## **Annual Progress Report (APR)**



2019 Air Quality Annual Progress Report (APR) for South Lanarkshire Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

June 2019

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### **Executive Summary: Air Quality in Our Area**

### Air Quality in South Lanarkshire

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

South Lanarkshire Council is committed to working towards achieving compliance with health-based air quality objectives. The main source of localised air pollution in South Lanarkshire is road traffic emissions; and to a lesser extent, emissions from industrial processes and commercial/domestic fuel combustion. The main pollutants of concern are nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).

This Annual Progress Report provides a summary of the 2018 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 (NO<sub>2</sub>) concentrations measured at automatic monitoring sites within South Lanarkshire were below the annual mean objective of  $40 \ \mu g.m^{-3}$  during 2018. The last five years' measurements indicate a downward trend in measured NO<sub>2</sub> concentrations at all the automatic sites, this decline is more apparent since 2016.

Exceedances of the NO<sub>2</sub> annual mean objective were measured at 3 diffusion tube sites:

24 Low Patrick Street, Hamilton – distance drop calculations estimate an NO<sub>2</sub> annual mean of 59.2 µg.m<sup>-3</sup> at the nearest location of relevant exposure to this diffusion tube site. In recent years, although the measured NO<sub>2</sub> annual mean has been greater than the 40 µg.m<sup>-3</sup> objective, the measurement has been considered in context with the conclusions of the 2014 Detailed Assessment of NO<sub>2</sub> and PM<sub>10</sub> in Hamilton Town Centre (which was based on 2013 measurements). The Detailed Assessment concluded that no concentrations in excess of the 40 µg.m<sup>-3</sup> objective were occurring at 1st floor height where relevant exposure is present. The measured NO<sub>2</sub> annual mean concentrations

in 2018 at this location is however ~8  $\mu$ g.m<sup>-3</sup> higher than that measured in 2013 (51.3  $\mu$ g.m<sup>-3</sup>); there is therefore a risk that concentrations in excess of the objective have occurred at the nearby first floor height receptors. Based on the 2018 measurement it is therefore recommended that an updated Detailed Assessment is required.

- 233 Glasgow Road, Blantyre distance drop off calculations estimate an NO<sub>2</sub> annual mean of 52.9 µg.m<sup>-3</sup> at the nearest location of relevant exposure to this measurement site. Defra's Appraisal of the 2018 Detailed Assessment at Glasgow Road, Blantyre concluded that the recommendation to declare an Air Quality Management Area was not acceptable, as there was a degree of uncertainty over the dispersion modelling results. Defra suggested that diffusion tube monitoring should be extended in this area; and that a further year's monitoring should be used as a basis to review whether there is evidence to justify declaration of an AQMA. An automatic analyser commenced measurement of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at this location in January 2019. There will be sufficient measurement data to re-assess if an AQMA may be required in the 2020 reporting year.
- 20 Farmeloan Road, Rutherglen distance drop off calculations estimate an NO<sub>2</sub> annual mean of 40.5 μg.m<sup>-3</sup> at the nearest location of relevant exposure to this measurement site. The 2013 Detailed Assessment for Rutherglen predicted a marginal exceedance of the 40 μg.m<sup>-3</sup> NO<sub>2</sub> objective at ground level on the west side of the road; and concentrations less than the 40 μg.m<sup>-3</sup> NO<sub>2</sub> objective on the east side of the road. Based on the marginal exceedance measured at ground level, it is considered unlikely that there will be exceedances at first floor height where residential properties are present on the west side of the street. South Lanarkshire Council will continue to measure NO<sub>2</sub> at this location.

The 18 µg.m<sup>-3</sup> Scottish PM<sub>10</sub> annual mean objective was not exceeded at any of South Lanarkshire Council's seven automatic monitoring sites in 2018.

Measured PM<sub>10</sub> concentrations were higher in 2018 when compared to 2017 at Rutherglen, Lanark and Uddingston automatic monitoring sites. Measured concentrations were lower at Raith Interchange 2 automatic site. Concentrations

measured at East Kilbride Whirlies, Hamilton and Cambuslang automatic site remained consistent with 2017.

Only one hourly mean NO<sub>2</sub> concentration in excess of 200 µg.m<sup>-3</sup> objective was measured at Rutherglen during 2018, all measurement sites were therefore compliant with the 1-hour short-term mean objective<sup>1</sup>.

A PM<sub>10</sub> daily mean greater than 50  $\mu$ g.m<sup>-3</sup> was measured at Lanark on one occasion and at Cambuslang on two occasions during 2018. All measurement sites were therefore compliant with the 24-hour short-term mean objective<sup>2</sup>.

South Lanarkshire Council measured  $PM_{2.5}$  concentrations at seven of their automatic sites in 2018.  $PM_{2.5}$  monitoring commenced at the Raith Interchange 2 site in August 2018. No exceedances of the Scottish  $PM_{2.5}$  annual mean objective<sup>3</sup> 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 2018 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 (<u>https://www.southlanarkshire.gov.uk/info/200141/environment</u>).

<sup>&</sup>lt;sup>1</sup> 1-hr mean 200 µg.m<sup>-3</sup> standard is not to be exceeded more than 18 times per year

 $<sup>^2</sup>$  24-hr mean 50µg.m  $^3$  not to be exceeded more than 7 times a year

 $<sup>^3</sup>$  Exceedances of the PM\_{2.5} annual mean objective of  $10\mu g/m^3$ 

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

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### 1. Local Air Quality Management

This report provides an overview of air quality in South Lanarkshire during 2018. 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 to improve air quality and any progress that has been made.

Dellutent	Air Quality Object	Date to be	
Pollutant	Concentration Measured as		achieved by
Nitrogen	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
dioxide (NO <sub>2</sub> )	40 μg/m³	Annual mean	31.12.2005
Particulate	50 μg/m³, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Matter (PM <sub>10</sub> )	18 μg/m³	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m³	Annual mean	31.12.2020
	350 μg/m³, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO <sub>2</sub> )	125 μg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m³, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 μg/m³	Running annual mean	31.12.2010
1,3 Butadiene	2.25 μg/m³	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
<b>Lead</b> 0.25 μg/m <sup>3</sup>		Annual Mean	31.12.2008

 Table 1.1 – Summary of Air Quality Objectives in Scotland

### 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 can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at <u>https://uk-air.defra.gov.uk/aqma/local-authorities?la\_id=386</u>.

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Whirlies Roundabout	PM₁₀ 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	PM₁₀ annual mean	Rutherglen	An area encompassing all areas of Rutherglen is designated.	Rutherglen AQMA, details available at: <u>http://www.scottishairquality.</u> <u>co.uk/laqm/aqma?id=386</u>
Lanark Town Centre	NO2 annual mean	Lanark	An area encompassing all areas of Lanark is designated.	Lanark AQMA, details available at: <u>http://www.scottishairquality.</u> <u>co.uk/laqm/aqma?id=386</u>

### Table 2.1 – Declared Air Quality Management Areas

# 2.2 Progress and Impact of Measures to address Air Quality in South Lanarkshire

South Lanarkshire has taken forward a number of measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. South Lanarkshire Council have adopted a combined Air Quality Action Plan for the three AQMAs in South Lanarkshire and this can be accessed here <a href="https://www.southlanarkshire.gov.uk/downloads/file/12278/draft\_air\_quality\_action\_plan\_june\_2018">https://www.southlanarkshire.gov.uk/downloads/file/12278/draft\_air\_quality\_action\_plan\_june\_2018</a>.

### Existing Measures Impacting on Air Quality

South Lanarkshire Council have implemented a number of measures that currently impact air quality. These measures have been considered within the Air Quality Action Plan. Details are as follows:

- Strategic 1 Strengthen links with Local Transport Strategy Air quality is integral to <u>South Lanarkshire's Local Transport Strategy 2013 -2023</u> with a commitment to improve air quality through the provision of enhanced public transport infrastructure and by supporting the introduction of electric and hybrid vehicles.
- Strategic 2 Strengthen links with Local Planning and Economic Development 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.

• Strategic 3 – Integrate air quality with other Council Strategies

<u>The Sustainable Development and Climate Change Strategy 2017 – 2022</u> 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 the raising awareness of air quality issues as well as the benefits of active and sustainable travel including related issues such as car parking and engine idling near schools.

The <u>South Lanarkshire Biodiversity Duty Implementation Plan 2018-2022</u> includes an action to investigate the use of green infrastructure to improve air quality. South Lanarkshire recognises the benefits of encouraging cycling and have developed a <u>South Lanarkshire Council Cycling Strategy 2015-2020</u>. This strategy aims to improve air quality by getting more people cycling and travelling actively.

The Council has also developed a <u>Park and Ride Strategy 2018 - 2027</u> which is currently in draft format. Making the rail network attractive and accessible by

providing park and ride facilities to improve air quality is detailed as one of the key benefits and outcomes of this strategy.

- Strategic 4 Revise and adopt an Air Quality Strategy for South Lanarkshire An <u>Air Quality Strategy</u> 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.
- Strategic 5 Develop air quality guidance note South Lanarkshire has developed a GIS based story map '<u>The air that we breathe</u>' 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.
- Strategic 6 Lobby government for additional national policy
   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 Air quality action planning funds have supported review of traffic within the Lanark area as part of a Scottish Transport Appraisal Guidance 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.
- Strategic 8 SCOOT or other intelligent traffic system continue expansion of 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.
- Strategic 9 Encourage the uptake of low emission vehicles As part of National Clean Air Day, South Lanarkshire council ran a promotional event with support of local businesses to promote electric vehicles. A range of electric cars, motorcycles and scooters were available for staff and members of the local community to see. In addition representatives from Home Energy Scotland and South Lanarkshire Environmental Service's air quality team were also on hand to offer advice and information.

To support the transition to low emission vehicles across the wider community South Lanarkshire continues to expand the network of electric charging points.

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Information on the location of the charging points is available via the <u>air quality</u> <u>storymap</u>. 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.



### Figure 2.2. South Lanarkshire National Clean Air Day

### • Strategic 10 – Expand cycle / 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 55 counters are in use.

### Strategic 11 – Awareness training on air quality issues

A one day training event focusing solely on air quality and development was undertaken in March 2019. The event was attended by representatives from Environmental Services and Traffic and Transportation Services. A half day shortened event is planned for 19/20 in response to request for shorter training event to be provided for planning colleagues.

### • Strategic 12 – Train station and bus station improvements

South Lanarkshire Council is working in Partnership with Scotrail to introduce information boards regarding cycle and walking links to local park infrastructure that connects North and South Lanarkshire Council. 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.

- Strategic 13 Investigate integration of air quality awareness within Education Air quality and sustainable active travel workshops are undertaken within a number of primary schools within South Lanarkshire. In addition, a teacher's resource pack to support the transition between primary and secondary schools with a focus on active sustainable journey planning is currently in development.
- Strategic 14 Improve cycle routes South Lanarkshire Council continues to invest in the maintenance, upgrading and expansion of cycling infrastructure across the area. Active travel studies are currently underway for East Kilbride as well as the Cambuslang and Rutherglen areas. These studies will inform future investment within the cycle network.

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.



Figure 2.2. South Lanarkshire National Clean Air Day promoting the cycling infrastructure

 Strategic 15 – Investigate further behaviour change initiatives <u>Beat the</u> <u>Street Lanark and Rutherglen</u> was a behaviour change initiative that encouraged walking, cycling and scooting for short journeys across these local communities. 15% of the local population within these towns participated in the initiative with an incredible 75,118.5 miles travelled sustainably. A real focus on the school commute was integral to the project and it is hoped that a lasting legacy from the initiative is a greater use of active travel for short journeys within these towns.



Figure 2.2. Local primary school highlighting Beat the Street initiative

Figure 2.2. Beat the Street initiative



- Strategic 16 Continue to expand air quality monitoring activities A new continuous air quality monitoring station has been installed in <u>Blantyre</u> to augment existing monitoring activity across South Lanarkshire.
- Strategic 17 Section 75 Town and Country Planning (Scotland) Act 1997 agreements No Section 75 agreements have been processed this year in terms of air quality.

### 2.2.1 GIS Story Book

**"The air that we breathe" – GIS story book**<sup>4</sup> – Environmental Services with assistance of colleagues within IT and Public Relations launched their Air Quality Story Map called "The Air That We Breathe" in June 2018, to coincide with Clean Air Day. This story map is an interactive "one stop shop" for all information relating to Air Quality within South Lanarkshire and will show local pollution information as well as providing information on actions everyone can take to be 'part of the solution, not the problem'.

### 2.2.2 Whirlies, East Kilbride Air Quality Management Areas

Measures have been identified specifically for the Whirlies, East Kilbride Air Quality Management Area. These include:

- Real time bus passenger information Real time passenger information have been in place at key bus stop locations in the East Kilbride area. In addition bus companies who are operating in South Lanarkshire have developed an <u>App</u> to provide their customers access to real time information for buses on routes within South Lanarkshire.
- 2. Investigate bike hire schemes for key locations 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 underway within the Rutherglen and Cambuslang area whereby local Active Schools Coordinators who travel between local schools

<sup>&</sup>lt;sup>4</sup> <u>https://www.southlanarkshire.gov.uk/info/200193/pollution/263/air\_quality</u>

have access to 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.

### 2.2.3 Rutherglen Air Quality Management Area

A number of measures have been identified specifically for the Rutherglen Air Quality Management Area. These include:

1. Investigate eco-route signage to encourage alternative routes away from town centre

At this stage this measure has not been progressed. This will be reviewed going forward.

### 2. Review parking restriction enforcement and promotion

At this stage this measure has not been progressed. This will be reviewed going forward.

### 3. Real time passenger information installed

Limited progress has been made with this measure. This will be reviewed going forward. One of the main bus companies who are operating in South Lanarkshire have developed an <u>App</u> to provide their customers access to real time information for buses on routes within South Lanarkshire.

### 4. Air quality modelling to assist understanding of the current picture

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

5. Investigate the utilisation of green infrastructure to target emission reductions in hot spot locations

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.

Figure 2.2.3. 1 Photograph of the planting project in Rutherglen to increase the number of pollution fighting plants in key hot spot locations.



### 6. Investigate quality bus partnerships

At this stage this measure has not been progressed. This will be reviewed going forward.

### 7. Investigate the use of traffic regulation orders

At this stage this measure has not been progressed. This will be reviewed going forward.

### 8. Investigate bike hire schemes for key locations

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.

**9. Review pedestrian locations -** At this stage this measure has not been progressed. This will be reviewed going forward.

### 2.2.4 Lanark Air Quality Management Area

A number of measures have been identified specifically for the Lanark Air Quality Management Area. These include:

- Investigate eco-route signage to encourage alternative routes away from town centre - 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.
- Traffic re-routing investigation <u>The Local Transport Strategy 2013 2023</u> 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.
- Review delivery times Initial discussions are underway with Traffic and Transportation Services as to the traffic regulation restrictions within the Lanark area.
- 4. Real time bus 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.
- 5. Review traffic and air quality patterns 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.

- 6. **Review and promote awareness of parking restrictions -** Initial discussions are underway with Traffic and Transportation Services as to the traffic regulation restrictions within the Lanark area.
- 7. Investigate the use of green infrastructure 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
- 8. Investigate quality bus partnerships Lanark bus companies have been encouraged to join the <u>ECO Stars fleet recognition scheme</u> 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 however due to low uptake the course was cancelled. Future workshops are being considered.
- 9. **Investigate the use of traffic regulation conditions** At this stage this measure has not been progressed. This will be reviewed going forward.
- 10. Engage local businesses in eco fleet initiatives and travel planning -South Lanarkshire provide fleet operators free access to <u>assessment and</u> <u>tailored guidance</u> to assist fleet operators in becoming more economic in terms of fuel, emissions and costs.
- 11. Investigate cycle hire feasibility study within the Lanark area At this stage this measure has not been progressed. This will be reviewed going forward.
- 12. Investigate active travel hub for bus and train stations 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 too be incorporated within future plans for the site.
- 13. **Review pedestrian locations** At this stage this measure has not been progressed. This will be reviewed going forward.

### 2.3 Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national crossgovernment 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 <u>https://www.gov.scot/Publications/2015/11/5671/17</u>. Progress by South Lanarkshire Council against relevant actions within this strategy is demonstrated below.

### 2.3.1 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.

## 2.3.2 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. In March 2018 68 out of 149 schools had implemented a travel plan with a further 60 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

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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. Although not a policy as such, a key communication tool with employees is 'The Works' magazine and this includes a regular column called 'carbon corner'. This regularly features articles aimed at reducing travel and encouraging more sustainable, active means of travel which has climate change and air quality cobenefits.
- 7. 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.
- 8. 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.

### 2.4 Policies Relevant to Air Quality in South Lanarkshire

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

#### Local Development Plan 2015 – 2020 2.4.1

The Local Development Plan<sup>5</sup> 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:

- East Kilbride: Residential development areas are bordering the designated AQMA 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 outwith 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.

### 2.4.2 Climate change – annual statement on Climate Change

The Climate Change Annual Statement<sup>6</sup> 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** ٠

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.

<sup>&</sup>lt;sup>5</sup> http://www.southlanarkshire.gov.uk/info/200172/plans\_and\_policies/39/development\_plans/6
<sup>6</sup> http://www.southlanarkshire.gov.uk/downloads/file/11048/climate\_change\_duties\_summary\_report\_2016

#### Sustainable Development and Climate Change Strategy 2017 – 2022 2.4.3

South Lanarkshire Council's Sustainable Development and Climate Change Strategy<sup>7</sup> 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.

### 2.4.4 Supplementary Planning Guidance

The Supplementary Planning Guidance for Sustainable Development and Climate Change<sup>8</sup> 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 exposure 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.

### 2.4.5 Local Transport Strategy

The Local Transport Strategy<sup>9</sup> specified that road traffic has been recognised as a significant source of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> 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 PM<sub>10</sub> and PM<sub>2.5</sub> 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

<sup>&</sup>lt;sup>7</sup> https://www.southlanarkshire.gov.uk/downloads/file/12055/sustainable\_development\_and\_climate\_change\_strategy\_2017-2022

<sup>&</sup>lt;sup>8</sup> http://www.southlanarkshire.gov.uk/downloads/file/9914/sustainable\_development\_and\_climate\_change
<sup>9</sup> http://www.southlanarkshire.gov.uk/downloads/file/7420/local\_transport\_strategy\_2013-23

an accessible and integrated transport network. The strategy seeks to link with other council strategies and polices.

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.
- 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.

# 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 undertook automatic (continuous) monitoring at seven sites during 2018. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <u>http://www.scottishairquality.scot/data/data-selector</u>.

Maps showing the location of the monitoring sites are provided in Appendix D or can be found at <u>http://www.scottishairquality.scot/latest/</u>. Further details on Quality Assurance/Quality Control (QA/QC) procedures are included in Appendix C.

### 3.1.2 Non-Automatic Monitoring Sites

South Lanarkshire Council undertook non – automatic (passive) monitoring of NO<sub>2</sub> at 40 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on QA/QC and bias adjustment for the diffusion tubes are included in Appendix C.

Based on comment provided by Defra's in their appraisal of the 2018 APR and Glasgow Road, Blantyre, Detailed Assessment; South Lanarkshire Council have conducted a review of the existing diffusion tube monitoring locations to determine if they are still required, and to identify any new locations where measurements are required as there may be a risk of exceeding the air quality objective. Following the review, ten diffusion tube sites were decommissioned as NO<sub>2</sub> annual mean measurements were consistently below the objective. NO<sub>2</sub> diffusion tubes were deployed at ten new monitoring locations in 2018. Details of the decommissioned and new sites are presented in Table 3.1.2

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Decommissioned Sites 2017	New Sites 2018	Comment
6 Machan Road, Larkhall	Greenhills Road, East Kilbride	New road planned for this area
14 Scott Hill, East Kilbride	218 Eaglesham Road, East Kilbride	Community growth area will feed into this junction
West Mains/East Mains, East Kilbride	56 Maxwell Drive, East Kilbride	Highlighted in AQ assessment for planning development that may exceed AQ objective (PM)
25 Burnside Road, Rutherglen	Cambuslang Road (Smith Terrace)	Busy junction with houses close
1 Rodger Drive (opp), Rutherglen	Hamilton Road/ Clydeford Road Jct	Expand Cambuslang monitoring area – busy junction
281 Stonelaw Road, Rutherglen	Greenlees Road, Cambuslang	Expand Cambuslang monitoring area – busy junction/canyon
4 Annsfield Road, Hamilton	190 Hamilton Road, Halfway	Route between Rutherglen and Hamilton
Technology Avenue, Hamilton	289 Glasgow Road (Empire Bar)	Route from Blantyre into Hamilton
65 Old Mill Road, Uddingston	Wellhall Road / Hillhouse Roundabout	Busy junction (incinerator proposal in general area)
Crofthead Road Park, Uddingston	Bardykes Road (West End Bar)	Further monitoring in Blantyre area

### Table 3.1.2 New diffusion tube sites for 2018

### 3.2 Individual pollutants

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

### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

No annual mean NO<sub>2</sub> concentrations in excess of the 40  $\mu$ g.m<sup>-3</sup> air quality objective were measured at automatic monitoring sites in South Lanarkshire during 2018.

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg.m<sup>-3</sup>.

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 2018 dataset of monthly mean values is provided in Appendix B. NO<sub>2</sub> annual mean concentrations in excess of the 40 µg.m<sup>-3</sup> objective were measured at 3 diffusion tube sites in South Lanarkshire during 2018. Exceedances of the annual mean objective were measured at:

• Tube 12 – 20 Farmeloan Road, Rutherglen (42.2 µg.m<sup>-3</sup>)

- Tube 26 24 Low Patrick Street, Hamilton (66.9 µg.m<sup>-3</sup>)
- Tube 32 233 Glasgow Road, Blantyre (54.2 µg.m<sup>-3</sup>)

These results were adjusted for distance drop off to estimate the annual mean concentrations at the nearest location of relevant exposure. The following NO<sub>2</sub> annual mean concentrations were calculated:

- Tube 12 20 Farmeloan Road, Rutherglen (40.5 μg.m<sup>-3</sup>)
- Tube 26 24 Low Patrick Street, Hamilton (59.2 µg.m<sup>-3</sup>)
- Tube 32 233 Glasgow Road, Blantyre (52.9 µg.m<sup>-3</sup>)

Following distance correction, these 3 diffusion tubes still measured exceedances of the NO<sub>2</sub> 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 NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200  $\mu$ g.m<sup>-3</sup>, not to be exceeded more than 18 times per year.

An annual mean NO<sub>2</sub> concentrations greater than 60  $\mu$ g.m<sup>-3</sup> was measured at diffusion tube site 26 Low Patrick Street, Hamilton; which indicates that there is a risk of exceeding the 1-hour mean objective this locations. Although a bus stop is present at this location it is considered unlikely that members of the public would spend one hour or longer.

Hourly mean NO<sub>2</sub> concentrations measured at automatic monitoring sites during 2018 were compliant with the NO<sub>2</sub> 1-hour objective as no sites measured exceedances of the  $200\mu g.m^{-3}$  objective more than 18 times over the year. Rutherglen site measured hourly concentrations in excess of 200  $\mu g.m^{-3}$  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 (PM<sub>10</sub>)

Table A.5 in Appendix A compares the ratified and adjusted monitored  $PM_{10}$  annual mean concentrations for the past 5 years with the air quality objective of 18  $\mu$ g.m<sup>-3</sup>.

There were no exceedances of the 18  $\mu$ g.m<sup>-3</sup> annual mean objective at any monitoring locations within South Lanarkshire during 2018. A comparison of PM<sub>10</sub> annual mean concentrations measured in South Lanarkshire over the past 5 years are presented in Figure A.5 in Appendix A. In general, measured annual mean PM<sub>10</sub> concentrations have reduced over the last few years.

Table A.6 in Appendix A compares the ratified continuous monitored  $PM_{10}$  daily mean concentrations for the past 5 years with the air quality objective of 50 µg.m<sup>-3</sup>, not to be exceeded more than 7 times per year. A daily mean greater than 50 µg.m<sup>-3</sup> was measured at Lanark on one occasion and at Cambuslang on two occasions, therefore compliant with the objective.

### 3.2.3 Particulate Matter (PM<sub>2.5</sub>)

South Lanarkshire Council measured PM<sub>2.5</sub> concentrations at seven of their automatic monitoring locations during 2018; Rutherglen, East Kilbride Whirlies, Lanark, Hamilton, Uddingston, Raith Interchange 2 and Cambuslang.

Table A.7 and Figure A.6 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  $10\mu g.m^{-3}$ . During 2018, the  $PM_{2.5}$  concentrations measured within South Lanarkshire were within the annual mean objective of  $10\mu g.m^{-3}$ .

### 3.2.4 Sulphur Dioxide (SO<sub>2</sub>)

South Lanarkshire Council do not currently measure SO<sub>2</sub> 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 2018.

### 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 2018.

### 4.4 Commercial and Domestic Sources

No new or significantly changed commercial or domestic sources have been identified during 2018.

### 4.5 New Developments with Fugitive or Uncontrolled Sources

No new or significantly changed fugitive sources have been identified during 2018.

### 5. Planning Applications

No planning applications were received during 2018 that required an air quality impact assessment.

Table 5.1 indicates proposed developments that are listed in the Local Development Plan 2 proposed plan document; 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.

Туре	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	Peel Road Thorntonhall
Development Framework Site	Duchess Road, Rutherglen
Residential Masterplan Site	East Whitlawburn, Cambuslang

### Table 5. 1 – Proposed developments

### 6. Conclusions and Proposed Actions

### 6.1 Conclusions from New Monitoring Data

All Nitrogen Dioxide (NO<sub>2</sub>) annual mean concentrations measured during 2018 at automatic monitoring sites in South Lanarkshire were less than the 40 µg.m-3 objective.

The last 5 years of measurements indicate a downward trend in measured NO<sub>2</sub> concentrations at all automatic sites.

Exceedances of the NO<sub>2</sub> annual mean objective were measured at 3 diffusion tube locations at 24 Low Patrick Street, Hamilton; 20 Farmeloan Road, Rutherglen; and 233 Glasgow Road, Blantyre.

### Rutherglen

This monitoring location is within the existing AQMA declared for  $PM_{10}$  within Rutherglen. The distance drop off calculations estimate an NO<sub>2</sub> annual mean of 40.5  $\mu$ g.m<sup>-3</sup> at the nearest location of relevant exposure. The annual mean measured in 2016 was 41  $\mu$ g.m<sup>-3</sup> (distance corrected to 39  $\mu$ g.m<sup>-3</sup>) and in 2017 was 39.6  $\mu$ g.m<sup>-3</sup>.

The 2013 Detailed Assessment for Rutherglen<sup>10</sup> predicted a marginal exceedance of the 40  $\mu$ g.m<sup>-3</sup> NO<sub>2</sub> objective at ground level on the west side of the road; and concentrations less than the 40  $\mu$ g.m<sup>-3</sup> NO<sub>2</sub> objective on the east side of the road. Based on the marginal exceedance measured at ground level, it is considered unlikely that there will be exceedances at first floor height where residential properties are present on the west side of the street. South Lanarkshire Council will continue to measure NO<sub>2</sub> at this location.

### Hamilton

The distance drop off calculations estimate an NO<sub>2</sub> annual mean of 59.2  $\mu$ g.m<sup>-3</sup> at the nearest location of relevant exposure to this diffusion tube site. In recent years, although the measured NO<sub>2</sub> annual mean has been greater than the 40  $\mu$ g.m<sup>-3</sup> objective, the measurement has been considered in context with the conclusions of the 2014 Detailed Assessment of NO<sub>2</sub> and PM<sub>10</sub> in Hamilton Town Centre (which was based on 2013 measurements). The Detailed Assessment concluded that no concentrations in excess of the 40  $\mu$ g.m<sup>-3</sup> objective were occurring at 1st floor height where relevant exposure is present. The measured NO<sub>2</sub> annual mean concentrations

<sup>&</sup>lt;sup>10</sup> (2013) Ricardo AEA, Detailed Assessment of Air Quality, Main Street Rutherglen, South Lanarkshire (Ricardo-AEA/R/ED56927001-RuthDA), Issue Number 2, Date 21<sup>st</sup> February 2014

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in 2018 at this location is however ~8  $\mu$ g.m<sup>-3</sup> higher than that measured in 2013 (51.3  $\mu$ g.m<sup>-3</sup>); there is therefore a risk that concentrations in excess of the objective have occurred at the nearby first floor height receptors. During 2018, there have been no significant changes to the roads surrounding this location, nor have there been any known roadworks or unusual circumstances that could account for the measured increase in NO<sub>2</sub> annual mean. Based on the 2018 measurement an updated Detailed Assessment is required at this location. South Lanarkshire Council will continue to monitor at this location and will make plans to collate relevant traffic data for an updated Detailed Assessment.

### Blantyre

A detailed assessment was conducted for Glasgow Road, Blantyre in 2018<sup>11</sup>. The assessment concluded that, based on a dispersion modelling study verified using the 2017 diffusion tube measurements; it is likely that annual mean  $NO_2$  concentrations in excess of the 40 µg.m<sup>-3</sup> 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.

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 NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> on Glasgow Road, Blantyre, in January 2019, as well as continued diffusion tube monitoring. This data will be reviewed during the 2020 Annual Progress Report.

No exceedances of the  $PM_{10}$  annual mean objective were measured during 2018. Measured concentrations at the seven  $PM_{10}$  measurement sites in South Lanarkshire ranged from 10 to 13 µg.m<sup>-3</sup>. Measured  $PM_{10}$  concentrations were generally lower in 2018 when compared to 2017, except for Rutherglen, Lanark and Uddingston which all increased by 1 µg.m<sup>-3</sup>. South Lanarkshire Council acknowledge that there has been an increase in  $PM_{10}$  at Uddingston monitoring location since 2016, however the annual  $PM_{10}$  concentration remains below the objective of 18 µg.m<sup>-3</sup> and the annual

<sup>&</sup>lt;sup>11</sup> Ricardo Energy & Environment (2018) Detailed Assessment of air quality at Glasgow Road. Blantyre.

mean concentration in 2015 was 11  $\mu$ g.m<sup>-3</sup>, indicating that similar concentrations have been present in this area before. Automatic monitoring of PM<sub>10</sub> will continue at this location.

There were no exceedances of the NO<sub>2</sub> hourly or PM<sub>10</sub> daily short-term air quality objectives during 2018. No exceedances of the PM<sub>2.5</sub> annual mean objective were measured during 2018. Measured concentrations at the seven PM<sub>2.5</sub> measurement sites in South Lanarkshire ranged from 5 to 7 µg.m<sup>-3</sup>. Measured PM<sub>2.5</sub> concentrations increased by 1 µg.m<sup>-3</sup> for all sites, except for Lanark were PM<sub>2.5</sub> maintained a 6 µg.m<sup>-3</sup> annual mean. PM<sub>2.5</sub> monitoring began at Raith Interchange 2 site in 2018, as such the PM<sub>2.5</sub> annual mean was not compared but will be in future APRs.

### 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

The 2018 diffusion tube monitoring data has identified an increase in NO<sub>2</sub> annual mean concentrations at Low Patrick Street, Hamilton. South Lanarkshire Council will continue to monitor at this location and conduct an updated Detail Assessment. Based on the conclusions of Defra's appraisal of the Detailed Assessment at Glasgow Road, Blantyre; South Lanarkshire Council will continue to monitor NO<sub>2</sub> concentrations at this location and will provide an update in the 2020 APR.

Following the completion of this report, South Lanarkshire Council will submit their next Annual Progress Report in 2020.
## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m)	Inlet Height (m)
SL04	Rutherglen	Roadside	261128	661128	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	60	1	2
EK0	East Kilbride Whirlies	Roadside	264370	655670	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	10	0.5	2
SL03	Lanark	Kerbside	288426	643704	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	2	0.5	1
SL05	Hamilton	Roadside	272310	655276	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	2	8	1.8
SL06	Uddingston	Roadside	269663	660304	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	2	2	1.5
SL07	Cambuslang	Kerbside	264321	660516	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS	10	0.5	2
SLC08	Raith Interchange 2	Rural	271063	658087	NO <sub>2</sub> ; PM <sub>10</sub> ; PM <sub>2.5</sub>	Yes	Chemiluminescent; FIDAS <sup>(3)</sup>	25	38	2

(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.

(3) Upgraded t o FIDAS from FDMS analyser in August 2018

Table A.2 – Detail	s of Non-Automatic	<b>Monitoring Sit</b>	es
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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
1	3 London Street, Larkhall	Kerbside	276087	651563	NO <sub>2</sub>	No	2.3	1	No
2	Greenhills Road, East Kilbride	Roadside	260052	653785	NO <sub>2</sub>	No	20	1.3	No
3	4 Kirkton Street, Carluke	Kerbside	284538	650572	NO <sub>2</sub>	No	2	0.8	No
4	4 St Leonard Street, Lanark	Kerbside	288438	643694	NO <sub>2</sub>	Yes	0.7	4.4	No
5	32 Friars Lane, Lanark	Urban Background	287860	643685	NO <sub>2</sub>	Yes	4.8	3.6	No
6	4 Bloomgate, Lanark	Roadside	288122	643685	NO <sub>2</sub>	Yes	2	0.2	No
7	218 Eaglesham Road, East Kilbride	Kerbside	260711	654205	NO <sub>2</sub>	No	4.7	1.2	No
8	Whirlies (1), East Kilbride	Kerbside	264374	655673	NO <sub>2</sub>	Yes	6.8	1.9	No
9	Whirlies (2), East Kilbride	Kerbside	264374	655673	NO <sub>2</sub>	Yes	6.8	1.9	No
10	Whirlies (3), East Kilbride	Kerbside	264374	655673	NO <sub>2</sub>	Yes	6.8	1.9	No
11	56 Maxwell Drive, East Kilbride	Roadside	264210	654909	NO <sub>2</sub>	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
12	20 Farmeloan Road, Rutherglen	Kerbside	261662	661789	NO <sub>2</sub>	Yes	0.6	2.1	No
13	252 Main Street, Rutherglen	Kerbside	261662	661663	NO <sub>2</sub>	Yes	3.8	0.1	No
14	12 Mill Street, Rutherglen	Roadside	261302	660734	NO <sub>2</sub>	Yes	5.1	2.6	No
15	Cambuslang Road (Smith Terrace)	Roadside	261858	662142	NO <sub>2</sub>	Yes	3	1.5	No
16	Hamilton Road/ Clydefor Road Jct	Kerbside	264492	660497	NO <sub>2</sub>	No	15	1.5	No
17	262 Cambuslang Road, Cambuslang	Roadside	263086	661296	NO <sub>2</sub>	No	0.3	2.3	No
18	Greenlees Road, Cambuslang	Roadside	264300	660476	NO <sub>2</sub>	No	5	1	No
19	Blackswell Lane, Hamilton	Roadside	272704	655431	NO <sub>2</sub>	No	6.9	2.7	No
20	190 Hamilton Road, Halfway	Kerbside	265561	659788	NO <sub>2</sub>	No	3	1.5	No
21	109 Caird Street, Hamilton	Roadside	271670	656346	NO <sub>2</sub>	No	5.7	3.1	No
22	79 Union Street, Hamilton	Kerbside	271852	655320	NO <sub>2</sub>	No	1.2	3.3	No
23	134 Almada Street, Hamilton	Roadside	271424	655786	NO <sub>2</sub>	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
24	Almada Street-Muir Street, Hamilton	Roadside	271861	655952	NO <sub>2</sub>	No	3.6	0.1	No
25	289 Glasgow Road (Empire Bar)	Roadside	270013	656436	NO <sub>2</sub>	No	2	2.7	No
26	24 Low Patrick Street, Hamilton	Roadside	272608	655213	NO <sub>2</sub>	No	3.3	5.6	No
27	10 Gateside Street, Hamilton	Roadside	272265	655078	NO <sub>2</sub>	No	2.2	0.8	No
28	28 Low Quarry gardens, Hamilton	Urban Background	271949	654957	NO <sub>2</sub>	No	11.9	0.6	No
29	5 Wordsworth Way, Bothwell	Urban Background	270924	659109	NO <sub>2</sub>	No	15.9	1.6	No
30	93 Main Street, Bothwell	Kerbside	270526	658722	NO <sub>2</sub>	No	8.9	2.3	No
31	25 Main Street, Bothwell	Roadside	270526	658510	NO <sub>2</sub>	No	3.1	3.3	No
32	233 Glasgow Road, Blantyre	Roadside	268902	657591	NO <sub>2</sub>	No	0.4	3.6	No
33	283 Glasgow Road, Blantyre	Roadside	268754	657689	NO <sub>2</sub>	No	5.2	3	No
34	1 Hunthill Road, Blantyre	Roadside	268000	656643	NO <sub>2</sub>	No	4.4	2.3	No
35	Wellhall Road / Hillhouse Roundabout	Urban Background	270065	654918	NO <sub>2</sub>	No	12.2	1.3	No

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Distance to Relevant Exposure (m) <sup>(1)</sup>		Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
36	Bardykes Road (West End Bar)	Kerbside	268175	658191	NO <sub>2</sub>	No	1.5	0.2	No
37	Burnpark Avenue, Uddingston	Roadside	268944	661474	NO <sub>2</sub>	No	22	29.2	No
38	81 Main Street, Uddingston	Roadside	269617	660438	NO <sub>2</sub>	No	0.2	2.7	No
39	North British Road, Uddingston	Kerbside	270180	660753	NO <sub>2</sub>	Yes	29	1.1	No
40	Bannatyne Street, Lanark	Kerbside	288450	643698	NO <sub>2</sub>	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	NO <sub>2</sub>	Monitoring	Results
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			Valid Data	Valid Data	NO <sub>2</sub>	Annual Mea	an Concent	ration (µg.r	n <sup>-3</sup> ) <sup>(3)</sup>
Site ID	Site Type	Monitoring Type	Capture for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018
Rutherglen	Roadside	Automatic	98.5	98.5	40.6	37	48	N/A	38
East Kilbride Whirlies	Roadside	Automatic	74.4	74.4	35	33	37	29	32
Lanark	Kerbside	Automatic	99.8	99.8	22	21	24	20	19
Hamilton	Roadside	Automatic	98.9	98.9	37	35	34	31	31
Uddingston	Roadside	Automatic	99.8	99.8	29	29	29	27	24
Cambuslang	Kerbside	Automatic	99.8	99.8	-	33	<b>40.0</b> (25.0)	36	35
Raith Interchange 2	Rural	Automatic	97.6	97.6	-	-	31	24	24
1	Kerbside	Diffusion Tube	83	83	23.7	32.3	36	23.9	25.9
2	Roadside	Diffusion Tube	83	83	-	-	-	-	16.1
3	Kerbside	Diffusion Tube	83	83	30.6	36.2	<b>46.0</b> (37.0)	27.3*	33.9
4	Kerbside	Diffusion Tube	83	83	-	34	34	29.7	30.3
5	Urban Background	Diffusion Tube	92	92	-	6.6	12	7.2	6.6
6	Roadside	Diffusion Tube	92	92	34.1	38.2	36	36.1	37.3
7	Kerbside	Diffusion Tube	92	92	-	-	-	-	22.4
8	Kerbside	Diffusion Tube	83	83	-	-	-	36.8	31.7
9	Kerbside	Diffusion Tube	83	83	-	-	-	34.2	34.3

			Valid Data	Valid Data	NO <sub>2</sub>	Annual Mea	an Concent	ration (µg.r	n <sup>-3</sup> ) <sup>(3)</sup>
Site ID	Site Type	Monitoring Type	Capture for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018
10	Kerbside	Diffusion Tube	75	75	-	-	-	31.5	35.5
11	Roadside	Diffusion Tube	100	100	-	-	-	-	14.8
12	Kerbside	Diffusion Tube	100	100	32.6	37.2	<b>41.0</b> (39.0)	39.6	42.2 (40.5)
13	Kerbside	Diffusion Tube	92	92	-	28.8	31	25.2	26.0
14	Roadside	Diffusion Tube	100	100	27.3	27.9	31	27.2*	32.7
15	Roadside	Diffusion Tube	100	100	-	-	-	-	33.7
16	Kerbside	Diffusion Tube	100	100	-	-	-	-	28.4
17	Roadside	Diffusion Tube	100	100	-	No result	30	27.6	26.0
18	Roadside	Diffusion Tube	100	100	-	-	-	-	37.9
19	Roadside	Diffusion Tube	100	100	-	32.4	37	31.1*	36.7
20	Kerbside	Diffusion Tube	100	100	-	-	-	-	23.4
21	Roadside	Diffusion Tube	100	100	-	26.2	33	27.9*	32.4
22	Kerbside	Diffusion Tube	100	100	-	14.6	31	26.6*	29.0
23	Roadside	Diffusion Tube	100	100	-	31.6	35	29.9*	29.0

			Valid Data	Valid Data	NO <sub>2</sub> /	Annual Mea	an Concent	ration (µg.r	n <sup>-3</sup> ) <sup>(3)</sup>
Site ID	Site Type	Monitoring Type	Capture for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018
24	Roadside	Diffusion Tube	92	92	-	31.2	30	31.4*	32.1
25	Roadside	Diffusion Tube	100	100	-	-	-	-	36.9
26	Roadside	Diffusion Tube	83	83	-	44.6	<b>53.0</b> (47.0)	47.0* (42.3)	66.9 (59.2)
27	Roadside	Diffusion Tube	92	92	39.5	35.3	36	30.7*	34.6
28	Urban Background	Diffusion Tube	100	100	12.5	17.8	14	17.1*	12.7
29	Urban Background	Diffusion Tube	100	100	19.4	20	21	20.5	20.1
30	Kerbside	Diffusion Tube	100	100	-	30.9	<b>40.0</b> (29.2)	32.9	35.0
31	Roadside	Diffusion Tube	100	100	-	No result	31	29.2*	25.3
32	Roadside	Diffusion Tube	100	100	-	No result	<b>56.0</b> (55.0)	49.6 (48.5)	54.2 (52.9)
33	Roadside	Diffusion Tube	100	100	-	28.8	33	23.5	25.5
34	Roadside	Diffusion Tube	100	100	-	24.8	27	19.8	22.8
35	Urban Background	Diffusion Tube	92	92	-	-	-	-	23.7
36	Kerbside	Diffusion Tube	92	92	-	-	-	-	25.4
37	Roadside	Diffusion Tube	100	100	26.5	24	28	26.3	31.3

			Valid Data	Valid Data	NO <sub>2</sub> /	NO <sub>2</sub> Annual Mean Concentration (µg.m <sup>-3</sup> ) <sup>(3)</sup>					
Site ID	Site Type	Monitoring Type	Capture for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018		
38	Roadside	Diffusion Tube	100	100	32.8	31.5	33	31.7	29.4		
39	Kerbside	Diffusion Tube	75	75	24.6	22.1	27	21.1	27.0		
40	Kerbside	Diffusion Tube	75	75	-	-	-	27.7	24.4		

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of  $40\mu g/m^3$  are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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.

() Distance corrected NO<sub>2</sub> annual mean concentrations are presented in brackets. Where an exceedance is measured at a monitoring site which is not representative of public exposure, the procedure specified in paragraphs 7.77 to 7.79 of LAQM.TG16 has been used to estimate the concentration at the nearest receptor.

\* Annualised

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

			Valid Data	Valid Data		NO <sub>2</sub> 1-Hou	r Means > 2	200µg/m <sup>3 (3)</sup>	
Site ID	Site Type	Monitoring Type	Capture for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018
Rutherglen	Roadside	Automatic	98.5	98.5	0	0	0	-	1
East Kilbride Whirlies	Roadside	Automatic	74.4	74.4	7	5	1	1	0 (138)
Lanark	Kerbside	Automatic	99.8	99.8	0	0	0	0	0
Hamilton	Roadside	Automatic	98.9	98.9	0	0	0	0	0
Uddingston	Roadside	Automatic	99.8	99.8	0	0	0	0	0
Cambuslang	Kerbside	Automatic	99.8	99.8	N/A	N/A	12	1	0
Raith Interchange 2	Rural	Automatic	97.6	97.6	N/A	N/A	0	0	0

Notes: Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> 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 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

(-) A fault was discovered with the automatic analyser at Rutherglen in 2017 leading to the available measurements being unreliable, therefore results for Rutherglen have not been reported.

		Valid Data Capture	Valid Data	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>							
Site ID	Site Type	for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018			
Rutherglen	Roadside	99.7	99.7	20	18	17	12	13			
East Kilbride Whirlies	Roadside	99.5	99.5	18	16	16	10	10			
Lanark	Kerbside	95.2	95.2	-	15	11	10	11			
Hamilton	Roadside	99.8	99.8	16	17	n/a	11	11			
Uddingston	Roadside	99.8	99.8	-	11	9	11	12			
Cambuslang	Kerbside	99.8	99.8	-	16	15	12	12			
Raith Interchange 2	Rural	86.3	86.3	-	-	16	13	11			

#### Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results

Notes: Exceedances of the  $PM_{10}$  annual mean objective of  $18\mu g/m^3$  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.

		Valid Data Capture for	Valid Data	PM <sub>10</sub> 24-Hour Means > 50μg/m <sup>3 (3)</sup>							
Site ID	Site Type	Monitoring Period (%)	Capture 2018 (%) (2)	2014	2015	2016	2017	2018			
Rutherglen	Roadside	99.7	99.7	1	5	1	1	0			
East Kilbride Whirlies	Roadside	99.5	99.5	2	4	0	0	0			
Lanark	Kerbside	95.2	95.2	-	1	0	0	1			
Hamilton	Roadside	99.8	99.8	0	3	0	0	0			
Uddingston	Roadside	99.8	99.8	-	2	0	0	0			
Cambuslang	Kerbside	99.8	99.8	-	5	0	0	2			
Raith Interchange 2	Rural	86.3	86.3	-	-	0	0	0			

Table A.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results

Notes: Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> 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 98.1<sup>st</sup> percentile of 24-hour means is provided in brackets.

		Valid Data Capture	Valid Data	PM2.5	Annual Me	an Concer	ntration (µg	/m³) <sup>(3)</sup>
Site ID	Site Type	for Monitoring Period (%) <sup>(1)</sup>	Capture 2018 (%) <sup>(2)</sup>	2014	2015	2016	2017	2018
Rutherglen	Roadside	99.7	99.7	-	-	-	6	7
East Kilbride Whirlies	Roadside	66.6	66.6	-	-	-	4	5
Lanark	Kerbside	95.2	95.2	-	5	7	6	6
Hamilton	Roadside	99.8	99.8	-	-	-	5	6
Uddingston	Roadside	99.8	99.8	-	6	5	6	7
Cambuslang	Kerbside	99.8	99.8	-	-	-	5	7
Raith Interchange 2	Rural	36.9	36.9	-	-	-	-	5

Table A.7 – Annual Mean PM<sub>2.5</sub> Monitoring Results

Notes: Exceedances of the PM<sub>2.5</sub> annual mean objective of 10µg/m<sup>3</sup> 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 2018

## Table B.1 – NO2 Monthly Diffusion Tube Results for 2018

	NO <sub>2</sub> Mean Concentrations (μg/m <sup>3</sup> )														
Site ID													Annual Mean		
Site iD	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted	Distance Corrected
1	38.5	30.6	29.3	26.3	21.2	21.9	21.1	20.5		30.6	29.6		27.0	25.9	
2	24.8		10.4	14.9	17.0	17.1	12.5	11.3	8.6	19.6	31.3		16.8	16.1	
3	45.8	35.2	29.4	34.4	29.5	32.4	32.2	40.6		46.9	26.3		35.3	33.9	
4	43.5	29.1	31.7	32.2	31.5	29.1	27.9	28.5		33.3	29.0		31.6	30.3	
5	10.5	7.9	7.5	6.3	5.7	5.3	4.9	4.4		7.3	9.2	6.9	6.9	6.6	
6	42.8	46.1	53.1	33.3	35.8	42.7	30.0	31.2		40.9	35.0	36.4	38.8	37.3	
7	31.3	28.3	29.3	22.5	23.1	25.8	19.3	17.0	13.4	22.0	24.8		23.3	22.4	
8	29.1	35.7	24.3	37.5	36.3	34.1	28.6		27.6	41.8	35.2		33.0	31.7	
9	41.7	38.0	48.3	31.1	33.5	31.1	27.9		25.4	40.3	40.1		35.7	34.3	
10	44.4	44.3	36.8	32.2	33.7	35.5	28.0			37.9	40.1		37.0	35.5	
11	20.9	20.4	19.4	13.0	11.3	12.5	9.6	9.7	9.2	16.4	17.0	25.7	15.4	14.8	
12	56.3	55.3	32.1	48.3	43.9	44.9	38.1	35.6	31.1	43.3	44.9	53.3	43.9	42.2	40.5
13	42.0	37.6	31.2	31.0	29.6	25.7	22.2	20.0	22.8	27.1	8.9		27.1	26.0	
14	43.6	35.2	45.6	37.6	38.7	35.6	25.6	22.8	20.8	32.7	34.1	36.4	34.1	32.7	
15	40.1	40.2	37.3	37.7	34.4	28.9	30.1	26.4	28.4	36.4	42.1	39.3	35.1	33.7	
16	38.8	27.0	34.0	24.9	29.6	32.3	26.2	21.9	26.6	33.4	24.7	35.5	29.6	28.4	
17	37.6	35.8	8.7	28.0	23.3	27.2	26.7	20.9	24.2	28.5	31.7	32.3	27.1	26.0	
18	51.0	51.7	41.9	35.7	32.6	39.3	8.8	38.2	41.5	43.8	46.8	42.9	39.5	37.9	
19	24.2	37.4	43.4	42.8	45.6	35.0	38.4	35.6	29.6	43.2	44.1	39.6	38.2	36.7	
20	32.8	24.5	25.9	26.6	24.7	24.8	18.4	16.5	16.6	23.3	28.9	29.1	24.3	23.4	
21	44.0	41.9	26.3	23.9	27.2	22.4	32.6	39.5	24.7	33.8	44.2	45.0	33.8	32.4	

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	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
													Annual Mean		
Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted	Distance Corrected
22	41.1	33.3	29.9	26.3	28.9	26.4	23.7	24.4	21.1	30.8	40.2	37.0	30.3	29.0	
23	68.5	21.1	26.4	31.8	27.7	27.1	16.1	22.5	20.6	29.1	39.4	31.7	30.2	29.0	
24	47.2	39.1	16.9	29.1	29.7	27.9		24.6	30.0	40.6	37.4	45.0	33.4	32.1	
25	50.0	48.1	36.6	35.3	30.9	31.5	31.4	32.7	27.0	40.2	49.0	48.2	38.4	36.9	
26	72.7	57.8	54.1	50.8	61.1	60.5			128.7	61.6	78.8	71.1	69.7	66.9	59.2
27	51.8	38.7	28.7	28.9		32.7	33.7	32.8	28.4	40.9	40.7	38.8	36.0	34.6	
28	21.5	14.5	16.2	11.6	8.8	9.8	6.2	6.9	6.8	14.5	23.3	18.3	13.2	12.7	
29	28.8	28.8	22.6	22.3	17.3	16.5	13.2	13.4	11.2	21.2	28.2	27.4	20.9	20.1	
30	47.4	42.4	31.9	38.6	32.6	34.4	31.7	29.1	31.5	40.2	39.3	38.2	36.4	35.0	
31	35.3	30.3	24.5	22.7	23.7	22.2	21.1	20.4	19.1	30.5	34.0	32.4	26.4	25.3	
32	89.6	50.5	54.6	46.6	32.3	28.6	31.1	42.1	57.1	73.9	72.9	97.9	56.4	54.2	52.9
33	36.4	37.9	31.1	25.4	25.6	23.7	19.6	18.7	18.1	12.2	35.6	33.9	26.5	25.5	
34	38.4	24.3	28.4	22.7	16.5	16.6	17.8	16.2	18.7	28.5	31.1	26.3	23.8	22.8	
35	25.8	31.0	23.9	23.6	20.3	23.2		25.5	14.3	21.6	33.7	28.4	24.7	23.7	
36	33.3		22.1	28.2	28.0	23.9	22.5	19.7	17.9	29.4	36.5	29.0	26.4	25.4	
37	38.3	40.8	30.2	34.7	32.2	25.2	21.5	19.6	21.9	36.2	45.9	44.2	32.6	31.3	
38	45.9	40.8	33.1	32.3	31.7	27.1	27.8	27.3	26.4	37.3	11.5	26.4	30.6	29.4	
39	32.7	28.9	26.2	30.4	28.2			14.4		26.5	33.2	32.5	28.1	27.0	
40	35.5	28.2	26.4	19.4	25.6			20.8		28.7	20.5	23.9	25.4	24.4	

(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 (2014 to 2018)





Figure A.2 – Trends in Annual Mean NO<sub>2</sub> Concentrations at Roadside Sites (2014 to 2018)





# NO2 Annual Mean ug/m3 Sites ■ 2014 ■ 2015 ■ 2016 ■ 2017 ■ 2018

# Figure A.4 – Trends in Annual Mean NO<sub>2</sub> Concentrations at Urban Background Sites (2014 to 2018)









## 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**

PM<sub>10</sub> and PM<sub>2.5</sub> 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 NO<sub>2</sub> 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 0.96 from the latest version (v 03/19) of the combined national database of adjustment factors was used to adjust the 2018 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. Therefore, the local BIAS adjustment was not considered reliable to use.

#### Figure C.1 National BIAS Adjustment

National Diffusion Tube	e Bias Adju	stment	Fa	ctor Spreadsheet			Spreads	neet Vers	ion Numbe	er: 03/19	
Allow the steps below in the correct order to show the results of relevant co-location studies ata only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods henever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet in spreadheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.											
he LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract artners AECOM and the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.											
Step 1:	Step 2:	Step 3:			S	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	Whe	re there is only one study for a chosen Where there is more than one study, u	combinatio se the ove	n, you should i rall factor <sup>3</sup> sho	use the adjustr wn in <mark>blue</mark> at th	nent fact ne foot of	or shown w the final c	vith caution. olumn.	
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 <sup>2</sup>	lf you	have your own co-location study then see f Helpdesk at LAQMF	ootnote <sup>4</sup> . If leipdesk@ui	uncertain what to k.bureauveritas.	o do then contac com or 0800 032	t the Loca 27953	I Air Quality	Management	
Analysed By <sup>1</sup>	Method To undo your selection, choose (All) from the pop-up list	Year <sup>5</sup> To undo your selection, choose (All)	Site Type	Site Local Authority		Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (μg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>6</sup>	Bias Adjustment Factor (A) (Cm/Dm)	
Edinburgh Scientific Services	50% TEA in acetone	2018	R	Stirling Council	10	24	22	8.1%	G	0.92	
Edinburgh Scientific Services	50% TEA in acetone	2018	KS	Marylebone Road Intercomparison	12	86	85	0.9%	G	0.99	
Edinburgh Scientific Services	50% TEA in acetone	2018		Overall Factor <sup>3</sup> (2 studies)					Jse	0.96	

#### **Distance Drop off corrections**

Distance correction was applied to NO<sub>2</sub> monitoring data where an annual mean of 40  $\mu$ g.m<sup>-3</sup> or above was measured, and where the monitoring location is not representative of relevant human exposure. Where required, the LAQM NO<sub>2</sub> distance drop off calculator was used. The results are presented below.

#### Figure C.2 Distance Drop Off Calculator

BUREAU VERITAS	Er	nter data int	to the pink c	ells		
	Distan	ice (m)	NO₂ Annual I	Mean Concent	tration (µg/m³)	
Site Name/ID	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	Comment
12.0	2.1	2.7	14.3	42.2	40.5	Predicted concentration at Receptor above AQS objective.
26.0	5.6	8.9	13.4	66.9	59.2	Predicted concentration at Receptor above AQS objective.
32.0	3.6	4.0	10.5	54.2	52.9	Predicted concentration at Receptor above 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 shortterm period means were adjusted to annual means using the method recommended in TG(16) Box 7.9.

# **Appendix D: Monitoring Site Locations**



















Figure D.5: Blantyre Monitoring Sites



Figure D.6: Raith Interchange and Bothwell Monitoring Sites



Figure D.7: Uddingston Monitoring Sites



### Figure D.8: Halfway Diffusion Tube Site







#### Figure D.10: Rutherglen Monitoring Sites







Figure D.12: Lanark AQMA with monitoring locations



Figure D.13: East Kilbride Whirlies AQMA with monitoring locations


Figure D.14: Rutherglen AQMA with monitoring locations

## **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 <sub>2</sub>	Nitrogen Dioxide
NOx	Nitrogen Oxides
PM10	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

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