

Annual Progress Report (APR)



2017 Air Quality Annual Progress Report (APR) for
West Dunbartonshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2017

West Dunbartonshire Council

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Executive Summary: Air Quality in Our Area

Air Quality in West Dunbartonshire Council

Local air quality within the West Dunbartonshire Council area remains generally satisfactory.

No Air Quality Management Areas have been declared within the Council Area.

West Dunbartonshire Council has two automatic air quality monitoring stations. The first, West Dunbartonshire Clydebank is located at Briar Drive in Clydebank and monitors Nitrogen Dioxide (NO₂), PM₁₀ and PM_{2.5}. The second, West Dunbartonshire Glasgow Road, is situated at the corner of Glasgow Road and Leven Street, Dumbarton. This unit monitors NO₂ and is part of the Automatic Urban and Rural Network (AURN). Both automatic units have co-located NO₂ diffusion tubes.

During 2016 we also monitored NO₂ at 24 locations (diffusion tubes) throughout the West Dunbartonshire Council area.

Monitoring carried out during 2016 did not identify any exceedances of National Air Quality Objectives for NO₂, PM₁₀ or PM_{2.5}

No significant changes in emission sources within the Council area were identified during 2016.

There have been no new relevant industrial installations and no new or substantially altered roads within the Council area.

There were no new significant commercial, domestic or fugitive sources of emissions.

Actions to Improve Air Quality

West Dunbartonshire Council has not declared an Air Quality Management Area.

The Council has adopted the provisions of the Road Traffic (Vehicle Emissions) (Fixed Penalty) (Scotland) Regulations 2003.

During 2016 three vehicle emission testing dates took place. A total of 667 cars were stopped and tested. In total, seven vehicles failed the emission test and fixed penalty notices were issued to the drivers of the vehicles.

West Dunbartonshire Council employees also carry out random idling engine checks at shopping centres, taxi ranks, and bus termini throughout the year. We also respond to complaints from members of the public regarding idling engines and vehicle emissions.

Local Priorities and Challenges

West Dunbartonshire Council has no specific priorities in respect of local air quality beyond that of statutory monitoring, routine vehicle emission testing and idling engines enforcement.

How to Get Involved

Further information about air quality and related subjects can be obtained by visiting

[http://www.west-dunbarton.gov.uk/business/environmental-health/pollution/air-quality/#Air pollution](http://www.west-dunbarton.gov.uk/business/environmental-health/pollution/air-quality/#Air%20pollution)

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LAQM Annual Progress Report 2017

1. Local Air Quality Management

The current report provides an overview of air quality within West Dunbartonshire during 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by West Dunbartonshire Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m ³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10 µg/m ³	Annual mean	31.12.2020
Sulphur dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3 Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003
Lead	0.25 $\mu\text{g}/\text{m}^3$	Annual Mean	31.12.2008

2. Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

West Dunbartonshire Council currently does not have any Air Quality Management Areas.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

West Dunbartonshire Council undertook automatic (continuous) monitoring at 2 sites during 2016. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <http://www.scottishairquality.co.uk>

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

3.1.2 Non-Automatic Monitoring Sites

West Dunbartonshire Council undertook non- automatic (passive) monitoring of NO₂ at 24 sites during 2016. Table A.2 in Appendix A shows the details of the sites.

Since the 2016 Annual Progress Report three diffusion tubes were removed from the network. Clydebank 18 was removed due to the installation of new lampposts. Vale of Leven 3 & 4 were removed from the network as small layout changes to the local road meant that changing the tubes had become dangerous for staff as there are no pavements. They were not relocated nearby as the data collected over the past few years indicated that none of the three tubes were going to breach the National Air Quality Objectives.

One new tube location was added to the network as a result of complaints from a resident regarding a perceived increase in the number of buses stopping at a bus stop outside his home. The new tube location has been identified as East Thompson Street (DT28).

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

3.2 Individual pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

None of the monitored locations breached the National Air Quality Objectives for NO₂ during 2016.

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

The full 2016 dataset of monthly mean values of all diffusion tubes is provided in Appendix B

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. Neither site exceeded this National Air Quality Objective during 2016.

3.2.2 Particulate Matter (PM₁₀)

The FIDAS unit at West Dunbartonshire Clydebank was removed for repair from September until December with a resultant loss of data for those months. The data has therefore been annualised in accordance with the guidance set down in TG (16). Details are provided in Appendix C.

West Dunbartonshire Council recorded no exceedances of the National Air Quality Objective for PM₁₀ in 2016. The annualised mean for 2016 was 9µg/m³. There remains insufficient data to discuss trends in PM levels within the Council area as monitoring for both PM₁₀ and PM_{2.5} began in March 2015 with the installation of a FIDAS at West Dunbartonshire Clydebank.

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

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 7 times per year.

3.2.3 Particulate Matter (PM_{2.5})

West Dunbartonshire Council recorded no exceedances of the National Air Quality Objective for PM_{2.5}. The annualised mean for 2016 was 6µg/m³. There remains insufficient data to discuss trends in PM levels within the Council area as monitoring for both PM₁₀ and PM_{2.5} began in March 2015 with the installation of a FIDAS at West Dunbartonshire Clydebank.

Table A.7 in Appendix A compares the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 2 years with the air quality objective of 10µg/m³.

3.2.4 Sulphur Dioxide (SO₂)

West Dunbartonshire Council does not monitor for sulphur dioxide.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

West Dunbartonshire Council does not monitor for carbon monoxide, lead or 1,3-butadiene.

4. New Local Developments

Greater Glasgow Area City Deal Projects

There are two proposed developments that may possibly affect local air quality and are discussed further below. Both projects are part of the Glasgow Region City Deal.

The Glasgow Region City Deal is an agreement between the UK Government, the Scottish Government and eight Local Authorities across Glasgow and the Clyde Valley.

1. West Dunbartonshire Council City Deal

West Dunbartonshire Council is moving forward with a project at the former Exxon site near Bowling.

As well as creating a major industrial and commercial development, the proposal is to build a new road to provide an alternative route in and out of Dumbarton.

Negotiations are still ongoing to purchase the site and exact details are not finalised. However we know approximately where the proposed alterations to the existing road will be and therefore three new NO₂ diffusion tubes have been installed around a tenement block near to the current proposed road layout. These tubes will remain in place until the road has been constructed and provide data before, during and after construction.

2. Clyde Waterfront and Renfrew Riverside City Deal

The Clyde Waterfront and Renfrew Riverside project is the construction of a new 'opening' bridge across the River Clyde. The new bridge will touchdown in the West Dunbartonshire Council area. The exact location of the bridge touchdown was not finalised at the time of writing this report but the general area has been identified.

The bridge, which will accommodate vehicles, pedestrians and cyclists, will create a new connection between the north and south sides of the River Clyde.

Work on this project is expected to start on site in 2018 and take two years to complete.

Four new NO₂ diffusion tubes have been deployed around the area of the bridge touchdown to establish the current NO₂ levels and provide air quality information during the various stages of the project.

4.1 Road Traffic Sources

There are no new road traffic sources within the West Dunbartonshire Council area.

4.2 Other Transport Sources

There are no new other transport sources within the West Dunbartonshire Council area.

4.3 Industrial Sources

There are no new industrial sources within the West Dunbartonshire Council area.

4.4 Commercial and Domestic Sources

There are no new commercial or domestic sources within the West Dunbartonshire Council area.

4.5 New Developments with Fugitive or Uncontrolled Sources

There are no new developments with fugitive or uncontrolled sources within the West Dunbartonshire Council area

5. Planning Applications

Apart from the proposed developments discussed above there have been no new planning applications granted which may have an effect on local air quality.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Monitoring of local air quality during 2016 has shown no exceedance of the National Air Quality Objectives at any relevant location.

6.2 Conclusions relating to New Local Developments

There are no additional new local developments which require consideration in this report.

6.3 Proposed Actions

Monitoring throughout 2016 did not identify any exceedance of the National Air Quality Objectives. However proposed future developments have been identified which may have a future impact on local air quality. Before these developments commence it was deemed expedient to install seven additional NO₂ diffusion tubes to the existing network before work on the developments begin in order to provide benchmark NO₂ levels. The results from these additional tubes will be presented in subsequent annual progress reports.

Appendix A Monitoring Results

Table A.1– Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	West Dunbartonshire Clydebank	Urban Traffic	249723	672044	NO ₂ ; PM ₁₀ : PM _{2.5}	N	Chemiluminescent & FIDAS	2.5	5	1.5
CM2	West Dunbartonshire Glasgow Road	Urban Traffic	240238	675193	NO ₂	N	Chemiluminescent ML2014	18	4.5	1.5

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

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
DT1	Clydebank 1	Urban Traffic	248479	671115	NO ₂	No	2	1	No
DT2	Clydebank 6	Urban Traffic	249725	672069	NO ₂	No	40	1	No
DT3	Clydebank 7	Urban Traffic	249913	669865	NO ₂	No	4	1	No
DT4	Clydebank 9	Urban Traffic	248899	670784	NO ₂	No	3	1	No
DT5	Clydebank 10	Urban Traffic	249759	671845	NO ₂	No	8.5	1	No

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
DT6	Clydebank 11	Urban Traffic	249801	672288	NO ₂	No	22	1	No
DT7	Clydebank 12	Urban Traffic1	249747	671665	NO ₂	No	10	1	No
DT8	Clydebank 13	Urban Traffic	249762	671760	NO ₂	No	3.5	1	No
DT9	Clydebank 14	Urban Traffic	249872	671854	NO ₂	No	>25	1	No
DT10	Clydebank 15	Urban Traffic	249746	671966	NO ₂	No	8.5	1	No
DT11	Clydebank 16	Urban Traffic	249967	672548	NO ₂	No	10	1	No

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
DT12	Clydebank 17	Urban Traffic	249987	672440	NO ₂	No	11	1	No
DT13	Dumbarton 1	Urban Traffic	240322	675177	NO ₂	No	2.5	1	No
DT14	Dumbarton 11	Urban Traffic	240515	675078	NO ₂	No	4	1	No
DT15	Dumbarton 12	Urban Traffic	239410	675330	NO ₂	No	7	1	No
DT16	Glasgow Rd, D'ton 2	Urban Traffic	240178	675228	NO ₂	No	8	1	No
DT17	Glasgow Rd, D'ton 3	Urban Traffic	240279	675196	NO ₂	No	4.5	1	No

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
DT18	Milton 1	Urban Traffic	242266	674235	NO ₂	No	12	1	No
DT19	Milton 2	Urban Traffic	242160	674299	NO ₂	No	2	12	No
DT20	Alexandria 1	Urban Traffic	239024	680206	NO ₂	No	5	1	No
DT21	Balloch 1	Urban Traffic	238584	681562	NO ₂	No	12	1	No
DT22	Briar Drive 1	Urban Traffic	249723	672044	NO ₂	No	2.5	5	Yes
DT23	Briar Drive 2	Urban Traffic	249723	672044	NO ₂	No	2.5	5	Yes

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?
DT24	Briar Drive 3	Urban Traffic	249723	672044	NO ₂	No	2.5	5	Yes
DT25	Dumbarton triplicate 1	Urban Traffic	240238	675193	NO ₂	No	18	4.5	Yes
DT26	Dumbarton triplicate 2	Urban Traffic	240238	675193	NO ₂	No	18	4.5	Yes
DT27	Dumbarton triplicate 3	Urban Traffic	240238	675193	NO ₂	No	18	4.5	Yes
DT28	East Thompson St	Urban Traffic	249972	671448	NO ₂	No	13	1	No

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
CM1	Urban traffic	Automatic	97.5	97.5	22.9	25	21	18	22
CM2	Urban traffic	Automatic	83.7	83.7	24	19	17	17.1	21
DT1	Urban traffic	Diffusion tube	100	100	30.9	32.9	25	26.82	23.1
DT2	Urban traffic	Diffusion tube	100	100	36.2	35.9	29.3	23.99	26.8
DT3	Urban traffic	Diffusion tube	100	100	28.9	30	27.4	21.44	22.7
DT4	Urban traffic	Diffusion tube	100	100	25.3	25.8	19.7	19.96	18.7
DT5	Urban traffic	Diffusion tube	100	100	27.9	28.9	21.7	24.32	22.0
DT6	Urban traffic	Diffusion tube	100	100	25	22.9	20.1	19.07	21
DT7	Urban traffic	Diffusion tube	91.6	91.6	26.2	25	19	17.78	21.1

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Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
DT8	Urban traffic	Diffusion tube	100	100	25.2	27.3	20.9	21.37	21
DT9	Urban traffic	Diffusion tube	100	100	17.2	15.9	13.1	12.28	13.8
DT10	Urban traffic	Diffusion tube	91.6	91.6	28.4	28	22.9	24.25	18.6
DT11	Urban traffic	Diffusion tube	100	100	22.9	25.8	21.8	23.11	19.6
DT12	Urban traffic	Diffusion tube	100	100	25.4	23.5	21.3	21.09	17.7
DT13	Urban traffic	Diffusion tube	83.3	83.3	27.9	29.2	25.8	24.56	25.3
DT14	Urban traffic	Diffusion tube	91.6	91.6	33.9	29.2	28.1	24.07	23.2
DT15	Urban traffic	Diffusion tube	100	100	20.5	20.5	15.3	14.77	17.8
DT16	Urban traffic	Diffusion tube	91.6	91.6	34.6	32	24.1	25.87	25.5
DT17	Urban traffic	Diffusion tube	83.3	83.3	23.6	31.3	28.8	24.34	23.5

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Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
DT18	Urban traffic	Diffusion tube	100	100	51.7	54.8	40	44.3	39.5
DT19	Urban traffic	Diffusion tube	100	100	21.1	25.7	18.6	15.02	16
DT20	Urban traffic	Diffusion tube	100	100	25.7	26.6	28.1	23.33	23.6
DT21	Urban traffic	Diffusion tube	100	100	24.6	24	19.6	16.05	19.6
DT22	Urban traffic	Diffusion tube	100	100	23.9	24.6	20.1	17.91	19.1
DT23	Urban traffic	Diffusion tube	100	100	25.2	22.9	20.2	18.19	20.6
DT24	Urban traffic	Diffusion tube	83.3	83.3	26.9	32.2	21	19.22	20.2
DT25	Urban traffic	Diffusion tube	100	100	20.3	20.3	16.9	15.72	17.4
DT26	Urban traffic	Diffusion tube	100	100	23.3	20.5	16.5	17.6	17
DT27	Urban traffic	Diffusion tube	100	100	21.1	20.9	17.6	15.47	16.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
DT28	Urban traffic	Diffusion tube	83.3	83.3	-	-	-	-	18.4

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

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

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

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

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

Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2012	2013	2014	2015	2016
CM1	Urban traffic	Automatic	97.54	97.54	0	14(189)	0	0	0
CM2	Urban traffic	Automatic	83.7	83.7	0	4	0	0	0(106)

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

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

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

(3) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2012	2013	2014	2015	2016
CM1	Urban Traffic	73.2	73.2	N/A	N/A	N/A	10	9

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

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

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

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

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM ₁₀ 24-Hour Means > 50µg/m ³ (3)				
				2012	2013	2014	2015	2016
CM1	Urban Traffic	73.2	73.2	N/A	N/A	N/A	0	No data

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

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

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

(3) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A.7 – Annual Mean PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2012	2013	2014	2015	2016
CM1	Urban Traffic	73.2	73.2	N/A	N/A	N/A	6	6

Notes: Exceedences of the PM₁₀ annual mean objective of 10µg/m³ are shown in **bold**.

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

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

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

Appendix B Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO₂ Monthly Diffusion Tube Results for 2016

Site ID	NO ₂ Mean Concentrations (µg/m ³)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted ⁽¹⁾
DT1	21.9	21.1	24.7	20.4	12.3	15.3	15.8	23.8	26.1	33.8	39.1	31.6	23.8	23.1
DT2	18.3	22.9	20	34.5	16.3	23.5	2.1	25	26.6	55.4	51.9	35.3	27.7	26.8
DT3	17.6	21.6	19.9	24.9	13.2	15.6	14.4	20.5	27	36.1	39.2	30.4	23.4	22.7
DT4	16.9	18.7	19.4	19	12.6	11.4	13.5	18	22.8	20.3	32.6	26.6	19.3	18.7
DT5	30.1	30.2	18.5	17.9	13.9	15.4	2.1	15.5	21.1	35.2	41.8	30.4	22.7	22.0
DT6	25.7	21.4	16.6	19.7	16	11.7	10.4	17.3	22.9	29.4	38.8	29.4	21.6	21.0
DT7	16.9	19.2	16.2		15.4	14.7	12	19.2	22.2	28.1	44	31.1	21.7	21.1
DT8	21.8	20.1	12.8	38.2	12.1	10.8	10	19.8	21.8	31.6	38.1	22.5	21.6	21.0

Site ID	NO ₂ Mean Concentrations (µg/m ³)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted ⁽¹⁾
DT9	12.3	18.9	22.3	22.5	4.8	3.8	2.8	10.6	13.1	16.9	23.2	19.1	14.2	13.8
DT10	21.3	20.1	15.8	22.3	1.9	10.9	12.5	17	18.8		41.2	29	19.2	18.6
DT11	18.4	28	20	15.8	8.6	8.8	15.7	19.1	22.2	23.9	37.5	24.4	20.2	19.6
DT12	13.7	17.4	18.8	1.9	11.8	6.8	16.4	16.7	23.1	21.3	37.3	33.9	18.3	17.7
DT13	22.5	21.2	23.3	22.4	5	13.4		29.7	38.1		54.6	30.2	26.0	25.3
DT14	54.2	28.9	13.7	26.4	16.1	7.4	14.2	18.2		26.3	30.7	27.4	24.0	23.2
DT15	20.8	11.9	35.7	17.6	11	8.3	6.5	18.1	12.8	24.7	32.7	19.8	18.3	17.8
DT16	17.6	34.9	29.6	21.7	19.3	19.2	24.5	34.2	25.5	37.1		25.6	26.3	25.5
DT17	17.6	21.4	27.5		18.1	18.6	2.1		18.5	37	48	33.9	24.3	23.5
DT18	37.1	31.2	14.7	30.5	39.7	43	45.3	19.3	53.6	57.2	66.2	50.8	40.7	39.5

Site ID	NO ₂ Mean Concentrations (µg/m ³)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted ⁽¹⁾
DT19	16.8	19	17.3	13.1	13	8.7	13.9	17	19.9	14.1	24.9	19.7	16.5	16.0
DT20	24.1	28	22.6	20.6	13.2	7.7	16.3	45.5	30.9	27.6	36.4	19.5	24.4	23.6
DT21	13.8	26.6	12.3	17.6	13.4	15	10.3	24.3	18	25	37.6	29.1	20.3	19.6
DT22	23.1	22.4	17.5	16.6	26.4	10.1	8.9	17.2	22.5	36	33.6	1.6	19.7	19.1
DT23	35.9	28.5	20.9	10	9.3	16.9	7.4	16.9	22	27.5	33.7	25.3	21.2	20.6
DT24		34.9	19.7		6.2	12.2	6.1	16.8	18.6	41.4	28.2	24.6	20.9	20.2
DT25	22.2	15.6	14.8	22.4	11.9	9.5	7.1	16	10.5	28.3	32.8	24.6	18.0	17.4
DT26	11.9	18.7	18.5	19.9	9.6	8.4	9.4	15.9	14.3	23.6	38	21.5	17.5	17.0
DT27	17.2	22.8	11.3	13.4	10.3	9.1	8.5	16.4	13	25.8	33	23.7	17.0	16.5
DT28		16.8	42.3	18.4	8.8	8.3	9.5	14.1	16.6		31	23.9	19.0	18.4

(1) See Appendix C for details on bias adjustment

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

Automatic Monitors

Data from West Dunbartonshire Council automatic monitors is downloaded daily by AEA. The data is screened, scaled and ratified by AEA and a full report is provided for each calendar year. Both of the automatic monitors have a comprehensive service contract and are serviced at six monthly intervals. West Dunbartonshire Glasgow Rd, Dumbarton is serviced by Enviro Technology and West Dunbartonshire Clydebank by Horiba (NO_x unit) and Air Monitors (FIDAS).

During 2016 the FIDAS unit was removed for repairs by Air Monitors. There was therefore no data between September and December. As a result of this the annual mean for PM₁₀ and PM_{2.5} had to be annualised. See table below.

The full Air Pollution Report for 2016 produced Ricardo Energy and Environment for West Dunbartonshire Glasgow Road (site id WDB4) and West Dunbartonshire Clydebank (site ID WDB3) can be accessed at <http://www.scottishairquality.co.uk>.

PM₁₀ Annualisation of data 2016

Site	% Data Capture	AM	PM	Ra
S Lanarkshire Lanark	99.6	11	1	1
Glasgow Townhead	99.09	12	11.2	1.071
Renfrew Cockels Loan	89.97	14	12.5	1.120
Edinburgh Currie	97.8	9	9.2	0.978
Ratio				1.042

West Dunbartonshire Clydebank PM₁₀ period mean = $8.6 \times 1.042 = \underline{\underline{8.96\mu\text{g}/\text{m}^3}}$

PM_{2.5} Annualisation of data 2016

Site	% Data Capture	AM	PM	Ra
S Lanarkshire Lanark	99.59	7	6.5	1.077
Glasgow Townhead	96.4	7	6.6	1.061
Auchencorth Moss	86.9	3	2.5	1.2
Edinburgh St Leonards	92.2	6	6.3	0.952
Ratio				1.073

West Dunbartonshire Clydebank PM_{2.5} period mean = $5.6 \times 1.073 = \underline{\underline{6\mu\text{g}/\text{m}^3}}$

NO₂ Tubes

West Dunbartonshire Council use Glasgow Scientific Services (GSS) for NO₂ tube analysis. Tubes are provided and analysed by GSS.

The NO₂ tube preparation method used is 20% triethanolamine (TEA) in water.

Glasgow Scientific Services participate in the AIR NO₂ Proficiency Testing Scheme. In 2016 the results the lab submitted to the scheme were determined to be satisfactory based on a z-score of $\leq \pm 2$. The exception to this was AR015 where a result of 0% is recorded. Enquiries with GSS revealed that in August there was a failure in the PT scheme due to problems with the autosampler. Due to this NPL did not include the results as they would falsely skew the statistics.

Another round was ordered in August and the score for GSS was calculated to prove the system was working again.

A bias of 0.97 has been used to adjust NO₂ tube data. The bias was obtained from the National Diffusion Tube Bias Adjustment Factor spreadsheet.

Appendix D Automatic Monitoring site location maps with co-located NO2 tubes

West Dunbartonshire Council

Title: West Dunbartonshire Clydebank & DT22,23 & 24

Map No :

Map Ref: NS4971NE

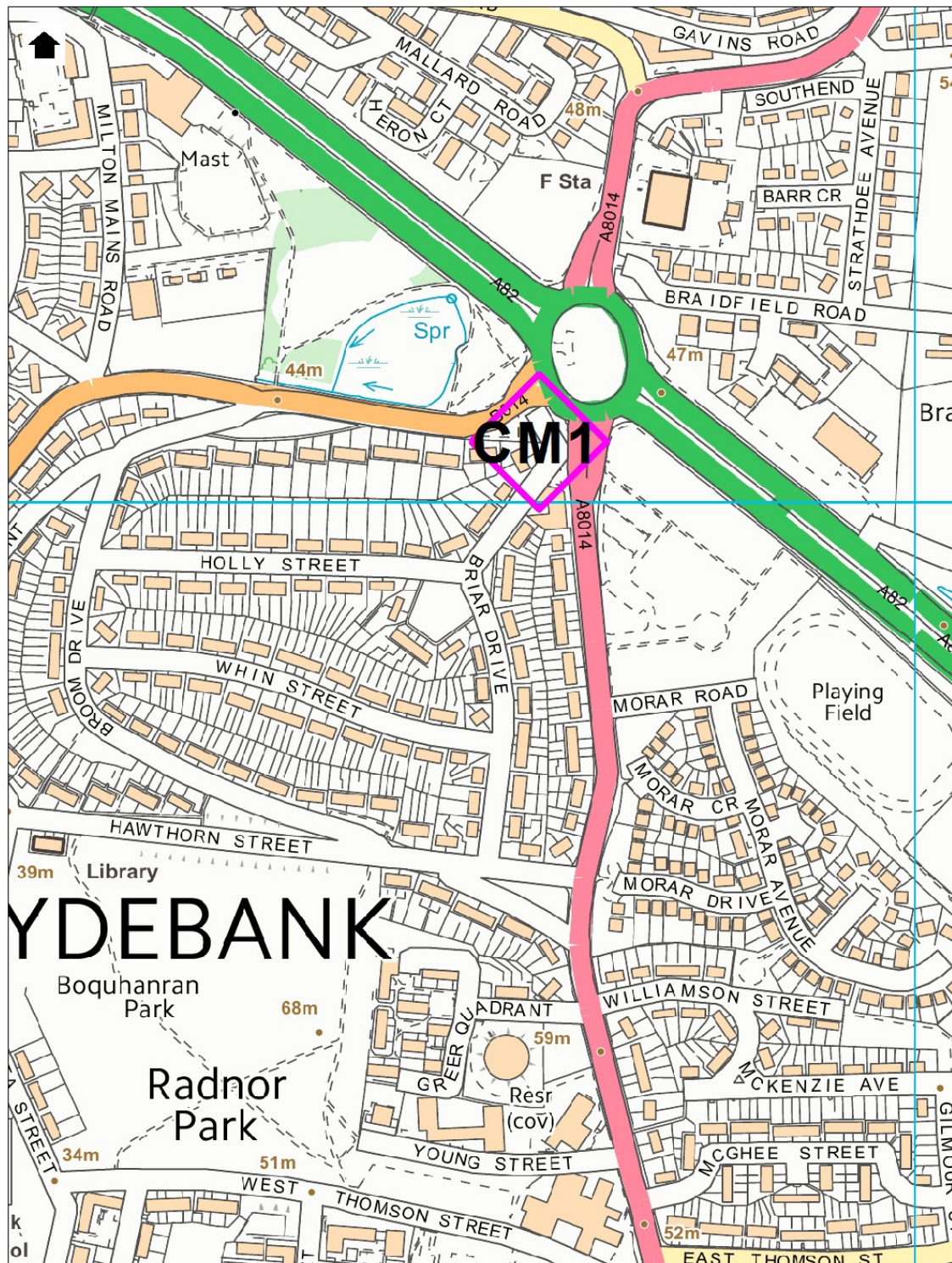
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Date : 14/06/2017

Scale : 1:2500

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West Dunbartonshire OS Licence Number 100020790.



West Dunbartonshire Council

Title: West Dunbartonshire Glasgow Rd & DT25,26 & 27

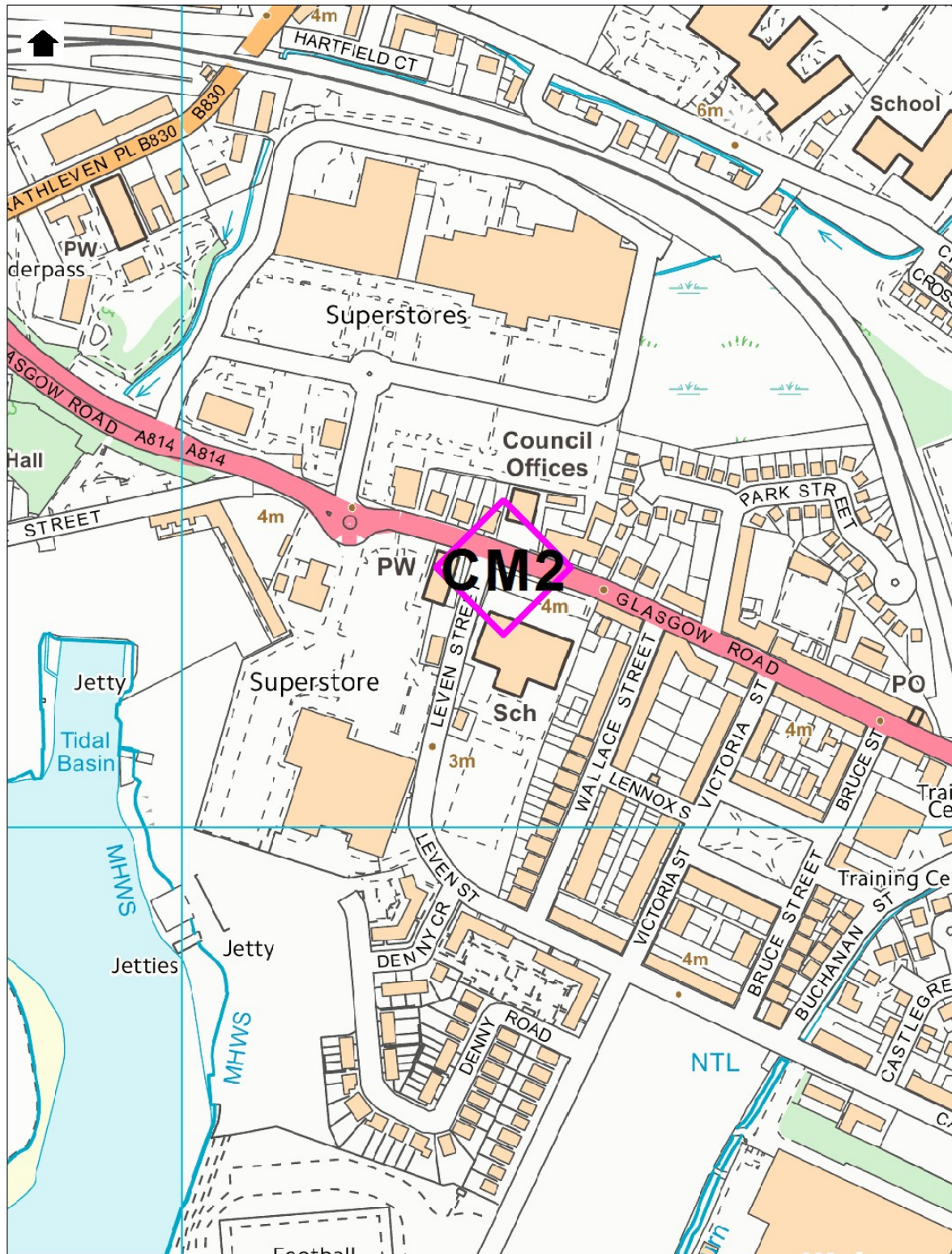
Map No :

Map Ref: NS4075SW

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Date : 14/06/2017

Scale : 1:2500



Appendix E NO2 Diffusion tube locations

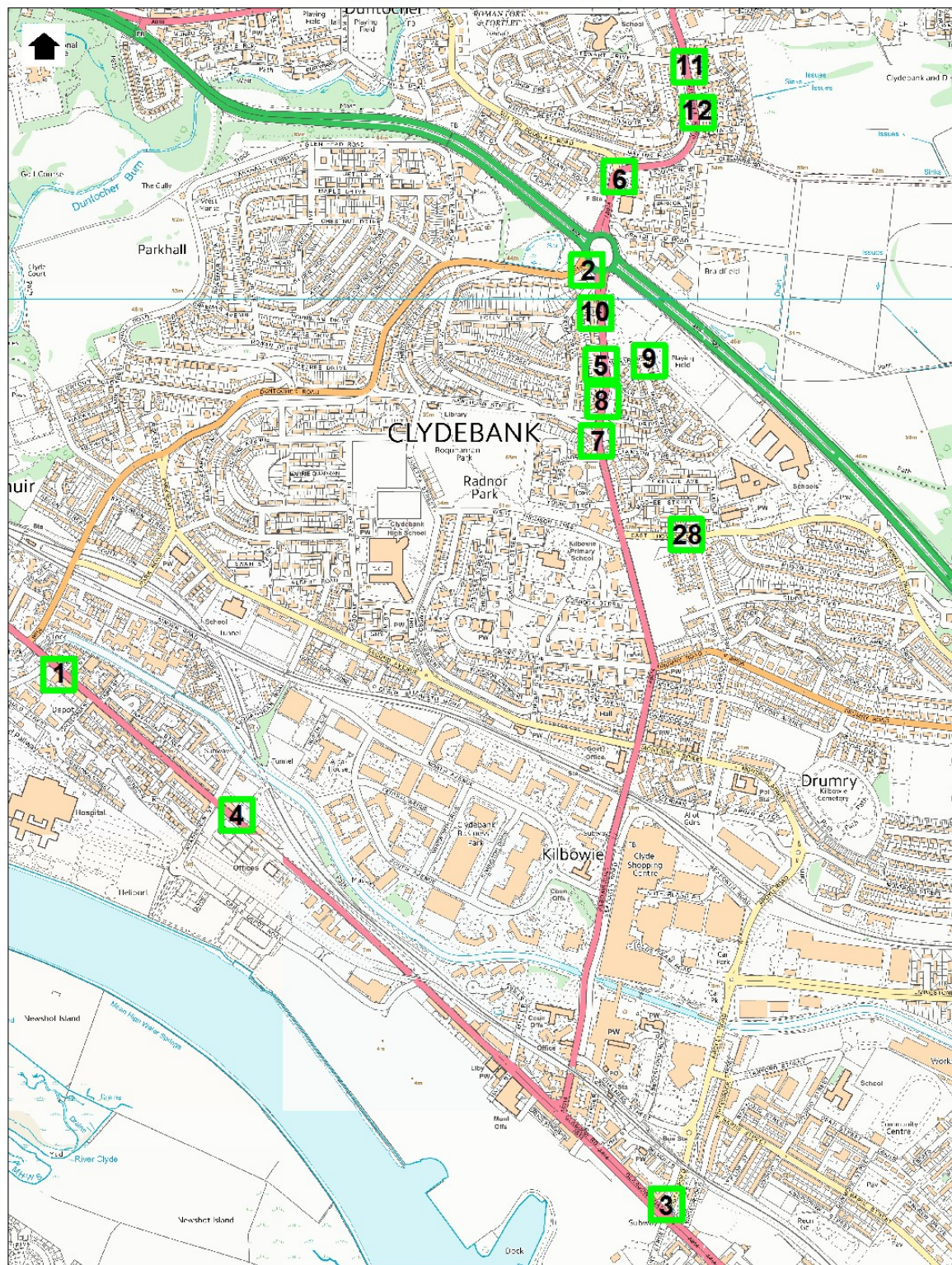
West Dunbartonshire Council

Title: Clydebank NO2

Map No : Map Ref. NS4971

Date : 14/06/2017 Scale : 1:8000

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West Dunbartonshire Council

Map No :

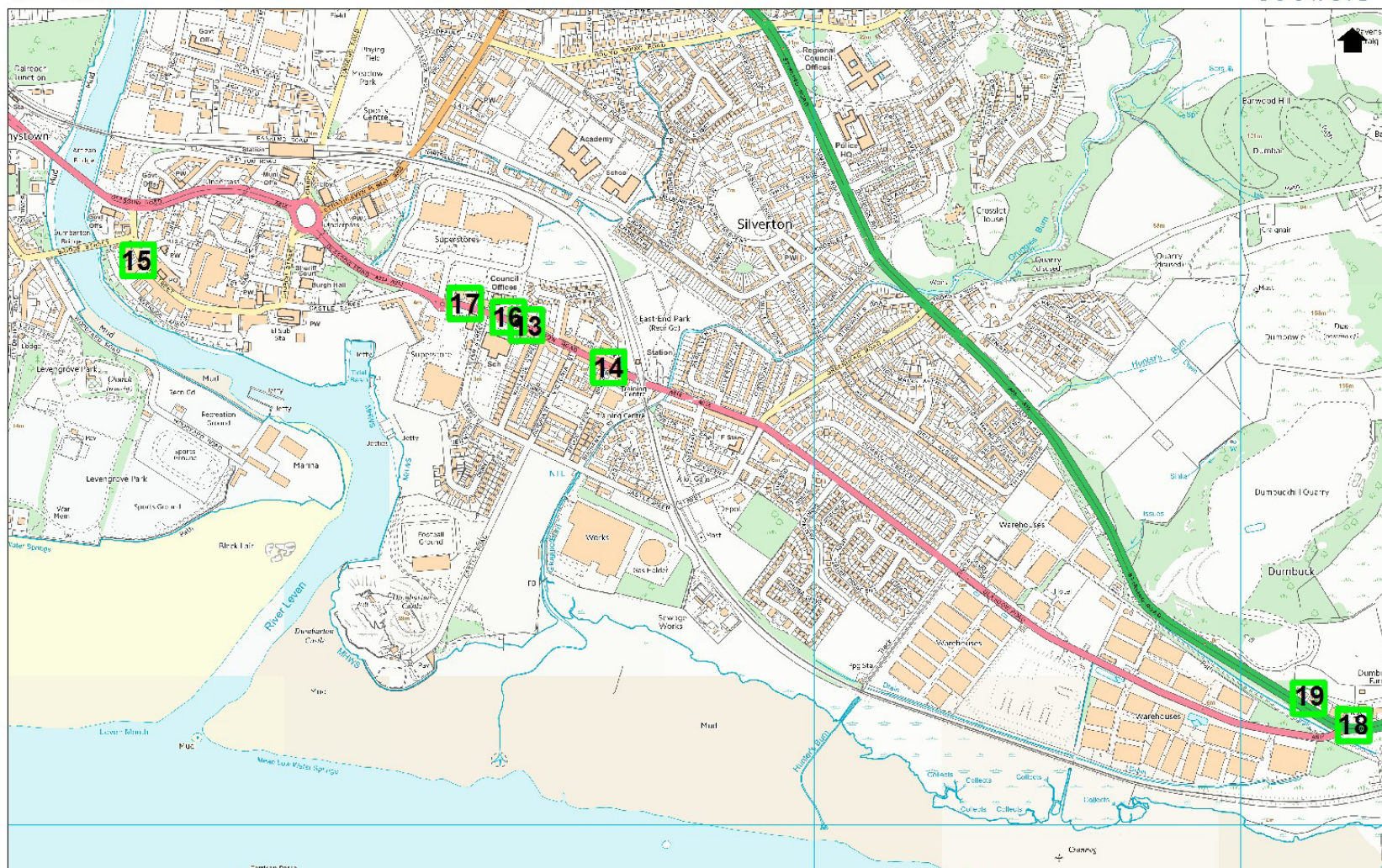
Date : 14/06/2017

Map Ref: NS4074

Scale : 1:8000

Title: Dumbarton NO2

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West Dunbartonshire Council

Title: Vale of Leven NO2

Map No :

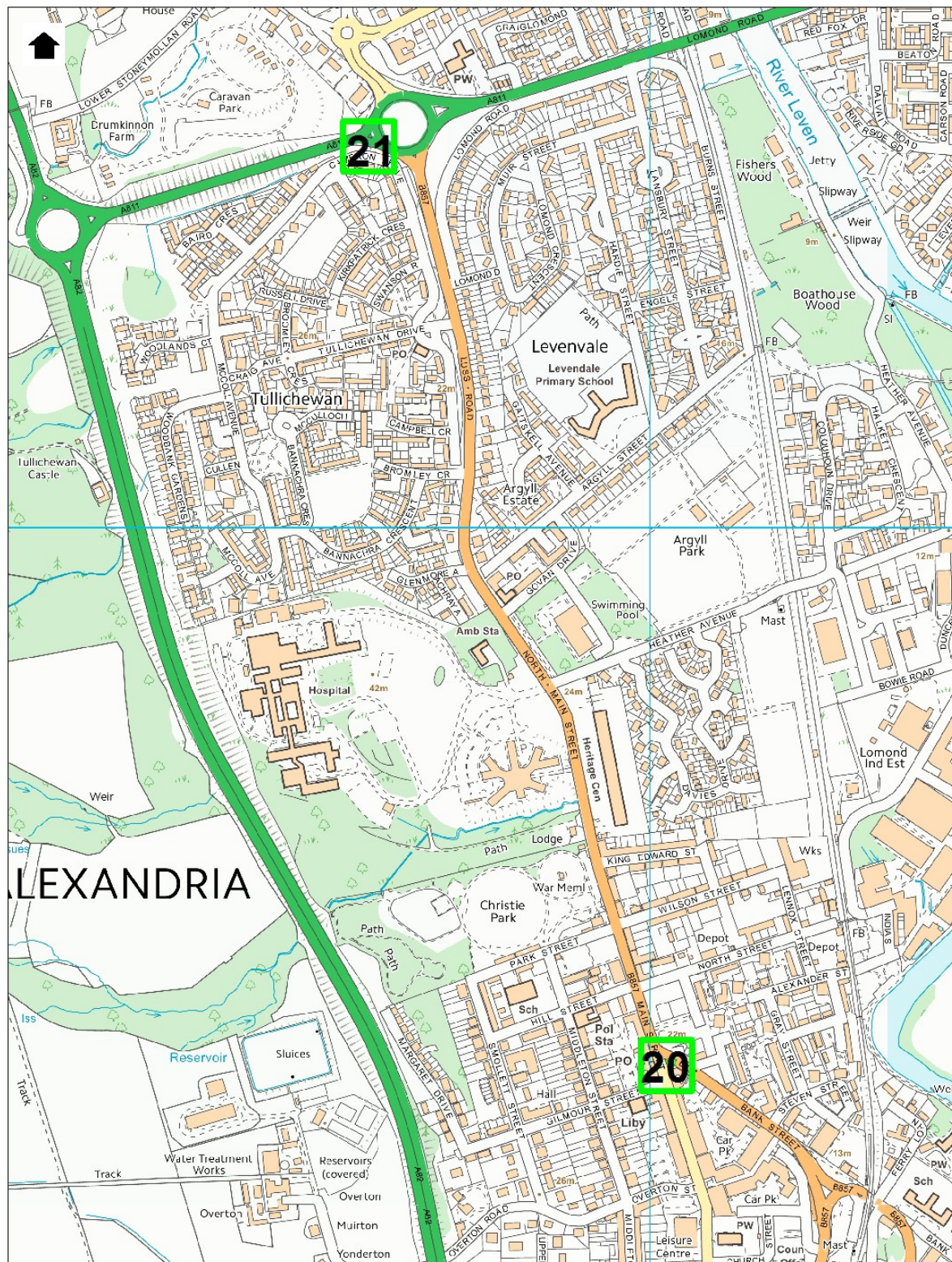
Map Ref: NS3880

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Date : 14/06/2017

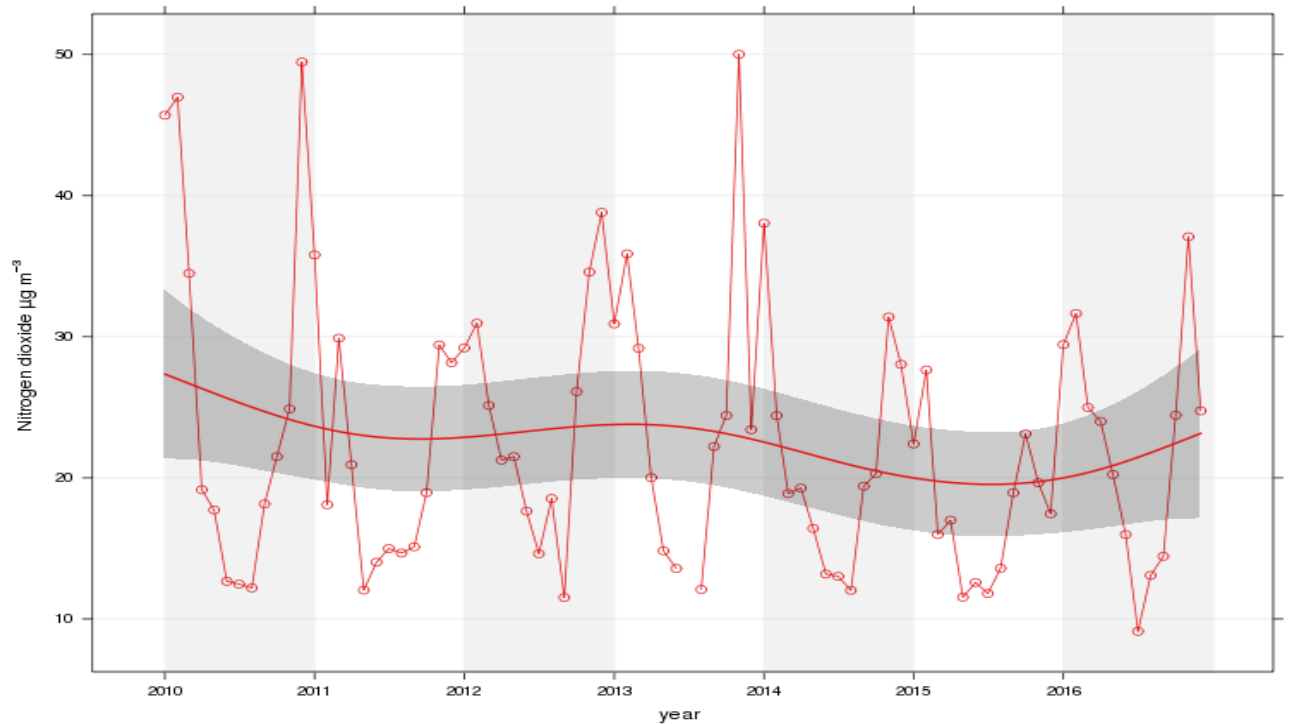
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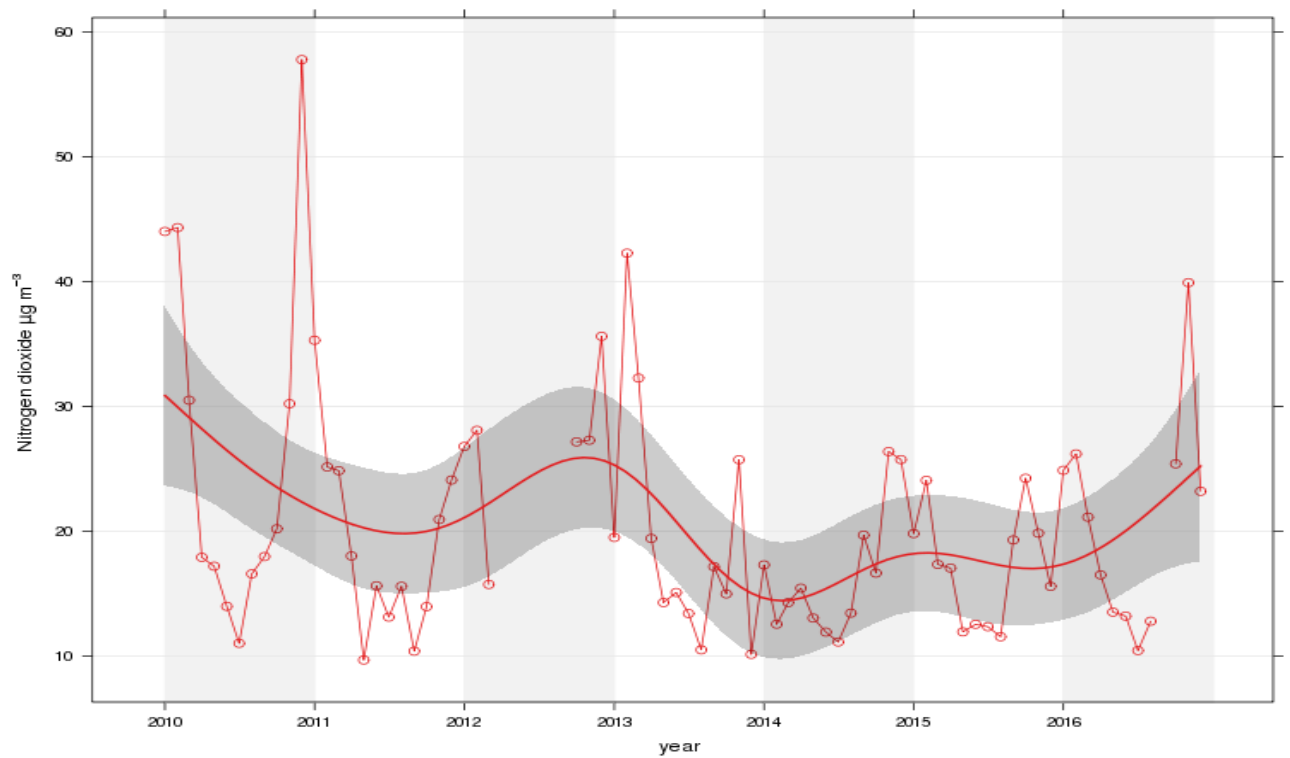


Appendix F Automatic Monitor trends 2010 -2016

Trend for West Dunbartonshire Clydebank



Trend for West Dunbartonshire Glasgow Road



Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. Air Quality Management Areas are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance (TG16)
- The Environment Act 1995
- The Air Quality (Scotland) Regulations 2000
- The Air Quality (Scotland) (Amendment) Regulations 2002
- West Dunbartonshire Council Annual Progress Report 2016