Annual Progress Report (APR)

2024 Air Quality Annual Progress Report (APR) for Glasgow City Council

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

September 2024

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Report Reference Number	GCC/NRS/APR24
Date	September 2024

Executive Summary: Air Quality in Our Area

Air Quality in Glasgow

The Annual Progress Report has been undertaken to fulfil Glasgow City Council's duty to annually review and assess air quality. The report provides the latest monitoring results and discusses the implications for air quality management in Glasgow.

The main pollutants of concern in Glasgow are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5)}$, related to road traffic emissions.

During 2023, Glasgow City Council measured concentrations of NO_2 below the Annual Mean Objective at all automatic monitoring stations in the city, including those within the City Centre Air Quality Management Area (AQMA). This was the second year in which levels of NO_2 at the automatic monitoring stations were within the objective following on from results in 2022. However, it should be noted that the compliance recorded at Glasgow Kerbside continues to be marginal, recording an annual mean of 39.0ug/m^3 against an objective level of 40ug/m^3.

Exceedances of the annual mean objective in 2023 were recorded in monitoring conducted by diffusion tube at two locations, down from four locations in 2022. One further location was within 10% of the objective, down from three such locations in 2022.

The hourly mean objective for this pollutant is set at 200ug/m^3 with 18 hours above this level permitted before an exceedance is considered to have been made. No hourly mean levels above 200ug/m^3 were recorded at any of the monitoring stations in 2023. Further, no diffusion tubes recorded annual mean levels above 60ug/m^3, indicating that exceedances of the hourly mean objective at these locations was unlikely.

Levels of NO_2 pollution have been on a downward trend in recent years as a result of improvements in vehicle emissions and the phased introduction of the Glasgow LEZ for scheduled bus services since 2018. NO_2 levels dropped significantly in 2020 due to pandemic restrictions, before increasing in 2021 as these restrictions lessened. However, most automatic stations recorded a slight decrease in NO_2 levels between 2021 and 2022, maintaining a significant decrease on the pre-pandemic levels. These levels fell further in

2023. Trends in the recorded levels of NO_2 both within the Glasgow Low Emission Zone and in the rest of the city are discussed in detail later in this report.

Levels of PM_{10} recorded across the city in 2023 were satisfactory with both the daily mean and annual mean objectives being met at all monitoring locations. This continued the trend of compliance in respect of this pollutant which has been observed for several years. It should be noted that the Scottish objective for this pollutant is set at just under half that of the UK and EU limits. Levels of PM_{10} recorded in 2023 were also below the guideline values set by the World Health Organisation.

For Scottish Local Authorities particulates at $PM_{2.5}$ have now been prescribed in regulations with an annual mean objective of 10µg/m^3 to be achieved by 2020. This objective was not exceeded at any monitoring location in Glasgow during 2023.

Continued monitoring has shown no exceedances of the annual mean objective for NO_2 within the Byres Rd / Dumbarton Rd AQMA since 2017. The 2023 APR proposed the Byres Rd / Dumbarton Rd AQMA be revoked and this was completed in July 2024.

Actions to Improve Air Quality

Air Quality Action Plans

In response to the implementation of the AQMA's in the city, Glasgow City Council produced Air Quality Action Plans (AQAP) in 2004 and 2009 introducing a range of measures aimed at reducing pollution in the city. The AQAP 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 the city car club and electric vehicle charging infrastructure, have been implemented and continue to be actioned.

A new AQAP was introduced in April 2024. This was produced in consideration of the recommendations from Environmental Standards Scotland's report on their investigation into air quality, and the updated guidance and templates arising from this.

Low Emission Zone

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 has been introduced in two phases, with the first phase targeting improvements in emissions arising from scheduled bus journeys 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 was increased by 20% each year, until 100% of buses were compliant by end of December 2022.

Public and stakeholder consultation on possible LEZ phase 2 options took place in February and March of 2020. The results of this were used, along with extensive option modelling, to identify the preferred LEZ scheme for non-bus traffic.

The second phase of the LEZ received Ministerial approval and came into effect on 31 May 2022. This began a statutory one-year grace period before general enforcement began on 1 June 2023. A further year grace period for vehicles registered to residential properties within the zone means enforcement for these vehicles began on 1 June 2024. The Glasgow LEZ will apply to all vehicle types with the exception of motorcycles and mopeds.

The objectives of the Glasgow Low Emission Zone are as follows:

- Improve public health of residents of and visitors to, the City of Glasgow by contributing towards meeting the air quality objectives prescribed under section 87(1) of the Environment Act 1999.
- Contribute towards the emissions reduction targets set out in Part 1 of the Climate Change (Scotland) Act 2009 through the promotion of low and zero emissions vehicles and the promotion of public and sustainable transport options.
- Improve the amenity of Glasgow through the promotion of the Glasgow City Council Strategic Themes of A Vibrant City, A Healthier City and a Sustainable and Low Carbon City.

Link to Glasgow's LEZ.

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

Enforcement of phase 2 of the Glasgow LEZ began on 1 June 2023 and this APR therefore includes reporting on monitored pollution levels during the part of 2023 when the LEZ was actively enforced. This is considered in more detail later in this report.

Glasgow's Climate Plan

In 2019, Glasgow City Council set up a Climate Emergency Working Group, subsequently declaring a Climate Emergency in the city. In response to this, a Climate Plan has been prepared detailing a list of actions which the Council, its partners and stakeholders will take to ensure a just transition to a low carbon and resilient city. Many of the actions to move to a low carbon city have co-benefits for air quality pollutants with development of the LEZ directly addressing actions 22 and 53 of the Glasgow Climate Plan. Expected improvements in LAQM pollutant emissions are a co-benefit of actions 26, 33, 54, 55 and 56. The AQAP and LEZ complements those actions seeking to reduce carbon emissions from traffic such as reducing private car use, improve public transport provision and transition of the fleet to cleaner forms of transport.

Link to Glasgow's Climate Plan

https://www.glasgow.gov.uk/CHttpHandler.ashx?id=50623&p=0

Glasgow Transport Strategy

The Glasgow Transport Strategy is a new local transport strategy which is city-wide and provides a framework for investment and decision-making on transport issues up to 2030. Part 1 of the Glasgow Transport Strategy, a Policy Framework, has been produced and approved by the Council. Part 2, a Spatial Delivery Framework, was approved and adopted by the Council on 8 February 2024.

Link to Glasgow's transport Strategy

https://www.glasgow.gov.uk/transportstrategy

There are other separate but related transport strategies, all of which complement the LEZ – the Active Travel Strategy, Liveable Neighbourhoods Plan and City Centre Transformation Plan.

City Centre Transformation Plan

The City Centre Transformation Plan (CCTP) is particularly aligned with the development of the LEZ, given the overlap with the aims of the CCTP and the geographical area covered by the plan. Key aims of the CCTP which have the potential to improve air quality include:

- Re-allocate road space in Glasgow City Centre for active travel and green infrastructure;
- Deliver improved public transport and support/encourage a shift to more sustainable modes, particularly walking, cycling and public transport;
- Improve access for the mobility impaired;
- Achieve a 30-40% reduction in peak-hour private car traffic in Glasgow City Centre by 2030;
- Deliver improvements for servicing (e.g. goods, deliveries and waste collection) to improve the vitality of Glasgow City Centre;
- Support a doubling of Glasgow City Centre's population by 2035; and
- Support Glasgow's aim to be carbon neutral by 2030
- The CCTP will help to deliver a transformation of the centre and ensure the city makes a full contribution to our climate change commitments and transition to net zero carbon.

As part of the CCTP, several Area Based Catalysts for Change have been identified to deliver the transformational changes set out in the plan objectives. One of these is the ‘People First Zone’. The ‘People First Zone’ is proposed to be a central area where vehicular access would be limited to essential users only such as people with disabilities, buses, taxis, emergency services etc. This intervention would greatly reduce vehicle numbers in the core of the city centre and create opportunities to reallocate road space for active travel, public realm and greenery. On street parking would also be significantly reduced. The People First Zone coincides with a central area within the LEZ where air pollution levels are at their highest. It also complements the ongoing ‘Avenues project’.

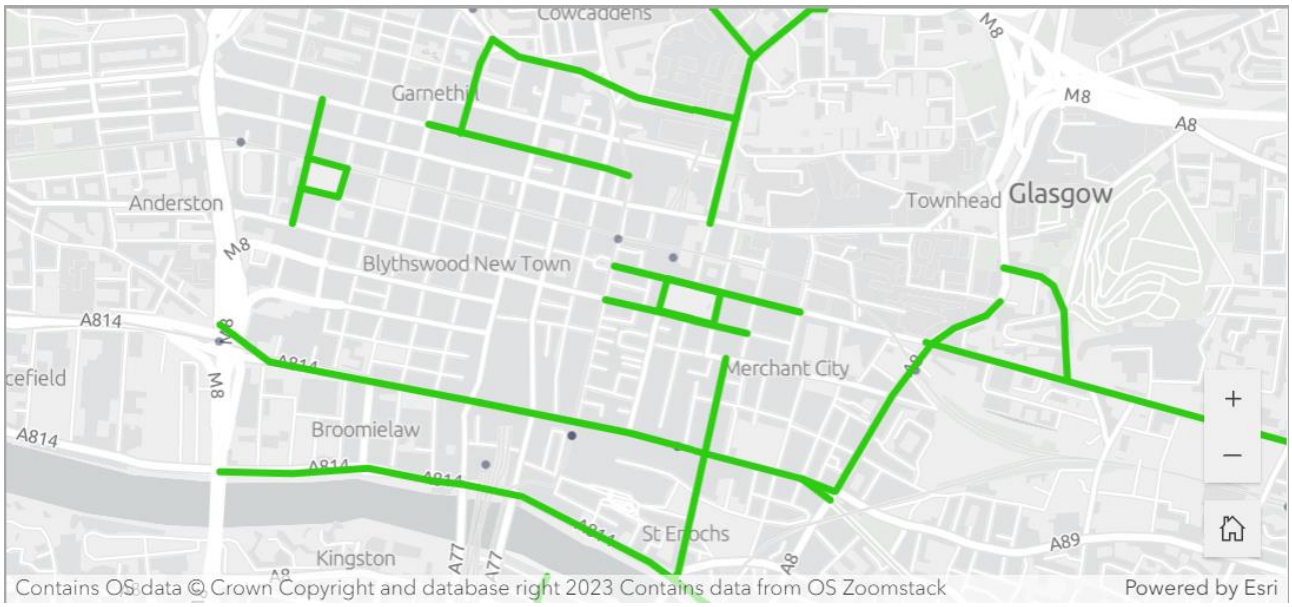
The CCTP Final Report was approved at Committee on 1 December 2022.

Link to the City Centre transport plan.

https://www.glasgow.gov.uk/index.aspx?articleid=27557

EIIPR Avenues Programme

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. It will be delivered through City Deal investment over the period to 2027/28



Active Travel Strategy

The Council adopted Glasgow's Active Travel Strategy 2022-2031 at the City Administration Committee on 24th February 2022.

As part of a step change to how we move around Glasgow, the Active Travel Strategy (ATS) aims to achieve significant modal shift across the city to walking, wheeling and cycling and to deliver on its vision that:

"walking, wheeling and cycling will be the first and natural choice for everyday journeys, for people
of all ages and ability, to travel locally to schools, to shops, to work, or to the city centre."

The ATS further defines how active travel contributes to the transport needs of the city, while helping deliver on carbon neutrality and social equity.

A key output from the strategy will be the City Network, which will provide an accessible, safe, coherent and direct active travel network across Glasgow. To be delivered by 2030 in a phased approach, the City Network will connect key amenities and drivers of travel such as education, business, retail and culture. There will also be development of the Neighbourhood Network with a focus on walking and wheeling. This Neighbourhood Network will enable easy everyday active journeys within and between neighbourhoods.

Glasgow City Council Fleet Strategy

As a Local Authority, GCC operates a large vehicle fleet to support all aspects of Council services with over 1,300 vehicles in the fleet across the council “family”. The GCC Fleet Strategy for 2020 to 2030 sets out to minimise the Council’s carbon footprint and lead on our carbon neutrality and net zero commitments. Successful delivery of the fleet strategy will see alternative fuel solutions powering our fleet to support our operational objectives, significantly reducing our carbon footprint and advancing the Council’s drive towards net zero emissions.

Link to Glasgow Fleet Strategy

https://www.glasgow.gov.uk/councillorsandcommittees/viewSelectedDocument.asp?c=P62AFQDN0GZL81ZLDN

Other initiatives such as the provision, and promotion of, electric vehicle charge points, car clubs and cycle hire schemes, all serve to promote sustainable and low emission transport options. The LEZ can support the travel aspirations of Glasgow by encouraging modal shift, especially if delivered in tandem with active travel and bus priority improvements.

Clean Air Day

Glasgow City Council continues to support Clean Air Day, organised by Environmental Protection Scotland on behalf of the Scottish Government. Taking place on 15 June 2023, Clean Air Day focussed on education and promotion of learning activities related to air pollution and transport choices to school children. Pupils from St Joseph's primary school produced artwork inspired by the introduction of Glasgow's Low Emission Zone.

Local Priorities and Challenges

Glasgow's Low Emission Zone (LEZ) is an intervention directed at protecting and improving public health. While the concept was first 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 providing cleaner air.

The LEZ scheme design was approved by the City Administration Committee of Glasgow City Council and by Scottish Ministers and came into effect on 31st May 2022. This began the mandatory grace period before general enforcement began on 1st June 2023. An additional grace period applies to vehicles registered to a residential address within the LEZ and enforcement for these vehicles will begin on 1st June 2024.

The priorities for 2024 / 2025 includes the continuing enforcement of the LEZ, including ongoing communications and engagement to increase compliance rates.

Other priorities include:

- Proceeding with the implementation of actions within Glasgow's Climate Plan with a focus on those actions with local air quality co-benefits.
- Progress actions within the new 2024 Air Quality Action Plan
- Continuing to develop the Glasgow Transport Strategy and its related parts, the City Centre Transformation Plan, the Liveable Neighbourhoods Plan and the Active Travel Strategy.
- Undertake a comprehensive review of air quality monitoring in Glasgow with a focus around schools, hospitals and care homes.

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.

Link to LAQM website

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

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.

Link to Scottish Air Quality website

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

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Glasgow during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2021
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare publish and implement an Air Quality Action Plan (AQAP) within the shortest possible time and no later than 12 months of the date of AQMA Designation Order. The AQAP must set out measures the local authority intends to put in place in pursuit of the objectives within the shortest possible time Measures should be provided with milestones and a final date for completion. The action plan itself should have a timescale for completion and for revocation of the AQMA. Where measures to reduce air pollution may require a longer timescale an action plan shall be reviewed and republished within five years of initial publication and then five-yearly thereafter.

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/localairqualitymanagement

The Byres Road / Dumbarton Road AQMA was formally revoked on 4th July 2024 leaving the City Centre as the last remaining active AQMA.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
City Centre AQMA	NO_2 annual mean PM_{10} annual mean NO_2 hourly 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	Glasgow City Council Air Quality Action Plan 2024

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
			respect of the annual mean NO_2 Objective. In 2007 the area covered by this AQMA was extended and declared in respect of the annual mean PM_{10} Objective. In 2012 a further extension of the AQMA was declared and the order amended in respect of the hourly mean NO_2 Objective.	

2.2 Cleaner Air for Scotland 2

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

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

2.2.1 Placemaking – Plans and Policies

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

Glasgow City Council has worked to ensure that air quality is embedded in Council policies going forward. It is a core consideration within the Glasgow Transport Strategy, the City Centre Transformation Plan, the Liveable Neighbourhoods Plan and the Active Travel Strategy. The LEZ was incorporated into the Strategic Environmental Assessment of the overarching Glasgow Transport Strategy.

Cross departmental working within Glasgow City Council has been enhanced by the actions within CAFS2, with greater interaction and consultation between departments responsible for environment, sustainability, transport, planning and design.

2.2.2 Transport – Low Emission Zones

Local authorities working with Transport Scotland and SEPA will look at opportunities to promote zero-carbon city centres within the existing LEZs structure.

Glasgow City Council introduced phase 2 of the LEZ on 31st May 2022 with general enforcement beginning on 1st June 2023. GCC continues to work with partners at SEPA to build on the traffic emissions modelling work undertaken as part of the National Modelling Framework (NMF) to develop carbon emissions inventories from city centre transport sources. This work will build on the existing assessment completed by SEPA – Consideration of Carbon Dioxide emissions within an LEZ scheme: Glasgow. Glasgow City Council will continue to work with SEPA in the data gathering for, and reporting of, the effectiveness of the Glasgow LEZ for incorporation into future APRs. An initial assessment of the operational phase of the Glasgow LEZ, incorporating a repeat of pre-enforcement modelling, was not finalised in time for inclusion within this APR. It will be reported separately at https://www.glasgow.gov.uk/LEZ once available. Enforcement of phase 2 of the Glasgow LEZ began on 1 June 2023 and this APR therefore includes reporting on monitored pollution levels during the part of 2023 when the LEZ was actively enforced. This is considered in more detail later in this report.

The Glasgow Transport Strategy has an ambitious target of reducing peak hour traffic in Glasgow City Centre by 30% by 2030. The transport and emissions models developed by SEPA will be updated and adapted to provide decision making evidence for actions within the GTS and CCTP such as the “People First Zone” – a low traffic area encompassing much of the city centre, including those areas where existing air pollution exceeds the objectives.

2.3 Implementation of Air Quality Action Plan(s) and/or measures to address air quality

In order to ensure that local authorities implement the measures within an action plan by the timescales stated within that plan, the Scottish Government expects authorities to submit updates on progress through the APR process. Glasgow City Council has taken forward a number of measures within the action plan during the current reporting year of 2023 in pursuit of improving local air quality and meeting the air quality objectives within the shortest possible time. 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 relating to each AQMA.

Key completed measures for this reporting year are:

- From the start of 2023 100% of the scheduled service bus fleet were compliant with the LEZ standards.
- LEZ enforcement preparations were completed, including extensive advertising / public awareness campaigns and general enforcement of the LEZ began on 1st June 2023, following expiry of the one year grace period.
- The process and administration of the additional grace period for zone residents and time-limited exemptions, including for taxi operators, was established.
- Billboard and bus advertising campaign to raise awareness of and reduce unnecessary vehicle idling.
- A retrofit fund for taxis was continued and promoted, providing exhaust treatment or engine replacement to LEZ standards for older vehicles.
- A GCC hybrid working system continued, thus reducing the need for travel.
- GCC had deployed 337 charge points across 175 units for public use in the city, more than any other Scottish Local Authority, including a significant number of 'Rapid' units that will charge most vehicles 80% in approximately 30 minutes.

- The Glasgow EcoStars scheme continued to expand with 298 members and 11,653 vehicles part of the scheme.

- Introduced charging for the EV charging network to allow electricity costs to be recouped and provide funding for network expansion and ongoing maintenance.

Glasgow City Council expects the following measures to be completed over the course of the next reporting year:

- Continue to implement and enforce the Glasgow LEZ.
- Expand the scope of the LEZ as grace periods and exemptions expire.
- Continue to work with Glasgow taxi operators to increase compliance rates during exemption periods.
- Continue with progress on the Avenues project.
- Expand the walking and cycling network and associated infrastructure.
- Continue to work on the business case for and assess the feasibility of a Workplace Parking Levy.
- Continue to develop options for the city centre “People First Zone”.
- Adopt and implement the 2024 Air Quality Action Plan

Glasgow City Council has identified a range of new measures since the last reporting year. These measures are set out in detail in the 2024 Air Quality Action Plan. The new action plan measures, and their expected impacts, can be seen in Table F.1 in Appendix F

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/Actual Completion year	Measure Status	Funding Status	Key Milestones	Progress	Barriers to implementation
1	Vehicle Idling Council will expand program of vehicle idling enforcement	Public Information	Ongoing	In Progress	Part Funded	Idling Enforcement focussed on education around schools No of interventions by officers No of vehicle Idling complaints	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. Enforcement patrols serve notice or information to drivers idling.	AQAP grant funding availability Enforcement regulations
2	Vehicle Emission Testing	Vehicle fleet efficiency	Ongoing although Emission Testing now only takes place during Multi Agency Days of action	Ongoing in a limited capacity	Part funded	Number of vehicles tested	Emission testing continues in a reduced capacity. 40,000+ vehicles tested to date.	Reduction or cessation of multi-agency days of action Testing capability not renewed
3	Low Emission Zone	Promoting low emission transport	Phase 1 -end 2022 Phase 2 -2023/4	In Progress	Fully Funded – year 1 Future funding from revenue is expected	100% of bus journeys are compliant by December 2022. Phase 2 final scheme design developed and received Committee and Ministerial approval. Phase 2	Phase 2 final scheme design developed and received Committee and Ministerial approval. Phase 2 came into effect on 31 May 2022. Phase 2 of the LEZ applies to all	Reduction or loss of funding Legal challenges

						came into effect on 31 May 2022. Enforcement of phase 2 for general traffic – 1st June 2023.	vehicle types and was enforced from June 2023. It requires a minimum emission standard of Euro VI/6 for diesel vehicles and Euro IV/4 for petrol vehicles.	
4	Cleaner Taxis	Promoting low emission transport	Ongoing	In Progress	LEZ Support Fund	Proportion of taxis / private hire vehicles meeting LEZ emissions standards	GCC have adopted licensing conditions in line with the introduction of the LEZ enforcement. 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. GCC have reduced testing frequency for newer vehicles and increased testing frequency for older vehicles. GCC have committed to all private hire fleet vehicles being zero emissions by 2030. Increased proportion of fleet	Funding availability. Operator eligibility.

							meeting LEZ standards.	
5	Council Workplace Travel Plan	Promoting travel alternatives	Ongoing	In Progress	Funded	Proportion of staff using public /sustainable transport options Proportion of work related journeys reduced. Hybrid Working pattern established reducing need for travel to the office.	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 investigated to make e-bikes more attainable under the scheme. Repayment period is currently 18 months to improve accessibility of the scheme. Claims for cycle mileage for business travel have been clarified and clearer information provided. Staff travel survey updated.	Availability of various funding sources.
6	Air Quality Information	Public Information	Ongoing	In progress	Funded	Publication of Air Quality and LEZ related information	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 engagement in	

							relation to LEZ and vehicle idling highlights the air quality benefits.	
7	Cycling Strategy	Promoting travel alternatives	Ongoing	In progress	Funded	Early in 2022 the City adopted Glasgow's Active Travel Strategy 2022-2031 (ATS) which aims for walking, cycling and wheeling to be the first and natural choice for everyday journeys. The strategy details proposed changes to our street environments alongside a range of behaviour change interventions, to be delivered in collaboration with community and other external organisations, to support and enable active journeys. The strategy also outlines proposals for the City Network, a functional and high density network of protected cycle lanes connecting all areas of the city and linking to key trip generators,	Various on street and school cycle provision infrastructure installed Infrastructure at further tower blocks to be progressed.	Funding availability

						deliverable by 2030. Working closely alongside the Liveable Neighbourhoods programme in particular, the ATS contributes to the outcomes for the city from transport, as detailed within the Glasgow Transport Strategy, which includes a "successful and just transition to a net-zero carbon, clean and sustainable city.		
9	Promote Greener Vehicles	Promoting low emission transport	Ongoing	In progress	Funded	No of EV charging points	337 charge points across 175 units, including significant numbers of rapid chargers, provided by GCC deployed for public use in the city	Funding / Private sector involvement
10	Leading by Example	Promoting low emission transport	Ongoing	In progress	Funded	Proportion of fleet with zero emissions	GCC have committed to decarbonising the entire fleet by 2030. Additional fleet improvement plans have been put in place to ensure all GCC vehicles accessing the LEZ meet the emissions standards by time of enforcement.	Continued funding

11	Leading by Example	Promoting low emission transport	ongoing	in progress	Funded	Membership of the Glasgow ECO Stars scheme	The fleet recognition scheme has been operating since September 2014 and has currently recruited 315 members encompassing approximately 12,415 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.	

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 11 sites during 2023. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at http://www.scottishairquality.scot/

Maps showing the location of the monitoring sites are provided in Appendix E. 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

Glasgow City Council undertook non- automatic (passive) monitoring of NO_2 at 111 sites during 2023. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix E. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.1.3 Other Monitoring Activities

There were no other monitoring activities undertaken during 2023.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

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

Table A.4 in Appendix A compares the adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at non automatic monitoring sites.

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

During 2023, Glasgow City Council measured concentrations of NO_2 below the Annual Mean Objective at all automatic monitoring stations in the city, including those within the City Centre Air Quality Management Area (AQMA). This was the second year in which levels of NO_2 at the automatic monitoring stations were within the objective following on from results in 2022. However, it should be noted that the compliance recorded at Glasgow Kerbside continues to be marginal, recording an annual mean of 39.0ug/m^3 against an objective level of 40ug/m^3.

Levels of NO_2 pollution have been on a downward trend in recent years as a result of improvements in vehicle emissions and the phased introduction of the Glasgow LEZ for scheduled bus services since 2018. NO_2 levels dropped significantly in 2020 due to pandemic restrictions, before increasing in 2021 as these restrictions lessened. However, most automatic stations recorded a slight decrease in NO_2 levels between 2021 and 2022, maintaining a significant decrease on the pre-pandemic levels. These levels fell further in 2023.

Figure E.4 in Appendix E shows the trend in annual average NO_2 concentrations at selected automatic monitoring stations since 2019.

Exceedances of the annual mean objective in 2023 were recorded in monitoring conducted by diffusion tube at two locations, CC14 and CC15, down from four locations in

2022. One further location, CC13, was within 10% of the objective, down from three such locations in 2022. All of these tubes are located in the immediate vicinity of Glasgow Central train station.

The hourly mean objective for this pollutant is set at 200ug/m^3 with 18 hours above this level permitted before an exceedance is considered to have been made. No hourly mean levels above 200ug/m^3 were recorded at any of the automatic monitoring stations in 2023. Further, no diffusion tubes recorded annual mean levels above 60ug/m^3, indicating that exceedances of the hourly mean objective at these locations was unlikely.

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 18µg/m^3.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than seven times per year.

Levels of PM_{10} recorded across the city in 2023 were satisfactory with both the daily mean and annual mean objectives being met at all monitoring locations. This continued the trend of compliance in respect of this pollutant which has been observed for several years.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A compares the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years with the air quality objective of 10µg/m^3. This objective was not exceeded at any monitoring location in Glasgow during 2023.

3.2.4 Sulphur Dioxide (SO_2)

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.

4 New Local Developments

4.1 Road Traffic Sources

Road traffic levels on surrounding roads is likely to be affected by the continuing works on the Woodside Viaduct part of the M8 motorway, with increases expected due to periods where diversions are in place. Whilst not expected to lead to new exceedances of the air quality objectives, monitoring will continue on applicable routes to verify this. Diversions in this area have also had an impact on the operation of the Glasgow LEZ, with periods of LEZ enforcement being suspended due to non-compliant vehicles being diverted into the LEZ.

4.2 Other Transport Sources

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

4.3 Industrial Sources

The Scottish Environmental Protection Agency (SEPA) are the licensing and enforcement authority for different types of industrial installation and have identified the following new sources.

Table 4.1 New or changed industrial sources

Authorisation No	Authorisation Level	Authorisation Activity	Status Date	Site
PPC/A/5002293	PPC Part A	PPC(A) - Other Waste Storage and Treatment Sites	02/02/2023	Queenslie Healthcare Waste Treatment and Transfer Site, 50 Carmaben Road, Queenslie Industrial Estate, Glasgow, G33 4UN

PPC/B/5004152	PPC Part B	PPC(B) - Combustion of Fuels	17/03/2023	50-54 Kelvin Avenue, Hillington, Glasgow, Lanarkshire, G52 4LT
PPC/B/5004836	PPC Part B	PPC(B) - Combustion of Fuels	07/06/2023	Barclays Glasgow Campus, 1-4 Clyde Place, Glasgow, Lanarkshire, G5 8DP
PPC/B/5005278	PPC Part B	PPC(B) - Combustion of Fuels	19/06/2023	Mazumdar-Shaw Advanced Research Centre, University of Glasgow, 11 Chapel Lane, G11 6EW
PPC/B/5004647	PPC Part B	PPC(B) - Other Manufacturing or Industry	17/07/2023	321 Aitkenhead Road, Polmadie, Glasgow, G42 0PE
PPC/B/5005894	PPC Part B	PPC(B) - Mining and Quarrying	29/09/2023	Glasgow Concrete, 2410 London Road, Glasgow, G32 8XZ
WML/L/5005403	WML	Waste - Other Waste Storage and Treatment Sites	05/12/2023	37-47 Vermont Street, Glasgow, G41 1LT
WML/L/1018833	WML	Waste - Other Waste Storage and Treatment Sites	24/08/2023	Barclay Curle Complex, 739 South Street, Glasgow, G14 0BX
WML/L/1163794	WML	Waste - Other Waste Management Activities	17/11/2023	321 Aikenhead Road, Glasgow, G42 0PE

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. No assessments resulted in predictions of significant adverse impacts on air quality.

6 Glasgow Low Emission Zone

Enforcement of the Glasgow LEZ began on 1st June 2023 following the mandatory one-year grace period after formal introduction of the zone on 31st May 2022. Therefore, the 2024 APR is the first to report on post-LEZ air quality levels.

The LEZ was enforced for seven months of the 2023 reporting period; however it should be noted that residents of the zone were subject to a further year grace period and were therefore exempt from the LEZ for this period. The Glasgow taxi fleet were also eligible for a time-limited exemption, with 776 exemptions until 31st May 2024 issued to operators.

However, initial results from 2023 are positive, with significant reductions in the monitored levels of NO_2 recorded across the city and particularly within the area of the LEZ.

Table D.1 in Appendix D shows results from the city centre monitoring using NO_2 diffusion tubes and the percentage reduction observed between 2022 and 2023. The average reduction between 2022 and 2023 within the city centre and the Glasgow Low Emission Zone (which began enforcement on 1st June 2023) was 19.9%. Whilst NO_2 levels reduced across the city, the average reduction for locations outside the city centre was 15.3%.

Table D.2 and Figure E.3 in Appendix D show those monitoring locations which were exceeding or within 10% of the annual mean objective in the last full pre-pandemic year of 2019 and the results for these locations in the subsequent years. Diffusion tube results show a clear upward trend since the pandemic affected year of 2020 with all locations showing increases between 2021 and 2022. This is then followed by a significant decrease in 2023 as the enforcement of the Glasgow LEZ begins.

In 2023, two locations (CC14 - Gordon St & CC15 – Heilanman's Umbrella) within the LEZ continued to record exceedances of the NO_2 annual mean objective. However, these were marginal, with a maximum recorded level of 42.1ug/m^3 in Gordon St, reduced from 50.0ug/m^3 in 2022. It should also be noted that location CC15, under the railway bridge at Heilanman's Umbrella, is subject to poor dispersion and is not suitable for direct comparison with the objectives. However, as it reflects a busy area to which the public have general access, it will continue to be monitored and reported.

As the Glasgow LEZ was only enforced for part of the 2023 calendar year and was not universal in scope due to the ongoing grace periods and exemptions, it is not yet possible to determine the full impact of the LEZ on the annual mean objective from the observed 2023 monitoring results. 2024 results will show a full year of general LEZ enforcement and also an expansion of the vehicles which fall within the scope.

The Scottish Environment Protection Agency (SEPA) is undertaking an update to the air pollution dispersion modelling conducted in advance of the introduction of the LEZ. This study is expected to be completed by November 2024 and will be made available on the LEZ website. This will provide more up to date modelling of the anticipated pollution levels for a full calendar year of the operational LEZ.

7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

Monitoring results for NO_2 from 2023 show an improvement in levels measured at all automatic monitoring stations in the city. The Annual Mean Objective at these stations was met for the second year in a row. However, it should be noted that the compliance recorded at Glasgow Kerbside continues to be marginal, recording an annual mean of 39.0ug/m^3 against an objective level of 40ug/m^3.

Levels of NO_2 pollution have been on a downward trend in recent years as a result of improvements in vehicle emissions and the phased introduction of the Glasgow LEZ for scheduled bus services since 2018. NO_2 levels fell further in 2023 with an average reduction of 19.9% from 2022 recorded by diffusion tubes in the LEZ area.

Exceedances of the annual mean objective in 2023 were recorded in monitoring conducted by diffusion tube at two locations, down from four locations in 2022. One further location was within 10% of the objective, down from three such locations in 2022.

No hourly mean levels of NO_2 above 200ug/m^3 were recorded at any of the monitoring stations in 2023, continuing the long-term trend of compliance with this objective.

Levels of PM_{10} recorded across the city in 2023 were satisfactory with both the daily mean and annual mean objectives being met at all monitoring locations. This continued the trend of compliance in respect of this pollutant which has been observed for several years. It should be noted that the Scottish objective for this pollutant is set at just under half that of the UK and EU limits. Levels of PM_{10} recorded in 2023 were also below the guideline values set by the World Health Organisation.

The $PM_{2.5}$ annual mean objective of 10µg/m^3 was not exceeded at any monitoring location in Glasgow during 2023.

7.2 Conclusions relating to New Local Developments

Ongoing remedial work on the Woodside Viaduct part of the M8 motorway, expected to continue through until 2026, has the potential to increase road traffic emissions through the use of periodic diversions. Whilst not expected to lead to new exceedances of the air quality objectives, monitoring will continue on applicable routes to verify this. There were no other new developments considered likely to affect air quality.

7.3 Proposed Actions

Following the formal introduction of phase 2 of the LEZ on 31 May 2022 and general enforcement beginning on 1st June 2023, Glasgow City Council will continue to work with partners in the Scottish Government, Transport Scotland and the Scottish Environment Protection Agency to implement and evaluate the operation and effectiveness of the LEZ. The monitoring results from 2023 in relation to the LEZ have been considered in this report and further modelling assessments, undertaken by SEPA, will be published on the LEZ website.

The 2024 Air Quality Action Plan has been officially adopted and the measures included can be seen in Appendix F. The AQAP measures will be progressed with the aim of completing within the five year lifespan of the plan and revoking the City Centre AQMA, the last active AQMA in the city.

The next Air Quality Progress Report will be produced and submitted in 2024.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
GLA4	Glasgow Kerbside	Kerbside	258708	665200	NO_2 PM_{10} $PM_{2.5}$	YES City Centre AQMA	Chemiluminescent FIDAS	0	1	3
GLKP	Glasgow Townhead	Urban Background	259675	665900	NO2 PM10 PM2.5 O3	YES City Centre AQMA	Chemiluminescent FIDAS UV Photometric	0	120	3
GGWR	Glasgow Great Western Road	Roadside	258007	666649	NO2	No	Chemiluminescent	0	5	2
GHSR	Glasgow High Street	Roadside	260013	665346	NO2 PM10 PM2.5	YES City Centre AQMA	Chemiluminescent FIDAS	0	3	3
GLA5	Glasgow Anderston	Urban Background	257925	665487	NO2 PM10 PM2.5	No	Chemiluminescent FIDAS	0	40	3
GLA6	Glasgow Byres Road	Roadside	256526	666933	NO2 PM10 PM2.5	No	Chemiluminescent FIDAS	0	3	3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
GL9	Glasgow Dumbarton Road	Roadside	255030	666608	NO2 PM10 PM2.5	No	Chemiluminescent FIDAS	0	3	2
GL2	Glasgow Nithsdale Road	Roadside	257883	662673	NO2 PM10 PM2.5	No	Chemiluminescent FIDAS	0	3	2
GLA7	Glasgow Waulkmillglen Reservoir	Rural	252461	658154	NO2 PM10 PM2.5 O3	No	Chemiluminescent FIDAS UV Photometric	N/A	N/A	3
GL3	Glasgow Broomhill	Roadside	255030	667195	PM10 PM2.5	No	FIDAS	0	3	2
GL6	Glasgow Burgher Street	Roadside	262550	664164	NO2 PM10 PM2.5	No	Chemiluminescent FIDAS	0	3	2

Notes:

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

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
CC01	George Square	Urban Background	259296	665389	NO2	City Centre	N/A	30.0	No	3.0
CC02	Union Street	Roadside	258828	665204	NO2	City Centre	0.0	3.0	No	3.0
CC03	Bath Street	Roadside	258374	665826	NO2	City Centre	3.0	3.0	No	2.5
CC04	Glassford Street	Roadside	259361	665252	NO2	City Centre	0.0	3.0	No	2.5
CC05	Buchanan Street	Roadside	259055	665468	NO2	City Centre	0.0	3.0	No	2.5
CC06	Castle Street	Roadside	260068	665589	NO2	City Centre	0.0	3.0	No	2.5
CC07	Hope Street 3	Kerbside	258856	665940	NO2	City Centre	N/A	1.0	No	2.5
CC08	Montrose Street	Roadside	259536	665313	NO2	City Centre	0.0	3.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
CC09	Cochrane Street	Roadside	259430	665316	NO2	City Centre	0.0	3.0	No	2.5
CC10	Renfield Street	Roadside	258896	665637	NO2	City Centre	0.0	3.0	No	2.5
CC11	George Street	Kerbside	259551	665380	NO2	City Centre	N/A	1.0	No	2.5
CC12	North Street	Roadside	257906	665675	NO2	City Centre	N/A	3.0	No	2.5
CC13	Hope Street 1	Roadside	258730	665322	NO2	City Centre	0.0	3.0	No	3.0
CC14	Gordon Street	Roadside	258756	665346	NO2	City Centre	N/A	3.0	No	3.0
CC15	Heilanmans Umbrella North	Roadside	258770	665120	NO2	City Centre	0.0	3.0	No	3.0
CC16	Saltmarket	Roadside	259545	664739	NO2	City Centre	0.0	3.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
CC17	High Street	Roadside	259732	664991	NO2	City Centre	0.0	3.0	No	2.5
CC18	Dobbies Loan	Urban Background	259415	666194	NO2	City Centre	0.0	3.0	No	2.5
CC20	Dundasvale Street	Urban Background	258820	666306	NO2	City Centre	0.0	15.0	No	2.5
CC21	Royston Road	Roadside	260429	666264	NO2	No	5.0	3.0	No	2.5
CC22	St Mungo Avenue	Urban Background	259392	665866	NO2	City Centre	0.0	5.0	No	2.5
CC23	Brown Street	Roadside	258336	665122	NO2	City Centre	0.0	3.0	No	2.5
CC24	Broomielaw	Roadside	258562	664933	NO2	City Centre	N/A	3.0	No	2.5
CC25	McLeod Street	Urban Background	260077	665481	NO2	City Centre	0.0	8.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
CC26	Sauchiehall Street	Urban Background	258639	665852	NO2	City Centre	N/A	N/A	No	3.0
CC28	St Mungo's PS	Roadside	259983	665834	NO2	City Centre	10.0	1.0	No	2.5
CC29	Garnetbank PS	Roadside	258240	666033	NO2	City Centre	5.0	1.0	No	2.5
GE01	Westmuir Street	Roadside	262589	664139	NO2	No	0.0	3.0	No	2.5
GE02	Hillcrest Road	Roadside	265075	662001	NO2	No	5.0	3.0	No	2.5
GE03	Main Street (Bridgeton)	Roadside	260650	663319	NO2	No	0.0	5.0	No	2.5
GE04	Westercraigs	Urban Background	260942	665226	NO2	No	0.0	15.0	No	2.5
GE06	Sacone SW	Urban Background	263920	664569	NO2	No	0.0	15.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GE07	Easterhouse	Roadside	267005	666217	NO2	No	0.0	5.0	No	2.5
GE10	Tollcross Park	Roadside	263864	663544	NO2	No	0.0	3.0	No	2.5
GE14	St Michaels Lane	Roadside	262472	664214	NO2	No	0.0	3.0	No	2.5
GE16	Ellismuir Road	Roadside	268413	663872	NO2	No	9.0	1.0	No	2.5
GE17	Carmyle Avenue	Roadside	264792	662418	NO2	No	0.0	7.0	No	2.5
GE18	Barrowfield Street	Roadside	261705	663993	NO2	No	3.0	1.0	No	2.5
GE19	Dalmarnock Station	Roadside	261013	663169	NO2	No	N/A	1.0	No	2.5
GN01	Springburn Road	Roadside	260541	669268	NO2	No	0.0	6.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GN02	Kippen Street	Urban Background	259731	668488	NO2	No	5.0	3.0	No	2.5
GN03	Ryeside Road	Roadside	261778	668122	NO2	No	10.0	1.0	No	2.5
GS02	Bridge Street	Roadside	258702	664480	NO2	No	3.0	3.0	No	2.5
GS04	Haggs Road	Roadside	256295	661792	NO2	No	0.0	3.0	No	2.5
GS06	Oxford Street	Roadside	258798	664570	NO2	No	0.0	3.0	No	2.5
GS07	Dougrie Road	Roadside	260203	659128	NO2	No	N/A	3.0	No	2.5
GS08	Aikenhead Road	Roadside	259225	662579	NO2	No	0.0	6.0	No	2.5
GS09	Langside Primary School	Roadside	257138	661617	NO2	No	5.0	3.0	No	3.0

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GS10	Paisley Road West	Roadside	255599	664313	NO2	No	0.0	3.0	No	2.5
GS11	Sutherland Avenue	Urban Background	256343	663153	NO2	No	10.0	5.0	No	2.5
GS12	Mallaig Place	Urban Background	253989	665298	NO2	No	20.0	6.0	No	2.5
GS13	Govanhill Street	Roadside	258678	662901	NO2	No	3.0	3.0	No	3.0
GS14	Invergarrie Road	Urban Background	253821	658590	NO2	No	5.0	3.0	No	2.5
GS16	Silverburn	Roadside	253047	661349	NO2	No	0.0	5.0	No	2.5
GS18	Paisley Rd West 2	Roadside	257415	664616	NO2	No	0.0	3.0	No	2.5
GS19	Hampden	Urban Background	259038	661285	NO2	No	0.0	3.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GS20	45 Clifford Street	Roadside	256262	664308	NO2	No	0.0	3.0	No	2.5
GS21	608 Scotland Street West	Roadside	256948	664270	NO2	No	0.0	1.0	No	2.5
GS22	17 Kilbride Street	Roadside	259732	663032	NO2	No	0.0	3.0	No	2.5
GS23	2 Myrtle Drive	Roadside	259246	661979	NO2	No	0.0	3.0	No	2.5
GS24	183 Crossloan Road	Roadside	254724	665407	NO2	No	0.0	3.0	No	2.5
GS25	234 Berryknowes Road	Urban Background	253542	664443	NO2	No	0.0	15.0	No	2.5
GS27	Battlefield Road	Roadside	258084	661642	NO2	No	0.0	3.0	No	2.5
GS28	128 Mennock Road	Roadside	259871	660618	NO2	No	0.0	3.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GS30	Govan Road	Roadside	254021	665943	NO2	No	0.0	2.0	No	3.0
GS31	Govan Road (Hospital)	Roadside	253865	666006	NO2	No	2.0	2.0	No	2.5
GS34	1220 Govan Road	Roadside	254372	665902	NO2	No	0.0	2.0	No	3.0
GS35	Shieldhall Road	Roadside	253554	665176	NO2	No	0.0	3.0	No	2.5
GS36	Wallace Street	Roadside	258108	664514	NO2	No	0.0	3.0	No	2.5
GS37	Dumbreck Road	Roadside	255477	663644	NO2	No	7.0	1.0	No	2.5
GS45	Ben Glas Place	Urban Background	253609	659958	NO2	No	5.0	1.0	No	2.5
GS46	Kirriemuir Avenue	Roadside	253471	663587	NO2	No	20.0	1.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GS47	1214 Paisley Road West	Roadside	254818	664109	NO2	No	10.0	1.0	No	2.5
GW01	Dumbarton Road	Roadside	256209	666525	NO2	No	3.0	3.0	No	2.5
GW02	Lawrence Street	Roadside	256295	666816	NO2	No	5.0	2.0	No	3.0
GW04	Finnieston Street	Roadside	257235	665108	NO2	No	N/A	3.0	No	2.5
GW06	Napiershall Street	Roadside	257790	666791	NO2	No	0.0	4.0	No	2.5
GW07	Queen Margaret Drive 2	Roadside	257216	667639	NO2	No	0.0	3.0	No	3.0
GW08	Queen Margaret Drive 3	Roadside	257012	667433	NO2	No	0.0	3.0	No	3.0
GW09	Anniesland Cross	Roadside	254613	668886	NO2	No	0.0	15.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GW10	Balshagray Avenue	Roadside	254498	667291	NO2	No	0.0	10.0	No	2.5
GW11	Thornwood Drive	Roadside	254903	666855	NO2	No	0.0	3.0	No	2.5
GW12	Belmont Street	Roadside	257533	667418	NO2	No	N/A	3.0	No	2.5
GW13	Glasgow Harbour	Urban Background	255287	666276	NO2	No	0.0	30.0	No	3.0
GW14	Crow Road	Roadside	254640	668203	NO2	No	0.0	3.0	No	2.5
GW15	Hyndland Road	Roadside	255764	667297	NO2	No	0.0	4.0	No	2.5
GW16	Park Road	Roadside	257555	666896	NO2	No	0.0	3.0	No	2.5
GW18	Maryhill Road	Roadside	257243	668285	NO2	No	0.0	3.0	No	3.0

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GW19	Scotstoun	Urban Background	253592	667771	NO2	No	0.0	10.0	No	2.5
GW21	Milner Road	Roadside	254456	668108	NO2	No	0.0	3.0	No	2.5
GW22	Gibson Street	Roadside	257166	666787	NO2	No	0.0	2.0	No	2.5
GW26	Great Western Road	Roadside	257255	667112	NO2	No	0.0	3.0	No	2.5
GW30	South Street	Roadside	253193	667219	NO2	No	0.0	2.0	No	2.5
GW33	Great George Street	Roadside	256663	667100	NO2	No	0.0	3.0	No	2.5
GW34	Blairdardie Road	Roadside	253080	670199	NO2	No	8.0	1.0	No	2.5
GW35	Cadder Road	Roadside	257373	669164	NO2	No	10.0	1.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GW36	New City Road	Urban Background	258309	666457	NO2	No	N/A	1.0	No	2.5
GW37	676 Dumbarton Road	Roadside	254946	666612	NO2	No	0.0	1.0	No	2.5
GW39	Primrose Court	Roadside	252993	667615	NO2	No	0.0	13.0	No	2.5
GW40	Harland Street	Roadside	253139	667333	NO2	No	2.0	3.0	No	2.5
GW41	Partick Bus Station	Roadside	255692	667338	NO2	No	0.0	2.0	No	2.5
GS48	180 Prospecthill Rd	Roadside	258547	661714	NO2	No	0.0	2.0	No	2.5
GS49	92 Calder St	Roadside	258320	662824	NO2	No	0.0	3.0	No	2.5
GS50	186 Rosshall Academy	Roadside	252065	663544	NO2	No	0.0	2.0	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
GE20	375 Cumbernauld Rd	Roadside	262110	665472	NO2	No	0.0	2.0	No	2.5
GW42	158 Curle St	Roadside	253804	666897	NO2	No	0.0	2.0	No	2.5
GS51	Mount Florida Primary	Urban Background	258709	661317	NO2	No	0.0	10.0	No	2.5
GS52	Glendale Primary	Roadside	257822	663713	NO2	No	10.0	3.0	No	2.5
GE22	989 Cumbernauld Rd	Roadside	263145	666346	NO2	No	0.0	5.0	No	2.5
GE23	6 Maxwelton Rd	Roadside	263439	666750	NO2	No	0.0	12.0	No	2.5
GS53	Devon St	Roadside	258589	663776	NO2	No	0.0	8.0	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
GLA4	Glasgow Kerbside	Automatic	79.8	79.8	**55.7**	36.0	**45.1**	39.1	39.0
GLKP	Glasgow Townhead	Automatic	99.5	99.5	24.2	17.1	18.0	16.8	15.6
GGWR	Glasgow Great Western Road	Automatic	98.8	98.8	29.7	19.4	21.6	19.8	18.2
GHSR	Glasgow High Street	Automatic	99.5	99.5	29.8	21.1	23.2	20.9	18.4
GLA5	Glasgow Anderston	Automatic	99.6	99.6	25.5	19.5	21.2	21.6	20.5
GLA6	Glasgow Byres Road	Automatic	93.9	93.9	34.7	22.7	25.7	25.3	21.4
GL9	Glasgow Dumbarton Road	Automatic	99.6	99.6	34.8	25.2	29.1	24.4	20.2
GL2	Glasgow Nithsdale Road	Automatic	99.5	99.5	31.3	28.7	24.0	22.1	21.2
GLA7	Glasgow Waulkmillglen Reservoir	Automatic	68.0	68.0	9.4	5.3	7.5	10.8	7.0
GL6	Glasgow Burgher Street	Automatic	92.0	68.7	27.0	14.7	-	-	16.7

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in bold.

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
CC01	259296	665389	Urban Background	100	100.0	32.4	19.4	25.0	29.9	22.6
CC02	258828	665204	Roadside	84.6	84.6	**47.1**	25.8	37.5	38.4	31.4
CC03	258374	665826	Roadside	100	100.0	38.6	23.3	31.7	36.2	29.7
CC04	259361	665252	Roadside	100	100.0	**40.1**	24.9	28.6	34.3	30.7
CC05	259055	665468	Roadside	100	100.0	38.0	23.9	25.9	32.7	26.5
CC06	260068	665589	Roadside	100	100.0	29.2	20.1	24.3	27.5	22.2
CC07	258856	665940	Kerbside	84.6	84.6	**40.3**	23.4	35.2	**40.4**	35.1
CC08	259536	665313	Roadside	100	100.0	28.2	19.1	22.3	27.0	20.3
CC09	259430	665316	Roadside	84.6	84.6	35.2	21.9	28.6	29.9	22.9
CC10	258896	665637	Roadside	75	75.0	**41.7**	28.2	33.1	38.6	30.3
CC11	259551	665380	Kerbside	73.1	73.1	32.1	18.1	24.6	29.7	24.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
CC12	257906	665675	Roadside	84.6	84.6	26.9	20.6	19.3	22.8	19.8
CC13	258730	665322	Roadside	100	100.0	**55.5**	**40.3**	**43.5**	**44.9**	39.0
CC14	258756	665346	Roadside	84.6	84.6	**58.8**	36.3	**40.2**	**50.0**	**42.1**
CC15	258770	665120	Roadside	80.8	80.8	**52.1**	26.9	35.6	**42.3**	**40.9**
CC16	259545	664739	Roadside	100	100.0	30.8	23.0	26.2	31.8	21.2
CC17	259732	664991	Roadside	92.3	92.3	**42.0**	25.9	25.3	34.8	25.7
CC18	259415	666194	Urban Background	100	100.0	22.9	18.7	21.8	23.6	17.9
CC20	258820	666306	Urban Background	100	100.0	28.2	20.6	24.0	24.5	20.6
CC21	260429	666264	Roadside	92.3	92.3	28.6	21.4	23.8	28.8	21.5
CC22	259392	665866	Urban Background	100	100.0	25.7	19.9	21.0	23.7	19.6
CC23	258336	665122	Roadside	100	100.0	24.3	16.7	19.3	21.0	15.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
CC24	258562	664933	Roadside	82.7	82.7	36.7	22.5	31.8	36.2	26.7
CC25	260077	665481	Urban Background	100	100.0	29.6	22.2	22.1	29.3	20.7
CC26	258639	665852	Urban Background	75	75.0	31.7	21.2	23.8	28.5	23.4
CC28	259983	665834	Roadside	100	100.0	24.0	18.6	14.7	19.2	14.6
CC29	258240	666033	Roadside	100	100.0	29.3	21.3	21.6	23.1	18.2
GE01	262589	664139	Roadside	100	100.0	31.9	22.9	27.6	30.6	24.8
GE02	265075	662001	Roadside	100	100.0	16.3	13.1	12.7	13.8	12.2
GE03	260650	663319	Roadside	100	100.0	19.5	13.3	16.0	19.7	15.6
GE04	260942	665226	Urban Background	100	100.0	19.0	19.7	18.0	16.3	11.6
GE06	263920	664569	Urban Background	100	100.0	16.0	14.1	15.1	15.6	11.9
GE07	267005	666217	Roadside	100	100.0	15.2	11.7	11.9	13.3	10.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GE10	263864	663544	Roadside	100	100.0	20.5	14.0	11.2	12.1	11.0
GE14	262472	664214	Roadside	100	100.0	36.0	28.9	27.4	21.0	20.2
GE16	268413	663872	Roadside	100	100.0	18.7	13.2	13.0	12.4	10.4
GE17	264792	662418	Roadside	84.6	84.6	25.8	19.1	19.3	20.2	18.6
GE18	261705	663993	Roadside	73.1	73.1	15.0	12.5	14.7	15.5	9.8
GE19	261013	663169	Roadside	92.3	92.3	18.8	12.8	14.2	12.2	12.7
GN01	260541	669268	Roadside	100	100.0	18.5	15.6	15.3	17.2	15.1
GN02	259731	668488	Urban Background	100	100.0	18.7	15.3	12.5	16.5	13.7
GN03	261778	668122	Roadside	100	100.0	19.2	14.7	13.7	13.4	9.7
GS02	258702	664480	Roadside	100	100.0	33.6	26.7	28.0	31.6	26.9
GS04	256295	661792	Roadside	100	100.0	25.7	18.3	19.5	21.0	18.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GS06	258798	664570	Roadside	100	100.0	24.5	18.8	20.7	23.9	19.5
GS07	260203	659128	Roadside	100	100.0	16.0	13.8	15.1	13.7	11.8
GS08	259225	662579	Roadside	100	100.0	24.4	16.2	20.9	22.6	17.8
GS09	257138	661617	Roadside	100	100.0	15.7	12.5	11.5	14.1	11.6
GS10	255599	664313	Roadside	100	100.0	28.1	20.6	21.0	23.3	18.5
GS11	256343	663153	Urban Background	100	100.0	12.7	10.2	11.5	11.3	9.0
GS12	253989	665298	Urban Background	100	100.0	18.1	13.9	14.2	14.2	12.9
GS13	258678	662901	Roadside	59.6	59.6	23.2	17.6	21.5	22.8	16.5
GS14	253821	658590	Urban Background	100	100.0	13.6	11.9	9.8	11.7	9.2
GS16	253047	661349	Roadside	100	100.0	17.9	11.8	14.0	12.2	10.3
GS18	257415	664616	Roadside	100	100.0	36.4	22.9	22.4	17.9	16.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GS19	259038	661285	Urban Background	100	100.0	16.6	11.5	9.6	8.3	8.2
GS20	256262	664308	Roadside	100	100.0	33.2	19.0	18.9	18.7	20.0
GS21	256948	664270	Roadside	100	100.0	27.3	18.7	19.2	19.1	15.8
GS22	259732	663032	Roadside	100	100.0	21.8	12.8	15.1	15.5	13.6
GS23	259246	661979	Roadside	92.3	92.3	16.7	12.1	9.7	11.5	12.2
GS24	254724	665407	Roadside	92.3	92.3	22.3	15.9	14.4	13.2	13.0
GS25	253542	664443	Urban Background	82.7	82.7	21.5	15.1	12.6	13.7	13.6
GS27	258084	661642	Roadside	100	100.0	25.3	17.2	18.9	17.1	15.7
GS28	259871	660618	Roadside	100	100.0	20.5	13.2	12.8	11.8	10.6
GS30	254021	665943	Roadside	82.7	82.7	29.7	21.0	18.7	19.0	14.8
GS31	253865	666006	Roadside	100	100.0	29.6	21.6	23.4	21.1	18.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GS34	254372	665902	Roadside	100	100.0	23.3	16.7	14.9	15.8	13.9
GS35	253554	665176	Roadside	100	100.0	23.5	14.1	14.4	12.8	12.7
GS36	258108	664514	Roadside	92.3	92.3	33.4	21.4	24.3	25.9	22.8
GS37	255477	663644	Roadside	100	100.0	22.5	16.2	15.5	15.6	14.4
GS45	253609	659958	Urban Background	100	100.0	14.3	10.2	11.2	8.8	8.4
GS46	253471	663587	Roadside	92.3	92.3	14.2	9.6	9.5	9.2	8.7
GS47	254818	664109	Roadside	90.4	90.4	22.0	18.4	15.4	15.6	13.9
GW01	256209	666525	Roadside	92.3	92.3	26.7	24.2	22.2	25.1	20.9
GW02	256295	666816	Roadside	100	100.0	20.3	16.9	17.8	19.8	15.9
GW04	257235	665108	Roadside	92.3	92.3	26.1	16.9	23.1	22.3	22.2
GW06	257790	666791	Roadside	100	100.0	26.6	19.9	19.8	22.9	21.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GW07	257216	667639	Roadside	90.4	90.4	24.3	21.7	23.8	26.3	21.0
GW08	257012	667433	Roadside	100	100.0	27.3	21.1	24.7	29.8	22.7
GW09	254613	668886	Roadside	100	100.0	25.5	16.6	22.4	21.3	16.8
GW10	254498	667291	Roadside	100	100.0	25.9	18.5	19.9	23.5	18.8
GW11	254903	666855	Roadside	92.3	92.3	15.8	12.9	13.2	16.6	12.1
GW12	257533	667418	Roadside	100	100.0	15.8	15.7	14.1	16.8	12.4
GW13	255287	666276	Urban Background	100	100.0	19.3	16.4	16.9	21.4	16.4
GW14	254640	668203	Roadside	100	100.0	31.7	21.2	20.9	21.8	19.6
GW15	255764	667297	Roadside	100	100.0	23.4	15.6	14.8	15.7	13.3
GW16	257555	666896	Roadside	100	100.0	28.3	19.2	19.3	17.7	16.1
GW18	257243	668285	Roadside	100	100.0	29.6	19.4	19.9	21.7	16.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GW19	253592	667771	Urban Background	100	100.0	17.6	14.0	11.2	13.6	12.0
GW21	254456	668108	Roadside	100	100.0	18.4	12.4	10.4	10.3	9.3
GW22	257166	666787	Roadside	100	100.0	27.8	16.2	17.0	19.9	15.5
GW26	257255	667112	Roadside	82.7	82.7	30.7	18.4	15.9	18.4	18.3
GW30	253193	667219	Roadside	100	100.0	21.8	16.0	18.1	17.7	15.3
GW33	256663	667100	Roadside	100	100.0	25.5	20.2	17.0	13.8	13.7
GW34	253080	670199	Roadside	100	100.0	14.0	11.7	9.7	9.9	8.1
GW35	257373	669164	Roadside	100	100.0	17.3	14.1	11.9	14.3	11.3
GW36	258309	666457	Urban Background	100	100.0	29.0	23.4	22.8	21.0	15.1
GW37	254946	666612	Roadside	75	75.0	32.3	31.2	32.0	28.2	27.6
GW39	252993	667615	Roadside	100	100.0	21.1	16.4	21.3	22.7	15.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2019	2020	2021	2022	2023
GW40	253139	667333	Roadside	100	100.0	21.6	14.9	14.8	17.7	13.8
GW41	255692	667338	Roadside	100	100.0	22.0	16.1	16.5	18.6	15.7
GS48	258547	661714	Roadside	100	100.0	-	-	27.5	26.8	17.6
GS49	258320	662824	Roadside	100	100.0	-	-	31.8	26.9	21.8
GS50	252065	663544	Roadside	100	100.0	-	-	22.9	19.1	14.3
GE20	262110	665472	Roadside	100	100.0	-	-	-	21.7	14.9
GW42	253804	666897	Roadside	100	100.0	-	-	-	16.8	13.7
GS51	258709	661317	Urban Background	92.3	92.3	-	-	-	14.9	10.6
GS52	257822	663713	Roadside	100	100.0	-	-	-	21.0	14.4
GE22	263145	666346	Roadside	100	100.0	-	-	-	-	12.1
GE23	263439	666750	Roadside	100	100.0	-	-	-	-	13.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
GS53	258589	663776	Roadside	75	75.0	-	-	-	-	18.4

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**

☒ **Diffusion tube data has been bias adjusted**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in bold.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(22) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
GLA4	Glasgow Kerbside	Automatic	79.8	79.8	3	0	0	0	0(105)
GLKP	Glasgow Townhead	Automatic	99.5	99.5	0	0	0	0	0
GGWR	Glasgow Great Western Road	Automatic	98.8	98.8	0	0	0	0	0
GHSR	Glasgow High Street	Automatic	99.5	99.5	0	0	0	0	0
GLA5	Glasgow Anderston	Automatic	99.6	99.6	0	0	0(82)	0	0
GLA6	Glasgow Byres Road	Automatic	93.9	93.9	0	0	0	0	0
GL9	Glasgow Dumbarton Road	Automatic	99.6	99.6	0	0	0	0	0
GL2	Glasgow Nithsdale Road	Automatic	99.5	99.5	0	0	-	0	0
GLA7	Glasgow Waulkmillglen Reservoir	Automatic	68.0	68.0	0	0	0	0	0(56)
GL6	Glasgow Burgher Street	Automatic	92.0	68.7	0	0	-	-	0(79)

Notes:

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

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

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
GLA4	Glasgow Kerbside	91	91	-	11.4	12.3	12.5	12.0
GLKP	Glasgow Townhead	99	99	11.3	8.8	9.2	10.3	9.0
GHSR	Glasgow High Street	100	100	10.7	9.3	10.3	10.9	9.6
GLA5	Glasgow Anderston	100	100	11.5	9.0	10.5	12.0	10.4
GLA6	Glasgow Byres Road	63	63	15.0	10.8	11.2	11.4	10.8
GL9	Glasgow Dumbarton Road	97	97	13.2	10.2	12.0	12.9	11.5
GL2	Glasgow Nithsdale Road	100	100	15.2	10.2	9.1	10.9	11.0
GLA7	Glasgow Waulkmillglen Reservoir	65	65	8.8	6.9	7.0	8.2	8.8
GL3	Glasgow Broomhill	100	100	13.0	9.6	9.8	10.6	10.2
GL6	Glasgow Burgher Street	80	38	12.0	11.0	-	-	10.0

Notes:

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

All means have been “annualised” as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
GLA4	Glasgow Kerbside	91	91	**-**	0	0	2	0
GLKP	Glasgow Townhead	99	99	4	0	0	2	0
GHSR	Glasgow High Street	100	100	1	0	0	1	0
GLA5	Glasgow Anderston	100	100	2	0 (24)	0	2	0
GLA6	Glasgow Byres Road	63	63	6	0	0	2(40)	0(23)
GL9	Glasgow Dumbarton Road	97	97	4	0	0(27)	2(45)	0
GL2	Glasgow Nithsdale Road	100	100	5	N/A(3)	0	0	0
GLA7	Glasgow Waulkmillglen Reservoir	65	65	1	0	0	0	0
GL3	Glasgow Broomhill	100	100	4	0	0	1	0
GL6	Glasgow Burgher Street	80	38	2	-	-	**-**	0(18)

Notes:

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

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

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

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

Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
GLA4	Glasgow Kerbside	91	91	-	5.9	6.9	6.7	6.5
GLKP	Glasgow Townhead	99	99	6.7	5.0	5.2	5.7	4.5
GHSR	Glasgow High Street	100	100	6.3	4.9	5.5	5.9	5.1
GLA5	Glasgow Anderston	100	100	6.6	5.1	5.8	6.6	5.8
GLA6	Glasgow Byres Road	63	63	9.1	6.1	6.0	6.4	6.0
GL9	Glasgow Dumbarton Road	97	97	7.1	5.4	5.7	6.5	5.5
GL2	Glasgow Nithsdale Road	100	100	9.2	7.2	5.3	6.3	6.2
GLA7	Glasgow Waulkmillglen Reservoir	65	65	5.5	4.1	4.3	4.8	4.7
GL3	Glasgow Broomhill	100	100	7.8	5.4	5.5	6.0	5.8
GL6	Glasgow Burgher Street	80	38	-	-	-	-	5.7

Notes:

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

All means have been “annualised” as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 Monthly Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CC01	259296	665389	32.0	24.9	30.1	26.8	9.7	18.8	17.0	17.8	20.1	25.6	15.9	25.5	22.0	22.6		
CC02	258828	665204	42.6	40.4	37.8	31.5	31.2	23.0	36.4	19.7		23.7	20.2		30.7	31.4		
CC03	258374	665826	31.8	32.5	38.9	33.2	21.7	27.4	18.2	21.9	28.4	36.3	32.4	24.9	29.0	29.7		
CC04	259361	665252	37.5	39.5	37.9	32.5	30.4	25.6	24.3	21.1	27.9	27.0	26.1	29.4	29.9	30.7		
CC05	259055	665468	33.5	31.5	35.6	30.6	23.5	25.1	17.9	16.3	23.7	26.9	25.6	19.6	25.8	26.5		
CC06	260068	665589	29.0	29.0	28.3	23.5	17.2	17.0	13.9	15.0	17.8	22.5	24.4	22.0	21.6	22.2		
CC07	258856	665940	44.8	42.3	42.1	36.4	34.8	31.6	24.7	25.1	33.9		27.2		34.3	35.1		
CC08	259536	665313	29.5	25.6	28.3	25.3	16.2	14.5	12.7	14.5	13.9	20.3	20.8	15.6	19.8	20.3		
CC09	259430	665316	26.2	31.6	29.2		23.6	18.0	13.4	18.4	21.5		21.9	19.7	22.4	22.9		
CC10	258896	665637	38.4		38.1	34.0	29.8	24.8	26.4			27.9	24.5	22.2	29.6	30.3		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CC11	259551	665380		35.5		29.0	29.9	18.9	19.4		20.7	22.9	19.9	21.0	24.1	25.8		
CC12	257906	665675	23.2	21.3	30.3	30.2	18.6	13.4	13.4	8.4			18.6	15.7	19.3	19.8		
CC13	258730	665322	47.8	50.7	49.5	39.3	37.4	42.7	27.4	32.1	44.1	34.6	24.4	27.1	38.1	39.0		
CC14	258756	665346	53.6	52.7	57.7	44.6	34.0	35.9	38.8	30.0			32.9	30.3	41.1	42.1		
CC15	258770	665120	52.4	47.5	48.0	44.5	40.6		37.3		41.9	39.3	20.9	26.4	39.9	40.9		
CC16	259545	664739	27.8	26.1	26.9	23.3	19.4	13.4	16.0	14.2	20.5	17.7	21.5	21.2	20.7	21.2		
CC17	259732	664991	34.4	34.1	33.8	26.1		19.9	19.1	17.3	21.7	22.5	22.9	24.3	25.1	25.7		
CC18	259415	666194	24.6	26.9	24.2	16.8	9.1	12.0	3.8	11.2	20.6	19.1	25.9	15.1	17.4	17.9		
CC20	258820	666306	30.6	23.6	29.3	22.5	15.5	14.0	13.2	9.8	20.4	19.7	23.5	19.0	20.1	20.6		
CC21	260429	666264	38.4	31.5	26.7	19.1	17.9	12.5	8.7	10.8	20.7		27.0	17.1	20.9	21.5		
CC22	259392	665866	31.7	27.7	26.2	17.8	16.9	16.3	7.5	15.0	16.5	20.0	15.9	18.3	19.2	19.6		
CC23	258336	665122	22.6	22.6	22.3	13.5	14.0	12.8	6.1	11.3	14.9	15.0	15.1	14.0	15.4	15.7		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CC24	258562	664933	36.9		33.9	30.7	23.1		20.5	18.8	23.3	25.8	22.9	24.3	26.0	26.7		
CC25	260077	665481	35.5	24.8	24.5	19.1	13.7	18.5	13.0	14.2	17.4	21.1	21.4	19.2	20.2	20.7		
CC26	258639	665852	33.2		28.9	26.7	19.6	20.1	13.8	16.2	20.1	27.0			22.8	23.4		
CC28	259983	665834	12.8	19.1	23.5	16.3	9.2	9.4	7.5	6.5	7.2	16.2	26.7	16.4	14.2	14.6		
CC29	258240	666033	17.0	28.5	26.3	21.7	15.9	13.3	10.3	8.2	13.8	16.7	22.9	18.8	17.8	18.2		
GE01	262589	664139	35.3	32.7	30.4	23.7	25.2	14.6	17.3	18.8	19.7	19.8	33.2	19.8	24.2	24.8		
GE02	265075	662001	17.9	14.8	18.2	13.5	8.4	9.6	5.6	8.0	9.8	15.2	15.9	5.7	11.9	12.2		
GE03	260650	663319	23.9	19.1	21.7	16.4	11.6	10.2	10.2	11.5	14.2	15.1	16.0	13.0	15.2	15.6		
GE04	260942	665226	16.1	15.4	17.6	11.5	9.3	7.1	2.3	6.8	10.8	11.4	17.6	10.2	11.3	11.6		
GE06	263920	664569	21.2	16.4	15.1	9.0	7.6	6.6	5.3	6.6	9.3	11.0	18.9	12.0	11.6	11.9		
GE07	267005	666217	20.7	10.5	12.9	10.2	9.2	7.5	4.7	7.3	10.7	11.3	12.9	8.8	10.6	10.8		
GE10	263864	663544	14.7	13.9	18.1	7.1	4.4	6.0	2.7	1.6	19.4	8.4	19.8	12.8	10.7	11.0		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GE14	262472	664214	28.0	27.8	35.8	17.7	14.6	17.4	8.7	13.3	12.5	16.8	26.5	16.9	19.7	20.2		
GE16	268413	663872	17.9	14.7	15.9	9.0	5.0	6.3	2.2	5.1	7.6	8.0	19.8	10.4	10.2	10.4		
GE17	264792	662418	26.3	23.1	31.8	14.0	10.6	10.2	9.2	7.8			30.0	18.7	18.2	18.6		
GE18	261705	663993	11.9	16.0	18.8	8.8	5.5	6.1	3.4		6.1			9.7	9.6	10.1		
GE19	261013	663169	16.8	16.5	23.5	8.6	6.3	8.1	4.8	3.3		11.8	24.0	12.2	12.4	12.7		
GN01	260541	669268	19.5	20.8	21.8	16.5	11.9	12.9	6.4	9.3	12.3	16.6	19.1	9.6	14.7	15.1		
GN02	259731	668488	17.9	17.6	15.0	14.9	12.0	11.2	7.7	7.9	11.0	15.2	20.5	9.3	13.4	13.7		
GN03	261778	668122	11.4	10.4	16.2	10.1	2.7	6.2	3.8	5.0	7.3	8.9	19.7	12.1	9.5	9.7		
GS02	258702	664480	34.7	33.3	35.4	32.2	25.7	19.6	16.4	17.8	24.2	27.5	25.6	23.2	26.3	26.9		
GS04	256295	661792	23.8	20.8	26.9	21.0	14.1	15.5	10.8	12.6	16.4	17.9	22.8	11.6	17.9	18.3		
GS06	258798	664570	27.6	26.4	28.6	21.1	17.5	14.3	9.7	13.2	17.0	19.4	18.2	14.8	19.0	19.5		
GS07	260203	659128	11.3	11.9	16.7	13.0	10.8	10.0	6.2	8.5	10.0	11.3	20.2	8.7	11.6	11.8		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GS08	259225	662579	23.8	22.3	29.1	21.6	19.9	10.8	8.6	10.0	13.9	19.2	15.5	14.3	17.4	17.8		
GS09	257138	661617	13.7	13.1	16.5	13.6	8.5	8.9	5.9	6.9	9.8	13.2	16.1	9.1	11.3	11.6		
GS10	255599	664313	24.0	29.3	20.4	16.5	16.0	13.9	11.0	11.3	17.7	19.7	20.9	16.5	18.1	18.5		
GS11	256343	663153	9.0	10.7	14.4	9.6	8.3	5.9	3.7	4.5	7.8	8.7	12.7	9.9	8.8	9.0		
GS12	253989	665298	18.5	14.3	16.5	12.8	13.9	8.9	5.6	7.1	9.0	12.5	23.2	9.1	12.6	12.9		
GS13	258678	662901				17.4		11.5	8.7	11.5	15.7	17.6	18.9		14.5	16.5		
GS14	253821	658590	13.0	9.2	12.3	6.4	7.3	6.9	5.3	5.9	7.5	10.9	14.9	8.7	9.0	9.2		
GS16	253047	661349	7.7	10.4	22.3	8.8	4.7	9.4	4.5	4.5	7.5	13.9	20.3	6.7	10.1	10.3		
GS18	257415	664616	23.3	19.8	29.8	15.8	9.7	15.3	9.7	10.4	13.0	14.4	19.6	16.7	16.5	16.9		
GS19	259038	661285	7.7	11.6	15.0	6.3	3.8	1.8	2.0	2.3	3.1	10.6	17.4	14.0	8.0	8.2		
GS20	256262	664308	19.3	24.7	28.5	13.0	8.4	10.6	7.3	9.5	13.7	28.0	47.7	23.0	19.5	20.0		
GS21	256948	664270	15.9	22.6	26.5	9.7	11.6	10.2	9.3	9.8	15.3	15.0	21.9	17.0	15.4	15.8		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GS22	259732	663032	20.4	20.9	22.9	8.7	5.7	6.0	8.2	6.6	9.5	12.9	25.0	12.2	13.3	13.6		
GS23	259246	661979	39.2	11.9	19.2	9.5	4.5	6.0	2.4	3.5		9.7	18.4	6.7	11.9	12.2		
GS24	254724	665407	14.2	15.4	21.9	9.0	7.2	6.8	4.7	7.3		12.1	25.7	15.3	12.7	13.0		
GS25	253542	664443	15.3	15.2	21.8	10.8	5.5	9.0	4.6			14.3	20.6	15.2	13.2	13.6		
GS27	258084	661642	17.1	17.5	26.7	17.0	8.8	11.3	7.7	8.3	10.9	14.9	27.1	16.9	15.4	15.7		
GS28	259871	660618	13.7	11.6	18.2	8.5	3.1	5.5	3.1	6.4	6.9	10.1	24.4	12.5	10.3	10.6		
GS30	254021	665943	19.6			16.0	13.5	9.5	8.5	10.8	11.3	14.1	23.8	16.9	14.4	14.8		
GS31	253865	666006	20.8	27.3	29.2	17.8	11.4	14.0	9.5	9.3	12.1	17.7	27.6	23.9	18.4	18.8		
GS34	254372	665902	15.6	18.6	24.5	12.0	10.4	9.7	4.3	7.0	8.8	14.8	22.8	14.1	13.6	13.9		
GS35	253554	665176	22.6	15.9	21.6	8.5	5.4	7.4	3.5	6.5	6.5	13.0	24.7	13.0	12.4	12.7		
GS36	258108	664514		34.6	36.8	15.6	15.1	18.8	12.8	11.9	19.3	19.1	37.1	23.7	22.3	22.8		
GS37	255477	663644	14.6	16.5	25.6	11.7	8.3	10.0	5.3	6.6	12.1	15.5	25.6	16.8	14.1	14.4		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GS45	253609	659958	6.5	11.8	15.1	9.7	3.6	7.6	2.1	3.0	4.9	10.1	16.0	8.0	8.2	8.4		
GS46	253471	663587	9.5	9.6	15.6	7.6		5.3	2.0	3.0	3.9	8.3	18.6	10.4	8.5	8.7		
GS47	254818	664109	14.5	15.3	23.5	19.5	6.0		8.1	8.2	9.7	18.5	15.1	10.6	13.5	13.9		
GW01	256209	666525	31.4	31.8	31.1	23.2		21.0	9.6	12.8	17.3	18.6	16.9	10.2	20.4	20.9		
GW02	256295	666816	22.6	18.4	23.8	15.9	11.4	13.1	7.2	9.4	13.6	14.4	22.3	13.8	15.5	15.9		
GW04	257235	665108		24.5	31.6	26.6	19.3	18.3	14.0	15.2	19.2	28.2	22.1	18.9	21.6	22.2		
GW06	257790	666791	35.1	24.6	26.8	23.7	18.1	13.2	12.2	14.3	18.3	19.2	25.9	19.6	20.9	21.4		
GW07	257216	667639	32.7	26.3	25.2	22.1	19.1		12.5	12.7	18.8	19.1	18.2	18.7	20.5	21.0		
GW08	257012	667433	32.5	31.0	30.6	20.9	18.7	17.1	15.8	14.1	21.3	19.3	25.4	19.3	22.2	22.7		
GW09	254613	668886	27.6	24.7	23.5	16.2	13.3	11.0	9.4	10.1	13.3	14.6	18.1	14.8	16.4	16.8		
GW10	254498	667291	24.5	23.0	24.8	20.5	14.1	14.0	11.9	11.1	20.8	19.8	19.8	16.4	18.4	18.8		
GW11	254903	666855	18.5	17.3	16.4	11.5	10.3	7.2	2.5	7.4	10.7		18.9	9.7	11.9	12.1		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GW12	257533	667418	18.4	14.4	17.2	12.2	9.7	8.4	5.2	4.3	10.6	14.5	19.5	11.4	12.2	12.4		
GW13	255287	666276	23.0	22.8	24.7	16.0	13.4	12.5	9.3	10.0	13.2	20.1	22.6	4.0	16.0	16.4		
GW14	254640	668203	22.6	28.3	35.2	16.3	10.3	16.8	8.8	12.6	13.4	20.1	23.5	21.8	19.1	19.6		
GW15	255764	667297	17.6	18.7	19.7	12.7	7.8	7.6	5.6	5.7	10.2	15.2	22.5	12.9	13.0	13.3		
GW16	257555	666896	18.1	18.7	28.0	12.4	10.8	14.6	7.5	10.5	10.4	15.8	26.4	14.9	15.7	16.1		
GW18	257243	668285	23.3	19.8	29.8	15.8	9.7	15.3	9.7	10.4	13.0	14.4	19.6	16.7	16.5	16.9		
GW19	253592	667771	13.8	18.3	21.3	9.4	5.4	10.4	4.5	5.6	8.8	9.7	20.5	12.7	11.7	12.0		
GW21	254456	668108	13.0	15.6	16.7	8.4	3.4	4.1	2.1	3.6	5.5	7.3	17.7	11.2	9.1	9.3		
GW22	257166	666787	17.5	24.5	26.0	9.2	9.0	8.3	8.0	8.0	14.2	13.9	26.4	16.2	15.1	15.5		
GW26	257255	667112	24.3	19.2	32.6	13.5	11.5	15.9			10.4	18.9	20.8	11.4	17.9	18.3		
GW30	253193	667219	25.0	23.2	27.4	12.6	7.5	10.5	6.1	5.9	7.1	14.6	24.1	14.9	14.9	15.3		
GW33	256663	667100	16.2	20.1	24.7	11.5	7.7	8.4	3.7	6.9	7.8	16.2	22.0	15.7	13.4	13.7		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GW34	253080	670199	11.4	11.1	12.8	7.5	4.0	5.4	2.1	2.7	6.1	7.8	15.3	8.8	7.9	8.1		
GW35	257373	669164	14.0	15.7	19.4	11.5	4.9	9.7	2.1	5.8	6.9	11.2	19.2	12.2	11.1	11.3		
GW36	258309	666457	15.5	23.5	24.4	19.3	7.2	6.7	9.0	7.6	10.1	14.6	21.0	17.9	14.7	15.1		
GW37	254946	666612	21.4	40.4	32.5	27.0	20.1	23.1	22.2			28.2	27.3		26.9	27.6		
GW39	252993	667615	18.5	25.9	14.9	12.6	9.9	9.7	7.9	12.1	17.4	14.7	20.1	16.5	15.0	15.4		
GW40	253139	667333	21.1	23.0	21.2	11.4	4.4	10.0	4.2	7.8	11.9	13.4	25.9	7.3	13.5	13.8		
GW41	255692	667338	24.3	18.5	25.9	11.7	9.6	10.3	3.4	6.2	7.8	17.1	33.3	15.2	15.3	15.7		
GS48	258547	661714	16.2	24.5	26.7	22.5	14.9	19.3	7.8	12.8	17.2	21.8	1.7	21.0	17.2	17.6		
GS49	258320	662824	16.1	24.9	28.1	27.4	19.0	15.3	18.0	16.7	20.9	17.7	30.0	21.5	21.3	21.8		
GS50	252065	663544	11.5	18.4	19.8	16.9	11.1	10.5	10.5	9.6	6.9	13.9	25.0	13.3	14.0	14.3		
GE20	262110	665472	14.7	19.9	20.6	13.4	12.4	12.0	9.8	11.4	11.2	12.3	23.7	13.4	14.6	14.9		
GW42	253804	666897	15.9	19.8	16.7	12.4	7.9	10.2	6.0	7.9	11.7	12.2	26.7	12.5	13.3	13.7		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.02)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GS51	258709	661317	8.2	11.2	15.9	9.9	8.0	8.1	5.1	6.7	6.2	13.1	20.9		10.3	10.6		
GS52	257822	663713	14.4	19.0	22.0	18.6	3.9	14.9	9.5	10.0	5.0	15.3	20.7	15.7	14.1	14.4		
GE22	263145	666346	12.9	16.0	14.8	8.7	8.1	8.2	5.3	8.0	11.2	13.7	22.0	13.1	11.8	12.1		
GE23	263439	666750	16.7	19.4	19.0	13.7	11.5	11.1	9.1	10.1	14.1	12.2	16.0	8.8	13.5	13.8		
GS53	258589	663776				19.9	18.8	15.8	13.4	11.0	18.1	19.4	28.6	16.8	18.0	18.4		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**

☒ **Local bias adjustment factor used**

☒ **Glasgow City Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Glasgow During 2023

Glasgow City Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Glasgow City Council During 2023

Glasgow City Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Diffusion tube monitoring is carried out in accordance with the procedures contained in the guidance 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users' and LAQM.TG22

Monitoring was conducted in adherence with the 2023 Diffusion Tube Monitoring Calendar.

For 2023 all NO_2 diffusion tubes were supplied and analysed by Glasgow Scientific Services. The preparation method was 20% tri-ethanolamine in water. Glasgow Scientific Services is UKAS accredited for the analysis of diffusion tubes, participating in the AIR-PT Scheme for NO_2 tube analysis and the Annual Field Inter-Comparison Exercise.

In the four AIR-PT results available for 2023, GSS scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Diffusion Tube Annualisation

Annualisation was required for three diffusion tube sites, CC11, GE18 and GS13 due to low data collection. Annualisation was conducted in accordance with the annualization

section of the diffusion tube processing tool and the results have been expressed in the main results table. The annualization method is shown in Table C.2

Diffusion Tube Bias Adjustment Factors

Glasgow City Council have applied a local bias adjustment factor of 1.02 to the 2023 monitoring data. A summary of bias adjustment factors used by Glasgow City Council over the past five years is presented in Table C.1.

Results from four local co-location studies were used to provide the local co-location factor. These were GLA5, GLA6, GLKP and GHSR. Details of the co-location study can be found in Table C2.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	1.02
2022	Local	-	1.10
2021	National	03/22	1.12
2020	National	03/21	0.96
2019	National	03/20	0.85

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Glasgow required distance correction during 2023.

QA/QC of Automatic Monitoring

The 11 permanent monitoring stations in Glasgow form part of the Air Quality in Scotland monitoring network. Instruments are calibrated by the Local Site Operators (LSO) according to the specific site guidelines and audits are carried out every six months by Ricardo EAE. Glasgow City Council Public Health act as LSO for seven of the stations while Ricardo AEA act as LSO for the 4 stations operated as part of the UK network operated by DEFRA. These stations are GLA4, GLKP, GGWR and GHSR.

All of the automatic air quality data gathered, both current and historical, is independently ratified by Ricardo AEA and made available for viewing by the public at the Scottish Government funded air quality website at:

http://www.scottishairquality.co.uk

All data within this report has been fully ratified.

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

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

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

Automatic Monitoring Annualisation

Annualisation was required for two automatic monitoring sites in respect of NO_2, GL6 and GLA7 due to low data collection. Additionally, annualization was required at three locations in respect of both PM_{10} and $PM_{2.5}$, GL6, GLA6 and GL7. Annualisation was conducted in accordance with the technical guidance and the results have been expressed in the main results table. The annualization method is shown in Table C.2

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Glasgow required distance correction during 2023.

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

Site ID	Annualisation Factor Glasgow Anderston	Annualisation Factor Glasgow Byres Rd	Annualisation Factor Glasgow High Street	Annualisation Factor Glasgow Townhead	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
CC11	1.0358	1.0743	1.0394	1.0403	1.0474	24.1	25.3	
GE18	1.0593	0.9710	1.0553	1.0507	1.0341	9.6	9.9	
GS13	1.0364	1.1956	1.1013	1.1189	1.1130	14.5	16.1	
GLA7 (NO_2)	1.0515	-	-	1.0704	1.0609	6.6	7.0	
GL6 (NO_2)	1.0262	-	-	1.0985	1.0624	15.8	16.7	
GLA6 (PM_{10})	1.1045	-	-	1.1095	1.1070	9.7	10.8	
GLA7 (PM_{10})	1.0741	-	-	1.0640	1.0690	8.2	8.8	
GL6 (PM_{10})	1.2295	-	-	1.2605	1.2450	8.0	10.0	
GLA6 ($PM_{2.5}$)	1.1255	-	-	1.1181	1.1218	5.3	6.0	
GLA7 ($PM_{2.5}$)	1.0802	-	-	1.0813	1.0807	4.4	4.7	
GL6 ($PM_{2.5}$)	1.2138	-	-	1.2359	1.2248	4.6	5.7	

Table C.3 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	8	10	11	11	10
Bias Factor A	0.94 (0.89 - 1)	0.81 (0.75 - 0.89)	1.15 (1.03 - 1.31)	1.18 (1.04 - 1.35)	1.16 (1.04 - 1.33)
Bias Factor B	7% (0% - 13%)	23% (12% - 33%)	-13% (-24% - -3%)	-15% (-26% - -4%)	-14% (-25% - -4%)
Diffusion Tube Mean (µg/m^3)	42.1	26.4	14.0	15.8	14.7
Mean CV (Precision)	4.5%	5.9%	9.0%	10.3%	10.0%
Automatic Mean (µg/m^3)	39.6	21.5	16.1	18.6	17.2
Data Capture	98%	100%	100%	99%	99%
Adjusted Tube Mean (µg/m^3)	40 (38 - 42)	21 (20 - 24)	16 (14 - 18)	19 (16 - 21)	17 (15 - 20)

Notes:

A combined local bias adjustment factor of 1.02 has been used to bias adjust the 2023 diffusion tube results.

Appendix D: City Centre / LEZ NO_2 Monitoring Results

Table D.1: Monitoring results from city centre locations during the period 2019 – 2023

Site ID	Site Name	2019	2020	2021	2022	2023	% reduction 2022 to 2023
CC01	George Square	32.4	19.4	25.0	29.9	22.6	24.4
CC02	Union Street	**47.1**	25.8	37.5	38.4	31.4	18.2
CC03	Bath Street	38.6	23.3	31.7	36.2	29.7	18.0
CC04	Glassford St	**40.1**	24.9	28.6	34.3	30.7	10.5
CC05	Buchanan St	38.0	23.9	25.9	32.7	26.5	19.0
CC06	Castle Street	29.2	20.1	24.3	27.5	22.2	19.3
CC07	Hope Street 3	**40.3**	23.4	35.2	**40.4**	35.1	13.1
CC08	Montrose St	28.2	19.1	22.3	27.0	20.3	24.8
CC09	Cochrane St	35.2	21.9	28.6	29.9	22.9	23.4
CC10	Renfield Street	**41.7**	28.2	33.1	38.6	30.3	21.5
CC11	George Street	32.1	18.1	24.6	29.7	25.8	13.1
CC12	North Street	26.9	20.6	19.3	22.8	19.8	13.2
CC13	Hope Street 1	**55.5**	**40.3**	**43.5**	**44.9**	39.0	13.1
CC14	Gordon Street	**58.8**	36.3	**40.2**	**50.0**	**42.1**	15.8
CC15	Hielanman's Umbrella North	**52.1**	26.9	35.6	**42.3**	**40.9**	3.3
CC16	Saltmarket	30.8	23.0	26.2	31.8	21.2	33.3
CC17	High Street	**42.0**	25.9	25.3	34.8	25.7	26.1
CC18	Dobbies Loan	22.9	18.7	21.8	23.6	17.9	24.2
CC20	Dundasvale St	28.2	20.6	24.0	24.5	20.6	15.9
CC21	Royston Road	28.6	21.4	23.8	28.8	21.5	25.3
CC22	St Mungo Ave	25.7	19.9	21.0	23.7	19.6	17.3
CC23	Brown Street	24.3	16.7	19.3	21.0	15.7	25.2
CC24	Broomielaw	36.7	22.5	31.8	36.2	26.7	26.2
CC25	McLeod Street	29.6	22.2	22.1	29.3	20.7	29.4
CC26	Sauchiehall St	31.7	21.2	23.8	28.5	23.4	17.9
CC28	St Mungo's PS	24.0	18.6	14.7	19.2	14.6	24.0
CC29	Garnetbank PS	29.3	21.3	21.6	23.1	18.2	21.2

**Exceedances of annual mean shown in bold

Table D.2: Selected monitoring results from city centre locations exceeding or within 10% of the objective during the period 2019 – 2023

Site ID	Site name	Location Description	Annual Mean NO_2 (µg/m^3)				
			2019	2020	2021	2022	2023
CC13	Hope St 1	Road canyon – next to taxi rank	**55.5**	**40.3**	**43.5**	**44.9**	**39.0**
CC14	Gordon St	Road canyon – next to taxi rank	**58.8**	**36.3**	**40.2**	**50.0**	**42.1**
CC07	Hope St 3	Road canyon – general traffic	**40.3**	23.4	35.2	**40.4**	35.1
CC15	Heilanman's Umbrella	Sheltered location – poor dispersion	**52.1**	26.9	35.6	**42.3**	**40.9**
CC02	Union St	Bus gate – buses and commercial traffic	**47.1**	25.8	**37.5**	**38.4**	31.4
CC10	Renfield St	Road canyon – general traffic	**41.7**	28.2	33.1	**38.6**	30.3
CC17	High St	General traffic	**42.0**	25.9	25.3	34.8	25.7
CC04	Glassford St	General traffic	**40.1**	24.9	28.6	34.3	30.7
CC03	Bath St	General traffic	**38.6**	23.3	31.7	**36.2**	29.7
CC05	Buchanan St	Bus gate – buses and taxis	**38.0**	23.9	25.9	32.7	26.5
CC24	Broomielaw	General traffic	**36.7**	22.5	31.8	**36.2**	26.7

*Exceedances of annual mean shown in red. Monitoring within 10% of objective shown in bold.

Appendix E: Monitoring locations and pollution trends

Figure E.1: Location of Automatic Monitoring Stations

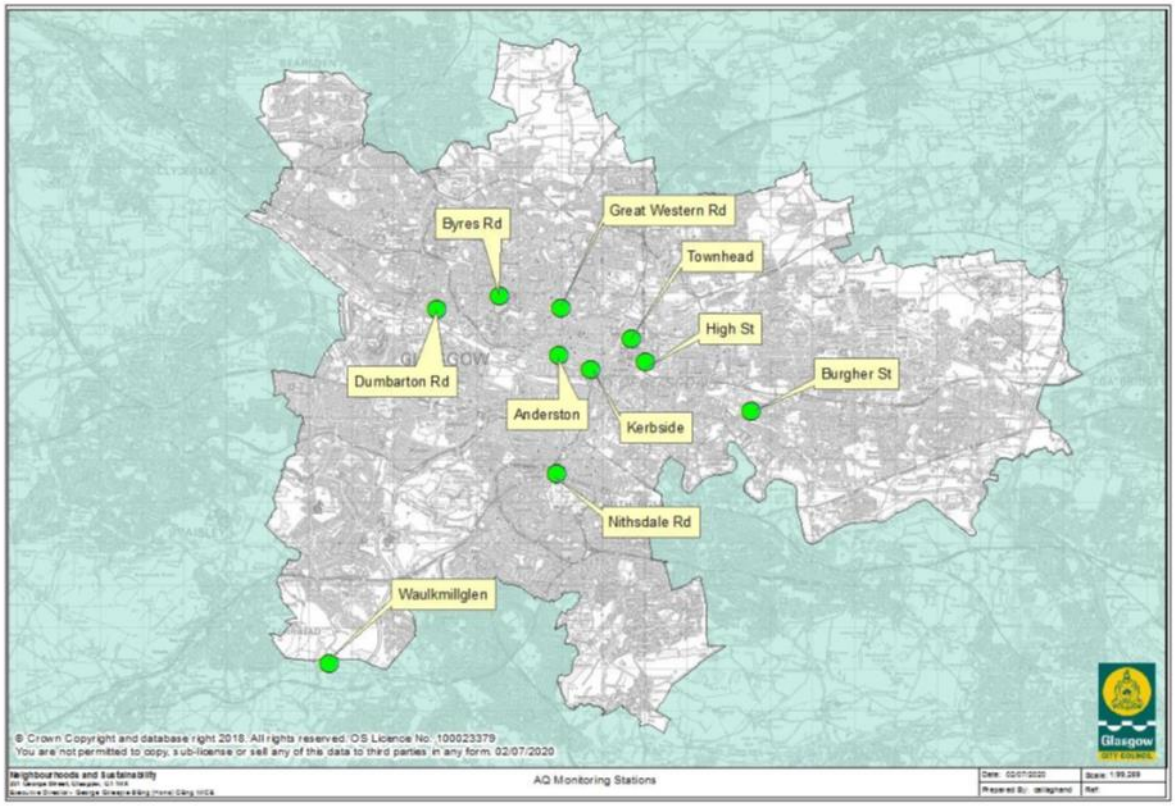


Figure E.2: Location of NO_2 Diffusion Tubes

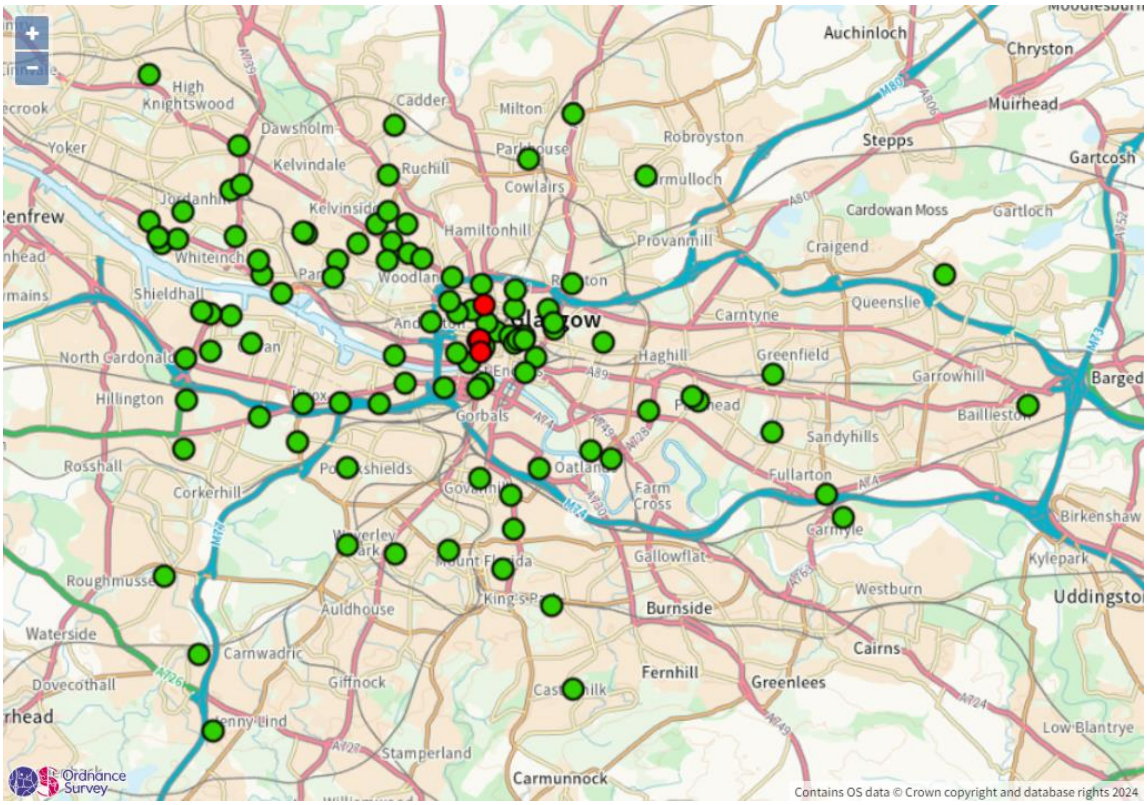


Figure E.3: Selected monitoring results from city centre locations exceeding or within 10% of the objective during the period 2019 – 2023

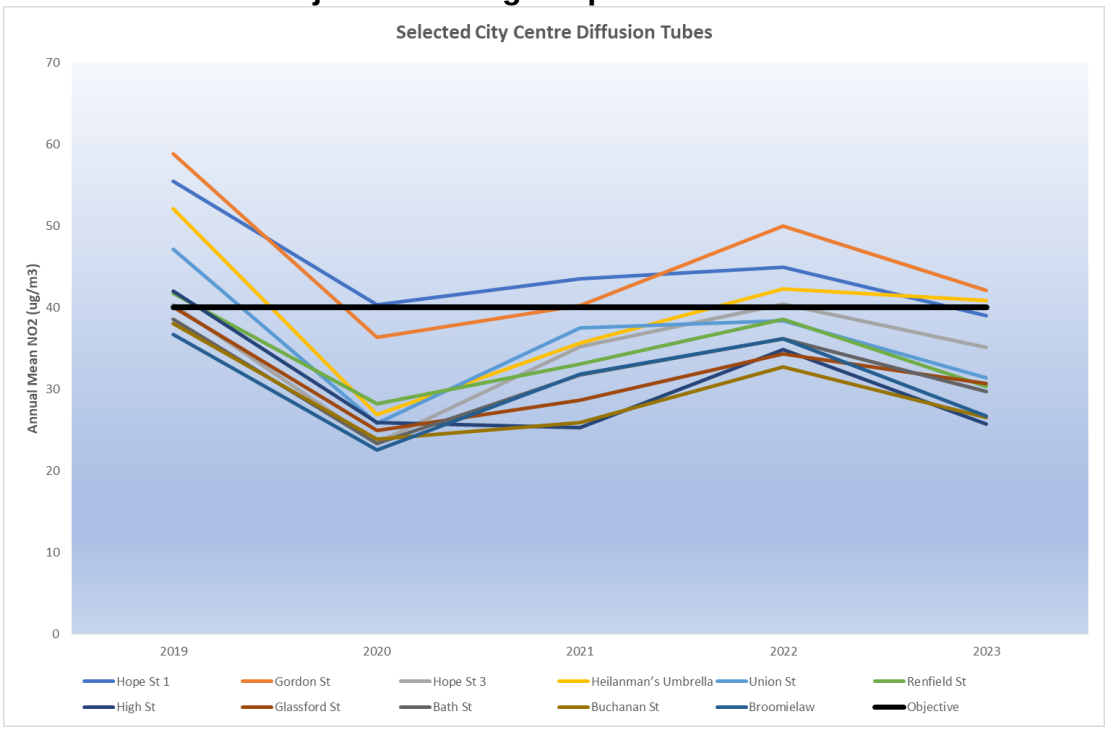
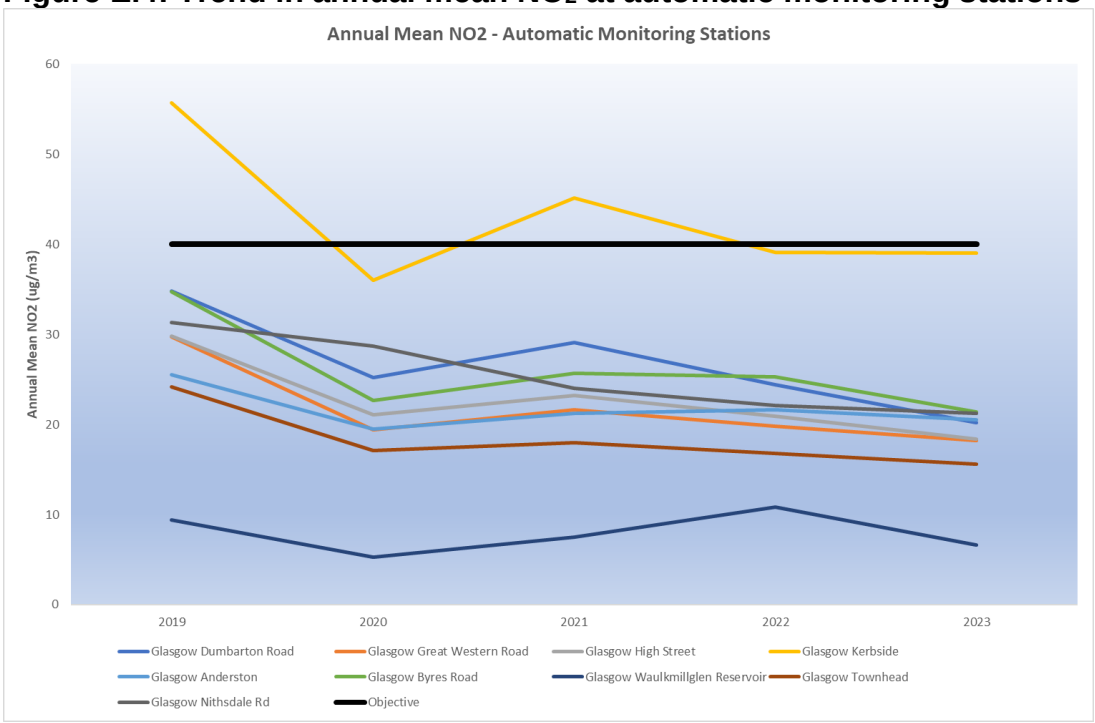


Figure E.4: Trend in annual mean NO_2 at automatic monitoring stations



Appendix F: 2024 Air Quality Action Plan Measures

Table F.1: 2024 AQAP Measures

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
1	Continue to implement the Low Emission Zone and Mitigation Measures	Promoting Low Emission Transport	2024	In progress	GCC	Transport Scotland LEZ Grant Self-funded through penalty charges	Fully funded for development and implementation phases	£1 million - £10 million	20% reduction (10ug/m^3 at 2022 worst case location)	June 2023 – implement LEZ for all vehicle types. June 2024 – resident grace period and sector specific exemptions end. Statutory annual reporting	The Glasgow LEZ has been in effect since 2018 (buses only) and expanded to all other vehicle types in June 2023. The grace period for residents and the exemption for taxis will expire in June 2024.
2	Implement the Council's Fleet Strategy		2030	In progress	GCC	Internal	Funded	>£10 million	Unknown. As a significant fleet operator, GCC fleet improvements will have a benefit, particularly within the AQMA	As detailed in Fleet Strategy	
3	Conduct a pilot project to install a combined solar PV, battery storage and EV		2024	In progress	GCC	European Union and Transport Scotland funding	Funded	£100k - £500k	Unknown	Procurement of PV panels and battery storage complete	Locations for pilot project actively being explored

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
	charging facility open to public use.										
4	Transition the fleet of private hire vehicles to zero emission vehicles		2030	Planned	GCC	N/A	N/A	Unknown – expected through changes to license conditions and fleet renewal as vehicles age out of use	Unknown. Over 3000 private hire vehicles currently licensed in Glasgow.	Annual proportion of zero emission private hire vehicles	
5	Develop new Staff Travel Plan for GCC employees	Promoting Travel Alternatives	2024	In progress	GCC	N/A	N/A	N/A	No target reduction in emissions	Staff travel survey completed – analysis in early 2024	
6	Support hybrid and remote working		Ongoing	In progress	GCC	N/A	N/A	N/A	No target reduction in emissions	Hybrid working ongoing since pandemic. Increased provision of hybrid meeting rooms to facilitate remote working	
7	Establish a pilot example school for the promotion of good air quality and travel practices.		2024	Planned	GCC	Various – School street program / active travel funding / Scottish Government	In planning	TBD	Unknown. Reduction will be estimated from analysis of completed project	Identification of pilot school. Preparation of educational material	Project will include current best practice in respect of the “School Streets” program, combined with active travel infrastructure provision and educational

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
											material for staff, parents and students and help with School Travel Plans.
8	Vehicle Idling Awareness and Enforcement	Traffic Management	Ongoing	In progress	GCC	Scottish Government	Funded	£100k - £500k (staffing and communications costs)	Unknown. Vehicle idling is unnecessary and contributes to overall emissions, especially at sensitive locations	N/A	GCC will undertake vehicle idling awareness campaigns and enforcement, particularly around sensitive locations, and explore options for improving effectiveness of enforcement.
9	Emission based parking permits		2024	In progress	GCC	N/A	N/A	£10k-£50k	Whilst focussed on CO_2 emissions, this measure is expected to have co-benefits in respect of LAQM pollutants	Consultation completed end 2023 Publication of Proposals to be carried out in first quarter of 2024	
10	Implement city wide 20mph speed limit and explore with Transport Scotland the potential for actions benefitting air quality in relation to the trunk road network.		2024	Planned	GCC	N/A	N/A	N/A	Unknown. Minor emission reduction expected due to reduction in due to smoother traffic	Network assessment completion – March 2024.	

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
	Where appropriate, and in line with Action 17, update air quality monitoring at suitable locations close to the trunk road network.								flow and reduced congestion. Thi s measure will encourage more walking, wheeling and cycling in quieter and less congested neighbourhood s		
11	Support the development and implementation of the Glasgow Transport Strategy (GTS) and associated City Centre Transport Plan (CCTP) and People First Zone (PFZ)	Transport Planning and Infrastructure	2030	In progress	GCC	Various sources - GCC / Scottish Government / Transport Scotland / Sustrans	Annual or ongoing funding required	>£10 million	Unknown but significant due to target of 30-40% reduction in peak-hour private car traffic in city centre	To be determined within delivery plan and delivery framework. PFZ strategic case and emerging options March 2024	Various aspects of the GTS and CCTP are expected to have significant impact on vehicle emissions, particularly within the AQMA Glasgow Transport Strategy City Centre Transport Plan
12	Support the expansion of Glasgow's active travel network and supporting infrastructure through		2031	Partially completed	GCC	GCC / Scottish Government / Sustrans	Annual or ongoing funding required	£1 million - £10 million	Unknown – reduction in emissions expected due to transition to	Annual targets for number of key locations connected to city network (schools, healthcare	Glasgow Active Travel Strategy

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
	the Active Travel Strategy including promoting behavioural change to encourage modal shift to sustainable transport options								zero emission transport modes	centres etc.) to inform City Network delivery.	
13	Public Cycle Hire Scheme		N/A	In progress	GCC / Nextbike	GCC / Scottish Government	Funded	£10k - £50k	Unknown – reduction in emissions expected due to transition to zero emission transport modes	GCC will continue to explore potential for expansion of the cycle hire scheme, including provision of e-bikes and charging infrastructure.	
14	Support for Glasgow Car Club	Alternatives to Private Vehicle Use	Ongoing	In progress	GCC / Co Wheels	Dependent on future requirements	Not funded	Dependent on future requirements	Each car club vehicle is estimated to remove the equivalent of 12 vehicles from private use	Dependent on future requirements	Potential future measures include increased vehicles / locations and zero emission vehicles where appropriate
15	Continue to support and expand the Eco Stars Fleet Recognition Scheme	Vehicle Fleet Efficiency	Ongoing	In progress	GCC / TRL	GCC / Scottish Government	Funded	£10k - £50k	Eco Stars helps fleet operators improve efficiency, reduce fuel consumption & emissions and	Annual increase in membership and fleet numbers	

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
									make cost savings		
16	Revoke Byres Rd / Dumbarton Rd AQMA	Public information	2024	In progress	GCC	N/A	N/A	N/A	N/A – target reduction has been achieved in this AQMA		
17	Undertake a comprehensive review of air quality monitoring in Glasgow with a focus around schools, hospitals and care homes		2024	Planned	GCC	N/A	N/A	N/A	N/A		This action fulfils one of the additional recommendations from the ESS report. Whilst existing knowledge indicates that all sensitive receptors of this type currently meet the air quality objectives, the provision of this information will help quantify the progress required for longer term ambitions such as meeting the WHO guideline levels
18	Develop an appropriate model to successfully deliver the Local Heat and Energy Efficiency Strategy (LHEES)	N/A	2024	In progress	GCC	N/A for model development stage	N/A	N/A	The deployment of heat networks in the city will reduce the contribution to background pollution levels		

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
									from fossil fuelled heating systems.		
19	Aligning Planning and Air Quality Guidance and Placemaking Targets outlined in CAFS 2 Ensuring air quality is a material consideration in developments compatible with National Planning Framework (NPF) 4 and that air quality is included in any revisions to the City Development Plan	Policy Guidance and Control	Ongoing	Ongoing	GCC	N/A	N/A	N/A	Unknown	Providing air quality updates as required for changes in GCC Planning Policy and Guidance	
20	Explore pathways towards the achievement of World Health Organisation (WHO) guideline values, including interim guidelines, and liaise with the Scottish Government in relation to potential changes to		Ongoing	In progress	GCC	N/A	N/A	N/A	New target values of themselves will not result in pollutant reductions		

Measure No.	Measure	Category and Classification	Expected /Actual Completion Year	Measure Status	Delivery Organisation (s)	Funding Source	Funding Status	Estimated Cost of Measure	Target Reduction in Pollutant / Emission from Measure	Key Milestones	Comments
	the statutory Scottish objectives.										
21	Support the Council Tree Plan and pursue planting at locations where additional trees have the potential to maximise air quality co-benefits.	N/A	Ongoing	Planned	GCC	Various / Potential LEZ surplus funding	Unconfirmed	£100k - £500k	Unknown - Dependent on location / species etc.	Annual reporting on new tree planting, particularly within AQMA	

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
DT	Diffusion Tube
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

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