

Annual Progress Report (APR)



sustainable thriving achieving

East Dunbartonshire Council

www.eastdunbarton.gov.uk

2022 Air Quality Annual Progress Report (APR) for East Dunbartonshire Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

August 2022

East Dunbartonshire Council

Information	East Dunbartonshire Council
Local Authority Officer	Anne Prescott
Department	Environmental Health, Community Protection
Address	45 Southbank Drive, Kirkintilloch, G66 1XR
Telephone	0300 1234510
E-mail	anne.prescott@eastdunbarton.gov.uk
Report Reference Number	EDC_AUG_2022
Date	August 2022

Executive Summary: Air Quality in Our Area

Air Quality in East Dunbartonshire

This report is the 2022 Annual Progress Report undertaken in accordance with East Dunbartonshire Council's statutory obligation under the National Air Quality Strategy.

The report considers measured pollutant concentrations across East Dunbartonshire for the calendar year of 2021 and considers the potential for exceedences of the air quality objectives.

In East Dunbartonshire, the main pollutants of concern are NO₂, PM₁₀ and PM_{2.5} and the source of pollutant is mainly due to the volume of traffic and congestion. Across East Dunbartonshire, traffic flows have returned to pre pandemic levels however, pollutant levels remain satisfactory.

East Dunbartonshire Council has four continuous automatic analysers; one in Bishopbriggs, one in Bearsden, one in Kirkintilloch and one in Milngavie. This equipment downloads automatically and pollutant levels can be viewed via the Council web page or Scottish Air Quality website.

Monitoring over 2021 indicates a continuing overall downward trend in line with what has been experienced across Scotland over the last few years and this trend continued on the whole for all pollutants. The annual mean NO₂ level at three of our four automatic monitoring sites rose slightly post pandemic to levels between 16 and 24 µg/m³ as opposed to the objective level of 40µg/m³ however, the level at our Bishopbriggs site dropped from 20 µg/m³ in 2020 to 18.6 µg/m³ for 2021. Unfortunately, data capture at the Bishopbriggs site was poor resulting in annualisation being required with a final annual mean NO₂ of 16.8 µg/m³ being recorded for 2021. Milngavie recorded the lowest annual mean level of 16 µg/m³. It was 15 µg/m³ at the same site the previous year following various periods of lockdown. No exceedences of the hourly mean were recorded.

All four sites recorded levels well below 10% of the air quality objective for annual mean NO₂.

There is no discernible pattern to annual mean PM₁₀ levels during 2021. PM₁₀ levels at three out of four of our automatic monitoring sites recorded slight increases varying between 9.5 µg/m³ at Bearsden and 10.7 µg/m³ at Kirkintilloch however, the level at our

Milngavie site dropped from 10 $\mu\text{g}/\text{m}^3$ in 2020 to 8.7 $\mu\text{g}/\text{m}^3$ in 2021; all well below the annual mean objective level of 18 $\mu\text{g}/\text{m}^3$.

Annual mean $\text{PM}_{2.5}$ levels at all four sites are well within the Scottish objective level of 10 $\mu\text{g}/\text{m}^3$. Although annual mean $\text{PM}_{2.5}$ levels increased slightly at three of our four sites, the increase was very slight and the overall level at Bishopbriggs decreased, dropping from 6 $\mu\text{g}/\text{m}^3$ in 2020 to 5.9 $\mu\text{g}/\text{m}^3$ in 2021.

There are no new major sources of emissions although the installation of domestic wood burning stoves, and complaints concerning their use, continue to be received.

There are two AQMAs in East Dunbartonshire: one in Bishopbriggs and one in Bearsden. No new AQMAs were declared during 2020. NO_2 tubes which were added to the network to further investigate background levels have mostly been removed.

East Dunbartonshire Council intend to revoke the Bearsden AQMA designation for exceedences of both the NO_2 and PM_{10} annual mean however; it is not our intention to revoke the Bishopbriggs AQMA at this stage. Committee approval for revoking the Bearsden AQMA was forthcoming in November 2021 and the revocation has been approved by both the Scottish Government and Sepa. Statutory consultation yielded no adverse comments.

Air quality is a material consideration in terms of planning which means that all local development is considered in terms of air quality to ensure implications are examined and considered in advance and appropriate consultation takes place with such partners as the Scottish Environment Protection Agency (SEPA), Transport Scotland and Scottish Natural Heritage (SNH).

Actions to Improve Air Quality

East Dunbartonshire has a successful iBike programme operated in partnership with Sustrans Scotland. The iBike officers work intensely across local schools delivering practical lessons on active travel embedded within the school curriculum. This includes learning to cycle sessions, bike skills sessions, led rides, led walks, bike maintenance sessions, bike clubs etc. This encourages younger people to travel more actively and evidence shows that iBike schools tend to have higher levels of active travel on average than non-iBike schools.

Officers across the Council worked with Education to deliver the Climate Change Challenge in 2021. This included delivering 'Meet the expert' sessions where staff attended online question and answer sessions with local primary pupils about their individual relevant subject and created materials to help them create projects and ideas that will help tackle climate change. There was a final presentation from the schools themselves with presentations relating to transport, flooding, and housing. An example of the work related to transport is this video/song from Killermont Primary School:

https://www.youtube.com/watch?v=JM_yeaOXsdo

Local Priorities and Challenges

Our priority in the coming year is to ensure the smooth running of our monitoring network to gain as accurate a picture as possible of air quality levels across East Dunbartonshire.

We intend to revoke the Bearsden AQMA Order although we will continue to monitor and move forward with any outstanding and ongoing actions in the Bearsden Air Quality Action Plan. Complaints concerning smoke and smell associated with wood burning stoves remain a challenge and have possibly been exacerbated due to people being at home and being more aware of what is going on in their neighbourhood. There has also been an increase in the number of complaints concerning bonfires, chimineas, fire pits and BBQs.

How to Get Involved

Further information on air quality in East Dunbartonshire can be found on the Council website [Pollution page](#). You can visit the Scottish Air Quality website and view live air quality data in East Dunbartonshire at The Scottish Air Quality web pages. You can register for text and email alerts when air quality is forecast to be poor for the day ahead and can visit the Education pages and involve your children and family – all on the same link which also offers a free app for iPhone and Android for keeping you updated about air pollution in Scotland.

Table of Contents

Executive Summary: Air Quality in Our Area	iii
Air Quality in East Dunbartonshire Council	iii
Actions to Improve Air Quality	iv
Local Priorities and Challenges	v
How to Get Involved	v
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
Air Quality Management Areas	2
Cleaner Air for Scotland 2	3
2.1.1 Placemaking – Plans and Policies	3
2.1.2 Transport – Low Emission Zones	4
Progress and Impacts of Measures to address Air Quality in East Dunbartonshire Council	4
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives	233
3.1 Summary of Monitoring Undertaken	233
3.1.1 Automatic Monitoring Sites	233
3.1.2 Non-Automatic Monitoring Sites	233
3.1.3 Other Monitoring Activities	244
3.2 Individual Pollutants	244
3.2.1 Nitrogen Dioxide (NO ₂)	244
3.2.2 Particulate Matter (PM ₁₀)	245
3.2.3 Particulate Matter (PM _{2.5})	255
3.2.4 Sulphur Dioxide (SO ₂)	255
3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene	255
4 New Local Developments	266
4.1 Road Traffic Sources	266
4.2 Other Transport Sources	277
4.3 Industrial Sources	277

4.4	Commercial and Domestic Sources	288
4.5	New Developments with Fugitive or Uncontrolled Sources	288
5	Planning Applications.....	299
6	Conclusions and Proposed Actions.....	30
6.1	Conclusions from New Monitoring Data	30
6.2	Conclusions relating to New Local Developments.....	31
6.3	Proposed Actions.....	31
	Appendix A: Monitoring Results	32
	Appendix B: Full Monthly Diffusion Tube Results for 2021	46
	Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	51
	New or Changed Sources Identified Within <Local Authority Name> During <Year>	51
	Additional Air Quality Works Undertaken by <Local Authority Name> During <Year>	51
	QA/QC of Diffusion Tube Monitoring	51
	Diffusion Tube Annualisation.....	52
	Diffusion Tube Bias Adjustment Factors	52
	NO ₂ Fall-off with Distance from the Road.....	52
	QA/QC of Automatic Monitoring	53
	PM ₁₀ and PM _{2.5} Monitoring Adjustment	53
	Automatic Monitoring Annualisation	53
	NO ₂ Fall-off with Distance from the Road.....	53
	Annualisation Summary.....	54
	Local Bias Adjustment calculations	55
	Appendix D: Maps Showing the Location of the Monitoring Sites.....	566
	Glossary of Terms	61
	References	62

List of Tables

Table 1.1 – Summary of Air Quality Objectives in Scotland.....	1
Table 2.1 – Declared Air Quality Management Areas	2
Table 2.2 – Progress on Measures to Improve Air Quality.....	5
Table A.1 – Details of Automatic Monitoring Sites	32
Table A.2 – Details of Non-Automatic Monitoring Sites	33
Table A.3 – Annual Mean NO ₂ Monitoring Results (µg/m ³)	37
Table A.4 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	42
Table A.5 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³)	43
Table A.6 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	44
Table A.7 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³)	45
.....	Error! Bookmark not defined.
Table B.1 – NO ₂ 2021 Monthly Diffusion Tube Results (µg/m ³)	46
Table C.1 – Bias Adjustment Factor	52
Table C.2 – Annualisation Summary (concentrations presented in µg/m ³)	54
Table C.3 – Local Bias Adjustment Calculations	55

List of Figures

Figure 1 NO₂ tubes monitoring locations

Figure 2 Kirkintilloch NO₂ tubes locations

Figure 3 Bearsden and Milngavie NO₂ tubes locations

Figure 4 Bishopbriggs NO₂ tubes locations

Figure 5 Map of AQMA and monitoring stations

1 Local Air Quality Management

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

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

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO ₂)	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM ₁₀)	18 µg/m ³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10 µg/m ³	Annual mean	31.12.2021
Sulphur dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m ³	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m ³	Running 8-Hour mean	31.12.2003

2 Actions to Improve Air Quality

Air Quality Management Areas

Air Quality Management Areas (AQMA) 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 AQMA declared by East Dunbartonshire Council can be found in Table 2.1. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at the DEFRA [AQMA webpage](#).

We propose to revoke the Bearsden AQMA (see monitoring section).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Bearsden	<ul style="list-style-type: none"> • NO₂ annual mean • PM₁₀ Annual mean 	Bearsden	The designated area incorporates a 60 metre wide corridor along the A809 to the junction with Antonine Road and to the south beyond Canniesburn Toll to incorporate several road junctions. The eastern boundary is to the east side of Roman Road Carpark with a small section of Stockiemuir Road also incorporated.	<u>Bearsden AQMA Action Plan</u>
Bishopbriggs	<ul style="list-style-type: none"> • NO₂ annual mean 	Bishopbriggs	The designated area incorporates a 60- metre-wide	The Bishopbriggs Air Quality Action

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
	<ul style="list-style-type: none"> PM₁₀ annual mean 		corridor along the A803 Kirkintilloch Road, Bishopbriggs, bordered on the South by the Council's boundary with Glasgow City and by a line 30 metres to the North of Cadder Roundabout.	Plan is outdated and the majority of measures have been achieved. Those outstanding are updated in Table 2.3

Cleaner Air for Scotland 2

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

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

2.1.1 Placemaking – Plans and Policies

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

Air quality is embedded in the Local Development Plan with specific policy on addressing air quality through planning applications and accompanying Air Quality Planning Guidance. The Strategic Environmental Assessment (SEA) process also includes the

assessment of impact on air quality. SEA Officers assess every Council plan and policy and air quality impact assessment is part of the process.

2.1.2 Transport – Low Emission Zones

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

East Dunbartonshire Council has decided to take no further action at this stage on introducing Low Emission Zones as there are currently no exceedences of any of the air quality objectives across the East Dunbartonshire area. The Council does intend introducing a Climate Action Plan with a net zero target for the East Dunbartonshire area and, as transport is one of the main sources of emissions, this will be a key area of focus for carbon reduction.

Progress and Impacts of Measures to address Air Quality in East Dunbartonshire

East Dunbartonshire Council has taken forward a number of measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in

Table **2.2**. More detail on these measures can be found in the air quality Action Plan relating to each AQMA. Key completed measures are shown in the table.

Progress on the following measures has been slower than expected due to the pandemic and the cancellation of a number of planned projects such as the Air Quality/Active Travel in Schools Project. This measure is currently in the process of going back out to tender.

East Dunbartonshire Council expects this measure to be completed over the course of the next reporting year.

Table 2.2 – 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	Maintain contact with Scottish Govt re adoption of national air quality measures	Policy Guidance and Development Control	Increase focus on background concentrations of PM and encourage national action	East Dunbartonshire Council		Ongoing	Compliance across East Dunbartonshire with Scottish Objective levels.	No exceedences across East Dunbartonshire for several years. Revocation process underway for Bearsden AQMA.	NO ₂ , PM ₁₀ and PM _{2.5} . now being monitored at all four sites.	Monitoring will continue at all four sites as long as funding allows.	Ongoing target of reducing pollutant levels
2	Promote air quality with planning and transport strategies and other Council Plans	Policy Guidance and Development Control	EDLP2 is now under examination and expected end of June 2022. The LDP provides the planning context for the Local Transport Strategy. The LDP and Local Transport Strategy integrate air quality, planning development and transport planning to mitigate the air	East Dunbartonshire Council		All of these actions are underway and adopted as standard practice Regular joint working takes place		Local planning considerations aim to mitigate the cumulative negative air quality impacts of new development	Local Development Plan 2 is under examination and expected to be complete by end of June 2022. Following this, the findings will be examined and steps taken towards adopting LDP2 subject to Council approval.	Ongoing process for continual updating	Air quality planning guidance has been adopted. LTS was published in 2020 and will run until 2025 so focus is on delivering actions.

			<p>pollution effects of traffic.</p> <p>Look for opportunities to enhance joint working between Council Services to encourage potential air quality implications of existing and future Council strategies.</p>						<p>A new Active Travel Strategy is in preparation to accelerate modal shift towards zero-carbon travel and an update report on the Electric Vehicle Action Plan is awaiting committee approval</p> <p>The Local Transport Strategy 2020-2025 has been approved.</p>		
3	Junction improvements-Feasibility study	Traffic management	Model of junction improvements at Bearsden Cross. Provide Council with evidence to assist in decision whether to make appropriate junction improvements.	East Dunbartonshire Council	This work was undertaken during 2013 and no discernible benefit anticipated			Low	This measure was again reconsidered in 2016 but dismissed.		This measure was re evaluated as part of the consultation response to the Draft Action Plan however, it is no longer under consideration.
4	Intelligent traffic management systems	Traffic management	Identify appropriate locations and implement intelligent traffic management systems to	East Dunbartonshire Council		Junction at Bearsden Cross upgraded to Mova 8 in 2018		Medium	Further upgrades are available therefore funding may be sought to improve junction.	Work on Mova 8 complete in 2018	Works completed with air quality funding.

			improve traffic flow Identify improvements at junctions and consider modifying surrounding environment to achieve maximum benefit						Designs are being finalised for Canniesburn Toll Improvement Project which will include signals on the junction and potentially linking in with an adjacent junction.		Signalised junction at Canniesburn Toll planned to improve traffic flow
5	Parking Controls	Traffic Management	Decriminalise parking Extend the controlled parking zone Additional yellow lines near schools and hotspots	East Dunbartonshire Council		Off street decriminalised parking introduced summer 2016		Small	Charges introduced in council car parks throughout Kirkintilloch, Bishopbriggs, Bearsden and Milngavie.	Ongoing roll out of controlled parking zones.	TTROs have now expired and work is progressing to make permanent TROs at various schools across East Dunbartonshire including Westerton and Clober in the west and various across the east.
6	Mitigation of emissions from developments within and around the AQMA	Policy guidance and development control	Developments within or impacting on AQMA are reviewed for air quality impacts and where necessary all practical emission mitigation options are considered	East Dunbartonshire Council				Small to medium impact	Regular review and updating of LDP and LTS takes account of policies consistent with air quality objectives. Mitigation includes active, sustainable	Ongoing standard practice.	All developments requiring a full air quality impact assessment to include a Dust Management Plan as standard

East Dunbartonshire Council

			and implemented.	East Dunbartonshire Council		Already implemented		Small to medium impact	travel measures. Included as planning condition as part of consultation process	Ongoing standard practice	All Planning Applications involving demolition have dust control measures included as a condition.
7	Air quality planning guidance	Policy guidance and development control	Improve through planning that all construction / demolition sites have a Dust Management Plan.	East Dunbartonshire Council	2017	2018		Small to medium	Planning guidance adopted 2018.	This measure is now complete although guidance will be updated as necessary	Developers will know at the start of the planning process what is expected from them.
8	Fleet waste collection	Traffic Management	Reduce emissions from source by reducing number of vehicles on road at any one time	East Dunbartonshire Council		Implementation complete		Small - medium	Fortnightly fleet waste collection as standard	This measure is now complete with no plans to make any further alteration	Altered shift patterns leads to less heavy vehicles in use across EDC area at any one given time. Early start and weekend working spreads

			Seven day a week operation has reduced the overall number of vehicles required to operate the service								the use of vehicles reducing peak travel time emissions
9	Council fleet replacement programme	Vehicle fleet efficiency	Continue current replacement programme Pool EDC will attempt to increase the availability of electric/hybrid vehicles to appropriate staff Increase number of charge points across EDC area	East Dunbartonshire Council		Ongoing		High	Funding for electric vehicles has been discontinued and the number of vehicles has reduced to 27 as other leases have expired. Emphasis will be on increasing charge points	No planned completion date- pool EDC vehicles will be provided where possible.	Continuous ongoing implementation where funding allows. More emphasis on charging infrastructure being improved.
10	Environmental fleet recognition scheme	Vehicle fleet efficiency	Environmental Fleet Recognition Scheme rates individual vehicles using a star rating system, to recognise levels of operational and environmental performance. It aims to reduce the	EDC, TRL and all members		2017 onwards		Medium	Approx 118 vehicles within EDC Fleet assessed and graded at 4* with 65 vehicles at 5* Approx. 194 members overall of the EDC scheme	Current contract expired March 2022. Funding is in place for 2022/2023 and progressing through Procurement	This measure will continue as funding allows

			energy used by commercial and passenger transport fleets by encouraging increased adoption of fuel efficiency measures. This will bring about benefits for members through more efficient operations, reduced fuel costs and emissions.						with 6,057 vehicles.		
11	Vehicle idling enforcement	Vehicle fleet efficiency	<p>The Council has adopted the necessary enforcement powers to allow staff to undertake monitoring of engine idling, including buses, and where appropriate, enforce financial penalties for non-compliance</p> <p>Regular vehicle idling awareness raising campaigns are</p>	East Dunbartonshire Council – Community Protection		Powers adopted in 2006		Small	<p>Regular monitoring patrols are undertaken when appropriate.</p> <p>Individual complaints investigated.</p>	<p>Ongoing as resources allow</p> <p>Campaign planned for Autumn 2022</p>	<p>No fixed penalties issued to date as policy of education is adhered to. Drivers always asked to switch off.</p>

			undertaken with distribution of leaflets and advice								
12	Management of biomass installations	Promoting low emission plant	Suitably manage biomass installations in the domestic sector and as part of the planning process	East Dunbartonshire Council		All planning applications involving a wood burning stove have an appropriate informative added to ensure most efficient stove is installed.		Medium	Reactive work undertaken in responding to complaints Many installations do not require planning permission		Biomass has a negative impact on air quality unless appropriate abatement is installed. Any application installing biomass as CHP requires full AQIA.
13	Quality bus/bike partnerships	Promoting travel alternatives	Consider extending opportunities to improve infrastructure and create further cycle/bus corridors in other areas of Bearsden Expand the network with new cycle and walking routes both within towns and the countryside dedicated for active travel use to avoid conflict with motor vehicles	East Dunbartonshire Council, SPT and Sustrans					Core paths in Bearsden upgraded 2017/18. New links created to provide traffic free link to bus stop on Drymen Road and Bearsden Academy.		No plan to extend Bearsway Cycle Path. Cycle and walking routes will be developed where possible. Work on the next Active Travel Strategy is progressing and new projects across the authority area will be identified with increased opportunities for active travel.
14	Council smart working	Promoting travel alternatives	Smart working has led to reduced travel to work for many staff	East Dunbartonshire Council		Extended as a result of the pandemic		Medium	The pandemic has had a huge impact on this measure. All		Traffic levels have returned to pre pandemic levels however, no exceedences

									staff are continuing to work from home where possible throughout EDC.		of pollutant levels have been recorded across East Dunbartonshire.
15	Green travel planning	Promoting travel alternatives	Travel plans aim to address the negative impacts of car travel by encouraging sustainable forms of transport, such as walking, cycling and public transport; or reducing the need for travel.	East Dunbartonshire Council				Small	Pool bikes are available for staff use however there has been a reduction in staff movement due to working from home during the pandemic.		There was a commitment within the Local Transport Strategy 2020-2025 to prepare a corporate travel plan for the Council. The pandemic has had a huge effect on how people work and travel to work so it is likely this will not be progressed until it becomes clearer how and where people will be working in future across the Council estate.
16	School travel plans	Promoting travel alternatives	All new build schools within EDC require a school travel plan as part of their planning permission ensuring pupils are catered for and presented with sustainable travel options.	East Dunbartonshire Council		Already implemented as standard		Small	All new build schools within EDC include travel plans as standard		It is incumbent upon the school to keep existing school travel plans up to date

East Dunbartonshire Council

17	Air quality awareness raising and education	Public information	Raise awareness in schools by involving pupils in science projects, art competitions and planting days Raise awareness among EDC staff via regular informative updates	East Dunbartonshire Council		Ongoing		Small	Various projects already undertaken and more planned in schools as part of science and maths curriculum	Ongoing	Projects undertaken as funding allows. Teaching package due in schools during 2022/2023
18	Travel plans for large employers	Promoting travel alternatives	Strategic development and regeneration team to ensure all relevant commercial planning applications have travel plan conditions applied in accordance with current best practice	East Dunbartonshire Council		Ongoing		Small	Ongoing		Travel plans submitted where appropriate with large scale developments. This may be affected by the need for travel and home working.
19	Eco driver training	Vehicle fleet efficiency	Training for Council Staff as well as fleet. Fuel good training can help individuals become more efficient drivers either at work or	East Dunbartonshire Council	2019 onwards	Ongoing	No of staff completing Eco Driver Training	Small	Employees trained in Fuel Good Driving Techniques		This measure will continue as funding allows. Sessions offered to all staff who drive as condition of employment and added to CPD. No funding for 2022/2023.

			during leisure and help save money on fuel costs								
20	Council pool cars – priority spaces and car sharing	Vehicle fleet efficiency	<p>Council pool cars to have prioritised parking spaces</p> <p>Car sharing database to be updated (introduced in 2016)</p>	East Dunbartonshire Council, SPT and Liftshare				Small	<p>Priority spaces designated for pool cars at all Council buildings</p> <p>117 employees signed up to SPT Journey share/Liftshare</p>		<p>Car sharing has been problematic during the pandemic and will only be encouraged when it is safe to do so.</p> <p>This database is still live but has been little used since the pandemic. Further progress unlikely.</p>
21	Vehicle emission testing	Vehicle fleet efficiency	EDC undertakes vehicle emission testing within AQMAs and other parts of the area. Fixed penalty notices are served for vehicles failing to meet the appropriate emission standards, although there is an option to have a faulty	East Dunbartonshire Council, North Lanarkshire Council, Police Scotland		Powers adopted in 2006	No of fixed penalties served	Low	The no of vehicles tested during 2019 was greatly reduced from previous years due to the change in emphasis to awareness raising and idling patrols	Ongoing as funding allows	<p>No testing undertaken during 2020 due to pandemic. Unlikely to be reinstated and education/patrols will be the way forward.</p> <p>Idling patrols and education in schools planned for 2022/2023</p>

			vehicle repaired and re tested.								
22	Vehicle tracking and telematics	Vehicle fleet efficiency	Vehicle tracking systems help monitor and manage fleet operations providing real time information which can help towards the reduction of fuel use and emissions, carbon reduction, encourage better driving techniques and put a stop to any council vehicles engine idling	East Dunbartonshire Council				Small	Master naught vehicle tracking installed in all fleet and pool vehicles	Ongoing	Contract for vehicle tracking is due for renewal and the plan is to extend the number of vehicles with trackers.
23	Improvements to SPT prioritised bus stops	Promoting travel alternatives	Upgrading of bus stops to encourage active travel	East Dunbartonshire Council, SPT				Small	Improvements to bus stops on A81 and A809 Drymen Road have been undertaken	The process of improving SPT bus stops will continue as required and as funding allows.	New Real Time Passenger Information units have been installed at a further 8 bus stops in 2021 with more planned in the area.
24	Soft measures – Healthy Habits	Promoting travel alternatives	The Healthy Habits campaign seeks to inspire people to choose active travel	East Dunbartonshire Council				Small	The Healthy Habits project is ongoing with new initiatives continually developed to encourage local	Projects will continue as funding allows.	Work progressed throughout 2021 where possible with use being made of the Council's walking and

East Dunbartonshire Council

			such as walking and cycling.						people to walk and cycle more often.		cycling maps and associated signage directing people to a number of long distance and local walking and cycling routes.
25	Domestic emissions and fuel consumption awareness raising	Public information	Support for awareness raising of energy efficient measures by Scottish and UK government	East Dunbartonshire Council				Small	Solar thermal projects complete or underway in Bearsden.	2021	Some of these measures are undertaken as funding allows. Installation of renewable technologies project is postponed.
26	Tree and wild flowers planting	Public information	Undertake planting schemes within or adjacent to Bearsden AQMA	East Dunbartonshire Council		Undertaken when funding is available		Small	Trees, shrubs and wildflower meadows planted throughout Bearsden AQMA	Ongoing as funding allows	Planting undertaken where funding allows
27	Joint health improvement plan	Public Information	The Joint Health Improvement Plan seeks to work with local communities and residents in joint effort to improve health and address health inequalities	East Dunbartonshire Council, NHS Greater Glasgow and Clyde				Small	Ongoing Increased awareness of increasing active travel to help control the impact of obesity on the NHS		The JHIP sub-group have reconvened meetings involving council, HSCP, Third Sector and leisure representatives to promote and re-establish opportunities around active use of the local environment.
28	Green Infrastructure	Public Information	Expand the programme of installing sustainable	East Dunbartonshire Council					LDP Supplementary Guidance on Green		Solar panels still being installed. Increase in CHP installations. All

East Dunbartonshire Council

			energy measures						Infrastructure and Green Network is available on line		Council new build now with CHP and air source heat pumps.
29	Taxi Licensing	Promoting low emission transport.	Consider means of reducing emissions from taxis and private hire vehicles in AQMA	East Dunbartonshire Council				Small		Frequency of testing increased to twice a year for older vehicles. Approved by committee during 2020	No change during 2021 to bi annual testing of vehicles 5 years and over.

BISHOPBRIGGS ACTION PLAN UPDATE – REMAINING OUTSTANDING MEASURES

Table 2.3 – Progress on Measures to Improve Air Quality Bishopbriggs Action Plan Update – Remaining Outstanding Measures

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
4	Support the construction of phases 3 to 5 of the Bishopbriggs Relief Road (BRR) to the east of Bishopbriggs.	Traffic management	<p>Construction of the Westerhill Development Road (WDR) (previously referred to as Bishopbriggs Relief Road (Phase 5)) is intended to support development sites at Westerhill, however would also be expected to attract vehicles currently using the A803 through Bishopbriggs as it provides a more direct link to the M80 and wider strategic road network. A reduction in trips on the A803 would be expected to reduce traffic congestion and the associated air quality impacts with queued traffic.</p> <p>In addition to the potential reduction in traffic on the A803 due to the WDR, the City Deal plans also include improvements to the A803 corridor from Torrance</p>	EDC & Transport Scotland	Procurement process underway to appoint designers of WDR. A803 Corridor Improvements project has appointed designers for Feasibility Stage.	<p>Phase 3 opened 2015.</p> <p>Phase 4 opened June 2018</p>	Traffic levels on both WDR and A803 will provide an indication of success of measure. Mode shift from private car to bus/rail and cycling/walking will also provide an indication of performance.	Medium	Procurement process underway to appoint designers of WDR. A803 Corridor Improvements designers have been appointed to undertake Feasibility Design.	2026	With City Deal funding approved, the City deal team are currently preparing for procurement of design consultants for WDR and have appointed design consultants for the Feasibility design stage of the A803 Corridor Improvements project.

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
			Roundabout to Glasgow to increase sustainable travel on the route. This will include measures to encourage a shift from private car to bus and active travel, with subsequent benefits to health and the environment.								
7	Investigation of options in Bishopbriggs town centre to improve access to Bishopbriggs station and opportunities for active travel.	Promoting travel alternatives	As part of the A803 Corridor Improvements and the Bishopbriggs Town Centre (BTC) regeneration design work (both City Deal projects), walking and cycling to/from the town centre will be promoted. It is expected that completion of the Relief Road (Westerhill Development Road WDR) (previously referred to as BRR Phase 5) will assist in reducing traffic levels on the route through the town centre, which will combine with these projects to improve opportunities for active travel. To	Network Rail & EDC	Procurement process underway to appoint designers for the WDR. Public realm designs are being developed by appointed consultants for the BTC project.		Increased walking and cycling provision in the town centre to encourage active travel. Reduced levels of car trips through the town centre. Increase in footfall through the TC.	Small			

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
			be tested through the business case process.								
8	Investigate options for a Bishopbriggs East / Westerhill transport hub comprising a bus terminal, rail halt and park and ride facility.	Promoting travel alternatives	City Deal funding was approved to advance the Outline Business Cases for transport infrastructure improvements in Bishopbriggs. Work is underway to appoint designers for the BRR Phase 5 (including Westerhill masterplan) and sustainable travel improvements on the A803 corridor. These are likely to include measures such as bus lanes and bus priority at junctions, along with increased active travel provision. The likely impacts of rail improvements and park and ride options were considered as part of the Strategic Business Case development, and will be further considered as part of the OBC process to determine whether they will form part of the sustainable transport improvements as part	EDC, SPT & Transport Scotland							The benefits of a Bus Park and Ride at or near the BRR/Westerhill were assessed as part of the Strategic Business Case development, and will be further tested as part of the OBC process to determine whether they will form part of the sustainable transport improvements as part of the City Deal projects

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
			of the City Deal projects.								
9	Where possible encourage the establishment of partnerships between public transports to provide more joined up inter-modal transport options.	Promoting travel alternatives	As Programme partner SPT are engaging with transport providers to determine viability of inter-modal options, although there is limited interest.	EDC, SPT & local bus operators					Ongoing		A sustainable transport bus corridor is planned as part of the City Deal funding package
11	Produce a public transport access map.	Public information	This can be investigated in coordination with SPT, but may not form part of the City Deal work.	EDC,SPT				Small	A public transport map would be best undertaken by SPT given their database of registered bus services etc. SPT currently has no funding available for such an		

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
									undertaking		

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

East Dunbartonshire Council undertook automatic (continuous) monitoring at four sites during 2021. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <https://www.scottishairquality.scot/latest/current-levels>

The annual mean ranged from 16 – 24 $\mu\text{g}/\text{m}^3$ across East Dunbartonshire demonstrating compliance with the 40 $\mu\text{g}/\text{m}^3$ air quality objective.

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

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

3.1.2 Non-Automatic Monitoring Sites

East Dunbartonshire Council undertook non- automatic (passive) monitoring of NO_2 at 48 sites during 2021. The diffusion tubes were analysed by Glasgow Scientific Services (GSS), which is a UKAS accredited laboratory, and the data from these tubes was compared against the annual average objective for NO_2 . Table A.2 in Appendix A shows the details of the sites.

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

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

3.1.3 Other Monitoring Activities

East Dunbartonshire Council installed two Zephyr mobile monitoring units in the area in February 2020, just prior to the first lockdown. One was installed outside a local primary school in order to utilise the data as part of a school educational programme. To date, neither of these units has been utilised and consideration needs to be given as to whether there is a worthwhile purpose in their installation.

Individual Pollutants

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

3.1.4 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³.

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

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

There were no exceedences of the air quality objectives for this pollutant within East Dunbartonshire during the calendar year of 2021.

3.1.5 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 18µg/m³.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than seven times per year.

There were no exceedences of the air quality objectives for this pollutant within East Dunbartonshire during the calendar year of 2021.

3.1.6 Particulate Matter (PM_{2.5})

Table A.7 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/m³.

There were no exceedences of the air quality objectives for this pollutant within East Dunbartonshire during the calendar year of 2021.

3.1.7 Sulphur Dioxide (SO₂)

East Dunbartonshire Council does not monitor sulphur dioxide.

3.1.8 Carbon Monoxide, Lead and 1,3-Butadiene

East Dunbartonshire Council does not monitor carbon monoxide, lead or 1,3 Butadiene.

4 New Local Developments

Proposed new local developments in East Dunbartonshire which may affect air quality are still subject to obtaining planning permission therefore have been detailed under Planning Applications. Several applications required air quality assessments and are under consideration and these have also been detailed under Planning Applications.

4.1 Road Traffic Sources

East Dunbartonshire Council Roads have reported as follows:

- Narrow congested streets with residential properties close to the kerb – no new roads that meet this criteria
- Busy streets where people may spend one hour or closer to traffic – no new roads that meet this criteria
- Roads with a high flow of buses and/or HGVs – no new roads that meet this criteria
- Junctions new junction to Allander Leisure Centre and housing has signals and a parking ban around it. Should improve traffic flow and so reduce pollution.
- New roads constructed or proposed – Proposed redesign of Canniesburn Toll programmed from October onwards. This will put signals on the Toll and should be better able to regulate traffic flow. It will also improve walking and cycling across/around the Toll
- Roads with significantly changed traffic flow – Roads with significantly changed traffic flows. Most roads had a dip in traffic last year (2021) and have risen towards normal levels this year (2022) however, traffic on Switchback towards Glasgow shown as down from average 11,000 to 8,000 vehicle per day. Also Milngavie Road down from 8,000 to 4,000 in both directions. Likely many who use these roads to Glasgow are able to work from home.
- Bus or coach stations – no new bus or coach stations to report.

The following was also reported:

New or adopted roads

Cyprian Drive Lenzie

Rutherford Rd Lenzie

Crammond Drive Lenzie

Saltmarsh Drive Lenzie

Carresbrook Place Lenzie

Lumloch Drive Bishopbriggs

Westerhill Drive Bishopbriggs

All of the above are new roads within residential areas.

4.2 Other Transport Sources

East Dunbartonshire Council confirms that there are no other transport sources as prescribed in the criteria viz: airports; locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m; locations with many movements of diesel locomotives, and potential long-term relevant exposure within 30m or ports for shipping.

4.3 Industrial Sources

East Dunbartonshire Council confirms that to our knowledge, there are no new industrial sources as prescribed in the criteria viz: new or proposed installations for which an air quality assessment has been carried out or existing installations where emissions have increased substantially or new relevant exposure has been introduced or new or significantly changed installations with no previous air quality assessment; major fuel storage depots storing petrol; petrol stations or poultry farms.

4.4 Commercial and Domestic Sources

East Dunbartonshire Council confirms that to our knowledge, no new commercial or domestic sources have been identified during 2021 which may impact on air quality.

4.5 New Developments with Fugitive or Uncontrolled Sources

East Dunbartonshire Council confirms that no new developments with Fugitive or Uncontrolled Sources were identified during 2021.

A planning application for the proposed extraction of hard rock and inert waste landfill from a former colliery has not yet been decided however, the Air Quality Impact Assessment has been approved.

5 Planning Applications

East Dunbartonshire Council requests a full air quality impact assessment in line with our Planning Guidance and where we consider the application may affect air quality.

All East Dunbartonshire Council projects requiring planning permission come with a full air quality impact assessment as standard.

Environmental Health is consulted on many planning applications and the following included requests for full air quality impact assessments:

1. TP/ED/21/0365 | Residential Development, including associated infrastructure and landscaping on land off Market Road, Kirkintilloch | Site At Fauldhead Old Duntiblae Road Kirkintilloch East Dunbartonshire

An AQIA was requested on the basis that development would lead to 500 or more vehicle movements per day. The report concluded that there would be no significant impact on existing receptors.

2. TP/ED/21/0366 | Residential Development, including associated infrastructure and landscaping on the land off Chryston Road, Kirkintilloch. | Land At Chryston Road Kirkintilloch East Dunbartonshire

This application was raised in conjunction with the above application (0365) and dealt with as one. Conclusion as above.

3. TP/ED/21/0465 | Proposed erection of a Class 1 retail foodstore with associated car parking, access, landscaping and other works. | Land Adjacent To Initiative Road Woodilee Road Lenzie East Dunbartonshire

An AQIA was requested on the basis that development would lead to 500 or more vehicle movements per day. The report concluded that the site would be low risk during the construction phase with an insignificant impact for the operational phase. Mitigation measures in the form of a dust management plan were also submitted.

All of the above applications are still under consideration.

6 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

Both automatic and passive monitoring for NO₂ carried out during 2021 did not reveal any exceedences of the annual mean Air Quality Objective at any of the monitoring locations within East Dunbartonshire. There has been an overall downward trend across Scotland over the last few years and this trend continued on the whole for all pollutants. The annual mean NO₂ level at three of our four automatic monitoring sites rose slightly post pandemic to levels between 16 and 24 µg/m³ as opposed to the objective level of 40µg/m³ however, the level at our Bishopbriggs site dropped from 20 µg/m³ in 2020 to 18.6µg/m³ (16.8µg/m³ after annualisation) for 2021. No exceedences of the hourly mean were recorded.

Similarly, PM₁₀ levels at three out of four of our automatic monitoring sites recorded slight increases varying between 9.5 µg/m³ at Bearsden and 10.7 µg/m³ at Kirkintilloch however, the level at our Milngavie site dropped from 10 µg/m³ in 2020 to 8.7 µg/m³ in 2021; all well below the annual mean objective level of 18µg/m³.

PM_{2.5} was measured at all four automatic monitoring sites and again, rose slightly at three out of four of our monitoring sites however, the level reduced slightly at our Bishopbriggs site dropping from 6 µg/m³ in 2020 to 5.9 µg/m³ in 2021.

East Dunbartonshire Council has two Air Quality Management Areas – Bishopbriggs and Bearsden. All monitoring results within the AQMAs are below the air quality objective levels for which they were declared and have been for some time. Committee approval to revoke the Bearsden AQMA was forthcoming in November 2021 and approval from both the Scottish Government and Sepa has been confirmed. It is not our intention to revoke the Bishopbriggs AQMA just yet due to the number of planned infrastructure and development changes planned as part of the City Deal funding award.

Conclusions relating to New Local Developments

East Dunbartonshire Council has no exceedences of any of the relevant air quality objectives and new local developments are unlikely to introduce new exceedences. Although a number of applications for development have included air quality impact assessments, there is nothing to indicate that such development would introduce any new exceedences of any of the air quality objectives.

Proposed Actions

Monitoring data for 2021 has not identified any new exceedences of the objectives for any pollutant and all monitored areas of East Dunbartonshire are not only in compliance but are well below the objective levels, even although traffic levels have gradually returned to pre pandemic levels.

A review of the NO₂ tube network has seen the removal of a number of NO₂ tubes which confirm there is no longer any need for concern in the particular area in terms of air quality objective levels.

The revocation of the Bearsden AQMA has been approved by committee and agreed with the Scottish Government and Sepa. The Revocation Order is due to be signed imminently at which time further consultation and relevant publicity will be undertaken.

It is not our intention to revoke the Bishopbriggs AQMA at this stage due to the extensive proposed redevelopment of Bishopbriggs in line with City Deal funding including an aspiration to complete phase 5 of the Bishopbriggs Relief Road (now referred to as Westerhill Development Road). It is anticipated that during construction over several years, local air quality data may be unreliable.

We will continue to implement Action Plan measures where funding allows.

The next Annual Progress Report will be submitted in 2023.

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)
EDB1	Bishopbriggs	Roadside	260995	670130	NO ₂ ; PM ₁₀ ; PM _{2.5}	Yes AQMA 1	Chemiluminescent; FIDAS	5m	2m	2
EDB2	Bearsden	Kerbside	254269	672067	NO ₂ ; PM ₁₀ ; PM _{2.5}	Yes AQMA 2	Chemiluminescent; FIDAS	<2m	1m	2
EDB3	Kirkintilloch	Kerbside	265675	673516	NO ₂ ; PM ₁₀ ; PM _{2.5}	No	Chemiluminescent; FIDAS	<2m	1m	3
EDB4	Milngavie	Roadside	255328	674115	NO ₂ ; PM ₁₀ ; PM _{2.5}	No	Chemiluminescent; TEOM FDMS; FIDAS	<40m	1m	3

Notes:

(1) AQMA1 is Bishopbriggs Air Quality Management Area

(2) AQMA2 is Bearsden Air Quality Management Area

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)
EDB5	Bearsden 1 (118 Drymen Rd)	Roadside	254218	672193	NO2	Yes - Bearsden	3m	2m	No	2.4
EDB11	Bearsden 10	Roadside	255394	670683	NO2	No	24m	2m	No	2.4
EDB12	Bearsden 13	Roadside	254809	671057	NO2	Yes - Bearsden	26m	2m	No	2.4
EDB13	Bearsden 14	Roadside	254877	671000	NO2	Yes - Bearsden	8m	2m	No	2.4
EDB14	Bearsden 15	Roadside	254898	671023	NO2	Yes - Bearsden	2m	2m	No	2.5
EDB15	Bearsden 16	Kerbside	254269	672067	NO2	Yes - Bearsden	2m	1m	Yes	1.8
EDB16	Bearsden 16 B	Kerbside	254269	672067	NO2	Yes - Bearsden	2m	1m	Yes	1.8
EDB17	Bearsden 16 C	Kerbside	254269	672067	NO2	Yes - Bearsden	2m	1m	Yes	1.8
EDB18	Bearsden 17	Roadside	254258	672077	NO2	Yes - Bearsden	<2m	2m	No	2.6
EDB19	Bearsden 18	Roadside	254275	672069	NO2	Yes - Bearsden	<2m	2m	No	2.4
EDB51	Bearsden 19	Roadside	255403	673236	NO2	No	5m	<2m	No	2.2

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)
EDB52	Bearsden 20	Roadside	255400	673134	NO2	No	28m	<2m	No	2.5
EDB53	Bearsden 21	Roadside	254984	671910	NO2	No	32m	<2m	No	2.2
EDB6	Bearsden 3 (5 Ravelston Rd)	Urban Background	254655	670158	NO2	No	8m	5m	No	2.4
EDB7	Bearsden 4 (8 Lowther Ave)	Urban Background	253075	673382	NO2	No	6m	5m	No	1.8
EDB8	Bearsden 7	Roadside	254269	672069	NO2	Yes - Bearsden	<2m	2m	No	1.8
EDB9	Bearsden 8	Roadside	254275	672047	NO2	Yes - Bearsden	18m	2m	No	1.8
EDB10	Bearsden 9	Roadside	254751	670621	NO2	No	30m	2m	No	1.8
EDB21	Bishopbriggs 13	Roadside	260549	669312	NO2	Yes - Bishopbriggs	5m	2m	No	2.4
EDB22	Bishopbriggs 14	Roadside	260995	670130	NO2	Yes - Bishopbriggs	42m	2m	Yes	1.8
EDB23	Bishopbriggs 14B	Roadside	260995	670130	NO2	Yes - Bishopbriggs	42m	2m	Yes	1.8
EDB24	Bishopbriggs 14C	Roadside	260995	670130	NO2	Yes - Bishopbriggs	42m	2m	Yes	1.8
EDB25	Bishopbriggs 16	Roadside	260580	669533	NO2	Yes - Bishopbriggs	<2m	2m	No	2.4
EDB26	Bishopbriggs 17	Roadside	260552	669320	NO2	Yes - Bishopbriggs	<2m	2m	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)
EDB30	Bishopbriggs 21	Roadside	261033	669650	NO2	No	6m	2m	No	2.2
EDB31	Bishopbriggs 22	Roadside	260571	669339	NO2	Yes - Bishopbriggs	5m	2m	No	2.3
EDB32	Bishopbriggs 23	Roadside	260759	669999	NO2	Yes - Bishopbriggs	5m	2m	No	2.2
EDB33	Bishopbriggs 24	Roadside	261903	671955	NO2	Yes - Bishopbriggs	10m	2m	No	2.2
EDB34	Bishopbriggs 25	Urban Background	260617	670338	NO2	No	6m	2m	No	2.4
EDB64	Bishopbriggs 26	Roadside	262112	670517	NO2	No	3m	1m	No	2.4
EDB68	Bishopbriggs 30	Roadside	262398	669436	NO2	No	3m	1m	No	2.4
EDB36	Bishopbriggs 6	Roadside	261016	670198	NO2	Yes - Bishopbriggs	<2m	2m	No	2.5
EDB37	Kirkintilloch 15	Roadside	265641	673497	NO2	No	2m	2m	No	2.8
EDB38	Kirkintilloch 16	Roadside	265697	673524	NO2	No	3m	2m	No	2.4
EDB39	Kirkintilloch 17	Kerbside	265675	673516	NO2	No	3m	1m	Yes	1.9
EDB40	Kirkintilloch 17 B	Kerbside	265675	673516	NO2	No	3m	1m	Yes	1.9
EDB41	Kirkintilloch 17 C	Kerbside	265675	673516	NO2	No	3m	1m	Yes	1.9
EDB42	Kirkintilloch 18	Kerbside	265674	673521	NO2	No	<2m	2m	No	2.4

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)
EDB43	Kirkintilloch 19	Roadside	265602	673583	NO2	No	<2m	<2m	No	2.5
EDB44	Kirkintilloch 20	Roadside	265849	673424	NO2	No	6m	<2m	No	2.3
EDB45	Kirkintilloch 21	Roadside	265506	671961	NO2	No	5m	<2m	No	2.4
EDB53	Milngavie 10	Roadside	255329	674114	NO2	No	40m	1m	Yes	2.0
EDB54	Milngavie 10 B	Roadside	255329	674114	NO2	No	40m	1m	Yes	2.0
EDB55	Milngavie 10 C	Roadside	255329	674114	NO2	No	40m	1m	Yes	2.0
EDB73	Milngavie 13	Roadside	255183	674409	NO2	No	3m	1m	No	2.4
EDB47	Milngavie 4	Roadside	255728	674486	NO2	No	5m	2m	No	2.6
EDB50	Milngavie 7	Roadside	255279	674124	NO2	No	<2m	9m	No	2.1
EDB52	Milngavie 9	Urban Background	255331	674214		No	7m	2m	No	2.4

* A number of diffusion tubes (8) were removed part way through 2021 as part of the NO₂ diffusion tube review. These tubes have been removed from the table

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bearsden	Kerbside	Automatic	98.2	98.2	33	33	32	20	24.3
Bishopbriggs	Roadside	Automatic	56.7	56.7	27.0	27	26	20	18.6* (16.8 after annualisation)
Kirkintilloch	Kerbside	Automatic	99.7	99.7	30	29	27	18	19.6
Milngavie	Roadside	Automatic	96.7	96.7	22	20	19	15	16.2
Bearsden 1 (118 Drymen Rd)	Roadside	Diffusion Tubes	100	100	24.7	26.8	25	16.9	19.3
Bearsden 10	Roadside	Diffusion Tubes	100	100	26.3	24.2	24.1	23.1	20.08
Bearsden 13	Roadside	Diffusion Tubes	100	100	33.2	28	29.2	21.7	21.25
Bearsden 14	Roadside	Diffusion Tubes	92	92	31.4	28.1	27.6	21.4	22.02
Bearsden 15	Roadside	Diffusion Tubes	100	100	34.3	30.1	28.8	22.9	19.34
Bearsden 16	Roadside	Diffusion Tubes	100	100	33.2	29	31.7	23.2	20.95
Bearsden 16 B	Roadside	Diffusion Tubes	100	100	37.1	32.5	29.7	23.7	21.16
Bearsden 16 C	Roadside	Diffusion Tubes	100	100	34.4	30.8	30.4	20.7	26.15

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bearsden 17	Roadside	Diffusion Tubes	100	100	32.1	31.1	31.2	20.6	22.68
Bearsden 19	Roadside	Diffusion Tubes	100	100	#N/A	16.4	18.5	14.2	18.03
Bearsden 20	Roadside	Diffusion Tubes	100	100	#N/A	14.5	17.3	13.4	14.30
Bearsden 21	Roadside	Diffusion Tubes	100	100	#N/A	16.4	18.0	19.9	15.87
Bearsden 3 (5 Ravelston Rd)	Roadside	Diffusion Tubes	100	100	17.9	17.0	17.4	11.4	12.35
Bearsden 4 (8 Lowther Ave)	Urban Background	Diffusion Tubes	83	83	10.1	13.3	15.3	7.5	7.27
Bearsden 7	Roadside	Diffusion Tubes	100	100	31.3	24.9	30.1	21.5	21.59
Bearsden 8	Roadside	Diffusion Tubes	100	100	32.3	27.0	27.4	20.9	22.22
Bearsden 9	Roadside	Diffusion Tubes	100	100	25.9	21.3	23.4	17.0	17.86
Bishopbriggs 13	Roadside	Diffusion Tubes	100	100	34.1	34.7	31.5	23.3	27.62
Bishopbriggs 14	Roadside	Diffusion Tubes	100	100	25.5	24.1	22.0	15.2	14.42
Bishopbriggs 14 B	Roadside	Diffusion Tubes	100	100	24.6	23.3	21.5	16.7	14.63
Bishopbriggs 14 C	Roadside	Diffusion Tubes	100	100	25.6	22.8	21.8	17.5	15.93
Bishopbriggs 16	Roadside	Diffusion Tubes	100	100	24.7	24.8	22.1	18.1	16.87

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bishopbriggs 17	Roadside	Diffusion Tubes	100	100	29	27.6	24.9	19.6	19.81
Bishopbriggs 21	Roadside	Diffusion Tubes	100	100	18.9	19.7	14.9	12.0	12
Bishopbriggs 22	Roadside	Diffusion Tubes	83	83	33.2	32.7	29.0	23.6	24.37
Bishopbriggs 23	Roadside	Diffusion Tubes	92	92	32.3	23.0	27.0	21.0	19.22
Bishopbriggs 24	Roadside	Diffusion Tubes	100	100	21.2	22.8	24.9	18.5	17.27
Bishopbriggs 25	Roadside	Diffusion Tubes	100	100	14.8	15.6	15.4	12.7	11.38
Bishopbriggs 26	Roadside	Diffusion Tubes	92	92	#N/A	#N/A	17.2	12.5	16.08
Bishopbriggs 30	Roadside	Diffusion Tubes	100	100	#N/A	#N/A	22.5	16.7	19.15
Bishopbriggs 6	Roadside	Diffusion Tubes	100	100	28.8	24.9	24.1	17.8	17.14
Kirkintilloch 15	Roadside	Diffusion Tubes	100	100	25.7	25.3	24.4	17.3	17.85
Kirkintilloch 16	Roadside	Diffusion Tubes	100	100	32.4	28.4	27.6	20.3	20.57
Kirkintilloch 17	Roadside	Diffusion Tubes	100	100	30.9	26.7	28.1	19.1	20.9
Kirkintilloch 17 B	Roadside	Diffusion Tubes	100	100	28.4	24.1	27.7	17.8	20.86
Kirkintilloch 17 C	Roadside	Diffusion Tubes	100	100	28.1	26.3	27.5	18.0	22.1

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Kirkintilloch 18	Roadside	Diffusion Tubes	100	100	25.1	22.5	23.4	16.6	16.83
Kirkintilloch 19	Roadside	Diffusion Tubes	100	100	16.0	17.4	18.2	14.0	15.43
Kirkintilloch 20	Roadside	Diffusion Tubes	100	100	30.1	27.5	24.8	22.5	23.68
Kirkintilloch 21	Roadside	Diffusion Tubes	100	100	22.4	18.8	18.2	15.2	13.63
Milngavie 10	Roadside	Diffusion Tubes	100	100	20.5	22.9	20.5	15.8	16.47
Milngavie 10 B	Roadside	Diffusion Tubes	100	100	20.1	19.5	20.0	14.7	16.55
Milngavie 10 C	Roadside	Diffusion Tubes	100	100	20.3	19.5	19.9	12.5	16.02
Milngavie 13	Roadside	Diffusion Tubes	75	75	#N/A	#N/A	18.4	14.1	15.28
Milngavie 4	Roadside	Diffusion Tubes	100	100	24.0	20.3	21.7	17.7	20.92
Milngavie 7	Roadside	Diffusion Tubes	100	100	29.6	26.5	24.5	21.7	21.35
Milngavie 9	Urban Background	Diffusion Tubes	100	100	26.2	25.2	22.0	14.9	21.22

Notes:

*Bishopbriggs Automatic Continuous Monitor requires annualisation as per LAQM.TG(16). See Table C.2

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in bold.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bearsden	Kerbside	Automatic	98.2	98.2	0	0	0	0	0
Bishopbriggs	Roadside	Automatic	56.7	56.7	0	0(99)	0	0	0
Kirkintilloch	Kerbside	Automatic	99.7	99.7	0	0	0	0	0
Milngavie	Roadside	Automatic	96.7	96.7	0	0(105)	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/year) are shown in bold.

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

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

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

Table A.5 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bearsden	Kerbside	100	100	13	14	11	8	9.5
Bishopbriggs	Roadside	100	100	16	17	12	10	10.2
Kirkintilloch	Kerbside	100	100	12	11	13	9	10.7
Milngavie	Roadside	97	97	13	13	14	10	8.7

Notes:

Exceedances of the PM₁₀ annual mean objective of 18 µg/m³ are shown in bold.

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

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

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

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Bearsden	Kerbside	100	100	0	0	2	0	0
Bishopbriggs	Roadside	100	100	2	7	2	0	0
Kirkintilloch	Kerbside	100	100	0	0	3	0	0
Milngavie	Roadside	97	97	1	0	2	0	0

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50 µg/m³ not to be exceeded more than seven times/year) are shown in bold.

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

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

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

Table A.7 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Bearsden	Kerbside	100	100	N/A	N/A	6	5	5.2
Bishopbriggs	Roadside	100	100	N/A	N/A	7	6	5.9
Kirkintilloch	Kerbside	100	100	6	6	8	5	5.4
Milngavie	Roadside	97	97	N/A	N/A	N/A	4	4.8

Notes:

Exceedances of the PM_{2.5} annual mean objective of 10 µg/m³ 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%).

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO₂ 2021 Monthly Diffusion Tube Results (µg/m³)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
Bearsden 1 (118 Drymen Rd)	37.9	11.3	25.1	17.6	10.5	6.5	7.3	20.5	20.2	28.1	22.8	23.8	19.30	18.7
Bearsden 10	31.6	11.9	21.5	20.1	17.3	9.8	6.8	12.9	20.3	38.6	21.5	28.7	20.08	19.5
Bearsden 13	21.3	8.2	27.4	24.5	9.9	10.1	12	24.3	24	34.5	26.7	32.1	21.25	20.6
Bearsden 14	27.7	11.5	21.5	27.4	10.5	11.5	14.5	24	27.8	32.2	33.6	NR	22.02	21.3
Bearsden 15	25.1	10.8	21.2	22	17.4	10.5	9.8	15	24.8	25	22.7	27.8	19.34	18.8
Bearsden 16	21.5	18.9	20.6	28.4	16.4	8.9	11.3	29.4	29.8	34.2	4.5	27.5	20.95	20.3
Bearsden 16 B	24.9	9.1	21.6	24.9	2.1	13.6	9.6	30.1	24.8	31.4	29.2	32.6	21.16	20.5
Bearsden 16 C	27.5	9.5	23.4	29.5	52.7	14.2	11.5	31.1	28.1	33.3	21.9	31.1	26.15	25.4
Bearsden 17	24.8	15.7	19.8	29.5	11	15	20.5	18.9	28.3	31.7	25.2	31.7	22.68	22.0
Bearsden 18	28.7	10.5	12.9	26	11	6.7	16	23	26.8	29.1	18.8	27.2	19.73	19.1
Bearsden 19	21.5	10.5	15.3	15.4	46.9	5.4	5.1	12.6	11.9	28.3	23.9	19.5	18.03	17.5
Bearsden 20	26.2	9.6	16.2	16.8	NR	3.1	3.6	9.1	16.1	17.8	NR	24.5	14.30	13.9

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
Bearsden 21	27.2	11.1	10.6	29.5	11.4	2.5	10.9	11.5	13.6	19.8	18.4	23.9	15.87	15.4
Bearsden 3 (5 Ravelston Rd)	22.5	8.5	10.1	13.6	11.1	4.3	6.5	12.6	11.6	14.3	14.2	18.9	12.35	12.0
Bearsden 4 (8 Lowther Ave)	13.7	2.9	6.6	8	NR	2.8	3.9	7	5.9	10.2	NR	11.7	7.27	7.1
Bearsden 7	23.9	16.3	19.7	27.8	14.8	10.2	23	13.8	25.2	30.7	25	28.7	21.59	21.0
Bearsden 8	30.3	11.2	26.5	24.1	8.3	11.6	13.9	20.1	25.7	31.7	33	30.2	22.22	21.5
Bearsden 9	25	5.6	13.4	16.7	22.2	9.3	9.7	17.4	17.5	26.7	26.9	23.9	17.86	17.3
Bishopbriggs 13	31.8	12.1	23.1	31.5	48.9	13.5	15.8	26.6	29.7	35.1	30.5	32.8	27.62	26.8
Bishopbriggs 14	26.2	10	22	19.8	14.2	2.1	5.2	14.1	16.3	20.8	20.7	1.6	14.42	14.0
Bishopbriggs 14B	16.2	9.7	12.2	17.7	11	7.7	8	12.8	15.2	22.4	20.2	22.5	14.63	14.2
Bishopbriggs 14C	24.7	7.9	17.8	20	9.3	7	5.5	12.2	17	22.3	23.7	23.7	15.93	15.4
Bishopbriggs 16	33.2	10.7	9.8	16.9	13.8	5.4	7.3	19.7	19.2	22.8	19.4	24.2	16.87	16.4

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
Bishopbriggs 17	34.6	8	25.4	22.9	13.6	6.2	8	17.8	20.9	30	24.4	25.9	19.81	19.2
Bishopbriggs 21	21.2	8	10.5	12	14.2	2.1	5.2	7.4	9.8	17.9	18.1	17.6	12	11.6
Bishopbriggs 22	37.8	NR	NR	20.2	10.1	10.9	18.7	23.1	25.1	33.3	34.6	30	24.37	23.6
Bishopbriggs 23	40	12.8	NR	17	10.9	9.8	7.5	15.5	18.6	25.6	25.9	27.8	19.22	18.6
Bishopbriggs 24	31.7	10.7	9.7	19	17.7	6	14.7	17.8	19.9	20.6	16.7	22.7	17.27	16.7
Bishopbriggs 25	19.7	10.8	13.9	11.8	18.1	5.7	5.7	9.1	10.4	14.7	15.1	1.6	11.38	11.0
Bishopbriggs 26	24.9	9.6	13.5	18.5	13	6.2	11.7	NR	15.6	19.5	21.9	22.5	16.08	15.6
Bishopbriggs 30	26.4	8.4	17.7	23.4	14.5	8	15.5	14.4	21.3	26	26.7	27.5	19.15	18.6
Bishopbriggs 6	34.2	12	16.6	21.6	2.1	11.4	6.8	16.9	19.1	23.2	14.7	27.1	17.14	16.9
Kirkintilloch 15	24.1	10.8	16.4	24	10	7.8	10.2	15.8	19.1	25.8	23.9	26.3	17.85	17.3
Kirkintilloch 16	31.7	10.3	24.1	23.4	7.5	11.6	8.9	18.1	23.1	30	28.3	29.8	20.56	19.9

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
Kirkintilloch 17	33.2	16.1	21.5	24.7	9.7	8.2	9.4	20.2	21.6	30.6	25.1	30.6	20.9	20.3
Kirkintilloch 17 B	30	10.7	22.1	26.6	10.6	9.8	8.9	23.2	20.8	29.9	28.5	29.2	20.86	20.2
Kirkintilloch 17 C	34.5	16.6	22.1	20.6	11.8	12.7	8	24.7	24.7	30.1	28.9	30.5	22.1	21.4
Kirkintilloch 18	27.9	10.6	19.6	19.7	13.8	4.5	13.8	12.5	19.6	13.6	23.6	22.7	16.83	16.3
Kirkintilloch 19	21.5	9.7	11	16.5	22.1	9.8	6.6	11	15	21	20.1	20.8	15.43	15.0
Kirkintilloch 20	41.7	13.7	17.7	25.2	7.9	12.2	13.7	19.4	23.9	48.6	33	27.2	23.68	23.0
Kirkintilloch 21	25.9	8.3	11.8	16.8	2.1	5	8.7	11	12.8	19	21.2	20.9	13.63	13.2
Milngavie 10	27.6	8.4	13.3	18.1	23	6	8	17	16.9	21.1	17	21.2	16.47	16.0
Milngavie 10 B	22.7	9.5	14.9	18.3	21	7.1	9.6	16.3	17.2	23.3	18.1	20.6	16.55	16.0
Milngavie 10 C	26.2	10.8	13.1	16.1	14.8	5.9	10.7	17	15.6	21.7	20.4	19.9	16.02	15.5
Milngavie 13	24.3	9.7	8.4	15.9	16.9	6.9	8	16	NR	NR	NR	31.4	15.28	14.8
Milngavie 4	20.6	13.4	28.1	24.5	30.3	12.7	6.2	17	16.7	39.3	18.3	23.9	20.92	20.3
Milngavie 7	30.6	12.2	21.4	19.3	25.7	11	7.8	22.6	23.8	29.1	25.2	27.5	21.35	20.7
Milngavie 9	25.7	17	24.7	22.5	20.1	12.7	13.1	19.1	22.3	27.3	22.7	27.4	21.22	20.6

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 East Dunbartonshire Council During 2021

East Dunbartonshire Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by East Dunbartonshire Council During 2021

East Dunbartonshire Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Glasgow Scientific Services (GSS) and are prepared using the 20% TEA in water method and in accordance with the procedures set out in the practical guidance. Glasgow Scientific Services (GSS) Laboratory is UKAS accredited for the analysis of Diffusion tubes. The duration of exposure is normally the 4/5 week period as suggested by the calendar provided by Defra. All results have been bias adjusted and annualised where required.

Glasgow Scientific Services (GSS) Laboratory also participates in the independent AIR-PT scheme for NO₂ tubes analysis and GSS has performed to the following proficiency levels during the AIR-PT testing scheme in 2021.

January-February - 50%

May-June – 100%

July-August – 100%

September-October – no report

The above results were determined to be satisfactory based upon a z-score of $\leq \pm 2$.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within East Dunbartonshire recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

East Dunbartonshire Council have applied a local bias adjustment factor of 0.97 to the 2021 monitoring data. A summary of bias adjustment factors used by East Dunbartonshire Council over the past five years is presented in Table C.1.

The local bias adjustment factor of 0.97 was derived from four co-location studies undertaken at Bishopbriggs, Bearsden, Kirkintilloch and Milngavie.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	-	0.97
2020	Local	-	0.95
2019	Local	-	0.85
2018	Local	-	0.92
2017	Local	-	0.87

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within East Dunbartonshire required distance correction during 2021 therefore Table C.4 has been removed.

QA/QC of Automatic Monitoring

All automatic sites are part of the Scottish Air Quality Programme and are audited twice per year by Ricardo. Servicing and repair is carried out by Acoem UK and Horiba UK, the service contracts include a six monthly service of instruments, call outs to site for repairs and the routine replacement of consumables. All data is available in real-time, and regularly scaled and ratified by Ricardo on behalf of the Scottish Government.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀/PM_{2.5} monitors utilised within East Dunbartonshire Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within East Dunbartonshire Council recorded data capture of greater than 75% apart from Bishopbriggs which recorded 56.7% for NO₂ and has therefore required annualisation.

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within East Dunbartonshire Council required distance correction during 2021.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

There is no LAQM annualisation tool to process annualisation for automatic monitoring, therefore guidance as per Chapter 7: NO_x and NO₂ Monitoring of the LAQM Technical Guidance 2016 has been followed and the results presented within Table C.2

ANNUALISATION OF CONTINUOUS MONITORING DATA

Annualisation calculations for Bishopbriggs Automatic Monitor

(NB useable data is January – May and November 2021)

Site	Annual Mean (A_m)	Period Mean (P_m)	Ratio (A_m/P_m)
EDB2 Bearsden	24.3	25.8	0.942
EDB3 Kirkintilloch	19.6	21.3	0.92
EDB4 Milngavie	16.2	19.2	0.844
	Average (R_a)		0.902

$$M \times R_a = 18.6 \times 0.902 = 16.8 \mu\text{g}/\text{m}^3$$

Table C.3 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	4	9	8	11	
Bias Factor A	1.08 (0.77-1.82)	0.88 (0.73-1.09)	0.94 (0.76-1.23)	1.02 (0.84-1.3)	
Bias Factor B	-7% (-45%-30%)	14% (-9%-36%)	6% (-19%-31%)	-2% (-23%-19%)	
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	17.9	22.3	25.8	16.0	
Mean CV (Precision)	8.0%	7.5%	7.8%	7.8%	
Automatic Mean ($\mu\text{g}/\text{m}^3$)	19.4	19.6	24.3	16.4	
Data Capture	100%	100%	99%	100%	
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	19 (14-33)	20 (16-24)	24 (20-32)	16 (13-21)	

Notes:

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

Appendix D: Maps Showing the Location of the Monitoring Sites

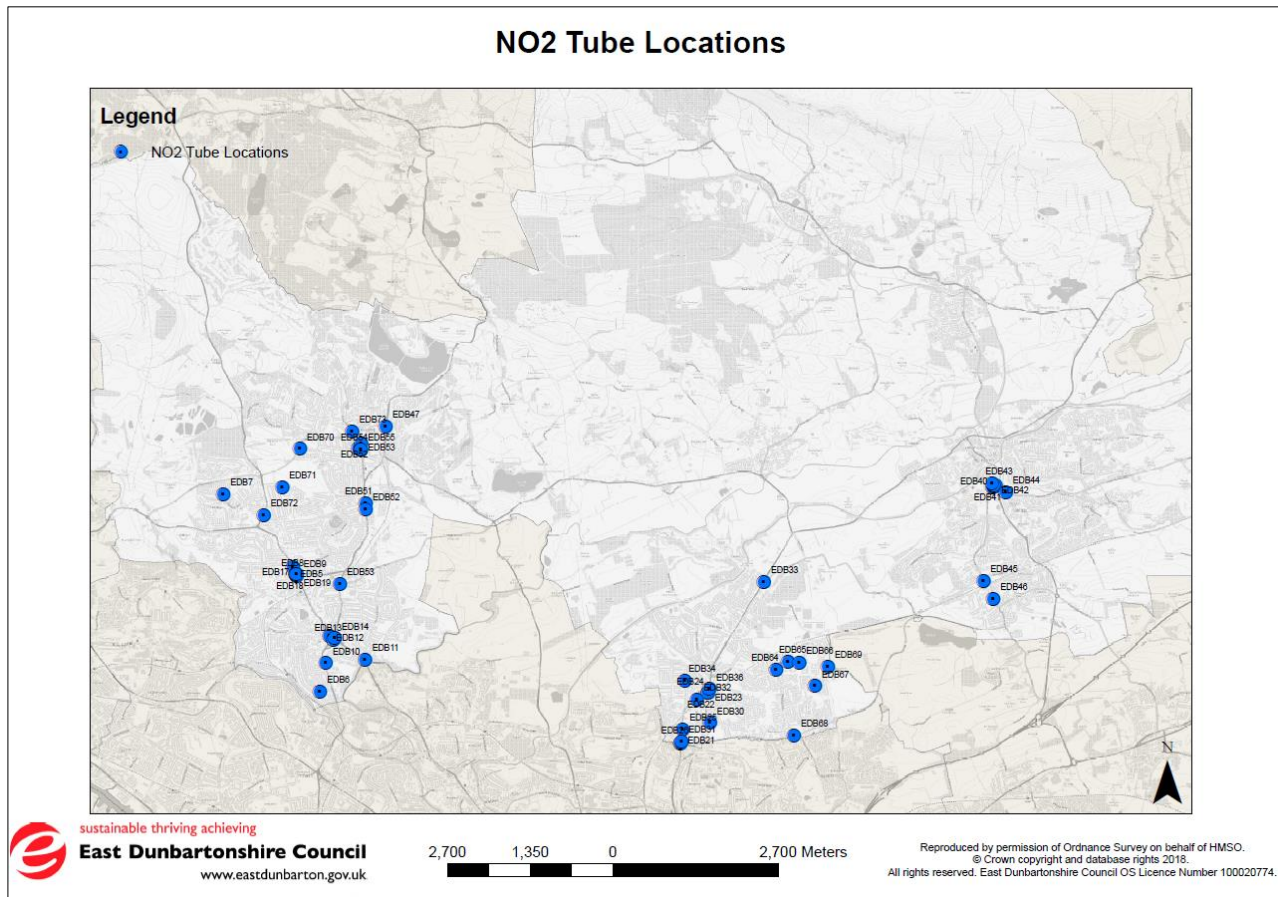


Figure 1 NO₂ tubes monitoring locations

*Eight NO₂ tubes were removed part way through 2021 viz EDB 46, 65,66,67,69,70,71,72

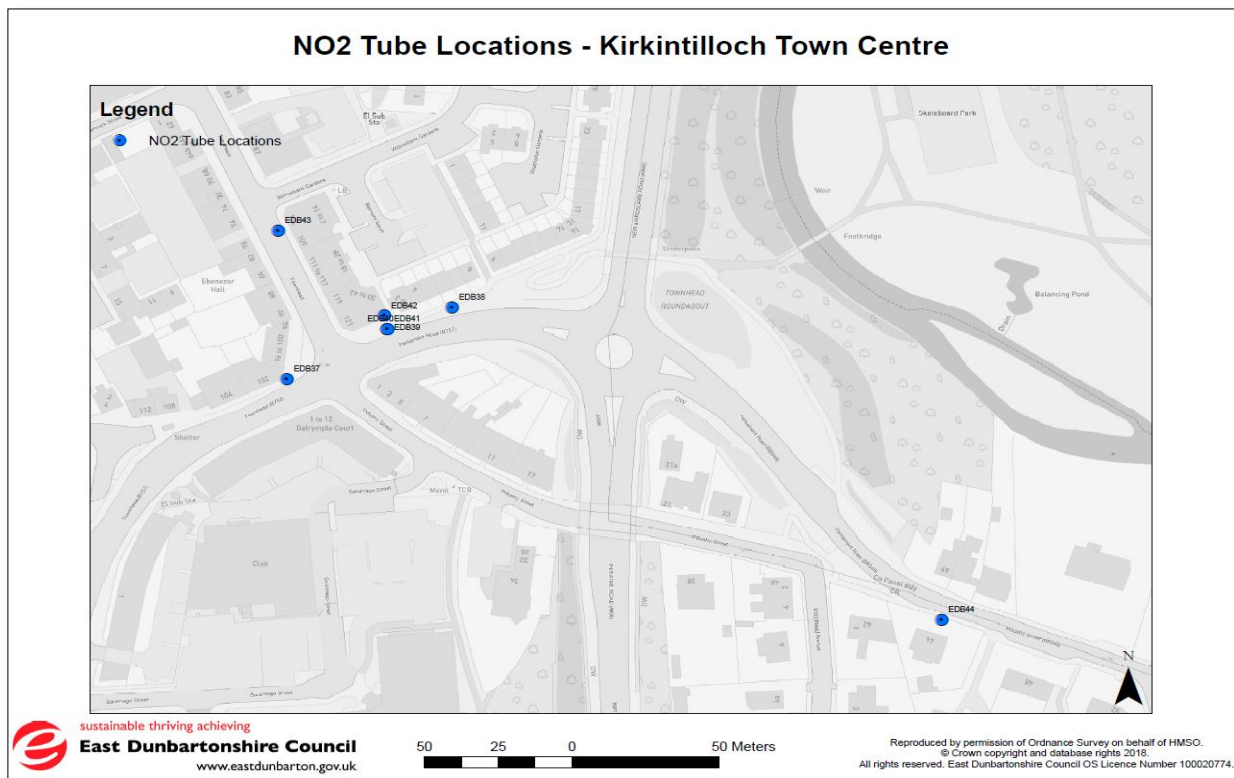


Figure 2 Kirkintilloch NO₂ tubes locations

*EDB 46 removed part way through 2021

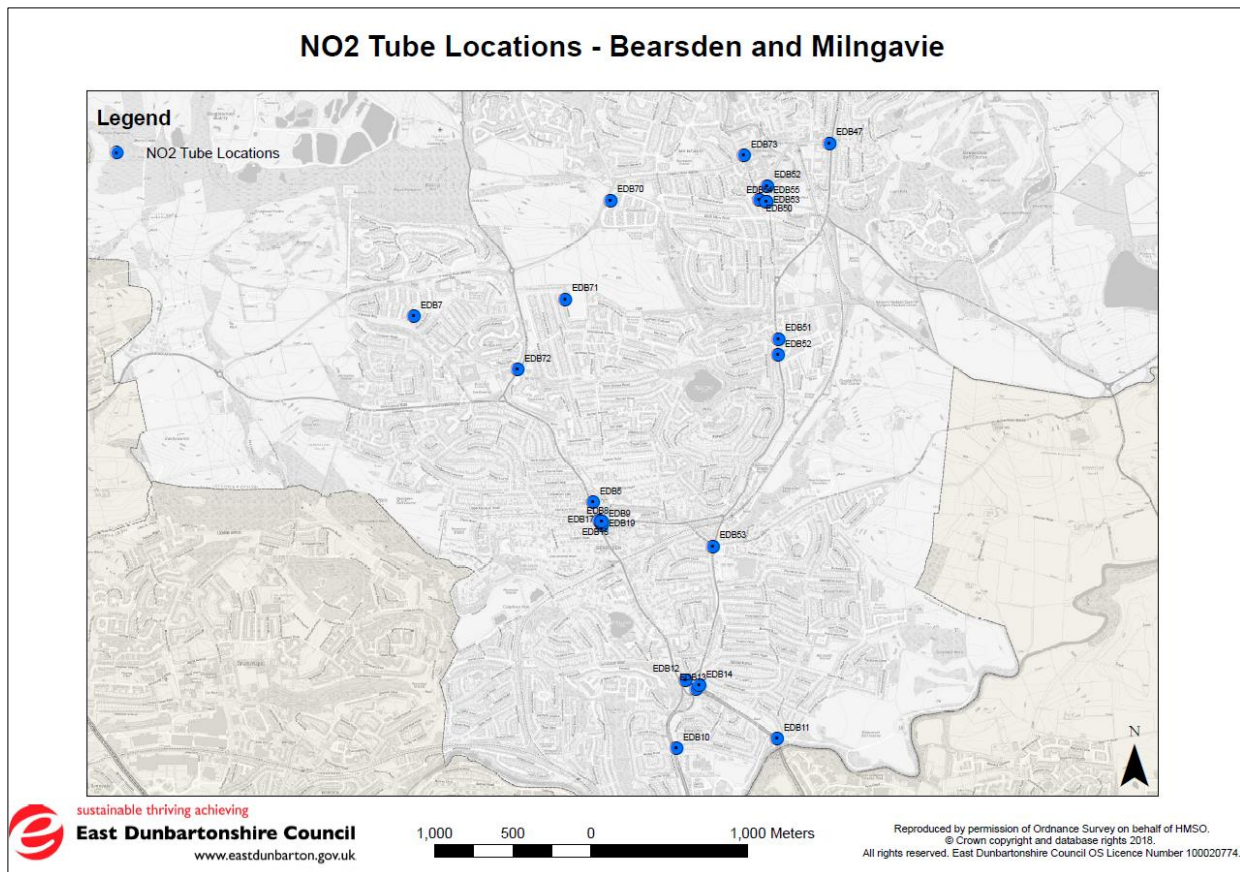


Figure 3 Bearsden and Milngavie NO₂ tubes locations

*EDB 70,71,72 removed part way through 2021

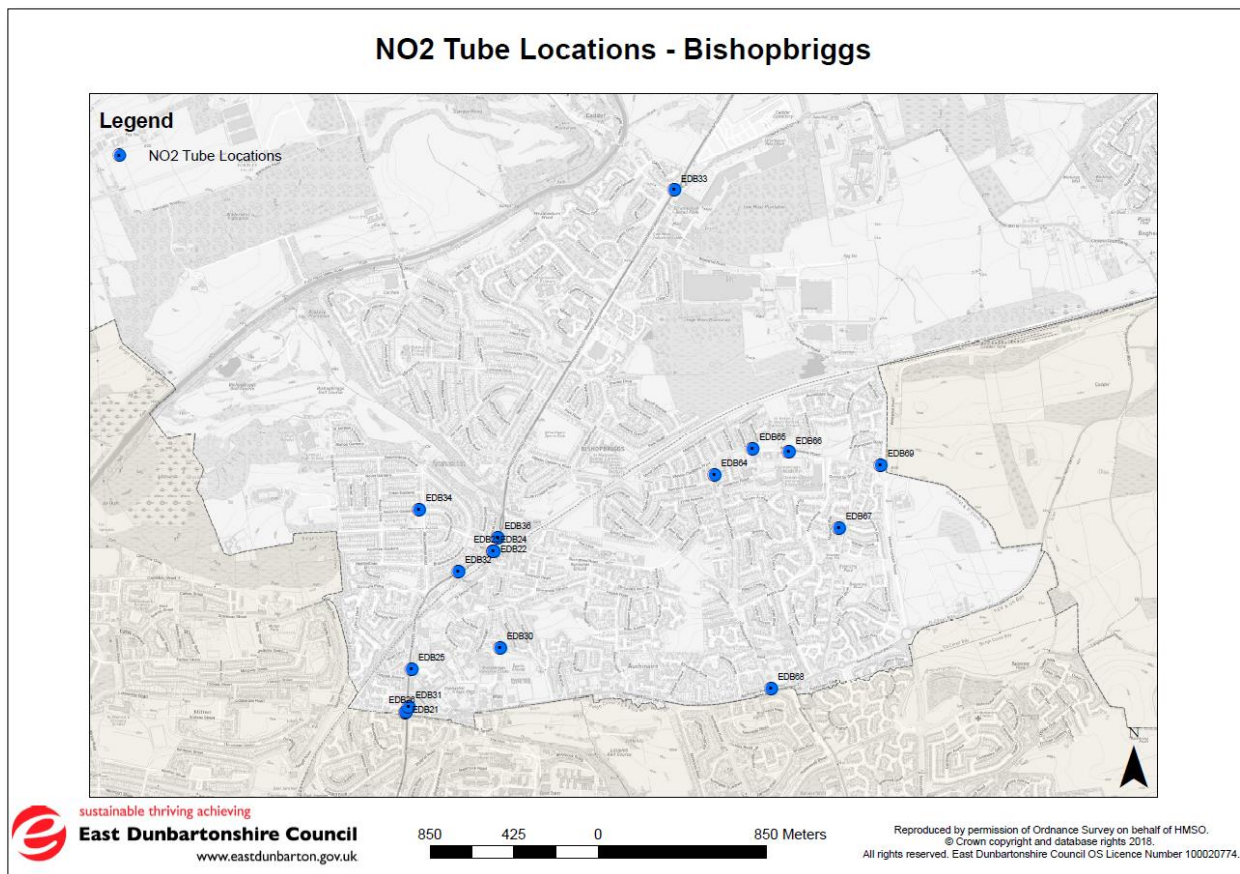


Figure 4 Bishopbriggs NO₂ tubes locations

*EDB 65,66,67,69 removed part way through 2021

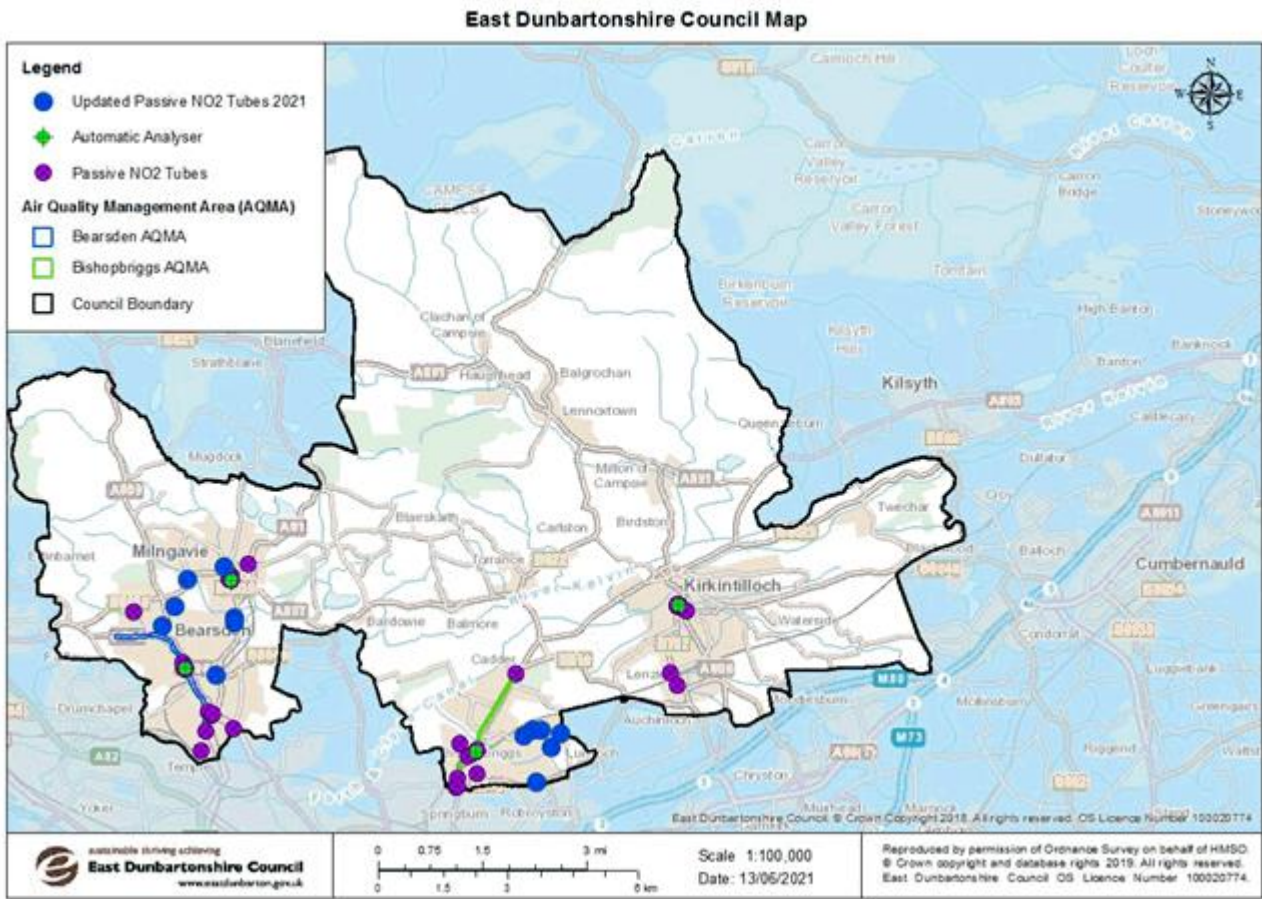


Figure 5 Map of AQMA and monitoring stations

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO 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

- 1) Environment Act 1995.
- 2) The Air Quality (Scotland) Regulations 2000.
- 3) The Air Quality (Scotland)(Amendment) Regulations 2001.
- 4) Local Air Quality Management Technical Guidance LAQM, TG(16), DEFRA, April 2016
- 5) Local Air Quality Management Technical Guidance TG(16), Department for Environment, Food and Rural Affairs (DEFRA), 2018
- 6) Local Air Quality Management Policy Guidance, (PG)(S)(16), DEFRA, March 2016
- 7) East Dunbartonshire Bearsden Air Quality Action Plan
- 8) East Dunbartonshire Bishopbriggs Air Quality Management Area Action Plan
- 9) East Dunbartonshire Bishopbriggs Air Quality Management Area Update
- 10) East Dunbartonshire Local Transport Strategy 2020-2025