



2020 Air Quality Annual Progress Report (APR) for  
Glasgow City Council

In fulfilment of Part IV of the  
Environment Act 1995

Local Air Quality Management

June 2020

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

### **Air Quality in Glasgow**

During 2019, Glasgow City Council measured concentrations of Nitrogen Dioxide (NO<sub>2</sub>) above the Annual Mean Objective at one automatic monitoring station within the existing City Centre Air Quality Management Area (AQMA) and at several locations, measured by diffusion tube, also within the City Centre AQMA. However, the number of diffusion tube exceedences (6) showed a continued reduction from the previous year 2018 (7).

The NO<sub>2</sub> Hourly Mean Objective was not exceeded at any of the automatic monitoring stations.

Neither the Annual Mean Objective for PM<sub>10</sub> nor the Daily Mean Objective for PM<sub>10</sub> were exceeded at any monitoring location during 2019. However, all monitoring locations showed an increase in the number of days where the daily mean was above 50µg/m<sup>3</sup>.

For Scottish Local Authorities particulates at PM<sub>2.5</sub> have now been prescribed in regulations with an Annual Mean Objective of 10µg/m<sup>3</sup> by 2020. This objective was not exceeded at any monitoring location during 2019.

Previous Air Quality Annual Progress Reports confirmed compliance with relevant Annual Mean Objectives for both Parkhead Cross and Byres Road / Dumbarton Road AQMA's. Proposals to revoke the AQMA's currently in place in respect of the Annual Mean Objective for NO<sub>2</sub> at Parkhead Cross and the Annual Mean Objective for PM<sub>10</sub> at Byres Road / Dumbarton Road have been approved by the Environment, Sustainability and Climate Change Committee of Glasgow City Council with full revocation expected in 2020.

### **Actions to Improve Air Quality**

In response to the implementation of the AQMA's in the city, Glasgow City Council produced Air Quality Action Plans in 2004 and 2009 introducing a range of measures aimed at reducing pollution in the city. The Action Plan is an evolving project with several measures such as vehicle idling enforcement, vehicle emission testing and initiatives towards cleaner vehicles ongoing. Other measures such as a Council workplace travel plan and city car club continue to evolve. Work will commence on a revised Air Quality Action Plan later in 2020.

The Scottish Programme for Government announced in 2017 that there would be Low Emission Zones (LEZ's) in 4 cities in Scotland. Glasgow City Council introduced Scotland's first LEZ in an area broadly equivalent to the city centre AQMA at the end of 2018.

The LEZ is being introduced in two phases, with the first phase targeting improvements in emissions arising from bus journeys going through the city centre. From December 2018 the LEZ required that 20% of bus journeys through the city centre meet the Euro VI emission standard. This target is to be increased by 20% each year, until 100% of buses are compliant by December 2022. Currently more than 40% of bus journeys through the city centre meet this emission standard due to the LEZ. The second phase of the LEZ will apply to all vehicle types and will also come into force at the end of 2022.

Link to Glasgow's LEZ.

<https://www.glasgow.gov.uk/LEZ>

The Council continues to promote and facilitate improvements in sustainable transport through investment in cycling infrastructure, such as the Avenues and City Ways projects, and easier public access to air quality information has been introduced.

Included in the Glasgow City Region City Deal funding, Glasgow City Council is investing approximately £115 million within the city centre to deliver on the Enabling Infrastructure - Integrated Public Realm (EIIPR) programme. More commonly known as the Avenues programme, this will see streetscape improvements made to the public realm, supporting a key strategic objective of the City Centre Strategy and Action Plan 2014-19: the establishment of principal Avenues throughout the city centre to form an integrated network of continuous pedestrian and cycle priority routes.

Link to City Centre Strategy and Action Plan 2014-19 and Avenues.

<https://www.glasgow.gov.uk/article/18277/City-Centre-Centre-Strategy>

Link to Avenues programme.

<https://www.glasgow.gov.uk/avenues>

Design and construction work is being phased over the period 2017 to 2024. The first phase, Sauchiehall St West was completed in 2019. Completion and has radically altered the balance of the traffic mode along Sauchiehall Street, prioritising space for

cyclists and pedestrians and introducing sustainable green infrastructure.



**Sauchiehall St pre-implementation of Avenues program**



**Sauchiehall St on completion of Sauchiehall St West**

Link to Glasgow's Strategic Plan for Cycling 2016 – 2025.

<https://www.glasgow.gov.uk/index.aspx?articleid=20804>

Link to Glasgow's Cycling Projects.

<https://www.glasgow.gov.uk/index.aspx?articleid=19364>

<https://www.glasgow.gov.uk/index.aspx?articleid=21805>

Link to Glasgow's City Centre Transport Strategy 2014 – 2024.

<https://www.glasgow.gov.uk/index.aspx?articleid=18276>

Measures which have progressed during 2019 within the Air Quality Action Plan (AQAP) programme are shown in Table 2.2. An AQAP summary is shown in Appendix D.

George Square in Glasgow city centre was largely taken over, including a road closure in front of the Council chambers to create a relaxing picnic area, for National Clean Air Day, 20 June 2019.

Clean Air Day was an opportunity for pupils from several of the city's primary schools to show their work on air quality projects and to learn more about what everyone can do to reduce air pollution.

Among the attractions were low emission buses from operators within the city and an array of electric vehicles from major manufacturers. These vehicles included electric motorbikes and taxis.

Sustainable and active travel was also heavily promoted, with the Avenues programme showcased along with the Low Emission Zone and the redevelopment of Glasgow Queen St station. Next Bike were also on hand demonstrating their e-bikes.



## Clean Air Day 2019

### Local Priorities and Challenges

Glasgow's Low Emission Zone (LEZ) is an intervention directed at protecting and improving public health. While the concept was introduced in the 2009 Action Plan it is also now part of a broader approach to enhancing the amenity and attractiveness of the city centre through cleaner air.

The LEZ is intended to accelerate the pace of improvement in Glasgow's air quality and in particular to ensure that air pollution levels are reduced in the city centre. The principal source of air pollution in the city is from road traffic and detailed analysis of air pollution in the city centre has been undertaken to determine source apportionment. This identified that, on the streets with the highest level of pollution, buses (60-75%) and other diesel engine vehicles are the main source of pollution.

The LEZ is being introduced in two phases. The first phase looks to improve emissions from bus journeys going through the city centre. Such action should not only improve air quality in the city centre itself, but also have the positive effect of improving emissions in those other parts of the city on through routes.

From December 2018 the LEZ required that 20% of bus journeys through the city centre met the Euro VI emission standard. This target is to be increased by 20% each year until 100% of bus journeys are compliant.

The second phase of the LEZ will apply to all vehicle types and come into effect at the end of 2022. This will require a minimum emissions standard from vehicles of Euro 6/VI for diesel engines and Euro 4/IV for petrol engines. In these respects, Glasgow's LEZ will be one of the most ambitious in the UK with emission standards equivalent to those required by London's Ultra Low Emission Zone.



Indicative signage to raise awareness of the LEZ introduction has been installed at key city centre locations and on the main approach routes into the city centre.

### **How to Get Involved**

Information relating to the LEZ, Local Air Quality Management (LAQM) and AQMA's in Glasgow is available via the Glasgow City Council website. This information includes Air Quality Action Plans, Progress Reports and Detailed Assessments.

<https://www.glasgow.gov.uk/index.aspx?articleid=18863>



## **Glasgow City Council**

The website also contains links to the national Air Quality in Scotland webpage where the public can access both real time and historical monitoring data in addition to registering to receive text/email alerts where poor air quality is forecast.

<http://www.scottishairquality.co.uk/>

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## 1. Local Air Quality Management

This report provides an overview of air quality in Glasgow 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 Glasgow City 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 <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m <sup>3</sup>	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 Glasgow City 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://www.glasgow.gov.uk/index.aspx?articleid=18863>

We propose to amend the Byres Rd / Dumbarton Rd AQMA due to continued compliance with the PM<sub>10</sub> Annual Mean Objective (see monitoring section).

We propose to revoke Parkhead Cross AQMA due to continued compliance with the NO<sub>2</sub> Annual Mean Objective (see monitoring section).

On 17<sup>th</sup> March 2020 the Environment, Sustainability and Climate Change Committee of Glasgow City Council approved the above changes to the AQMAs with final amendment / revocation expected in the next few months.

**Table 2.1 – Declared Air Quality Management Areas**

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
City Centre AQMA	NO <sub>2</sub> Annual Mean	Glasgow	The city centre AQMA is loosely bound by the M8 motorway to the west and north (with slight protrusions at North Street and Royston Road), by High Street and Saltmarket to the east and by the river Clyde to the south. This area was declared an AQMA in 2004 in respect of the annual mean NO <sub>2</sub> Objective.	Glasgow City Council Air Quality Action Plan 2009  <a href="https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0">https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0</a>

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
	<p>PM<sub>10</sub> Annual Mean</p> <p>NO<sub>2</sub> Hourly Mean</p>		<p>In 2007 the area covered by this AQMA was extended and declared in respect of the annual mean PM<sub>10</sub> Objective.</p> <p>In 2012 a further extension of the AQMA was declared and the order amended in respect of the hourly mean NO<sub>2</sub> Objective.</p>	
Parkhead Cross AQMA	NO <sub>2</sub> Annual Mean	Glasgow	<p>Parkhead Cross is formed by the convergence of five roads in Glasgow's east end. The roads are Westmuir Street, Tollcross Road, Springfield Road, Duke Street and Gallowgate. The area is a mixture of commercial and residential properties within mostly tenement properties.</p> <p>This area was declared in 2007 in respect of the annual mean NO<sub>2</sub> Objective.</p>	<p>Glasgow City Council Air Quality Action Plan 2009</p> <p><a href="https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0">https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0</a></p>
Byres Road and Dumbarton Road AQMA		Glasgow	This AQMA extends from the junction of Byres Road and Great Western Road, south to Dumbarton Road and west along Dumbarton Road as far as Thornwood Drive roundabout.	<p>Glasgow City Council Air Quality Action Plan 2009</p> <p><a href="https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0">https://www.glasgow.gov.uk/CHttpHandler.ashx?id=32447&amp;p=0</a></p>

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
	NO <sub>2</sub> Annual Mean		<p>This area was declared an AQMA in 2007 in respect of the annual mean NO<sub>2</sub> Objective.</p> <p>In 2012 the area covered by this AQMA was extended northwards along Queen Margaret Drive to the junction with Oban Drive.</p>	
	PM <sub>10</sub> Annual Mean		<p>In 2016 this AQMA was amended in respect of the annual mean PM<sub>10</sub> Objective.</p>	

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

Glasgow City 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 2.2. More detail on these measures can be found in the air quality Action Plan linked to in Table 2.1 above relating to each AQMA, A summary of the AQAP measures is shown in Appendix D.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Vehicle Idling  Council will expand program of vehicle idling enforcement	Public Information	Regular scheduled patrols to enforce and/or educate regarding vehicle idling.	N&S Public Health		2003 Onwards	Low	Council continues to promote awareness and benefits in regard to reduction of vehicle idling via billboards and advertising campaign on PSV vehicles, around schools and bus stops.	Ongoing	No Fixed Penalty notice issued in 2019. 1309 interventions with leaflets handed out
2	Emissions Testing	Public Information	Emission Testing will now only take place during Multi Agency Days of action	N&S Public Health		2003 Onwards	Low	Emission testing continues in a reduced capacity.  40,000+ vehicles tested to date.		210 Vehicles testing during 2019. 1 FPN issued



## Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3	Low Emission Zone	Promoting low emission transport	Cleaner Air For Scotland (CAFS)  National Low Emissions Framework (NLEF)	Scottish Government  GCC are a partner authority on the CAFS Governance Group	2015	2018 - 2022	Medium	GCC introduced Scotland's first LEZ in an area broadly equivalent to the city centre AQMA.  From December 2018 Phase 1 of the LEZ required that 20% of bus journeys through the city centre met the Euro VI emission standard.  In December 2019 this requirement increased to 40% of bus journeys through the city centre.	2022	Compliance target for bus journeys is to be increased by 20% each year until 100% of bus journeys are compliant by December 2022.  Phase 2 of the LEZ will apply to all vehicle types and will come into effect in December 2022. It will require a minimum emission standard of Euro VI/6 for diesel vehicles and Euro IV/4 for petrol vehicles.

Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Cleaner Taxis	Vehicle Fleet Efficiency	Council will prepare an emissions strategy to reduce emissions from taxi and private hire vehicles	Licensing	2009	Ongoing	Low / Medium	<p>GCC have adopted licensing conditions in line with the introduction of the LEZ enforcement due for December 2022.</p> <p>GCC have removed the five year age policy for taxi applications to facilitate the replacement of vehicles with a newer taxi which meets the required emission standard.</p> <p>GCC have reduced testing frequency for newer vehicles and increased testing frequency for older vehicles.</p>	Ongoing	As part of the ongoing LEZ preparation funding of £1.09M has been provided by the Scottish Government for the conversion of older taxis from diesel to LPG, reducing emissions and meeting LEZ requirements.

## Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	Council Workplace Travel Plan	Promoting Travel Alternatives	Travel plan was launched in an updated form.	Glasgow City Council		2014	Low	GCC continues to support active and sustainable transport to places of work. This includes the refresh of the cycle to work scheme with an increase in the level of funding available being increased to £1,500 to make folding and e-bikes more attainable under the scheme. Repayment period is currently 18 months to improve accessibility of the scheme.	Ongoing	Staff Travel Survey has been delayed.  Pool bikes continue to be made available, now across two sites of operation.

## Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6	Car Clubs	Alternatives to private vehicle use	The council will make on street spaces available for car club use.	Glasgow City Council	2009	2010 onwards  2015 onwards (award of new operator contract)	Low	The Car Club continues to expand and move the vehicle fleet to electric vehicles.  Funding was sought through the LEZ support fund for the electrification of all vehicles within the city centre.	Ongoing	

## Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
10	Air Quality Information	Public Information	The Council will provide data and information regarding current and longer term air quality monitoring on our web site and at variable message signs throughout the city	Glasgow City Council	2009	Ongoing	Low	Operational difficulties have resulted in the removal of the City Trees and their associated air quality information message boards.  GCC continues to publish air quality information on the main website and promote the use of the Scottish Air Quality Database "Know & Respond" information service.	Ongoing	

## Glasgow City Council

13	Cycling Strategy	Promoting Travel Alternatives	Provide cycling improvements throughout the city.	Glasgow City Council	2011	Ongoing	Low	<p>The Strategic Plan for Cycling continues to provide a focus for delivery of increased cycling in Glasgow. Aspects of the strategy are currently being refreshed to support this. Proposed Route Development has been revisited via GIS analysis to identify buildable routes and prioritise these. This should output a strategic network that also feeds to other programmes to improve active travel in general in the Glasgow area. Cycle parking is continually being improved with on Street rack installations focussing on out of town trip</p>	<p>During 2019 funding support from a range of sources including the Scottish Government's AQAP fund and GCC Cycling Development fund was invested in various aspects of Sustainable / Active Travel. Including cycle infrastructure, the permeable streets programme and school cycle parking.</p>
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## Glasgow City Council

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
								generators, School cycle parking installations continue to progress and help remove storage and security as a barrier to cycling to school.		
17	Promote Greener Vehicles	Promoting low emission transport	Provide and promote electric vehicle charging provision	Glasgow City Council		Ongoing	Low	172 publicly available EV chargers.	Ongoing	300 publicly available EV chargers to be available by 2021.
18	Leading by Example	Promoting low emission transport	<p>The Council will demonstrate best practice in the operation of its vehicle fleet</p> <p>The Council have introduced a fleet of electric vehicles through a government backed scheme and trained staff in the efficient use of these vehicles.</p>	Glasgow City Council		Ongoing	Low	GCC have committed to decarbonising the entire fleet by 2030 with around 300 vehicles to be swapped out in 2020.	Ongoing -2030	

Glasgow City Council

18	Leading by Example	Promoting low emission transport	<p>The Council will demonstrate best practice in the operation of its vehicle fleet</p> <p>The Glasgow ECO Stars Fleet Recognition Scheme is being promoted by Glasgow City Council. The scheme is designed to raise awareness with both public and private organisations of the important role they can play in helping to improve air quality</p>	Glasgow City Council	2014	Ongoing	Low	<p>The fleet recognition scheme has been operating since September 2014 and has currently recruited 229 members encompassing approximately 9396 fleet vehicles including three of the largest bus companies operating within Glasgow. Glasgow Taxi's group also joined the Glasgow Eco Stars scheme in 2018 to provide advice and guidance on</p>	Ongoing	
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								<p>modernising the fleet.</p> <p>The ECO Stars scheme has played an important role to keep transport organisations informed regarding the implementation of the Glasgow LEZ through several stakeholder events. In 2020/21 the scheme will look into the feasibility of establishing a scoring system for non-road mobile machinery for use in Glasgow and to align this with construction consents and</p>		
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**Glasgow City Council**

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
								planning conditions to improve the standard of mobile plant used in the city.		

## **2.3 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 <http://www.gov.scot/Publications/2015/11/5671/17>. CAFS was subject to an independent review in August 2019 which provided a number of recommendations for improvement of the strategy delivery going forward. Progress by Glasgow City 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.

Glasgow City Council’s 2009 AQAP includes measures to promote staff travel to the workplace and GCC has produced a staff travel plan and introduced a number of measures to assist staff. Glasgow continues to work with partners to deliver our shared vision in the Cycling Action Plan for Scotland that by 2020, 10% of everyday journeys will be made by bike.

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

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

Glasgow City Council has implemented an Energy and Carbon Masterplan which provides a blue print to reduce carbon dioxide emissions by 30% by 2020/21. This masterplan highlights over 30 actions to meet the reduction target focussing heavily on renewable energy power supplies and the commitment to less polluting transport modes. Links to the masterplan and Glasgow’s Carbon Management Plan 2 are available at.

<https://www.glasgow.gov.uk/index.aspx?articleid=17181>

Going forward, Glasgow is in the process of creating its new Energy & Carbon Masterplan, which will run from 2020 to 2050. The new plan will take on a more area based approach and will consider all aspects of the environment when devising solutions and actions. Air quality improvements will largely be supported by a continued deployment of electric vehicle charging infrastructure across the city, providing the infrastructural support required to transition away from fossil fuelled transport towards cleaner forms of transport.

In addition to the above, the EU H2020 RUGGEDISED project is installing renewable energy generation and large scale battery storage in tandem with electric vehicle infrastructure to ensure that vehicles are charged with renewable energy where possible. It will also implement electric vehicle charging infrastructure that is integrated into street lighting columns, thus increasing the number of available charge points without increasing street furniture. It is hoped that the RUGGEDISED installations will provide the catalyst that helps private taxi operators' move towards electric vehicles.

<http://www.ruggedised.eu/cities/glasgow/>

### 3. Air Quality Monitoring Data and Comparison with Air Quality Objectives

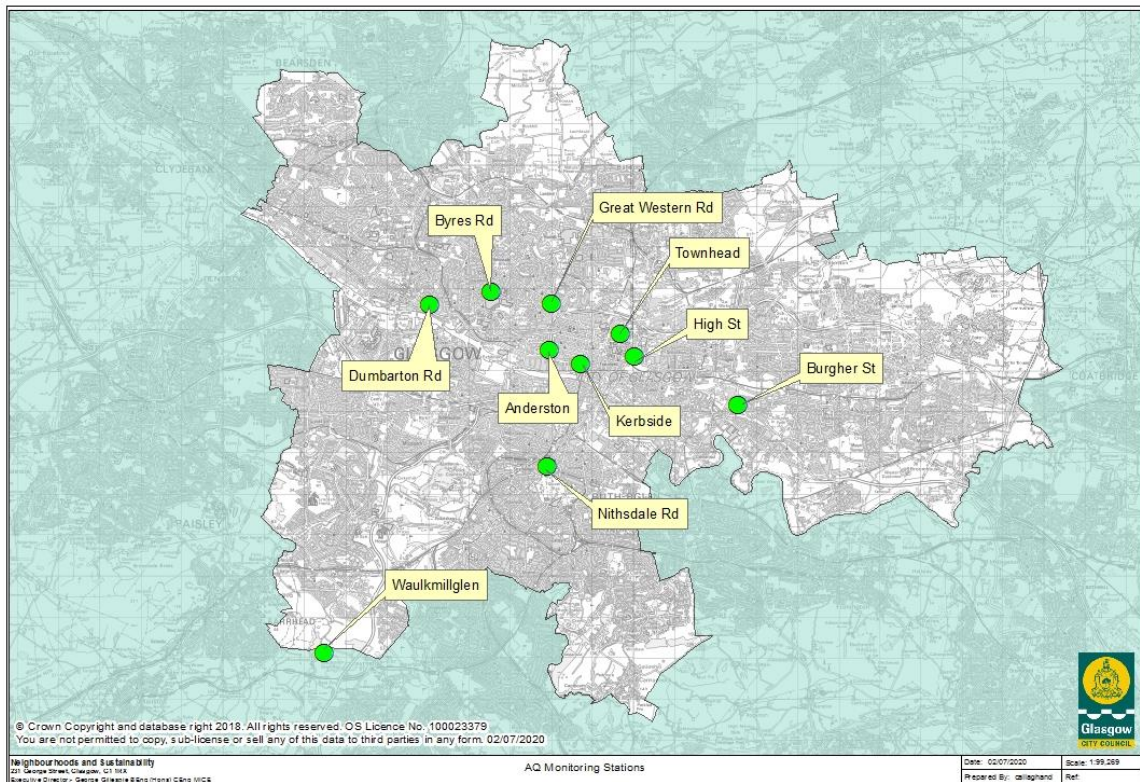
#### 3.1 Summary of Monitoring Undertaken

##### 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.

Glasgow City Council undertook automatic (continuous) monitoring at 10 sites during 2019. The locations are shown in Figure 3.1 below. Station information including pollutants monitored are shown Table A.2 in Appendix A.

**Figure 3.1 - Location of Automatic Monitoring Sites**



Maps and photographs showing the location of the monitoring sites are provided at <http://www.scottishairquality.co.uk/> Monitoring data from both Glasgow’s network and nationally across Scotland can also be accessed at this link.

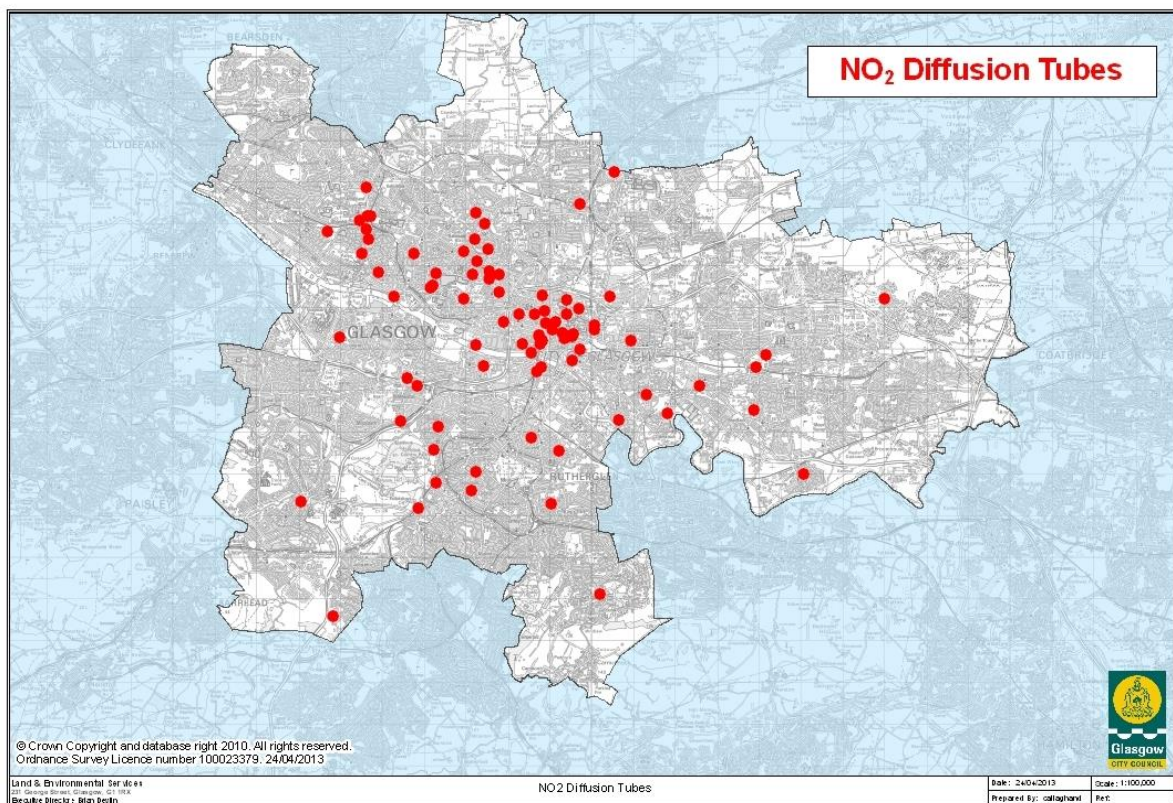
Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

### 3.1.2 Non-Automatic Monitoring Sites

During 2019, Glasgow undertook non-automatic (passive) monitoring of Nitrogen Dioxide (NO<sub>2</sub>) at 104 sites and Benzene (C<sub>6</sub>H<sub>6</sub>) at 4 locations. Whilst concentrated within the City Centre AQMA, NO<sub>2</sub> diffusion tubes are also widely dispersed throughout the city as shown in Figure 3.2 following.

Specific site details are shown in Appendix A. Table A.3.

**Figure 3.2 - Location of Nitrogen Dioxide (NO<sub>2</sub>) Diffusion Tubes**



Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

### 3.2 Individual pollutants

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

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

Table A.4 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

Table A.5 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 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

During 2019, Glasgow City Council measured concentrations of Nitrogen Dioxide (NO<sub>2</sub>) above the Annual Mean Objective at one automatic monitoring station, Kerbside (GLA4), within the existing City Centre Air Quality Management Area (AQMA) and at several locations, measured by diffusion tube, also within the City Centre AQMA. However, the number of diffusion tube exceedances (6) showed a continued reduction from the previous year 2018 (7).

The NO<sub>2</sub> Hourly Mean Objective was not exceeded at any of the automatic monitoring stations. No diffusion tubes showed a value over 60µg/m<sup>3</sup>, which indicates compliance at these locations with the Hourly Mean Objective.

### 3.2.2 Particulate Matter (PM<sub>10</sub>)

Table A.6 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> Annual Mean concentrations for the past 5 years with the air quality objective of 18µg/m<sup>3</sup>.

Table A.7 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> Daily Mean concentrations for the past 5 years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 7 times per year.

Neither the Annual Mean Objective for PM<sub>10</sub> nor the PM<sub>10</sub> Daily Mean Objective were exceeded at any monitoring location during 2019. However, all monitoring locations showed an increase in the number of days where the daily mean was above 50µg/m<sup>3</sup>.

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

Table A.8 in Appendix A compares the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past 5 years with the air quality Objective of 10µg/m<sup>3</sup>.

For Scottish Local Authorities particulates at PM<sub>2.5</sub> have now been prescribed in regulations with an Annual Mean Objective of 10µg/m<sup>3</sup> to be achieved by 2020. This objective was not exceeded at any monitoring location during 2019.

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

Sulphur dioxide monitoring has been discontinued in Glasgow following a long period of compliance with the relevant Objectives.

#### **3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene**

Monitoring of these pollutants has been discontinued in Glasgow following a long period of compliance with the relevant Objectives.

#### **3.2.6 Benzene (C<sub>6</sub>H<sub>6</sub>)**

Table A.9 in Appendix A shows the monitored C<sub>6</sub>H<sub>6</sub> annual mean concentrations with the air quality objective of 3.25µg/m<sup>3</sup>. The Annual Mean Objective was not exceeded at any monitoring location during 2019.



#### **4. New Local Developments**

No new local developments have been identified which require consideration in this report.

##### **4.1 Road Traffic Sources**

No new road traffic sources have been identified which require consideration in this report.

##### **4.2 Other Transport Sources**

No significant new transport sources have been identified which require consideration in this report.

##### **4.3 Industrial Sources**

No significant new industrial sources have been identified which require consideration in this report.

##### **4.4 Commercial and Domestic Sources**

No significant new commercial and domestic sources have been identified which require consideration in this report.

##### **4.5 New Developments with Fugitive or Uncontrolled Sources**

No significant new developments with fugitive or uncontrolled sources have been identified which require consideration in this report.

## **5. Planning Applications**

There have been several planning applications for residential and commercial developments within the last year which required air quality assessments due to the introduction of new receptors or increased emissions due to additional vehicle movements. Only one of the assessments predicted significant adverse air quality impacts or new exceedances of the objectives. This was for a new residential development in New City Road (Planning Reference 17/02092/DC) where a potential exceedance of the Annual Mean PM<sub>10</sub> objective was predicted at a small number of introduced receptors. Agreement was reached that these residential properties would be served by a filtration system at the identified receptors.

## **6. Conclusions and Proposed Actions**

### **6.1 Conclusions from New Monitoring Data**

Automatic analyser and diffusion tube monitoring indicates that concentrations of NO<sub>2</sub> are likely to continue to exceed the NO<sub>2</sub> Annual Mean Objective at locations within the existing City Centre AQMA.

There were no exceedances of this Objective within the existing Byres Road/Dumbarton Road and Parkhead Cross AQMA's nor at any other location out with the City Centre AQMA. Proposals to revoke the AQMA currently in place in respect of the Annual Mean Objective for NO<sub>2</sub> at Parkhead Cross have been approved by committee and will be finalised in 2020. It is not considered that any further amendment to the remaining AQMA's in respect of this Objective is necessary or that any new areas require more detailed investigation.

There were no exceedances of the NO<sub>2</sub> Hourly Mean Objective at any of the automatic monitoring station and no diffusion tubes within the City Centre AQMA produced an annual mean concentration in excess of 60µg/m<sup>3</sup>. Consideration has been given to the revocation of this AQMA and this will proceed if monitoring continues to show compliance at the automatic stations and annual mean concentrations monitored by diffusion tube below 60µg/m<sup>3</sup>. No further amendment to this AQMA is necessary nor any new areas identified that require more detailed analysis.

There were no exceedances of the PM<sub>10</sub> Annual Mean Objective. Proposals to revoke the AQMA currently in place in respect of the Annual Mean Objective for PM<sub>10</sub> at Byres Road/Dumbarton Road have been approved by committee and will be finalised in 2020.

There were no exceedances of the PM<sub>10</sub> 24hour Mean Objective.

There were no exceedances of the PM<sub>2.5</sub> Annual Mean Objective.

### **6.2 Conclusions relating to New Local Developments**

No new local developments have been identified which require further consideration in this report.

### **6.3 Proposed Actions**

During 2020 Glasgow will proceed in partnership with the Scottish Government to deliver Scotland's first Low Emission Zone (LEZ). From 31 December 2018 the LEZ requires that 20% of bus journeys through the city centre meet the Euro VI emission

standard. This target is to be increased by 20% each year leading to all vehicles entering the zone, including private cars, being fully compliant by the end of 2022.

Work will commence on a revised Air Quality Action Plan in 2020.

Actions to improve air quality and monitoring of pollutant levels will continue and results published in next year's Annual Progress Report.

## Appendix A: Monitoring Results

Table A.2 – 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) <sup>(2)</sup>	Inlet Height (m)
GLA4	Glasgow Kerbside	Kerbside	258708	665200	NO <sub>2</sub>	City Centre	Chemiluminescent	0	1	3
GLKP	Glasgow Townhead	Urban Background	259675	665900	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub> O <sub>3</sub>	City Centre	Chemiluminescent FIDAS UV Photometric	0	120	3
GGWR	Glasgow Great Western Road	Roadside	258007	666649	NO <sub>2</sub>	No	Chemiluminescent	0	5	2
GHSR	Glasgow High Street	Roadside	260013	665346	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub>	City Centre	Chemiluminescent FIDAS	0	3	3
GLA5	Glasgow Anderston	Urban Background	257925	665487	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub>	City Centre	Chemiluminescent FIDAS	0	40	3
GLA6	Glasgow Byres Road	Roadside	256526	666933	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub>	Byres Rd Dumbarton Rd	Chemiluminescent FIDAS	0	3	3
GL9	Glasgow Dumbarton Road	Roadside	255030	666608	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub>	Byres Rd Dumbarton Rd	Chemiluminescent FIDAS	0	3	2
GL6	Glasgow Burgher Street	Roadside	262550	664164	NO <sub>2</sub> PM <sub>10</sub>	Parkhead	Chemiluminescent FDMS TEOM	0	3	2

Glasgow City Council

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) <sup>(2)</sup>	Inlet Height (m)
GL2 <sup>(3)</sup>	Glasgow Nithsdale Road	Roadside	257883	662673	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub>	No	Chemiluminescent FIDAS	0	3	2
GLA7	Glasgow Waulkmillglen Reservoir	Rural	252461	658154	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub> O <sub>3</sub>	No	Chemiluminescent FIDAS UV Photometric	N/A	N/A	3

(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) Mobile monitoring station located at Nithsdale Rd.

Table A.3 – 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
CC01	George Square	Urban Background	259296	665389	NO <sub>2</sub>	Yes	N/A	30	No
CC02	Union Street	Roadside	258828	665204	NO <sub>2</sub>	Yes	0	3	No
CC03	Bath Street	Roadside	258374	665826	NO <sub>2</sub>	Yes	3	3	No
CC04	Glassford Street	Roadside	259361	665252	NO <sub>2</sub>	Yes	0	3	No
CC05	Buchanan Street	Roadside	259055	665468	NO <sub>2</sub>	Yes	0	3	No
CC06	Castle Street	Roadside	260068	665589	NO <sub>2</sub>	Yes	0	3	No
CC07	Hope Street 3	Kerbside	258856	665940	NO <sub>2</sub>	Yes	N/A	1	No
CC08	Montrose Street	Roadside	259536	665313	NO <sub>2</sub>	Yes	0	3	No
CC09	Cochrane Street	Roadside	259430	665316	NO <sub>2</sub>	Yes	0	3	No
CC10	Renfield Street	Roadside	258896	665637	NO <sub>2</sub>	Yes	0	3	No

Glasgow City Council

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?
CC11	George Street	Kerbside	259551	665380	NO2	Yes	N/A	1	No
CC12	North Street	Roadside	257906	665672	NO2	Yes	N/A	3	No
CC13	Hope Street 1	Roadside	258730	665322	NO2	Yes	0	3	No
CC14	Gordon Street	Roadside	258756	665346	NO2	Yes	N/A	3	No
CC15	Heilanmans Umbrella North	Roadside	258770	665120	NO2	Yes	0	3	No
CC16	Saltmarket	Roadside	259545	664739	NO2	Yes	0	3	No
CC17	High Street	Roadside	259732	664991	NO2	Yes	0	3	No
CC18	Dobbies Loan	Urban Background	259415	666194	NO2	Yes	0	3	No
CC20	Dundasvale Street	Urban Background	258820	666306	NO2	Yes	0	15	No
CC21	Royston Road	Roadside	260429	666264	NO2	Yes	5	3	No



Glasgow City Council

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?
CC22	St Mungo Avenue	Urban Background	259392	665866	NO <sub>2</sub>	Yes	0	5	No
CC23	Brown Street	Roadside	258336	665122	NO <sub>2</sub>	Yes	0	3	No
CC24	Broomielaw	Roadside	258562	664933	NO <sub>2</sub>	Yes	N/A	3	No
CC25	McLeod Street	Urban Background	260077	665481	NO <sub>2</sub>	Yes	0	8	No
CC26	Sauchiehall Street	Urban Background	258639	665852	NO <sub>2</sub>	Yes	N/A	N/A	No
CC28	St Mungo's PS	Roadside	259983	665834	NO <sub>2</sub>	Yes	10	1	No
CC29	Garnetbank PS	Roadside	258240	666033	NO <sub>2</sub>	Yes	5	1	No
GE01	Westmuir Street	Roadside	262589	664139	NO <sub>2</sub>	Yes	0	3	No
GE02	Hillcrest Road	Roadside	265075	662001	NO <sub>2</sub>	No	5	3	No
GE03	Main Street (Bridgeton)	Roadside	260650	663319	NO <sub>2</sub>	No	0	5	No
GE04	Westercraigs	Urban Background	260942	665226	NO <sub>2</sub>	No	0	15	No

Glasgow City Council

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?
GE06	Sacone SW	Urban background	263920	664569	NO2	No	0	20	No
GE07	Easterhouse	Roadside	267005	666217	NO2	No	0	5	No
GE10	Tollcross Park	Roadside	263864	663544	NO2	No	0	3	No
GE14	St Michaels Lane	Roadside	262472	664214	NO2	Yes	0	3	No
GE16	Ellismuir Road	Roadside	268413	663872	NO2	No	9	1	No
GE17	Carmyle Avenue	Roadside	264792	662418	NO2	No	0	7	No
GE18	Barrowfield Street	Roadside	261705	663993	NO2	No	3	1	No
GE19	Dalmarnock Station	Roadside	261013	663169	NO2	No	N/A	1	No
GN01	Springburn Road	Roadside	260541	669268	NO2	No	0	6	No
GN02	Kippen Street	Urban Background	259731	668488	NO2	No	5	3	No
GN03	Ryeside Road	Roadside	261778	668122	NO2	No	10	1	No

Glasgow City Council

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?
GS02	Bridge Street	Roadside	258702	664480	NO2	Yes	3	3	No
GS04	Haggs Road	Roadside	256295	661792	NO2	No	0	3	No
GS06	Oxford Street	Roadside	258798	664570	NO2	No	0	3	No
GS07	Douglie Road	Roadside	260203	659128	NO2	No	N/A	3	No
GS08	Aikenhead Road	Roadside	259225	662579	NO2	No	0	6	No
GS09	Langside Primary School	Roadside	257138	661617	NO2	No	5	3	No
GS10	Paisley Road West	Roadside	255599	664313	NO2	No	0	3	No
GS11	Sutherland Avenue	Urban Background	256343	663153	NO2	No	10	5	No
GS12	Mallaig Place	Urban background	253989	665298	NO2	No	20	6	No
GS13	Govanhill Street	Roadside	258678	662901	NO2	No	3	3	No

Glasgow City Council

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?
GS14	Invergarrie Road	Urban Background	253821	658590	NO2	No	5	3	No
GS16	Silverburn	Roadside	253047	661349	NO2	No	0	5	No
GS18	Paisley Rd West 2	Roadside	257415	664616	NO2	No	0	3	No
GS19	Hampden	Urban Background	259038	661285	NO2	No	0	3	No
GS20	45 Clifford Street	Roadside	256262	664308	NO2	No	0	3	No
GS21	608 Scotland Street West	Roadside	256948	664270	NO2	No	0	1	No
GS22	17 Kilbride Street	Roadside	259732	663032	NO2	No	0	3	No
GS23	2 Myrtle Drive	Roadside	259246	661979	NO2	No	0	3	No
GS24	183 Crossloan Road	Roadside	254724	665407	NO2	No	0	3	No
GS25	234 Berryknowes Road	Urban Background	253542	664443	NO2	No	0	15	No

Glasgow City Council

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?
GS27	Battlefield Road	Roadside	258084	661642	NO2	No	0	3	No
GS28	128 Mennock Road	Roadside	259871	660618	NO2	No	0	3	No
GS30	Govan Road	Roadside	254021	665943	NO2	No	0	2	No
GS31	Govan Road (Hospital)	Roadside	253865	666006	NO2	No	2	2	No
GS34	1220 Govan Road	Roadside	254372	665902	NO2	No	0	2	No
GS35	Shieldhall Road	Roadside	253554	665176	NO2	No	0	3	No
GS36	Wallace Street	Roadside	258108	664514	NO2	No	0	3	No
GS37	Dumbreck Road	Roadside	255477	663644	NO2	No	7	1	No
GS45	Ben Glas Place	Urban Background	253609	659958	NO2	No	5	1	No
GS46	Kirriemuir Avenue	Roadside	253471	663587	NO2	No	20	1	No

Glasgow City Council

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?
GS47	1214 Paisley Road West	Roadside	254818	664109	NO2	No	10	1	No
GW01	Dumbarton Road	Roadside	256209	666525	NO2	Yes	3	3	No
GW02	Lawrence Street	Roadside	256295	666816	NO <sub>2</sub>	Yes	5	2	No
GW04	Finnieston Street	Roadside	257235	665108	NO <sub>2</sub>	No	N/A	3	No
GW06	Napiershall Street	Roadside	257790	666791	NO <sub>2</sub>	No	0	4	No
GW07	Queen Margaret Drive 2	Roadside	257216	667639	NO <sub>2</sub>	Yes	0	3	No
GW08	Queen Margaret Drive 3	Roadside	257012	667433	NO <sub>2</sub>	Yes	0	3	No
GW09	Anniesland Cross	Roadside	254613	668886	NO <sub>2</sub>	No	0	15	No
GW10	Balshagray Avenue	Roadside	254498	667291	NO <sub>2</sub>	No	0	10	No
GW11	Thornwood Drive	Roadside	254903	666855	NO <sub>2</sub>	No	0	3	No

Glasgow City Council

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?
GW12	Belmont Street	Roadside	257533	667418	NO <sub>2</sub>	No	N/A	3	No
GW13	Glasgow Harbour	Urban Background	255287	666276	NO <sub>2</sub>	No	0	30	No
GW14	Crow Road	Roadside	254640	668203	NO <sub>2</sub>	No	0	3	No
GW15	Hyndland Road	Roadside	255764	667297	NO <sub>2</sub>	No	0	4	No
GW16	Park Road	Roadside	257555	666896	NO <sub>2</sub>	No	0	3	No
GW18	Maryhill Road	Roadside	257243	668285	NO <sub>2</sub>	No	0	3	No
GW19	Scotstoun	Urban Background	253592	667771	NO <sub>2</sub>	No	0	>10	No
GW21	Milner Road	Roadside	254456	668108	NO <sub>2</sub>	No	0	3	No
GW22	Gibson Street	Roadside	257166	666787	NO <sub>2</sub>	No	0	3	No
GW26	Great Western Road	Roadside	257255	667112	NO <sub>2</sub>	No	0	3	No

Glasgow City Council

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?
GW30	South Street	Roadside	253193	667219	NO2	No	0	2	No
GW31	Harland Street	Roadside	253139	667333	NO2	No	2	3	No
GW32	Partick Bus Station	Roadside	255692	667333	NO2	Yes	0	2	No
GW33	Great George Street	Roadside	256663	667100	NO2	No	0	3	No
GW34	Blairdardie Road	Roadside	253080	670199	NO2	No	8	1	No
GW35	Cadder Road	Roadside	257373	669164	NO2	No	10	1	No
GW36	New City Road	Urban Background	258309	666457	NO2	No	N/A	1	No
GW37	676 Dumbarton Road	Roadside	254946	666612	NO2	No	0	1	No
GW38	1545 Dumbarton Road	Roadside	252993	667615	NO2	No	0	5	No
GW39	Primrose Court	Roadside	253475	667289	NO2	No	0	13	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?
CCB1	Heilanman's Umbrella North	Roadside	258770	665121	C6H6	No	0	3	No
CCB2	Hope Street	Kerbside	258738	665167	C6H6	No	3	1	No
GWB1	Ochiltree Avenue	Roadside	254839	669295	C6H6	No	3	5	No
GSB1	Pollokshaws Road	Roadside	255869	661185	C6H6	No	3	3	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.4 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GLA4	Kerbside (Kerbside)	Automatic	98	98	<b>60</b>	<b>65</b>	<b>59</b>	<b>61</b>	<b>56</b>
GLKP	Townhead (U Background)	Automatic	99	99	26	26	25	24	24
GGWR	Gt. Western Rd (Roadside)	Automatic	91	91	31	32	31	29	30
GHSR	High St. (Roadside)	Automatic	97	97	32	34	35	31	30
GLA5	Anderston (U Background)	Automatic	99	99	-	20	22	24	26
GLA6	Byres Rd. (Roadside)	Automatic	97	97	38	38	37	34	35
GL9	Dumbarton Rd. (Roadside)	Automatic	100	100	<b>41</b>	<b>45</b>	<b>43</b>	34	35
GL6	Burgher St. (Roadside)	Automatic	100	100	27	33	26	25	27
GL2	Nithsdale Rd. (Roadside)	Automatic	100	100	-	-	-	32	31
GLA7	Waulkmillglen (Rural)	Automatic	99	99	9	11	9	9	9

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
CC01	George Sq. (U Background)	Diffusion Tube	92	92	38	30	37	35	32
CC02	Union St. (Roadside)	Diffusion Tube	83	83	<b><u>65</u> *</b>	<b>49</b>	<b>50 *</b>	<b>47</b>	<b>47</b>
CC03	Bath St. (Roadside)	Diffusion Tube	100	100	39	40	<b>42</b>	<b>41</b>	39
CC04	Glassford St. (Roadside)	Diffusion Tube	100	100	<b>42</b>	37	<b>41</b>	40	40
CC05	Buchanan St. (Roadside)	Diffusion Tube	100	100	39	39	<b>42</b>	<b>41</b>	38
CC06	Castle St. (Roadside)	Diffusion Tube	100	100	27	29	34	31	29
CC07	Hope St. 3 (Kerbside)	Diffusion Tube	100	100	<b>48</b>	<b>43</b>	<b>45</b>	40	40
CC08	Montrose St. (Roadside)	Diffusion Tube	92	92	35	36	36	29	28
CC09	Cochrane St. (Roadside)	Diffusion Tube	75	75	34	32	39	35	35
CC10	Renfield St. (Roadside)	Diffusion Tube	92	92	<b>57</b>	<b>46</b>	<b>51</b>	<b>45</b>	<b>42</b>
CC11	George St. (Kerbside)	Diffusion Tube	75	75	39	40	40	39 *	32

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
CC12	North St. (Roadside)	Diffusion Tube	100	100	22	23	28	30	27
CC13	Hope St. 1 (Roadside)	Diffusion Tube	92	92	<b><u>63</u></b>	<b><u>65</u></b>	<b><u>68</u></b>	<b><u>63</u></b>	<b>56</b>
CC14	Gordon St. (Roadside)	Diffusion Tube	92	92	<b><u>67</u></b>	<b>58</b>	<b><u>64</u></b>	<b>60</b>	<b>59</b>
CC15	Heilanmans Umbrella N (Roadside)	Diffusion Tube	83	83	<b><u>69</u></b>	<b>60</b>	<b>54</b>	<b>48</b>	<b>52</b>
CC16	Saltmarket (Roadside)	Diffusion Tube	100	100	32	31	38	27	31
CC17	High St. (Roadside)	Diffusion Tube	83	83	40	<b>45</b>	<b>43</b>	40	<b>42</b>
CC18	Dobbies Loan (U Background)	Diffusion Tube	100	100	24	24	27	27	23
CC20	Dundasvale St. (U Background)	Diffusion Tube	92	92	30	29	34	30	28
CC21	Royston Rd. (Roadside)	Diffusion Tube	83	83	34	35	34	29	29
CC22	St. Mungo Ave. (U Background)	Diffusion Tube	100	100	28	29	32	27	26
CC23	Brown St (Roadside)	Diffusion Tube	100	100	23	24	27	29	24

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
CC24	Broomielaw (Roadside)	Diffusion Tube	92	92	41	37	44	39	37
CC25	McLeod St. (U Background)	Diffusion Tube	100	100	31	31	35	31	30
CC26	Sauchiehall St. (U Background)	Diffusion Tube	100	100	35	31	41	31	32
CC28	St Mungo's PS (Roadside)	Diffusion Tube	100	100	-	-	26	26	24
CC29	Garnetbank PS (Roadside)	Diffusion Tube	100	100	-	-	31	31	29
GE01	Westmuir St. (Roadside)	Diffusion Tube	100	100	32	35	36	32	32
GE02	Hillcrest Rd. (Roadside)	Diffusion Tube	100	100	16	17	20	16	16
GE03	Main St. Bridgeton (Roadside)	Diffusion Tube	100	100	20	19	20	22	20
GE04	Westercraigs (U Background)	Diffusion Tube	100	100	18	17	20	21	19
GE06	Sacone SW (U Background)	Diffusion Tube	100	100	16	15	20	20	16

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GE07	Easterhouse (Roadside)	Diffusion Tube	100	100	16	17	19	16	15
GE10	Tollcross Park (Roadside)	Diffusion Tube	92	92	16	19	20	22	21
GE14	St. Michaels Lane (Roadside)	Diffusion Tube	92	92	37	39	37	35	36
GE16	Ellismuir Rd. (Roadside)	Diffusion Tube	100	100	-	-	20	19	19
GE17	Carmyle Ave. (Roadside)	Diffusion Tube	92	92	-	-	34	32	26
GE18	Barrowfield St. (Roadside)	Diffusion Tube	83	83	-	-	21	20	15
GE19	Dalmarnock Station (Roadside)	Diffusion Tube	83	83	-	-	22	20	19
GN01	Springburn Rd. (Roadside)	Diffusion Tube	100	100	21	22	24	23	19
GN02	Kippen St. (U Background)	Diffusion Tube	75	75	18	20	22	19	19
GN03	Ryeside Rd. (Roadside)	Diffusion Tube	100	100	-	-	17	19	19
GS02	Bridge St. (Roadside)	Diffusion Tube	100	100	30	31	34	30	34

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GS04	Haggs Rd. (Roadside)	Diffusion Tube	92	92	22	28	26	27	26
GS06	Oxford St. (Roadside)	Diffusion Tube	100	100	25	24	31	27	25
GS07	Dougrie Rd. (Roadside)	Diffusion Tube	92	92	22	18	18	18	16
GS08	Aikenhead Rd. (Roadside)	Diffusion Tube	100	100	18	23	24	21	24
GS09	Langside PS (Roadside)	Diffusion Tube	92	92	15	20	15	17	16
GS10	Paisley Rd. West (Roadside)	Diffusion Tube	92	92	25	27	32	26	28
GS11	Sutherland Ave. (U Background)	Diffusion Tube	92	92	13	13	16	16	13
GS12	Mallaig Pl. (U Background)	Diffusion Tube	92	92	19	18	19	20	18
GS13	Govanhill St. (Roadside)	Diffusion Tube	92	92	23	23	26	21	23
GS14	Invergarrie Rd. (U Background)	Diffusion Tube	100	100	13	14	12	13	14
GS16	Silverburn (Roadside)	Diffusion Tube	100	100	14	19	19	21	18

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GS18	Paisley Rd. West 2 (Roadside)	Diffusion Tube	83	83	30	32	36	36	36
GS19	Hampden (U Background)	Diffusion Tube	92	92	16	19	15	19	17
GS20	Clifford St. (Roadside)	Diffusion Tube	83	83	24	27	29	29	33
GS21	Scotland St. West (Roadside)	Diffusion Tube	100	100	27	28	33	29	27
GS22	Kilbride St. (Roadside)	Diffusion Tube	83	83	20	21	25	25	22
GS23	Myrtle Dr. (Roadside)	Diffusion Tube	100	100	16	20	22	20	17
GS24	Crossloan Rd. (Roadside)	Diffusion Tube	92	92	22	23 *	26	23	22
GS25	Berryknowes Rd. (U Background)	Diffusion Tube	100	100	22	25	25	24	22
GS27	Battlefield Rd. (Roadside)	Diffusion Tube	92	92	26	29	29	26	25
GS28	Mennoch Rd. (Roadside)	Diffusion Tube	83	83	21	21	24	24	21



Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GS30	Govan Rd. (Roadside)	Diffusion Tube	92	92	-	34	33	31	30
GS31	Govan Rd. Hospital (Roadside)	Diffusion Tube	83	83	-	35	38	32	30
GS34	1220 Govan Rd (Roadside)	Diffusion Tube	92	92	-	26	28	24	23
GS35	Shieldhall Rd. (Roadside)	Diffusion Tube	92	92	-	25	25	23	24
GS36	Wallace St. (Roadside)	Diffusion Tube	92	92	-	-	40	36	33
GS37	Dumbreck Rd. (Roadside)	Diffusion Tube	100	100	-	-	24	27	23
GS45	Ben Glas Pl. (U Background)	Diffusion Tube	92	92	-	-	14	15	14
GS46	Kirriemuir Ave. (Roadside)	Diffusion Tube	92	92	-	-	16	16 *	14
GS47	1214 Paisley Rd. West (Roadside)	Diffusion Tube	100	100	-	-	24	23	22
GW01	Dumbarton Rd. (Roadside)	Diffusion Tube	100	100	26	30	33	33	27
GW02	Lawrence St. (Roadside)	Diffusion Tube	100	100	19	21	24	24	20

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GW04	Finnieston St. (Roadside)	Diffusion Tube	83	83	26	29	29	29	26
GW06	Napiershall St. (Roadside)	Diffusion Tube	100	100	27	28	28	26	27
GW07	Queen Margaret Dr. 2 (Roadside)	Diffusion Tube	100	100	25	26	32	29	24
GW08	Queen Margaret Dr. 3 (Roadside)	Diffusion Tube	92	92	34	30	37	32	27
GW09	Anniesland Cross (Roadside)	Diffusion Tube	92	92	23	23	27	23	26
GW10	Balshagray Ave. (Roadside)	Diffusion Tube	100	100	24	26	28	28	26
GW11	Thornwood Dr. (Roadside)	Diffusion Tube	100	100	17	19	20 *	17	16
GW12	Belmont St. (Roadside)	Diffusion Tube	92	92	18	16	21	19	16
GW13	Glasgow Harbour (U Background)	Diffusion Tube	100	100	20	24	24	23	19
GW14	Crow Rd. (Roadside)	Diffusion Tube	100	100	28	32	32	32	32

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GW15	Hyndland Rd. (Roadside)	Diffusion Tube	92	92	21	21	25	24	23
GW16	Park Rd. (Roadside)	Diffusion Tube	100	100	24	27	30	29	28
GW18	Maryhill Rd. (Roadside)	Diffusion Tube	92	92	30	28 *	33	31	30
GW19	Scotstoun (U Background)	Diffusion Tube	100	100	16	19	20	22	18
GW21	Milner Rd. (Roadside)	Diffusion Tube	92	92	16	18	18	19	18
GW22	Gibson St. (Roadside)	Diffusion Tube	92	92	30	28	33	27	28
GW26	Gt Western Rd. (Roadside)	Diffusion Tube	100	100	25 *	30	29	30	31
GW30	South St. (Roadside)	Diffusion Tube	100	100	-	25	27	24	22
GW31	Harland St. (Roadside)	Diffusion Tube	100	100	-	24	23	25	22
GW32	Partick Bus Station (Roadside)	Diffusion Tube	100	100	-	26	25	26	22
GW33	Gt George St. (Roadside)	Diffusion Tube	100	100	-	27	27	25	26

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GW34	Blairdardie Rd. (Roadside)	Diffusion Tube	100	100	-	-	16	15	14
GW35	Cadder Rd. (Roadside)	Diffusion Tube	100	100	-	-	19	19	17
GW36	New City Rd. (U Background)	Diffusion Tube	100	100	-	-	33	31	29
GW37	676 Dumbarton Rd. (Roadside)	Diffusion Tube	100	100	-	-	-	36	32
GW38	1545 Dumbarton Rd. (Roadside)	Diffusion Tube	100	100	-	-	-	29	30
GW39	Primrose Ct. (Roadside)	Diffusion Tube	100	100	-	-	-	22	21

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> 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.

Table A.5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2015	2016	2017	2018	2019
GLA4	Kerbside (Kerbside)	Automatic	98	98	4	4	3	2	3
GLKP	Townhead (U Background)	Automatic	99	99	0	2	0	0	0
GGWR	Gt. Western Rd. (Roadside)	Automatic	91	91	0	0	0	0	0
GHSR	High St. (Roadside)	Automatic	97	97	0(110)	6	0	0	0
GLA5	Anderston (U Background)	Automatic	99	99	-	0	0	0(93)	0
GLA6	Byres Rd. (Roadside)	Automatic	97	97	0	2	9	0	0
GL9	Dumbarton Rd. (Roadside)	Automatic	100	100	0	3	0	0	0
GL6	Burgher St. (Roadside)	Automatic	100	100	0	0 (141)	0	0	0
GL2	Nithsdale Road. (Roadside)	Automatic	100	100	-	-	-	0	0
GLA7	Waulkmillglen (Rural)	Automatic	99	99	0(92)	0	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.

Table A.6 – Annual Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2015	2016	2017	2018	2019
GLKP	Townhead (U Background)	99	99	12	12	13	11	11
GHSR	High Street (Roadside)	100	100	16	13	13	14	11
GLA5	Anderston (U Background)	76	76	-	15	15	12	12
GLA6	Byres Road (Roadside)	92	92	10	12	13	14	15
GL9	Dumbarton Road (Roadside)	100	100	17	15	15	14	13
GL6	Burgher Street (Roadside)	99	99	16	16	12	13	12
GL2	Nithsdale Road (Roadside)	95	95	14	13	15	14	15
GLA7	Waulkmillglen (Rural)	98	98	11	9	11	9	9

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 18µg/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.

Table A.7 – 24-Hour Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> (3)				
				2015	2016	2017	2018	2019
GLKP	Townhead (U Background)	99	99	0(33)	0	1	0	4
GHSR	High Street (Roadside)	100	100	0	0	0	0	1
GLA5	Anderston (U Background)	76	76	-	0(22)	0(35)	0(29)	2
GLA6	Byres Road (Roadside)	92	92	0	2	0	0	6
GL9	Dumbarton Road (Roadside)	100	100	3	0	3	0	4
GL6	Burgher Street (Roadside)	99	99	3	0(22)	0	0	2
GL2	Nithsdale Road (Roadside)	95	95	1	0	0(32)	1	5
GLA7	Waulkmillglen (Rural)	98	98	0(34)	0(16)	1	0	1

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 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.



Table A.8 – Annual Mean PM<sub>2.5</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2015	2016	2017	2018	2019
GLKP	Townhead (U Background)	99	99	7	7	8	7	7
GHSR	High Street (Roadside)	100	100	8	8	7	8	6
GLA5	Anderston (U Background)	76	76	-	-	-	7	7
GLA6	Byres Road (Roadside)	93	93	-	-	-	8	9
GL9	Dumbarton Road (Roadside)	100	100	-	-	-	7	7
GL2	Nithsdale Road (Roadside)	95	95	-	-	-	8	9
GLA7	Waulkmillglen (Rural)	98	98	-	-	-	5	6

Notes: Exceedances of the PM<sub>10</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.

Table A.9 – Annual Mean Benzene (C<sub>6</sub>H<sub>6</sub>) Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	C6H6 Annual Mean Concentration µg/m <sup>3</sup>
CCB1	Heilanman's Umbrella North (Roadside)	92	92	0.7
CCB2	Hope St (Kerbside)	100	100	0.6
GWB1	Ochiltree Avenue (Roadside)	100	100	0.6
GSB1	Pollokshaws Rd (Roadside)	100	100	0.7

## Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2019

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
CC01 (George Sq.)	65.2	37.9	43.5	41.8	28.6	26.9	27.9	29.8	41.8	42	-	33.9	38.1	32.4	
CC02 (Union St.)	80	71.9	-	61	42.3	38	-	47.7	52.3	43	66.3	51.7	55.4	47.1	
CC03 (Bath St.)	61.2	61.2	52.4	51.5	33.2	31.5	32.4	35.8	41	36.8	64.8	43.3	45.4	38.6	
CC04 (Glassford St.)	63.3	48.5	52.5	48.3	46.4	34.9	38	38.8	42.6	40.3	66.3	46.3	47.2	40.1	
CC05 (Buchanan St.)	55.5	57.6	46.8	55.8	37.1	28.3	34.2	32.2	38.8	40	66.4	43.1	44.7	38.0	
CC06 (Castle St.)	54.8	43.2	38.1	33.3	29.3	21.9	24.4	26.4	29	35.4	45.9	31	34.4	29.2	
CC07 (Hope St.3)	56.3	53.6	53.1	54.1	31.1	41	38.3	42.7	46.7	43.7	60.5	47.6	47.4	40.3	
CC08 (Montrose St.)	51.4	41.9	33	31.5	28.7	16.6	25.1	27	-	34.7	56.2	19	33.2	28.2	
CC09 (Cochrane St.)	39.5	50.3	42.6	37.9	-	-	27.9	23.2	-	48.1	61	42.3	41.4	35.2	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
CC10 (Renfield St.)	67.3	-	55.5	53.7	50	40	40.8	43.8	50.8	42.1	48.5	46.5	49.0	41.7	
CC11 (George St.)	65.1	47.6	37.2	31.4	32.3	25.7	30.3	-	38.4	-	-	31.7	37.7	32.1	
CC12 (North St.)	41.8	41	23.9	51.5	23.2	24.9	23	19.3	27	37.3	45.7	21.7	31.7	26.9	
CC13 (Hope St.1)	81.8	84.8	80.7	91.6	57	52.4	51.7	53.8	63.9	56	-	44.3	65.3	55.5	
CC14 (Gordon St.)	85.1	87.3	74.2	86.1	56.3	51.4	63.2	63.4	58.9	55.8	78.8	-	69.1	58.8	
CC15 (HUN)	63.9	64.1	59.9	62.8	46.6	42.3	-	-	112	45.6	72.3	43.1	61.3	52.1	
CC16 (Saltmarket)	51.8	42.7	42.7	36	34.2	28	25.4	31.1	34.9	32.8	42.9	32	36.2	30.8	
CC17 (High St.)	68.7	54.8	45.4	49.1	39.8	-	-	41.2	39.7	39	65.8	51.2	49.5	42.0	
CC18 (Dobbies Loan)	42.3	32	26	25.1	19.4	14.4	14.4	26.1	20.8	35	39.6	28.1	26.9	22.9	
CC20 (Dundasvale St.)	59.6	44.6	32.5	32.1	27.4	20.7	15	19.7	29	-	52	32.3	33.2	28.2	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	CC21 (Royston Rd.)	49.6	44.5	-	52.3	26.4	10.3	25.4	-	24.7	31.2	42.4			29.7
CC22 (St. Mungo Ave.)	46	33	35.9	25.9	24.2	19.6	20.2	26.7	25.7	30.8	45.8	28.7	30.2	25.7	
CC23 (Brown St.)	36.3	35.7	24.7	31.3	20.4	20.2	18.2	18.4	24.1	33.6	49.3	30.2	28.5	24.3	
CC24 (Broomielaw)	64.2	-	44.5	43.5	35.8	32.4	34.4	34.7	34.5	42	67.7	41.4	43.2	36.7	
CC25 (McLeod St.)	52.2	52.3	31.6	29	26.7	22.8	27.4	28.1	30	34.5	52.4	30.8	34.8	29.6	
CC26 (Sauchiehall St.)	56.8	50.7	31.2	43	24	24.7	27.5	25.3	31.1	36.4	60.1	36.8	37.3	31.7	
CC28 (St. Mungo's PS)	51.5	34.1	26.6	21.1	14.9	18	17.6	20.2	19.9	30.1	53.2	31.5	28.2	24.0	
CC29 (Garnetbank PS)	67.8	38.2	34	14.9	27.1	21.8	22.7	28.1	25.8	41.1	52.3	40	34.5	29.3	
GE01 (Westmuir St.)	60.2	51.2	43.6	34.6	30.8	24.8	28.6	32.7	37.4	31	47.5	27.4	37.5	31.9	
GE02 (Hillcrest Rd.)	31.8	22.4	17.3	21	11.6	9.5	10.5	10.3	15.7	19.4	42.9	18	19.2	16.3	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	GE03 (Main St. Bridg'n)	34.9	33.6	21.3	22.6	21.7	11.1	16.5	12.7	18.5	26	32.7			24.2
GE04 (Westercraigs)	44.1	32.1	20.4	18.2	9.2	13	12.5	11.7	18.3	22.6	45	21.1	22.4	19.0	
GE06 (Sacone SW)	44.7	23.7	18.4	15.8	10.5	8.4	9.3	10	14.2	20.3	34.8	15.2	18.8	16.0	
GE07 (Easterhouse)	34.4	23.9	17.1	14.4	12.8	10.1	10.7	12.4	16.8	16.8	27.9	16.6	17.8	15.2	
GE10 (Tollcross Pk.)	43.3	31.7	20.3	19.2	-	10.6	14.3	12	20.2	26.3	41.6	25.8	24.1	20.5	
GE14 (St. Michaels L.)	55.5	57.2	41.8	43.9	-	29.6	27.1	36.2	32.7	35.9	68.9	36.6	42.3	36.0	
GE16 (Ellismuir Rd.)	50.9	24.9	8.4	11.9	8.7	29.6	9.4	14.1	17	22.1	46.9	19.6	22.0	18.7	
GE17 (Carmyle Ave.)	39.7	48.3	25.4	26.1	-	11.9	20.8	25.7	27.3	35.5	36.3	36.4	30.3	25.8	
GE18 (Barrowfield St.)	33.1	35.2	16.3	17.3	7.5	6.1	-	13.3	-	21.7	3	23.3	17.7	15.0	
GE19 (Dalmarnock Stn.)	18.7	24.6	19.7	-	14.2	-	18.3	14.9	15.8	24.5	47.2	23.6	22.2	18.8	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	GN01 (Springburn Rd.)	34.5	32.4	16.2	27	13.1	11.8	14	11.4	15.3	24.5	37.6			23.7
GN02 (Kippen St.)	37.2	28.1	14	2	29.3	-	-	13.7	18.9	20.4	34.4	-	22.0	18.7	
GN03 (Ryeside Rd.)	61.6	25.2	11.3	12.5	12	22	11.3	11.2	14.9	25.8	39.1	23.5	22.5	19.2	
GS02 (Bridge St.)	68.2	45.3	37.6	40.1	36.6	26.4	27.5	27.7	39.2	42	53.2	30	39.5	33.6	
GS04 (Haggs Rd.)	45.5	40.2	21.8	30.9	-	18.6	23.9	22.4	26.1	27.6	49.8	26.1	30.3	25.7	
GS06 (Oxford St.)	51.4	34.6	32.9	31.8	24.6	18.2	21.9	20.3	19.7	31.5	32.1	27	28.8	24.5	
GS07 (Dougrie Rd.)	30	21.4	18.5	21.8	14.8	12.3	14.7	13.9	14.2	-	33.5	11.5	18.8	16.0	
GS08 (Aikenhead Rd.)	40.3	33.5	23.7	39.2	20.9	19.6	18.2	18.9	21.8	33.2	50.7	24.6	28.7	24.4	
GS09 (Langside PS)	32.5	23.8	15.8	20.1	12.4	10.4	11.2	10.7	14.3	-	36.6	15.2	18.5	15.7	
GS10 (Paisley Rd. W)	57	41.9	31.7	32.3	28	21.7	24.6	23	28.1	-	44.7	30.6	33.1	28.1	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
	GS11 (Sutherland Ave.)	38.2	17.4	14.3	15.6	10.1	10.2	9	6.7	-	16.2	14.2			12.7
GS12 (Mallaig Pl.)	40.7	26.5	20.8	20.6	12	9.6	-	8.9	17.5	26.8	25.7	25.5	21.3	18.1	
GS13 (Govanhill St.)	48.6	31.8	24.1	27.7	18.1	-	15.6	14.1	19.2	27.8	45.4	27.6	27.3	23.2	
GS14 (Invergarrie Rd.)	26.7	16.4	11.9	14	7.9	9.8	10.2	10.5	13.5	18.1	36.2	17.4	16.1	13.6	
GS16 (Silverburn)	31	28.3	14.4	24.7	13.3	14.5	12.9	11.6	13.4	23.6	45	20.4	21.1	17.9	
GS18 (Paisley Rd. W 2)	60.3	55.6	37.5	48.3	-	24.7	-	35.1	31.2	43.9	51.5	40	42.8	36.4	
GS19 (Hampden)	34.1	23.5	12.8	20	-	10.4	8.4	7.9	13.5	21.6	42.2	20.6	19.5	16.6	
GS20 (Clifford St.)	54.3	37.9	27.5	31.7	-	-	24	27.1	31.3	52.6	51.8	52.4	39.1	33.2	
GS21 (Scotland St. W)	52.7	40.8	23.4	32.3	24.6	19.6	19.6	30.8	29.5	30.2	47.4	33.9	32.1	27.3	
GS22 (Kilbride St.)	42.6	-	25.8	20.5	-	14.3	16.3	19.4	20.5	31	33.4	32.1	25.6	21.8	



Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted (1)
GS23 (Myrtle Dr.)	36.7	26.3	12.1	17.2	14.7	15	10.4	13	15.9	24.2	32.4	18.3	19.7	16.7
GS24 (Crossloan Rd.)	46.7	35.6	22.9	23.1	-	13.5	18.7	15.4	19.8	29.6	40.2	22.7	26.2	22.3
GS25 (Berryknowes Rd.)	50.8	32.1	23.5	35.7	20.4	17.8	14.7	16.2	21.2	32.1	15.5	23.2	25.3	21.5
GS27 (Battlefield Rd.)	43.7	36.5	25.8	36.1	26.5	21.1	14.9	-	22.1	34.1	41	25	29.7	25.3
GS28 (Mennock Rd.)	62.1	25.2	24.1	27.3	16.5	17.4	11.3	14.1	18.5	24.4	-	-	24.1	20.5
GS30 (Govan Rd.)	62.8	-	44.5	32.7	32.9	25.4	25.9	26.7	29.8	34	39.2	30.2	34.9	29.7
GS31 (Govan Rd. Hosp.)	36.8	52.7	32.1	33.3	-	20.1	20.3	26.4	32.9	-	52.5	40.6	34.8	29.6
GS32 (Harland St.)	47.2	36.8	21.9	19.9	15.8	16	15.8	15.4	20.9	30.3	36.7	28.4	25.4	21.6
GS33 (Partick Stn.)	26.9	39.8	21.8	30.6	21	17.4	18.8	20.4	27.3	28.3	31	27.9	25.9	22.0
GS34 (1220 Govan Rd.)	36.1	38	28.2	24.2	-	16.7	17.1	16.1	25.4	30.3	41.3	27.8	27.4	23.3

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
GS35 (Shieldhall Rd.)	48.5	37.5	29.5	26.8	15.8	-	13.9	14.1	19	27.5	45.2	25.9	27.6	23.5	
GS36 (Wallace St.)	36.7	56.4	25.1	40.9	39.6	29.4	37.3	34	37	-	51.5	43.8	39.2	33.4	
GS37 (Dumbreck Rd.)	43	34.5	15.4	35.3	20.6	17.1	18.1	15.5	23.1	26.7	46.1	22	26.5	22.5	
GS45 (Ben Glas Pl.)	27.4	19.2	10.1	12.8	9.2	11.3	-	7.8	12.5	18.6	39.5	16.2	16.8	14.3	
GS46 (Kirriemuir Ave.)	31.8	20.9	6.6	-	7.3	8.2	8.5	8.6	12.9	19.4	41.6	17.4	16.7	14.2	
GS47 (1214 Paisley Rd. W)	34.8	23.7	21.8	23.1	20.4	23.7	14.1	18.5	20.8	32.4	48.8	28.5	25.9	22.0	
GW01 (Dumbarton Rd.)	60.1	42.4	27.5	40.8	25.8	17.6	18.2	17.6	24.1	34	47.1	22.3	31.5	26.7	
GW02 (Lawrence St.)	44	37	21.2	23.3	15.1	12.9	13.7	16.6	20.3	24	40.4	18.7	23.9	20.3	
GW04 (Finnieston St.)	39.9	-	27.3	38.8	-	18.9	20.8	20.4	27.3	32	57.9	24	30.7	26.1	
GW06 (Napiershall St.)	48.4	45.8	26.3	36.1	25.3	18.5	21.5	24.4	23.8	31.4	43.3	31.2	31.3	26.6	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	GW07 (QMD2)	46.3	43.6	25.9	36.6	22.3	18	19	23.9	26.2	29.9	31.4			20.3
GW08 (QMD3)	46.4	-	42.9	33.4	30.3	22.7	23.6	24.2	27.6	34.4	31.9	35.6	32.1	27.3	
GW09 (Annie'sland X.)	48.7	41.9	26.3	26.1	20	20.1	-	19.3	19.9	28.9	44.7	33.7	30.0	25.5	
GW10 (Balshagray Ave.)	40.4	46	24.3	35.1	23	21.8	19.6	28	21.8	36	42.4	27.8	30.5	25.9	
GW11 (Thornwood Dr.)	32.8	26.3	18.8	16.8	10.3	10.3	10.3	11.4	15.8	19.9	31.7	18.4	18.6	15.8	
GW12 (Belmont St.)	38.6	-	16.1	20.1	9.8	10.9	11.9	9.3	15.2	17.7	32.8	21.7	18.6	15.8	
GW13 (Glasgow Hbr.)	44.9	29.3	17.5	21.7	13.8	12.6	14.6	10.8	17.9	24.6	47.6	17.5	22.7	19.3	
GW14 (Crow Rd.)	55.9	46.1	31.4	45	32.4	27.3	28.1	26.6	24.8	40.4	53.5	36.6	37.3	31.7	
GW15 (Hyndland Rd.)	43.2	39.1	-	30.4	19	16.7	19.1	19.1	18.9	27.2	46.2	24	27.5	23.4	
GW16 (Park Rd.)	48.2	44.8	28.1	36.9	27.8	26.9	24.4	21.6	24.1	38	49.7	28.6	33.3	28.3	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	GW18 (Maryhill Rd.)	51	46.6	27.5	42	-	25.4	24.9	22.6	29.9	32.2	53.5			27.7
GW19 (Scotstoun)	30.8	29.6	18.3	15.3	12.7	13.9	12.9	12.7	18.4	24.7	36.7	22.7	20.7	17.6	
GW21 (Milner Rd.)	41.2	31.8	19.5	17.3	10.8	10	-	11.4	14.8	21	38.7	21.3	21.6	18.4	
GW22 (Gibson St.)	57.1	46.5	-	27.5	26.3	22.4	24.9	22.4	31	33.1	41.8	27.1	32.7	27.8	
GW26 (Gt. Western Rd.)	53.3	44	30.5	37.6	32.1	26.4	26.2	24.4	30.7	37	55.7	35.2	36.1	30.7	
GW30 (South St.)	36.4	40.2	20.5	19.2	20.3	16.7	15.2	19.2	22.6	29.8	45.3	22.2	25.6	21.8	
GW31 (Harland St)	47.2	36.8	21.9	19.9	15.8	16	15.8	15.4	20.9	30.3	36.7	28.4	25.4	21.6	
GW32 (Partick Bus Station)	26.9	39.8	21.8	30.6	21	17.4	18.8	20.4	27.3	28.3	31	27.9	25.9	22.0	
GW33 (Gt. George St.)	62.7	37.6	23.4	18.9	23.5	17.2	20.3	23.8	24.2	34.9	44.9	29	30.0	25.5	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1)	
	GW34 (Blairdardie Rd.)	39.8	22.3	10.8	9.8	3.2	14.4	3.5	9.7	11.2	20.7	31.9			20
GW35 (Cadder Rd.)	45.4	30.3	11.1	17.5	14.8	10	8	12.5	13.5	23.7	33.9	22.9	20.3	17.3	
GW36 (New City Rd.)	48.9	54.1	36.8	30.8	12.3	11.2	29.6	30.9	25.8	44.1	45.6	39.2	34.1	29.0	
GW37 (676 Dumbarton Rd)	54.7	52.9	41	22.9	33.6	31.9	28.1	32.3	27	40.2	47.3	43.4	37.9	32.3	
GW38 (1545 Dumbarton Rd.)	45.1	55.9	33.3	26.2	26.1	25.1	26.6	29.2	26.8	35.9	49.1	39.1	34.9	29.6	
GW39 (Primrose Court)	44	34.6	23.3	19.9	11.6	16.3	15.8	17	12.9	29.2	46	27.7	24.9	21.1	

(1) See Appendix C for details on bias adjustment

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

### C.4 Air Quality Monitoring Data QA/QC

The 10 permanent monitoring stations in Glasgow form part of the Air Quality in Scotland monitoring network. Instruments are calibrated by the Local Site Operators according to the specific site guidelines, audits are carried out every six months by Ricardo Energy and Environment. All of the automatic air quality data gathered is independently ratified by Ricardo and made available for viewing by the public at the Scottish Government funded air quality website at:

<http://www.scottishairquality.co.uk>

This webpage also provides access to the QA/QC information relevant to LAQM report requirements. The instrument UKAS calibration certification generated by the six-monthly audit programme for Glasgow's monitoring stations is available at:

<http://www.scottishairquality.co.uk/laqm/certificates-calibration>

Individual site statistics for each monitoring station and instrument is available at:

<http://www.scottishairquality.co.uk/laqm/statistics-pdf>

For 2019 the locally derived bias adjustment was 0.85 based on triplicate tubes collocated at five automatic monitoring stations in Glasgow. The NO<sub>2</sub> diffusion tubes used in Glasgow City Council's NO<sub>2</sub> diffusion tube network are provided and analysed by GCC Scientific Services. Further information on bias adjustment and laboratory proficiency (WASP) is available here at:

<http://www.scottishairquality.co.uk/laqm/tools>

## Appendix D: Air Quality Action Plan Summary

Table D.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
1	Vehicle Idling  Council will expand program of vehicle idling enforcement	Public Information	Regular scheduled patrols to enforce and/or educate regarding vehicle idling.	2003 Onwards	Low	Council continues to promote awareness and benefits in regard to reduction of vehicle idling via billboards and advertising campaign on PSV vehicles, around schools and bus stops. No Fixed Penalty notice issued in 2019. 1309 interventions with leaflets handed out	Ongoing
2	Emission Testing	Public Information	Emission Testing will now only take place during Multi Agency Days of action	2003 onwards	Low	Emission testing continues in a reduced capacity. 40,000+ vehicles tested to date. 210 Vehicles testing during 2019. 1 FPN issued	Ongoing
3	Low Emission Zones	Promoting Low Emission Transport	The Council will undertake a detailed feasibility study with a view to introducing LEZs in Glasgow	2009 / 2009-2010	Medium	Feasibility study into LEZs in Glasgow was completed in 2010.	Completed 2010
3	Low Emission Zones	Promoting Low Emission Transport		2014	Medium	Trial of LEZ camera technology completed.	Completed 2014

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
3	Low Emission Zones	Promoting Low Emission Transport	<p>Cleaner Air for Scotland (CAFS)</p> <p>National Low Emission Framework (NELF)</p>	2015 / 2022	Medium	<p>GCC introduced Scotland's first LEZ in an area broadly equivalent to the city centre AQMA.</p> <p>From December 2018 Phase 1 of the LEZ required that 20% of bus journeys through the city centre met the Euro VI emission standard.</p> <p>In December 2019 this requirement increased to 40% of bus journeys through the city centre Compliance target for bus journeys is to be increased by 20% each year until 100% of bus journeys are compliant by December 2022.</p> <p>Phase 2 of the LEZ will apply to all vehicle types and will come into effect in December 2022. It will require a minimum emission standard of Euro VI/6 for diesel vehicles and Euro IV/4 for petrol vehicles.</p>	2022



## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
4	Cleaner Taxis	Vehicle Fleet Efficiency	<p>Council will prepare an emissions strategy to reduce emissions from taxi and private hire vehicles</p> <p>Proposals to limit the maximum age and increase the emission testing frequency for taxis researched and discussed with interested parties</p>	2009 /	Low/Medium	<p>GCC have adopted licensing conditions in line with the introduction of the LEZ enforcement due for December 2022.</p> <p>GCC have removed the five year age policy for taxi applications to facilitate the replacement of vehicles with a newer taxi which meets the required emission standard.</p> <p>GCC have reduced testing frequency for newer vehicles and increased testing frequency for older vehicles. As part of the ongoing LEZ preparation funding of £1.09M has been provided by the Scottish Government for the conversion of older taxis from diesel to LPG, reducing emissions and meeting LEZ requirements</p>	Ongoing

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
5	Council Workplace Travel Plan	Promoting Travel Alternatives	Travel Plan was relaunched in an updated form.	2014	Low	GCC continues to support active and sustainable transport to places of work. This includes the refresh of the cycle to work scheme with an increase in the level of funding available being increased to £1,500 to make folding and e-bikes more attainable under the scheme. Repayment period is currently 18 months to improve accessibility of the scheme.	Ongoing
6	Car Clubs	Alternative to Private Vehicle Use	The Council will make on street spaces available for car club vehicles.	2009 / 2010 Onwards  2015 Onwards	Low	The Car Club continues to expand and move the vehicle fleet to electric vehicles.  Funding was sought through the LEZ support fund for the electrification of all vehicles within the city centre.	Ongoing

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
7	Public Service Vehicles	Vehicle Fleet Efficiency	The Council will pursue the use of traffic regulation conditions to control bus emissions within AQMAs. The Quality Partnership Scheme in the city requires that buses have to meet set emission standards by pre-agreed dates on certain routes.	2009 / 2012	Medium	<p>From January 2014 100% of each operator's streamline journeys within Glasgow City boundary will be operated with vehicles meeting EURO 3 emission engine standard for particulates (PM10).</p> <p>From June 2014 a minimum of 20% of total scheduled journeys within City Centre AQMA to be operated with vehicles meeting full Euro4 emission standards.</p>	2019

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
7	Public Service Vehicles	Vehicle Fleet Efficiency	<p>The Council will pursue the use of traffic regulation conditions to control bus emissions within AQMAs.</p> <p>The Quality Partnership Scheme in the city requires that buses have to meet set emission standards by pre-agreed dates on certain routes.</p>	2009 / 2015	Medium	The implementation of the Fastlink route linking the City Centre and the new Southern General Hospital introduced emission standards. Initially Euro IV or V, becoming a minimum of Euro V on all sections by 2018.	2021
7	Public Service Vehicles	Vehicle Fleet Efficiency	Glasgow City Council have agreed to implement Scotland's first LEZ in an area broadly equivalent to the city centre AQMA.	2016 / 2022	Medium	From December 2019 Phase 1 of the LEZ requires that 40% of bus journeys through the city centre meet the Euro VI emission standard.	2022

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
8	Boiler Emissions	Promoting Low Emission Plants	The Council will raise awareness and provide information to assist in energy efficiency in the home and workplace	2010 / 2011 onwards	Low	<p>Biomass Guidance produced 2011 addressing boiler emissions</p> <p>Glasgow Home Energy Advice Team (G-HEAT) has been established to provide independent advice on energy related issues to householders in the city</p> <p>Attention of developers continues to be drawn to biomass guidance at the planning stage</p>	Ongoing
9	Planning Guidance	Policy Guidance and Development Control	The Council will produce revised planning guidance	2010 / 2012	Medium	Guidance complete and available on council website	2012
9	Planning Guidance	Policy Guidance and Development Control	Glasgow City Council is in the process of replacing its current Planning Guidance with more formal Supplementary Planning Guidance in respect of air quality (SPG).	2015	Medium	Preparation of Consultation Document Complete	Ongoing

## Glasgow City Council

Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
10	Air Quality Information	Public Information	The Council will provide data and information regarding current and longer term air quality monitoring on our web site and at variable message signs throughout the city	2016	Low	Operational difficulties have resulted in the removal of the City Trees and their associated air quality information message boards.  GCC continues to publish air quality information on the main website and promote the use of the Scottish Air Quality Database "Know & Respond" information service.	Ongoing
11	Construction Sites	Policy Guidance and Development Control	The Council will produce a code of practice for construction / demolition contractors	2011 / 2012	Low	Guidance produced and available on Council web site	2012
12	Fire Reduction	Public Information	The Council will investigate multi agency strategic level actions aimed at reducing the number of fires and harmful emissions	2011	Low	The Council have promoted and facilitated educational visits to schools to highlight the dangers of fires and fire starting to children.	2011

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13	Cycling Strategy	Promoting Travel Alternatives	Air Quality grants will be sourced for funding cycling improvements in the city.	2011 / 2012 Ongoing	Low	<p>The Strategic Plan for Cycling continues to provide a focus for delivery of increased cycling in Glasgow. Aspects of the strategy are currently being refreshed to support this. Proposed Route Development has been revisited via GIS analysis to identify buildable routes and prioritise via MCDA. This should output a strategic network that also feeds to other programmes to improve active travel in general in the Glasgow area.</p> <p>Cycle parking is continually being improved with on Street rack installations focussing on out of town trip generators, School cycle parking installations continue to progress and help remove storage and security as a barrier to cycling to school.</p> <p>During 2019 funding support from a range of sources including the Scottish Governments AQAP fund and GCC Cycling Development fund was invested in various aspects of Sustainable / Active Travel.</p>	Ongoing
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Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
						Including cycle infrastructure, the permeable streets programme and school cycle parking	
14	Bus Retro-fit Scheme	Promoting Low Emission Transport	<p>Grant funding to retro-fit Buses with new exhaust tech to reduce harmful emissions.</p> <p>Grant of ~ £250k agreed from Scottish Government</p> <p>Discussions with bus operators / SPT / Retrofit companies and procurement</p>	2011 / 2014	Low	<p>Follow up proposals rejected by bus companies.</p> <p>Funding redirected towards joint purchase with SPT of 2 fully electric buses for use on Route 100 to Transport museum.</p>	Completed
15	Tree Planting		The Council will investigate the potential for a programme of tree planting as a means of city centre PM10 reduction	/ 2016	Low	<p>Programme of tree planting within the city continues</p> <p>The Council also secured funding to install two CityTrees in city centre Air Quality Management Area. These installations are comprised of moss and vascular plants and facilitate the introduction of greening into hard stand areas.</p>	2017



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Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
16	CARBOTRAF	Traffic Management	EU funded project to bring about real-time reduction in traffic pollution through active traffic management.	2011 / 2014	Low	Demonstrator in two cities to show relationship between black carbon and real time traffic management .	Completed
17	Promote Greener Vehicles	Promoting Low Emission Transport	The Council will investigate the potential for reduced rate street parking for electric and hybrid vehicles	2012 / 2012	Low	172 publicly available EV chargers 300 publicly available EV chargers to be available by 2021.	Ongoing
18	Leading by Example		<p>The Council will demonstrate best practice in the operation of its vehicle fleet</p> <p>The Council have introduced a fleet of electric vehicles through a government backed scheme and trained staff in the efficient use of these vehicles.</p>		Low	GCC have committed to decarbonising the entire fleet by 2030 with around 300 vehicles to be swapped out in 2020.	Ongoing

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18	Leading by Example		<p>The Council will demonstrate best practice in the operation of its vehicle fleet</p> <p>The Glasgow ECO Stars Fleet Recognition Scheme is being promoted by Glasgow City Council. The scheme is designed to raise awareness with both public and private organisations of the important role they can play in helping to improve air quality</p>	2014	Low	<p>The fleet recognition scheme has been operating since September 2014 and has currently recruited 229 members encompassing approximately 9396 fleet vehicles including three of the largest bus companies operating within Glasgow. Glasgow Taxi's group also joined the Glasgow Eco Stars scheme in 2018 to provide advice and guidance on modernising the fleet.</p> <p>The ECO Stars scheme has played an important role to keep transport organisations informed regarding the implementation of the Glasgow LEZ through several stakeholder events. In 2020/21 the scheme will look into the feasibility of establishing a scoring system for non-road mobile machinery for use in Glasgow and to align this with construction consents and planning conditions to</p>	Ongoing
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Measure No.	Measure	Category	Focus	Planning and Implementation Phase	Target Pollution Reduction in the AQMA	Progress to Date	Completion Date
						improve the standard of mobile plant used in the city.	

## 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
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	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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- Glasgow City Council Strategic Plan for Cycling 2016 – 2025.
- Glasgow City Council City Centre Transport Strategy 2014 – 2024
- Glasgow City Council Energy and Carbon Masterplan
- Glasgow City Council Carbon Management Plan 2