
# 2015 Updating and Screening Assessment for ARGYLL and BUTE COUNCIL

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

April 2015

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| **Local Authority Officer** | Malcolm Chattwood |
| | |
| **Department** | Regulatory Services |
| **Address** | Kilmory, Lochgilphead PA31 8QA |
| **Telephone** | 01546 604421 |
| **e-mail** | Malcolm.chattwood@argyll-bute.gov.uk |
| | |
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| **Approved by Alan Morrison Regulatory Services Manager** | |
| **Date** | **29/4/15** |
| **Signature** |  |

# Executive Summary

The continuing work to assess local air quality within Argyll and Bute Council has established that there is no requirement to progress to a Detailed Assessment for any pollutants and that:-

(a) Diffusion tube monitoring results indicate that the 2004 annual mean objective for nitrogen dioxide ($NO_2$) continues to be met.

(b) A review of planning applications submitted in 2014 did not reveal any developments with the potential to significantly affect local air quality. There were no new permitted processes opened in 2014 with the capacity to affect local air quality. No new landfill sites or quarries opened with relevant public exposure.

(c) A review of road traffic and other transport sources including a new roundabout serving a supermarket in Helensburgh identified in the 2014 Progress Report did not reveal any areas where changes or new developments would be likely to significantly affect air quality.

(d) A number of biomass boilers identified in the 2013 and 2014 Progress Reports have been installed across the area but none have been found to significantly affect air quality either singly or when considering combined impacts.

**Conclusion**

There is no requirement for Argyll and Bute Council to progress to Detailed Assessment. In the course of our work we have identified this position through objective monitoring and assessment of development and other potential sources.

# Table of contents

## List of Tables



## List of Figures

## Appendices

# 1 Introduction

## 1.1 Description of Local Authority Area

The Argyll and Bute Council area covers approximately 6900 square kilometres and borders upon Stirling, Highland, West Dunbartonshire, and Perth and Kinross Councils. Much of the land area is occupied by mountain and moorland, particularly in the north eastern portion. Off the coastline lie a large number of islands, 23 of which are inhabited. The principal islands are Bute, Islay, Mull, Luing, Jura, Coll, Lismore, Iona, Colonsay and Gigha, and the main settlements are located at Bowmore, Campbeltown, Dunoon, Lochgilphead, Oban, Rothesay, Tobermory, Tarbert, Inveraray and Helensburgh.

The combination of mountain, moorland, coastline, particularly the long indented sea lochs, as well as several large fresh water lochs, give the area a distinctive character. The designations of several National and Regional Scenic Areas and the Loch Lomond and the Trossachs National Park reflect this.

**Industry**

Industries tend to be related to the natural assets of the area. Forestry and agriculture are prevalent inland, whilst in coastal areas there are a large number of distilleries, fish farms and fishing businesses. Tourism makes a significant and important contribution to the Argyll and Bute economy.

Those industries that are regulated by the Scottish Environmental Protection Agency (SEPA) because of their potential to cause pollution i.e. permitted processes in terms of the Pollution Prevention & Control (Scotland) Regulations 2012, are mapped in Appendix C.

## Population

The average population density of Argyll and Bute is less than 13 people per square kilometre with 75% of the population living in areas classified by the Scottish Government as either 'remote rural' or 'remote small towns' (Table 1.1)[1].

**Table 1.1 6 Fold Classification of Population Distribution**

| Scottish Government Urban-Rural classification | Population living within classification | % total population | % of total land area |
|---|---|---|---|
| 1: Large urban areas | 0.0 | 0.0 | 0.0 |
| 2: Other urban areas | 16037 | 17.9 | 0.1 |
| 3: Accessible small towns | 0.0 | 0.0 | 0.0 |
| 4. Remote small towns | 28310 | 31.6 | 0.6 |
| 5: Accessible rural | 6271 | 7.0 | 2.8 |
| 6: Remote rural | 38973 | 43.5 | 96.5 |
| **Total** | **89590** | **100.0** | **100.0** |

Over 46,000 people live in the six main population centres of Campbeltown, Dunoon, Helensburgh, Lochgilphead, Oban and Rothesay (Table 1.2). Around 97% of the population live within 10km of the coast with 17% living on islands.

**Table 1.2 Main Population Centres and their Population and Classification**

| Town | Population | Scottish Government Urban-Rural classification |
|---|---|---|
| Campbeltown | 4810 | Remote small town |
| Dunoon | 9400 | Remote small town |
| Helensburgh | 15430 | Other urban area |
| Lochgilphead/Ardrishaig | 3560 | Remote rural area |
| Oban | 8180 | Remote small town |
| Rothesay | 4750 | Remote small town |
| **Total** | **46130** | |

**Road Network and Transport**

The topography of the area, together with the relatively dispersed population, means that the majority of transport movements involve long road journeys. Most of the main roads follow the coastline and have to make long detours around the head of extensive sea lochs. The only towns served by the rail network are Oban and Helensburgh. Throughout the area heavy reliance is therefore placed upon road transport, both by the resident population and visitors. Between 1995 and 1997, 82% of the 1.8 million trips made into the Argyll, the Isles, Loch Lomond, Stirling and the Trossachs Tourist Board area were made by road transport. Summertime traffic flows are consequently higher than those experienced during the winter months and this has been taken into account when assessing the impact of traffic sources.

Regular car ferry services connect the larger islands and there are numerous smaller car and passenger ferries serving the smaller islands. In addition, ferry services operate between mainland settlements for commuter, freight and tourist traffic, for example Dunoon to Gourock. The main ferry terminals are located at Hunter's Quay (Dunoon), Oban, Rothesay and Kennacraig.

Airports operating scheduled flights between island and mainland communities are found at Coll, Colonsay, Tiree, Campbeltown, Islay and Oban.

A map showing the location of ferry terminals and airports is included in Appendix C.

## 1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management

Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

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

## 1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Scotland** are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) Amendment Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre 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 1.3 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 | 31.12.2010 |
| **1,3-Butadiene** | 2.25 μg/m$^3$ | Running annual mean | 31.12.2003 |
| **Carbon monoxide** | 10.0 mg/m$^3$ | Running 8-hour mean | 31.12.2003 |
| **Lead** | 0.5 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 |
| **Particles ($PM_{10}$)** | 50 μg/m$^3$, not to be | 24-hour mean | 31.12.2010 |

| | | | |
|---|---|---|---|
| **(gravimetric)** | exceeded more than 7 times a year | | |
| | 18 µg/m$^3$ | Annual mean | 31.12.2010 |
| **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

**Table 1.4 Summary of Previous Rounds of Review and Assessments**

| Report | Date | Outcome |
|---|---|---|
| First Stage Assessment | 1998 | Further assessment of $NO_2$ & $SO_2$ required |
| Second Stage Assessment (USA) | 2003 | Detailed assessments required for $PM_{10}$ and $SO_2$ in relation to the combustion of solid fuel in Tarbert. Further assessment recommended for Port Ellen Maltings. |
| Detailed Assessment – $PM_{10}$ & $SO_2$ from solid fuel combustion in Tarbert | 2005 | Indicated compliance with $PM_{10}$ & $SO_2$ objectives. |
| Further Assessment for industrial process at Port Ellen | 2005 | Recommended monitoring for CO at Port Ellen |
| Progress Report | 2005 | Recommended monitoring for CO at Port Ellen |
| Updating & Screening Assessment | 2006 | Continue monitoring $PM_{10}$ related to solid fuel combustion at Tarbert and detailed assessment for CO at Port Ellen Maltings |
| Progress Report & Detailed Assessment | 2007 | Detailed assessment reported Port Ellen Maltings should comply with CO objective. |
| Progress Report | 2008 | Continued monitoring indicates compliance with $NO_2$, CO & $PM_{10}$ objectives |
| Updating & Screening Assessment | 2009 | Continued monitoring indicates compliance with $NO_2$ CO & $PM_{10}$ objectives |
| Progress Report | 2010 | Continued monitoring indicates compliance with $NO_2$ CO & $PM_{10}$ objectives |
| Progress Report | 2011 | Continued monitoring indicates compliance |

| | | |
|---|---|---|
| | | with $NO_2$ CO & $PM_{10}$ objectives |
| Updating & Screening Assessment | 2012 | Continued monitoring indicates compliance with $NO_2$ & $PM_{10}$ objectives |
| Progress Report | 2013 | Continued monitoring indicates compliance with $NO_2$ objectives |
| Progress Report | 2014 | Continued monitoring indicates compliance with $NO_2$ objectives |

# 2 New Monitoring Data

## 2.1 Summary of Monitoring Undertaken

### 2.1.1 Automatic Monitoring Sites

Previous reports have reported on the Council's monitoring of $PM_{10}$ in Tarbert in support of the assessment of domestic coal combustion. Following the completion of a Detailed Assessment[2] a review of monitoring in 2011 concluded that there was continuing compliance with the $PM_{10}$ objectives. Accordingly, the $PM_{10}$ monitor at Tarbert was decommissioned in June 2012 and there is now no perceived need for continuous monitoring of any pollutants in Argyll and Bute.

### 2.1.2 Non-Automatic Monitoring Sites

Argyll and Bute Council undertakes monitoring of nitrogen dioxide using diffusion tubes at 10 sites throughout the district. The diffusion tubes are sited mainly on roads which are perceived to be subject to the highest concentrations due to traffic flow and are perhaps associated with other features such as street canyons. Siting of tubes was reviewed following publication of the Progress Report in 2014. It was concluded that all tubes were sited appropriately & there would be no benefit to be gained in moving tubes and losing the potential to continue recording nitrogen dioxide trends. Details of current sites are provided in Table 2.1 and QA/QC procedures are included in Appendix A.

**Table 2.1 Details of Non-Automatic Monitoring Sites**

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? | Distance to kerb of nearest road | Does this location represent worst-case exposure? |
|---|---|---|---|---|---|---|---|---|---|---|
| N1 | George Street 1, Oban | Roadside | 185921 | 729942 | $NO_2$ | N | N | Y (5m) | 2m | Y |
| N2 | George Street 2, Oban | Roadside | 185870 | 730319 | $NO_2$ | N | N | Y (4m) | 9m | Y |
| N3 | George Street 3, Oban | Roadside | 185880 | 730250 | $NO_2$ | N | N | Y (4m) | 9m | Y |
| N4 | Argyll Street, Dunoon | Roadside | 217324 | 676984 | $NO_2$ | N | N | Y (6m) | 3m | Y |
| N5 | Main St, Campbeltown | Roadside | 171918 | 620330 | $NO_2$ | N | N | Y (1m) | 3m | Y |
| N6 | Colchester Sq, Lochgilphead | Roadside | 186222 | 687940 | $NO_2$ | N | N | Y (10m) | 2m | Y |
| N7 | Inverneil | Rural B'ground | 186048 | 729293 | $NO_2$ | N | N | Y (3m) | N/A | Y |
| N8 | East Princes St, Helensburgh | Roadside | 229919 | 682287 | $NO_2$ | N | N | Y (4m) | 2m | Y |
| N9 | Main Road, Cardross | Roadside | 234350 | 677771 | $NO_2$ | N | N | Y (6m) | 2m | Y |
| N10 | Sinclair Street Helensburgh | Roadside | 231925 | 704478 | $NO_2$ | N | N | Y (3m) | 2m | Y |

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### 2.2.1 Nitrogen Dioxide

**Diffusion Tube Monitoring Data**

The annual concentrations from diffusion tube monitoring sites (adjusted for bias) are presented in Table 2.3 and a monthly breakdown of results is included in Appendix B. The annual mean concentrations for $NO_2$ diffusion tubes (adjusted for bias) for the years 2010 to 2014 are presented in Table 2.4 and are shown in graphical format in Appendix B.

Following interference with the Lochgilphead site the tube was moved to a more secure site which is also closer to sensitive receptors and representative of residential property in the area. The results from June 2012 onwards reflect this change and a general increase in readings has been noted due to the more sheltered nature of the site.

Trend lines have been plotted on the graphs where the duration of monitoring and results rendered it meaningful. Table 2.2 summarises the trends none of which are significantly upward. All sites are significantly below the prescribed 40$\mu g/m^3$ prescribed annual mean.

**Table 2.2 $NO_2$ Diffusion Tube Trends to 2014**

| Site ID | Location | Trend |
|---|---|---|
| N1 | George Street 1, Oban | Down |
| N2 | George Street 2, Oban | Slightly up |
| N3 | George Street 3, Oban | Slightly down |
| N4 | Argyll Street, Dunoon | Slightly down |
| N5 | Main St, Campbeltown | Very slightly down |
| N6 | Colchester Sq, Lochgilphead | Not plotted |
| N7 | Inverneil | Level |
| N8 | East Princes St, Helensburgh | Down |
| N9 | Main Road, Cardross | Level |
| N10 | Sinclair Street, Helensburgh | Slightly down |

**Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes in 2014**

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.83) 2014 (μg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| N1 | George Street 1, Oban | Roadside | N | N | 12 months | N/A | N | 20.7 |
| N2 | George Street 2, Oban | Roadside | N | N | 12 months | N/A | N | 26.2 |
| N3 | George Street 3, Oban | Roadside | N | N | 12 months | N/A | N | 22.4 |
| N4 | Argyll Street, Dunoon | Roadside | N | N | 12 months | N/A | N | 14.6 |
| N5 | Main St, Campbeltown | Roadside | N | N | 11 months | N/A | N | 14.5 |
| N6 | Colchester Sq, Lochgilphead | Roadside | N | N | 12 months | N/A | N | 14.7 |
| N7 | Inverneil | Rural B'ground | N | N | 12 months | N/A | N | 1.8 |
| N8 | East Princes St, Helensburgh | Roadside | N | N | 11 months | N/A | N | 12.4 |
| N9 | Main Road, Cardross | Roadside | N | N | 12 months | N/A | N | 13.1 |
| N10 | Sinclair Street Helensburgh | Roadside | N | N | 12 months | N/A | N | 14.9 |

**Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)**

| Site ID | Location | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 2010 (Bias Adjustment Factor = 1.10) | 2011 (Bias Adjustment Factor = 0.94) | 2012 (Bias Adjustment Factor = 0.95) | 2013 (Bias Adjustment Factor = 0.99) | 2014 (Bias Adjustment Factor = 0.83) |
| N1 | George Street 1, Oban | Roadside | N | 25.6 | 23.9 | 22.9 | 22.7 | 20.7 |
| N2 | George Street 2, Oban | Roadside | N | 24.7 | 24.1 | 24.1 | 26.9 | 26.2 |
| N3 | George Street 3, Oban | Roadside | N | 28.0 | 21.2 | 22.2 | 26.3 | 22.4 |
| N4 | Argyll Street, Dunoon | Roadside | N | 17.9 | 15.0 | 15.0 | 18.3 | 14.6 |
| N5 | Main St, Campbeltown | Roadside | N | 22.2 | 17.8 | 17.5 | 16.5 | 14.5 |
| N6 | Colchester Sq, Lochgilphead | Roadside | N | 9.1 | 10.1 | 23.4 | 19.5 | 14.7 |
| N7 | Inverneil | Rural B'ground | N | 3.0 | 2.5 | 2.6 | 2.9 | 1.8 |
| N8 | East Princes St, Helensburgh | Roadside | N | 19.8 | 15.6 | 13.3 | 14.3 | 12.4 |
| N9 | Main Road, Cardross | Roadside | N | 19.4 | 14.2 | 13.8 | 16.0 | 13.1 |
| N10 | Sinclair Street Helensburgh | Roadside | N | 21.7 | 19.2 | 19.4 | 19.7 | 14.9 |

### 2.2.2 Summary of Compliance with AQS Objectives

Argyll and Bute Council has 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 Road Traffic Sources

## 3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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

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

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

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

Argyll and Bute Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

## 3.4 Junctions

A new roundabout on the A814 at Craigendoran, Helensburgh was constructed to serve a supermarket which opened in 2013. Whilst the traffic flow is in excess of 10000 vehicles per day there is no relevant exposure of sensitive receptors within 10m and therefore there is no requirement for further assessment.

Argyll and Bute Council has assessed new/newly identified junctions meeting the criteria in Section A.4 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

Argyll and Bute Council confirms that there are no new/proposed roads.

## 3.6 Roads with Significantly Changed Traffic Flows

Argyll and Bute Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

## 3.7 Bus and Coach Stations

Argyll and Bute Council confirms that there are no relevant bus stations in the Local Authority area.

# 4 Other Transport Sources

## 4.1 Airports

Argyll and Bute Council confirms that there are no airports in the Local Authority area with a total equivalent passenger output of 1 million passengers per annum.

## 4.2 Railways (Diesel and Steam Trains)

### 4.2.1 Stationary Trains

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

### 4.2.2 Moving Trains

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

## 4.3 Ports (Shipping)

Argyll and Bute Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

# 5 Industrial Sources

## 5.1 Industrial Installations

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

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

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

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

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

A new supermarket including a petrol station was opened in Craigendoran, Helensburgh in 2013. The station was assessed in accordance with the procedure set out in Section C.3 of Box 5.5 of TG(09 and it was concluded that the progression to a Detailed Assessment was not necessary.

Argyll and Bute Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

## 5.3 Petrol Stations

Argyll and Bute Council confirms that there are no petrol stations meeting the specified criteria**.**

## 5.4 Poultry Farms

Argyll and Bute Council confirms that there are no poultry farms meeting the specified criteria.

# 6 Commercial and Domestic Sources

## 6.1 Biomass Combustion – Individual Installations

Since the 2012 USA was prepared planning permission has been given for a number of biomass boilers to be installed. These individual installations are considered below:

Table 6.1 New biomass boilers >50kW

| Site | Rating kW | Stack Height | Building Height | Effective Stack Height | Stack Diameter |
|---|---|---|---|---|---|
| Ambrismore Farm, Bute | 120 | 6.5 | 5.8 | 1.3 | 0.25 |
| Ardlussa, Jura | 200 | 5.5 | 4.0 | 2.5 | 0.25 |
| Aros, Lochgilphead | 215 | 12.6 | 11.2 | 2.3 | 0.25 |
| Burnside Court, Oban | 199 | 12.5 | 10 | 4.2 | 0.25 |
| Campbeltown Hospital | 398 | 15.6 | 9.0 | 11.0 | 0.35 |
| Castle Lachlan, Strachur | 130 | 5.5 | 4.9 | 1.1 | 0.25 |
| Combie Court, Oban | 200 | 13 | 12 | 1.7 | 0.21 |
| Cowal Community Hospital, Dunoon | 398 | 15.6 | 14.7 | 1.4 | 0.35 |
| Dunstaffnage Mains Farm, Dunbeg, Oban | 398 | 11 | 3.2 | 11 | 0.35 |
| Torrisdale Castle | 170 | 5.5 | 4.8 | 1.2 | 0.25 |
| Islay High School | 360 | 4.6 | 3.6 | 1.7 | 0.50 |
| Islay Hospital, Bowmore | 195 | 5.0 | 3.5 | 2.5 | 0.25 |
| Midton Acrylics, Lochgilphead | 165 | 8.2 | 4.9 | 5.5 | 0.25 |
| Quien Steading, Bute | 85 | 6.1 | 5.4 | 1.2 | 0.2 |
| Taynuit Hotel | 100 | 6.0 | 5.1 | 1.5 | 0.2 |
| Woodend House, Bute | 120 | 6.1 | 5.5 | 1.0 | 0.2 |

The boilers listed in table 6.1 were assessed in accordance with the guidance contained in Box 5.8 LAQM.TG(09)[4]. Emission rates were estimated based on the maximum thermal capacity of the boiler and the emission factors for $PM_{10}$ of 30g/GJ and $NO_2$ of 150 g/GJ. These factors are the maximum prescribed for acceptance for RHI payments and the boilers are designed to comply with this requirement. Background concentrations for 2015 were obtained from the Scottish Air Quality Archive[5]. A summary of the results from each site are presented in Tables 6.2, 6.3 and 6.4

Table 6.2. Biomass boilers – assessment against 24 hour $PM_{10}$ objective

| Site | Adjusted emission rate g/s | Threshold emission rate g/s | Progress to detailed assessment? |
|---|---|---|---|
| Ambrismore Farm, Bute | 0.0002 | 0.0017 | No |
| Ardlussa, Jura | 0.0003 | 0.0010 | No |
| Aros, Lochgilphead | 0.0003 | 0.0009 | No |
| Campbeltown Hospital | 0.0005 | 0.0076 | No |
| Castle Lachlan, Strachur | 0.0002 | 0.0007 | No |
| Combie Court, Oban | 0.0002 | 0.0008 | No |
| Cowal Community Hospital, Dunoon | 0.0005 | 0.0008 | No |
| Dunstaffnage Mains Farm, Dunbeg, Oban | 0.0005 | 0.0050 | No |
| Torrisdale Castle | 0.0002 | 0.0007 | No |
| Islay High School | 0.0005 | 0.0013 | No |
| Islay Hospital, Bowmore | 0.0003 | 0.0016 | No |
| Midton Acrylics, Lochgilphead | 0.0002 | 0.0030 | No |
| Quien Steading, Bute | 0.0001 | 0.0011 | No |
| Taynuit Hotel | 0.0001 | 0.0008 | No |
| Woodend House, Bute | 0.0002 | 0.0011 | No |

Table 6.3. Biomass boilers – assessment against annual mean $NO_2$ objective

| Site | Adjusted emission rate g/s | Threshold emission rate g/s | Progress to detailed assessment? |
|---|---|---|---|
| Ambrismore Farm, Bute | 0.0005 | 0.0017 | No |
| Ardlussa, Jura | 0.0008 | 0.0029 | No |
| Aros, Lochgilphead | 0.0009 | 0.0028 | No |
| Campbeltown Hospital | 0.0018 | 0.0219 | No |
| Castle Lachlan, Strachur | 0.0005 | 0.0019 | No |
| Combie Court, Oban | 0.0005 | 0.0023 | No |
| Cowal Community Hospital, Dunoon | 0.0011 | 0.0023 | No |
| Dunstaffnage Mains Farm, Dunbeg, Oban | 0.0016 | 0.0145 | No |
| Torrisdale Castle | 0.0007 | 0.0020 | No |
| Islay High School | 0.0014 | 0.0038 | No |
| Islay Hospital, Bowmore | 0.0008 | 0.0047 | No |
| Midton Acrylics, Lochgilphead | 0.0007 | 0.0088 | No |
| Quien Steading, Bute | 0.0003 | 0.0020 | No |
| Taynuit Hotel | 0.0004 | 0.0022 | No |
| Woodend House, Bute | 0.0004 | 0.0019 | No |

Table 6.4. Biomass boilers – assessment against 24 hour $NO_2$ objective

| Site | Adjusted emission rate g/s | Threshold emission rate g/s | Progress to detailed assessment? |
|---|---|---|---|
| Ambrismore Farm, Bute | 0.0037 | 0.0075 | No |
| Ardlussa, Jura | 0.0061 | 0.0095 | No |
| Aros, Lochgilphead | 0.0066 | 0.0090 | No |
| Campbeltown Hospital | 0.0130 | 0.1115 | No |
| Castle Lachlan, Strachur | 0.0040 | 0.0071 | No |
| Combie Court, Oban | 0.0037 | 0.0075 | No |
| Cowal Community Hospital, Dunoon | 0.0072 | 0.0076 | No |
| Dunstaffnage Mains Farm, Dunbeg, Oban | 0.0121 | 0.0634 | No |
| Torrisdale Castle | 0.0052 | 0.0071 | No |
| Islay High School | 0.0110 | 0.0181 | No |
| Islay Hospital, Bowmore | 0.0060 | 0.0170 | No |
| Midton Acrylics, Lochgilphead | 0.0051 | 0.0346 | No |
| Quien Steading, Bute | 0.0026 | 0.0071 | No |
| Taynuit Hotel | 0.0031 | 0.0073 | No |
| Woodend House, Bute | 0.0037 | 0.0071 | No |

Argyll and Bute Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 6.2 Biomass Combustion – Combined Impacts

An assessment of potential combined impacts for biomass boilers was undertaken following the procedure in Section D1b of TG(09). There are no areas where there are multiple biomass installations in any 500mx500m area which are likely to cause significant cumulative impacts.

Argyll and Bute Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 6.3 Domestic Solid-Fuel Burning

Tarbert was identified in previous reports as having the highest concentration of residential properties burning coal as a primary fuel. A Detailed Assessment[6] was undertaken and reported in 2005. The report was supplemented by further $PM_{10}$ monitoring and it was concluded that the designation of an Air Quality Management Area was not necessary. $PM_{10}$ monitoring ceased in June 2012 and the TEOM monitor sited at Tarbert Academy was decommissioned.

Argyll and Bute Council has assessed areas of significant domestic solid fuel use, and concluded that it will not be necessary to proceed to a Detailed Assessment.

# 7 Fugitive or Uncontrolled Sources

There are no new potential major sources of fugitive or uncontrolled emissions of particulate matter. There are a number of new unmetalled access roads associated with forestry extraction or windfarm construction that are of a temporary nature and are hard surfaced with graded and rolled aggregate. These roads are invariably remote, inherently damp and do not threaten to cause breaches of $PM_{10}$ objectives. The Council does not propose to carry out individual assessments of these sources unless particular circumstances indicate that it would be appropriate.

Argyll and Bute Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

# 8 Conclusions and Proposed Actions

## 8.1 Conclusions from New Monitoring Data

The results from the ongoing nitrogen dioxide diffusion tube monitoring exercise and reference to Appendix B shows that no significant rising trends are apparent or that any measured concentrations are close to the annual mean objective.

## 8.2 Conclusions from Assessment of Sources

Development of a supermarket in Helensburgh and a number of biomass boiler installations were identified in Progress Reports for consideration in this Updating and Screening Assessment.

Biomass boilers were evaluated using the procedure in Box 5.8 of LAQM.TG(09) and none were found to warrant further assessment.

The impact of traffic at the roundabout serving the new supermarket in Helensburgh was assessed using the procedure contained in Box 5.3 of LAQM.TG(09) the absence of sensitive receptors within 10m of the kerb removed the requirement to proceed to further assessment.

## 8.3 Proposed Actions

The 2015 Updating and Screening Assessment has not identified any need to proceed to a Detailed Assessment for any pollutant. New developments that may have potential impacts on air quality will be kept under review and presented in the Progress Report in April 2016. A review of diffusion tube monitoring sites did not reveal any need to relocate any tubes and monitoring will continue in 2015.

# 9 References

(1) http://www.scotland.gov.uk/Topics/Statistics/About/Methodology/UrbanRuralClassification

(2) Argyll and Bute Council, Local Air Quality Management Progress Report and Detailed Assessment, April 2005

(3) http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

(4) Defra in partnership with the devolved administrations, Technical Guidance LAQM.TG(09), February 2009

(5) http://www.scottishairquality.co.uk/data/mapping?view=data

(6) Argyll and Bute Council, Detailed Assessment of Emissions from Domestic Solid Fuel Burning in Tarbert, November 2005

# Appendices

## Appendix A: QA:QC Data

### Diffusion Tube Bias Adjustment Factors

Nitrogen dioxide diffusion tubes are supplied and analysed by Glasgow Scientific Services. The laboratory scored 100% in the latest WASP assessment dated February 2015. The preparation method used is 20% TEA in water and the 2014 bias adjustment factor of 0.83 was obtained from Spreadsheet Version 03_15[3]. No local co-location studies were available to produce bias adjustment factors.

### QA/QC of diffusion tube monitoring

The $NO_2$ diffusion tubes are supplied and analysed by Glasgow Scientific Services and prepared by using 20% TEA in water. The duration of exposure is normally the 4/5 week period suggested by the calendar provided by Defra. Glasgow Scientific Services have adopted the procedures for preparation and analysis contained in the document "Diffusion Tubes for Ambient $NO_2$ Monitoring:- Practical Guidance." Section 3 of this document also provides the basis for the operation of the Council's diffusion tube network.

A bias adjustment factor was applied to the annual mean $NO_2$ concentrations for 2015. The factor of 0.83 was obtained from Spreadsheet Version Number 03_15 downloaded from http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

# Appendix B: Monitoring Results and Graphs

## Table B.1 Monthly Nitrogen Dioxide Diffusion Tube Monitoring Results

| 2014 | George St 1 Oban | George St 2 Oban | George St 3 Oban | Lochgilphead | Campbeltown | Mid Argyll Rural | Dunoon | East Princess St Helensburgh | Sinclair St Helensburgh | Cardross |
|---|---|---|---|---|---|---|---|---|---|---|
| **January** | 23.9 | 29.3 | 28.5 | 17.9 | 19.7 | 3.9 | 11.9 | # | 21.2 | 18.7 |
| **February** | 20.4 | 36.2 | 29.4 | 17.3 | # | 2.4 | 19.4 | 12.0 | 18.0 | 16.8 |
| **March** | 26.7 | 33.0 | 31.0 | 19.4 | 19.8 | 2.4 | 11.2 | 14.6 | 21.8 | 17.2 |
| **April** | 27.7 | 33.9 | 29.0 | 20.4 | 16.5 | 2.5 | 15.7 | 13.7 | 17.8 | 14.8 |
| **May** | 28.0 | 34.8 | 33.5 | 21.4 | 26.3 | 2.2 | 21.6 | 12.0 | 21.6 | 15.1 |
| **June** | 13.8 | 17.8 | 11.5 | 8.1 | 9.0 | 1.6 | 6.8 | 5.2 | 7.8 | 6.0 |
| **July** | 24.3 | 25.7 | 23.8 | 13.8 | 14.3 | 1.8 | 16.1 | 9.7 | 16.5 | 10.1 |
| **August** | 23.6 | 24.3 | 18.0 | 19.7 | 14.2 | 2.6 | 15.8 | 14.7 | 15.6 | 11.7 |
| **September** | 26.1 | 41.9 | 26.4 | 20.4 | 22.1 | 1.6 | 17.4 | 13.5 | 15.6 | 16.0 |
| **October** | 27.5 | 33.3 | 31.1 | 16.2 | 20.0 | 1.8 | 18.7 | 16.9 | 18.5 | 22.5 |
| **November** | 29.7 | 38.2 | 37.6 | 24.9 | 26.1 | 4.0 | 30.0 | 25.9 | 26.0 | 26.5 |
| **December** | 27.9 | 29.8 | 23.7 | 20.7 | 16.9 | 1.6 | 20.6 | 19.0 | 26.0 | 18.0 |
| Notes: #= no result | | | | | | | | | | |

**Figure 1 Graph of Annual NO2 trends – Oban Area**

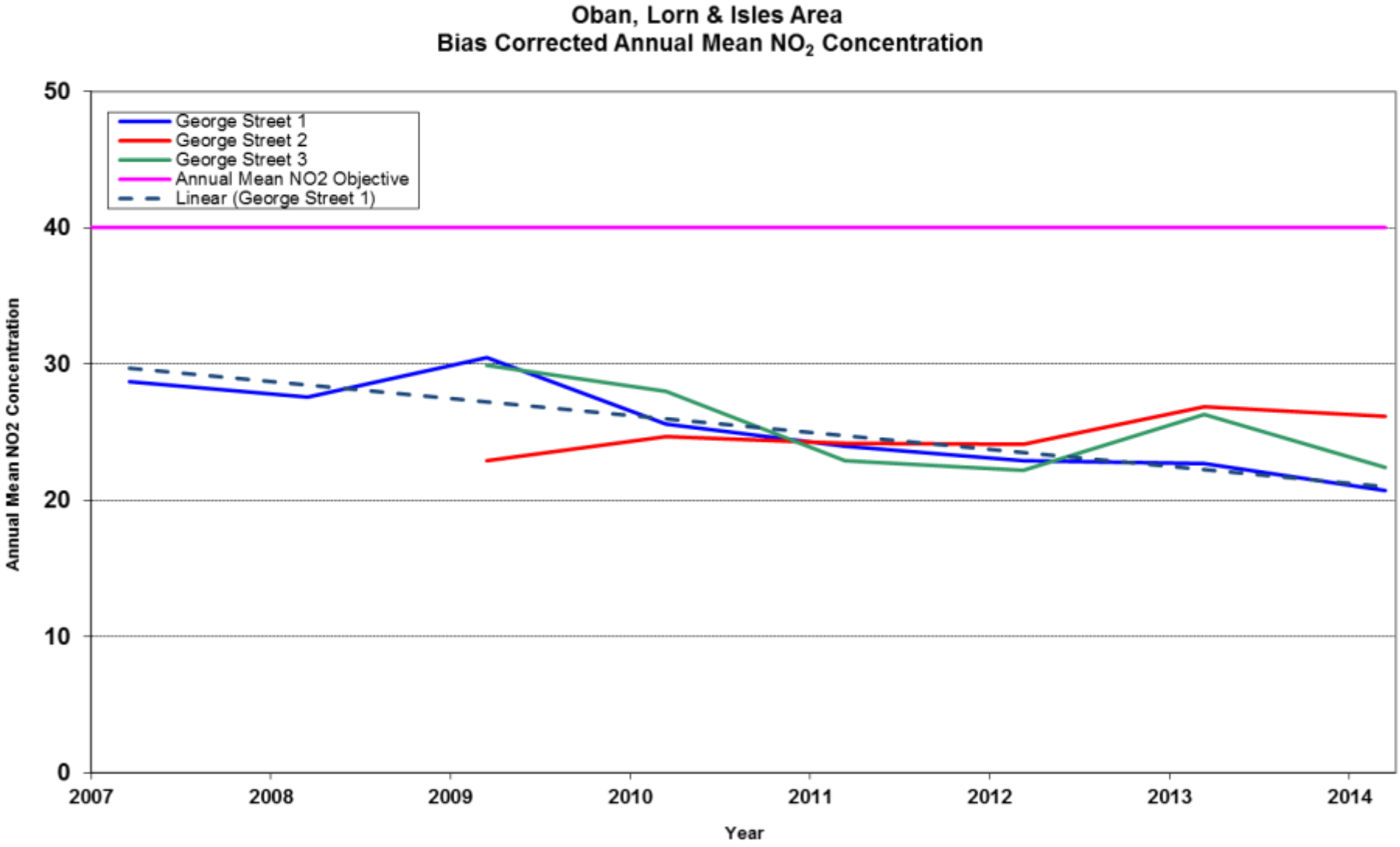


**Figure 2 Graph of Annual NO2 trends – Mid-Argyll Area**

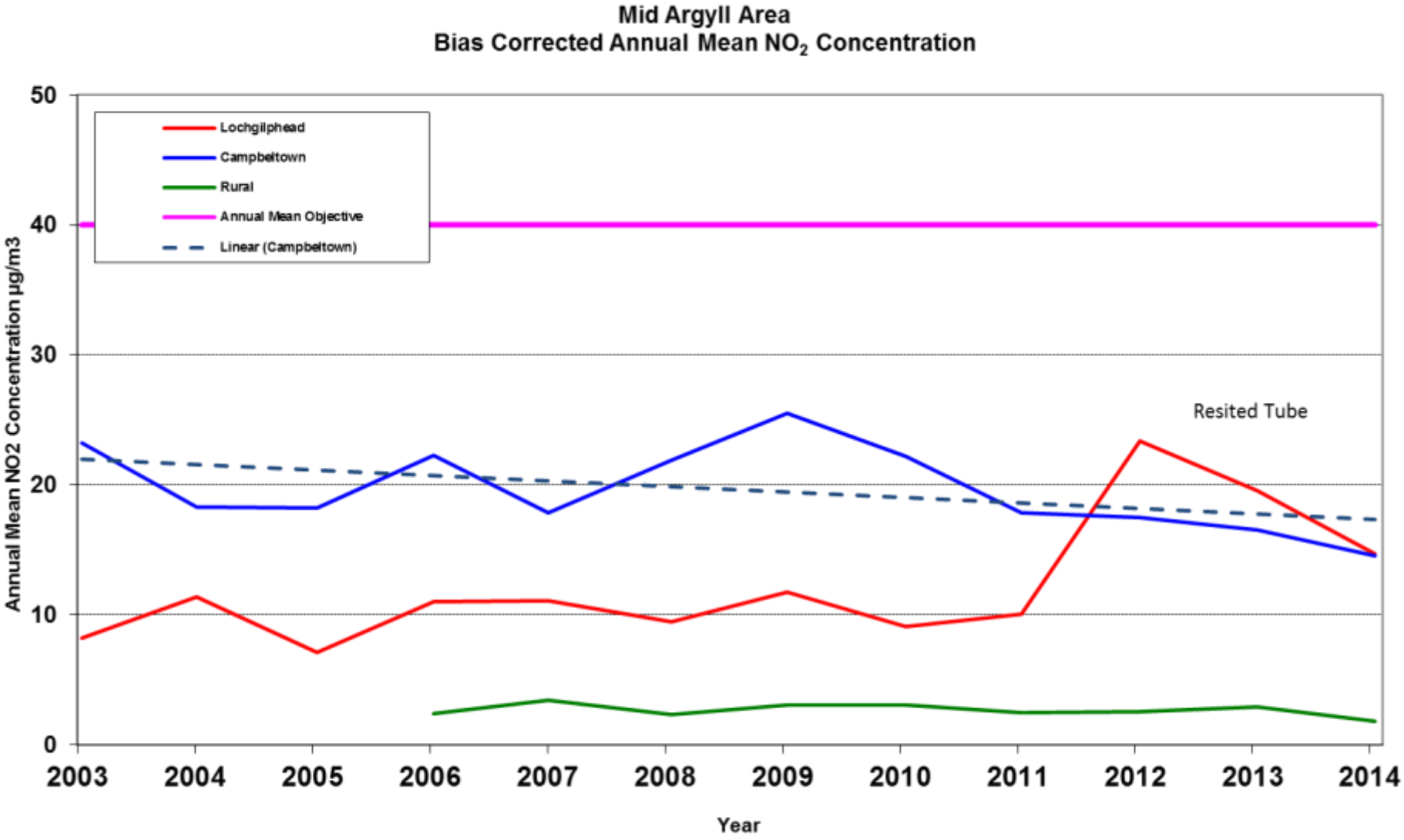


**Figure 3 Graph of Annual NO2 trends – Bute and Cowal Area**

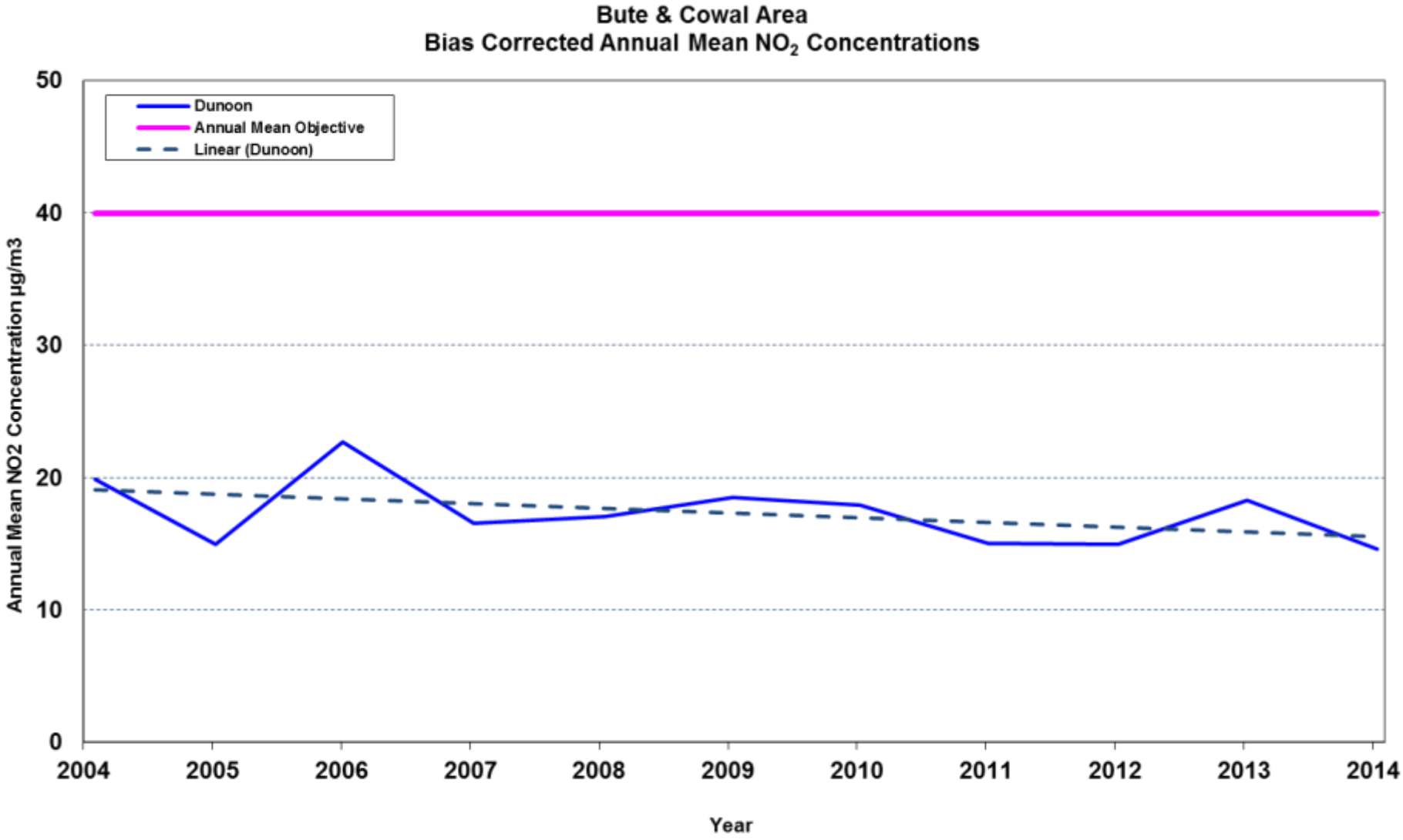
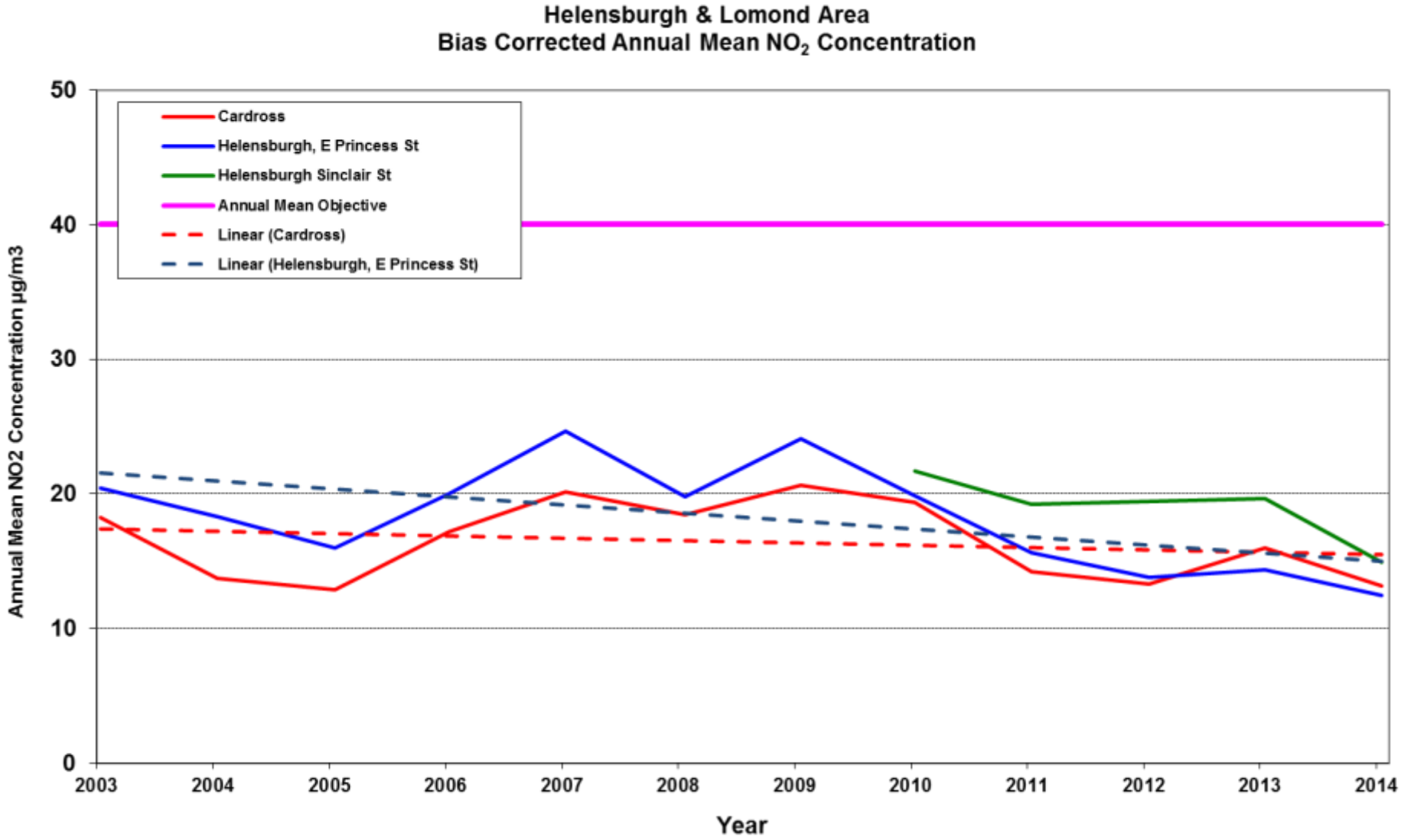
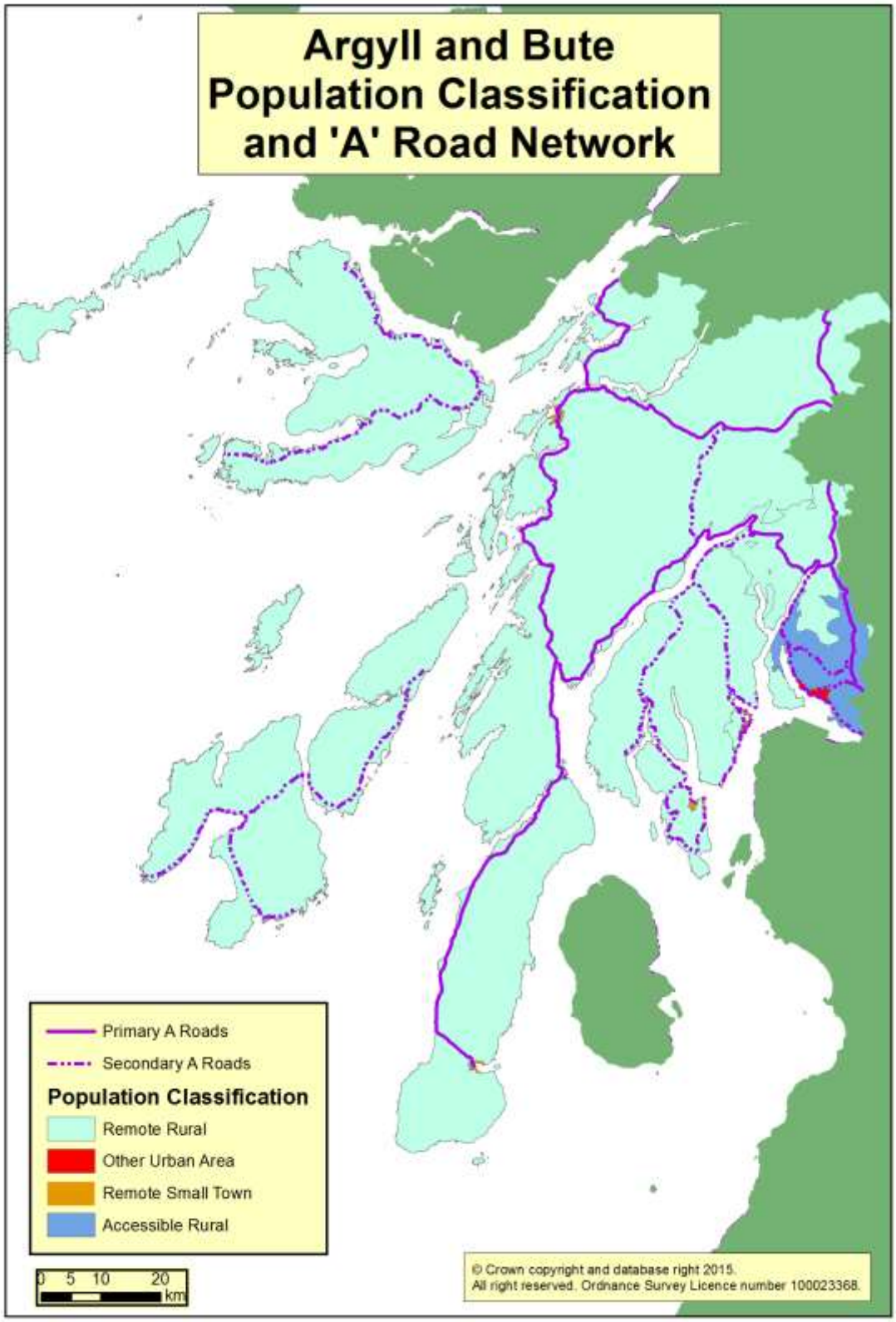


**Figure 4 Graph of Annual NO2 trends – Helensburgh and Lomond Area**



# Appendix C: Maps

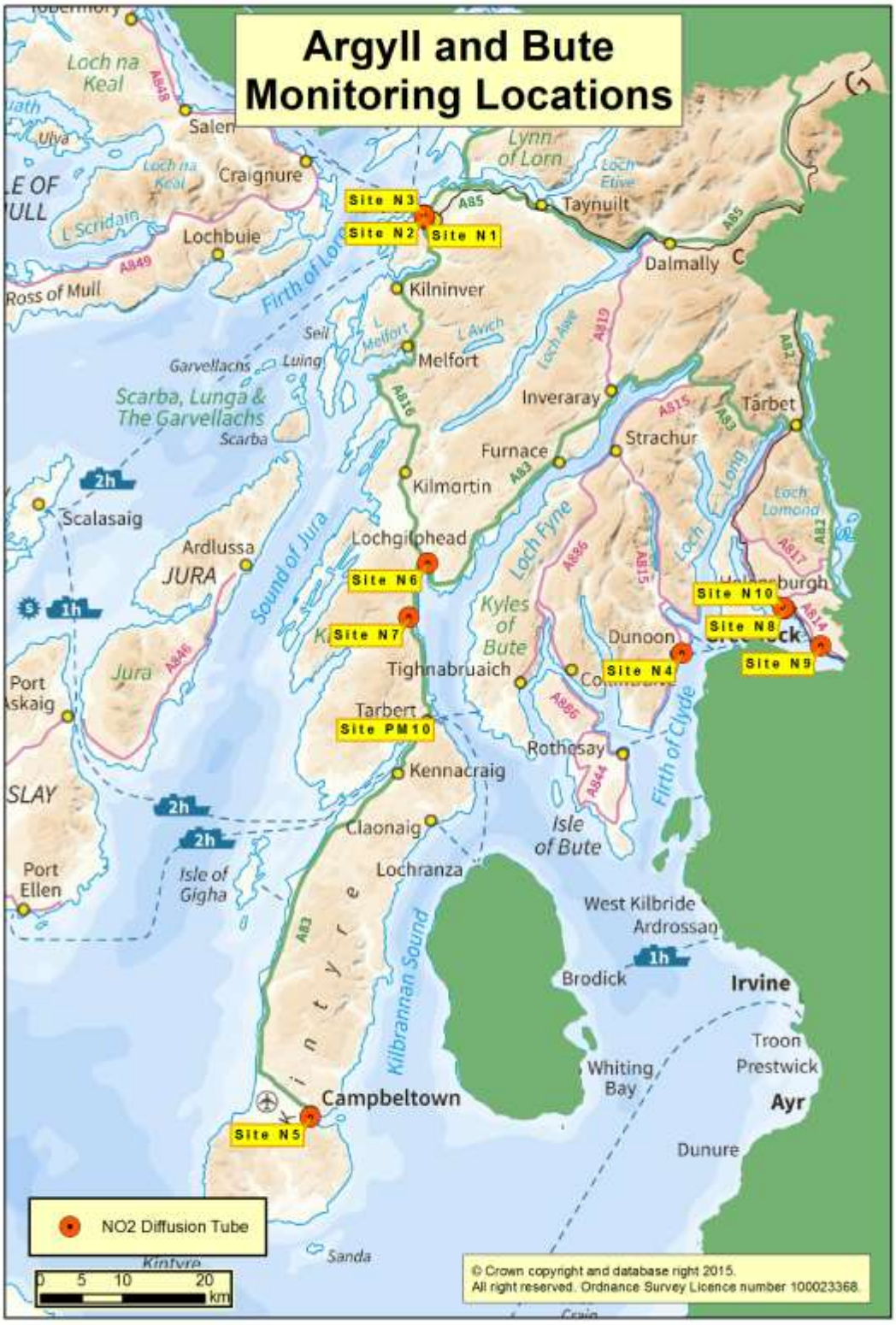
## Figure 5 Map of Population Distribution & A Roads



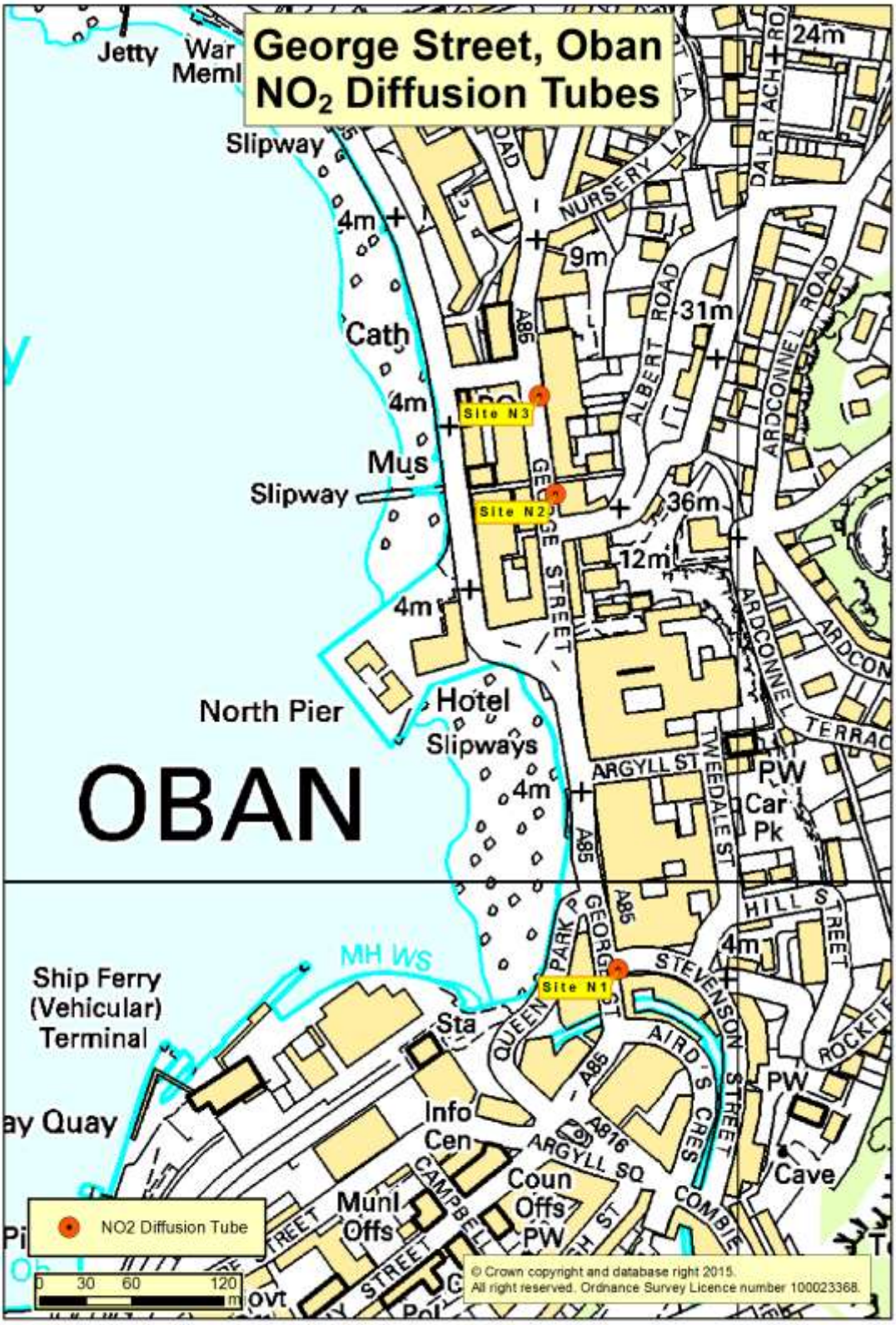
## Figure 6 Map of Major Settlements

## Figure 7 Map of Major Ports & Airports

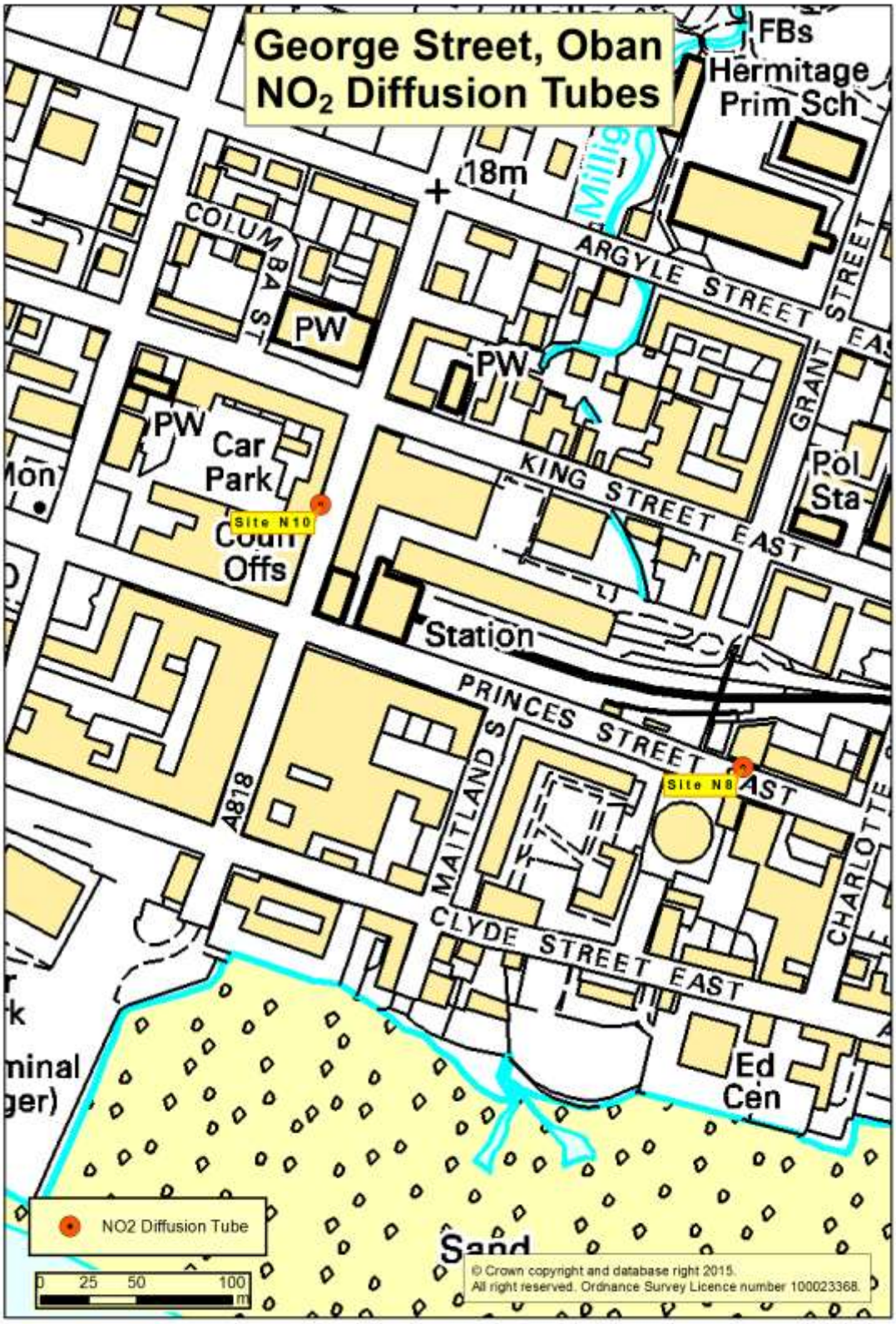
## Figure 8 Map of Monitoring Locations



## Figure 9 Map of Diffusion Tube Sites, Oban



## Figure 10 Map of Diffusion Tube Sites, Helensburgh



## Figure 11 Map of PPC Installations