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**East Dunbartonshire Council**

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## Annual Progress Report



2018 Air Quality Annual Progress Report (APR) for  
East Dunbartonshire Council

In fulfilment of Part IV of the  
Environment Act 1995

Local Air Quality Management

June, 2018

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## **Executive Summary: Air Quality in Our Area**

### **Air Quality in East Dunbartonshire Council**

This report is the 2018 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 East Dunbartonshire for the calendar year of 2017 and considers the potential for exceedences of the air quality objectives.

In East Dunbartonshire, the main pollutants of concern are NO<sub>2</sub> and PM<sub>10</sub> and the source of pollutant is mainly due to the volume of traffic and congestion.

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 2017 indicates an overall downward trend in annual mean NO<sub>2</sub> concentrations at three of the four continuous automatic monitors – although Milngavie displayed no change. The annual mean NO<sub>2</sub> level dropped considerably at our Bearsden monitoring site which would tend to suggest that the unexpected increase in the previous year was due to the temporary ongoing works and associated traffic congestion in the surrounding area.

Annual mean PM<sub>10</sub> levels dropped at Kirkintilloch and Bearsden with no change at Milngavie and a slight increase at Bishopbriggs however; there were no exceedences of the Scottish objective levels at any of the four continuous monitors. There was a considerable reduction in the PM<sub>10</sub> level at Kirkintilloch. A Fidas 200 was installed at the Kirkintilloch site giving East Dunbartonshire Council the ability to monitor PM<sub>2.5</sub> for the first time. The annual mean is well below the objective level.

There are no new major sources of emissions although there is an on-going increase in the installation of biomass across East Dunbartonshire. There is a possibility that the cumulative effect of emissions from biomass installations may lead to exceedences of the air quality objectives.

No new AQMAs were declared during 2017. Additional NO<sub>2</sub> tubes have been added to the network to monitor two remaining hotspots to aid the decision as to whether or not the Bishopbriggs AQMA should be revoked and there were no exceedences of the annual mean at either site. For this reason, the Bishopbriggs Air Quality Action Plan will not be updated.

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**

During 2017, we made improvements to our NO<sub>2</sub> diffusion tube monitoring network following detailed assessments undertaken in Bishopbriggs and Kirkintilloch. Further tubes were added to assess whether more detailed analysis is required or whether we are in a position to revoke the Bishopbriggs AQMA.

The installation of a Fidas 200 at our Kirkintilloch automatic monitoring site has given East Dunbartonshire Council the capability to monitor PM<sub>2.5</sub> thus supporting the development of a national PM<sub>2.5</sub> monitoring network and assisting East Dunbartonshire Council in meeting its obligation as enacted in legislation. This is a priority for both local authorities and the Scottish Government and feeds into the Cleaner Air for Scotland (CAFS) requirement that all local authorities monitor in their area for PM<sub>2.5</sub>.

During 2017, ECO Stars, a vehicle fleet recognition system, was introduced into East Dunbartonshire for the first time and membership is at 44 members with 1437 vehicles in the scheme, helping to improve air quality through the promotion of both fuel efficient driving and ongoing improvement of the vehicle emissions standards of our freight throughout East Dunbartonshire. Six vehicle emission testing days were undertaken at weekends in order to get the message across to those members of the public not normally around during the working week and over 50 vehicle idling patrols around our primary schools in conjunction with North Lanarkshire Council (with whom we are in partnership) took place to encourage the public to switch off vehicle

engines and help improve air quality. We additionally responded to individual complaints concerning engine idling.

The Draft Bearsden Air Quality Action Plan was approved by committee in November 2017 and a good response to statutory and public consultation has been received. These responses will be taken in to account and a decision will be made whether to amend the Plan prior to final adoption.

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). Air quality planning guidance is being developed in house and this will further assist potential developers who will be made aware in advance of any development of our requirements in terms of air quality.

### **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. This includes the monitoring of PM<sub>2.5</sub> throughout the East Dunbartonshire area. The challenge presented by biomass and the ever-increasing number of applications and installations remains. Although installations must meet the highest standard possible to help control emissions, not all installations are notified. The number of applications in domestic premises continues to rise, as does the number of complaints concerning smell, smoke and fumes associated with solid fuel burning.

### **How to Get Involved**

Further information on air quality in East Dunbartonshire can be found on the Council website [HERE](#). You can visit the Scottish Air Quality website and view live air quality data in East Dunbartonshire at <http://www.scottishairquality.co.uk>. 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.

## Table of Contents

<b>Executive Summary: Air Quality in Our Area</b> .....	<b>i</b>
Air Quality in East Dunbartonshire Council .....	i
Actions to Improve Air Quality .....	ii
Local Priorities and Challenges.....	iii
How to Get Involved.....	iii
<b>1. Local Air Quality Management</b> .....	<b>1</b>
<b>2. Actions to Improve Air Quality</b> .....	<b>3</b>
2.1 Air Quality Management Areas.....	3
2.2 Progress and Impact of Measures to address Air Quality in East Dunbartonshire Council .....	4
2.3 Cleaner Air for Scotland .....	24
2.3.1 Transport – Avoiding travel – T1 .....	24
2.3.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2.....	24
<b>3. Air Quality Monitoring Data and Comparison with Air Quality Objectives</b> .....	<b>26</b>
3.1 Summary of Monitoring Undertaken .....	26
3.1.1 Automatic Monitoring Sites .....	26
3.1.2 Non-Automatic Monitoring Sites.....	27
3.2 Individual pollutants.....	27
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> ).....	27
3.2.2 Particulate Matter (PM <sub>10</sub> ).....	28
3.2.3 Particulate Matter (PM <sub>2.5</sub> ) .....	29
3.2.4 Sulphur Dioxide (SO <sub>2</sub> ) .....	29
3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene .....	29
<b>4. New Local Developments</b> .....	<b>30</b>
4.1 Road Traffic Sources.....	30
4.2 Other Transport Sources .....	30
4.3 Industrial Sources.....	31
4.4 Commercial and Domestic Sources .....	31
4.5 New Developments with Fugitive or Uncontrolled Sources.....	31
<b>5. Planning Applications</b> .....	<b>32</b>
<b>6. Conclusions and Proposed Actions</b> .....	<b>33</b>
6.1 Conclusions from New Monitoring Data.....	33
6.2 Conclusions relating to New Local Developments .....	33

6.3	Proposed Actions .....	34
<b>Appendix A: Monitoring Results .....</b>		<b>35</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2017 .....</b>		<b>48</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring</b>		
<b>Data QA/QC .....</b>		<b>51</b>
<b>Glossary of Terms .....</b>		<b>55</b>
<b>References .....</b>		<b>56</b>

### List of Tables

Table 1.1 – Summary of Air Quality Objectives in Scotland .....	1
Table 2.1 – Declared Air Quality Management Areas.....	3
Table 2.2 – Progress on Measures to Improve Air Quality .....	6

### List of Figures

Figure 1 Automatic (continuous) monitoring Sites .....	26
Figure 2 Non- automatic (passive) monitoring of NO <sub>2</sub> .....	27
Figure 3 National Diffusion Tubes Adjustment Factor .....	53
Figure 4 Bias Adjustment Factors for Bearsden. ....	54
Figure 5 Bias Adjustment Factors for Kirkintilloch .....	54

## 1. Local Air Quality Management

This report provides an overview of air quality in East Dunbartonshire during 2017. 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 <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003



Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Lead	0.25 µg/m <sup>3</sup>	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.

A summary of AQMAs declared by East Dunbartonshire Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries, are available online at this [LINK](#)

**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"> <li>• NO<sub>2</sub> annual mean</li> <li>• PM<sub>10</sub> annual mean</li> </ul>	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.	<a href="#">Bishopbriggs Updated Action Plan</a>
Bearsden AQMA	<ul style="list-style-type: none"> <li>• NO<sub>2</sub> annual mean</li> <li>• PM<sub>10</sub> annual mean</li> </ul>	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	Draft Bearsden AQMA Action Plan

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
			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.	

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

East Dunbartonshire Council declared an area of Bishopbriggs an AQMA in 2005. An Action Plan was adopted in 2010 and an updated Action Plan was published in 2014. Of the original 41 measures, 8 remain outstanding and mostly out with the control of the local authority. Pollutant levels have fallen sufficiently to consider revoking the AQMA and there were no exceedences during 2017. Further NO<sub>2</sub> tubes were added to test two hotspots highlighted in a Detailed Assessment undertaken during 2016 and there has been no exceedences of the annual mean at either site during 2017.

The Draft Bearsden Air Quality Action Plan was approved by committee in November 2017. East Dunbartonshire Council has continued to support a number of measures during the current reporting year of 2017 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 from the Draft Bearsden Air Quality Action Plan are:

Measure 22 Vehicle tracking and telematics. 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

Master naught vehicle tracking has been installed in all fleet and pool vehicles and there is no plan to extend or upgrade this system at this time.

Progress on the following measure within the Draft Bearsden Air Quality Action Plan.

Measure 19 – Eco Driver Training. This has been slower than expected due to the difficulty involved in releasing staff to attend sessions, particularly those who drive fleet vehicles providing Council services.

Fuel good training can help individuals become more efficient drivers either at work or during leisure and help save money on fuel costs. Based on 12,000 miles per annum, this equates to typical annual savings of £250 – and to improvements in Air Quality.

East Dunbartonshire Council hopes to provide free Fuel Good sessions to employees. This would help to improve air quality, reduce emissions, save money and improve EDCs environmental credentials in terms of its carbon footprint. For this reason, we plan to open up the driving sessions to all staff. Staff will be able to book their own training via an online booking system and this will be recorded as part of their PDP. The measure will then be evaluated on its success or otherwise and a decision made at that time as to whether to continue with the measure.

East Dunbartonshire Council expects the following measure detailed in the Draft Bearsden Air Quality Action Plan to be completed over the course of the next reporting year.

Measure 7 Air quality planning guidance. Initial guidance has been introduced to committee and will be consulted upon during 2018. This measure should be complete, with the guidance fully adopted over the course of the next reporting year.

**Table 2.2 – Progress on Measures to Improve Air Quality**

**Draft Bearsden Air Quality Action Plan**

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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				Ongoing target of reducing pollutant levels



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
2	Promote air quality with planning and transport strategies and other Council Plans	Policy Guidance and Development Control	<p>East Dunbartonshire Local Development Plan was adopted in 2017. The Local Development Plan provides the planning context for the Local Transport Strategy which was written in conjunction with the Bishopbriggs Air Quality Action Plan. The Local Development Plan and Local Transport Strategy integrate air quality, planning development and transport planning to mitigate the air pollution effects of traffic.</p> <p>Develop a broad AQMA steering group (for the Bearsden AQAP) and maintain regular and on-going communication between members of the group during the plans implementation.</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>	East Dunbartonshire Council		All of these actions are underway and adopted as standard practice		Local planning considerations aim to mitigate the cumulative negative air quality impacts of new development	Update of LTS is underway	Ongoing	Draft air quality planning guidance presented to committee
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 will be re evaluated as part of the consultation response to the Draft Action Plan



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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	Intelligent Traffic Management Systems	Traffic management	Identify appropriate locations and implement intelligent traffic management systems to improve traffic flows  Identify improvements at junctions and consider modifying surrounding environment to achieve maximum benefit	East Dunbartonshire Council		Junction upgraded to Mova 6 in 2015		Medium	Further upgrades are available therefore funding will be sought to improve junction.	2018/19	Funding applied for to allow junction improvement
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	Ongoing roll out of controlled parking zones	



Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6	Mitigation of emissions from developments within and around the AQMA	Policy guidance and development control	<p>Developments within or impacting on AQMA are reviewed for air quality impacts and where necessary all practical emission mitigation options are considered and implemented. Planning GIS system to have upgrade to include AQMA boundary</p> <p>Ensure through planning that all construction / demolition sites have a Dust Management Plan.</p>	East Dunbartonshire Council		GIS system upgraded 2015 to include AQMA boundaries		Small to medium impact	Regular review and updating of LDP to take account of all policies consistent with air quality objectives and requirements set out in Policy 4 – Sustainable Transport. These policies set out that new development must aim to provide access by active travel and public transport infrastructure.		All developments requiring a full air quality impact assessment to include a Dust Management Plan as standard



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
7	Air quality planning guidance	Policy guidance and development control	Improving links with Local Planning and Development Framework consistent approach to air quality impact assessment	East Dunbartonshire Council	2017	2018		Small to medium	Initial guidance to committee December 2017		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 Seven day a week operation has reduced the overall number of vehicles required to operate the service	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 the use of vehicles reducing peak travel time emissions



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
9	Council fleet replacement programme	Vehicle fleet efficiency	<p>Continue current replacement programme</p> <p>Pool EDC will attempt to increase the availability of electric/hybrid vehicles to appropriate staff</p> <p>Fleet EDC will investigate options available for making use of electric/hybrid vehicles as part of the Council fleet</p> <p>Increase number of charge points across EDC area</p>	East Dunbartonshire Council		Ongoing		High	<p>14 electric pool cars now in use</p> <p>Two additional charging points at Council depots planned</p>		No current plan to purchase a hybrid fleet vehicle
10	Environmental fleet recognition scheme	Vehicle fleet efficiency	<p>Environmental Fleet Recognition Scheme rates individual vehicles and the overall operation of a vehicle fleet, using a star rating system, to recognise levels of operational and environmental performance. It aims to reduce the 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.</p>	EDC, TRL and all members		2017		Medium	<p>EDC Fleet assessed and graded at 4*</p> <p>44 members with 1437 vehicles</p>	No completion date planned	This measure will continue as funding allows



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
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 undertaken with distribution of leaflets and advice</p>	East Dunbartonshire Council – Community Protection		Powers adopted in 2006		Small	Council continues to promote awareness and benefits in regard to reduction of vehicle idling via billboards and advertising campaign on PSV vehicles and bus stops.	Ongoing as resources allow	No fixed penalties issued as policy of education is adhered to. Drivers always asked to switch off.
12	Management of biomass installations	Promoting low emission plant	<p>Suitably manage biomass installations as part of the planning process</p> <p>Suitably manage biomass installations in the domestic sector</p>	East Dunbartonshire Council		This will be further addressed on the introduction of air quality planning guidance			Reactive work undertaken in responding to complaints		Biomass has a negative impact on air quality unless appropriate abatement is installed



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
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.  2000 cycle maps printed with more to follow.		In 2016, a decision was made by Council not to proceed with Bears Way Phase 2.
14	Council smart working	Promoting travel alternatives	Smart working means being more flexible about when and where employees work and how technology is used to find new and more efficient ways to do things.	East Dunbartonshire Council		Already implemented		Medium	Many staff regularly work from home		Less staff travelling to work. Flexible working also changes the peak travel
15	Green travel planning	Promoting travel alternatives	Travel plans aim to address the negative impacts of car travel, notably single occupancy vehicles, by encouraging car sharing, or a shift to more sustainable forms of transport, such as walking, cycling and public transport; or reducing the need for travel.	East Dunbartonshire Council					Cycle parking introduced at Bearsden Community Hub,		
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		Small	All new build schools within EDC include travel plans as standard		



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
17	Air quality awareness raising and education	Public information	Raise awareness of air quality issues as part of joint action days with Police Scotland Raise awareness among EDC staff by providing air quality training sessions Raise awareness in schools by involving pupils in science projects, art competitions and planting days	East Dunbartonshire Council		Ongoing		Small		Ongoing	School pupils involved in planting of trees in school grounds. Ties in with curriculum and John Muir Award Scheme.
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 Offer assistance to existing companies to aid the process of creating a travel plan								
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 during leisure and help save money on fuel costs	East Dunbartonshire Council and Energy Savings Trust / Transport Scotland funding available		Postponed until 2018		Small		No completion date planned.	Sessions will be offered to all staff who drive and will count towards CPD



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	Council pool cars – priority spaces and car sharing	Vehicle fleet efficiency	Council pool cars to have prioritised parking spaces  Car sharing database to be instigated (introduced in 2016)	East Dunbartonshire Council, SPT and Liftshare				Small	Priority spaces designated for pool cars at all Council buildings  117 employees signed up to SPT Journey share/Liftshare		
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 vehicle repaired and re tested.	East Dunbartonshire Council, North Lanarkshire Council, Police Scotland		Powers adopted in 2006	No of fixed penalties served	Low	757 vehicles tested during 2017	Ongoing as funding allows	Of 757 vehicles tested, 6 failed test resulting in 6 fixed penalty notices being served.
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	Complete	No plan to upgrade



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
23	Improvements to SPT prioritised bus stops	Promoting travel alternatives	Upgrading of bus stops to encourage active travel	East Dunbartonshire Council, SPT					Improvements to bus stops on A81 and A809 Drymen Road have been undertaken over last three years.		
24	Soft measures – Healthy Habits	Promoting travel alternatives	The Healthy Habits campaign seeks to inspire people to choose active travel such as walking and cycling.	East Dunbartonshire Council					The Healthy Habits project is ongoing with new initiatives continually developed to encourage local people to walk and cycle more often. Healthy Habits maps and signs regularly reviewed, updated and distributed.		
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							



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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 project undertaken in conjunction with Bearsden Academy pupils as part of their John Muir Award scheme.



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
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							Environmental measures include promoting good quality air by tackling local air pollution; addressing environmental incivilities such as illicit tipping, graffiti and dog fouling. Other environmental issues such as reducing carbon emissions, promoting green space for active travel, sustainable development and community transport schemes also feature prominently on partnership agendas.



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28	Green Infrastructure	Public Information	Expand the programme of installing sustainable energy measures	East Dunbartonshire Council					LDP Supplementary Guidance on Green Infrastructure and Green Network is underway.	Should be implemented during 2018	Guidance will seek to stimulate installation of green roofs and help extend projects planning solar panels.
29	Taxi Licensing	Promoting low emission transport.	Consider means of reducing emissions from taxis and private hire vehicles in AQMA	East Dunbartonshire Council					No progress to date		Propose to undertake testing in house and increase frequency of testing for older vehicles

## 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		EDC & Transport Scotland		Phase 3 opened 2015.		Medium		Phase 4 opened June 2018	
7	Investigation of options in Bishopbriggs town centre to improve access to Bishopbriggs station and opportunities for active travel.	Promoting travel alternatives		Network Rail & EDC				Small			This measure cannot proceed until the entire BRR is complete
8	Investigate options for a Bishopbriggs East / Westerhill transport hub comprising a bus terminal, rail halt and park and ride facility.	Promoting travel alternatives		EDC, SPT & Transport Scotland							Rail halt and park and ride still aspirational. Both are included in Local Plan but no guarantee of delivery.



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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
9	Where possible encourage the establishment of partnerships between public transports to provide more joined up inter-modal transport options.	Promoting travel alternatives		EDC, SPT & local bus operators					No further progress on this measure.		
11	Produce a public transport access map.	Public information		EDC				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 undertaking		



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.	Assess appropriateness of bus services and network within East Dunbartonshire.	Transport planning and infrastructure	EDC and SPT				Small	This measure is particularly within the remit of SPT. It may be reviewed on completion of the BRR however, bus fleet is undergoing major transformation in light of the LEZ plans for Glasgow. It will be some time before action, if any, is taken.		
20	Continue to review and enforce parking / loading restrictions within the AQMA	Traffic management			Will be carried out as part of Decriminalised Parking Enforcement. Current estimate of implementation Jan 2013.			Small	Off street decriminalised parking introduced summer 2016 Charges introduced in Council Car Parks	Ongoing roll out of controlled parking zones	

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
21	Encourage companies within the AQMA, particularly those with service bays in the area to the rear of the Triangle, to reduce idling from delivery vehicles on private property	Vehicle fleet efficiency		EDC				Medium	Under review due to extensive planning proposal adjacent to this site. May follow as part of planning permission conditions.		

## **2.3 Cleaner Air for Scotland**

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland’s legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available at <http://www.gov.scot/Publications/2015/11/5671/17>. Progress by East Dunbartonshire Council against relevant actions within this strategy is demonstrated below.

### **2.3.1 Transport – Avoiding travel – T1**

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

East Dunbartonshire Council began work on a Corporate Travel Plan during 2017 however; the Plan is not yet complete. The Plan proposed several alternative travel options to encourage a reduction in reliance on cars. If the Plan proceeds and is adopted, it should result in a reduction of pollutant levels across East Dunbartonshire through the promotion of active travel, increasing the availability of electric pool cars and charging points and increased provision of cycle storage and facilities.

Communal charging points are also being considered. The guiding principles are incorporated into other initiatives such as our Healthy Habits, an award winning active travel project. The Healthy Habits project is designed to encourage local people to walk and cycle more as part of their everyday journeys. It is hoped that a formalised corporate travel plan will be implemented however, it will require working with colleagues across a variety of services such as transport, sustainability and climate change and environmental health to ensure air quality is given appropriate consideration.

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

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered. East Dunbartonshire Council has looked at producing a Sustainable Energy Action Plan but is currently concentrating on corporate issues. A variety of

corporate projects will have a bearing on area-wide emissions, and work is being undertaken by other sections within the Council which will have area-wide benefits (e.g. Local Transport Strategy/Active Travel Strategy measures) and it is hoped that these will eventually be expanded into a SEAP.

### 3. Air Quality Monitoring Data and Comparison with Air Quality Objectives

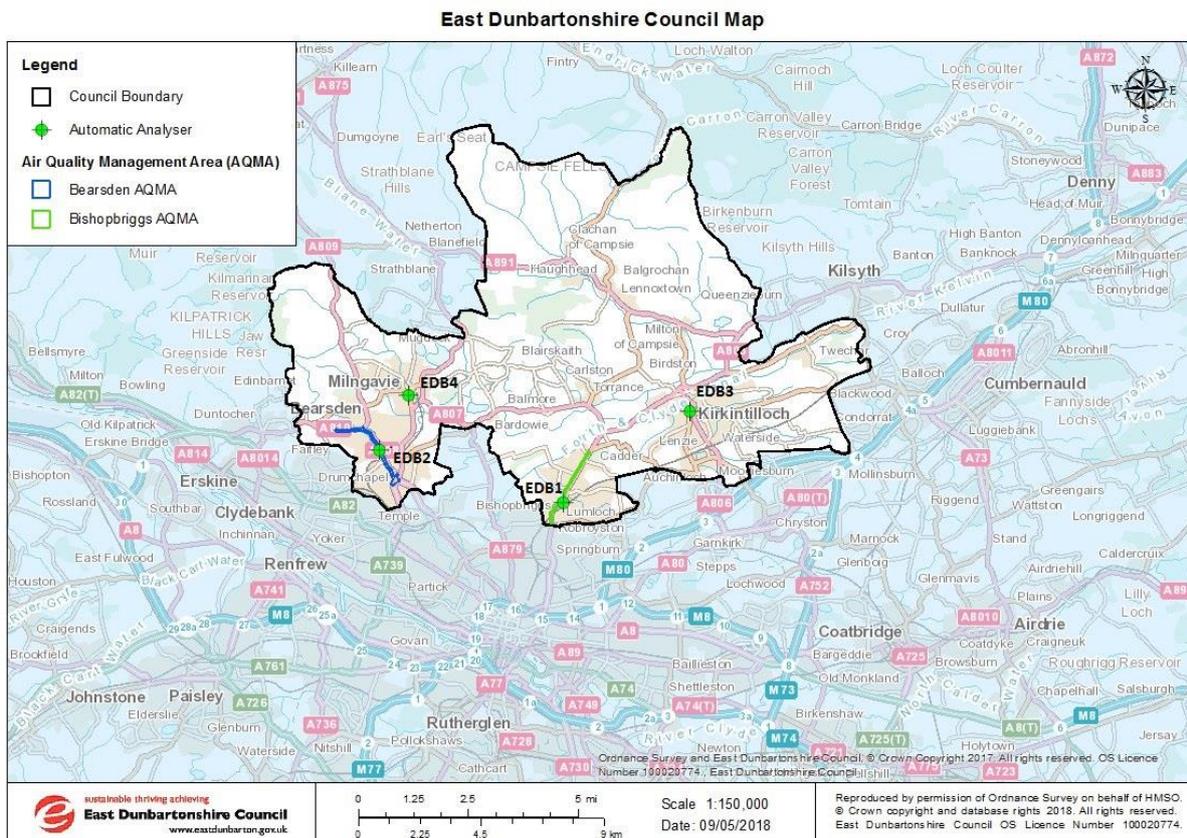
#### 3.1 Summary of Monitoring Undertaken

##### 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 2017. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available on line.

Maps showing the location of the monitoring sites are provided in Figure 1. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

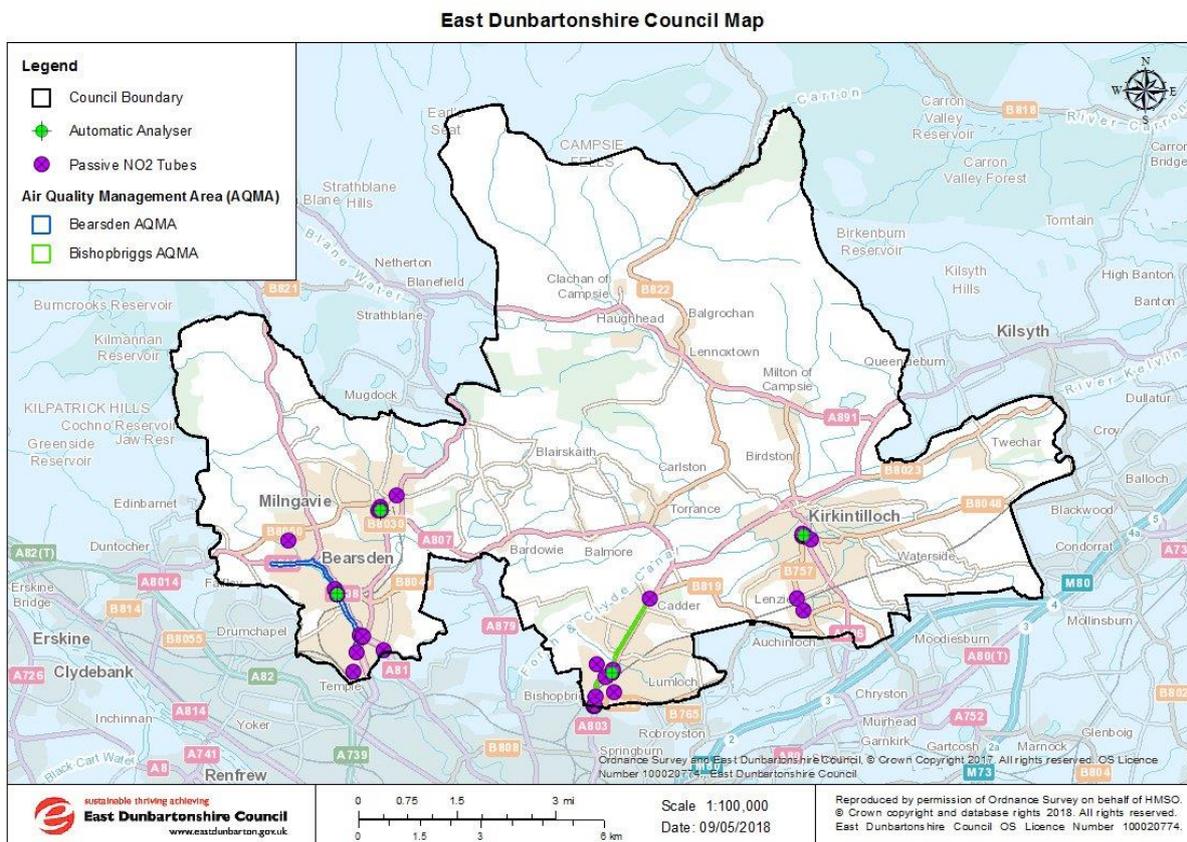


**Figure 1 Automatic (continuous) monitoring Sites**

### 3.1.2 Non-Automatic Monitoring Sites

East Dunbartonshire Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 43 sites during 2017. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 2. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.



**Figure 2 Non- automatic (passive) monitoring of NO<sub>2</sub>**

### 3.2 Individual pollutants

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

#### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>. In

2017 NO<sub>2</sub> was monitored at four automatic sites; two at roadside and two at kerbside. All sites go through regular filter changes and calibrations in accordance with LAQM TG16 and the guidance in the Scottish LSO User Manual.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

There were no exceedences of the annual mean and the hourly mean air quality objective at any of the automatic monitoring sites.

Approximately half of the non-automatic (diffusion tube) monitoring sites have shown increased concentrations in 2017 compared with the previous year, with the other half either decreasing or remaining the same. The data has been bias adjusted and this is discussed in Appendix C.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

Table A.5 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past 5 years with the air quality objective of 18µg/m<sup>3</sup>.

Table A.6 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for the past 5 years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 7 times per year.

There were no exceedences of the annual mean air quality objective for PM<sub>10</sub> during the monitoring period. Although the daily mean objective of 50 microgrammes was exceeded on two occasions at Bearsden and once at Milngavie, the allowable number of permitted exceedences is 7 and therefore giving no cause for concern. The overall PM<sub>10</sub> concentration within the Council area has, however, seen a steady decrease since 2012 with an annual average for PM<sub>10</sub> of 17µg/m<sup>3</sup> in recent years.

The PM<sub>10</sub> concentration measured at the Milngavie site has remained well below the annual mean and 24 hour mean objectives in all reported years since installation. For this reason, it is our intention to move the equipment to an alternative site closer to the Kilmardinny West development in the coming year.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

Table A.7 in Appendix A compares the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past 5 years with the air quality objective of 10µg/m<sup>3</sup>.

The Fidas 200 particulate monitor capable of monitoring PM<sub>2.5</sub> and PM<sub>10</sub> simultaneously, was added to our monitoring network in March 2017 in order to comply with the legislative requirement introduced in 2016 to monitor PM<sub>2.5</sub>. The concentration levels recorded at the Kirkintilloch site indicates that the levels have been compliant with the Scottish objective levels and WHO guideline values. With increasing evidence of the effects on health of PM<sub>2.5</sub> there is no safe threshold for concentrations of particulate matter (PM).

Additionally, monitoring supports the requirements of the LOIP (Local Outcome Improvement Plan) which seeks to improve health outcomes for the people of East Dunbartonshire.

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

East Dunbartonshire Council does not monitor Sulphur Dioxide (SO<sub>2</sub>) as there is 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 does not currently monitor carbon monoxide, lead or 1,3-Butadiene

## **4. New Local Developments**

East Dunbartonshire Council installs biomass boilers as standard in all new build schools, community centres and public buildings. Further details are available in section 5.

### **4.1 Road Traffic Sources**

East Dunbartonshire Council Roads were consulted on changes to traffic flows on roads within the area in 2017 and the following information is reported:

- 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
- New roads constructed or proposed – no new roads that meet this criteria
- Roads with significantly changed traffic flow – four phases out of five of the Bishopbriggs Relief Road have been constructed (or almost complete.) This is a measure in the Bishopbriggs Air Quality Action Plan. As development has progressed, traffic in the vicinity of Wester Cleddens Road, Bishopbriggs has increased. It was intended during 2017 to undertake a detailed assessment in this area however; the opening of Phase 4 of the BRR has been postponed. Funding is available to address this during 2018 and will be reported in the next Annual Progress Report if complete.
- Bus or coach stations – no new bus or coach stations to report.

### **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 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 receive applications to approve chimney heights for biomass boiler installations and approved the following installation:

Single storey building to house 2x60kW biomass boilers with two flues (7.6m in height) and wood pellet storage area. Campsie View Nursing Home Canal Street Kirkintilloch East Dunbartonshire G66 1QY

#### **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

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

### **TP/ED/17/0051**

Site North Of Jellyhill Meadowburn Bishopbriggs East Dunbartonshire  
Erection of 135 dwellings, (including affordable housing) with associated roads, landscaping and amenity open space.

Application refused – granted on appeal. Air quality assessment submitted with the application. Further information is available on the Council website.

### **TP/ED/17/0717**

6 St Mungo Street Bishopbriggs East Dunbartonshire G64 1QT  
Demolition of existing industrial and commercial premises and erection of 64 no. apartments in four separate 3-4 storey blocks with accommodation in the roofspace and associated parking, roads and landscaping. Application granted subject to condition. Further information is available on the Council website.

### **TP/ED/17/0866**

Land Adjacent To Meiklehill Farm Kirkintilloch Road Bishopbriggs East Dunbartonshire. Development of new crematorium, memorial gardens, parking and new access. Further information is available on the Council website.

### **TP/ED/17/0517**

Site South Of Blacklands Place Lenzie East Dunbartonshire  
Residential development of 74 dwellings (comprising of 48 dwellings and 26 flats) with associated access, infrastructure and engineering works. Further information this development is available on the Council website.

There were also 24 planning applications concerning domestic property and which included the installation of wood burning stoves.

## **6. Conclusions and Proposed Actions**

### **6.1 Conclusions from New Monitoring Data**

Monitoring data for 2017 indicates an overall improvement in air quality across East Dunbartonshire.

A slight increase in the annual mean PM<sub>10</sub> level was measured at the Bishopbriggs automatic continuous monitoring equipment however; it is still below the objective level. The monitoring equipment at this site is outdated and will be replaced. Two additional NO<sub>2</sub> diffusion tubes were added to the network to test two hot spot areas within the Bishopbriggs AQMA boundary and neither has exceeded the annual mean objective level. A decision will be made as to whether the revocation procedure should be instigated.

The AQMA in Bearsden was declared in 2011 for exceedences of both the NO<sub>2</sub> and PM<sub>10</sub> annual mean objective level. The annual mean NO<sub>2</sub> objective level was unexpectedly exceeded in 2016 (46µg/m<sup>3</sup>) and has now returned to an acceptable level of 33µg/m<sup>3</sup>. We are of the opinion that last year's exceedence was due to ongoing work and temporary traffic lights adding to congestion. Monitoring equipment at the Bearsden site is also outdated and new equipment should be installed by the time next years' Annual Progress Report is due. Monitoring will continue at this site.

The annual mean NO<sub>2</sub> and PM<sub>10</sub> levels at Kirkintilloch have dropped considerably from the previous year and meet the air quality objective levels. A Fidas 200 was installed early in 2017 and results indicate compliance with the PM<sub>2.5</sub> annual mean objective level. Monitoring will continue at this site.

The continuous monitor in Milngavie has recorded consistently low levels of NO<sub>2</sub> and PM<sub>10</sub> annual mean since its installation in 2011. There was no change in 2017 and we plan to relocate the equipment to an alternative site nearby to better utilise both the equipment and the data. This may be complete by the submission date of the next APR.

### **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.

The increase in small scale domestic installations has led to an increase in the number of complaints received however, in many cases, there is little or no action that can be taken.

### **6.3 Proposed Actions**

Monitoring throughout 2017 did not reveal any new exceedences. Two further NO<sub>2</sub> tubes were added to the network in 2017 to test hotspot areas highlighted in a detailed assessment undertaken the previous year when gathering evidence to help decide whether to revoke the Bishopbriggs AQMA. Results from both NO<sub>2</sub> tubes gave annual average figures of 37 µg/m<sup>3</sup> and 33 µg/m<sup>3</sup> respectively.

The automatic monitoring station at Milngavie has recorded levels well below objective levels since its installation in 2011. The enclosure has recently been replaced and we plan to move this monitor to an alternative site to better utilise the data.

There are no changes required to any existing AQMAs in the form of boundary changes however, serious consideration will be given to revoking the Bishopbriggs AQMA and advice sought from appropriate stakeholders to ensure this process is undertaken in compliance with all appropriate guidance. There are 8 outstanding measures in the Bishopbriggs Air Quality Action Plan and there will be no further updates.

Funding is in place to renew outdated monitoring equipment at Bearsden and Bishopbriggs in order to ensure that the quality and integrity of our monitoring data is preserved.

Additional NO<sub>2</sub> tubes will be added to the network to help inform the decision as to where the Milngavie automatic monitor should be re sited to ensure meaningful data is gathered. Relocation of the automatic monitor may lead to an alteration in the Bearsden AQMA boundary once sufficient data has been gathered.

It is hoped that the Draft Bearsden Air Quality Action Plan will be fully adopted by the Council by the time next year's APR is submitted.

Work will continue with stakeholders to continue towards implementing the measures in the Draft Bearsden Air Quality Action Plan.

The next Annual Progress Report will be submitted in 2018.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
EDB1	Bishopbriggs	Roadside	260995	670130	NO <sub>2</sub> ; PM <sub>10</sub>	Y	Chemiluminescent; BAM (heated inlet)	5m	2m	2.0
EDB2	Bearsden	Kerbside	254269	672067	NO <sub>2</sub> ; PM <sub>10</sub>	Y	Chemiluminescent; BAM (heated inlet)	<2m	1m	2.0
EDB3	Kirkintilloch	Kerbside	265675	673516	NO <sub>2</sub> ; PM <sub>10</sub> PM <sub>2.5</sub>	N	Chemiluminescent; TEOM FDMS; FIDAS	<2m	1m	3.0
EDB4	Milngavie	Roadside	255328	674115	NO <sub>2</sub> ; PM <sub>10</sub>	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.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?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
<b>EDB5</b>	Bearsden 1 (118 Drymen Road)	Roadside	254218	672193	NO <sub>2</sub>	Y	3m	2m	N
<b>EDB6</b>	Bearsden 3 (5 Ravelston Road)	Urban Background	254655	670158	NO <sub>2</sub>	N	8m	5m	N
<b>EDB7</b>	Bearsden 4 (8 Lowther Ave)	Urban Background	253075	673382	NO <sub>2</sub>	N	6m	5m	N
<b>EDB8</b>	Bearsden 7	Roadside	254269	672069	NO <sub>2</sub>	Y	<2m	2m	N
<b>EDB9</b>	Bearsden 8	Roadside	254275	672047	NO <sub>2</sub>	Y	18m	2m	N
<b>EDB10</b>	Bearsden 9	Roadside	254751	670621	NO <sub>2</sub>	N	30m	2m	N
<b>EDB11</b>	Bearsden 10	Roadside	255394	670683	NO <sub>2</sub>	N	24m	2m	N
<b>EDB12</b>	Bearsden 13	Roadside	254809	671057	NO <sub>2</sub>	Y	26m	2m	N
<b>EDB13</b>	Bearsden 14	Roadside	254877	671000	NO <sub>2</sub>	Y	8m	2m	N

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
EDB24	Bishopbriggs 14C	Roadside	260995	670130	NO <sub>2</sub>	Y	42m	2m	Y
EDB25	Bishopbriggs 16	Roadside	260580	669533	NO <sub>2</sub>	Y	<2m	2m	N
EDB26	Bishopbriggs 17	Roadside	260552	669320	NO <sub>2</sub>	Y	<2m	2m	N
EDB27	Bishopbriggs 18	Urban Background	260604	670337	NO <sub>2</sub>	N	20m	2m	N
EDB28	Bishopbriggs 19	Roadside	261280	670431	NO <sub>2</sub>	N	1m	16m	N
EDB29	Bishopbriggs 20	Roadside	261285	670451	NO <sub>2</sub>	N	15m	1m	N
EDB30	Bishopbriggs 5	Urban Background	260948	669610	NO <sub>2</sub>	N	44m	5m	N
EDB31	Bishopbriggs 6	Roadside	261016	670198	NO <sub>2</sub>	Y	<2m	2m	N
EDB32	Kirkintilloch 15	Roadside	265641	673497	NO <sub>2</sub>	N	2m	2m	N
EDB33	Kirkintilloch 16	Roadside	265697	673524	NO <sub>2</sub>	N	3m	2m	N

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
EDB34	Kirkintilloch 17	Roadside	265675	673516	NO <sub>2</sub>	N	3m	1m	Y
EDB35	Kirkintilloch 17B	Roadside	265675	673516	NO <sub>2</sub>	N	3m	1m	Y
EDB36	Kirkintilloch 17C	Roadside	265675	673516	NO <sub>2</sub>	N	3m	1m	Y
EDB37	Kirkintilloch 18	Roadside	265674	673521	NO <sub>2</sub>	N	<2m	2m	N
EDB38	Milngavie 4	Roadside	255728	674486	NO <sub>2</sub>	N	5m	2m	N
EDB39	Milngavie 5	Roadside	255327	674137	NO <sub>2</sub>	N	5m	2m	N
EDB40	Milngavie 6	Roadside	255288	674121	NO <sub>2</sub>	N	2m	2m	N
EDB41	Milngavie 7	Roadside	255279	674124	NO <sub>2</sub>	N	<2m	9m	N
EDB42	Milngavie 8	Roadside	255251	674198	NO <sub>2</sub>	N	3m	1m	N
EDB43	Milngavie 9	Roadside	255331	674214	NO <sub>2</sub>	N	7m	2m	N

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
EDB44	Milngavie 10	Roadside	255325	674116	NO <sub>2</sub>	N	40m	1m	Y
EDB45	Milngavie10B	Roadside	255325	674116	NO <sub>2</sub>	N	40m	1m	Y
EDB46	Milngavie10C	Roadside	255325	674116	NO <sub>2</sub>	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.3 – Annual Mean NO<sub>2</sub> Monitoring Results**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Bearsden	Roadside	Automatic	91	91	36	37	34	<b>46</b>	33
Bishopbriggs	Roadside	Automatic	99	99	33	29	27	29	27
Kirkintilloch	Roadside	Automatic	99	99	32	29	29	34	30
Milngavie	Roadside	Automatic	97	97	23	24	23	22	22
Bearsden 1	Roadside	Diffusion Tube	92	92	29.86	28.82	32.87	29.10	24.72
Bearsden 3	Urban Background	Diffusion Tube	92	92	18.60	19.83	22.80	18.41	17.88
Bearsden 4	Urban Background	Diffusion Tube	92	92	11.36	11.86	11.95	11.76	10.13
Bearsden 7	Roadside	Diffusion Tube	100	100	34.33	34.23	28.84	35.33	31.30
Bearsden 8	Roadside	Diffusion Tube	100	100	34.58	33.39	33.54	32.80	32.34
Bearsden 9	Roadside	Diffusion Tube	100	100	28.23	20.91	30.57	26.07	25.85
Bearsden 10	Roadside	Diffusion Tube	100	100	28.89	26.87	26.07	26.21	26.34
Bearsden 13	Roadside	Diffusion Tube	100	100	37.53	37.49	31.97	33.24	33.16
Bearsden 14	Roadside	Diffusion Tube	100	100	35.24	32.69	32.91	34.83	31.36
Bearsden 15	Roadside	Diffusion Tube	92	92	38.12	27.94	33.90	31.91	34.27
Bearsden 16	Kerbside	Diffusion Tube	92	92	39.45	36.61	33.58	35.03	33.20
Bearsden 16B	Kerbside	Diffusion Tube	100	100	39.34	37.40	34.43	34.53	37.12
Bearsden 16C	Kerbside	Diffusion Tube	100	100	37.87	37.03	34.77	35.92	34.43
Bearsden 17	Roadside	Diffusion Tube	92	92	39.51	37.04	28.79	34.76	32.13
Bearsden 18	Roadside	Diffusion Tube	100	100	33.83	35.75	31.69	31.27	30.20
Bishopbriggs 12	Roadside	Diffusion Tube	N/A	N/A	30.66	31.04	25.95	31.98	N/A
Bishopbriggs 13	Roadside	Diffusion Tube	92	92	40.43	33.91	35.99	38.13	34.07
Bishopbriggs 14	Roadside	Diffusion Tube	92	92	28.27	28.26	30.92	31.78	25.47

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Bishopbriggs14B	Roadside	Diffusion Tube	92	92	26.70	26.88	30.04	29.10	24.56
Bishopbriggs14C	Roadside	Diffusion Tube	92	92	29.75	29.11	28.88	26.66	25.59
Bishopbriggs 16	Roadside	Diffusion Tube	92	92	28.98	30.28	24.96	26.98	24.72
Bishopbriggs 17	Roadside	Diffusion Tube	92	92	35.50	35.99	27.08	31.02	29.01
Bishopbriggs 5	Urban Background	Diffusion Tube	N/A	N/A	14.19	10.94	14.40	16.60	N/A
Bishopbriggs 6	Roadside	Diffusion Tube	92	92	28.28	26.47	28.11	34.35	28.77
Bishopbriggs 18	Urban Background	Diffusion Tube	N/A	N/A	20.34	18.53	19.10	16.56	N/A
Bishopbriggs 19	Roadside	Diffusion Tube	N/A	N/A	-	22.13	18.27	21.49	N/A
Bishopbriggs 20	Roadside	Diffusion Tube	N/A	N/A	-	18.16	18.96	16.70	N/A
Kirkintilloch 15	Roadside	Diffusion Tube	92	92	31.44	34.10	34.96	27.36	25.73
Kirkintilloch 16	Roadside	Diffusion Tube	92	92	35.19	37.15	29.93	29.15	32.41
Kirkintilloch 17	Roadside	Diffusion Tube	83	83	34.12	38.07	32.80	33.16	30.86
Kirkintilloch 17B	Kerbside	Diffusion Tube	83	83	34.68	38.49	32.85	32.23	28.44
Kirkintilloch 17C	Kerbside	Diffusion Tube	92	92	32.40	34.86	28.53	31.91	28.09
Kirkintilloch 18	Kerbside	Diffusion Tube	100	100	26.96	28.57	25.45	27.15	25.07
Milngavie 4	Roadside	Diffusion Tube	100	100	27.36	24.03	26.40	24.26	23.95
Milngavie 5	Roadside	Diffusion Tube	N/A	N/A	25.83	24.10	22.88	23.92	N/A
Milngavie 6	Roadside	Diffusion Tube	N/A	N/A	34.71	39.28	30.02	32.98	N/A
Milngavie 7	Roadside	Diffusion Tube	92	92	34.22	30.90	31.21	30.32	29.61
Milngavie 8	Roadside	Diffusion Tube	N/A	N/A	26.30	26.39	24.23	23.78	N/A
Milngavie 9	Roadside	Diffusion Tube	100	100	27.33	22.00	28.40	27.03	26.18
Milngavie 10	Roadside	Diffusion Tube	100	100	25.86	24.08	24.89	22.98	20.52
Milngavie10B	Roadside	Diffusion Tube	100	100	24.73	22.71	21.94	24.44	20.10
Milngavie10C	Roadside	Diffusion Tube	100	100	24.98	22.66	22.42	23.33	20.28

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Kirkintilloch 19	Roadside	Diffusion Tube	92	92	N/A	N/A	N/A	N/A	15.96
Kirkintilloch 20	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	30.09
Kirkintilloch 21	Roadside	Diffusion Tube	92	92	N/A	N/A	N/A	N/A	22.44
Kirkintilloch 22	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	19.09
Bishopbriggs 21	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	18.91
Bishopbriggs 22	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	33.16
Bishopbriggs 23	Roadside	Diffusion Tube	92	92	N/A	N/A	N/A	N/A	32.29
Bishopbriggs 24	Roadside	Diffusion Tube	83	83	N/A	N/A	N/A	N/A	21.21
Bishopbriggs 25	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	14.78

Notes: Exceedences of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedence of the NO<sub>2</sub> 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.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Bearsden	Kerbside	Automatic	91	91	5	0	5	<b>19</b>	0
Bishopbriggs	Roadside	Automatic	99	99	0	0	0	0	0
Kirkintilloch	Kerbside	Automatic	99	99	12	0	0	0	0
Milngavie	Roadside	Automatic	97	97	0	0	1	0	0

Notes: Exceedences of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> 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 85%, the 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

**Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2013	2014	2015	2016	2017
Bearsden	Kerbside	98	98	-	14	14	14	13
Bishopbriggs	Roadside	95	95	-	17	15	15	16
Kirkintilloch	Kerbside	98	98	17	17	17	16	12
Milngavie	Roadside	92	92	14	14	13	13	13

Notes: Exceedences of the PM<sub>10</sub> annual mean objective of 18µg/m<sup>3</sup> 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.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> <sup>(3)</sup>				
				2013	2014	2015	2016	2017
Bishopbriggs	Roadside	95	95	0	0	1(23)	0	2
Bearsden	Kerbside	98	98	0	1	0	0	0
Kirkintilloch	Kerbside	98	98	3	2	4	0	0
Milngavie	Roadside			0	0	0	0	1

Notes: Exceedences of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> 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 85%, the 98.1<sup>st</sup> percentile of 24-hour means is provided in brackets.

**Table A.7 – Annual Mean PM<sub>2.5</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2013	2014	2015	2016	2017
Kirkintilloch	Kerbside	82	82	N/A	N/A	N/A	N/A	6.0

Notes: Exceedences of the PM<sub>10</sub> annual mean objective of 10µg/m<sup>3</sup> 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.

## Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2017

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
Bishopbriggs 6	<b>49.4</b>	36.0	37.3	32.9	25.2	20.6	20.8	28.5	35.4	31.9	<b>45.7</b>	-	33	29	
Bishopbriggs 13	<b>47.4</b>	<b>44.6</b>	<b>42.7</b>	33.8	38.6	30.4	28.1	<b>53.0</b>	24.3	39.4	<b>48.5</b>	-	39	34	
Bishopbriggs 14	<b>42.0</b>	31.7	36.1	21.6	24.7	20.2	22.3	24.8	29.7	29.8	39.1	-	29	25	
Bishopbriggs 14 B	<b>43.5</b>	34.7	34.2	21.3	24.2	23.2	23.7	18.8	29.5	20.8	36.6	-	28	25	
Bishopbriggs 14 C	<b>42.1</b>	37.2	33.4	25.9	25.8	19.0	22.8	20.8	30.4	29.7	36.5	-	29	26	
Kirkintilloch 15	<b>41.1</b>	34.0	32.7	20.8	22.0	18.8	19.8	22.0	30.7	<b>46.4</b>	37.0	-	30	26	
Kirkintilloch 16	<b>68.8</b>	39.7	38.2	27.9	30.3	<b>44.6</b>	21.2	22.6	35.5	31.8	<b>49.2</b>	-	37	32	
Kirkintilloch 17	<b>50.2</b>	<b>44.3</b>	34.5	18.4	26.1	23.7	22.9	26.0	-	<b>58.9</b>	<b>49.7</b>	-	35	31	
Kirkintilloch 17 B	<b>48.5</b>	38.6	39.3	20.8	29.8	23.6	22.4	25.3	-	29.7	<b>48.9</b>	-	33	28	
Kirkintilloch 17 C	<b>50.8</b>	<b>40.8</b>	36.8	26.7	23.9	24.2	22.2	26.1	34.3	29.3	<b>40.1</b>	-	32	28	
(Bearsden 1) 118 Drymen Rd	<b>46.2</b>	32.5	36.8	22.7	25.5	21.4	19.9	11.8	25.5	26.9	<b>43.3</b>	-	28	25	
Bearsden 3 (5 Ravelston Rd)	32.5	22.1	18.9	9.9	11.9	11.4	-	10.8	15.9	17.6	<b>54.5</b>	-	21	18	
Bearsden 4 (8 Lowther Ave)	22.2	14.4	11.4	5.4	-	5.9	6.7	6.9	9.7	10.1	16.0	19.4	12	10	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
	Bearsden 7	<b>45.2</b>	<b>41.9</b>	37.6	30.3	34.7	32.7	27.9	22.8	<b>40.0</b>	31.9	34.7			<b>52.0</b>
Bearsden 8	<b>44.8</b>	38.9	37.1	32.9	27.0	31.8	29.0	32.0	<b>41.2</b>	35.3	<b>43.8</b>	<b>52.2</b>	37	32	
Bearsden 9	<b>46.5</b>	32.4	31.7	23.7	20.4	17.5	20.8	22.8	30.0	27.4	35.1	<b>48.2</b>	30	26	
Bearsden 10	<b>44.1</b>	29.8	34.8	22.4	19.4	20.5	18.2	23.7	30.8	27.6	<b>44.8</b>	<b>47.2</b>	30	26	
Bearsden 13	<b>53.2</b>	39.4	<b>42.9</b>	29.6	34.5	22.9	28.7	27.7	<b>40.4</b>	38.1	<b>50.3</b>	<b>49.7</b>	38	33	
Bearsden 14	<b>51.6</b>	39.2	39.9	32.2	33.0	24.7	24.3	27.8	16.6	35.6	<b>48.8</b>	<b>58.9</b>	36	31	
Bearsden 15	<b>52.9</b>	<b>40.7</b>	34.9	<b>50.0</b>	29.1	30.5	-	27.7	36.7	34.3	<b>44.1</b>	<b>52.4</b>	39	34	
Bearsden 16	<b>45.4</b>	<b>40.8</b>	<b>40.1</b>	32.9	31.9	31.6	29.8	30.1	37.3	-	<b>48.0</b>	<b>51.9</b>	38	33	
Bearsden 16 B	<b>46.9</b>	<b>40.8</b>	<b>40.7</b>	33.2	35.8	38.0	30.5	34.9	39.2	36.2	<b>82.9</b>	<b>52.9</b>	<b>43</b>	37	
Bearsden 16 C	<b>52.0</b>	<b>40.0</b>	<b>41.0</b>	33.5	36.2	33.7	34.4	27.9	38.3	33.9	<b>50.8</b>	<b>53.2</b>	<b>40</b>	34	
Milngavie 4	38.3	27.8	32.0	23.1	21.4	17.4	16.8	21.8	26.4	25.8	39.5	<b>40.0</b>	28	24	
Milngavie 7	-	<b>63.9</b>	38.3	25.1	23.5	25.0	17.2	26.7	31.7	33.5	<b>42.8</b>	<b>46.7</b>	34	30	
Milngavie 9	<b>49.6</b>	29.8	29.0	18.3	21.2	18.6	24.7	21.3	31.6	27.5	<b>46.1</b>	<b>43.4</b>	30	26	
Milngavie 10	33.7	28.3	25.8	15.5	19.2	16.2	15.7	17.0	27.1	21.3	25.8	37.4	24	21	
Milngavie 10 B	36.5	28.3	25.9	15.9	20.3	14.3	13.8	12.1	24.9	17.9	31.1	36.2	23	20	
Milngavie 10 C	33.6	27.0	28.1	17.3	18.7	15.0	15.6	14.9	25.6	20.8	27.9	35.2	23	20	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted <sup>(1)</sup>
Bishopbriggs 16	35.6	34.0	33.5	16.5	-	17.1	21.5	19.0	27.4	24.0	37.1	<b>46.9</b>	28	25
Bishopbriggs 17	<b>44.7</b>	32.3	37.7	13.1	24.0	23.6	-	24.3	35.9	29.1	<b>46.8</b>	<b>55.3</b>	33	29
Bearsden 17	<b>48.7</b>	<b>41.6</b>	33.7	19.9	<b>41.7</b>	32.3	25.4	23.9	39.9	-	<b>47.4</b>	<b>51.8</b>	37	32
Bearsden 18	<b>42.8</b>	34.5	34.2	25.4	27.9	30.6	18.5	35.3	39.0	31.8	<b>43.7</b>	<b>52.9</b>	35	30
Kirkintilloch 18	<b>41.1</b>	29.3	31.6	21.0	20.0	17.4	15.7	31.6	33.2	27.0	35.4	<b>42.5</b>	29	25
Bishopbriggs 21	33.6	22.9	23.2	14.0	11.3	11.2	11.1	25.9	32.0	18.1	26.3	31.2	22	19
Bishopbriggs 22	<b>53.6</b>	<b>44.7</b>	38.2	32.1	32.8	27.8	28.7	12.0	<b>41.2</b>	38.7	<b>47.4</b>	<b>60.2</b>	38	33
Bishopbriggs 23	<b>45.2</b>	<b>41.2</b>	<b>44.6</b>	17.9	-	22.7	20.3	33.8	34.4	<b>46.3</b>	<b>44.4</b>	<b>57.5</b>	37	32
Bishopbriggs 24	38.7	31.9	26.8	13.3	22.8	17.1	19.0	26.1	-	19.5	28.6	-	24	21
Bishopbriggs 25	32.2	20.6	19.9	8.6	10.7	10.3	8.4	15.9	16.2	18.0	22.9	20.2	17	15
Kirkintilloch 19	33.7	25.8	21.5	11.6	15.2	11.6	9.7	11.4	-	14.7	26.9	19.7	18	16
Kirkintilloch 20	<b>44.8</b>	33.9	36.6	26.3	28.7	22.9	19.3	13.4	31.9	30.7	<b>77.7</b>	<b>48.9</b>	35	30
Kirkintilloch 21	34.3	29.2	27.5	14.9	-	21.4	15.8	17.3	26.8	22.4	32.5	<b>41.6</b>	26	22
Kirkintilloch 22	35.0	23.6	24.8	15.5	14.8	12.7	11.1	18.5	18.5	20.9	29.4	38.5	22	19

(1) See Appendix C for details on bias adjustment

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

The QA/QC audits for East Dunbartonshire Council automatic monitoring sites are carried out by Ricardo Energy & Environment (E&E) twice a year at all four sites. Officers within the Environmental Health Team provided LSO support for the sites.

A combination of Horiba APNA and Model 42i Thermo instruments are used to monitor oxides of nitrogen (NO<sub>x</sub>) to establish NO<sub>2</sub> concentrations in the network together with Eberline Beta-attenuation monitor (BAM) and TEOM FDMS to monitor PM<sub>10</sub> particles and a FIDAS to measure PM<sub>10</sub> and PM<sub>2.5</sub>. All stations are air conditioned. Service contracts are in place so that all analysers are serviced every 6 months.

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 fortnightly 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 the national network.

### **PM Monitoring Adjustment**

East Dunbartonshire Council monitors PM<sub>10</sub> using three types of analyser:

- Eberline
- Fidas

- 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 while the TEOM (FDMS) and Fidas monitor at Milngavie and Kirkintilloch are maintained by Air Monitors Ltd.

The Eberline used by East Dunbartonshire Council has a heated inlet which can cause evaporation of some semi-volatile particles thereby reducing the measured PM<sub>10</sub> concentration. All data has been ratified and multiplied by the gravimetric equivalent by Ricardo Energy and Environment.

The Palas FIDAS, measures PM<sub>2.5</sub> and PM<sub>10</sub> simultaneously as well as other PM fractions via just one inlet. The instrument utilises a white light LED source to measure optical light scattering of single particles to measure both size and number of particles.

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. All TEOM FDMS data was fully ratified by Ricardo Energy and Environment to AURN standards.

### **QA/QC of diffusion tube monitoring**

Glasgow Scientific Services (GSS) supply nitrogen dioxide diffusion tubes to East Dunbartonshire Council. GSS satisfactorily passed all WASP (Workplace Analysis Scheme for Proficiency) tests since 2009. GSS recorded “good” precision throughout the first half of 2017 but “poor” in the second half.

The full set of monthly NO<sub>2</sub> diffusion tube results are shown in Table B.1 above. Performance reports on all analytical laboratories taking part in AIR NO<sub>2</sub> PT are described as satisfactory. In terms of the precision associated with the analysis of multiple tubes, there is no more than one occasion in each of the last three years when the performance of GSS was described as anything other than ‘Good’.

### **Diffusion tube bias adjustment factors**

A bias factor is calculated using a spread sheet provided by Ricardo Energy & Environment. Historically East Dunbartonshire Council has used the higher local bias

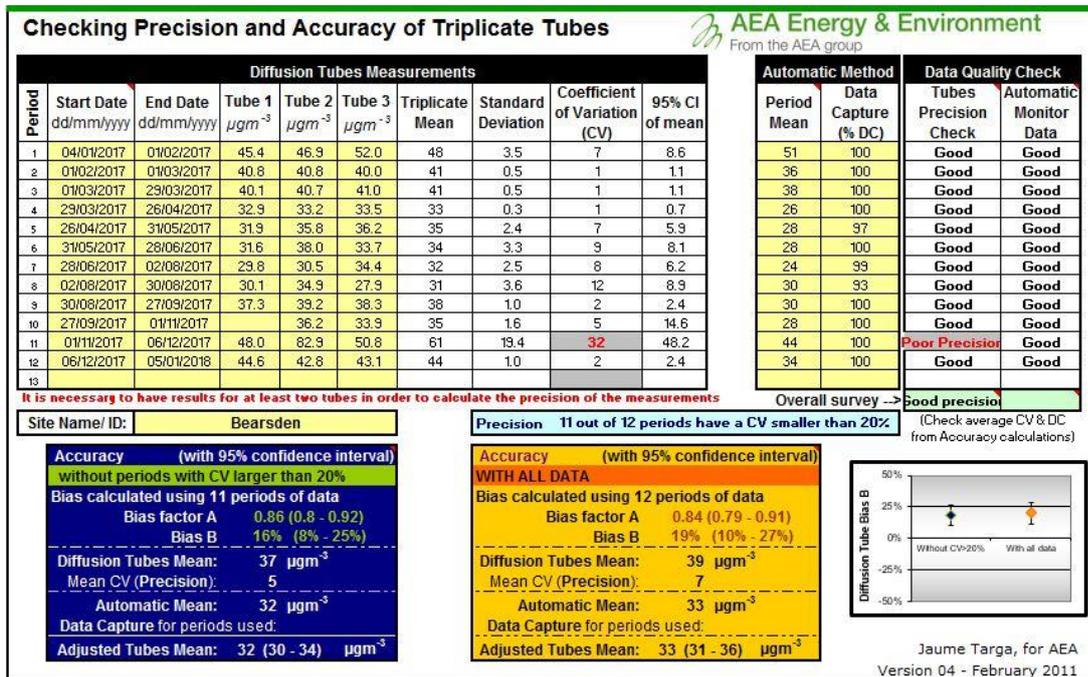
adjustment factor to adjust their diffusion tube results and not the national average or the GSS bias adjustment figure. The bias adjustment factor of 0.87 was applied to all the diffusion tube results, although the local bias adjustment factor is lower this time for 2017, as opposed to 0.91 from Glasgow Scientific Services (GSS) we utilised this figure for the sake of consistency. We did however compare all our NO<sub>2</sub> tube results against both the national and the GSS bias adjustment figure and no exceedences were obtained.

The nitrogen dioxide diffusion tubes supplied to East Dunbartonshire Council by the laboratory were prepared using the 20% triethanolamine (TEA) in water method.

A spreadsheet compiled by the National Physical Laboratory reports bias corrections reflecting the difference between results obtained from automatic analysers compared with those obtained from co-located diffusion tubes analysed by individual laboratories. Four co-location studies were undertaken within the East Dunbartonshire Council area, and the result of this study is lower than that for 2016, when that of GSS was 0.97. There was no need for distance correction to be applied to diffusion tube results using the fall off with distance calculator this year.

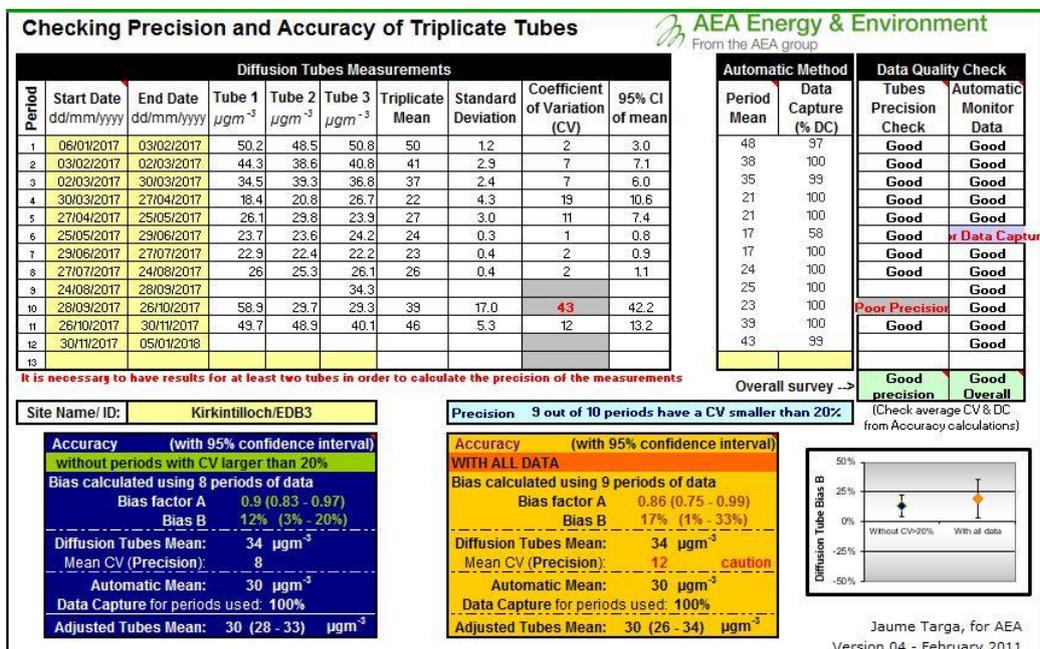
National Diffusion Tube Bias Adjustment Factor Spreadsheet										Spreadsheet Version Number: 03/18	
Follow the steps below in the correct order to show the results of relevant co-location studies										This spreadsheet will be updated at the end of June 2018	
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods										LAQM Helpdesk Website	
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet										This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.	
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.	
Step 1:			Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List			Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor shown in blue at the foot of the final column.				
If a laboratory is not chosen, we have no data for this laboratory.			If a preparation method is not chosen, we have no data for this method at this laboratory.		If a year is not chosen, we have no data.		If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953				
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)	
ESG Glasgow	20% TEA in water	2017	KS	Marlybone Road Intercomparison	12	98	79	24.6%	G	0.80	
Glasgow Scientific Services	20% TEA in water	2017	UB	Glasgow City Council	12	34	25	32.3%	G	0.75	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	12	38	37	2.3%	G	0.97	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	10	35	34	3.8%	P	0.97	
Glasgow Scientific Services	20% TEA in water	2017	KS	Glasgow City Council	12	63	53	6.2%	G	0.94	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	12	45	36	24.5%	P	0.80	
Glasgow Scientific Services	20% TEA in water	2017	KS	Marlybone Road Intercomparison	12	77	79	-2.2%	G	1.02	
ESG Glasgow	20% TEA in water	2017	<b>Overall Factor<sup>1</sup> (1 study)</b>							Use	0.80
Glasgow Scientific Services	20% TEA in water	2017	<b>Overall Factor<sup>1</sup> (6 studies)</b>							Use	0.91

Figure 3 National Diffusion Tubes Adjustment Factor



If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: [LAQMHelpdesk@uk.bureauveritas.com](mailto:LAQMHelpdesk@uk.bureauveritas.com)

**Figure 4 Bias Adjustment Factors for Bearsden.**



If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: [LAQMHelpdesk@uk.bureauveritas.com](mailto:LAQMHelpdesk@uk.bureauveritas.com)

**Figure 5 Bias Adjustment Factors for Kirkintilloch**

## 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 <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide
GSS	Glasgow Scientific Services

## References

Department for Environment, Food and Rural Affairs (Defra). 2016. *Technical Guidance LAQM.TG (16)*, Defra publications. <http://laqm.defra.gov.uk/technical-guidance/>

Palas GmbH (2016) Fidas ® 200 - Product Lines - Palas. Available at: <http://www.palas.de/en/product/fidas200> (Accessed: 18/6/18).

Draft Bearsden Air Quality Action Plan

Bishopbriggs Air Quality Management Area Action Plan

Bishopbriggs Air Quality Management Area Update