2017 Air Quality Annual Progress Report for **ARGYLL AND BUTE COUNCIL**

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

June 2017

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Executive Summary: Air Quality in Our Area

Air Quality in Argyll and Bute Council

Argyll and Bute is an area with over 75% classified as remote[1] and a population which is widely distributed. There is only one town with a population greater than 10,000 and industries tend to be geographically diverse and related to the natural assets of the area. Forestry and agriculture are prevalent inland, whilst in coastal areas there are a number of distilleries, fish farms and fishing businesses. Large scale industry is absent and this is reflected by the low number and nature of industries regulated by SEPA under the Pollution Prevention and Control regime. Tourism makes a significant and important contribution to the Argyll and Bute economy and is responsible for higher summer-time traffic flows in some areas.

Results of modelling of sources of nitrogen dioxide and particulates are presented in Figures 8 and 9 and show that background concentrations are very low. In the absence of industry hotspots the major potential source of pollution that may impact on human health is that produced by motor vehicles. However, traffic flows tend to reflect the low and dispersed population but a network of nitrogen dioxide diffusion tubes is maintained to monitor those areas deemed to be subject to higher concentrations. Reference to the measured annual trends in Figures 1 to 4 shows that nitrogen dioxide levels are well below the annual objective and trends are either level or falling at all sites where tubes have been established long enough for relationships to be plotted.

The shift to install small to medium-sized biomass boilers at schools and commercial premises has continued although at a slower rate than recent years. Technical details supporting planning applications are subject to scrutiny and evaluation to ensure that air quality objectives should not be compromised.

Actions to Improve Air Quality

Air quality in Argyll and Bute is considered to be generally very good and complies with all the air quality objectives listed in Table 1. The Council has not identified any areas where air quality objectives may be under threat and where specific consequent action is required to improve air quality

Local Priorities and Challenges

Although the Council does not face any specific challenges in relation to air quality it is hampered in the case of smaller biomass boilers by the planning development system being the only effective means of applying regulatory control and then only where planning permission is required. Notwithstanding this, appropriate controls are attached to planning applications, where appropriate, to protect local air quality standards and ensure that they are not adversely affected by the development.

How to Get Involved

The Council publishes a report summarising the results of its air quality monitoring Copies can be downloaded at https://www.argyll-bute.gov.uk/planning-and-environment/air-pollution-and-local-air-quality

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1. Local Air Quality Management

This report provides an overview of air quality in Argyll and Bute during 2017. 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 Argyll and Bute Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2020
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	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	0.25 µg/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.

Argyll and Bute Council currently does not have any AQMAs and this current and past annual assessments suggests that it will be not be necessary to declare any AQMAs in the future.

2.2 Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available at http://www.gov.scot/Publications/2015/11/5671/17. Progress by Argyll and Bute Council against relevant actions within this strategy is demonstrated below.

2.2.1 Transport – Avoiding travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. Argyll and Bute Council does not currently have a formal corporate travel plan but the widely dispersed geographical location of offices and other workplaces (including offshore) has prompted the widespread development of facilities such as video conferencing with a consequent reduction in travel. It is anticipated that increasing familiarity with the use of the technology will allow staff to continue to reduce business travel between locations within the working day. The recent opening of the Council's new office in Helensburgh allowed the concentration of services from outlying premises to be consolidated on one site. The town centre site is readily accessible by train, bus and ferry and showers and lockers are provided for those staff who wish to commute by bicycle. The central location also facilitates better access for members of the public wishing to use Council services.

All of Argyll and Bute's schools have a travel plan in place. School Travel Plans identify issues relating to the school journey and set out agreed aims and packages of measures to promote more sustainable travel choices for pupils, parents, staff and visitors.

2.2.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered. With the exception of Helensburgh, Dunoon and Rothesay, Argyll and Bute is not connected to the gas national grid. There has been a limited programme of the installation of biomass boilers at schools and other Council buildings to replace other heating fuels, generally oil or electricity. Argyll and Bute Council does not have a formally adopted sustainable action energy plan but Local Development Policy LDP 6 Supporting the Sustainable Growth of Renewables requires that the Council will support renewable energy developments where these are consistent with the principles of sustainable development and it can be adequately demonstrated that there would be no unacceptable significant adverse effects, whether individual or cumulative, including on local communities. This includes air quality and installations are assessed as part of planning application and Clean Air Act requirements.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Non-Automatic Monitoring Sites

Following regular reviews there have been no changes to our monitoring strategy from previous years and Argyll and Bute Council undertook non - automatic (passive) monitoring of NO_2 at 10 sites during 2017. Table A.1 in Appendix A shows the details of the sites.

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

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_2)

Table A1 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m3.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

The results show that for all sites annual mean concentrations of NO_2 are all well below the annual objective. Where the run of results allows a trend to be plotted it can be seen that the annual concentrations appear to be falling or remaining steady.

3.2.2 Particulate Matter (PM_{10})

Argyll and Bute Council does not monitor PM_{10}

3.2.3 Particulate Matter ($PM_{2.5}$)

Argyll and Bute Council does not monitor $PM_{2.5}$

3.2.4 Sulphur Dioxide (SO_2)

Argyll and Bute Council does not monitor sulphur dioxide.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Argyll and Bute Council does not monitor carbon monoxide, lead or 1,3 butadiene.

4. New Local Developments

Since the publication of the 2016 Annual Progress Report there have been a small number of new developments which, if approved, may affect air quality as characterised by guidance LAQM TG16. They are listed in the sections below.

4.1 Road Traffic Sources

Argyll and Bute Council confirms that there are no roads or features in the following list that are new or newly identified that would require further assessment:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed
- Roads with significantly changed traffic flows.
- Bus or coach stations.

4.2 Other Transport Sources

Argyll and Bute Council confirms that there none of the following that are new or newly identified that would warrant further assessment:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

4.3 Industrial Sources

Argyll and Bute Council confirms that there none of the following that are new or newly identified that would warrant further assessment:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.

- Industrial installations: new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

4.4 Commercial and Domestic Sources

The biomass boilers listed in Table 4.1 are currently the subject of ongoing assessment to determine the potential impact on sensitive receptors.

Table 4.1 Proposed Biomass Boilers >50kW

Site	Rating kW	Stack Height m	Building Height m	Effective Stack Height m	Stack Diameter m
Mid-Argyll Swimming Pool	2*120	4.2	6.0	Nil	0.20
Campbeltown Picture House	150	8.4	9.8	Nil	0.25
Glenshellach, Oban	2*201	7	3.4	6.0	0.25

Mid-Argyll Swimming Pool, Lochgilphead - Planning reference 17/00681/PP[7].

This development consists of a replacement biomass boiler installation and is currently in the planning system as a retrospective application. An objection to the application has been lodged due to a lack of information provided to justify the selection of a flue height which is lower than adjacent buildings. The Council is currently in dialogue with the developers to identify a solution to the situation.

Campbeltown Picture House. Planning reference 15/03507/PP[7].

The major refurbishment of the Picture House includes the installation of a 150kW biomass boiler which is intended to utilise an existing chimney and hence does not require planning permission. The capacity of the boiler is 150kW and its fuel consumption is less than 45.4kg/hr so chimney height approval under Section 14 of Clean Air Act 1993 is therefore not required. The flue using the existing chimney is proposed to be 8.4m tall and is within 5m of the ridge of the building it serves which is 9.8m tall. There are also other receptors likely to be impacted by poor dispersion which are giving rise to concern. The developer appears not to have considered flue

gas dispersion in designing the installation and efforts have been made over a prolonged period by the Council to promote engagement to review the design. Recent correspondence has indicated that a dispersion modelling exercise will be undertaken and the results submitted to the Council for comment.

Glenshellach, Oban. Planning reference 17/01181/PP[7].

The installation is a replacement installation for a single biomass boiler serving a district heating scheme. A modelling exercise was undertaken which concluded that there would be negligible impact on air quality at relevant receptors.

4.5 New Developments with Fugitive or Uncontrolled Sources

There is one development currently under consideration that has been assessed for its potential impact on air quality. Details are provided below. There are a number of new un-metalled 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} or $PM_{2.5}$ objectives. The Council does not propose to carry out individual assessments of these sources unless particular circumstances indicate that it would be appropriate.

Glasdrum Sand and Gravel Quarry, Fasnacloich, Appin. Planning reference 16/02911/MIN[7].

The application for a small capacity (15000 tonnes/annum) sand and gravel quarry included air quality as part of its environmental statement. It was concluded that the implementation of the proposed dust management strategy would ensure that the impact on air quality would be negligible.

5. Planning Applications

Applications currently under consideration with a potential air quality impact are considered in Sections 4.4 and 4.5.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

The graphs in Figures 1 to 4 continue to show a steady or falling trend in those areas monitored by nitrogen dioxide diffusion tubes and all sites are well below the annual mean objective. There is therefore no requirement to undertake a Detailed Assessment.

6.2 Conclusions relating to New Local Developments

Local developments warranting consideration for air quality impacts have included sand and gravel extraction and biomass boiler installations. In the case of two of the three biomass boiler installations the screening tests failed due to inadequate stack height compared to nearby buildings. An objection to the planning application was lodged in respect of one development but in the other case the flue height was effectively approved by an existing planning permission. This latter situation has highlighted deficiencies in the existing legislation which will hopefully be eliminated following the ongoing review of the Clean Air Act.

6.3 Proposed Actions

Argyll and Bute Council will continue to monitor the concentrations of nitrogen dioxide at those sites contained in this report. Results of monitoring and other air quality assessment work will be presented in the next Annual Progress Report due in June 2018

Appendix A: Monitoring Results

Table A.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?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?
N1	George Street 1, Oban	Roadside	185921	729942	NO_2	N	5	2	No
N2	George Street 2, Oban	Roadside	185870	730319	NO_2	N	0	9	No
N3	George Street 3, Oban	Roadside	185880	730250	NO_2	N	0	9	No
N4	Argyll Street, Dunoon	Roadside	217324	676984	NO_2	N	6	3	No
N5	Main St, Campbeltown	Roadside	171918	620330	NO_2	N	0	3	No
N6	Colchester Sq, Lochgilphead	Roadside	186222	687940	NO_2	N	0	2	No
N7	Inverneil	Rural Background	186048	729293	NO_2	N	3	N/A	No
N8	East Princes St, Helensburgh	Roadside	229919	682287	NO_2	N	4	2	No

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?
N9	Main Road, Cardross	Roadside	234350	677771	NO_2	N	6	2	No
N10	Sinclair Street Helensburgh	Roadside	231925	704478	NO_2	N	3	2	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.

Figure 1. Graph of Annual NO_2 trends – Oban, Lorn and Isles Area

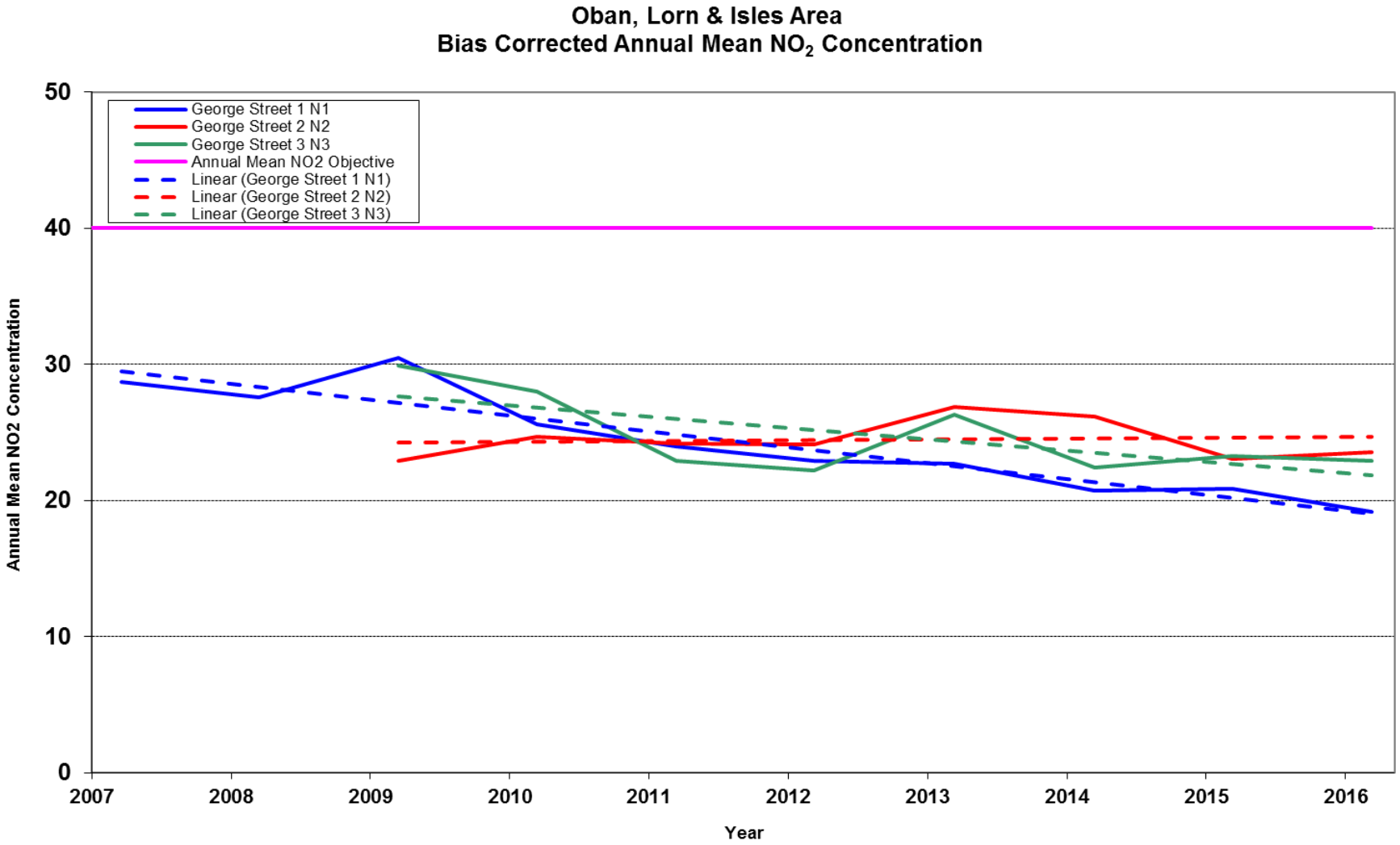

Figure 2. Graph of Annual NO_2 trends – Bute and Cowal Area

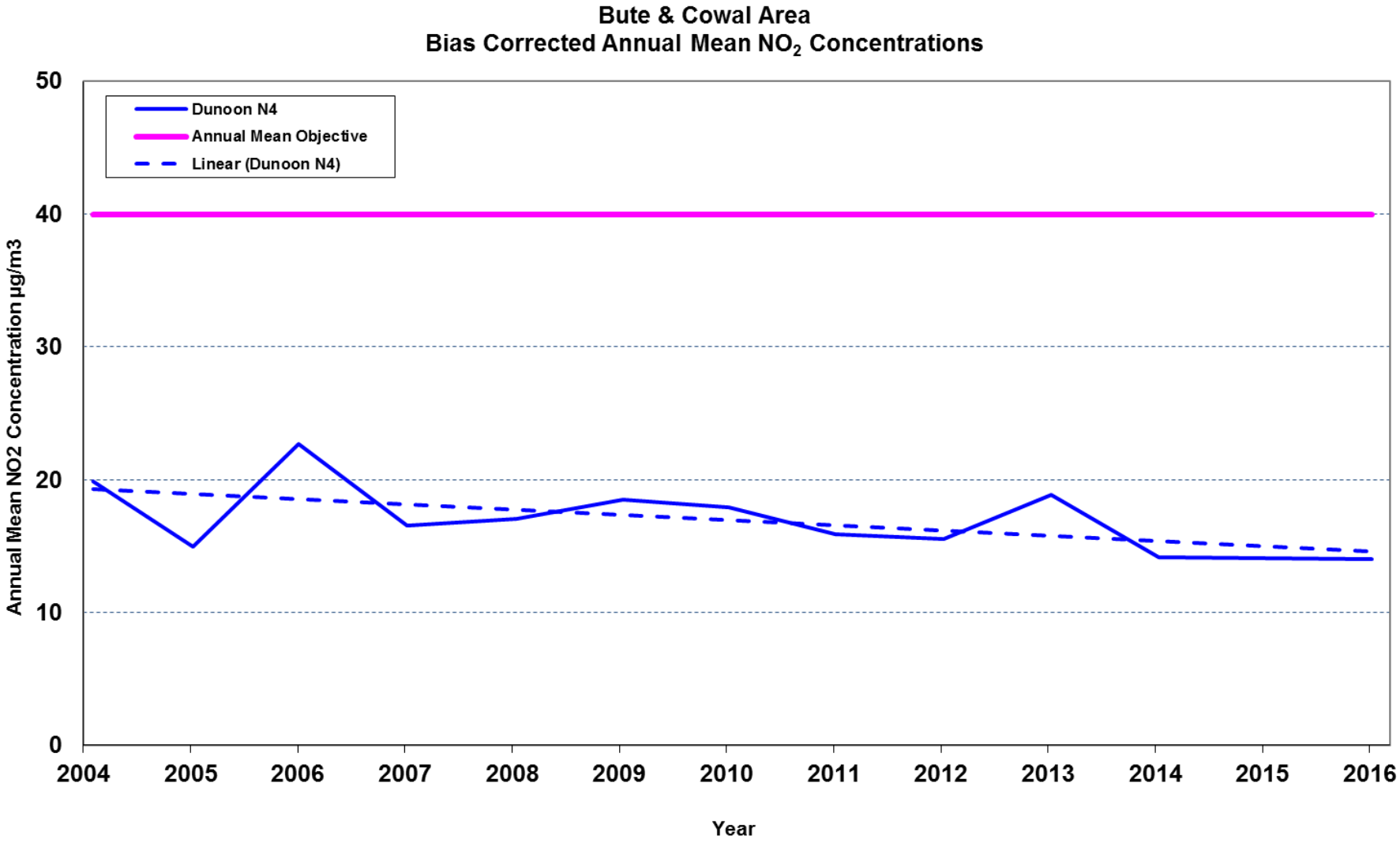

Figure 3. Graph of Annual NO_2 trends – Mid Argyll and Islay Area

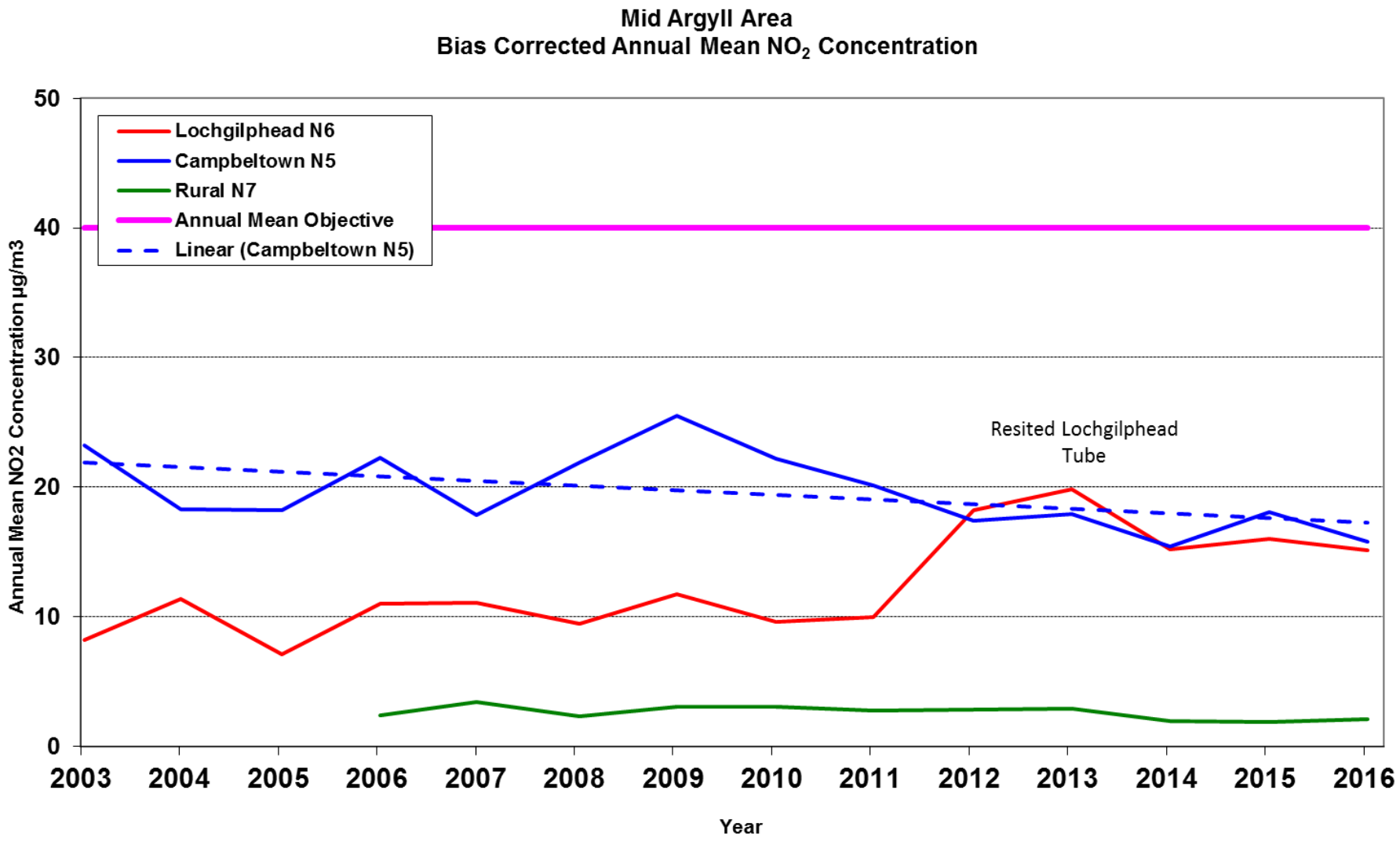

Figure 4 Graph of Annual NO_2 trends – Helensburgh and Lomond Area

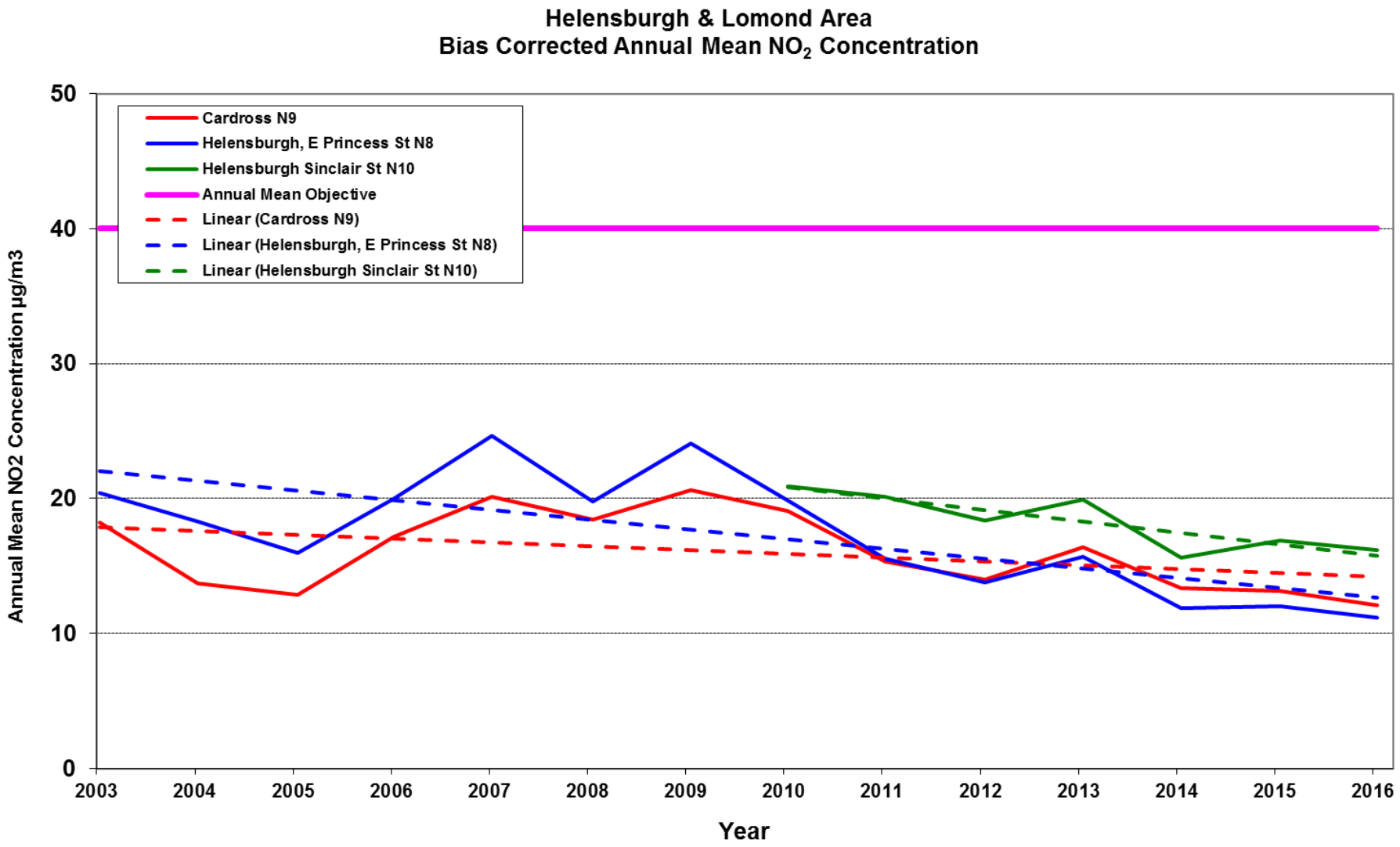

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2012	2013	2014	2015	2016
N1	Roadside	Diffusion Tube	100	100	22.9	22.7	20.7	20.8	18.5
N2	Roadside	Diffusion Tube	100	100	24.1	26.9	26.2	23.0	22.2
N3	Roadside	Diffusion Tube	100	92	22.2	26.3	22.4	23.3	21.3
N4	Roadside	Diffusion Tube	100	92	15.0	18.3	14.6	14.1	14.0
N5	Roadside	Diffusion Tube	100	100	17.5	16.5	14.5	16.0	15.8
N6	Roadside	Diffusion Tube	100	92	23.4	19.5	14.7	18.1	15.1
N7	Rural B'ground	Diffusion Tube	100	92	2.6	2.9	1.8	1.9	2.1
N8	Roadside	Diffusion Tube	100	100	13.3	14.3	12.4	12.0	11.2
N9	Roadside	Diffusion Tube	100	92	13.8	16.0	13.1	13.2	12.1
N10	Roadside	Diffusion Tube	100	100	19.4	19.7	14.9	16.9	16.2

Notes: Exceedences of the NO_2 annual mean objective of 40µg/m3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedence of the NO_2 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.

Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results for 2016

Site ID	NO_2 Mean Concentrations (µg/m^3)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted (1)
N1	11.4	16.5	20.7	21.5	18.0	10.7	18.1	23.5	20.7	20.6	27.1	15.0	19.1	18.5
N2	15.4	27.6	24.3	21.7	18.3	6.0	20.7	26.7	28.9	29.1	32.8	27.8	22.9	22.2
N3	15.3	11.9	23.6	22.0	25.4	3.4		25.7	26.9	28.3	31.0	29.2	20.4	19.8
N4	13.4		15.1	13.8	10.0	9.0	7.8	13.3	12.7	20.1	24.7	19.3	14.5	14.0
N5	14.8	16.0	14.9	14.8	7.7	13.3	13.5	18.3	19.1	19.5	23.6	19.9	16.3	15.8
N6	11.9	21.1	19.6	20.9	8.1	9.6	9.8	16.5	18.0	18.9		16.8	15.6	15.1
N7	1.9	2.1	2.0	2.0	2.2		2.2	1.9	2.0	1.9	1.7	3.6	2.1	2.1
N8	9.4	9.6	12.6	13.5	4.5	4.4		10.5	10.5	15.6	19.1	17.0	11.5	11.2
N9	14.9	9.3	15.1	7.8	8.4	1.9	5.4	11.0	13.7	15.1	25.4	21.5	12.5	12.1
N10	19.9	16.9	18.9	16.2	9.3	4.4	10.4	14.6	19.3	16.8	30.8	22.9	16.7	16.2

(1) See Appendix C for details on bias adjustment

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

Diffusion Tube Bias Adjustment Factors

Nitrogen dioxide diffusion tubes are supplied and analysed by Glasgow Scientific Services. The laboratory scored 100% in the WASP assessment covering the period of the reported sampling results. The preparation method used is 20% TEA in water and the 2016 bias adjustment factor of 0.97 was obtained from Spreadsheet Version 03_17ver2[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 2016. The factor of 0.97 was obtained from Spreadsheet Version Number 03_17ver2 downloaded from http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Appendix D: Maps

Figure 5 Map of Population Distribution & A Roads

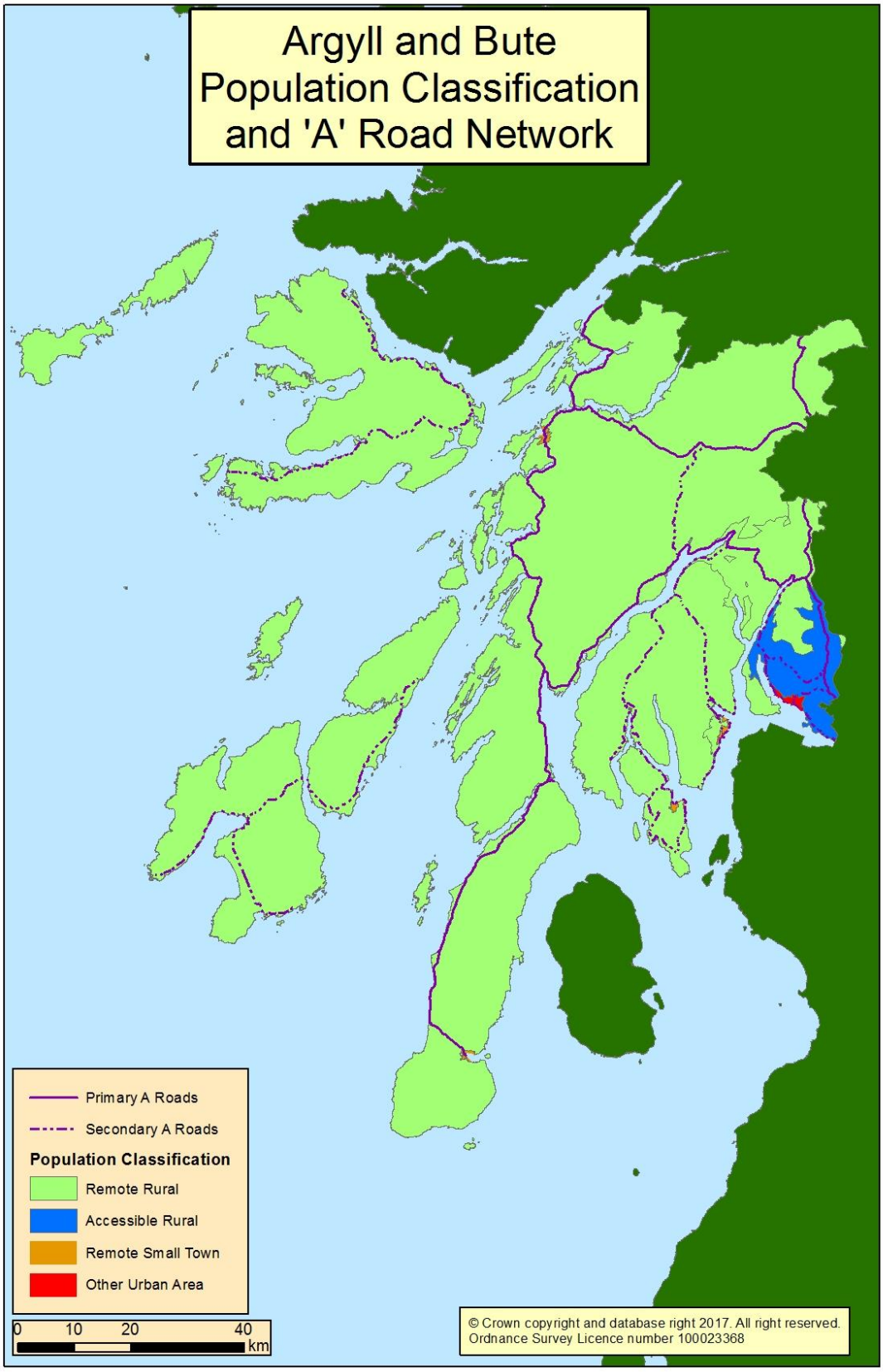

Figure 6 Map of Major Settlements

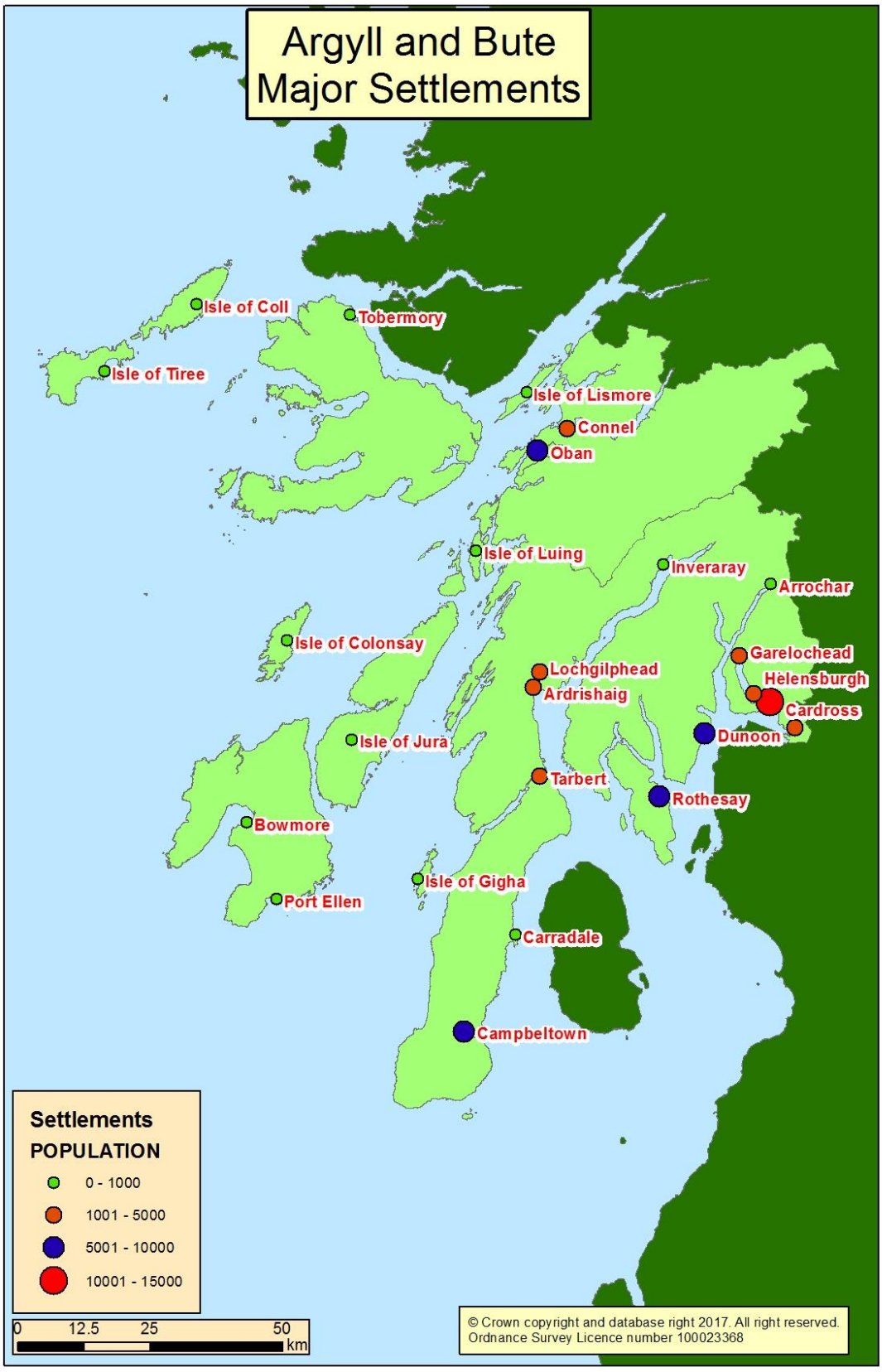

Figure 7 Map of Transport Routes

Figure 8 Map of Modelled Background NO_2 Annual Mean Concentrations

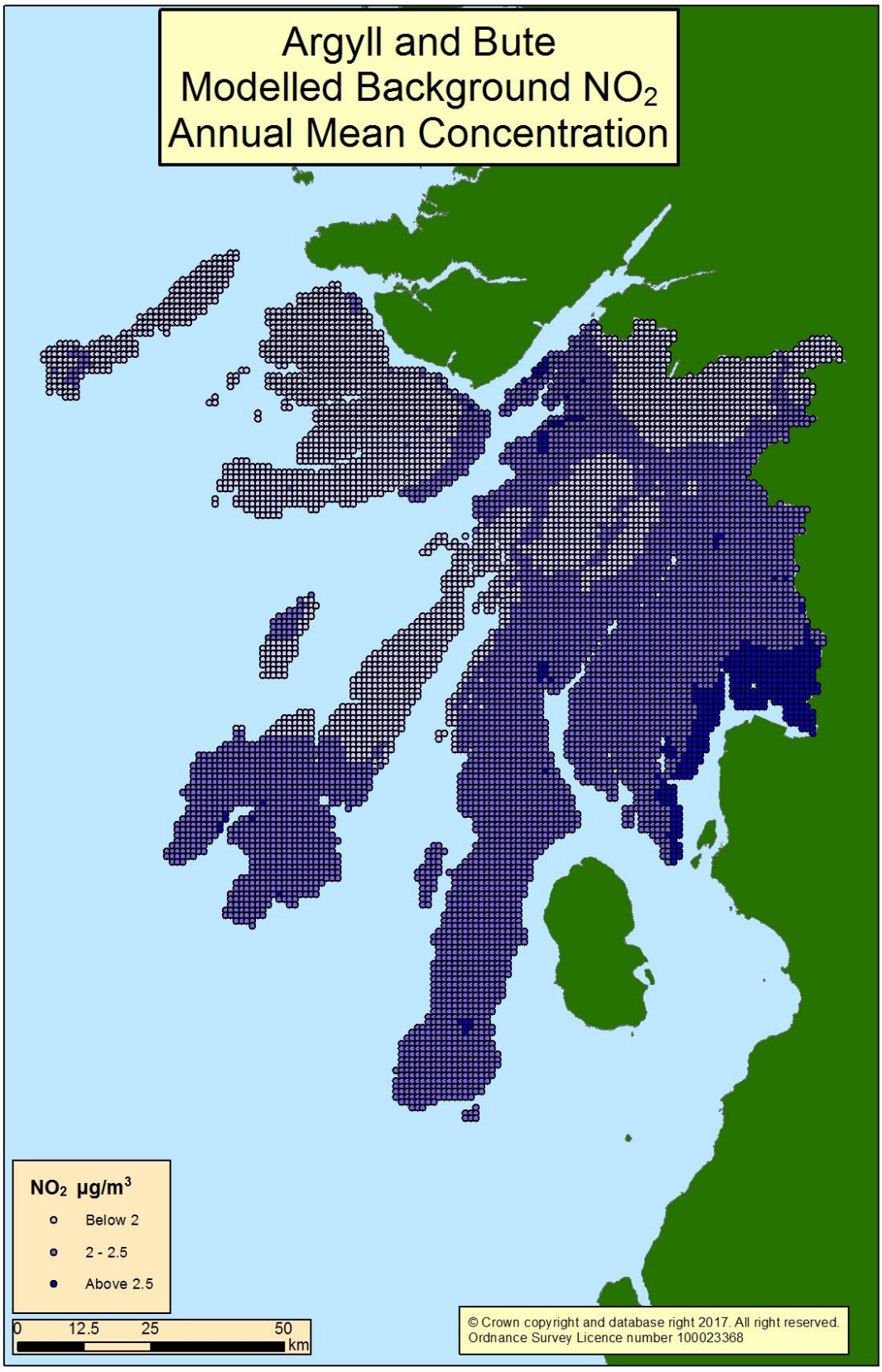

Figure 9 Map of Modelled Background PM_{10} Annual Mean Concentrations

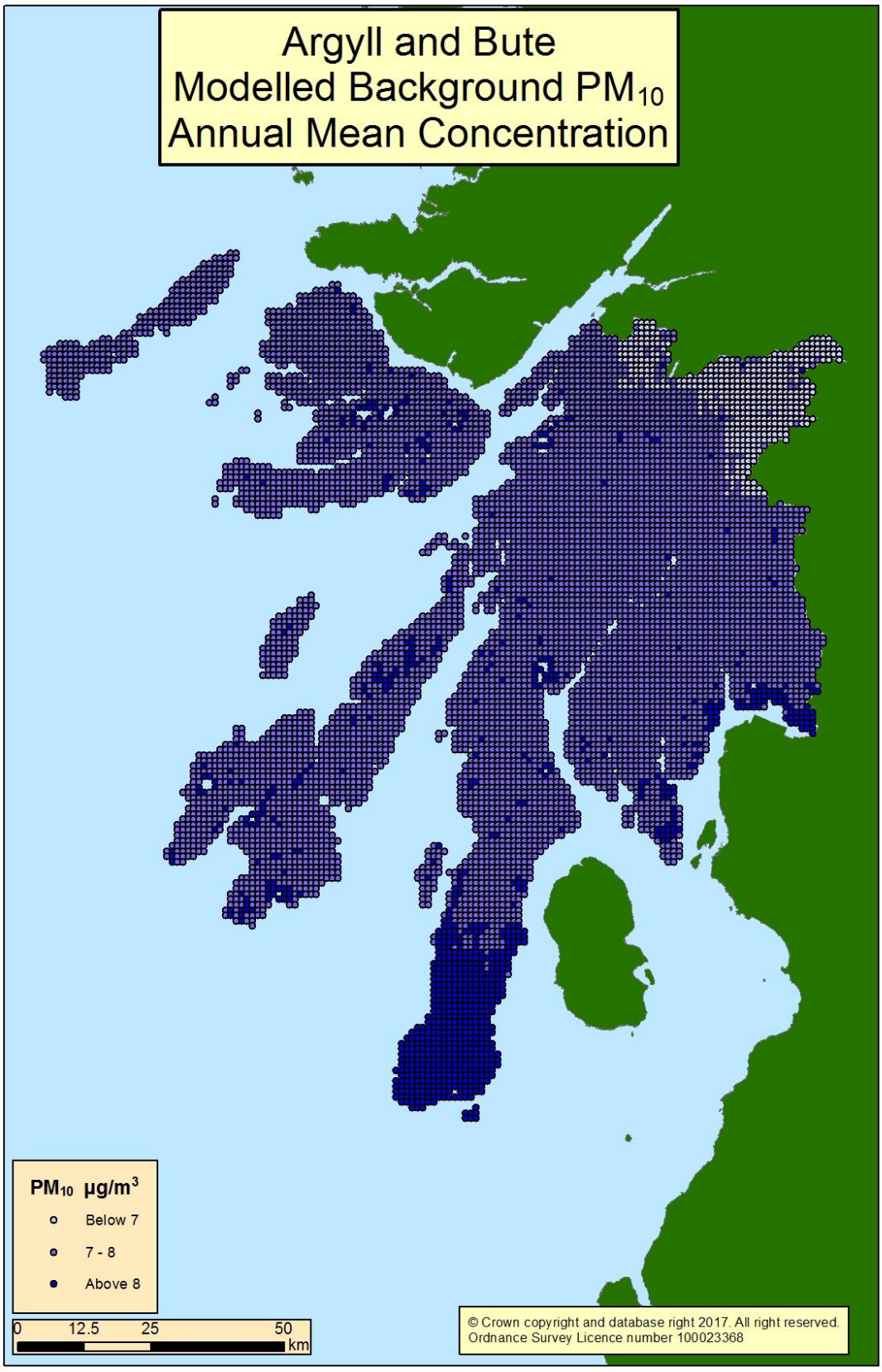

Figure 10 Map of Monitoring Locations

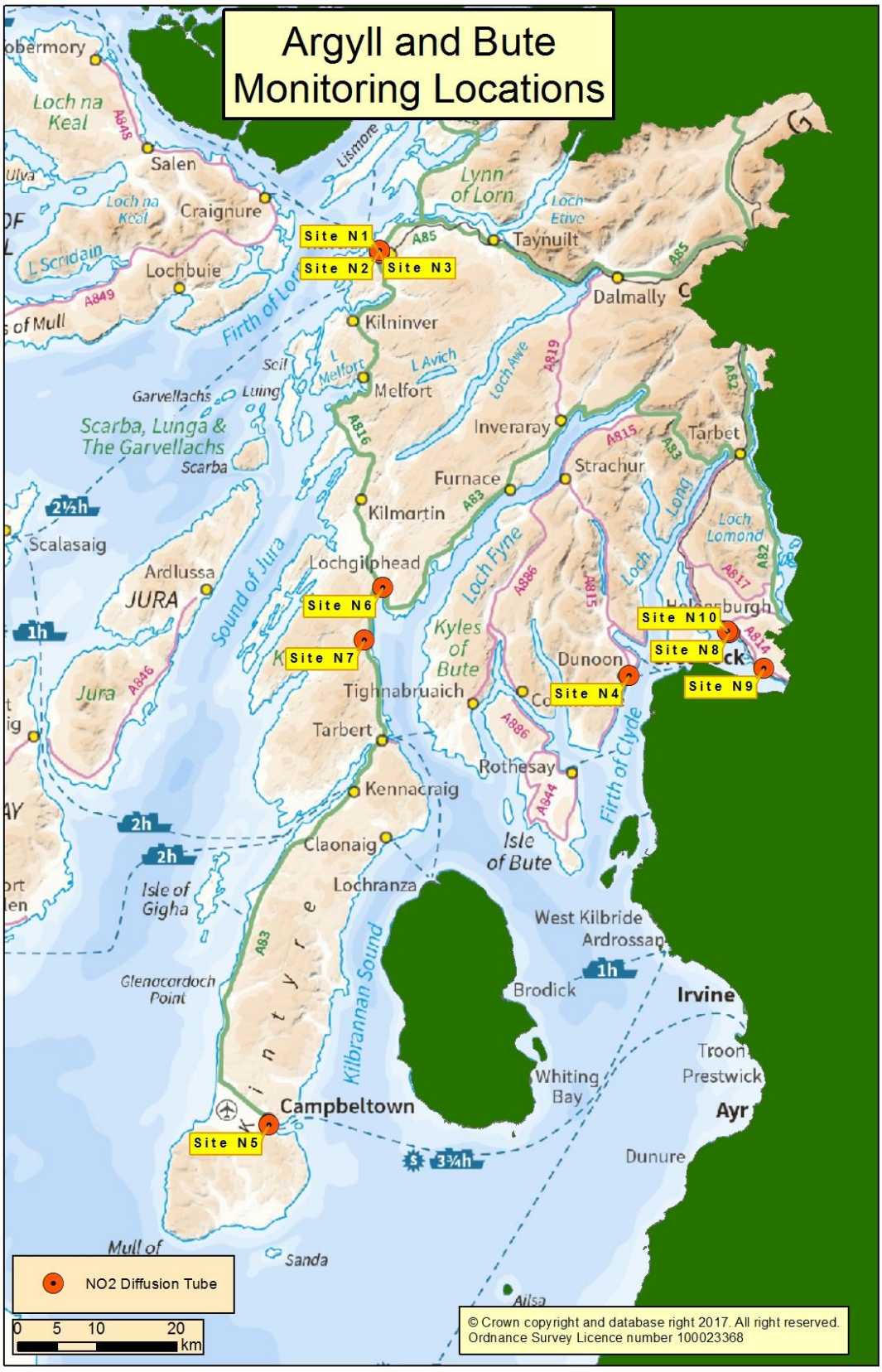

Figure 11 Map of Diffusion Tube Sites, Helensburgh

Figure 12 Map of Diffusion Tube Sites, Oban

Figure 13 Map of Permitted Process Sites

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_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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

(2) Argyll and Bute Council, 2016 Air Quality Annual Progress Report, June 2016

(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) Defra in partnership with the devolved administrations, Technical Guidance LAQM.TG(16), April 2016

(7) Argyll and Bute Council. Online access to planning applications is available at http://publicaccess.argyll-bute.gov.uk/online-applications/