

## Annual Progress Report (APR)



**2016 Air Quality Annual Progress Report (APR) for  
West Dunbartonshire Council**

**In fulfilment of Part IV of the  
Environment Act 1995**

**Local Air Quality Management**

**Date June 2016**

|                                |  |
|--------------------------------|--|
| <b>Local Authority Officer</b> | Graham Pollock                                       |
| <b>Department</b>              | Corporate Services                                   |
| <b>Address</b>                 | Aurora House, 3 Aurora Avenue, Clydebank.<br>G81 1BF |
| <b>Telephone</b>               | 0141 951 7957  |
| <b>E-mail</b>                  | Environmental.health@west-dunbarton.gov.uk           |
| <b>Report Reference number</b> | APR/16/1   |
| <b>Date</b>                    | June 2016  |

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

### **Air Quality in West Dunbartonshire Council**

Air quality within the West Dunbartonshire Council area is generally good. We have no Air Quality Management Areas.

West Dunbartonshire Council has two automatic air quality monitoring stations. One, West Dunbartonshire Clydebank, is located at Briar Drive, Clydebank and monitors NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. The second, West Dunbartonshire Glasgow Road, is situated at the corner of Glasgow Road and Leven Street, Dumbarton. This unit monitors NO<sub>2</sub> only and is part of the Automatic Urban and Rural Network (AURN). Both our automatic sites have co-located NO<sub>2</sub> diffusion tubes.

We also monitored NO<sub>2</sub> using passive diffusion tubes at 24 locations throughout West Dunbartonshire Council. Since the 2015 Update and Screening Assessment monitoring at one diffusion tube (Riddell Street) has stopped as the lampposts were removed. The Riddell Street tube was in place while a new housing development was ongoing. The site is now fully occupied. The diffusion tube results indicated that the National Air Quality Objective for NO<sub>2</sub> was not going to be breached at that location and it was decided not to replace the tube on completion of the upgrading of the lampposts.

Monitoring carried out in the Council area during 2015 did not identify any exceedances of Nitrogen Dioxide (NO<sub>2</sub>) objectives nor were the PM<sub>10</sub> or the PM<sub>2.5</sub> objectives breached.

No significant changes in emission sources within the Council area have been identified during 2015.

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.

### **Actions to Improve Air Quality**

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

## **West Dunbartonshire Council**

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

During 2015 two vehicle emission testing dates took place. A total of 278 vehicles were stopped and tested. One vehicle failed the emissions test and a fixed penalty notice was issued to the driver of the vehicle.

West Dunbartonshire Council employees also carry out idling engines checks at shopping centres, taxi ranks and bus termini throughout the year. In addition we 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 [www.west-dunbarton.gov.uk/business/environmental-health/pollution/air-quality](http://www.west-dunbarton.gov.uk/business/environmental-health/pollution/air-quality)

# Table of Contents

|  |          |
|--|----------|
| <b>Executive Summary: Air Quality in Our Area</b> .....                                | <b>i</b> |
| Air Quality in West Dunbartonshire Council .....                                       | i        |
| Actions to Improve Air Quality .....   | i        |
| Local Priorities and Challenges.....   | ii       |
| How to Get Involved.....   | ii       |
| <b>1. Local Air Quality Management</b> .....   | <b>1</b> |
| <b>2. Actions to Improve Air Quality</b> .....   | <b>2</b> |
| 2.1 -Air Quality Management Areas.....   | 2        |
| <b>3. Air Quality Monitoring Data and Comparison with Air Quality Objectives</b> ..... | <b>3</b> |
| 3.1 Summary of Monitoring Undertaken .....   | 3        |
| 3.1.1 Automatic Monitoring Sites .....   | 3        |
| 3.1.2 Non-Automatic Monitoring Sites .....   | 3        |
| 3.2 Individual pollutants.....   | 3        |
| 3.2.1 Nitrogen Dioxide (NO <sub>2</sub> ) .....  | 3        |
| 3.2.2 Particulate Matter (PM <sub>10</sub> ) .....                                     | 4        |
| 3.2.3 Particulate Matter (PM <sub>2.5</sub> ).....                                     | 5        |
| 3.2.4 Sulphur Dioxide (SO <sub>2</sub> ).....  | 5        |
| 3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene .....                                    | 5        |
| <b>4. New Local Developments</b> .....   | <b>6</b> |
| 4.1 Road Traffic Sources.....  | 6        |
| 4.2 Other Transport Sources .....  | 6        |
| 4.3 Industrial Sources.....  | 6        |
| 4.4 Commercial and Domestic Sources .....  | 6        |
| 4.5 New Developments with Fugitive or Uncontrolled Sources.....                        | 6        |
| <b>5. Planning Applications</b> .....  | <b>7</b> |

|   |           |
|---|-----------|
| <b>6. Conclusions and Proposed Actions</b> .....                                  | <b>8</b>  |
| 6.1 Conclusions from New Monitoring Data.....                                     | 8         |
| 6.2 Conclusions relating to New Local Developments .....                          | 8         |
| 6.3 Proposed Actions .....  | 8         |
| <b>Appendix A: Monitoring Results</b> .....                                       | <b>9</b>  |
| <b>Appendix B: Full Monthly Diffusion Tube Results for 2015</b> .....             | <b>23</b> |
| <b>Appendix C: Supporting Tech Info / Air Quality Monitoring Data QA/QC</b> ..... | <b>26</b> |
| <b>Appendix D: Automatic monitor locations</b> .....                              | <b>32</b> |
| <b>Appendix E: NO<sub>2</sub> Diffusion tube locations and key</b> .....          | <b>33</b> |
| <b>Appendix F: Graphs showing NO<sub>2</sub> trend</b> .....                      | <b>38</b> |
| <b>Glossary of Terms</b> .....  | <b>41</b> |
| <b>References</b> .....   | <b>42</b> |

**List of Tables**

|   |   |
|---|---|
| Table 1.1 – Summary of Air Quality Objectives in Scotland ..... | 1 |
|---|---|

## 1. Local Air Quality Management

This report provides an overview of air quality in West Dunbartonshire Council 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 <sub>2</sub> )     | 200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year   | 1-hour mean  | 31.12.2005             |
|   | 40 µg/m <sup>3</sup>   | Annual mean  | 31.12.2005             |
| Particulate Matter (PM <sub>10</sub> )  | 50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year   | 24-hour mean | 31.12.2010             |
|   | 18 µg/m <sup>3</sup>   | Annual mean  | 31.12.2010             |
| Particulate Matter (PM <sub>2.5</sub> ) | 10 µg/m <sup>3</sup>   | Annual mean  | 31.12.2020             |
| Sulphur dioxide (SO <sub>2</sub> )      | 350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year | 1-hour mean  | 31.12.2004             |
|   | 125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year  | 24-hour mean | 31.12.2004             |

| 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             |
| <b>Benzene</b>         | 3.25 $\mu\text{g}/\text{m}^3$   | Running annual mean | 31.12.2010             |
| <b>1,3 Butadiene</b>   | 2.25 $\mu\text{g}/\text{m}^3$   | Running annual mean | 31.12.2003             |
| <b>Carbon Monoxide</b> | 10.0 $\text{mg}/\text{m}^3$   | Running 8-Hour mean | 31.12.2003             |
| <b>Lead</b>            | 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 (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

There are no AQMAs within the West Dunbartonshire Council area.



### **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 two sites during 2015. 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 NO<sub>2</sub> at 24 sites during 2015. Table A.2 in Appendix A shows the details of the sites.

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 (NO<sub>2</sub>)**

Only one of the monitored locations – Milton 1 - breached the National Air Quality Objective for NO<sub>2</sub> with a bias adjusted annual average of 44.3µg/m<sup>3</sup>.

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.

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<sub>2</sub> levels at the residences. The tube, designated Milton 2, has been at this site since 2008. The 2015 bias adjusted annual mean for Milton 2 was 15.02µg/m<sup>3</sup>.

The NO<sub>2</sub> Distance Calculator from the Air Quality Archive web site was used to predict NO<sub>2</sub> levels at the residences based on the results of Milton 1 diffusion tube. The calculator predicted the NO<sub>2</sub> levels at the residences to be 27.2µg/m<sup>3</sup> which although higher than the Milton 2 diffusion tube result remains well within the National Air Quality Objective for NO<sub>2</sub>. There is therefore no need to proceed to Detailed Assessment at this location.

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>. Trend graphs for NO<sub>2</sub> results, both automatic and diffusion tubes are included in Appendix F. The automatic monitors appear to show a very slight downward trend. It remains to be seen if this will continue. The diffusion tube results, on the whole, appear to follow this slight downward trend. However there are some exceptions. Graphs showing the trends in NO<sub>2</sub> levels for both automatic monitors and diffusion tubes can be found in Appendix F.

For diffusion tubes, the full 2015 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year. There were no exceedences of the National Air Quality Objectives at any site during 2015.

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

West Dunbartonshire Council recorded no exceedances of the National Air Quality Objectives for PM<sub>10</sub> during 2015.

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

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

We have insufficient data to discuss trends in PM levels as monitoring of PM<sub>10</sub> and PM<sub>2.5</sub> began in March 2015 with the installation of a FIDAS monitor at West Dunbartonshire Clydebank.

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

West Dunbartonshire Council did not record an exceedance of the National Air Quality Objectives for PM<sub>2.5</sub> during 2015.

2015 was the first year West Dunbartonshire Council monitored PM<sub>2.5</sub> therefore we have insufficient data to carry out any comparison from previous years.

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

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**

### **4.1 Road Traffic Sources**

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

### **4.2 Other Transport Sources**

There are no new 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**

In October 2015 a planning application was lodged for a development at Queens Quay, Clydebank. The application was for a mixed use development including residential (including affordable/community housing), retail, financial/service, restaurant, public house, office, hotel, care home , health centre, assembly and leisure uses, with associated car parking, access road, quay wall improvements and landscaping. An air quality assessment carried out by EnviroCentre dated October 2015, submitted in support of the application, concluded that there would be no significant change to NO<sub>x</sub> and PM levels at relevant receptors as a result of the development.

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

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

Monitoring of local air quality during 2015 has shown no exceedance of any of the National Air Quality Objectives at any relevant location.

### **6.2 Conclusions relating to New Local Developments**

There was one major proposed development during 2015 which was considered to have the potential to adversely affect local air quality. The resultant air quality impact assessment report has shown that there will be no significant adverse effect on local air quality as a result of the proposed development.

### **6.3 Proposed Actions**

Monitoring throughout 2015 has not identified any exceedance of the National Air Quality Objectives. No need to modify the existing monitoring programme has been identified.

West Dunbartonshire Council will therefore continue to monitor local air quality in accordance with its statutory duty and submit an Air Quality Progress Report in 2017.

## Appendix A: Monitoring Results

**Table A.1 – Details of Automatic Monitoring Sites**

| Site ID | Site Name                        | Site Type     | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored                                      | In AQMA? | Monitoring Technique    | Distance to Relevant Exposure (m) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Inlet Height (m) |
|---------|----------------------------------|---------------|---------------|---------------|---|----------|-------------------------|--|---|------------------|
| CM1     | West Dunbartonshire Clydebank    | Urban traffic | 249723        | 672044        | NO <sub>2</sub> ; PM <sub>10</sub> :<br>PM <sub>2.5</sub> | N        | Chemiluminescent FIDAS  | 2.5  | 5   | 1.5              |
| CM2     | West Dunbartonshire Glasgow Road | Urban traffic | 240238        | 675193        | NO <sub>2</sub>   | 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) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube collocated with a Continuous Analyser? |
|---------|--------------|---------------|---------------|---------------|----------------------|----------|--|---|---|
| DT1     | Clydebank 1  | Urban traffic | 248479        | 671115        | NO <sub>2</sub>      | No       | 2  | 1   | No  |
| DT2     | Clydebank 6  | Urban traffic | 249725        | 672069        | NO <sub>2</sub>      | No       | 40   | 1   | No  |
| DT3     | Clydebank 7  | Urban traffic | 249913        | 669865        | NO <sub>2</sub>      | No       | 4  | 1   | No  |
| DT4     | Clydebank 9  | Urban traffic | 248899        | 670784        | NO <sub>2</sub>      | No       | 3  | 1   | No  |
| DT5     | Clydebank 10 | Urban traffic | 249759        | 671845        | NO <sub>2</sub>      | No       | 8.5  | 1   | No  |
| DT6     | Clydebank 11 | Urban traffic | 249801        | 672288        | NO <sub>2</sub>      | No       | 22   | 1   | No  |



West Dunbartonshire Council

| Site ID | Site Name    | Site Type     | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube collocated with a Continuous Analyser? |
|---------|--------------|---------------|---------------|---------------|----------------------|----------|--|---|---|
| DT7     | Clydebank 12 | Urban traffic | 249747        | 671665        | NO <sub>2</sub>      | No       | 10   | 1   | No  |
| DT8     | Clydebank 13 | Urban traffic | 249762        | 671760        | NO <sub>2</sub>      | No       | 3.5  | 1   | No  |
| DT9     | Clydebank 14 | Urban traffic | 249872        | 671854        | NO <sub>2</sub>      | No       | >25  | 1   | No  |
| DT10    | Clydebank 15 | Urban traffic | 249746        | 671966        | NO <sub>2</sub>      | No       | 8.5  | 1   | No  |
| DT11    | Clydebank 16 | Urban traffic | 249967        | 672548        | NO <sub>2</sub>      | No       | 10   | 1   | No  |
| DT12    | Clydebank 17 | Urban traffic | 249987        | 672440        | NO <sub>2</sub>      | No       | 11   | 1   | No  |
| DT13    | Clydebank 18 | Urban traffic | 249929        | 6714454       | NO <sub>2</sub>      | No       | 9  | 1   | No  |

West Dunbartonshire Council

| Site ID | Site Name                 | Site Type     | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube collocated with a Continuous Analyser? |
|---------|---------------------------|---------------|---------------|---------------|----------------------|----------|--|---|---|
| DT14    | Milton 1                  | Urban traffic | 242266        | 674235        | NO <sub>2</sub>      | No       | 12   | 1   | No  |
| DT15    | Milton 2                  | Urban traffic | 242160        | 674299        | NO <sub>2</sub>      | No       | 2  | 12  | No  |
| DT16    | Dumbarton 1               | Urban traffic | 240322        | 657177        | NO <sub>2</sub>      | No       | 2.5  | 1   | No  |
| DT17    | Dumbarton 11              | Urban traffic | 240515        | 675078        | NO <sub>2</sub>      | No       | 4  | 1   | No  |
| DT18    | Dumbarton 12              | Urban traffic | 239410        | 675330        | NO <sub>2</sub>      | No       | 7  | 1   | No  |
| DT19    | Glasgow Road, Dumbarton 2 | Urban traffic | 240178        | 675228        | NO <sub>2</sub>      | No       | 8  | 1   | No  |
| DT20    | Glasgow Road, Dumbarton 3 | Urban traffic | 240279        | 675196        | NO <sub>2</sub>      | No       | 4.5  | 1   | No  |

West Dunbartonshire Council

| Site ID | Site Name              | Site Type     | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube collocated with a Continuous Analyser? |
|---------|------------------------|---------------|---------------|---------------|----------------------|----------|--|---|---|
| DT21    | Alexandria 1           | Urban traffic | 239024        | 680206        | NO <sub>2</sub>      | No       | 5  | 1   | No  |
| DT22    | Balloch 1              | Urban traffic | 238584        | 681562        | NO <sub>2</sub>      | No       | 12   | 1   | No  |
| DT23    | Briar Drive 1          | Urban traffic | 249723        | 672044        | NO <sub>2</sub>      | No       | 2.5  | 5   | Yes   |
| DT24    | Briar Drive 2          | Urban traffic | 249723        | 672044        | NO <sub>2</sub>      | No       | 2.5  | 5   | Yes   |
| DT25    | Briar Drive 3          | Urban traffic | 249723        | 672044        | NO <sub>2</sub>      | No       | 2.5  | 5   | Yes   |
| DT26    | Dumbarton Triplicate 1 | Urban traffic | 240238        | 675193        | NO <sub>2</sub>      | No       | 18   | 4.5   | Yes   |
| DT27    | Dumbarton Triplicate 2 | Urban traffic | 240238        | 675193        | NO <sub>2</sub>      | No       | 18   | 4.5   | Yes   |

West Dunbartonshire Council

| Site ID | Site Name              | Site Type     | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube collocated with a Continuous Analyser? |
|---------|------------------------|---------------|---------------|---------------|----------------------|----------|--|---|---|
| DT28    | Dumbarton Triplicate 3 | Urban traffic | 240238        | 675193        | NO <sub>2</sub>      | No       | 18   | 4.5   | Yes   |
| DT29    | Vale of Leven 3        | Urban traffic | 240115        | 677146        | NO <sub>2</sub>      | No       | >25  | 1   | No  |
| DT30    | Vale of Leven 4        | Urban traffic | 204164        | 677014        | NO <sub>2</sub>      | No       | >25  | 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 NO<sub>2</sub> Monitoring Results

| Site ID | Site Type     | Monitoring Type | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |      |      |      |       |
|---------|---------------|-----------------|---|--|---|------|------|------|-------|
|         |               |                 |   |  | 2011  | 2012 | 2013 | 2014 | 2015  |
| CM1     | Urban traffic | Automatic       | 96  | 96   | 19  | 22.9 | 25   | 21   | 18    |
| CM2     | Urban traffic | Automatic       | 96  | 96   | 21  | 24   | 19   | 17   | 17.1  |
| DT1     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 32.8  | 30.9 | 32.9 | 25.0 | 26.82 |
| DT2     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 31.9  | 36.2 | 35.9 | 29.3 | 23.99 |
| DT3     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 30.9  | 28.9 | 30   | 27.4 | 21.44 |
| DT4     | Urban traffic | Diffusion Tube  | 100   | 100  | 28.9  | 25.3 | 25.8 | 19.7 | 19.96 |
| DT5     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 29.1  | 27.9 | 28.9 | 21.7 | 24.32 |
| DT6     | Urban traffic | Diffusion Tube  | 100   | 100  | 28.3  | 25.0 | 22.9 | 20.1 | 19.07 |
| DT7     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 24.1  | 26.2 | 25   | 19   | 17.78 |

West Dunbartonshire Council

| Site ID | Site Type     | Monitoring Type | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |             |             |         |              |
|---------|---------------|-----------------|---|--|---|-------------|-------------|---------|--------------|
|         |               |                 |   |  | 2011  | 2012        | 2013        | 2014    | 2015         |
| DT8     | Urban traffic | Diffusion Tube  | 100   | 100  | 27  | 25.2        | 27.3        | 20.9    | 21.37        |
| DT9     | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 16.8  | 17.2        | 15.9        | 13.1    | 12.28        |
| DT10    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 24.3  | 28.4        | 28.0        | 22.9    | 24.25        |
| DT11    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 29.2  | 22.9        | 25.8        | 21.8    | 23.11        |
| DT12    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 30.9  | 25.4        | 23.5        | 21.3    | 21.09        |
| DT13    | Urban traffic | Diffusion Tube  | 83.3  | 83.3                                       | 28.4  | 29.4        | 26.1        | 22.22.1 | 20.57        |
| DT14    | Urban traffic | Diffusion Tube  | 100   | 100  | <b>51.6</b>   | <b>51.7</b> | <b>54.8</b> | 40.0    | <b>44.30</b> |
| DT15    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 28.8  | 21.1        | 25.7        | 18.6    | 15.02        |
| DT16    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 26.1  | 27.9        | 29.2        | 25.8    | 24.56        |
| DT17    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 35.2  | 33.9        | 29.2        | 28.1    | 24.07        |

West Dunbartonshire Council

| Site ID | Site Type     | Monitoring Type | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |      |      |      |       |
|---------|---------------|-----------------|---|--|---|------|------|------|-------|
|         |               |                 |   |  | 2011  | 2012 | 2013 | 2014 | 2015  |
| DT18    | Urban traffic | Diffusion Tube  | 100   | 100  | 21.7  | 20.5 | 20.5 | 15.3 | 14.77 |
| DT19    | Urban traffic | Diffusion Tube  | 100   | 100  | 31  | 34.6 | 32   | 24.1 | 25.87 |
| DT20    | Urban traffic | Diffusion Tube  | 83.3  | 83.3                                       | 33.3  | 32.6 | 31.3 | 28.8 | 24.34 |
| DT21    | Urban traffic | Diffusion Tube  | 100   | 100  | 29.0  | 25.7 | 26.6 | 28.1 | 23.33 |
| DT22    | Urban traffic | Diffusion Tube  | 100   | 100  | 23.5  | 24.6 | 24.0 | 19.6 | 16.05 |
| DT23    | Urban traffic | Diffusion Tube  | 100   | 100  | 20.4  | 23.9 | 24.6 | 20.1 | 17.91 |
| DT24    | Urban traffic | Diffusion Tube  | 100   | 100  | 26.5  | 25.2 | 22.9 | 20.2 | 18.19 |
| DT25    | Urban traffic | Diffusion Tube  | 100   | 100  | 22.9  | 26.9 | 32.2 | 21.0 | 19.22 |
| DT26    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 22.1  | 20.3 | 20.3 | 16.9 | 15.72 |
| DT27    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 22.3  | 23.3 | 20.5 | 16.5 | 17.6  |

| Site ID | Site Type     | Monitoring Type | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |      |      |      |       |
|---------|---------------|-----------------|---|--|---|------|------|------|-------|
|         |               |                 |   |  | 2011  | 2012 | 2013 | 2014 | 2015  |
| DT28    | Urban traffic | Diffusion Tube  | 91.6  | 91.6                                       | 22.6  | 21.1 | 20.9 | 17.6 | 15.47 |
| DT29    | Urban traffic | Diffusion Tube  | 91.6  | 83.3                                       | 25.1  | 23.1 | 24.8 | 19.7 | 19.03 |
| DT30    | Urban traffic | Diffusion Tube  | 100   | 100  | 28.1  | 22   | 23.3 | 20.7 | 24.49 |

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

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

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



Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

| Site ID | Site Type     | Monitoring Type | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup> |      |         |      |      |
|---------|---------------|-----------------|---|--|--|------|---------|------|------|
|         |               |                 |   |  | 2011   | 2012 | 2013    | 2014 | 2015 |
| CM1     | Urban traffic | Automatic       | 96  | 96   | 0  | 0    | 14(189) | 0    | 0    |
| CM2     | Urban traffic | Automatic       | 96  | 96   | 0  | 0    | 4       | 0    | 0    |

Notes: Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

(3) If the period of valid data is less than 90%, the 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

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

| Site ID | Site Type     | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |      |      |      |      |
|---------|---------------|---|--|--|------|------|------|------|
|         |               |   |  | 2011   | 2012 | 2013 | 2014 | 2015 |
| CM1     | Urban traffic | 78  | 78   | N/A  | N/A  | N/A  | N/A  | 10   |

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 18µg/m<sup>3</sup> are shown in **bold**.

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

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

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

Table A.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results

| Site ID | Site Type     | Valid Data Capture for Monitoring Period (%)<br>(1) | Valid Data Capture 2015 (%)<br>(2) | PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> (3) |      |      |      |      |
|---------|---------------|---|------------------------------------|--|------|------|------|------|
|         |               |   |                                    | 2011   | 2012 | 2013 | 2014 | 2015 |
| CM1     | Urban traffic | 78  | 78                                 | N/A  | N/A  | N/A  | N/A  | 0    |

Notes: Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 7 times/year) are shown in **bold**.

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

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

(3) If the period of valid data is less than 90%, the 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.

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

| Site ID | Site Type     | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2015 (%) <sup>(2)</sup> | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup> |      |      |      |      |
|---------|---------------|---|--|---|------|------|------|------|
|         |               |   |  | 2011  | 2012 | 2013 | 2014 | 2015 |
| CM1     | Urban traffic | 77.5  | 77.5                                       | N/A   | N/A  | N/A  | N/A  | 6    |

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 10µg/m<sup>3</sup> are shown in **bold**.

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

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

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

## Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2015

| Site ID | NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> ) |      |      |      |      |      |      |      |      |      |      |      |             |                      |
|---------|--|------|------|------|------|------|------|------|------|------|------|------|-------------|----------------------|
|         | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual Mean |                      |
|         |  |      |      |      |      |      |      |      |      |      |      |      | Raw Data    | Bias Adjusted<br>(1) |
| DT1     | 44.1   |      | 36.1 |      | 14.3 | 15.2 | 22.0 | 23.7 | 31.2 | 33.5 | 28.1 | 25.5 | 27.37       | 26.8                 |
| DT2     | 41.8   | 9.5  | 21   | 16.7 | 15.5 | 14.6 | 23.1 | 18.2 |      | 45.1 | 33.2 | 30.6 | 24.48       | 24.0                 |
| DT3     | 30   | 25.4 | 28.4 | 13.9 | 9.4  | 18.6 | 25.7 | 22   | 27.6 |      | 17.5 | 22.1 | 21.87       | 21.4                 |
| DT4     | 34.1   | 20.8 | 29.7 | 16   | 10.6 | 14.5 | 17.7 | 17.9 | 21.9 | 30.6 | 14.9 | 15.7 | 20.37       | 20.0                 |
| DT5     | 36.2   | 25.9 | 27.5 | 11.9 |      | 16.7 | 21.5 | 19.6 | 28.3 | 36.7 | 21.7 | 27.0 | 24.82       | 24.3                 |
| DT6     | 28.9   | 19.2 | 22.3 | 11.1 | 12.1 | 9.5  | 14.4 | 16.6 | 23.3 | 30.2 | 22.4 | 23.5 | 19.46       | 19.1                 |
| DT7     | 33   | 25.3 | 21.4 | 12.3 | 8.7  | 11.1 |      | 20.9 | 25.1 | 2.0  | 21.4 | 18.4 | 18.15       | 17.8                 |
| DT8     | 34.2   | 21.7 | 21.7 | 17   | 13.6 | 14.4 | 19.2 | 19.3 | 24.7 | 33.2 | 23.0 | 19.7 | 21.81       | 21.4                 |
| DT9     | 22.9   | 11.8 | 14.4 | 10.7 | 5.7  | 5.8  | 8.6  |      | 14.2 | 24.3 | 6.4  | 13   | 12.53       | 12.3                 |

| Site ID | NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> ) |      |      |      |      |      |      |      |      |      |      |      |             |                      |
|---------|--|------|------|------|------|------|------|------|------|------|------|------|-------------|----------------------|
|         | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual Mean |                      |
|         |  |      |      |      |      |      |      |      |      |      |      |      | Raw Data    | Bias Adjusted<br>(1) |
| DT10    | 33.1   | 23.6 | 25.0 |      | 14.3 |      | 16.8 | 10.4 | 31.9 | 37.1 | 36.0 | 19.3 | 24.75       | 24.3                 |
| DT11    | 38.3   | 33.3 | 28.5 | 17.7 | 12.1 | 12.6 | 18.1 | 21.6 | 27.4 | 32.8 | 17.6 | 23.0 | 23.58       | 23.1                 |
| DT12    | 30.1   | 26.4 | 21.1 | 13.2 | 9.7  | 14.0 | 16.2 | 22.5 | 22.4 | 34.8 | 27.8 | 20.1 | 21.53       | 21.1                 |
| DT13    | 38.6   | 19.8 | 26.3 | 17.7 | 7.2  | 14.5 | 16.4 | 20.7 | 27.7 |      |      |      | 20.99       | 20.6                 |
| DT14    | 69.7   | 51.4 | 27.9 | 14.5 | 19.8 | 41.3 | 48   | 43.2 | 61.7 | 59.9 | 57.5 | 47.5 | 45.2        | 44.3                 |
| DT15    | 27.8   | 19.5 | 23.5 | 11.6 | 8.4  | 12.5 | 14.2 | 14.3 | 16.6 | 2    | 22   | 11.5 | 15.33       | 15.0                 |
| DT16    | 19   | 16.4 | 18.6 | 18.3 | 17.8 | 25.7 | 25.3 |      | 43.1 | 36.3 | 36.9 | 18.2 | 25.06       | 24.6                 |
| DT17    | 30.1   | 26.4 | 21.1 | 13.2 | 9.7  | 14   | 16.2 | 22.5 | 22.4 | 34.8 | 27.8 | 20.1 | 21.53       | 21.1                 |
| DT18    | 33.1   | 11.4 | 13.8 | 8.6  | 10.1 | 8.8  | 10.9 | 12.5 | 17.2 | 29.3 | 15   | 10.2 | 15.08       | 14.8                 |
| DT19    | 40.3   | 23.7 | 11.2 | 20.9 | 16.9 | 16.1 | 28.6 | 24.8 | 37.7 | 44.3 | 21.8 | 30.5 | 26.4        | 25.9                 |
| DT20    | 43.8   | 22.2 | 29.8 | 10.7 | 10.1 | 21.6 |      | 28.2 |      | 45.7 | 14.1 | 22.2 | 24.84       | 24.3                 |

| Site ID | NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> ) |      |      |      |      |      |      |      |      |      |      |      |             |                      |
|---------|--|------|------|------|------|------|------|------|------|------|------|------|-------------|----------------------|
|         | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual Mean |                      |
|         |  |      |      |      |      |      |      |      |      |      |      |      | Raw Data    | Bias Adjusted<br>(1) |
| DT21    | 27.4   | 32.5 | 28.0 | 19.4 | 11.6 | 15.1 | 21.0 | 23.1 | 29.1 | 31.6 | 24.9 | 22.0 | 23.81       | 23.3                 |
| DT22    | 11.1   | 12.6 | 12.0 | 16.6 | 7.6  | 11.0 | 15.3 | 19.8 | 26.3 | 27.2 | 20.7 | 16.3 | 16.38       | 16.0                 |
| DT23    | 25.2   | 12.9 | 22.1 | 11.8 | 7.1  | 8.5  | 18.6 | 16.9 | 18.6 | 33.9 | 18.8 | 24.9 | 18.28       | 17.9                 |
| DT24    | 31.6   | 16.8 | 17.7 | 14.9 | 7.1  | 7.9  | 13.2 | 15.5 | 18.1 | 45.8 | 22.0 | 21.1 | 18.56       | 18.2                 |
| DT25    | 30.1   | 21.4 | 24.0 | 9.5  | 9.1  | 7.8  | 15.7 | 24.8 | 16.9 | 43.2 | 20.6 | 12.2 | 19.61       | 19.2                 |
| DT26    | 28.4   | 13.2 | 14.6 | 11.0 | 9.3  | 9.9  | 14.6 | 11.0 | 20.7 | 27.4 | 16.4 |      | 16.05       | 15.7                 |
| DT27    | 53.5   | 14.8 | 13.7 | 9.9  | 6.9  | 9.4  | 17.4 | 9.6  | 20.7 | 27.5 | 14.2 |      | 17.96       | 17.6                 |
| DT28    | 28.3   | 11.3 | 12.7 | 13.8 | 6.0  | 11.1 | 14.8 | 9.7  | 24.3 | 28.3 | 13.3 |      | 15.78       | 15.5                 |
| DT29    | 24.6   |      | 13.8 | 12.8 | 4.8  | 15.3 | 18.0 | 18.5 | 28.5 | 30.8 | 30.9 | 15.6 | 19.42       | 19.0                 |
| DT30    | 71.8   | 17.8 | 14.0 | 17.2 | 12.4 | 17.9 | 19.9 | 23.0 | 29.1 | 35.7 | 21.1 | 20.0 | 24.99       | 24.5                 |

(1) See Appendix C for details on bias adjustment

## **Appendix C: Supporting Tech Info / 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.

Additionally AEA carry out an audit of all automatic monitors twice yearly. Both the Glasgow Road, Dumbarton and the West Dunbartonshire, Clydebank air quality units have a comprehensive service contract and are serviced by Enviro Technology Services plc and Horiba respectively at 6 monthly intervals.

West Dunbartonshire Council staff change filters and carry out manual calibration of the NO<sub>x</sub> analysers on a fortnightly basis. The calibration data is forwarded to AEA for QA/QC purposes.

Since moving to new office accommodation in March 2015 we no longer have the facility to monitor the West Dunbartonshire Clydebank unit on a daily basis. We do not have the necessary software to remotely monitor West Dunbartonshire Glasgow Road. We therefore rely on Ricardo/AEA informing us of any problems at both units.

#### **NO<sub>2</sub> Tubes**

West Dunbartonshire Council use Glasgow Scientific Services (GSS) for NO<sub>2</sub> tube analysis. Tubes are provided and analysed by GSS.

The NO<sub>2</sub> tube preparation method used is 20% triethanolamine (TEA) in water.

Glasgow Scientific Services participate in the AIR NO<sub>2</sub> Proficiency Testing Scheme. In 2015 100% of the results the lab submitted to the scheme were determined to be satisfactory based on a z-score of  $\leq \pm 2$ .

A bias of 0.98 has been used to adjust NO<sub>2</sub> tube data. The bias was obtained from the National Diffusion Tube Bias Adjustment Factor Spreadsheet.



- Produced by Ricardo Energy and Environment on behalf of the Scottish Government
- WEST DUNBARTONSHIRE CLYDEBANK
- 01 January to 31 December 2015
- These data have been fully ratified by Ricardo Energy and Environment

| Pollutant                         | PM <sub>10+</sub>     | PM <sub>25~</sub>     | NO <sub>2</sub>        | NO <sub>x</sub>        |
|-----------------------------------|-----------------------|-----------------------|------------------------|------------------------|
| Maximum hourly mean               | 96 µg m <sup>-3</sup> | 73 µg m <sup>-3</sup> | 145 µg m <sup>-3</sup> | 876 µg m <sup>-3</sup> |
| Maximum daily mean                | -                     | 34 µg m <sup>-3</sup> | 75 µg m <sup>-3</sup>  | 277 µg m <sup>-3</sup> |
| 98.08th percentile of daily means | 26 µg m <sup>-3</sup> | 22 µg m <sup>-3</sup> | -                      | -                      |
| Average                           | 10 µg m <sup>-3</sup> | 6 µg m <sup>-3</sup>  | 18 µg m <sup>-3</sup>  | 39 µg m <sup>-3</sup>  |
| Data capture                      | 78.0 %                | 77.5 %                | 95.6 %                 | 95.6 %                 |

- + PM<sub>10</sub> instruments:
- FIDAS using a gravimetric factor of 1 from 13 March 2015 onwards
- ~ PM<sub>25</sub> as measured by a FIDAS
- All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure.
- NO<sub>x</sub> mass units are NO<sub>x</sub> as NO<sub>2</sub> µg m<sup>-3</sup>

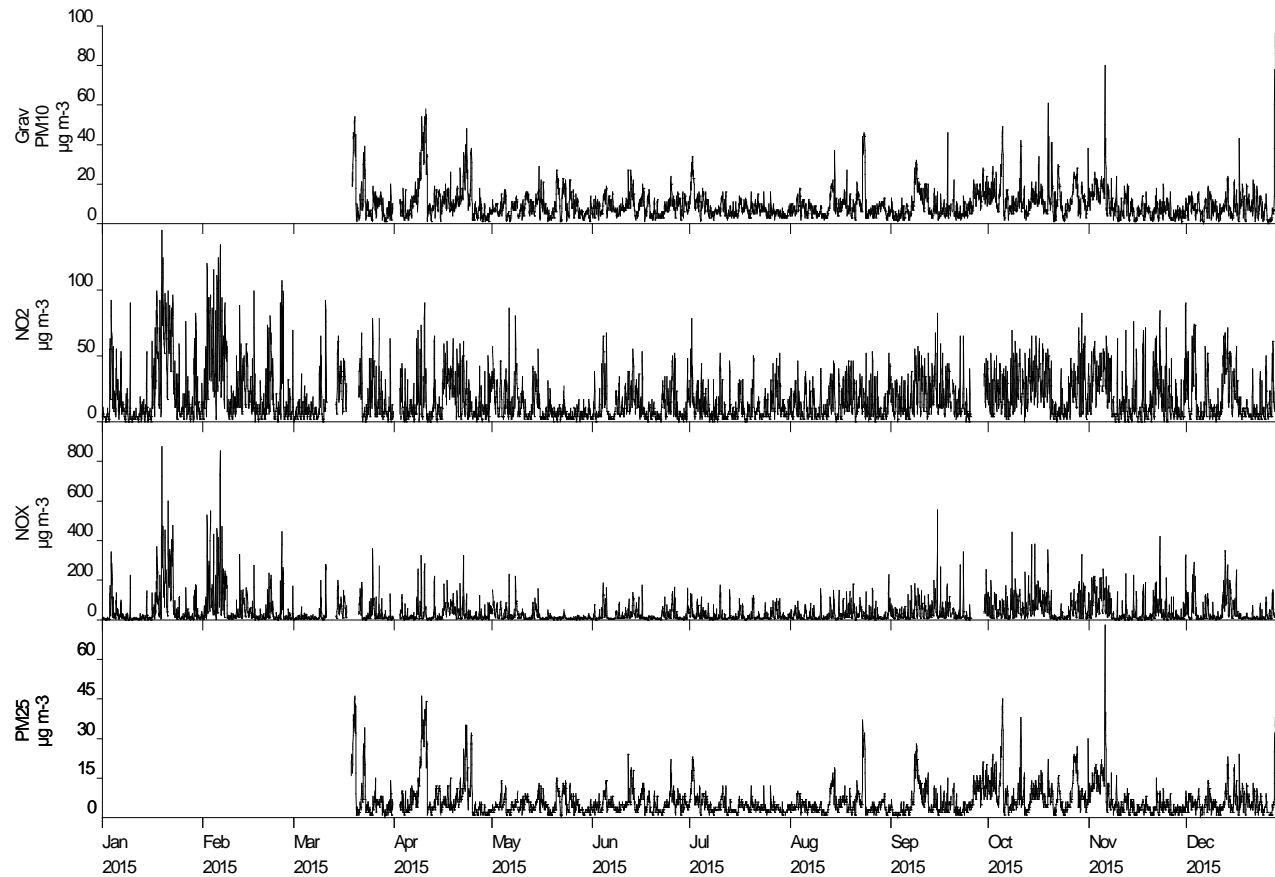
| Pollutant  | Air Quality Regulations (2000) and<br>Air Quality (Scotland) Amendment Regulations 2002 | Exceedances | Days |
|--|---|-------------|------|
| PM <sub>10</sub> Particulate Matter<br>(Gravimetric) | Daily mean > 50 µg m <sup>-3</sup>  | 0           | 0    |
| PM <sub>10</sub> Particulate Matter<br>(Gravimetric) | Annual mean > 18 µg m <sup>-3</sup>   | 0           | -    |
| Nitrogen Dioxide                                     | Annual mean > 40 µg m <sup>-3</sup>   | 0           | -    |
| Nitrogen Dioxide                                     | Hourly mean > 200 µg m <sup>-3</sup>  | 0           | 0    |

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

Produced by Ricardo Energy and Environment on behalf of the Scottish Government

West Dunbartonshire Clydebank

Hourly Mean Data for 01 January to 31 December 2015



## Dumbarton Roadside

01/01/2015 to 31/12/2015

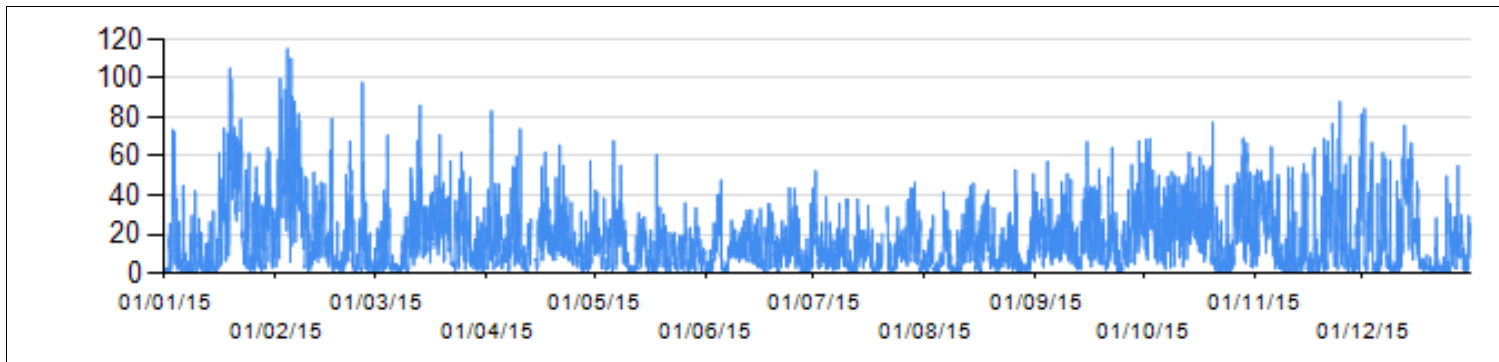
|  | V High<br>(No. of<br>Days) | High<br>(No. of<br>Days) | Mod<br>(No. of<br>Days) | Low<br>(No. of<br>Days) | Max.<br>Hourly<br>Conc. | Max.<br>Daily<br>Conc. | Max.<br>Running<br>8 Hour<br>Mean | Max.<br>Running<br>24 Hour<br>Mean | Period<br>Mean<br>Conc | Period<br>Data<br>Capture<br>(%) |
|--|----------------------------|--------------------------|-------------------------|-------------------------|-------------------------|------------------------|-----------------------------------|------------------------------------|------------------------|----------------------------------|
| <b>NO2</b><br>( $\mu\text{g}/\text{m}^3$ ) | 0                          | 0                        | 0                       | 365                     | 115.2                   | 62.2                   | 77.3                              | 67.4                               | 17.1                   | 95.8                             |
| <b>NOX</b><br>( $\mu\text{g}/\text{m}^3$ ) | 0                          | 0                        | 0                       | 0                       | 594.3                   | 200.4                  | 290.7                             | 213.3                              | 36.7                   | 95.8                             |

- These data have been fully ratified by Ricardo Energy and Environment

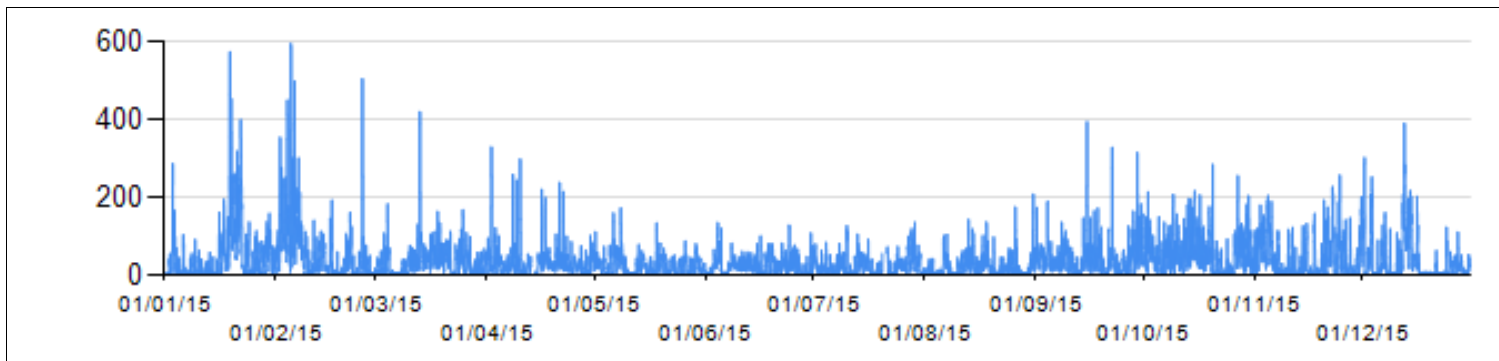
|            | Air Quality Objective                                     | Exceedances | Days |
|------------|---|-------------|------|
| <b>NO2</b> | Hourly mean > 200 $\mu\text{g}/\text{m}^3$                | None        | 0    |
| <b>NO2</b> | Period mean > annual mean obj 40 $\mu\text{g}/\text{m}^3$ | No          |      |

Note: When comparing site measurements against the air quality objectives data capture should meet or exceed 90% across a calendar year.

NO2



NOX



**Appendix D: Automatic monitor locations**

**West Dunbartonshire Clydebank Automatic Monitor Location (CM1)**

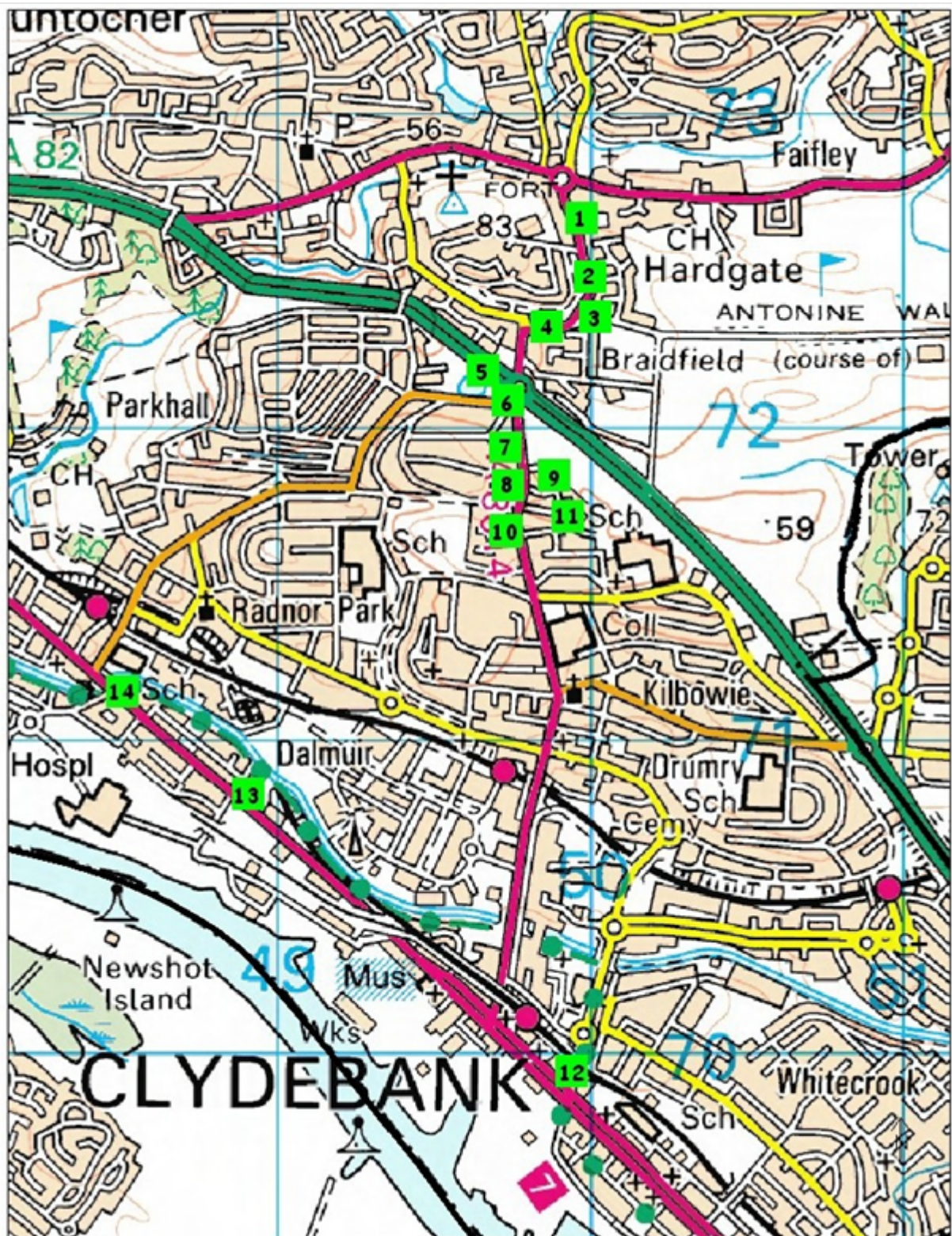


**Dumbarton Roadside Automatic Monitor Location (CM2)**

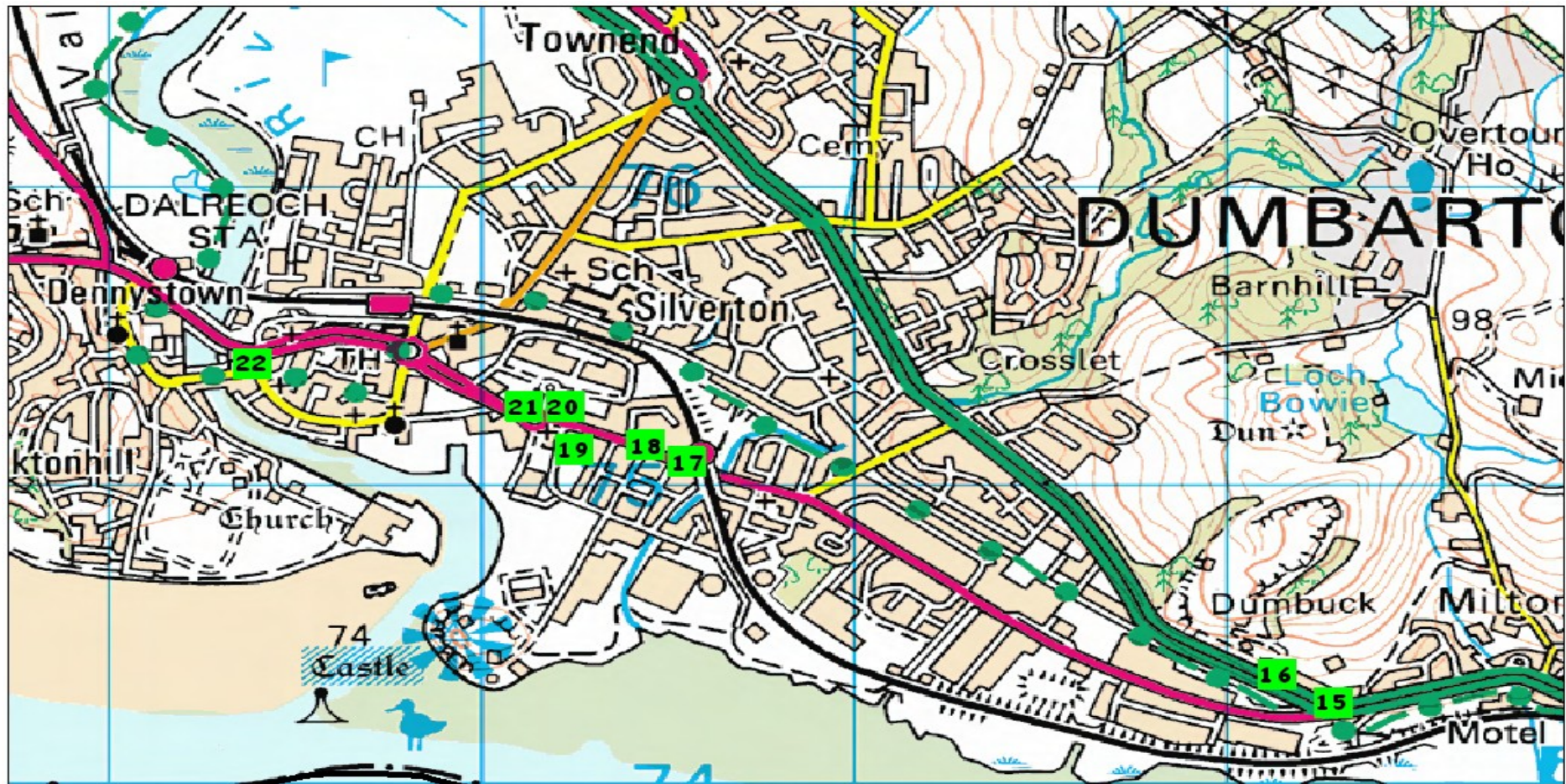


Appendix E: NO<sub>2</sub> Diffusion tube locations and key

Clydebank



Dumbarton



West Dunbartonshire Council

Title: - N02 Map - Dumbarton

Date: 05/04/2012

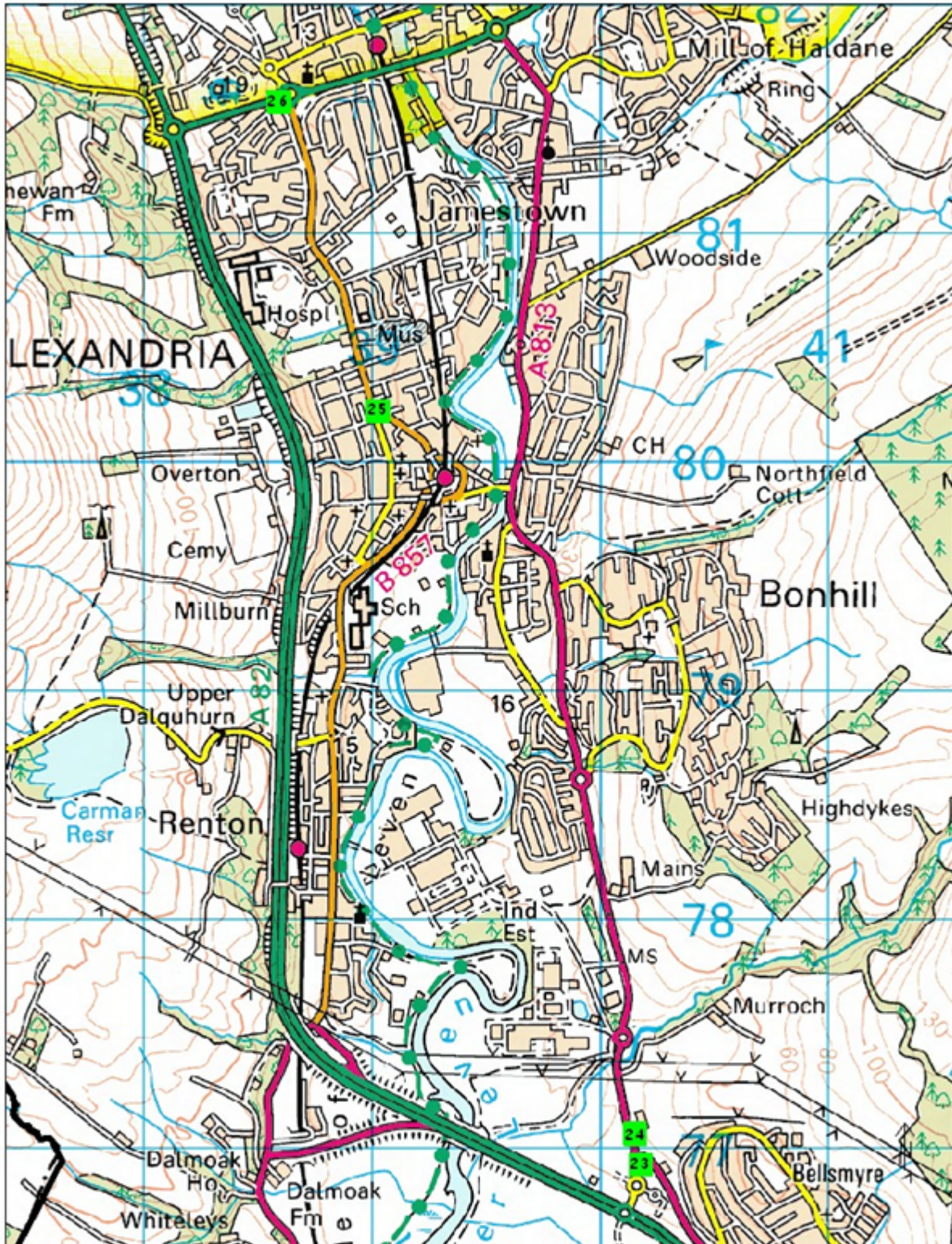
Scale: 1:15000

Map Reference: NS4075

Reproduced from the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright.  
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.



Vale of Leven



Title : N02 Map - Vale of Leven

Reproduced from the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright. Use in whole or in part without the permission of the Controller of Her Majesty's Stationery Office may lead to prosecution or civil proceedings. West Dunbartonshire Council Licence No. LA0905 IL 2001

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

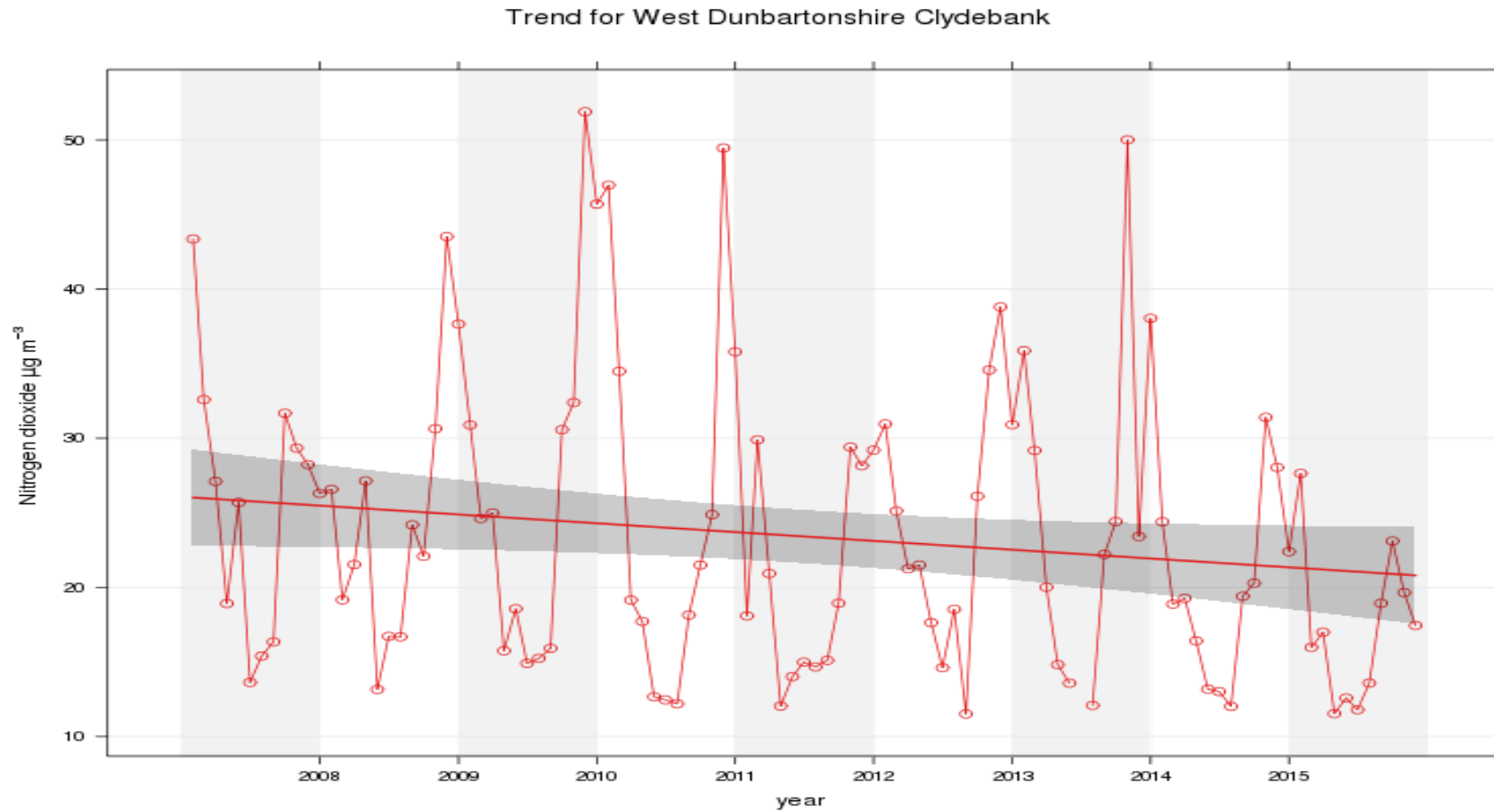
Key for NO<sub>2</sub> diffusion tube monitoring locations

| Map Number | Site ID | Name of site                             |
|------------|---------|--|
| 1          | DT11    | Clydebank 16                             |
| 2          | DT12    | Clydebank 17                             |
| 3          | DT13    | Clydebank 18                             |
| 4          | DT6     | Clydebank 11                             |
| 5          | DT2     | Clydebank 6                              |
| 6          | DT23-25 | West Dunbartonshire Clydebank Co-located |
| 7          | DT10    | Clydebank 15                             |
| 8          | DT8     | Clydebank 13                             |
| 9          | DT5     | Clydebank 10                             |
| 10         | DT7     | Clydebank 12                             |
| 11         | DT9     | Clydebank 14                             |
| 12         | DT3     | Clydebank 7                              |
| 13         | DT4     | Clydebank 9                              |
| 14         | DT1     | Clydebank 1                              |
| 15         | DT14    | Milton 1                                 |
| 16         | DT15    | Milton 2                                 |
| 17         | DT17    | Dumbarton 11                             |
| 18         | DT20    | Glasgow Road Dumbarton 3                 |

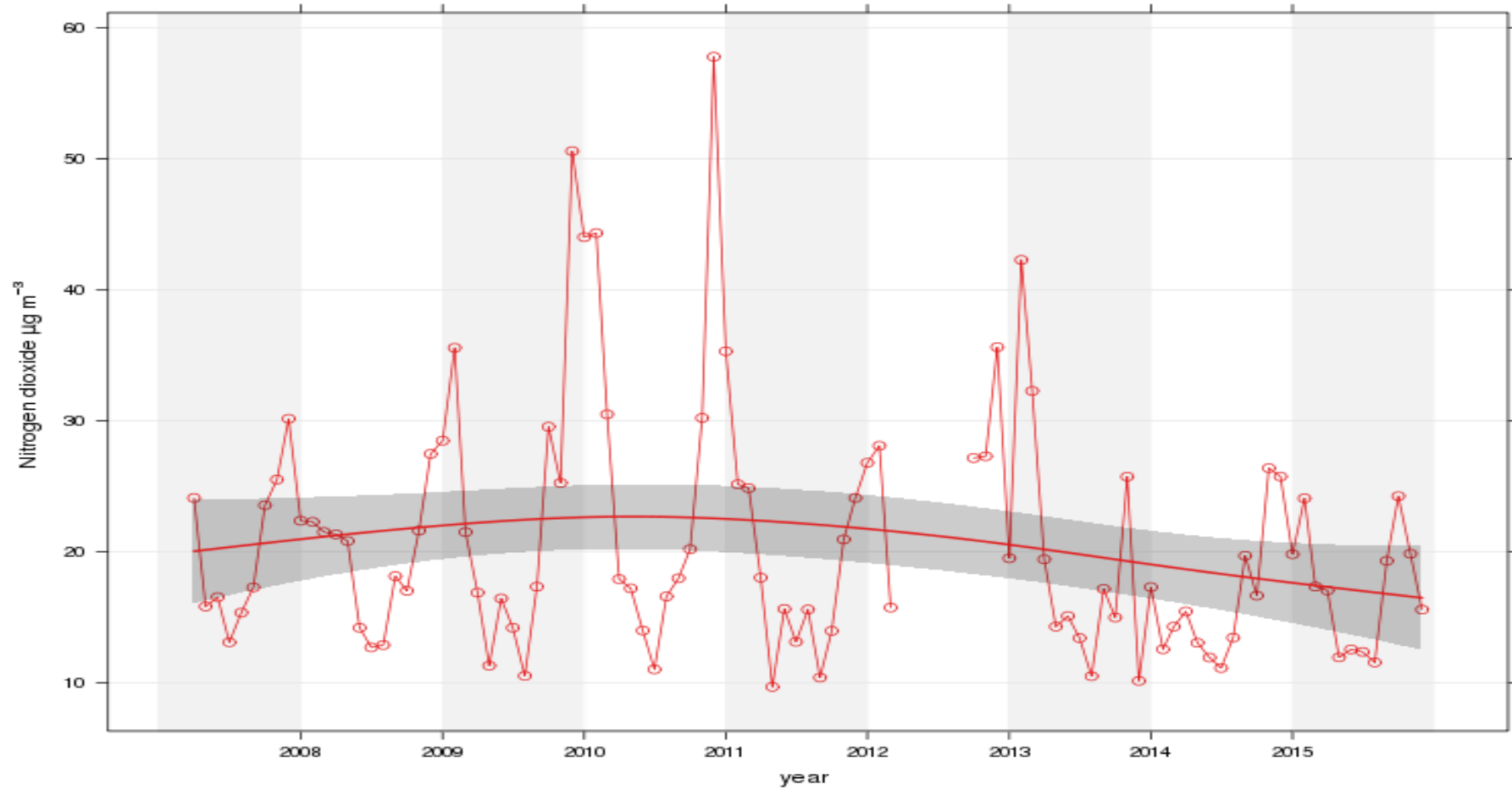
**West Dunbartonshire Council**

| <b>Map Number</b> | <b>Site ID</b> | <b>Name of site</b>                          |
|-------------------|----------------|--|
| 19                | DT26-28        | West Dunbartonshire Glasgow Road. Co-located |
| 20                | DT19           | Glasgow Road, Dumbarton 2                    |
| 21                | DT16           | Dumbarton 1                                  |
| 22                | DT18           | Dumbarton 12                                 |
| 23                | DT30           | Vale of Leven 4                              |
| 24                | DT29           | Vale of Leven 3                              |
| 25                | DT21           | Alexandria 1                                 |
| 26                | DT22           | Balloch 1                                    |

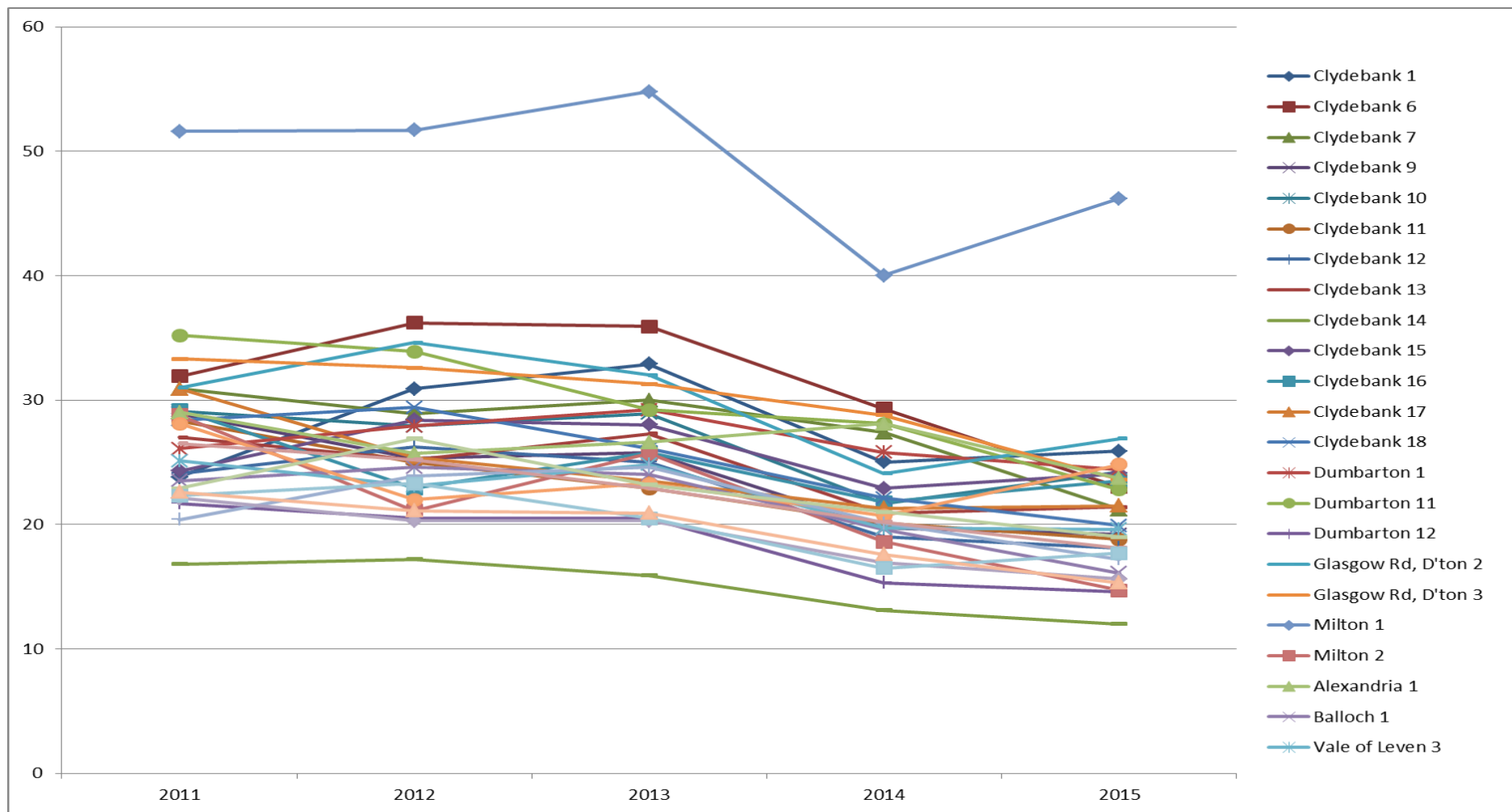
Appendix F: Graphs showing NO<sub>2</sub> trend



Trend for West Dunbartonshire Glasgow Road



NO<sub>2</sub> diffusion tube trend 2011 - 2015



## Glossary of Terms

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

**References**

Local Air Quality Management Technical Guidance TG (16)

Local Air Quality Policy Guidance PG(S) (16)

The Environment Act 1995 and Regulations made thereunder

West Dunbartonshire Council Update and Screening Assessment 2015

The Road Traffic (Vehicle Emissions) (Fixed Penalty) (Scotland) Regulations 2003.