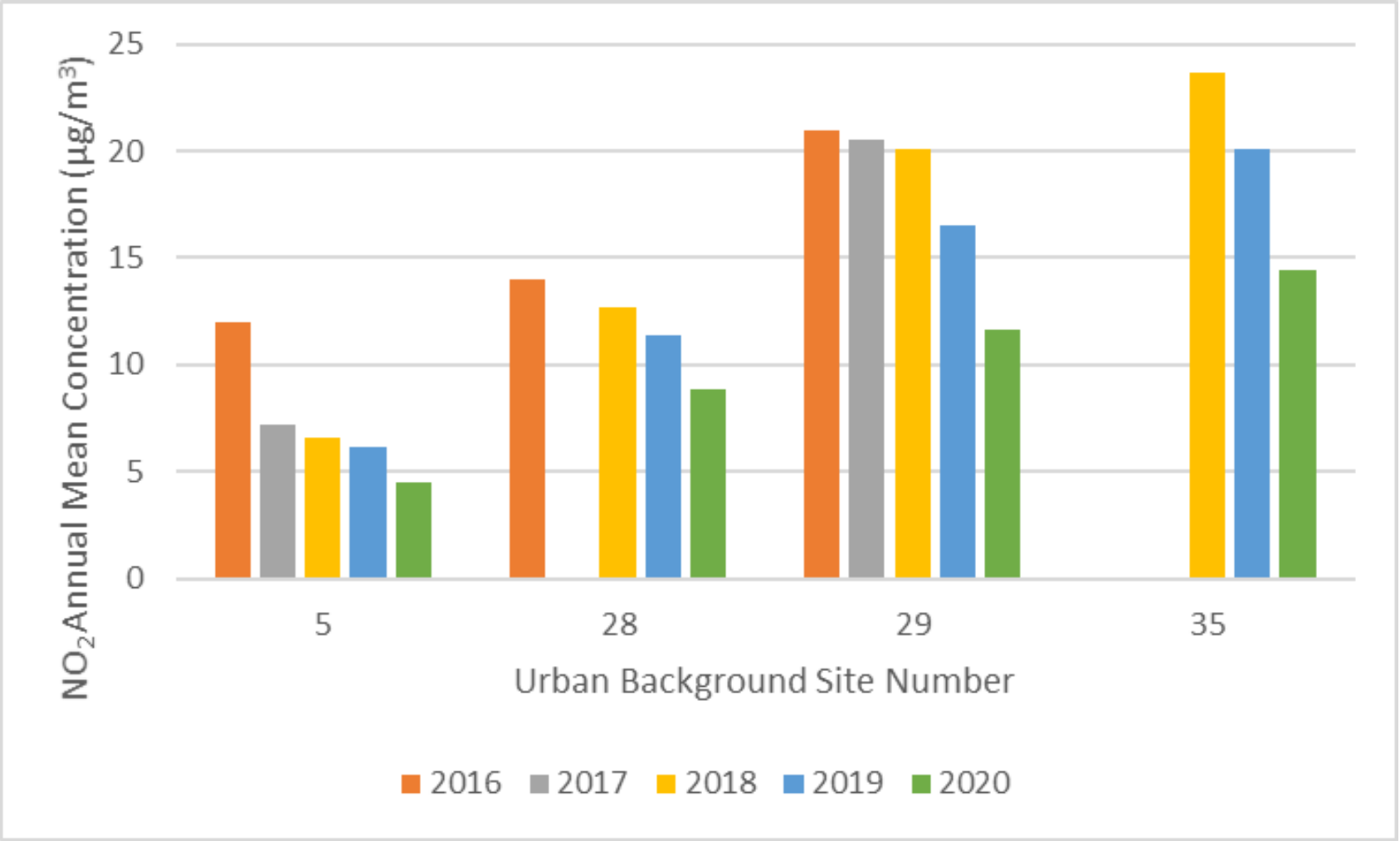


Figure A.5 – Trends in Annual Mean PM_{10} Concentrations at Automatic Sites (2016 to 2020)

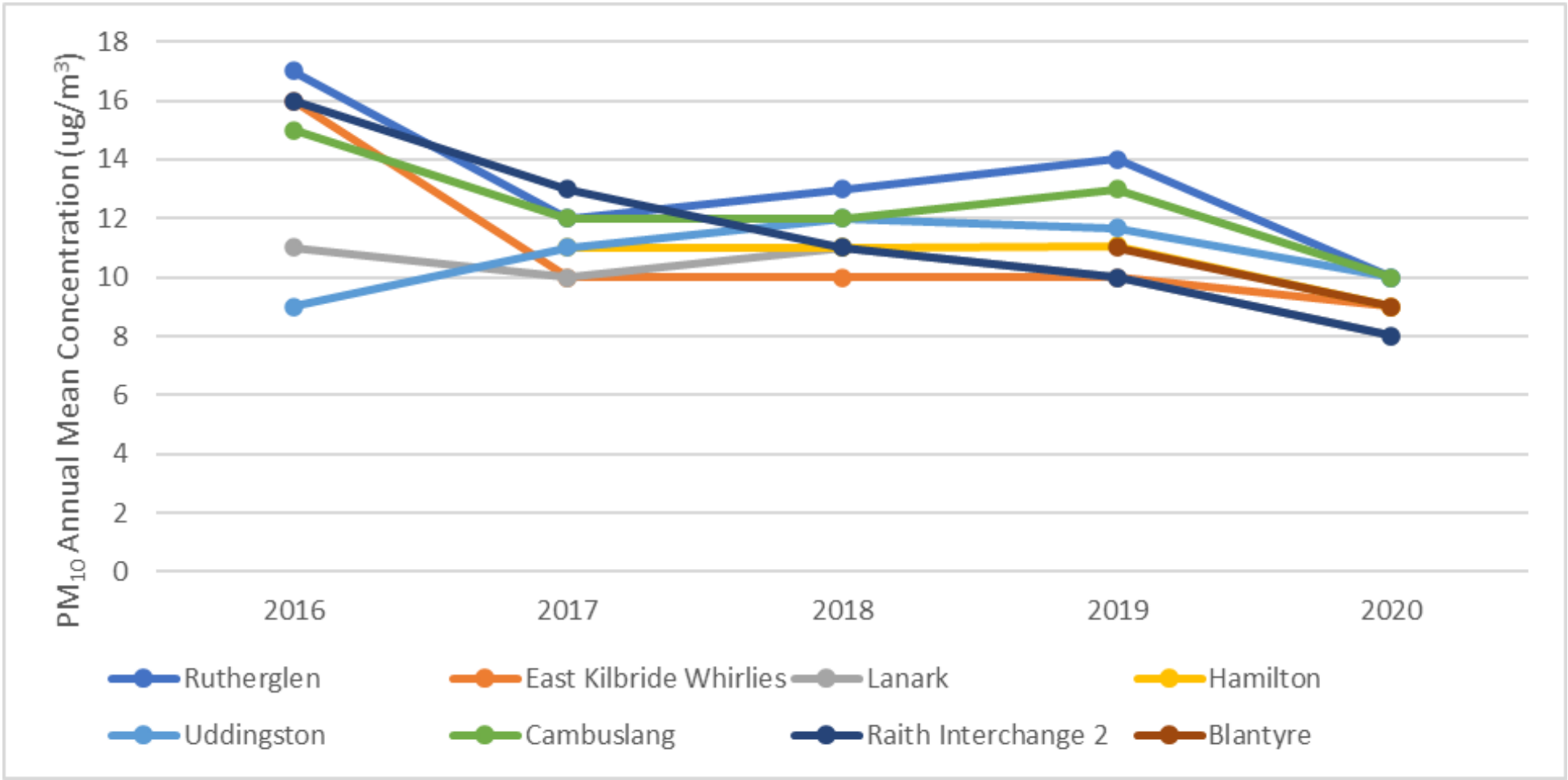
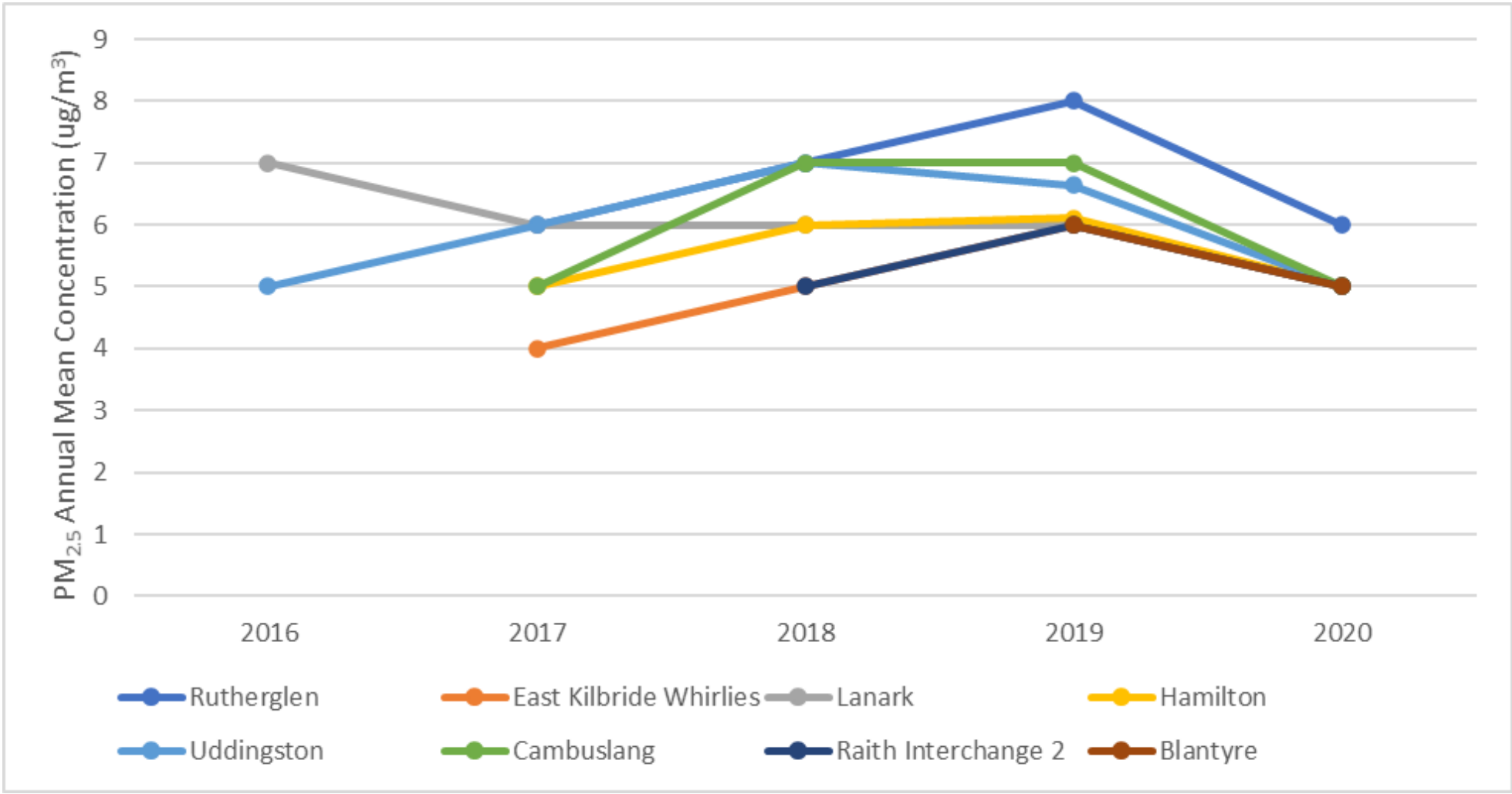


Figure A.6 – Trends in Annual Mean $PM_{2.5}$ Concentrations at Automatic Sites (2016 to 2020)



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

New or Changed Sources Identified Within South Lanarkshire Council During 2020

South Lanarkshire Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by South Lanarkshire Council During 2020

South Lanarkshire Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

As mentioned in Section 6, with two exceptions, South Lanarkshire Council maintained the diffusion tube monitoring networks as normal (exposure and analysis in line with diffusion tube calendar) during 2020, including over the lockdown period. As a result of lockdown challenges the diffusion tubes were exposed for a two-month period on two occasions, in March to April and in May to June. As all diffusion tubes were exposed beyond the 4 to 5 week recommended exposure period, a Time Weighted Annual Mean was used to calculate the annual mean NO_2 concentration using the Diffusion Tube Processing Tool (v1.0), as per LAQM.TG(16). All results have been bias adjusted, annualised (where required) and expressed as a Time Weighted Annual Mean NO_2 concentration before being 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

For measurement sites where the annual data capture was less than 75% but greater than 25%, the short-term period means were adjusted to annual means using the method recommended in TG(16) Box 7.9. The sites requiring annualisation and details of the calculation method undertaken are provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

South Lanarkshire Council have applied a national bias adjustment factor of 0.88 from the latest version (v 03/21) (Figure C.2) of the combined national database of adjustment factors was used to adjust the 2020 diffusion tube results. This adjustment factor was considered most appropriate because:

- There is greater uncertainty associated with the local factor due to changes to diffusion tube exposure periods.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/21

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 spreadsheet 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 2021
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[2] (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[5]	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	10	51	43	17.4%	G	0.85
Edinburgh Scientific Services	50% TEA in acetone	2020	R	Stirling Council	11	16	15	11.6%	G	0.90
Edinburgh Scientific Services	50% TEA in acetone	2020		Overall Factor[3] (2 studies)				Use		0.88

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
2020	National	03/21	0.88
2019	National	03/20	0.87
2018	National	03/19	0.96
2017	National	03/18	0.89
2016	National	03/17 V2	0.87

NO_2 Fall-off with Distance from the Road

Distance correction was applied at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account). Fall-off-with-distance calculations were required for two diffusion tube monitoring sites, DT26 and DT32. The output from the Diffusion Tube Data Processing Tool is presented in Table C.3.

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 required the application of a correction factor.

Automatic Monitoring Annualisation

Six of eight automatic monitoring locations within South Lanarkshire Council recorded data capture of greater than 75% and two sites with data capture below 25%, therefore it was not required to annualise any monitoring data.

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

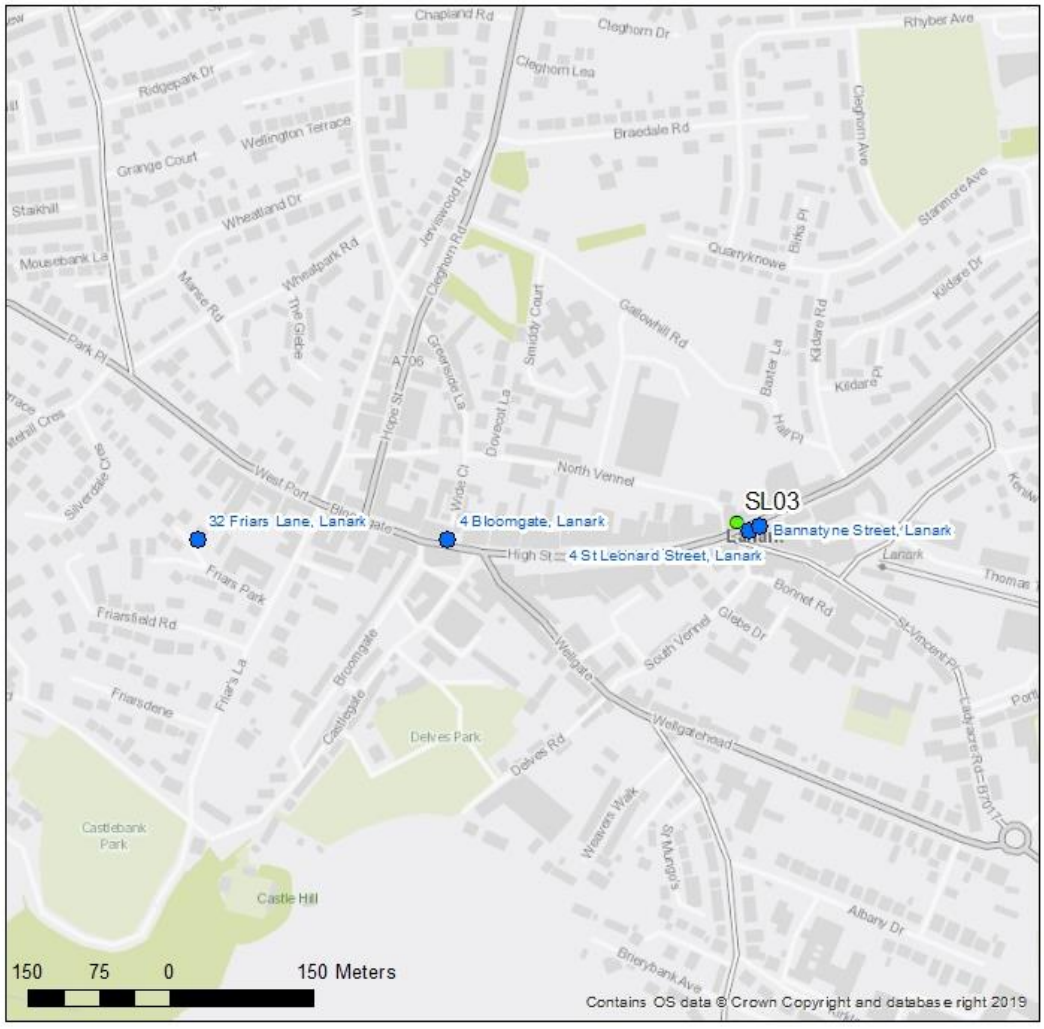
Diffusion Tube ID	Annualisation Factor - Grangemouth	Annualisation Factor - Glasgow Townhead	Annualisation Factor - Coatbridge	Annualisation Factor - Edinburgh St Leonards	Average Annualisation Factor	Raw Data Time Weighted Annual Mean	Annualised Data Time Weighted Annual Mean	**Comments**
2	1.0355	1.0563	1.0569	0.9696	1.0296	10.9	11.2	
3	1.0464	1.0261	1.0361	0.9536	1.0155	28.6	29.0	
13	0.9977	0.9781	0.9850	0.9094	0.9676	20.3	19.7	
17	1.0138	0.9976	1.0166	0.9108	0.9847	20.0	19.7	
29	0.9977	0.9781	0.9850	0.9094	0.9676	13.7	13.3	
40	0.8317	0.8029	0.8406	0.7690	0.8111	14.8	12.0	

Table C.3 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	**Distance (m): Monitoring Site to Kerb**	**Distance (m): Receptor to Kerb**	**Monitored Concentration (Annualised and Bias Adjusted**	**Background Concentration**	**Concentration Predicted at Receptor**	**Comments**
26	5.6	8.9	37.1	13.5	33.7	
32	3.6	4.0	46.1	10.7	**45.1**	*Predicted concentration at Receptor above AQS objective.*

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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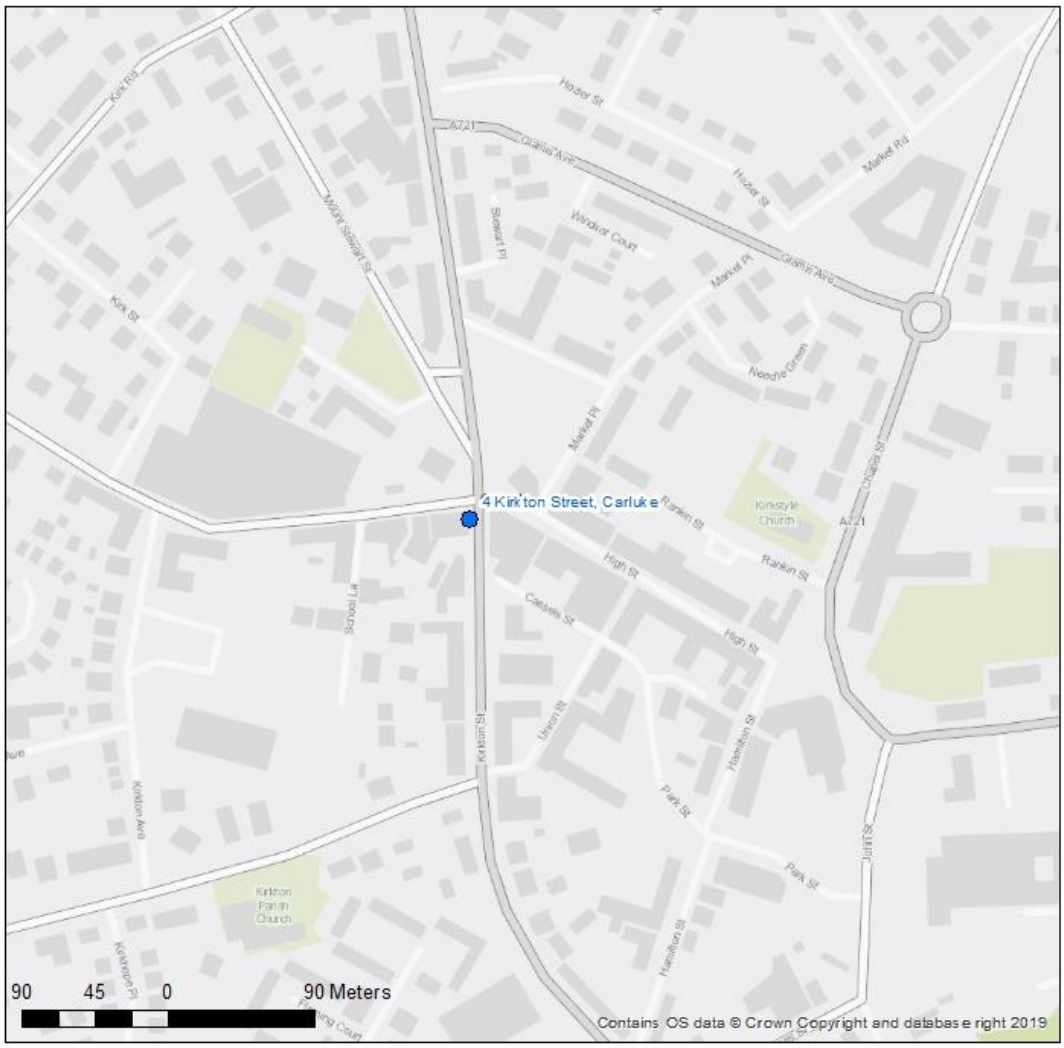
Figure D.2: Carluke Diffusion Tube Site



N

Legend:

- Diffusion Tube
- Automatic Station

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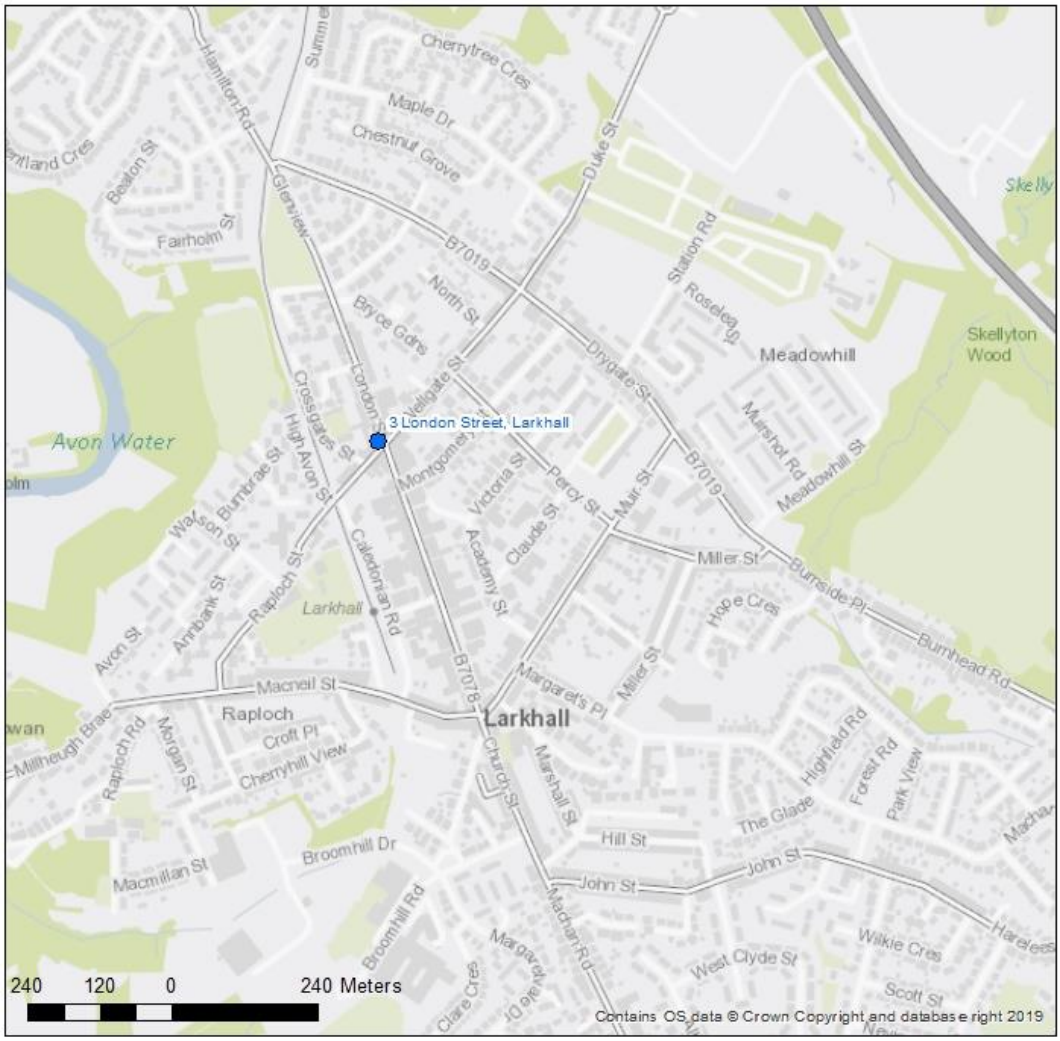
Figure D 3: Larkhall Diffusion Tube Site



N

Legend:

- Diffusion Tube
- Automatic Station

Ricardo Energy & Environment

Figure D.4: Hamilton Monitoring Sites

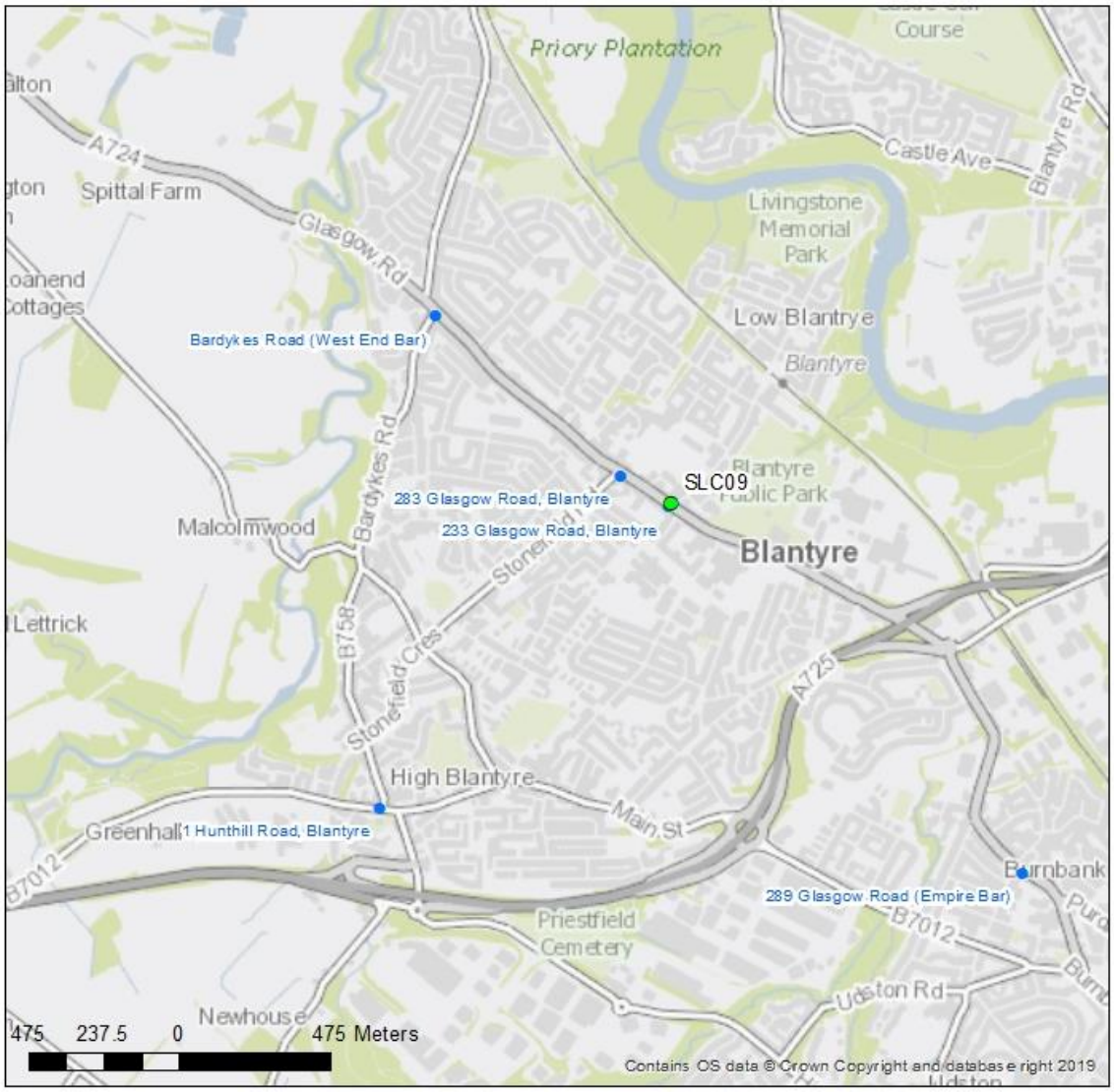
N

Legend:

- Diffusion Tube
- Automatic Station

Ricardo Energy & Environment

Figure D.5: Blantyre Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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Figure D.6: Raith Interchange and Bothwell Monitoring Sites

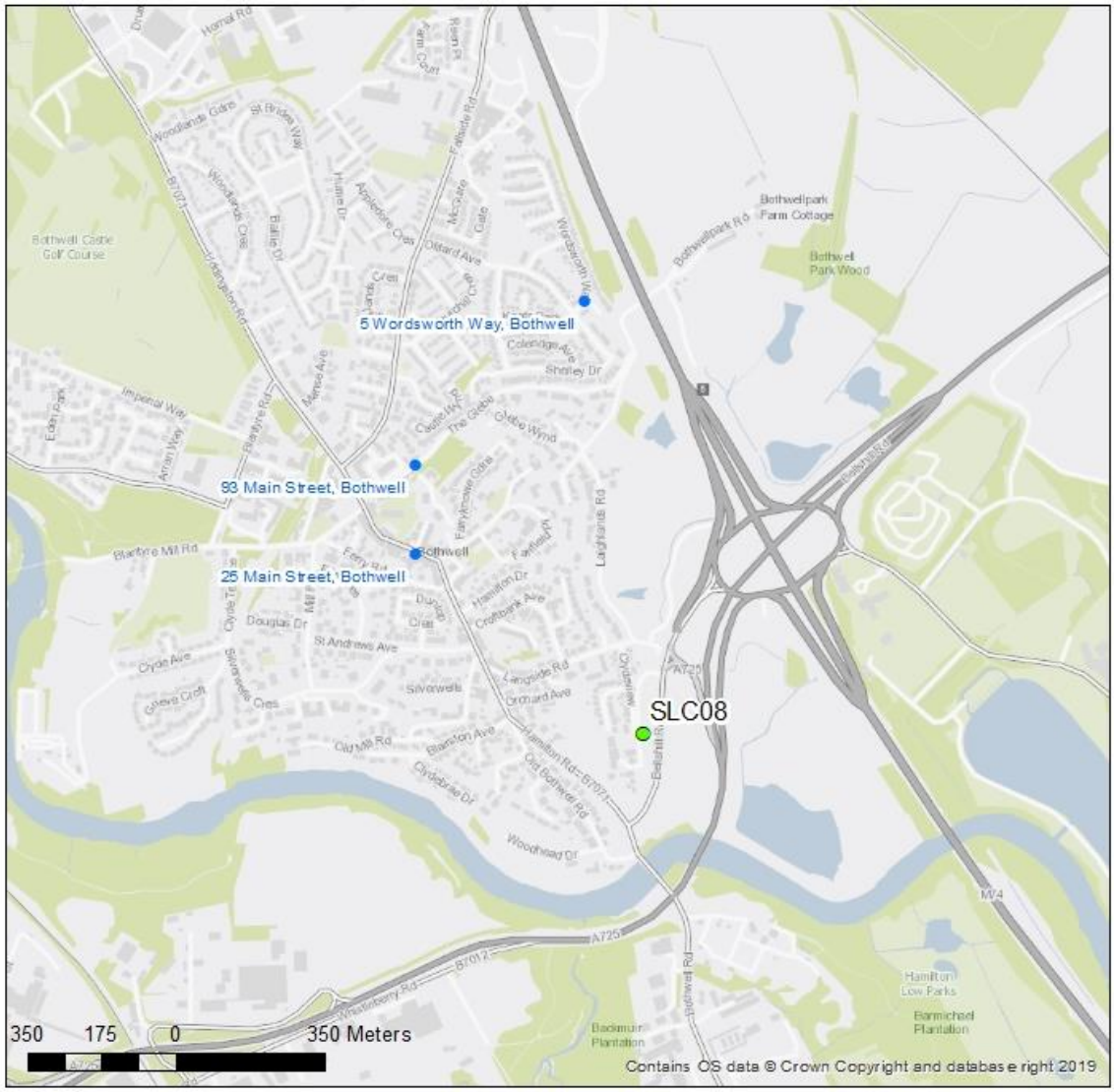
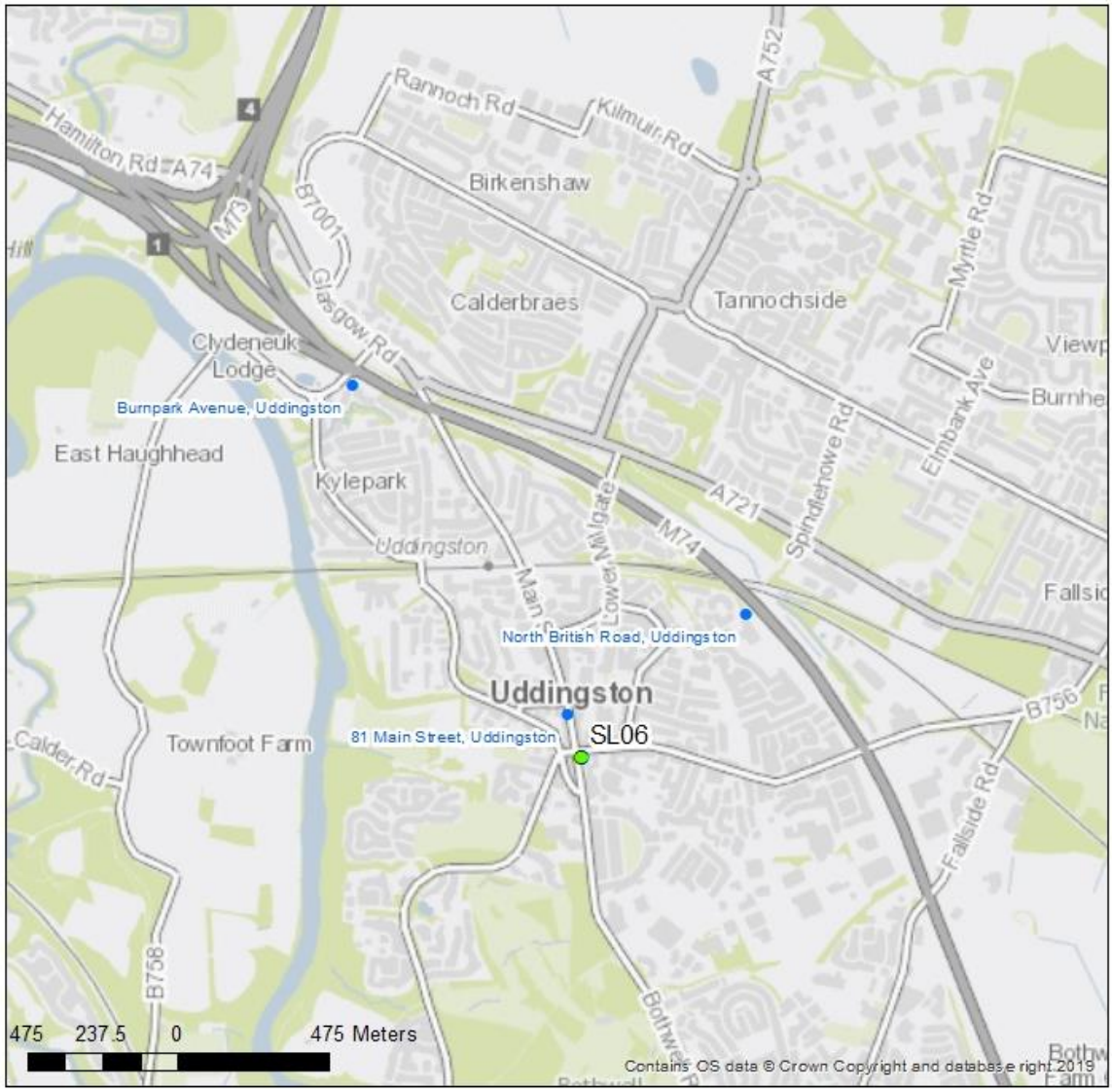


Figure D.7: Uddingston Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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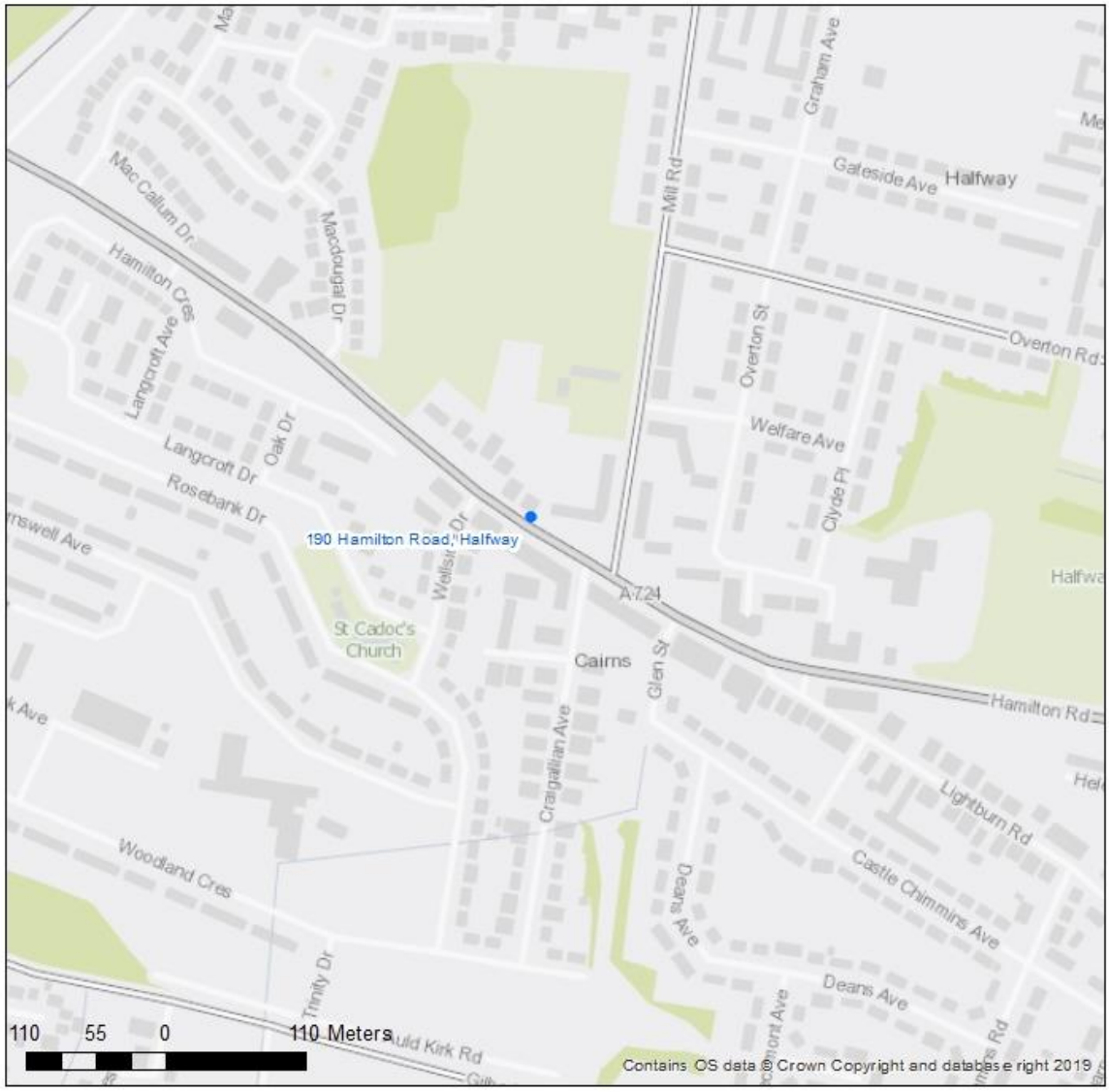
Figure D.8: Halfway Diffusion Tube Site



N

Legend:

- Diffusion Tube
- Automatic Station

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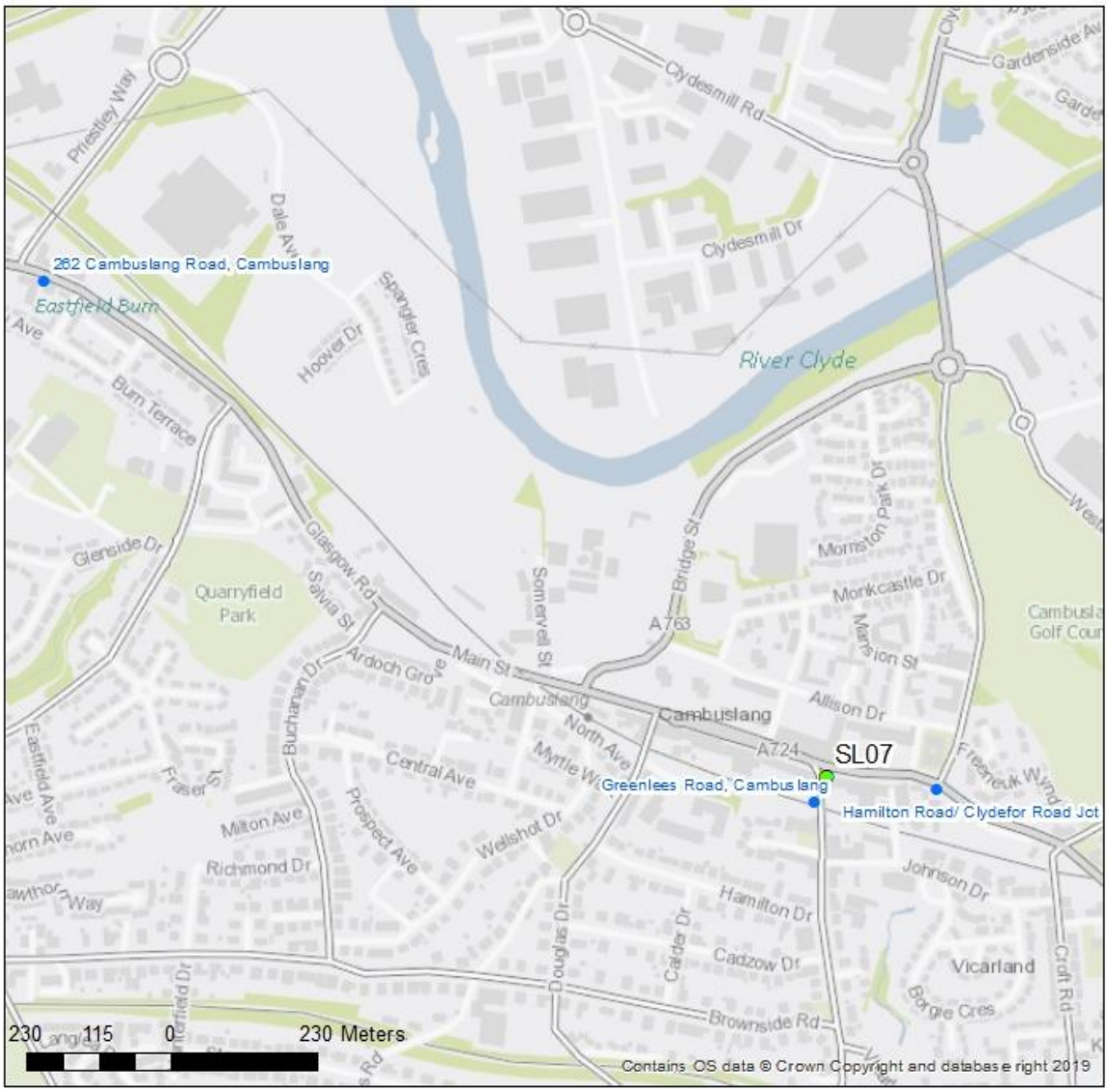
Figure D.9: Cambuslang Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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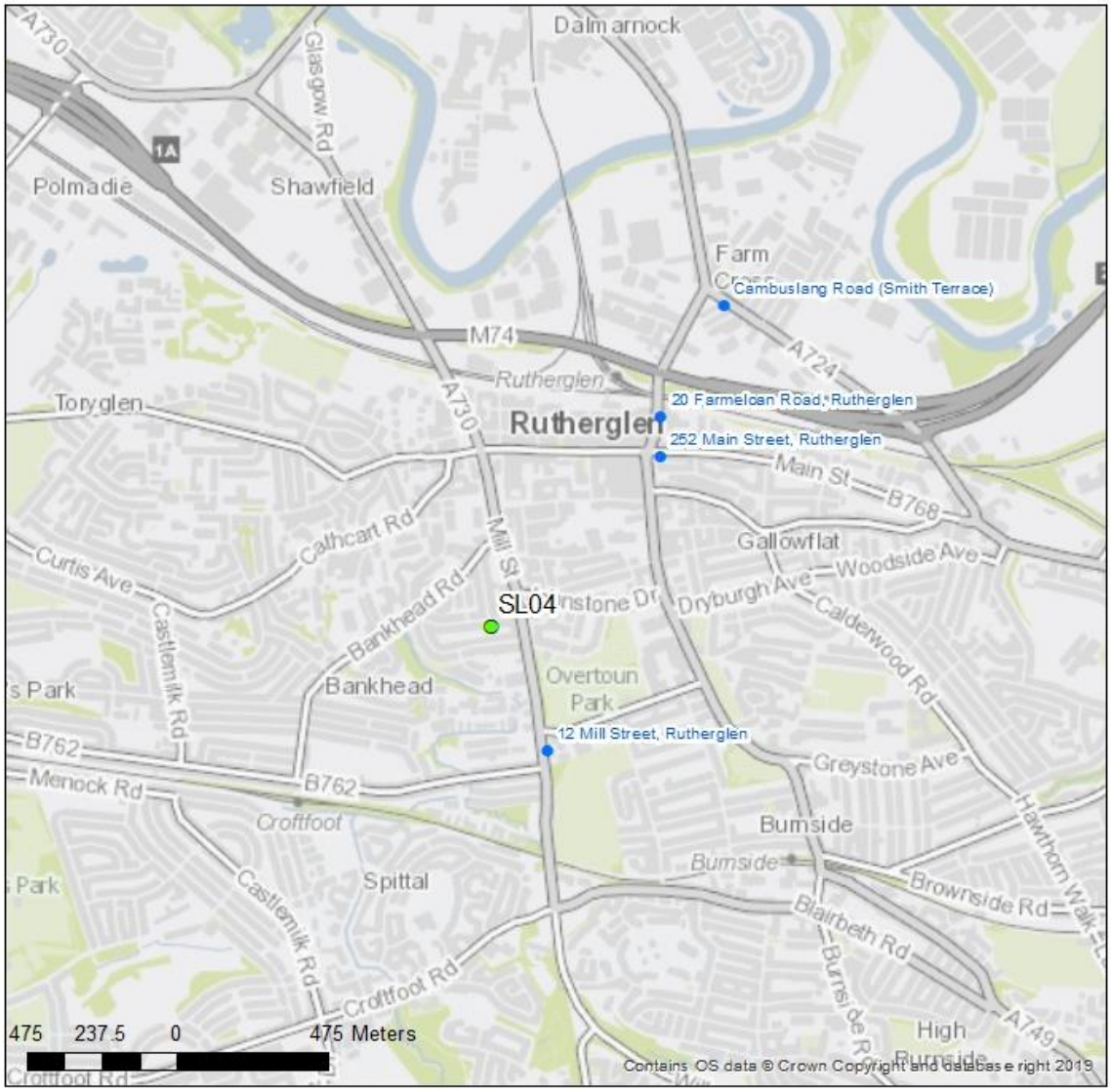
Figure D.10: Rutherglen Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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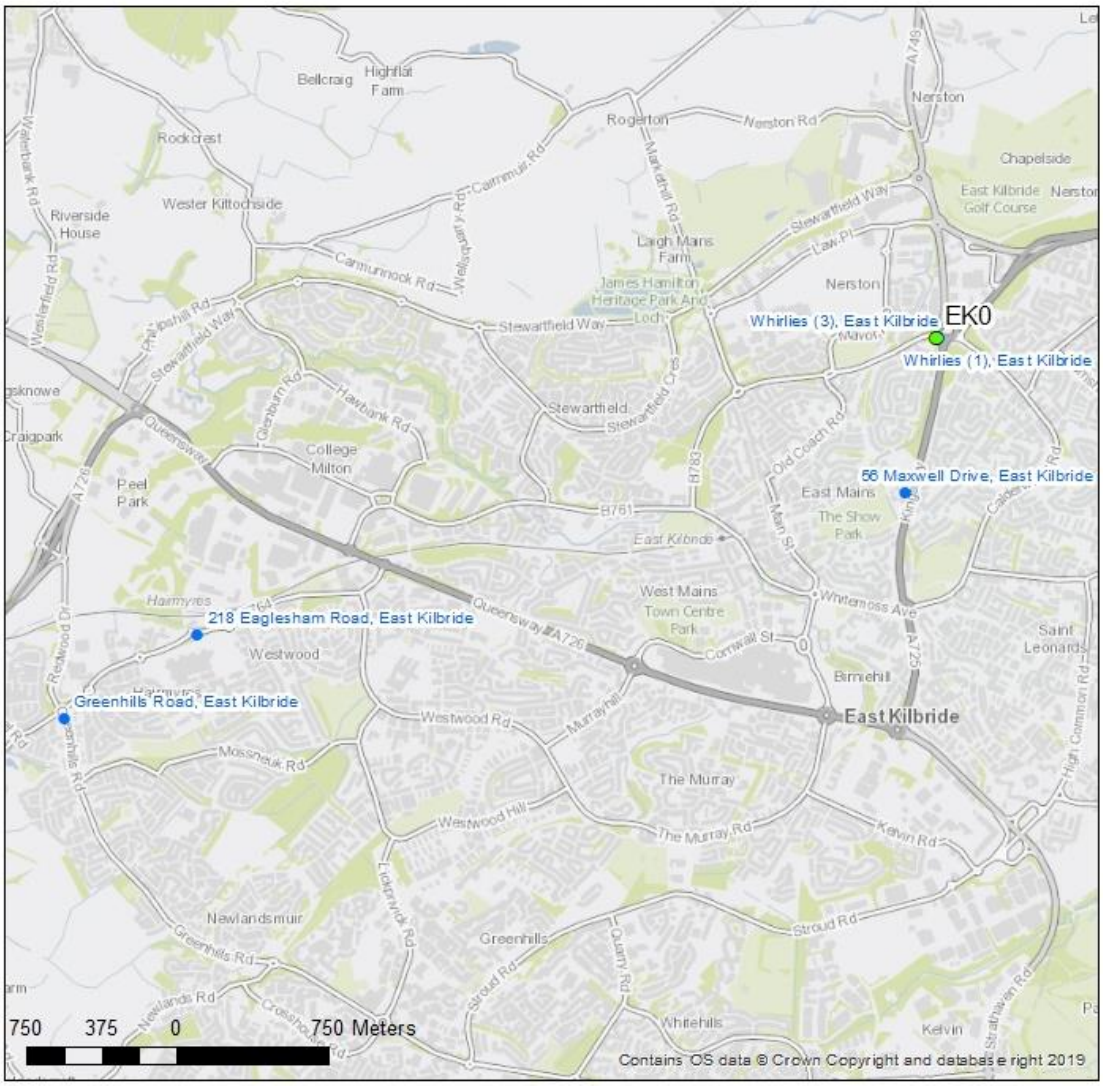
Figure D.11: East Kilbride Monitoring Sites



N

Legend:

- Diffusion Tube
- Automatic Station

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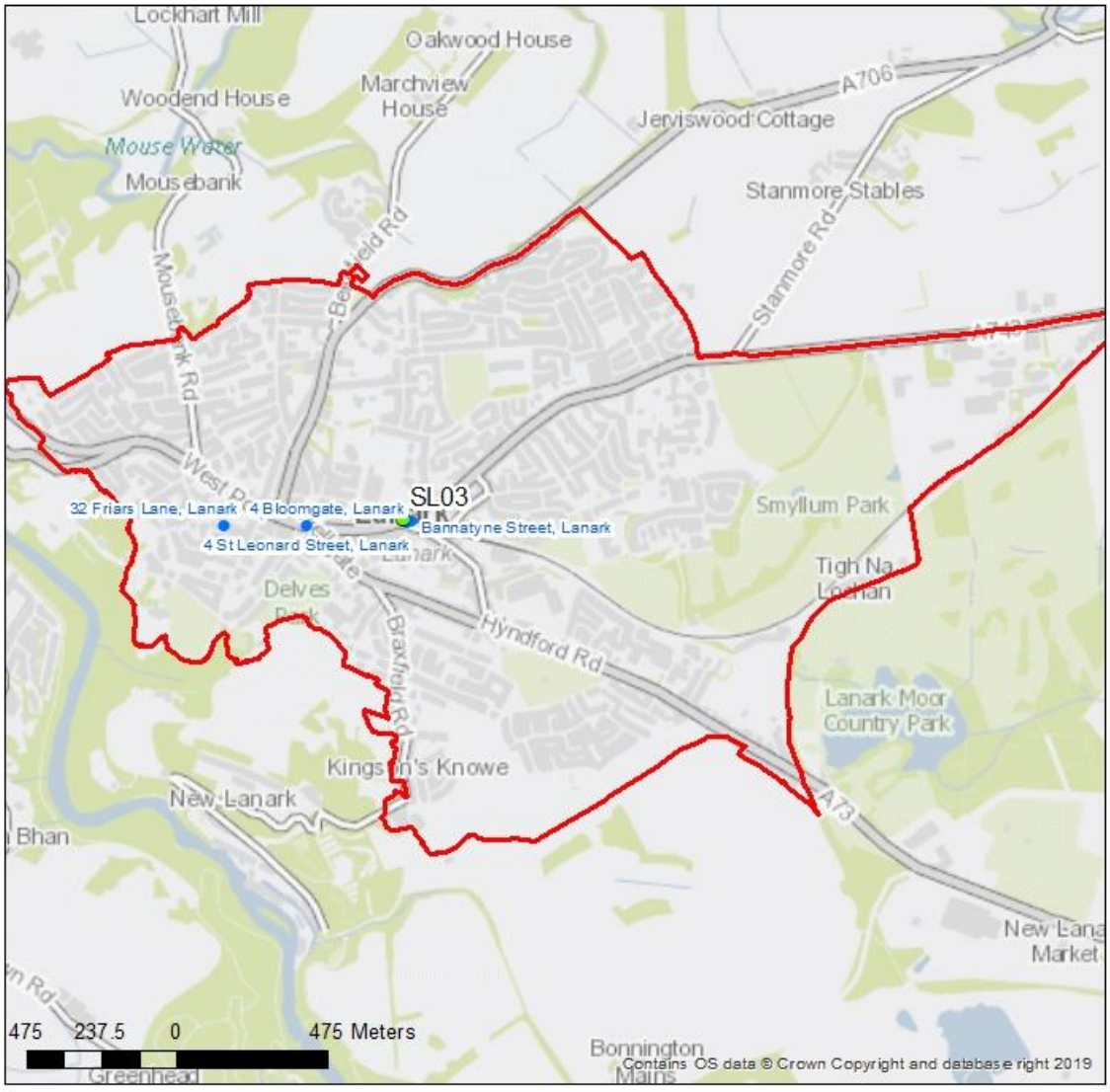
Figure D.12: Lanark AQMA with monitoring locations



Legend:

- Diffusion Tube
- Automatic Station
- AQMA Boundary

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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

South Lanarkshire Council, South Lanarkshire Council Local Development Plan 2

South Lanarkshire Council, The Sustainable Development and Climate Change Strategy 2017 – 2022

South Lanarkshire Council, South Lanarkshire Biodiversity Duty Implementation Plan 2018-2022

South Lanarkshire Council, South Lanarkshire Council Cycling Strategy 2015-2020

South Lanarkshire Council, Park and Ride Strategy 2018 - 2027

South Lanarkshire Council, "The air that we breathe" – GIS story book, available at https://www.southlanarkshire.gov.uk/info/200193/pollution/263/air_quality

South Lanarkshire Council, The Local Transport Strategy 2013 - 2023

South Lanarkshire Council, Sustainable Development and Climate Change Strategy 2017 – 2022

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