2014 Air Quality Progress Report for West Dunbartonshire Council

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

April 2104

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Executive Summary

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. It represents West Dunbartonshire Council's latest Progress Report. Results from monitoring in the Council area are presented and any potentially significant sources of air pollution are identified. The Progress Report evaluates those changes since the last assessment which could lead to the risk of an air quality objective being exceeded.

Monitoring carried out in the area during 2013 has not identified any exceedences of Nitrogen Dioxide (NO_2) objectives. Due to equipment failure it is not possible to provide an update with regard to the PM_{10} levels in the Council area during 2013.

The Progress Report has not identified any significant changes in emission sources within the Council area. There have been no new relevant industrial installations and no new or substantially altered roads within the Council area. There are no new significant commercial, domestic or fugitive sources of emissions.

The main findings of the 2014 Progress Report are summarised below.

Nitrogen Dioxide (NO_2)

Real Time Monitoring

West Dunbartonshire Council has two automatic monitoring stations. The location of these units has not changed since the 2012 Update and Screening Assessment.

1. **Dumbarton Roadside**

This unit was affiliated into the national network (AURN) during 2010.

The ratified data from Ricardo-AEA confirms an annual mean of 19µg/m^3. There were 4 exceedences of the hourly mean.

2. West Dunbartonshire, Clydebank (Kilbowie Roundabout).

The ratified data from Ricardo-AEA confirms an annual mean of 25µg/m^3 for 2013. There were 14 exceedences of the hourly mean.

NO_2 Diffusion Tubes

There were 24 NO_2 diffusion tubes (excluding co-located triplicates) at various sites within the West Dunbartonshire Council area during 2013.
During that time one of these tubes – Milton 1 - breached the National Air Quality Objective for NO_2. This exceedence is fully discussed further on in this report.
No other diffusion tube breached the National Air Quality Objective for NO_2.

West Dunbartonshire Council concludes that there is no need to proceed to Detailed Assessment in respect of Nitrogen Dioxide.

PM_{10}

The TEOM/FDMS located at West Dunbartonshire Clydebank became non-operational in early 2012. It was unable to be repaired and was switched off.
West Dunbartonshire Council is therefore unable to report on PM_{10} levels in its area during 2013.

Conclusion

National Air Quality Objectives were not exceeded in 2013 in the West Dunbartonshire Council area. There is therefore no need to proceed to Detailed Assessment for any objective.
West Dunbartonshire Council will complete a further report on local air quality in 2015.

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1 Introduction

1.1 Description of Local Authority Area

West Dunbartonshire Council is the 4th smallest Scottish Council in terms of land area covering 17,792 hectares. Population is mid placed in the table of 32 Councils at approximately 96,000 in 43,000 households.

The Authority comprises two main areas:
Clydebank situated on the north of the River Clyde. Almost half the population of West Dunbartonshire Council lives in the Clydebank area giving it a population density level similar to large cities;
Dumbarton and the Vale of Leven are less densely populated areas extending along the banks of the River Leven to Loch Lomond.

The dominant landscape is moorland alongside rolling farmlands and rugged hills and ridges. West Dunbartonshire is widely recognised as containing some of the finest lowland countryside in Scotland. Although West Dunbartonshire is not a particularly agricultural area, a high proportion of the area is classed as open countryside. Contrastingly the level of urban development is significantly higher than the Scottish average. The area has the highest proportion of fresh water in Scotland, much of it of very high quality.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 LAQM process.

They 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 μg/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 µg/m^3	Running annual mean	31.12.2003
	3.25 µg/m^3	Running annual mean	31.12.2011
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2011
	18 µg/m^3	Annual mean	31.12.2011
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Report	Date	Outcome
Stage 1	1999	Proceed to Stage 2
Stage 2	2002	Continue monitoring until 2003 and report further
Update And Screening Assessment	2003	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2004	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2005	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Update And Screening Assessment	2006	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2007	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2008	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Update And Screening Assessment	2009	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2010	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2011	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment

Update and Screening Assessment	2012	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment
Progress Report	2013	National Air Quality Objectives continued to be met therefore no need to proceed to detailed assessment

No exceedences of National Air Quality Objectives were identified during previous rounds of review and assessment in the West Dunbartonshire Council area.
West Dunbartonshire Council has not declared an Air Quality Management Area.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

West Dunbartonshire Council has two automatic monitoring stations. Their location remains unchanged since the 2013 Progress Report. Location maps are included as Appendices B & C. Details of the automatic monitoring stations are provided in table 2.1.

1. **West Dunbartonshire, Glasgow Road.**

This unit, which contains a real time Casella ML2041 NOx analyser, has been located here since April 2007. This is an AURN site.

2. **West Dunbartonshire, Clydebank**

This unit houses a real time chemiluminescent Horiba NOx analyser. This unit is located at Kilbowie Roundabout which is the busiest junction in the West Dunbartonshire Council area. This unit has been located here since February 2007.

Details of QA/QC procedures for both automatic monitors are included as Appendix A in this report

Figure 2.1 Map(s) of Automatic Monitoring Sites (if applicable)

See Appendices B and C.

Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
A1	West Dunbartonshire, Glasgow Road	Roadside	240238	675193	2.0	NOx	N	Chemiluminescent ML2014	Y*(2.5)	5.0	N
A2	West Dunbartonshire, Clydebank	Roadside	249723	672044	2.0	NOx	N	Chemiluminescent Analyser	N(18)	4.5	N

* This unit sits 5m back from kerb due to location difficulties. Nearest relevant exposure are residential properties 2.5 metres from kerb

2.1.2 Non-Automatic Monitoring Sites

West Dunbartonshire Council had 24 NO_2 diffusion tubes distributed throughout the Council area during 2013 (excluding co-located triplicates).This is unchanged since the 2013 Progress Report . Details of the diffusion tube locations are provided in Table 2.2.

NO_2 tubes are supplied and analysed by Glasgow Scientific Services (GSS).
The tube preparation method used by GSS is 20% triethanolamine (TEA) in water.
The tubes are used in accordance with the report “Diffusion Tube for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users: Report to DEFRA and the Devolved Administrations: ED48673043: Issue 1a: February 2008.

Full QA/QC procedures for GSS are included in Appendix A. GSS participates in the Workplace Analysis Scheme.

Bias Adjustment Factor and Co-location Exercise

All NO_2 diffusion tube results have been bias adjusted using the 2013 factor of 0.99 obtained from the Review and Assessment website. A co-location exercise was undertaken at the West Dunbartonshire, Clydebank automatic monitoring site. Details are discussed further in Appendix A.

Figure 2.2 Map(s) of Non-Automatic Monitoring Sites (if applicable)

See Appendices D, E and F.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
T1	Clydebank 1	Roadside	248479	671115	2.5	NO_2	N	N	Y	4m	Y
T2	Clydebank 6	Kerbside	249725	672069	2.5	NO_2	N	N	N(40)	1m	Y
T3	Dumbarton 1	Roadside	240322	675177	2.5	NO_2	N	N	N (2.5)	1m	Y
T4	Dumbarton 11	Roadside	240515	675078	2.5	NO_2	N	N	N (4)	1m	Y
T5	Balloch 1	Kerbside	238584	681562	2.5	NO_2	N	N	N	12m	Y
T6	Alexandria 1	Kerbside	239024	680206	2.5	NO_2	N	N	N(5)	1m	Y
T7	Briar Drive, Triplicate 1	Roadside	249723	672044	2.5	NO_2	N	Y	N(18)	4.5m	N
T8	Briar Drive, Triplicate 2	Roadside	249723	672044	2.5	NO_2	N	Y	N(18)	4.5m	N

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
T9	Briar Drive, Triplicate 3	Roadside	249723	672044	2.5	NO_2	N	Y	N(18)	4.5m	N
T10	Dumbarton, Triplicate 1	Roadside	240238	675193	2.5	NO_2	N	Y	N(2.5)	5m	N
T11	Dumbarton, Triplicate 2	Roadside	240238	675193	2.5	NO_2	N	Y	N(2.5)	5m	N
T12	Dumbarton, Triplicate 3	Roadside	240238	675193	2.5	NO_2	N	Y	N(2.5)	5m	N
T13	Milton 1	Kerbside	242266	674235	2.5	NO_2	N	N	N (12)	1m	Y
T14	Milton 2	Roadside	242160	674299	2.5	NO_2	N	N	N (2m)	12m	N
T15	Glasgow Rd, Dumbarton 2	Roadside	240178	675228	2.5	NO_2	N	N	N (8)	1m	Y
T16	Glasgow Rd, Dumbarton 3	Roadside	240279	675196	2.5	NO_2	N	N	N (4.5)	1m	Y
T17	Clydebank 7	Roadside	249913	669865	2.5	NO_2	N	N	N (4)	1m	Y

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
T18	Clydebank 9	Kerbside	248899	670784	2.5	NO_2	N	N	N (3)	1m	Y
T19	Clydebank 10	Kerbside	249759	671845	2.5	NO_2	N	N	N (8.5)	1m	Y
T20	Clydebank 11	Roadside	249801	672288	2.5	NO_2	N	N	N (22)	1m	Y
T21	Clydebank 12	Kerbside	249747	671665	2.5	NO_2	N	N	N (10)	1m	Y
T22	Clydebank 13	Kerbside	249762	671790	2.5	NO_2	N	N	N (8.5)	1m	Y
T23	Clydebank 14	Kerbside	249872	671854	2.5	NO_2	N	N	N (>25)	1m	N
T24	Clydebank 15	Kerbside	249746	671966	2.5	NO_2	N	N	N (8.5)	1m	Y
T25	Clydebank 16	Kerbside	249967	672548	2.5	NO_2	N	N	N (10)	1m	Y
T26	Clydebank 17	Kerbside	249987	672440	2.5	NO_2	N	N	N (11)	1m	Y
T27	Clydebank 18	Kerbside	249972	672351	2.5	NO_2	N	N	N (12)	1m	Y

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
T28	Vale of Leven 3	Roadside	240115	677146	2.5	NO_2	N	N	N(>25)	4m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

West Dunbartonshire Council monitoring results have shown that there was no exceedence of the National Air Quality Objectives for NO_2 during 2013. There appears to be no discernable trend in NO_2 levels in either the automatic monitors or the diffusion tube network results. See results and trend graphs below.

2.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

West Dunbartonshire Council has two automatic NOx monitoring stations. During 2013 they were located as detailed below. Neither station breached the National Air Quality Objectives for NO_2.

West Dunbartonshire, Glasgow Road.
This unit contains a real time Casella ML 2041NOx analyser and has been at this location since April 2007. The unit is located 5 metres from the kerbside. This unit is an AURN site.
The ratified data from Ricardo-AEA indicates that the annual average NO_2 level for 2013 was 19µg/m^3.
There were 4 exceedences of the hourly mean objective during 2013.
The nearest receptors are residential properties located 2.5m from the roadside. The NO_2 Distance Calculator on the R&A web site was used to predict the NO_2 levels at the nearest receptors which are 2.5 metres closer to the roadside than the automatic monitor. The calculator predicted NO_2 levels at the façade of the nearest residential property of 20.1µg/m^3.

West Dunbartonshire, Clydebank (Kilbowie Roundabout)

This unit houses a real time chemiluminescent NOx analyser. It has been located there since February 2007. Kilbowie Roundabout is the busiest junction within the West Dunbartonshire Council area. The unit is located approximately 25 metres from the roundabout and 4.5 metres from the nearest road. The ratified data from Ricardo-AEA indicates that the annual average NO_2 level for 2013 was 25µg/m^3. There were 14 exceedences of the hourly mean objective during 2013. The nearest receptors are residential properties located just under 20 metres from the nearest road.

Details of the results from the automatic monitoring stations are shown in Tables 2.3 and 2.4.

Table 2.3 Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2013 % [b]	Annual Mean Concentration (µg/m^3)				
					2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
A1	Roadside	N	98	98	26	26	21	24	19
A2	Roadside	N	89.9	89.9	23	27	19	22.9[c]	25

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Figure 2.3 Trends in Annual Mean NO_2 Concentrations Measured at Automatic Monitoring Sites

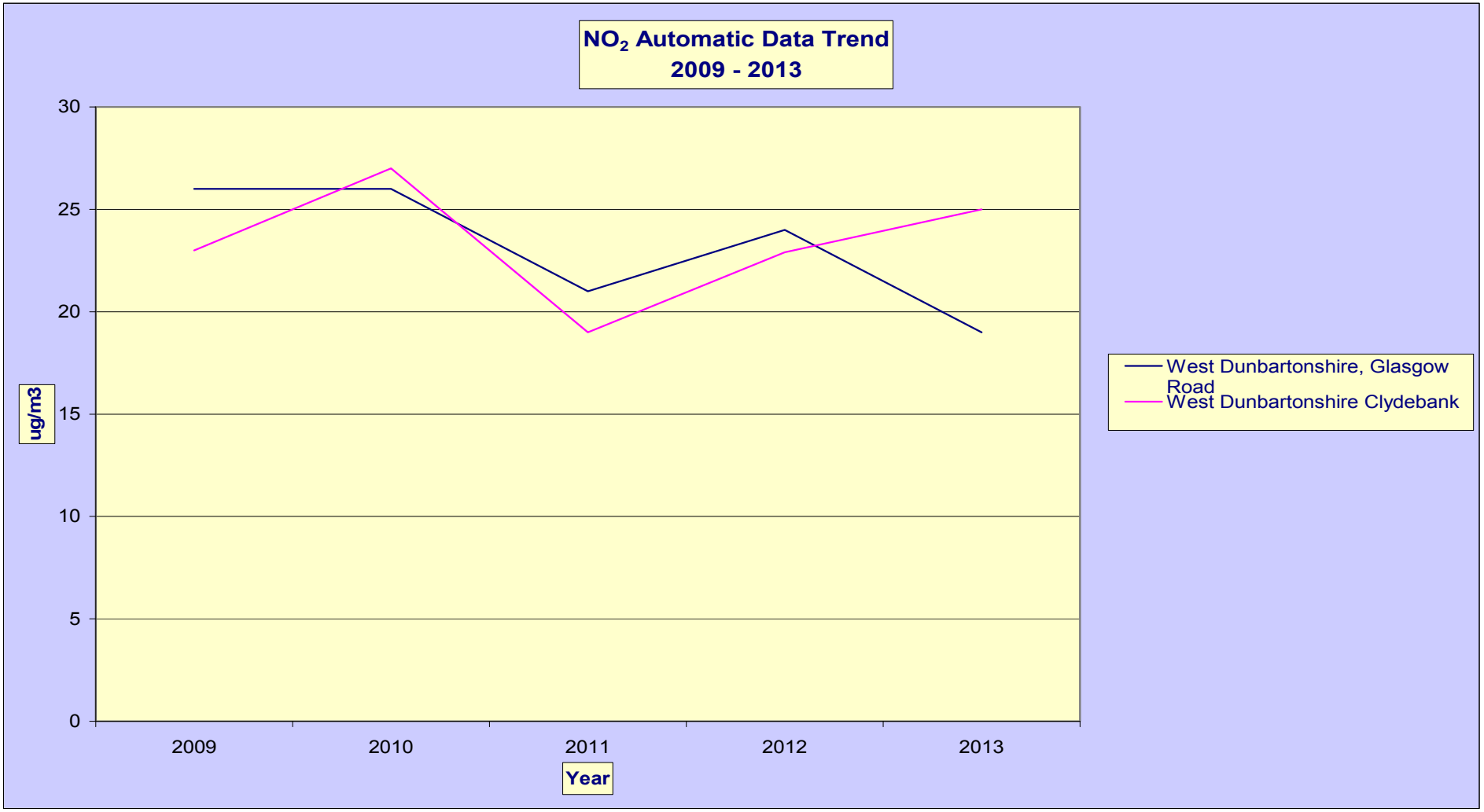


Table 2.4 Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2013 % [b]	Number of Hourly Means > 200µg/m^3				
					2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
A1	Roadside	N	98	98	0	0	0	0	4
A2	Roadside	N	89.9	89.9	0	0	0	0	14(189)

In bold, exceedence of the NO_2 hourly mean AQS objective (200µg/m^3 – not to be exceeded more than 18 times per year)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] If the data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets

* Number of exceedences for previous years is optional

Diffusion Tube Monitoring Data

West Dunbartonshire Council monitored NO_2 using diffusion tubes at 24 locations (excluding co-located triplicates) throughout the Council area during 2013.

All results have been bias adjusted using a factor of 0.99 based on information from the Review and Assessment website and are shown in Tables 2.5 and 2.6.

One of the monitored locations – Milton 1 - was found to exceed the National Air Quality Objective for NO_2. This result is discussed below.

Milton 1 – bias adjusted annual average of 54.8µg/m3.

This tube is located at the Dumbuck traffic light junction on the A82. The A82 is the main trunk road access to the West of Scotland and is the busiest road within the Council area. It is not possible to locate an automatic monitor at the location as there is no suitable site.
The nearest receptors are residential properties located approximately 12 metres back from the kerb. An additional diffusion tube was placed in the front garden of one of the houses approximately 5 metres from the front façade to obtain data regarding NO_2 levels at the residences. The tube, designated Milton 2, has been at this site since 2008. The 2013 bias adjusted annual mean for Milton 2 was 25.7µg/m^3.
The NO_2 Distance Calculator from the Air Quality Archive web site was used to predict NO_2 levels at the residences based on the results of Milton 1 diffusion tube. The calculator predicted the NO_2 levels at the residences to be 26.2µg/m^3 which although slightly higher than the Milton 2 diffusion tube result remains well within the National Air Quality Objective for NO_2. There is therefore no need to proceed to Detailed Assessment at this location

Table 2.5 Results of NO_2 Diffusion Tubes 2013

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.99 [b]
T1	Clydebank 1	Roadside	N	N	12	32.9
T2	Clydebank 6	Kerbside	N	N	12	35.9
T3	Dumbarton 1	Roadside	N	N	12	29.2
T4	Dumbarton 11	Roadside	N	N	12	29.2
T5	Balloch 1	Kerbside	N	N	12	24
T6	Alexandria 1	Kerbside	N	N	12	26.6
T7	Briar Drive, Triplicate 1	Roadside	N	Triplicate and co-located	12	24.6
T8	Briar Drive, Triplicate 2	Roadside	N	Triplicate and co-located	12	22.9
T9	Briar Drive, Triplicate 3	Roadside	N	Triplicate and co-located	12	23.2
T10	Dumbarton, Triplicate 1	Roadside	N	Triplicate and co-located	12	20.3
T11	Dumbarton, Triplicate 2	Roadside	N	Triplicate and co-located	12	20.5
T12	Dumbarton, Triplicate 3	Roadside	N	Triplicate and co-located	12	20.9
T13	**Milton 1**	**Kerbside**	**N**	**N**	**12**	**54.8**

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.99 [b]
T14	Milton 2	Roadside	N	N	11	25.7
T15	Glasgow Rd, Dumbarton 2	Roadside	N	N	12	32
T16	Glasgow Rd, Dumbarton 3	Roadside	N	N	12	31.3
T17	Clydebank 7	Roadside	N	N	12	30
T18	Clydebank 9	Kerbside	N	N	11	25.8
T19	Clydebank 10	Kerbside	N	N	11	28.9
T20	Clydebank 11	Roadside	N	N	12	22.9
T21	Clydebank 12	Kerbside	N	N	12	25
T22	Clydebank 13	Kerbside	N	N	12	27.3
T23	Clydebank 14	Kerbside	N	N	12	15.9
T24	Clydebank 15	Kerbside	N	N	12	28
T25	Clydebank 16	Kerbside	N	N	12	25.8
T26	Clydebank 17	Kerbside	N	N	12	23.5

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.99 [b]
T27	Clydebank 18	Kerbside	N	N	12	26.1
T28	Vale of Leven 3	Roadside	N	N	12	24.8
T29	Vale of Leven 4	Kerbside	N	N	12	23.3
T30	Dumbarton 12	Kerbside	N	N	12	20.5

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

[a] Means should be "annualised" as in Box 3.2 of TG(09)(http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%

[b] If an exceedence is measured at a monitoring site not representative of public exposure, NO_2 concentration at the nearest relevant exposure should be estimated based on the "NO_2 fall-off with distance" calculator (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=30).

Table 2.6 Results of NO_2 Diffusion Tubes (2009 to 2013)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2009 (Bias Adjustment Factor = 1.23	2010 (Bias Adjustment Factor = 1.1	2011 (Bias Adjustment Factor = 0.94	2012 (Bias Adjustment Factor = 0.95	2013 (Bias Adjustment Factor = 0.99
T1	Roadside	N	38	32	32.8	30.9	32.9
T2	Kerbside	N	42	43	31.9	36.2	35.9
T3	Roadside	N	32	36	26.1	27.9	29.2
T4	Roadside	N	35	36	35.2	33.9	29.2
T5	Kerbside	N	31	30	23.5	24.6	24
T6	Kerbside	N	36	30	29	25.7	26.6
T7	Roadside	N	27	28	20.4	23.9	24.6
T8	Roadside	N	28	26	26.5	25.2	22.9
T9	Roadside	N	29	29	22.9	26.9	23.2
T10	Roadside	N	23	27	22.1	20.3	20.3
T11	Roadside	N	23	25.5	22.3	23.3	20.5
T12	Roadside	N	25	26	22..6	21.1	20.9
T13	**Kerbside**	**N**	**60**	**54**	**51.6**	**51.7**	**54.8**
T14	Roadside	N	30	25	28.8	21.1	25.7
T15	Roadside	N	36	35	31	34.6	32
T16	Roadside	N	39	42	33.3	32.6	31.3
T17	Roadside	N	28	37	30.9	28.9	30

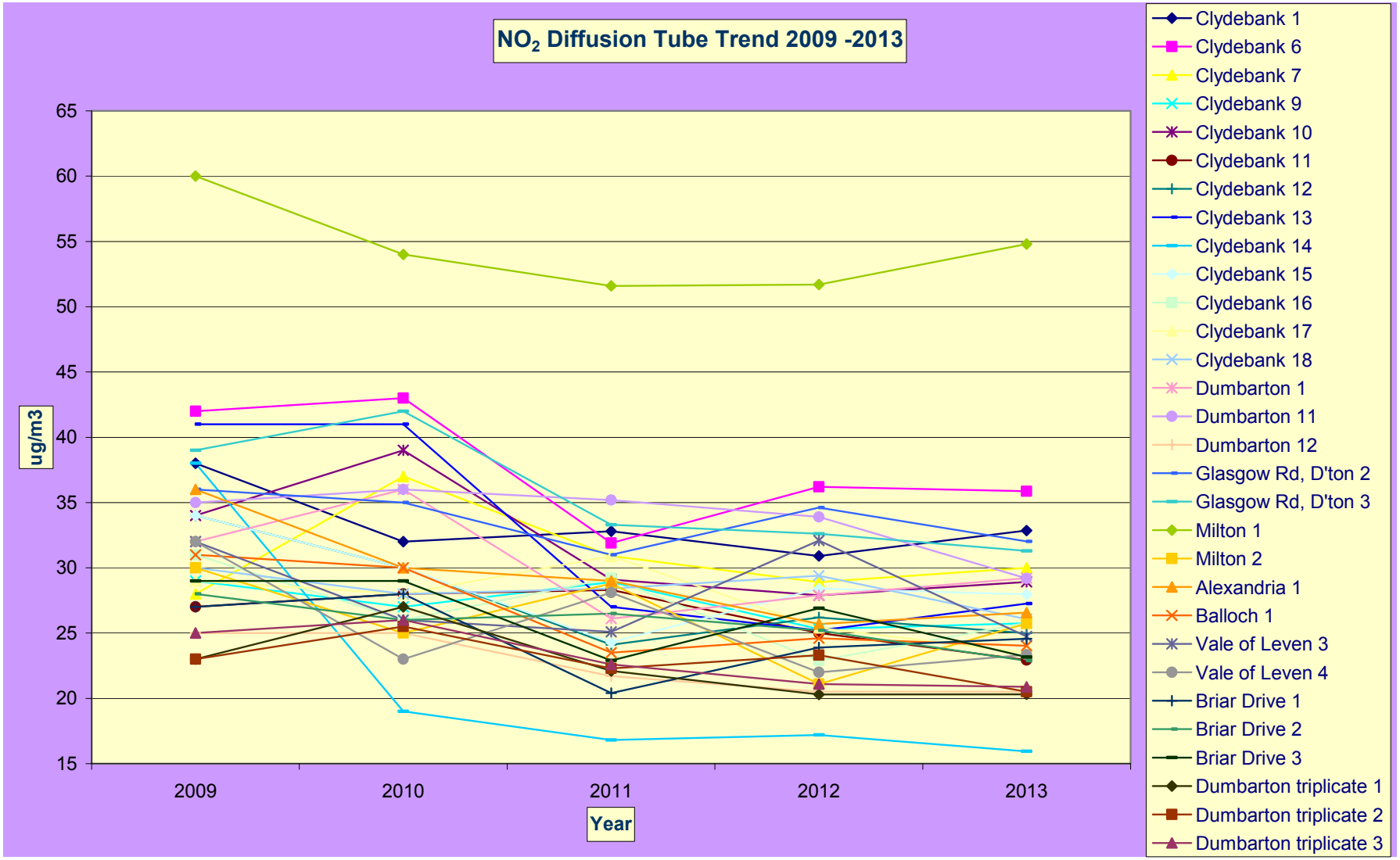
Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2009 (Bias Adjustment Factor = 1.23	2010 (Bias Adjustment Factor = 1.1	2011 (Bias Adjustment Factor = 0.94	2012 (Bias Adjustment Factor = 0.95	2013 (Bias Adjustment Factor = 0.99
T18	Kerbside	N	29	27	28.9	25.3	25.8
T19	Kerbside	N	34	39	29.1	27.9	28.9
T20	Roadside	N	27	28	28.3	25	22.9
T21	Kerbside	N	34	30	24.1	26.2	25
T22	Kerbside	N	41	41	27	25.2	27.3
T23	Kerbside	N	38	19	16.8	17.2	15.9
T24	Kerbside	N	34	30	24.3	28.4	28
T25	Kerbside	N	31	26	29.2	22.9	25.8
T26	Kerbside	N	29	28	30.9	25.4	23.5
T27	Kerbside	N	30	28	28.4	29.4	26.1
T28	Roadside	N	32	26	25.1	23.1	24.8
T29	Kerbside	N	32	23	28.1	22	23.3
T30	Kerbside	N	25	25	21.7	20.5	20.5

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

[a] Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



2.2.2 Particulate Matter (PM_{10})

At the beginning of 2012 the TEOM/FDMS at the site designated West Dunbartonshire, Clydebank began returning faulty data. The problem was reported to the service/maintenance contractor who attended and ordered spare parts. Once installed the new parts did not remedy the fault and despite many visits by the engineers and the installation of replacement parts the unit continued to return faulty data for the rest of the year. The unit was permanently switched off at the beginning of 2013. Funding has been secured to replace this unit.

2.2.3 Sulphur Dioxide (SO_2)

West Dunbartonshire Council does not carry out sulphur dioxide monitoring.

2.2.4 Benzene

West Dunbartonshire Council does not carry out benzene monitoring.

2.2.5 Other Pollutants Monitored

West Dunbartonshire Council does not carry out monitoring for any other pollutant.

2.2.6 Summary of Compliance with AQS Objectives

West Dunbartonshire Council examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

West Dunbartonshire Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

West Dunbartonshire Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local Transport Plans and Strategies

An updated Local Transport Strategy (LTS) has been published by West Dunbartonshire Council and covers the period from 2013 – 2018. It builds upon the previous LTS and is designed to address local problems that have been identified. The LTS is focused upon deliverable and achievable actions in the short to medium term.

West Dunbartonshire Council shares responsibility for transport in the area with a number of other bodies including Transport Scotland and Strathclyde Partnership for Transport. As a result, the Council has a dual role to fulfil by providing for local transport needs within the local authority area whilst also seeking to work in partnership with other bodies to facilitate a strategic transport network that supports its wider role within the transport network of the west of Scotland.
The problems and issues to be addressed in the LTS are summarised in the strategy and were identified through a combination of:

- A review of the previous LTS and transport studies which have been undertaken over recent years;
- Analysis of relevant local, regional and national policy documents; and
- Findings from public and stakeholder consultation exercises.
-

A number of possible interventions have been identified and prioritized in the LTS. These interventions will be funded from the Council's annual capital and revenue budgets whilst additional funding from partners will be sought as necessary. In particular, external funding support will be sought for projects highlighted as being strategic as these have been identified as having wider implications at a regional or national level or affecting a part of the transport network for which West Dunbartonshire Council has no responsibility.

5 Planning Applications

In early 2013 the Environmental Health Section discovered that a biomass boiler was being installed in the new school in Dumbarton. At that time there was very limited information available on what was proposed and what use the biomass boiler would be put to. The boiler has now been installed – the appliance is approved for use in a smoke control area – and will be considered in our next Update And Screening Assessment.

6 Climate Change Strategies

The Council is actively working towards reducing its greenhouse gas emissions and dealing with the impacts of climate change. The recently published Climate Change Strategy outlined the following aims:

- A significant reduction in greenhouse gas emissions from Council operations, and from the Council area as a whole (from homes and business);
- Ensure the Council, and its partners, are better prepared to deal with the current and future impacts/consequences of climate change;
- Identify ongoing activity that contributes to climate change mitigation and adaptation and develop new policy and action to address any gaps in our approach;
- Embed climate change mitigation and adaptation action throughout the organisation to ensure it becomes integral to the operation of the Council;

The Council has also produced a Carbon Management Plan which focuses on reducing carbon emissions from the Council's own activities or other areas over which it has direct control. It outlines a range of projects to reduce carbon emissions, from energy efficiency to alternative fuel vehicles, waste minimisation, and awareness raising and training programmes. This Plan set a target of reducing emissions by one-third by 2015

7. Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

West Dunbartonshire Council has not identified any exceedences of the National Air Quality Objectives in its area during 2013.

7.2 Conclusions relating to New Local Developments

There are no new local developments which have come to light during 2013 which will require to be considered in next years report on local air quality.

7.3 Other Conclusions

None

7.4 Proposed Actions

The monitoring data for 2013 has not identified a need to proceed to Detailed Assessment. There are no proposed changes to the monitoring programme nor is any additional monitoring required.

West Dunbartonshire Council will submit a further report in 2015.

8 References

Local Air Quality Management Technical Guidance (TG09)

The Environment Act 1995

The Air Quality (Scotland) Regulations 2000

The Air Quality (Scotland) (Amendment) Regulations 2002

West Dunbartonshire Council Progress Report 2013

West Dunbartonshire Council Update and Screening Assessment 2012

West Dunbartonshire Council Air Quality Progress Report 2011

West Dunbartonshire Council Air Quality Progress Report 2010

West Dunbartonshire Council Update and Screening Assessment 2009

West Dunbartonshire Council Air Quality Progress Report 2008

West Dunbartonshire Council Air Quality Progress Report 2007

West Dunbartonshire Council Update and Screening Assessment 2006

West Dunbartonshire Council Air Quality Progress Report 2005

West Dunbartonshire Council Air Quality Progress Report 2004

Appendices

Appendix A - QA/QC Data

Appendix B – West Dunbartonshire, Glasgow Road Automatic Monitor location

Appendix C - West Dunbartonshire Clydebank Automatic Monitor location

Appendix D - Clydebank NO_2 Diffusion Tube Locations

Appendix E - Dumbarton NO_2 Diffusion Tube Monitoring Locations

Appendix F - Vale of Leven NO_2 Diffusion Tube Locations

Appendix G - Key for NO_2 diffusion tube monitoring locations

Appendix H - Completed bias spreadsheet used to derive local bias

Appendix I – Ricardo-AEA Pollution Report for Dumbarton Roadside

Appendix J – Ricardo-AEA Pollution Report for West Dunbartonshire, Clydebank

Appendix K - 2013 Monthly NO_2 diffusion tube results

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

All diffusion tubes results have been adjusted using the bias factor of 0.99 obtained from the R&A website (version 03/14).

Factor from Local Co-location Studies (if available)

A local bias adjustment figure based on data from the NOx analyser designated West Dunbartonshire Clydebank and the triplicate co-located NO_2 diffusion tubes were derived using the spreadsheet on the R&A website. The completed spreadsheet will be submitted to the R&A website. A copy of the completed co-location spreadsheet is included as Appendix H.
The locally derived bias adjustment factor for 2013 for West Dunbartonshire Clydebank was 1.02. This is very close to the 0.99 bias for GSS published on the R&A website however the spreadsheet indicates that caution should be used in applying this factor due to poor precision. It was therefore decided to use the bias adjustment factor of 0.99 from the R&A website which has been applied to all 2013 NO_2 tube results.

Discussion of Choice of Factor to Use

As stated above due to the poor precision of the data during 2013 it was decided to use the 0.99 bias factor for GSS published on the R&A website.

QA/QC of Automatic Monitoring

Data from West Dunbartonshire Council automatic monitors is downloaded daily by Bureaveritas (BV). The data is screened, scaled and ratified by Ricardo-AEA and a full report is provided for each calendar year.

Additionally BV carry out an audit of both automatic monitors twice yearly. The Glasgow Road, Dumbarton and the West Dunbartonshire, Clydebank have a comprehensive service contract and are serviced by Enviro Technology Services and Horiba respectively at 6 monthly intervals.

West Dunbartonshire Council staff change filters and carry out manual calibration of the NOx analysers on a fortnightly basis. The calibration data is forwarded to BV for QA/QC purposes.

The West Dunbartonshire, Clydebank unit is remotely checked by West Dunbartonshire Council staff each working day to ensure that data capture is optimal. Since the installation of the Casella unit in Dumbarton, Glasgow Road we are unable to carry out this daily check on that unit as we do not have the required software. We therefore rely on BV informing us of any problems at the unit.

QA/QC of Diffusion Tube Monitoring

West Dunbartonshire Council use Glasgow Scientific Services (GSS) for NO_2 tube analysis. Tubes are provided and analysed by GSS.

The NO_2 tube preparation method used is 20% triethanolamine (TEA) in water. Glasgow Scientific Services were one of the UK laboratories undertaking LAQM activities that has participated in recent WASP NO_2 PT rounds 117 - 124 and the percentage (%) of results submitted which were subsequently determined to be satisfactory based upon a z-score of < ± 2. On enquiry to the lab regarding some of the results the following letter was sent out by GSS to all lab users.

"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).

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.

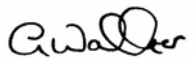
We would not expect the above failure of the spiked QC sample to have an affect on the exposed tubes for the reasons given above.

In addition to the above, the laboratory takes part in a 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-Finalv2.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.



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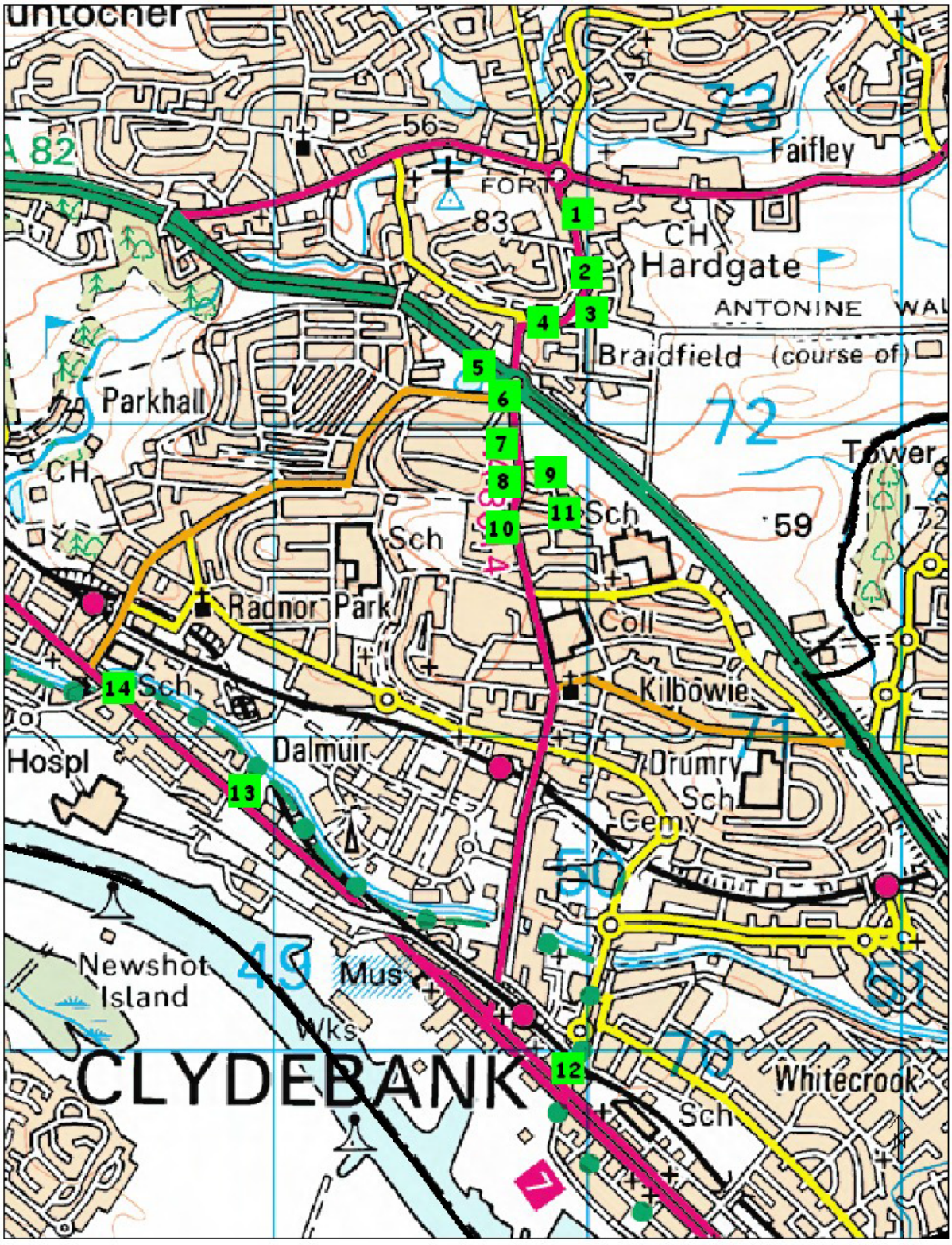
Appendix B – Dumbarton Roadside Automatic Monitor Location (A1)

Appendix C – West Dunbartonshire Clydebank Automatic Monitor Location (A2)

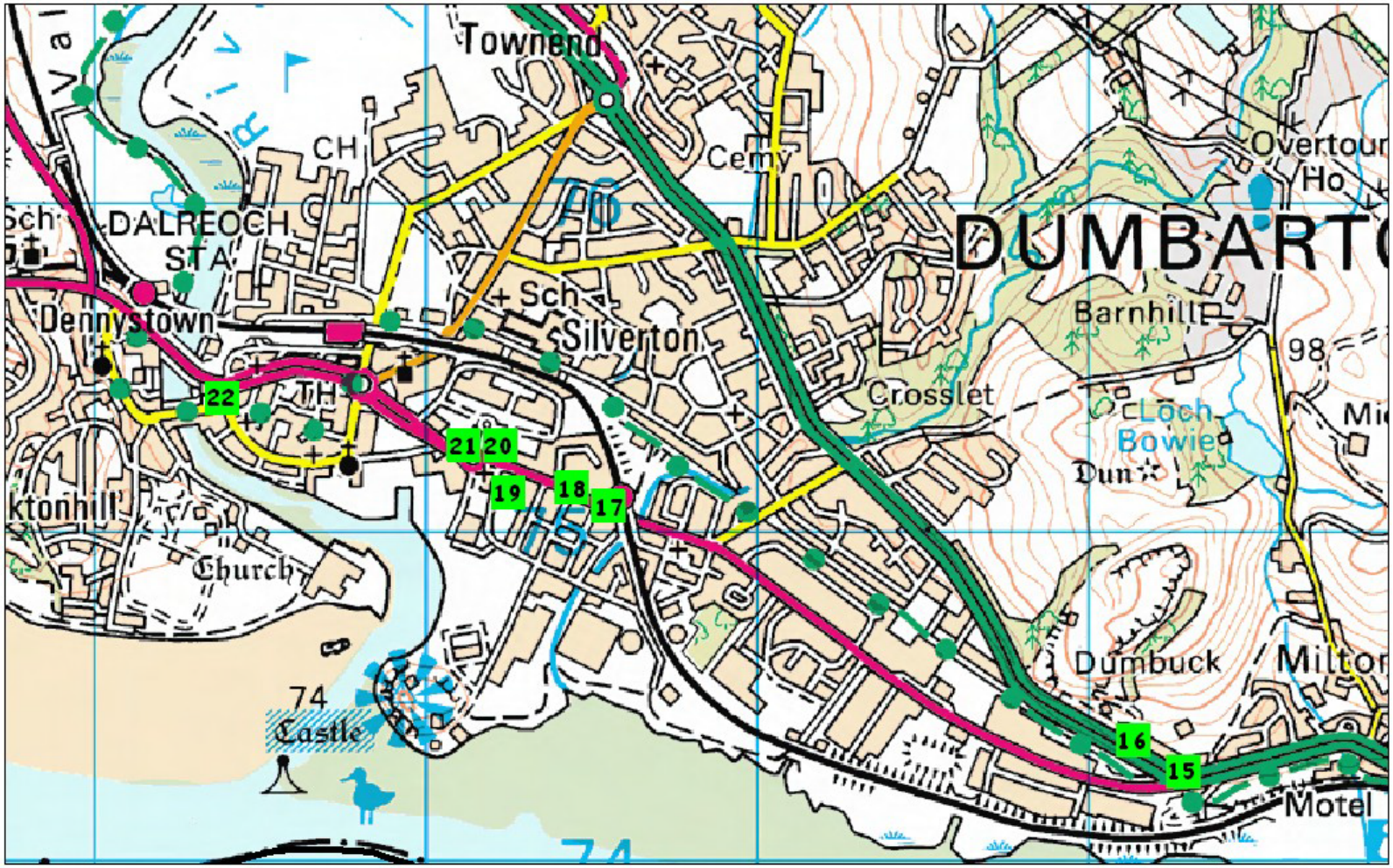
Appendix D – Clydebank NO_2 Diffusion Tube Locations



Title : N02 Map - Clydebank

Map No.
Map Reference : NS4971
Scale : 1:15000
Date : 05/04/2012

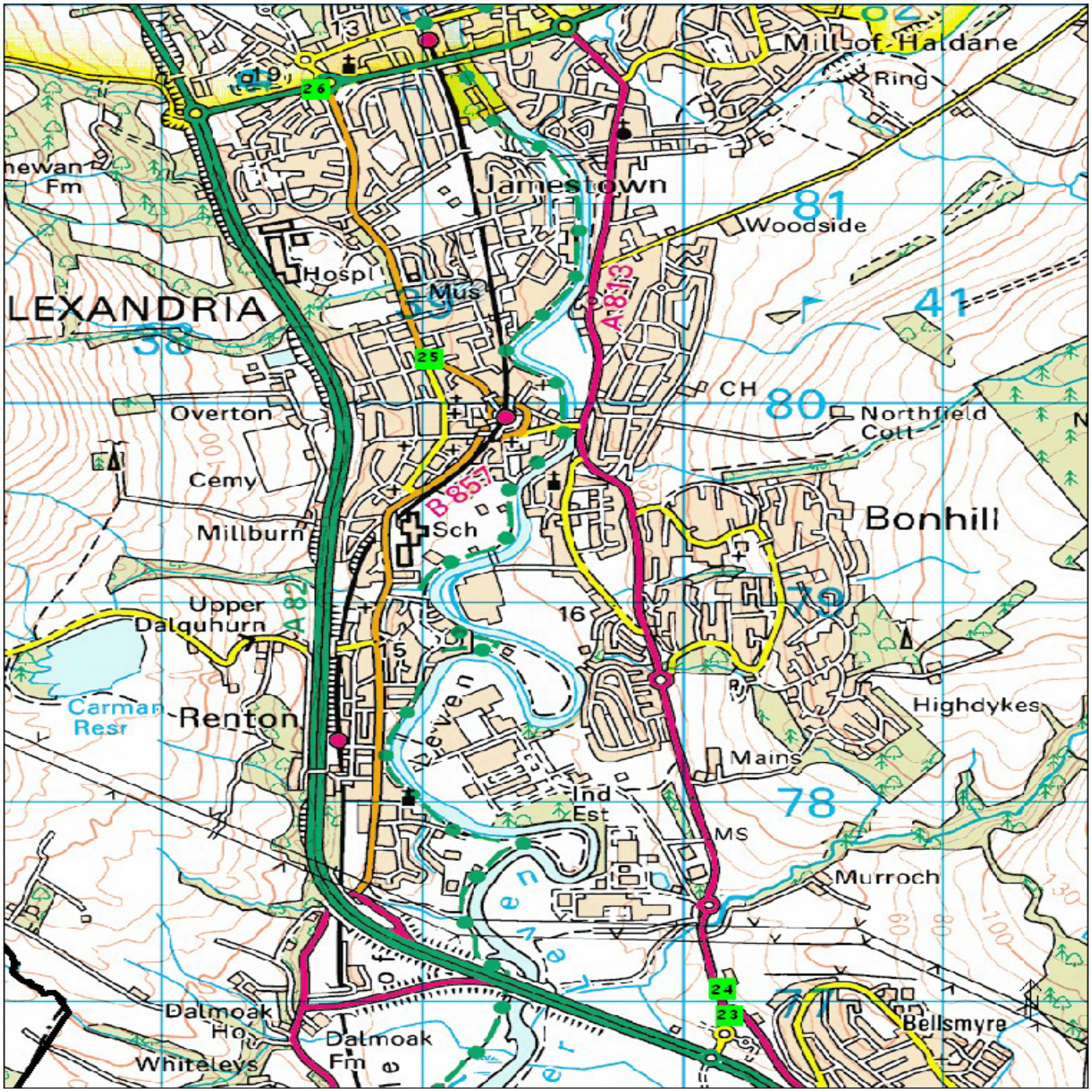
Appendix E – Dumbarton NO_2 Diffusion Tube Monitoring Locations



West Dunbartonshire Council Title: - N02 Map - Dumbarton

Date : 05/04/2012
Scale : 1:15000
Map Reference : NS4075

Appendix F – Vale of Leven NO_2 Diffusion Tube Monitoring Locations



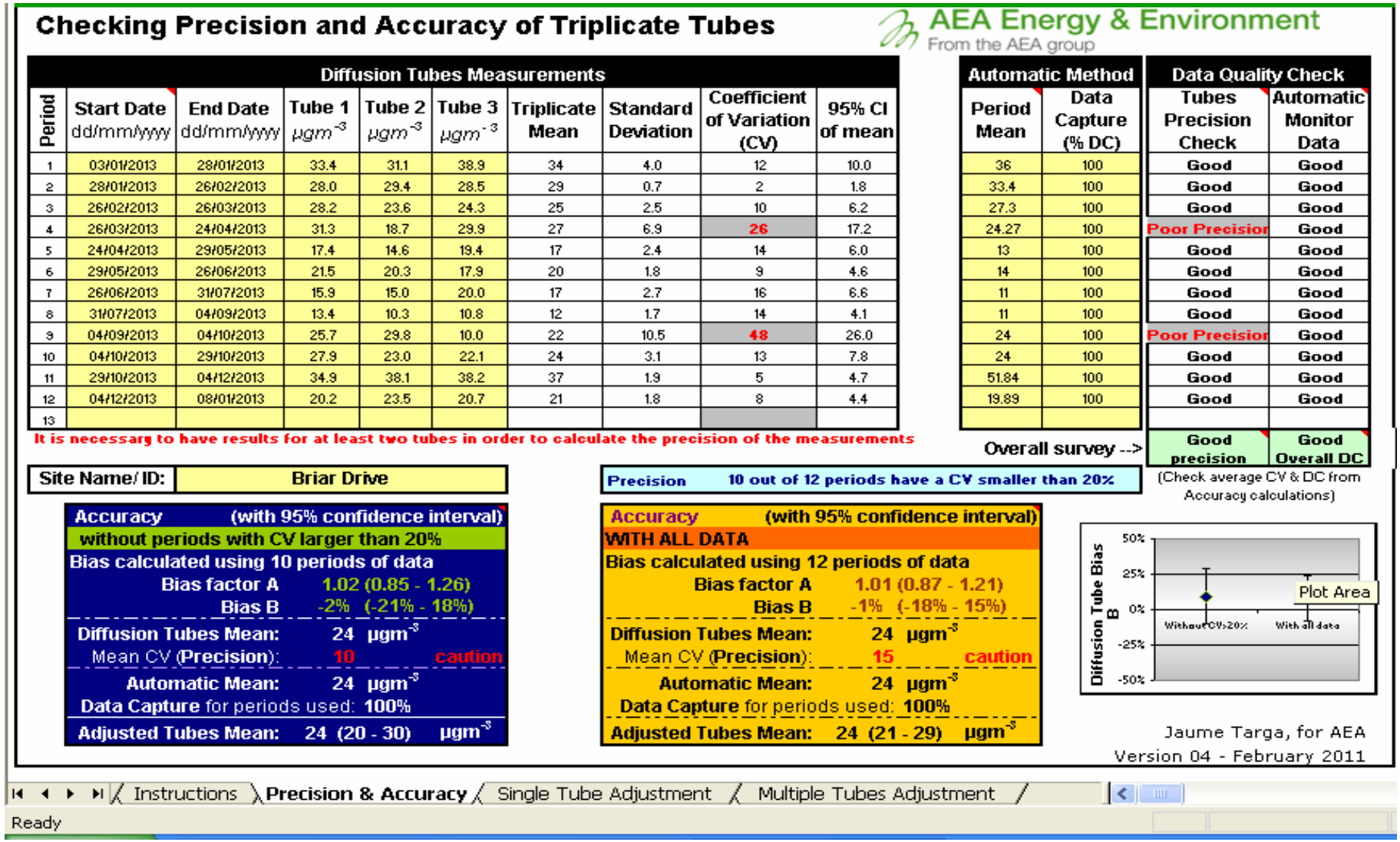
Title : N02 Map - Vale of Leven

Map No.
Map Reference : NS3979
Scale : 1:20672
Date : 05/04/2012

Appendix G - Key for NO_2 diffusion tube monitoring locations

Site ID	Map number	Location
T1	14	Clydebank 1
T2	5	Clydebank 6
T3	21	Dumbarton 1
T4	17	Dumbarton 11
T5	26	Balloch 1
T6	25	Alexandria 1
T7- T9	6	Briar Drive (triplicate)
T10 –T12	19	Dumbarton (triplicate)
T13	15	Milton 1
T14	16	Milton 2
T15	20	Glasgow Road, Dumbarton 2
T16	18	Glasgow Road, Dumbarton 3
T17	12	Clydebank 7
T18	13	Clydebank 9
T19	9	Clydebank 10
T20	4	Clydebank 11
T21	10	Clydebank 12
T22	8	Clydebank 13
T23	11	Clydebank 14
T24	7	Clydebank 15
T25	1	Clydebank 16
T26	2	Clydebank 17
T27	3	Clydebank 18
T28	24	Vale of Leven 3
T29	23	Vale of Leven 4
T30	22	Dumbarton 12

Appendix H - Completed bias spreadsheets used to derive local bias



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	03/01/2013	28/01/2013	33.4	31.1	38.9	34	4.0	12	10.0
2	28/01/2013	26/02/2013	28.0	29.4	28.5	29	0.7	2	1.8
3	26/02/2013	26/03/2013	28.2	23.6	24.3	25	2.5	10	6.2
4	26/03/2013	24/04/2013	31.3	18.7	29.9	27	6.9	26	17.2
5	24/04/2013	29/05/2013	17.4	14.6	19.4	17	2.4	14	6.0
6	29/05/2013	26/06/2013	21.5	20.3	17.9	20	1.8	9	4.6
7	26/06/2013	31/07/2013	15.9	15.0	20.0	17	2.7	16	6.6
8	31/07/2013	04/09/2013	13.4	10.3	10.8	12	1.7	14	4.1
9	04/09/2013	04/10/2013	25.7	29.8	10.0	22	10.5	48	26.0
10	04/10/2013	29/10/2013	27.9	23.0	22.1	24	3.1	13	7.8
11	29/10/2013	04/12/2013	34.9	38.1	38.2	37	1.9	5	4.7
12	04/12/2013	08/01/2013	20.2	23.5	20.7	21	1.8	8	4.4
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
36	100	Good	Good
33.4	100	Good	Good
27.3	100	Good	Good
24.27	100	Poor Precision	Good
13	100	Good	Good
14	100	Good	Good
11	100	Good	Good
11	100	Good	Good
24	100	Poor Precision	Good
24	100	Good	Good
51.84	100	Good	Good
19.89	100	Good	Good
Overall survey -->		Good precision	Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Briar Drive

Precision: 10 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%

Bias calculated using 10 periods of data

Bias factor A	1.02 (0.85 - 1.26)	
Bias B	-2% (-21% - 18%)	
Diffusion Tubes Mean:	24 µgm^{-3}	
Mean CV (Precision):	10	caution
Automatic Mean:	24 µgm^{-3}	
Data Capture for periods used:	100%	
Adjusted Tubes Mean:	24 (20 - 30) µgm^{-3}	

Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 12 periods of data

Bias factor A	1.01 (0.87 - 1.21)	
Bias B	-1% (-18% - 15%)	
Diffusion Tubes Mean:	24 µgm^{-3}	
Mean CV (Precision):	15	caution
Automatic Mean:	24 µgm^{-3}	
Data Capture for periods used:	100%	
Adjusted Tubes Mean:	24 (21 - 29) µgm^{-3}	

Jaume Targa, for AEA
Version 04 - February 2011

Instructions | Precision & Accuracy | Single Tube Adjustment | Multiple Tubes Adjustment

Ready

Appendix I: AEA Pollution Report for West Dunbartonshire, Clydebank

Produced by RICARDO-AEA on behalf of the Scottish Government

WEST DUNBARTONSHIRE CLYDEBANK
1st January to 31st December 2013

These data have been fully ratified by RICARDO-AEA

POLLUTANT	NO_2	NO_X
Maximum hourly mean	273 µg m^{-3}	1173 µg m^{-3}
99.8th percentile of hourly means	189 µg m^{-3}	825 µg m^{-3}
Average	25 µg m^{-3}	59 µg m^{-3}
Data capture	89.9 %	89.9 %

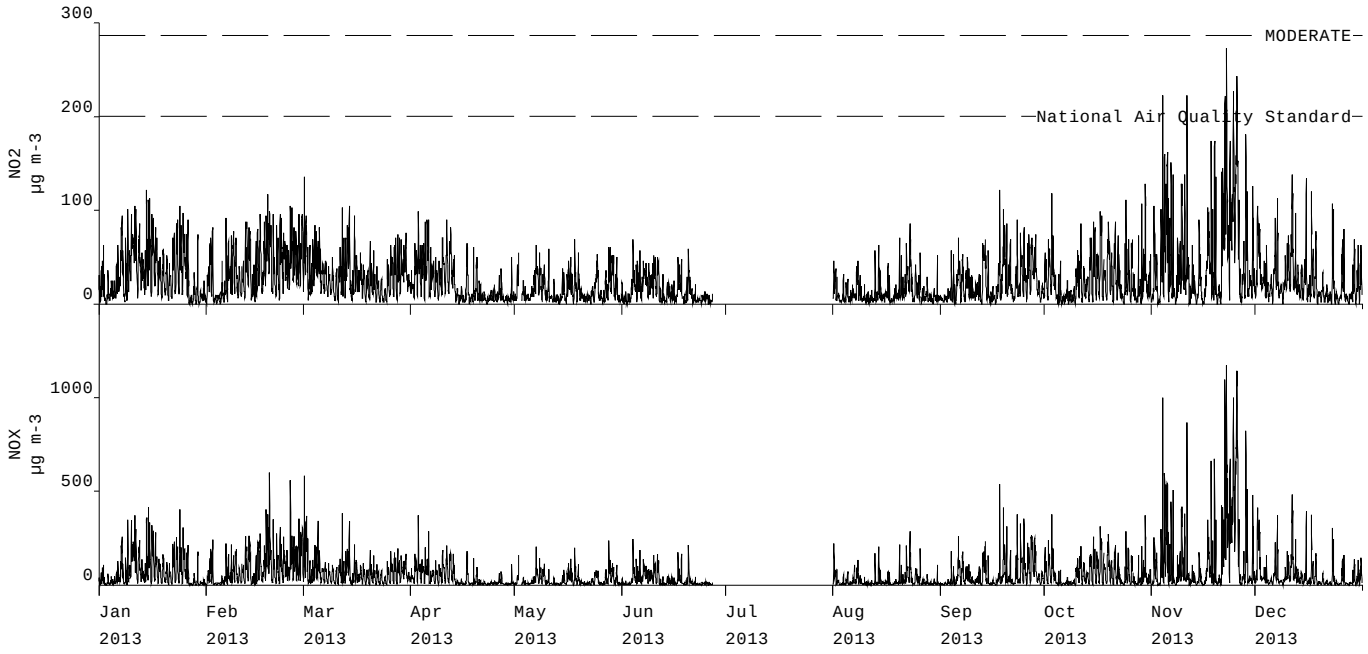
All gaseous pollutant mass units are at 20°C and 1013 mb.
NO_X mass units are NO_X as NO_2 µg m^{-3}

Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	-	-
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 18 µg m^{-3}	-	-
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	14	5

Note: For a strict comparison against the objectives there must be a data capture of >90% throughout the calendar year

Produced by RICARDO-AEA on behalf of the Scottish Government

West Dunbartonshire Clydebank
Hourly Mean Data for 1st January to 31st December 2013



Appendix J – AEA Pollution report for Dumbarton Roadside

Produced by RICARDO-AEA on behalf of the Scottish Government and Defra

WEST DUNBARTONSHIRE GLASGOW ROAD
1st January to 31st December 2013

These data have been fully ratified by RICARDO-AEA

POLLUTANT	NO_2	NO_X
Maximum hourly mean	272 µg m^{-3}	767 µg m^{-3}
Average	19 µg m^{-3}	38 µg m^{-3}
Data capture	98 %	98 %

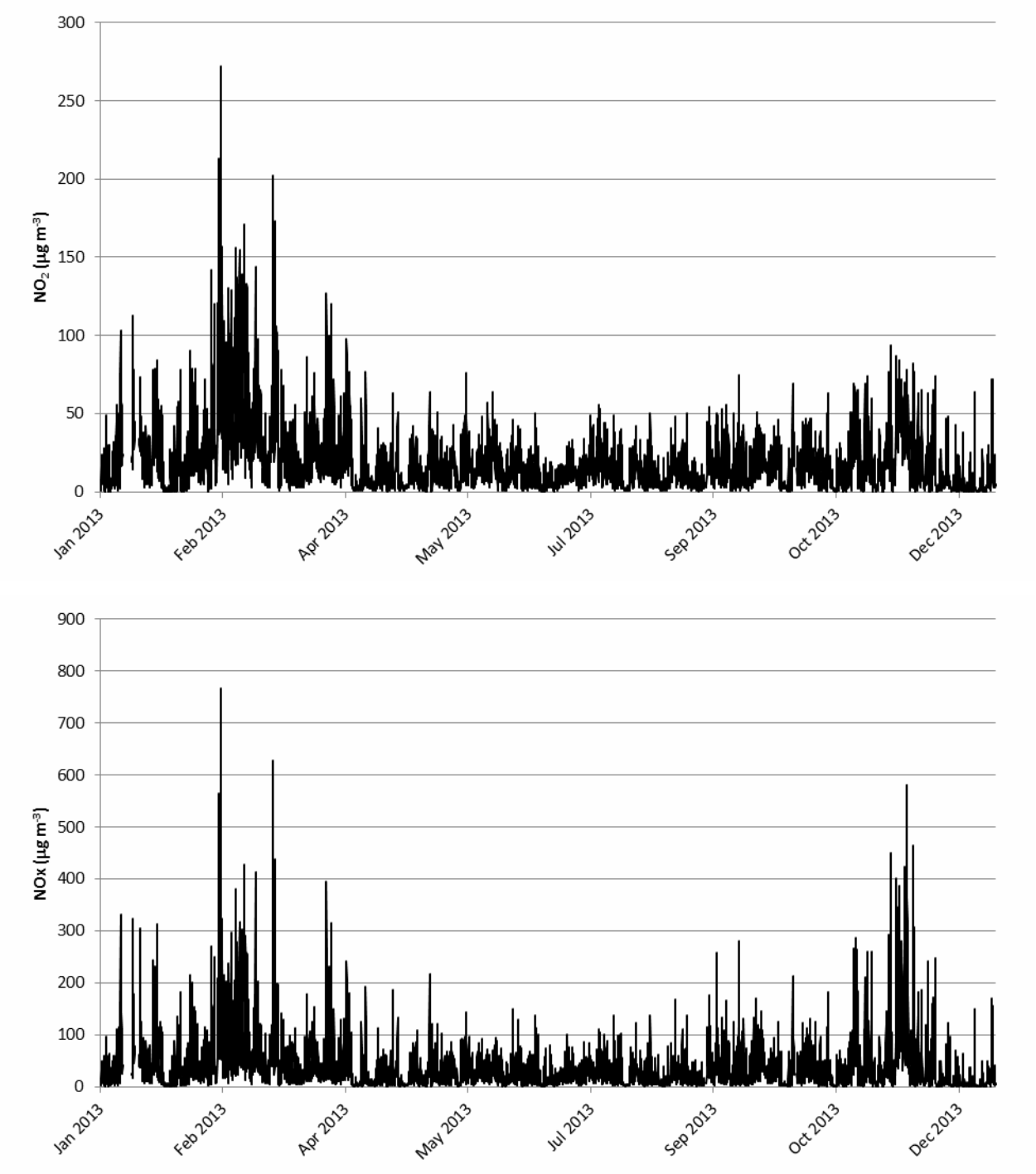
All gaseous pollutant mass units are at 20°C and 1013 mb.
NO_X mass units are NO_X as NO_2 µg m^{-3}

Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	-	-
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 18 µg m^{-3}	-	-
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	4	5

Note: For a strict comparison against the objectives there must be a data capture of >90% throughout the calendar year

Produced by RICARDO-AEA on behalf of the Scottish Government and Defra

West Dunbartonshire Glasgow Road
Hourly Mean Data for 1st January to 31st December 2013



Date Created: 08/04/2014

Appendix K – 2013 Monthly Figures NO_2 (not bias adjusted)

N02 tubes 2013												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Clydebank 1	36.8	36.6	32.9	26.2	28.5		40.9	22.9	27.6	27.8	48.3	36.5
Clydebank 6	39.8	52.6	38.5	38.5	26.6	32.8	23.5	19.4	42.8	35.6	54.1	30.5
Clydebank 7	45.8	40.3	24.1	31.5	28.7	27.3	20	18.3	30.1	30.9	39.2	27.4
Clydebank 9	30.5	33.4	34.2	24.3	24.4		19.1	15.2	27.4	21	34.1	22.6
Clydebank 10	35.1	33.1	26.9	25.7	23.1		24.7	21.1	29.7	31.3	46.7	23.9
Clydebank 11	27.9	32.8	25.9	19.4	23.7	21.2	1.6	18	21.4	23	37.1	26
Clydebank 12	23.2	27	24.8	27.3	20.8	22	17.6	17.8	27.2	25.9	43.3	25.9
Clydebank 13	37	33	29.3	25	23.5	18.4	22.4	16	28.4	26.6	44.9	25.9
Clydebank 14	22.3	21.5	16.2	9.4	11.1	15.1	11.8	9.6	15.2	15.8	28.8	16.5
Clydebank 15	46.5	37.8	26.2	29.6	10.9	25.1	19.4	17.7	28.8	30.4	39.6	26.9
Clydebank 16	33.6	27.9	21.7	19.3	20.3	27.1	18.8	20.5	27.2	22.5	47.1	26.4
Clydebank 17	32.5	25.6	14.4	18.6	16.5	25.4	20.4	19.9	22.1	19.4	44	25.9
Clydebank 18	32.6	28.3	26.1	17.2	23.4	24.6	18.9	20.8	27.7	24	46.7	25.7
Dumbarton 1	31.3	32.8		20.3	25	28.6	27.9	22.6	34.1	24.3	37.8	23.5
Dumbarton 11	76	36.9	32.4	20.8	20.4	22.2	14.5	14.4	28	23	42.8	22.3
Dumbarton 12	29.6	27.3	29	20.8	15.1	19.5	12.7	11.2	22.8	18.7	27.3	14.9
Glasgow Rd, D'ton 2	41.1	34.5	32.5	21.7	31.5	44.5	25.5	19.2	28.7	39.1	48.4	21.4
Glasgow Rd,	48.5	32.4	33.4	35	23.5	40.5	19.1	32.3	35.8	31.5	28	19.3

D'ton 3												
Milton 1	**53.9**	**39.9**	**55.7**	**58.9**	**52**	**62.5**	**54**	**45.2**	**55**	**55.5**	**66.4**	**64.8**
Milton 2	**93.4**	**24.6**	**11.6**	**13.4**	**21.3**	**20.5**		**23.2**	**17.9**	**16.9**	**25.2**	**18**
Alexandria 1	**29.5**	**34.4**	**24.4**	**26.5**	**23.3**	**24.6**	**21.8**	**21**	**26.6**	**26.4**	**39.2**	**24.3**
Balloch 1	**24.6**	**30.6**	**32**	**27.4**	**18.3**	**24.2**	**19.8**	**15.2**	**26.9**	**21.2**	**28**	**23.1**
Vale of Leven 3	**27.1**	**29.3**	**15.7**	**19.9**	**24.9**	**27.9**	**22.6**	**21.5**	**25.7**	**25.9**	**38.1**	**21.4**
Vale of Leven 4	**24.7**	**27**	**18.2**	**14.9**	**19.4**	**27.3**	**22.8**	**21.9**	**25.9**	**23.4**	**38.2**	**19.3**
Briar Drive 1	**33.4**	**28**	**28.2**	**31.3**	**17.4**	**21.5**	**15.9**	**13.4**	**25.7**	**27.9**	**34.9**	**20.2**
Briar Drive 2	**31.1**	**29.4**	**23.6**	**18.7**	**14.6**	**20.3**	**15**	**10.3**	**29.8**	**23**	**38.1**	**23.5**
Briar Drive 3	**38.9**	**28.5**	**24.3**	**29.9**	**19.4**	**17.9**	**20**	**10.8**	**10**	**22.1**	**38.2**	**20.7**
Dumbarton triplicate 1	**25**	**27.5**	**25.3**	**18.8**	**17.1**	**21**	**15.1**	**11.2**	**23.8**	**18.4**	**32.3**	**10.8**
Dumbarton triplicate 2	**23.2**	**25.3**	**21.3**	**18.3**	**20.3**	**23.5**	**15.1**	**11.9**	**24.1**	**19.6**	**32.7**	**13.3**
Dumbarton triplicate 3	**28**	**27.4**	**19.7**	**21.5**	**16.9**	**23**	**14.6**	**10.4**	**24.1**	**21.5**	**34.5**	**11.5**