Annual Progress Report (APR)

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THE CITY OF EDINBURGH COUNCIL

2021 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 2021

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 has declared six Air Quality Management Areas (AQMAs), five for the pollutant nitrogen dioxide (NO_2) and one for fine particulates (PM_{10}).

An AQMA is required when a pollutant fails to meet air quality standards which are set by the Scottish and UK Governments. 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.

Monitoring Data

During 2020, the Council has monitored NO_2 concentrations at 192 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, located within the City Centre AQMA, reporting an annual mean concentration of 44.0µg/m^3. This site is located at a façade at the point of nearest relevant exposure. Previously, and in particular during 2019, 24 monitoring locations reported exceedances of the annual mean NO_2 objective. Significant decreases (up to 29.4µg/m^3) have been observed from 2019 to 2020, which is the result of the COVID-19 pandemic, whereby the UK and Scottish Governments enforced lockdowns and provided guidance for people to work at home/stay local in order to prevent the spread of the virus. This meant that traffic volumes decreased across the UK, and as such NO_2 concentrations have been observed to have decreased as well.

Whilst all other sites were reported to be compliant, likely due to decreasing traffic volumes, monitoring site 81 continued to report an exceedance. The adjacent road network and junction was adjusted to facilitate diversion routes for the tramline construction work. This may have therefore caused an increase in congestion in the area, resulting in the continued exceedance even with lower overall volumes of traffic experienced across the City.

No new monitoring sites reported an exceedance of the NO_2 objectives.

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 2020.

Compliance has been achieved at periphery monitoring locations of the Central AQMA for more than three years, including sites 80, 80a, 80h, 80g, ID4 and 80c along the Gorgie Road, as well as sites 77, 77b and 77a along the Slateford Road. The Council will consider any amendments that could be made to the boundary of the AQMA, following the implementation of the proposed LEZ.

Annual mean NO_2 concentrations within the Great Junction Street AQMA have reported concentrations to be below the AQS objective for four years running. Previous to 2020, concentrations here were gradually decreasing. Significant road network changes are due in the area due to the extension of the trams network and proposed Low Traffic Neighbourhood. The Council therefore will consider revoking the Great Junction Street AQMA once the impact of this is known.

Within the Inverleith Row AQMA, there has now been three consecutive years of compliance, with annual mean concentrations being below 36µg/m^3 (10% of the AQS objective). Prior to this in 2017 the concentrations were at the objective. Air dispersion and emissions modelling has furthermore predicted a sustained reduction of NO_2 concentrations when the proposed Low Emission Zone is operational. The Council therefore intends to revoke the Inverleith Row AQMA.

During 2020 Particulate Matter was also monitored at eight (automatic) monitoring stations. Similar to NO_2, PM_{10} and $PM_{2.5}$ concentrations had largely decreased at all monitoring locations from 2019 to 2020. With the exception of the monitoring locations at Queensferry Road and Nicolson Street, annual mean PM_{10} concentrations had decreased from that reported in 2019, with an average decrease of 2.7µg/m^3. For $PM_{2.5}$, an average decrease of 1.3µg/m^3 was observed at monitoring locations where $PM_{2.5}$ has been monitored for more than 1 year. Whilst this is considered to also be in part a result of the impact of COVID-19 on traffic volumes at roadside locations, the Impact of Lockdown Measures on Scottish Air Quality report inidicates that attributing changes in PM_{10} and $PM_{2.5}$ to be more challenging than NO_x, as a large contribution arises from regional background sources. Due to low data capture reported in 2019 at Queensferry Road and Nicolson Street, the trends cannot be accurately assessed.

No exceedances of the PM_{10} annual mean or 24-hour AQS objectives were reported in 2020.

Actions to Improve Air Quality

Even without the effect of the pandemic, long term trends show concentrations of the main pollutants are decreasing at most locations across the city, albeit there remain hot spot areas where statutory legal objectives are being breached, especially traffic related NO_2 in the City Centre. The development of a Low Emission Zone (LEZ) is expected to reduce concentrations of NO_2.The objectives for fine particulate matter (PM10 and PM2.5) were not breached, including within the PM10 Salamander Street AQMA for the first year since it was declared in 2017.

Any lasting impact on air quality from changes in travel patterns and behaviour as the country moves on from the pandemic will be better understood once monitoring data becomes available in the future.

The Council has continued to make progress with a range of actions which will improve air quality. These include engagement with the bus and freight sector to

encourage reduction in emissions from vehicles, implementing measures to deal with congestion and promoting modal shift away from car use.

The Council is working with the Scottish Government to develop and implement a LEZ scheme in Edinburgh, alongside Aberdeen, Dundee and Glasgow. LEZs are being developed in close partnership with SEPA and Transport Scotland to assist in the work of the National Modelling Framework (NMF), which provides consistent quantitative evidence for assessment of criteria for each LEZ in Scotland.

It is intended that, once approved, the LEZ will constitute a significant action in the forthcoming revision of the Air Quality Action Plan to reduce NO_2 in the City. The LEZ scheme will be delivered in conjunction with the actions of the City Mobility Plan and Edinburgh City Centre Transformation programme to ensure wider benefits in both air pollution and carbon reduction are maximised.

Artwork Advertising Edinburgh's Low Emission Zone Proposal Public Consultation

The main actions in the current NO_2 Air Quality Action Plan and local transport strategy to improve air quality are based on:

- promoting cleaner transport, especially buses and other heavy vehicles;
- adoption of a fleet recognition efficiency scheme for reducing emissions from road freight vehicles;
- improving traffic flow and easing congestion by use of intelligent traffic signalling; and
- promoting modal shift away from car use by means of an Active Travel Action Plan, provision of Park and Rides, Controlled Parking and Priority Parking Areas.

The bus fleet in Edinburgh continues to improve in terms of emission standards. Scottish Power Energy Network assisted Lothian Buses in introducing four new double deck electric buses into the fleet in 2021. This, alongside 98 new Euro VI buses, means 94% of the Lothian Bus fleet is now Euro VI or better. The other main operators also continue to make improvements in the emissions performance of the buses in preparation for the proposed LEZ.

In terms of the Council's own fleet, there is a strategic fleet replacement programme being undertaken in order to meet key service requirements and deliver a modern fleet of vehicles which complies with the proposed LEZ. In comparison to the previous year, there is an increase in the proportion of Euro 6/VI (or better) vehicles in the fleet, from 51% to 60%. There was a three-fold increase in electric vehicles with the requisition of electric cars and vans.

ECO Stars Edinburgh is a voluntary, free to join, fleet recognition scheme that provides bespoke guidance on environmental best practice to operators of goods vehicles, buses and coaches, whose fleets regularly serve the Edinburgh area. The Council has one of the largest ECO Stars schemes in the UK, with 312 operators covering more than 10,000 vehicles.

Improving traffic flow and reducing vehicle idling times are also measures which help to improve air quality. Traffic management systems that are automatically responsive to traffic flows and demand can help ease congestion by providing more effective control of traffic signals, such as SCOOT. SCOOT is in place throughout the road network in the city. Ongoing utility works and road improvements can damage inductive loops which then require repair. In the past year a loop repair programme has been initiated with associated staff resource. Loops are also now replaced as a part of the Council's roads resurfacing programme. All these measures have resulted in a significant reduction in the number of damaged loops, giving a corresponding improvement in benefit to SCOOT operations.

The Council continues to support a range of policies and measures that will encourage modal shift away from private car use, including, but not exclusive, of an Active Travel Action Plan, provision of Park and Ride, Controlled Parking and Priority Parking Areas. A number of policies in the City Mobility Plan will reinforce this work.

An age limitation and vehicle engine (emission) policy for taxis and private hire vehicles has been extended in light of the COVID-19 pandemic, to alleviate pressure on the sector. As of 1 April 2023, any new licensed taxi or PHC vehicle (or a replacement vehicle under an existing taxi/PHC licence) is to be Euro 6 engine standard. The extension of these dates allows licence holders to retain existing vehicles for a longer period (18 months) than would previously have been allowed.

The Council is working with Air Quality Consultants to develop the NO_2 Air Quality Action Plan supported by Scottish Government funding. A Plan will be drafted for public consultation in 2022.

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 has since entered a statutory period of representations prior to its submission to Scottish Ministers for Examination.

Priorities for the Council in terms of air quality in 2022 will be

- **finalise the LEZ scheme** for statutory processing
- **complete the revision of the NO_2 Air Quality Action Plan**, in conjunction with the City Mobility Plan and the Scottish Government's clean air strategy - Cleaner Air for Scotland 2. The LEZ scheme for Edinburgh will form a major aspect of the Action Plan. Development of the Plan has been delayed due to the prioritisation of the LEZ work. The Plan will require the determination of the final LEZ scheme before it can be drafted for public consultation in 2022.
- **finalise the drafting of the Salamander Street Action Plan** for PM_{10} for consultation once the steering group has reconvened. This has also been delayed due to prioritisation of other air quality work. The intention is also to present a Draft Plan for consultation in 2022.

Further local priorities are summarised below;

- Continue ECO Stars scheme subject to funding,
- Continue the roll out of telematics across the Council Fleet,
- Complete outstanding SCOOT development and repair work,
- Install on-street electric vehicle charging infrastructure to strengthen the existing network,
- Continue support for Active Travel Action Plan, and;

- Establish new PM monitoring with sensor technology, around the Salamander Street AQMA and at locations representative of new or proposed properties near Leith Docks.

How to 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 Edinburgh during 2020. 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) is 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	31.12.2020
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
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

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 Table 2.1. 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 (Revised 2008) New Action Plan currently being developed and due for public consultation in 2022

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	New Action Plan currently being developed and due for public consultation in 2022

Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available on the Scottish Government's website. Progress by The City of Edinburgh Council against relevant actions within this strategy is demonstrated below.

2.1.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan.

The City of Edinburgh Council is in the process of developing a new travel plan. Smarter Choices, Smarter Places funding has been utilised to recruit a travel planning officer who will be responsible for implementing the new plan. The Council is currently running its Smarter Choices, Smarter Places programme to promote uptake of active and sustainable transport. The COVID-19 pandemic has brought significant change to the context, for example there is a high prevalence of home working which the Council as an employer supports. The Council will continue to recognise where there are opportunities to offer travel planning advice to people which may help to encourage the use of active and sustainable transport and adapt to the situations which arise.

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

Scottish Government expects any Scottish local authority which has a Sustainable Energy Action Plan (SEAP) to ensure that air quality considerations are covered. The Council's previous SEAP (2015-2020) has been integrated into the 2030 Climate Strategy. The City of Edinburgh Council declared a Climate Emergency in 2019 and committed to work towards a net zero emissions target by 2030 for the whole city. Continuing SEAP projects have been brought into the wider Sustainability Programme and future reporting on city emissions will reflect the new Council target for 2030. See report link;

Item 7.6 – Sustainability Programme Progress Update.pdf (edinburgh.gov.uk).

2.1.3 Transport – Active Travel (T3)

The Council produced an Active Travel Action Plan (ATAP) in 2010, which was updated in 2016 and is due a further review in 2020. The Plan aims to deliver significant increases in the number of pedestrian and cycling journeys travelled within Edinburgh. The ATAP as well as bringing health benefits will assist in encouraging modal shift away from car use. The plan has set targets of 35% of all Edinburgh adult residents' trips being made by walking and 10% by bicycle by 2020.

A core element of the plan is the development of the 'QuietRoutes' cycle network which will enable people to travel around the city on safe routes away from the busier roads. Several major and smaller cycling and pedestrian schemes have been delivered and additional schemes are in progress. The active travel improvements programme, showing routes which are being designed and improved can be downloaded; https://www.edinburgh.gov.uk/cycling-walking/cycling-walking-projects

Cycling has become a more attractive travel option due to bold measures such as the new segregated path on Buccleuch Street. This is a key link in Edinburgh's walking and cycling network and the National Cycle Network, forming a single route from the Meadows to the Innocent Railway Tunnel in Holyrood Park. This then follows an old railway route to Duddingston, Brunstane and Musselburgh, creating a major cycling corridor in the south east of the city providing the opportunity to travel this route by bike, without having to dismount or negotiate busy junctions. New crossings have been created to permit cycling, and an alleyway at Gifford park was opened up, flanked by two community murals, to

provide a safe and attractive route for people to make everyday journeys on foot and by bike.

Segregated cycle lanes offer real protection from traffic. Being serious about road safety and encouraging more people to travel by bike makes this kind of facility crucial. As a result, further roadside segregated cycle paths have been constructed on large sections of Leith Walk. The success of these routes will hopefully continue this momentum of rolling out safer, more accessible schemes further and faster across the city.

To monitor levels of walking and cycling over time, there are cycle and pedestrian counters across the city. Progress of ATAP actions have been reviewed in 2013 and 2015. Increases in active travel for cycling and walking are shown below in an extract from the Plan (Table 2.2).

Table 2.2 – ATAP progress for cycling and walking

Activity	2011 Data	2014/15 Data	2020 Target
Cycling			
% of all Edinburgh residents' trips	-	3%b	10%
% of trips to work by Edinburgh residents	4.9%a	7.3%b	15%
Walking			
% of all Edinburgh residents' trips	-	32%b	35%
% of trips to work by Edinburgh residents	18.2%a	20%b	21%
School cycling training			
% of P6/P7 children provided with on-road cycle training	-	63%	72%

a 2011 Census b Scottish Household Survey 2015 and Edinburgh Bike Life report

Analysis of travel to work data indicates that in most parts of Edinburgh walking mode share could be increased by 10% to 20%. The City of Edinburgh Council is currently working towards improvements to bike life in the City in the following ways:

- Connecting missing links between key trip generators and sections of the QuietRoutes Network to create a safe, convenient, and seamless network;

- Planned upgrades to the city's existing QuietRoutes Network will continue to make cycling without mixing with busy traffic a realistic travel choice,

- Committed 10% of the Roads and Transportation budget in to cycling and walking,

- Increase modal shift towards walking and cycling – developing a city that is attractive and safe for people on bikes, whatever their age or ability,

- Complete the City Centre West to East Link (CCWEL) – the extensive network of routes is missing a vital link along its west-east axis across the city centre, and;

- Collaborating with Sustrans in developing projects for cycle network infrastructure which aims to rebalance streets for people, especially in West Edinburgh and the City Centre, with plans to transform some of the most car dominated parts of the city into safe and attractive places for pedestrians and cyclists.

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

The City of Edinburgh Council has taken forward a number of measures during the current reporting year in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.14. More detail on these measures can be found in the Air Quality Action Plan and the following plans and strategies.

The Council approved a new local transport strategy, the 'City Mobility Plan' (CMP), in February 2021 to cover a 10-year period to 2030 which determines the strategic direction for mobility, local objectives, and inform related priorities, resources, and investment. Details can be found here; https://www.edinburgh.gov.uk/citymobilityplan

The Council's active travel agenda was set out in the Active Travel Action Plan (ATAP) in 2010, which was refreshed in 2013 and 2016. Initial funding of £65,000 was secured from Sustrans Scotland's 2019/20 'Places for Everyone' programme to take forward the

development of a new plan in 2022.
http://www.edinburgh.gov.uk/downloads/file/7316/active_travel_action_plan_2016_refresh

The Public and Accessible Transport Action Plan was updated in 2020;
http://www.edinburgh.gov.uk//download/downloads/id/357/public_and_accessible_transport_action_plan

The Council approved a City Centre Transformation plan to ensure a people-focused Capital City Centre. It outlines a programme to enhance public spaces to better support life in the city, by prioritising movement on foot, by bike and by public transport. The Council will therefore need to undergo a re-evaluation of traffic management priorities in the City Centre, while also taking cognisance of the development of the Low Emission Zone and the emerging City Mobility Plan.

https://www.connectingedinburgh.com/citycentre

'Open Streets' is the name given to the Council's programme of monthly street closures, that aim to help people experience the city in a quieter, more people-focussed environment, while helping the Council to monitor congestion, and travel behaviours, to inform future plans. The programme launched in May 2019, however due to the pandemic events were cancelled in 2020.

https://www.connectingedinburgh.com/open-streets/open-streets-1?documentId=9&categoryId=6

The conditions for taxis and private hire cars licences have been altered to help improve air quality. Emissions reduction is expected through the introduction of an age limitation and vehicle engine (emission) policy. As of 1 April 2023, any new licensed taxi or PHC vehicle (or a replacement vehicle under an existing taxi/PHC licence) was to be Euro 6 engine standard. However, in response to the COVID-19 pandemic the policy timescales were extended to alleviate pressure on the sector. The extension of these dates allows licence holders to retain existing vehicles for a longer period (18 months) than would previously have been allowed. Although there are no changes to the policy in respect of Euro 0-4 vehicles and they must be replaced upon the expiry of their current licence (unless an exemption has already been granted).

2.1.4 Key completed measures

Key completed measures from the Air Quality Action Plan and previous local transport strategy are set out below;

Transport Planning and Infrastructure Projects

Tramline 1

The Trams operate from Edinburgh Airport to a temporary stop at York Place in the city centre, becoming operational on 30th May 2014. Passenger journeys have increased each financial year since 2014/15, except over the time of the COVID-19 pandemic (2020/21). Construction on the agreed extension from York Place to Newhaven/Leith started in Autumn 2019, with passenger services anticipated in 2023. The annual forecast demand, with the extension, is 15.7 million journeys in 2023.

Table 2.3a Annual trams passenger numbers

Year	Passenger journeys
May 2014 to March 2015	4.1 million
April 2015 to March 2016	5.3 million
April 2016 to March 2017	5.8 million
April 2017 to March 2018	6.8 million
April 2018 to March 2019	7.5 million
April 2019 to March 2020	7.1 million
April 2020 to March 2021	0.9 million

Data obtained from Department of Transport light rail and tram statistics.

Rail Improvements

In recent years, new rail lines have been constructed which serve the Edinburgh area. It is anticipated that air quality benefits to the city are being delivered due to commuter model shift from road to rail.

Alternatives to private vehicle use

Park and Ride (P&R)

The City of Edinburgh Council has several Park and Ride locations around the periphery of the city boundary and is also served by Park and Rides in East Lothian, Midlothian and

Fife. The current number of spaces available has the potential to reduce the two-way daily work commuter traffic by 11,280 vehicles if operated at maximum capacity.

Newcraighall and Wallyford also have rail accessibility and Ingliston is connected to Edinburgh Trams service.

Usage has been well down over the last 18th months due to the pandemic. Approximate figures are shown in Table 2.3.

Land has been acquired at Hermiston for development of the P&R extension, however funding has yet to be allocated. This would more than double the capacity.

Table 2.3b Ingliston and Hermiston Park and Ride usage

	2012	2016	2017	2018	2019	2020
Ingliston	79,740	227,231	255,952	284,640	281,921	74,956
Hermiston	Not available	103,055	103,690	101,856	104,919	32,708

Traffic Management

Newbridge Roundabout (Glasgow Road AQMA)

The 'non-cable linked fixed- time' traffic signalling which controlled Newbridge Roundabout was replaced in 2015 with a Microprocessor Optimised Vehicle Actuation (MOVA) system. This system became fully operational in February 2016 and vehicle time delays were assessed showing that there has been a significant reduction in waiting time on the A8 westbound corridor, as detailed in previous Annual Progress Reports.

Historically, Transport Scotland have received complaints about queuing on the M9 slip, leading to the Newbridge roundabout and consideration has been given to alternations to the roundabout. Air quality would have to be a major factor in any changes.

Reduction of speed limits, 20mph zones

The City of Edinburgh Council has introduced a 20mph speed limit across parts of the city, covering the city centre, main shopping streets and residential areas while retaining a strategic network of roads at 30mph and 40mph. The scheme has been introduced primarily for road safety purposes; however, it is also anticipated to improve travelling conditions across the city for walking and cycling, which will encourage modal shift. There

is uncertainty with respect to any direct improvements it will have on air quality. The project monitoring framework will take cognisance of (LAQM) pollution concentration trends analysis.

Vehicle Fleet Efficiency

Driver training and ECO driving aids

The Council plans to install a telematics system in all Council vehicles with a view to providing data which would enable effective management of the fleet and contribute to the Council's wider aims of air quality improvement and carbon reduction targets. Installation on the HGV fleet is currently underway. Some delays have occurred with the pandemic response. The Council proposes to address engine idling, reduce size of the fleet, and determine the potential for alternative fuel vehicles, such as electric or dual hybrid systems, with the information gained from the telematics data.

2.1.5 Ongoing measures

Vehicle Fleet Efficiency

Promoting low emission public vehicles

All bus companies operating in Edinburgh continue to improve their fleet, but it was not possible to achieve the draft Voluntary Emissions Reduction Partnership (VERP) target of 100% Euro 5 by October 2015.

Substantial financial support is needed to deliver continuing improvement. To support the delivery of Scotland's Low Emission Zones (LEZs), Transport Scotland devised the Bus Emissions Abatement Retrofit (BEAR) programme which allows for buses/coaches to be fitted with CVRAS (Clean Vehicle Retrofit Accreditation Scheme) retrofit technology to improve vehicle emissions to Euro VI standard or better.

In 2017/18 BEAR Phase 1 scheme awarded £1.6 million funding for 42 buses to be converted across Scotland. £7.89 million was allocated to the delivery of BEAR Phase 2 in 2018/19, with seven applicants awarded funding to retrofit 84 vehicles. £9.8 million was awarded by BEAR 3 phase in 2020/21.

Lothian Buses

Lothian Buses are the main service provider in the urban areas of Edinburgh with a total of 736 vehicles in service. Significant improvements have been achieved since 2006 with the assistance of Scottish Government funding shown in Table 2.4. The yearly improvement is illustrated in Table 2.5.

Earlier this year, Lothian Buses was awarded £2,207,952 from the Scottish Government's Bus Emission Abatement Retrofit (BEAR 3) programme which is allowing the retrofit of 188 buses from Euro V to Euro VI standard, enabling the company to continue to reduce emissions across the City. The project alone will take 91% of the fleet to EVI standard.

Scottish Power Energy Network assisted Lothian Buses in introducing four new double deck electric buses into the fleet in 2021. This, alongside 98 new Euro VI buses, means 94% of the Lothian Bus fleet is now Euro VI or better, overall.

Table 2.4 – Number of older vehicles retrofitted and new buses purchased

Technology	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Retro-fit SCRT Euro III to Euro V/VI (EEV)	43 (A)										
Retro-fit SCTR Euro V to Euro VI									36	188 *	
Hybrid double deck vehicles. Euro V	15 (B)										
Hybrid single deck vehicles. Euro V		10 (C)									
Double deck EEV	60 (D)										
Single deck EEV		5 (D)									
Euro IV to V: engine management alterations				26 (D)	49 (D)						
Double deck vehicles. Euro V								54			
Hybrid single deck vehicles. Euro VI			20 (C)	20 (F)							
Hybrid double deck vehicles. Euro VI					20 (G)	20 (H)					
Single deck vehicles							15 (D)				

Technology	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Euro VI											
Double deck vehicles Euro VI				25 (D)		55 (D)	45 (D)				98
Tri-axle double deck Euro VI									36		
Electric single deck vehicles							6 (I)				
Electric Double Deck vehicles											4 (J)
Plaxton coaches Euro VI									14		

KEY:
A Lothian Buses contributed to total cost of £500,000 (Lothian Buses £243,000, CEC £50,000 and Scottish Government £207,000)

B Total cost £5M (Scottish Government £1M Green Bus Fund (1)

C Total cost £2.65M (Scottish Government £750,000 Green Bus Fund (2)

D Lothian Buses self-funding

E Scottish Government £1.5M Green Bus Fund (3)

F Scottish Government £1.05M Green Bus Fund (4)

G Scottish Government £1.5M Green Bus Fund (5)

H Scottish Government £1.5M Green Bus Fund (6)

I Scottish Government £1M Green Bus Fund (7)

J Scottish Power Energy Network 'Green Economy Fund'

* To be retrofitted 2020 and 2021

Table 2.5– Euro Standard of service bus fleet (Lothian Buses 2006 to 2021)

Euro Standard	Base 2006	May 2013	May 2014	Mar 2015	May 2016	Mar 2017	Aug 2018	Aug 2019	Nov 2021
Pre-Euro	63 10%	0	0	0	0	0	0	0	0
Euro I	33 5%	0	0	0	0	0	0	0	0
Euro II	202 32%	0	0	0	0	0	4 0.5%	0	11 1%
Euro III	317 52%	251 41%	273 43%	233 36%	222 33%	228 31%	170 21%	139 18%	0
Euro IV	0	81 13%	75 12%	55 9%	6 1%	6 1%	7 1%	0	0
Euro V	0	141 23%	147 23%	186 29%	258 39%	258 36%	287 35%	228 32.8%	34 5%
EEV (V/VI)	0	142 23%	146 23%	104 16%	85 13%	85 11%	94 12%	108 10.9%	0
Euro VI	0	0	1 <1%	65 10%	97 14%	151 21%	249 30%	255 37.5%	682 93%
Electric	0	0	0	0	0	0	6 1%	6 0.8%	10 1%
Total	**615**	**615**	**642**	**643**	**668**	**728**	**817**	**736**	**737**

Data provided by Lothian Buses, November 2021

As part of a £6.5 million investment in 2016, all Euro II City Tour buses were replaced with 30 Euro VI vehicles. See Table 2.6. The new buses are also quieter and therefore beneficial with respect to noise pollution. The fleet has increased and reduced in recent years to provide service for private hire and bespoke, special events.

Table 2.6 – Euro Standard of City Tour Bus fleet (Lothian Buses) 2010 to 2021

Euro Standard	Oct 2011	May 2013	May 2014	Mar 2015	Sept 2016	Mar 2017	Aug 2018	Aug 2019	Nov 2020
Pre-Euro	0	0	0	0	0	0	0	0	0
Euro I	0	0	0	0	0	0	0	0	0
Euro II	45	38	44	44	0	0	4	3	0
Euro III	0	1	1	1	0	0	0	0	0
Euro IV	0	0	0	0	0	0	0	0	0
Euro V	1	1	2	2	0	0	0	0	0
Euro V EEV	0	0	0	0	0	0	0	6	0
Euro VI	0	0	0	0	30	30	30	30	30
Total	**46**	**40**	**47**	**47**	**30**	**30**	**34**	**39**	**30**

Lothian Buses deploy their highest Euro standard vehicles on high-frequency services and those routes which transit AQMAs e.g. Airlink100 and service 22 which both pass through the Central AQMA and St John's Road or Great Junction Street AQMAs, respectively. The deployment of Euro V standard buses or better in AQMAs is shown in Table 2.7.

Table 2.7 – Deployment of Euro V standard or better Lothian Buses in AQMAs

Service Number	Euro Standard
Central AQMA	
1, 2, 42, 45	Euro VI hybrid single deck and Euro VI double deck
3, 4, 5, 7, 8, 10, 11, 14, 15, 16, 19, 22, 25, 26, X26, 27, 29, X29, 31, X31, 37, X37, 41, 4344, X44 47, 47B, 49, 100, 113, 124, 300	Euro VI double deck
12	Euro VI hybrid single deck
23	Electric double deck and Euro VI double deck
30, 36, X7	Euro VI single deck

Service Number	Euro Standard
33, X33, 34, 35, X18, X27, X28	Euro VI hybrid double deck and Euro VI double deck
104	Euro VI single deck and Euro VI double deck
St John's Road AQMA	
12	Euro VI hybrid single deck
26, 31, Airlink100	Euro VI double deck
X18	Euro VI double deck
Great Junction St AQMA	
7, 10, 11, 14, 16, 21, 22, 25, 49, 200	Euro VI double deck
34, 35	Euro VI hybrid double deck and Euro VI double deck
36	Euro VI hybrid single deck
Majestic Tour	Euro VI double deck
Glasgow Road AQMA	
X18	Euro VI double deck
Inverleith Row AQMA	
8, 14, 21, 27	Euro VI double deck
23	Electric double deck and Euro VI double deck
Majestic Tour	Euro VI double deck

Lothian Buses continue to be committed to reducing the emissions from their fleet and to invest in low emission vehicles as part of their fleet replacement strategy. Currently 100% of the main bus fleet is Euro V or better.

First Scotland East

First Scotland East has a total of 115 buses available to operate in the Edinburgh area, from Livingston and Falkirk bases. There are two frequent services which use the A8 corridor and therefore go through the Glasgow Road, St John's Road and Central AQMAs, whereby the less frequent airport service passes through the Glasgow Road AQMA only. The new tour bus service operates wholly in the Central AQMA, as does the 24/25 Services, which passes through from the south west of the City. The fleet standard is shown in Table 2.8.

Table 2.8 – First Scotland East fleet in Edinburgh (2011-2021)

Euro Standard	2011	2013	2014	2015	2017	2019	2021
Euro I	23 7%	0	0	0	0	0	0
Euro II	149 45%	0	0	0	0	4 4%	0
Euro III	116 35%	75 69%	53 52%	84 54%	0	16 14%	0
Euro IV	33 10%	24 22%	31 30%	32 21%	43 27%	23 20%	33 29%
Euro V	9 3%	10 9%	18 18%	37 24%	65 42%	25 22%	40 35%
Euro VI	0	0	0	0	48 31%	45 40%	42 37%
Total vehicles	**330**	**109**	**102**	**153**	**156**	**113**	**115**

Data provided by First Scotland East, December 2021

First Bus continues to make improvements in the emissions performance of buses in preparation for the proposed LEZ.

Stagecoach East Scotland

There are 81 buses in the Stagecoach East Scotland fleet operating on services into Edinburgh. The majority of these buses pass through the Queensferry Road corridor into the City Centre (and Central AQMA), while the JET Airport Service from Fife, goes through the Glasgow Road AQMA.

In November 2017, a fleet renewal of the JET service, brought all of the buses up to Euro VI standard. Euro IV buses were eradicated from the fleet in 2018. The current Euro class status of the Stagecoach East Scotland fleet operating in Edinburgh is shown in Table 2.9.

Table 2.9. Stagecoach East Scotland fleet operating in Edinburgh (2012-2021)

Euro Standard	2012	2016	2017	2018	2019	2021
Euro I	0	0	0	0	0	0
Euro II	2 5%	0	0	0	0	0
Euro III	4 10%	0	0	0	0	0
Euro IV	27 69%	10 17%	10 17%	0	0	0
Euro V	6 15%	38 63%	34 56%	30 42%	36 43%	9 11%
Euro VI	0	12 20%	16 27%	41 58%	48 57%	72 89%
Total	**39**	**60**	**60**	**71**	**84**	**81**

Data provided by Stagecoach, October 2021

Citylink

Citylink operate several ‘inter-city’ type coach services between destinations across Scotland. The services are subcontracted to a range of different bus operators, consequently many of the vehicles are not directly owned by Citylink. All services into Edinburgh pass through the Glasgow Road AQMA, St Johns Road AQMA or Central AQMA. The status of the vehicles Citylink operate into Edinburgh is shown in Table 2.10. Euro III and IV vehicles have been eradicated from the fleet and the company and in 2021 78% of the fleet is Euro VI.

Table 2.10 – Citylink fleet in Edinburgh, 2015, 2016, 2019 and 2021.

Euro Standard	May 2015	July 2016	October 2019	October 2021
Euro I	0	0	0	0
Euro II	0	0	0	0
Euro III	2 (4%)	1 (2%)	0	0
Euro IV	0	6 (12%)	0	0
Euro V	43 (92%)	37 (72%)	19 (37%)	11 (22%)
Euro VI	2 (4%)	7 (14%)	32 (63%)	40 (78%)
Total	**47**	**51**	**51**	**51**

Data supplied by Citylink October 2021.

Fleet efficiency recognition schemes

The freight sector has been a more challenging group for local authorities to co-ordinate. To persuade road freight operators to voluntarily reduce their emissions, the Council became a partner in an EU-funded project, ECO Stars Europe, through which the ECO Stars Edinburgh scheme was established. The latter is now funded through the Air Quality Action Plan grant award and is one of the biggest schemes of its type in the UK.

It is a voluntary, free to join fleet recognition scheme that provides bespoke guidance on environmental best practice to operators of goods vehicles, buses and coaches, whose fleets regularly serve Edinburgh area. The current focus is to re-engage with members to try and ensure that they are following their road map and improving their fleets. Progress made with ECO Stars Edinburgh is detailed in Table 2.11.

Table 2.11 – ECO Stars Edinburgh Scheme – Progress from 2012 to 2021

Year	Number of vehicles	Number of operators
2012	1,684	14
2013	2,900	35
2014	3,525	51
2015	5,048	84
2016	6,089	129
2017	7,061	154

Year	Number of vehicles	Number of operators
2018	8,001	200
2019	9,254	241
2020	9,997	287
2021	10,576	312

Council Fleet

The Council is committed to leading by example through the acquisition of lower emission vehicles for its own fleet. The degree of ongoing fleet improvement is set out below.

Table 2.12 – Improvement in City of Edinburgh Council fleet 2003 to 2021

Euro Standard	2003	2017	2018	2019	2020	2021
Pre-Euro	12 1%	0	0	0	0	0
Euro 1/I	96 12%	0	0	0	0	0
Euro 2/II	374 45%	0	0	0	0	0
Euro 3/III	338 41%	15 2%	14 2%	12 1%	8 1%	8 1%
Euro 4/IV	12 1%	217 25%	221 24%	188 19%	150 15%	84 8%
Euro 5/V	0	497 56%	376 42%	337 34%	322 33%	320 31%
Euro 6/VI	0	128 15%	267 30%	433 43%	448 45%	453 44%
Electric	0	25 3%	25 3%	33 3%	57 6%	171 16%
Total	**832**	**882**	**903**	**1003**	**985**	**1036**

The proportion of the Council's fleet Euro 6/VI and above, continues to increase from 51% in 2020 to 60% in 2021. The number of electric vehicles significantly increased in the past year with the requisition of electric cars and vans.

Fleet Management have been examining the impact of the Low Emission Zone and the restrictions that this will place on some fleet units, going forward. Careful planning of key replacement vehicles will mitigate the effect on operations. Passenger operations is an area that will need urgent planning, as this fleet was not included in the fleet review, due to being under its own separate review, now complete. However, three electric low-level, passenger buses have recently been adopted into the fleet.

A Fleet replacement programme is in place to eradicate the oldest vehicles in the Council fleet, with the Euro 3/III (truck type) vehicles due for imminent replacement.

Promoting Low Emission Transport

Managing traffic emissions via mandatory Low Emission Zone

The Council is committed to implementing a Low Emission Zone in terms of the Programme for Government commitment 2017/18, where Scottish Government agreed to work with the four major Scottish Cities to have LEZs in place by 2020. In response to the COVID-19 pandemic, agreement was reached to delay to the timescales to Spring 2022.

The Council continues to work in close partnership with Scottish Environment Protection Agency (SEPA), Transport Scotland and the Scottish Government to assist in the work of the National Modelling Framework (NMF) which is also a key element in the Clean Air for Scotland Strategy. The NMF process has provided the quantitative evidence for assessment of criteria for the National Low Emission Framework and LEZs in particular.

In June and October 2021, the Council considered a wide range of NMF reports in respect to LEZ development, detailing the air dispersion and emission modelling work (See appendix C). An emissions analysis report was included as well as the results of the summer 2021 statutory consultation process.

Further analysis is now being undertaken in respect to the impact a LEZ would have on reducing greenhouse gas emissions, prior to any conclusions being made on the way forward. In general, however, the LEZ is being devised in conjunction with the

development of the City Mobility Plan (CMP) and Edinburgh City Centre Transformation (CCT) programme in order to realise the wider benefits of such a scheme.

Guidance to support the regulations for the introduction of LEZs was published in October 2021. Funding to support the implementation of LEZs is being made from the Scottish Government on a year to year basis.

To support the introduction of LEZ's across the different fleets there are other funding streams being developed. BEAR, Transport Scotland's Bus Emissions Abatement Retrofit Programme, is ongoing, with funding of up to £5.7million available in 2021/22 financial year to licensed bus and coach operators, local authorities and community transport operators located in AQMAs.

Funding is also available to support the retrofitting of light goods vehicles, heavy goods vehicles and taxis through the LEZ Retrofitting Fund for micro-businesses. In October 2020, the Low Emission Zone Support Fund for low-income households and micro-businesses was announced to incentivise the scrapping of older petrol and diesel vehicles and encourage a change to sustainable transport. This has the added benefit of reducing carbon dioxide and supporting the Council's 2030 Climate strategy.

Promotion of electric vehicle charging infrastructure

In December 2017, the Council approved Edinburgh's first Electric Vehicle (EV) Action Plan, with the key purpose of developing a strategic and co-ordinated approach to charging hubs. This was to encourage the uptake of EVs, while reducing carbon emissions, improving air quality and unlocking wider economic benefits.

More recently, the Council approved a Business Case for the installation of on-street EV charging infrastructure and developed a detailed project plan, to strengthen the existing network. £2.2m funding was awarded from Transport Scotland through the Switched-on Towns and Cities Fund for installing EV on street chargers. Due to the impact of COVID-19, the funding has been extended to April 2022. A total of 75 on-street charging points will be put in across the city as part of the first phase of implementation.

In association with Innovate UK, the Council is participating in a project considering the benefits and costs of wireless electric vehicle charging. The project overall will bring together logistics modelling expertise from Heriot-Watt University (HWU) and low carbon and vehicle technology, energy infrastructure and commercial knowledge from Flexible

Power Systems (FPS), while the Council will function as the vehicle user, with two dedicated vehicles.

Traffic Management

Urban Traffic Control Systems (SCOOT)

Improving traffic flow and reducing idling time are measures which help to improve air quality. Split Cycle Offset Optimisation Technique (SCOOT) systems are automatically responsive to traffic flows and demand and therefore help ease congestion by providing more effective control of traffic signals.

SCOOT infrastructure is in place on many road networks in the city. Ongoing utility works and road improvements can damage inductive loops which then require repair. In the past year a loop repair programme has been initiated with associated staff resource. Loops are also now replaced as a part of the Council's roads resurfacing programme. All these measures have resulted in a significant reduction in the number of damaged loops, giving a corresponding improvement in benefit to SCOOT operations.

Equipment at Lothian Road/ Fountainbridge and West Port/Lady Lawson Street is running on fixed time until suitable timing options have been explored.

Current SCOOT status in the AQMAs is detailed in Table 2.13.

Table 2.13 – SCOOT status in AQMAs 2021

SCOOT Status	Locations
Central AQMA	
Fully operational	Gorgie Road (West); Chesser Avenue, Balgreen Road
Fully operational	Gorgie Road (East); Westfield Road, Robertson Avenue
Fully operational	Ardmillan and Slateford Road; (Gorgie / Dalry, Angle Park, Slateford Road / Shandon)
Junctions fully operational. Work ongoing to integrate stand-alone crossings into SCOOT.	Bridges corridor; West Richmond Street to East Mayfield

SCOOT Status	Locations
Diversions associated with ongoing repairs to North Bridge means system is running fixed time. To be brought on SCOOT following completion of project.	Bridges Corridor; High Street, South Bridge, Chambers Street
Fully operational	London Road; Easter Road to Meadowbank, plus Abbeymount
Loop repairs and communications equipment required – validation will follow (2022).	London Road; Jock's Lodge
Scheme is on hold due to CCWEL (City Centre West East Link). Options for SCOOT to be considered by the project.	Roseburn
Unlikely to be re-installed due to Tram priority.	Haymarket, Princes Street, Queen Street and Leith Walk
Equipment installed. However, traffic priorities being reconsidered in terms of City Centre Transformation.	West Port
Partially operational on Cowgate. High Street loops to be installed (once setts replaced). Validation required. Ongoing work.	Cowgate, St Mary's Street, High Street
St John's Road AQMA	
Infrastructure and loops installed. Replacement mesh communications unit to be installed and then validation will be required.	St Johns Road, Corstorphine Manse Road / St Johns Road
Great Junction Street AQMA	
Temporary traffic management in place due to tram works. SCOOT operation will be restored on completion.	Shore, Bernard Street, Salamander Street
Fully operational	Bath Road to Seafield Road
Inverleith Row/ Ferry Road junction	

SCOOT Status	Locations
Fully operational	Inverleith Row (Goldenacre) / Ferry Road and Ferry Road / Granton Road

Other Action Plan Initiatives

Controlled Parking Zones

Controlled Parking Zones (CPZs) enable on-road parking spaces to be used by residents and therefore reduce opportunity for car commuting into the city centre. The boundary of the Council's CPZ was substantially extended in 2006-2007 and covers the central core of the city.

An alternative form of parking control, a Priority Parking Area (PPA) was trialled in the south-central area of the city during 2010. The operational times of the PPA were aligned with peak travel periods and, as with the CPZs, aims to make it easier for residents to park near to their homes. The trial delivered positive outcomes and has been made permanent. Thus, several new areas in the city have been designated PPAs.

Introduction of new and extensions to existing CPZs or PPAs are kept under regular review by the Council and a strategic review of parking is currently underway. This aims to determine parking pressures across the city and inform a citywide strategy for addressing parking pressures in areas where they have become a problem. Proposals for new parking controls have been advertised for areas with significant parking pressures identified through this review. The locations of residential CPZs and PPAs can be downloaded from the following link:
http://www.edinburgh.gov.uk/info/20083/parking_permits/577/parking_permit_map

Residential Parking Permits

The Council also operates a tiered pricing scheme for residential parking permits based on CO2 emissions and engine size. Work undertaken for 2015 Air Quality Action Plan Progress Report showed that there had been an element of behaviour change with residents moving towards the purchase of smaller engine vehicles producing less CO2. A recent review of the parking pricing strategy introduced a change to the pricing structure (from a five-tiered system, to seven) on the basis that this would reward and encourage owners of smaller, low CO2 emission-engine vehicles.

Also, as a part of the pricing review, the Council ran a consultation between October 2017 and January 2018 on the possible introduction of a surcharge on parking permits issued to diesel vehicles. The Council received a huge response to the consultation with 5,412 responses to the online questionnaire, with over 98% living within the city. Overall the majority (88%) of respondents recognise the impact air quality has on their health and agree (82%) that it is important to tackle air pollution. Nearly half (47%) agreed that the Council should charge more for permits issued to the most polluting vehicles. The Council will now introduce a surcharge on residents' permits for diesel-fuelled vehicles, with a view to encouraging owners to consider the impact of their vehicle choice, on both the wider-environment and local air quality. The new surcharge will come into force with new permit holders or existing permit holders changing to diesel vehicles, but omit those who currently own a diesel car, to compensate for purchases that were made in good faith at a time when diesel vehicles were incentivised.

Progress on the following measures has been slower than expected, predominately due to staff resourcing issues and prioritisation of the LEZ work;

- Completion of the Draft PM10 Salamander Street Air Quality Action Plan.
- Revision of the Air Quality Action Plan for NO2. There is a need for co-development with the developing LEZ, City Mobility Plan and the new national air quality strategy – Cleaner Air for Scotland 2.

Grant funding was sought and awarded from Scottish Government to provide external consultancy support to help Action Planning development in 2021/22.

- No current commitment for financial support for the expansion of Hermiston Park and Ride.

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

- Reconvene the Steering Group considering the PM10 Salamander Street Air Quality Action Plan to further develop the Draft Plan,
- Revise the existing NO2 Air Quality Action Plan, in conjunction with the developing LEZ scheme, City Mobility Plan and the Cleaner Air for Scotland 2 Strategy,

- Continue on-going development work with SEPA, Transport Scotland and partners to develop the Low Emission Zone (LEZ) scheme under the National Low Emission Framework and the National Modelling Framework,
- Finalise a LEZ scheme for Edinburgh, as per the relevant regulations under the Transport (Scotland) Act 2019,
- Continue ECO Stars scheme subject to funding,
- Continue the roll out of telematics across the Council Fleet,
- Continue ongoing SCOOT development and repair work,
- Install on-street electric vehicle charging infrastructure to strengthen the existing network, and;
- Continue support for Active Travel Action Plan.

Table 2.14 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Promoting low emission public transport	Vehicle fleet efficiency	Reduce bus emissions via voluntary agreements with bus companies	CEC	2009 - 2011	Euro IV by 2012 Euro V by 2015 Formal agreement not reached due to being onerous in absence of financial support		NOx Central 59% St John's 48% Gt Junction St 61%	TTR study Completed.	On going	
1a	Implementation of a LEZ	Promoting Low emission transport	Manage bus emissions and potentially emissions from other vehicle classes	CEC in conjunction with Scottish Government, Transport Scotland and SEPA	2016-to date	Programme for Government commitment for LEZ to be in place by 2020		Will be determined by outcomes of NMF and NLEF under CAFS With proposed scheme 55% NOx reduction in Central AQMA (SEPA, May 2021).	Statutory consultation undertaken in the summer 2021. Further work being undertaken in respect to the statutory requirement to reduce greenhouse gas emissions.	Scottish Government and 4 Cities agreed implementation date between Feb and May 2022.	
2	Fleet efficiency and recognition Scheme ECO Stars	Vehicle Fleet Efficiency	Manage road freight emissions	CEC in conjunction with TRL	2010-2011	2011 to date	Recruitment figures		2021 – 312 operators and 10,576 vehicles registered	Ongoing	Part funding secured for 2021/22
3	Cleaner council vehicles	Vehicle Fleet Efficiency	Improve emissions by ensuring highest standard for vehicle replacement	CEC		2003		Not quantified	2021 the current Council fleet is 60% Euro 6/VI compliant	Ongoing	The Council is developing a fleet decarbonisation plan.

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3a	ECO driver training and ECO driving aids	Vehicle Fleet Efficiency	Council vehicle trial telematics system	CEC, Fleet	2018		Reduction in idling and fuel consumption	Not quantified	Council approved installation of a Telematics system for all council vehicles	Trial completed Roll out of telematics underway	
4	Bus based Park and Rides Rail based Park and Rides * Tram based Park and Rides**	Alternative to private vehicle use Modal shift	Reduce emissions by easing congestion at peak travel times	CEC		Ongoing	Usage	Not quantified	Ferrytoll (1040) Ingliston** (1082) Straiton (600) N'craighall* (565) Sheriffhall (561) Hermiston (450) Wallyford* (321) Halbeath (1021	Land secured at Hermiston for future expansion	Require funding to enable expansion
5	Differential parking	Promoting low emission vehicles	Aimed at smaller engines and low CO_2 emission vehicles Diesel-surcharge on resident's car parking permits	CEC		Ongoing		Not quantified	Work undertaken for 2015 Air Quality Action Plan Progress Report showed that there had been an element of behaviour change with residents moving towards the purchase of smaller engine vehicles producing less CO2		Requires adoption of low emission vehicles in terms of NOx and PM_{10}

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6	Controlled Parking Zones Priority Parking Zones PPZ	Traffic Management	Discourage car commuting into city centre	CEC				Not quantified	Several CPZ in city centre One new PPZ introduced Total 10 PPZs surrounding city centre	0ngoing	Strategic Parking Review underway
7	Tramline 1	Transport Planning and Infrastructure	Zero emissions at source. Encourage modal shift from car use	CEC/ TFE		Line 1 May 2014 Line 1a from Autumn 2019	Passenger growth	Not quantified	7.1 m Passengers 2019/20	Completed	Construction of Line 1a (extension to Newhaven/ Leith) underway. Due for completion 2023.
8	New rail line stations; 3 1. Aidrie – Bathgate 4 2. New Craighall 5 3. Borders 6 4. Gogar	Transport Planning and Infrastructure	Modal shift to reduce road traffic entering Edinburgh	Transport Scotland			Passenger numbers	Not quantified	Completed 1. 2010 2. 2002 3. Sept 2015 4. 2016	All Completed	Passenger growth recorded
9	New cycle networks	Transport Planning and Infrastructure	Part of CECs Active Travel Action Plan	CEC/ Sustrans/ NHS Lothian	2010	2016 (updated)		Not quantified		On going	
9a	Promoting travel alternatives	Promotion of cycling and walking	CECs Active Travel Action Plan Encourage modal shift away from car	CEC/ Sustrans/ NHS Lothian	Ongoing			Not quantified		On going	

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
10a	Urban traffic control systems – SCOOT	Traffic Management	Reduce waiting times and stop/starts	CEC Transport	Ongoing			Not quantified	No. of schemes across City; Inverleith Row, Gorgie, Ardmillan Triangle, Part London all fully operational	On going	A loop repair programme has been initiated with associated staff resource. Loops are also now replaced as a part of the Council's roads resurfacing programme.
10b	Urban traffic Control systems – MOVA at Newbridge	Traffic Management	Reduce idling time	CEC transport	2014	Mar 2016	Reduced NO_2 concentrations and idling times	44% NOx 26% PM10	Completed April 2016	Completed	Delay time reduced on Westbound A8 pm. Measured NO_2 at junction reduced.
11	20mph speed limits across the City	Traffic Management	To assist improving cycle and walking uptake by making roads safer	CEC	2015	31/07/2016 commenced		Not quantified		2018	2018 Fully implemented

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

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.

City of Edinburgh Council undertook automatic (continuous) monitoring at nine sites during 2020. 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.

The NO_x analyser at Nicolson Street was offline for two weeks at the end of January, as a replacement reaction cell was required. Additionally, there were issues with the sample tube inlet during April and May which has resulted in a reduction in the data capture when compared to previous years.

At the Gorgie Road monitoring site, a broken photomultiplier tube was replaced in the Chemiluminescent analyser in February 2020. This has also resulted in a reduction in the data capture.

Throughout the year at the Currie monitoring site there were problems with the manifold pump. This has now been resolved, however there was also a loss of power to the site in November and December. This has resulted in poor data capture for the NO_x analyser.

At Salamander Street, there were intermittent power supply issues during February 2020 caused by a failure with the TEOM pump and affected all equipment at this site. This has resulted in a reduction of the data capture. A new air conditioning unit was also installed at the site in June 2020.

At Glasgow Road, there was a configuration and comms issue with the TEOM in February-March 2020, resulting in the loss of data. Additionally, in April-June 2020 there was a lot of noisy data produced. This was attempted to be cleaned by Ricardo during data ratification; however it was determined that none of this data could be recovered or used.

New NO_x analysers were installed in February 2020 at the Currie, Salamander Street, and Glasgow Road continuous monitoring locations. In addition to this, new FIDAS monitors were installed at these sites in December 2020 to measure PM_{10} and $PM_{2.5}$, to replace the ageing TEOMs. This was carried out as part of a programme to replace NO_x and TEOM analysers with support from the Scottish Government LAQM Funding Support.

3.1.2 Non-Automatic Monitoring Sites

City of Edinburgh Council undertook non- automatic (passive) monitoring of NO_2 at 183 sites during 2020, inclusive of six triplicate co-location sites and four duplicate 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.

Four monitoring sites were discontinued, and 30 new sites were deployed in 2020 (inclusive of a new triplicate co-location site at Nicolson Street). This also includes five new sites which were a result of relocations. Details of these are shown in **Table 3.1**. This is part of the 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 2020

Tube ID	Site ID	New / Removed (during 2020)
16a	Glasgow Road 68 / Façade	Removed (February 2020)
64a	Queensferry Road 552	Removed (February 2020)
153	New Arthur Place 4	Removed (February 2020)
154	Viewcraig Street 9	Removed (January 2020)
121	Inverleith Gardens 2	New (January 2020)
122	Inverleith Gardens 9	New (January 2020)

Tube ID	Site ID	New / Removed (during 2020)
129B	Queensferry Road/Ramsay Grange	New (February 2020)
64C	Queensferry Road 554 Façade	New (February 2020) – Relocated from 64A
69J	Queensferry Road 554 Roadside	New (February 2020)
119	Bonnington Rd/Great Junction Street 143	New (January 2020)
45b	Ferry Road/1 Madeira Street	New (January 2020)
120	Leith Walk 45-47	New (January 2020)
118	Lindsay Road 198-199	New (January 2020)
116	London Road/Jocks Lodge 23a	New (January 2020)
117	Restalrig Road 1 nr junction	New (January 2020)
51b	Salamander Street 29b	New (January 2020)
94	Chester Street 29	New (January 2020)
123	Dalkeith Road 16/Preston St Primary School	New (January 2020)
93	Drumsheugh Gardens 20	New (January 2020)
128	Dundas Street 9	New (February 2020)
124	East Preston St/Dalkeith Road Junction	New (January 2020)
126	East Preston Street 32	New (January 2020)
125	East Preston Street 3A	New (January 2020)
92	Lord Russell Place 3-5	New (January 2020)
130	Market Street 6	New (February 2020)
95	Palmerston Place 28/Lansdowne Cres	New (January 2020)
96	Palmerston Place 7	New (January 2020)
163	New Arthur Place – lamp post NHH1(permit holders only signage), towards The Pleasance/Dalkeith Road	New (February 2020) – Relocated from 153
162	19 Viewcraig Gardens – parking restrictions sign	New (February 2020) – Relocated from 154
127	West Preston Street 17	New (January 2020)
91	West Preston Street 40	New (January 2020)
63A	540 Queensferry Road – façade	New (February 2020) – Relocated from 63
135b	59/61 Nicolson Street black drainpipe	New (February 2020) – Relocated from 135a
CL16,CL17,CL18	Nicolson Street (co-location)	New (January 2020)

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 2020 may be an atypical year due to the impacts of COVID-19. Therefore pollutant trends should be considered with caution.

3.1.3 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 2020 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.

In regards to automatic monitoring, three automatic monitoring stations that report NO_2 concentrations reported a data capture of greater than 95%: Glasgow Road, Queensferry Road, and St John's Road. Two further monitoring stations reported relatively good data capture (>75%): Gorgie Road (92%) and St Leonards (88%). Data capture for the remaining monitoring stations is provided below, with an explaination as to why the data capture is below 75% (where possible):

- Curre (33.7%) – Complications with the manifold pump and a loss of power at the station;
- Nicolson Street (74.3%) – Predominately resulting from complications with the sample tube inlet; and
- Salamander Street (65.4%) – Predominately resulting from electrical power supply issues.

Where data capture for automatic monitoring stations is between 25% and 75%, annualisation has been carried out in accordance with the methodology set out in LAQM.TG(16). Further information of this can be found in Appendix C. For a strict comparison against the objectives there must be a data capture of 85% or greater throughout the calendar year.

Of the five automatic monitoring stations achieving the desired data capture of 85% , none reported an annual mean NO_2 concentration exceeding the AQS objective of 40µg/m^3 during 2020. The maximum reported annual mean concentration from among all the automatic sites was 27.2µg/m3 reported at Nicolson Street, however data capture here was below that required for a strict comparision. Exceedances were preivously reported in 2019 at both Nicolson Street and St John's Road.

In terms of the hourly mean objective, where data capture was greater than 85%, there were no reported one-hour averages where concentrations exceeded 200µg/m3 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/m3, indicating that had there been 100% data capture there would have not been more than 18 hours where hourly concentrations were greater than 200µg/m3.

In regards to non-automatic monitoring carried out using passive diffusion tubes, only one monitoring location reported an annual mean NO_2 concentration exceeding the AQS objective of 40µg/m^3, compared to a total of 24 in 2019. This was at the diffusion tube monitoring location 81, located on London Road/East Norton Place and within the Edinburgh City Centre AQMA, reporting an annual mean concentration of 44.0µg/m^3. This site is located at the point of nearest relevant exposure, therefore no fall-off with distance calculations were required. There were three further monitoring locations where an annual mean concentration within 10% of the AQS objective was reported (between 36.0-40.0µg/m^3). These were at the following sites:

- 64, outside any declared AQMA, located along Queensferry Road junction to Maybury Road/Whitehouse Road – 38.4µg/m^3;
- 69, within the Edinburgh City Centre AQMA, located along London Road next to the Wolseley Cresent junction – 39.3µg/m^3; and
- 135b within the Edinburgh City Centre AQMA, located near to building number 69 on Nicolson Street – 36.9µg/m^3.

Only monitoring location 64 is not located at a site of relevant exposure, and following distance correction calculations it is predicted that there is an annual mean concentration of 27.4µg/m^3 at the nearest relevant receptor.

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

Overall, annual mean NO_2 concentrations reported at all monitoring locations where monitoring was also carried out in 2019, with the exception of 143a, 69, 71, and 33b, decreased in 2020 from that which was reported in 2019. An average decrease of 9.5µg/m^3 was reported at these sites. This is largely believed to be a result of the impacts of the COVID-19 pandemic, whereby the UK and Scottish Governments enforced numerous lockdowns, alongside provided guidelines for home working and restricting travel. It has been observed across much of the UK, in particular in urban areas, that there has been a significant decrease in traffic volumes for part of 2020, and a change in traffic patterns. Department for Transport (DfT) data suggests that reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels. It has also been estimated by the Air Quality Expert Group (AQEG) that during the first lockdown, NO_2 concentrations in urbanised areas decreased up to 30% relative to pre-pandemic levels.

Annual mean NO_2 concentration reductions of up to 29.4µg/m^3 were reported throughout all of the AQMAs, with the greatest reductions, from 10µg/m^3 up to 29.4µg/m^3, being reported in the Edinburgh City Centre AQMA, St John's Road AQMA, Glasgow Road AQMA, and the Great Junction Street AQMA. Increases in concentrations were reported at the following sites:

- 33b (Queens Street No.66), within the Edinburgh City Centre AQMA, reporting an increase of 0.8µg/m^3;
- 69 (London Road/Wolseley Terrace), within the Edinburgh City Centre AQMA, reporting an increase of 3.9µg/m^3;
- 71 (Portobello High Street W 185), outside any AQMA, reporting an increase of 2.0µg/m^3; and
- 143a (Hamilton Place/Stockbridge Library), outside any AQMA, reporting an increase of 1.0µg/m^3.

With the increases in concentrations being low, the impact of all these listed above is considered to be relatively insignificant. Nearby traffic control changes, roadworks and resurfacing are likely to have been the cause of these increases. Despite this, no new exceedances were reported as a result.

Whilst all other sites were reported to be compliant, likely due to decreasing traffic volumes, monitoring site 81 continued to report an exceedance. During 2020 there were road network and junction adjustments taking place nearby in order to facilitate as a

diversion route for tram construction work taking place. This may have therefore caused an increase in congestion in the area, resulting in the continued exceedance even with lower overall volumes of traffic.

Compliance has been achieved at periphery monitoring locations of the Central AQMA for more than three years, including sites 80, 80a, 80h, 80g, ID4 and 80c along the Gorgie Road, as well as sites 77, 77b and 77a along the Slateford Road. The Council will consider any amendments that could be made to the boundary of the AQMA, following the implementation of the proposed LEZ.

Annual mean NO_2 concentrations within the Great Junction Street AQMA have reported concentrations to be below the AQS objective for four years running. Previous to 2020, concentrations here were gradually decreasing.

Within the Inverleith Row AQMA, there has now been three consecutive years of compliance.

TRENDS

Trend analysis has been undertaken at all automatic monitoring locations using the 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, 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	Trend in Annual Mean NO_2 (Years)	Concentrations of NO_2
St Leonard's	Urban background	(2008 to 2020) ↓	Decreasing
Currie	Suburban	(2010 to 2020) →	Stable
Gorgie Road	Roadside	(1999 to 2020) ↓	Decreasing
Salamander St.	Roadside	(2009 to 2020) ↘	Slightly decreasing
Queensferry Rd	Roadside	(2011 to 2020) ↓	Decreasing
St John's Road	Kerbside	(2007 to 2020) ↓	Decreasing
Glasgow Road	Roadside	(2012 to 2020) ↘	Decreasing

Trend analysis of the annual mean NO_2 concentrations continues to show that at all sites, with the exception of Currie, report a decrease. St John's Road is showing the greatest average decrease of 3.2µg/m3 each year. The NO_2 concentrations at the Suburban site of Currie has remained relatively consistent since 2010, even with consideration of the 2020 data impacted by COVID-19. It is also important to note that the data capture at Currie was 34% in 2020, although annualization has been carried out there is an increased uncertainty in the accuracy of this concentration.

Using the Trend Level tool, monthly averaged hourly concentrations are displayed for each year where monitoring data is available and highlights during which hours of the day, and which months, that the measured NO_2 concentrations are greatest. This shows that in general there has a been an overall improvement across all continuous monitoring locations. This also highlights that, where data is available, that NO_2 concentrations in the months of April through to July/August in 2020 were considerably lower than other years. At some sites, notable St John's Road, there is a sudden drop off from March to April, and gradually increases again as the year progresses, as expected reflecting the sudden drop in traffic levels observed during the first lockdown. Additionally, the winter months generally experience higher concentrations of NO_2 than the summer months, due to the natural relationship and reactions between Sunlight/ozone and NO_x alongside a higher

volume of private vehicle trips taking place, but concentrations in 2020 continue to appear to be reduced when compared to previous winter periods.

Regression analysis of the average of all 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	Trend in Annual Mean NO_2 (Years Included)	Concentrations of NO_2
Central AQMA	(2008 to 2020) ↓	Decreasing
Great Junction Street AQMA	(2008 to 2020) ↓	Decreasing
St John's Road AQMA	(2008 to 2020) ↓	Decreasing
Glasgow Road AQMA	(2009 to 2020) ↓	Decreasing
Inverleith Row AQMA	(2011 to 2020) ↓	Decreasing

Similarly to that reported in the 2020 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.

3.1.4 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 2020, all monitoring sites had relatively good data capture of at least 80%, with the exception of Glasgow Road which had a data capture of 73.7%. Annualisation was therefore carried out on the data reported from Glasgow Road. New FIDAS monitors analysers were installed in December 2020 at the Currie, Salamander Street, and Glasgow Road continuous monitoring locations to measure PM_{10} and $PM_{2.5}$, in order to replace the ageing TEOMs.

All monitoring locations reported concentrations below the annual mean AQS objective for PM_{10} (18µg/m^3) in 2020, with Salamander Street reporting the maximum annual mean concentration of 14.8µg/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 and Queensferry Road both reporting the maximum of two 24-hour periods with an average greater than 50µg/m^3. This is based on data corrected using Edinburgh's local gravimetric factor of 1.14.

With the exception of the monitoring locations at Queensferry Road and Nicolson Street, annual mean PM_{10} concentrations had decreased from that reported in 2019, with anaverage decrease of 2.7µg/m^3. Decreases are likely due to the impact of COVID-19 lockdown measures,not just as a result of reduced traffic volumes but also through the reduction of activities of non-traffic related PM sources, for example construction work. .. Both Queensferry Road and Nicolson Street sites had a low data capture in 2019 (Queensferry Road – 22.2%; Nicolson Street – 5.6%) and therefore annual mean concentrations cannot be accurately compared

TRENDS

Trend analysis has been undertaken at all automatic monitoring locations using the 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 PM_{10} concentrations, with the exception of ID5 St John's Road, which began monitoring in 2017 and EDNS Nicolson Street and ED012 Tower Street which both began monitoring in 2019.

Graphs are shown in Appendix A – Figure A.4 and Figure A.5. 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	Trend in Annual Mean NO_2 (Years)	Concentrations of NO_2
St Leonard's	Urban background	(2008 to 2020) ↘	Slightly decreasing
Currie	Suburban	(2010 to 2020) ↘	Slightly decreasing
Salamander St.	Roadside	(2009 to 2020) ↘	Slightly decreasing
Queensferry Rd	Roadside	(2011 to 2020) →	Stable
Glasgow Road	Roadside	(2012 to 2020) →	Stable

Trend analysis of the annual mean PM_{10} concentrations continues to show that at all sites, with the exception of Queensferry Road and Glasgow Road, report a slight decrease in concentrations over their monitoring periods. Salamander Street 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, even with consideration of the 2020 data impacted by COVID-19. These sites did however show a decrease in concentration in 2020 from 2019, which is to be expected with decreased traffic volumes and potentially reductions from other PM sources such as

from construction/industrial processes which were also observed to cease during the initial national lockdown.

Using the Trend Level tool, monthly averaged hourly concentrations are displayed for each year where monitoring data is available and highlights during which hours of the day, and which months, that the measured PM_{10} concentrations are greatest. This shows that in general there has a been little improvement in the reduction of PM_{10} concentrations in recent years at monitoring locations Currie, Glasgow Road and Queensferry Road. A more notable decrease is observed at Salamander Street and St Leonards. PM_{10} concentrations are generally higher between the hours of 08:00 and 20:00, when there is expected to be higher volumes of traffic and work activity. This pattern is not as noticable at St Leonards and Currie, due to being Urban Background and Suburban sites and situated further from busy roads and other sources – PM10 is less likely to be dispersed over significant distances unless favourable meteorological conditions allow. There has also been a notable difference in 2020 compared to previous years, whereby throughout the year at all monitoring sites (except Currie) patterns have changed and concentrations are lower. This is again likely due to the COVID-19 pandemic and its impacts on traffic flows/volumes and potential reductions in other PM generating activities.

3.1.5 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.

New monitors were installed in in the final quarter of 2019 at both Nicolson Street and Queensferry Road, therefore 2020 is the first year in which a full set of $PM_{2.5}$ data is available at these sites. 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 5.2µg/m^3 being reported at Queensferry Road.

Trend analysis has been carried out for monitoring at St Leonards, the only site with more than five years' worth of monitoring data, using the Excel simple regression statistical program. Graphs are shown in Appendix A, Figure A.6 and Figure A.7. Trend analysis shows that there is a general downward trend (decreasing concentrations) at this site.

3.1.6 Sulphur Dioxide (SO_2)

Table A.13 in Appendix A compares the ratified continuous monitored SO_2 concentrations for year 2020 with the air quality objectives for SO_2. There were no exceedances in any of the objectives, which is consistent with previous years.

3.1.7 Other Pollutants Monitored

The following pollutants were also monitored in the City at the urban background (AURN) site at St Leonard's in 2019. The data is presented in Appendix A. The UK and Scottish Governments and Devolved Administrations are responsible for the review and assessment of these pollutants.

3.1.7.1 Ozone (O_3)

Table A.14 in Appendix A presents the ratified continuous monitored Ozone concentrations from 2016 to 2020 with the air quality objectives. There were a total of three 8-hour periods in which the average concentrations exceeded 100µg/m^3. This is below the AQS objective where the exceedance limit is 10.

3.1.7.2 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 2020. Monitoring is undertaken using a Digitel sampler. Concentrations since 2009 are shown Table A.15.

4 New Local Developments

Planning applications can be found on the Council's website here: https://www.edinburgh.gov.uk/planningcomments using the reference numbers detailed below with each case.

Road Traffic Sources

The Edinburgh Tram extension from the city centre to Newhaven is currently undergoing construction. The project will connect Leith and Newhaven to the current end of the tram line at York Place with eight new stops. Construction began in November 2019 and trams are timetabled to take their first passengers to and from Newhaven in Spring 2023. New temporary traffic management measures introduced in the area in order to create diversion routes during tram construction work will have affected traffic flows and caused increases in congestion on certain routes including London Road and Easter Road. Construction work was paused during the March 2020 lockdown, however work recommenced on 22 June 2020 following the decision from Scottish Government to allow the construction industry to restart. Information here: https://www.edinburgh.gov.uk/tramstonewhaven/

Traffic volumes overall have been significantly down in 2020 across Edinburgh due to the COVID-19 pandemic and resultant restrictions on travel and work. See Chapter 6 for a comparison of 2019 and 2020 traffic volumes.

The Council has approved plans in 2021 for the trial of two Low Traffic Neighbourhood (LTN) schemes in Leith and Corstorphine which will be introduced in 2022. The schemes, which are part of two wider projects to reduce through traffic in the local areas and provide segregated cycleways and associated street improvements (Leith Connections and Corstorphine Connections) include within their boundaries the Great Junction Street & Salamander Street AQMAs and the St John's Road AQMA. In its design phase, traffic modelling for different scenarios undertaken as part of the Leith project predicted increases in journey times (delays) along the Great Junction Street/Commerical Street corridor, varying from slight to a doubling, depending on the degree of road closures as part of the LTN. The option selected by the project team including road closures will therefore be implemented on a trial basis, using an Experimental Traffic Regulation Order (ETRO) once the Trams to Newhaven construction work and associated traffic

management at the Foot of the Walk has been completed. Similarly, the Corstorphine LTN will be progressed as a trial using ETROs. The project team will assess air quality impacts throughout both trials using a combination of diffusion tubes and air quality sensors.

A proposed new access road to Edinburgh Airport Main Terminal 1 from the Gogar Roundabout A8 21/00217/FUL was refused permission by the Council in 2021 as this was deemed contrary to the West Edinburgh Strategic Design Framework and LDP Proposal T9, to safeguard the Gogar Link Road. Although the principle of a new access road serving the airport is supported by the LDP, the proposal would not achieve coordinated development, the route alignment would be prejudicial to the delivery of the Gogar Link Road and potentially require the delivery of a second route to achieve the objectives of the LDP.

Other Transport Sources

Since the Annual Progress Report 2020 there have been none of the following identified as being new:

- Airports.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

Since the 2019 Annual Progress Report complaints of both noise and fumes have continued to be received by Network Rail and Environmental Health regarding the regular running of a stationary diesel maintenance locomotive at Slateford rail depot. As the nearest residential properties are greater than 15m from the boundary of the site, the LAQM screening criteria had previously ruled out a risk of exceedance of the relevant sulphur dioxide air quality objective. Network Rail have been undertaking air quality monitoring, which includes nitrogen dioxide, during 2021.

Industrial Sources

Due to a cyberattack on SEPA IT systems in December 2019, SEPA were only able to provide limited information regarding the permitting of industrial sources in the Edinburgh area in 2020. SEPA have advised that there were no changes to PPC Part A installations

(emissions to air, land and water). There are unable to provide information regarding PPC Part B (emissions to air only) permitting sites.

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.

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 primary CHP plant at the University of Edinburgh's Pleasance site comprises 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. The installation does not include any NOx abatement technology, having been approved, installed and part-operational in 2013. Initial screening of the plant indicates a contribution from the CHP 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 are continuing to consider options for the engine operation, particularly whether it can operate to a low NOx specification. The Council commenced monitoring of NO_2, in January 2017 by installing a number of passive diffusion sites in the Pleasance area during 2017, 2018 and 2019. Results show that concentration are in keeping with general background levels in the area.

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).

SEPA have reported no new or significantly changed CHP or Biomass plants with the Council's administrative area over the past year.

Smoke Control Orders cover the entire City of Edinburgh Council area. There are currently no areas where significant coal burning takes place.

New Developments with Fugitive or Uncontrolled Sources

Due to the cyberattack, SEPA has been unable to provide an update on new landfill sites, quarries, unmade haulage roads on industrial sites or waste transfer stations with the Edinburgh boundary over the past year.

Since lockdown restrictions have eased for the construction industry, there has been significant construction works in the Leith area, including works associated with the Edinburgh tram extension to Newhaven (route along Leith Walk, Constitution Street and Ocean Drive) and groundworks on the new residential development sites in Salamander Street covering areas either adjacent to or within the AQMA declared for exceedances of PM_{10} from various sources including fugitive emissions, industrial, and traffic. Since December 2020 there have been several dust complaints relating to the temporary storage of construction material at two satellite sites used for the tram construction, at the Powderhall and in Ocean Way sites. Investigation into the complaints has established that although there has been stockpiling of aggregate materials, most dust has been generated from the traffic and lorries moving about the sites. The Powderhall site is no longer being used and Environmental Health have been engaging with the Ocean Way site operator who is undertaking dust monitoring.

Through the Planning process developers are expected manage dust through the appropriate suppression methods, as appropriate.

Although these construction activities are within or near to the PM_{10} AQMA the statutory PM objectives in 2020 were not breached. As lockdown restrictions in 2021 have eased and activities have returned to almost pre pandemic levels, with the ongoing construction

work in the locality it is expected measured PM concentrations for this year will be higher. Monitoring at the two automatic sites in the AQMA will continue.

Additional monitoring with sensor technology is being considered in and 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 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 2022. 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

Planning applications can be found on the Council's website here: https://www.edinburgh.gov.uk/planningcomments using reference numbers detailed below with each case.

Planning permission for a proposed mixed-use development including student accommodation and affordable housing (20/00465/FUL), within the Salamander Street AQMA for PM_{10} was granted against the recommendation of the Environmental Health service due to concerns over the poor level of amenity in regard to air quality and noise (discussed previously in 2020 Annual Progress Report) and the creation of a new road canyon. However, Dalton's metal recycling yard (SEPA licence WML/E/0000112) located on the site will require to cease operations, have all associated plant and machinery removed prior to any development work commencing as a condition of the granted consent. The removal of the scrapyard from the area can be seen as a gain for residential amenity in terms of removal of a noise and particulate emissions source.

A proposal of application notice was received by the Council in 2020 for a proposed renewable energy development and storage at an area of South Edinburgh west of Kaimes (20/02823/PAN). This is an area which has been earmarked for further residential development (LDP). The proposal comprised of photovoltaics, battery storage and flexible use of gas engines, which were defined as necessary to ensure continual charging. The proposal was approved for consultation with community council in July 2020. The use of gas in the scheme will result in NOx emissions, in an area which may be developed with housing in the future. An air quality impact assessment will be required for consideration as part of the application process.

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 has since entered a statutory period of representations prior to its submission 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 also.

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;

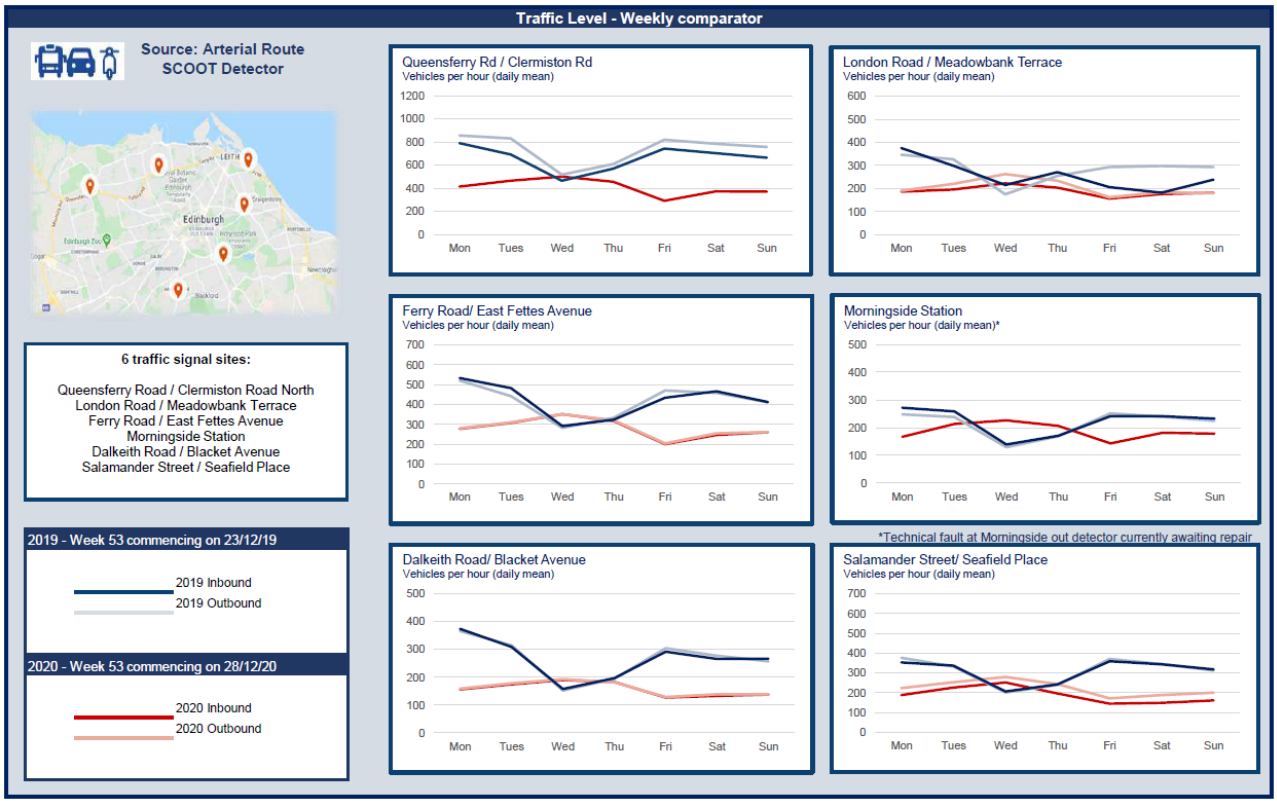
- the delivery of Edinburgh tram;
- access to bus services and park and ride facilities;
- improvements to the public realm and other pedestrian and cycle actions; and,
- traffic management, including junction improvements.

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 Impact of COVID-19 upon LAQM

As detailed in Section 3, there have been significant decreases observed across the City in NO_2 concentrations throughout 2020. This is largely attributed to a decrease in traffic volumes as a result of the COVID-19 pandemic, whereby the UK and Scottish Governments enforced numerous lockdowns and restrictions in order to prevent the spread of the virus. At a high level, traffic levels within Edinburgh have been compared, as shown in Figure 6.1. This shows that at the traffic monitoring locations around the city, 2020 traffic volumes have been lower throughout the majority of each week when compared to 2019.

Figure 6.1 – Average Weekly Comparison of Traffic Volumes, 2019 vs 2020



Diffusion tube monitoring was not able to be carried out for the March, April and May monitoring periods, due to the impact on analytical labs and to allow for work practices to be reviewed and adapted to enable officers to undertake the work safely in response to the COVID-19 pandemic. 38.5% of diffusion tube sites required annualisation due to this.

To better enable physical distancing the Scottish Government (Sustrans) funded the Spaces for People initiative which provided pop-up walking and cycling routes and temporary improvements to existing routes. Edinburgh was granted over £5 million to make the temporary changes, which included 39 km of segregated cycle infrastructure, 54 measures around schools to give more space to physically distance and removing street clutter. The Council intends to retain some of the measures following public consultation to help contribute to its objectives including giving people greater choice in how they move around the city.

Review of the diffusion tube network will consider the positioning of monitoring points in cases where the temporary schemes to widen pavements or create cycleways at such locations are to be made permanent.

Cycling trips increased across the city during the pandemic – cycle counters measured a 30% increase in trips during May 2020 compared to May 2019, and a 28% increase in June 2020 from June 2019.

7 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

Analysis of the monitoring results for NO_2 shows that the annual mean objective continues to be exceeded at one location in 2020.

In previous years, and in particular 2019, numerous exceedances were reported across the City. Significant decreases in annual mean NO_2 concentrations up to 29.4µg/m^3 were observed in 2020, likely resulting from the impacts of the COVID-19 pandemic whereby traffic volumes were observed to have decreased. Conversely some locations have experienced slight increases in concentrations. Although it is unknown what has caused this, it is believed to be due to traffic control changes/roadworks taking place nearby.

Site ID81 - London Road/East Norton Place exceeeded the objectives in 2020. Congestion in this area as a consequence of traffic diversons to facilitate tram construction work is likely to have resulted in the continued exceedence of the annual objective at this site despite overall reduction in traffic volumes.

No new locations reported exceedances in 2020.

Annual mean NO_2 concentrations within the Great Junction Street AQMA have reported concentrations to be below the AQS objective for four years running. Previous to 2020, concentrations here were gradually decreasing. Significant road network changes are due in the area due to the extension of the trams network and proposed Low Traffic Neighbourhood. The Council therefore will consider revoking the Great Junction Street AQMA once the impact of this is known.

Within the Inverleith Row AQMA, there has now been three consecutive years of compliance, with annual mean concentrations being below 36µg/m^3 (10% of the AQS objective). Prior to this in 2017, concentrations were at the objective. Results from additional sites in the AQMA, established in 2020 (Inverleith Gardens), also show the annual mean concentrations well below the objective. Results of air quality dispersion and emissions modelling undertaken as part of the NMF for the LEZ programme, has predicted that NOx emission rates decline by 7-8% when compared to the 2019 Base scenario. This

is likely to be due to buses and taxis moving to full compliance so they can operate within the city centre LEZ. The 2019 base scenario predicted air dispersion modelling predicted concentrations at *kerbside points* to be around the 40 μgm^{-3} threshold, however monitoring at relevant receptors identified 40 μgm^{-3} in 2017. Nonetheless, the modelling predicted NO2 concentrations decline slightly (1μgm^{-3}) at the kerbside with the City Centre LEZ implementation (base 2019 scenario) and around 10 μgm^{-3} reduction with the 2023 scenario (see Appendix C & E). With an expected introduction date for a city centre LEZ of May 2022 it is anticipated that compliance with the objectives will continue to be achieved. Therefore, the Inverleith Row AQMA will be revoked. The Council will continue to monitor at all existing locations within the current AQMA following revocation.

No diffusion tube monitoring locations reported an annual mean concentration during 2020 in excess of 60 $\mu g/m^3$, suggesting that there has not been any exceedances of the hourly mean objective. There were no hourly concentrations reported in excess of 200 $\mu g/m^3$ 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, this AQMA designation will be revoked.

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 2020, there are no breaches of the AQS objectives, including those sites within the Salamander Street AQMA since the first time since the AQMA was declared. Overall, there is a general decreasing trend in both PM_{10} and $PM_{2.5}$ concentrations reported across Edinburgh.

Conclusions relating to New Local Developments

The air quality impact of cumulative development, especially large proposals with associated car-parking, is a concern for the Council, in terms of air quality impact and the risk of increasing roadside NO_2 concentrations. The assessment of New Local Developments highlights a number of traffic-generating developments in densely populated areas in Edinburgh North. Additionally, new sensitive receptors (especially residential) may also be subject to levels of pollution from existing and proposed neighbouring uses, especially in the vicinity of industrial and fugitive sources of PM_{10}.

The introduction of new sensitive receptors with new local development is also proposed adjacent to sources of NO_2.

The Council will need to consider long term monitoring of NO_2 and particles in areas where new residential exposure will be introduced.

In terms of SEPA regulated processes, the Council has requested that should there be any applications for permitted processes within the Salamander Street AQMA, that consultation with the Council is undertaken.

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 timescales for the preparation and delivery of the new plan have been affected by the Covid 19 pandemic. City Plan 2030 has been prepared following responses to the Choices Main Issues Report published in 2020. The proposed Plan has since been approved by the Council's Planning Committee in September 2021. Before the Plan can be adopted, it is required to undergo a statutory period of representations prior to submission to Scottish Ministers for Examination.

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

The Edinburgh St James' project which commenced construction phase following the closure of the St James Shopping Centre in October 2016 is nearing completion, with the opening of a galleria style retail mall in June 2021. The development, named the St James Quarter, sits within the City Centre AQMA and includes a car park of over 1600 spaces, 45 of which have electric vehicle charging points. The positioning of the new shopping centre has created a street canyon between buildings on Leith Street, which risks introducing new exceedances in the AQMA. Existing NO_2 monitoring in this area will continue.

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.

Proposed Actions

The report provides an annual update on the most recently available annual air quality monitoring data (2020), local pollutant trends and emerging issues, fulling the requirement of the statutory Local Air Quality Management Framework.

For the fourth consecutive year, Great Junction Street AQMA has reported no breaches in the annual NO_2 objective. Previous to 2020, concentrations here were gradually decreasing. Significant road network changes are due in the area due to the extension of the trams network and proposed Low Traffic Neighbourhood. Therefore, the Council will continue to monitor here and consider revoking this AQMA once the impacts of these are known.

Within the Inverleith Row AQMA, there has now been three consecutive years of compliance, with annual mean concentrations being below 36µg/m^3 (10% of the AQS objective). Prior to this in 2017, concentrations were at the objective. Additional monitoring from January 2020 is consistent with results of the existing sites and well below the objective. Air quality modelling of the area has furthermore predicted a sustained and step reduction of NO_2 concentrations if the Low Emission Zone as proposed becomes operational. The Council therefore intends to revoke the Inverleith Row AQMA.

The revision of the existing NO_2 Air Quality Action Plan (2008) has started and will be progressed in conjunction with the Low Emission Zone proposals, which will become a significant measure within the plan.

The Council continues to work with SEPA, Transport Scotland and Scottish Government to develop and finalise a LEZ proposed scheme to be implemented in Edinburgh in May 2022.

The Council is in the process of amending the St Johns' Road AQMA Order to remove the NO_2 hourly designation as there continues to be no breach of the hourly mean objective within the AQMA.

Additional monitoring around the St John's Road AQMA will be undertaken to consider the impact of the proposed LTN.

The Council intends to reconvene the PM_{10} AQAP Steering Group in order to finalise a Draft AQAP for consultation in 2022. PM_{10} and $PM_{2.5}$ monitoring data shows that for all locations in 2020, there are no breaches of the air quality objectives including within the Salamander Street AQMA, for the first time since its declaration. 2020 concentrations are likely to have been impacted by the reduction in commercial and industrial activity as well as transport due to the pandemic. Although overall, there is a general decreasing trend in both PM_{10} and $PM_{2.5}$ concentrations reported across Edinburgh.

The Council will develop new PM monitoring with sensor technology, around the Salamander Street AQMA and at locations representative of new or proposed properties near Leith Docks (West).

The following summary details several key existing action plan measures and additional measures further to those above which will continue to be taken forward during 2021 and 2022:

- Continue ECO Stars scheme,
- Continue the roll out of telematics across the Council Fleet,
- Complete ongoing SCOOT development and repair work,
- Complete the installation of on-street electric vehicle charging bays across the city to enhance the existing network, and;
- Continue support for the Active Travel Action Plan.

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

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)
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
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.

(3) Distance to nominal kerb, due to parking bay/parking restrictions/cycle lane in front of monitoring location

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) (4)
13a	Deanhaugh Street/Raeburn Pl	Roadside	324533	674655	NO_2	No	0.0	2.0	No	2.0
57	Glasgow Road 158	Roadside	318185	672756	NO_2	No	8.5	3.6	No	2.0
16a	Glasgow Road 68/ Façade	Roadside	313028	672629	NO_2	No	0.0	6.2	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 Façade/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 (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

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) [4]
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
64a	Queensferry Road 552	Roadside	318698	674964	NO_2	No	0.0	10.5	No	2.0
64C	Queensferry Road 554 Façade	Roadside	318687	674966	NO_2	No	0.0	10.0	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 – City Centre	2.3	0.2	No	2.0
22a	Roseburn Terrace Wbound	Kerbside	322984	673189	NO_2	Yes – City Centre	1.7	2.5 [3]	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

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) (4)
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
76c	Angle Park Terrace 25	Roadside	323587	672360	NO_2	Yes – City Centre	0.0	4.8	No	2.0
76b	Angle Park Terrace 74 2M East	Roadside	323527	672285	NO_2	Yes – City Centre	0.0	2.1	No	2.0
76	Angle Park Terrace/Harrison Road	Roadside	323498	672263	NO_2	Yes – City Centre	0.0	2.2	No	2.0
76a	Ardmillan Terrace 22	Roadside	323487	672287	NO_2	Yes – City Centre	0.0	2.2	No	2.0
80e	Balgreen Rd/Library	Roadside	322110	672268	NO_2	No	0.0	2.0	No	2.0
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 – City Centre	0.0	2.3	No	2.0
79a	Fountainbridge 103	Roadside	324731	672984	NO_2	No	0.0	2.2	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 – City Centre	0.0	2.6	No	2.1
18	Gorgie Road 8	Roadside	323477	672476	NO_2	Yes – City Centre	0.0	2.4	No	2.0
80c	Gorgie Road 87	Roadside	323265	672394	NO_2	Yes – City Centre	0.0	2.5	No	2.0
80f	Gorgie Road No160	Roadside	323141	672345	NO_2	Yes – City Centre	0.0	3.2	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) [4]
80g	Gorgie Road No173	Kerbside	323083	672311	NO_2	Yes-City Centre	2.9	1.8 [3]	No	2.0
80b	Gorgie Road 549	Roadside	321724	671557	NO_2	Yes – City Centre	0.0	2.5	No	2.0
80a	Gorgie Road/Glen Lea	Roadside	322381	671950	NO_2	Yes – City Centre	0.0	2.6	No	2.0
5	Gorgie Road/Murieston Road	Kerbside	323484	672478	NO_2	Yes – City Centre	4.9	0.3	No	2.0
76d	Henderson Terrace	Roadside	323632	672449	NO_2	Yes – City Centre	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 – City Centre	0.0	2.3	No	2.0
77b	Slateford Road 93/95	Roadside	322999	671876	NO_2	Yes – City Centre	0.0	2.6	No	2.0
77	Slateford Road 97	Roadside	322960	671846	NO_2	Yes – City Centre	0.0	2.7	No	2.0
80h	Wardlaw Street No2	Roadside	323065	672295	NO_2	Yes – City Centre	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) [4]
						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 – City Centre	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 – City Centre	0.0	2.8	No	2.0
25	Easter Road/CH shop	Roadside	326934	674503	NO_2	Yes – City Centre	0.0	2.3	No	2.0
25b	Easter Road/Rossie Place	Roadside	326950	674624	NO_2	Yes – City Centre	0.0	3.3	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) [4]
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 [3]	No	2.0
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
30d	Great Junction Street/WC opp 137	Roadside	326757	676144	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 – City Centre	0.0	4.5	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) [4]
20	Leith Walk/McDonald Road	Roadside	326361	674882	NO_2	Yes-City Centre	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-City Centre	0.0	5.7 [3]	No	2.0
67	London Road/Earlston Place	Roadside	327190	674433	NO_2	Yes – City Centre	0.0	2.7	No	2.0
81	London Road/East Norton Place	Roadside	326980	674446	NO_2	Yes – City Centre	0.0	2.5	No	2.0
116	London Road/Jocks Lodge 23a	Roadside	328245	674166	NO_2	Yes-City Centre	0.0	2.3	No	2.1
46	London Road/junct Easter Road	Roadside	326944	674472	NO_2	Yes – City Centre	0.0	5.6	No	2.0
68	London Road/Parson's Green Ter	Roadside	328042	674179	NO_2	Yes – City Centre	0.0	2.7	No	2.0
69	London Road/Wolseley Place	Roadside	328272	674143	NO_2	Yes – City Centre	0.0	2.6	No	2.0
70	London Road/Wolseley Terrace	Roadside	328337	674129	NO_2	Yes – City Centre	0.0	4.6	No	2.0
32	Niddrie Mains Road 28	Kerbside	328889	671649	NO_2	No	4.7	2.6 [3]	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

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) [4]
73d	Portobello Rd façade 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
72	Seafield Road East 10	Roadside	329993	674457	NO_2	No	0.0	4.5	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
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 [3]	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 – City Centre	0.0	2.4	No	2.0
48a	Cowgate/Blair Street	Roadside	325929	673490	NO_2	Yes – City Centre	0.0	3.2	No	2.0
48	Cowgate/Guthrie Street	Roadside	325881	673471	NO_2	Yes – City Centre	0.0	4.5	No	2.0
48e	Cowgatehead 2	Roadside	325537	673405	NO_2	Yes – City Centre	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

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) [4]
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
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 – City Centre	0.0	6.8	No	2.0
37ai, 37aii	Grassmarket 41	Roadside	325401	673340	NO_2	Yes – City Centre	0.0	3.4	No	2.0
37b	Grassmarket 75	Roadside	325471	673369	NO_2	Yes – City Centre	0.0	5.0	No	2.0
37c	Grassmarket/nrThomsons Court	Background	325397	673377	NO_2	No	0.0	22.8 [3]	No	2.0
75e	Gt Stuart Street 9	Roadside	324476	673967	NO_2	No	0.0	9.4 [3]	No	2.0
HT1	Haymarket Terrace North side	Roadside	323985	673219	NO_2	Yes – City Centre	0.0	3.7	No	2.0
HT2	Haymarket Terrace South side	Kerbside	323787	673212	NO_2	Yes – City Centre	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-City Centre	3.5	1.3	No	2.0
17a	Hope Park Terrace/VS	Roadside	326312	672614	NO_2	Yes-City Centre	0.0	5.0	No	2.0
149a	Howden Hall Road 79	Roadside	327383	668079	NO_2	No	0.0	4.5	No	2.0
34	India Street	Background	324790	674341	NO_2	No	N/A	2.5 [3]	No	2.1
8B	Lauriston Place Opp119	Roadside	324989	673016	NO_2	No	0.0	4.9	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) [4]
74g	Leith Street News Room Pub	Roadside	325897	674051	NO_2	Yes – City Centre	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 – City Centre	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 – City Centre	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
62C	Morrison Street 91	Roadside	324541	673183	NO_2	Yes – City Centre	0.0	2.4	No	2.0
49	Morrison Street	Roadside	324167	673249	NO_2	Yes – City Centre	2.4	2.2	No	2.0
135b	Nicolson Street 69	Roadside	326099	673140	NO_2	Yes – City Centre	0.0	2.8	No	2.0
136	Nicolson Street 92	Roadside	326164	673054	NO_2	Yes- City Centre	0.0	5.7 [3]	No	2.0
95	Palmerston Place 28/Lansdowne Cres	Kerbside	324105	673457	NO_2	No	5.0	0.8	No	2.0
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 – City Centre	0.0	3.5	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) [4]
47	Princes Street (Eastbound)	Roadside	325049	673791	NO_2	Yes – City Centre	6.5	9.0	No	2.0
24	Princes Street/Mound	Kerbside	325397	673869	NO_2	Yes – City Centre	10.2	1.0	No	2.0
33b	Queen Street No66	Roadside	324837	674053	NO_2	Yes – City Centre	0.0	7.0	No	2.0
33a	Queen Street/Albyn Pl	Roadside	324817	674077	NO_2	Yes – City Centre	0.0	6.0	No	2.0
33	Queen Street/North David Street	Roadside	325467	674229	NO_2	Yes – City Centre	0.0	6.5	No	2.0
SH1	Shandwick Place Hostel	Roadside	324513	673556	NO_2	Yes – City Centre	0.0	2.5	No	2.0
144	South Bridge 59	Roadside	326020	673370	NO_2	Yes- City Centre	0.0	2.3	No	2.0
142	South Clerk Street 41a	Roadside	326367	672554	NO_2	Yes- City Centre	0.0	2.0	No	2.0
141	South Clerk Street 84	Roadside	326383	672472	NO_2	Yes-City Centre	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
153	New Arthur Place 4	Background	326365	673310	NO_2	No	0.0	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 – City Centre	0.0	4.8	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) [4]
3	Torphichen Place/Chiropractice	Roadside	324258	673295	NO_2	Yes – City Centre	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 – City Centre	0.0	2.7	No	2.0
28b	West Port 62	Roadside	325166	673242	NO_2	Yes – City Centre	0.0	1.4	No	2.0
28c	West Port Opp 50	Roadside	325184	673261	NO_2	Yes – City Centre	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 – City Centre	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

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) (4)
CL16, CL17, CL18	Nicolson Street	Roadside	326151	673041	NO_2	Yes – City Centre	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.

(3) Distance to nominal kerb, due to parking bay/parking restrictions/cycle lane in front of monitoring location.

(4) Tube height has not been measured. All tubes are estimated to be at 2m height.

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 2020 (%) (2)	2016	2017	2018	2019	2020
ID4	Gorgie Road	Roadside	Automatic	92.4	92.4	33	30	28	27	18.4
ID5	St. John's Road	Kerbside	Automatic	99.4	99.4	**53**	**53**	**43**	**41.9**	25.6
ID6	Currie High School	Suburban	Automatic	33.7	33.7	7	6	8	9.9	5.3
ID7	St. Leonard's	Urban Background	Automatic	88.0	88.0	23	20	18	20.8	13.7
ID8	Salamander Street	Roadside	Automatic	65.4	65.4	27	25	25	24.3	19.5
ID9	Queensferry Road	Roadside	Automatic	99.2	99.2	**42**	-	**52**	36.9	25.8
ID10	Glasgow Road	Roadside	Automatic	97.7	97.7	28	26	26	25.2	15.4
EDNS	Nicolson Street	Kerbside	Automatic	74.3	74.3	-	-	**51**	**50.4**	27.2
13a	Deanhaugh Street/Raeburn Pl	Roadside	Diffusion Tube	75.0	75.0	26.0	23.0	26.0	22.1	15.4
57	Glasgow Road 158	Roadside	Diffusion Tube	65.4	65.4	**41.0**	33.0	38.0	31.9	23.8
16a	Glasgow Road 68/ Façade	Roadside	Diffusion Tube	100.0	7.7	36.0	30.0	-	29.1	-
16	Glasgow Road 68/adj	Roadside	Diffusion Tube	75.0	75.0	**45.0**	**40.0**	**46.0**	**40.9**	26.7
15a	Glasgow Road Façade/9	Roadside	Diffusion Tube	75.0	75.0	33.0	35.0	38.0	32.0	17.3
58i, 58ii	Glasgow Road Newbridge R'about	Roadside	Diffusion Tube	75.0	75.0	**49.0**	**51.0**	**52.0**	**46.0**	29.2
15	Glasgow Road Newbridge R'about/3	Roadside	Diffusion Tube	75.0	75.0	**44.0**	**44.0**	**44.0**	39.2	24.3
56	Glasgow Road/Drumbrae R'about	Roadside	Diffusion Tube	57.7	57.7	32.0	31.0	32.0	25.3	14.3
143a	Hamilton Place/Stockbridge Library	Roadside	Diffusion Tube	75.0	75.0	33.0	28.0	27.0	25.0	26.0
41	Hillview Terrace	Background	Diffusion Tube	75.0	75.0	20.0	17.0	18.0	16.7	11.3
121	Inverleith Gardens 2	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	24.1
122	Inverleith Gardens 9	Roadside	Diffusion Tube	67.3	67.3	-	-	-	-	27.1
55c	Inverleith Row/Café Montague	Roadside	Diffusion Tube	75.0	75.0	29.0	23.0	24.0	23.9	16.1
55i, 55ii	Inverleith Row/Ferry Road	Roadside	Diffusion Tube	75.0	75.0	**41.0**	**40.0**	34.0	33.4	26.2
129B	Queensferry Road/Ramsay Grange	Roadside	Diffusion Tube	63.6	57.7	-	-	-	-	13.6

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
63A	Queensferry Road 540	Roadside	Diffusion Tube	75.0	75.0	-	-	-	18.0	16.6
64	Queensferry Road 550	Roadside	Diffusion Tube	75.0	75.0	**68.0**	**61.0**	**62.0**	**56.9**	38.4
64b	Queensferry Road 550F	Roadside	Diffusion Tube	75.0	75.0	31.0	32.0	32.0	27.2	20.9
64a	Queensferry Road 552	Roadside	Diffusion Tube	100.0	7.7	29.0	30.0	30.0	26.4	-
64C	Queensferry Road 554 Façade	Roadside	Diffusion Tube	72.7	67.3	-	-	-	-	18.4
69J	Queensferry Road 554 Roadside	Roadside	Diffusion Tube	63.6	57.7	-	-	-	-	35.0
62	Queensferry Road 561	Roadside	Diffusion Tube	75.0	75.0	20.0	18.0	21.0	17.8	13.0
69I	Queensferry Road/Lyle Court	Roadside	Diffusion Tube	50.0	50.0	-	-	-	**40.3**	28.2
40	Queensferry Road/Hillhouse Road	Roadside	Diffusion Tube	75.0	75.0	32.0	28.0	30.0	24.7	19.1
129	Queensferry Road/Hillpark Wood	Roadside	Diffusion Tube	75.0	75.0	-	-	-	15.2	11.4
23	Roseburn Terrace	Kerbside	Diffusion Tube	75.0	75.0	**40.0**	32.0	37.0	35.3	21.0
22a	Roseburn Terrace Wbound	Kerbside	Diffusion Tube	57.7	57.7	-	**43.0**	**42.0**	36.5	23.1
1d	St John's Road 131	Roadside	Diffusion Tube	75.0	75.0	**45.0**	**42.0**	**40.0**	37.7	28.8
1b	St John's Road IR	Roadside	Diffusion Tube	75.0	75.0	36.0	29.0	28.0	27.3	17.4
1	St John's Road SB	Kerbside	Diffusion Tube	57.7	57.7	37.0	32.0	29.0	31.8	16.9
SJ1	St John's Road/Kaimes Road	Kerbside	Diffusion Tube	75.0	75.0	34.0	33.0	31.0	27.7	17.7
39	St John's Road/Victor Park Terr	Roadside	Diffusion Tube	75.0	75.0	36.0	35.0	32.0	30.4	19.1
14	Trinity Crescent	Roadside	Diffusion Tube	75.0	75.0	24.0	22.0	24.0	20.4	17.6
76c	Angle Park Terrace 25	Roadside	Diffusion Tube	75.0	75.0	30.0	30.0	30.0	26.8	21.8
76b	Angle Park Terrace 74 2M East	Roadside	Diffusion Tube	75.0	75.0	**44.0**	39.0	40.0	33.8	25.6
76	Angle Park Terrace/Harrison Road	Roadside	Diffusion Tube	75.0	75.0	**43.0**	35.0	37.0	33.2	22.9
76a	Ardmillan Terrace 22	Roadside	Diffusion Tube	75.0	75.0	31.0	29.0	28.0	27.1	15.4
80e	Balgreen Rd/Library	Roadside	Diffusion Tube	67.3	67.3	33.0	32.0	31.0	28.0	18.5
4a	Calder Road	Roadside	Diffusion Tube	67.3	67.3	30.0	22.0	24.0	22.7	15.4
79d	Dundee Street/Yeaman Place	Roadside	Diffusion Tube	75.0	75.0	39.0	38.0	**40.0**	34.5	24.4

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
79a	Fountainbridge 103	Roadside	Diffusion Tube	75.0	75.0	36.0	31.0	29.0	27.0	18.1
79	Fountainbridge/Tollcross	Roadside	Diffusion Tube	75.0	75.0	36.0	25.0	28.0	29.4	18.6
80	Gorgie Road – Delhaigh	Roadside	Diffusion Tube	57.7	57.7	38.0	34.0	37.0	33.3	20.7
18	Gorgie Road 8	Roadside	Diffusion Tube	75.0	75.0	38.0	35.0	35.0	33.2	22.6
80c	Gorgie Road 87	Roadside	Diffusion Tube	59.6	59.6	34.0	35.0	34.0	27.4	21.3
80f	Gorgie Road No160	Roadside	Diffusion Tube	57.7	57.7	-	-	35.0	32.5	20.0
80g	Gorgie Road No173	Kerbside	Diffusion Tube	67.3	67.3	-	-	39.0	31.1	21.8
80b	Gorgie Road 549	Roadside	Diffusion Tube	50.0	50.0	32.0	28.0	-	28.1	16.5
80a	Gorgie Road/Glen Lea	Roadside	Diffusion Tube	75.0	75.0	31.0	29.0	27.0	25.8	17.3
5	Gorgie Road/Murieston Road	Kerbside	Diffusion Tube	75.0	75.0	**44.0**	**43.0**	**42.0**	33.3	25.6
76d	Henderson Terrace	Roadside	Diffusion Tube	75.0	75.0	33.0	28.0	33.0	28.6	23.0
11a	Lanark Road 425	Roadside	Diffusion Tube	75.0	75.0	-	-	33.0	27.5	20.1
11	Lanark Road 610	Roadside	Diffusion Tube	75.0	75.0	23.0	20.0	20.0	20.5	13.7
77a	Slateford Road 51	Roadside	Diffusion Tube	75.0	75.0	36.0	31.0	32.0	28.2	21.4
77b	Slateford Road 93/95	Roadside	Diffusion Tube	65.4	65.4	36.0	33.0	36.0	34.2	27.2
77	Slateford Road 97	Roadside	Diffusion Tube	75.0	75.0	34.0	29.0	35.0	31.9	21.9
80h	Wardlaw Street No2	Roadside	Diffusion Tube	59.6	59.6	-	-	28.0	27.2	17.5
29a	Bernard Street/opp King Chambers	Roadside	Diffusion Tube	75.0	75.0	37.0	27.0	31.0	27.1	25.0
29ci, 29cii	Bernard Street/PS	Roadside	Diffusion Tube	65.4	65.4	39.0	36.0	37.0	35.4	28.4
29	Bernard Street/Sainsburys	Roadside	Diffusion Tube	75.0	75.0	33.0	32.0	30.0	25.9	21.7
119	Bonnington Rd/Great Junction Street 143	Roadside	Diffusion Tube	67.3	67.3	-	-	-	-	18.2
43	Broughton Road	Roadside	Diffusion Tube	75.0	75.0	34.0	32.0	34.0	29.4	22.0
9d	Commercial Street 0pp Job centre plus	Roadside	Diffusion Tube	75.0	75.0	**42.0**	36.0	35.0	33.6	28.3
9	Commercial Street 88	Roadside	Diffusion Tube	75.0	75.0	32.0	26.0	29.0	26.3	20.6
9a	Commercial Street/Portland Place	Roadside	Diffusion Tube	75.0	75.0	**40.0**	35.0	37.0	32.8	29.2
30f	Duke Street	Roadside	Diffusion Tube	65.4	65.4	38.0	35.0	35.0	32.3	26.9
25c	Easter Road 105/109	Roadside	Diffusion Tube	57.7	57.7	33.0	31.0	33.0	33.2	27.0
25e	Easter Road 198	Roadside	Diffusion Tube	65.4	65.4	27.0	24.0	28.0	25.5	17.9

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
25d	Easter Road/Bothwick	Roadside	Diffusion Tube	67.3	67.3	32.0	29.0	38.0	25.6	21.2
25	Easter Road/CH shop	Roadside	Diffusion Tube	55.8	55.8	**46.0**	38.0	37.0	33.2	25.8
25b	Easter Road/Rossie Place	Roadside	Diffusion Tube	75.0	75.0	35.0	30.0	32.0	30.1	21.5
18A	Ferry Road 203	Roadside	Diffusion Tube	55.8	55.8	-	-	-	31.8	23.1
53	Ferry Road/ 6 Bowhill Terrace	Roadside	Diffusion Tube	67.3	67.3	34.0	34.0	31.0	28.8	22.2
45b	Ferry Road/1 Madeira Street	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	19.5
45d	Ferry Road/North Junction Street	Roadside	Diffusion Tube	75.0	75.0	33.0	33.0	32.0	31.2	25.9
30b	Great Junction Street 137	Roadside	Diffusion Tube	67.3	67.3	33.0	33.0	32.0	30.8	19.7
30c	Great Junction Street 14	Roadside	Diffusion Tube	75.0	75.0	**40.0**	34.0	37.0	33.1	22.7
30e	Great Junction Street/CG junct Pirrie St	Roadside	Diffusion Tube	32.7	32.7	34.0	-	34.0	33.3	20.2
30	Great Junction Street/FV	Roadside	Diffusion Tube	75.0	75.0	**42.0**	32.0	37.0	32.8	23.8
30d	Great Junction Street/WC opp 137	Roadside	Diffusion Tube	67.3	67.3	33.0	33.0	32.0	28.7	19.4
120	Leith Walk 45-47	Roadside	Diffusion Tube	25.0	25.0	-	-	-	-	16.4
21	Leith Walk/Brunswick Road	Roadside	Diffusion Tube	42.3	42.3	**40.0**	38.0	-	30.6	20.0
20	Leith Walk/McDonald Road	Roadside	Diffusion Tube	15.4	15.4	**40.0**	-	39.0	37.9	-
118	Lindsay Road 198-199	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	19.8
66	London Road/Cadzow Place	Roadside	Diffusion Tube	65.4	65.4	32.0	31.0	28.0	29.8	22.5
67	London Road/Earlston Place	Roadside	Diffusion Tube	57.7	57.7	**41.0**	**42.0**	**42.0**	36.9	25.5
81	London Road/East Norton Place	Roadside	Diffusion Tube	75.0	75.0	**57.0**	**41.0**	**43.0**	**50.0**	**44.0**
116	London Road/Jocks Lodge 23a	Roadside	Diffusion Tube	30.8	30.8	-	-	-	-	21.6
46	London Road/junct Easter Road	Roadside	Diffusion Tube	65.4	65.4	39.0	**40.0**	37.0	34.9	22.8
68	London Road/Parson's Green Ter	Roadside	Diffusion Tube	59.6	59.6	31.0	30.0	33.0	28.0	24.6

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
69	London Road/Wolseley Place	Roadside	Diffusion Tube	75.0	75.0	38.0	37.0	38.0	35.4	39.3
70	London Road/Wolseley Terrace	Roadside	Diffusion Tube	75.0	75.0	**40.0**	38.0	**40.0**	37.6	32.3
32	Niddrie Mains Road 28	Kerbside	Diffusion Tube	75.0	75.0	29.0	29.0	28.0	26.4	20.5
9c	North Junction St nr 4	Roadside	Diffusion Tube	59.6	59.6	34.0	36.0	28.0	26.0	17.9
71	Portobello High Street W 185	Roadside	Diffusion Tube	67.3	67.3	31.0	29.0	29.0	25.1	27.1
73d	Portobello Rd façade Ramsay Inst	Roadside	Diffusion Tube	75.0	75.0	36.0	31.0	34.0	31.4	24.4
117	Restalrig Road 1 nr junction	Roadside	Diffusion Tube	67.3	67.3	-	-	-	-	21.4
30X	Rodney Street 31	Roadside	Diffusion Tube	67.3	67.3	-	-	-	25.2	18.0
30A	Rodney Street 10	Roadside	Diffusion Tube	75.0	75.0	-	-	-	32.4	23.3
51b	Salamander Street 29b	Roadside	Diffusion Tube	59.6	59.6	-	-	-	-	20.4
51c	Salamander Street/Baltic Street	Roadside	Diffusion Tube	75.0	75.0	31.0	32.0	31.0	26.5	22.4
72	Seafield Road East 10	Roadside	Diffusion Tube	75.0	75.0	33.0	28.0	31.0	27.5	19.4
10B	Bank Street	Roadside	Diffusion Tube	75.0	75.0	-	-	-	36.5	24.1
44	Broughton Street	Roadside	Diffusion Tube	75.0	75.0	33.0	36.0	30.0	27.4	23.3
8A	Brougham Street 9	Roadside	Diffusion Tube	75.0	75.0	-	-	-	37.7	26.7
6B	Bruntsfield Place 147	Roadside	Diffusion Tube	75.0	75.0	-	-	-	17.8	14.0
6a	Bruntsfield Place 210	Roadside	Diffusion Tube	32.7	32.7	32.0	31.0	31.0	25.4	17.4
48G	Cannongate	Roadside	Diffusion Tube	75.0	75.0	-	-	-	**42.7**	28.0
94	Chester Street 29	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	19.6
138	Clerk Street 15	Roadside	Diffusion Tube	65.4	65.4	39.0	**41.0**	37.0	33.4	27.3
151	Comiston Road No.116	Roadside	Diffusion Tube	75.0	75.0	-	25.0	25.0	21.2	17.3
48f	Cowgate/ 50 St Mary's Street	Roadside	Diffusion Tube	67.3	67.3	38.0	34.0	39.0	34.6	24.0
48c	Cowgate/Blackfriars	Roadside	Diffusion Tube	75.0	75.0	**40.0**	**41.0**	34.0	36.0	31.0
48a	Cowgate/Blair Street	Roadside	Diffusion Tube	75.0	75.0	37.0	27.0	36.0	38.2	21.5
48	Cowgate/Guthrie Street	Roadside	Diffusion Tube	57.7	57.7	38.0	33.0	33.0	31.7	21.9
48e	Cowgatehead 2	Roadside	Diffusion Tube	42.3	42.3	**41.0**	**43.0**	37.0	29.6	23.6
123	Dalkeith Road 16/Preston St Primary School	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	13.8
150	Drum Street	Roadside	Diffusion Tube	67.3	67.3	29.0	25.0	25.0	23.0	18.1

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
93	Drumsheugh Gardens 20	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	13.0
128	Dundas Street 9	Roadside	Diffusion Tube	54.5	50.0	-	-	-	-	20.4
124	East Preston St/Dalkeith Road Junction	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	18.4
126	East Preston Street 32	Roadside	Diffusion Tube	67.3	67.3	-	-	-	-	14.6
125	East Preston Street 3A	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	15.5
10A	George IV Bridge	Roadside	Diffusion Tube	75.0	75.0	-	-	-	27.7	22.8
74f	George Street 112	Roadside	Diffusion Tube	75.0	75.0	31.0	30.0	30.0	25.7	19.5
37ai, 37aii	Grassmarket 41	Roadside	Diffusion Tube	42.3	42.3	**53.0**	**50.0**	**56.0**	**52.5**	33.4
37b	Grassmarket 75	Roadside	Diffusion Tube	75.0	75.0	37.0	34.0	37.0	38.8	21.7
37c	Grassmarket/nrThomsons Court	Background	Diffusion Tube	67.3	67.3	28.0	26.0	26.0	25.1	17.9
75e	Gt Stuart Street 9	Roadside	Diffusion Tube	75.0	75.0	24.0	22.0	24.0	19.7	15.3
HT1	Haymarket Terrace North side	Roadside	Diffusion Tube	75.0	75.0	**42.0**	**41.0**	31.0	36.5	22.7
HT2	Haymarket Terrace South side	Kerbside	Diffusion Tube	75.0	75.0	**46.0**	38.0	**41.0**	**40.8**	22.9
10	Home Street/Tollcross	Roadside	Diffusion Tube	65.4	65.4	37.0	38.0	38.0	30.7	24.5
140	Hope Park Terrace/Clerk Street	Roadside	Diffusion Tube	75.0	75.0	37.0	34.0	32.0	26.5	24.7
17a	Hope Park Terrace/VS	Roadside	Diffusion Tube	75.0	75.0	34.0	32.0	31.0	28.7	23.9
149a	Howden Hall Road 79	Roadside	Diffusion Tube	65.4	65.4	33.0	29.0	33.0	26.5	17.4
34	India Street	Background	Diffusion Tube	75.0	75.0	21.0	20.0	19.0	17.7	13.8
8B	Lauriston Place Opp119	Roadside	Diffusion Tube	75.0	75.0	-	-	-	31.2	24.1
74g	Leith Street News Room Pub	Roadside	Diffusion Tube	67.3	67.3	**59.0**	-	-	**44.4**	27.3
92	Lord Russell Place 3-5	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	18.7
62A	Lothian Road 45	Roadside	Diffusion Tube	75.0	75.0	-	-	-	**56.6**	31.3
62B	Lothian Road 139	Roadside	Diffusion Tube	57.7	57.7	-	-	-	**43.9**	26.3
62X	Lothian Road/Rutland St	Roadside	Diffusion Tube	67.3	67.3	-	-	-	**46.1**	30.6
130	Market Street 6	Roadside	Diffusion Tube	36.4	34.6	-	-	-	-	25.7
152	Mayfield Road No.90	Roadside	Diffusion Tube	75.0	75.0	-	26.0	28.0	24.8	18.2
38	Melville Drive	Roadside	Diffusion Tube	75.0	75.0	27.0	25.0	26.0	22.8	18.6
42	Midmar Drive	Background	Diffusion Tube	75.0	75.0	17.0	15.0	15.0	12.6	8.1

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
8	Morningside Road	Roadside	Diffusion Tube	75.0	75.0	26.0	23.0	25.0	21.9	15.8
62C	Morrison Street 91	Roadside	Diffusion Tube	75.0	75.0	-	-	-	**42.2**	29.4
49	Morrison Street	Roadside	Diffusion Tube	65.4	65.4	**42.0**	38.0	37.0	37.2	26.1
135b	Nicolson Street 69	Roadside	Diffusion Tube	67.3	67.3	-	-	-	37.8	36.9
136	Nicolson Street 92	Roadside	Diffusion Tube	67.3	67.3	38.0	32.0	37.0	32.2	20.8
95	Palmerston Place 28/Lansdowne Cres	Kerbside	Diffusion Tube	75.0	75.0	-	-	-	-	19.1
96	Palmerston Place 7	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	24.9
27	North Bridge South	Roadside	Diffusion Tube	59.6	59.6	**53.0**	37.0	**40.0**	**40.6**	23.0
47	Princes Street (Eastbound)	Roadside	Diffusion Tube	75.0	75.0	**41.0**	38.0	36.0	36.2	26.4
24	Princes Street/Mound	Kerbside	Diffusion Tube	50.0	50.0	**57.0**	**60.0**	**53.0**	**53.2**	29.1
33b	Queen Street No66	Roadside	Diffusion Tube	75.0	75.0	-	-	35.0	29.2	30.0
33a	Queen Street/Albyn Pl	Roadside	Diffusion Tube	67.3	67.3	-	29.0	33.0	28.7	19.7
33	Queen Street/North David Street	Roadside	Diffusion Tube	75.0	75.0	39.0	**40.0**	**42.0**	36.0	27.5
SH1	Shandwick Place Hostel	Roadside	Diffusion Tube	67.3	67.3	36.0	-	**40.0**	37.0	28.8
144	South Bridge 59	Roadside	Diffusion Tube	67.3	67.3	**50.0**	**43.0**	**41.0**	38.1	27.0
142	South Clerk Street 41a	Roadside	Diffusion Tube	57.7	57.7	37.0	33.0	35.0	29.8	21.4
141	South Clerk Street 84	Roadside	Diffusion Tube	75.0	75.0	36.0	38.0	37.0	32.9	22.9
75d	St Colme Street/4	Roadside	Diffusion Tube	75.0	75.0	29.0	25.0	27.0	22.9	17.5
163	New Arthur Place	Background	Diffusion Tube	54.5	51.9	-	-	-	-	16.3
153	New Arthur Place 4	Background	Diffusion Tube	100.0	7.7	-	17.0	17.0	16.9	-
10c	Teviot Place 14	Roadside	Diffusion Tube	65.4	65.4	-	-	-	28.2	19.6
3b	Torphicen Place 1	Roadside	Diffusion Tube	75.0	75.0	**44.0**	**41.0**	**43.0**	**40.0**	30.0
3	Torphichen Place/Chiropractice	Roadside	Diffusion Tube	75.0	75.0	**50.0**	**42.0**	**43.0**	**40.5**	29.1
162	Viewcraig Gardens 19	Roadside	Diffusion Tube	63.6	59.6	-	-	-	-	12.0
2	West Maitland St/Palmerston Pl	Kerbside	Diffusion Tube	75.0	75.0	**54.0**	**49.0**	**50.0**	**45.8**	34.2
28d	West Port 42	Roadside	Diffusion Tube	67.3	67.3	**51.0**	**47.0**	**51.0**	**44.0**	24.5
28b	West Port 62	Roadside	Diffusion Tube	67.3	67.3	**59.0**	-	**65**	**54.2**	24.8
28c	West Port Opp 50	Roadside	Diffusion Tube	75.0	75.0	**44.0**	36.0	38.0	35.0	22.2
127	West Preston Street 17	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	14.3
91	West Preston Street 40	Roadside	Diffusion Tube	65.4	65.4	-	-	-	-	13.7

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
36	York Place	Roadside	Diffusion Tube	75.0	75.0	34.0	35.0	32.0	29.5	20.9
CL1, CL2, CL3	Queensferry Rd	Roadside	Diffusion Tube	75.0	75.0	**65.0**	-	**55.0**	**44.8**	27.5
CL4, CL5, CL6	Gorgie Road	Roadside	Diffusion Tube	75.0	75.0	**40.0**	33.0	32.0	30.4	20.1
CL7, CL8, CL9	Salamander St	Roadside	Diffusion Tube	75.0	75.0	35.0	32.0	27.0	27.8	20.7
CL10, CL11, CL12	Glasgow Rd	Roadside	Diffusion Tube	75.0	75.0	**41.0**	**41.0**	35.0	32.3	17.9
CL13, CL14, CL15	St Johns Road	Kerbside	Diffusion Tube	75.0	75.0	**64.0**	**61.0**	**47.0**	**46.6**	25.9
CL16, CL17, CL18	Nicolson Street	Roadside	Diffusion Tube	75.0	75.0	-	-	-	-	30.3

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 2020 (%) (2)	2016	2017	2018	2019	2020
ID4	Gorgie Road	Roadside	Automatic	92.4	92.4	0	0	0	0 (87.6)	0
ID5	St. John's Road	Roadside	Automatic	99.4	99.4	5	1	2	0	0
ID6	Currie High School	Suburban	Automatic	33.7	33.7	0	0	0	0 (79.4)	0 (32.0)
ID7	St. Leonard's	Urban Background	Automatic	88.0	88.0	0 (73)	0	0	0	0
ID8	Salamander Street	Roadside	Automatic	65.4	65.4	0	0	0	0	0 (90.8)
ID9	Queensferry Road	Roadside	Automatic	99.2	99.2	0 (142)	3 (159)	3	0	0
ID10	Glasgow Road	Roadside	Automatic	97.7	97.7	0	0	0	0	0
EDNS	Nicolson Street	Kerbside	Automatic	74.3	74.3	-	-	0	4	0 (100.6)

Notes:

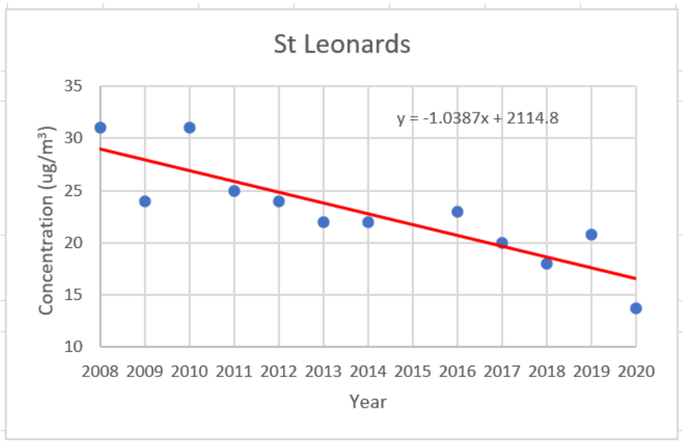
Exceedances of the NO_2 1-hour mean objective (200 µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.

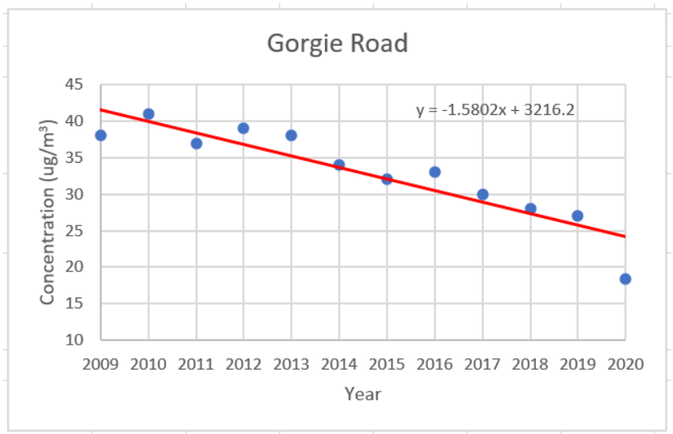
If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

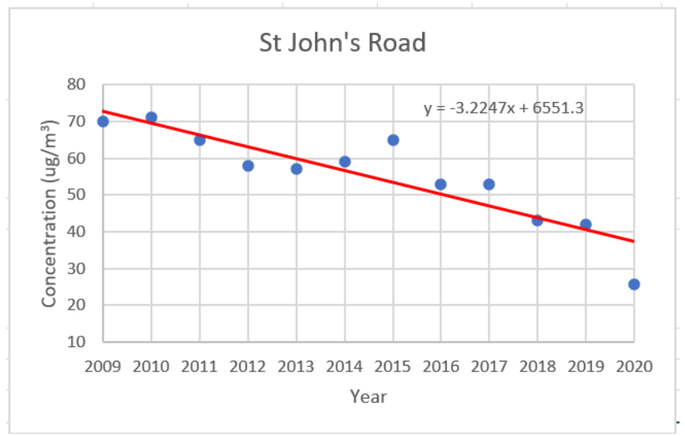
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

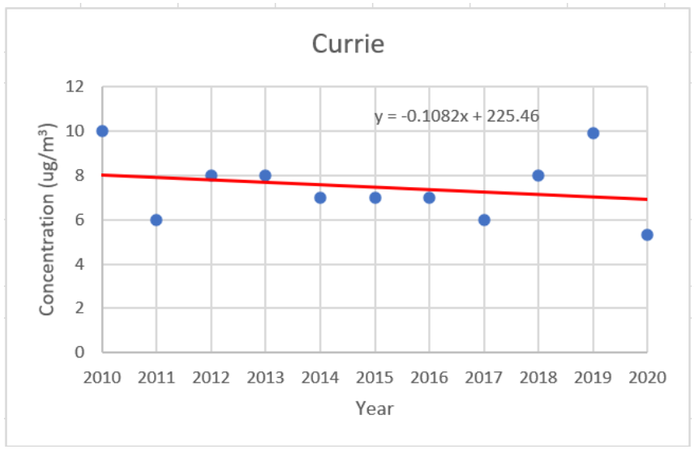
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

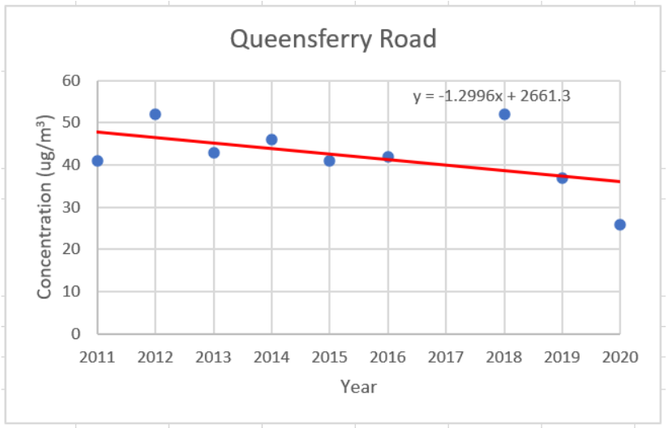
Figure A.1 – NO_2 Concentration Trends at Continuous Monitoring Locations

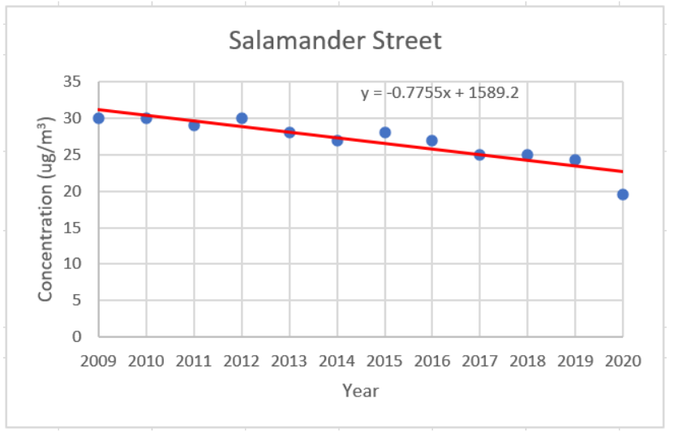












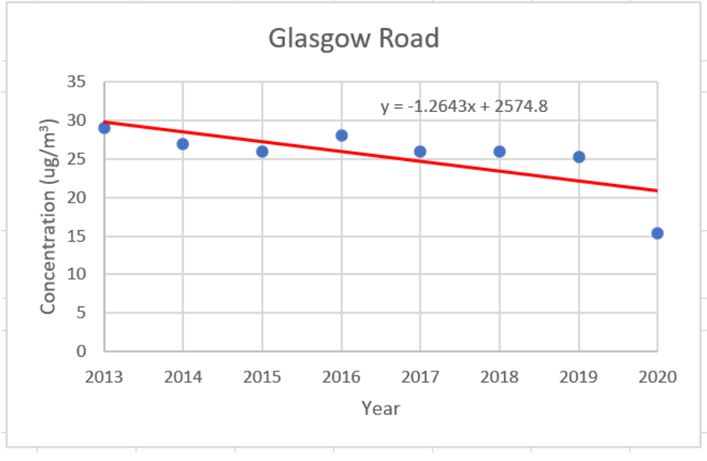
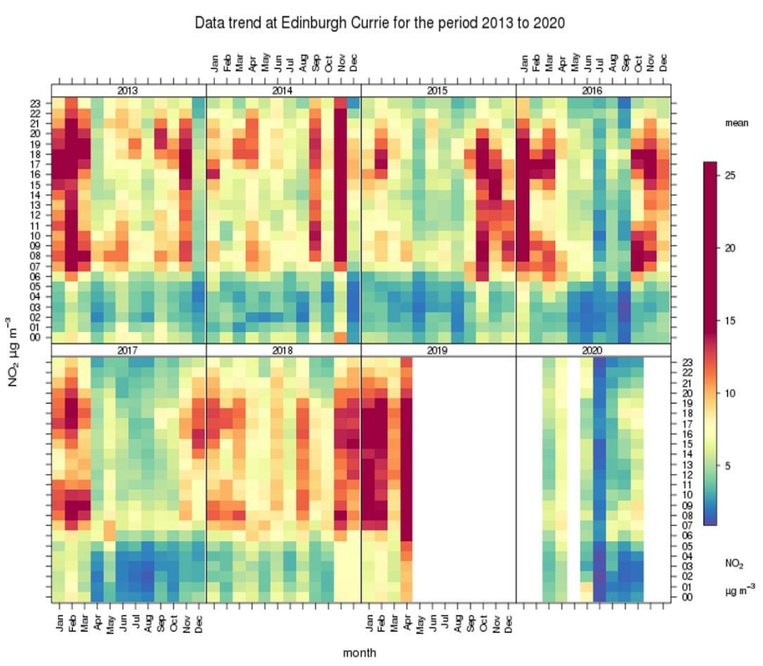
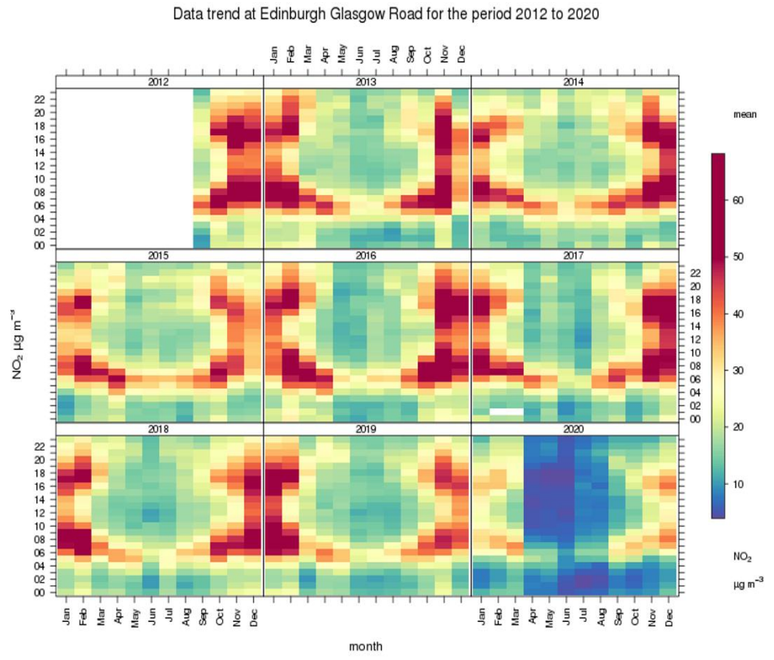
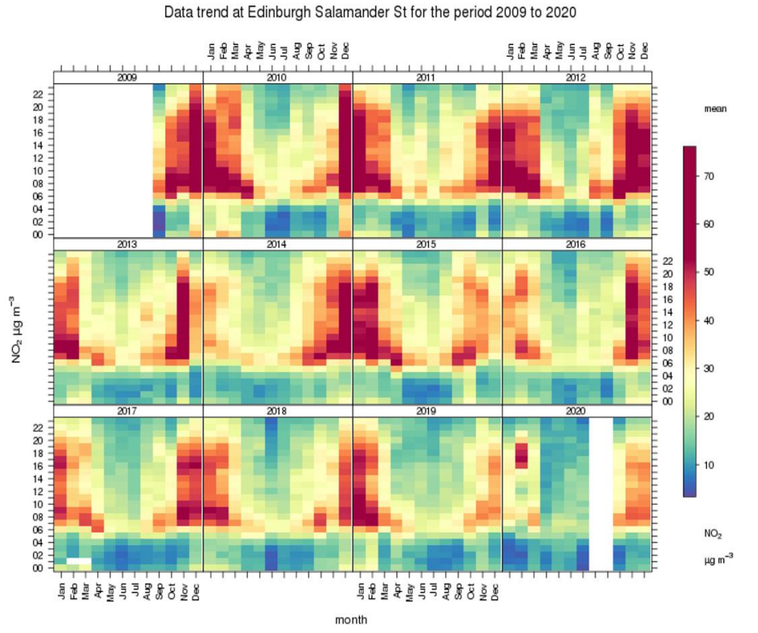


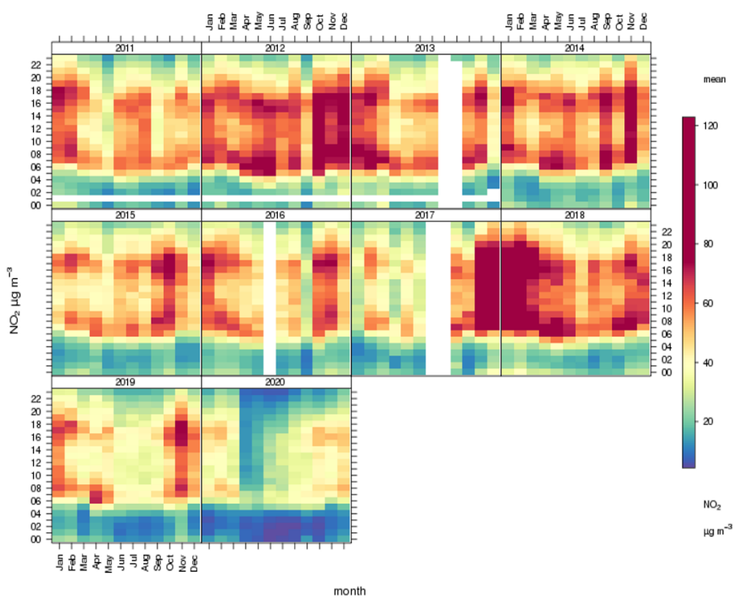
Figure A 2 – Hourly Average NO_2 Data Trends Each Month at Continuous Monitoring Locations



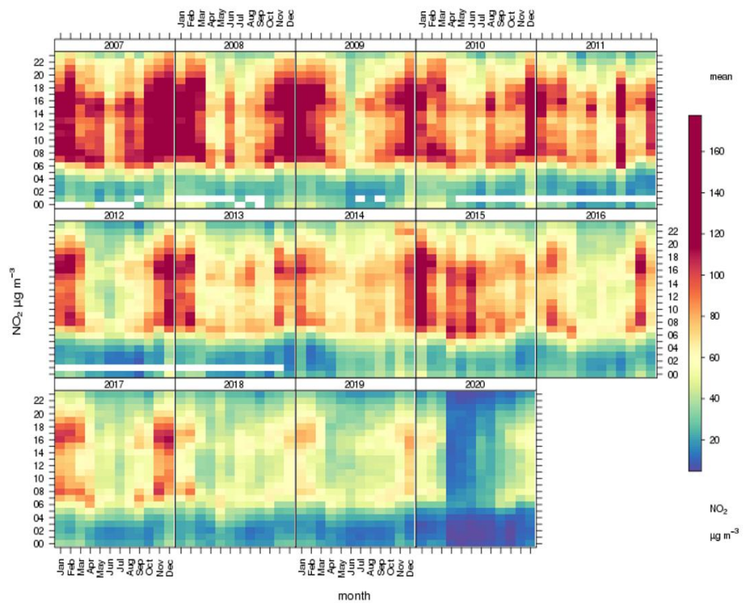


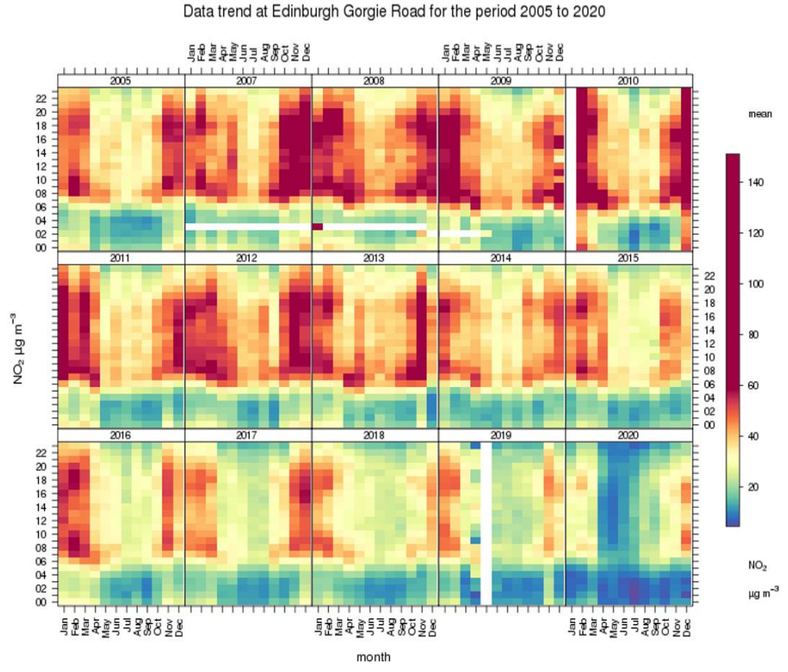


Data trend at Edinburgh Queensferry Road for the period 2011 to 2020



Data trend at Edinburgh St John's Road for the period 2005 to 2020





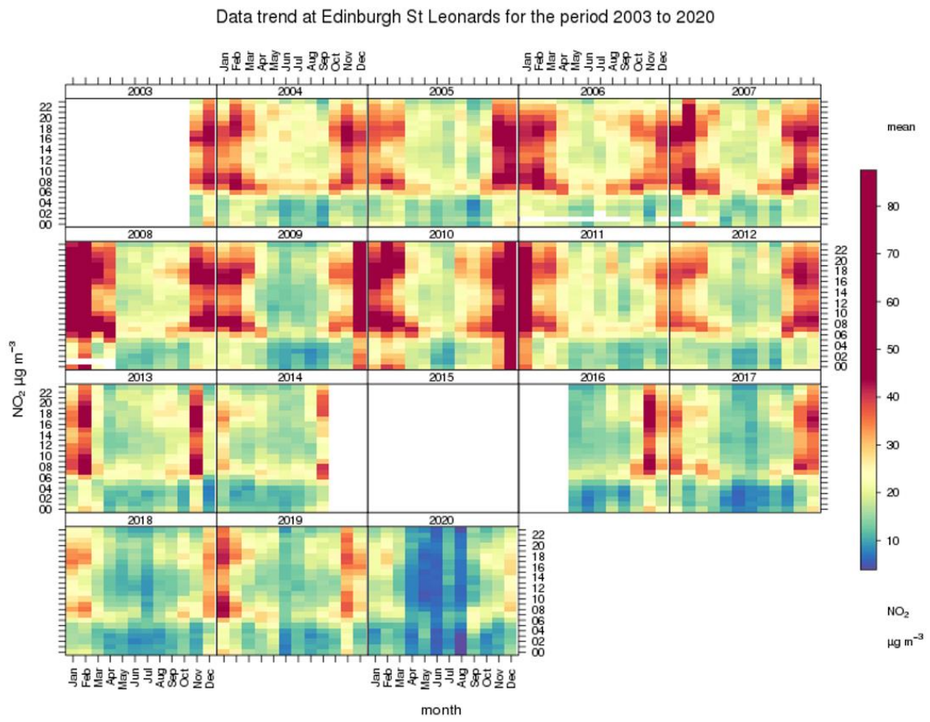
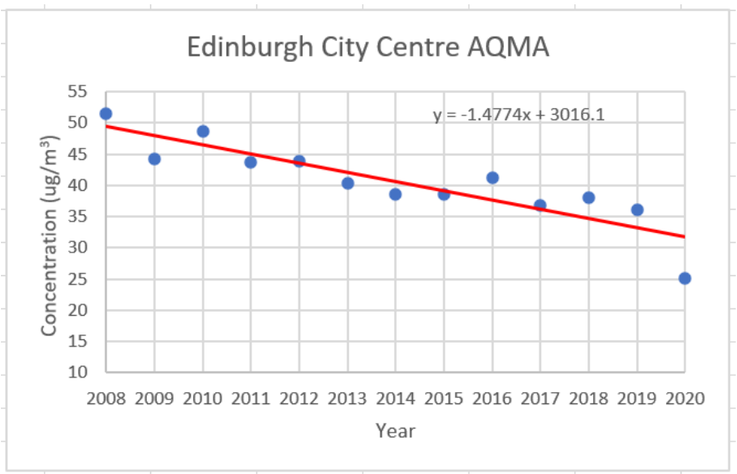
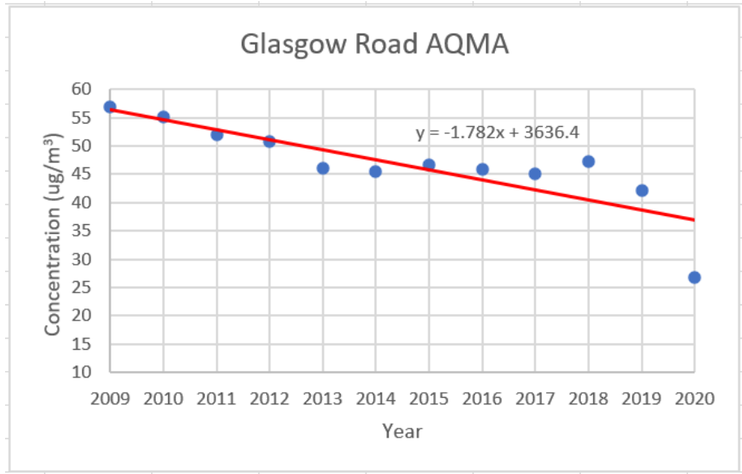
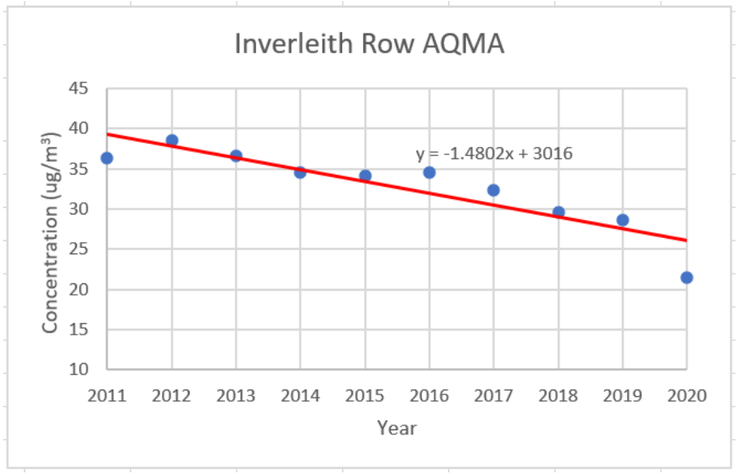
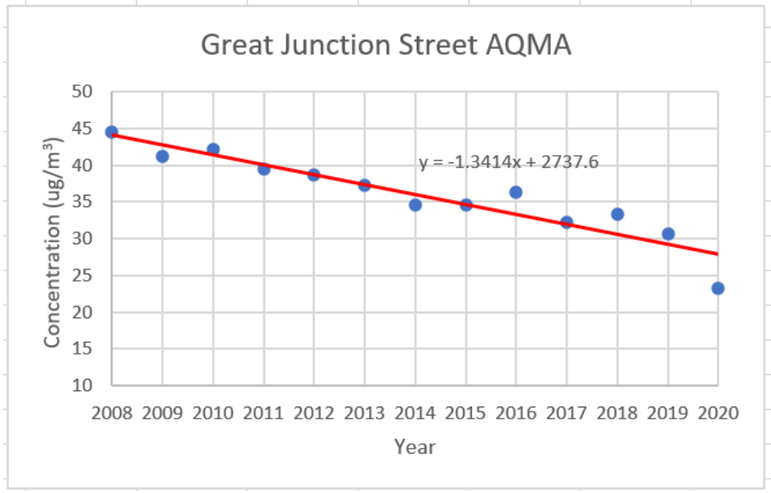

Data trend at Edinburgh St Leonards for the period 2003 to 2020
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
00 02 04 06 08 10 12 14 16 18 20 22
NO2 µg m−3
month
mean
80 70 60 50 40 30 20 10
NO2
µg m−3

Figure A.3 – Average Passive Diffusion Tube NO_2 Concentration Trends within Each AQMA









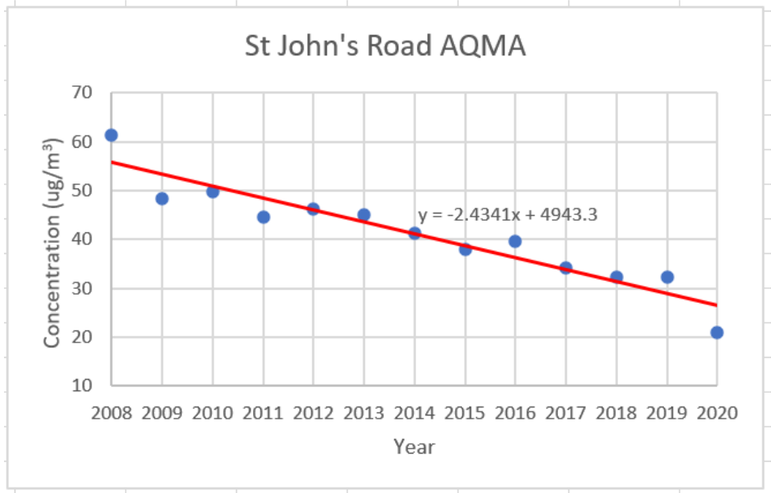


Table A.5 – Data used to establish the trend of annual mean concentrations of nitrogen dioxide at passive diffusion tube sites within the City Centre AQMA (µg/m^3)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2	-	56.8	73.4	73.2	50.5	-	58.8	51	54.3	48.7	49.5	45.8	34.2
3	58.2	26.3	55.6	55.1	48	43	43	45	49.6	41.8	43.2	40.5	29.1
5	-	58.2	60.1	54.3	51.9	48.5	43.3	42	44	42.7	42	33.3	25.6
18	51.5	45	54.5	48.2	49	45	42	37	38.3	35.3	34.8	33.2	22.6
20	53.1	36.8	38.1	-	35	34	32	33	39.7	-	45.3	37.9	-
21	-	40	40.7	35.8	38.8	36.2	35.1	35	40.3	37.9	-	30.6	20.0
23	-	47.5	58.2	41.4	45.1	41.2	45.7	37	39.7	34.3	37.1	35.3	21.0
24	-	46.2	73	-	49.7	59.9	-	54	56.7	54.2	52.7	53.2	29.1
25	58.2	50.8	49.7	43.6	45	41	39	40	45.7	37.9	37.1	33.2	25.8
27	52.3	48.4	49.4	48.7	52	47	48	-	53	37.4	40.4	40.6	23.0
36	-	39.2	41.1	36.9	43.1	29.1	34.1	36	33.6	34.6	31.9	29.5	20.9
46	52.3	43.4	46.2	40.4	46	38	38	37	39.3	39.7	37.4	34.9	22.8
47	-	31.6	47.5	39	-	41	41.1	38	40.8	38.1	35.5	36.2	26.4
48	46.6	39.8	46.2	40.2	40	38	33	33	37.7	32.7	32.9	31.7	21.9
49	-	48.2	54.5	53.5	50.8	46.8	39.3	36	41.7	38.1	37	37.2	26.1
66	-	43	40.5	-	36	34	31	33	31.5	31.1	28.1	29.8	22.5
67	-	47.9	51.3	45.5	46	46	39	42	40.5	42.1	41.7	36.9	25.5
68	-	30.4	36.6	31.5	33	29	28	31	30.9	30.2	32.7	28.0	24.6
69	-	56.2	50.6	50.4	42	40	42	43	39.3	36.5	37.8	35.4	39.3
70	-	47.3	46.1	42.4	41	44	38	44	40	38.2	40.1	37.6	32.3
76	-	-	52.9	44.4	48	41	41	38	43.4	34.6	37.1	33.2	22.9
77	-	-	47.6	38.1	43	40	37	38	33.9	29	34.5	31.9	21.9
80	-	-	47.4	42.2	42	44	37	33	38	34.2	36.5	33.3	20.7
81	-	-	-	51.2	46	44	43	50	56.7	40.9	42.6	50.0	44.0
17a	-	38.8	43.4	37.4	39	36	35	36	34.4	31.9	31.2	28.7	23.9
25b	44.9	38.8	39.1	35.8	35	34	31	31	34.7	29.9	31.8	30.1	21.5

25c	43.8	38	37.7	41	41	37	29	31	33.1	30.5	32.6	33.2	27.0
25d	40.8	37.3	37.1	32.7	34	30	30	30	32.3	29	28.1	25.6	21.2
25e	37.3	34.1	34.2	32	33	27	31	25	27.4	23.9	28.4	25.5	17.9
28b	72.5	66.7	62.4	57	61	52	56	58	58.9	-	64.9	54.2	24.8
28c	51.5	43.5	41.5	39	-	39	-	46	43.5	35.9	38.3	35.0	22.2
28d	66.6	60.2	54.9	55.2	60	58	51	52	50.8	46.9	51.4	44.0	24.5
37ai, 37aii	42.3	40.5	60	42	43	44	40	42	54.1	56.5	56.3	52.5	33.4
37b	-	-	-	37.1	39	37	35	36	36.7	34.1	37.1	38.8	21.7
48a	-	-	37.7	31.4	40	35	36	34	37.4	27.6	35.6	38.2	21.5
74f	-	-	43.4	44.7	47	34	30	26	30.8	30.4	30.3	25.7	19.5
Mean	**51.5**	**44.2**	**48.6**	**43.7**	**43.9**	**40.4**	**38.6**	**38.6**	**41.2**	**36.7**	**38**	**36.1**	**25.2**

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
16	57.3	54.7	50.9	54.8	44.9	45.6	46	44.8	39.6	46	40.9	26.7
58i, 58ii	61.8	65	59.3	54.8	52	51.9	51.3	49	50.9	52	46.0	29.2
15	51.4	45.7	45.9	42.5	41.4	38.6	42.8	44	44.4	43.7	39.2	24.3
Mean	**56.8**	**55.1**	**52**	**50.7**	**46.1**	**45.4**	**46.7**	**45.9**	**45**	**47.2**	**42.0**	**26.7**

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
55i, 55ii	43.8	46	43	40	41	40.5	39.5	34.3	33.4	26.2
55c	28.6	32.7	31.3	29.3	24.9	29.2	23.4	23.6	23.9	16.1
53	36.9	36.8	35.5	34.5	36.4	34.2	34.4	30.8	28.8	22.2

Mean	36.4	38.5	36.6	34.6	34.1	34.6	32.4	29.6	28.7	21.5

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 (µg/m^3)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
29	45.3	45.1	43.7	38.9	37	36	31	32	33.2	32.1	29.8	25.9	21.7
29a	48	42	44.6	41.9	40	38	34	34	37.2	27.4	31.1	27.1	25.0
29ci, 29cii	53.4	48.2	49.4	44.6	44	42	39	40	41.6	35.9	36.5	35.4	28.4
9	40.4	31.6	36.7	31.2	35	32	30	29	32	26.3	29.1	26.3	20.6
9a	-	-	45.5	46.2	44	41	41	42	39.8	35.1	36.5	32.8	29.2
45d	42.4	40.9	38.3	39.6	37	34	34	37	33.2	33.2	32	31.2	25.9
30b	38.4	38.5	39.9	40	38	36	33	38	32.8	32.8	31.7	30.8	19.7
30c	50.2	42.6	44.1	38.4	38	39	37	34	40.3	34.2	37.1	33.1	22.7
30d	39	37.1	39.9	33.8	38	34	34	30	33	33	31.2	28.7	19.4
30e	43.1	41.9	38.7	41.2	37	36	33	32	34	-	33.9	33.3	20.2
30	44.6	44.1	41.8	39.1	38	41	-	33	42.1	31.7	36.9	32.8	23.8
Mean	**44.5**	**41.2**	**42.1**	**39.5**	**38.7**	**37.2**	**34.6**	**34.6**	**36.3**	**32.2**	**33.3**	**30.7**	**23.3**

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 (µg/m^3)

Site ID	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	50	43	47	39	43	42	39	35	37.3	32.2	29.2	31.8	16.9
1b	48.8	44.2	43.5	38.4	44	41	37	33	36.1	28.5	27.7	27.3	17.4
1d	84.9	57.8	58.8	56.3	52	52	48	46	45.1	42	40.1	37.7	28.8
Mean	**61.2**	**48.3**	**49.8**	**44.6**	**46.3**	**45**	**41.3**	**38**	**39.5**	**34.2**	**32.3**	**32.3**	**21.0**

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 2020 (%) (2)	2016	2017	2018	2019	2020
ID5	St. John's Road	Kerbside	99.5	99.5	-	12	13	13.6	9.9
ID6	Currie High School	Suburban	95.1	95.1	10	8	9	9.5	8.6
ID7	St. Leonard's	Urban Background	99.3	99.3	11	10	11	11.0	8.1
ID8	Salamander Street	Roadside	84.5	84.5	18	19	20	18.1	14.8
ID9	Queensferry Road	Roadside	99.7	99.7	19	22	25	-	11.2
ID10	Glasgow Road	Roadside	73.7	73.7	17	16	16	15.9	12.4
EDNS	Nicolson Street	Roadside	99.3	99.3	-	-	-	9.0	9.5
ED012	Tower Street	Urban Industrial	96.9	96.9	-	-	-	10.7	8.6

Notes:

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

Concentrations monitored using TEOMs have been adjusted using Edinburgh's Gravimetric Factor of 1.14

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 Name	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
ID5	St. John's Road	Kerbside	99.5	99.5	-	1	1	3	0
ID6	Currie High School	Suburban	95.1	95.1	0	0	0	1	0
ID7	St. Leonard's	Urban Background	99.3	99.3	0 (29)	0	0	1	0
ID8	Salamander Street	Roadside	84.5	84.5	0	0	3	5	2 (51.2)
ID9	Queensferry Road	Roadside	99.7	99.7	0 (40)	8	4	0	2
ID10	Glasgow Road	Roadside	73.7	73.7	0	0	0	3	0 (37.4)
EDNS	Nicolson Street	Roadside	99.3	99.3	-	-	-	0 (43.3)	0
ED012	Tower Street	Urban Industrial	96.9	96.9	-	-	-	1	0

Notes:

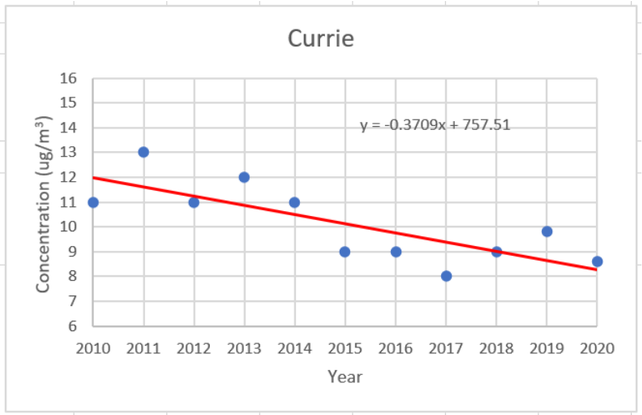
Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 not to be exceeded more than seven times/year) are shown in bold.

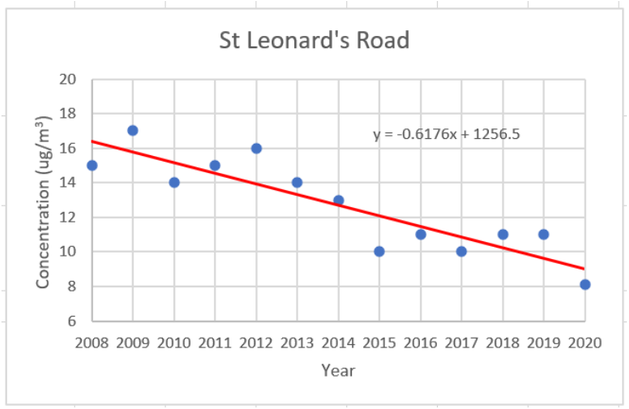
If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

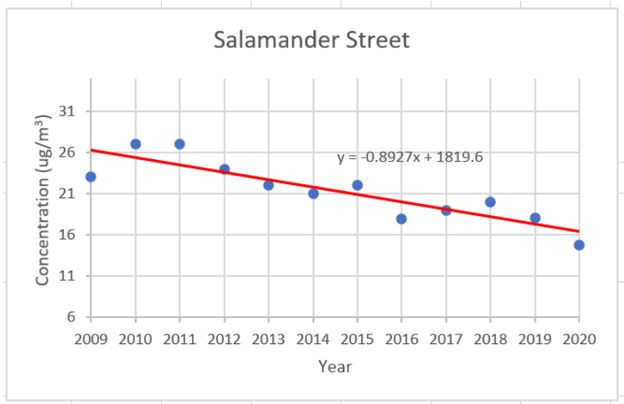
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

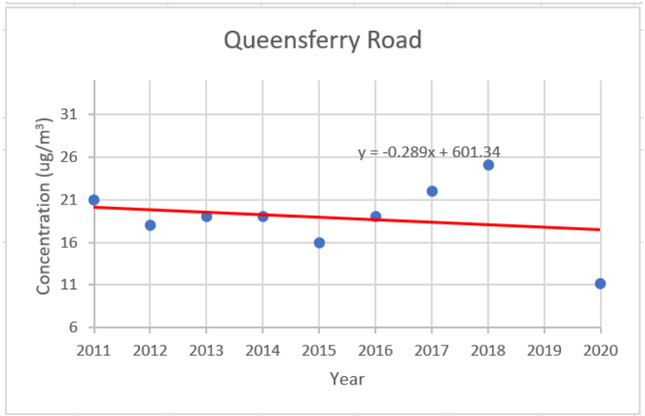
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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









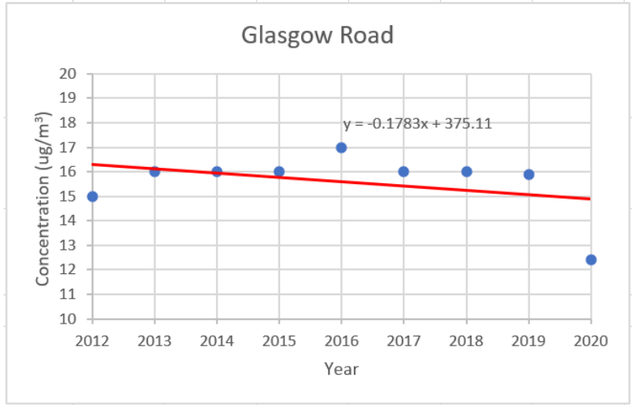
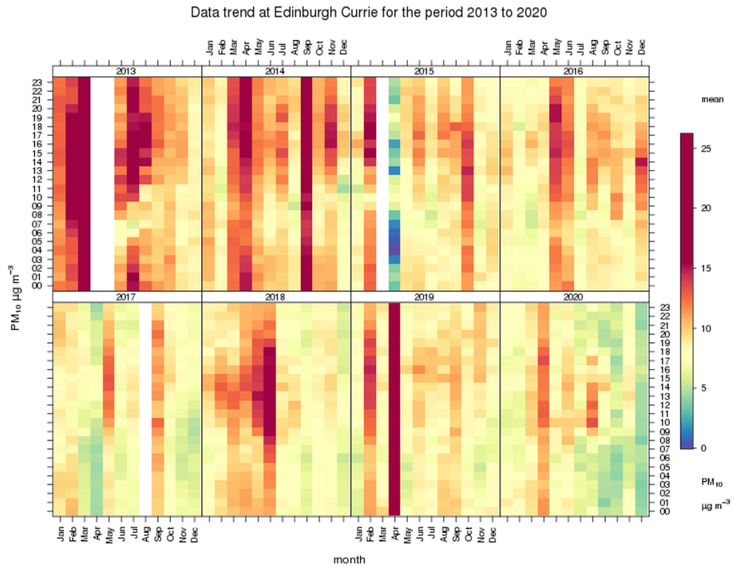
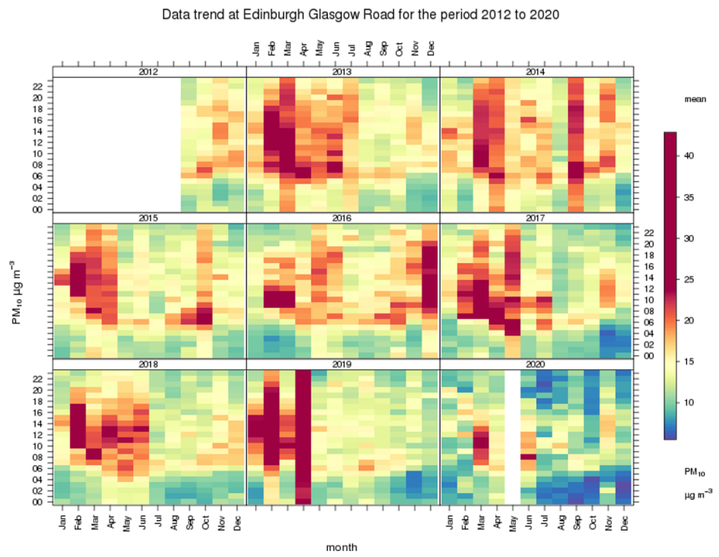
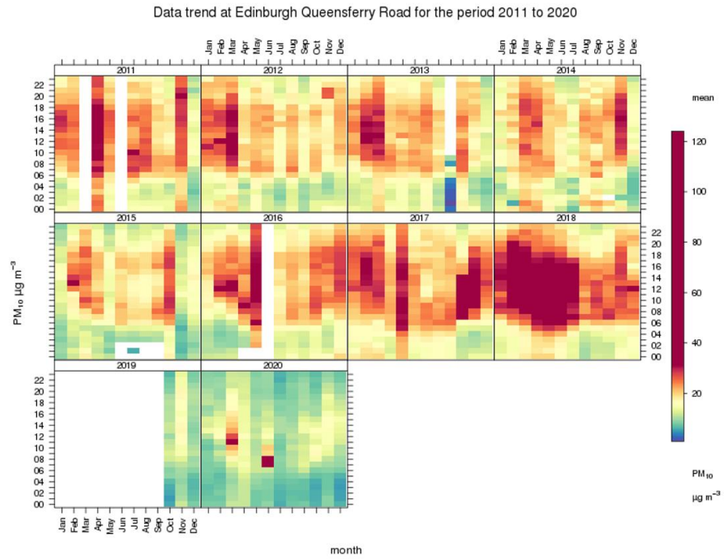
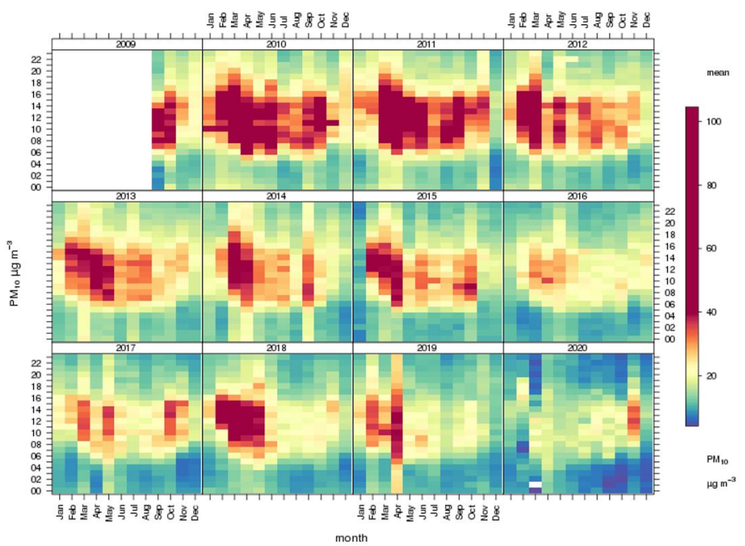


Figure A.5 – Hourly Average PM_{10} Data Trends Each Month at Continuous Monitoring Locations









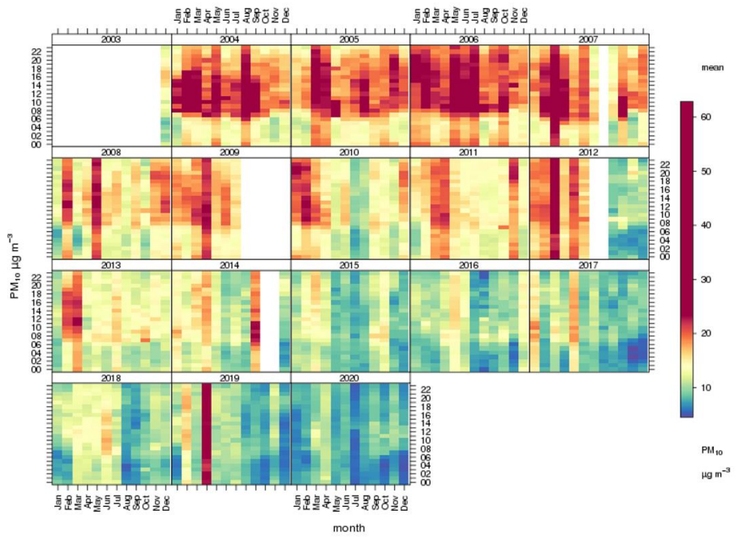


Table A.12 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Name	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
ID5	St. John's Road	Kerbside	99.5	99.5	-	6	6	7.0	4.9
ID6	Currie High School	Suburban	100	4.2	-	-	-	-	2.8
ID7	St. Leonard's	Urban Background	99.3	99.3	6	7	6	6.4	4.4
ID8	Salamander Street	Roadside	100	4.2	-	-	-	-	4.0
ID9	Queensferry Road	Roadside	99.7	99.7	-	-	-	6.1	5.2
ID10	Glasgow Road	Roadside	100	4.2	-	-	-	-	3.8
EDNS	Nicolson Street	Roadside	99.3	99.3	-	-	-	5.2	5.0
ED012	Tower Street	Urban Industrial	96.9	96.9	-	-	-	5.7	4.2

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.6 – $PM_{2.5}$ Concentration Trend at St Leonard's

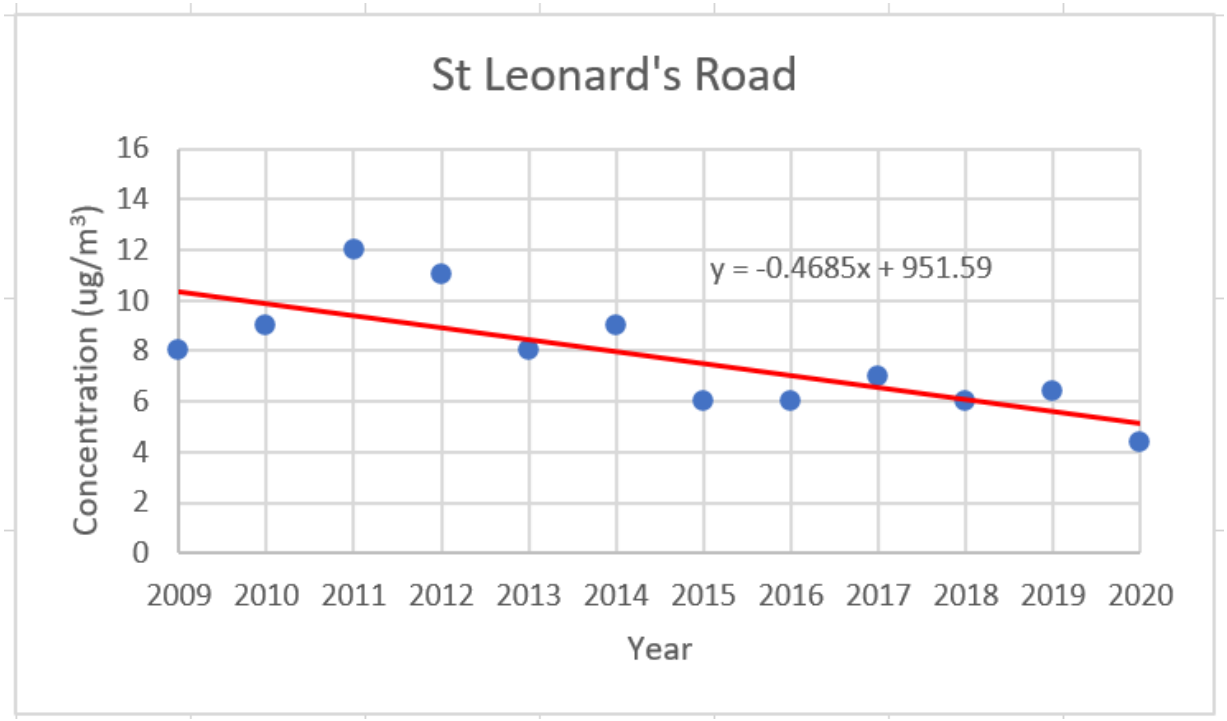


Figure A.7 – Hourly Average $PM_{2.5}$ Data Trends Each Month at St Leonards

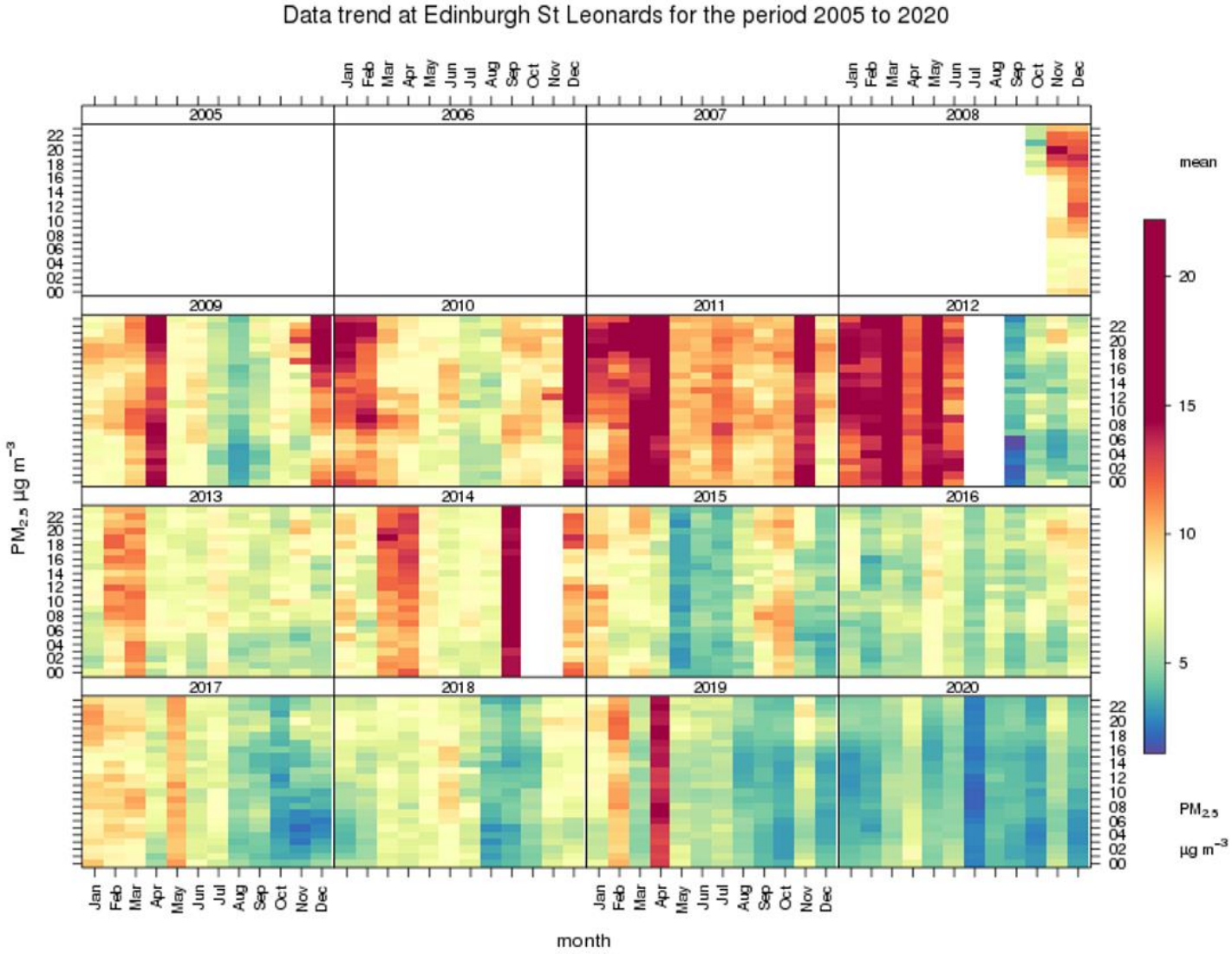


Table A.13 – SO_2 2020 Monitoring Results, Number of Relevant Instances

Site ID	Site Name	Site Type	Valid Data Capture for monitoring Period (%) (1)	Valid Data Capture 2020 (%) (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	70.6	70.6	0 (8.9)	0 (8.6)	0 (7.1)

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	98.5	98.5	3

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
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

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 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	15.2	16.5	-	-	-	13.2	12.2	22.1	15.9	18.5	22.0	30.0	18.4	15.4
57	37.9	39.5	-	-	-	14.6	27.5	19.8	25.7	26.3	27.3	-	27.3	23.8
16a	26.0	-	-	-	-	-	-	-	-	-	-	-	-	-
16	34.8	32.9	-	-	-	21.9	18.1	34.7	11.8	33.9	31.5	67.5	31.9	26.7
15a	18.0	31.4	-	-	-	12.8	18.4	17.9	15.5	24.2	26.3	21.5	20.7	17.3
58i	50.7	47.0	-	-	-	21.3	24.1	28.7	32.6	33.0	36.7	39.6	-	-
58ii	57.9	43.9	-	-	-	19.0	29.7	31.1	32.6	33.9	36.3	30.1	34.9	29.2
15	36.9	39.1	-	-	-	17.3	21.7	26.1	23.8	28.1	34.1	34.2	29.0	24.3
56	23.8	28.2	-	-	-	15.6	10.7	-	19.8	1.3	-	29.9	18.5	14.3
143a	19.9	25.7	-	-	-	13.3	14.0	37.8	17.3	39.5	27.2	85.2	31.1	26.0
41	17.2	14.9	-	-	-	10.2	5.9	12.9	12.0	13.8	15.5	19.3	13.5	11.3
121	35.8	31.1	-	-	-	22.1	18.9	27.4	28.4	31.2	27.3	36.5	28.7	24.1
122	-	40.1	-	-	-	28.1	26.2	31.6	30.8	34.6	36.5	45.9	34.2	27.1
55c	17.0	20.6	-	-	-	20.8	13.0	25.1	18.9	22.9	6.1	28.4	19.2	16.1
55i	36.1	35.8	-	-	-	21.4	25.0	31.4	30.6	36.2	35.8	35.8	-	-
55ii	29.3	36.2	-	-	-	21.9	25.8	29.1	30.5	34.7	33.2	33.9	31.3	26.2
129B	-	22.3	-	-	-	12.9	12.1	17.9	15.9		18.6	19.7	17.1	13.6
63A	29.3	24.1	-	-	-	10.1	14.8	13.7	16.4	18.4	26.3	25.8	19.9	16.6
64	59.3	54.0	-	-	-	11.6	39.0	48.5	46.0	52.2	48.6	54.1	45.9	38.4
64b	29.6	30.6	-	-	-	12.0	18.3	17.9	19.7	25.6	35.0	35.5	24.9	20.9
64a	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-
64C	-	25.0	-	-	-	16.5	16.3	23.6	20.1	25.0	27.8	31.3	23.2	18.4
69J	-	51.4	-	-	-	35.9	36.7	-	38.7	51.5	45.1	66.8	46.6	35.0
62	13.9	17.5	-	-	-	11.7	10.4	16.7	15.9	15.8	16.5	21.4	15.5	13.0
69l	-	44.3	-	-	-		23.8	-	34.8	47.0	41.7	49.6	40.2	28.2
40	25.9	22.9	-	-	-	15.4	13.7	24.0	23.3	24.7	27.1	27.9	22.8	19.1
129	11.7	14.4	-	-	-	11.4	8.3	16.9	12.9	14.4	14.8	17.9	13.6	11.4
23	24.0	29.3	-	-	-	22.4	12.2	29.6	24.6	25.5	26.7	31.0	25.0	21.0

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
22a	38.6	38.2	-	-	-	17.7	17.1	-	27.2	31.6	-	38.1	29.8	23.1
1d	43.6	45.8	-	-	-	15.0	18.2	27.6	22.2	40.5	21.7	74.9	34.4	28.8
1b	22.4	25.9	-	-	-	15.5	11.6	20.7	19.4	20.7	21.9	29.1	20.8	17.4
1	23.2	29.0	-	-	-	19.7	-	-	20.4	20.6	20.7	35.4	24.1	16.9
SJ1	25.1	27.1	-	-	-	13.5	11.0	19.4	20.5	23.3	23.1	27.8	21.2	17.7
39	37.7	36.9	-	-	-	13.4	14.4	17.6	19.5	25.0	29.9	11.0	22.8	19.1
14	27.2	27.8	-	-	-	18.9	10.5	15.9	16.9	21.8	29.2	21.2	21.0	17.6
76c	36.4	35.3	-	-	-	14.9	14.8	21.5	20.1	22.3	27.9	41.2	26.0	21.8
76b	32.5	33.2	-	-	-	21.5	17.1	33.3	30.2	31.6	36.1	40.3	30.6	25.6
76	28.8	24.5	-	-	-	24.0	15.7	31.4	26.8	25.6	35.5	34.3	27.4	22.9
76a	9.4	23.5	-	-	-	10.5	9.1	16.7	19.0	21.2	26.6	30.1	18.5	15.4
80e	24.6	25.2	-	-	-	14.4	15.5	18.5	-	22.8	29.1	39.8	23.7	18.5
4a	15.8	21.2	-	-	-	-	17.3	20.0	17.7	20.8	21.1	31.9	20.7	15.4
79d	43.1	26.5	-	-	-	21.8	19.4	29.2	24.0	32.4	29.6	36.5	29.2	24.4
79a	24.9	26.3	-	-	-	14.2	12.9	21.1	20.0	19.9	22.7	33.0	21.7	18.1
79	27.6	24.7	-	-	-	14.9	13.8	20.7	19.2	23.7	26.1	29.8	22.3	18.6
80	35.3	30.5	-	-	-	-	19.1	-	17.5	32.1	31.4	39.7	29.4	20.7
18	19.4	31.2	-	-	-	22.0	19.4	24.2	23.4	35.4	32.7	35.0	27.0	22.6
80c	-	-	-	-	-	16.8	18.1	39.4	21.4	27.9	30.9	31.9	26.6	21.3
80f	-	33.0	-	-	-	20.0	18.8	-	25.2	26.2	25.5	37.8	26.6	20.0
80g	39.0	40.3	-	-	-	-	17.8	14.4	23.4	27.2	34.0	38.2	29.3	21.8
80b	18.7	28.8	-	-	-	-	15.4	29.1	-	-	25.4	17.1	22.4	16.5
80a	23.6	24.7	-	-	-	12.9	13.1	21.9	20.3	25.2	29.9	13.9	20.6	17.3
5	34.4	44.8	-	-	-	20.2	19.6	28.2	26.7	33.3	30.8	37.1	30.6	25.6
76d	28.9	33.1	-	-	-	21.4	20.7	26.4	20.5	24.6	33.0	38.9	27.5	23.0
11a	25.8	28.5	-	-	-	15.2	20.1	22.4	20.4	22.2	36.4	24.6	24.0	20.1
11	18.0	19.9	-	-	-	3.9	9.2	13.6	16.8	16.6	18.4	30.7	16.3	13.7
77a	34.9	27.5	-	-	-	12.9	11.1	23.1	23.3	28.5	30.9	37.9	25.6	21.4
77b	30.7	35.3	-	-	-	20.3	16.3	34.2	23.3	-	52.4	64.3	34.6	27.2
77	28.7	24.8	-	-	-	21.5	14.7	28.7	22.4	27.4	27.0	40.5	26.2	21.9
80h	12.0	33.0	-	-	-	12.6	17.2	18.2	-	28.2	-	29.1	21.5	17.5
29a	21.8	25.0	-	-	-	25.0	14.8	29.1	24.2	28.9	67.3	32.4	29.8	25.0
29ci	35.9	36.6	-	-	-	22.9	21.6	50.4	26.1	-	35.7	-	-	-
29cii	38.0	34.1	-	-	-	23.1	21.2	-	24.6	35.4	29.5	-	32.6	28.4
29	24.7	28.8	-	-	-	17.6	17.4	24.0	24.3	29.7	32.7	34.3	25.9	21.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
119	23.3	22.5	-	-	-	17.3	-	33.6	19.3	26.6	25.3	28.4	24.5	18.2
43	37.5	35.1	-	-	-	19.6	14.3	16.5	25.2	27.1	31.5	30.2	26.3	22.0
9d	27.5	28.6	-	-	-	33.1	21.9	60.0	26.9	33.2	33.6	39.9	33.9	28.3
9	24.8	27.2	-	-	-	24.7	15.0	25.3	22.0	28.0	25.5	29.0	24.6	20.6
9a	38.0	40.8	-	-	-	30.2	21.9	35.7	28.1	39.4	40.9	39.5	34.9	29.2
30f	39.4	31.7	-	-	-	18.1	19.2	27.1	29.6	39.4	42.4	-	30.9	26.9
25c	64.0	32.1	-	-	-	14.5	-	-	35.6	45.3	38.2	40.6	38.6	27.0
25e	14.3	22.6	-	-	-	20.4	16.2	-	26.9	28.7	28.7	34.2	24.0	17.9
25d	17.6	28.5	-	-	-	17.6	-	40.5	24.8	30.8	33.6	36.0	28.7	21.2
25	29.5	35.1	-	-	-	24.3	18.6	31.4	27.6	-	35.4	-	28.8	25.8
25b	24.5	29.1	-	-	-	18.5	13.9	29.2	22.3	29.0	29.5	34.9	25.7	21.5
18A	33.9	41.9	-	-	-	21.7	21.5	-	31.2	-	34.8	32.2	31.0	23.1
53	37.4	40.0	-	-	-	13.0	-	21.5	26.9	29.4	37.7	33.4	29.9	22.2
45b	22.3	26.9	-	-	-	19.0	13.6	29.9	21.3	23.1	26.1	27.9	23.3	19.5
45d	37.8	37.4	-	-	-	20.0	17.0	28.0	30.7	28.9	36.3	42.3	30.9	25.9
30b	23.3	31.5	-	-	-		20.3	21.4	29.1	29.8	37.0	19.4	26.5	19.7
30c	27.3	24.3	-	-	-	22.1	16.6	30.3	28.6	28.3	31.3	34.9	27.1	22.7
30e	26.4	26.8	-	-	-	-	-	-	27.0	25.9	-	-	26.5	20.2
30	27.1	24.7	-	-	-	22.2	16.5	35.6	29.7	29.9	35.6	34.9	28.5	23.8
30d	23.2	20.8	-	-	-	18.9	-	29.3	26.9	27.1	29.9	33.0	26.1	19.4
120	27.4	-	-	-	-	-	-	-	-	-	30.1	29.0	28.8	16.4
21	-	-	-	-	-	18.7	17.9	-	-	31.1	35.6	31.3	26.9	20.0
20	45.7	38.2	-	-	-	-	-	-	-	-	-	-	-	-
118	14.7	21.5	-	-	-	29.3	14.6	29.1	24.7	28.1	18.9	31.6	23.6	19.8
66	28.7	24.2	-	-	-	16.9	19.1	29.8	26.3	38.5	23.1	-	25.8	22.5
67	42.3	42.8	-	-	-	-	22.9	38.1	32.2	-	33.2	29.1	34.4	25.5
81	63.1	94.3	-	-	-	14.3	27.0	54.4	30.1	49.0	52.7	87.9	52.5	44.0
116	39.6	-	-	-	-	7.3	-	-	32.7	-	30.0	-	27.4	21.6
46	29.7	34.6	-	-	-	21.6	22.2	-	31.6	30.5	35.4	38.8	30.6	22.8
68	34.8	-	-	-	-	15.2	19.7	22.5	22.3	26.7	-	68.5	30.0	24.6
69	80.9	54.3	-	-	-	15.8	19.8	56.6	27.8	33.8	33.8	99.4	46.9	39.3
70	55.2	49.7	-	-	-	16.9	24.4	29.1	24.2	32.0	7.7	108.0	38.6	32.3
32	27.9	31.0	-	-	-	15.5	15.3	23.2	23.3	26.7	29.0	28.9	24.5	20.5
9c	22.4	-	-	-	-	-	16.7	25.0	22.9	25.0	25.9	30.3	24.0	17.9
71	32.2	30.4	-	-	-	11.5	15.1	19.6	-	25.8	36.1	106.7	34.7	27.1

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
73d	34.4	32.7	-	-	-	18.3	15.1	23.6	28.5	30.3	36.3	42.8	29.1	24.4
117	43.8	22.4	-	-	-	21.4	-	23.2	18.8	24.7	26.5	49.7	28.8	21.4
30X	24.8	26.6	-	-	-	15.3	15.7	20.5	17.7	19.4	-	36.7	22.1	18.0
30A	28.5	32.9	-	-	-	23.5	19.8	24.3	26.6	25.1	34.0	35.8	27.8	23.3
51b	-	22.2	-	-	-	29.1	17.7	33.0	-	26.1	21.5	31.2	25.8	20.4
51c	41.6	30.5	-	-	-	16.3	18.7	21.6	27.3	27.0	27.8	30.4	26.8	22.4
72	16.2	20.7	-	-	-	24.7	13.3	24.5	24.9	29.7	25.5	29.1	23.2	19.4
10B	37.8	37.1	-	-	-	14.0	18.0	26.6	28.5	27.5	32.7	37.0	28.8	24.1
44	35.1	31.7	-	-	-	20.4	17.0	35.3	26.6	24.8	28.5	31.5	27.9	23.3
8A	35.5	29.8	-	-	-	14.3	17.5	26.2	18.4	47.6	31.3	67.0	32.0	26.7
6B	16.7	20.7	-	-	-	13.6	8.4	16.5	15.7	8.9	19.2	30.8	16.7	14.0
6a	-	-	-	-	-	14.6	12.5	-	18.8	23.1	-	-	17.3	17.4
48G	40.2	42.4	-	-	-	26.6	19.5	37.5	31.3	34.9	36.4	32.2	33.4	28.0
94	26.4	30.1	-	-	-	14.7	13.6	27.3	20.0	24.3	22.9	31.7	23.4	19.6
138	33.0	35.4	-	-	-	12.8	15.9	-	24.0	29.8	50.2	91.4	36.6	27.3
151	16.1	24.2	-	-	-	13.6	13.9	17.4	18.2	20.0	22.4	40.6	20.7	17.3
48f	-	31.4	-	-	-	19.8	16.0	31.4	26.3	34.2	26.7	56.4	30.3	24.0
48c	44.4	43.5	-	-	-	14.8	23.0	24.2	22.2	25.5	38.0	97.2	37.0	31.0
48a	30.2	35.8	-	-	-	16.6	16.2	25.7	19.9	23.5	25.7	38.0	25.7	21.5
48	34.1	36.1	-	-	-	14.5	-	22.6	20.1	-	24.4	56.4	29.7	21.9
48e	-	43.0	-	-	-	15.9	21.3	29.2	-	-	-	28.9	27.7	23.6
123	21.0	19.0	-	-	-	10.0	8.3	13.6	15.0	15.8	21.0	24.9	16.5	13.8
150	26.0	18.8	-	-	-	-	17.7	33.8	20.0	24.1	26.1	28.2	24.3	18.1
93	16.2	19.9	-	-	-	9.4	8.7	14.4	14.7	17.3	19.9	18.8	15.5	13.0
128	-	26.3	-	-	-	16.6	13.4	24.4	-	24.8	28.1		22.3	20.4
124	24.8	30.0	-	-	-	12.9	16.9	15.2	17.9	17.8	23.8	38.6	22.0	18.4
126	19.7	-	-	-	-	10.9	10.9	23.6	16.9	19.0	22.1	25.2	18.5	14.6
125	24.3	15.6	-	-	-	9.6	10.8	15.1	17.8	18.3	23.7	31.7	18.5	15.5
10A	28.6	28.8	-	-	-	15.2	13.3	24.5	23.0	21.1	23.5	67.2	27.2	22.8
74f	27.6	31.8	-	-	-	11.4	11.5	27.6	19.8	22.6	27.0	30.9	23.4	19.5
37ai	-	-	-	-	-	14.2	-	50.3	19.9	58.5	33.1	-	-	-
37aii	-	-	-	-	-	16.1	-	52.6	20.8	84.0	-	-	38.3	33.4
37b	39.2	36.1	-	-	-	15.7	16.6	23.4	25.0	23.4	25.5	28.3	25.9	21.7
37c	30.1	29.6	-	-	-	10.9	13.5	19.5	18.9	20.2	-	33.7	22.1	17.9
75e	29.8	21.7	-	-	-	9.4	9.8	17.8	16.0	13.7	20.6	25.7	18.3	15.3

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
HT1	30.3	31.7	-	-	-	18.1	17.5	26.6	24.8	28.7	34.8	31.2	27.1	22.7
HT2	18.5	40.7	-	-	-	17.4	18.4	25.5	28.2	30.3	32.1	35.3	27.4	22.9
10	38.1	30.2	-	-	-	16.8	14.2	33.6	26.8	-	51.6	38.1	31.2	24.5
140	29.9	31.5	-	-	-	17.5	13.9	25.3	26.0	27.5	33.0	60.7	29.5	24.7
17a	36.5	32.9	-	-	-	17.1	15.0	30.3	22.2	26.6	31.4	44.6	28.5	23.9
149a	18.5	26.8	-	-	-	22.5	13.5	17.8	20.3	11.4	29.2	-	20.0	17.4
34	19.4	20.0	-	-	-	10.2	8.2	13.6	13.3	16.4	21.9	25.3	16.5	13.8
8B	28.8	37.1	-	-	-	15.4	18.0	24.8	28.7	29.0	28.0	49.5	28.8	24.1
74g	58.5	-	-	-	-	23.2	21.8	33.7	32.2	38.8	30.5	39.2	34.7	27.3
92	22.0	21.3	-	-	-	12.6	9.7	31.1	17.8	27.7	25.1	34.0	22.4	18.7
62A	47.5	43.6	-	-	-	24.5	23.6	42.0	30.7	39.9	37.3	47.1	37.4	31.3
62B	40.5	37.0	-	-	-	19.2	-	34.8	28.8	-	35.5	54.2	35.7	26.3
62X	70.1	-	-	-	-	19.2	23.6	32.6	33.1	36.9	50.9	45.7	39.0	30.6
130	-	-	-	-	-	-	-	36.6	25.3	28.6	38.4	-	32.2	25.7
152	34.0	29.3	-	-	-	11.1	13.0	14.6	16.5	20.8	26.3	29.9	21.7	18.2
38	30.6	29.6	-	-	-	11.7	14.1	15.3	17.2	21.7	27.2	32.5	22.2	18.6
42	9.0	13.5	-	-	-	7.6	5.2	7.3	8.5	8.4	10.9	16.7	9.7	8.1
8	19.3	22.7	-	-	-	14.3	10.4	17.6	17.2	19.4	19.5	29.5	18.9	15.8
62C	35.5	35.2	-	-	-	16.7	22.1	48.2	26.1	27.5	31.5	73.4	35.1	29.4
49	29.9	40.2	-	-	-	20.4	23.3	36.8	31.4	-	42.6	41.3	33.2	26.1
135b	-	40.0	-	-	-	18.3	26.5	48.9	29.8	58.1	62.9	88.6	46.6	36.9
136	29.7	30.0	-	-	-	19.8	-	26.6	27.5	25.8	28.6	36.4	28.1	20.8
95	28.8	25.3	-	-	-	14.6	10.4	19.3	17.4	24.3	30.8	34.7	22.8	19.1
96	36.9	33.3	-	-	-	24.2	15.5	31.7	28.1	30.0	31.7	36.6	29.8	24.9
27	-	32.4	-	-	-	-	17.6	30.3	31.1	33.6	30.4	39.4	30.7	23.0
47	36.4	32.5	-	-	-	15.2	20.9	35.1	30.4	35.4	37.0	40.5	31.5	26.4
24	53.8	-	-	-	-	-	31.8	-	34.3	40.2	42.9	48.3	41.9	29.1
33b	35.6	28.5	-	-	-	16.2	13.1	29.3	22.7	39.5	52.7	84.9	35.8	30.0
33a	28.3	29.9	-	-	-	16.0	18.0	21.7	23.2	26.2	-	30.0	24.2	19.7
33	39.0	42.5	-	-	-	15.0	18.8	33.3	22.1	31.6	50.2	43.6	32.9	27.5
SH1	-	35.7	-	-	-	13.9	19.1	37.2	35.8	35.7	33.2	80.1	36.3	28.8
144	40.8	42.7	-	-	-	22.9	19.3	32.7	32.9	37.2	-	37.2	33.2	27.0
142	34.2	31.5	-	-	-	17.7	13.0	23.0	23.6	-	-	38.8	26.0	21.4
141	32.8	28.3	-	-	-	14.7	16.2	27.4	22.0	28.7	31.0	45.4	27.4	22.9
75d	21.7	29.9	-	-	-	15.9	11.7	21.9	19.7	19.3	24.7	23.5	20.9	17.5

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
163	-	-	-	-	-		13.2	11.2	14.5	20.9	21.6	49.0	21.7	16.3
153	21.4	-	-	-	-	-	-	-	-	-	-	-	-	-
10c	23.9	22.8	-	-	-	14.2	14.2	30.2	23.6	23.9	26.8	-	22.5	19.6
3b	40.9	42.2	-	-	-	27.1	22.7	40.4	31.1	39.9	39.6	38.9	35.9	30.0
3	42.3	41.3	-	-	-	24.4	24.9	35.7	32.1	38.5	35.8	37.7	34.7	29.1
162	-	18.2	-	-	-	8.4	-	10.7	14.3	15.6	19.7	26.1	16.1	12.0
2	53.0	56.1	-	-	-	24.0	28.3	40.7	39.8	43.3	42.8	39.6	40.8	34.2
28d	53.5	-	-	-	-	17.7	26.5	32.7	29.5	28.7	29.0	31.9	31.2	24.5
28b	48.6	-	-	-	-	21.0	26.3	24.9	30.9	31.8	33.6	35.4	31.6	24.8
28c	38.3	36.1	-	-	-	15.4	21.9	36.5	25.9	22.5	24.3	18.3	26.6	22.2
127	17.7	16.6	-	-	-	12.0	10.2	17.1	16.3	17.7	17.9	28.8	17.1	14.3
91	22.0	21.5	-	-	-	10.2	9.9	-	18.0	18.2	21.3	25.9	18.4	13.7
36	25.2	32.2	-	-	-	12.7	16.8	26.9	20.9	27.5	29.6	32.4	24.9	20.9
CL1	39.7	40.1	-	-	-	24.4	24.3	35.2	30.4	38.3	36.7	36.7	-	-
CL2	31.5	39.2	-	-	-	26.5	25.4	35.9	31.6	35.8	-	36.0	-	-
CL3	28.1	39.0	-	-	-	22.3	25.4	34.7	29.2	36.8	32.6	36.8	32.9	27.5
CL4	29.7	30.3	-	-	-	14.2	14.8	22.9	21.7	23.8	28.2	33.5	-	-
CL5	31.1	30.3	-	-	-	15.2	16.1	21.5	18.5	25.1	27.6	28.8	-	-
CL6	26.6	27.7	-	-	-	12.2	16.4	22.4	17.5	23.9	30.5	36.4	24.0	20.1
CL7	33.0	27.8	-	-	-	14.4	18.2	18.4	22.8	26.8	31.8	27.9	-	-
CL8	28.5	28.3	-	-	-	16.3	17.2	14.6	21.2	25.7	28.9	30.4	-	-
CL9	33.7	35.5	-	-	-	16.1	17.9	19.0	24.6	27.3	32.3	28.4	24.7	20.7
CL10	28.4	35.2	-	-	-	9.6	15.3	8.3	20.8	25.6	27.5	-	-	-
CL11	37.8	30.3	-	-	-	10.2	16.8	13.1	19.7	28.1	27.0	22.6	-	-
CL12	28.8	12.9	-	-	-	10.5	14.3	14.4	20.5	22.3	32.5	-	21.4	17.9
CL13	40.6	51.2	-	-	-	16.2	16.9	23.7	24.6	30.1	32.3	40.1	-	-
CL14	42.2	48.4	-	-	-	15.3	22.8	22.6	28.4	31.7	35.6	45.6	-	-
CL15	51.2	40.8	-	-	-	14.9	23.1	22.3	24.9	29.8	33.6	27.5	31.0	25.9
CL16	43.9	47.2	-	-	-	13.6	28.3	28.5	27.3	35.8	58.3	59.9	-	-
CL17	47.1	46.3	-	-	-	15.3	28.3	29.2	30.2	33.6	37.4	61.9	-	-
CL18	44.7	42.3	-	-	-	15.1	24.7	27.4	32.6	37.1	37.8	43.9	36.2	30.3

Notes:

(1) See Appendix C for details on bias adjustment

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

New or Changed Sources Identified Within the City of Edinburgh During 2020/21

The City of Edinburgh Council has not identified any new sources relating to air quality within the reporting year of 2020/21.

Additional Air Quality Works Undertaken by the City of Edinburgh Council During 2020/21

Low Emission Zone Development

The Council continues to work in close partnership with Scottish Environment Protection Agency (SEPA), Transport Scotland and the Scottish Government to assist in the work of the National Modelling Framework (NMF) which is also a key element in the Clean Air for Scotland Strategy. The NMF process has provided the quantitative evidence for assessment of criteria for the National Low Emission Framework and LEZs in particular.

In June the Council considered a number of reports in respect to the LEZ development work. The package of reports can be accessed from the Council Committee Papers Online website here;
https://democracy.edinburgh.gov.uk/ieListDocuments.aspx?CId=136&MId=5663&Ver=4

A further suite of reports alongside SEPA's full NMF report was considered in October and can be found here;

https://democracy.edinburgh.gov.uk/ieListDocuments.aspx?CId=136&MId=6209&Ver=4

The following reports are of most relevance in consideration of the proposed Low Emission Zone;

Emissions Analysis for Low Emission Zones – Edinburgh (SEPA, 2021)

Air Modelling Results Interim (SEPA, 2021)

CAFS National Low Emission Framework – Options appraisal (The City of Edinburgh Council, 2021)

CAFS, National Modelling Framework – LEZ Evidence Report Edinburgh (SEPA 2021)

The documents support the preference for a City Centre Low Emission Zone, to be implemented in Spring 2022.

Consideration of Inverleith Row AQMA Revocation

In the Inverleith Row AQMA, results of air quality dispersion and emissions modelling undertaken as part of the NMF for the LEZ programme, has predicted that NOx emission rates decline by 7-8% when compared to the 2019 Base scenario. This is likely to be due to buses and taxis moving to full compliance so they can operate within the proposed city centre LEZ. The 2019 base scenario predicted air dispersion modelling predicted concentrations at *kerbside points* to be around the 40 μgm^{-3} threshold, however monitoring at relevant receptors identified 40 μgm^{-3} in 2017. Nonetheless, the modelling predicted NO2 concentrations decline slightly (1μgm^{-3}) with the City Centre LEZ implementation with the 2019 base scenario and around 10 μgm^{-3} reduction with the 2023 scenario (SEPA, 2021 - Emissions Analysis for Low Emission Zones, Edinburgh). It is anticipated that compliance with the objectives will continue to be achieved in Inverleith in conjunction with the long-term downward trends and the introduction of the proposed LEZ. Therefore, the Inverleith Row AQMA will be revoked. The Council will continue to monitor at all existing locations within the current AQMA following revocation.

QA/QC of Diffusion Tube Monitoring

City of Edinburgh Council's diffusion tubes in 2020 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 2020, AIR PT AR036 (January – February 2020) ESS scored 50%, and in AIR PT AR040 (September – October 2020), ESS scored 100%. No results are available between May and August 2020 as testing rounds were cancelled due to the COVID-19 pandemic. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

The Council currently operate 6 co-location studies, and within 2020 all but one co-location studies which use tubes supplied by ESS with the 50% TEA in acetone preparation method in 2020 were rated as 'good', with one being rated as 'poor', 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%.

Monitoring in 2020 had largely been completed in adherence with the 2020 Diffusion Tube Monitoring Calendar, whereby most changeovers were completed within ±2 days of the specified date. The only deviation from this was during the March, April and May exposure periods where no tubes were deployed. This was a result of the reduction of lab services due to the COVID-19 pandemic.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. As such, 75 sites operated by City of Edinburgh Council required annualisation in 2020. This was conducted using the latest version of the Diffusion Tube Data Processing Tool (v1.1) utilising data from four automatic background monitoring sites. 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 local bias adjustment factor of 0.837 to the 2020 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 Nicholson Street. Data from six sites were considered for the co-location study 2020. These were calculated using the Diffusion Tube Data Processing Tool (v1.1), with the outputs presented in Table C.4. 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 2020, obtained from the national bias adjustment spreadsheet (v06/21) is 0.85 (based on five 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, 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 Salamander Street and Nicolson Street, reported good data quality and data capture within 2020. The four sites with good data quality and data capture are therefore able to be used in combination to calculate a local bias adjustment factor alongside additional national study sites at Marylebone Road and Stirling. 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 City of Edinburgh Council's co-location sites with good data quality, data capture, and the two additional national study sites.

$$\frac{(0.17 + 0.18 + 0.42 + 0.11 + 0.17 + 0.12)}{6} + 1 = 1.20$$

$$\frac{1}{1.20} = 0.837$$

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

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.84
2019	Local	-	0.84
2018	Local	-	0.90
2017	Local	-	0.82
2016	Local	-	0.77

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.5.

Fall-off with distance calculations were required at one site where annual mean NO_2 concentrations were greater than 36µg/m^3, and the site is not located at relevant exposure – Site ID 64. This was completed using the latest version of the Diffusion Tube Data Processing Tool (v1.1), and the output from this is presented in Table C.5.

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 DEFRA and 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

The two ML 9841 B NO_x analysers (located at Glasgow Road and Salamander Street) perform a daily auto-calibration. Warning limits are set at +/- 5 % on the software program.

All sites including those listed above are visited fortnightly, apart from the National Network site of St Leonards which is managed by DEFRA/AECOM and 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.

The TEOM heads on the automatic PM_{10} units are cleaned monthly and filters are changed when necessary in accordance with the instrument.

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

TEOMs have been used to monitor PM_{10} concentrations for part of 2020 at Currie, Glasgow Road and Salamander Street. Edinburgh's Local Gravimetric Adjustment factor of 1.14 has been applied to the raw monitoring data prior to calculations of any exceedances.

Automatic Monitoring Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. As such, three automatic monitoring sites – Currie, Salamander Street and Nicolson Street – required annualisation in 2020 for NO_2, and one automatic monitoring site – Glasgow Road – required annualisation for PM_{10}. This was carried out in accordance with the methodology set out in LAQM.TG(16). These sites, alongside the details of the calculation method undertaken, are provided in Table C.2 and Table C.3. No annualisation of $PM_{2.5}$ data was carried out, as data capture for 2020 as 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 Edinburgh City Council required distance correction during 2020.

Table C.2 – NO_2 Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
57	1.0378	1.0375	1.0868	1.0034	1.0414	27.3	28.5	
56	0.9956	0.8883	0.9287	0.8969	0.9274	18.5	17.1	
122	0.9266	0.9786	0.9338	0.9449	0.9460	34.2	32.4	
129B	0.9214	0.9898	0.9410	0.9561	0.9521	17.1	16.2	
64C	0.9266	0.9786	0.9338	0.9449	0.9460	23.2	21.9	
69J	0.9126	0.8988	0.8843	0.8958	0.8979	46.6	41.8	
69I	0.8976	0.8115	0.8186	0.8251	0.8382	40.2	33.7	
22a	0.9956	0.8883	0.9287	0.8969	0.9274	29.8	27.6	
1	0.8819	0.8353	0.8149	0.8089	0.8352	24.1	20.2	
80e	0.9728	0.9485	0.9094	0.9026	0.9333	23.7	22.2	
4a	0.9498	0.8776	0.8762	0.8571	0.8902	20.7	18.4	
80	0.9387	0.7991	0.8243	0.8049	0.8418	29.4	24.7	
80c	0.9038	1.0266	0.9180	0.9656	0.9535	26.6	25.4	
80f	0.9126	0.8988	0.8843	0.8958	0.8979	26.6	23.9	

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
80g	0.9498	0.8776	0.8762	0.8571	0.8902	29.3	26.1	
80b	0.9680	0.8699	0.8462	0.8349	0.8797	22.4	19.7	
77b	0.9569	0.9487	0.9310	0.9154	0.9380	34.6	32.5	
80h	1.0252	0.9740	0.9619	0.9402	0.9753	21.5	20.9	
29ci	1.0378	1.0375	1.0868	1.0034	1.0414	-	-	*Duplicate Site with 29ci and 29cii – Annual data provided for 29cii only*
29cii	1.0378	1.0375	1.0868	1.0034	1.0414	32.6	33.9	*Duplicate Site with 29ci and 29cii – Annual data provided for 29cii only*
119	0.8992	0.9142	0.8669	0.8610	0.8853	24.5	21.7	
30f	1.0378	1.0375	1.0868	1.0034	1.0414	30.9	32.1	
25c	0.8819	0.8353	0.8149	0.8089	0.8352	38.6	32.3	
25e	0.9481	0.8744	0.8817	0.8663	0.8926	24.0	21.4	
25d	0.8992	0.9142	0.8669	0.8610	0.8853	28.7	25.4	
25	1.0536	1.0632	1.1293	1.0275	1.0684	28.8	30.8	
18A	0.9463	0.8660	0.8797	0.8636	0.8889	31.0	27.6	
53	0.8992	0.9142	0.8669	0.8610	0.8853	29.9	26.5	
30b	0.9498	0.8776	0.8762	0.8571	0.8902	26.5	23.6	

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
30e	1.0349	0.8049	0.9673	0.8328	0.9100	26.5	24.1	
30d	0.8992	0.9142	0.8669	0.8610	0.8853	26.1	23.1	
120	0.7818	0.6928	0.6000	0.6367	0.6778	28.8	19.5	
21	0.8935	0.9387	0.8277	0.8975	0.8893	26.9	23.9	
66	1.0378	1.0375	1.0868	1.0034	1.0414	25.8	26.9	
67	0.9483	0.8700	0.8734	0.8531	0.8862	34.4	30.5	
116	0.9204	0.9759	0.9581	0.9105	0.9412	27.4	25.8	
46	0.9481	0.8744	0.8817	0.8663	0.8926	30.6	27.3	
68	0.9823	1.0141	0.9641	0.9668	0.9818	30.0	29.4	
9c	0.9286	0.9023	0.8558	0.8640	0.8877	24.0	21.3	
71	0.9728	0.9485	0.9094	0.9026	0.9333	34.7	32.4	
117	0.8992	0.9142	0.8669	0.8610	0.8853	28.8	25.5	
30X	0.9996	0.9684	0.9760	0.9459	0.9725	22.1	21.5	
51b	0.9394	0.9848	0.9158	0.9392	0.9448	25.8	24.4	
6a	1.0809	1.2216	1.2955	1.2269	1.2062	17.3	20.8	

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
138	0.9481	0.8744	0.8817	0.8663	0.8926	36.6	32.6	
48f	0.9266	0.9786	0.9338	0.9449	0.9460	30.3	28.6	
48	0.8897	0.9128	0.8625	0.8575	0.8807	29.7	26.2	
48e	0.9983	1.0487	1.0006	1.0217	1.0173	27.7	28.1	
150	0.9498	0.8776	0.8762	0.8571	0.8902	24.3	21.7	
128	1.0393	1.1202	1.1302	1.0800	1.0924	22.3	24.3	
126	0.9386	0.9795	0.9114	0.9244	0.9385	18.5	17.4	
37ai	0.8976	1.1869	1.0360	1.0463	1.0417	-	-	*Duplicate Site with 37ai and 37aii – Annual data provided for 37aii only*
37aii	0.8976	1.1869	1.0360	1.0463	1.0417	38.3	39.9	*Duplicate Site with 37ai and 37aii – Annual data provided for 37aii only*
37c	0.9996	0.9684	0.9760	0.9459	0.9725	22.1	21.4	
10	0.9569	0.9487	0.9310	0.9154	0.9380	31.2	29.2	
149a	1.0378	1.0375	1.0868	1.0034	1.0414	20.0	20.8	
74g	0.9386	0.9795	0.9114	0.9244	0.9385	34.7	32.6	
62B	0.8897	0.9128	0.8625	0.8575	0.8807	35.7	31.5	
62X	0.9386	0.9795	0.9114	0.9244	0.9385	39.0	36.6	

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
130	0.8736	1.0466	0.9452	0.9449	0.9526	32.2	30.7	
49	0.9569	0.9487	0.9310	0.9154	0.9380	33.2	31.2	
135b	0.9266	0.9786	0.9338	0.9449	0.9460	46.6	44.1	
136	0.8992	0.9142	0.8669	0.8610	0.8853	28.1	24.8	
27	0.9153	0.9021	0.8780	0.8840	0.8948	30.7	27.5	
24	0.9128	0.8108	0.7959	0.8048	0.8311	41.9	34.8	
33a	0.9996	0.9684	0.9760	0.9459	0.9725	24.2	23.5	
SH1	0.9266	0.9786	0.9338	0.9449	0.9460	36.3	34.4	
144	0.9996	0.9684	0.9760	0.9459	0.9725	33.2	32.3	
142	1.0072	0.9776	0.9914	0.9573	0.9834	26.0	25.5	
163	0.8883	0.9369	0.8547	0.8964	0.8941	21.7	19.4	
10c	1.0378	1.0375	1.0868	1.0034	1.0414	22.5	23.4	
162	0.8626	0.9460	0.8674	0.8886	0.8911	16.1	14.4	
28d	0.9386	0.9795	0.9114	0.9244	0.9385	31.2	29.3	
28b	0.9386	0.9795	0.9114	0.9244	0.9385	31.6	29.6	

Site ID	Annualisation Factor Bush Estate AURN	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Peebles AURN	Annualisation Factor Glasgow Townhead AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
91	0.9481	0.8744	0.8817	0.8663	0.8926	18.4	16.4	
ID6	0.971	1.123	1.150	1.122	1.091	4.9	5.3	
ID8	0.994	0.945	0.908	0.949	0.949	20.6	19.5	
EDNS	0.963	1.056	0.979	1.023	1.005	27.1	27.2	

Table C.3 – PM_{10} Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Edinburgh St Leonards AURN	Annualisation Factor Auchencorth Moss AURN	Annualisation Factor Glasgow Townhead AURN	Annualisation Factor Newcastle Centre AURN	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
ID10	0.982	1.003	0.982	0.996	0.991	12.5	12.4	

Table C.4 – Local Bias Adjustment Co-location Summary

	Queensferry Road	Gorgie Road	Salamander St	Glasgow Road	St Johns Road	Nicholson Street
Periods used to calculate bias	9	8	4	6	8	6
Bias Factor A	0.86 (0.79 – 0.94)	0.85 (0.79 – 0.91)	0.87 (0.7 – 1.17)	0.7 (0.58 – 0.89)	0.9 (0.84 – 0.97)	0.85 (0.74 – 0.98)
Bias Factor B	17% (7% - 26%)	18% (10% - 26%)	15% (-15% - 44%)	42% (12% - 72%)	11% (4% - 18%)	18% (2% - 34%)
Diffusion Tube Mean (µg/m^3)	32.9	22.8	29.6	22.0	30.1	31.8
Mean CV (Precision)	5.5%	6.5%	5.6%	9.0%	8.1%	8.1%
Automatic Mean (µg/m^3)	28.2	19.4	25.8	15.5	27.1	26.9
Data Capture	99%	100%	94%	99%	99%	99%
Adjusted Tube Mean (µg/m^3)	28 (26 – 31)	19 (18 – 21)	26 (21 – 35)	15 (13 – 20)	27 (25 – 29)	27 (24 – 31)

Notes:

A combined local bias adjustment factor of 0.837 has been used to bias adjust the 2020 diffusion tube results.

Figure C.1 – National Bias Adjustment Factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 06/21

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 Sept 2021

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

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 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[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	10	51	43	17.4%	G	**0.85**
Edinburgh Scientific Services	50% TEA in acetone	2020	R	Stirling Council	11	16	15	11.6%	G	**0.90**
Edinburgh Scientific Services	50% TEA in acetone	2020	KS	The City of Edinburgh Council	9	31	28	10.3%	G	**0.91**
Edinburgh Scientific Services	50% TEA in acetone	2020	R	The City of Edinburgh Council	9	21	16	30.9%	P	**0.76**
Edinburgh Scientific Services	50% TEA in acetone	2020	R	The City of Edinburgh Council	9	33	28	17.9%	G	**0.85**
Edinburgh Scientific Services	50% TEA in acetone	2020		**Overall Factor[3] (5 studies)**				**Use**		**0.85**

Table C.5 – 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	38.4	12.8	27.4	

Appendix D: Maps of Monitoring Locations

Figure D.1 – Automatic Monitoring Locations

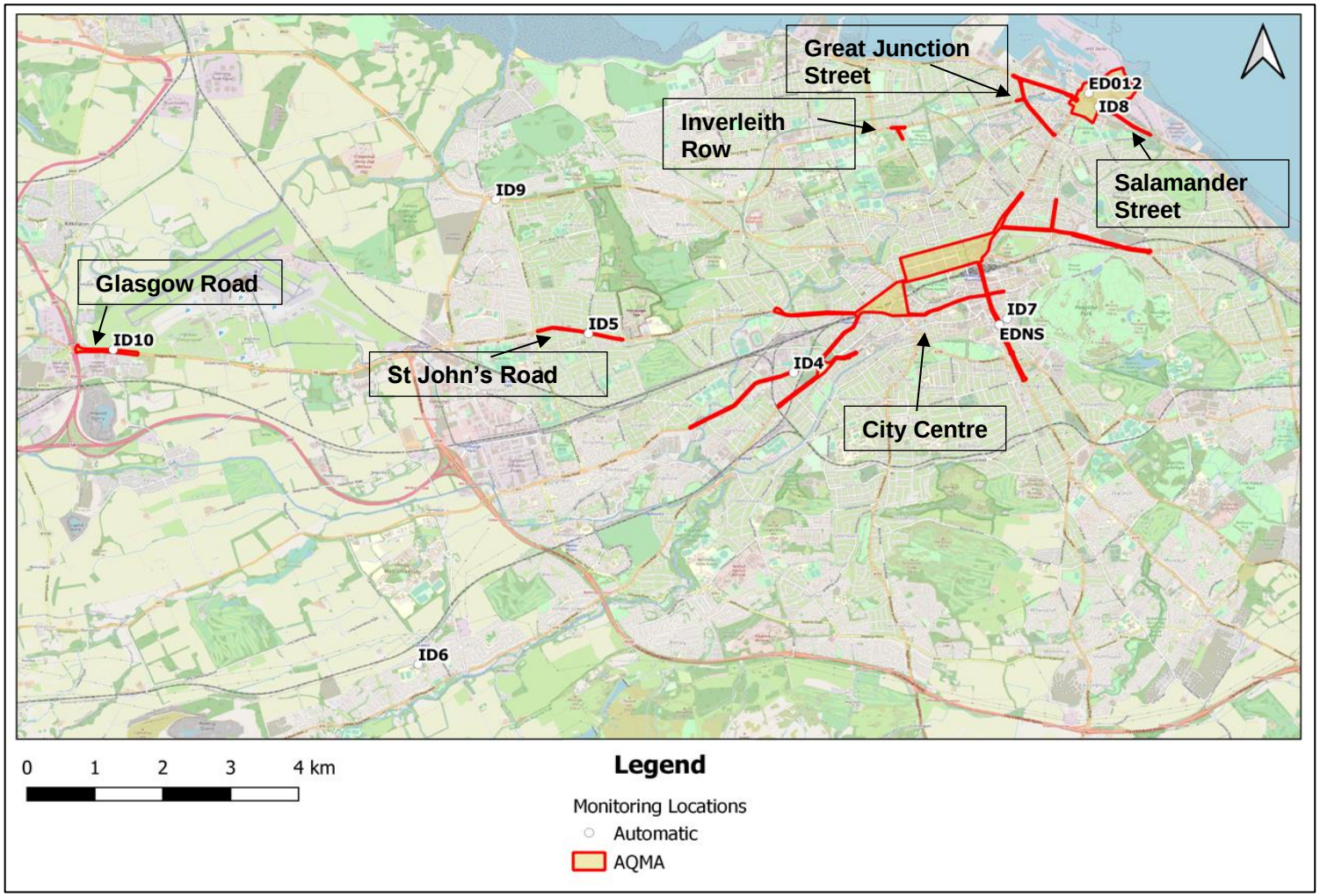


Figure D.2 – Diffusion Tube Locations: City Centre AQMA

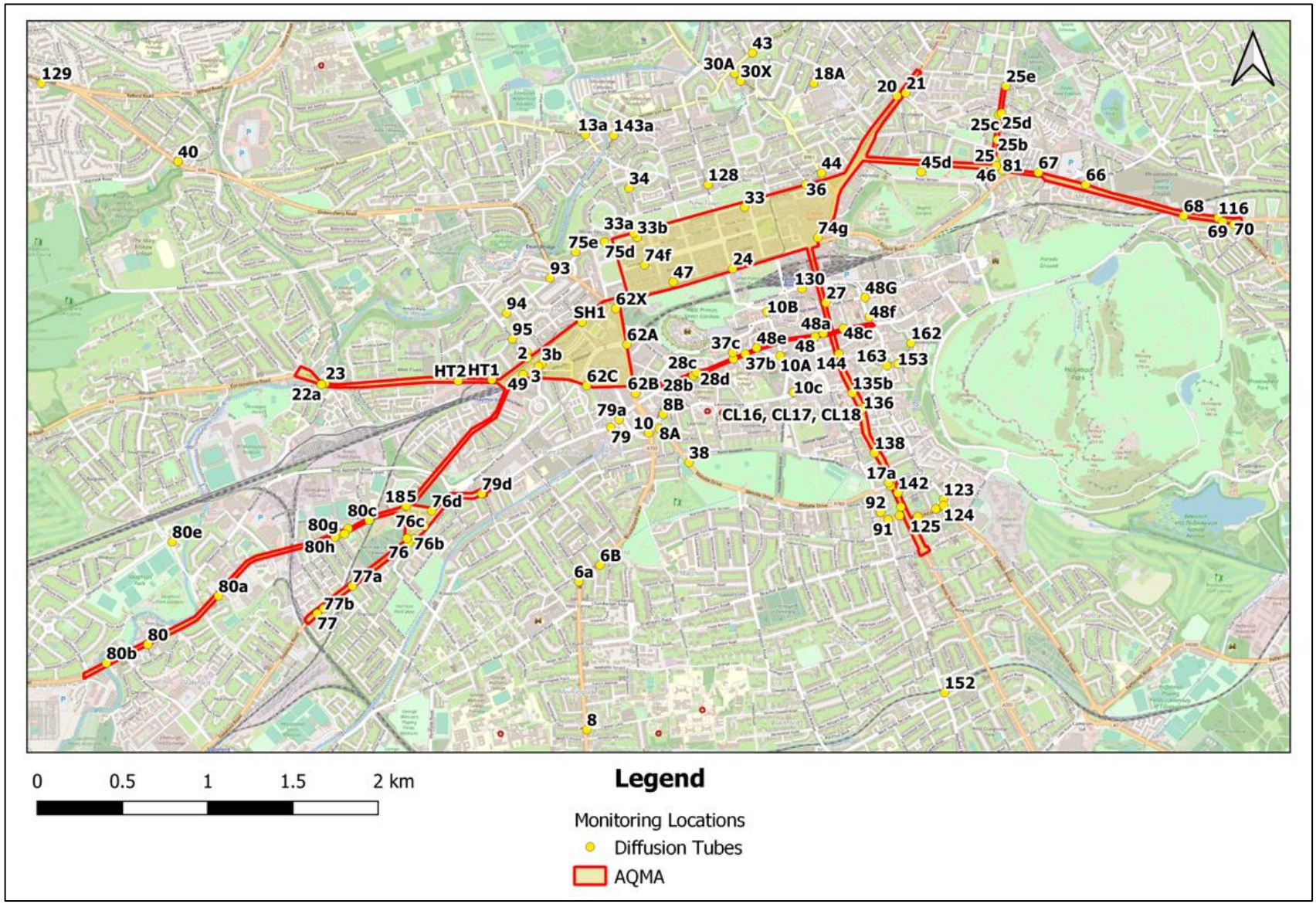


Figure D.3 – Diffusion Tube Locations: Glasgow Road AQMA

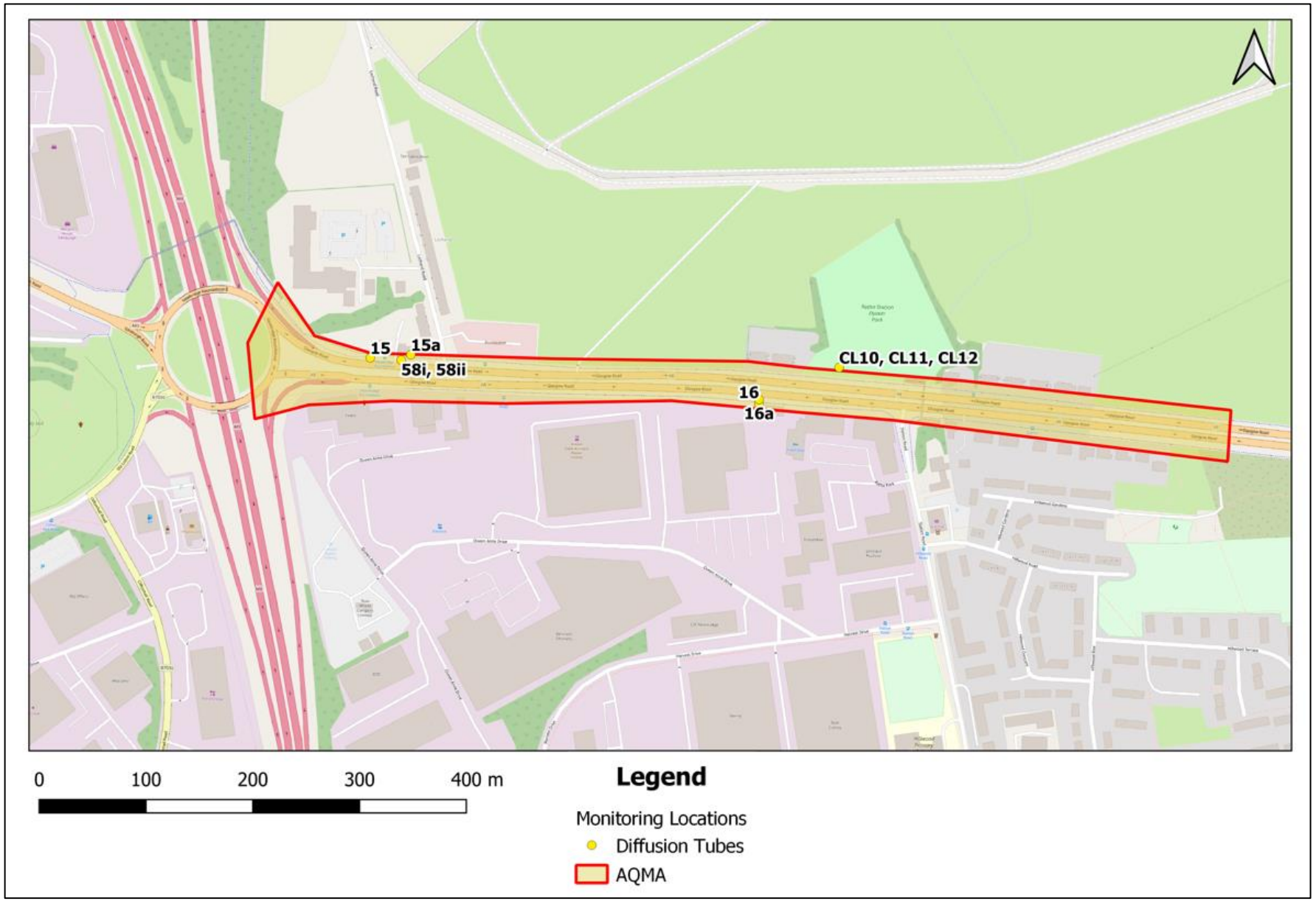


Figure D.4 – Diffusion Tube Locations: Inverleith Row AQMA

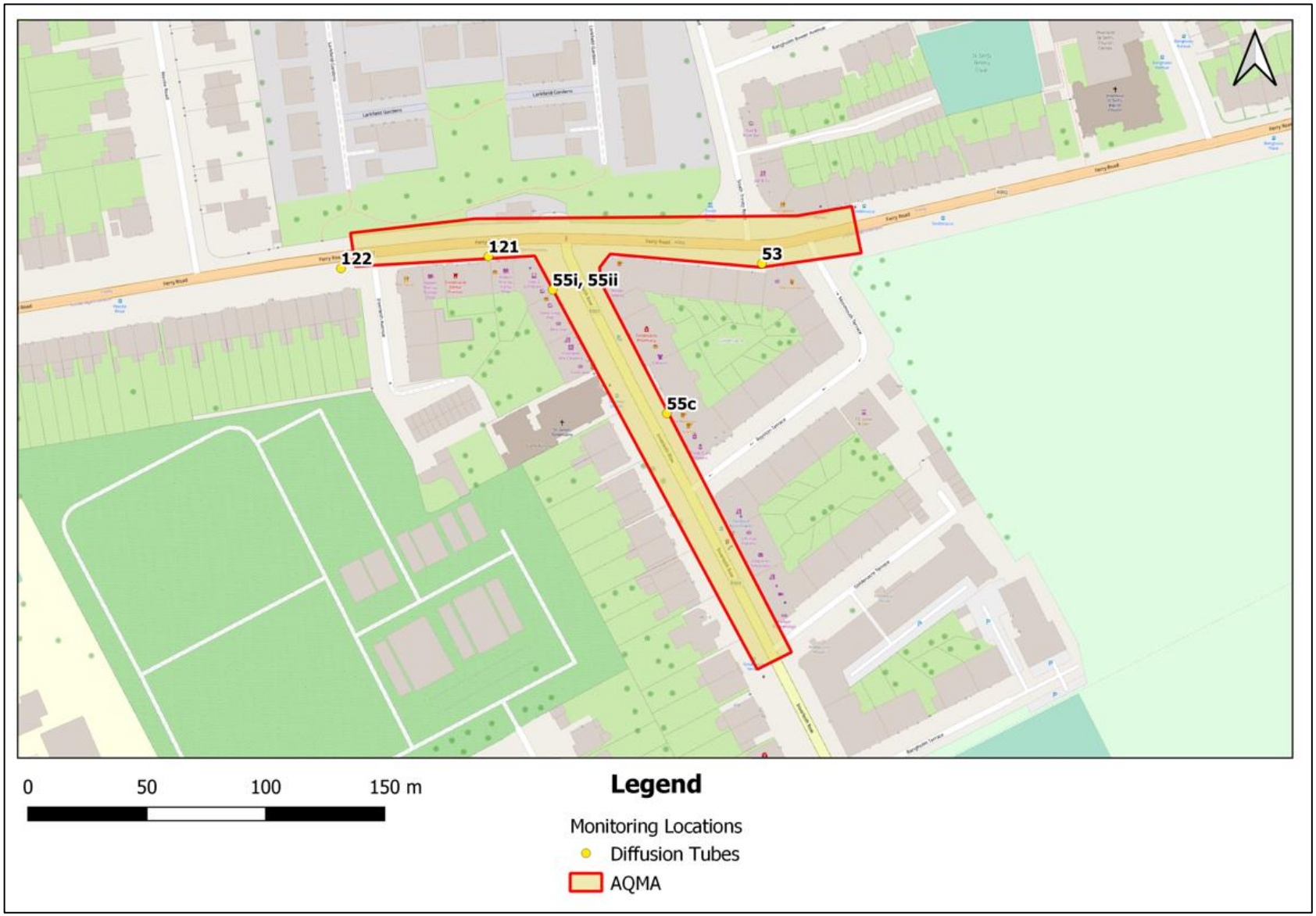


Figure D.5 – Diffusion Tube Locations: Great Junction Street and Salamander Street AQMAs

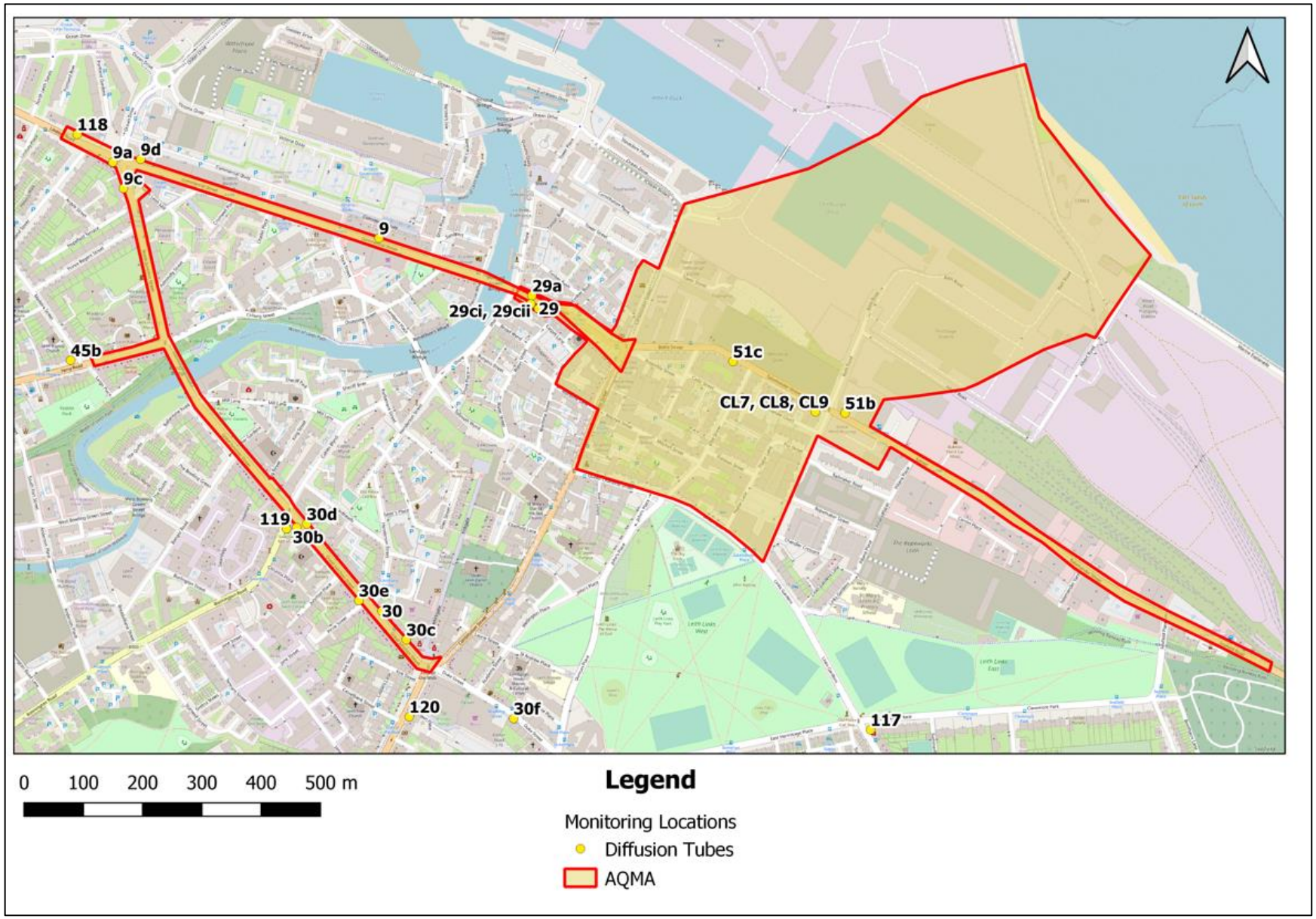


Figure D.6 – Diffusion Tube Locations: St John's Road

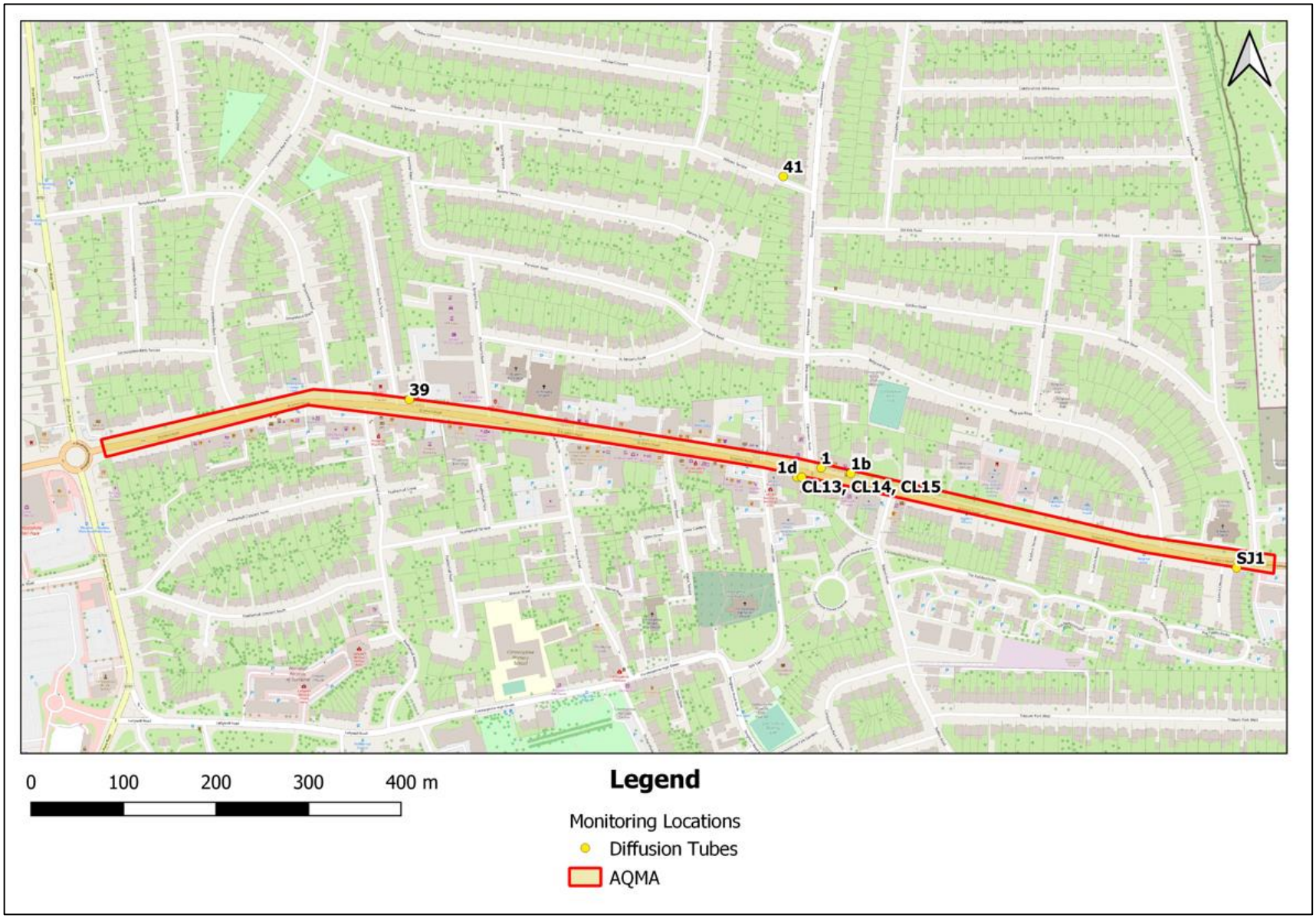
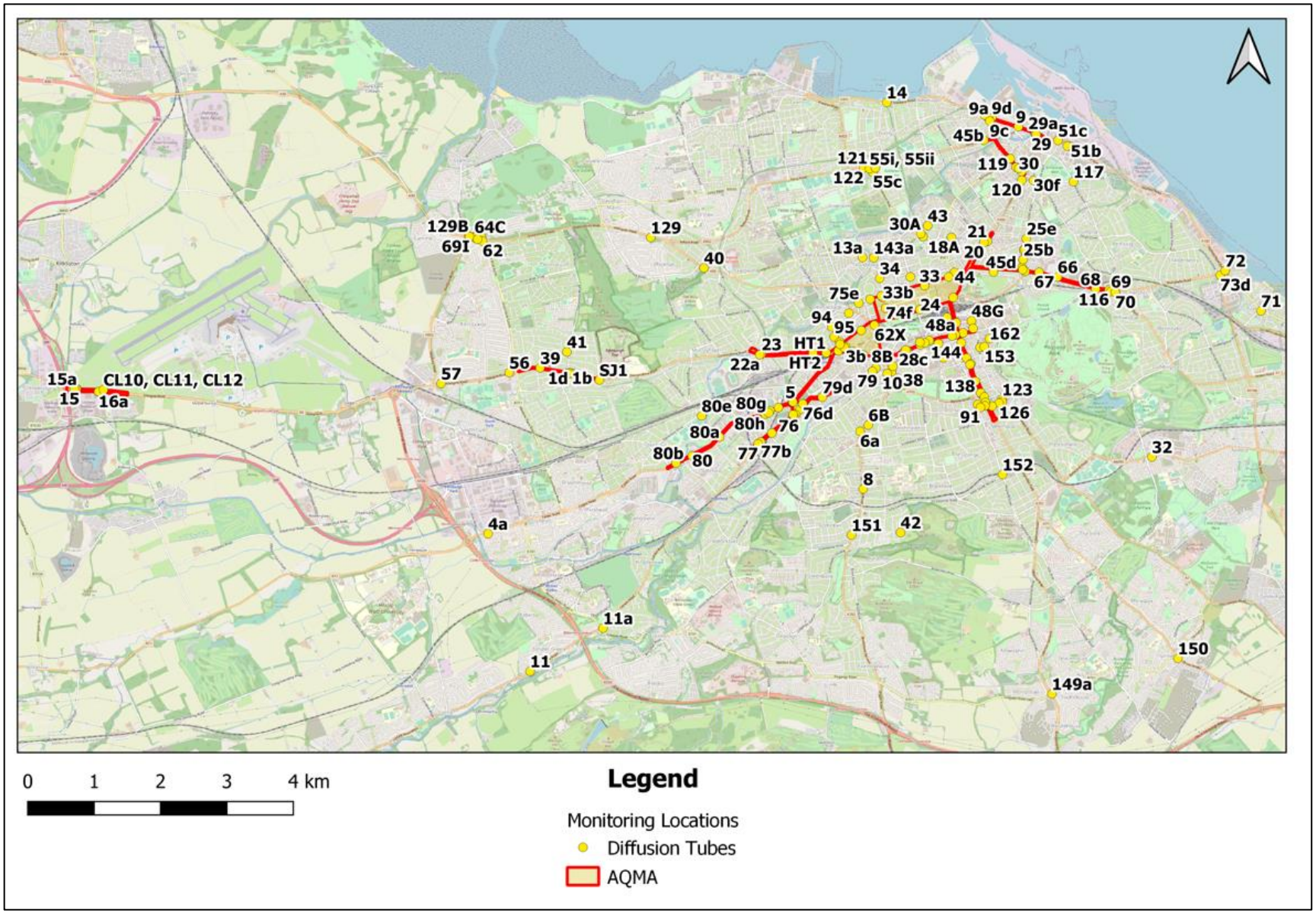


Figure D.7 – Diffusion Tube Locations: Overview



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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'
AQO	Air Quality Objectives
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)
CAFS	Cleaner Air for Scotland strategy
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LTN	Low Traffic Neighbourhood
NLEF	National Low Emission Framework defined in the Cleaner Air for Scotland Strategy
NMF	National Modelling Framework defined in the Cleaner Air for Scotland Strategy
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control

SO_2	Sulphur Dioxide

References

None