sustainable thriving achieving

East Dunbartonshire Council

www.eastdunbarton.gov.uk

2014 Air Quality Progress Report for

EAST DUNBARTONSHIRE COUNCIL

In fulfillment of Part IV of the Environment Act 1995 Local Air Quality Management

June 2014

Local Authority Officer	Anne Prescott and Colleen Kennedy
Department	Environment and Community Protection
Address	Southbank House, Southbank Road, Kirkintilloch, G66 1XQ
Telephone	0141 578 8814
e-mail	anne.prescott@eastdunbarton.gov.uk colleen.kennedy@eastdunbarton.gov.uk
Report Reference number	
Date	June 2014

Executive Summary

This report is the 2014 Progress Report for air quality from East Dunbartonshire Council (EDC) detailing 2013 data for Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) pollutants, and providing up to date information on industrial and commercial developments to determine if air quality in the East Dunbartonshire Council area is in compliance with the United Kingdom and Scotland specific air quality objectives.

East Dunbartonshire Council continue to work towards improving air quality in the area and has two Air Quality Management Areas (AQMA's) one in Bearsden and one in Bishopbriggs, with an Action Plan already in place for Bishopbriggs and one being implemented for Bearsden.

This report highlights that air quality is improving overall with only one exceedence of the annual mean concentration objective in 2013 which was the NO_2 diffusion tube at Bishopbriggs 13. The council met the daily mean objective for PM_{10} although two of the four monitors had incomplete data so could not be used for 2013, and a new PM_{10} air analyser was installed in Bearsden in August 2013. The number of measured PM_{10} exceedences did not breach the number of permitted exceedences in 2013.

Monitoring of NO_2 and PM_{10} continue within the Bearsden AQMA where the annual mean concentration of NO_2 at Bearsden was 36 $\mu g/m^3$ for 2013 and there were no exceedences of the 1 hour mean. After the Quality Control process the PM_{10} data at Bearsden was found to be erroneous and could not be used for 2013.

The other AQMA in East Dunbartonshire is at Bishopbriggs where there was one exceedence of the annual mean concentration LAQM objective for an NO_2 diffusion tube in 2013. Bishopbriggs 13 is located on a lamp post at a very busy road junction and has always exceeded the 40 $\mu g/m^3$ objective. Subsequently a further tube (Bishopbriggs 17) was installed in 2010 and is attached to the drainpipe of a house which is two metres from Bishopbriggs 13 and has been below the 40 $\mu g/m^3$ concentration every year since installation. After the Quality Control process the PM_{10} data at Bishopbriggs was found to be erroneous and could not be used for 2013.

A Detailed Assessment was carried out for Kirkintilloch to ascertain whether an AQMA should be declared. The Detailed Assessment concluded that an area of Kirkintilloch should be declared for NO_2 and PM_{10} annual mean exceedences, however the data for 2013 would suggest otherwise. As there have been no exceedences of NO_2 or PM_{10} annual mean concentrations for both 2012 and 2013 this would suggest that there may be no requirement on the council to declare an AQMA however this will require clarification. The continued decline in emissions highlights that the construction of the Kirkintilloch Link Road contributed to elevated levels of NO_2 and PM_{10}.

Measured objectives for NO_2 and PM_{10} were met at the Milngavie site.

The main focus is to increase awareness about air quality and the Council will endeavour to reduce air pollution by working with the general public through vehicle emission testing days and vehicle idling campaigns, including school visits, radio commercials and leaflet distribution. The Council will also encourage modal shift from vehicles to walking and cycling.

Air quality is also a big consideration when processing planning applications and implementing transport policies however one of the biggest challenges of the future for local authorities attempting to reduce air pollution is the increase in biomass boiler applications received. Whilst the council is required to meet Climate Change obligations, there can be a negative impact on local air quality.

Table of Contents

LIST OF TABLES

LIST OF CHARTS

APPENDICES

1 Introduction

1.1 Description of Local Authority Area

The East Dunbartonshire Council area covers approximately 200 square kilometres located to the north of Glasgow and is bordered by Glasgow City Council to the south, West Dunbartonshire Council to the west, Stirling Council to the north and North Lanarkshire Council to the east. The local authority area is landlocked and contains a mixture of both urban and rural areas. A map of the East Dunbartonshire area is provided in Figure 1, Appendix A.

The population of East Dunbartonshire is approximately 105,000 with the majority of residents based in the urban areas to the south, which are contiguous with Glasgow. The main urban centres are Kirkintilloch, Bishopbriggs, Lenzie, Bearsden and Milngavie. The northern part of East Dunbartonshire is largely rural with a few small population centres in Torrance, Lennoxtown, Twechar and Milton of Campsie. There are relatively low levels of industrial activity within the local authority area.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedences are considered likely, the local authority must then 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

Progress reports are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre, $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1: Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Scotland

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year (the rest of the UK)	24-hour mean	31.12.2004
	50 $\mu g/m^3$, not to be exceeded more than 7 times a year (Scotland)	24-hour mean	31.12.2010
	40 $\mu g/m^3$ (the rest of the UK)	Annual mean	31.12.2004
	18 $\mu g/m^3$ (Scotland)	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

A summary of all previous reviews and assessments of local air quality since 2003 in East Dunbartonshire are presented in Table 1.2 and described further in the following texts.

The locations of both AQMA's are presented in Figures 2 and 3.

Table 1.2: Details of local air quality reviews submitted by East Dunbartonshire Council

Date submitted	Assessment / Report	Conclusions
May 2003	Updating and Screening Assessment (2003 U&SA)	The risk of exceeding NO_2 and PM_{10} objectives at several busy roads and junctions was identified in Bishopbriggs, Bearsden and Milngavie.
September 2004	Detailed Assessment of NO_2 and PM_{10} (2004 DA)	The assessment considered NO_2 and PM_{10} concentrations resulting from road traffic emissions along the A803 in Bishopbriggs, and the A81 and A809 in Bearsden and Milngavie. The assessment concluded that annual mean NO_2 and PM_{10} objectives would be exceeded and that an Air Quality Management Area (AQMA) should be declared in Bishopbriggs. The study also identified potential exceedences of the 2010 annual mean PM_{10} air quality objective within Bearsden and Milngavie. However, further action was deferred until the modelling results could be verified with monitored data
April 2005	Addendum to Detailed Assessment of NO_2 and PM_{10} (2004 DA- Addendum)	
May 2005	Progress Report (2005 PR)	No new areas were identified where exceedences of NAQS objectives were predicted The intention to declare an AQMA in Bishopbriggs was confirmed. Following the results of the DA it was noted that the Council intended to install automatic monitoring for PM_{10} and NO_2 in Bearsden
October 2005	Bishopbriggs AQMA declaration	An AQMA covering a 60m corridor along the A803 Kirkintilloch Road between Colston Road and a point 30m north of Cadder Roundabout was declared on 23rd October 2005 and implemented on 23rd December 2005.
June 2006	Updating and Screening Assessment (2006 U&SA)	The risk of NO_2 and PM_{10} objectives being exceeded at Bearsden Cross was identified. Due to a low data capture rate at automatic monitoring site it was recommended that further monitoring was carried out prior to proceeding to a Detailed Assessment.
May 2007	Bishopbriggs AQMA Further Assessment (2007 FA)	The Further Assessment confirmed the requirement for an AQMA, for both NO_2 and PM_{10}, in Bishopbriggs. The Further Assessment considered two proposed future road traffic emission scenarios: the implementation of a quality bus corridor on the A803; and completion of the Bishopbriggs Relief Road. The assessment concluded that both options would generally improve air quality within the AQMA but that there may be a marginal increase in pollutant concentrations at the junction between Colston Road and Kirkintilloch Road at the south of the AQMA as a result of both schemes. The assessment concluded that the completion of the Bishopbriggs Relief Road in addition to the implementation of the quality bus corridor would achieve the highest improvement in air quality within the AQMA, although concentrations of both pollutants were still predicted to exceed the NAQS objectives in 2010.

Date submitted	Assessment / Report	Conclusions
June 2007	Progress Report (2007 PR)	The report identified that measured NO_2 concentrations at four sites in Bearsden and one in Milngavie exceeded the annual mean NO_2 objective. Potential exceedences of the PM_{10} annual mean and 24 hour mean objectives were identified in Bearsden and Milngavie. It was concluded that a Detailed Assessment of NO_2 and PM_{10} was required for busy junctions in Bearsden and Milngavie.
October 2007	Bishopbriggs AQMA Further Assessment (2007 FA-Addendum)	The Addendum report included additional information on source apportionment within the AQMA. It was identified that transboundary sources accounted for the greatest proportion of both PM_{10} and NO_X concentrations. The greatest contributions from local sources were from road traffic and commercial and domestic sources. It was shown that particulate emissions from tyre, break wear and re-suspension contributed significantly to road traffic emissions of PM_{10} and HGVs were the greatest contributor to road traffic emissions of NO_x.
January 2008	Bishopbriggs AQMA Draft Action Plan (2008 AP-draft)	Following the a series of consultations with the local community and stakeholders, including a citizens panel questionnaire, a short-life working group and 2 workshops; the Draft Action Plan was issued in conjunction with the Local Transport Strategy (LTS). A joint Strategic Environmental Assessment (SEA) was undertaken separately which assessed the wider impacts of both the LTS and AP.
April 2008	Detailed Assessment Bearsden & Milngavie (2008 DA)	The assessment of NO_2 and PM_{10} concentrations in Bearsden and Milngavie concluded that there were some areas within Bearsden and Milngavie where predicted $NO_2$and PM_{10} concentrations were above the respective air quality objectives; however, the locations were not classified as locations of relevant public exposure. Furthermore, there were several areas along Drymen Road at which predicted concentrations were close to, but not exceeding, the 2010 annual mean PM_{10} objective. Based on the results of the Detailed Assessment it was concluded that an AQMA in Bearsden or Milngavie was not required; however, further monitoring was recommended.
August 2008	Progress Report (2008 PR)	No identified or predicted exceedences of NAQS objectives.
March 2009	Bishopbriggs AQMA Final Action Plan (2009 AP)	Following consultation with SEPA, neighbouring local authorities, all Council departments and the Scottish Government the final version Action Plan was issued.
July 2009	Bishopbriggs AQMA – Progress Report 2009	Measured NO_2 concentrations within the AQMA indicate two exceedences during 2008. Measured concentrations of PM_{10} are in compliance with the 2010 NAQS objectives.

Date submitted	Assessment / Report	Conclusions
September 2009	Updating and Screening Assessment 2009	The review of monitoring data identified exceedences of the annual mean NAQS objective for NO_2 and predicted exceedences of the 2010 annual mean NAQS objective for PM_{10} at locations of relevant exposure along Drymen Road in Bearsden. East Dunbartonshire Council intend to declare an AQMA along Drymen Road in Bearsden in respect to measured and predicted exceedences of the annual mean NAQS objectives for NO_2 and PM_{10}. An Automatic Air Quality Analyser is being installed in Milngavie to ensure that the annual mean objective is not exceeded. The PM_{10} monitoring data for Bishopbriggs indicate that concentrations within the AQMA have reduced such that the 2010 annual mean objective for PM_{10} is not being exceeded. NO_2 concentrations continue to exceed the annual mean NAQS objective at some locations within the AQMA.
May 2010	Progress Report	The measured PM_{10} concentration at Kirkintilloch exceeds the 2010 annual mean objective, giving a level of 22.5 µg/m^3 however; the construction of the Kirkintilloch Link Road is taking place very close by. It is anticipated that the PM_{10} level will decrease once the Kirkintilloch Link Road is complete in the summer of 2010. An Automatic Air Quality Analyser is being installed in Milngavie to ensure that the annual mean objective is not exceeded.
August 2011	Progress Report	The installation of a new automatic monitoring site in Milngavie is expected to be operational by August 2011. Measured concentrations of both NO_2 and PM10 at Kirkintilloch are in excess of the relevant annual mean objectives at 45µg/m³ and 26µg/m³ respectively. The construction of the Kirkintilloch Link Road was completed in November 2010. It is the Council's intention to proceed to a Detailed Assessment for both pollutants in this area.

Date submitted	Assessment / Report	Conclusions
October 2012	Updating and Screening Assessment	Measured pollutant concentrations across the council area were typically lower than those measured in 2010. The Detailed Assessment of Kirkintilloch is currently underway. Measured PM10 concentrations exceeded the annual mean objective at the automatic monitoring sites in Bearsden and Kirkintilloch in 2011 however with an observed decrease in measured concentrations at both locations from 2010 to 2011. The automatic monitoring site at Bearsden recorded a decrease in the annual mean concentration of 5µg/m³ while a decrease of 7µg/m³ was recorded at Kirkintilloch. This is thought to have been influenced by 2010 having a particularly high background concentration of PM_{10}. A similar drop in annual mean concentrations of PM_{10} has been seen across the UK from 2010 to 2011.
November 2012	Bishopbriggs Air Quality Action Plan Update	Of the 41 actions in the original Bishopbriggs Action Plan, only 11 have not been progressed. The remainder are either complete or underway.
May 2013	Progress Report 2013	The report highlighted that air quality is improving overall with only two exceedences of the Local Air Quality Management (LAQM) objective in 2012 which was the measured annual mean NO_2 concentration at Bearsden Cross and a diffusion tube at Bishopbriggs 13. Three out of the four sites in the council area met the daily mean objective for PM_{10} and the fourth site had incomplete data so could not be used for 2012. The number of measured PM_{10} exceedences did not breach the number of permitted exceedences in 2012.
December 2013	Kirkintilloch Detailed Assessment	Adjusted dispersion modelling predictions indicate NO_2 and PM_{10} annual mean are being exceeded and the Council should proceed with declaring an AQMA at Kirkintilloch to include all areas of exceedence.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

East Dunbartonshire Council monitor NO_2 and PM_{10} using a combination of automatic analysers and passive diffusion tubes (PDT). The automatic monitoring sites are presented in Table 2.1 and the details of non-automatic monitoring sites are presented in Table 2.2.

Since the Progress Report in 2013 the Partisol air monitor was installed at Milngavie Road, Bearsden to monitor PM_{10}. This is an indicative monitoring study to ascertain whether the Bearsden AQMA should be extended.

For all air monitors there have been regular calibrations, services and audits.

All automatic monitoring NO_2 and PM_{10} data has been fully ratified by Ricardo-AEA on behalf of the Scottish Government.

Diffusion tube data has been corrected using the national and local bias correction factor.

Details of the quality control and data correction processes carried out are reported in Appendix B.

2.1.1 Automatic Monitoring Sites

East Dunbartonshire Council operate four automatic NOx analysers and five automatic PM_{10} monitors. The analysers are located at four sites:

- the junction of Drymen Road (A809) and Roman Road in Bearsden (since December 2005)
- the junction of Kirkintilloch Road (A803) with Springfield Road and Kenmure Avenue in Bishopbriggs (since December 2003)
- the Townhead junction in Kirkintilloch (since October 2007)
- the junction of Main Street and Park Road, Milngavie (since August 2011)
- the junction of Milngavie Road and Kessington Road, Bearsden (since August 2013)

There are NOx and PM_{10} analysers at each monitoring site with the exception of the new gravimetric Partisol analyser at Bearsden which just monitors PM_{10}

The locations of the automatic monitoring sites are annotated in Appendix A, Figures 2, 3, 4 and 5.

Table 2.1: Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Bearsden 16	Kerbside	254269 672067	NO_2 PM_{10}	Horiba 360, Eberline (heated inlet)	Y	Y<2m	1m	Y
Bearsden 2025	Kerbside	255015 671477	PM_{10}	Partisol	N	Y	1m	Y
Bishopbriggs 14	Roadside	260995 670130	NO_2 PM_{10}	Horiba 360, Eberline (heated inlet)	Y	Y 5m	2 m to nearest road 10m to junction with main road	N
Kirkintilloch 17	Kerbside	265700 673500	NO_2 PM_{10}	Thermo 42i TEOM (FDMS)	N	Y <2m	1m	Y
Milngavie 10	Roadside	255328 674115	NO_2 PM_{10}	Thermo 42i TEOM (FDMS)	N	Y	1m	Y

2.1.2 Non-Automatic Monitoring

East Dunbartonshire Council maintain a network of forty NO_2 diffusion tube sites located across the council area. The monitoring sites represent public exposure and areas of high pollution concentrations at a variety of kerbside, roadside and urban background locations. The locations of the non-automatic monitoring sites are also annotated in Figures 2, 3, 4 and 5.

Table 2.2: Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Reference	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst case Location?
Bearsden 1	R	254218 672193	NO_2	Y	Y (3m)	2m	Y
Bearsden 3	UB	254655 670158	NO_2	N	N (8m)	5m	Y
Bearsden 4	UB	253075 673382	NO_2	N	N (6m)	5m	Y
Bearsden 7	K	254269 672069	NO_2	Y	Y (<2m)	1m	Y
Bearsden 8	K	254275 672047	NO_2	Y	N (18m)	1m	Y
Bearsden 9	R	254751 670621	NO_2	N	N (30m)	2m	Y
Bearsden 10	R	255394 670683	NO_2	N	N (24m)	2m	Y
Bearsden 13	K	254809 671057	NO_2	Y	Y (26m)	1m	Y
Bearsden 14	K	254877 671000	NO_2	Y	Y (8m)	1m	N
Bearsden 15	K	254898 671023	NO_2	Y	Y (2m)	1m	Y
Bearsden 16	K	254269 672067	NO_2	Y	Y (2m)	1m	Y
Bearsden 16B	K	254269 672067	NO_2	Y	Y (2m)	1m	Y
Bearsden 16C	K	254269 672067	NO_2	Y	Y (2m)	1m	Y
Bearsden 17	K	254258 672077	NO_2	Y	Y(<2m)	1m	Y
Bearsden 18	K	254275 672069	NO_2	Y	Y(<2m)	1m	Y
Bishopbriggs 5	UB	260948 669610	NO_2	N	N (44m)	5m	N
Bishopbriggs 6	K	261016 670198	NO_2	Y	Y (<2m)	1m	Y
Bishopbriggs 8	UB	260842 670278	NO_2	N	N (<2m)	5m	N
Bishopbriggs 12	K	260581 669527	NO_2	Y	N (4m)	1m	Y
Bishopbriggs 13	K	260549 669312	NO_2	Y	N (5m)	1m	Y
Bishopbriggs 14	R	260995 670130	NO_2	Y	N (42m)	2m	N
Bishopbriggs 14B	R	260995 670130	NO_2	Y	N (42m)	2m	N
Bishopbriggs 14C	R	260995 670130	NO_2	Y	N (42m)	2m	N
Bishopbriggs 16	K	260580 69533	NO_2	Y	Y (<2m)	2m	Y
Bishopbriggs 17	K	260552 69320	NO_2	Y	Y (<2m)	2m	Y

Site Name	Site Type	OS Grid Reference	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst case Location?
Kirkintilloch 15	R	265640 673501	NO_2	N	Y (2m)	2m	Y
Bishopbriggs 18	UB	260604 670337	NO_2	N	N (<2m)	5m	N
Kirkintilloch 16	R	265695 673521	NO_2	N	N (3m)	2m	Y
Kirkintilloch 17	R	265700 673500	NO_2	N	Y (3m)	2m	Y
Kirkintilloch 17B	R	265700 673500	NO_2	N	Y (3m)	2m	Y
Kirkintilloch 17C	R	265700 673500	NO_2	N	Y (3m)	2m	Y
Kirkintilloch 18	K	265667 673532	NO_2	N	Y (<2m)	2m	Y
Milngavie 4	R	255728 674486	NO_2	N	N (5m)	2m	Y
Milngavie 5	R	255327 674137	NO_2	N	N (50m)	2m	Y
Milngavie 6	R	255288 674121	NO_2	N	N (10m)	2m	Y
Milngavie 7	R	255279 674124	NO_2	N	N (<2m)	9m	Y
Milngavie 8	R	255251 674198	NO_2	N	N (3m)	1m	Y
Milngavie 9	R	255331 674214	NO_2	N	Y (7m)	2m	Y
Milngavie 10	R	255325 674116	NO_2	N	Y	1 m	Y
Milngavie 10 B	R	255325	NO_2	N	Y	1 m	Y
Milngavie 10 C	R	674116	NO_2	N	Y	1 m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The annual mean and 1-hour mean NO_2 automatic monitoring data for 2013 and previous years are presented in Tables 2.3 and 2.4 respectively, and Chart 1.1 shows the annual mean concentrations in graph form. Measured exceedences of NAQS objectives are highlighted in bold.

The data capture rate of all the analysers was good, with a data capture rate of 92% or greater achieved at all four sites in 2013.

Table 2.3 Results of Automatic Monitoring for Nitrogen Dioxide (NO_2) Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Annual mean concentrations (objective ≤ 40 µg/m³)						
			2007	2008	2009	2010	2011	2012	2013
Bearsden	Bearsden Cross	Y	39.4	**44.1**	39.6	**47**	39.5	**41.42**	36
	Data Capture		99	99	99	100	100	100	100
Bishopbriggs	Bishopbriggs Cross	Y	34.1	31.5	33.4	33	35.7*	30	32
	Data Capture		99	90	90	91	65	95	92
Kirkintilloch	Townhead	N/A	-	35.6	**42**	**45**	**43**	34	31
	Data Capture		-	100	94	94	87	100	95
Milngavie	Main Street	N/A	-	-	-	-	-	25	23
	Data Capture		-	-	-	-	20	98	93

*Annualised in line with TG(09)

Chart 1.1 Annual Mean Concentrations of all automatic monitors for Nitrogen Dioxide (NO_2)

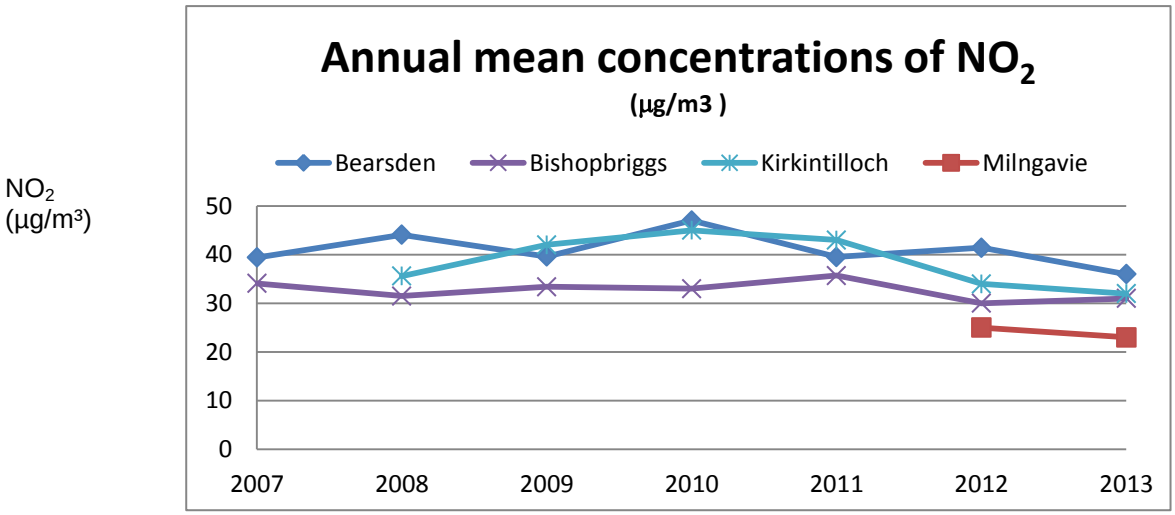


Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide (NO_2): Comparison with 1-hour mean

Site ID	Location	Within AQMA?	Number of exceedences of hourly mean (200 µg/m³ not to be breached >18 times per year)						
			2007	2008	2009	2010	2011	2012	2013
Bearsden	Bearsden Cross	Y	0	3	**19**	**37**	0	1	5
Bishopbriggs	Bishopbriggs Cross	Y	0	0	1	0	0 (115)	0	0
Kirkintilloch	Townhead	N/A	-	0	0	4	0 (151)	4	12
Milngavie	Main Street	N/A	-	-	-	-	0	0	0

Bearsden

The measured annual mean NO_2 concentration at Bearsden Cross in 2013 was 36 μg/m³, which is below the annual mean objective level of 40 μg/m³.

Chart 1.1 demonstrates that the annual mean concentration of NO_2 at Bearsden from 2007 to 2012 was sitting on, or around, the annual mean objective limit of 40 μg/m³ however in 2013 it was below the mean objective at 36 μg/m. The past two years have shown a big decrease compared to 2010 when it was at its highest NO_2 annual mean concentration of 47 μg/m³.

There were 5 recorded exceedences of the 1-hour objective for NO_2 at Bearsden which is well below the allowable objective of 18 and a significant improvement on 2010 when there were thirty seven recorded exceedences of the 1-hour objective for NO_2 at the Bearsden monitoring site.

Bishopbriggs

Chart 1.1 shows that annual mean NO_2 concentrations have been below the annual mean concentration objective of 40 μg/m³ since 2007 with concentrations of between 31 μg/m³ and 35 μg/m³, and with an annual mean concentration of 32 μg/m³ in 2013.

Measured NO_2 concentrations at the Bishopbriggs Cross site during 2013 were below both the annual mean and 1-hour mean NAQS objectives for NO_2 with no exceedences highlighting that the NAQS objectives for NO_2 are being met at Bishopbriggs Cross.

Kirkintilloch

Chart 1.1 highlights a clear trend in the five year period starting in 2007 at 35.6 μg/m³, rising to a peak of 45 μg/m³ in 2010 and then decreasing over the past three years to 34 μg/m³ in 2012 and reaching an all-time low of 31 μg/m³ in 2013. This reinforces the theory that the construction of the Kirkintilloch Link Road contributed to elevated levels of NO_2 and PM_{10} over that period until it opened in 2010.

The measured annual mean NO_2 concentration at Kirkintilloch in 2013 was 31μg/m³, which is below the annual mean objective level of 40μg/m. There were 12 measured exceedences of the 1-hour objective for NO_2 however this is below the limit of 18.

Milngavie

Measured NO_2 concentrations at the Milngavie site during 2013 were below both the annual mean and 1-hour mean objectives for NO_2 indicating that the objectives for NO_2 are being met at Milngavie.

The 2013 NO_2 annual mean was 23 μg/m³ which shows that air quality in the vicinity of the fixed air monitor at Main Street, Milngavie is well below the annual mean objective of 40 μg/m³ and there were no exceedences of the hourly mean.

Diffusion Tube Monitoring Data

The NO_2 diffusion tube monitoring data for 2013 and previous years are presented in Table 2.5. As the data capture for all sites was above 75% there has been no need to annualise the data. The diffusion tube monitoring results have been adjusted for laboratory bias using a mean of the national and local bias adjustment factors. Further detail of the annualisation and laboratory bias adjustment is provided in Appendix B. Trend charts of historic diffusion tube data at urban background, roadside and kerbside sites are presented in Charts 2.1, 2.2 and 2.3 respectively. Measured exceedences of NAQS objectives are highlighted in bold.

Table 2.5: Results of Nitrogen Dioxide (NO_2) Diffusion Tubes

Site ID	Location	Within AQMA?	Data capture for monitoring period (%)	Data Capture for full calendar year 2013 (%)	Annual mean concentrations (μg/m^3)						
					2007	2008	2009	2010	2011	2012	2013
Bearsden 1	118 Drymen Rd	Y	**100**	**100**	30	33	32	**42.5**	31	34.3	29.9
Bearsden 3	5 Ravelston Rd	N	**100**	**100**	19	17	23	22.7	12	20.9	18.63
Bearsden 4	8 Lowther Ave	N	**100**	**100**	10	14	15	15.9	13	11.4	11.38
Bearsden 7	Bearsden Cross Traffic lights	Y	**100**	**100**	**43**	**48**	**42**	**46.6**	31	39.1	34.37
Bearsden 8	Bearsden Cross Hanging basket	Y	**100**	**100**	38	38	**40**	**40.4**	25	32.2	34.63
Bearsden 9	Switchback	N	**100**	**100**	27	29	31	33.0	32	28.9	28.26
Bearsden 10	Maryhill Rd/ Rannoch Dr	N	**100**	**100**	34	33	31	35.6	27	27.2	28.93
Bearsden 13	Canniesburn Toll	Y	**100**	**100**	37	39	38	**43.7**	37	37.5	37.57
Bearsden 14	Milngavie Rd at CanniesburnToll	Y	**100**	**100**	39	38	39	**43.5**	37	33.1	35.28
Bearsden 15	Milngavie Rd	Y	**100**	**100**	34	**40**	38	39.8	33	37.2	38.17
Bearsden 16 (average of 3 collocated tubes for 2012)	102 Drymen Rd	Y	**100**	**100**	**40**	**46**	**40**	**45.5**	35	38.8	38.94

Bearsden 16B (average of 3 collocated tubes for 2012)	102 Drymen Rd	Y	**100**	**100**	**41**	**45**	39	**46.0**	40	38.8	38.94
Bearsden 16C (average of 3 collocated tubes for 2012)	102 Drymen Rd	Y	**100**	**100**	39	**43**	**40**	**48.3**	35	38.8	38.94
Bearsden 17	Drymen Rd	Y	**100**	**100**	/	/	/	**42.2**	30	39.7	39.56
Bearsden 18	Roman Rd	Y	**100**	**100**	/	/	/	38.6	30	30.8	33.88
Bishopbriggs 5	Huntershill House	N	**92**	**92**	14	15	21	17.1	13	15.8	14.21
Bishopbriggs 6	145 Kirkintilloch Rd	Y	**100**	**100**	37	37	36	**42.7**	32	30.5	28.31
Bishopbriggs 8	77 Brackenbrae Avenue	N	**-**	**-**	15	17	21	22.2	16	removed	removed
Bishopbriggs 12	24 Kirkintilloch Rd	Y	**92**	**192**	34	**40**	**40**	**46.0**	35	37.3	30.7
Bishopbriggs 13	1495 Springburn Rd	Y	**100**	**100**	**51**	**51**	**47**	**52.1**	**40**	**43.2**	**40.48**
Bishopbriggs 14 (average of 3 collocated tubes for 2012)	128 Kirkintilloch Rd	Y	**100**	**100**	30	31	33	34.4	29	29.4	28.28
Bishopbriggs 14B (average of 3 collocated tubes for 2012)	128 Kirkintilloch Rd	Y	**100**	**100**	32	33	37	38.1	28	29.4	28.28
Bishopbriggs 14C (average of 3 collocated tubes for 2012)	128 Kirkintilloch Rd	Y	**100**	**100**	29	32	33	38.2	31	29.4	28.28
Bishopbriggs 16	24 Kirkintilloch Rd (Building Facade)	Y	**100**	**100**	/	/	/	31.5	29	30	29.02
Bishopbriggs 17	1495 Springburn Road (Building Facade)	Y	**100**	**100**	/	/	/	37.8	32	35.6	35.54
Bishopbriggs 18	Lamp post Beaufort Gdns	N	**100**	**100**	/	/	/	/	/	16.1	20.37

Kirkintilloch 15	Lamp post R2 Townhead Lights	N/A	**100**	**100**	35	32	**44**	38.5	30	32.4	31.48
Kirkintilloch 16	Parliament Rd	N/A	**100**	**100**	38	33	**48**	37.1	35	33.7	35.24
Kirkintilloch 17 (average of 3 collocated tubes for 2012)	1 Broomfield Walk	N/A	**100**	**100**	/	36	**44**	**42.9**	35	38.2	33.77
Kirkintilloch 17B (average of 3 collocated tubes for 2012)	1 Broomfield Walk	N/A	**100**	**100**	/	35	**41**	**42.5**	37	38.2	33.77
Kirkintilloch 17C (average of 3 collocated tubes for 2012)	1 Broomfield Walk	N/A	**100**	**100**	/	34	**42**	**41.8**	34	38.2	33.77
Kirkintilloch 18	Belmont Court	N/A	**100**	**100**	/	/	/	36.4*	28	28.8	26.99
Milngavie 4	Station Rd	N/A	**100**	**100**	26	29	30	31.5	29	27.6	27.4
Milngavie 5	Woodburn Way/ Park Rd	N/A	**100**	**100**	24	26	25	30.3	23	22.3	25.86
Milngavie 6	Park Rd	N/A	**100**	**100**	**40**	**42**	36	**41.0**	35	39.9	34.76
Milngavie 7	29 Southgate	N/A	**100**	**100**	/	/	34*	**40.2**	35	36.5	34.27
Milngavie 8	6-12 Park Road	N/A	**100**	**100**	/	/	27*	30.3	24	24.1	26.34
Milngavie 9	Fairview Court	N/A	**92**	**92**	/	/	28*	33.6	28	28.6	27.37
Milngavie 10 (average of 3 collocated tubes for 2012)	Main Street	N/A	**100**	**100**	/	/	/	/	/	25.9	25.22
Milngavie 10B (average of 3 collocated tubes for 2012)	Main Street	N/A	**100**	**100**	/	/	/	/	/	25.9	25.22
Milngavie 10C (average of 3 collocated tubes for 2012)	Main Street	N/A	**100**	**100**	/	/	/	/	/	25.9	25.22

Chart 2.1 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Urban Background Diffusion Tube Monitoring Sites

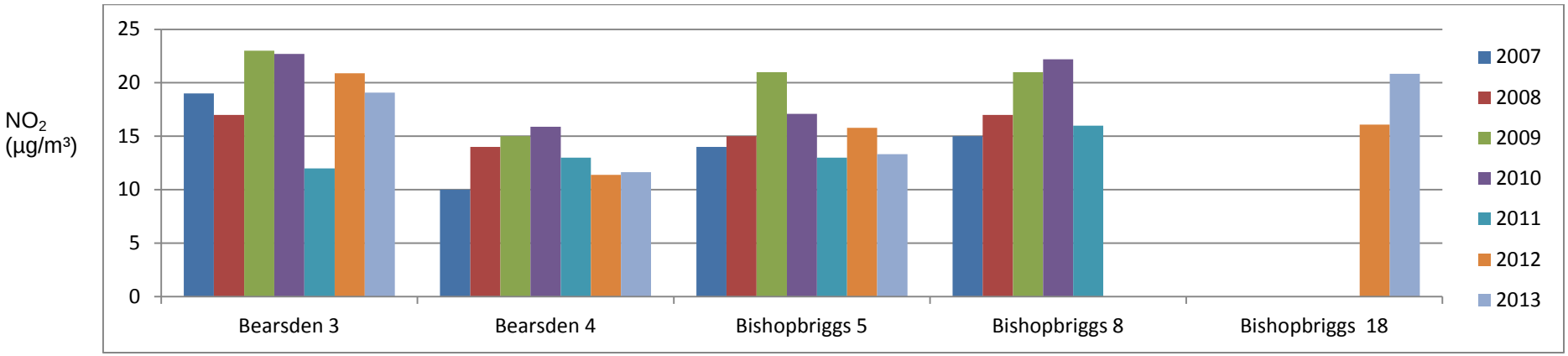


Chart 2.2 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Roadside Diffusion Tube Monitoring Sites

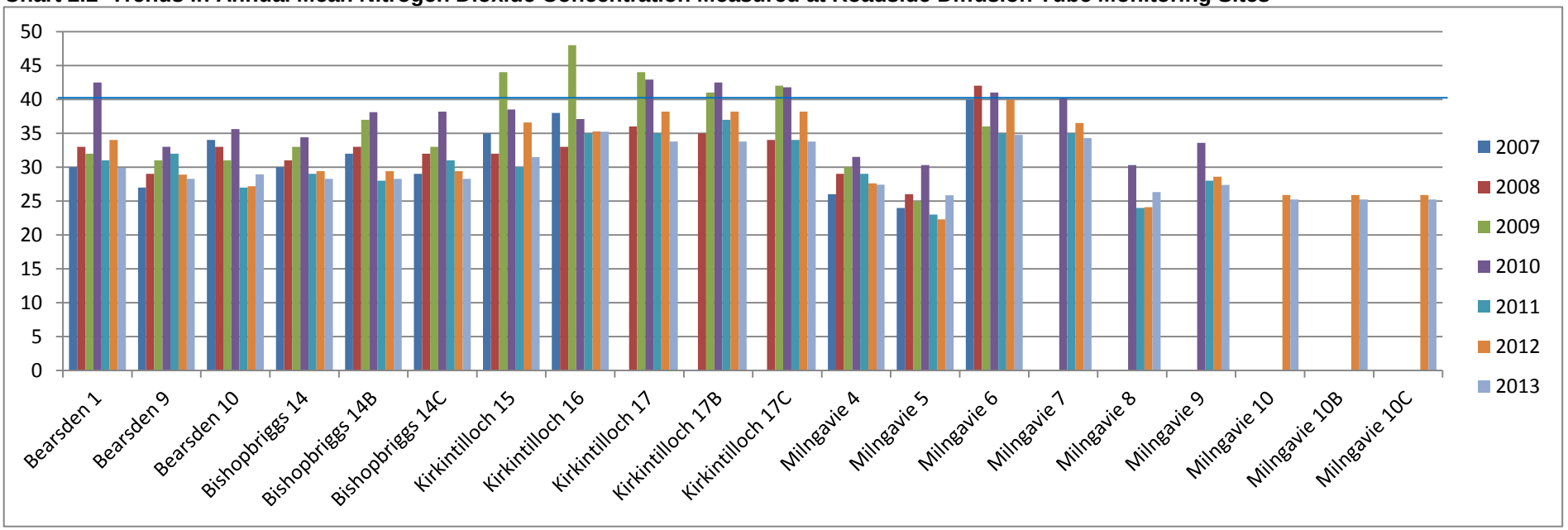
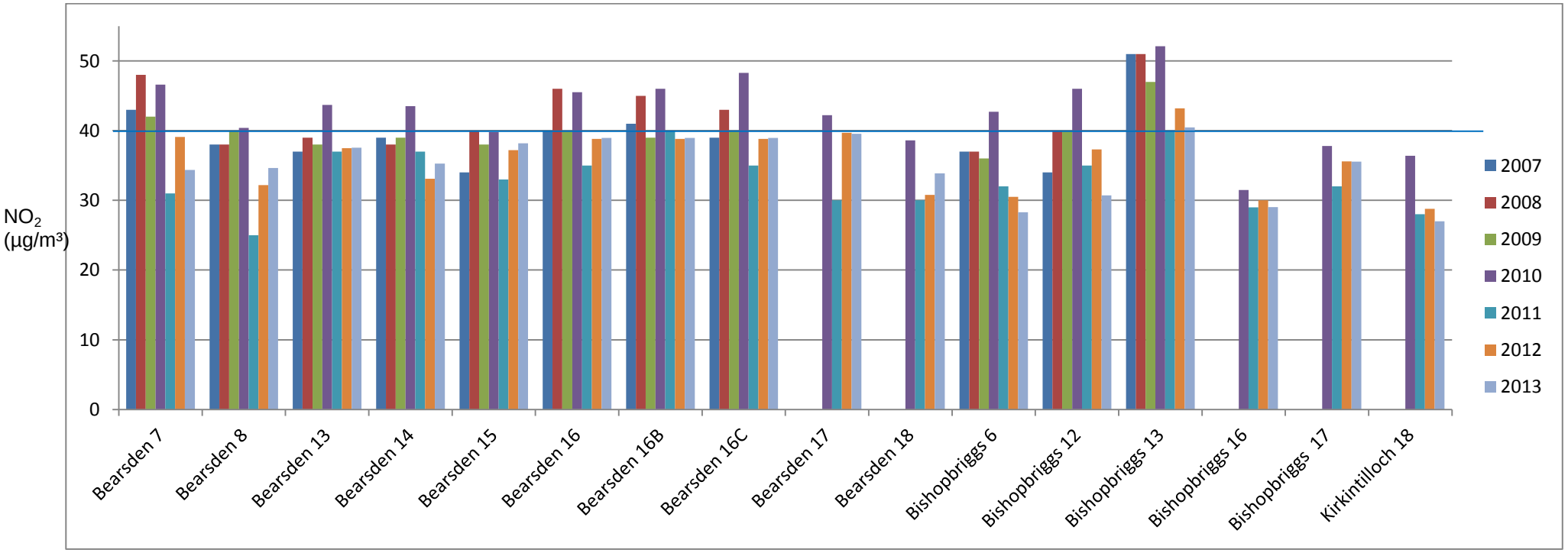


Chart 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Kerbside Diffusion Tube Monitoring Sites



Charts 2.1, 2.2 and 2.3 show measured concentrations have significantly reduced since 2007 at all locations.

All of the diffusion tubes at Bearsden, Kirkintilloch and Milngavie were below the 40 µg/m³ annual mean concentrations in 2013. All of the urban background and roadside diffusion tubes were below the 40 µg/m³ annual mean objective for 2013 with the lowest concentration of 11.38 µg/m³ recorded at one of the urban background diffusion tubes which is located on a street lamp in a residential street in Bearsden.

There was one diffusion tube at Bishopbriggs where the measured annual mean concentration was in excess of the objective of 40 µg/m at Bishopbriggs 13 sitting at 40.43 µg/m³ for 2013. Bishopbriggs 13 is located on a lamp post at a very busy road junction and has always exceeded the 40 $\mu g/m^3$ objective. Subsequently another tube (Bishopbriggs 17) was installed in 2010 which sits on a drainpipe on a house situated two metres from Bishopbriggs 13 and has been below the 40 $\mu g/m^3$ concentration every year. As Bishopbriggs 13 is at the side of the road it is unlikely that it reflects the exposure on humans for more than an hour in a 24 hour period, so this could possibly be replaced by Bishopbriggs 17 in the long term.

2.2.2 PM_{10}

The measured annual mean and 24-hour mean PM_{10} concentrations for 2013 and previous years are presented in Tables 2.6 and 2.7 respectively. Measured exceedences of NAQS objectives are highlighted in bold. The data capture rate for the Kirkintilloch and Milngavie PM_{10} analysers was good however the data capture rate at Bearsden and Bishopbriggs was poor which led to a loss of data.

Table 2.6 Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Annual mean concentrations (objective ≤ 18µg/m³)						
			2007	2008	2009	2010	2011	2012	2013
Bearsden	Bearsden Cross	Y	**20.6**	**22.8**	**20.5**	**25**	**20**	-	-
	Data Capture		85	79	70	96	97	42	12.2
Bishopbriggs (Eberline/BAM)	Bishopbriggs Cross	Y	**21.1**	17.8	**18.9**	**19**	17	15	-
	Data Capture		97	94	79	99	96	94	14.3
Kirkintilloch	Townhead	N	-	**22.0**	**22.5**	**26**	**19**	18	17
	Data Capture		-	55	93	79	91	82	85
Milngavie	Main Street	N	-	-	-	-	-	14	14
	Data Capture		-	-	-	-	-	99	91

Chart 2.4 Annual Mean Concentrations of all automatic monitors for Particulate Matter (PM_{10})

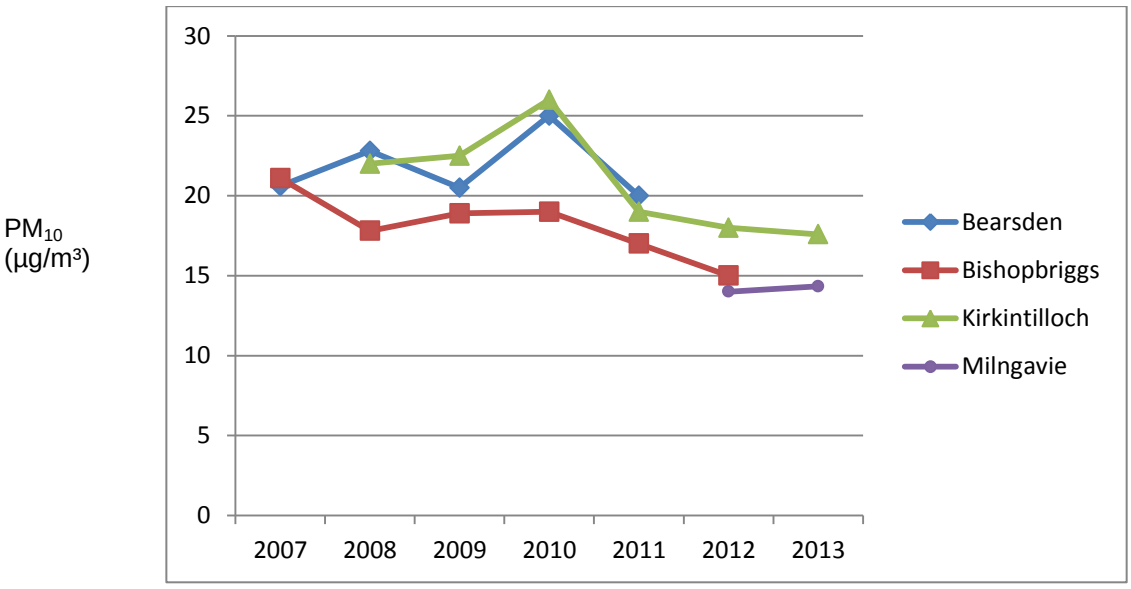


Chart 2.4 highlights the annual mean concentrations of PM_{10} data for the four fixed air monitors in East Dunbartonshire Council between 2007 and 2013.

Bearsden

After the Quality Control process the PM_{10} data at Bearsden was found to be erroneous and could not be used for 2013.

The Partisol was installed in August 2013 to record PM_{10} data at Milngavie Road, Bearsden and there is five months of data available for 2013 which can be seen in Annex D. This analyser is being used as an indicative monitoring study to ascertain the need for extending the Bearsden AQMA, and from the 5 months data for 2013 it looks like emissions are below the objective of 18 μg/m³ with a mean of 12.6 μg/m³ for the 5 months of data available. This study will continue until a full year's data is available.

Bishopbriggs

The PM_{10} data at Bishopbriggs shows that PM_{10} fell consistently over the past 6 years from 20 μg/m³ in 2007 to an annual mean concentration of 15 μg/m³ in 2012. The annual mean concentration over the previous two years has been under the annual mean objective of 18 μg/m³ however after the Quality Control process the PM_{10} data at Bishopbriggs was found to be erroneous and could not be used for 2013.

Kirkintilloch

Kirkintilloch shows a clear downward trend in the three year period since the highest reading of 26 μg/m³, in 2010 with an all-time low of 17 μg/m³ for 2013. This is a strong indicator that the construction of the Kirkintilloch Link Road contributed to elevated levels of NO_2 and PM_{10} over the construction period until the new road opened in November 2010.

Milngavie

The 2013 PM_{10} annual mean was 14 μg/m³ which is the same as 2012 and confirms that air quality in the vicinity of the fixed air monitor at Main Street, Milngavie is below the annual mean objective of 18 μg/m³.

Table 2.7 Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Number of exceedences of daily mean objective (50 μg/m³ not to be breached >7 times per year)						
			2007	2008	2009	2010	2011	2012	2013
Bearsden	Bearsden Cross	Y	3	5	5	**20**	0	0	0
Bishopbriggs	Bishopbriggs Cross	Y	6	4	5	11	0	3	0
Kirkintilloch	Townhead	N/A	3	6	15	**21**	1	6	3
Milngavie	Main Street	N/A	-	-	-	-	-	3	0

The measured annual mean PM_{10} concentrations during 2013 indicate that PM_{10} concentrations were below the annual mean objective and the number of measured exceedences of the daily mean objective for PM_{10} did not breach the number of permitted exceedences for Milngavie and Kirkintilloch.

2.2.3 Sulphur Dioxide

East Dunbartonshire Council does not currently monitor SO_2. Historical monitoring data indicated a decline in concentration in line with those experienced across the UK. Concentrations measured from 1992 to 2005 were significantly below objective levels for SO_2.

2.2.4 Benzene

East Dunbartonshire Council does not currently monitor Benzene.

2.2.5 Other pollutants monitored

East Dunbartonshire Council does not undertake monitoring of any other pollutants.

2.2.6 Summary of Compliance with NAQS Objectives

The air quality at all fixed monitoring stations complied with the NO_2 objectives, however there was one diffusion tube exceedence of the NAQS objectives in the Bishopbriggs AQMA.

The air quality at Kirkintilloch and Milngavie complied with the PM_{10} objectives however the Quality Control process carried out by Ricardo-AEA found the PM_{10} data for Bearsden and Bishopbriggs was erroneous and could therefore not be reported for 2013.

3 New Local Developments

The Council Planning Service has advised that the following developments are under consideration:

- Lairdsland Primary School, Donaldson Street, Kirkintilloch – new build primary school – Planning permission granted and school under construction – due to open August 2015
- Bishopbriggs Town Centre Redevelopment, Bishopbriggs. Refused. Large supermarket own site and planned new store, offices, shopping development. Granted on appeal however unknown as to when work will commence.
- Waitrose, West of Scotland Rugby Club, Milngavie. Approved.
- McGavigan's Field, Woodilee Road, Kirkintilloch. Housing development of 38 units. Construction underway.

3.1 Road Traffic Sources

The Council Roads Services have advised that there were no new or significantly changed road traffic sources, as per the screening criteria, that have not been previously assessed. It was therefore concluded that there have been no significant changes to emissions from traffic sources within the Council area since the 2012 Progress Report however the Bishopbriggs Relief Road is due to open imminently.

3.2 Other Transport Sources

There have been no newly identified emissions from rail, shipping or aircraft operations within the Council area since the 2012 Progress Report.

3.3 Industrial Sources

The Scottish Environment Protection Agency (SEPA) were contacted to determine if there have been any new or significantly changed industrial processes in the area which may impact on air quality.

The register of Pollution Prevention and Control (PPC) processes included one new PPC installation in the council area which was a petrol station at Milngavie Road, Bearsden.

All Pollution Prevention and Control (PPC) Part A and Part B permits regulated by SEPA in the East Dunbartonshire Council area can be seen in Appendix C.

3.4 Commercial and Domestic Sources

East Dunbartonshire Council Planning Services were consulted with regards to any new or changed commercial and domestic sources. No new commercial biomass combustion sources were identified. No new areas of domestic fuel burning were identified.

3.5 New Developments with Fugitive or Uncontrolled Sources

SEPA were consulted in relation to any changed waste, landfill or quarry processes identified in the public registers. There have been no significant changes to existing process emissions and no new fugitive sources identified.

4 Local / Regional Air Quality Strategy

East Dunbartonshire Council prepared a new, updated Air Quality Strategy which is now complete and awaiting ratification by the Council and progressing through the Strategic Environmental Assessment process.

5 Planning Applications

East Dunbartonshire Council has reviewed all planning applications received during 2013 and the following are planning applications which may have an impact on air quality:

- Lairdsland Primary School, Donaldson Street, Kirkintilloch – new school – approved and under construction
- Bishopbriggs Town Centre Redevelopment – originally refused but granted on appeal
- McGavigan's Field, Woodilee Road, Kirkintilloch – Housing development of 38 houses now under construction
- Asda Bearsden – petrol filling station – granted and now operational

6 Air Quality Planning Policies

East Dunbartonshire Council Planning Service have a Local Plan and a Draft Local Development Plan and air quality impact assessments are requested where it is considered that there is likely to be a significant impact on the environment e.g. increased traffic generation, or where the proposed development is within or close to an AQMA.

The Local Plan gives clear advice on how the environmental impact of proposed developments, including air quality, will be assessed through the planning process for the benefit of developers and communities. Air Quality is a material consideration in terms of planning therefore new planning applications are reviewed on a weekly basis.

7 Local Transport Plans and Strategies

The new draft Local Transport Strategy covers 2013 – 2017 and seeks to build on the success of the previous strategy as a means of delivering an integrated transport network across the area; improving the transport infrastructure and services, facilitating sustainable economic growth whilst contributing to improved health, community safety and other Council and partner priorities.

The purpose of the Local Transport Strategy is to:

- Set out and guide the strategy for the Council's roads and transportation plans
- Provide a transport policy link between the Council's Single Outcome Agreement, the Local Development Plan and other policy documents
- Coordinate transport funding spend from a variety of sources making sure that investment contributes positively to roads maintenance, regeneration and sustainable development
- Review the transport network and monitor travel demand in the area, and
- Guide partnership working with key transport organisations

8 Climate Change Strategies

East Dunbartonshire Council produced its original Strategy and Implementation Plan in 2008. This has been updated and an East Dunbartonshire Council Climate Change Declaration, East Dunbartonshire Council Sustainable Development Strategy and Action Plan and Carbon Management Plan have been produced, along with East Dunbartonshire Council Green Office Policy and East Dunbartonshire Council Energy Policy.

Sustainable development, including carbon reduction, is a key strategic priority for East Dunbartonshire Council, reflected in strategic plans and practical activities, including the creation of a Climate Change and Energy Efficiency Team dedicated to tackling the issue of Climate Change. The Climate Change agenda sometimes differs from the Air Quality agenda and all steps will be taken to attempt to work in partnership with them even when the two are not in tandem.

9 Implementation of Action Plans

The Bishopbriggs Air Quality Management Area Action Plan Update was submitted as a stand-alone document. It was appraised during 2013 and of the 41 actions in the original Bishopbriggs Action Plan only 11 have not been progressed. . The remainder are to be progressed or underway.

The Draft Bearsden Air Quality Management Area Action Plan is underway.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Measured concentrations of NO_2 and PM_{10} at Bearsden, Bishopbriggs, Kirkintilloch and Milngavie in 2013 all met the air quality objectives with the exception of one NO_2 tube at Bishopbriggs that was 40.48 μg/m³ which is marginally above the 40 μg/m³ objective, however this tube is located at a busy road junction and other tubes in the vicinity are below the objective. An AQMA will continue to be in place in Bishopbriggs.

The AQMA is still in place for Bearsden and the additional Partisol 2025 to measure PM_{10} was installed just outside the AQMA area to give an indicative idea of whether the PM_{10} emissions are elevated in that area, and whether the AQMA would have to be extended. The emission values for the 5 months of 2013 since it was installed in August 2013 show that the levels are below the objectives with a mean of 12.6 μg/m³

10.2 Conclusions relating to New Local Developments

No new local developments were identified for which there was a need to proceed to a Detailed Assessment.

10.3 Proposed Actions

The next LAQM requirement for the Council will be to submit an Updating and Screening Assessment in 2015.

In 2014 a decision will be made as to whether an AQMA in Kirkintilloch will require to be declared based on the Detailed Assessment and the most up to date data.

Due to the Bishopbriggs Town Centre Development being granted on appeal, it has been agreed with the Scottish Government to postpone further monitoring and modelling to establish whether the Bishopbriggs AQMA can be revoked until such time as the development is complete as traffic patterns will alter.

The Bishopbriggs AQMA will therefore continue for a number of years to ascertain whether the proposed development in the vicinity will have an impact on air quality. Two more diffusion tubes will also be installed close to the proposed development, which will monitor relevant exposure of a nearby property.

The Bishopbriggs Relief Road Phase IV is due to open forthwith. Traffic will be monitored regularly for some time. The opening of the road will alter traffic flows through Bishopbriggs AQMA.

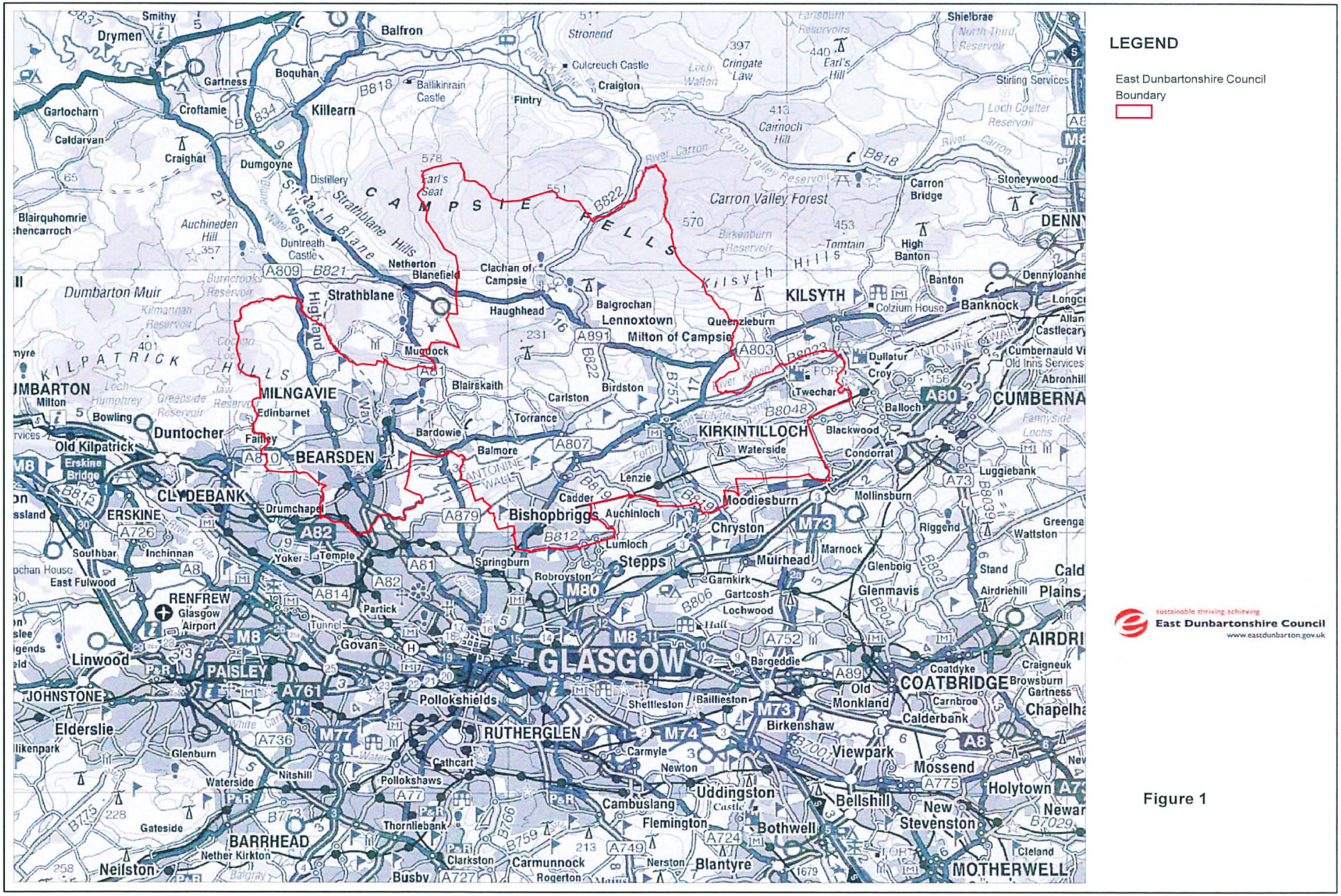
The Partisol 2025 in Bearsden will continue to measure PM_{10} until a full year of data has been recorded in line with the Bearsden Further Assessment.

Attention and action is required to improve the gathering of PM_{10} data at both Bearden and Bishopbriggs.

APPENDICES

APPENDIX A

FIGURES


LEGEND
East Dunbartonshire Council Boundary
sustainable thriving achieving
East Dunbartonshire Council
www.eastdunbarton.gov.uk
Figure 1
Drymen
Balfron
Stronend
Culcreuch Castle
Craigton
Fintry
Gartness
Boquhan
Killearn
Ballikinrain Castle
Gartocharn
Croftamie
Caldarvan
Craighat
Dumgoyne
Distillery
Earl's Seat
CAMPSIE FELLS
Carron Valley Forest
Carron Bridge
Stoneywood
Blairquhomrie
Auchineden Hill
Duntreath Castle
Netherton
Blanefield
Clachan of Campsie
Dumbarton Muir
Strathblane
Haughhead
Balgrochan
Lennoxtown
Queenzieburn
Milton of Campsie
KILSYTH
Colzium House
Banknock
High Banton
Kilsyth Hills
Tomtain
Dullatur
Croy
Twechar
Balloch
CUMBERNA
KILPATRICK HILLS
MILNGAVIE
Edinbarnet
Blairskaith
Carlston
Birdston
Torrance
KIRKINTILLOCH
Blackwood
Condorrat
Waterside
Bowling
Duntocher
Old Kilpatrick
Bardowie
Balmore
BEARSDEN
Lenzie
Cadder
Moodiesburn
Mollinsburn
Luggiebank
CLYDEBANK
Drumchapel
Bishopbriggs
Auchinloch
Chryston
Riggend
ERSKINE
Lumloch
Stepps
Muirhead
Marnock
Southbar
Inchinnan
Yoker
Temple
Springburn
Robroyston
Garnkirk
Glenboig
East Fulwood
RENFREW
Glasgow Airport
Partick
Gartcosh
Glenmavis
Airdriehill
Lochwood
Govan
GLASGOW
AIRDRI
Linwood
PAISLEY
Bargeddie
Coatdyke
Craigneuk
JOHNSTONE
Pollokshields
Shettleston
Baillieston
Old Monkland
COATBRIDGE
Browsburn
Gartness
Elderslie
RUTHERGLEN
Carmyle
Birkenshaw
Calderbank
Chapelha
Glenburn
Cathcart
Newton
Viewpark
Mossend
Waterside
Nitshill
Pollokshaws
Uddingston
Holytown
Cambuslang
Bellshill
New Stevenston
Gateside
Thornliebank
Flemington
Bothwell
BARRHEAD
Nether Kirkton
Clarkston
Carmunnock
Nerston
Blantyre
Neilston
Busby
Rogerton
MOTHERWELL
Cleland

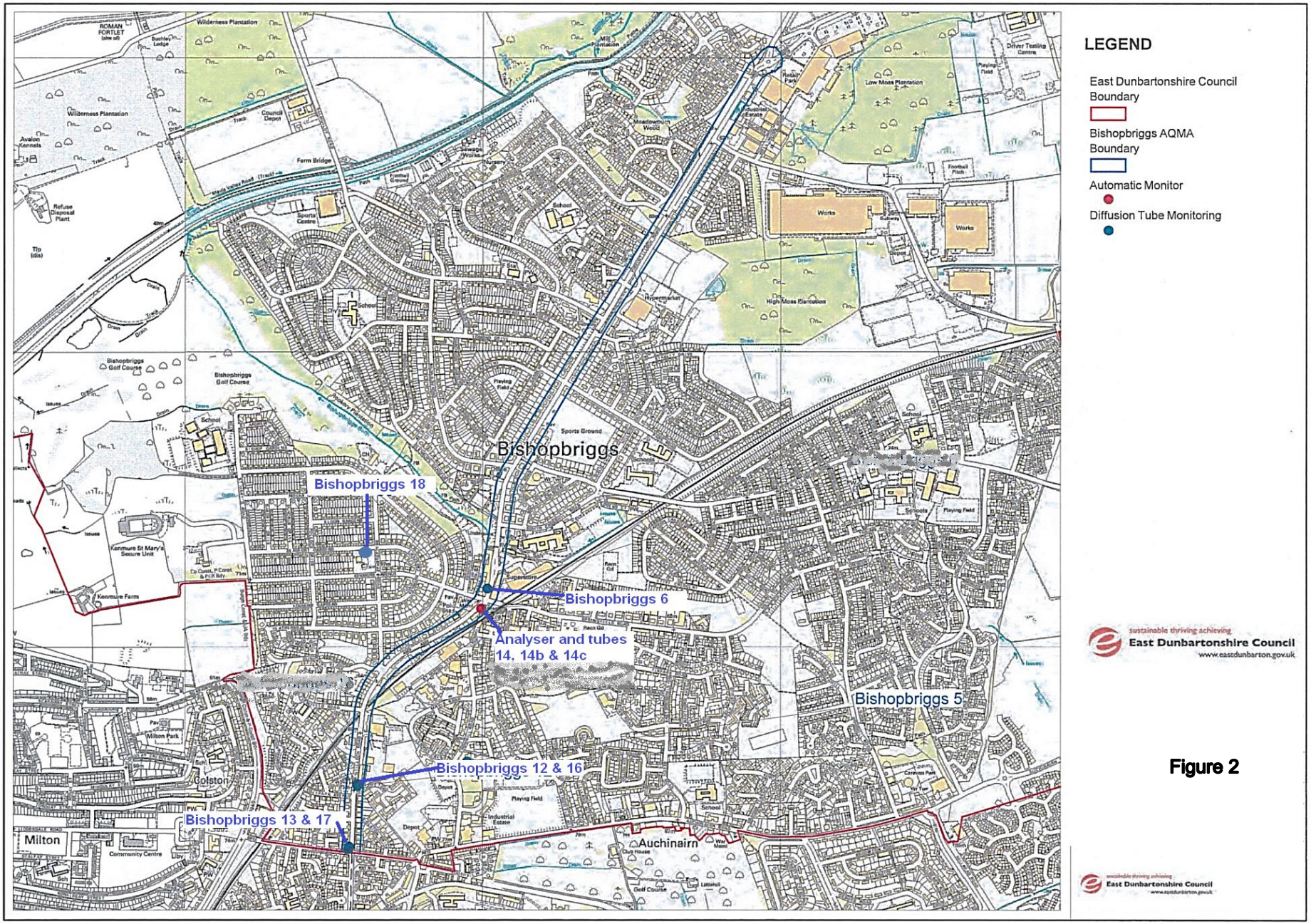

LEGEND
East Dunbartonshire Council Boundary
Bishopbriggs AQMA Boundary
Automatic Monitor
Diffusion Tube Monitoring
Bishopbriggs
Bishopbriggs 18
Bishopbriggs 6
Analyser and tubes 14, 14b & 14c
Bishopbriggs 5
Bishopbriggs 12 & 16
Bishopbriggs 13 & 17
Milton
Colston
Auchinairn
sustainable thriving achieving
East Dunbartonshire Council
www.eastdunbarton.gov.uk

Figure 2


LEGEND
Diffusion Tubes
East Dunbartonshire Council Boundary
Bearsden AQMA
Automatic Monitors
BEARSDEN
8 Cowther Ave
118 Drymen Road
Bearsden 18
Bearsden 17
Bearsden 7
Bearsden 16
Bearsden 8
Bearsden 13
Bearsden 14
Bearsden 15
Bearsden 10
Bearsden 9
New monitor at Milngavie Rd, Bearsden
East Dunbartonshire Council

Figure 3

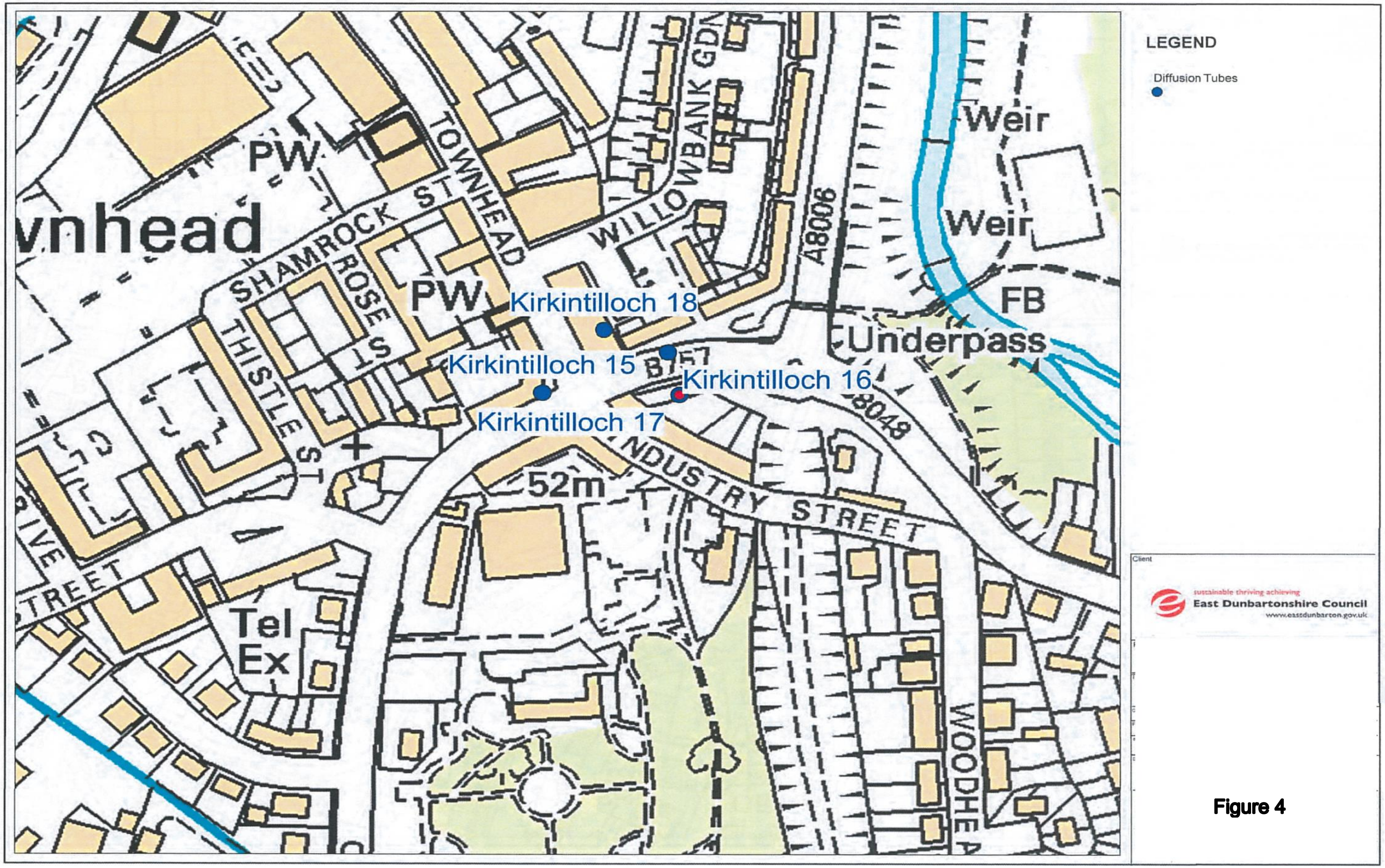
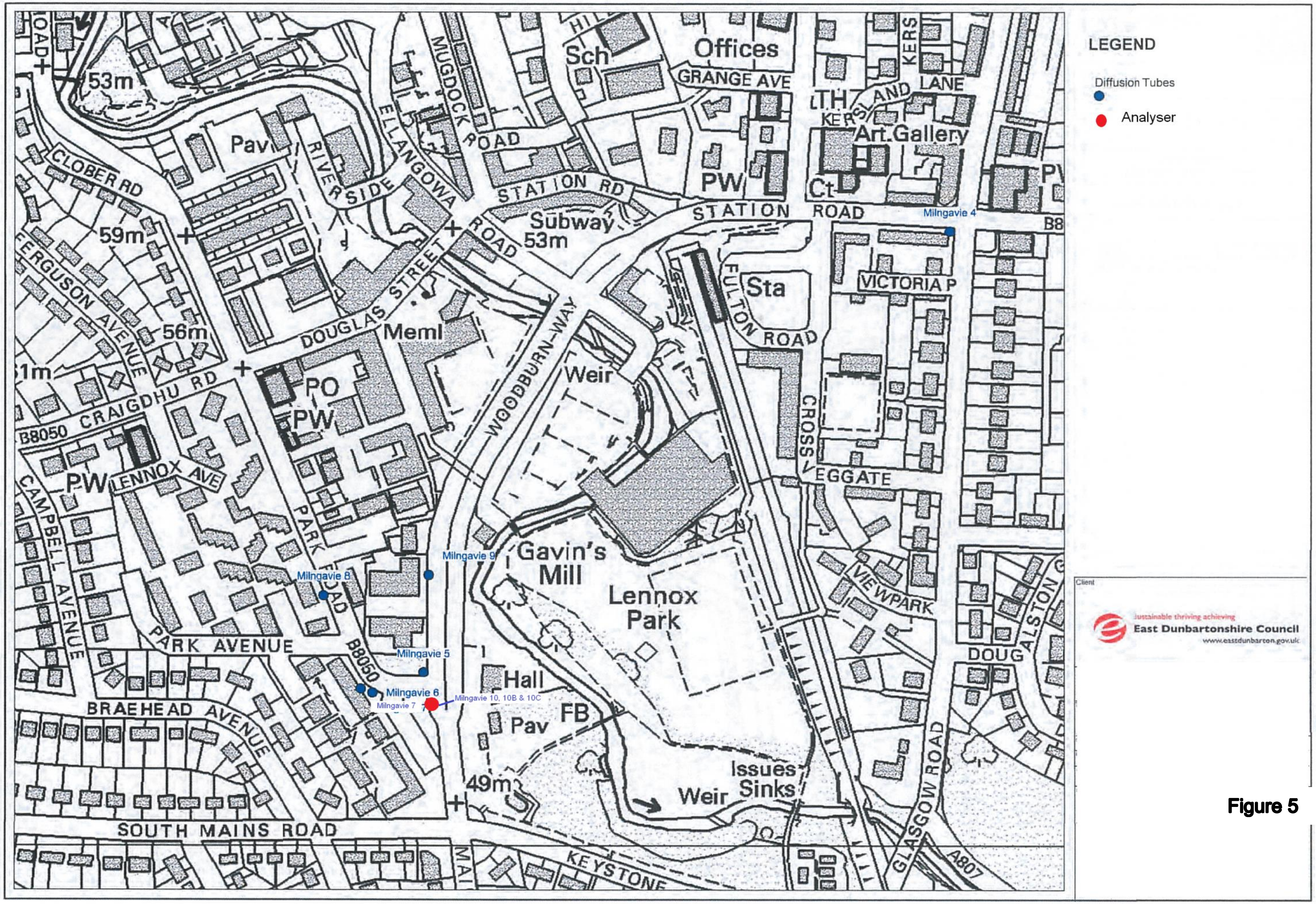

LEGEND
Diffusion Tubes
Kirkintilloch 18
Kirkintilloch 15
Kirkintilloch 16
Kirkintilloch 17
vnhead
PW
PW
SHAMROCK ST
TOWNHEAD
WILLOWBANK GDN
ROSE ST
THISTLE ST
A8006
Weir
Weir
FB
Underpass
B757
8048
NDUSTRY STREET
52m
STREET
Tel
Ex
WOODHEA
Client
sustainable thriving achieving
East Dunbartonshire Council
www.eastdunbarton.gov.uk

Figure 4


LEGEND
Diffusion Tubes
Analyser
Milngavie 4
Milngavie 5
Milngavie 6
Milngavie 7
Milngavie 8
Milngavie 9
Milngavie 10, 10B & 10C
East Dunbartonshire Council
Figure 5

APPENDIX B

QA: QC DATA

The laboratory analysis of the passive diffusion tubes used by the Council is undertaken by Glasgow Scientific Services. 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.

Glasgow Scientific Services public analyst participates in the inter-comparison scheme, with bias correction factors calculated and applied annually. The laboratory analyses results from co-location studies at various locations.

The laboratory co-location factors are presented in Table A.1.

Site Name	Study duration	Tube precision	Bias correction factor
East Dunbartonshire Council	12	P	**1.04**
East Dunbartonshire Council	12	G	**0.92**
East Dunbartonshire Council	10	P	**1.10**
East Dunbartonshire Council	11	G	**1.05**
Marylebone Road Inter-comparison	12	G	**0.85**
Overall factor from Glasgow Scientific Services co-location studies			**0.99**

Factor from Local Co-location Studies

The data for the four co-location studies carried out by East Dunbartonshire Council were put into the Ricardo-AEA bias adjustment spread sheet and the results are presented in Table B2.

Automatic Analyser Site Name	Study duration	Tube precision	Bias correction Factor
Bearsden	12	Good	**0.92**
Bishopbriggs	12	Good	**1.07**
Kirkintilloch	12	Poor	**0.99**
Milngavie	12	Good	**0.89**
Overall factor for East Dunbartonshire Council			**0.97**

Discussion of Choice of Factor to Use

For 2013 data the national and the local bias adjustment factors are different so a mean of the two was used and the data from the NO_2 tubes for EDC were multiplied by 0.98.

PM Monitoring Adjustment

East Dunbartonshire Council monitor PM_{10} using three types of analyser:

- Eberline
- Tapered Element Oscillating Microbalance (TEOM) with a Filter Dynamics Measurement System (FDMS);
- Partisol 2025

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 Eberline used by East Dunbartonshire Council have a heated inlet which can cause evaporation of some semi-volatile particles thereby reducing the measured PM_{10} 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.

The Partisol data has not adhered to the same quality control process as stated in the Technical Guidance 09 as this analyser is being used as an indicative monitoring study to ascertain the need for extending the Bearsden AQMA however it does not need to be altered using the gravimetric equivalent.

Short-term to Long-term Data adjustment

East Dunbartonshire Council has not undertaken any short-term monitoring of pollutants which require adjustment to calculate long-term mean concentrations.

QA/QC of automatic monitoring

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

Table 1: Laboratory summary performance for WASP NO_2 PT rounds 1120 - 123

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent Health and Safety Laboratory Workplace Analysis Scheme for Proficiency NO_2 Proficiency Testing rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of ± 2 as defined above.

	WASP R120	WASP R121	WASP R122	WASP R123
Round conducted in the period	Jan - Mar 2013	Apr-Jun 2013	Jul – Sep 2013	Oct – Dec 2013
GSS lab	50%	25%	100%	100%

Glasgow Scientific Services have prepared a report in response to the 2013 WASP results.

Summary of Nitrogen Dioxide Diffusion Tube Proficiency Test Results and internal Quality Control Programmes.

This report is in response to a request from Local Authorities in the Laboratory Management Group. The following question was posed in relation to the Health and Safety Laboratory proficiency testing scheme results:

Across a rolling five quarter period, the lab should achieve 95% accuracy. However, averaging the five quarters to March 2013, GSS only achieved 90%; averaging the five quarters to December 2012, GSS only achieved 80% accuracy. I am also advised that in two non-consecutive quarters, only 50% was achieved.

Four tubes are received each round, with four rounds per year. The results are compared to the spiked value and a z score is assigned to each result. The performance over the last 36 months was as follows:

WASP - NO2 results (z-scores)

		Tube 1	Tube 2	Tube 3	Tube 4
Round	113	-1.3	-1.2	-0.7	-1
	114	0.6	0.9	0.1	0.9
	115	-0.2	0	-0.1	-0.2
	116	0.7	-0.2	-0.5	0.3
	117	-0.9	**-2**	**-2.1**	-2.8
	118	0.4	0	0.2	0.2
	119	-0.8	-0.5	0.1	-1.6
	120	**-2.4**	**-2.1**	-1.7	-1.4
	121	-2.3	-4.0	-1.9	-2.1
	122	0.78	0.95	0.82	1.24
	123	0.18	-0.19	0.11	0.3
	124	-0.15	0.28	-0.05	-0.35

Key: Result satisfactory when uncertainty of measurement is taken into account. Considered as a warning as z-score ≥ ±2.

Summary: 2 results in 48 outside of z-score ≥ ±2
Percentage pass: 95.8%

The general classification of a Z_{score} is

$Z_{score} \leq \pm 2$ – satisfactory result

$Z_{score} > \pm 2$ and $\leq \pm 3$ – questionable (warning) result

$Z_{score} > \pm 3$ – unsatisfactory result

Results with a z-score ≥ ±2 are investigated in accordance with the quality system. The results for Round 120 were found to be satisfactory when the method uncertainty of measurement is taken into account (remedial action report NC345). Tube 4 result (Round 117) remained a warning result and was investigated (remedial action report NC142). All QCs and instrument performance were satisfactory and as the sample cannot be repeated, the reason for the warning result could not be explained. No unsatisfactory results have been reported (i.e. z-score ≥ ±3).

Summary of Nitrogen Dioxide Diffusion Tube Proficiency Test Results and internal Quality Control Programmes.

For Round 121, two results were just over a z score of 2 and are considered satisfactory when uncertainty of measurement is taken in account. One result exceeded a z score of 3 and was investigated. The QC samples are different to actual exposed tubes as they are spiked with nitrite, which can get absorbed onto the metal frit and the way the frits are placed together can make extraction more difficult that a standard exposed tube.

Following an investigation as per the quality system requirements, remedial action was subsequently taken to extract for a longer period of time to minimise the effect of direct addition of nitrite. Since this has been built into the procedures for spiked tubes, all WASP samples have been satisfactory, as demonstrated by the results for Rounds 122, 123 and 124.

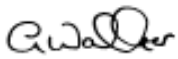
We would not expect the above failure of the spiked QC sample to have an affect on the exposed tubes for the reasons given above.

In addition to the above, the laboratory takes part in an monthly inter-field comparison exercise where tubes are co-located with automatic analysers. The results have been satisfactory and the latest bias adjustment factor for Glasgow Scientific Services is 0.99. See:

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_14-Final-v2.xls

The internal Quality Control for the LA monthly diffusion tube samples have been satisfactory. This involves running standards and blanks, with approximately 160 points being generated in our control chart every month. Finally, no issues have been raised by either internal audit or external audit by UKAS.

I hope this information provides you with some comfort on the performance of the method, however please get back to me if you would like further information.



Gary Walker
Scientific and Regulation Services Manager, Public Analyst
Glasgow Scientific Services
Land and Environmental Services
Glasgow City Council
64 Everard Drive
Glasgow
G21 1XG

Phone 0141 276 0613
Fax 0141 276 0669
Mobile 0787 9483935
B'berry 0782 5904230
Email gary.walker@glasgow.gov.uk

www.glasgow.gov.uk/scientificservices

APPENDIX C

PPC Part A and Part B

PPC Part A and Part B

Part A
PW Hall, Woodilee Ind Estate, Kirkintilloch

Part B (standard)
Aggregate Industries, Kirkintilloch Readymix Plant, Torrance
Archibald Young Ltd, Milton Road, Kirkintilloch
Carrickstone Rock Co Ltd Mobile Plant
Cemex Cumbernauld Readymix, Gartshore, Twechar
Cemex Roadstone Coating Plant, Gartshore, Twechar
Ferrymill Motors, Campsie Road, Torrance
Guala Closures UK Ltd, Broomhill Ind Est, Kirkintilloch
Guala Closures UK Ltd, Old Mill Park Ind Est, Kirkintilloch
John McGavigan Ltd, 111 Westerhill Road, Bishopbriggs
Marley Eternit Ltd, Cadder, Bishopbriggs
Robeslee Concrete Co Ltd, Southbank Road, Kirkintilloch
George Beattie & Sons – Mobile Plant, although base is in Auchinvole, Twechar

Part B (Dry Cleaners)
Bearsden Dry Cleaners, 1 Canniesburn Toll, Bearsden
Cross Court Cleaners, 8 The Cross Court, Bishopbriggs
Dry Clean Depot Ltd, Unit 12 ,Baljafray Shopping Centre, Grampian Way, Bearsden
Johnson Cleaners UK Ltd, 10-12 Station Road, Milngavie
Johnson Cleaners UK Ltd, 73 Cowgate, Kirkintilloch
The Dry Cleaning Company, Block 17C Unit 2, Old Mill Park Industrial Estate, Kirkintilloch

Part B (Petrol Vapour Recovery)
ASDA, Milngavie Road, Bearsden
Bearsden Filling Station, Duntocher Road, Bearsden
BP Canniesburn Connect Service Station, Maryhill Road, Bearsden
BP Services, Milngavie Road, Bearsden
Hillfoot Auto Supplies, 145 Milngavie Road, Bearsden
Kirkie Filling Station, Waterside Road, Kirkintilloch
Lennox Service Station, Main Street, Lennoxtown
Malthust Fuel, 42 Glasgow Road, Milngavie
N&S Motors, Boghead Road, Lenzie
Shell Low Moss Filling Station, Kirkintilloch Road, Bishopbriggs
Shell Westermains FS, Glasgow Road, Kirkintilloch

APPENDIX D

Partisol Bearsden Indicative Data 2013

Partisol Bearsden PM_{10} indicative data

The Partisol was installed in August 2013 to record PM_{10} data at Milngavie Road, Bearsden as an indicative monitoring study to ascertain the need for extending the Bearsden AQMA. There is five months of data available for 2013 which can be seen below and highlights that for each month the emissions were below the objective of 18 µg/m³. This study will continue until a full year's data is available.

Month in 2013	Monthly mean	Within Objective (< 18 µg/m$^{3)}$
August	**10.78**	**Yes**
September	**11.92**	**Yes**
October	**12.17**	**Yes**
November	**16.53**	**Yes**
December	**11.92**	**Yes**
5 Monthly mean	**12.6**	**Yes**