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Updating and Screening Assessment 2012 for

EAST DUNBARTONSHIRE COUNCIL

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

October 2012

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Executive Summary

This report is the 2012 Updating and Screening Assessment, 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 Council area for the calendar year 2011 and considers the potential for exceedences of air quality objectives as a result of new or significantly changed local emission sources.

Measured pollutant concentrations across the council area in 2011 were typically lower than those measured in 2010, although a longer term upward trend in measured concentrations is apparent at some sites.

There were six diffusion tube locations, out with an AQMA, where the measured annual mean concentration were above the objective. However, four of these diffusion tubes are located in Kirkintilloch where the Council is currently undertaking a Detailed Assessment of NO_2 and PM_{10}. The other two diffusion tube sites which were in excess of the annual mean objective are located in Milngavie. It is the Council's intention to wait until they have a full year of data from the automatic monitoring site before making a decision on whether to proceed to a Detailed Assessment.

Measured PM_{10} 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 5 $\mu g/m^3$, while a decrease of 7 $\mu g/m^3$ 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.

No new or significantly changed emission sources were identified within East Dunbartonshire which have potential to cause exceedences of air quality objectives.

Table of contents

List of Tables

List of Figures

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 East Dunbartonshire is provided in Figure 1 in Appendix B.

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 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

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 microgrammes 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 LAQM in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
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 7 times a year	24-hour mean	31.12.2010
	18 $\mu g/m^3$	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 brief 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 in Appendix B.

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.

Date submitted	Assessment / Report	Conclusions
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.
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.

Date submitted	Assessment / Report	Conclusions
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.
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.

Date submitted	Assessment / Report	Conclusions
May 2010	Progress Report	The measured PM_{10} concentration at Kirkintilloch exceeds the 2010 annual mean objective, giving a level of 22.5 □g/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 PM_{10} at Kirkintilloch are in excess of the relevant annual mean objectives at 45 □g/m3 and 26 □g/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.

2 New Monitoring Data

During 2011 East Dunbartonshire Council monitored both PM_{10} and NO_2 at several locations throughout the council area using both automatic and passive sampling methods.

All automatic monitoring NO_2 and PM_{10} data have been fully ratified by AEA Technology on behalf of the Scottish Government. Diffusion tube data have been corrected using a local bias correction. Details of the quality control and data correction processes carried out are reported in Appendix A.

2.1 Summary of Monitoring Undertaken

East Dunbartonshire monitor NO2 and PM10 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.

2.1.1 Automatic Monitoring Sites

East Dunbartonshire Council currently operate automatic monitoring sites at four locations. Each site currently has both a NOx and PM10 analyser.
It should be noted that the automatic monitoring site located in Milngavie has only been in operation since 16th August 2011.

Details of the monitoring sites are shown in Table 2.1 and annotated in Figure 2, 3, 4, 5 and 6 in Appendix B.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y 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}	APNA 360,BAM (heated inlet)	Y	Y<2m	1m	Y
Bishopbriggs 14	Roadside	260995	670130	NO_2, PM_{10}	APNA 360, BAM (heated inlet)	Y	Y 5m	2 m to nearest road 10m to junction with main road	N
Kirkintilloch 17	Kerbside	265675	673516	NO_2, PM_{10}	Thermo 42i TEOM (FDMS)	N	Y <2m	1m	Y
Milngavie	Roadside	255328	674115	NO_2, PM_{10}	Thermo 42i TEOM (FDMS)	N	Y	1m	Y

2.1.2 Non-Automatic Monitoring Sites

East Dunbartonshire Council maintain a network of thirty two 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 roadside and urban background locations. The locations of the non-automatic monitoring sites are annotated in Figures 3, 4, 5 and 6.

Table 2.2 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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 (118 Drymen Road)	R	254218	672193	NO_2	Y	N	Y (3m)	2m	Y
Bearsden 3 (5 Ravelston Road)	UB	254655	670158	NO_2	N	N	N (8m)	5m	Y
Bearsden 4 (8 Lowther Ave)	UB	253075	673382	NO_2	N	N	N (6m)	5m	Y
Bearsden 7	R	254269	672069	NO_2	Y	N	Y (<2m)	2m	Y
Bearsden 8	R	254275	672047	NO_2	Y	N	N (18m)	2m	Y
Bearsden 9	R	254751	670621	NO_2	N	N	N (30m)	2m	Y
Bearsden 10	R	255394	670683	NO_2	N	N	N (24m)	2m	Y
Bearsden 13	R	254809	671057	NO_2	Y	N	Y (26m)	2m	Y
Bearsden 14	R	254877	671000	NO_2	Y	N	Y (8m)	2m	N
Bearsden 15	R	254898	671023	NO_2	Y	N	Y (2m)	2m	Y
Bearsden 16	R	254269	672067	NO_2	Y	Y	Y (2m)	2m	Y
Bearsden 16B	R	254269 672067	672067	NO_2	Y	Y	Y (2m)	2m	Y
Bearsden 16C	R	254269 672067	672067	NO_2	Y	Y	Y (2m)	2m	Y
Bearsden 17	R	254258 672077	672077	NO_2	Y	N	Y(<2m)	2m	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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 18	R	254275 672069	672069	NO_2	Y	N	Y(<2m)	2m	Y
Bishopbriggs 12	R	260581	669527	NO_2	Y	N	N (4m)	2m	Y
Bishopbriggs 13	R	260549	669312	NO_2	Y	N	N (5m)	2m	Y
Bishopbriggs 14	R	260995	670130	NO_2	Y	Y	N (42m)	2m	N
Bishopbriggs 14B	R	260995	670130	NO_2	Y	Y	N (42m)	2m	N
Bishopbriggs 14C	R	260995	670130	NO_2	Y	Y	N (42m)	2m	N
Bishopbriggs 16	R	260580	669533	NO_2	Y	N	Y (<2m)	2m	Y
Bishopbriggs 17	R	260552	669320	NO_2	Y	N	Y (<2m)	2m	Y
Bishopbriggs 5	UB	260948	669610	NO_2	N	N	N (44m)	5m	N
Bishopbriggs 6	R	261016	670198	NO_2	Y	N	Y (<2m)	2m	Y
Bishopbriggs 8	UB	260842	670278	NO_2	N	N	N (<2m)	5m	N
Kirkintilloch 15	R	265641	673497	NO_2	N	N	Y (2m)	2m	Y
Kirkintilloch 16	R	265697	673524	NO_2	N	N	N (3m)	2m	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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 17	R	265675	673516	NO_2	N	Y	Y (3m)	2m	Y
Kirkintilloch 17B	R	265675	673516	NO_2	N	Y	Y (3m)	2m	Y
Kirkintilloch 17C	R	265675	673516	NO_2	N	Y	Y (3m)	2m	Y
Kirkintilloch 18	R	265674	673521	NO_2	N	Y	Y (<2m)	2m	Y
Milngavie 4	R	255728	674486	NO_2	N	N	N (5m)	2m	Y
Milngavie 5	R	255327	674137	NO_2	N	N	N (5m)	2m	Y
Milngavie 6	R	255288	674121	NO_2	N	N	N (2m)	2m	Y
Milngavie 7	R	255279	674124	NO_2	N	N	N (<2m)	9m	Y
Milngavie 8	R	255251	674198	NO_2	N	N	N (3m)	1m	Y
Milngavie 9	R	255331	674214	NO_2	N	N	Y (7m)	2m	Y

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The annual mean and 1-hour mean NO_2 automatic monitoring data for 2011 and previous years are presented in Tables 2.3 and 2.4 respectively. Measured exceedences of NAQS objectives are highlighted in bold.

The automatic monitoring station located in Bearsden had 100% data capture. The data capture at both Bishopbriggs and Kirkintilloch was below the desired 90% with 65.3% and 86.9% respectively. The low data capture rate at Bishopbriggs was due to data being lost from January to May 2011. These data have been annualised.

Measured NO_2 concentrations at the automatic monitoring stations located at Beardsen, Bishopbriggs and Milngavie were below both the annual mean and 1-hour mean NAQS objectives for NO_2.

Measured concentrations at the automatic monitor are significantly below the annual mean objectives for NO_2 at Bishopbriggs.

The measured annual mean NO_2 concentration at Kirkintilloch in 2011 was 43 µg/m^3 which is above the annual mean objective level of 40 µg/m^3. There were no measured exceedences of the 1-hour objective for NO_2.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Annual mean concentrations (μg/m^3)				
					2007 [c]	2008 [c]	2009	2010	2011
Bearsden	Bearsden Cross	Y	100	100	39.4	**44.1**	39.6	**47**	39
Bishopbriggs	Bishopbriggs Cross	Y	65.3	65.3	34.1	31.5	33.4	33	35.7*
Kirkintilloch	Townhead	N	86.9	86.9	39.2	35.6	**42.8**	**45**	**43**
Milngavie	Milngavie	N	100	37.4	N/A	N/A	N/A	N/A	27.0*

*** Data has been annualised due to monitoring period**

Figure 2.1 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

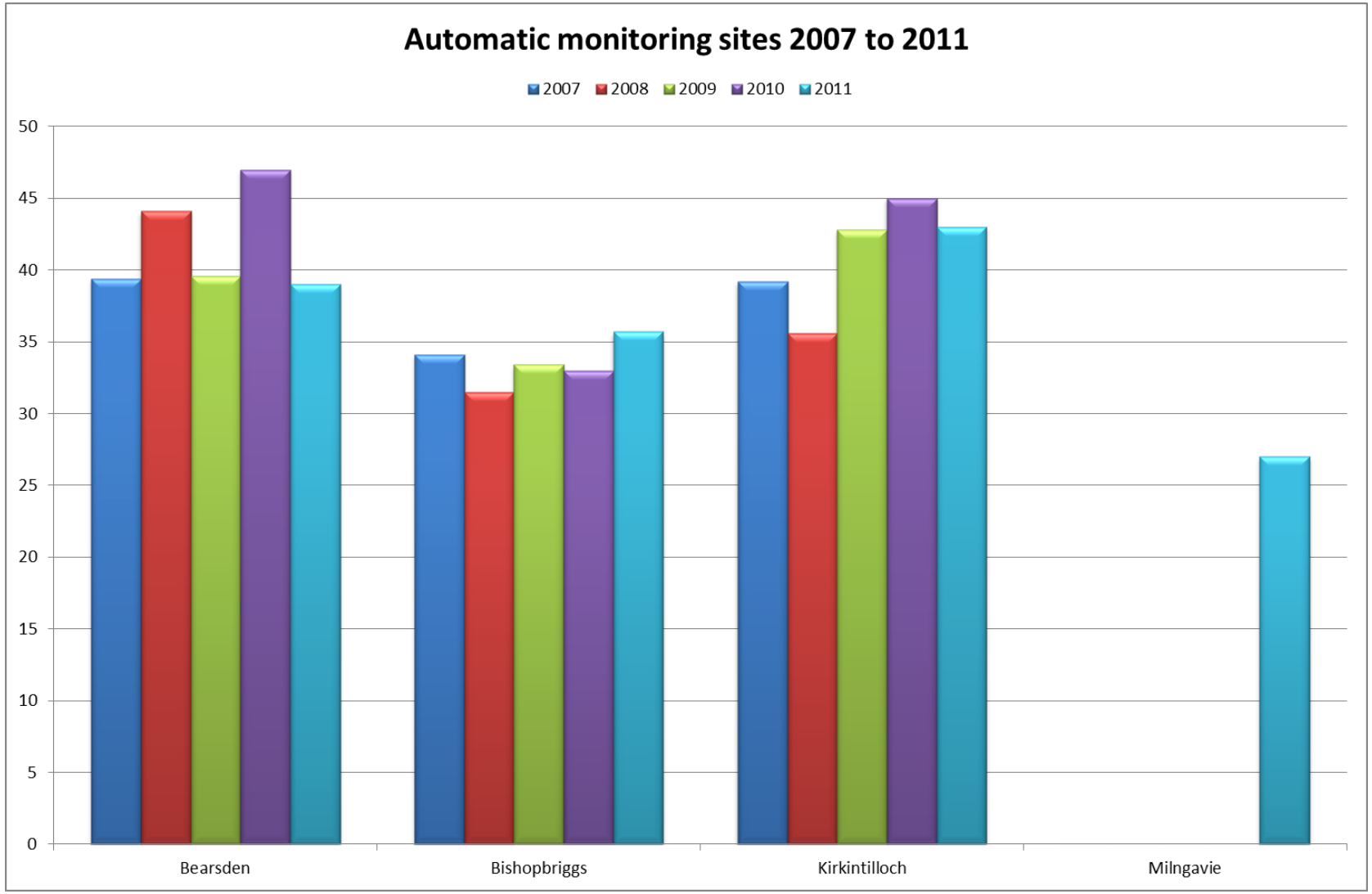


Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Location	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of hourly mean (200 μg/m^3)				
					2007	2008	2009	2010	2011 [c]
Bearsden	Bearsden Cross	N	100	100	0	10	1	**37**	0
Bishopbriggs	Bishopbriggs Cross	Y	65.3	65.3	0	1	0	0	0 (115)
Kirkintilloch	Townhead	N	86.9	86.9	0	0	0	4	0 (151)
Milngavie	Milngavie	N	100	33	N/A	N/A	N/A	N/A	0

Diffusion Tube Monitoring Data

The NO_2 diffusion tube monitoring data for 2011 and previous years are presented in Table 2.6. Data capture for all sites, with the exception of one, were greater than 75%. Therefore, it has been necessary to annualise measured concentrations at one location. The diffusion tube monitoring results have been adjusted for laboratory bias Further detail of the annualisation and laboratory bias adjustment is provided in Appendix A. Results have not been distance corrected as no sites met the necessary criteria. Trend charts of historic diffusion tube data at urban background and roadside and kerbside sites are presented in Charts 2.1, 2.2 and 2.3 respectively.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.17) 2011 ($\mu g/m^3$)
Bearsden 1	118 Drymen Road	R	Y	N	58%	Y	N	36.7
Bearsden 3	5 Ravelstoun Road	UB	N	N	100%	N	N	23.8
Bearsden 4	8 Lowther Avenue	UB	N	N	92%	N	N	14.8
Bearsden 7	Bearsden Cross Traffic lights	R	Y	N	83%	N	N	39.6
Bearsden 8	Bearsden Cross Hanging basket	R	Y	N	100%	N	N	35.4
Bearsden 9	Switchback	R	N	N	83%	N	N	37.6
Bearsden 10	Maryhill Road/ Rannoch Drive	R	N	N	100%	N	N	37.7
Bearsden 13	Canniesburn Toll	R	Y	N	100%	N	N	**43.2**
Bearsden 14	Milngavie Road at Canniesburn Toll	R	Y	N	92%	N	N	**43.8**
Bearsden 15	Milngavie Road	R	Y	N	100%	N	N	**42.1**
Bearsden 16	102 Drymen Rd	R	Y	Y	100%	N	N	**40.8**
Bearsden 16B	102 Drymen Rd	R	Y	Y	92%	N	N	**46.3**
Bearsden 16C	102 Drymen Rd	R	Y	Y	92%	N	N	**44.2**

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.17) 2011 ($\mu g/m^3$)
Bearsden 17	106 Drymen Road	R	Y	N	100%	N	N	38.6
Bearsden 18	3 Roman Road	R	Y	N	100%	N	N	35.3
Bishopbriggs 12	24 Kirkintilloch Road	UB	Y	N	100%	N	N	**40.5**
Bishopbriggs 13	1495 Springburn Road	R	Y	N	100%	N	N	**47.0**
Bishopbriggs 14	128 Kirkintilloch Road	UB	Y	Y	100%	N	N	34.4
Bishopbriggs 14B	128 Kirkintilloch Road	R	Y	Y	100%	N	N	32.8
Bishopbriggs 14C	128 Kirkintilloch Road	R	Y	Y	100%	N	N	35.9
Bishopbriggs 16	24 Kirkintilloch Road (Building Facade)	R	Y	N	100%	N	N	34.3
Bishopbriggs 17	1495 Springburn Road (Building Facade)	R	Y	N	83%	N	N	37.3
Bishopbriggs 5	Huntershill House	R	N	N	100%	N	N	18.1
Bishopbriggs 6	145 Kirkintilloch Road	R	Y	N	100%	N	N	37.6

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.17) 2011 ($\mu g/m^3$)
Bishopbriggs 8	77 Brackenbrae Avenue	R	N	N	100%	N	N	19.1
Kirkintilloch 15	Lamp post R2 Townhead Lights	R	N	N	100%	N	N	34.5
Kirkintilloch 16	Parliament Rd	R	N	N	100%	N	N	**40.8**
Kirkintilloch 17	1 Broomfield Walk	R	N	Y	100%	N	N	**41.1**
Kirkintilloch 17B	1 Broomfield Walk	R	N	Y	100%	N	N	**42.7**
Kirkintilloch 17C	1 Broomfield Walk	R	N	Y	100%	N	N	39.5
Kirkintilloch 18	Belmont Court	R	N	N	100%	N	N	32.6
Milngavie 4	Station Road	R	N	N	92%	N	N	33.5
Milngavie 5	Woodburn Way/ Park Road	R	N	N	100%	N	N	29.9
Milngavie 6	Park Road	R	N	N	100%	N	N	**41.2**
Milngavie 7	29 Southgate	R	N	N	100%	N	N	**40.5**
Milngavie 8	6-12 Park Road	R	N	N	92%	N	N	28.3
Milngavie 9	Fairview Court	R	N	N	100%	N	N	30.4

Table 2.6: Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2007	2008	2009 (Bias Adjustment Factor = 1.20)	2010* (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.17)
Bearsden 1	R	Y	30	33	32	**42.5**	36.7
Bearsden 3	UB	N	19	17	23	22.7	23.8
Bearsden 4	UB	N	10	14	15	15.9	14.8
Bearsden 7	R	Y	**43**	**48**	**42**	**46.6**	39.6
Bearsden 8	R	Y	38	38	**40**	**40.4**	35.4
Bearsden 9	R	N	27	29	31	33.0	37.6
Bearsden 10	R	N	34	33	31	35.6	37.7
Bearsden 13	R	Y	37	39	38	**43.7**	**43.2**
Bearsden 14	R	Y	39	38	39	**43.5**	**43.8**
Bearsden 15	R	Y	34	**40**	38	39.8	**42.1**
Bearsden 16	R	Y	**40**	**46**	**40**	**45.5**	**40.8**
Bearsden 16B	R	Y	**41**	**45**	39	**46.0**	**46.3**
Bearsden 16C	R	Y	39	**43**	**40**	**48.3**	**44.2**
Bearsden 17	R	Y	/	/	/	**42.2**	38.6
Bearsden 18	R	Y	/	/	/	38.6	35.3

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2007	2008	2009 (Bias Adjustment Factor = 1.20)	2010* (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.17)
Bishopbriggs 5	UB	N	14	15	21	17.1	18.1
Bishopbriggs 6	R	Y	37	37	36	**42.7**	37.6
Bishopbriggs 8	UB	N	15	17	21	22.2	19.1
Bishopbriggs 12	R	Y	34	**40**	**40**	**46.0**	**40.5**
Bishopbriggs 13	R	Y	**51**	**51**	**47**	**52.1**	**47.0**
Bishopbriggs 14	R	Y	30	31	33	34.4	34.4
Bishopbriggs 14B	R	Y	32	33	37	38.1	32.8
Bishopbriggs 14C	R	Y	29	32	33	38.2	35.9
Bishopbriggs 16	R	Y	/	/	/	31.5	34.3
Bishopbriggs 17	R	Y	/	/	/	37.8	37.3
Kirkintilloch 15	R	N	35	32	**44**	38.5	34.5
Kirkintilloch 16	R	N	38	33	**48**	37.1	**40.8**
Kirkintilloch 17	R	N	/	36	**44**	**42.9**	**41.1**
Kirkintilloch 17B	R	N	/	35	**41**	**42.5**	**42.7**
Kirkintilloch 17C	R	N	/	34	**42**	**41.8**	39.5
Kirkintilloch 18	R	N	/	/	/	36.4*	32.6

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2007	2008	2009 (Bias Adjustment Factor = 1.20)	2010* (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.17)
Milngavie 4	R	N	26	29	30	31.5	33.5
Milngavie 5	R	N	24	26	25	30.3	29.9
Milngavie 6	R	N	**40**	**42**	36	**41.0**	**41.2**
Milngavie 7	R	N	/	/	34	**40.2**	**40.5**
Milngavie 8	R	N	/	/	27	30.3	28.3
Milngavie 9	R	N	/	/	28	33.6	30.4

Figure 2.2 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites

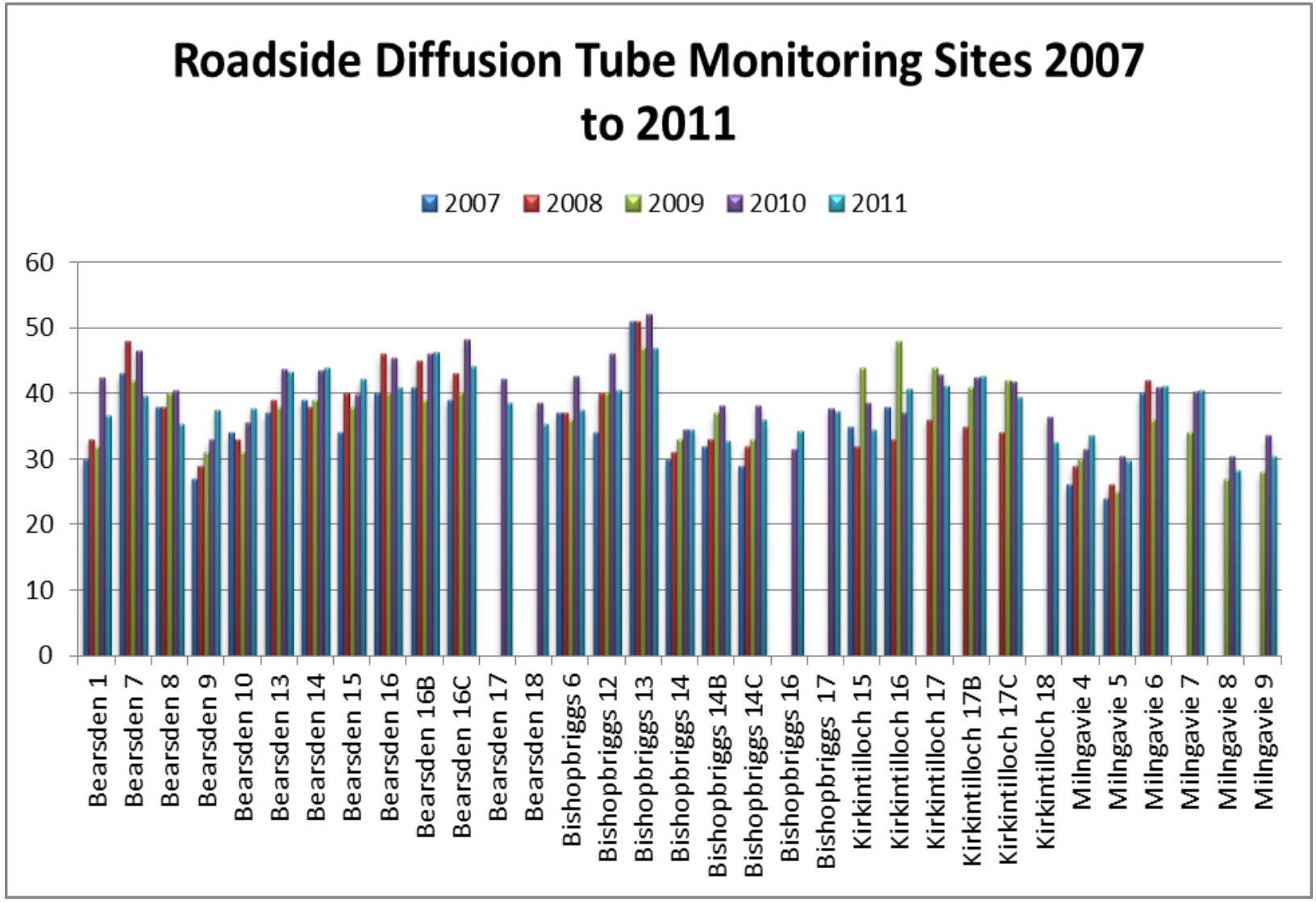
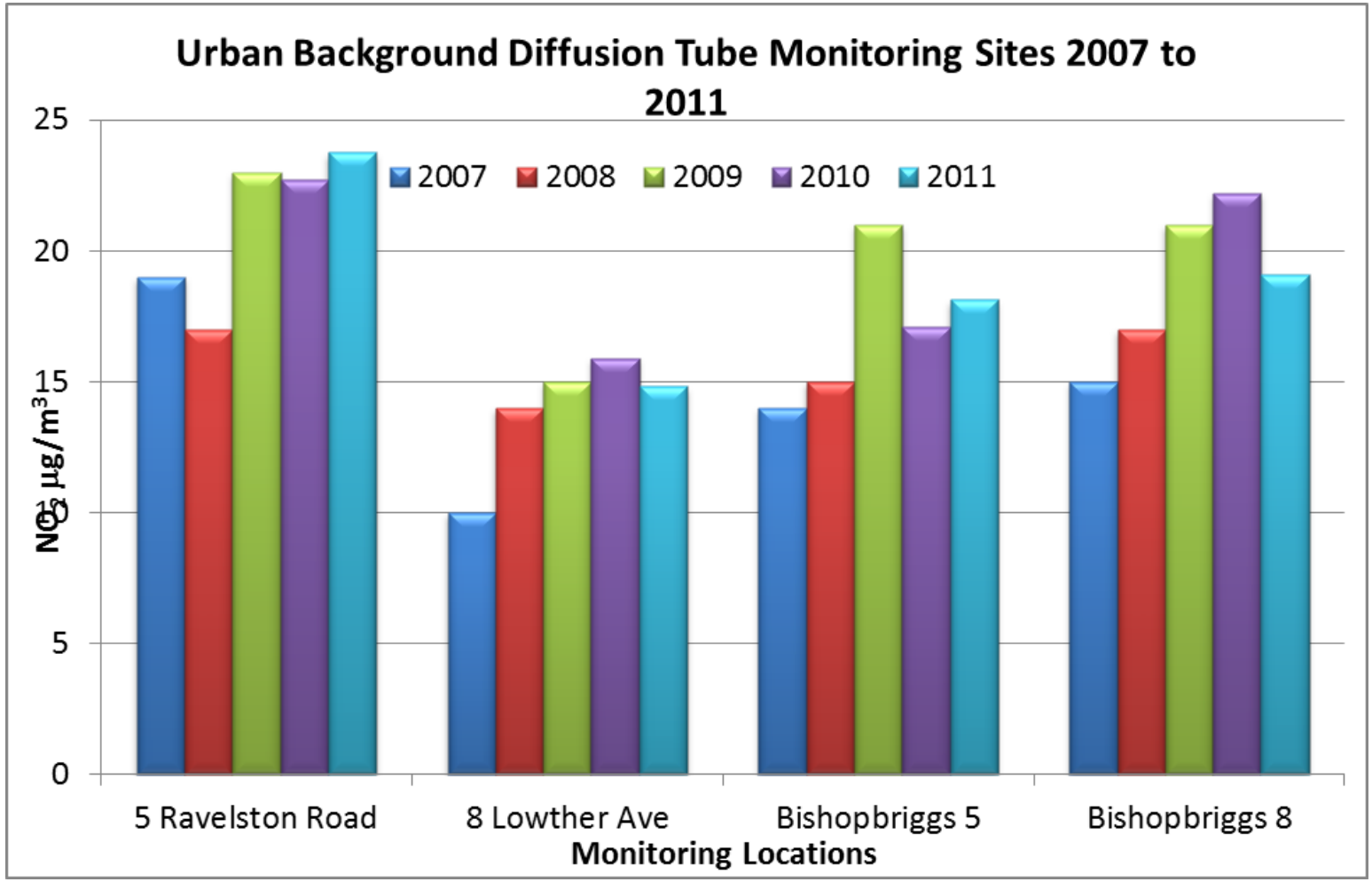


Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Urban Background Diffusion Tube Monitoring Sites



Measured concentrations at all locations, appear to show an upward trend in annual mean concentrations from 2007 to 2011.

There were a total of nine diffusion tubes sites, not within existing AQMA's where the measured annual mean concentrations were in excess of the objective. A detailed assessment of Kirkintilloch is already underway.

Measured concentrations at diffusion tubes located within the Bearsden AQMA also contnue to be above the annual mean NO_2 objective.

Measured concentrations at diffusion tubes Bishopbriggs 12 and 13 were also above the annual mean NO_2 objective.

Measured concentrations at Milngavie 6 and 7 continue to be above the annual mean objective for NO_2.

Urban background monitoring sites continue to show an upward trend in measured annual mean concentrations from 2007 to 2011.

2.2.2 PM_{10}

The measured annual mean and 24-hour mean PM_{10} concentrations for 2011 and previous years are presented in Tables 2.7 and 2.8 respectively. Measured and predicted exceedences of NAQS objectives are highlighted in bold. The data capture rate of all the PM_{10} analysers was good, with greater than 90% capture rate at Bearden, Bishopbriggs and Kirkintilloch. Milngavie was only operation from August 2011 and had 99% data capture for that period, equivalent to 37% for the whole year.

Table 2.7 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

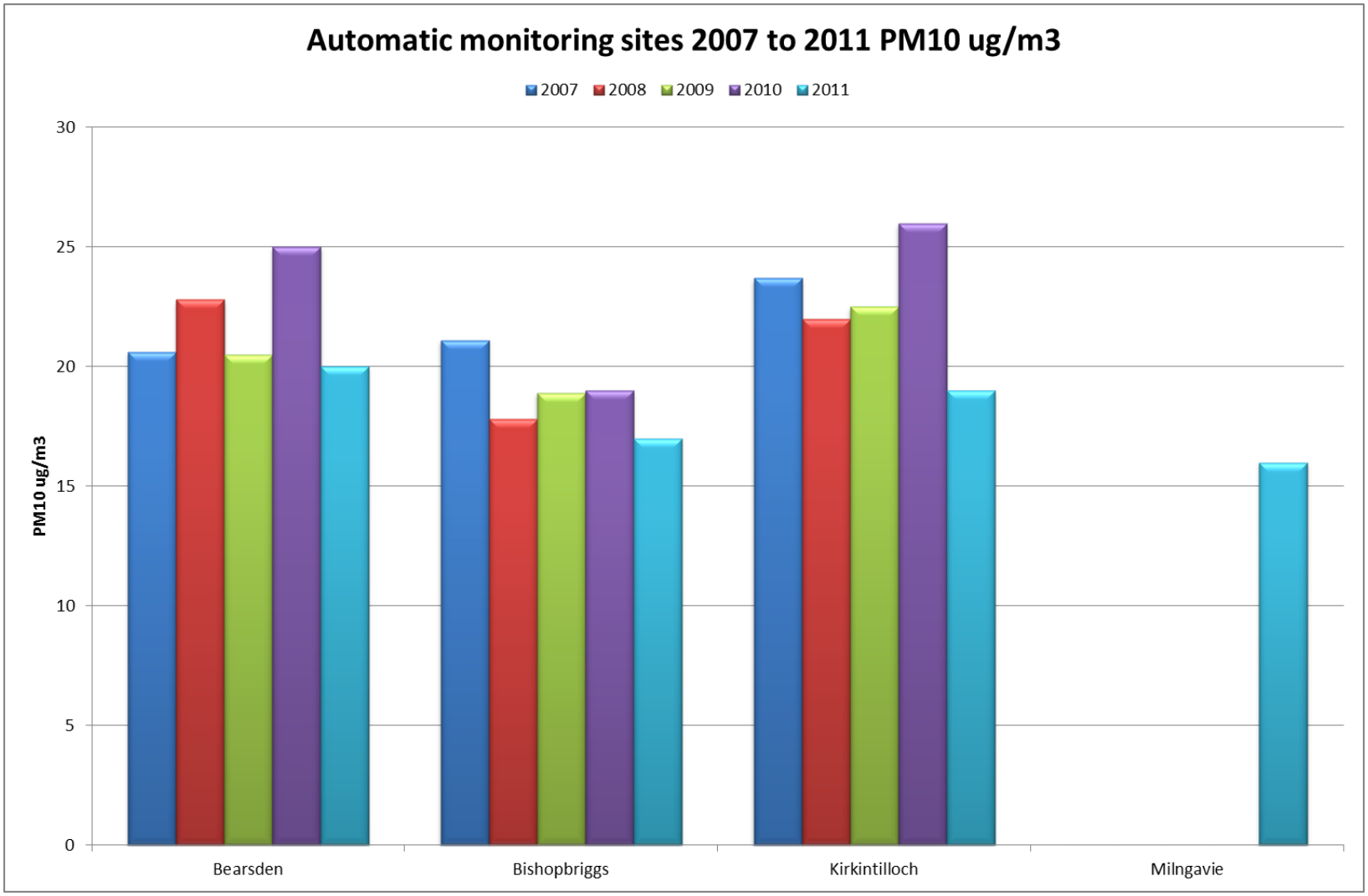
Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2007*[c]	2008* [c]	2009* [c]	2010* [c]	2011 [c]
Bearsden	Roadside	Y	97.1	97.1	Y	**20.6**	**22.8**	**20.5**	**25**	**20**
Bishopbriggs (BAM)	Roadside	Y	96.0	96.0	Y	**21.1**	17.8	**18.9**	**19**	17
Kirkintilloch	Roadside	N	91.4	91.4	Y	**23.7**	**22.0**	**22.5**	**26**	**19**
Milngavie	Roadside	N	99	37	Y	N/A	N/A	N/A	N/A	16*

***** Data has been annualised due to monitoring period

Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2007*	2008*	2009*	2010*	2011
Bearsden	Roadside	Y	97.1	97.1	Y	3	5	5	**20**	3
Bishopbriggs (BAM)	Roadside	Y	96.0	96.0	Y	6	4	5	**11**	2
Kirkintilloch	Roadside	N	91.4	91.4	Y	3	6	**15**	**21**	6
Milngavie	Roadside	N	99	37	Y	N/A	N/A	N/A	N/A	1 (36)

Figure 2.4Trends in Annual Mean PM_{10} Concentrations



The measured annual mean PM_{10} concentrations during 2011 indicate that PM_{10} concentrations at Kirkintilloch and Bearsden Cross monitoring sites were above the annual mean objective.

Elevated levels of PM_{10} measured at Kirkintilloch have continued throughout 2011 with 6 exceedences of the daily mean objective.

2.2.3 Sulphur Dioxide

East Dunbartonshire Council does not currently monitor SO2. 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 AQS Objectives

Measured concentrations of NO_2 continued to exceed the annual mean objective at the automatic monitoring site in Kirkintilloch. The hourly mean objectives were not exceeded at any of the automatic monitoring sites.

There were six diffusion tube locations, outwith an AQMA, where the measured annual mean concentration were above the objective. However, four of these diffusion tubes are located in Kirkintilloch where the Council is currently undertaking a Detailed Assessment of NO_2 and PM_{10}. The other two diffusion tube sites which were in excess of the annual mean objective are located in Milngavie. It is the Council's intention to wait until they have a full year of data from the automatic monitoring site before making a decision on whether to proceed to a Detailed Assesssment.

Measured PM_{10} 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 5 $\mu g/m^3$, while a decrease of 7 $\mu g/m^3$ 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.

East Dunbartonshire Council has examined the results from monitoring in the district. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

The Council Roads Services Department 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 2009 Updating and Screening Assessment.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

East Dunbartonshire Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

East Dunbartonshire Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

East Dunbartonshire Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

East Dunbartonshire Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Kirkintilloch Relief Road was completed in November 2010. This road is being considered by the council in the Kirkintilloch Detailed Assessment which is currently being undertaken.

East Dunbartonshire Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

East Dunbartonshire Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

East Dunbartonshire Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

There have been no newly identified emissions from rail, shipping or aircraft operations within the Council area since the 2011 Progress Report.

4.1 Airports

East Dunbartonshire Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

East Dunbartonhire Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

The Edinburgh to Glasgow line, which has a large number of diesel locomotives, passes through Bishopbriggs. Although there is relevant exposure within 30m at some locations, the background annual mean NO_2 concentration is not greater than 25 µg/m^3 and therefore there is no requirement to proceed to a Detailed Assessment.

East Dunbartonshire Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

East Dunbartonshire Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

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.

East Dunbartonshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

East Dunbartonshire confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

East Dunbartonshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the East Dunbartonshire Council area.

5.3 Petrol Stations

East Dunbartonshire Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

East Dunbartonshire Council confirms that there are no poultry farms meeting the specified criteria.

6 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.

6.1 Biomass Combustion – Individual Installations

East Dunbartonshire Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

East Dunbartonshire Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The Council was granted £350,000 for investment in Energy Efficiency Measures in 2011, which include free cavity wall and a loft insulation programme.

The bulk of Council housing stock now have energy efficient gas central heating boilers.

The majority of urban areas within EDC are smoke control areas however there has been an increase in the number of residents expressing an interest in installing wood burning stoves.

East Dunbartonshire Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 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.

East Dunbartonshire Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Measured concentrations of NO_2 continued to exceed the annual mean objective at the automatic monitoring site in Kirkintilloch. The hourly mean objectives were not exceeded at any of the automatic monitoring sites.

There were 6 diffusion tube locations, outwith an AQMA, where the measured annual mean concentration was above the objective. However, four of these sites are within the current study area of the Kirkintilloch Detailed Assessment which the Council has undertaken. The other two diffusion tube sites which were in excess of the annual mean objective are located in Milngavie. It is the Council's intention to wait until they have a full year of data from the automatic monitoring site before making a decision on whether to proceed to a Detailed Assesssment.

Measured concentrations of PM_{10} continue to exceed 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 5 $\mu g/m^3$, while a decrease of 7 $\mu g/m^3$ was recorded at Kirkintilloch, between 2010 to 2011.

8.2 Conclusions from Assessment of Sources

No new sources were identified for which there was a need to proceed to a Detailed Assessment

8.3 Proposed Actions

The next LAQM requirement for the Council will be to submit a Detailed Assessment of NO_2 and PM_{10} at Kirkintilloch.

Appendices

Appendix A: QA/QC Data

Appendix B: Figures

Appendix A: QA:QC Data

Factor from Local Co-location Studies (if available)

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 AEA 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
Marylebone Road Intercomparison	11	G	**0.86**
West Dunbartonshire Council	12	G	**0.77**
West Dunbartonshire Council	11	G	**0.82**
Glasgow City Council	9	G	**1.11**
Glasgow City Council	12	P	**0.95**
Glasgow City Council	12	S	**1.01**
East Ayrshire Copuncil	12	P	**1.13**
Overall factor from Glasgow Scientific Services co-location studies			**0.94**

*Diffusion_Tube_Bias_Factors-v03_12

Factor from Local Co-location Studies (if available)

The results for the three co-location studies carried out by East Dunbartonshire Council are presented in Table B2.

Site Name	Study duration	Tube precision	Bias correction Factor
Bearsden automatic analyser	13	Good	1.02
Kirkintilloch automatic analyser	12	Good	1.17
Factor from Bearsden and Kirkintilloch co-location studies			1.1

Due to issues with data capture at Bishopbriggs it was felt more appropriate to only use the results of Bearsden and Kirkintilloch to calculate the local bias correction factor.

Discussion of Choice of Factor to Use

The Council have chosen to use the local bias adjustment factor. The laboratory bias adjustment factor is mainly made up of results from monitoring undertaken by Glasgow City Council. Three of the co-location studies had poor precisions whilst both of the Council's studies showed good precision. It was felt that using the local adjustment factor was more appropriate as historically the local bias factor hass always been used. This factor is slightly higher so will provide a worst case of the NO_2 concentrations within the Council area.

PM Monitoring Adjustment

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

- Beta-attenuation monitor (BAM);
- Tapered Element Oscillating Microbalance (TEOM) with a Filter Dynamics Measurement System(FDMS); and
- Partisol gravimetric analyser.

The beta attenuation analysers are maintained by Horiba and undergo regular calibration. The TEOM (FDMS) is maintained by Air Monitors Ltd. The gravimetric analyser was provided by Casella ETI and the filters are analysed by Glasgow Scientific Services which is a UKAS accredited laboratory.

The beta-attenuation monitors (BAMs) used by East Dunbartonshire Council have a heated inlet which has been found to cause evaporation of some semi-volatile particles thereby reducing the measured PM_{10} concentration. All data have been provided ratified and gravimetric equivalent by 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.

Short-term to Long-term Data adjustment

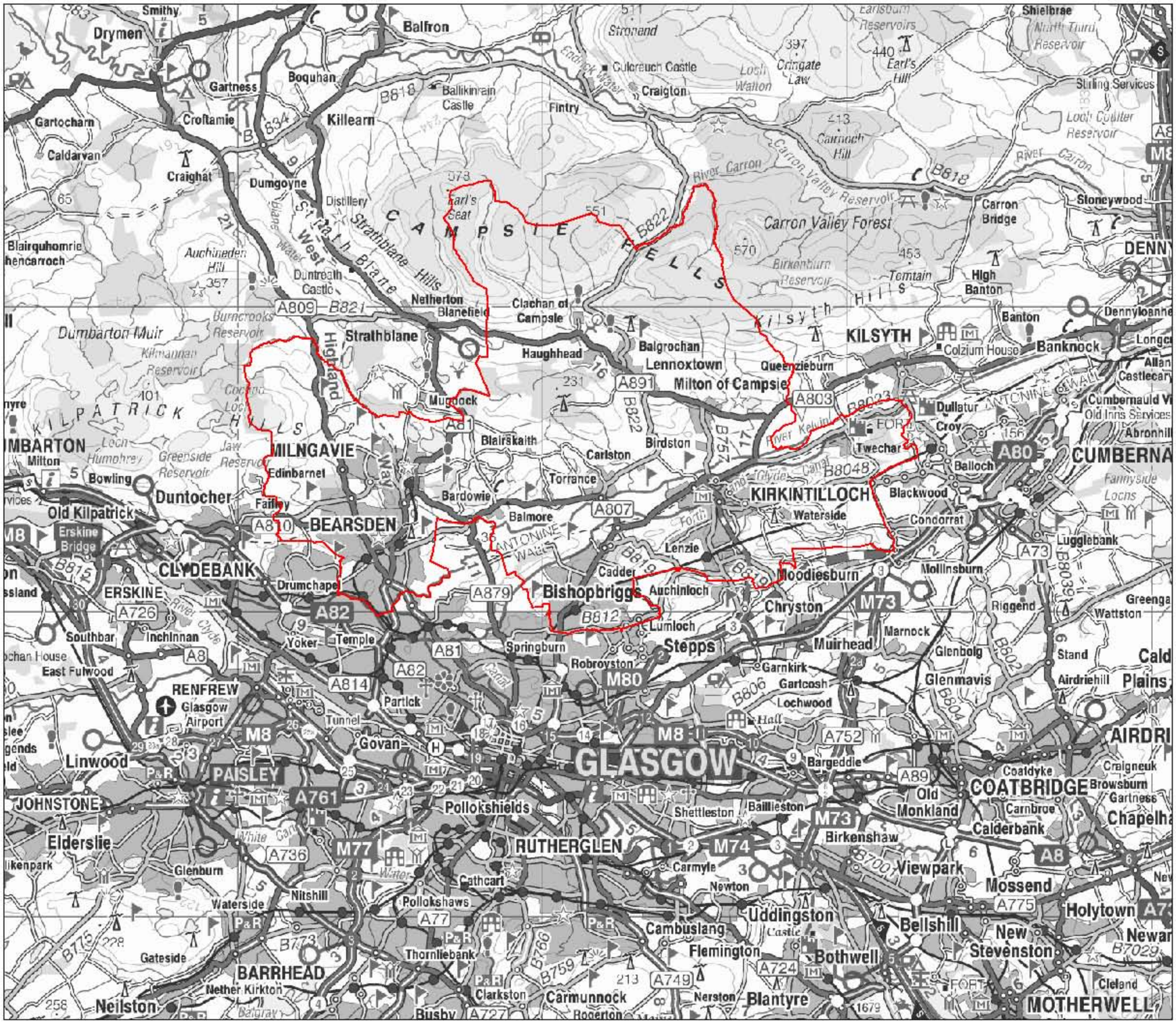
East Dunbartonshire Council has not undertaken any short-term monitoring of pollutants which require adjustment to calculate long-term mean concentrations.

QA/QC of automatic monitoring

Quality Assurance/Quality Control (QA/QC) audits are carried out by AEA Technology Ltd twice a year at all three sites.

Short-term to Long-term Data adjustment

Appendix B: Figures



LEGEND

East Dunbartonshire Council Boundary

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Project
Updating and Screening Assessment 2012

Title
Council Area

Created by	Project Manager	Reviewer	Date
JS	BS		July 2011

File No.	Project No.
	10514880039

Size	Scale	Status
		Final Issue

Drawing No.
Figure 1

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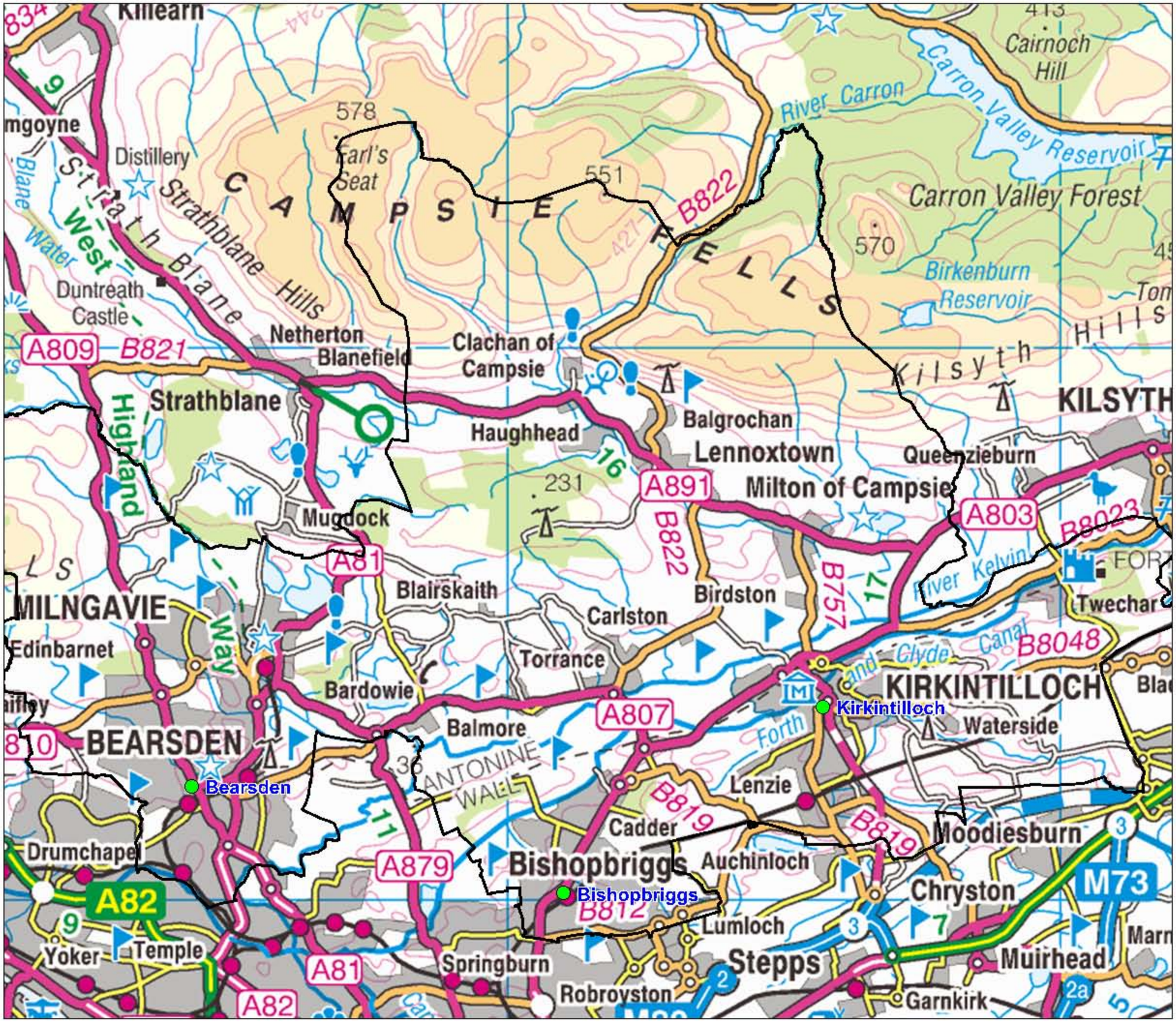

LEGEND

East Dunbartonshire Council Boundary

Client: East Dunbartonshire Council

Project: Updating and Screening Assessment 2012

Title: Automatic Monitoring Locations

Created by	Project Manager	Reviewer	Date
JS	BS		Aug 2012

File No.

Project No.: 1051488048

Size | Scale | Status: Final Issue

Drawing No.

Figure 2

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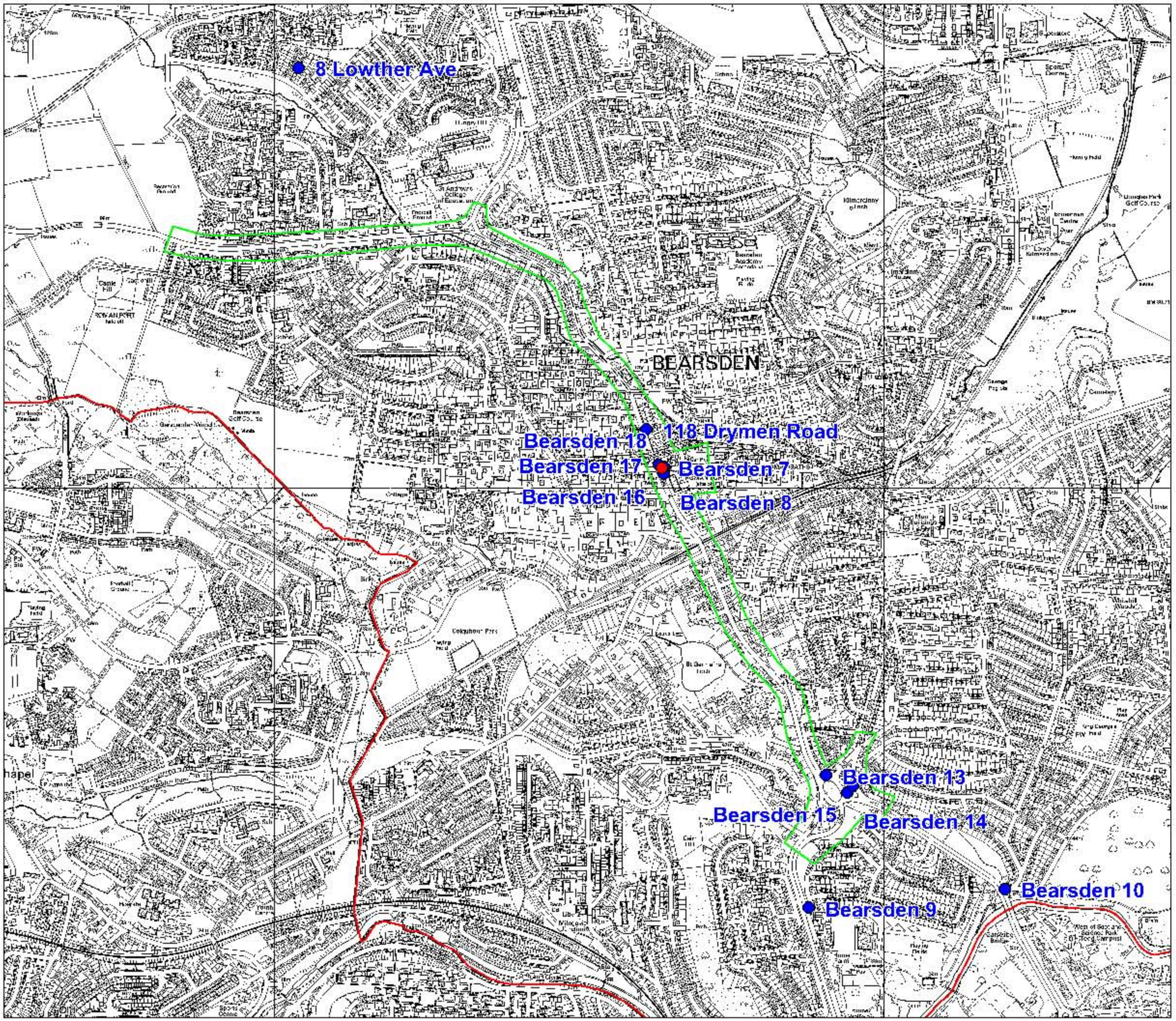

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East Dunbartonshire Council Boundary

Bearsden AQMA Boundary

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Project: Updating and Screening Assessment 2012

Title: **Bearsden AQMA**

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File No.	Project No.
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Drawing No.: **Figure 3**

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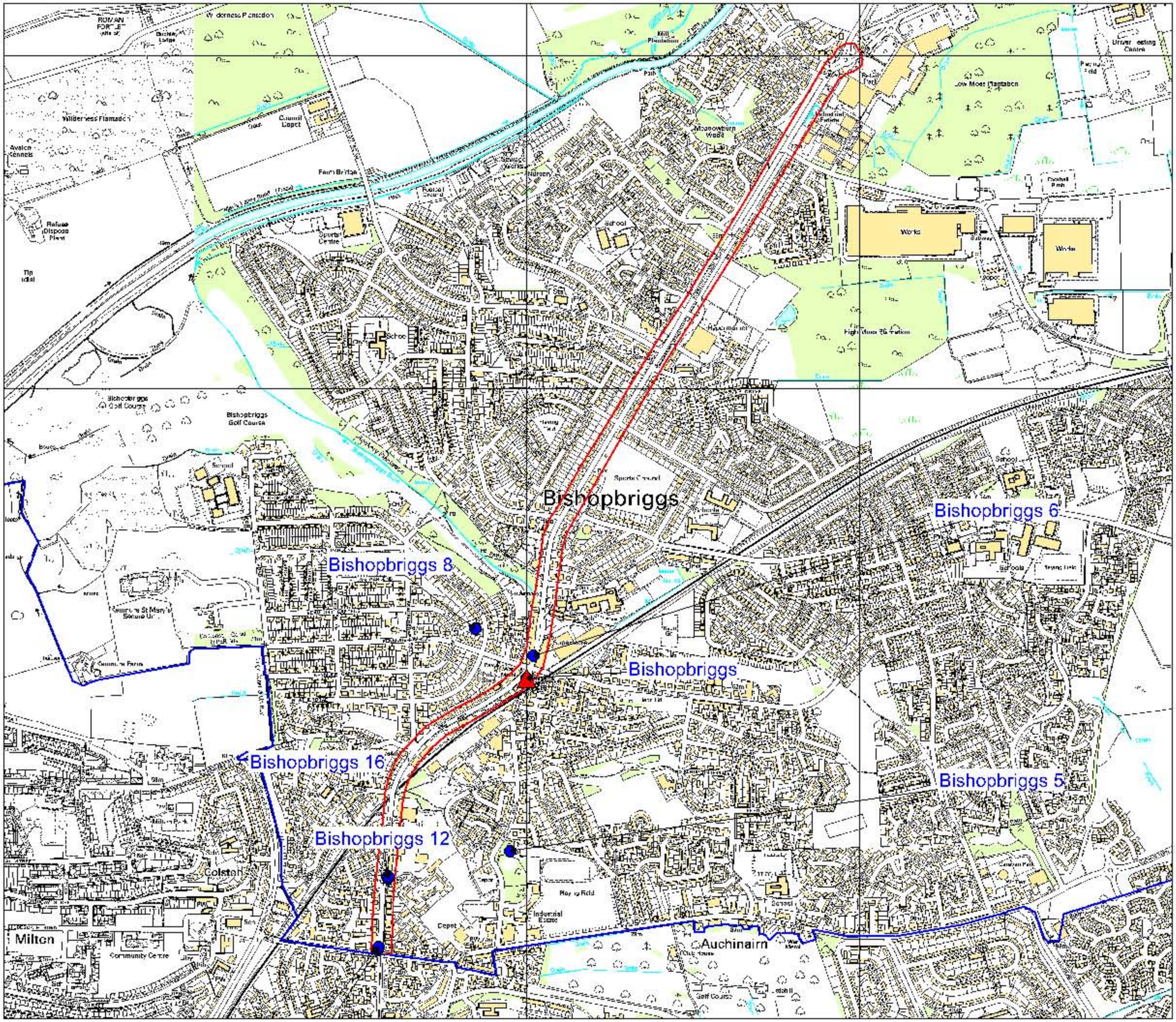

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East Dunbartonshire Council Boundary

Bishopbriggs AQMA Boundary

Automatic Monitor

Diffusion Tube Monitoring

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Title: **Monitoring Locations Bishopbriggs**

Created by	Project Manager	Reviewer	Date
JS	BS		Sept 2012

File No.	Project No.
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Size	Scale	Status
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Drawing No.: **Figure 4**

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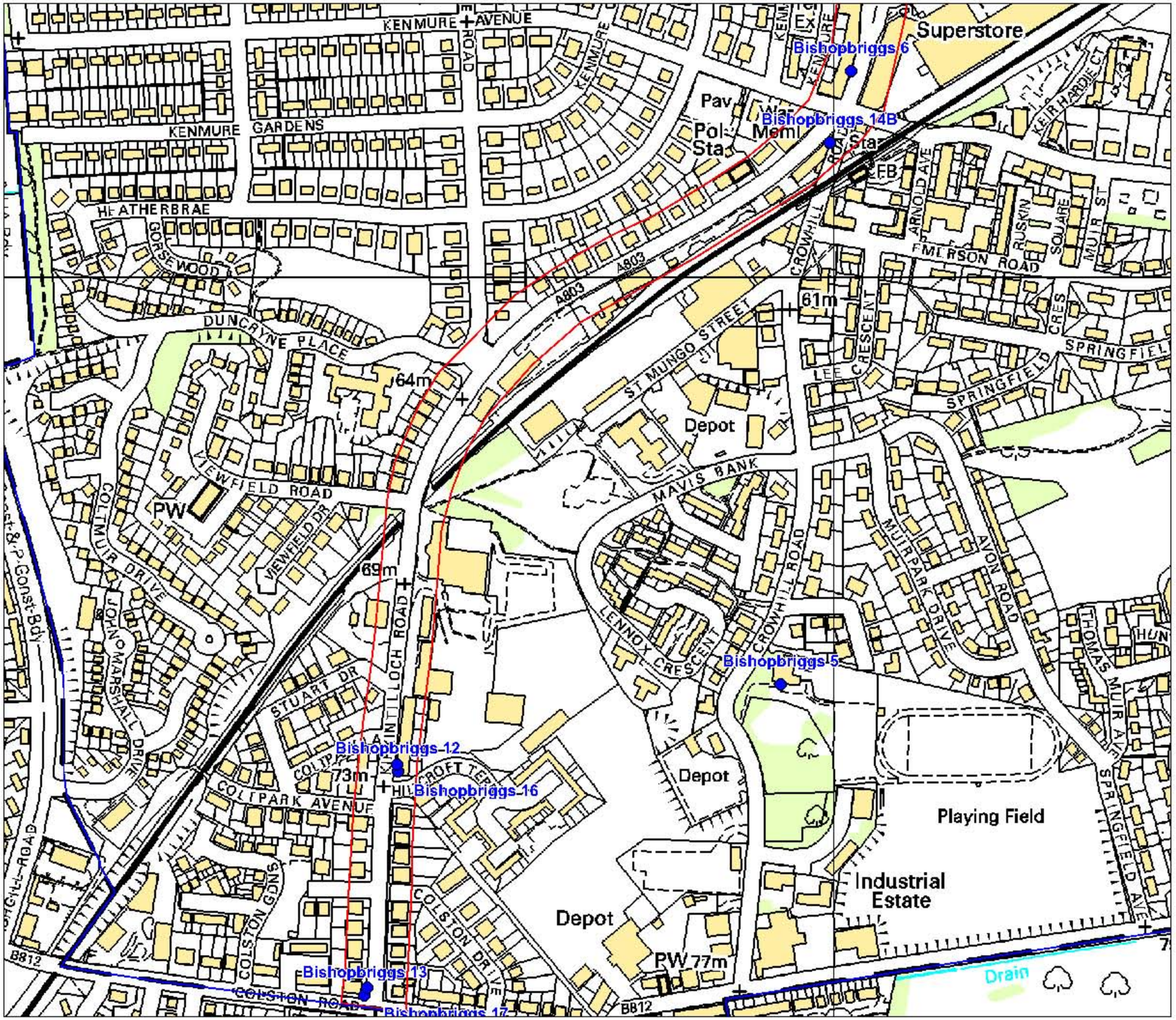

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Project	Updating and Screening Assessment 2012
Title	Diffusion Tubes in Bishopbriggs
Created by: JS	Project Manager: BS
Reviewer	Date: Aug 2012
File No.: XXXXX	Project No.: 10514880048
Size	Scale
Status: Draft Issue	
Drawing No.	**Figure 5**

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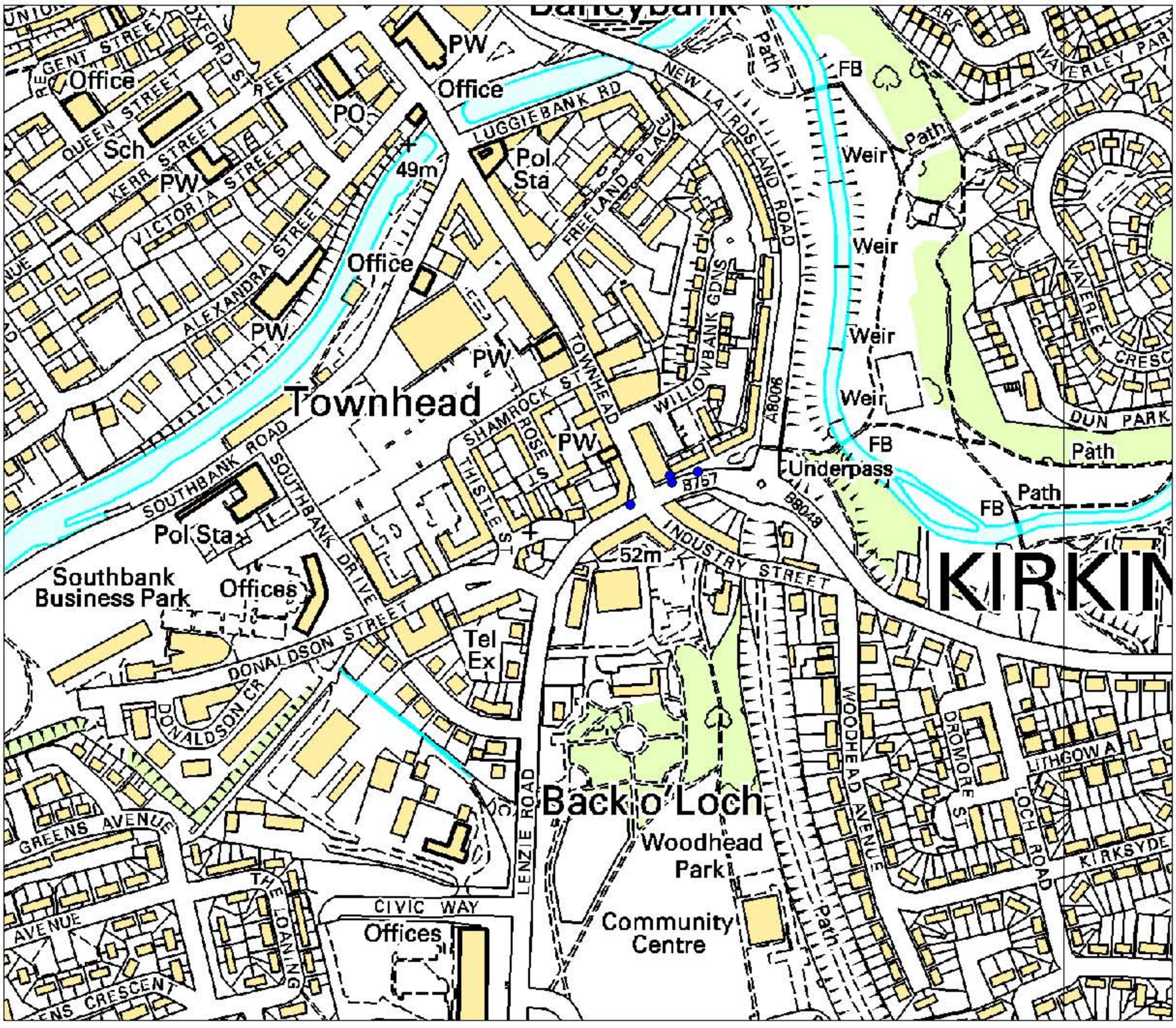

LEGEND

Diffusion Tube Locations

Council Boundary

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Project: Updating and Screening Assessment 2012

Title: **Diffusion Tube Locations Kirkintilloch**

Created by	Project Manager	Reviewer	Date
JS	BS		Sept 2012

File No.	Project No.
	10514880039

Size	Scale	Status
		Draft Issue

Drawing No.: **Figure 6**

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