

Annual Progress Report (APR)



2016 Air Quality Annual Progress Report (APR) for
East Dunbartonshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

July, 2016

East Dunbartonshire Council

Local Authority Officer	Anne Prescott Adeyemi Roland
Department	Environmental and Community Protection
Address	Southbank House, Southbank Road, Kirkintilloch, G661QX
Telephone	0300 1234 510
E-mail	anne.prescott@eastdunbarton.gov.uk adeyemi.roland@eastdunbarton.gov.uk
Report Reference number	
Date	July, 2016

Executive Summary: Air Quality in Our Area

Air Quality in East Dunbartonshire Council

This report is the 2016 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 from within the East Dunbartonshire Council area for the calendar year of 2015 and considers the potential for exceedences of air quality objectives.

In East Dunbartonshire, the main pollutants of concern are NO₂ and PM₁₀. Previous modelling studies have indicated that the source of pollutant is mainly due to volume of traffic and congestion.

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

The latest monitoring over 2015 indicates that overall, levels of pollutant are going down, with no exceedences of the Scottish Air Quality Objectives for NO₂ or PM₁₀ annual mean. The overall levels at all four sites were lower than in 2014. There are no new major sources of emissions although there is an ongoing increase in the installation of biomass across the East Dunbartonshire Council area. No new AQMAs were declared during 2015 and the Bishopbriggs Air Quality Action Plan and Action Plan Update have been further revised as part of this Annual Progress Report. There is also a Draft Bearsden Air Quality Action Plan currently out to internal consultation however this has not been included with this report as it is subject to change in line with the consultation.

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).

Levels in Bishopbriggs have decreased overall in recent years therefore the necessity for the Bishopbriggs AQMA will be reviewed and the AQMA may be revoked.

Updated modelling is currently underway in Kirkintilloch to investigate whether an AQMA is required as pollutant levels, although meeting air quality objectives for NO₂, are continuing to hover close to the air quality objective level for PM₁₀.

Actions to Improve Air Quality

Throughout 2015, East Dunbartonshire Council has undertaken a number of Clean Air Initiatives to help improve air quality including school banner competitions to encourage the switch off of vehicle engines; and patrols with Environmental Health staff and Police Scotland, with whom we are in partnership, to raise awareness of air quality issues.

Local Priorities and Challenges

One of the biggest challenges for improving air quality is the increase in biomass applications and installations. Biomass (essentially deriving heat from burning wood) helps local authorities meet Climate Change obligations. To reduce any adverse impact on local air quality, the installation must meet the highest standard possible for controlling emissions.

Adoption of the Bearsden Air Quality Action Plan on completion of the consultation process is a priority and a decision on whether to revoke the Bishopbriggs AQMA, and whether to declare an area of Kirkintilloch as an AQMA are local priorities.

How to Get Involved

The public can visit East Dunbartonshire Council's webpage online to view air quality reports, [maps of AQMAs](#) etc. Click on **P** then **Pollution** on the **A-Z of Services** to view.

You can visit the Scottish Air Quality website and view live air quality data in East Dunbartonshire <http://www.scottishairquality.co.uk/>. You can also register for text and e mail 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

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in East Dunbartonshire Council	i
Actions to Improve Air Quality	ii
Local Priorities and Challenges.....	ii
How to Get Involved.....	ii
1. Local Air Quality Management	1
2. Actions to Improve Air Quality	2
2.1 Air Quality Management Areas.....	2
2.2 Progress and Impact of Measures to address Air Quality in East Dunbartonshire	3
3. Air Quality Monitoring Data and Comparison with Air Quality Objectives	16
3.1 Summary of Monitoring Undertaken	16
3.1.1 Automatic Monitoring Sites	16
3.1.2 Non-Automatic Monitoring Sites.....	16
3.2 Individual pollutants.....	16
3.2.1 Nitrogen Dioxide (NO ₂).....	17
3.2.2 Particulate Matter (PM ₁₀).....	18
3.2.3 Particulate Matter (PM _{2.5})	18
3.2.4 Sulphur Dioxide (SO ₂)	18
3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene	18
4. New Local Developments	19
4.1 Road Traffic Sources.....	19
4.2 Other Transport Sources	19
4.3 Industrial Sources.....	19
4.4 Commercial and Domestic Sources	19
4.5 New Developments with Fugitive or Uncontrolled Sources.....	20
5. Planning Applications	21
6. Conclusions and Proposed Actions	22
6.1 Conclusions from New Monitoring Data.....	22
6.2 Conclusions relating to New Local Developments	22
6.3 Proposed Actions	23
Appendix A: Monitoring Results	24
Appendix B: Full Monthly Diffusion Tube Results for 2015	36
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	39

QA/QC of Automatic Monitoring.....	41
Appendix D: Trends in Annual Mean NO₂ Concentration at Automatic monitoring sites.....	43
Appendix E: Trends in Annual Mean PM₁₀ Concentration at Automatic monitoring sites.....	45
Appendix F: Location of air quality monitoring stations and diffusion tubes network.	46
Glossary of Terms	47
References	48

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

List of Figures

Chart 1 Continuous Monitoring Annual Mean concentration	43
Chart 2 Annual Mean NO ₂ Tubes Monitoring	43
Chart 3 Monthly NO ₂ Diffusion Tubes.....	44
Chart 4 East Dunbartonshire Council AQMA NO ₂ Diffusion Tubes	44
Chart 5 East Dunbartonshire Council Non AQMA NO ₂ Diffusion Tubes.....	45
Chart 6 PM ₁₀ Annual mean concentrations	45
Chart 7 Location of Air quality Monitoring stations and diffusion tubes	46

1. Local Air Quality Management

This report provides an overview of air quality in East Dunbartonshire during 2015. 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		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	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
	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
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Lead	0.25 µg/m ³	Annual Mean	31.12.2008

2. Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

East Dunbartonshire Council has 2 AQMAs declared and a summary can be found in Table . Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at

<https://www.eastdunbarton.gov.uk/residents/environmental-health-residents/pollution>

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Bishopbriggs AQMA	<ul style="list-style-type: none"> • NO₂ annual mean • PM₁₀ annual mean 	East Dunbartonshire	The designated area incorporates a 60 metre wide 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.	Bishopbriggs Updated Action Plan

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Bearsden AQMA	<ul style="list-style-type: none"> • NO2 annual mean • PM10 annual mean 	East Dunbartonshire	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.	Draft Bearsden AQMA Action Plan

2.2 Progress and Impact of Measures to address Air Quality in East Dunbartonshire

East Dunbartonshire Council has taken forward a number of measures which were detailed in the Bishopbriggs Action Plan during the current reporting year of 2015 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 Bishopbriggs Air Quality Action Plan and the Bishopbriggs Air Quality Action Plan Update. The few remaining outstanding measures in the Bishopbriggs Action Plan are out with the control of East Dunbartonshire Council and completion of the Bearsden Action Plan has been the priority during 2015. Key completed measures in the Bishopbriggs Action Plan are:

- Support the completion of the Kirkintilloch Link Road (KLR) and ensure that appropriate signage is installed for the KLR to encourage Glasgow commuter traffic away from the A803 corridor. Completed in late 2010
- Support the construction of phases 3 to 5 of the Bishopbriggs Relief Road (BRR) to the east of Bishopbriggs. Phase 3 was completed in 2015 and phase 4 is now underway

- Support Network Rail in increasing and improving rail services to and from Bishopbriggs and other stations in East Dunbartonshire. Extension to platform to allow longer trains to stop now completed.

Progress on the following measures has been slower than expected due to:

- Support and facilitate implementation of the A803 quality bus corridor (QBC) through Bishopbriggs to Kirkintilloch. Real – time bus notification system has been delayed until bus operators can use compliant buses on QBC. This is under the control of SPT and carried out as funding allows. EDC has however installed SCOOT throughout the length of the A803 through Bishopbriggs.
- Investigate options for a Bishopbriggs East / Westerhill transport hub comprising a bus terminal, rail halt and park and ride facility. Bus terminus complete; Rail halt and park and ride still aspirational. Both are included in the current Local Plan but with no guarantee of delivery. EDC, SPT and Transport Scotland are all involved.
- Survey and upgrade all bus stops. Currently, SPT has no funding available for the provision of upgrading bus passenger facilities along the length of the AQMA. The availability of funding would need to be established before these bus stop infrastructure improvements can be carried out.

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

- Support the construction of phases 3 to 5 of the Bishopbriggs Relief Road (BRR) to the east of Bishopbriggs. Phase 4 should be completed over the course of the next reporting year taking further traffic off the A803 through Bishopbriggs
- Investigate preferential licensing for taxis with low emissions. New powers gained by Licensing Standards Officers may address this over the course of the next reporting year. Older taxi stock can be more polluting therefore upgrading the quality of the licensed taxi stock should help improve air quality.

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	Support national government to reduce atmospheric pollution at a national level	Policy guidance and Development Control	Variety of measures detailed in Action Plan aimed at reducing pollutant levels	EDC	N/A	N/A	Reduction in pollutant levels	Levels have reduced since introduction of Action Plan in 2010.	Ongoing reduction in pollutant levels		Refer to Bishopbriggs Action Plan and Update
2	Raise awareness of air quality issues in East Dunbartonshire	Policy guidance and Development Control	Support a wide range of national, regional and local promotional events to provide better awareness of air quality issues	EDC	N/A	N/A	Reduction in pollutant levels	No direct impact	Ongoing		Awareness raising is an ongoing measure
3	Support completion of the Kirkintilloch Link Road	Transport planning and infrastructure	Construct KLR and reduce traffic through Bishopbriggs Town Centre.	EDC/Kirkintilloch Initiative	N/A	N/A	Reduction in pollutant levels	0.5 - 1µg/m ³ improvement	KLR opened in December 2010. See Bishopbriggs Action Plan Update.	N/A	
4	Support the construction of Phases 3-5 of the Bishopbriggs Relief Road	Transport planning and infrastructure	Phase 3-5 of BRR will create a bypass around Bishopbriggs	EDC and Transport Scotland	N/A	N/A	Reduction in pollutant levels	1µg/m ³ reduction in NO ₂ annual mean concentrations 1µg/m ³ reduction in PM ₁₀ annual mean concentrations	Phase 3 complete. Phase 4 under construction and due to open in 2017	2017 for phase 4	Future of phase 5 is unknown as no funding is available

East Dunbartonshire Council

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
5	Support and facilitate implementation of the A803 quality bus corridor(QBC) through Bishopbriggs to Kirkintilloch	Transport planning and infrastructure	Improvements to bus services and facilities will improve traffic flow, reduce congestion and increase the attractiveness of bus travel.	SPT	N/A	N/A	Reduction in pollutant levels	6µg/m ³ reduction in NO ₂ annual mean concentrations. No reduction in PM ₁₀ .	Part complete. Refer to Bishopbriggs Action Plan Update.		
6	Maximise network efficiency by requiring appropriate improvements to junctions affected by new development in line with high environmental and design standards	Transport planning and infrastructure	EDC will ensure all developments requiring new access to the road network are fully assessed.	EDC	N/A	N/A	Reduction in pollutant levels	0.5-1µg/m ³ reduction in pollutant concentrations at Bishopbriggs Cross	Ongoing through the planning process	Ongoing	Refer to Bishopbriggs Action Plan
7	Investigation of options in Bishopbriggs Town Centre to improve access to Bishopbriggs Station and opportunities for active travel	Transport planning and infrastructure	EDC intends to investigate options around Bishopbriggs Town Centre to make active travel more attractive.	Network Rail and EDC	N/A	N/A	Reduction in pollutant levels	0.5-1µg/m ³ reduction in pollutant levels at Bishopbriggs Cross if implemented	Additional cycle storage at Bishopbriggs Station.. Refer to Bishopbriggs Action Plan and Update	Ongoing	£50,000 – 1 million in financial cost to fully implement

East Dunbartonshire Council

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
8	Investigate options for a Bishopbriggs East/Westerhill transport hub comprising a bus terminal, rail halt and park and ride facility	Transport planning and infrastructure	The consultation process revealed considerable support for this measure.	EDC, SPT and Network Rail	N/A	N/A	Reduction in pollutant levels	If introduced – more than 1µg/m ³ reduction in pollutants at Bishopbriggs Cross. Over £1million to implement	Bus terminus complete. Rail halt and park and ride is aspirational.		Refer to Bishopbriggs Action Plan and Update
9	Where possible, encourage establishment of partnerships between public transport Operators to provide more joined up intermodal transport options	Promoting travel alternatives	Partnership working required to make public transport more attractive and facilitate its use.	EDC, SPT and local bus operators	N/A	N/A	Reduction in pollutant levels	Low – less than 0.5µg/m ³ reduction in pollutants	Refer to Bishopbriggs Action Plan Update		
10	Survey and upgrade all bus stops	Promoting travel alternatives	EDC plan to survey and upgrade all bus stops in order to facilitate travel by bus. All upgrades will be carried out in consultation with SPT.	EDC, SPT	N/A	N/A	Reduction in pollutant levels	Low – less than 0.5µg/m ³ reduction in pollutants	Refer to Bishopbriggs Action Plan Update		
11	Produce a public transport access map	Promoting travel alternatives	In conjunction with bus operators and SPT, the Council plan to produce a public transport access map which will be updated regularly	EDC,SPT	N/A	N/A	Reduction in pollutant levels	The reduction is pollutant levels due to this measure is considered low-less than 0.5µg/m ³ .	Refer to Bishopbriggs Action Plan Update		

East Dunbartonshire Council

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
12	Assess appropriateness of bus services and network within East Dunbartonshire .	Promoting travel alternatives	The aim of this action is to ensure accessibility of key services is available to all as a sensible travel option.	EDC, SPT	N/A	N/A	Reduction in pollutant levels	The reduction is pollutant levels due to this measure is considered low-less than 0.5µg/m ³ .	Refer to Bishopbriggs Action Plan and Update		
13	Continue to work with SPT and NHS Greater Glasgow to improve community transport in East Dunbartonshire	Promoting travel alternatives	The aim of this action is to improve community transport and ensure adequate access to services for all residents in East Dunbartonshire	EDC,SPT and NHS	N/A	N/A	Reduction in pollutant levels	Low – less than 0.5µg/m ³ reduction in pollutants	Refer to Bishopbriggs Action Plan Update.		
14	Support Network Rail in increasing and improving rail services to and from Bishopbriggs and other stations in East Dunbartonshire	Promoting travel alternatives	Improving rail services will make rail travel a more attractive form of transport	Transport Scotland and Network Rail	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Several of the proposals which are part of the measure are complete or underway. Refer to Bishopbriggs Action Plan Update		
15	Improve walking and cycling infrastructure within Bishopbriggs	Promoting travel alternatives	Improvements to walking and cycling routes will encourage increased travel to work by active modes	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Increased cycle storage at Bishopbriggs Station is complete.		EDC now have an Active Travel Strategy. More detail on walking/cycle routes can be found there

East Dunbartonshire Council

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
16	Assess requirements for and implement additional traffic management on the A803 corridor	Traffic management	Ensure adequate traffic management is put in place to reduce congestion and encourage road users to take the most appropriate route	EDC	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants at Bishopbriggs Cross.	SCOOT is now installed throughout the A803 within the East Dunbartonshire area.		Refer to Bishopbriggs Action Plan and Update
17	Increase vehicle emissions testing and enforcement in and around the AQMA	Traffic management	Vehicle emissions testing to be carried out regularly and if possible, increase frequency	EDC, Police Scotland and VDSA	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Regular vehicle emissions testing is carried out as an ongoing measure	Ongoing	Funding allowed for 10 testing days to be carried out during 2015
18	Investigate preferential licensing for taxis with low emissions	Traffic management Possibly promoting low emission transport??	The Council is responsible for issuing taxi licences therefore will investigate issuing preferential licenses to encourage taxis with low emissions as a method of encouraging taxi owners to improve vehicles	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Not yet instigated. Refer to Bishopbriggs Action Plan and Update		Still under consideration
19	Enforce switch off of parked vehicles in areas with public access	Traffic management	EDC has power s to enforce and issue fines to owners of vehicles who do not switch off whilst parked	EDC and Police Scotland	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants	Regular patrols and campaigns undertaken	Ongoing	83 action events completed during 2015.

East Dunbartonshire Council

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
20	Continue to review and enforce parking/loading restrictions within AQMA	Traffic management	EDC will continue to review and enforce parking and loading restrictions in East Dunbartonshire	EDC and Police Scotland	N/A	N/A	Reduction in pollutant levels	Low – less than 0.5µg/m ³ reduction in pollutants	Decriminalised Parking Enforcement powers implemented in 2014.	Ongoing	
21	Encourage companies within the AQMA to reduce idling on private property	Traffic management	Emissions from idling delivery vehicles in service bays identified as a source of pollution. Encourage voluntary switch off	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	No progress		Opposition from local operators
22	Regular maintenance checks and upgrade of Council fleet	Vehicle fleet efficiency	EDC as a large fleet operator will maintain and upgrade fleet on a regular basis	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Currently 99% Euro 5 with 1% Euro 6	Ongoing	
23	Encourage uptake of green fuel and new low emission vehicles within the Council fleet.	Vehicle fleet efficiency	Faster uptake of low emissions technology will demonstrate to public that the Council is playing its part in reducing emissions	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	11 electric vehicles available with 3 more on order	Ongoing	
24	Effective travel plans for all Council buildings and new large developments	Promoting travel alternatives	Will encourage staff and site users to consider the available travel options	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Travel plans complete for a number of Council buildings	Ongoing	
25	Ensure effective travel plans exist for all schools	Promoting travel alternatives	Travel plans will encourage walking, cycling and use of sustainable travel to school for pupils and staff	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	All schools have travel plans. Regular updates required	Ongoing	Health benefits of active travel

East Dunbartonshire Council

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
26	Develop further understanding of the road traffic flows and emissions within the AQMA	Traffic management	Understanding traffic flows and emissions within the AQMA will help ensure effective measures for reducing emissions are put in place	EDC	N/A	N/A	Reduction in pollutant levels	No direct impact	Various traffic census undertaken to better understand flows	Undertaken as required	
27	Undertake regular reviews of road traffic flows and public transport capacity and usage	Traffic management	In order to determine local transport needs, regular monitoring of usage and predicted future demand will be undertaken	EDC	N/A	N/A	Reduction in pollutant levels	No direct impact	Regularly reviewed as part of Local Transport Strategy	Ongoing	
28	Ensure developments are reviewed for air quality impacts and suitable mitigation considered where appropriate	Policy guidance and development control	Impact of development on air quality should be considered at planning stage	EDC	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants	Undertaken as part of the planning process	Ongoing	
29	Introduce measures to reduce impact of redevelopment of Bishopbriggs Town Centre on air quality	Policy guidance and development control	The town centre action plan will include measures to reduce the impact of road vehicles	EDC	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants	Town Centre Redevelopment works underway.	No date set	

East Dunbartonshire Council

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
30	Ensure that air quality is included as a priority in the next revision of the East Dunbartonshire Council Local Plan	Policy guidance and development control	Air quality will be included as a priority in the next update to raise awareness of air quality issues	EDC	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants	Work about to begin on next update of Local Development Plan.	Although the LDP covers a four year span, the updating process is continuous	
31	Introduce supplementary air quality planning guidance for developments within East Dunbartonshire Council area	Policy guidance and development control	Provides developers with additional information to ensure a co-ordinated approach to development outlining potential problems and mitigation requirements	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Recent decision to prepare local guidance in house	During 2016/2017	
32	Promote sustainable developments and encourage use of planning to reduce need for travel	Policy guidance and development control	Using Planning as a tool to create local centres with reduced need for travel will help decrease the number of vehicle trips in the area	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Ongoing. Regularly Enforced as part of planning process.	Ongoing	
33	Use planning conditions to maximise developer commitments to reduce air quality impacts	Policy guidance and development control	Developer commitments can be used to fund public transport and sustainable travel options	EDC	N/A	N/A	Reduction in pollutant levels	High -more than 1µg/m ³ reduction in pollutants	Developer commitments help with improved cycle/public transport provision	Ongoing as part of the planning process	

East Dunbartonshire Council

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
34	Ensure compliance with construction site guidelines and implement mitigation measures to reduce impact on air quality	Policy guidance and development control	All developments to comply with guidelines and reduce impact on air quality	EDC	N/A	N/A	Reduction in pollutant levels	High - more than 1µg/m ³ reduction in pollutants	Mitigation enforced as part of planning process	Ongoing	Dust management plans requested where appropriate
35	Continue to monitor and assess air quality within East Dunbartonshire Council area in line with national legislation	Policy guidance and development control	It is a duty of local authorities to monitor and assess measured pollutant concentrations	EDC and Scottish Government	N/A	N/A	Reduction in pollutant levels	No direct impact	Ongoing under LAQM regime		Complying with duties
36	Regularly review the monitoring network to ensure all pollutants and areas of concern are appropriately monitored	Policy guidance and development control	It is a duty of local authorities to regularly review the monitoring network and report to Scottish Government of its findings	EDC	N/A	N/A	Reduction in pollutant levels	No direct impact	Ongoing under the LAQM regime	Levels checked daily and reviewed annually.	Complying with duties
37	Continue to liaise with SEPA and operators to ensure emissions from regulated sites are properly assessed and controlled	Environmental permits	EDC will continue to liaise with SEPA and operators to ensure the Council are aware of any changes to atmospheric emissions and act on nuisance or compliance as appropriate	EDC and SEPA	N/A	N/A	Reduction in pollutant levels	No direct impact	Ongoing		

East Dunbartonshire Council

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
38	Continue to monitor and assess compliance within existing smoke control areas	Policy guidance and development control	Proper regulation and enforcement can minimise levels of atmospheric emissions from residential and commercial properties	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Ongoing. All complaints formally investigated		
39	Promote use of energy efficient domestic heating systems	Public information	Local residents will be encouraged to install efficient domestic heating systems. Rolling upgrades to heating systems in Council owned property	EDC	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	The Local Housing Strategy Introduces a variety of Measures to Improve Energy efficiency	Ongoing	
40	Promote waste reduction and uptake of recycling	Public information	EDC will continue to promote recycling and improve recycling facilities to reduce atmospheric emissions from sites and reduce vehicle visit numbers	EDC and SG	N/A	N/A	Reduction in pollutant levels	Medium 0.5 - 1µg/m ³ improvement in reduction of pollutants	Ongoing increase in targets achieved.	Next target to introduce collection of food waste from businesses in line with Zero Waste Scotland targets	

East Dunbartonshire Council

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
41	Support local/national awareness raising campaigns	Public information	EDC will continue to promote environmental awareness to help change public attitudes and encourage personal responsibility	EDC	N/A	N/A	Reduction in pollutant levels	No direct impact	Ongoing. Regular engine idling campaigns involving schools, and environmental campaigns such as reducing dog fouling. Attendance at public events		

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 4 sites during 2015. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <http://www.scottishairquality.co.uk/latest/>

Automatic monitoring results for Nitrogen Dioxide undertaken in 2015 are shown in Table A.2 and Table A.3. The results show that there were no exceedences of either the annual mean or the hourly air quality objectives, with annual mean concentrations well below the $40\mu\text{g}/\text{m}^3$ objective level and no exceedences of the $200\mu\text{g}/\text{m}^3$ hourly mean concentration at any of the monitoring locations.

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

3.1.2 Non-Automatic Monitoring Sites

East Dunbartonshire Council also undertook non- automatic (passive) monitoring of NO_2 at 42 sites during 2015. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix F. Most of the sites are located roadside, and represent residential exposure; there are four sets of triplicate tubes co-located with the automatic monitors. All the monitoring sites exceeded the 75% data capture requirement and therefore negate the requirement to calculate annualised data. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

The measured annual mean nitrogen dioxide concentration for Bearsden, for 2015 was 34µg/m³, with 5 exceedances of the hourly mean objective. This is a roadside site located within the AQMA at a major road junction.

For the Bishopbriggs area the measured annual mean nitrogen dioxide concentration for 2015 was 27µg/m³ with no measured exceedances of the hourly mean objective.

The measured annual mean for nitrogen dioxide concentration at the Kirkintilloch Air Quality Station in 2015 was 29 µg/m³ with no measured exceedances of the hourly mean objective.

The measured annual mean for nitrogen dioxide concentration at Milngavie Air Quality Station in 2015 was 23 µg/m³ with 1 measured exceedance of the hourly mean objective.

All of these hourly exceedances are well below the objective of 200µg/m³ not to be exceeded more than 18 times a year, measured as a 1 hour mean.

Table A.2 in Appendix A compares the ratified and bias adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2015 dataset of monthly mean values is provided in Appendix B. The locally determined bias adjustment factor, which is higher than the national figure (thus representing a worse case situation), was felt to be the most appropriate. Although the annual mean concentration for the NO₂ tubes did not exceed the objective there were several records that exceeded the 40 µg/m³ concentration. An unusually high concentration of nitrogen dioxide (204 µg/m³) was recorded by one of the passive tubes located at Ravelston Road, Bearsden. The result has been removed due to being abnormally high and not representative of the area.

Table A.3 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

3.2.2 Particulate Matter (PM₁₀)

There were 4 exceedences of the daily mean PM₁₀ level at Kirkintilloch, whilst only 1 exceedence of the daily mean PM₁₀ level was recorded within the Bishopbriggs AQMA; however, with only 23% data capture at the Bishopbriggs site during 2015, this result is unreliable.

Table A.4 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 18µg/m³.

Table A.5 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 7 times per year.

It should be noted that the PM₁₀ equipment at the Bishopbriggs site failed to operate properly due to water ingress which caused the motherboard of the Eberline to malfunction, resulting in a failure to capture data. This was resolved in August 2015 but resulted in the loss of eight months of data.

3.2.3 Particulate Matter (PM_{2.5})

PM_{2.5} concentration was not measured at any monitoring site by East Dunbartonshire Council in 2015.

3.2.4 Sulphur Dioxide (SO₂)

East Dunbartonshire Council does not monitor Sulphur Dioxide (SO₂) as there are no significant sources or likelihood of the relevant air quality objectives being exceeded in the local area.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

East Dunbartonshire Council do not currently monitor carbon monoxide, lead or 1, 3-Butadiene.

4. New Local Developments

Biomass boilers are being installed in all new build schools and an air quality assessment is undertaken as standard. Further detail is given in Section 5.

4.1 Road Traffic Sources

Phase 3 of Bishopbriggs Relief Road opened in May 2015. This was a measure within the Bishopbriggs AQMA Action Plan and reduces the volume of traffic on the busy A803 corridor.

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 a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m or ports for shipping.

4.3 Industrial Sources

East Dunbartonshire Council confirms 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 received a number of applications to approve chimney heights for biomass installations. Installations were approved by Planning and Building Standards in six existing schools. The schools were as follows:

- Gartconner Primary School – replacing oil with 250kW biomass boiler
- Lenzie Academy – replacing gas with 800kW biomass boiler
- Oxgang Primary School – replacing oil with 250kW biomass boiler
- Castlehill Primary School – replacing oil with 250kW biomass boiler
- Boclair Academy – replacing gas with 2 x 300kW biomass boilers

- Clober Primary School – replacing gas with 250kW biomass boiler

There has been an on-going increase in the number of biomass installations across East Dunbartonshire but it is difficult to quantify, as many do not require planning permission or building warrant – particularly in the domestic situation.

4.5 New Developments with Fugitive or Uncontrolled Sources

East Dunbartonshire Council confirms there are no new developments with fugitive particulate matter emissions in the local authority area.

5. Planning Applications

East Dunbartonshire Council has reviewed all planning applications received during 2015 and the following are planning applications which may have an impact on air quality and for which planning permission has been granted:

- Lenzie Moss Primary School
- Woodhill Primary School
- St Flannans Primary School

All three are new build schools with biomass boilers being installed as standard and due to open during 2016. All three applications were accompanied by air quality assessments. The findings of the assessments individually would not lead to exceedences of any of the air quality objectives.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Levels around Kirkintilloch, although meeting air quality objectives for NO₂, are continuing to hover close to the air quality objective level for PM₁₀. Updated modelling is currently underway to further investigate whether an AQMA is required. Congestion around the junction close to the continuous monitor has increased year on year since the opening in late 2010 of the Kirkintilloch Link Road (KLR). The KLR provides access to the M80 and helps traffic avoid going through Kirkintilloch Town Centre. Work is currently underway in Kirkintilloch Town Centre. The aim is to strike a new balance between pedestrians, cyclists and drivers by removing street clutter, narrowing roads and widening footways.

The continuous monitor in Milngavie was installed in 2011 as modelling indicated pollutant hot spots however, data over the last four consecutive years has indicated a downward trend and levels of NO₂ and PM₁₀ are well within objective levels. The benefit of monitoring the air quality in this area will be assessed in the next annual progress report when five consecutive years of data will be available.

Bearsden AQMA which was declared in 2011 for NO₂ and PM₁₀ exceedences has indicated that NO₂ levels have dropped since the declaration and PM₁₀ levels have remained the same however monitoring will continue until a clear downward trend in both pollutants is observed..

Levels in Bishopbriggs have decreased overall in recent years therefore the necessity for the Bishopbriggs AQMA will be investigated and the AQMA may be revoked. This would be a positive move considering the majority of measures in the Bishopbriggs Air Quality Action Plan and the Update to the Action Plan have been implemented.

6.2 Conclusions relating to New Local Developments

New local developments in East Dunbartonshire are unlikely to introduce new exceedences of relevant objectives however, if the current upward trend of installing biomass continues, there may be a cumulative effect leading to new exceedences.

6.3 Proposed Actions

Modelling is currently underway in Kirkintilloch and Bishopbriggs. It is hoped that the additional data for Kirkintilloch will help inform the decision as to whether an area of Kirkintilloch should be declared an AQMA. The modelling for Bishopbriggs will help inform the decision as to whether the existing AQMA declaration should be revoked.

It is hoped that the Draft Bearsden Action Plan which is currently out to consultation, will be adopted by the Council before the end of this financial year and more of the actions will be implemented.

The next Air Quality Progress Report will be submitted in 2017.

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?	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	Y	Chemiluminescent; BAM (heated inlet)	5m	2m	2.0
EDB2	Bearsden	Kerbside	254269	672067	NO ₂ ; PM ₁₀	Y	Chemiluminescent; BAM (heated inlet)	<2m	1m	2.0
EDB3	Kirkintilloch	Kerbside	265675	673516	NO ₂ ; PM ₁₀	N	Chemiluminescent; TEOM FDMS	<2m	1m	3.0
EDB4	Milngavie	Roadside	255328	674115	NO ₂ ; PM ₁₀	N	Chemiluminescent; TEOM FDMS	<40m	1m	3.0

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

(2) N/A if not applicable.

Table A.1 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
EDB5	Bearsden 1 (118 Drymen Road)	R	254218	672193	NO ₂	Y	3m	2m	N
EDB6	Bearsden 3 (5 Ravelston Road)	UB	254655	670158	NO ₂	N	8m	5m	N
EDB7	Bearsden 4 (8 Lowther Ave)	UB	253075	673382	NO ₂	N	6m	5m	N
EDB8	Bearsden 7	R	254269	672069	NO ₂	Y	<2m	2m	N
EDB9	Bearsden 8	R	254275	672047	NO ₂	Y	18m	2m	N
EDB10	Bearsden 9	R	254751	670621	NO ₂	N	30m	2m	N
EDB11	Bearsden 10	R	255394	670683	NO ₂	N	24m	2m	N
EDB12	Bearsden 13	R	254809	671057	NO ₂	Y	26m	2m	N
EDB13	Bearsden 14	R	254877	671000	NO ₂	Y	8m	2m	N

East Dunbartonshire Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
EDB14	Bearsden 15	R	254898	671023	NO ₂	Y	2m	2m	N
EDB15	Bearsden 16	R	254269	672067	NO ₂	Y	2m	1m	Y
EDB16	Bearsden 16B	R	254269	672067	NO ₂	Y	2m	1m	Y
EDB17	Bearsden 16C	R	254269	672067	NO ₂	Y	2m	1m	Y
EDB18	Bearsden 17	R	254258	672077	NO ₂	Y	<2m	2m	N
EDB19	Bearsden 18	R	254275	672069	NO ₂	Y	<2m	2m	N
EDB20	Bishopbriggs 12	R	260581	669527	NO ₂	Y	4m	2m	N
EDB21	Bishopbriggs 13	R	260549	669312	NO ₂	Y	5m	2m	N
EDB22	Bishopbriggs 14	R	260995	670130	NO ₂	Y	42m	2m	Y
EDB23	Bishopbriggs 14B	R	260995	670130	NO ₂	Y	42m	2m	Y
EDB24	Bishopbriggs 14C	R	260995	670130	NO ₂	Y	42m	2m	Y

East Dunbartonshire Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
EDB25	Bishopbriggs 16	R	260580	669533	NO ₂	Y	<2m	2m	N
EDB26	Bishopbriggs 17	R	260552	669320	NO ₂	Y	<2m	2m	N
EDB27	Bishopbriggs 18	UB	260604	670337	NO ₂	N	20m	2m	N
EDB28	Bishopbriggs 19	R	261280	670431	NO ₂	N	1m	16m	N
EDB29	Bishopbriggs 20	R	261285	670451	NO ₂	N	15m	1m	N
EDB30	Bishopbriggs 5	UB	260948	669610	NO ₂	N	44m	5m	N
EDB31	Bishopbriggs 6	R	261016	670198	NO ₂	Y	<2m	2m	N
EDB32	Kirkintilloch 15	R	265641	673497	NO ₂	N	2m	2m	N
EDB33	Kirkintilloch 16	R	265697	673524	NO ₂	N	3m	2m	N
EDB34	Kirkintilloch 17	R	265675	673516	NO ₂	N	3m	1m	Y
EDB35	Kirkintilloch 17B	R	265675	673516	NO ₂	N	3m	1m	Y

East Dunbartonshire Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
EDB36	Kirkintilloch 17C	R	265675	673516	NO ₂	N	3m	1m	Y
EDB37	Kirkintilloch 18	R	265674	673521	NO ₂	N	<2m	2m	N
EDB38	Milngavie 4	R	255728	674486	NO ₂	N	5m	2m	N
EDB39	Milngavie 5	R	255327	674137	NO ₂	N	5m	2m	N
EDB40	Milngavie 6	R	255288	674121	NO ₂	N	2m	2m	N
EDB41	Milngavie 7	R	255279	674124	NO ₂	N	<2m	9m	N
EDB42	Milngavie 8	R	255251	674198	NO ₂	N	3m	1m	N
EDB43	Milngavie 9	R	255331	674214	NO ₂	N	7m	2m	N
EDB44	Milngavie 10	R	255325	674116	NO ₂	N	40m	1m	Y
EDB45	Milngavie10B	R	255325	674116	NO ₂	N	40m	1m	Y
EDB46	Milngavie10C	R	255325	674116	NO ₂	N	40m	1m	Y

- (1) 0 if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).
- (2) N/A if not applicable.

Table A.2 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
Bearsden	R	Automatic	98	98	39	42	36	37	34
Bishopbriggs	R	Automatic	99	99		30	31	29	27
Kirkintilloch	R	Automatic	95	95	43	34	32	29	29
Milngavie	R	Automatic	94	94		25	23	24	23
Bearsden 1 (118 Drymen Rd)	R	Diffusion Tube	100	100	31.36	34.26	29.86	28.82	32.87
Bearsden 3 (5 Ravelston Rd)	UB	Diffusion Tube	100	100	11.72	20.89	18.60	19.83	22.80
Bearsden 4 (8 Lowther Ave)	UB	Diffusion Tube	100	100	12.65	11.41	11.36	11.86	11.95
Bearsden 7	R	Diffusion Tube	92	92	31.00	39.11	34.33	34.23	28.84
Bearsden 8	R	Diffusion Tube	100	100	25.22	32.17	34.58	33.39	33.54
Bearsden 9	R	Diffusion Tube	100	100	32.12	28.86	28.23	20.91	30.57
Bearsden 10	R	Diffusion Tube	92	92	26.86	27.23	28.89	26.87	26.07
Bearsden 13	R	Diffusion Tube	100	100	36.93	37.46	37.53	37.49	31.97
Bearsden 14	R	Diffusion Tube	100	100	37.47	33.09	35.24	32.69	32.91
Bearsden 15	R	Diffusion Tube	100	100	33.01	37.15	38.12	27.94	33.90
Bearsden 16	K	Diffusion Tube	100	100	34.87	35.11	39.45	36.61	33.58
Bearsden 16B	K	Diffusion Tube	92	92	39.54	41.90	39.34	37.40	34.43
Bearsden 16C	K	Diffusion Tube	100	100	34.65	39.54	37.87	37.03	34.77
Bearsden 17	R	Diffusion Tube	100	100	30.21	39.69	39.51	37.04	28.79
Bearsden 18	R	Diffusion Tube	100	100	30.13	30.79	33.83	35.75	31.69
Bishopbriggs 12	R	Diffusion Tube	100	100	34.60	37.28	30.66	31.04	25.95
Bishopbriggs 13	R	Diffusion Tube	100	100	40.15	43.15	40.43	33.91	35.99
Bishopbriggs 14	R	Diffusion Tube	100	100	29.41	30.68	28.27	28.26	30.92

East Dunbartonshire Council

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
Bishopbriggs 14B	R	Diffusion Tube	100	100	28.05	28.16	26.70	26.88	30.04
Bishopbriggs 14C	R	Diffusion Tube	100	100	30.69	29.30	29.75	29.11	28.88
Bishopbriggs 16	R	Diffusion Tube	100	100	29.35	29.98	28.98	30.28	24.96
Bishopbriggs 17	R	Diffusion Tube	100	100	31.88	35.61	35.50	35.99	27.08
Bishopbriggs 5	UB	Diffusion Tube	75	75	12.90	15.77	14.19	10.94	14.40
Bishopbriggs 6	R	Diffusion Tube	100	100	32.11	30.46	28.28	26.47	28.11
Bishopbriggs 18	UB	Diffusion Tube	100	100	-	16.14	20.34	18.53	19.10
Bishopbriggs 19	R	Diffusion Tube	92	92	-	-	-	22.13	18.27
Bishopbriggs 20	R	Diffusion Tube	100	100	-	-	-	18.16	18.96
Kirkintilloch 15	R	Diffusion Tube	100	100	29.52	32.43	31.44	34.10	34.96
Kirkintilloch 16	R	Diffusion Tube	100	100	34.86	33.73	35.19	37.15	29.93
Kirkintilloch 17	R	Diffusion Tube	100	100	35.11	35.67	34.12	38.07	32.80
Kirkintilloch 17B	K	Diffusion Tube	100	100	36.52	38.73	34.68	38.49	32.85
Kirkintilloch 17C	K	Diffusion Tube	100	100	33.73	40.17	32.40	34.86	28.53
Kirkintilloch 18	K	Diffusion Tube	100	100	27.89	28.77	26.96	28.57	25.45
Milngavie 4	R	Diffusion Tube	92	92	28.65	27.60	27.36	24.03	26.40
Milngavie 5	R	Diffusion Tube	100	100	23.38	22.33	25.83	24.10	22.88
Milngavie 6	R	Diffusion Tube	100	100	35.23	39.88	34.71	39.28	30.02
Milngavie 7	R	Diffusion Tube	100	100	34.64	36.53	34.22	30.90	31.21
Milngavie 8	R	Diffusion Tube	100	100	24.19	24.07	26.30	26.39	24.23
Milngavie 9	R	Diffusion Tube	83	83	28.46	28.60	27.33	22.00	28.40
Milngavie 10	R	Diffusion Tube	100	100	-	24.38	25.86	24.08	24.89
Milngavie10B	R	Diffusion Tube	100	100	-	27.74	24.73	22.71	21.94
Milngavie10C	R	Diffusion Tube	100	100	-	25.67	24.98	22.66	22.42

Notes: Exceedences of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedence of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

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

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

Table A.3 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2011	2012	2013	2014	2015
Bearsden	Kerbside	Automatic	98	98	0	1	5	0	5
Bishopbriggs	Roadside	Automatic	99	99	0	0	0	0	0
Kirkintilloch	Kerbside	Automatic	95	95	0	4	12	0	0
Milngavie	Roadside	Automatic	94	94	0	0	0	0	1

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

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

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

(3) If the period of valid data is less than 90%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.4 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2011	2012	2013	2014	2015
Bearsden	Kerbside	91	91	20	-	-	14	14
Bishopbriggs	Roadside	23	23	17	15	-	17	15
Kirkintilloch	Kerbside	83	83	19	18	17	17	17
Milngavie	Roadside	98	98	-	14	14	14	13

Notes: Exceedences of the PM₁₀ annual mean objective of 18µg/m³ are shown in **bold**.

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

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

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

Table A.5 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM ₁₀ 24-Hour Means > 50µg/m ³ (3)				
				2011	2012	2013	2014	2015
Bishopbriggs	Roadside	23	23	2	3	0	0	1(23)
Bearsden	Kerbside	91	91	3	0	0	1	0
Kirkintilloch	Kerbside	83	83	6	6	3	2	4
Milngavie	Roadside	98	98	1	3	0	0	0

Notes: Exceedences of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 7 times/year) are shown in **bold**.

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

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

(3) If the period of valid data is less than 90%, the 90.4th percentile of 24-hour means is provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO₂ Monthly Diffusion Tube Results for 2015

Site ID	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾	
	Bearsden 1 118 Drymen Road	34.0	31.0	37.0	32.3	21.4	29.1	29.4	28.9	36.4	34.7	37.7			34.8
Bearsden 3 5 Ravelston Road	23.0	36.3	40.7	19.0	18.1	12.1	9.3	13.7		25.8	27.7	20.2	37.5	38.24	
Bearsden 4 (8 Lowther Ave)	15.5	16.8	19.3	8.5	7.8	6.5	5.1	8.2	11.2	15.2	14.3	12.2	11.7	11.95	
Bearsden 7	43.8	7.3	11.6	7.2		36.2	31.1		32.9	45.0	37.6	30.0	23.8	24.26	
Bearsden 8	48.0	27.6	39.2	23.4	24.2	30.6	25.0	31.8	35.4	36.7	42.1	30.6	32.9	33.54	
Bearsden 9	37.8	51.7	45.2	21.2	20.4	20.7	18.5	25.2	24.1	35.5	33.1	26.3	30.0	30.57	
Bearsden 10	44.2	20.3	33.7	18.7	11.5	21.3	19.2	25.1	22.9		33.1	31.1	23.4	23.89	
Bearsden 13	50.4	26.7	30.5	22.6	9.5	26.9	26.5	30.2	26.8	41.4	48.4	36.2	31.3	31.97	
Bearsden 14	46.3	29.5	40.9	15.1	17.0	27.4	23.8	34.7	30.7	39.4	44.8	37.6	32.3	32.91	
Bearsden 15	38.9	23.1	40.3	27.1	16.1		26.3	37.5	36.7	41.6	46.6	31.4	30.6	31.21	
Bearsden 16	46.5	27.8	37.9	18.8	18.5	26.1	32.7	34.8	33.7	46.6	39.1	32.5	32.9	33.58	
Bearsden 16B	47.1	22.0	41.6	15.5	20.7	35.5		36.1	37.0	47.2	39.7	28.9	30.9	31.56	

Site ID	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾	
Bearsden 16C	45.3	27.1	42.2	18.4	23.9	32.8	30.9	31.6	32.3	47.9	41.9	34.7	34.1	34.77	
Bearsden 17	38.4	21.3	35.7	12.7	10.7	18.3	30.8	34.6	26.5	43.7	32.7	33.3	28.2	28.79	
Bearsden 18	47.9	26.3	37.9	15.8		21.5	35.1	25.9	29.6	36.3	38.2	27.3	28.7	29.23	
Bishopbriggs 12	40.0	6.1		16.6	19.2	20.3	22.1	25.9	26.1	35.3	34.7	33.6	23.5	23.97	
Bishopbriggs 13	46.7	17.9	31.0	15.2	18.1	43.8	18.2	38.7	51.4	48.3	52.4	41.7	35.3	35.99	
Bishopbriggs 14	40.4	23.8	46.1	24.4			22.9	24.3	28.9	28.6	31.1	32.6	25.6	26.07	
Bishopbriggs 14B	42.8	24.4	33.6	17.5	14.1	25.0	46.1	27.2	25.8	31.2	37.5	28.2	29.5	30.04	
Bishopbriggs 14C	41.8	31.9	29.8	17.6	14.7	22.8	24.8	28.7	28.8	29.9	39.0	30.0	28.3	28.88	
Bishopbriggs 16	33.2	24.5	23.2	12.7	8.1	16.1	28.0	24.4	24.8	34.3	35.7	28.6	24.5	24.96	
Bishopbriggs 17	44.6	23.8	32.3	12.3	11.8	9.4	22.6	27.5	27.6	39.3	37.7	29.7	26.6	27.08	
Bishopbriggs 5	22.8	15.9	12.2	7.4	3.9				13.9	15.2	19.6	16.2	10.6	10.80	
Bishopbriggs 6	37.5	13.8	36.0	20.7	14.3	30.8	25.7	31.5	27.8	29.6	31.2	31.8	27.6	28.11	
Bishopbriggs 18	24.6	30.4	28.5	14.1	10.9	5.3	8.6	13.5	14.0	25.8	19.2	29.8	18.7	19.10	
Bishopbriggs 19	32.4	14.7	19.1	8.5	5.8		12.8		20.4	25.0	21.4	19.0	15.1	15.39	
Bishopbriggs 20	30.2	19.6	23.3	11.2	11.9	4.8	8.6	12.7	25.9	25.4	28.1	21.4	18.6	18.96	
Kirkintilloch 15	40.1		73.3	15.4	11.9	25.7	27.2	27.6	24.1	38.9	33.3	59.5	31.6	32.22	
Kirkintilloch 16	43.1	18.7	35.0	16.8	14.0	27.5	25.1	28.3	28.8	40.4	46.0	28.4	29.3	29.93	

Site ID	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾	
	Kirkintilloch 17	42.2	17.4	39.1	20.0	18.8	32.1	24.9		47.5	34.4	40.0			37.3
Kirkintilloch 17B	42.2	27.8	38.9	23.6	10.7	28.0	25.0	31.1	31.1	51.8	43.2	33.1	32.2	32.85	
Kirkintilloch 17C	34.9	33.0	42.4	10.9	13.6	16.1	24.2	28.5	28.5	39.4	35.1	29.1	28.0	28.53	
Kirkintilloch 18	38.1	23.3	34.7	17.5	19.3	13.8	18.6	22.6	20.3	31.5	35.5	24.2	25.0	25.45	
Milngavie 4	37.7	23.4	40.3	19.6	18.2	23.0	27.5	19.5	21.4	22.7		31.4	23.7	24.20	
Milngavie 5	29.5	21.6	38.0	12.9	14.0	14.6	18.0	20.8	16.4	24.8	33.6	25.0	22.4	22.88	
Milngavie 6	27.4	22.9	25.1	9.5	10.3	27.9	30.6	38.3	29.4	43.1	53.9	34.8	29.4	30.02	
Milngavie 7	44.6	22.2	35.7	20.7	14.8	27.0	30.0	30.7	30.1	42.4	37.6	31.4	30.6	31.21	
Milngavie 8	27.8	30.3	28.0	26.4	15.5	10.3	20.9	22.0	18.5	30.4	31.7	23.2	23.8	24.23	
Milngavie 9	27.7	47.9	24.3	10.9			20.2	26.8	24.7	33.6	34.6	27.7	23.2	23.66	
Milngavie 10	36.6	18.6	31.0	15.1	12.9		38.2	21.4	20.9	23.0	29.7	21.0	22.5	22.95	
Milngavie 10B	29.8	17.7	29.4	11.4	9.3	12.0	17.6	20.0	23.7	32.0	31.5	23.7	21.5	21.94	
Milngavie 10C	31.2	17.3	27.8	9.3	12.9	17.2	17.2	20.4	20.8	33.5	32.7	23.5	22.0	22.42	

(1) See Appendix C for details on bias adjustment

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

The diffusion tubes are exposed for a month at a time in accordance with the DEFRA Local Authority Air Quality support programme calendar of suggested exposure periods, before being returned to the laboratory. Analysis of the passive diffusion tubes used by the Council was undertaken by Glasgow Scientific Services (GSS). Glasgow Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis. The laboratory prepares the diffusion tubes using the 20% triethanolamine (TEA) in water method. GSS also participates in the workplace analysis scheme for proficiency (WASP). A summary of their performance in WASP over the past year is prepared and posted on the Defra webpages at <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

Glasgow Scientific Services (GSS) a public analyst participates in the inter-comparison scheme, with bias adjustment factors calculated and applied annually. The laboratory analyses result from co-location studies at various locations.

Discussion of Choice of Factor to Use

East Dunbartonshire Council co-location studies were undertaken at the automatic analyser stations in Bearsden, Bishopbriggs, Kirkintilloch and Milngavie; all the sites are roadside sites. The locally determined bias adjustment factor of 1.02 is higher than the national figure thus representing a worse case situation. By using the higher value it could be argued that it provides an artificially high bias adjustment factor resulting in higher final measurement results. The choice of our bias adjustment factor was based on the result of one site with a good tube precision, hence the choice of the much higher 1.02 value.

Decisions and recommendations contained in this report are therefore based on the calculation of data using the local bias adjustment factor rather than the lower national derived figure.

The precision and accuracy of the triplicate NO₂ diffusion tubes co-located with the automatic monitors was checked using the AEA DifTPAB v04 (1) spreadsheet.

The result for one of the September passive tubes has been removed due to the results returned being abnormally high and not representative of the area. NO₂ tube concentration values between 0 and 3 have been removed as part of the data clean up.

Table C.2 – The laboratory co-location factors for 2015

Site Name	Study Duration	Tube precision	Bias Adjustment factor
East Dunbartonshire Council	12	G	1.02
East Dunbartonshire Council	12	P	1.00
East Dunbartonshire Council	12	P	0.99
East Dunbartonshire Council	12	P	0.83
Marylebone Road Inter-comparison	12	G	0.83
Overall Factor from Glasgow Scientific Services co-location studies			0.98

Table C.2 –EDC co-location factors for 2015

Automatic Analyser Site Name	Study Duration	Tube precision	Bias Adjustment factor
Bearsden	12	Good	1.02
Bishopbriggs	12	Poor	1.00
Kirkintilloch	12	Poor	0.83
Milngavie	12	Poor	0.99
Overall factor for East Dunbartonshire Council			0.96

PM Monitoring Adjustment

East Dunbartonshire Council monitor PM₁₀ using two types of analyser:

- Eberline
- Tapered Element Oscillating Microbalance (TEOM) with a Filter Dynamics Measurement System (FDMS);

The Eberline - beta attenuation analysers at Bearsden and Bishopbriggs are maintained by Horiba and undergo regular calibration. The TEOM (FDMS) monitors at Kirkintilloch and Milngavie are maintained by Air Monitors Ltd and undergo regular calibration.

The Eberlines used by East Dunbartonshire Council have a heated inlet which can cause evaporation of some semi-volatile particles thereby reducing the measured PM₁₀ concentration. All data has been ratified and multiplied by the gravimetric equivalent by Ricardo-AEA technology.

The TEOM FDMS is equivalent to the European Reference Sampler and the results are therefore fully comparable to the AQS objectives, with no need for adjustment.

QA/QC of Automatic Monitoring.

Quality Assurance/Quality Control (QA/QC) audits are carried out by Ricardo-AEA Technology Ltd twice a year.

Calibration Methods

The calibration procedure is similar for the Council's four continuous analysers. To ensure that the information obtained from the analysers is as accurate as possible and to quantify any instrument drifts; a stringent two point zero/span calibration check is performed at monthly intervals. The methodology for the calibration procedure is derived from the manufacturers' instruction handbooks and from the LSO Operator Manual, as follows:

- Pre-calibration check - the site condition and status of the analyser is recorded prior to the zero/span check being conducted;
- Zero check – the response of the analyser to the absence of the gas being monitored;

- Span check – the response of the analyser to the presence of the gas of a known concentration;
- Post calibration check - the site condition and status of the analyser upon completion of all checks

Ricardo AEA carries out the QA/QC for the automatic monitors and they are calibrated annually to meet the criteria for national network.

Appendix D: Trends in Annual Mean NO₂ Concentration at Automatic monitoring sites

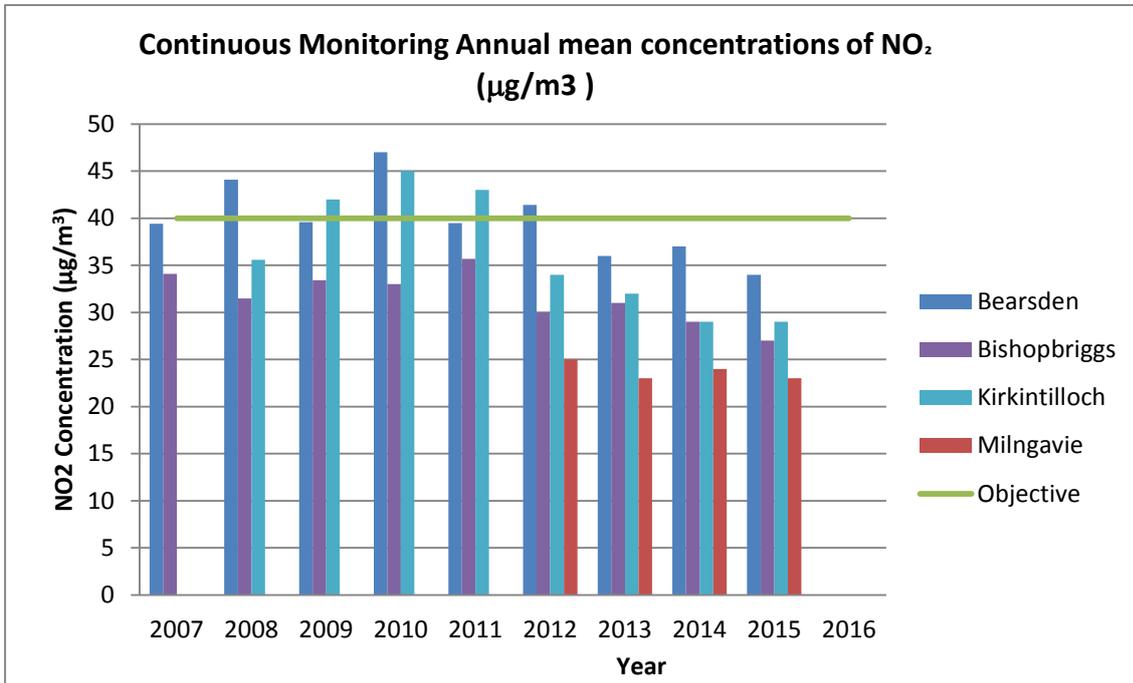


Chart 1 Continuous Monitoring Annual Mean concentration

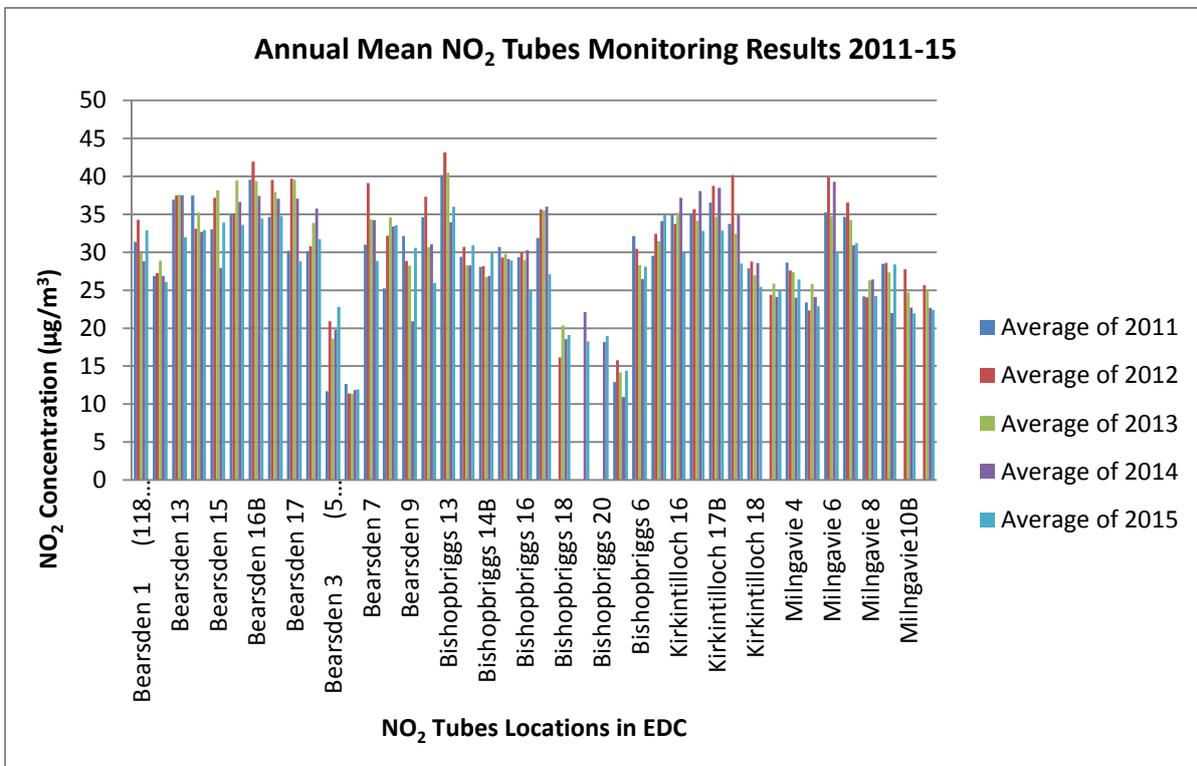


Chart 2 Annual Mean NO₂ Tubes Monitoring

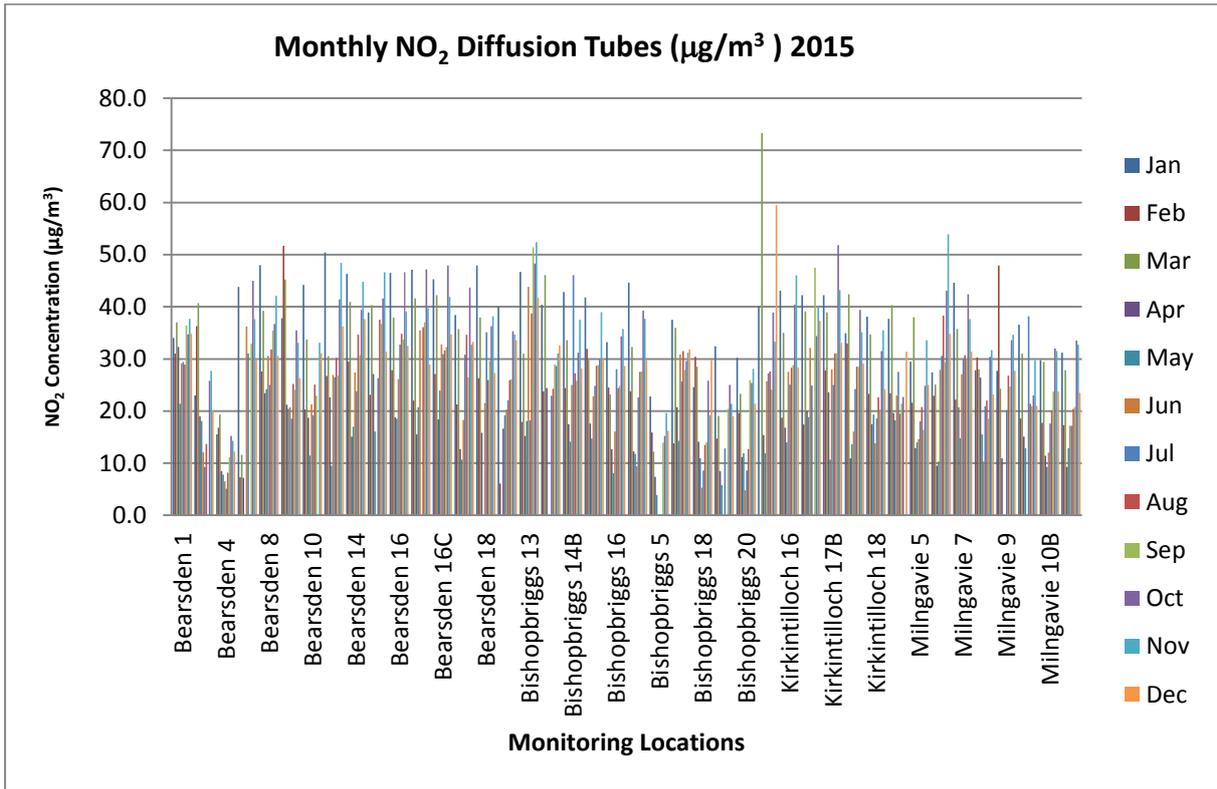


Chart 3 Monthly NO₂ Diffusion Tubes

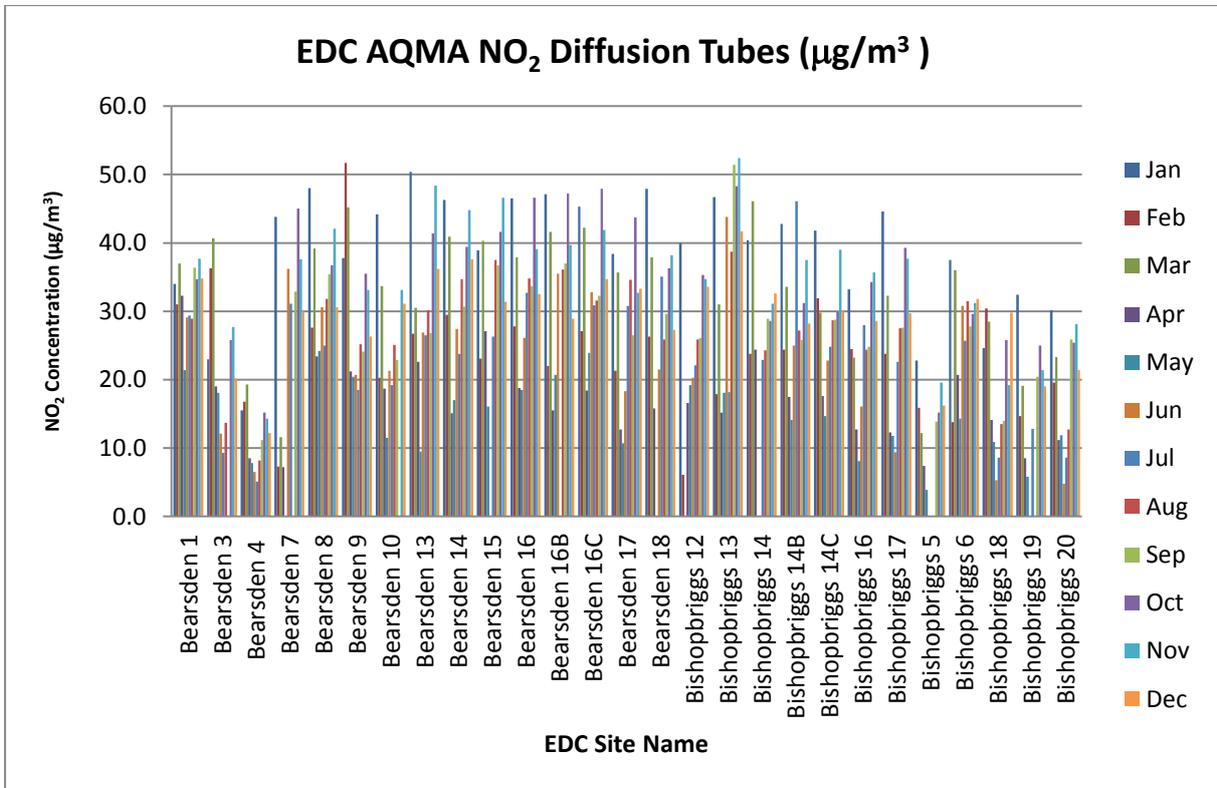


Chart 4 East Dunbartonshire Council AQMA NO₂ Diffusion Tubes

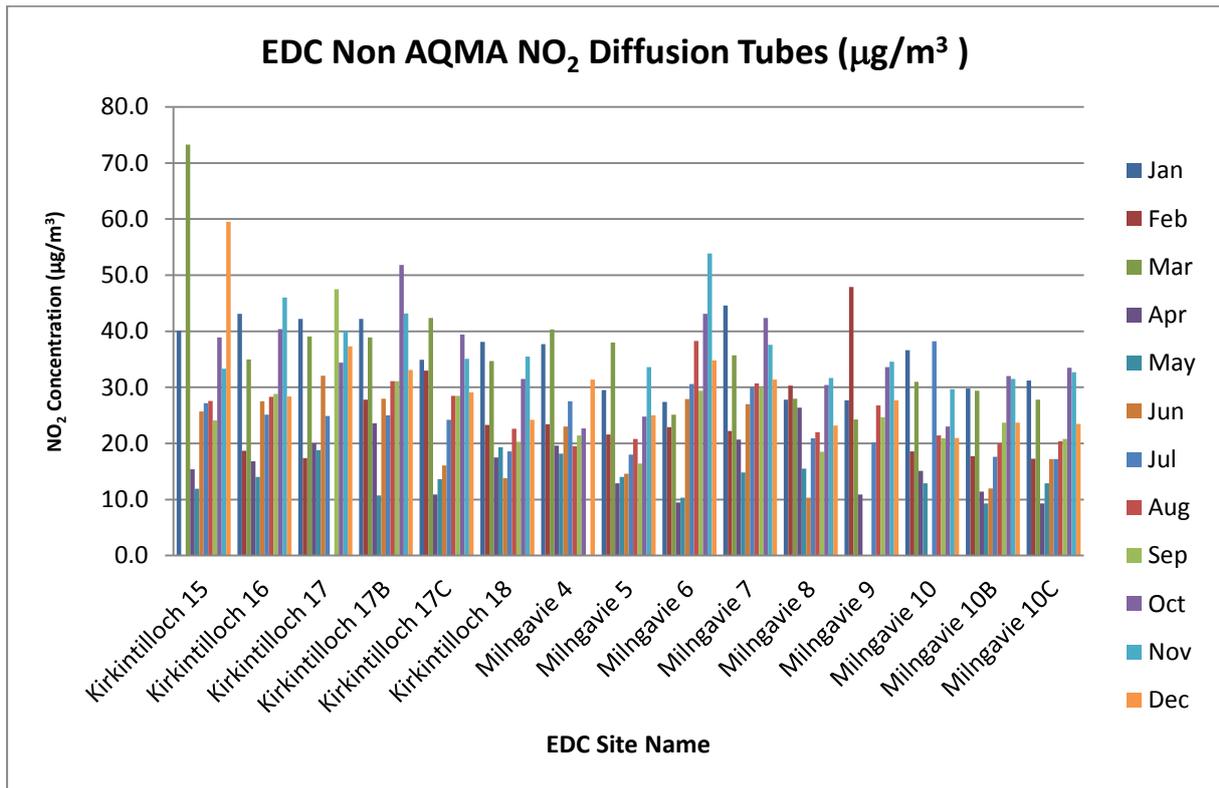


Chart 5 East Dunbartonshire Council Non AQMA NO₂ Diffusion Tubes

Appendix E: Trends in Annual Mean PM₁₀ Concentration at Automatic monitoring sites

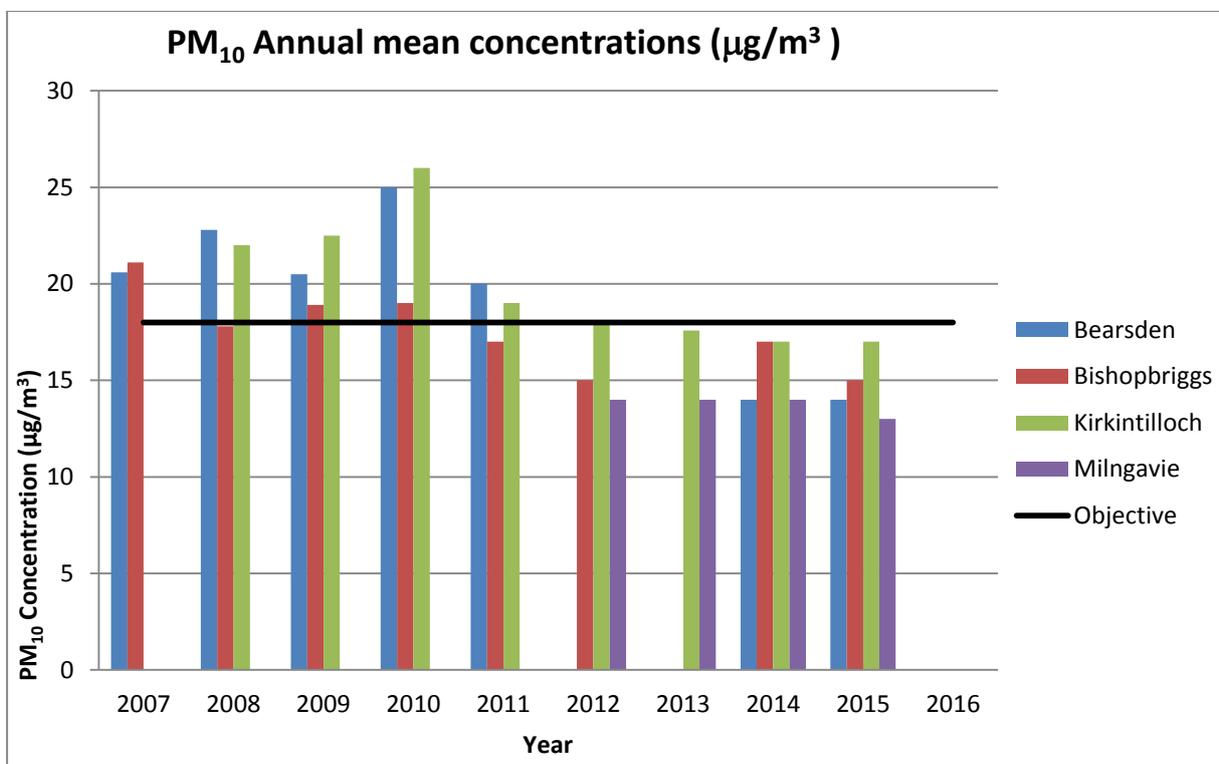


Chart 6 PM₁₀ Annual mean concentrations

Appendix F: Location of air quality monitoring stations and diffusion tubes network.

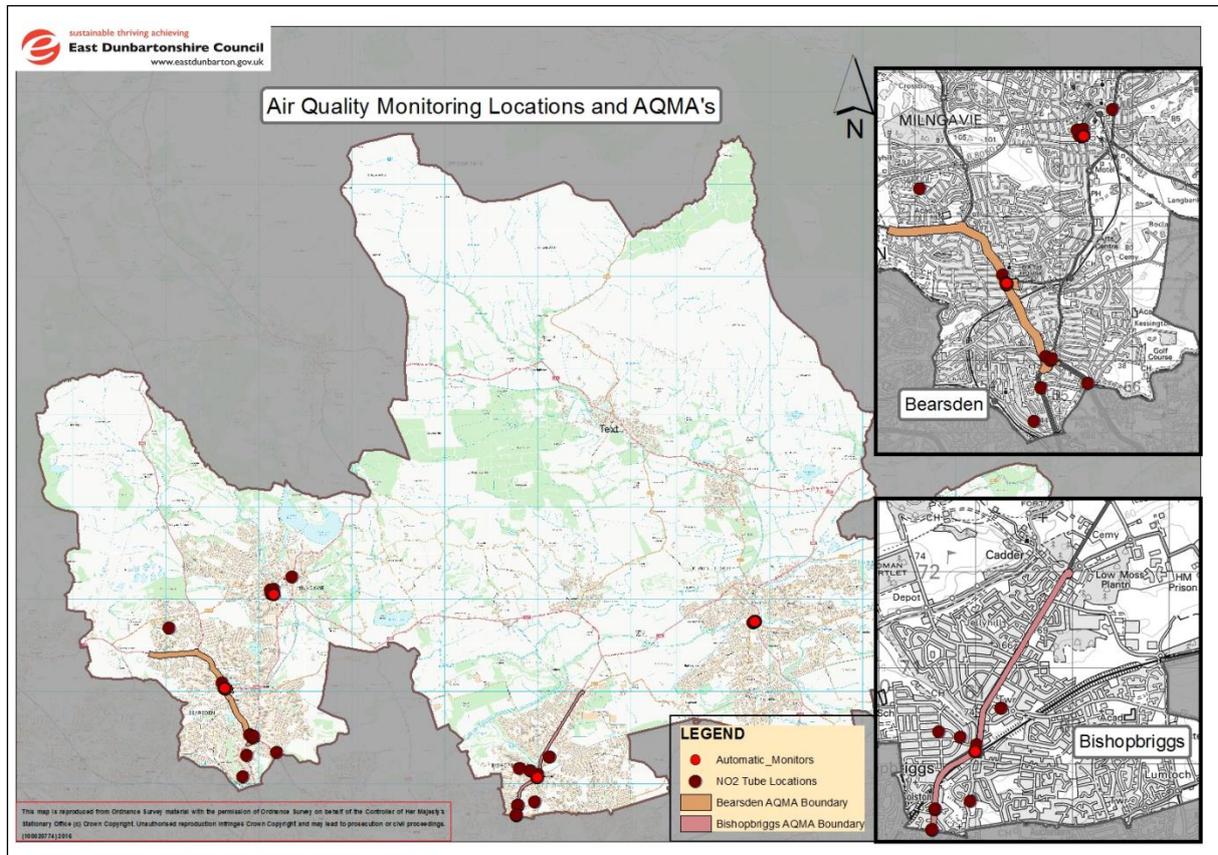


Chart 7 Location of Air quality Monitoring stations and diffusion tubes

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
QBC	Quality Bus Corridor
R	Roadside
K	Kerbside
UB	Urban Background

References

Local Air Quality Management Technical Guidance (TG16)

Local Air Quality Management Policy Guidance (PG(S)16)

Bishopbriggs Air Quality Management Area Action Plan

Bishopbriggs Air Quality Management Area Update