Annual Progress Report (APR)

THE CITY OF EDINBURGH COUNCIL

2022 Air Quality Annual Progress Report (APR) for The City of Edinburgh Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

December 2022

Bureau Veritas UK Limited assisted with Data and Monitoring sections of the report.

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Executive Summary: Air Quality in Our Area

Air Quality in the City of Edinburgh

The City of Edinburgh Council currently has six Air Quality Management Areas (AQMAs):

- Edinburgh Central AQMA, declared for exceedances of both the nitrogen dioxide (NO_2) annual and 1-hour mean Air Quality Strategy (AQS) objectives;
- St John's Road AQMA, declared for exceedances of both the NO_2 annual and 1-hour mean AQS objectives;
- Great Junction Street AQMA, declared for exceedances of the NO_2 annual mean AQS objective;
- Glasgow Road AQMA, declared for exceedances of the NO_2 annual mean AQS objective;
- Inverleith Row AQMA, declared for exceedances of the NO_2 annual mean AQS objective; and
- Salamander Street AQMA, declared for exceedances of both the PM_{10} annual and 24-hour mean AQS objectives.

An AQMA is required when a pollutant fails to meet air quality standards which are set by the Scottish Government. Road traffic is by far the greatest contributor to the high concentrations of NO_2 in the city. However, the AQMA at Salamander Street declared for PM_{10} exceedances is due to other sources as well as traffic. Emissions from industrial and fugitive sources from operations in and around Leith Docks are a contributory factor.

During 2021, the Council has monitored NO_2 concentrations at 184 monitoring locations, including eight automatic monitoring sites, and three duplicate diffusion tube sites and six triplicate co-location sites. Only one exceedance of the annual mean NO_2 AQS (Air Quality Strategy) objective of 40µg/m^3 was reported. This was at diffusion tube site ID 81 (East Norton Place), located within the Central AQMA, reporting an annual mean concentration of 40.5µg/m^3. This site is located at a façade at the point of nearest relevant exposure.

No diffusion tube monitoring locations reported annual mean concentrations greater than 60µg/m^3, therefore it is unlikely that there is a risk of any exceedances of the 1-hour NO_2 objective during 2021. As there continues to be no breach of the hourly mean objective at

the St John's Road AQMA over the past 5 years, the AQMA is currently being amened in order to revoke its designation for exceedances of the short term NO_2 AQS objective.

Annual mean NO_2 concentrations within the Great Junction Street AQMA have reported concentrations to be below the AQS objective for five years running. Previous to 2020, concentrations here were gradually decreasing. Despite this, there is currently an extension to the Tram network taking place and proposed traffic management changes that may cause concentrations to increase in future years. The Council therefore will consider revoking the Great Junction Street AQMA once the impact of this is known.

Within the Inverleith Row AQMA, there have now been four years of maintained compliance with the annual mean NO_2 objective. The Council has received approval from SEPA to revoke this AQMA due to the continued trend of decreasing NO_2 concentrations being observed and will progress with this over the course of 2023.

PM_{10} and $PM_{2,5}$ were measured across eight different monitoring sites. There were no reported exceedances of the PM_{10} annual mean or hourly AQS objectives, or of the $PM_{2.5}$ annual mean objective during 2021.

As there have been less than seven 24-hour mean periods where PM_{10} concentrations have exceeded 50µg/m^3 each year over the past five years within the Salamander Street AQMA, the Council will consider revoking this designation from the AQMA.

Actions to Improve Air Quality

The City of Edinburgh Council has revised the Air Quality Action Plan for Edinburgh in 2022. The Council's proposed AQAP measures consist of actions under eight key themes:

- Low Emission Zone (LEZ)
- Strategic Transport
- Behavioural Change to Active Travel
- Public Transport
- Low Emission Vehicles
- 2030 Climate Strategy
- Integrated Policies and Guidance
- Domestic Emissions.

This Plan is in draft format while a period of statutory consultation is undertaken in Spring 2023. The Plan will be finalised, following consultation input, before the end of 2023.

Local Priorities and Challenges

Continuing economic growth in the city and wider region presents a challenge for air quality. Population growth has inevitable demand for all modes of transport and supported infrastructure.

The Council has prepared Edinburgh's proposed new Local Development Plan called the City Plan 2030. This will set out the strategy for development, proposals and policies to shape development and inform planning decisions in the city over the next ten years and beyond. The first stage of preparing the Plan consulted on changes through a main issues report, called 'Choices for City Plan 2030' Responses to the Choices to help preparation of the new Plan were published in Summer 2020. The proposed Plan was approved at the Council's Planning Committee in September 2021 and the went through a statutory period of representations. It has now been submitted to Scottish Ministers for Examination.

Priorities for the Council in terms of air quality in 2023 will be

- **Continued delivery of the Low Emission Zone** including key actions as follows
    - Road network mitigation including engagement with key stakeholders on proposed changes and putting in place relevant traffic orders,
    - Signage and lineage notifying drivers at LEZ boundary and approach roads
    - Enforcement infrastructure and systems,
    - Communications timed across period to June 2024 to ensure maximum early compliance,
    - Further develop the LEZ through continued working with the Scottish Government to monitor and evaluate the LEZ by publishing regular updates on performance, and;
    - Continue to update the LEZ City Model developed under the National Modelling Framework to reflect changes to the road network and more recent fleet predictions from ANPR data collected.
- **Undertake statutory consultation on the revision of the Air Quality Action Plan**. The consultation and engagement on the Draft Air Quality Action Plan will be combined with other relevant emerging placemaking and mobility-led strategies and action plans.

- **Finalise the drafting of the Salamander Street Action Plan** for PM_{10} for consultation once the steering group has reconvened.
- **Monitoring of Particulate Matter** will be considered adjacent to the Salamander Street PM_{10} AQMA, considering the level of new sensitive residential uses in the area.
- **Changes to Air Quality Management Areas** including revoking of the Inverleith Row AQMA and amending the St John's Road AQMA in order to revoke its designation for exceedances of the short term (1-hour) NO_2 AQS objective.

How to Get Involved

The Council will undertake a statutory consultation about the revised Air Quality Action Plan in Spring 2023. We will want to hear your views. Information will become available on the Council's Consultation Hub here; https://consultationhub.edinburgh.gov.uk/ Get involved!

Individual decisions can make a big difference to improving air quality for example, rethinking your journey to lower your pollution footprint.

Further information on how you can help improve air quality can be found by clicking on the link below:

http://www.scottishairquality.scot/what-can-i-do/

Quiet Routes are Edinburgh's walking and cycling routes, which avoid the busy main roads. The link below directs you to the route maps:

http://www.edinburgh.gov.uk/info/20087/cycling_and_walking/1475/explore_quietroutes

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1 Local Air Quality Management

This report provides an overview of air quality in the City of Edinburgh Council's administration area during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by the City of Edinburgh 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 an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by the City of Edinburgh Council can be found in **Error! Not a valid bookmark self-reference.**. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at http://www.edinburgh.gov.uk/airquality. The AQMAs can also be viewed on the Council's air quality monitoring network map at the following link: https://cityofedinburgh.maps.arcgis.com/apps/webappviewer/index.html?id=08bce99ce03e4e2198935a4334041a8f.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants (AQO)	City / Town	Description	Action Plan
Central AQMA	NO_2 annual mean NO_2 1-hour mean (amended March 2009)	Edinburgh City Centre	Includes area of city centre and main arterial routes leading into the centre. Extensions in: March 2009 to include West Port; April 2013 to include Gorgie Road / Chesser, / Grassmarket / Cowgate and London Road / Easter Road; and September 2015 to include Angle Park Terrace and Clerk Street / Nicolson Street areas. Exceedances mostly in locations where there are street canyons, high percentage of bus movements and congested traffic. Residential properties	Air Quality Action Plan (Updated 2010) New Action Plan currently drafted for public consultation in Spring 2023

AQMA Name	Pollutants (AQO)	City / Town	Description	Action Plan
			at basement, ground, first, second, third, and fourth level, 2 – 4 metres from road edge. Busy shopping areas include Princes Street, George Street, Dalry / Gorgie Rd, Leith Walk, North Bridge, West Port, Grassmarket, London Road and Easter Road. Upwards road gradient Leith Walk, North Bridge (south bound) and West Port.	
St John's Road AQMA	NO_2 annual mean NO_2 1-hour mean (amended March 2009)	Corstorphine, Edinburgh	Part of the A8 route at Corstorphine area. Residential properties at ground, first, second, third and fourth floor level within 2m of kerb edge. Street canyon effect in part. Busy shopping area. Congested flat road with high percentage of bus movements.	As above
Great Junction Street AQMA	NO_2 annual mean	Leith, Edinburgh	The full length of road to the depth of the building facades, including the Ferry Road Junction area. Residential properties at first, second, third and fourth floor level. Street canyon, congested traffic and busy shopping area. Receptors close to road edge. High percentage of bus movements. Extended April 2013 to include Bernard Street, Commercial Street and North Junction Street.	As above
Glasgow Road AQMA	NO_2 annual mean	West Edinburgh	Part length of A8, between Newbridge Roundabout and Ratho Station, to the depth of the building facades.	As above
Inverleith Row AQMA	NO_2 annual mean	North Edinburgh	The road comprising the junction of Inverleith Row and Ferry Road, to the depth of building facades.	As above

AQMA Name	Pollutants (AQO)	City / Town	Description	Action Plan
Salamander Street AQMA	PM_{10} annual mean	Leith, Edinburgh	A section of the A199 including Salamander Street, Baltic Street, Bernard Street, and part of Seafield Road; an area to the north-east as far as the East Sands of Leith and south of Baltic Street, extending to Queen Charlotte Street and Links Place	Action Plan currently under development.

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 the City of Edinburgh 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.

The City of Edinburgh Council will provide an update on this action following discussions with the Scottish Government throughout the five-year life span of the CAFS2 strategy.

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. It has been agreed that all partners will meet in 2023 to consider the potential opportunities. Further updates will be provided in future reports.

2.3 Progress and Impacts of Measures to address Air Quality in the City of Edinburgh Council

The City of Edinburgh Council has revised the Air Quality Action Plan for Edinburgh in 2022. A copy is provided as a separate document to this report. This Plan is in draft format while a period of statutory consultation is undertaken in Spring 2023. The Plan will be finalised following consultation input before the end of 2023.

During the initial stages of developing a new draft AQAP, a review of the actions in the existing plan was undertaken to consider their success, or otherwise, and help identify those which remain relevant going forward into the updated AQAP. The outcome of this review is summarised below. This has been part of a wider review of relevant national, regional, and local policies, plans and programmes which have the potential to impact air quality in Edinburgh which is included in the AQAP document.

The focus of the 2010 AQAP was to reduce emissions from buses and freight vehicles operating in the city. A Low Emission Strategy Feasibility study undertaken prior to 2008, concluded that the greatest reductions in NO_x and PM_{10} emissions would be achieved by implementing a mandatory emissions reduction scheme for bus and road freight operators. Voluntary Partnership Agreements were deemed the next best option. Further Assessments at St John's Road and Great Junction Street AQMAs also identified that buses were the main contributors of NO_x emissions.

Actions in the AQAP were broadly set out under the following themes:

- Cleaner Vehicles – Actions on Buses
- Cleaner Vehicles – Actions on Freight
- Policy Planning and Assessment
- Transport Planning
- Traffic Management
- Cleaner Vehicle - Council Fleet
- Other

Conclusions from each of these themes is summarised below.

Cleaner Vehicles – Actions on Buses

Ongoing work with bus operators has developed since the AQAP was published, through voluntary partnerships, retrofitting existing buses and assisting bus operators with renewal of the fleet through Scottish Government funding. Buses will be further targeted through the Low Emission Zone (LEZ). In terms of impacts on emissions in the city centre, this group of ongoing measures is likely to have had the largest impact and will continue to help improve air quality as the bus fleet moves away from diesel.

Cleaner Vehicles – Actions on Freight

The main measure relating to freight has been the implementation of the ECO Stars scheme, which has expanded to include over 10,000 vehicles and 312 operators, becoming the largest scheme in the UK. Heavy Goods Vehicles (HGVs) have seen the largest proportional reductions in emissions with increasing Euro standards (particularly Euro 6), and therefore this measure is likely to have brought forward emissions reductions sooner than would otherwise have been the case.

Policy Planning and Assessment

The 2010 AQAP included a measure to run a series of seminars on air quality monitoring, establish a city-wide inventory of development sites, and develop further modelling of air quality impacts around current developments. Although this area of work hasn't progressed as much as those discussed above, air quality assessments ensure that air quality is fully considered within the planning process.

Transport Planning

At the time of the 2010 AQAP the Local Transport Strategy (LTS) was the key transport planning policy document. Since then, the Edinburgh Active Travel Action Plan has been updated periodically and the LTS has been replaced by the City Mobility Plan which, among other aims, has set a target for transport to be net zero carbon by 2030. Throughout the evolution of transport policy in Edinburgh since the AQAP was published, air quality has been considered within the process, with air quality professionals collaborating on policy to reduce both vehicle numbers and emissions. The implementation of the City Mobility Plan will be key to the updated AQAP.

Traffic Management

Traffic management measures have focussed on traffic signalling (implementation of SCOOT and MOVA at various junctions across the city) and 20 mph zones. At the Newbridge Roundabout (Glasgow Road AQMA) a feasibility study of three specific options was undertaken. Modelled emission reductions for NOx, PM10 and CO2 were 47%, 29% and 43% respectively, for the afternoon peak period with implementation of MOVA. Vehicle time delays were assessed pre-and post-installation with results showing that there was a significant reduction in waiting time on the A8 westbound corridor. In most cases these systems will reduce stop start traffic at specific junctions will result in localised and marginal reductions in emissions.

Cleaner Vehicles - Council Fleet

Some progress has been made in both driver training (eco-driving) and in telematics use in council vehicles. There has also been a gradual fleet renewal with an increase in electric vehicles (100% for cars) for the Council fleet. Notably, an electric 15-tonne mechanical street sweeper entered operation in 2020, which is the first of its type in Scotland. Although the Council fleet is not a large proportion of overall traffic in Edinburgh, and therefore will not have a large impact, it is important to show leadership and increase public awareness of the use of low emission vehicles.

Other

Other measures in the AQAP included staff awareness training, which although would not have had a large impact on emissions, raised awareness about air quality more widely across the Council. Measures progressed since the AQAP was published include the Edinburgh Tram, Borders Rail Link, Electric Vehicle infrastructure and extensive feasibility work on the LEZ. Progress on actions in the plan and other measures the Council is undertaking which affect air quality have been reported annually within Edinburgh's Annual Progress Report (APR). The APR has also reported a general downward trend in concentrations of NO_2 across Edinburgh. This will be as a result of both local measures (for example those to reduce emissions from buses and freight), measures being implemented by the Scottish Government (through Cleaner Air for Scotland) and those at a wider scale (such as those to reduce emissions from vehicles/improved Euro Standard vehicles). However, despite improvements, there remain areas of poor air quality which the revised AQAP will need to address.

The revised draft AQAP focuses on locations where there are current exceedances of the NO_2 AQS objectives, but also identifies strategic measures which will ensure concentrations of several pollutants are reduced across Edinburgh, even below current statutory objectives. This precautionary approach to public health is supported by the Cleaner Air for Scotland 2 Strategy (CAFS2) 2021.

The AQAP has been created in tandem with emerging placemaking and mobility-led strategies and actions plans including the Street-space Allocation Framework and action plans covering active travel, public transport, road safety and parking. This approach maximises delivery of relevant strategic objectives in the Council's City Mobility Plan, 2030 Climate Strategy, and emerging City Plan 2030.

The Plan is intended to complement the substantial amount of work which has been undertaken in relation to the Low Emission Zone (LEZ), which was implemented on 31 May 2022 (and will be enforced from 1st June 2024).

Separately, further work will be undertaken in respect to the actions that are required to address localised Particulate Matter (PM10) exceedances in the Salamander AQMA. This will include the presentation of draft actions in 2023 to address the specific issues within that AQMA.

The draft Plan's actions are summarised under eight key themes and set out in Table 2.2 below - *Draft Revised Air Quality Action Plan Actions December 2022 – for statutory consultation*. Each action includes the Council department or other organisation who is responsible for delivery, expected benefit in terms of pollutant emission and/or concentration reduction (where possible), implementation timescale, and how progress will be monitored.

The draft Plan also recognises key issues that need to be prioritised as follows:

- Implementation of the LEZ, which should reduce concentrations of nitrogen dioxide in central Edinburgh to a level which achieves the air quality objectives and Limit Values at most locations,
- Specific action in other areas of poor air quality such as St Johns Road AQMA and continued action in areas where AQMAs are being revoked to ensure air quality continues to improve e.g., Inverleith Row,

- Through collaborative working, ensure that wider strategic air quality action is implemented through existing policy areas. This will include strategic transport improvements, promotion of behaviour-change to reduce private vehicle use, promotion of low emission vehicles and controlling domestic emissions, and,
- Plans being developed and implemented for placemaking, climate change and noise reduction are closely co-ordinated and aligned with those for air quality in order to maximise co-benefits.

It is judged that with the implementation of the LEZ, the actions outlined in this draft Plan and the Council's wider commitments, the current air quality objectives for NO_2 will be achieved within the duration of the Plan.

There are several air quality policy areas that are outside of the direct control of the Council, such as vehicle emissions standards. The Council will therefore continue to work with regional and central government and key stakeholders on policies and issues beyond the Council's direct influence, particularly where local evidence can be provided to support and influence change.

The draft AQAP has been produced in collaboration with external bodies, SEPA, Transport Scotland and NHS Lothian, as well as relevant Council disciplines including Placemaking and Mobility, Planning, Climate (Policy and Insight), Regulatory Services, Finance and Communications.

With the feedback from the consultation a final AQAP will be produced. This will be presented to the Transport and Environment Committee for approval in 2023, prior to submission to the Scottish Government, under the requirements of the Environment Act 1995 (as amended).

Table 2.2 – Draft Revised Air Quality Action Plan Actions December 2022 – for statutory consultation

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
1 LEZ	1.1 Implement the Low Emission Zone and key actions such as the road network mitigation measures, signage, enforcement systems, communication plan and further development of the LEZ through continued working with Scottish Government to monitor and evaluate performance and maintain City modelling work.	Promoting Low Emission Transport – Low Emission Zone	The Council (Placemaking and Mobility, Network Management and Communications)	N/A	2022 onwards	Annual LEZ performance reporting	NOx emissions from traffic sources within LEZ by 55% (equivalent to 25-30 tonnes/year), when compared to 2019 levels	Initial implementation in place 31st May 2022	2025	Enforcement begins 1st June 2024.
	1.2 Work with Transport Scotland and SEPA to look at opportunities to promote zero-carbon city centres within the existing LEZs structure.	Promoting Low Emission Transport – Low Emission Zone	The Council (Placemaking and Mobility), SEPA, Transport Scotland	2021-2026	N/A	N/A	N/A	None	2026	Cleaner Air for Scotland Strategy action

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
2 Strategic Transport	2.1 In the context of a strategic approach to traffic management that seeks to reduce motorised traffic and encourage public transport and active travel, seek to ensure that traffic management projects achieve positive impacts on air quality especially in locations in breach of, or at risk of breaching, air quality objectives, and include mitigations for negative impacts.	Traffic Management – Strategic Highway Improvements	The Council (Network Management)	N/A	N/A	Modelled emission reductions for individual schemes	N/A	N/A	N/A	The City NMF Model should be utilised

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	2.2 Undertake detailed design work for the St John's Road/Drumbrae South junction and implement improvements	Traffic Management – Strategic Highway Improvements	The Council (Placemaking and Mobility)	2018	To be confirmed	Implementation of changes	Not quantifiable	Preliminary design and traffic modelling undertaken	To be confirmed	Details of resourcing and programming to be confirmed with Major Junctions Review
	2.3 In conjunction with Transport Scotland, ensure that any new traffic management schemes within the Glasgow Road AQMA achieve improvements in local air quality and reduce exposure to pollutants	Traffic Management – Strategic Highway Improvements	The Council (Placemaking and Mobility and Network Management) and Transport Scotland	N/A	N/A	Implementation of changes	Not quantifiable	N/A	N/A	Scheme could be considered in the lifetime of the Plan

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	2.4 Make use of the City's air quality model developed under the CAFS National Modelling Framework (NMF) for the LEZ, to help understand the air quality impacts of proposed street projects; and to assist in the selection of mitigation measures where necessary, to maximise improvements in air quality	Transport Planning and Infrastructure - Other	The Council (Placemaking and Mobility) and SEPA	2023	Across the timescale of this Plan	Annual LEZ performance reporting	N/A	None	2024 to have process in place	
3 Active Travel	3.1 Engage in Clean Air Day on an annual basis over the 5-year period of this plan	Promoting Travel Alternatives/ Public Information	The Council (Placemaking and Mobility)	2022	Annually across the timescale of this Plan	Clean Air Day activities	Not quantifiable	Previous engagement	2027	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	3.2 Work with Council education officers and schools, to increase awareness of air quality across the school community	Promoting Travel Alternatives/ Public Information	The Council (Placemaking and Mobility) and SEPA	2022	Across the timescale of this Plan	N/A	Not quantifiable	Ongoing ad-hoc activities within schools	2027	
	3.3 Support citizen science-type projects looking at air quality to encourage behaviour change towards sustainable travel modes	Promoting Travel Alternatives	The Council (Placemaking and Mobility)	N/A	N/A	N/A	Not quantifiable	N/A	Unknown at this stage	
4 Public Transport	4.1 Incorporate air quality considerations into the new Public Transport Action Plan (PTAP)	Transport Planning and Infrastructure	The Council (Placemaking and Mobility)	2022	2022-2027	PTAP produced which identifies air quality as a determining factor when considering the prioritisation of schemes	Not quantifiable	None	Across the timescale of this plan	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	4.2 Support projects to decarbonise the Edinburgh bus fleet.	Promoting Low Emission Transport	The Council (Placemaking and Mobility)	2022/23	Ongoing	Number of electric or alternatively fuelled vehicles in Edinburgh bus fleet	Not quantifiable	Low uptake to date	n/a	
5 Low Emission vehicles	5.1 Continue the ECO Stars fleet recognition scheme	Vehicle Fleet Efficiency – Fleet Efficiency and Recognition Schemes	The Council (Regulatory Services)	Annually	Ongoing	Numbers of vehicles registered on the scheme	Not quantifiable	ECO stars well established	2027	
	5.2 Update Edinburgh Planning Guidance to incorporate a greater provision of electric vehicle (EV) infrastructure in new developments	Promoting Low Emission Transport- Priority Parking for LEVs	The Council (Planning and Building Standards)	2022	2022/23	Updated guidance (within Edinburgh Design Guidance)	Not quantifiable	N/A	2023	Annual incremental improvements to be applied until 100% car parking is EV charging-ready

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
6 2030 Climate Strategy	6.1 Discourage the uptake and use of biomass in commercial settings through Planning Policy in order to ensure no negative impacts on local air quality and to support the transition to low carbon technologies	Promoting Low Emission Plant -Other Policy	The Council (Planning and Building Standards)	2022	2023/24	City Plan policy adoption	Not quantifiable	City Plan drafted for examination	2024	
7. Integrated Policy	7.1 Host a workshop with relevant Council officers to increase collective knowledge of air quality issues and solutions	N/A	The Council (Placemaking and Mobility)	2022	2022/23	Workshop held	N/A	None		

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	7.2 Use SEPA's regional air quality model to investigate the impacts of City Plan development on air quality in the long term	Transport Planning and Infrastructure - Other	The Council (Planning and Building Standards) and SEPA	2022	2023	Development of SEPA regional model	N/A	See Comments	2027	Work is ongoing to incorporate road network and traffic data into to the AERIUS tool, a pilot tool is expected in 2022. Discussions with the Scottish Planning Group to integrate this into the Scottish planning process will form part of a later work package.

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	7.3 Lobby Scottish Government for an update of licensing laws to tackle concerns such as patio gas heaters and external solid fuel burning in licensed premises	Promoting Low Emission Plant – Other Policy	The Council (Regulatory Services)	2022	2022 onwards	Change in licensing laws	N/A	None		
	7.4 Continue to enforce against vehicle idling and expand awareness raising campaigns, including advising commercial fleet operators at Council's Events Planning and Oversight Group of engine idling laws	Traffic Management – Anti-Idling Enforcement	The Council (Network Management and Enforcement and Communications)	2022	2022 onwards	TBC	Not quantifiable	Enforcement mechanism already in place.	Across the lifetime of this plan	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	7.5 Ensure Placemaking strategies and guidance including Place Briefs take account of air quality.	Policy Guidance and Development Control – Air Quality Planning and Policy Guidance	The Council (Planning and Building Standards & Placemaking and Mobility)	2022	ongoing	Evidence of Increasing prominence of air quality consideration within strategies and guidance	Not quantifiable	Air quality is a considering factor in the development of the emerging Street Space Allocation Framework	Across the lifetime of this plan	Link to Cleaner Air for Scotland 2 Strategy Action
8 Domestic Emissions	8.1 Local information campaigns to support the national message – for example communications from the Council in winter on energy needs to work in partnership with air quality messaging	Public Information	The Council (Placemaking and Mobility, Communications)	2022	Unknown at this stage	Campaigns undertaken	Not quantifiable	None	Unknown at this stage	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	8.2 Lobby Scottish Government to review the Clean Air Act, in particular supporting abolishing permitted development rights for flues for woodburning stoves and biomass boilers	Promoting Low Emission Plant – Other Policy	The Council (Regulatory Services)	2022	2022 onwards	New Clean Air Act	Not quantifiable	None		
	8.3 Review complaints and gather information on solid fuel burning to see whether there are any 'hotspot' areas within the city to inform any targeted intervention	Promoting Low Emission Plant – Other Policy	The Council (Regulatory Services)	2022	2022	Summary report on initial analysis of findings	Not quantifiable	None	2024	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	8.4 Lead on the development and delivery of net zero community pilots based in geographies with different demographic profiles and community capacity.	Promoting Low Emission Plant – Other Policy	The Council (Policy and Insight)	Already started working on Phase 1 of the pilot	2023/24 onwards	n/a	Not quantifiable	Funding secured (£500k one-off CEC investment) Phase 1 started	TBC	

Theme	Action	Category and Classification	Lead Authority (Service Area)	Planning Phase	Implementation Phase	Key Performance Indicator	Target Reduction in Pollutant / Emission from Action	Progress to date	Estimated Completion Date	Comments
	8.5 Develop a Whole House Retrofit (WHR) delivery programme for retrofitting social housing across the city to the highest energy standards, to reduce energy demand and tackle fuel poverty	Promoting Low Emission Plant – Other Policy	The Council (Housing Strategy & Development)	Already started	Already started	% of social housing compliant with EESH2	Not quantifiable	Stock condition surveys of CEC housing stock carried out in 2022/2023. A WHR pilot across 10 pilot areas covering 10 different building types is underway and will inform the longer-term investment and roll out of the whole house retrofit programme	Develop-ment of the programme by end of 2023. Completion of the works beyond 2030	

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.

The City of Edinburgh Council undertook automatic (continuous) monitoring at nine sites during 2021. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available through the Scottish Air Quality website.

Maps showing the location of the monitoring sites are provided on the City of Edinburgh's website. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Nicolson Street monitoring station reported an NO_2 data capture below 75% in 2021 (50%). This was due to the breakage of a valve within the NO_x analyser in January. The analyser was therefore removed for repair and reinstalled in May. A hot spare was temporarily installed, however this reported performance issues and therefore the data was not able to be used.

St Leonard's monitoring station also reported an NO_2 data capture lower than 75% in 2021 (62%). This was due to a number of faults identified with the NO_x analyser by the AURN CMCU and ESU throughout the year.

Gorgie Road, St John's Road and Currie High School monitoring stations all reported an NO_2 data capture greater than 75% for 2021. Data capture rates for PM_{10} and $PM_{2.5}$ was greater than 75% for all monitoring locations.

2021 was the first full year in which Fidas analysers were commissioned and fully functional monitoring particulate matter concentrations at Currie, Salamander Street, and Glasgow Road.

3.1.2 Non-Automatic Monitoring Sites

The City of Edinburgh Council undertook non- automatic (passive) monitoring of NO_2 at 176 sites during 2021, inclusive of 4 duplicate sites and 6 triplicate sites. Table A.2 in Appendix A shows the details of the sites.

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

During 2021 ten monitoring sites were decommissioned and five new monitoring sites were deployed. A summary of these sites is presented in Table 3.1. This is part of the Council's continual review and analysis of the network, and in addition to help with development of a local air quality model by the Scottish Environment Protection Agency (SEPA) as part of the National Modelling Framework (NMF).

Table 3.1 – Newly Commissioned/Decommissioned Diffusion Tube Sites in 2021

Tube ID	Site ID	New / Removed (during 2021)
57	Glasgow Road 158	Removed (Feb 2021)
76c	Angle Park Terrace 25	Removed (Feb 2021)
76a	Ardmillan Terrace 22	Removed (Feb 2021)
80c	Gorgie Road 87	Removed (Feb 2021)
80b	Gorgie Road 549	Removed (Feb 2021)
77	Slateford Road 97	Removed (Feb 2021)
30d	Great Junction Street/WC opp 137	Removed (Feb 2021)
68	London Road/Parson's Green Terrace	Removed (Aug 2021, annualisation can be carried out)
72	Seafield Road East 10	Removed (Feb 2021)
149a	Howden Hall Road 79	Removed (Feb 2021)
79B	Fountainbridge 158	New (Mar 2021)
90F	Southfield Place	New (Sep 2021)
48h	Canongate 206	New (Mar 2021)
8C	Earl Grey Street 22	New (Mar 2021)
79E	Morrison Crescent	New (Mar 2021)

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.

It is important to note that similar to 2020, 2021 may be an atypical year due to the impacts of COVID-19 and restrictions imposed by the Scottish Government. Therefore pollutant trends should be considered with caution.

3.2.1 Nitrogen Dioxide (NO_2)

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

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

With regard to automatic monitoring, out of the 8 automatic monitoring stations, only two required annualisation due to data capture below 75%, St Leonard's and Nicolson Street.

Annualisation has been carried out in accordance with the methodology set out in LAQM.TG(22). Further information of this can be found in Appendix C. For a strict comparison against the short-term objectives there must be a data capture of 85% or greater throughout the calendar year.

Of the six automatic monitoring stations achieving the desired data capture of 75%, no exceedances of the annual mean NO_2 AQS objective of 40µg/m^3 was reported during 2021. The maximum reported annual mean concentration from among all the automatic sites was 30.5µg/m^3 reported at Nicolson Street, however data capture here was below that required for a strict comparison. Exceedances have previously been reported in 2019 at both Nicolson Street and St John's Road.

With regards to the hourly mean objective, where data capture was greater than 85%, there were no reported one-hour averages where concentrations exceeded 200µg/m^3 at any of the monitoring sites. Where data capture was less than 85%, the 99.8th percentile has been calculated. The 99.8th concentrations are all well below 200µg/m^3, suggesting that had there been 100% data capture there would have not been more than 18 hours where hourly concentrations exceeded 200µg/m^3.

With regard to non-automatic monitoring carried out using passive diffusion tubes, one monitoring location reported an annual mean NO_2 concentration exceeding the AQS objective of 40µg/m^3. This was 40.6µg/m^3, reported at diffusion tube 81 located along London Road/East Norton Place within the Central AQMA. This is at a site of relevant exposure and has reported an exceedance consistently for the past five years.

In addition, two sites reported an annual mean concentration within 10% of the AQS objective. These were diffusion tube 69J (located at Queensferry Road 554) and 64 (located at Queensferry Road 550), reporting annual mean concentrations of 38.5µg/m^3 and 38.1µg/m^3 respectively. Neither of these are located at a site of relevant exposure and therefore require distance correction calculations. Following NO_2 fall-off with distance calculations, annual mean NO_2 concentrations at the nearest point of exposure are predicted to be 27.0µg/m^3 and 27.3µg/m^3 respectively.

No sites reported a concentration greater than 60µg/m^3, which would suggest that there have not been any exceedances of the hourly average objective for NO_2.

Overall, annual mean NO_2 concentrations have increased by an average of 0.7µg/m^3 across Edinburgh compared to that in 2020. Relative to 2020, an average decrease of 2.2µg/m^3 is reported across 67 monitoring locations, however an average increase of 2.5µg/m^3 is reported across 106 monitoring locations. All but one site, Nicolson Street (EDNS), continue to report annual mean NO_2 concentrations lower than that reported in 2019, however this site reported poor data capture in 2021.

It continues to be believed that the impacts of the COVID-19 pandemic, whereby the Scottish Government continued to enforce restrictions, particularly in the first half of 2021. In addition, there has been a national push for workers to work from home where possible and to adopt a hybrid style of working. Areas where relative annual mean concentration increases from 2020 have been observed are largely surrounding junctions or areas of known congestion. This is to be expected with traffic levels have returning following the easing of restrictions, however no exceedances have been reported as a result of this.

Of the 97 monitoring locations within declared AQMAs, 50 have shown and maintained compliance with the annual mean NO_2 AQS objective over the past five years. Whilst 2020 and 2021 monitoring data should be taken with a degree of caution, the Council will consider reducing the boundary of the associated AQMA(s) once the implications of the recently implemented Low Emission Zone (LEZ) become evident.

All monitoring locations within the Great Junction Street AQMA have reported and maintained compliance for the past five years. Prior to 2020, the monitoring locations indicated that annual mean NO_2 concentrations were decreasing. There is currently an extension to the Edinburgh Tram network taking place and proposed traffic management changes that may cause concentrations to increase in future years. Due to this and the uncertainty surrounding the 2020 and 2021 monitoring data, the Council will consider revoking this AQMA upon review of future data without any significant pandemic related restrictions and once the impact of the Tram network and traffic management changes are known.

Within respect to the Inverleith Row AQMA, there have now been four years of maintained compliance with the annual mean NO_2 objective. The Council has received approval from SEPA to revoke this AQMA due to the continued trend of decreasing NO_2 concentrations being observed and will progress with this over the course of the next year.

With respect to the St John's Road AQMA, over the past five years there have been no diffusion tube sites reporting an annual concentration greater than 60µg/m^3, and there have been less than 18 hourly periods where concentrations have exceeded 200µg/m^3. As such, this AQMA is currently being amended to revoke the designation for the NO_2 1-hour mean AQS objective.

TRENDS

Trend analysis has been undertaken at all automatic monitoring locations using both Excel and the Openair package in R Studio where more than five years' worth of valid data is available. The Scottish Air Website allows users to use this without the requirement of downloading and using R Studio. Excel has been used for regression analysis, as from analysis undertaken in the 2020 APR it was identified that the Openair package does not take into consideration annualised averages where there has been low data capture. This is because it uses the raw continuous automatic data, rather than any post-processed data.

All continuous monitoring locations have sufficient data available to assess the trends in NO_2 concentrations, with the exception of ID11 Nicolson Street, which began monitoring in 2018.

Trend analysis graphs are presented in Appendix A, Figure A.1, with Time Variation plots shown in Figure A.2 and Figure A.3. Table 3.2 summarises the trend analysis.

Table 3.2 – Summary of Annual Mean Nitrogen Dioxide Trends Measured at Automatic (Continuous) Monitoring Sites

Monitoring Location	Site Type	Years Monitoring Conducted	Trend in NO_2 Concentrations
St Leonard's	Urban background	2008 to 2021	↓ Decreasing
Currie	Suburban	2010 to 2021	→ Stable
Gorgie Road	Roadside	1999 to 2021	↓ Decreasing
Salamander St.	Roadside	2009 to 2021	↘ Slightly decreasing
Queensferry Rd	Roadside	2011 to 2021	↓ Decreasing
St John's Road	Kerbside	2007 to 2021	↓ Decreasing
Glasgow Road	Roadside	2012 to 2021	↓ Decreasing

Notes:
Change in concentration
- ≥ 1µg/m^3 per year = Increasing
- 0.9µg/m^3 – 0.3µg/m^3 per year = Slightly increasing
- 0.2µg/m^3 - -0.2µg/m^3 per year = Stable
- -0.3µg/m^3 to -0.9µg/m^3 per year = Slightly decreasing
- ≤ -1µg/m^3 per year = Decreasing

Trend analysis of the annual mean NO_2 concentrations continues to show that at all sites, with the exception of Currie, are reporting a decrease. St John's Road continue show the greatest average decrease of 3.2µg/m^3 each year.

Using the Time Variation tool within the Openair package, variation in average NO_2 concentrations by the day of the week and hour of the day combined (top-most pane), diurnal variation (lower left pane), seasonal variation (lower middle pane) and day of the week (lower right pane) can be assessed. This has been carried out for each of the automatic monitoring sites, splitting the data by 2017 – 2020, during 2020 (being the year in which the most severe COVID-19 restrictions were implemented), and 2021.

With the exception of Salamander St, whereby concentrations have not been observed to decrease as significantly, this further demonstrates that the 2020 and 2021 average NO_2

concentrations are lower than that reported in 2017, 2018 and 2019. In addition, this indicates that a diurnal profile is still apparent, however at a less significant level.

Regression analysis of the average of passive diffusion tubes locations which have been in place for at least five years and are located within each AQMA was also undertaken - a summary is shown in Table 3.3. Data used in the analysis as well as graphs for each AQMA is shown in Appendix A – Figure A.4 and Table A.5 to Table A.9. Data was corrected using the relevant bias adjustment factor for each year and taken from the point of measurement (not distance corrected).

Table 3.3 – Summary of Annual Mean Nitrogen Dioxide Passive Diffusion Tube Trends within the AQMAs

AQMA	Years Monitoring Conducted	Trend in NO_2 Concentrations
Central AQMA	2008 to 2021	↓ Decreasing
Great Junction Street AQMA	2008 to 2021	↓ Decreasing
St John's Road AQMA	2008 to 2021	↓ Decreasing
Glasgow Road AQMA	2009 to 2021	↓ Decreasing
Inverleith Row AQMA	2011 to 2021	↓ Decreasing

Similarly to that reported in the 2021 APR, there continues to be a decreasing trend of annual mean NO_2 concentrations observed since the deployment of the tubes in each of the AQMAs. The maximum decrease of 2.4µg/m^3 per year is reported at St John's Road AQMA, and the minimum decrease of 1.3µg/m^3 is reported in the Great Junction Street AQMA. The general downward trend remains to be in line with the national trend of NO_2 pollution showing long-term improvement at urban background and roadside locations. It is thought that significant improvement overall in the St John's AQMA is largely due to the deployment of predominantly Euro VI buses along that corridor.

It should be noted that where diffusion tube monitoring locations have been decommissioned, these have been removed from inclusion within the regression analysis. Additionally, whilst the monitoring network has increased, no additional tubes have been

included as the overall average concentrations could change significantly due to changing sample sizes (i.e. if all new sites reported low concentrations this would pull the average down, even if the original exceedance areas have not shown much improvement). Where any new monitoring locations have reported at least five years of monitoring data, the Council will consider whether these should be included within the regression analysis, or whether any other changes to the selection of sites should be considered.

3.2.2 Particulate Matter (PM_{10})

Table A.10 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.11 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.

During 2021, all monitoring sites had good data capture of at least 98%. Annualisation was therefore not required at any site.

All monitoring locations reported concentrations below the annual mean AQS objective for PM_{10} (18µg/m^3) in 2021, with Salamander Street reporting the maximum annual mean concentration of 15.4µg/m^3. Additionally, there were no breaches of the 24-hour mean AQS objective (50µg/m^3 not to be exceeded more than seven times a year), with Salamander Street reporting the maximum of three 24-hour periods with an average greater than 50µg/m^3.

With the exception of the monitoring locations at Currie High School and Glasgow Road, annual mean PM_{10} concentrations had increased by up to 1.3µg/m^3 from that reported in 2020, with an average increase of 0.8µg/m^3. Currie High School and Glasgow Road both reported decreased of 1.3µg/m^3 and 2.2µg/m^3 respectively.

TRENDS

Trend analysis has been undertaken at all automatic monitoring locations using Excel where more than five years' worth of valid data is available. Excel has been used for regression analysis, as from analysis undertaken in the 2020 APR it was identified that the Openair package does not take into consideration annualised averages where there has

been low data capture. This is because it uses the raw continuous automatic data, rather than any post-processed data.

All continuous monitoring locations have sufficient data available to assess the trends in PM_{10} concentrations, with the exception of EDNS Nicolson Street and ED012 Tower Street which both began monitoring in 2019.

Graphs are shown in Appendix A – Figure A.4. Table 3.4 summarises the trend analysis.

Table 3.4 – Summary of Annual Mean PM_{10} Trends Measured at Automatic (Continuous) Monitoring Sites

Monitoring Location	Site Type	Years Monitoring Conducted	Trend in PM_{10} Concentrations
St Leonard's	Urban background	2008 to 2021	↘ Slightly decreasing
Currie	Suburban	2010 to 2021	↘ Slightly decreasing
Salamander St.	Roadside	2009 to 2021	↘ Slightly decreasing
Queensferry Rd	Roadside	2011 to 2021	↘ Slightly decreasing
Glasgow Road	Roadside	2012 to 2021	↘ Slightly decreasing
St John's Road	Roadside	2017 to 2021	↘ Slightly decreasing

Trend analysis of the annual mean PM_{10} concentrations shows that all sites are reporting a slight decrease in concentrations over their monitoring periods. Salamander Street continues reports the greatest average decrease of 0.9µg/m^3 each year. The PM_{10} concentrations at the Roadside sites of Queensferry Road and Glasgow Road have remained relatively consistent since 2011/2012 up until 2019 but have decreased in 2020 and 2021. It should be noted that the impact of the COVID-19 pandemic could skew the overall long-term trend, however the longer-term impacts as a result of the pandemic are still yet to be determined.

In addition, it should be noted that St John's Road has been included due to it now having at least five years' worth of monitoring data, but this is still a shorter trend compared to the other monitoring sites and will therefore be more heavily influenced by the concentrations reported in 2020 and 2021.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.12 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.

During 2021, all monitoring sites had good data capture of at least 98%. Annualisation was therefore not required at any site.

At all sites annual mean concentrations of $PM_{2.5}$ were well below the objective of 10µg/m^3, with a maximum annual mean concentration of 5.9µg/m^3 being reported at Salamander Street. Nicolson Street reported a slight decrease of 0.2µg/m^3 from 2020, however all other sites have reported an increase. On average, this increase was 1.0µg/m^3, however the maximum was 1.7µg/m^3 at Salamander Street.

Trend analysis has been carried out for monitoring at St Leonards and St John's Road, as these are the only sites with more than five years' worth of monitoring data, using the Excel simple regression statistical program. Graphs are shown in Appendix A, Figure A.5. Table 3.5 summarises the trend analysis.

Table 3.5 – Summary of Annual Mean $PM_{2.5}$ trends measured at Automatic (Continuous) Monitoring Sites

Monitoring Location	Site Type	Years Monitoring Conducted	Trend in $PM_{2.5}$ Concentrations
St Leonard's	Urban background	2008 to 2021	↘ Slightly decreasing
St John's Road	Roadside	2017 to 2021	→ Stable

Trend analysis of the annual mean $PM_{2.5}$ concentrations shows St Leonard's is reporting a slight decrease of 0.5µg/m^3 per year over the entire monitoring period, however St John's Road has remained relatively stable over the past five years.

3.2.4 Sulphur Dioxide (SO_2)

Table A.13 in Appendix A compares the ratified continuous monitored SO_2 concentrations for year 2021 with the air quality objectives for SO_2. There were no exceedances in any of the objectives, which is consistent with previous years.

3.2.5 Other Pollutants Monitored

The following pollutants were also monitored in the City at the AURN urban background site at St Leonard's in 2019. The data is presented in Appendix A. These are not required as part of the LAQM regime but are part of specific UK-wide monitoring and compliance networks. The UK and Scottish Governments and Devolved Administrations are responsible for the review and assessment of these pollutants.

3.2.5.1 Ozone (O_3)

Table A.14 in Appendix A presents the ratified continuous monitored Ozone concentrations from 2016 to 2021 with the air quality objectives. There was only one 8-hour period in which the average concentrations exceeded 100µg/m^3. This is below the AQS objective where the exceedance limit is 10.

3.2.5.2 Polycyclic Aromatic Hydrocarbons (PAHs)

There are many different PAHs; however, a component used as a marker, is benzo (a) pyrene (BaP). The concentration monitored at St Leonard's complies with the UK Objective in 2021. Monitoring is undertaken using a Digitel sampler. Concentrations since 2009 are shown Table A.15.

4 New Local Developments

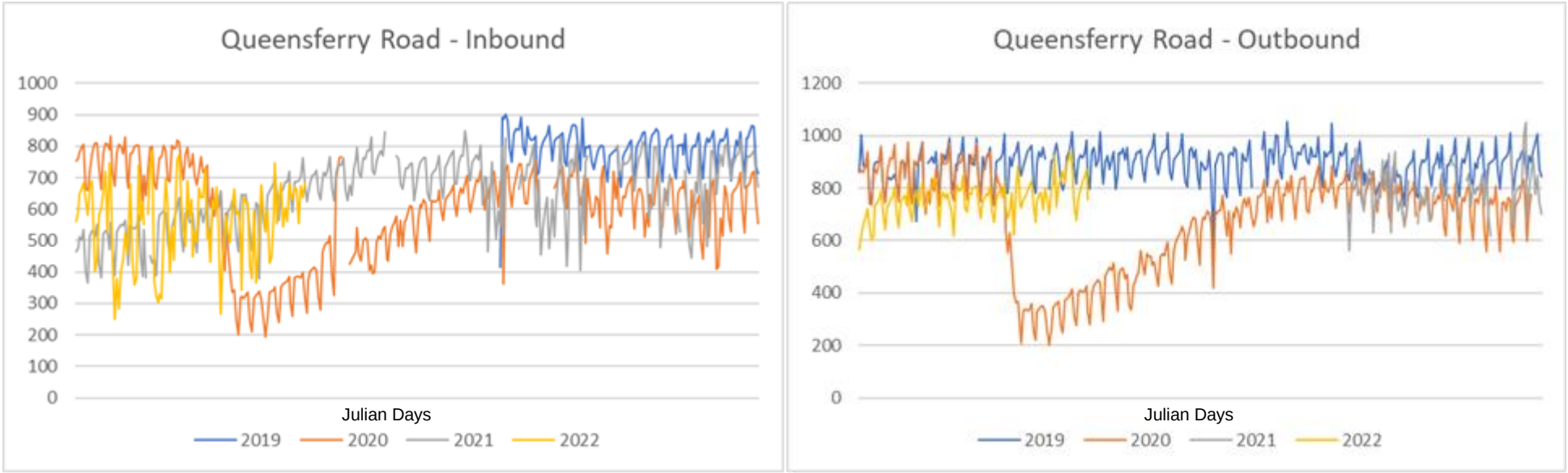
Details of any planning applications considered by the Council and referred to below, can be obtained on the Planning Portal here; https://www.edinburgh.gov.uk/planningcomments

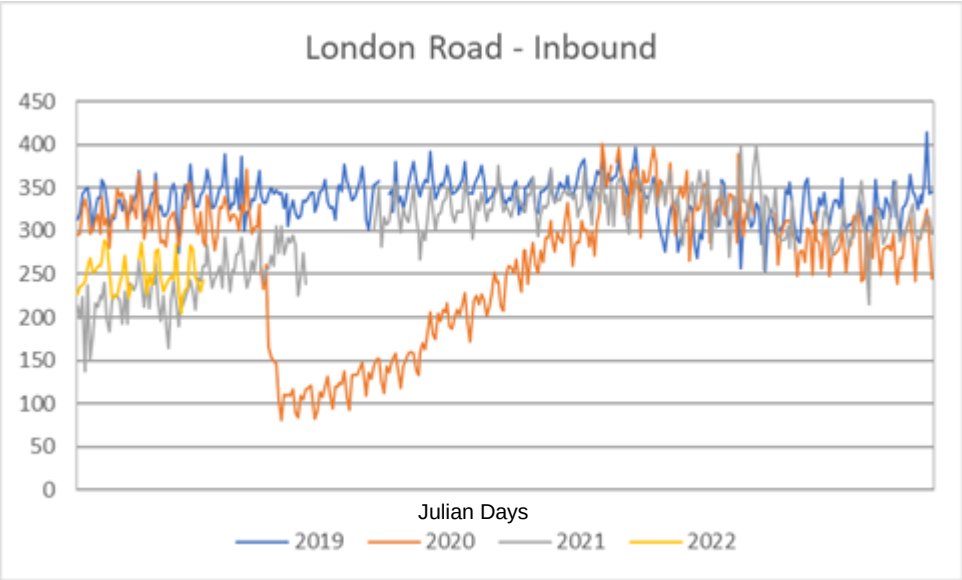
4.1 Road Traffic Sources

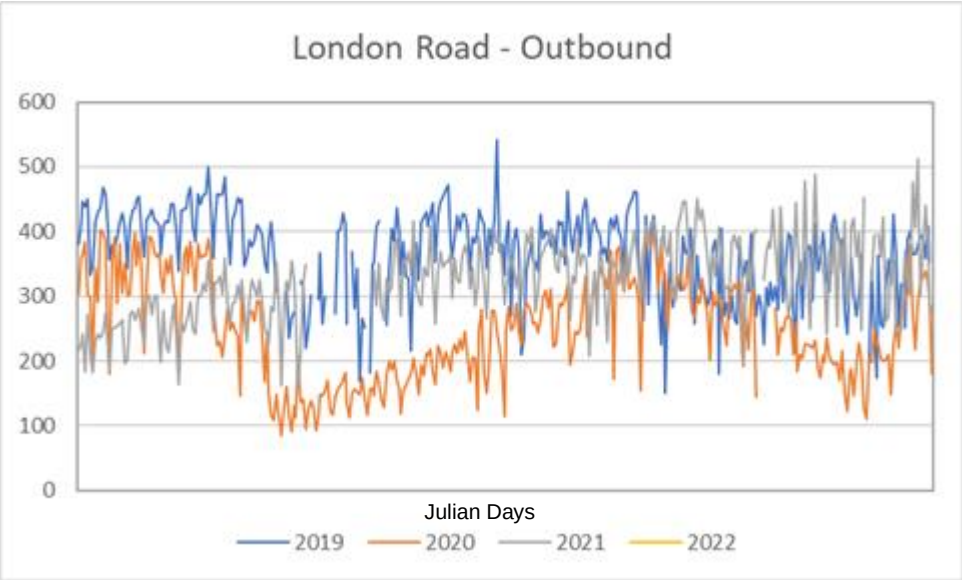
As a result of the Covid-19 pandemic and restrictions imposed by the Scottish and UK Government, it was observed that traffic levels had decreased substantially across the UK during 2020. This in turn resulted in a decrease in reported NO_2 concentrations in the majority of urban settings. Traffic data from 2021 indicates that traffic levels across Edinburgh were typically lower in the first half of the year compared to 2019, however during the final half it was more comparable to 2019, albeit total traffic flow remained lower. Figure 4.1 (overleaf) displays the inbound and outbound traffic counts from 2019 - 2022 at Queensferry Road, London Road, Morningside Road, Ferry Road, and Dalkeith Road in Edinburgh. Morningside Road is likely to have been impacted by local traffic management changes.

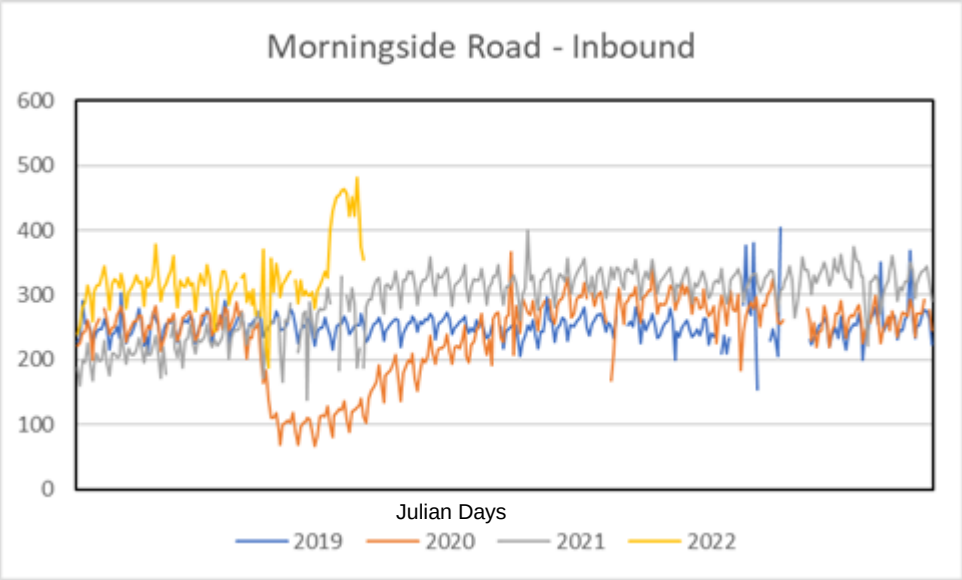
Two Low Traffic Neighbourhood trial projects in Leith and Corstorphine are being developed which will introduce measures to reduce the volume and speed of traffic with the intention of making the neighbourhoods safer and more attractive to people for walking, cycling and wheeling. The LTN areas include the Great Junction Street AQMA, a section of the Salamander Street AQMA and the St John's Road AQMA. LTN measures have the potential to increase traffic on the main routes through and on the boundaries of the schemes, as vehicle access is restricted to the smaller streets within the LTNs. Extension of the tram line to Newhaven, which passes through the Leith LTN, also has required traffic management changes during the ongoing construction phase and beyond, when the tram line becomes fully operational. The potential air quality impacts of the schemes are being assessed by short term NO_2 monitoring by the LTN project team prior to and throughout the duration of the trial schemes. The established long-term monitoring of NO_2 in these areas as part of the LAQM regime will continue.

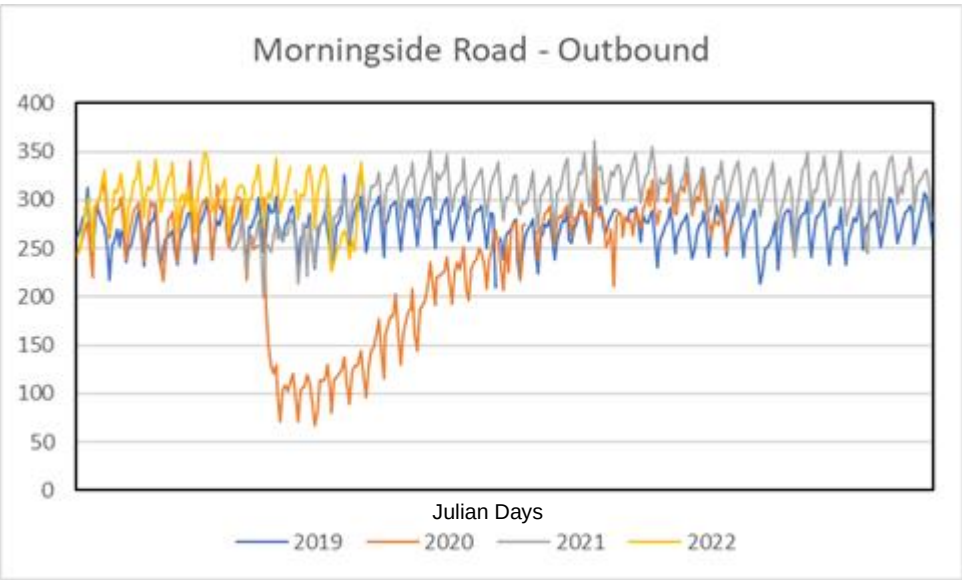
Figure 4.1 – Inbound and Outbound Traffic Counts across Edinburgh, 2019 to 2022




London Road - Inbound
450
400
350
300
250
200
150
100
50
0
Julian Days
2019
2020
2021
2022


London Road - Outbound
600
500
400
300
200
100
0
Julian Days
2019
2020
2021
2022


Morningside Road - Inbound
600
500
400
300
200
100
0
Julian Days
2019
2020
2021
2022


Morningside Road - Outbound
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150
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50
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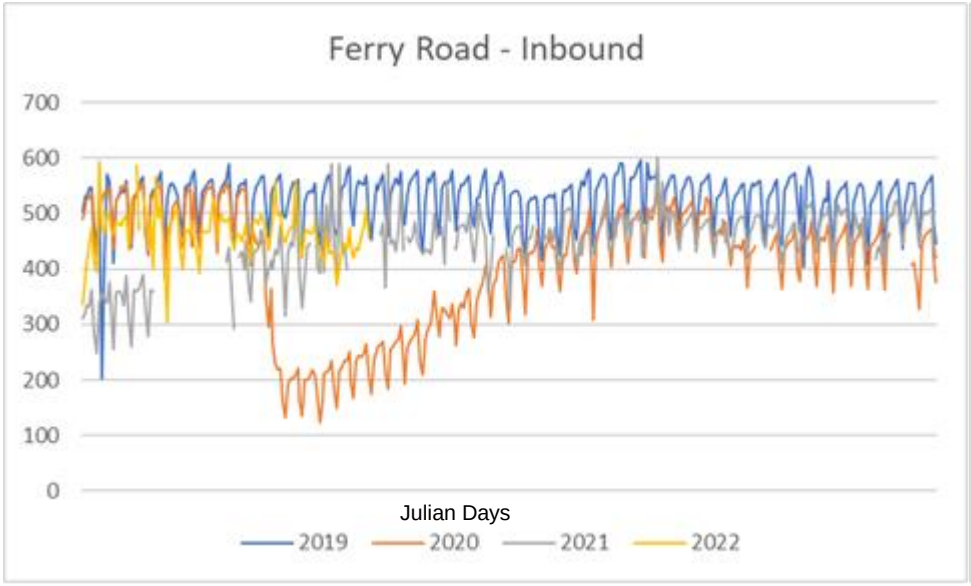
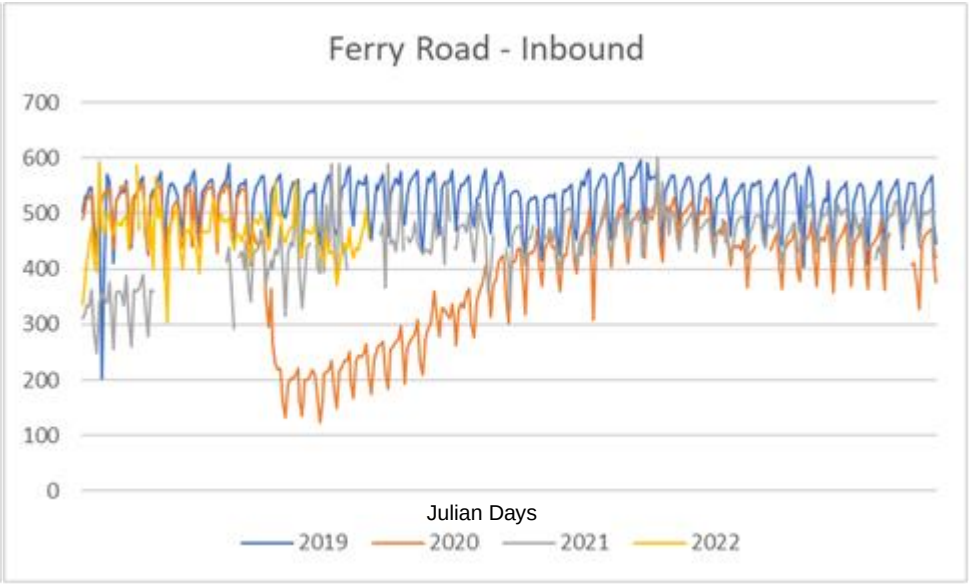
Julian Days
2019
2020
2021
2022


Ferry Road - Inbound
700
600
500
400
300
200
100
0
Julian Days
2019
2020
2021
2022


Ferry Road - Inbound
700
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Julian Days
2019
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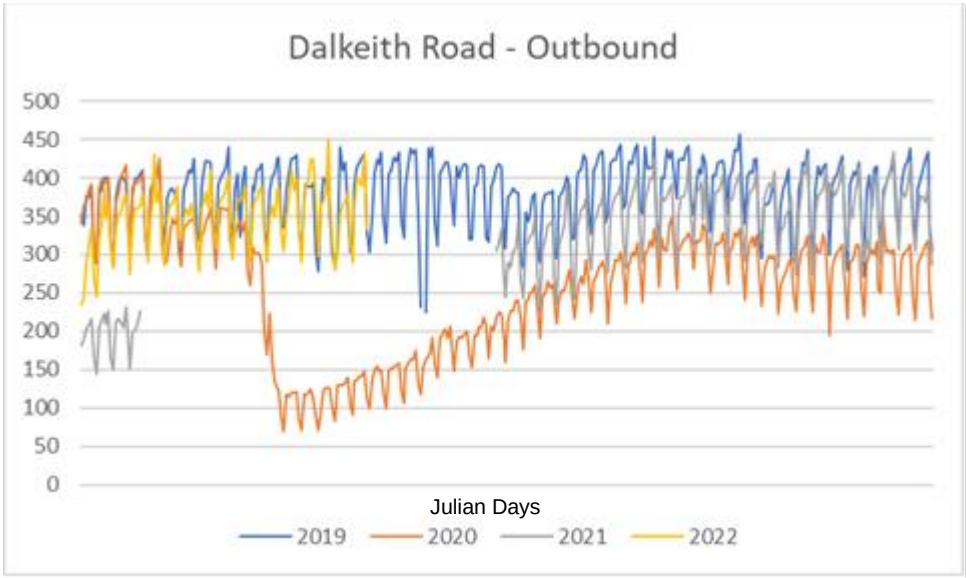
2022


Dalkeith Road - Outbound
500
450
400
350
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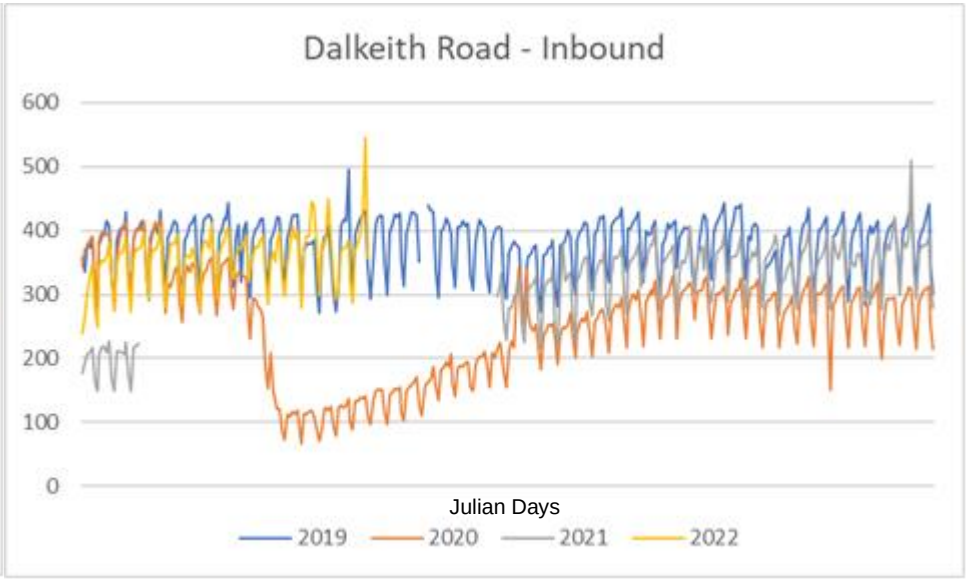
0
Julian Days
2019
2020
2021
2022


Dalkeith Road - Inbound
600
500
400
300
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100
0
Julian Days
2019
2020
2021
2022

4.2 Other Transport Sources

There are no new airports or locations where diesel or steam trains are regularly stationary or locations with a large number of movements of diesel locomotives.

There are no new ports for shipping. At the existing port, Leith Docks, vessel movements increased between 2018 and 2019 and again in 2020, during the pandemic. Forth Ports, the harbour authority publishes annual statistics, the most recent of which showed the vessel numbers (vessels generally over 500 tonnes) as 444 for 2020, 360 vessels for 2019 and 345 in 2018. The latest version is the 2020 data and can be found here https://www.forthports.co.uk/wp-content/uploads/2022/02/PMSC-Annual-Review-2020.pdf. Considering the level of sensitive residential uses proposed and developed in the close vicinity of the docks, it will be important to review monitoring in the area.

4.3 Industrial Sources

SEPA's records show there were two new Pollution Prevention and Control (PPC) Regulation's installations permitted within the Council's administration area since 2021, which the Council will seek further information on and report in the Annual Progress Report 2023. These are:

- Veolia Water Outsourcing Ltd, Seafield WWTW, PPC/B/SEPA2021-7012, Part B permit for combustion activities.
- NHS Lothian, NHS Western General Hospital, PPC/B/SEPA2021-7006, Part B permit for combustion activities.

There were also two PPC permits fully surrendered:

- Shawcor UK Ltd, Bredero House, Leith Docks, Leith, PPC/B/1000126, Part B permit for coating.
- Shawcor UK Ltd, Bredero House, Leith Docks, Leith, PPC/B/1009123, Part B permit for other manufacturing.

Through the planning process an application was granted for a new petrol filling station at Builyeon Road, South Queensferry (application number 21/04016/PPP), in association with a development for retail foodstore (Class 1) and drive-thru food and drink (Class 1+3/Sui Generis). The applicant was advised to consider researching the retrofit of a petrol

station in Slateford with electric vehicle re-charging facilities, to ensure that the set-up is future proofed and has adequate power supplied to meet potential electric demand.

The poultry farm use at the housing development site Millburn Tower, Gogar in the west of the City, will need to cease to operate prior to the occupation of any residential properties associated with the development. This was a condition of planning approval given by Scottish Ministers in April 2022.

4.4 Commercial and Domestic Sources

The City of Edinburgh Council issued Interim Planning Policy (2010) that discourages the installation of commercial biomass combustion installations in the city and intends to formalise similar policy with revision of the Air Quality Action Plan.

Combined Heat and Power (gas) units are now commonly installed in new developments. Planning applicants are advised to submit a chimney height application if they are installing any CHP or heating that is bigger than 366Kw output. This will ensure they comply with the Clean Air Act and provide the Council with upfront details on the height of the proposed flue/chimney. It should be noted that the applicants don't always take this advice on board. However, an *informative* is normally attached to any planning permission given to ensure this is carried out.

If a new or proposed CHP/energy plant is bigger than 1MW (accumulative) the Council will request that the plant be fitted with secondary abatement technology.

The Pollution Prevention and Control (Scotland) Regulations 2012 were amended in December 2017 to transpose the requirements of the Medium Combustion Plant Directive (MCPD –Directive (EU) 2015/2193 of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants). The purpose of the MCPD is to improve air quality. All combustion plant between 1 and 50 MW (net rated thermal input) will have to register or have a permit from SEPA. The Council's informal policy is to ensure secondary abatement technology is incorporated into any plant above 1MW (accumulate assessment).

The primary CHP plant at the University of Edinburgh's Pleasance site was approved, installed and part-operational in 2013, hence does not have abatement technology. It comprises of a single, internal combustion, spark ignition engine with an electrical power output of 1.5Mwe and two 9MWth boilers supplying district heating and electric networks

serving nearly 20 academic and student accommodation buildings. Screening of the plant indicated a contribution of NOx at the nearest receptor in excess of 70 µg/m^3. Although it is recognised the screening tool errs on the side of caution by considering the impact based on ground level release. Edinburgh University were considering options for the engine operation, particularly whether it can operate to a low NOx specification. The aforementioned MCP regulation will not also apply to the installation. The Council commenced monitoring of NO_2 in January 2017 by installing a number of passive diffusion sites in the Pleasance and View Craigs area. Results in 2021 continue to show that concentration are in keeping with general background levels in the area.

Within the Council administration area, there are an increasing number of complaints about domestic burning. Most complaints about smoke concern smoke from chimneys despite the entire city being a Smoke Control Area. The powers within the Clean Air Act 1993 have not however been able to be used formally to address such complaints – many of which, on investigation, are found to be caused by the use of “exempt fireplaces” or the use of “authorised fuels”. Burning of fuels in such fireplaces still results in emissions which can be visible and cause odours which give rise to concerns about air quality. The revision to the Air Quality Action Plan will consider domestic burning emissions as a source.

A planning application for the old Jenners building on Princes Street (22/00326/FUL) in the City Centre was granted for the change of use from retail to mixed-use development including retail and hotel and restaurant/bar spaces. An Air quality Impact Assessment was provided in respect of the proposed development, which stated that the energy needs will be met by all electric systems and therefore there will be no combustion plant on site. However, it also mentioned that a diesel standby generator would be proposed to provide backup power in case of emergency but that this would not be likely to be operated/tested for above 18 hours per year. Although the matter was not fully resolved, planning permission was granted on a conditional basis regarding the generator’s use (and other matters). An informative was also added stipulating the use of smokeless fuels only in any fireplaces, which were to be restored with the development.

4.5 New Developments with Fugitive or Uncontrolled Sources

Planning applications were recently received for the extension to a quarry site and addition of an asphalt plant at Bonington Mains Quarry (22/02513/FUL & 22/02514/FUL). The

applicant has submitted a Dust and Air Quality Impact Assessment as part of their Environmental Impact Assessment report. The conclusion suggests there will be little impact. The Council is currently reviewing the report which consider nearby residential development.

The number of construction sites and planned construction is of some concern to the Council. Careful management of activity will be required especially within the City Centre where population exposure is significant. Through the Planning process developers are expected to manage dust during this phase of development.

A planning application was granted at 57 Tower Street / 1 Bath Road (20/01313/FUL) for a residential development within the Salamander Street Air Quality Management Area (AQMA) which was declared for fugitive emissions as well as road traffic and industrial. The applicant proposed mechanical ventilation and filtration as a form of mitigation against elevated PM_{10} levels at the application site, which was the same mitigation proposed and consented for the neighbouring development to the south although the viability of such systems to filter fine particulates is queried as too is the systems in place to ensure enforcement. The decision making was also based on consideration of an appeal decision on a site nearby at 2 Ocean Drive (ref.14/05127/FUL). In this case, the Council refused planning permission on air quality and impact on health grounds. In overturning the Council's decision to refuse planning permission, the Planning Reporter observed that there was a downward trend in annual mean PM_{10} levels at the monitoring station at Salamander Street and across the city. The Reporter concluded that he was not satisfied overall that adverse effects for health should be properly regarded as significant and the proposal would not conflict with planning policy. Subsequently, having due regard to that appeal decision, the Planning Committee granted planning permission 18/0820206/FUL for the residential mixed-use development on land to the immediate south of the site and more recently a residential mixed-use development on the former Edinburgh Gas Works site.

Additional monitoring will need to be considered around the Salamander Street AQMA and specifically to the west of Leith Docks. It remains that the scope of the City-Wide Detailed Assessment for Particles 2016 that led to the declaration of the AQMA, did not consider residential premises in this area, as there were no relevant receptors. With residential properties now under construction, the feasibility of such monitoring in the area is being considered. The new tram line extension to Newhaven however, which passes through

the proposed monitoring area, is currently in its construction phase which is due for completion Spring 2023. This temporary source of fugitive particulate emissions has the potential to significantly elevate monitored PM concentrations, and if so, these concentrations would not accurately reflect the spatial spread of the PM emissions from sources responsible for the current PM_{10} AQMA. Monitoring will therefore be established to take account of the tram line construction.

5 Planning Applications

The Council has prepared Edinburgh's proposed new Local Development Plan called the City Plan 2030. This will set out the strategy for development, proposals and policies to shape development and inform planning decisions in the city over the next ten years and beyond. The first stage of preparing the Plan consulted on changes through a main issues report, called 'Choices for City Plan 2030' Responses to the Choices to help preparation of the new Plan were published in Summer 2020. The proposed Plan was approved at the Council's Planning Committee in September 2021 and the went through a statutory period of representations. It has now been submitted to Scottish Ministers for Examination.

The Proposed Plan carries forward the preferred approach of Choices and does not seek to allocate new greenfield sites. The Plan carries forward the sites proposed in the 2016 LDP which have not yet been substantially completed or where development has not yet commenced. Some of these sites are greenfield land considered appropriate for development through the LDP 2016.

The principles of the strategy of the proposed CityPlan2030 expect development to make the most efficient use of land, of existing and new infrastructure, of sustainable transport modes and to provide a range of uses to support 20-minute neighbourhoods. Use of brownfield land is key, as is ensuring that higher density, mixed use development is required for any greenfield sites.

The strategy supports the strong direction of policy required by the Climate Change Act, the National Transport Strategy, Housing for 2040 and the emerging policy of the Position Statement National Planning Framework 4.

Alignment with local air quality management and developing local and national air quality strategies will be crucial to ensuring a sustainable economic growth.

In terms of the existing Local Development Plan, Supplementary Planning Guidance published in August 2018 sets out the Council's approach to the assessment of infrastructure requirements associated with new development and a framework for the collection of developer contributions. The transport improvements identified by the studies and set out in the current LDP Action Programme include;

- the delivery of Edinburgh tram,;
- access to bus services and park and ride facilities;

- improvements to the public realm and other pedestrian and cycle actions; and,
- traffic management, including junction improvements.

The guidance aimed to ensure developers make a fair and realistic contribution to the delivery of necessary infrastructure provision and improvement associated with development.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Analysis of the monitoring results for NO_2 shows that during 2021, one monitoring location continues to report an exceedance of the annual mean AQS objective (40µg/m^3). This was at diffusion tube 81, located within the Central AQMA and reporting an annual mean concentration of 40.5µg/m^3. This site has consistently reported an exceedance over the past five years.

In previous years prior to 2020, numerous exceedances were reported across the City. Significant decreases in annual mean NO_2 concentrations have been observed in 2020, likely resulting from the impacts of the COVID-19 pandemic whereby traffic volumes were observed to have decreased. The 2021 annual mean concentrations continue to report below that of 2019, however 106 sites have shown an increase relative to what was reported in 2020. Despite this, no new locations of exceedance were reported in 2021.

Of the 97 monitoring locations within declared AQMAs, 50 have shown and maintained compliance with the annual mean NO_2 AQS objective over the past five years. Whilst 2020 and 2021 monitoring data should be taken with a degree of caution, the Council will consider reducing size or revoking the associated AQMAs once the implications of the recently implemented LEZ become evident.

Annual mean NO_2 concentrations within the Great Junction Street AQMA have reported concentrations to be below the AQS objective for five years running. Previous to 2020, concentrations here were gradually decreasing. Despite this, there is currently an extension to the Tram network taking place and proposed traffic management changes that may cause concentrations to increase in future years. The Council therefore will consider revoking the Great Junction Street AQMA once the impact of this is known.

Within the Inverleith Row AQMA, there have now been four years of maintained compliance with the annual mean NO_2 objective. The Council has received approval from SEPA to revoke this AQMA due to the continued trend of decreasing NO_2 concentrations being observed and will progress with this over the course of the next year.

No diffusion tube monitoring locations reported an annual mean concentration during 2021 in excess of 60µg/m^3, suggesting that there has not been any exceedances of the hourly mean objective. There were no hourly concentrations reported in excess of 200µg/m^3 at any of the automatic monitoring locations. As there continues to be no breach of the hourly mean objective at the St John's Road AQMA over the past 5 years, the AQMA is currently being amened in order to revoke its designation for exceedances of the short term NO_2 AQS objective.

Overall, there continues to be a decreasing trend in annual mean NO_2 concentrations observed across Edinburgh, from both the Automatic and Passive diffusion tube data.

PM_{10} and $PM_{2.5}$ monitoring data shows that for all locations in 2021, there were no breaches of all relevant AQS objectives, both short-term and annual mean. Overall, there is a general decreasing trend in both PM_{10} and $PM_{2.5}$ concentrations reported across Edinburgh.

As annual mean PM_{10} concentrations over the past five years within the Salamander Street AQMA have exceeded 18µg/m^3 this AQMA will not be revoked. However there have been less than seven 24-hour mean periods where PM_{10} concentrations have exceeded 50µg/m^3 each year over the past five years, therefore the Council will consider revoking the designation of the PM_{10} 24-hour average AQS objective from the Salamander Street AQMA. However, the Council is also awaiting the findings of the Scottish Government intercomparison study at Hope Street, Glasgow, which is considering the performance of the Fidas instrument now deployed across the particulate matter monitoring network in Edinburgh. Action on the Salamander Street AQMA will be deferred until the results of the inter comparison study are finalised.

6.2 Conclusions relating to New Local Developments

Two Low Traffic Neighbourhood trial projects in Leith and Corstorphine are being developed which will introduce measures to reduce the volume and speed of traffic with the intention of making the neighbourhoods safer and more attractive to people for walking, cycling and wheeling. The LTN areas include the Great Junction Street AQMA, a section of the Salamander Street AQMA and the St John's Road AQMA. LTN measures have the potential to increase traffic on the main routes through and on the boundaries of the schemes, as vehicle access is restricted to the smaller streets within the LTNs. Extension of the tram line to Newhaven, which passes through the Leith LTN, also has

required traffic management changes during the ongoing construction phase and beyond, when the tram line becomes fully operational. The potential air quality impacts of the schemes are being assessed by short term NO_2 monitoring by the LTN project team prior to and throughout the duration of the trial schemes. The established long-term monitoring of NO_2 in these areas as part of the LAQM regime will continue, with additional PDT monitoring from January 2022, where possible.

Considering the level of sensitive residential uses proposed and developed in the close vicinity of the docks, it will be important to review monitoring in the area. It remains that the scope of the City-Wide Detailed Assessment for Particles 2016 that led to the declaration of the AQMA, did not consider residential premises to the west of the docks, as there were no relevant receptors. With residential properties now under construction or already constructed, the feasibility of such monitoring in the area is being considered. The new tram line extension to Newhaven however, which passes through the proposed monitoring area, is currently in its construction phase which is due for completion Spring 2023. This temporary source of fugitive particulate emissions has the potential to significantly elevate monitored PM concentrations, and if so, these concentrations would not accurately reflect the spatial spread of the PM emissions from sources responsible for the current PM_{10} AQMA. Monitoring will therefore be established.

6.3 Proposed Actions

Continued delivery of the Low Emission Zone is a priority for the City of Edinburgh Council in 2023. This includes delivery of the following key actions:

- Road network mitigation including engagement with key stakeholders on proposed changes and putting in place relevant traffic orders,
- Signage and lineage notifying drivers at LEZ boundary and approach roads
- Enforcement infrastructure and systems,
- Communications timed across period to June 2024 to ensure maximum early compliance,
- Further develop the LEZ through continued working with the Scottish Government to monitor and evaluate the LEZ by publishing regular updates on performance, and;

- Continue to update the LEZ City Model developed under the National Modelling Framework to reflect changes to the road network and more recent fleet predictions from ANPR data collected.

The City of Edinburgh Council has also **revised the Air Quality Action Plan** for Edinburgh in 2022. This Plan is in draft format while a period of statutory consultation is undertaken in Spring 2023. With the feedback from the consultation a final AQAP will be produced. This will be presented to the Transport and Environment Committee for approval in 2023, prior to submission to the Scottish Government, under the requirements of the Environment Act 1995 (as amended).

Separately, further work will be undertaken in respect to the actions that are required to address localised **Particulate Matter (PM10) exceedances** in the Salamander AQMA. A Steering Group to consider these matters will be reconvened. Draft actions will be presented in 2023 to address the specific issues within the Salamander Street AQMA.

The Councill will take account of the findings of the Scottish Government's **Fidas intercomparison study**, prior to considering any amendments or revocation of the Salamander Street AQMA.

Monitoring of Particulate Matter will be considered adjacent to the Salamander Street PM_{10} AQMA, considering the level of new sensitive residential uses in the area.

Changes to Air Quality Management Areas including revoking of the Inverleith Row AQMA and amending the St John's Road AQMA in order to revoke its designation for exceedances of the short term (1-hour) NO_2 AQS objective.

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)
ID4	Gorgie Road	Roadside	323121	672314	NO_2	Yes – Central AQMA	Chemiluminescent	0	2.5	2.63
ID5	St. John's Road	Kerbside	320101	672907	NO_2; PM_{10}; $PM_{2.5}$	Yes – St Johns Road	Chemiluminescent; FIDAS 200	0	0.5	1.98
ID6	Currie High School	Suburban	317595	667909	NO_2; PM_{10}; $PM_{2.5}$	No	Chemiluminescent; TEOM; FIDAS 200	N/A	N/A	3.59 – NO_2; 3.24 – PM_{10}
ID7	St. Leonard's	Urban Background (AURN)	326265	673129	NO_2; PM_{10}; $PM_{2.5}$; O_3; CO; SO_2; PAH	No	Chemiluminescent; FIDAS 200; UV Adsorption; IR Adsorption; Digitalsamp	N/A	35	3.4 – NO_2, O_3, CO, SO_2, PAH; 3.2 – PM_{10}; 3.1 – $PM_{2.5}$
ID8	Salamander Street	Roadside	327615	676333	NO_2; PM_{10}; $PM_{2.5}$	Yes – Salamander Street	Chemiluminescent; TEOM; FIDAS 200	0	2.13	2.86
ID9	Queensferry Road	Roadside	318736	674930	NO_2; PM_{10}; $PM_{2.5}$	No	Chemiluminescent; FIDAS 200	6.5	1.7	2.96
ID10	Glasgow Road	Roadside	313103	672663	NO_2; PM_{10}; $PM_{2.5}$	Yes – Glasgow Road	Chemiluminescent; TEOM; FIDAS 200	0	6	2.84

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)
EDNS	Nicolson Street	Roadside	326151	673041	NO_2; PM_{10}; $PM_{2.5}$	Yes – Central AQMA	Chemiluminescent; FIDAS 200	2.2	2.9 (3)	2
ED012	Tower Street	Urban Industrial	327467	676537	PM_{10}; $PM_{2.5}$	Yes – Salamander Street	FIDAS 200	0	N/A	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)
13a	Deanhaugh Street/Raeburn Pl	Roadside	324533	674655	NO_2	No	0.0	2.0	No	2.0
16	Glasgow Road 68/adj	Roadside	313028	672633	NO_2	Yes - Glasgow Road	4.4	1.8	No	2.0
15a	Glasgow Road Facade/9	Roadside	312702	672675	NO_2	Yes - Glasgow Road	0.0	7.5	No	2.0
58i, 58ii	Glasgow Road Newbridge R'about	Roadside	312693	672670	NO_2	Yes - Glasgow Road	5.2	2.8	No	2.0
15	Glasgow Road Newbridge R'about/3	Roadside	312664	672672	NO_2	Yes - Glasgow Road	3.8	4.0	No	2.0
56	Glasgow Road/Drumbrae R'about	Roadside	319212	672921	NO_2	No	4.6	2.6	No	2.0
143a	Hamilton Place/Stockbridge Library	Roadside	324699	674651	NO_2	No	0.0	2.1	No	2.0
41	Hillview Terrace	Background	320081	673232	NO_2	No	N/A	1.0	No	2.0
121	Inverleith Gardens 2	Roadside	324611	676007	NO_2	No	0.0	4.6	No	2.0
122	Inverleith Gardens 9	Roadside	324549	676002	NO_2	No	8.4	1.2	No	2.0
55c	Inverleith Row/Café Montague	Roadside	324686	675941	NO_2	Yes - Inverleith Row	1.1	4.3	No	2.0
55i, 55ii	Inverleith Row/Ferry Road	Roadside	324638	675993	NO_2	Yes - Inverleith Row	0.0	4.7	No	2.0
129B	Queensferry Road/Ramsay Grange	Roadside	318601	674980	NO_2	No	0.0	11.7	No	2.0
63A	Queensferry Road 540	Roadside	318794	674959	NO_2	No	0.0	13.5	No	2.0
64	Queensferry Road 550	Roadside	318698	674955	NO_2	No	9.2	1.5	No	2.0
64b	Queensferry Road 550F	Roadside	318701	674964	NO_2	No	0.0	11.0	No	2.0

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)
64a	Queensferry Road 552	Roadside	318698	674964	NO_2	No	0.0	10.5	No	2.0
69J	Queensferry Road 554 Roadside	Roadside	318682	674957	NO_2	No	8.6	1.4	No	2.0
62	Queensferry Road 561	Roadside	318810	674903	NO_2	No	0.0	16.9	No	2.0
69I	Queensferry Road/Lyle Court	Roadside	318616	674968	NO_2	No	7.5	2.0	No	2.0
40	Queensferry Road/Hillhouse Road	Roadside	322144	674497	NO_2	No	0.0	2.0	No	2.0
129	Queensferry Road/Hillpark Wood	Roadside	321343	674956	NO_2	No	0.0	14.2	No	2.0
23	Roseburn Terrace	Kerbside	323007	673198	NO_2	Yes – Central	2.3	0.2	No	2.0
22a	Roseburn Terrace Wbound	Kerbside	322984	673189	NO_2	Yes - Central	1.7	2.5	No	2.0
1d	St John's Road 131	Roadside	320096	672907	NO_2	Yes - St John's Road	0.0	2.1	No	2.0
1b	St John's Road IR	Roadside	320154	672911	NO_2	Yes - St John's Road	0.0	2.0	No	2.0
1	St John's Road SB	Kerbside	320122	672917	NO_2	Yes - St John's Road	1.8	0.5	No	2.0
SJ1	St John's Road/Kaimes Road	Kerbside	320571	672809	NO_2	Yes - St John's Road	2.3	0.3	No	2.0
39	St John's Road/Victor Park Terr	Roadside	319677	672991	NO_2	Yes - St John's Road	4.2	1.6	No	2.0
14	Trinity Crescent	Roadside	324896	676991	NO_2	No	4.0	2.0	No	2.0
76b	Angle Park Terrace 74 2M East	Roadside	323527	672285	NO_2	Yes - Central	0.0	2.1	No	2.0
76	Angle Park Terrace/Harrison Road	Roadside	323498	672263	NO_2	Yes - Central	0.0	2.2	No	2.0
80e	Balgreen Rd/Library	Roadside	322110	672268	NO_2	No	0.0	2.0	No	2.0

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)
4a	Calder Road	Roadside	318894	670493	NO_2	No	5.0	12.0	No	2.0
79d	Dundee Street/Yeaman Place	Roadside	323926	672550	NO_2	Yes - Central	0.0	2.3	No	2.0
79a	Fountainbridge 103	Roadside	324731	672984	NO_2	No	0.0	2.2	No	2.0
79B	Fountainbridge 158	Roadside	324451	672864	NO_2	No	0.0	2.0	No	2.0
79	Fountainbridge/Tollcross	Roadside	324682	672939	NO_2	No	0.0	3.3	No	2.0
80	Gorgie Road - Delhaigh	Roadside	321967	671666	NO_2	Yes - Central	0.0	2.6	No	2.1
18	Gorgie Road 8	Roadside	323477	672476	NO_2	Yes - Central	0.0	2.4	No	2.0
80f	Gorgie Road No160	Roadside	323141	672345	NO_2	Yes - Central	0.0	3.2	No	2.0
80g	Gorgie Road No173	Kerbside	323083	672311	NO_2	Yes - Central	2.9	1.8	No	2.0
80a	Gorgie Road/Glen Lea	Roadside	322381	671950	NO_2	Yes - Central	0.0	2.6	No	2.0
5	Gorgie Road/Murieston Road	Kerbside	323484	672478	NO_2	Yes - Central	4.9	0.3	No	2.0
76d	Henderson Terrace	Roadside	323632	672449	NO_2	Yes - Central	0.0	1.8	No	2.0
11a	Lanark Road 425	Roadside	320625	669070	NO_2	No	0.0	2.6	No	2.0
11	Lanark Road 610	Roadside	319527	668420	NO_2	No	3.7	1.5	No	2.0
77a	Slateford Road 51	Roadside	323167	672009	NO_2	Yes - Central	0.0	2.3	No	2.0
77b	Slateford Road 93/95	Roadside	322999	671876	NO_2	Yes - Central	0.0	2.6	No	2.0
80h	Wardlaw Street No2	Roadside	323065	672295	NO_2	Yes - Central	0.0	5.0	No	2.0
29a	Bernard Street/opp King Chambers	Roadside	327137	676529	NO_2	Yes - Great Junction Street	0.0	2.1	No	2.0
29ci, 29cii	Bernard Street/PS	Roadside	327135	676515	NO_2	Yes - Great	0.0	2.1	No	2.0

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)
						Junction Street				
29	Bernard Street/Sainsburys	Roadside	327148	676507	NO_2	Yes - Great Junction Street	0.0	2.2	No	2.0
119	Bonnington Rd/Great Junction Street 143	Roadside	326723	676136	NO_2	No	0.0	1.4	No	2.0
43	Broughton Road	Roadside	325513	675134	NO_2	No	0.0	2.0	No	2.0
9d	Commercial Street 0pp Job centre plus	Roadside	326477	676759	NO_2	Yes - Great Junction Street	0.0	2.6	No	2.0
9	Commercial Street 88	Roadside	326879	676626	NO_2	Yes - Great Junction Street	0.0	2.6	No	2.0
9a	Commercial Street/Portland Place	Roadside	326430	676754	NO_2	Yes - Great Junction Street	3.9	1.5	No	2.0
30f	Duke Street	Roadside	327106	675816	NO_2	No	0.0	2.2	No	2.0
25c	Easter Road 105/109	Roadside	326958	674770	NO_2	Yes - Central	0.0	3.3	No	2.0
25e	Easter Road 198	Roadside	326999	674940	NO_2	No	0.0	4.0	No	2.0
25d	Easter Road/Bothwick	Roadside	326974	674780	NO_2	Yes - Central	0.0	2.8	No	2.0
25	Easter Road/CH shop	Roadside	326934	674503	NO_2	Yes - Central	0.0	2.3	No	2.0
25b	Easter Road/Rossie Place	Roadside	326950	674624	NO_2	Yes - Central	0.0	3.3	No	2.0
18A	Ferry Road 203	Roadside	325873	674956	NO_2	No	2.4	1.6	No	2.0
53	Ferry Road/ 6 Bowhill Terrace	Roadside	324726	676004	NO_2	Yes - Inverleith Row	1.6	4.6	No	2.0

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)
45b	Ferry Road/1 Madeira Street	Roadside	326359	676420	NO_2	No	0.0	8.6	No	2.0
45d	Ferry Road/North Junction Street	Roadside	326503	674436	NO_2	Yes- Great Junction Street	0.0	3.1	No	2.0
30b	Great Junction Street 137	Roadside	326740	676138	NO_2	Yes - Great Junction Street	0.0	2.9	No	2.0
30c	Great Junction Street 14	Roadside	326925	675949	NO_2	Yes - Great Junction Street	0.0	2.8	No	2.0
30e	Great Junction Street/CG junct Pirrie St	Roadside	326845	676015	NO_2	Yes - Great Junction Street	0.0	2.7	No	2.0
30	Great Junction Street/FV	Roadside	326884	675997	NO_2	Yes - Great Junction Street	0.0	2.8	No	2.0
120	Leith Walk 45-47	Roadside	326930	675819	NO_2	No	0.0	2.6	No	2.0
21	Leith Walk/Brunswick Road	Roadside	326413	674899	NO_2	Yes - Central	0.0	4.5	No	2.0
20	Leith Walk/McDonald Road	Roadside	326361	674882	NO_2	Yes - Central	3.1	1.2	No	2.0
118	Lindsay Road 198-199	Roadside	326370	676801	NO_2	Yes- Great Junction Street	4.7	0.6	No	2.0
66	London Road/Cadzow Place	Roadside	327468	674362	NO_2	Yes - Central	0.0	5.7	No	2.0
67	London Road/Earlston Place	Roadside	327190	674433	NO_2	Yes - Central	0.0	2.7	No	2.0

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)
81	London Road/East Norton Place	Roadside	326980	674446	NO_2	Yes - Central	0.0	2.5	No	2.0
116	London Road/Jocks Lodge 23a	Roadside	328245	674166	NO_2	Yes - Central	0.0	2.3	No	2.1
46	London Road/junct Easter Road	Roadside	326944	674472	NO_2	Yes - Central	0.0	5.6	No	2.0
68	London Road/Parson's Green Ter	Roadside	328042	674179	NO_2	Yes - Central	0.0	2.7	No	2.0
69	London Road/Wolseley Place	Roadside	328272	674143	NO_2	Yes - Central	0.0	2.6	No	2.0
70	London Road/Wolseley Terrace	Roadside	328337	674129	NO_2	Yes - Central	0.0	4.6	No	2.0
32	Niddrie Mains Road 28	Kerbside	328889	671649	NO_2	No	4.7	2.6	No	2.0
9c	North Junction St nr 4	Roadside	326448	676710	NO_2	Yes - Great Junction Street	2.1	2.7	No	2.0
71	Portobello High Street W 185	Roadside	330533	673850	NO_2	No	0.0	3.0	No	2.0
73d	Portobello Rd facade Ramsay Inst	Roadside	329917	674388	NO_2	No	0.0	3.7	No	2.0
117	Restalrig Road 1 nr junction	Roadside	327708	675797	NO_2	No	0.0	1.8	No	2.0
30X	Rodney Street 31	Roadside	325443	674969	NO_2	No	0.0	2.4	No	2.0
30A	Rodney Street 10	Roadside	325409	675013	NO_2	No	0.0	3.0	No	2.0
51b	Salamander Street 29b	Roadside	327665	676331	NO_2	No	0.0	1.8	No	2.0
51c	Salamander Street/Baltic Street	Roadside	327476	676418	NO_2	No	0.0	2.3	No	2.0
90F	Southfield Place	Roadside	330123	673554	NO_2	No	0.0	5.0	No	2.0
10B	Bank Street	Roadside	325598	673616	NO_2	No	0.0	2.7	No	2.0
44	Broughton Street	Roadside	325918	674430	NO_2	No	0.0	3.4	No	2.0
8A	Brougham Street 9	Roadside	324967	672931	NO_2	No	0.0	3.7	No	2.0
6B	Bruntsfield Place 147	Roadside	324619	672131	NO_2	No	0.0	5.5	No	2.0
6a	Bruntsfield Place 210	Roadside	324495	672035	NO_2	No	0.0	2.8	No	2.0
48G	Cannongate	Roadside	326173	673700	NO_2	No	0.0	2.6	No	2.0

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)
48h	Canongate 206	Roadside	326271	673722	NO_2	No	0.0	2.8	No	2.0
94	Chester Street 29	Roadside	324071	673608	NO_2	No	0.0	6.9	No	2.0
138	Clerk Street 15	Roadside	326229	672789	NO_2	No	0.0	4.4	No	2.0
151	Comiston Road No.116	Roadside	324367	670473	NO_2	No	0.0	2.7	No	2.0
48f	Cowgate/ 50 St Mary's Street	Roadside	326198	673587	NO_2	No	0.0	2.6	No	2.0
48c	Cowgate/Blackfriars	Roadside	326047	673519	NO_2	Yes - Central	0.0	2.4	No	2.0
48a	Cowgate/Blair Street	Roadside	325929	673490	NO_2	Yes - Central	0.0	3.2	No	2.0
48	Cowgate/Guthrie Street	Roadside	325881	673471	NO_2	Yes - Central	0.0	4.5	No	2.0
48e	Cowgatehead 2	Roadside	325537	673405	NO_2	Yes - Central	0.0	1.9	No	2.0
123	Dalkeith Road 16/Preston St Primary School	Roadside	326634	672516	NO_2	No	N/A	2.2	No	2.0
150	Drum Street	Roadside	329281	668615	NO_2	No	0.0	1.5	No	2.0
93	Drumsheugh Gardens 20	Roadside	324326	673815	NO_2	No	0.0	8.9	No	2.0
128	Dundas Street 9	Roadside	325253	674362	NO_2	No	7.4	2.2	No	2.0
8C	Earl Grey Street 22	Roadside	324864	673008	NO_2	Yes - Central	0.0	3.4	No	2.0
124	East Preston St/Dalkeith Road Junction	Roadside	326634	672481	NO_2	No	N/A	2.1	No	2.0
126	East Preston Street 32	Roadside	326588	672461	NO_2	No	0.0	6.4	No	2.0
125	East Preston Street 3A	Roadside	326483	672415	NO_2	No	0.0	4.2	No	2.0
10A	George IV Bridge	Roadside	325675	673358	NO_2	No	0.0	2.7	No	2.0
74f	George Street 112	Roadside	324880	673891	NO_2	Yes - Central	0.0	6.8	No	2.0
37ai, 37aii	Grassmarket 41	Roadside	325401	673340	NO_2	Yes - Central	0.0	3.4	No	2.0
37b	Grassmarket 75	Roadside	325471	673369	NO_2	Yes - Central	0.0	5.0	No	2.0
37c	Grassmarket/nrThomsons Court	Background	325397	673377	NO_2	No	0.0	22.8	No	2.0
75e	Gt Stuart Street 9	Roadside	324476	673967	NO_2	No	0.0	9.4	No	2.0

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)
HT1	Haymarket Terrace North side	Roadside	323985	673219	NO_2	Yes - Central	0.0	3.7	No	2.0
HT2	Haymarket Terrace South side	Kerbside	323787	673212	NO_2	Yes - Central	1.8	0.5	No	2.0
10	Home Street/Tollcross	Roadside	324904	672906	NO_2	No	0.0	2.0	No	2.0
140	Hope Park Terrace/Clerk Street	Roadside	326323	672596	NO_2	Yes- Central	3.5	1.3	No	2.0
17a	Hope Park Terrace/VS	Roadside	326312	672614	NO_2	Yes- Central	0.0	5.0	No	2.0
34	India Street	Background	324790	674341	NO_2	No	N/A	2.5	No	2.1
8B	Lauriston Place Opp119	Roadside	324989	673016	NO_2	No	0.0	4.9	No	2.0
74g	Leith Street News Room Pub	Roadside	325897	674051	NO_2	Yes - Central	0.0	3.7	No	2.0
92	Lord Russell Place 3-5	Roadside	326265	672441	NO_2	No	0.0	2.3	No	2.0
62A	Lothian Road 45	Roadside	324777	673425	NO_2	Yes - Central	0.0	4.1	No	2.0
62B	Lothian Road 139	Roadside	324827	673138	NO_2	No	3.2	3.5	No	2.2
62X	Lothian Road/Rutland St	Roadside	324711	673635	NO_2	Yes - Central	0.0	4.8	No	2.0
130	Market Street 6	Roadside	325804	673752	NO_2	No	0.0	4.5	No	2.0
152	Mayfield Road No.90	Roadside	326640	671384	NO_2	No	0.0	3.7	No	2.0
38	Melville Drive	Roadside	325141	672733	NO_2	No	10.0	2.8	No	2.0
42	Midmar Drive	Background	325105	670511	NO_2	No	N/A	1.4	No	2.0
8	Morningside Road	Roadside	324542	671167	NO_2	No	0.0	3.7	No	2.0
79E	Morrison Crescent	Roadside	324170	672919	NO_2	No	0.0	15.0	No	2.0
62C	Morrison Street 91	Roadside	324541	673183	NO_2	Yes - Central	0.0	2.4	No	2.0
49	Morrison Street	Roadside	324167	673249	NO_2	Yes - Central	2.4	2.2	No	2.0
135b	Nicolson Street 59-61	Roadside	326099	673140	NO_2	Yes – Central	0.0	2.8	No	2.0
136	Nicolson Street 92	Roadside	326164	673054	NO_2	Yes- Central	0.0	5.7	No	2.0
95	Palmerston Place 28/Lansdowne Cres	Kerbside	324105	673457	NO_2	No	5.0	0.8	No	2.0

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)
96	Palmerston Place 7	Roadside	324190	673380	NO_2	No	0.0	6.3	No	2.0
27	North Bridge South	Roadside	325944	673670	NO_2	Yes - Central	0.0	3.5	No	2.0
47	Princes Street (Eastbound)	Roadside	325049	673791	NO_2	Yes - Central	6.5	9.0	No	2.0
24	Princes Street/Mound	Kerbside	325397	673869	NO_2	Yes - Central	10.2	1.0	No	2.0
33b	Queen Street No66	Roadside	324837	674053	NO_2	Yes - Central	0.0	7.0	No	2.0
33a	Queen Street/Albyn Pl	Roadside	324817	674077	NO_2	Yes - Central	0.0	6.0	No	2.0
33	Queen Street/North David Street	Roadside	325467	674229	NO_2	Yes - Central	0.0	6.5	No	2.0
SH1	Shandwick Place Hostel	Roadside	324513	673556	NO_2	Yes - Central	0.0	2.5	No	2.0
144	South Bridge 59	Roadside	326020	673370	NO_2	Yes- Central	0.0	2.3	No	2.0
142	South Clerk Street 41a	Roadside	326367	672554	NO_2	Yes- Central	0.0	2.0	No	2.0
141	South Clerk Street 84	Roadside	326383	672472	NO_2	Yes- Central	0.0	2.6	No	2.0
75d	St Colme Street/4	Roadside	324646	674025	NO_2	No	0.0	6.2	No	2.0
163	New Arthur Place	Background	326302	673301	NO_2	No	2.5	N/A	No	2.0
10c	Teviot Place 14	Roadside	325754	673144	NO_2	No	0.0	2.5	No	2.0
3b	Torphicen Place 1	Roadside	324277	673309	NO_2	Yes - Central	0.0	4.8	No	2.0
3	Torphichen Place/Chiropractice	Roadside	324258	673295	NO_2	Yes - Central	0.0	2.3	No	2.0
162	Viewcraig Gardens 19	Roadside	326443	673433	NO_2	No	4.9	2.4	No	2.0
2	West Maitland St/Palmerston Pl	Kerbside	324193	673346	NO_2	No	5.2	0.5	No	2.0
28d	West Port 42	Roadside	325203	673250	NO_2	Yes - Central	0.0	2.7	No	2.0
28b	West Port 62	Roadside	325166	673242	NO_2	Yes - Central	0.0	1.4	No	2.0

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)
28c	West Port Opp 50	Roadside	325184	673261	NO_2	Yes - Central	0.0	3.0	No	2.0
127	West Preston Street 17	Roadside	326376	672421	NO_2	No	0.0	6.2	No	2.0
91	West Preston Street 40	Roadside	326309	672397	NO_2	No	0.0	4.0	No	2.0
36	York Place	Roadside	325828	674362	NO_2	No	2.7	5.5	No	2.0
CL1, CL2, CL3	Queensferry Rd	Roadside	318736	674930	NO_2	No	6.5	1.7	Yes	2.0
CL4, CL5, CL6	Gorgie Road	Roadside	323121	672314	NO_2	Yes - Central	0.0	6.0	Yes	2.4
CL7, CL8, CL9	Salamander St	Roadside	327615	676333	NO_2	No	0.0	2.1	Yes	2.4
CL10, CL11, CL12	Glasgow Rd	Roadside	313103	672663	NO_2	Yes - Glasgow Road	0.0	6.0	Yes	2.4
CL13, CL14, CL15	St Johns Road	Kerbside	320101	672907	NO_2	Yes - St John's Road	0.0	0.5	Yes	1.8
CL16, CL17, CL18	Nicolson Street	Roadside	326151	673041	NO_2	Yes - Central	2.2	2.9	Yes	1.8

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 ($\mu g/m^3$)

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ID4	Gorgie Road	Roadside	Automatic	89.9	89.9	30.0	28.0	27.0	18.4	18.2
ID5	St. John's Road	Kerbside	Automatic	93.8	93.8	53.0	43.0	41.9	25.6	28.7
ID6	Currie High School	Suburban	Automatic	92.7	92.7	6.0	8.0	9.9	5.3	5.1
ID7	St. Leonard's	Urban Background	Automatic	61.7	61.7	20.0	18.0	20.8	13.7	13.7
ID8	Salamander Street	Roadside	Automatic	99.2	99.2	25.0	25.0	24.3	19.5	22.1
ID9	Queensferry Road	Roadside	Automatic	99.3	99.3	-	52.0	36.9	25.8	29.2
ID10	Glasgow Road	Roadside	Automatic	98.8	98.8	26.0	26.0	25.2	15.4	16.6
EDNS	Nicolson Street	Roadside	Automatic	50.5	50.5	-	51.0	50.4	27.2	28.5
13a	Deanhaugh Street/Raeburn Pl	Roadside	Passive	84.6	84.6	23.0	26.0	22.1	15.4	16.3
16	Glasgow Road 68/adj	Roadside	Passive	90.4	90.4	**40.0**	**46.0**	**40.9**	26.7	27.9
15a	Glasgow Road Facade/9	Roadside	Passive	100.0	92.3	35.0	38.0	32.0	17.3	21.5
58i, 58ii	Glasgow Road Newbridge R'about	Roadside	Passive	100.0	100.0	**51.0**	**52.0**	**46.0**	29.2	30.7
15	Glasgow Road Newbridge R'about/3	Roadside	Passive	100.0	100.0	**44.0**	**44.0**	39.2	24.3	26.6
56	Glasgow Road/Drumbrae R'about	Roadside	Passive	67.3	67.3	31.0	32.0	25.3	14.3	20.4
143a	Hamilton Place/Stockbridge Library	Roadside	Passive	100.0	100.0	28.0	27.0	25.0	26.0	19.2
41	Hillview Terrace	Background	Passive	92.3	92.3	17.0	18.0	16.7	11.3	12.9
121	Inverleith Gardens 2	Roadside	Passive	100.0	100.0	-	-	-	24.1	25.3
122	Inverleith Gardens 9	Roadside	Passive	100.0	100.0	-	-	-	27.1	26.2
55c	Inverleith Row/Café Montague	Roadside	Passive	100.0	100.0	23.0	24.0	23.9	16.1	20.2
55i, 55ii	Inverleith Row/Ferry Road	Roadside	Passive	100.0	100.0	**40.0**	34.0	33.4	26.2	27.3
129B	Queensferry Road/Ramsay Grange	Roadside	Passive	100.0	100.0	-	-	-	13.6	16.0
63A	Queensferry Road 540	Roadside	Passive	100.0	100.0	-	-	18.0	16.6	16.4
64	Queensferry Road 550	Roadside	Passive	100.0	100.0	**61.0**	**62.0**	**56.9**	38.4	38.1
64b	Queensferry Road 550F	Roadside	Passive	100.0	100.0	32.0	32.0	27.2	20.9	20.7

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
64a	Queensferry Road 552	Roadside	Passive	100.0	100.0	30.0	30.0	26.4	-	20.1
69J	Queensferry Road 554 Roadside	Roadside	Passive	100.0	100.0	-	-	-	35.0	38.5
62	Queensferry Road 561	Roadside	Passive	100.0	100.0	18.0	21.0	17.8	13.0	14.7
69I	Queensferry Road/Lyle Court	Roadside	Passive	73.1	73.1	-	-	**40.3**	28.2	31.6
40	Queensferry Road/Hillhouse Road	Roadside	Passive	65.4	65.4	28.0	30.0	24.7	19.1	17.4
129	Queensferry Road/Hillpark Wood	Roadside	Passive	100.0	100.0	-	-	15.2	11.4	12.8
23	Roseburn Terrace	Kerbside	Passive	100.0	100.0	32.0	37.0	35.3	21.0	24.9
22a	Roseburn Terrace Wbound	Kerbside	Passive	92.3	92.3	**43.0**	**42.0**	36.5	23.1	25.9
1d	St John's Road 131	Roadside	Passive	100.0	100.0	**42.0**	**40.0**	37.7	28.8	29.1
1b	St John's Road IR	Roadside	Passive	90.4	90.4	29.0	28.0	27.3	17.4	20.8
1	St John's Road SB	Kerbside	Passive	92.3	92.3	32.0	29.0	31.8	16.9	20.4
SJ1	St John's Road/Kaimes Road	Kerbside	Passive	90.4	90.4	33.0	31.0	27.7	17.7	19.1
39	St John's Road/Victor Park Terr	Roadside	Passive	84.6	84.6	35.0	32.0	30.4	19.1	21.6
14	Trinity Crescent	Roadside	Passive	100.0	100.0	22.0	24.0	20.4	17.6	16.1
76b	Angle Park Terrace 74 2M East	Roadside	Passive	100.0	92.3	39.0	**40.0**	33.8	25.6	24.3
76	Angle Park Terrace/Harrison Road	Roadside	Passive	100.0	100.0	35.0	37.0	33.2	22.9	25.3
80e	Balgreen Rd/Library	Roadside	Passive	92.3	92.3	32.0	31.0	28.0	18.5	20.7
4a	Calder Road	Roadside	Passive	84.6	84.6	22.0	24.0	22.7	15.4	16.5
79d	Dundee Street/Yeaman Place	Roadside	Passive	92.3	92.3	38.0	**40.0**	34.5	24.4	22.7
79a	Fountainbridge 103	Roadside	Passive	92.3	92.3	31.0	29.0	27.0	18.1	19.2
79B	Fountainbridge 158	Roadside	Passive	100	67.3	-	-	-	-	20.3
79	Fountainbridge/Tollcross	Roadside	Passive	92.3	84.6	25.0	28.0	29.4	18.6	17.7
80	Gorgie Road - Delhaigh	Roadside	Passive	69.2	69.2	34.0	37.0	33.3	20.7	26.3
18	Gorgie Road 8	Roadside	Passive	100.0	100.0	35.0	35.0	33.2	22.6	23.3
80f	Gorgie Road No160	Roadside	Passive	84.6	84.6	-	35.0	32.5	20.0	22.3
80g	Gorgie Road No173	Kerbside	Passive	82.7	82.7	-	39.0	31.1	21.8	24.2

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
80a	Gorgie Road/Glen Lea	Roadside	Passive	92.3	92.3	29.0	27.0	25.8	17.3	18.7
5	Gorgie Road/Murieston Road	Kerbside	Passive	82.7	82.7	**43.0**	**42.0**	33.3	25.6	23.7
76d	Henderson Terrace	Roadside	Passive	100.0	100.0	28.0	33.0	28.6	23.0	21.9
11a	Lanark Road 425	Roadside	Passive	100.0	100.0	-	33.0	27.5	20.1	18.3
11	Lanark Road 610	Roadside	Passive	92.3	92.3	20.0	20.0	20.5	13.7	13.7
77a	Slateford Road 51	Roadside	Passive	92.3	92.3	31.0	32.0	28.2	21.4	21.5
77b	Slateford Road 93/95	Roadside	Passive	92.3	92.3	33.0	36.0	34.2	27.2	23.1
80h	Wardlaw Street No2	Roadside	Passive	57.7	57.7	-	28.0	27.2	17.5	21.0
29a	Bernard Street/opp King Chambers	Roadside	Passive	100.0	100.0	27.0	31.0	27.1	25.0	23.9
29ci, 29cii	Bernard Street/PS	Roadside	Passive	90.4	90.4	36.0	37.0	35.4	28.4	28.5
29	Bernard Street/Sainsburys	Roadside	Passive	100.0	100.0	32.0	30.0	25.9	21.7	21.2
119	Bonnington Rd/Great Junction Street 143	Roadside	Passive	100.0	100.0	-	-	-	18.2	20.8
43	Broughton Road	Roadside	Passive	100.0	100.0	32.0	34.0	29.4	22.0	22.7
9d	Commercial Street 0pp Job centre plus	Roadside	Passive	100.0	100.0	36.0	35.0	33.6	28.3	28.2
9	Commercial Street 88	Roadside	Passive	100.0	100.0	26.0	29.0	26.3	20.6	25.3
9a	Commercial Street/Portland Place	Roadside	Passive	100.0	100.0	35.0	37.0	32.8	29.2	27.6
30f	Duke Street	Roadside	Passive	92.3	92.3	35.0	35.0	32.3	26.9	28.0
25c	Easter Road 105/109	Roadside	Passive	100.0	100.0	31.0	33.0	33.2	27.0	32.1
25e	Easter Road 198	Roadside	Passive	92.3	92.3	24.0	28.0	25.5	17.9	21.9
25d	Easter Road/Bothwick	Roadside	Passive	92.3	92.3	29.0	38.0	25.6	21.2	24.7
25	Easter Road/CH shop	Roadside	Passive	92.3	92.3	38.0	37.0	33.2	25.8	29.1
25b	Easter Road/Rossie Place	Roadside	Passive	75.0	75.0	30.0	32.0	30.1	21.5	24.9
18A	Ferry Road 203	Roadside	Passive	100.0	100.0	-	-	31.8	23.1	26.6
53	Ferry Road/ 6 Bowhill Terrace	Roadside	Passive	100.0	100.0	34.0	31.0	28.8	22.2	22.5
45b	Ferry Road/1 Madeira Street	Roadside	Passive	100.0	100.0	-	-	-	19.5	20.6

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
45d	Ferry Road/North Junction Street	Roadside	Passive	100.0	100.0	33.0	32.0	31.2	25.9	25.7
30b	Great Junction Street 137	Roadside	Passive	100.0	100.0	33.0	32.0	30.8	19.7	24.2
30c	Great Junction Street 14	Roadside	Passive	80.8	80.8	34.0	37.0	33.1	22.7	25.1
30e	Great Junction Street/CG junct Pirrie St	Roadside	Passive	82.7	82.7	-	34.0	33.3	20.2	28.0
30	Great Junction Street/FV	Roadside	Passive	90.4	90.4	32.0	37.0	32.8	23.8	28.1
120	Leith Walk 45-47	Roadside	Passive	75.0	75.0	-	-	-	16.4	17.8
21	Leith Walk/Brunswick Road	Roadside	Passive	100.0	100.0	38.0	-	30.6	20.0	23.8
20	Leith Walk/McDonald Road	Roadside	Passive	7.7	7.7	-	39.0	37.9	-	-
118	Lindsay Road 198-199	Roadside	Passive	76.9	69.2	-	-	-	19.8	23.7
66	London Road/Cadzow Place	Roadside	Passive	82.7	82.7	31.0	28.0	29.8	22.5	23.7
67	London Road/Earlston Place	Roadside	Passive	92.3	92.3	**42.0**	**42.0**	36.9	25.5	30.1
81	London Road/East Norton Place	Roadside	Passive	75.0	75.0	**41.0**	**43.0**	**50.0**	**44.0**	**40.6**
116	London Road/Jocks Lodge 23a	Roadside	Passive	69.2	69.2	-	-	-	21.6	31.0
46	London Road/junct Easter Road	Roadside	Passive	100.0	100.0	**40.0**	37.0	34.9	22.8	27.1
68	London Road/Parson's Green Ter	Roadside	Passive	65.4	65.4	30.0	33.0	28.0	24.6	23.7
69	London Road/Wolseley Place	Roadside	Passive	90.4	90.4	37.0	38.0	35.4	39.3	27.8
70	London Road/Wolseley Terrace	Roadside	Passive	100.0	100.0	38.0	**40.0**	37.6	32.3	32.6
32	Niddrie Mains Road 28	Kerbside	Passive	92.3	92.3	29.0	28.0	26.4	20.5	20.6
9c	North Junction St nr 4	Roadside	Passive	82.7	82.7	36.0	28.0	26.0	17.9	21.4
71	Portobello High Street W 185	Roadside	Passive	100.0	100.0	29.0	29.0	25.1	27.1	22.6
73d	Portobello Rd facade Ramsay Inst	Roadside	Passive	100.0	100.0	31.0	34.0	31.4	24.4	23.3

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
117	Restalrig Road 1 nr junction	Roadside	Passive	90.4	90.4	-	-	-	21.4	18.3
30X	Rodney Street 31	Roadside	Passive	84.6	84.6	-	-	25.2	18.0	19.7
30A	Rodney Street 10	Roadside	Passive	100.0	100.0	-	-	32.4	23.3	24.8
51b	Salamander Street 29b	Roadside	Passive	100.0	100.0	-	-	-	20.4	24.0
51c	Salamander Street/Baltic Street	Roadside	Passive	84.6	84.6	32.0	31.0	26.5	22.4	21.4
90F	Southfield Place	Roadside	Passive	75	25.0	-	-	-	-	21.4
10B	Bank Street	Roadside	Passive	100.0	100.0	-	-	36.5	24.1	28.0
44	Broughton Street	Roadside	Passive	90.4	90.4	36.0	30.0	27.4	23.3	23.8
8A	Brougham Street 9	Roadside	Passive	84.6	84.6	-	-	37.7	26.7	23.4
6B	Bruntsfield Place 147	Roadside	Passive	100.0	100.0	-	-	17.8	14.0	14.3
6a	Bruntsfield Place 210	Roadside	Passive	75.0	75.0	31.0	31.0	25.4	17.4	18.4
48G	Cannongate	Roadside	Passive	100.0	100.0	-	-	**42.7**	28.0	29.2
48h	Canongate 206	Roadside	Passive	100	84.6	-	-	-	-	23.9
94	Chester Street 29	Roadside	Passive	92.3	92.3	-	-	-	19.6	18.1
138	Clerk Street 15	Roadside	Passive	57.7	57.7	**41.0**	37.0	33.4	27.3	23.7
151	Comiston Road No.116	Roadside	Passive	100.0	100.0	25.0	25.0	21.2	17.3	15.8
48f	Cowgate/ 50 St Mary's Street	Roadside	Passive	100.0	100.0	34.0	39.0	34.6	24.0	25.1
48c	Cowgate/Blackfriars	Roadside	Passive	84.6	84.6	**41.0**	34.0	36.0	31.0	24.0
48a	Cowgate/Blair Street	Roadside	Passive	76.9	76.9	27.0	36.0	38.2	21.5	22.7
48	Cowgate/Guthrie Street	Roadside	Passive	92.3	92.3	33.0	33.0	31.7	21.9	19.6
48e	Cowgatehead 2	Roadside	Passive	76.9	76.9	**43.0**	37.0	29.6	23.6	26.1
123	Dalkeith Road 16/Preston St Primary School	Roadside	Passive	100.0	100.0	-	-	-	13.8	13.9
150	Drum Street	Roadside	Passive	82.7	82.7	25.0	25.0	23.0	18.1	17.9
93	Drumsheugh Gardens 20	Roadside	Passive	100.0	100.0	-	-	-	13.0	15.4
128	Dundas Street 9	Roadside	Passive	65.4	65.4	-	-	-	20.4	18.9
8C	Earl Grey Street 22	Roadside	Passive	70	50.0	-	-	-	-	24.0
124	East Preston St/Dalkeith Road Junction	Roadside	Passive	100.0	100.0	-	-	-	18.4	15.9
126	East Preston Street 32	Roadside	Passive	90.4	90.4	-	-	-	14.6	14.9
125	East Preston Street 3A	Roadside	Passive	100.0	100.0	-	-	-	15.5	14.6
10A	George IV Bridge	Roadside	Passive	82.7	82.7	-	-	27.7	22.8	22.3

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
74f	George Street 112	Roadside	Passive	100.0	100.0	30.0	30.0	25.7	19.5	21.3
37ai, 37aii	Grassmarket 41	Roadside	Passive	100.0	100.0	**50.0**	**56.0**	**52.5**	33.4	23.4
37b	Grassmarket 75	Roadside	Passive	100.0	100.0	34.0	37.0	38.8	21.7	21.1
37c	Grassmarket/nrThomsons Court	Background	Passive	100.0	100.0	26.0	26.0	25.1	17.9	15.9
75e	Gt Stuart Street 9	Roadside	Passive	100.0	100.0	22.0	24.0	19.7	15.3	15.0
HT1	Haymarket Terrace North side	Roadside	Passive	92.3	92.3	**41.0**	31.0	36.5	22.7	25.1
HT2	Haymarket Terrace South side	Kerbside	Passive	100.0	100.0	38.0	**41.0**	**40.8**	22.9	26.2
10	Home Street/Tollcross	Roadside	Passive	92.3	92.3	38.0	38.0	30.7	24.5	21.2
140	Hope Park Terrace/Clerk Street	Roadside	Passive	100.0	100.0	34.0	32.0	26.5	24.7	22.7
17a	Hope Park Terrace/VS	Roadside	Passive	92.3	92.3	32.0	31.0	28.7	23.9	20.8
34	India Street	Background	Passive	100.0	100.0	20.0	19.0	17.7	13.8	13.5
8B	Lauriston Place Opp119	Roadside	Passive	100.0	100.0	-	-	31.2	24.1	24.4
74g	Leith Street News Room Pub	Roadside	Passive	92.3	92.3	-	-	**44.4**	27.3	31.2
92	Lord Russell Place 3-5	Roadside	Passive	92.3	92.3	-	-	-	18.7	16.9
62A	Lothian Road 45	Roadside	Passive	73.1	73.1	-	-	**56.6**	31.3	33.9
62B	Lothian Road 139	Roadside	Passive	75.0	75.0	-	-	**43.9**	26.3	30.7
62X	Lothian Road/Rutland St	Roadside	Passive	75.0	75.0	-	-	**46.1**	30.6	30.5
130	Market Street 6	Roadside	Passive	71.2	71.2	-	-	-	25.7	26.5
152	Mayfield Road No.90	Roadside	Passive	90.4	90.4	26.0	28.0	24.8	18.2	17.6
38	Melville Drive	Roadside	Passive	90.4	90.4	25.0	26.0	22.8	18.6	15.8
42	Midmar Drive	Background	Passive	90.4	90.4	15.0	15.0	12.6	8.1	9.5
8	Morningside Road	Roadside	Passive	92.3	92.3	23.0	25.0	21.9	15.8	15.4
79E	Morrison Crescent	Roadside	Passive	80	67.3	-	-	-	-	18.7
62C	Morrison Street 91	Roadside	Passive	84.6	84.6	-	-	**42.2**	29.4	25.0
49	Morrison Street	Roadside	Passive	92.3	92.3	38.0	37.0	37.2	26.1	27.0
135b	Nicolson Street 59-61	Roadside	Passive	55.8	55.8	-	-	37.8	36.9	34.4
136	Nicolson Street 92	Roadside	Passive	100.0	100.0	32.0	37.0	32.2	20.8	23.6
95	Palmerston Place 28/Lansdowne Cres	Kerbside	Passive	92.3	92.3	-	-	-	19.1	19.0

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
96	Palmerston Place 7	Roadside	Passive	100.0	100.0	-	-	-	24.9	26.1
27	North Bridge South	Roadside	Passive	92.3	92.3	37.0	**40.0**	**40.6**	23.0	28.8
47	Princes Street (Eastbound)	Roadside	Passive	100.0	100.0	38.0	36.0	36.2	26.4	26.0
24	Princes Street/Mound	Kerbside	Passive	100.0	100.0	**60.0**	**53.0**	**53.2**	29.1	34.4
33b	Queen Street No66	Roadside	Passive	100.0	100.0	-	35.0	29.2	30.0	22.2
33a	Queen Street/Albyn Pl	Roadside	Passive	65.4	65.4	29.0	33.0	28.7	19.7	23.7
33	Queen Street/North David Street	Roadside	Passive	100.0	100.0	**40.0**	**42.0**	36.0	27.5	23.5
SH1	Shandwick Place Hostel	Roadside	Passive	80.8	80.8	-	**40.0**	37.0	28.8	29.7
144	South Bridge 59	Roadside	Passive	82.7	82.7	**43.0**	**41.0**	38.1	27.0	28.1
142	South Clerk Street 41a	Roadside	Passive	82.7	82.7	33.0	35.0	29.8	21.4	21.9
141	South Clerk Street 84	Roadside	Passive	100.0	100.0	38.0	37.0	32.9	22.9	22.9
75d	St Colme Street/4	Roadside	Passive	100.0	100.0	25.0	27.0	22.9	17.5	19.5
163	New Arthur Place	Background	Passive	92.3	92.3	-	-	-	16.3	14.0
10c	Teviot Place 14	Roadside	Passive	90.4	90.4	-	-	28.2	19.6	22.4
3b	Torphicen Place 1	Roadside	Passive	100.0	100.0	**41.0**	**43.0**	**40.0**	30.0	28.9
3	Torphichen Place/Chiropractice	Roadside	Passive	100.0	100.0	**42.0**	**43.0**	**40.5**	29.1	31.1
162	Viewcraig Gardens 19	Roadside	Passive	100.0	100.0	-	-	-	12.0	13.3
2	West Maitland St/Palmerston Pl	Kerbside	Passive	92.3	92.3	**49.0**	**50.0**	**45.8**	34.2	35.4
28d	West Port 42	Roadside	Passive	92.3	92.3	**47.0**	**51.0**	**44.0**	24.5	23.6
28b	West Port 62	Roadside	Passive	57.7	57.7	-	-	**54.2**	24.8	23.0
28c	West Port Opp 50	Roadside	Passive	80.8	80.8	36.0	38.0	35.0	22.2	21.0
127	West Preston Street 17	Roadside	Passive	100.0	100.0	-	-	-	14.3	16.2
91	West Preston Street 40	Roadside	Passive	100.0	100.0	-	-	-	13.7	16.2
36	York Place	Roadside	Passive	92.3	92.3	35.0	32.0	29.5	20.9	23.9
CL1, CL2, CL3	Queensferry Rd	Roadside	Passive	100.0	100.0	-	**55.0**	**44.8**	27.5	28.3
CL4, CL5, CL6	Gorgie Road	Roadside	Passive	100.0	100.0	33.0	32.0	30.4	20.1	18.2

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CL7, CL8, CL9	Salamander St	Roadside	Passive	100.0	100.0	32.0	27.0	27.8	20.7	20.7
CL10, CL11, CL12	Glasgow Rd	Roadside	Passive	100.0	100.0	**41.0**	35.0	32.3	17.9	18.3
CL13, CL14, CL15	St Johns Road	Kerbside	Passive	100.0	100.0	**61.0**	**47.0**	**46.6**	25.9	27.2
CL16, CL17, CL18	Nicolson Street	Roadside	Passive	90.4	90.4	-	-	-	30.3	26.7

Notes:

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Table A.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ID4	Gorgie Road	Roadside	Automatic	89.9	89.9	0	0	0 (87.6)	0	0
ID5	St. John's Road	Roadside	Automatic	93.8	93.8	1	2	0	0	0
ID6	Currie High School	Suburban	Automatic	92.7	92.7	0	0	0 (79.4)	0 (32.0)	0
ID7	St. Leonard's	Urban Background	Automatic	61.7	61.7	0	0	0	0	0 (66.1)
ID8	Salamander Street	Roadside	Automatic	99.2	99.2	0	0	0	0 (90.8)	0
ID9	Queensferry Road	Roadside	Automatic	99.3	99.3	3 (159)	3	0	0	0
ID10	Glasgow Road	Roadside	Automatic	98.8	98.8	0	0	0	0	0
EDNS	Nicolson Street	Kerbside	Automatic	50.5	50.5	-	0	4	0 (100.6)	0 (102.6)

Notes:

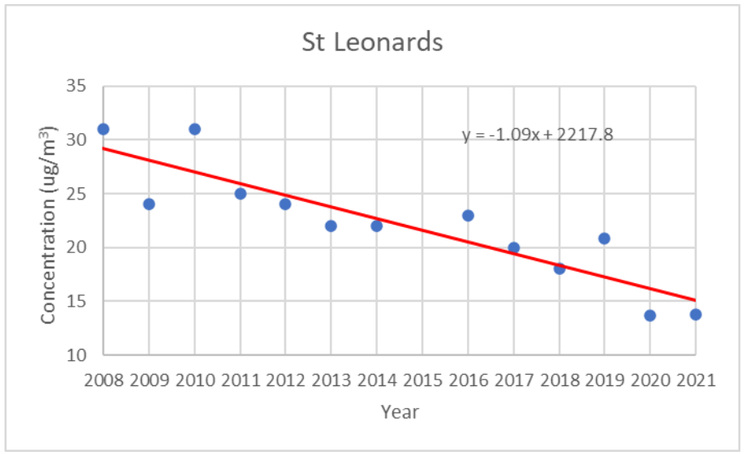
Exceedances of the NO_2 1-hour mean objective (200 µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.

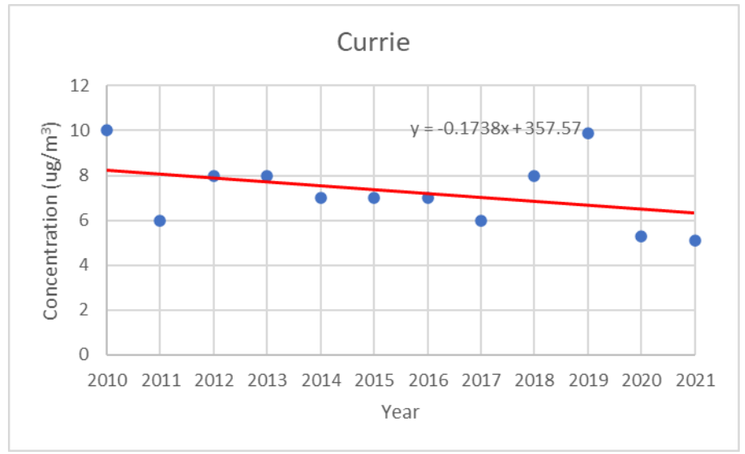
If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

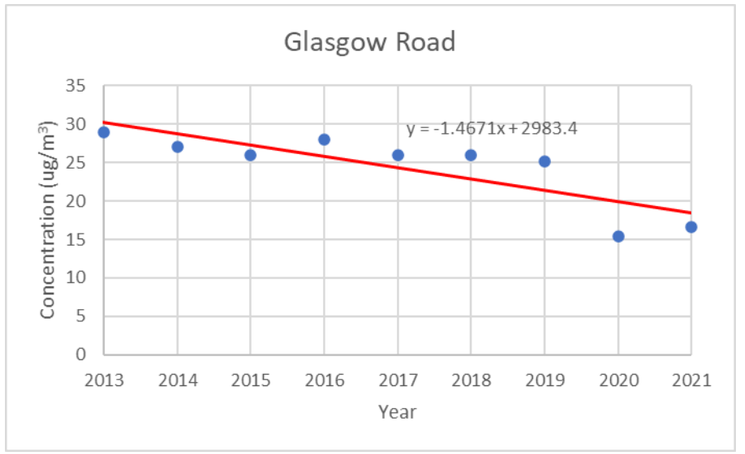
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

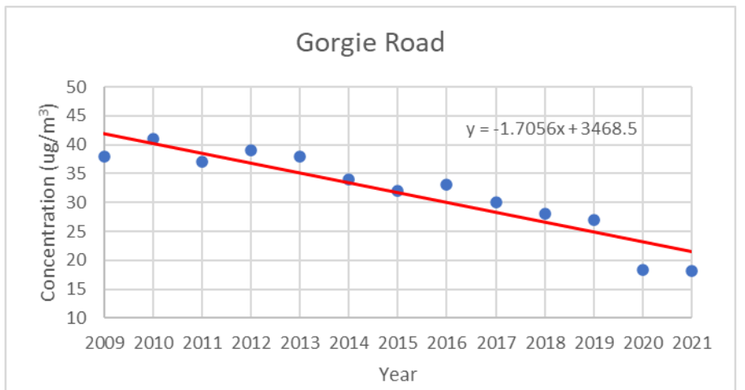
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

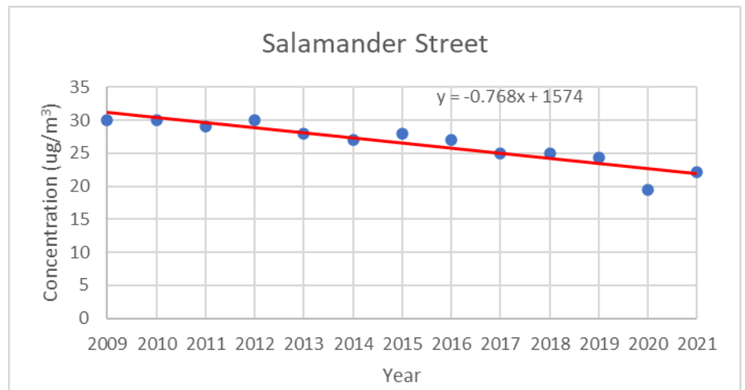
Figure A.1 – NO_2 Concentration Trends at Continuous Monitoring Locations

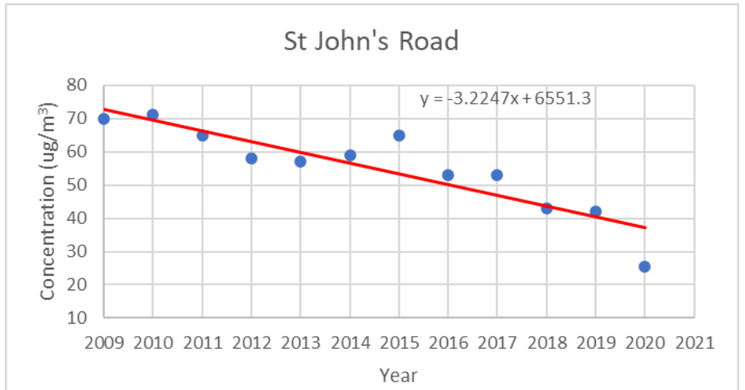












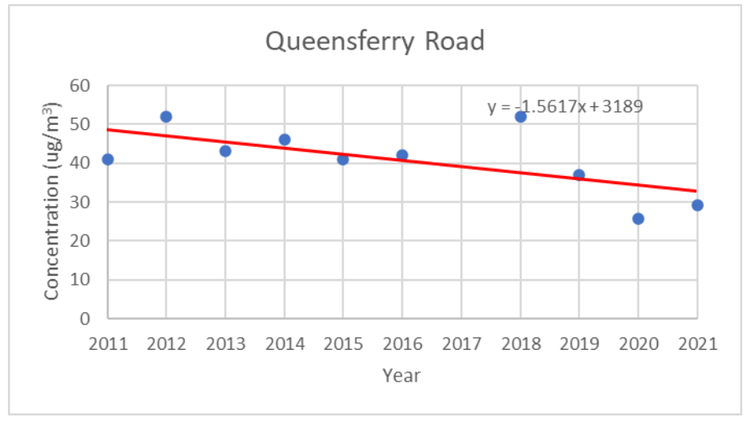
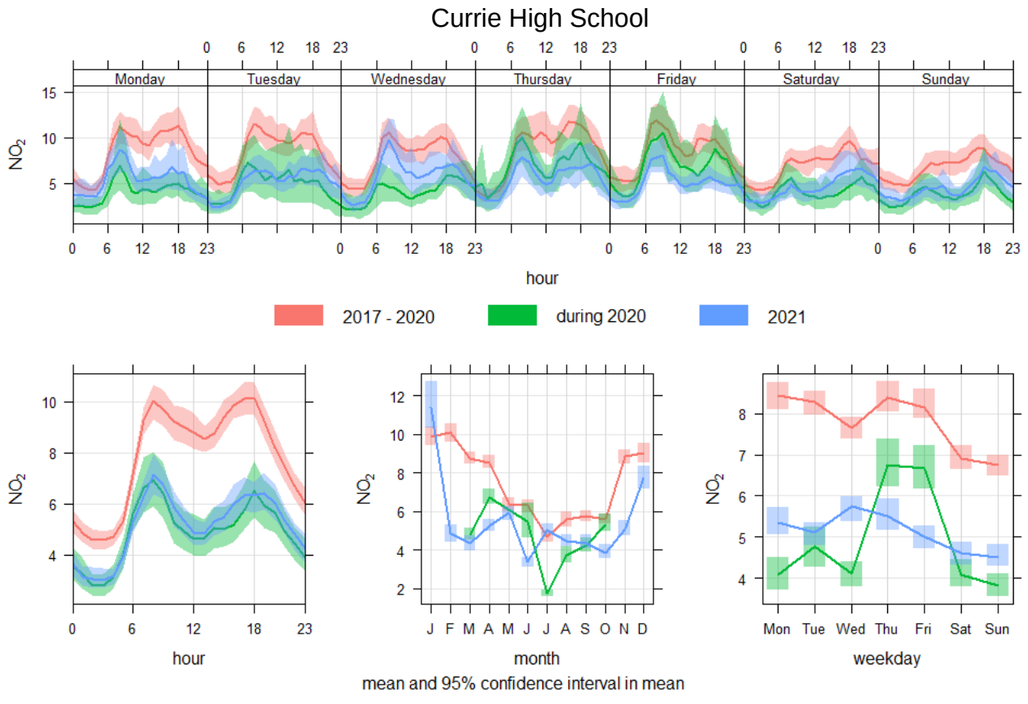
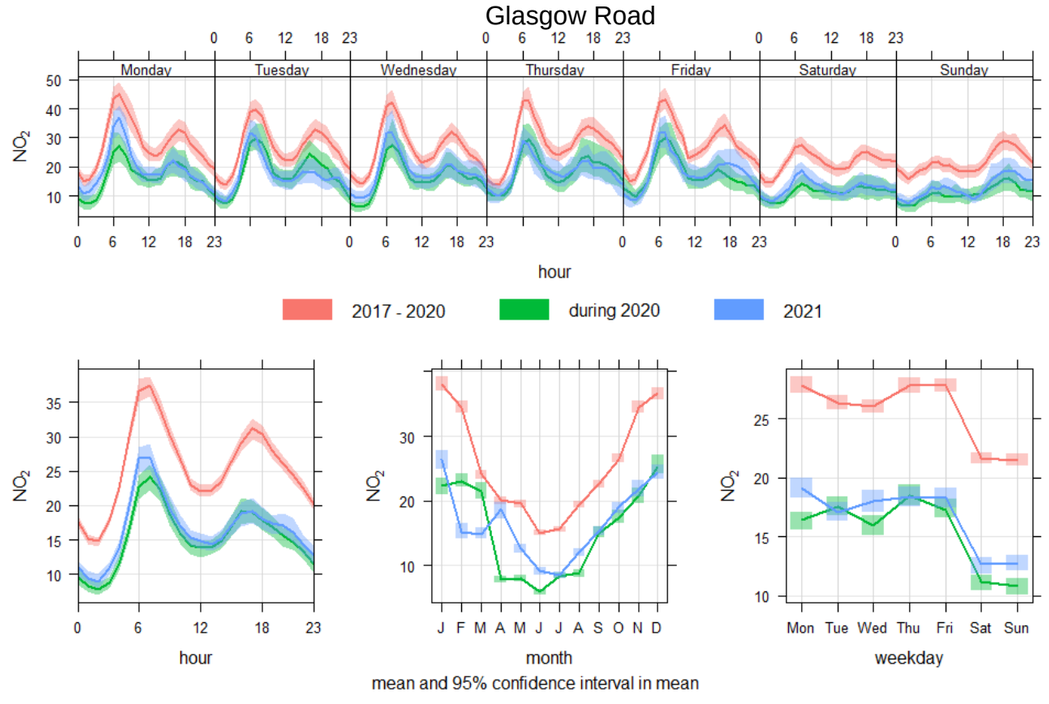
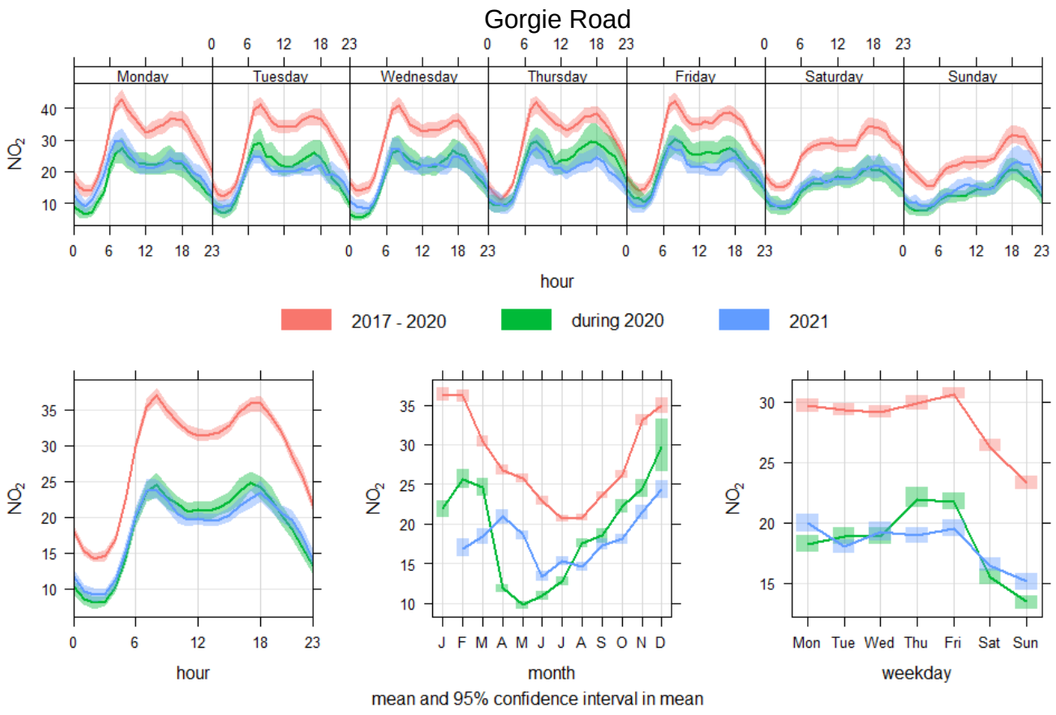


Figure A.2 – Time Variation Plots







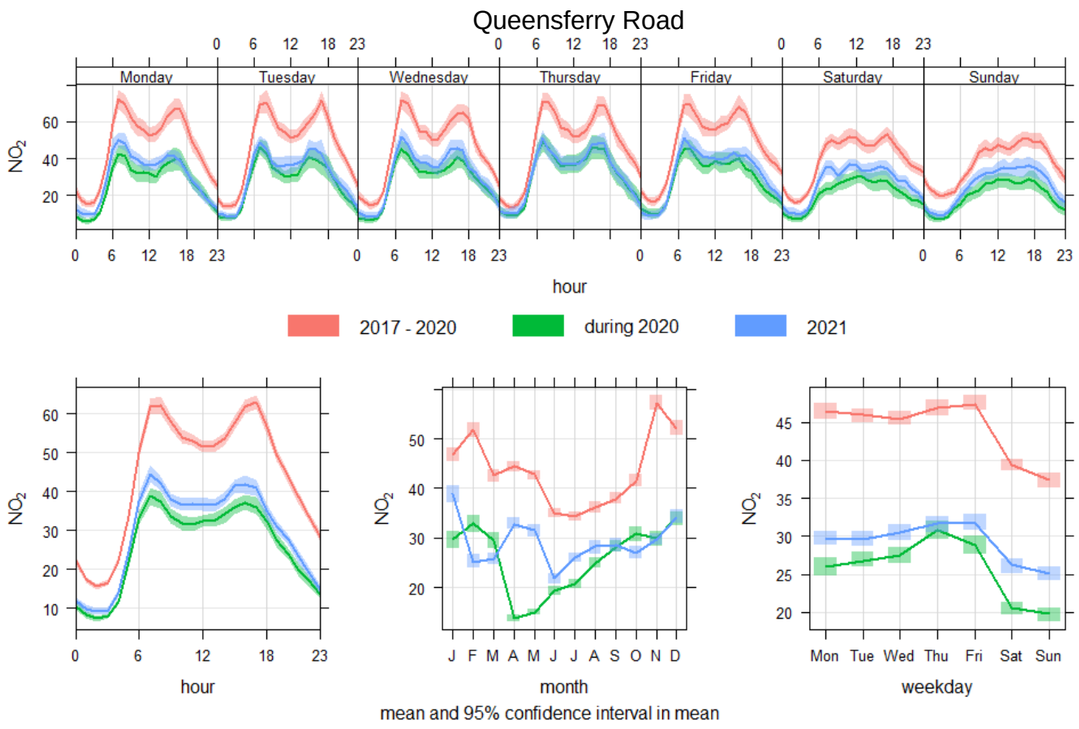


Figure A.3 – Time Variation Plots

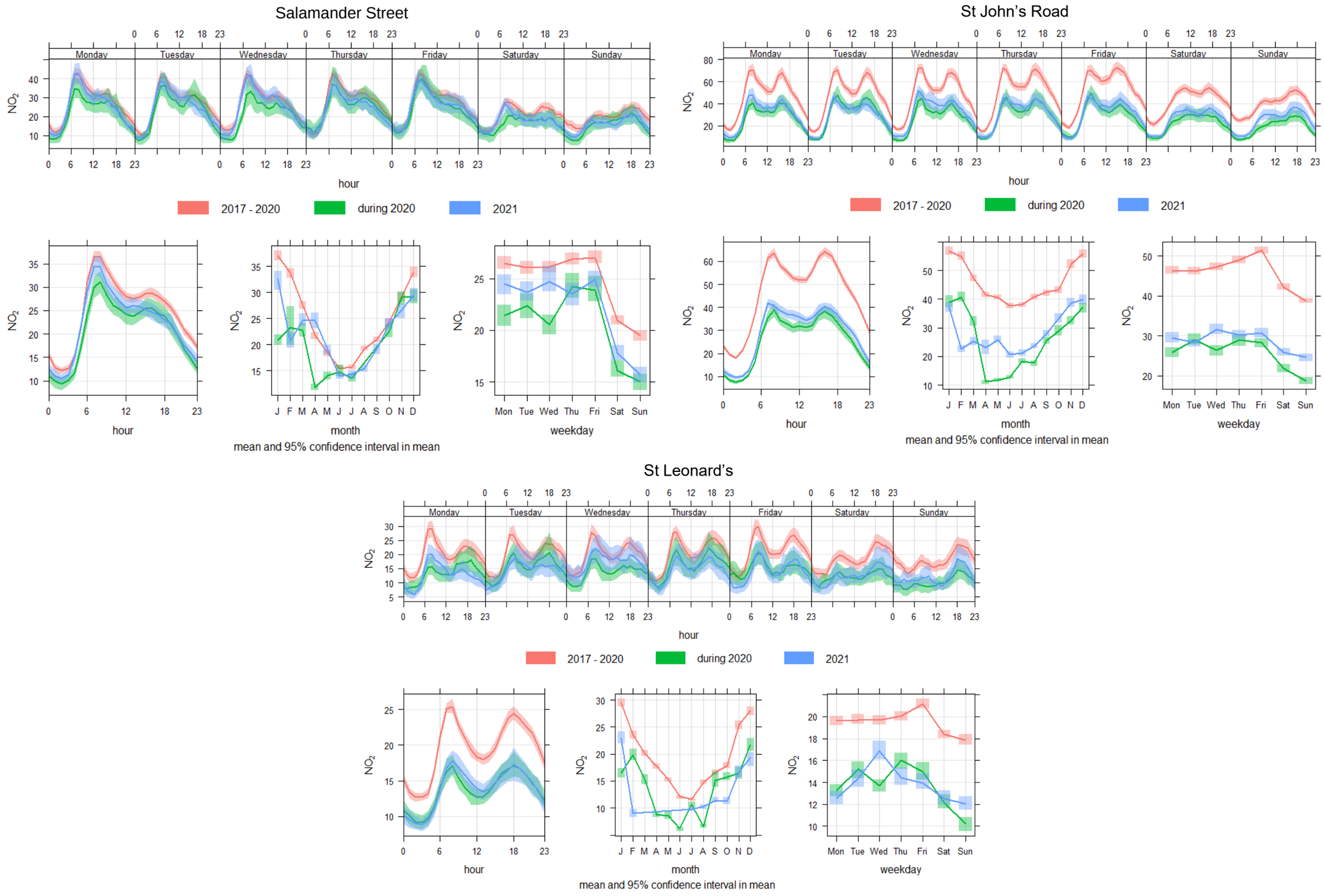


Table A.5 – Data used to establish the trend of annual mean concentrations of nitrogen dioxide at passive diffusion tube sites within the Central AQMA (µg/m^3)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
3	58.2	26.3	55.6	55.1	48.0	43.0	43.0	45.0	49.6	41.8	43.2	40.5	29.1	31.1
5	N/A	58.2	60.1	54.3	51.9	48.5	43.3	42.0	44.0	42.7	42.0	33.3	25.6	23.7
18	51.5	45.0	54.5	48.2	49.0	45.0	42.0	37.0	38.3	35.3	34.8	33.2	22.6	23.3
20	53.1	36.8	38.1	N/A	35.0	34.0	32.0	33.0	39.7	N/A	45.3	37.9	-	-
21	N/A	40.0	40.7	35.8	38.8	36.2	35.1	35.0	40.3	37.9	N/A	30.6	20.0	23.8
23	N/A	47.5	58.2	41.4	45.1	41.2	45.7	37.0	39.7	34.3	37.1	35.3	21.0	24.9
24	N/A	46.2	73.0	N/A	49.7	59.9	N/A	54.0	56.7	54.2	52.7	53.2	29.1	34.4
25	58.2	50.8	49.7	43.6	45.0	41.0	39.0	40.0	45.7	37.9	37.1	33.2	25.8	29.1
27	52.3	48.4	49.4	48.7	52.0	47.0	48.0	N/A	53.0	37.4	40.4	40.6	23.0	28.8
46	52.3	43.4	46.2	40.4	46.0	38.0	38.0	37.0	39.3	39.7	37.4	34.9	22.8	27.1
47	N/A	31.6	47.5	39.0	N/A	41.0	41.1	38.0	40.8	38.1	35.5	36.2	26.4	26.0
48	46.6	39.8	46.2	40.2	40.0	38.0	33.0	33.0	37.7	32.7	32.9	31.7	21.9	19.6
49	N/A	48.2	54.5	53.5	50.8	46.8	39.3	36.0	41.7	38.1	37.0	37.2	26.1	27.0
66	N/A	43.0	40.5	N/A	36.0	34.0	31.0	33.0	31.5	31.1	28.1	29.8	22.5	23.7
67	N/A	47.9	51.3	45.5	46.0	46.0	39.0	42.0	40.5	42.1	41.7	36.9	25.5	30.1
68	N/A	30.4	36.6	31.5	33.0	29.0	28.0	31.0	30.9	30.2	32.7	28.0	24.6	23.7
69	N/A	56.2	50.6	50.4	42.0	40.0	42.0	43.0	39.3	36.5	37.8	35.4	39.3	27.8
70	N/A	47.3	46.1	42.4	41.0	44.0	38.0	44.0	40.0	38.2	40.1	37.6	32.3	32.6
76	N/A	N/A	52.9	44.4	48.0	41.0	41.0	38.0	43.4	34.6	37.1	33.2	22.9	25.3
80	N/A	N/A	47.4	42.2	42.0	44.0	37.0	33.0	38.0	34.2	36.5	33.3	20.7	26.3
81	N/A	N/A	N/A	51.2	46.0	44.0	43.0	50.0	56.7	40.9	42.6	50.0	44.0	40.6
17a	N/A	38.8	43.4	37.4	39.0	36.0	35.0	36.0	34.4	31.9	31.2	28.7	23.9	20.8
25b	44.9	38.8	39.1	35.8	35.0	34.0	31.0	31.0	34.7	29.9	31.8	30.1	21.5	24.9
25c	43.8	38.0	37.7	41.0	41.0	37.0	29.0	31.0	33.1	30.5	32.6	33.2	27.0	32.1
25d	40.8	37.3	37.1	32.7	34.0	30.0	30.0	30.0	32.3	29.0	28.1	25.6	21.2	24.7
28b	72.5	66.7	62.4	57.0	61.0	52.0	56.0	58.0	58.9	N/A	64.9	54.2	24.8	23.0
28c	51.5	43.5	41.5	39.0	N/A	39.0	N/A	46.0	43.5	35.9	38.3	35.0	22.2	21.0

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
28d	66.6	60.2	54.9	55.2	60.0	58.0	51.0	52.0	50.8	46.9	51.4	44.0	24.5	23.6
37ai, 37aii	42.3	40.5	60.0	42.0	43.0	44.0	40.0	42.0	54.1	56.5	56.3	52.5	33.4	23.4
37b	N/A	N/A	N/A	37.1	39.0	37.0	35.0	36.0	36.7	34.1	37.1	38.8	21.7	21.1
48a	N/A	N/A	37.7	31.4	40.0	35.0	36.0	34.0	37.4	27.6	35.6	38.2	21.5	22.7
74f	N/A	N/A	43.4	44.7	47.0	34.0	30.0	26.0	30.8	30.4	30.3	25.7	19.5	21.3
Mean	**52.5**	**44.3**	**48.5**	**43.5**	**44.1**	**41.2**	**38.4**	**38.8**	**41.7**	**37.0**	**39.0**	**36.5**	**25.4**	**26.1**

Table A.6 – Data used to establish the trend of annual mean concentrations of NO_2 at passive diffusion tube sites within the Glasgow Road AQMA (µg/m^3)

Site ID	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
16	57.3	54.7	50.9	54.8	44.9	45.6	46.0	44.8	39.6	46.0	40.9	26.7	27.9
58i, 58ii	61.8	65.0	59.3	54.8	52.0	51.9	51.3	49.0	50.9	52.0	46.0	29.2	30.7
15	51.4	45.7	45.9	42.5	41.4	38.6	42.8	44.0	44.4	43.7	39.2	24.3	26.6
Mean	**56.8**	**55.1**	**52.0**	**50.7**	**46.1**	**45.4**	**46.7**	**45.9**	**45.0**	**47.2**	**42.0**	**26.7**	**28.4**

Table A.7 – Data used to establish the trend of annual mean concentrations of NO_2 at passive diffusion tube sites within the Inverleith Row AQMA (µg/m^3)

Site ID	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
55i, 55ii	43.8	46.0	43.0	40.0	41.0	40.5	39.5	34.3	33.4	26.2	27.3
55c	28.6	32.7	31.3	29.3	24.9	29.2	23.4	23.6	23.9	16.1	20.2
53	36.9	36.8	35.5	34.5	36.4	34.2	34.4	30.8	28.8	22.2	22.5
Mean	**36.4**	**38.5**	**36.6**	**34.6**	**34.1**	**34.6**	**32.4**	**29.6**	**28.7**	**21.5**	**23.4**

Table A.8 – Data used to establish the trend of annual mean concentrations of NO_2 at passive diffusion tube sites within the Great Junction Street AQMA ($\mu g/m^3$)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
29	45.3	45.1	43.7	38.9	37.0	36.0	31.0	32.0	33.2	32.1	29.8	25.9	21.7	21.2
29a	48.0	42.0	44.6	41.9	40.0	38.0	34.0	34.0	37.2	27.4	31.1	27.1	25.0	23.9
29ci, 29cii	53.4	48.2	49.4	44.6	44.0	42.0	39.0	40.0	41.6	35.9	36.5	35.4	28.4	28.5
9	40.4	31.6	36.7	31.2	35.0	32.0	30.0	29.0	32.0	26.3	29.1	26.3	20.6	25.3
9a	-	-	45.5	46.2	44.0	41.0	41.0	42.0	39.8	35.1	36.5	32.8	29.2	27.6
45d	42.4	40.9	38.3	39.6	37.0	34.0	34.0	37.0	33.2	33.2	32.0	31.2	25.9	25.7
30b	38.4	38.5	39.9	40.0	38.0	36.0	33.0	38.0	32.8	32.8	31.7	30.8	19.7	24.2
30c	50.2	42.6	44.1	38.4	38.0	39.0	37.0	34.0	40.3	34.2	37.1	33.1	22.7	25.1
30e	43.1	41.9	38.7	41.2	37.0	36.0	33.0	32.0	34.0	-	33.9	33.3	20.2	28.0
30	44.6	44.1	41.8	39.1	38.0	41.0	-	33.0	42.1	31.7	36.9	32.8	23.8	28.1
Mean	**45.1**	**41.7**	**42.3**	**40.1**	**38.8**	**37.5**	**34.7**	**35.1**	**36.6**	**32.1**	**33.5**	**30.9**	**23.7**	**25.8**

Table A.9 – Data used to establish the trend of annual mean concentrations of NO_2 at passive diffusion tube sites within the St John's Road AQMA ($\mu g/m^3$)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	50.0	43.0	47.0	39.0	43.0	42.0	39.0	35.0	37.3	32.2	29.2	31.8	16.9	20.4
1b	48.8	44.2	43.5	38.4	44.0	41.0	37.0	33.0	36.1	28.5	27.7	27.3	17.4	20.8
1d	84.9	57.8	58.8	56.3	52.0	52.0	48.0	46.0	45.1	42.0	40.1	37.7	28.8	29.1
Mean	**61.2**	**48.3**	**49.8**	**44.6**	**46.3**	**45.0**	**41.3**	**38.0**	**39.5**	**34.2**	**32.3**	**32.3**	**21.0**	**23.4**

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

Site ID	Site Name	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ID5	St. John's Road	Kerbside	97.8	97.8	12	13	13.6	9.9	11.0
ID6	Currie High School	Suburban	99.6	99.6	8	9	9.5	8.6	7.3
ID7	St. Leonard's	Urban Background	99.3	99.3	10	11	11.0	8.1	8.5
ID8	Salamander Street	Roadside	99.7	99.7	19	20	18.1	14.8	15.4
ID9	Queensferry Road	Roadside	99.6	99.6	22	25	-	11.2	12.0
ID10	Glasgow Road	Roadside	99.7	99.7	16	16	15.9	12.4	10.2
EDNS	Nicolson Street	Roadside	98.0	98.0	-	-	9.0	9.5	10.1
ED012	Tower Street	Urban Industrial	100.0	100.0	-	-	10.7	8.6	9.9

Notes:

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

All means have been "annualised" as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Table A.11 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Site Name	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ID5	St. John's Road	Kerbside	97.8	97.8	1	1	3	0	0
ID6	Currie High School	Suburban	99.6	99.6	0	0	1	0	1
ID7	St. Leonard's	Urban Background	99.3	99.3	0	0	1	0	0
ID8	Salamander Street	Roadside	99.7	99.7	0	3	5	2 (51.2)	3
ID9	Queensferry Road	Roadside	99.6	99.6	8	4	0	2	0
ID10	Glasgow Road	Roadside	99.7	99.7	0	0	3	0 (37.4)	3
EDNS	Nicolson Street	Roadside	98.0	98.0	-	-	0 (43.3)	0	0
ED012	Tower Street	Urban Industrial	100.0	100.0	-	-	1	0	0

Notes:

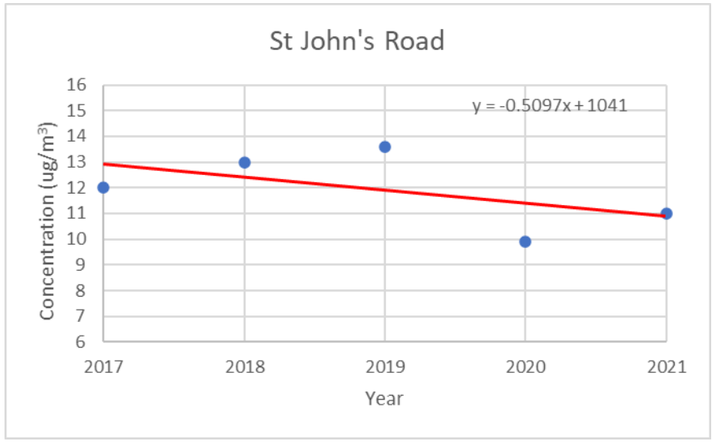
Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 not to be exceeded more than seven times/year) are shown in bold.

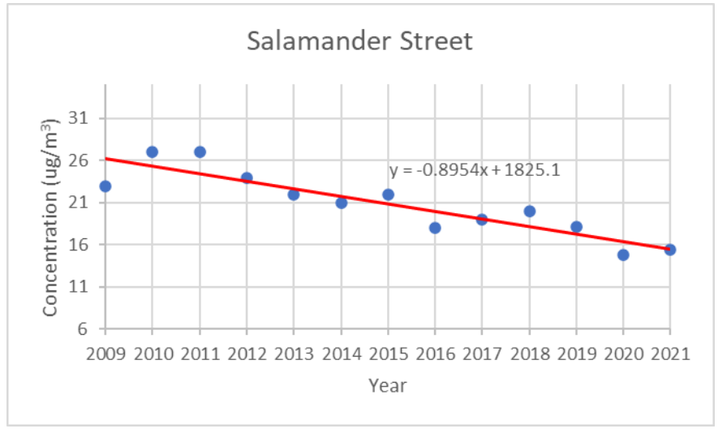
If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

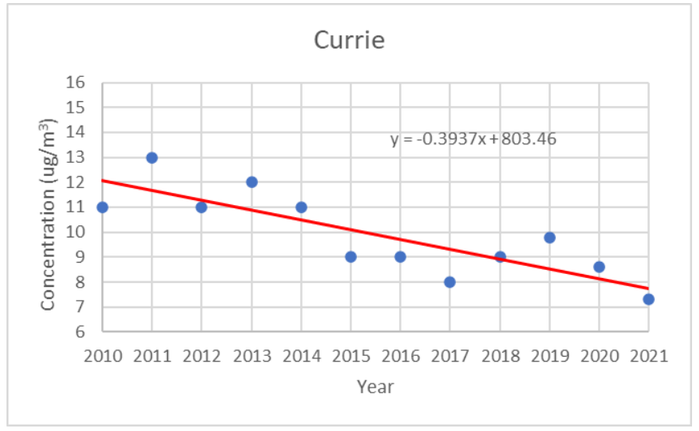
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

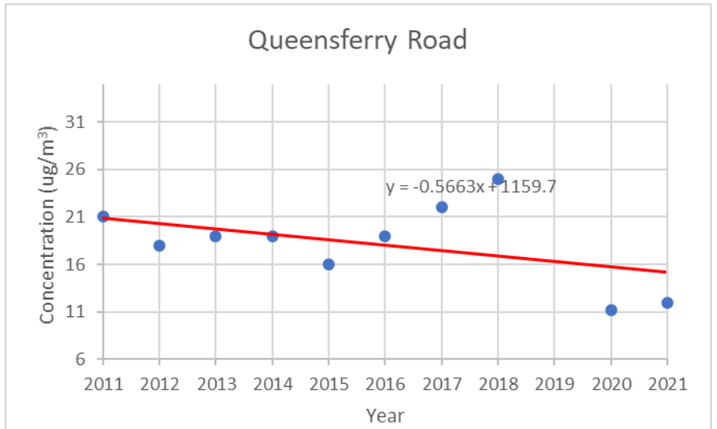
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

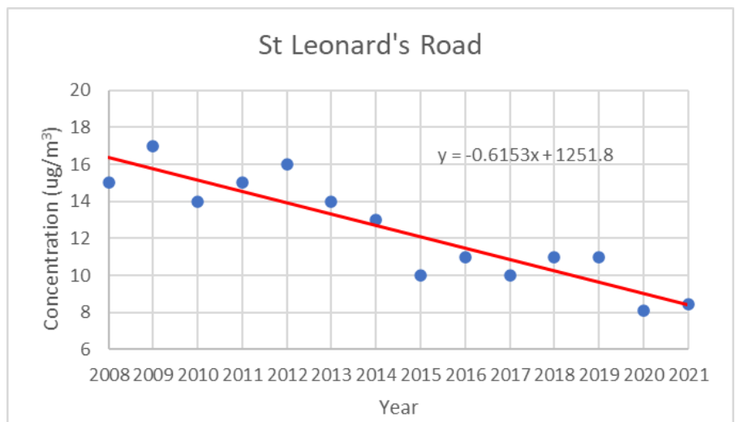
Figure A.4 – PM_{10} Concentration Trends at Continuous Monitoring Locations











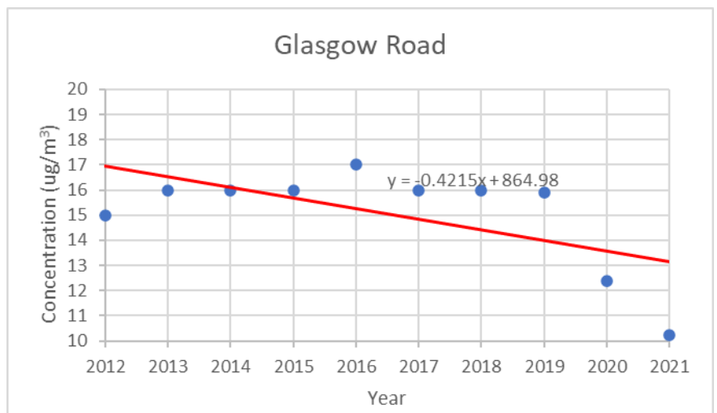


Table A.12 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Name	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ID5	St. John's Road	Kerbside	99.7	99.7	6	6	7.0	4.9	5.1
ID6	Currie High School	Suburban	99.6	99.6	-	-	-	2.8	4.3
ID7	St. Leonard's	Urban Background	98.0	98.0	7	6	6.4	4.4	5.4
ID8	Salamander Street	Roadside	99.6	99.6	-	-	-	4.0	5.5
ID9	Queensferry Road	Roadside	99.7	99.7	-	-	6.1	5.2	5.9
ID10	Glasgow Road	Roadside	97.8	97.8	-	-	-	3.8	5.5
EDNS	Nicolson Street	Roadside	99.3	99.3	-	-	5.2	5.0	4.8
ED012	Tower Street	Urban Industrial	100.0	100.0	-	-	5.7	4.2	4.7

Notes:

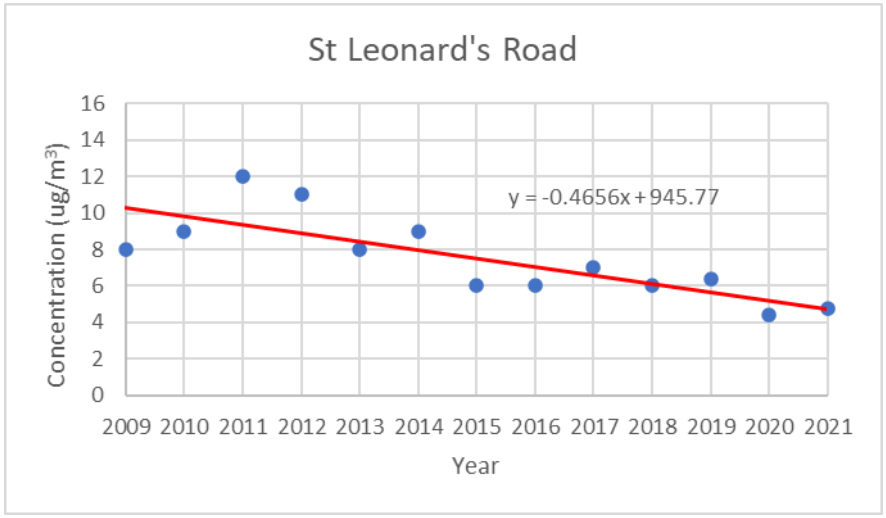
Exceedances of the $PM_{2.5}$ annual mean objective of 10 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.5 – $PM_{2.5}$ Concentration Trends at Continuous Monitoring Locations



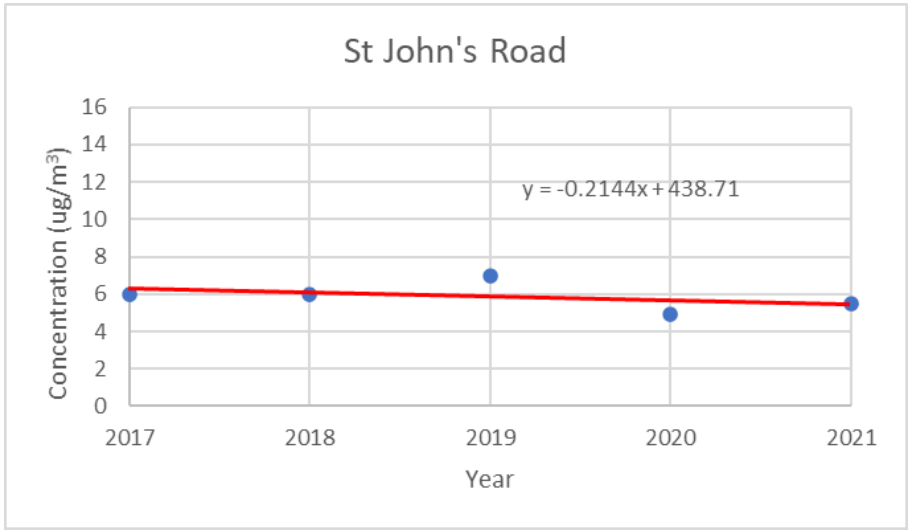


Table A.13 – SO_2 2021 Monitoring Results, Number of Relevant Instances

Site ID	Site Name	Site Type	Valid Data Capture for monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	Number of 15-minute Means > 266 µg/m	Number of 1-hour Means > 350 µg/m	Number of 24-hour Means > 125 µg/m
ID7	St. Leonard's	Urban Background	91.4	91.4	0	0	0

Notes:

Exceedances of the SO_2 objectives are shown in bold (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

If the period of valid data is less than 85%, the relevant percentiles are provided in brackets (15-Minute means: 99.9th percentile, 1-hour means: 99.7th percentile, 24-hour means: 99.2nd percentile).

(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.14 – Number of Ozone exceedances at St Leonards

Site ID	Site Name	Site Type	Valid Data Capture for monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	Number of 8-hour Means > 100 µg/m
ID7	St. Leonard's	Urban Background	98.3	98.3	1

Notes: Exceedances of the O_3 objective are shown in red and 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.15 – PAH (B(a)P) Monitoring at St Leonard's

St Leonard's Urban Background	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Annual Concentration (ng/m^3)	0.131	0.129	0.099	0.109	0.084	0.058	0.073	0.077	0.047	0.078	0.071	0.095	0.090

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Monthly Diffusion Tube Results (µg/m^3)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
13a		15.0	17.0	22.5	21.7	16.3	19.9		19.3	19.8	21.0	20.9	19.3	16.3
16	48.2	44.4	22.5	29.3	27.4	23.8	30.5	35.0	38.5	30.1	28.7	36.1	33.1	27.9
15a	6.4	20.6	23.7	21.5	20.7	20.7	21.9	26.5	27.8	33.3	38.5	25.9	25.6	21.5
58i	21.5	30.5	24.8	30.4	27.7	32.0	35.4	39.9	44.3	39.2	48.2	36.4	-	**-**
58ii	41.9	30.3	27.5	30.1	30.9	34.2	34.9	43.8	46.8	45.8	55.6	41.9	36.4	30.7
15	33.3	26.4	18.4	21.0	31.4	24.3	28.1	32.6	43.2	37.3	47.8	34.3	31.5	26.6
56	30.6		17.1		26.1		25.4	23.0		23.9	26.6	30.3	25.4	20.4
143a	56.0	20.7	16.4	17.6	14.3	15.3	18.5	19.2	19.7	21.4	27.3	26.4	22.7	19.2
41	17.7	13.7	11.3	11.6	16.3		15.6	14.3	16.1	16.3	15.7	19.5	15.3	12.9
121	35.1	24.3	26.3	23.1	32.2	27.5	28.2	29.0	32.6	35.9	30.5	34.8	30.0	25.3
122	39.6	30.1	28.5	28.7	27.7	29.1	17.5	31.5	36.2	31.7	35.5	36.3	31.0	26.2
55c	25.9	21.1	19.6	24.3	31.8	20.2	27.9	26.8	28.2	21.5	19.0	21.3	24.0	20.2
55i	37.6	25.7	30.5	31.8	34.1	32.0	29.8	30.6	38.3	34.9	39.4	32.5	-	**-**
55ii	41.9	27.4	28.2	30.3	28.9	28.3	29.4	32.4	34.6	31.6	34.3	34.0	32.4	27.3
129B	23.3	18.5	15.5	19.0	16.3	13.1	16.3	17.0	18.5	20.0	23.2	27.2	19.0	16.0
63A	26.2	16.4	19.4	17.3	15.9	11.8	14.7	15.8	19.2	25.7	25.1	25.8	19.4	16.4
64	35.3	26.5	35.9	43.9	40.1	41.3	49.6	46.8	53.1	57.5	53.3	59.6	45.2	38.1
64b	29.3	22.8	23.1	20.2	17.5	19.4	19.2	20.8	26.1	29.1	38.3	29.1	24.6	20.7
64a	27.1	20.3	17.0	24.5	21.7	18.4	24.1	20.3	27.7	25.3	33.2	26.2	23.8	20.1
69J	46.3	37.5	30.8	47.5	47.6	46.7	48.0	44.2	55.1	49.0	48.7	46.1	45.6	38.5
62	24.6	15.5	13.3	16.4	16.5	15.4	16.6	17.2	18.3	17.5	19.4	18.8	17.5	14.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
69l	24.2		30.8		40.6	40.1		29.3	43.4	43.9	45.7	39.7	37.5	31.6
40	26.6	17.4	7.3			18.9		25.0	26.8	23.2		26.4	21.5	17.4
129	18.3	13.9	8.9	15.5	17.6	10.9	20.0	17.7	16.1	12.8	14.5	15.5	15.1	12.8
23	31.8	26.9	18.2	31.3	37.4	27.6	39.4	21.0	39.1	23.8	27.8	30.8	29.6	24.9
22a		27.9	20.3	25.0	33.4	28.2	27.6	31.2	36.7	29.6	38.3	40.4	30.8	25.9
1d	52.4	23.0	25.9	22.4	32.9	21.5	29.8	57.0	31.5	39.1	40.7	38.5	34.6	29.1
1b	27.7	19.9	17.2		28.7	22.2	26.6	25.3	26.5	25.0	25.2	27.2	24.7	20.8
1	32.9	20.1	15.4	22.6	26.5	18.6	26.2	26.0	26.7	24.3		26.4	24.2	20.4
SJ1	19.6	16.4	15.4		22.5	19.0	23.1	23.9	24.5	26.0	27.5	31.0	22.6	19.1
39	29.0	21.0	21.9	23.1			24.0	21.5	25.4	29.0	30.3	30.9	25.6	21.6
14	29.4	24.3	17.8	16.8	19.1	12.0	13.0	13.0	17.3	18.8	24.0	24.1	19.1	16.1
76b	4.6	24.4	25.0	28.3	33.7	23.9	30.1	24.4	31.5	33.0	31.8	31.1	28.8	24.3
76	44.3	28.9	23.2	29.0	39.7	23.8	27.1	27.8	30.5	28.3	27.9	29.2	30.0	25.3
80e	32.8	17.7	20.6	22.6	23.5		21.8	22.6	25.3	28.7	26.2	28.4	24.6	20.7
4a	22.1	18.9	16.8	21.0		13.7	20.0		22.1	19.3	23.3	18.5	19.6	16.5
79d	10.2	22.2		28.4	28.9	27.2	27.1	29.4	31.1	27.4	34.7	30.1	27.0	22.7
79a	30.8	16.4	18.3	18.7	27.1	19.3	21.0		24.5	21.0	27.1	26.8	22.8	19.2
79B					19.8	17.3	23.2	20.3	23.4	22.1	28.4	23.5	22.3	20.3
79	31.8	5.5	17.5	15.9	20.5	15.9	21.1	19.3	21.8	23.5		22.7	21.0	17.7
80		32.3		28.9	31.0		28.4	31.2		28.6	32.3	34.7	30.9	26.3
18	40.7	19.7	24.8	28.5	31.7	25.4	29.0	23.6	30.0	23.2	28.1	26.8	27.6	23.3
80f		20.7	22.3	25.4	31.5	23.8	30.2		31.0	23.3	32.6	24.2	26.5	22.3
80g	33.3	31.8	27.8	29.7	31.3	23.3	26.0	25.8	32.3	25.8			28.7	24.2
80a	32.1	21.0	15.3	18.1	25.8	17.3	23.8	19.7	26.2	20.8		24.4	22.2	18.7
5	32.6	26.5	31.2	28.9	28.8			24.3	29.4	9.7	39.6	29.7	28.1	23.7
76d	38.7	18.0	22.6	26.6	26.0	22.0	25.5	24.3	29.1	24.2	28.1	26.0	25.9	21.9
11a	31.3	17.6	18.4	23.3	23.9	23.2	20.8	20.8	25.0	23.3	9.5	23.3	21.7	18.3

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
11	23.3	15.8	13.2	15.1	20.2	11.8	16.2	15.8		13.7	17.7	15.9	16.2	13.7
77a	42.6	26.2	19.9	25.3	27.8	15.6	21.0	22.7	27.6	26.0		26.2	25.5	21.5
77b	43.0		24.2	22.8	30.2	23.0	23.8	24.6	27.7	27.0	27.6	27.8	27.4	23.1
80h	35.6	21.2	27.6		23.3		19.2	19.5		24.0	24.6		24.8	21.0
29a	33.4	26.9	17.2	35.3	30.2	25.1	28.4	28.1	34.0	27.4	27.2	27.2	28.4	23.9
29ci	47.0	26.8	27.1		27.1	27.5	25.1	48.8	36.2	77.0	31.1	40.8	-	**-**
29cii	23.8	29.8	25.0		30.1	24.2	25.0	27.0	35.1	37.0	37.1	36.1	33.9	28.5
29	32.2	25.0	21.3	27.2	17.2	22.5	21.7	21.0	19.6	28.8	30.9	34.5	25.2	21.2
119	37.1	20.3	16.5	21.5	32.1	19.5	25.5	23.3	24.3	25.0	27.6	23.4	24.7	20.8
43	35.6	24.1	24.3	27.3	28.7	20.1	24.2	21.7	29.3	28.8	27.1	32.4	27.0	22.7
9d	43.4	22.1	24.2	36.0	36.8	29.6	37.5	37.4	38.2	34.3	27.7	34.8	33.5	28.2
9	63.6	26.8	15.0	34.4	30.1	24.8	31.4	25.8	31.8	22.5	27.7	26.1	30.0	25.3
9a	40.5	28.5	32.7	37.4	35.4	27.5	23.3	30.5	36.8	35.1	28.4	36.6	32.7	27.6
30f		35.8	22.9	34.1	33.0	29.8	29.7	33.0	38.1	41.8	25.4	42.4	33.3	28.0
25c	48.9	28.0	26.9	28.2	29.9	23.9	35.4	37.8	47.5	54.2	39.6	57.0	38.1	32.1
25e		25.1	17.2	29.0	34.6	18.7	31.6	26.8	29.5	23.5	22.7	27.1	26.0	21.9
25d		25.3	20.6	32.1	34.4	23.2	30.5	33.0	34.7	31.4	22.4	34.9	29.3	24.7
25	41.0	32.4	22.6	38.2	38.2		38.8	36.2	34.3	31.8	30.4	36.2	34.6	29.1
25b	35.0	24.9			29.5	23.9	28.2	28.6	32.0	29.1		34.8	29.6	24.9
18A	38.3	30.0	29.3	31.8	34.0	25.6	25.7	29.3	32.1	30.5	36.3	36.4	31.6	26.6
53	26.7	26.5	26.5	26.0	13.7	21.5	21.5	23.1	28.7	36.9	37.2	32.1	26.7	22.5
45b	32.7	16.9	21.0	9.8	26.6	20.2	25.5	41.1	29.7	20.0	20.6	28.7	24.4	20.6
45d	44.4	29.6	28.3	30.3	27.8	23.9	24.7	26.2	35.1	38.8	36.4	19.8	30.4	25.7
30b	37.9	25.6	24.6	26.2	28.9	23.0	24.8	24.3	31.7	34.0	37.3	26.2	28.7	24.2
30c	39.9	27.1	22.9		35.1	27.6	30.5	31.1	31.3	28.7	23.5		29.8	25.1
30e	43.8		25.7	30.9	27.2	24.0	37.5	25.8	54.0		32.1	31.2	33.2	28.0
30	40.9	37.4	22.9	35.2	39.9	27.6		35.7	35.8	27.8	29.1	34.3	33.3	28.1

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted [1]
120	29.1	20.2	16.8	16.5	22.7	16.7	18.5				20.6	29.3	21.2	17.8
21	41.0	28.1	24.0	23.9	30.8	20.0	24.4	26.5	30.0	33.2	34.2	22.4	28.2	23.8
20											46.4	39.7	-	**-**
118		4.8	20.5	35.4	35.5		28.5	25.1		23.8	23.4	26.4	27.3	23.7
66		22.7	13.1	33.6	33.9	23.5	27.4	32.4	32.6	29.6	32.2		28.1	23.7
67	46.0	24.2	25.5	40.3	39.4	32.7	38.7	36.2		35.1	39.4	35.3	35.7	30.1
81	69.8	32.3	28.5			22.4	39.7	34.1	53.8	65.1	35.3	74.5	48.1	**40.6**
116				42.5	33.2	30.2	39.8		31.1	31.3	37.0	33.6	34.8	31.0
46	37.6	20.6	21.9	37.7	32.8	18.5	31.7	33.1	39.3	34.8	41.5	36.7	32.2	27.1
68	40.0	23.6	20.7	31.8	25.8	21.3	27.3	26.2					27.1	23.7
69	43.0	34.7	27.2		24.6	30.7	27.0	28.3	37.6	40.8	37.1	32.2	33.0	27.8
70	89.3	28.4	27.9	26.0	26.0	24.9	33.5	26.4	34.0	45.9	43.5	58.7	38.7	32.6
32	35.4	26.2	18.7	19.1	21.1	19.4	23.2		25.9	25.4	26.4	28.5	24.5	20.6
9c	33.9	21.3	21.9	27.1	28.1		21.9	23.2	24.6		28.1	23.6	25.4	21.4
71	73.5	23.8	17.6	21.1	19.4	18.4	16.2	18.0	24.3	30.1	30.7	28.2	26.8	22.6
73d	37.7	26.6	24.3	25.9	30.7	21.1	25.1	22.3	32.4	31.6	24.7	29.6	27.7	23.3
117	32.9	22.5	14.2		21.4	16.2	16.0	22.4	22.6	22.5	24.3	24.0	21.7	18.3
30X	20.0	22.3	19.8	20.2		18.2	21.5		22.3	31.9	27.7	30.3	23.4	19.7
30A	34.7	25.6	21.9	29.0	30.2	25.2	24.7	25.5	36.4	35.4	30.9	32.9	29.4	24.8
51b	35.9	26.0	19.0	32.1	27.8	25.7	34.0	26.9	30.2	24.2	28.0	31.8	28.5	24.0
51c		21.2	23.1	19.0	28.1	25.3	19.5	20.2	32.8	32.2		32.1	25.4	21.4
90F									21.8	20.0	28.1		23.3	21.4
10B	70.7	19.2	20.6	23.5	24.0	28.3	26.4	27.4	32.5	39.4	48.9	37.4	33.2	28.0
44	41.4	26.2	21.9	29.6	32.3	20.4	29.2	27.9	26.1		29.2	25.8	28.2	23.8
8A	37.3	23.9	20.8	20.5		22.3	24.8	27.3		29.7	37.3	33.4	27.7	23.4
6B	27.3	16.6	13.9	15.0	19.0	14.6	18.1	16.7	19.3	16.3	11.0	15.8	17.0	14.3
6a	31.9	17.7	17.1	11.8		17.6	23.8	27.7	25.5	23.5			21.8	18.4

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
48G	42.5	32.0	29.8	28.0	38.8	25.7	33.7	33.1	40.0	34.6	38.5	38.9	34.6	29.2
48h			25.1	23.7	26.8	25.4	32.1	15.8	35.1	31.7	34.7	33.0	28.3	23.9
94	30.4	18.4	17.3	21.9	22.9	16.6	18.9	19.2	23.7	21.4		25.3	21.5	18.1
138	44.4	17.1	20.2				23.5	33.1		33.0	28.1		28.5	23.7
151	27.8	19.3	14.3	15.1	20.4	15.7	17.1	17.8	18.8	17.7	20.8	20.3	18.8	15.8
48f	40.1	20.9	19.3	24.6	28.8	24.8	32.8	33.7	32.8	35.8	35.8	27.9	29.8	25.1
48c	14.5		23.5	27.3	24.6	25.8	23.7		31.5	32.9	46.3	34.2	28.4	24.0
48a	35.1	21.2		21.7	29.9		24.9		27.4	22.2	28.9	30.8	26.9	22.7
48	27.1		16.0	19.6	22.2	19.3	20.7	21.0	24.5	28.4	32.4	24.8	23.3	19.6
48e	39.3		13.5	42.6	21.4		26.9	24.7		57.0	32.7	20.1	30.9	26.1
123	33.8	13.2	12.9	11.8	14.4	11.1	12.7	12.7	14.2	16.4	18.7	25.5	16.5	13.9
150	16.7	21.9	15.4	22.8		18.4		23.5	23.6	19.6	23.9	26.5	21.2	17.9
93	22.2	16.9	12.7	18.2	17.4	16.2	18.2	17.7	23.1	17.1	19.8	20.2	18.3	15.4
128	33.5	21.3	13.5			19.0	23.1	23.9	13.5	22.5			21.3	18.9
8C			17.7			19.0	9.8		30.3	26.2	36.7	32.7	27.1	24.0
124	16.8	14.0	15.3	16.4	16.2	16.5	18.6	17.1	19.6	20.8	30.4	24.1	18.8	15.9
126	25.9	15.9	13.1	19.3	17.3	11.7	17.6	15.1	18.5		21.2	18.2	17.6	14.9
125	27.7	23.0	11.0	12.8	15.7	13.7	15.6	12.1	17.1	17.4	24.4	17.6	17.3	14.6
10A	31.6	16.5	16.7	19.4	24.7	21.5	22.8		48.5	28.5	33.9		26.4	22.3
74f	28.6	21.8	18.0	20.2	21.3	17.6	22.2	27.2	24.4	27.5	38.3	35.6	25.2	21.3
37ai	42.0	18.2		20.1	24.0	19.6	20.7	21.4	26.5	26.6	30.8	28.2	-	**-**
37aii	48.8		12.9	19.8	20.6	24.7	34.3	67.9	36.8	34.4		27.1	27.8	23.4
37b	38.7	23.4	18.2	20.3	22.0	15.9	22.4	25.5	26.5	24.0	32.8	30.4	25.0	21.1
37c	26.9	14.6	12.0	17.9	17.0	14.0	18.0	17.0	17.2	19.7	25.0	27.0	18.9	15.9
75e	28.1	17.8	12.9	17.1	13.7	13.9	14.6	17.5	17.6	19.2	20.1	21.7	17.9	15.0
HT1	34.8	27.6		33.0	30.8	24.9	32.2	31.7	36.3	29.5	32.7	14.5	29.8	25.1
HT2	35.9	25.9	29.3	22.3	31.0	27.2	31.6	29.6	35.0	30.4	35.2	39.4	31.1	26.2

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
10		19.7	20.6	20.7	26.5	18.9	24.1	23.5	26.8	31.1	36.3	28.5	25.2	21.2
140	34.9	21.8	19.0	19.8	25.9	23.5	24.2	27.0	33.3	30.6	31.2	31.8	26.9	22.7
17a	16.2	28.1	21.4	26.9	27.4	19.4	28.2	23.2	29.9	27.3	11.5	33.9	24.7	20.8
34	24.7	17.4	10.5	12.3	16.3	11.3	12.8	4.9	20.7	16.7	22.2	22.4	16.0	13.5
8B	47.0	14.9	27.0	26.2	29.0	22.5	30.8	27.4	33.1	27.1	31.6	30.2	28.9	24.4
74g	43.6	33.2	27.5	38.5	46.2	31.4	38.7		44.6	33.8	38.2	30.9	37.0	31.2
92	36.3		11.2	16.4	19.4	13.2	16.4	24.2	19.9	21.8	20.1	21.4	20.0	16.9
62A	43.0	28.2		39.6	48.5	33.3		43.7	48.3		34.8	42.2	40.2	33.9
62B	48.6	27.4	27.5	31.4		29.5	40.3	42.9			37.7	42.6	36.4	30.7
62X	50.7		38.2	21.6	30.0	28.0	30.0		43.2	41.6	42.6		36.2	30.5
130	36.9	31.2	24.6	26.3	31.5	26.2		30.5	37.9	31.1	38.2	32.4	31.5	26.5
152	34.5	20.2	20.0	22.9	15.5	16.5	16.2	15.9	19.4	24.8	23.4	18.1	20.8	17.6
38	26.4	12.2	15.7	16.9	15.7	16.6	13.9	15.7	21.1		33.5	18.2	18.7	15.8
42	16.6	8.4	7.0		20.9	7.8	9.9	8.9	10.2	9.0	13.8	12.1	11.3	9.5
8	24.1	16.9	13.6	17.1	22.8	15.3	21.7	20.7		19.3	11.1	18.1	18.2	15.4
79E			16.8	18.5	22.3	15.5	18.3	19.7	21.4	20.2			19.1	18.7
62C	50.3	22.8	24.3	25.8		20.5	33.8		28.2	26.5	31.2	32.8	29.6	25.0
49	42.9	22.9	29.4	36.8	22.3	27.3	34.7	31.5		24.0	44.1	36.3	32.0	27.0
135b			25.7		30.9	36.9		40.7	61.2		43.9	29.4	38.4	34.4
136	41.2	20.9	18.6	23.7	28.3	21.4	32.3	31.2	32.1	29.1	30.2	27.3	28.0	23.6
95	33.2	20.6		22.2	20.7	16.8	17.3	22.4	21.6	23.2	25.8	24.1	22.5	19.0
96	45.1	29.2	23.8	28.2	34.6	25.5	30.0	29.5	32.9	29.8	27.7	35.4	31.0	26.1
27	30.0	29.9		30.1	39.8	30.8	38.3	38.8	40.1	31.6	32.6	33.2	34.1	28.8
47	40.2	20.6	28.2	30.8	36.1	27.1	32.8	30.1	34.1	24.7	34.0	31.8	30.9	26.0
24	50.0	36.8	35.6	39.4	44.9	33.2	41.8	41.2	45.5	46.3	27.5	48.2	40.9	34.4
33b	21.2	26.9	19.9	21.2	26.7	19.1	29.4	25.5	31.9	37.2	29.2	27.5	26.3	22.2
33a	37.8	19.3			24.7			37.0	30.1	35.9	34.5	27.4	30.8	23.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
33	33.6	23.3	24.1	25.5	29.5	23.2	28.7	27.0	10.0	38.7	37.6	33.2	27.9	23.5
SH1	32.8	36.9	28.4	27.0	43.0	27.7	38.6	38.0	37.0		42.4		35.2	29.7
144	33.7	24.9	24.2	28.4	32.5	33.8			43.6	34.8	44.0	33.3	33.3	28.1
142	38.9	25.4	18.5	21.2	26.3	17.2	25.5		29.2	26.0	27.1	30.8	26.0	21.9
141	40.3	14.1	20.1	22.1	24.8	19.7	24.8	32.3	32.0	32.2	32.4	31.1	27.2	22.9
75d	26.6	19.2	15.7	20.0	26.5	16.9	26.1	24.6	22.5	34.8	21.2	23.7	23.2	19.5
163	26.5	12.6	22.2	15.9	13.7	10.4	13.3	12.5	15.1	19.6		20.5	16.6	14.0
10c	33.4	16.5	16.5		23.4	25.0	25.5	25.0	24.3	49.1	31.7	22.3	26.6	22.4
3b	57.3	33.4	21.9	36.9	24.1	29.2	31.5	35.6	40.1	32.2	32.0	37.9	34.3	28.9
3	45.5	29.5	32.9	37.9	38.4	31.0	34.1	36.9	37.8	34.0	44.0	41.2	36.9	31.1
162	26.4	10.8	14.3	12.1	11.5	12.1	11.8	12.6	15.9	17.2	26.2	17.8	15.7	13.3
2	50.6	35.4	34.4	41.7	44.1	42.8	36.7	40.8	46.3	41.5		47.3	42.0	35.4
28d	31.9	18.4	21.7	22.1	28.6	27.9	26.0	31.0		33.9	37.6	29.4	28.0	23.6
28b	40.9	25.4	24.6	21.7		31.2		29.0				32.7	29.4	23.0
28c	30.7	17.1	18.9		24.7	21.8	28.4	23.1	26.8		31.5	26.1	24.9	21.0
127	27.8	17.3	11.4	21.4	21.6	16.3	20.3	19.8	18.7	19.0	18.5	19.0	19.3	16.2
91	28.8	15.5	14.2	15.2	17.2	16.3	17.1	16.9	17.7	19.4	25.6	26.1	19.2	16.2
36	43.8	24.9	26.0	27.6	30.9	19.2	23.2	24.0		27.3	31.4	34.1	28.4	23.9
CL1	33.6	30.0	23.9		35.4	29.9	38.8	37.7	37.0	38.9	39.7	31.6	-	**-**
CL2	39.9	26.1	26.2	30.5	36.5	28.6	37.7	39.2	34.1	35.1	38.0	37.8	-	**-**
CL3	43.2	24.1	24.0	27.5	30.7	25.6	35.9	34.7	39.1	36.3	34.0	38.8	33.6	28.3
CL4	28.6	18.1	20.8	22.0	21.7	18.9	19.1	19.0	21.7	21.2	25.7	23.7	-	**-**
CL5	29.9	18.5	20.8	17.1	21.0	18.8	19.5	20.8	24.4	20.4	26.1	22.5	-	**-**
CL6	32.2	18.2	22.9	17.8	18.1	20.0	18.4	18.7	22.1	18.0	28.9	23.8	21.7	18.2
CL7	32.7	20.3	21.2	27.1	23.7	17.4	19.5	22.0	24.5	30.3	27.7	23.6	-	**-**
CL8	33.0		18.2	25.5	22.6	18.1	18.3	20.4	25.5	25.0	27.9	30.8	-	**-**
CL9	32.8	23.1	19.3	24.7	24.1	27.9	18.5	19.6	23.4	26.3	34.6	32.2	24.5	20.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
CL10	24.6	14.8	16.5	20.3	15.7	14.9	16.5	18.3	24.0	28.3	37.0	21.8	-	**-**
CL11	20.8	13.7	20.3	19.0	15.2	16.3	17.6	19.8	24.9	32.9	38.2	21.8	-	**-**
CL12	33.0	16.0	19.1	20.6	14.1	16.3	18.2	18.4	23.0	31.3	30.8	27.9	21.7	18.3
CL13	36.1	22.5	24.2	28.9	32.7	29.2	28.5	31.8	36.2	40.6	50.5	42.2	-	**-**
CL14	33.4	24.6	14.1	21.6	25.7	28.8	28.3	29.4	35.5	37.8	47.1	38.2	-	**-**
CL15	36.5	21.7	25.8	24.8	31.9	24.8	28.6	31.3	36.1	42.6	47.3	41.1	32.2	27.2
CL16	37.4	24.0	24.5	29.4	26.4	31.9	30.4	29.7	36.0		40.1	33.6	-	**-**
CL17	37.8	23.4	26.2	27.9	31.6	27.8	26.4	31.5	39.7		44.3	36.3	-	**-**
CL18	36.2	23.9	28.2	24.1	33.0	31.0	31.0	33.0	37.0		38.5	32.4	31.7	26.7

Notes:

(1) See Appendix C for details on bias adjustment

(2) Cells highlighted in yellow indicate potentially erroneous data due to issues identified with the diffusion tubes upon collection. These concentrations have not been used in the calculation of annual averages.

(3) Blank cells represent a missing tube.

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

QA/QC of Diffusion Tube Monitoring

The City of Edinburgh Council's diffusion tubes in 2021 were supplied and analysed by Edinburgh Scientific Services (ESS), using the 50% Triethanolamine (TEA) in acetone preparation method. ESS's laboratory is UKAS accredited, participating in the AIR-PT Scheme for NO_2 tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high caliber. In the AIR-PT results available for 2021, AIR PT AR042 (January – February 2021) ESS scored 25%, in AIR PT AR043 and AR045 (May – June 2020; July – August 2021), ESS scored 100%, and in AIR PT AR046 (September – October 2021) ESS scored 75%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

The Council currently operate six co-location studies, and within 2021 all co-location studies which use tubes supplied by ESS with the 50% TEA in acetone preparation method in 2021 were rated as 'good', as shown by the precision summary results. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Tubes are considered to have a "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

Some high field blanks were identified within the data set. Following laboratory investigations, this was attributed to the use of old, potentially substandard tubes. This did not affect the reliability of sample test results as the tubes used for monitoring on location were fit for purpose. The laboratory procedures have been changed to dispose of old and substandard tubes, rather than reusing them for the blank study.

Monitoring in 2021 had been completed in adherence with the 2021 Diffusion Tube Monitoring Calendar, whereby most changeovers were completed within ±2 days of the specified date.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. As such, 16 sites operated by the City of Edinburgh Council required annualisation in 2021. This was conducted using the latest version of the Diffusion Tube Data Processing Tool utilising data from the three nearest automatic background monitoring sites part of the AURN. These sites, alongside the details of the calculation method undertaken, are provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data has been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube concentration and continuous monitoring, the latter assumed to be a more accurate method of monitoring. Defra LAQM.TG(16) provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

With regard to the application of a bias adjustment factor for diffusion tubes, Defra LAQM.TG(16) and the LAQM Helpdesk recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

Edinburgh City Council have applied a combined bias adjustment factor (using both the local co-location studies and the national co-location study at Marylebone Road) of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by Edinburgh City Council over the past five years is presented in Table C.1.

Edinburgh co-locates triplicate tubes on the sampler head cages at roadside and kerbside monitoring stations – Glasgow Road, Gorgie Road, Queensferry Road, Salamander Street, St John's Road and Nicolson Street. Data from six sites were considered for the co-location study 2021. These were calculated using the Diffusion Tube Data Processing Tool, with the outputs presented in Table C.3. Generally, the passive diffusion tubes give higher concentrations than the real-time analysers over an annual period.

The national bias adjustment factor for ESS in 2021, obtained from the national bias adjustment spreadsheet (v06/22) is 0.85 (based on six studies), as presented in Figure C.1.

It is recommended by Defra LAQM.TG(16) and the LAQM Helpdesk that the local bias adjustment factor should be used where available and relevant. Historically, the City of Edinburgh Council has used a combined factor of the local co-location sites, and any additional co-location sites used within the national study. All local co-location sites, with the exception of Nicolson Street, reported good data quality and data capture within 2021. The five sites with good data quality and data capture are therefore able to be used in combination to calculate the combined bias adjustment factor alongside using additional national study sites at Marylebone Road. The combined factors were calculated using the methodology stated within LAQM.TG(16) for calculating an average bias factor. A factor was calculated utilising only the City of Edinburgh Council's co-location sites with good data quality, data capture, and the additional national study site at Marylebone Road.

$$\frac{1}{(\frac{(0.16 + 0.16 + 0.1 + 0.38 + 0.17 + 0.15)}{6} + 1)} = 0.84$$

This factor also remains in-line with historical factors used in recent-past by the City of Edinburgh Council.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	-	0.84
2020	Local	-	0.84
2019	Local	-	0.84
2018	Local	-	0.90
2017	Local	-	0.82

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube

Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table C.4.

Fall-off with distance calculations were required at two sites where annual mean NO_2 concentrations were greater than 36µg/m^3, and the site is not located at relevant exposure. This was completed using the latest version of the Diffusion Tube Data Processing Tool, and the output from this is presented in Table C.4.

QA/QC of Automatic Monitoring

All monitoring stations are subject to an independent audit and stringent QA/QC procedures which are undertaken by Ricardo on behalf of the Scottish Government. This agreement commenced in 2007 (2013 for Currie). In addition, all data, including calibration data, are scrutinised on a daily basis by the Council (Monday to Friday) by visual examination, to check for any unusual measurements. Any suspicious data (e.g. large spikes) are flagged to undergo further checks.

Staff competence

Officers are trained as local site operators in relation to the management of the stations and undertake the necessary calibrations and basic maintenance. Shadow training is carried out where appropriate during half yearly audits (performed by Ricardo).

Calibration procedures

All sites including those listed above are visited fortnightly, apart from the National Network site of St Leonards which is managed as part of the AURN and is visited monthly.

Manual calibration checks are preformed using zero air/scrubber and certified NO gas at approximately 500ppb. All cylinders are replaced at 12 to 18-month intervals. Nitric Oxide cylinders are supplied by BOC.

Details of manual calibration checks, and precision and accuracy of instruments can be made available on request.

Servicing

All instruments are serviced and recalibrated every six months by an appropriate supplier. The service contracts include a support package for software and replacement parts, plus any necessary call outs to the sites.

Filters are changed on the Fidas instruments every six months. Servicing follows half yearly audits completed by Ricardo.

During all visits to the monitoring stations, actions taken and activities noted adjacent to the site are recorded in the site log book.

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

The Fidas instrument being utilised at all monitoring stations for PM_{10} and $PM_{2.5}$ monitoring by the City of Edinburgh Council does not currently require further application of a correction factor. However, the Council awaits the findings of the Scottish Government intercomparison study at Hope Street, Glasgow, which is considering the performance of the equipment against reference equivalent analysers. The findings will inform any adjustments which may be required.

Automatic Monitoring Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. As such, two automatic monitoring sites (St Leonard's and Nicolson Street) required annualisation in 2021 for NO_2. This was carried out in accordance with the methodology set out in LAQM.TG(16), utilising data from the three nearest automatic background monitoring sites part of the AURN. These sites, alongside the details of the calculation method undertaken, are provided in Table C.2.

No annualisation of PM_{10} or $PM_{2.5}$ data was carried out, as data capture for 2021 was either less than 25%, or greater than 75%, at all monitoring locations.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within the City of Edinburgh Council required distance correction during 2021.

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

Site ID	Annualisation Factor AURN Bush Estate	Annualisation Factor AURN Glasgow Townhead	Annualisation Factor AURN Dundee Mains Loan	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
56	0.9848	0.9325	0.9427	0.9533	25.4	24.2	
40	0.9840	0.9528	0.9439	0.9602	21.5	20.6	
79B	1.1190	1.0800	1.0552	1.0847	22.3	24.1	
80	1.0197	1.0181	0.9871	1.0083	30.9	31.2	
80h	1.0104	0.9728	1.0215	1.0016	24.8	24.9	
118	1.0525	1.0246	1.0108	1.0293	27.3	28.1	
116	1.0861	1.0499	1.0332	1.0564	34.8	36.8	
68	0.9246	1.0891	1.1057	1.0398	27.1	28.2	
90F	1.3944	0.9219	0.9584	1.0915	23.3	25.4	
138	1.0107	0.9575	0.9923	0.9868	28.5	28.1	
128	1.0121	1.0609	1.0824	1.0518	21.3	22.4	
8C	1.2173	0.9775	0.9633	1.0527	27.1	28.5	
79E	1.0825	1.1965	1.2027	1.1606	19.1	22.2	
135b	1.1075	1.0579	1.0283	1.0646	38.4	40.9	
33a	0.9686	0.8878	0.8830	0.9131	30.8	28.2	
28b	0.9013	0.9516	0.9398	0.9309	29.4	27.3	
St Leonard's	0.996	0.919	0.938	0.951	13.7	13.1	
Nicolson Street	1.022	1.063	1.119	1.068	28.53	30.5	

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	12	11	11	11	11
Bias Factor A	0.86 (0.79 - 0.95)	0.72 (0.63 - 0.85)	0.86 (0.79 - 0.95)	0.91 (0.83 - 1.01)	0.85 (0.79 - 0.93)
Bias Factor B	16% (5% - 27%)	38% (17% - 59%)	16% (5% - 27%)	10% (-1% - 21%)	17% (8% - 27%)
Diffusion Tube Mean (µg/m^3)	33.6	21.3	20.9	24.9	33.2
Mean CV (Precision)	7.8%	7.3%	6.1%	7.1%	6.2%
Automatic Mean (µg/m^3)	29.0	15.4	18.0	22.6	28.4
Data Capture	100%	99%	99%	99%	99%
Adjusted Tube Mean (µg/m^3)	29 (27 - 32)	15 (13 - 18)	18 (16 - 20)	23 (21 - 25)	28 (26 - 31)

Notes:

A combined local bias adjustment factor of 0.84 has been used to bias adjust the 2021 diffusion tube results.

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
64	1.5	10.7	38.1	12.2	27.0	
69J	1.4	10.0	38.5	12.2	27.3	

Figure C.1 – National Bias Adjustment Factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet											Spreadsheet Version Number: 06/22
Follow the steps below in the correct order to show the results of relevant co-location studies Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.											This spreadsheet will be updated at the end of September 2022 LAQM Helpdesk Website
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.									Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.		
Step 1:	Step 2:	Step 3:	Step 4:								
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.								
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953								
Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year[2] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)	
Edinburgh Scientific Services	50% TEA in acetone	2021		Overall Factor[3] (6 studies)				Use		0.85	

Figure D.1 – Automatic Monitoring Locations

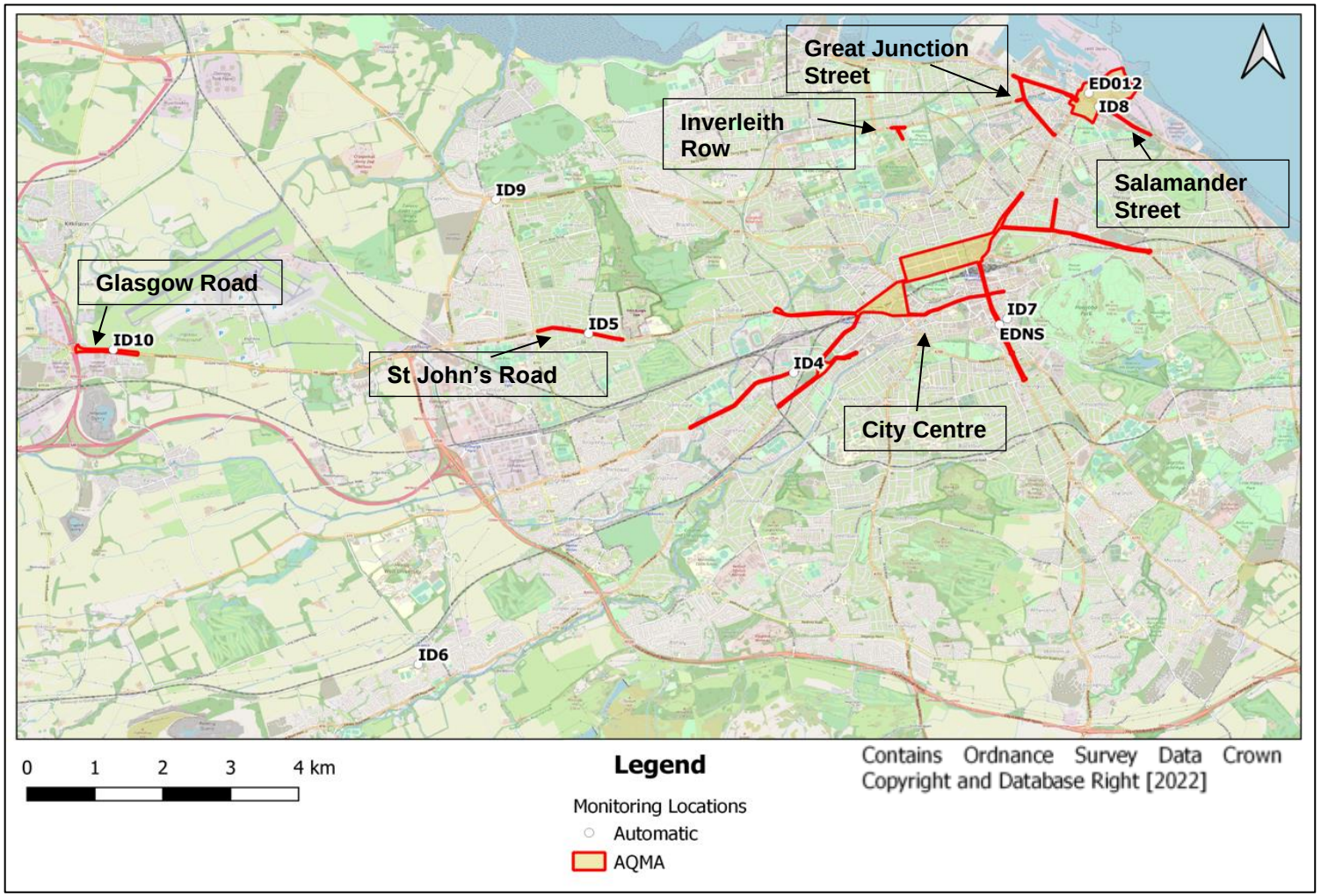


Figure D.2 – Diffusion Tube Locations: Central AQMA

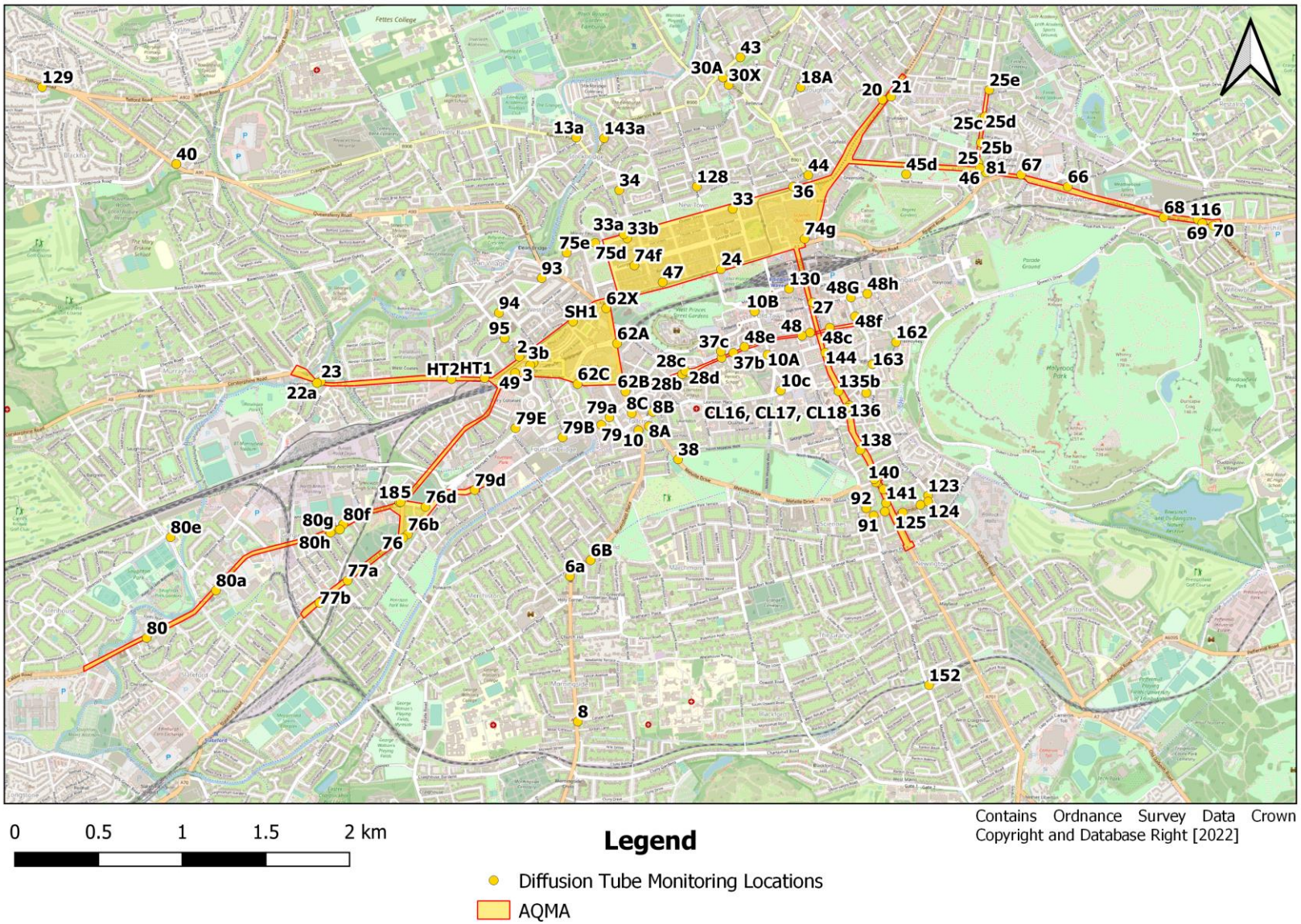


Figure D.3 – Diffusion Tube Locations: Glasgow Road AQMA

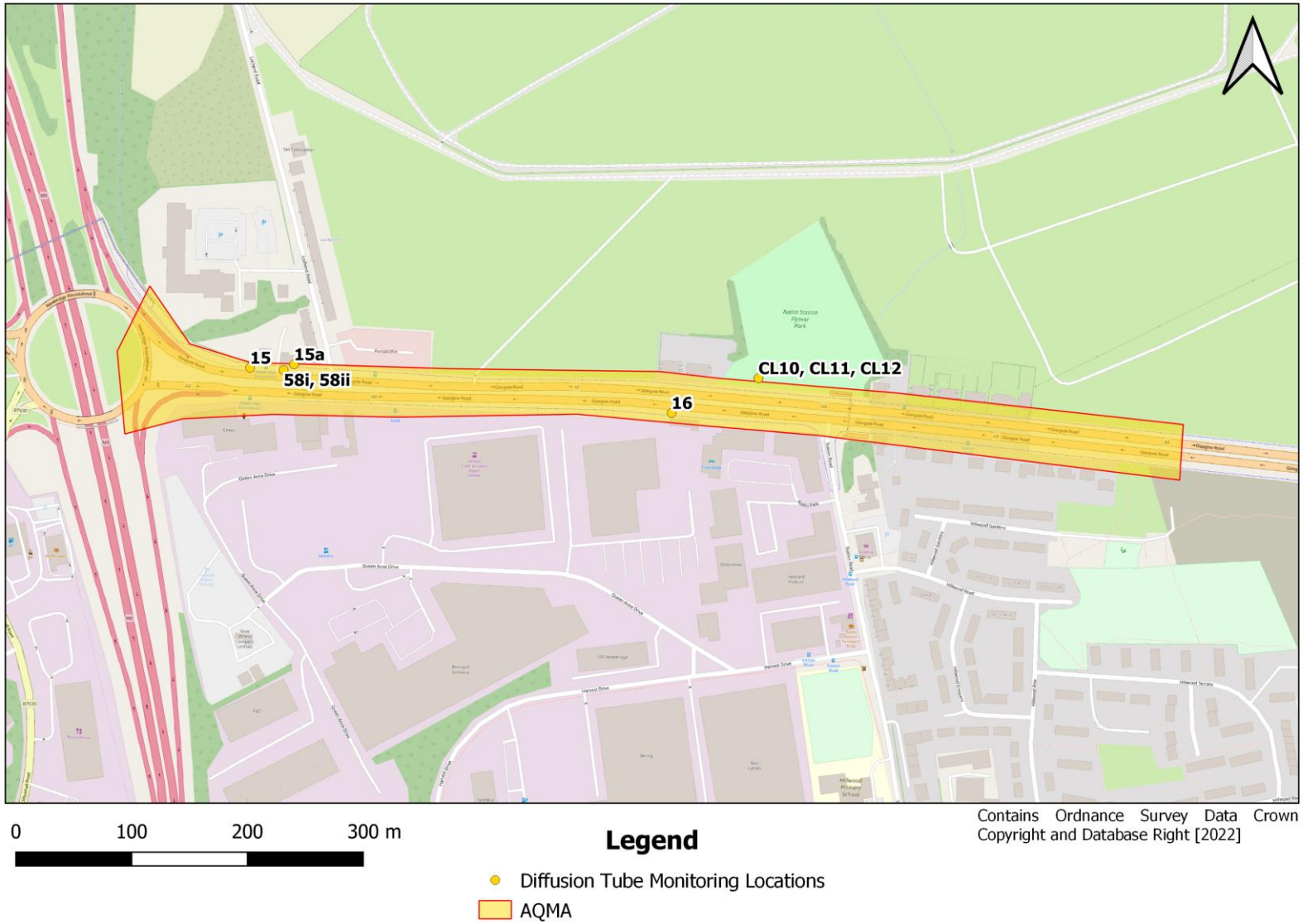


Figure D.4 – Diffusion Tube Locations: Inverleith Row AQMA

Figure D.5 – Diffusion Tube Locations: Great Junction Street and Salamander Street AQMAs

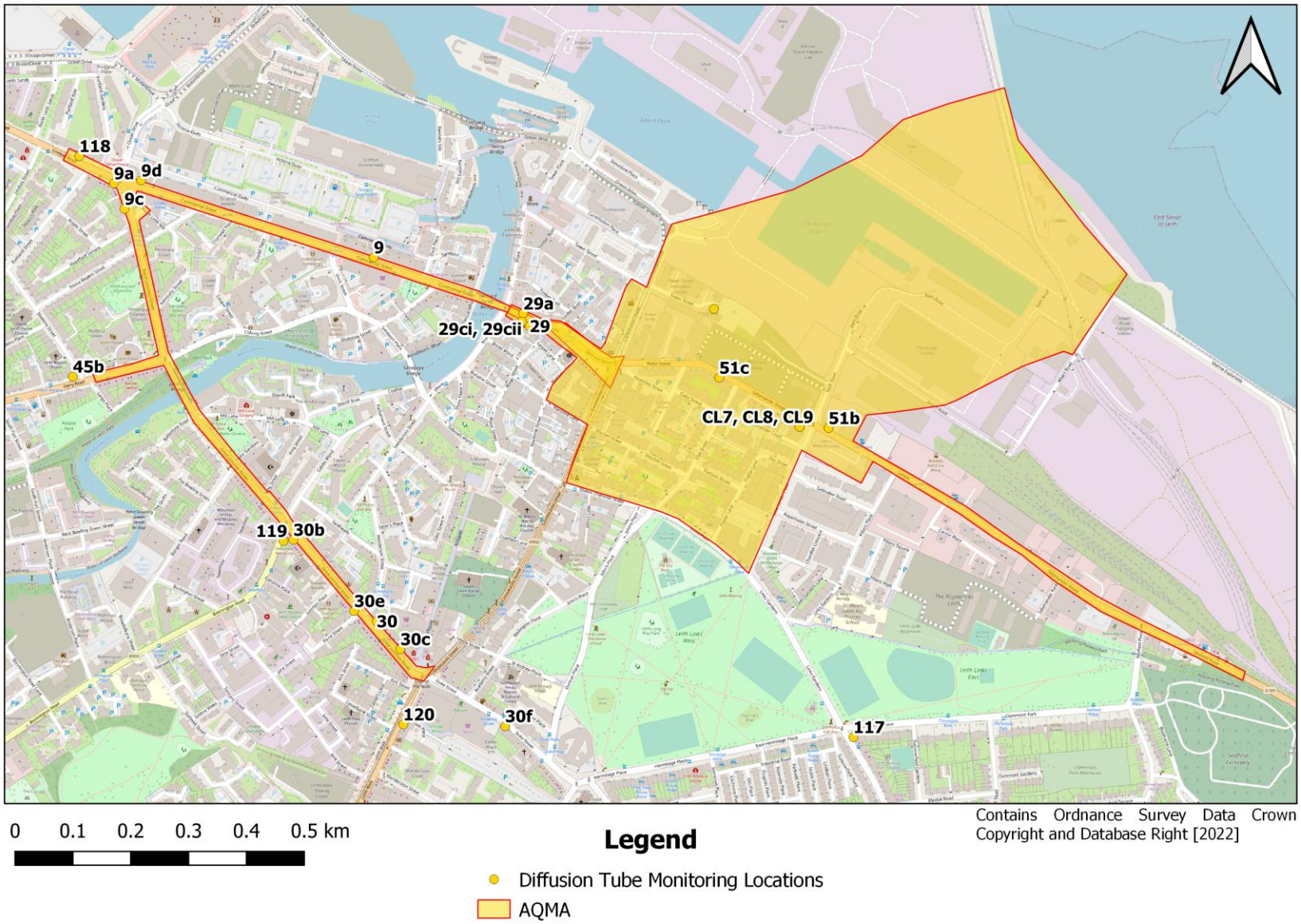


Figure D.6 – Diffusion Tube Locations: St John's Road

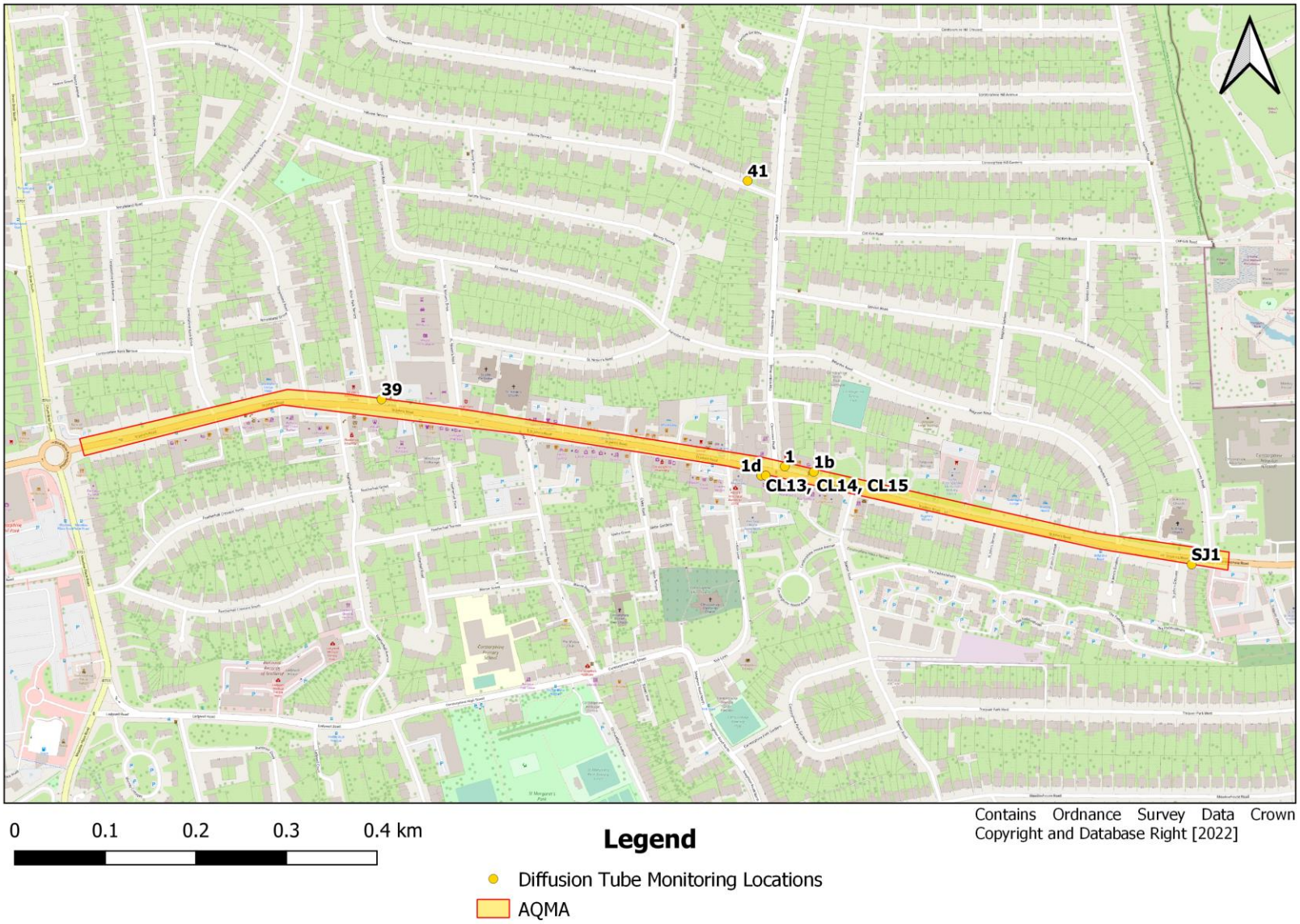
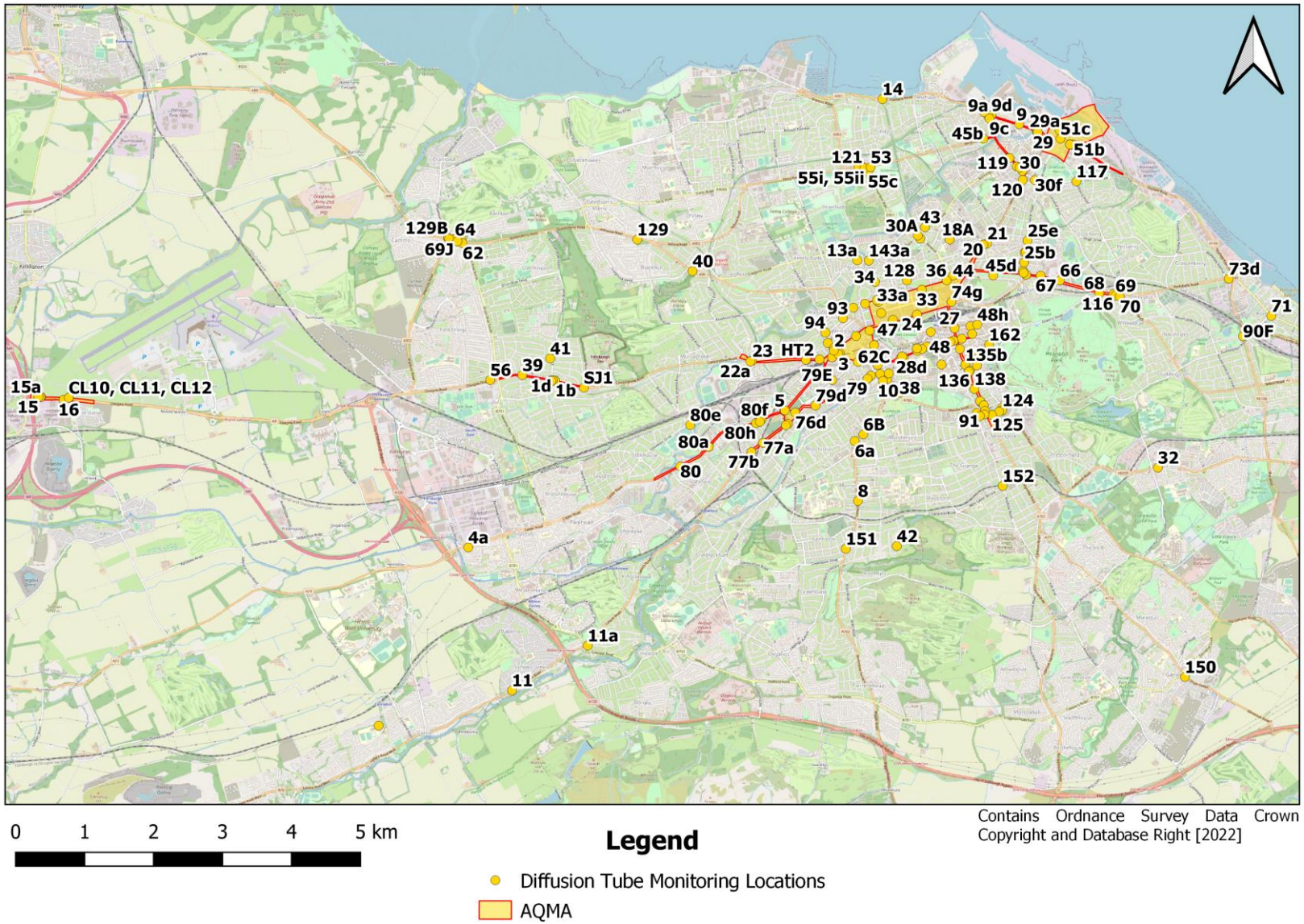


Figure D.7 – Diffusion Tube Locations: Overview



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)
BaP	Benzo (a) pyrene
CoE	The City of Edinburgh Council
Defra	Department for Environment, Food and Rural Affairs
ESS	Edinburgh Scientific Services
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
O_3	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
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
PPC	Pollution Prevention and Control (Regulations)
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

End