

Annual Progress Report (APR)



2020 Air Quality Annual Progress Report (APR) for
South Lanarkshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

July 2020

Customer:

South Lanarkshire Council

Customer reference:

Air Quality Support Services for South Lanarkshire Council – SCL/CPS/COMENT/19-113

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Contact:

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

T: +44 (0) 1235 753 189

E: Andrew.Lewin@ricardo.com

Author:

Eilidh Morrison

Approved by:

Andrew Lewin

Signed



Date:

6th July 2020

Ref: ED 12832110

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Local Authority Officer	Bronah Byrne
Department	Fleet and Environmental Services
Address	Ground Floor, Montrose House, 154 Montrose Crescent, Hamilton, ML3 6LB
Telephone	01698 455 373
E-mail	Bronah.byrne@southlanarkshire.gov.uk
Report Reference number	ED12832110
Date	July 2020

Executive Summary: Air Quality in Our Area

Air Quality in South Lanarkshire

Air Quality is generally good in most parts of South Lanarkshire, 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 (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}).

This Annual Progress Report provides a summary of the 2019 measurements conducted across South Lanarkshire; 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 (NO₂) concentrations measured at automatic monitoring sites within South Lanarkshire were below the annual mean objective of 40 µg.m⁻³ during 2019. The last five years' measurements indicate a downward trend in measured NO₂ concentrations at all the automatic sites, this decline is more apparent since 2016.

Exceedances of the NO₂ annual mean objective were measured at two diffusion tube sites:

1. 24 Low Patrick Street, Hamilton – distance drop calculations estimate an NO₂ annual mean of 46.0 µg.m⁻³ at the nearest location of relevant exposure to this diffusion tube site. In recent years, although the measured NO₂ annual mean has been greater than the 40 µg.m⁻³ objective, the measurement has been considered in context with the conclusions of the 2014 Detailed Assessment of NO₂ and PM₁₀ in Hamilton Town Centre (which was based on 2013 measurements). The Detailed Assessment concluded that no concentrations in excess of the 40 µg.m⁻³ objective were occurring at 1st floor height where relevant exposure is present. The measured NO₂ annual mean concentrations

in 2019 at this location is lower than that measured in 2013; there is therefore unlikely to be a risk that concentrations in excess of the objective have occurred at the nearby first floor height receptors. However, based on the 2018 measurement results, an updated Detailed Assessment is being prepared and will be submitted in 2020. The conclusions from the Detailed Assessment will be added to next year's annual report. South Lanarkshire Council will continue to monitor at this location.

2. 233 Glasgow Road, Blantyre – distance drop off calculations estimate an NO₂ annual mean of 46.3 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 NO₂, PM₁₀ and PM_{2.5} at this location in January 2019. A repeat Detailed Assessment is currently being prepared and will be submitted in 2020. The conclusions from the Detailed Assessment will be added to next year's annual report.

Only one hourly mean NO₂ concentration in excess of 200 µg.m⁻³ objective was measured at Cambuslang during 2019, all measurement sites were therefore compliant with the 1-hour short-term mean objective¹.

The 18 µg.m⁻³ Scottish PM₁₀ annual mean objective was not exceeded at any of South Lanarkshire Council's seven automatic monitoring sites in 2019.

Measured PM₁₀ concentrations were generally the same in 2019 when compared to 2018, except for Rutherglen and Cambuslang which increased by 1 µg.m⁻³ and Lanark and Raith Interchange 2 which decreased by 1 µg.m⁻³. Concentrations measured at Lanark, East Kilbride Whirlies, Uddingston and Cambuslang automatic site remained consistent with 2018. PM₁₀ monitoring commenced at the Blantyre site in January 2019.

¹ 1-hr mean 200 µg.m⁻³ standard is not to be exceeded more than 18 times per year

A PM₁₀ daily mean greater than 50 µg.m⁻³ was measured at every monitoring site during 2019. The highest number of exceedances were measured at the Cambuslang site, where 7 exceedances were recorded. All measurement sites were therefore compliant with the 24-hour short-term mean objective².

South Lanarkshire Council measured PM_{2.5} concentrations at eight of their automatic sites in 2019. PM_{2.5} monitoring commenced at the Blantyre site in January 2019. No exceedances of the Scottish PM_{2.5} annual mean objective³ 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

South Lanarkshire Council has taken forward a number of measures during the current reporting year of 2019 in pursuit of improving local air quality.

South Lanarkshire Council recently finalised their Air Quality Action Plan (AQAP). More information is included in Section 2 which provides details of the progress made so far.

Local Priorities and Challenges

South Lanarkshire Council will proceed to an updated detailed assessment at Low Patrick Street, Hamilton. Automatic and passive methods of air quality monitoring will continue throughout 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/environme nt>).

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/>.

² 24-hr mean 50µg.m⁻³ not to be exceeded more than 7 times a year

³ Exceedances of the PM_{2.5} annual mean objective of 10µg/m³

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1. Local Air Quality Management

This report provides an overview of air quality in South Lanarkshire Council during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

Table 1-1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	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
	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
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	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
Lead	0.25 µg/m ³	Annual Mean	31.12.2008

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.

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 at <https://www.gov.scot/Publications/2015/11/5671/17>. 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 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

The 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 2020, 70 out of 149 schools had implemented a travel plan with a further 66 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.

2.3 Policies Relevant to Air Quality in South Lanarkshire

South Lanarkshire Council has in place a number of policies which can impact on air quality within the local area. These policies aim to have a positive impact on pollutant concentrations across South Lanarkshire.

2.3.1 Local Development Plan 2015 – 2020

The Local Development Plan⁴ has interactive maps available outlining the land use plans for each of the urban settlements within South Lanarkshire. The development which could impact on the designated AQMAs declared for Whirlies, Rutherglen and Lanark are:

⁴ http://www.southlanarkshire.gov.uk/info/200172/plans_and_policies/39/development_plans/6

- East Kilbride: Residential development areas at Nerston could impact the traffic within the Whirlies AQMA.
- Lanark: Residential development areas to the east and south of the town centre of Lanark, within the AQMA boundary declared by Lanark.
- Rutherglen: Limited development within the immediate area, however large development within Cambuslang to the East of Rutherglen could result in increased traffic within the area. The proposed area of development and growth is out-with the designated AQMA.

The Local Development Plan Policy 4, outlines that development management will ensure that no adverse effects on air quality will occur as a result of proposed developments.

2.3.2 Climate change – annual statement on Climate Change

The Climate Change Annual Statement⁵ highlights that sustainable development including climate change compliance is a focus for South Lanarkshire Council. These duties are reflected in the Council Plan and South Lanarkshire's Sustainable Development Strategy (SDS). Climate Change actions are embedded within numerous strategic plans across South Lanarkshire, including:

- Local Development Plan
- Carbon Management Plan
- Employee Travel Plan

South Lanarkshire has key performance targets to reduce energy and fuel consumption in order to further reduce carbon emissions by a further 10% by 2021.

2.3.3 Sustainable Development and Climate Change Strategy 2017 – 2022

South Lanarkshire Council's Sustainable Development and Climate Change Strategy⁶ covers the period from 2017 to 2022. The strategy outlines the actions South Lanarkshire will take to reduce their carbon emissions and adapt to climate change.

⁵ http://www.southlanarkshire.gov.uk/downloads/file/11048/climate_change_duties_summary_report_2016

⁶ https://www.southlanarkshire.gov.uk/downloads/file/12055/sustainable_development_and_climate_change_strategy_2017-2022

2.3.4 Supplementary Planning Guidance

The Supplementary Planning Guidance for Sustainable Development and Climate Change⁷ forms part of the Development Plan for South Lanarkshire. Section 8 outlines key planning issues in relation to air quality that South Lanarkshire require to address, these include:

- Proposed new buildings can impact the local air flow of an area, impacting on air quality
- Proposed road construction, amendments can impact traffic flow and pollutant concentrations as a result of increased congestion.
- Proposed Developments in an area of existing poor air quality can expose future occupiers and result in increased pressure on the local road networks due to increased traffic.

Overall South Lanarkshire recognises the importance of the planning system to ensure air quality is not hindered through future developments.

2.3.5 Local Transport Strategy

The Local Transport Strategy⁸ specified that road traffic has been recognised as a significant source of NO₂, PM₁₀ and PM_{2.5} concentrations across South Lanarkshire. Previous LAQM reports and assessments have identified busy road junctions as areas for potential poor air quality and as a result the monitoring network within South Lanarkshire was expanded. Over the past couple of years PM₁₀ and PM_{2.5} monitoring has been expanded to Uddingston and Lanark in order to gather further information on pollutant concentrations.

The Local Transport Strategy for South Lanarkshire outlines the aim of working towards economic prosperity and environmental and social sustainability by providing an accessible and integrated transport network. The strategy seeks to link with other council strategies and policies.

The strategy includes numerous objectives which are particularly relevant to reducing pollutant concentrations:

- Ensuring that transport supports and facilitates economic recovery, regeneration and sustainable development.

⁷ http://www.southlanarkshire.gov.uk/downloads/file/9914/sustainable_development_and_climate_change

⁸ http://www.southlanarkshire.gov.uk/downloads/file/7420/local_transport_strategy_2013-23

- Improving health and wellbeing by facilitating and encouraging active travel, through the development of attractive, safe and convenient walking and cycling networks.
- Alleviating the impacts of traffic, congestion and traffic growth throughout South Lanarkshire.

2.3.6 Other Policies in Draft

A number of draft policies are currently in development and include the following: Food Growing Strategy; Ayrshire and South Lanarkshire Timber Transport Strategy; Food Strategy; Digital Inclusion Strategy; Local Heat and Energy Efficiency Strategy. During the Strategy development process, any areas that can influence air quality will be considered.

2.4 National Low Emission Framework (NLEF) Stage 1 Screening Appraisal for South Lanarkshire Council

The NLEF⁹, which is now part of the review and assessment process for LAQM reporting in Scotland, contributes to the Cleaner Air for Scotland strategy by aiming to improve local air quality in areas where air quality objectives are exceeded, or likely to be exceeded, primarily due to emissions from transport.

The NLEF is directly linked to Air Quality Action Planning (AQAP) for local authorities with Air Quality Management Areas (AQMAs) and will help to identify actions to improve local air quality within AQMAs. The NLEF appraisal takes the form of a two-stage process, as summarised in Table 2-2.

⁹ <https://www.gov.scot/publications/national-low-emission-framework/pages/2/>

Table 2-2 – NLEF Appraisal Process

Stage		Outcome	Actions Required
1	Screening	<ul style="list-style-type: none"> decision on whether to proceed to stage two assessment 	<ul style="list-style-type: none"> screening process to identify actions that will benefit air quality within the AQMA screening evidence should form part of the Annual Progress Report, with the decision agreed by Scottish Government and SEPA
2	Assessment	<ul style="list-style-type: none"> decision to proceed with introduction of LEZ or identification of alternative transport-related measures required to improve air quality Stage two assessment report agreed by Scottish Government and SEPA 	<ul style="list-style-type: none"> NMF approach to support assessment of sources of pollution and options quantitative impact assessment (based on predicted change in pollutant concentrations) consideration of consequential impacts (e.g. congestion, export of pollution)

An overview of the NLEF Stage 1 Screening Appraisal for South Lanarkshire Council is detailed in Table 2-3. A more detailed report has been submitted separately¹⁰. It is the opinion of South Lanarkshire Council that proposed measures are sufficient and there is therefore no need to proceed to a Stage 2 Assessment.

¹⁰ Ricardo Energy & Environment, "Scottish National Low Emission Framework (NLEF) Screening Determination", Report for South Lanarkshire Council, Issue 1, June 2020

Table 2-3 – NLEF Stage 1 Screening Appraisal

No.	NLEF Stage 1 Screening Appraisal Question	Appraisal Response
1	What is the name of the declared AQMA(s)?	Whirlies (East Kilbride), Rutherglen and Lanark
2	What pollutants are the AQMA(s) declared for?	Whirlies (East Kilbride) – PM ₁₀ Rutherglen – PM ₁₀ Lanark – NO ₂
3	What are the main sources of air pollution, or other factors, contributing to the declaration of the AQMA? <i>(If the main source is not transport-related no further screening is required).</i>	Whirlies (East Kilbride) – Background sources (no further screening required) Rutherglen – Background sources (no further screening required) Lanark – Road traffic emissions are the predominant source
4	Are the declared AQMA(s) (and therefore area(s) of exceedance) restricted in nature geographically to a small area for which a Low Emission Zone (LEZ) would not be appropriate or proportionate (e.g. single streets, road junctions, small town centre)?	No
5	Do the monitored concentrations within the AQMA(s) meet the air quality objective(s)? If yes, for how long has compliance been achieved? If not, what are the extent of the exceedances?	Yes, AQ objectives are met. There have been no exceedances of annual mean NO ₂ measured in Lanark AQMA since 2013
6	What is the current trend for pollutant concentrations within the AQMA(s) (state the trend for each pollutant declared)?	Measurements at the automatic and non-automatic monitoring sites NO ₂ concentrations have been decreasing in recent years.

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No.	NLEF Stage 1 Screening Appraisal Question	Appraisal Response
7	Are there any major planned developments which could impact air quality within or surrounding the AQMA(s)?	No
8	What are the current trends for vehicle movements within the AQMA and surrounding areas?	Taking into account the trends in vehicle movements over the past 10 years and the likely impact of nearby development; the traffic flows in and around the Lanark AQMA are likely to remain stable i.e. they are likely to increase in line with national growth projections only. This confirms that no further NLEF Stage 1 screening is required on the basis of traffic growth.
9	Provide evidence showing how the AQAP (and associated plans, programmes and strategies) will deliver significant improvements towards achieving the air quality objective(s) in as short a timescale as possible?	This has been submitted as a separate report "Scottish National Low Emission Framework (NLEF) Screening Determination" ¹⁰ .

2.5 Progress and Impact 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 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2-4. 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

Table 2-4 – 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	Policy guidance and	Encourage opportunity for contributions	Inclusion of air quality outcomes in	The Sustainable Development and Climate Change Strategy 2017 –	Ongoing measure that will continue

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	<p>Strategies</p> <p>Implementation Phase: Ongoing</p>	development control	<p>towards improving local air quality and minimising negative impacts from existing and future Council strategies.</p> <p>Increase awareness of local air quality.</p>	<p>the Sustainable Development and Climate Change Strategy 2017 – 2022.</p> <p>Inclusion of air quality outcomes in the Biodiversity Implementation Plan 2018 – 2022.</p> <p>Inclusion of air quality outcomes in the Cycling Strategy 2015 – 2020.</p> <p>Inclusion of air quality outcomes in the Park and Ride Strategy 2018 – 2027.</p>	<p>2022 includes a strategic outcome to protect, enhance and respect South Lanarkshire’s natural 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.</p> <p>The South Lanarkshire Biodiversity Duty Implementation Plan 2018-2022 includes an action to investigate the use of green infrastructure to improve air quality.</p> <p>South Lanarkshire recognises the benefits of encouraging cycling and have developed a South Lanarkshire Council Cycling Strategy 2015-2020.</p> <p>This strategy aims to improve air quality by getting more people cycling and travelling actively.</p> <p>The Council has a Park and Ride Strategy 2018 - 2017 which focuses on making the rail network attractive and accessible by providing park and ride facilities.</p>	to be considered as existing and new Strategies are developed and updated.

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					Improving air quality is one of the key benefits and outcomes of this strategy.	
Strategic 4	Revise and adopt an Air Quality Strategy for South Lanarkshire Implementation Phase: Ongoing	Policy guidance and development control	Increase focus on air quality in Council services and local businesses, organisations and the general public	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 Council. The policy is aimed at Council staff as well as local businesses, organisations and the general public.	2021
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.	
Strategic 7	Review traffic studies	Transport planning and infrastructure	To adopt a strategic approach to air quality and undertake a	Undertake a review of traffic to assess the potential impact	Air quality action planning funds have supported review of traffic within the Lanark area as part of a	

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Ongoing		detailed assessment of the feasibility and impacts of proposed infrastructure and traffic management measures.	traffic management optimisation on air quality	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.	
Strategic 8	SCOOT or other intelligent traffic system – continue expansion of system Implementation Phase: Ongoing	Traffic management	Reduce traffic queuing within the AQMA 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	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					<p>charging points is available via the air quality storymap.</p> <p>As part of South Lanarkshire's fleet review a pilot project is underway which has a number of diesel fleet vehicles replaced with a mix of petrol and electric vehicles. The aim of the project is to determine the real world costs in terms of monetary as well as emissions. Practical challenges associated with the utilisation of electric vehicles are being tested during this pilot project.</p>	
Strategic 10	<p>Expand cycle / pedestrian counters</p> <p>Implementation Phase: Ongoing</p>	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 70 counters are in use.	
Strategic 11	<p>Awareness training on air quality issues</p> <p>Implementation Phase: Ongoing</p>	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	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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, walking and public transport.	planning colleagues. 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 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.	Ongoing
Strategic 13	Investigate integration of air quality awareness within Education 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 sustainable active travel workshops have previously been undertaken within a number of primary schools within South Lanarkshire. Due to the pandemic however this year's workshop schedule had to be cancelled. An online active travel resource for primary schools is currently being considered for development with a view to this being piloted in South Lanarkshire with potential to be made available on a Scotland wide basis.	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Strategic 14	<p>Improve cycle routes</p> <p>Implementation Phase: Ongoing</p>	Transport planning and infrastructure	To encourage a shift to more sustainable forms of travel and reducing traffic	Improvement of cycle routes	<p>South Lanarkshire Council continues to invest in the maintenance, upgrading and expansion of cycling infrastructure across the area. Active travel studies have been undertaken for East Kilbride, Cambuslang and Rutherglen areas. A Lanark study is currently being undertaken. These studies will inform future investment within the cycle network.</p> <p>New walking and cycling connections have been installed as part of the M74 / Raith Interchange junction improvements and a recent joint project with North Lanarkshire Council has been undertaken to promote the walking and cycling routes that exists and connect the two local authority areas via Strathclyde Park.</p>	Ongoing
Strategic 15	<p>Investigate further behaviour change initiatives</p> <p>Implementation Phase: Ongoing</p>	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	<p>Beat the Street East Kilbride project ran for 4 out of the planned 6 weeks. During that time participants faced three storms and Covid 19. Despite all this 12,066 people participated in the game (17% of the local population) and an amazing 124,000+ miles were travelled. Survey and data analysis have found that there was an increase in adults being active by 28%, an increase in children being</p>	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
					<p>sufficiently active by 15%, an increase in cycling by an amazing 8%. 26% of BtS journeys were undertaken during commute hours.</p> <p>The project evolved into Beat the Bug to address concerns as lockdown commenced and to promote the importance of activity to support immune systems.</p>	
Strategic 16	<p>Continue to expand air quality monitoring activities</p> <p>Implementation Phase: Ongoing</p>	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	<p>Section 75 Town and Country Planning (Scotland) Act 1997 agreements</p> <p>Implementation Phase: Ongoing</p>	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	Real time passenger information in place at key bus stop locations in the East Kilbride area. Bus companies operating in South	Ongoing

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
	Implementation Phase: Completed				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. The pilot project may be extended to the East Kilbride depending on success and funding. A steering group has now been set up to support this action going forward.	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 technical issues occurred with this monitoring kit. These issues have since been resolved and further period of measurements will be necessary.	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

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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
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. 8270 vehicles and 206 companies have registered with the scheme however please note that these relate to the wider South Lanarkshire area.	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

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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 are underway into the purchase of additional land adjacent to the stations. Discussions between Environmental Services and Traffic and Transportation Services are underway in terms of active travel hub options to be incorporated within future plans for the site	Ongoing
Lanark 13	Review pedestrian locations Implementation Phase: On hold	Promoting travel alternatives	To increase awareness of travel choices and encourage changes in behaviour that will contribute to improving local air quality.	Improved provision of pedestrian locations	At this stage this measure has not been progressed. This will be reviewed going forward.	On hold
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

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
Rutherglen 2	<p>Review parking restriction enforcement and promotion</p> <p>Implementation Phase: On hold</p>	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	<p>Real time passenger information installed</p> <p>Implementation Phase: Ongoing</p>	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.	Ongoing
Rutherglen 4	<p>Air quality modelling to assist understanding of the current picture</p> <p>Implementation Phase: Completed</p>	Traffic Management	Improve understanding of current air quality within AQMA	<p>Carry out Air Quality dispersion modelling to quantify the current air quality status.</p> <p>Results shown in South Lanarkshire's air quality story map.</p>	<p>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.</p> <p>This is currently under review to establish what impact lockdown has had given the significant reduction in volume of traffic.</p>	Ongoing

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

Measure Number	Measure	Category	Focus	Key Performance Indicator	Progress to Date	Estimated Completion Date
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 2019. A new automatic monitoring site was set up at Glasgow Road, Blantyre, at the beginning of January 2019. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at

<http://www.scottishairquality.scot/data/data-selector>.

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

3.1.2 Non-Automatic Monitoring Sites

South Lanarkshire Council undertook non- automatic (passive) monitoring of NO₂ at 40 sites during 2019. 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 (NO₂)

No annual mean NO₂ concentrations in excess of the 40 µg.m⁻³ air quality objective were measured at **automatic** monitoring sites in South Lanarkshire during 2019. NO₂ measurement data capture was very low (5%) at the Whirlies site during 2019 due to

ongoing technical problems with the analyser and air conditioning system. It has not been possible to report a measured NO₂ annual mean for the Whirlies site.

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³. The annual mean concentrations measured at the automatic monitoring sites over the last five years are presented in Figure A.1 in Appendix A.

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. NO₂ annual mean concentrations in excess of the 40 µg.m⁻³ objective were measured at 2 diffusion tube sites in South Lanarkshire during 2019.

Exceedances of the annual mean objective were measured at:

3. Tube 26 – 24 Low Patrick Street, Hamilton (51.6 µg.m⁻³)
4. Tube 32 – 233 Glasgow Road, Blantyre (47.3 µg.m⁻³)

These results were adjusted for distance drop off to estimate the annual mean concentrations at the nearest location of relevant exposure. The following NO₂ annual mean concentrations were calculated:

5. Tube 26 – 24 Low Patrick Street, Hamilton (46.0 µg.m⁻³)
6. Tube 32 – 233 Glasgow Road, Blantyre (46.3 µg.m⁻³)

Following distance correction, these 2 diffusion tubes still measured exceedances of the NO₂ annual mean objective. Further information regarding each location is presented in the conclusions from new monitoring data section of this report (Section 6.1).

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Hourly mean NO₂ concentrations measured at automatic monitoring sites during 2019 were compliant with the NO₂ 1-hour objective as no sites measured exceedances of the 200µg.m⁻³ objective more than 18 times over the year. The Cambuslang automatic monitoring site measured hourly concentrations in excess of 200 µg.m⁻³ once during the year.

The annual mean concentrations measured at roadside, kerbside and urban background monitoring sites over the last 5 years are presented in Figure A.2, Figure A.3 and Figure A.4 in Appendix A.

3.2.2 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 18µg/m³.

There were no exceedances of the 18 µg.m⁻³ annual mean objective at any monitoring locations within South Lanarkshire during 2019. A comparison of PM₁₀ annual mean concentrations measured in South Lanarkshire over the past 5 years are presented in Figure A.5 in Appendix A.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 7 times per year.

A daily mean greater than 50 µg.m⁻³ was measured at every automatic site, with 7 exceedances measured in Cambuslang, the highest number measured. Therefore all sites remain compliant with the objective.

3.2.3 Particulate Matter (PM_{2.5})

South Lanarkshire Council measured PM_{2.5} concentrations at seven of their automatic monitoring locations during 2019; Rutherglen, East Kilbride Whirlies, Lanark, Hamilton, Uddingston, Raith Interchange 2 and Cambuslang.

Table A.7 in Appendix A compares the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 5 years with the air quality objective of 10µg/m³. During 2019, the PM_{2.5} concentrations measured at all locations in South Lanarkshire were less than the annual mean objective of 10µg.m⁻³.

3.2.4 Sulphur Dioxide (SO₂)

South Lanarkshire Council do not currently measure SO₂ 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 source have been identified during 2019.

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 2019.

4.4 Commercial and Domestic Sources

No new or significantly changed commercial or domestic sources have been identified during 2019.

4.5 New Developments with Fugitive or Uncontrolled Sources

No new or significantly changed fugitive sources have been identified during 2019.

5. Planning Applications

No planning applications were received during 2019 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
Development Framework Site	Langlands West, East Kilbride
Development Framework Site	Redwood Crescent, EK
Development Framework Site	St James Centre (North), EK
Development Framework Site	Hamilton International Technology Park
Development Framework Site	Uni of West of Scotland Almada Street, Hamilton

Development Framework Site	Bridge Street / Somervell Street, Cambuslang
Development Framework Site	Duchess Road, Rutherglen
Residential Masterplan Site	Peel Road Thorntonhall
Residential Masterplan Site	East Whitlawburn, Cambuslang

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

All Nitrogen Dioxide (NO₂) annual mean concentrations measured during 2019 at automatic monitoring sites in South Lanarkshire were less than the 40 µg.m⁻³ objective, including at the new site in Blantyre. The last 5 years of measurements indicate a downward trend in measured NO₂ concentrations at all automatic sites. One exceedance of the NO₂ hourly objective (200 µg.m⁻³) was measured at the Cambuslang automatic site.

Exceedances of the NO₂ annual mean objective were measured at two diffusion tube locations at 24 Low Patrick Street, Hamilton and 233 Glasgow Road, Blantyre.

No exceedances of the PM₁₀ annual mean objective were measured during 2019. Measured concentrations at the seven PM₁₀ measurement sites in South Lanarkshire ranged from 10 to 14 µg.m⁻³. Measured PM₁₀ concentrations were generally the same in 2019 when compared to 2018, except for Rutherglen and Cambuslang which increased by 1 µg.m⁻³ and Lanark and Raith Interchange 2 which decreased by 1 µg.m⁻³. South Lanarkshire Council acknowledge that there has been an increase in PM₁₀ at Rutherglen monitoring location since 2017, however the annual PM₁₀ concentration remains below the objective of 18 µg.m⁻³ and the annual mean concentration in 2016 was 17 µg.m⁻³, indicating that higher concentrations were present in this area before. Automatic monitoring of PM₁₀ will continue at this location. PM₁₀ monitoring began at the Blantyre site in 2019, as such the PM₁₀ annual mean will be reviewed against previous years' results in future APRs.

There were exceedances of the PM₁₀ daily short-term air quality objectives at every monitoring site during 2019. The highest number of exceedances were measured at the Cambuslang site, where 7 exceedances were recorded. All sites were still in compliance with the objective of no more than 7 exceedances per year. The number of exceedances were higher than in previous years but remained lower or similar to the results from 2015.

No exceedances of the PM_{2.5} annual mean objective were measured during 2019. Measured concentrations at the seven PM_{2.5} measurement sites in South Lanarkshire ranged from 6 to 8 µg.m⁻³. Measured PM_{2.5} concentrations increased by 1 µg.m⁻³ in Rutherglen, East Kilbride and Raith Interchange 2, and remained the same at the

other 4 sites. PM_{2.5} monitoring began at the Blantyre site in 2019, as such the PM_{2.5} annual mean will be reviewed against previous years' results in future APRs.

Hamilton

The distance drop off calculations estimate an NO₂ annual mean of 46.0 µg.m⁻³ at the nearest location of relevant exposure to this diffusion tube site. In recent years, although the measured NO₂ annual mean has been greater than the 40 µg.m⁻³ objective, the measurement has been considered in context with the conclusions of the 2014 Detailed Assessment of NO₂ and PM₁₀ in Hamilton Town Centre (which was based on 2013 measurements). The Detailed Assessment concluded that no concentrations in excess of the 40 µg.m⁻³ objective were occurring at 1st floor height where relevant exposure is present. The measured NO₂ annual mean concentrations in 2019 at this location is lower than that measured in 2013 (51.3 µg.m⁻³); there is therefore unlikely to be a risk that concentrations in excess of the objective have occurred at the nearby first floor height receptors. Based on the 2018 measurement results, an updated Detailed Assessment is being prepared and will be submitted in 2020. The conclusions from the Detailed Assessment will be added to next year's annual report. South Lanarkshire Council will continue to monitor at this location.

Blantyre

A detailed assessment was conducted for Glasgow Road, Blantyre in 2018¹¹. The assessment concluded that, based on a dispersion modelling study verified using the 2017 diffusion tube measurements; it is likely that annual mean NO₂ concentrations in excess of the 40 µg.m⁻³ objective are occurring at locations where there may be relevant human exposure. Defra's appraisal of the Detailed Assessment concluded that the recommendation to declare an Air Quality Management Area was not acceptable as there was a degree of uncertainty over the modelling results and conclusions.

1. Defra suggested that the 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. To supplement future data, South Lanarkshire Council installed an automatic monitoring site measuring NO₂, PM₁₀ and PM_{2.5} on Glasgow Road, Blantyre, in January 2019, as well as continued diffusion tube monitoring. A repeat Detailed Assessment

¹¹ Ricardo Energy & Environment, "Detailed Assessment of air quality at Glasgow Road, Blantyre", Report for South Lanarkshire Council, Issue 1, 2018

is currently being prepared and will be submitted in 2020. The conclusions from the Detailed Assessment will be added to next year's annual report.

6.2 Conclusions relating to New Local Developments

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

6.3 Proposed Actions

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

1. Submit the next Air Quality Progress Report in June 2021.
2. Continue to implement the measures outlined in the action plans for East Kilbride, Lanark and Rutherglen AQMAs.
3. Review the current NO₂ diffusion tube monitoring programme and seek to relocate any tubes where deemed appropriate (i.e. where continuously low readings have been recorded).
4. Await the outcome of the Detailed Assessment for Blantyre, in addition to the measurement results from the new automatic monitoring site, to guide the decision making process regarding the possible declaration of a new AQMA in Blantyre.
5. Await the outcomes of the Particulate Matter Measurement Study recently commissioned by the Scottish Government due to the current uncertainty regarding PM₁₀ 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.

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) 0 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?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
1	3 London Street, Larkhall	Kerbside	276087	651563	NO ₂	No	2.3	1	No
2	Greenhills Road, East Kilbride	Roadside	260052	653785	NO ₂	No	20	1.3	No
3	4 Kirkton Street, Carluke	Kerbside	284538	650572	NO ₂	No	2	0.8	No
4	4 St Leonard Street, Lanark	Kerbside	288438	643694	NO ₂	Yes	0.7	4.4	No
5	32 Friars Lane, Lanark	Urban Background	287860	643685	NO ₂	Yes	4.8	3.6	No
6	4 Bloomgate, Lanark	Roadside	288122	643685	NO ₂	Yes	2	0.2	No
7	218 Eaglesham Road, East Kilbride	Kerbside	260711	654205	NO ₂	No	4.7	1.2	No
8	Whirlies (1), East Kilbride	Kerbside	264374	655673	NO ₂	Yes	6.8	1.9	Yes
9	Whirlies (2), East Kilbride	Kerbside	364374	655673	NO ₂	Yes	6.8	1.9	Yes
10	Whirlies (3), East Kilbride	Kerbside	264374	655673	NO ₂	Yes	6.8	1.9	Yes
11	56 Maxwell Drive, East Kilbride	Roadside	264210	654909	NO ₂	No	16	30	No

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
12	20 Farmeloan Road, Rutherglen	Kerbside	261662	661789	NO ₂	Yes	0.6	2.1	No
13	252 Main Street, Rutherglen	Kerbside	261662	661663	NO ₂	Yes	3.8	0.1	No
14	12 Mill Street, Rutherglen	Roadside	261302	660734	NO ₂	Yes	5.1	2.6	No
15	Cambuslang Road (Smith Terrace)	Roadside	261858	662142	NO ₂	Yes	3	1.5	No
16	Hamilton Road/ Clydefor Road Jct	Kerbside	264492	660497	NO ₂	No	15	1.5	No
17	262 Cambuslang Road, Cambuslang	Roadside	263086	661296	NO ₂	No	0.3	2.3	No
18	Greenlees Road, Cambuslang	Roadside	264300	660476	NO ₂	No	5	1	No
19	Blackswell Lane, Hamilton	Roadside	272704	655431	NO ₂	No	6.9	2.7	No
20	190 Hamilton Road, Halfway	Kerbside	265561	659788	NO ₂	No	3	1.5	No
21	109 Caird Street, Hamilton	Roadside	271670	656346	NO ₂	No	5.7	3.1	No
22	79 Union Street, Hamilton	Kerbside	271852	655320	NO ₂	No	1.2	3.3	No
23	134 Almada Street, Hamilton	Roadside	271424	655786	NO ₂	No	3.7	1.4	No

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
24	Almada Street-Muir Street, Hamilton	Roadside	271861	655952	NO ₂	No	3.6	0.1	No
25	289 Glasgow Road (Empire Bar)	Roadside	270013	656436	NO ₂	No	2	2.7	No
26	24 Low Patrick Street, Hamilton	Roadside	272608	655213	NO ₂	No	3.3	5.6	No
27	10 Gateside Street, Hamilton	Roadside	272265	655078	NO ₂	No	2.2	0.8	No
28	28 Low Quarry gardens, Hamilton	Urban Background	271949	654957	NO ₂	No	11.9	0.6	No
29	5 Wordsworth Way, Bothwell	Urban Background	270924	659109	NO ₂	No	15.9	1.6	No
30	93 Main Street, Bothwell	Kerbside	270526	658722	NO ₂	No	8.9	2.3	No
31	25 Main Street, Bothwell	Roadside	270526	658510	NO ₂	No	3.1	3.3	No
32	233 Glasgow Road, Blantyre	Roadside	268902	657591	NO ₂	No	0.4	3.6	No
33	283 Glasgow Road, Blantyre	Roadside	268754	657689	NO ₂	No	5.2	3	No
34	1 Hunthill Road, Blantyre	Roadside	268000	656643	NO ₂	No	4.4	2.3	No
35	Wellhall Road / Hillhouse Roundabout	Urban Background	270065	654918	NO ₂	No	12.2	1.3	No

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
36	Bardykes Road (West End Bar)	Kerbside	268175	658191	NO ₂	No	1.5	0.2	No
37	Burnpark Avenue, Uddingston	Roadside	268944	661474	NO ₂	No	22	29.2	No
38	81 Main Street, Uddingston	Roadside	269617	660438	NO ₂	No	0.2	2.7	No
39	North British Road, Uddingston	Kerbside	270180	660753	NO ₂	Yes	29	1.1	No
40	Bannatyne Street, Lanark	Kerbside	288450	643698	NO ₂	Yes	1.5	0.2	No

(1) 0 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 NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2015	2016	2017	2018	2019
Rutherglen	Roadside	Automatic	50.1	50.1	37	48	N/A	38	36
East Kilbride Whirlies	Roadside	Automatic	5.3	5.3	33	37	29	32	-
Lanark	Kerbside	Automatic	99.6	99.6	21	24	20	19	19
Hamilton	Roadside	Automatic	99.5	99.5	35	34	31	31	29
Uddingston	Roadside	Automatic	93.2	93.2	29	29	27	24	26
Cambuslang	Kerbside	Automatic	99.6	99.6	33	40.0 (25.0)	36	35	33
Raith Interchange 2	Rural	Automatic	33.9	33.9	-	31	24	24	20
Blantyre	Roadside	Automatic	58.2	58.2	-	-	-	-	28.6
1	Kerbside	Diffusion Tube	100.0	100.0	32.3	36	23.9	25.9	21.8
2	Roadside	Diffusion Tube	66.7	66.7	-	-	-	16.1	22.7
3	Kerbside	Diffusion Tube	66.7	66.7	36.2	46.0 (37.0)	27.3*	33.9	36.4
4	Kerbside	Diffusion Tube	100.0	100.0	34	34	29.7	30.3	27.8
5	Urban Background	Diffusion Tube	100.0	100.0	6.6	12	7.2	6.6	6.1
6	Roadside	Diffusion Tube	100.0	100.0	38.2	36	36.1	37.3	31.2
7	Kerbside	Diffusion Tube	100.0	100.0	-	-	-	22.4	21.2
8	Kerbside	Diffusion Tube	100.0	100.0	-	-	36.8	31.7	31.1
9	Kerbside	Diffusion Tube	100.0	100.0	-	-	34.2	34.3	30.3
10	Kerbside	Diffusion Tube	66.7	66.7	-	-	31.5	35.5	28.5
11	Roadside	Diffusion Tube	100.0	100.0	-	-	-	14.8	15.3
12	Kerbside	Diffusion Tube	100.0	100.0	37.2	41.0 (39.0)	39.6	42.2 (40.5)	34.9
13	Kerbside	Diffusion Tube	91.7	91.7	28.8	31	25.2	26	23.9
14	Roadside	Diffusion Tube	100.0	100.0	27.9	31	27.2*	32.7	29.4
15	Roadside	Diffusion Tube	91.7	91.7	-	-	-	33.7	29.0
16	Kerbside	Diffusion Tube	91.7	91.7	-	-	-	28.4	29.4
17	Roadside	Diffusion Tube	100.0	100.0	No result	30	27.6	26	25.0
18	Roadside	Diffusion Tube	91.7	91.7	-	-	-	37.9	33.6
19	Roadside	Diffusion Tube	91.7	91.7	32.4	37	31.1*	36.7	33.7

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2015	2016	2017	2018	2019
20	Kerbside	Diffusion Tube	100.0	100.0	-	-	-	23.4	23.5
21	Roadside	Diffusion Tube	100.0	100.0	26.2	33	27.9*	32.4	25.2
22	Kerbside	Diffusion Tube	100.0	100.0	14.6	31	26.6*	29	27.1
23	Roadside	Diffusion Tube	100.0	100.0	31.6	35	29.9*	29	24.7
24	Roadside	Diffusion Tube	100.0	100.0	31.2	30	31.4*	32.1	28.5
25	Roadside	Diffusion Tube	100.0	100.0	-	-	-	36.9	34.1
26	Roadside	Diffusion Tube	100.0	100.0	44.6	53.0 (47.0)	47.0* (42.3)	66.9 (59.2)	46.0
27	Roadside	Diffusion Tube	91.7	91.7	35.3	36	30.7*	34.6	31.5
28	Urban Background	Diffusion Tube	100.0	100.0	17.8	14	17.1*	12.7	11.3
29	Urban Background	Diffusion Tube	91.7	91.7	20	21	20.5	20.1	16.5
30	Kerbside	Diffusion Tube	83.3	83.3	30.9	40.0 (29.2)	32.9	35	29.1
31	Roadside	Diffusion Tube	100.0	100.0	No result	31	29.2*	25.3	27.1
32	Roadside	Diffusion Tube	100.0	100.0	No result	56.0 (55.0)	49.6 (48.5)	54.2 (52.9)	46.3
33	Roadside	Diffusion Tube	100.0	100.0	28.8	33	23.5	25.5	22.6
34	Roadside	Diffusion Tube	100.0	100.0	24.8	27	19.8	22.8	21.3
35	Urban Background	Diffusion Tube	100.0	100.0	-	-	-	23.7	20.1
36	Kerbside	Diffusion Tube	100.0	100.0	-	-	-	25.4	26.6
37	Roadside	Diffusion Tube	100.0	100.0	24	28	26.3	31.3	22.7
38	Roadside	Diffusion Tube	100.0	100.0	31.5	33	31.7	29.4	24.8
39	Kerbside	Diffusion Tube	75.0	75.0	22.1	27	21.1	27	29.8
40	Kerbside	Diffusion Tube	75.0	75.0	-	-	27.7	24.4	20.3

Notes: Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(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) 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.

Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2015	2016	2017	2018	2019
Rutherglen	Roadside	Automatic	50.1	50.1	0	0	-	1	0 (99)
East Kilbride Whirlies	Roadside	Automatic	5.3	5.3	5	1	1	0 (138)	-
Lanark	Kerbside	Automatic	99.6	99.6	0	0	0	0	0
Hamilton	Roadside	Automatic	99.5	99.5	0	0	0	0	0
Uddingston	Roadside	Automatic	93.2	93.2	0	0	0	0	0
Cambuslang	Kerbside	Automatic	99.6	99.6	N/A	12	1	0	1
Raith Interchange 2	Rural	Automatic	33.9	33.9	N/A	0	0	0	0 (71)
Blantyre	Roadside	Automatic	58.2	58.2	-	-	-	-	0 (98)

Notes: Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2015	2016	2017	2018	2019
Rutherglen	Roadside	98.0	98.0	18	17	12	13	14
East Kilbride Whirlies	Roadside	97.6	97.6	16	16	10	10	10
Lanark	Kerbside	99.8	99.8	15	11	10	11	10
Hamilton	Roadside	69.1	69.1	17	n/a	11	11	11
Uddingston	Roadside	65.4	65.4	11	9	11	12	12
Cambuslang	Kerbside	99.6	99.6	16	15	12	12	13
Raith Interchange 2	Rural	89.4	89.4	-	16	13	11	10
Blantyre	Roadside	96.2	96.2	-	-	-	-	11

Notes: Exceedances of the PM₁₀ annual mean objective of 18µg/m³ are shown in **bold**.

(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) 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.

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM ₁₀ 24-Hour Means > 50µg/m ³ (3)				
				2015	2016	2017	2018	2019
Rutherglen	Roadside	98.0	98.0	5	1	1	0	4
East Kilbride Whirlies	Roadside	97.6	97.6	4	0	0	0	1
Lanark	Kerbside	99.8	99.8	1	0	0	1	1
Hamilton	Roadside	69.1	69.1	3	0	0	0	1 (7)
Uddingston	Roadside	65.4	65.4	2	0	0	0	2 (7)
Cambuslang	Kerbside	99.6	99.6	5	0	0	2	7
Raith Interchange 2	Rural	89.4	89.4	-	0	0	0	1
Blantyre	Roadside	96.2	96.2	-	-	-	-	2

Notes: Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 7 times/year) are shown in **bold**.

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

Table A.7 – Annual Mean PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2015	2016	2017	2018	2019
Rutherglen	Roadside	98.0	98.0	-	-	6	7	8
East Kilbride Whirlies	Roadside	97.6	97.6	-	-	4	5	6
Lanark	Kerbside	99.8	99.8	5	7	6	6	6
Hamilton	Roadside	69.1	69.1	-	-	5	6	6
Uddingston	Roadside	65.4	65.4	6	5	6	7	7
Cambuslang	Kerbside	99.6	99.6	-	-	5	7	7
Raith Interchange 2	Rural	89.4	89.4	-	-	-	5	6
Blantyre	Roadside	96.2	96.2	-	-	-	-	6

Notes: Exceedances of the PM₁₀ annual mean objective of 10µg/m³ are shown in **bold**.

(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) 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.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 – NO₂ Monthly Diffusion Tube Results for 2019

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	Distance Corrected (2)
1	33.2	31.1	28.7	27.3	25.4	17.5	18.6	11.4	23.5	30.8	36.2	17.6	25.1	21.8	
2	54.2		36.5	23.0	14.8	14.4		24.6					26.1	22.7	
3	44.6	38.1	42.7	30.8	44.0	32.5	33.4	41.6	0.0	0.0	0.0	0.0	41.8	36.4	
4	42.4	38.2	32.3	25.5	31.7	23.0	25.5	29.6	28.1	35.9	42.3	29.4	32.0	27.8	
5	9.1	5.5	4.4	9.2	6.1	5.0	4.5	7.6	6.3	9.5	13.5	4.1	7.1	6.1	
6	32.0	30.4	42.9	52.4	46.3	30.6	32.3	29.5	38.2				35.8	31.2	
7	21.9	27.4	17.7	29.8	25.2	22.3	19.7	16.9	20.8	32.1	37.5	21.0	24.4	21.2	
8	46.3	57.4	24.1	37.7	33.9	27.2	23.1	26.9	31.2	38.7	50.9	31.1	35.7	31.1	
9		36.6	27.4			28.3	28.4	24.3	32.5	38.7	58.1		34.8	30.3	
10			23.9			30.7		24.8		35.5	63.4		32.8	28.5	
11	30.6	25.8	11.5	18.8	12.4	11.8	11.2	8.1	13.0	19.7	31.8	16.5	17.6	15.3	
12	56.9	42.6	42.0	50.1	40.1	34.7	15.9	32.4	38.8	52.7	38.9	36.9	40.2	34.9	
13		37.1	20.8	34.8	26.1	22.3	14.4	17.2	23.0	33.4	46.9	26.2	27.5	23.9	
14		45.7	24.4	40.6	28.3	31.6	21.6	24.0	29.2	44.7	60.8	17.0	33.9	29.4	
15	46.8	36.1	34.7	31.9	28.1	27.2	22.0	25.0	28.9		49.6	36.1	33.3	29.0	
16	45.4	57.0	26.8	36.0	28.4		22.2	20.3	29.1	33.8	46.0	27.1	33.8	29.4	
17	39.7	44.8	28.5	27.7	24.8	18.6	22.6	17.7	26.8	31.5	42.9	19.8	28.8	25.0	
18	59.2	47.6	37.7	36.8	34.6		29.4	30.6	37.0	41.2	47.8	22.3	38.6	33.6	
19	38.7	40.8	40.5	53.8	34.3		33.1	38.4	37.0	43.0	30.0	36.3	38.7	33.7	
20	62.3	22.0	20.6	27.9	23.7	20.4	34.6	14.6	21.4	33.9	18.6	24.0	27.0	23.5	
21	46.1	62.6	30.1	23.2	24.3	22.2	5.1	21.3	26.4	31.9	29.2	25.2	29.0	25.2	
22	38.8	33.3	29.7	38.1	28.4		24.9	23.0	24.7	32.6	44.0	28.7	31.1	27.1	
23	39.6	30.6	22.2	32.1	24.3	19.3	23.3	29.7	27.0	34.9	29.4	28.3	28.4	24.7	
24	41.3	38.4	33.9	31.9	30.1	29.0	24.9	23.8	32.5	33.7	46.8	26.6	32.7	28.5	
25	53.9	49.4	40.9	39.1	31.9	30.1	30.9	28.8	38.6	43.6	50.0	33.8	39.3	34.1	

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	Distance Corrected (2)
	26	62.7	81.3	53.3	79.3	52.7	30.8	53.9	48.3	55.9	58.6	80.8			
27	49.3	29.8	34.9	32.8	38.8		27.4	30.3	34.2	39.7	48.9	32.8	36.3	31.5	
28	19.1	30.0	2.8	12.4	8.4		7.4	6.4	9.1	15.5	24.5	12.2	13.0	11.3	
29	27.5		12.0	22.3	15.6	13.4	13.4	12.2	14.7	24.6	34.7	18.5	19.0	16.5	
30	47.9	35.8	35.1	32.0	35.6		20.5	30.5	37.8	39.6	31.2	22.2	33.5	29.1	
31	35.3		24.9	26.1	23.9	17.0	21.4	18.8	22.3	27.1	35.0	90.0	31.2	27.1	
32	110.1	61.0	42.7	32.9	34.9		26.9	53.8	49.0	108.5	82.6	26.2	54.4	47.3	46.3
33	30.5	24.2	23.2	36.1	24.5	16.9	19.2	17.4	22.0	34.3	41.5	21.5	25.9	22.6	
34	40.5	25.2	21.8	23.5	21.9	15.4	16.3	17.4	19.1	25.4	42.6	24.3	24.5	21.3	
35	30.9	23.9	7.7	33.9	20.4	17.3	16.8	15.0	18.4	29.0	44.2	19.2	23.1	20.1	
36	24.1	63.6	21.0	38.1	26.1	21.0	20.6	21.7	26.0	33.7	45.2	26.3	30.6	26.6	
37	43.2	47.0	17.7	42.0	23.0	24.0	20.5	8.6	21.6	34.2	3.1	28.8	26.1	22.7	
38	29.9	38.2	33.1	30.6	28.0	25.6	24.4	27.0	29.8	32.0	36.3	7.8	28.6	24.8	
39	37.7	57.2	35.7	34.9	20.0	26.1			22.2	29.3	45.3		34.3	29.8	
40	21.7	18.5	24.1	38.9	24.8	14.2			30.2				23.4	20.3	

(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 NO₂ Concentrations at Automatic Monitoring Sites (2015 to 2019)

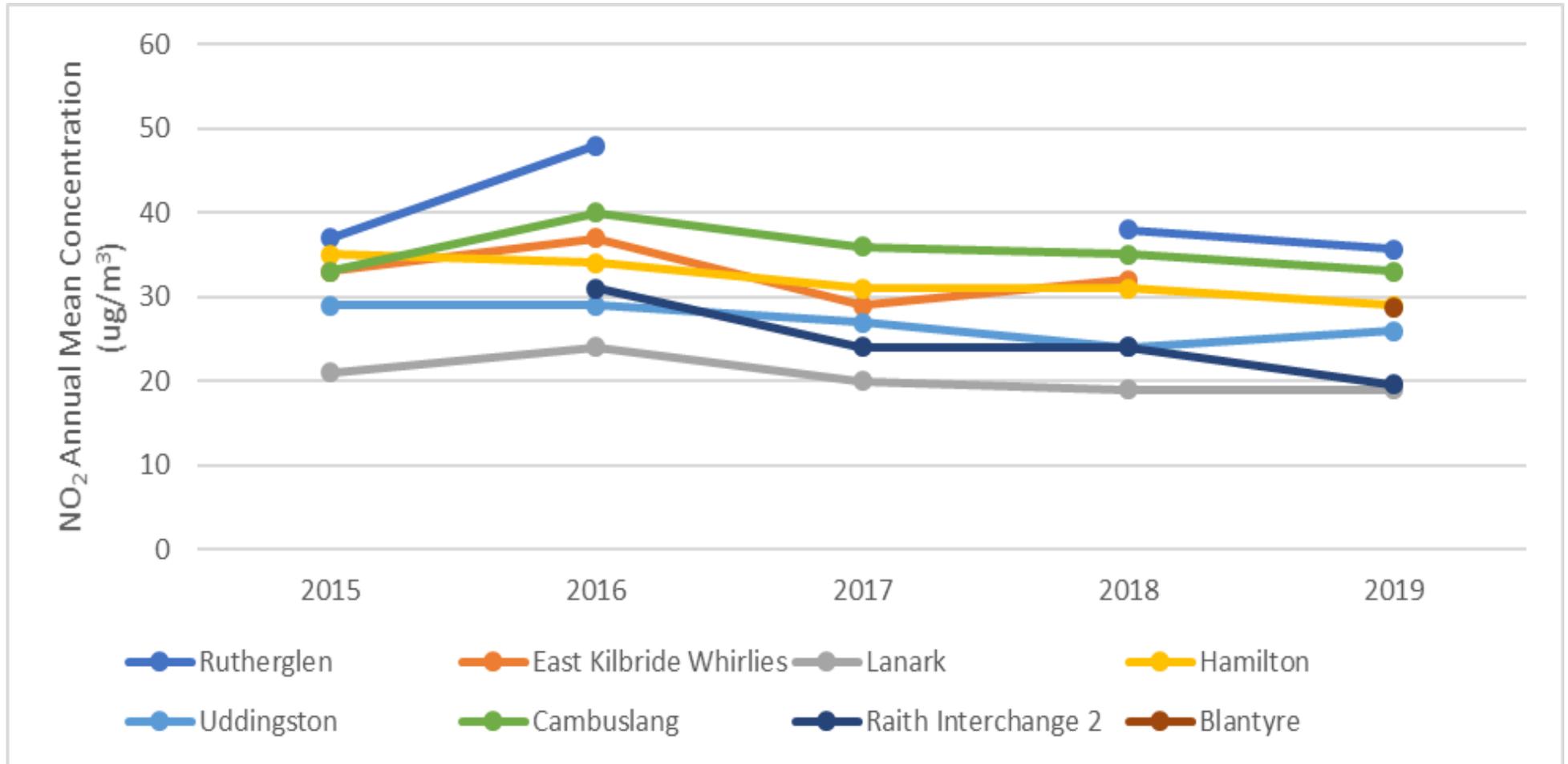


Figure A.2 – Trends in Annual Mean NO₂ Concentrations at Roadside Sites (2015 to 2019)

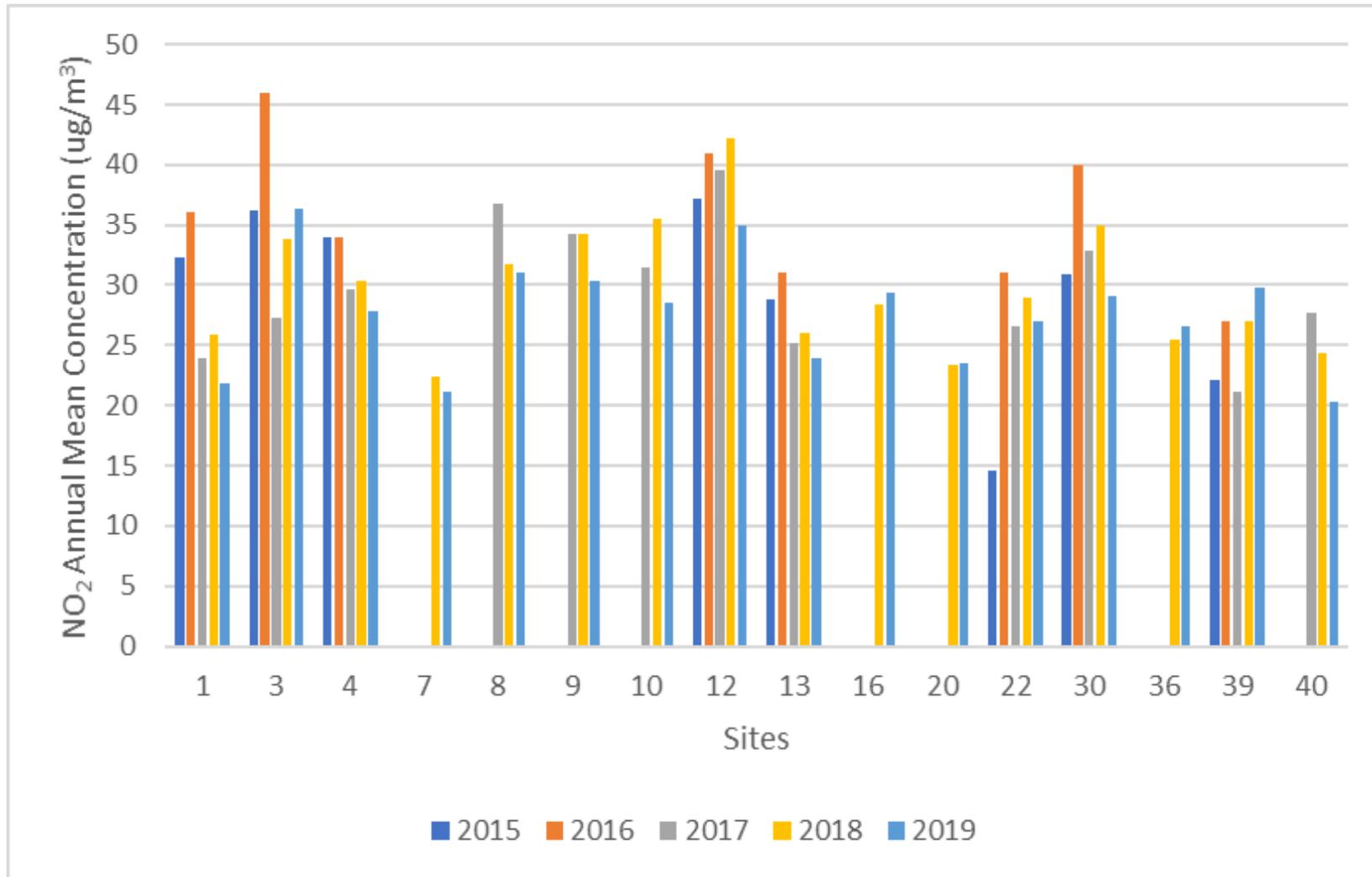


Figure A.3 – Trends in Annual Mean NO₂ Concentrations at Kerbside Sites (2015 to 2019)

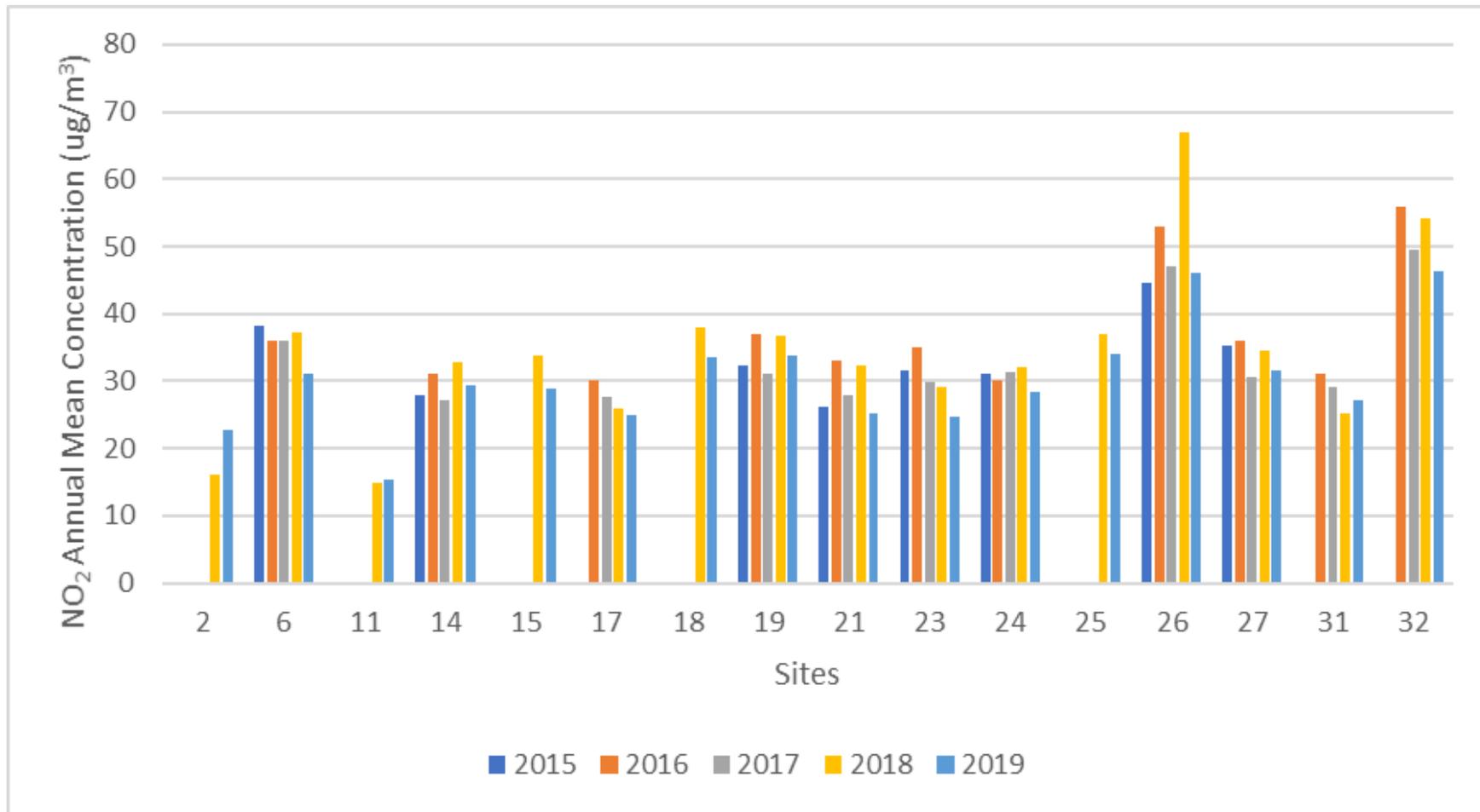


Figure A.4 – Trends in Annual Mean NO₂ Concentrations at Urban Background Sites (2015 to 2019)

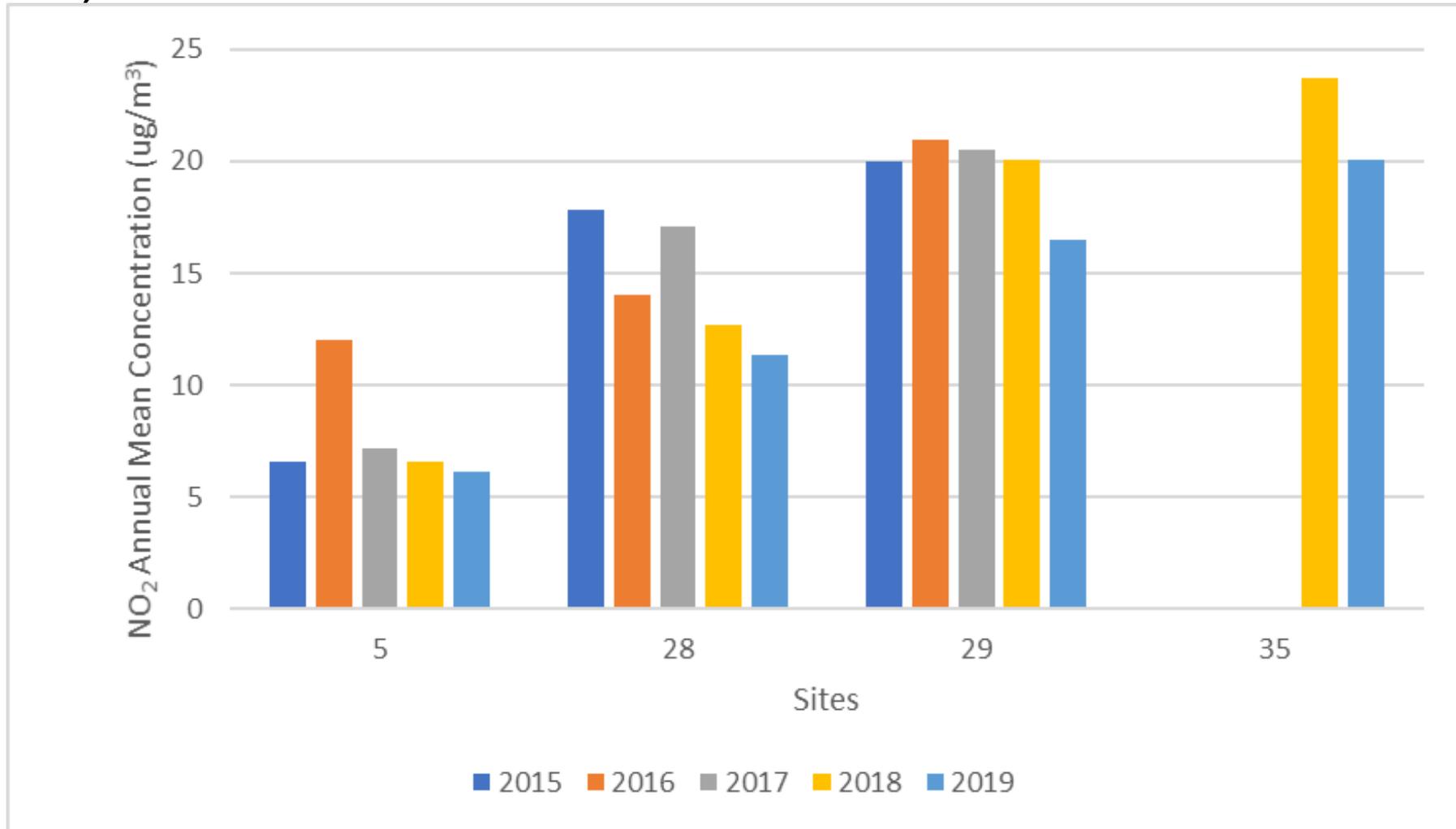


Figure A.5 – Trends in Annual Mean PM₁₀ Concentrations at Automatic Sites (2015 to 2019)

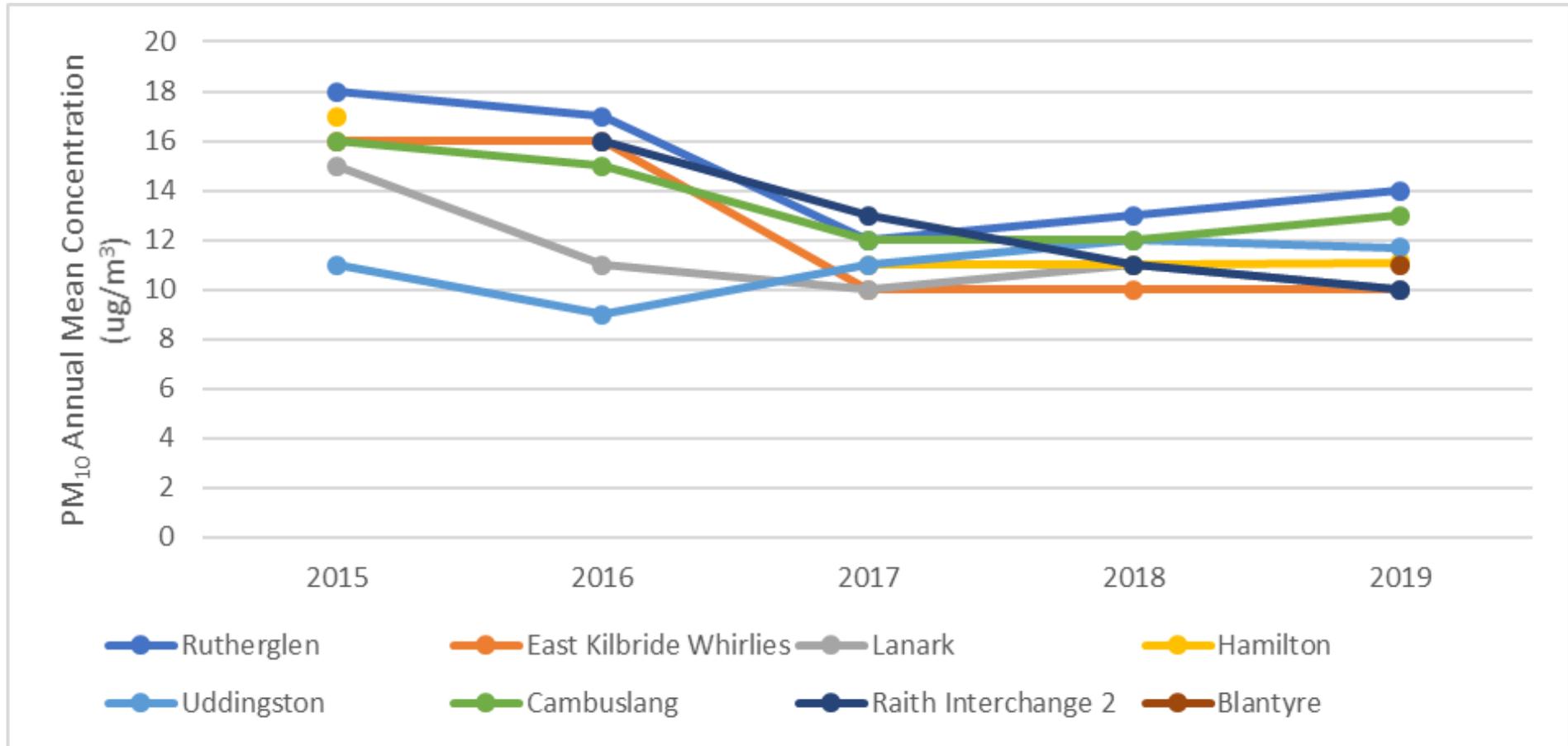
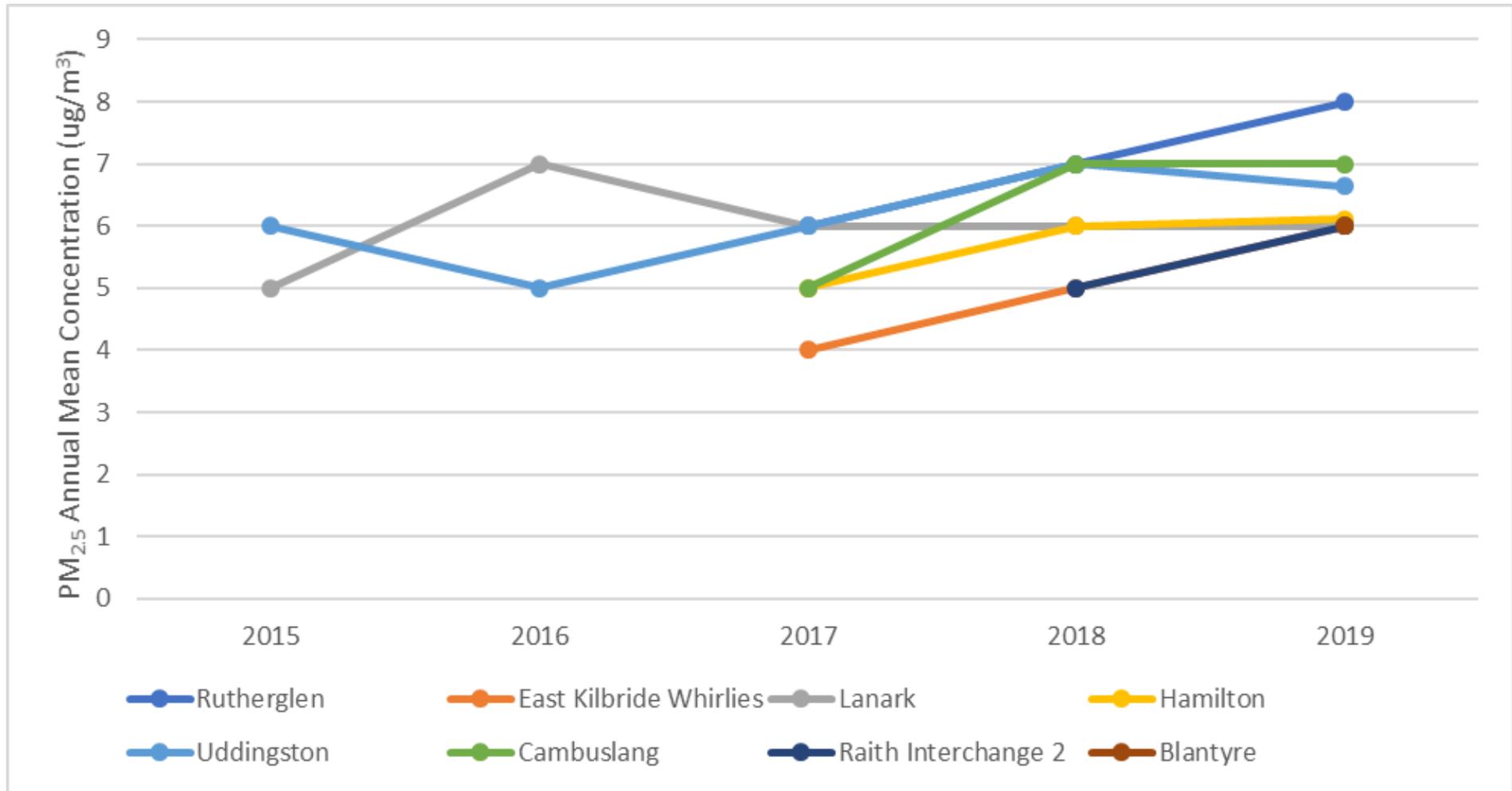


Figure A.6 – Trends in Annual Mean PM_{2.5} Concentrations at Automatic Sites (2015 to 2019)



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

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.

PM Monitoring Adjustment

PM₁₀ and PM_{2.5} measurements were made using FIDAS analysers. All PM measurement data were fully ratified by Ricardo Energy & Environment to AURN standards.

QA/QC of Diffusion Tube Monitoring Data

All passive diffusion tubes (PDT) for NO₂ 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 BIAS Adjustment Factors

The bias adjustment factor of 0.87 from the latest version (v 03/20) (Figure C.2) of the combined national database of adjustment factors was used to adjust the 2019 diffusion tube results. This adjustment factor was considered most appropriate because:

- Overall tube precision at the co-location monitoring site at Whirlies, East Kilbride was good, automatic monitoring data capture was poor overall (Figure C.1). Therefore, the local BIAS adjustment was not considered reliable to use.

Figure C.1 Co-location Study

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{g m}^{-3}$	Tube 2 $\mu\text{g m}^{-3}$	Tube 3 $\mu\text{g m}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	01/01/2019	31/01/2019	46.3	42.6	n/a	44	2.6	6	23.5	0	0	Good	or Data Capture
2	01/02/2019	28/02/2019	57.4	36.6	30.3	41	14.2	34	35.2	0	0	Poor Precision	or Data Capture
3	01/03/2019	31/03/2019	24.1	27.4	23.9	25	2.0	8	4.9	0	0	Good	or Data Capture
4	01/04/2019	30/04/2019	37.7	39.0	n/a	38	0.9	2	8.3	0	0	Good	or Data Capture
5	01/05/2019	31/05/2019	33.9	32.9	n/a	33	0.7	2	6.4	0	0	Good	or Data Capture
6	01/06/2019	30/06/2019	27.2	28.3	30.7	29	1.8	6	4.4	0	0	Good	or Data Capture
7	01/07/2019	31/07/2019	23.1	28.4	28.1	27	3.0	11	7.4	0	0	Good	or Data Capture
8	01/08/2019	31/08/2019	26.9	24.3	24.8	25	1.4	5	3.4	0	0	Good	or Data Capture
9	01/09/2019	30/09/2019	31.2	32.5	25.6	30	3.7	12	9.1	0	0	Good	or Data Capture
10	01/10/2019	31/10/2019	38.7	38.7	35.5	38	1.8	5	4.6	0	0	Good	or Data Capture
11	01/11/2019	30/11/2019	50.9	58.1	63.4	57	6.3	11	15.6	0	0	Good	or Data Capture
12	01/12/2019	31/12/2019	31.1	29.0	<1.0	30	1.5	5	13.3	15.3	68	Good	or Data Capture
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID:	Whirlies Roundabout	Precision	11 out of 12 periods have a CV smaller than 20%
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Overall survey --> Good precision Poor Overall DC (Check average CV & DC from Accuracy calculations)

Figure C.2 National BIAS Adjustment

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/20			
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of June 2020			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							LAQM Helpdesk Website			
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.			
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.	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@uk.bureauveritas.com or 0800 0327953							
Analysed By ¹	Method ²	Year ³	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g m}^{-3}$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g m}^{-3}$)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services	50% TEA in acetone	2019	KS	Marylebone Road Intercomparison	12	75	65	15.4%	P	0.87
Edinburgh Scientific Services	50% TEA in acetone	2019		Overall Factor³ (1 study)					Use	0.87

Distance Drop off corrections

Distance correction was applied to NO₂ monitoring data where an annual mean of 40 $\mu\text{g.m}^{-3}$ or above was measured, and where the monitoring location is not representative of relevant human exposure. Where required, the LAQM NO₂ distance drop off calculator was used. The results are presented below.

Figure C.3 Distance Drop Off Calculator



Enter data into the pink cells

Site Name/ID	Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
DT27	0.8	3.0	12.8	51.6	41.7	Predicted concentration at Receptor above AQS objective.
DT34	2.3	6.7	13.0	47.3	38.4	Predicted concentration at Receptor within 10% the AQS objective.

Short term to long term adjustment of measurements with annual data capture less than 75%

For measurement sites where the annual data capture was less than 75%, the short-term period means were adjusted to annual means using the method recommended in TG(16) Box 7.9.

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 2016

Defra UK AIR AQMA interactive map; Download the 2019 AQMA Dataset; available at <https://uk-air.defra.gov.uk/aqma/maps>

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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 - 2017

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/latest/>