Appendix 1

Argyll and Bute Council

Comhairle Earra-Ghàidheal agus Bhòid

2021 Air Quality Annual Progress Report (APR) for

ARGYLL AND BUTE COUNCIL

In fulfilment of Part IV of the

Environment Act 1995

Local Air Quality Management

Argyll and Bute Council

Comhairle Earra-Ghàidheal agus Bhòid

Local Authority Officer	Argyll and Bute Council
Department	Development and Economic Growth
Address	Kilmory, Lochgilphead PA31 8RT
Telephone	01546 604421
E-mail	envhealth@argyll-bute.gov.uk
Report Reference number	LAQM/APR/2021
Approved by Alan Morrison, Regulatory Services Manager	
Signature	
Date	14 September 2021

Executive Summary: Air Quality in Our Area

Air quality in Argyll and Bute is considered to be generally very good and complies with all the air quality objectives listed in Table 1.1. The Council has not identified any areas where air quality objectives may be under threat and where specific action is required to improve air quality. The COVID-19 pandemic is likely to have an impact on local air quality and the medium term impacts will be considered in future progress reports. However, in the short-term, this report has identified that annual average nitrogen dioxide (NO_2) concentration levels in 2020 have reduced at most monitoring locations. This is likely to be related to lower emissions from reduced travel during the COVID-19 response.

There is therefore no requirement to undertake a Detailed Assessment for any pollutant.

Argyll and Bute is an authority with over 73% of its area classified as remote[1] and a widely distributed population. 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, aquaculture 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.

The shift to install small to medium-sized biomass boilers at commercial premises has continued. Technical details supporting planning applications are subject to scrutiny and evaluation in accordance with guidance to ensure that air quality objectives should not be compromised.

National modelling of sources of nitrogen dioxide (NO_2) and fine particulates[7] show that background concentrations are very low. In the absence of industry hotspots, the major potential source of pollution that may impact on resident's health is transportation. However, traffic flows tend to reflect the low density dispersed population. A network of nitrogen dioxide diffusion tubes is maintained to monitor those areas in town centres

considered to be subject to higher concentrations. Reference to the measured annual trends in Figures 1 to 10 shows that nitrogen dioxide levels are well below the annual objective, and that trends in the data over the last ten years from most roadside sites are falling.

Challenges, highlighted through the COVID-19 response, indicate the requirement for a review of the Council's NO_2 monitoring program which is due to be completed by 31st December 2021.

Actions to Improve Air Quality

Where opportunities exist the Council supports initiatives such as the multi-agency Argyll Timber Transport Forum which aims to minimise the environmental impact of timber transport between forest and mill. This is achieved through the use of dedicated off-highway transport routes and sea transport via the TimberLINK network. The TimberLINK service ships up to 100,000 tonnes of timber a year from the Argyll ports of Ardrishaig, Campbeltown, Sandbank and temporary facilities to wood processing plants in Ayrshire. This removes around 8,000 lorry journeys (or nearly one million lorry miles) a year from roads between Argyll and Ayrshire, including tourist routes in Argyll and roads within the Greater Glasgow conurbation.

The Council works in Partnership with Transport Scotland, Highlands and Islands Transport Partnership (HITRANS) and Strathclyde Partnership for Transport (SPT) to secure funding to install electric vehicle charging infrastructure across the region and to improve accessibility to public transport services with the aim of reducing the dependence on vehicles powered by fossil fuels.

Local Priorities and Challenges

Although the Council does not face any specific challenges in relation to air quality the current regulatory system does not fully control the potential emissions from smaller biomass boilers and stoves which often fall out with the development planning system. It is understood that this issue is being considered as part of an ongoing review of the Clean Air Act.

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.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Argyll and Bute Council during 2020. 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) is 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 Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	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
Particulate Matter (PM_{10})	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
Sulphur dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	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

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 suggest that it will be very unlikely to be necessary to declare any AQMAs in the future based on current air quality objectives.

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 on the Scottish Government's website. 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 islands) has prompted the widespread development of facilities such as video conferencing with a consequent reduction in travel. Upgrading and increased use of ICT has allowed a number of employees to work from home. The possibility that a further continued increase in home-working following its widespread use as part of Covid-19 measures has been recognised and will allow staff to continue to reduce business travel between locations within the working day.

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.

The Council are committed to trying to encourage change from the private car to more sustainable, low emission modes of transport however, this can be challenging in rural areas where public transport connectivity is often infrequent or non-existent. Despite this the Council works with a number of key stakeholders annually to secure funding for active, public transport and behaviour change projects. These include infrastructure interventions such as cycle paths, cycle parking etc. and projects aimed at encouraging behaviour change such as travel plans, signage and mapping.

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.

Argyll and Bute Council does not have a formally adopted sustainable action energy plan but other strategies include provisions with the potential to exploit synergies between climate change and air quality.

With the exception of the urban centres of Helensburgh, Dunoon and Rothesay, Argyll and Bute is not connected to the national gas grid whilst local LPG networks of limited extent and capacity exist in Campbeltown and Oban. There has been a programme of the installation of biomass boilers at schools and other Council buildings to replace other heating fuels, generally oil or electricity.

Local Development Policy LDP 6 Supporting the Sustainable Growth of Renewables[2] 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 policy includes air quality and installations are assessed as part of planning application and Clean Air Act requirements.

The Council's Economic Development Strategy[3] has identified a role to encourage the creation of business clusters to concentrate employment opportunities with a reduction in the demand for commuting. The Strategy also supports the continued development of the established renewables sector including wind, solar and hydro. This contributes to the reduction in air quality and climate change impact outwith Argyll and Bute due to the reduction in the dependence of the electricity generating industry on the burning of fossil fuels such as coal and gas.

The Council works in partnership with Strathclyde Partnership for Transport to secure funding for public transport infrastructure projects in Helensburgh and Lomond. These generally focus on improving accessibility to public transport services and upgrades to shelters and public transport information. The Council are committed to encouraging increased use of low emission vehicles and have been working in partnership with Highlands and Islands Transport Partnership (HITRANS) to secure annual funding from Transport Scotland to install charging infrastructure across the region. In 2020 Argyll and Bute Council increased to 28 the number of charge points it provides within the local network of charging points for electric vehicles. Charge point locations within Argyll and Bute, and information on availability, connector speed and costs can be accessed 'live' at ChargePlace Scotland | Scotland's Public EV Charging Network.

2.3 Progress and Impacts of Measures to address Air Quality in Argyll and Bute Council

Argyll and Bute Council currently does not have any AQMAs, and therefore does require an Air Quality action plan.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Argyll and Bute Council did not undertake any automatic (continuous) monitoring during 2019 as previous report identified that this was unnecessary

3.1.2 Non-Automatic Monitoring Sites

Argyll and Bute Council undertook non- automatic (passive) monitoring of NO_2 at 10 sites during 2020. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D.

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

Argyll and Bute Council's monitoring programme reflects the previous outcomes of assessment reports which identified nitrogen dioxide as a pollutant to monitor. 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 A.23 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3.

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B.

The results show that for all sites the bias adjusted annual mean concentrations of NO_2 continue to be well below the annual objective. The majority of sites have been monitored continuously for between 10 and 15 years allowing trends to be shown. Figures 1 to 10 (Appendix A) show continuing downward trend in annual average NO_2 concentrations at all urban sites. In many cases the 2020 decreases in annual mean NO_2 concentrations shown are likely to be greater due to the impact of COVID-19 response and decrease in personal travel and transportation.

3.2.2 Particulate Matter (PM_{10})

Argyll and Bute Council does not monitor Particulate Matter.

3.2.3 Particulate Matter ($PM_{2.5}$)

Argyll and Bute Council does not monitor Particulate Matter.

3.2.4 Sulphur Dioxide (SO_2)

Argyll and Bute Council does not monitor for SO_2.

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 2020 Annual Progress Report[4] there have been a small number of new developments which, if approved, may affect air quality as characterised by guidance LAQM TG16[5]. 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 boiler listed in Table 4.1 were the subject of an assessment at the planning stage to determine the potential impact on sensitive receptors. The planning applications were approved.

The boilers listed in table 4.1 were assessed in accordance with the guidance contained in Box 5.8 LAQM.TG(09)[6]. Emission rate was estimated based on the maximum thermal capacity of the boiler and the emission factors provided for PM_{10} and NO_2. Background concentrations for 2020 were obtained from the Scottish Air Quality Archive[7]. A summary of the results from the sites are presented in Tables 4.2, 4.3 and 4.4. It should be noted that the PM_{10} screening assessments have been made against the more stringent annual mean objective

Table 4.1 Proposed Biomass Boilers >50kW

Site	Rating kW	Stack Height m	Building Height m	Effective Stack Height m	Stack Diameter m
Auchgoyle Farm Tignabruich	60	6.5	5.6	1.5	0.1
Elixir Distillery Islay	5600	19	12	11.6	0.7

Table 4.2. Biomass boilers – assessment against annual mean PM_{10} objective

Site	Adjusted emission rate g/s	Threshold emission rate g/s	Progress to detailed assessment?
Auchgoyle Farm Tignabruich	0.0006	0.0016	NO
Elixir Distillery Islay	0.113	0.2	NO

Table 4.3. Biomass boilers – assessment against annual mean NO_2 objective

Site	Adjusted emission rate g/s	Threshold emission rate g/s	Progress to detailed assessment?
Auchgoyle Farm Tignabruich	0.0001	0.0016	NO
Elixir Distillery Islay	0.328	1.87	NO

Table 4.4. Biomass boilers – assessment against hourly mean NO_2 objective

Site	Adjusted emission rate g/s	Threshold emission rate g/s	Progress to detailed assessment?
Auchgoyle Farm Tignabruich	0.0011	0.0144	NO
Elixir Distillery Islay	0.328	7.39	NO

Using the guidance provided in LAQM.TG16[5] it has been concluded that there are no areas considered to be at risk of objectives being exceeded due to cumulative impacts of multiple biomass/domestic combustion installations.

4.5 New Developments with Fugitive or Uncontrolled Sources

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 of a standard suitable for road-going vehicles and 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.

5 Planning Applications

The following planning applications with a potential air quality impact and subject to an air quality assessment were submitted in 2020:

Auchgoyle Farm, Tignabruich – 20/01186/PP

The approved application involved installation of a biomass heating system. An air quality assessment was undertaken (Section 4.4) and concluded that air quality objectives would not be exceeded. The boiler plant will be operated under the Medium Combustion Plant Directive.

Taynish House, Tayvallich – 20/01216/PP

The approved application involved installation of a biomass boiler. The boiler installation was considered not to lead to any concerns regarding air quality[11]

6 Impact of COVID-19 upon LAQM

Argyll and Bute Council continued to maintain its diffusion tube monitoring network during 2020 although COVID-19 response did have an impact on our monitoring programme.

Monitoring results in 2020 conclude that:

2020 Annual average NO_2 concentration levels reduced at most monitoring locations. This is likely to be related to lower emissions from reduced travel during the COVID-19 response.

The impact during this period on the monitoring programme, related to COVID-19 response, was two-fold.

Firstly tubes placed in exposure locations in March 2020 were not replaced on programmed dates in April 2020. This meant they were exposed for two calendar periods.

Secondly the change to office working patterns during the COVID-19 response impacted the logistics of the programme for changing the tubes. During this period it was not always possible to change tubes on calendar dates (or within two days of them). This increased divergence from dates in line with the diffusion tube calendar.

Whilst it is recognised that there may be divergence in annual average, arising from the variations in exposure periods, these were not considered sufficient to warrant recalculation (time weighting) particularly when the Council recognises the need to review monitoring protocols to ensure closer alignment with calendar dates in future.

The impact of COVID-19 considered within the preparation of this report has highlighted the need to review aspects of the Councils NO_2 monitoring program. This review will be completed by 31st December 2021.

7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

The graphs in Figures 1 to 10 (Appendix A) continue to show a long-term 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.

7.2 Conclusions relating to New Local Developments

Local developments warranting consideration for air quality impacts have included the installation of biomass boilers at two sites in rural areas and large capacity boilers associated with a distillery. The developments were screened for potential averse air quality impact and it was concluded that air quality objectives would not be jeopardised and further assessments were not required.

7.3 Proposed Actions

Monitoring during 2020 confirmed levels of atmospheric NO_2 continue to be well below the air quality objective. Therefore no actions, to reduce NO_2 concentrations, are required to meet this objective.

Argyll and Bute Council has recognised the need to undertake a detailed review of its nitrogen dioxide monitoring program which it will undertake during 2021.

Results of monitoring and other air quality assessment work will be presented in the next Annual Progress Report due in June 2022.

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? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
N1	George Street 1, Oban	Roadside	185921	729942	NO_2	N	5	2	No	2.5
N2	George Street 2, Oban	Roadside	185880	730253	NO_2	N	0	5	No	2.5
N3	George Street 3, Oban	Roadside	185870	730317	NO_2	N	0	5	No	2.5
N4	Argyll Street, Dunoon	Roadside	217324	676894	NO_2	N	6	3	No	2.5
N5	Main St, Campbeltown	Roadside	171970	620380	NO_2	N	0	3	No	2.5
N6	Colchester Sq, Lochgilphead	Roadside	186280	687920	NO_2	N	0	2	No	2.5
N7	Inverneil	Rural Background	184019	681303	NO_2	N	3	N/A	No	2 .5
N8	East Princes St, Helensburgh	Roadside	229919	682287	NO_2	N	4	2	No	2.5
N9	Main Road, Cardross	Roadside	234338	677717	NO_2	N	6	2	No	2.5

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
N10	Sinclair Street Helensburgh	Roadside	229675	682442	NO_2	N	0	3	No	2.5

Notes:

(1) 0m 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.2 – Annual Mean NO_2 Monitoring Results ($\mu g/m^3$)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
N1	Roadside	Diffusion Tube	100	100	18.5	21.1	20.1	21.4	14.0
N2	Roadside	Diffusion Tube	84	84	22.2	22.5	22.2	20.1	15.2
N3	Roadside	Diffusion Tube	100	100	21.3	22.5	20.8	21.9	16.1
N4	Roadside	Diffusion Tube	100	100	12.4	12.1	12.1	13.5	8.2
N5	Roadside	Diffusion Tube	100	100	15.8	15.4	15.8	15.6	9.6
N6	Roadside	Diffusion Tube	100	100	15.1	17.8	13.5	14.8	10.3
N7	Rural B'ground	Diffusion Tube	92	92	2.1	2.1	2.1	2.2	2.7
N8	Roadside	Diffusion Tube	100	100	10.2	10.8	9.9	11.8	10.3
N9	Roadside	Diffusion Tube	100	100	10.3	10.7	11.2	13.0	9.3
N10	Roadside	Diffusion Tube	100	100	16.2	17.1	15.0	15.5	10.9

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in bold.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

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.

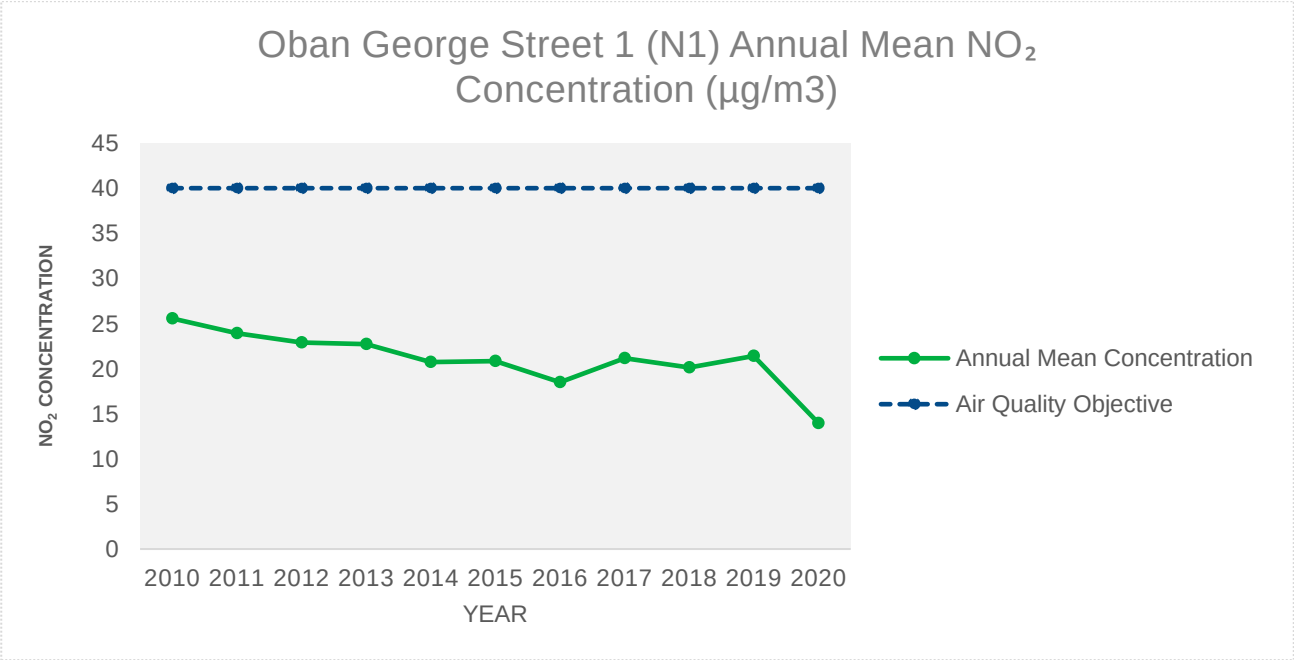

Figure 1 Annual mean NO_2 concentrations for site N1 Oban 2010 to 2020

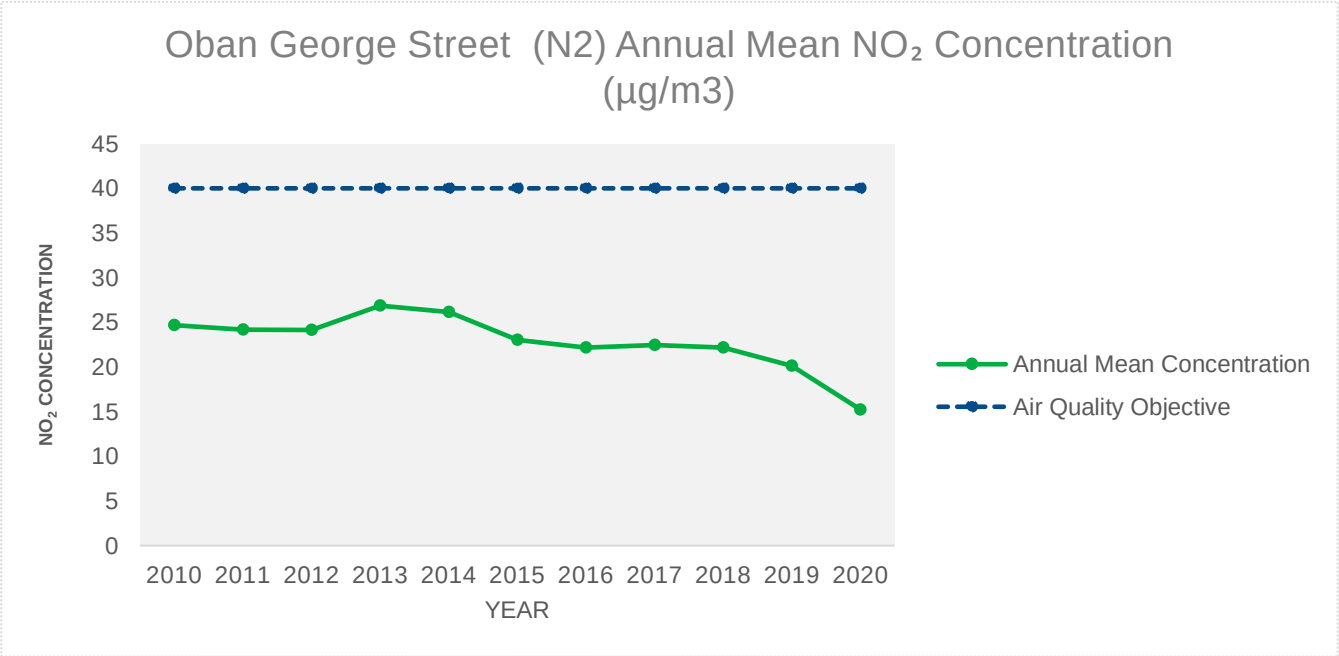

Figure 2 Annual mean NO_2 concentrations for site N2 Oban 2010 to 2020

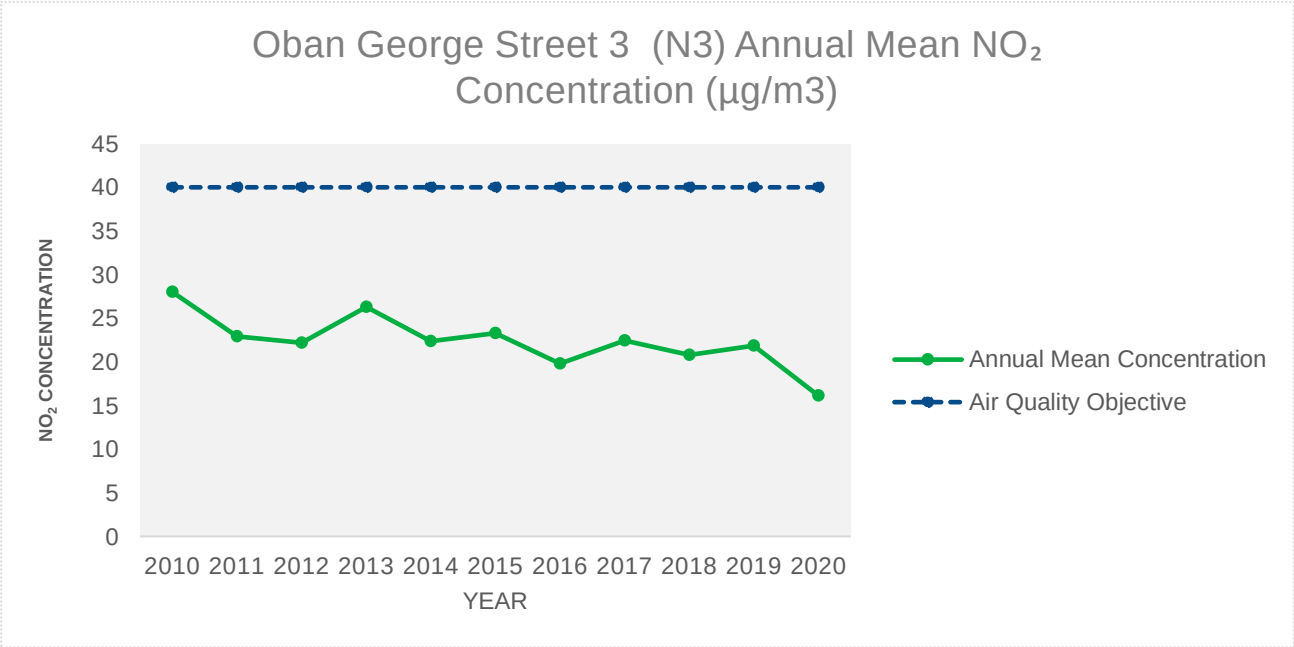

Figure 3 Annual mean NO_2 concentrations for site N3 Oban 2010 to 2020

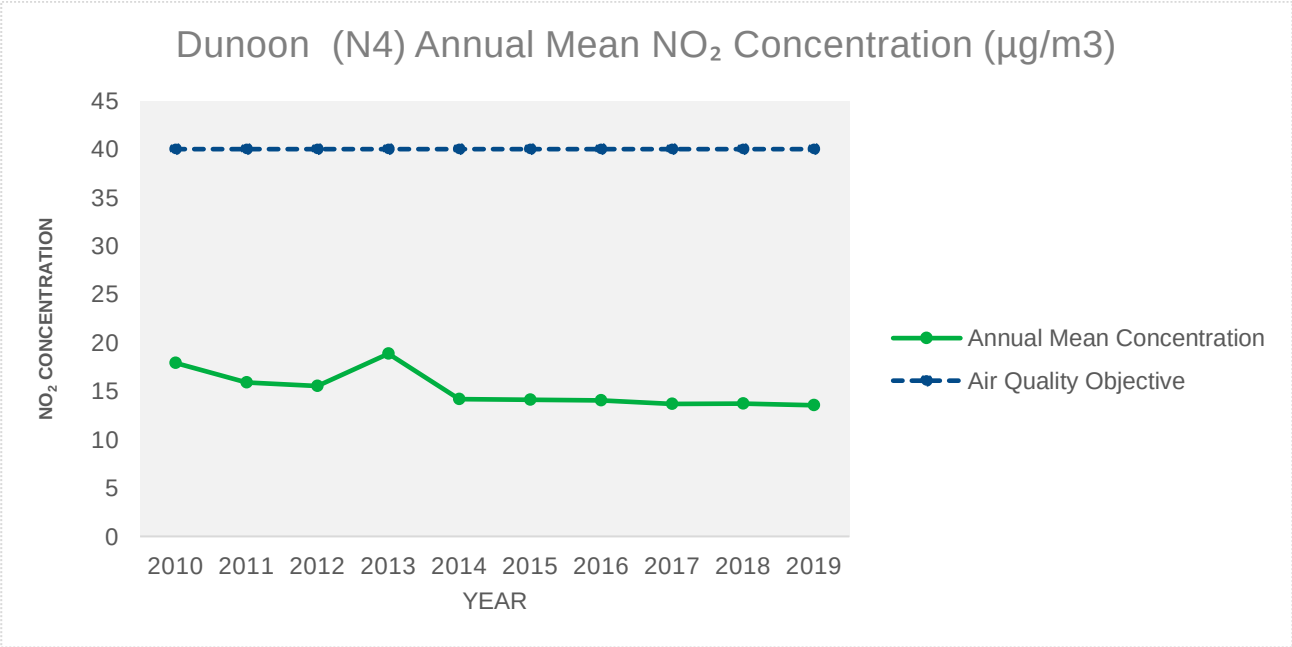

Figure 4 Annual mean NO_2 concentrations for site N4 Dunoon 2010 to 2020

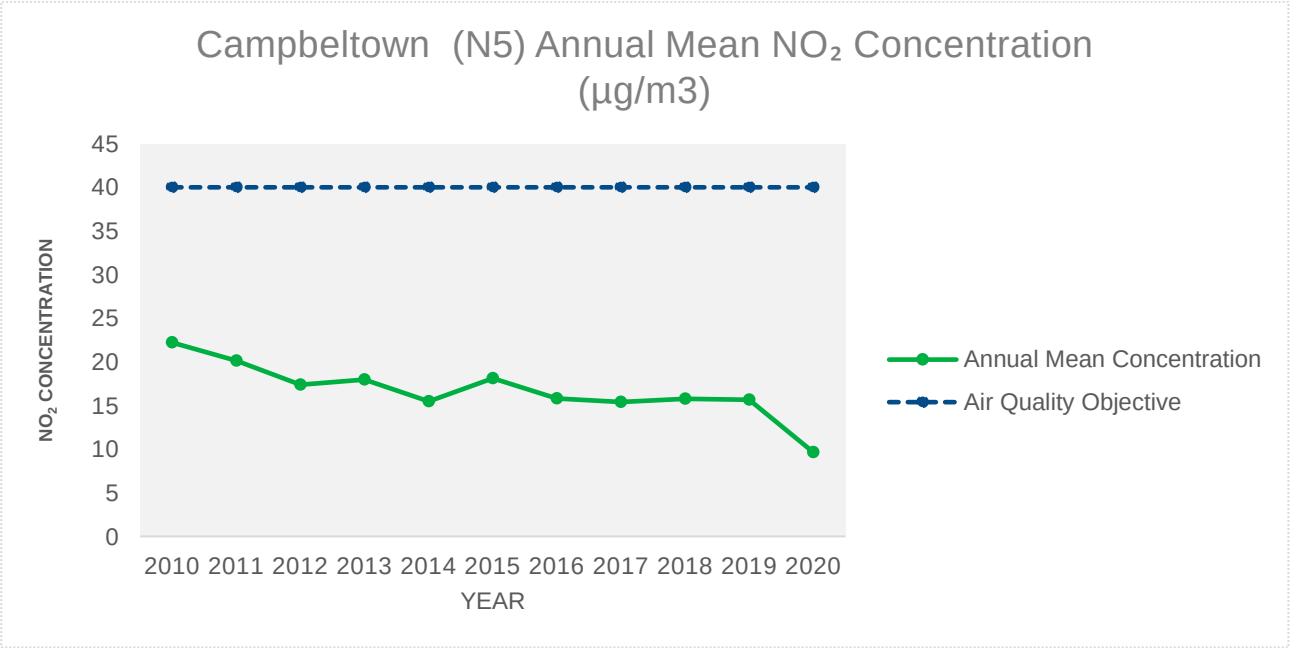

Figure 5 Annual mean NO_2 concentrations for site N5 Campbeltown 2010 to 2020

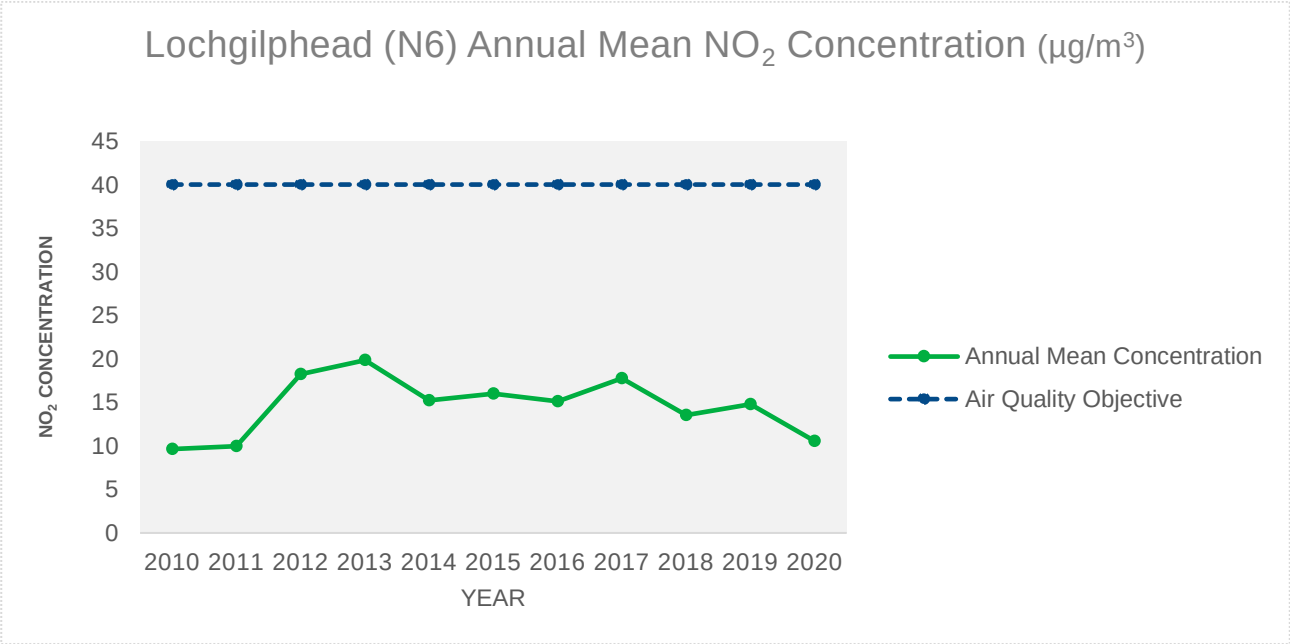

Figure 6 Annual mean NO_2 concentrations for site N6 Lochgilphead 2010 to 2020

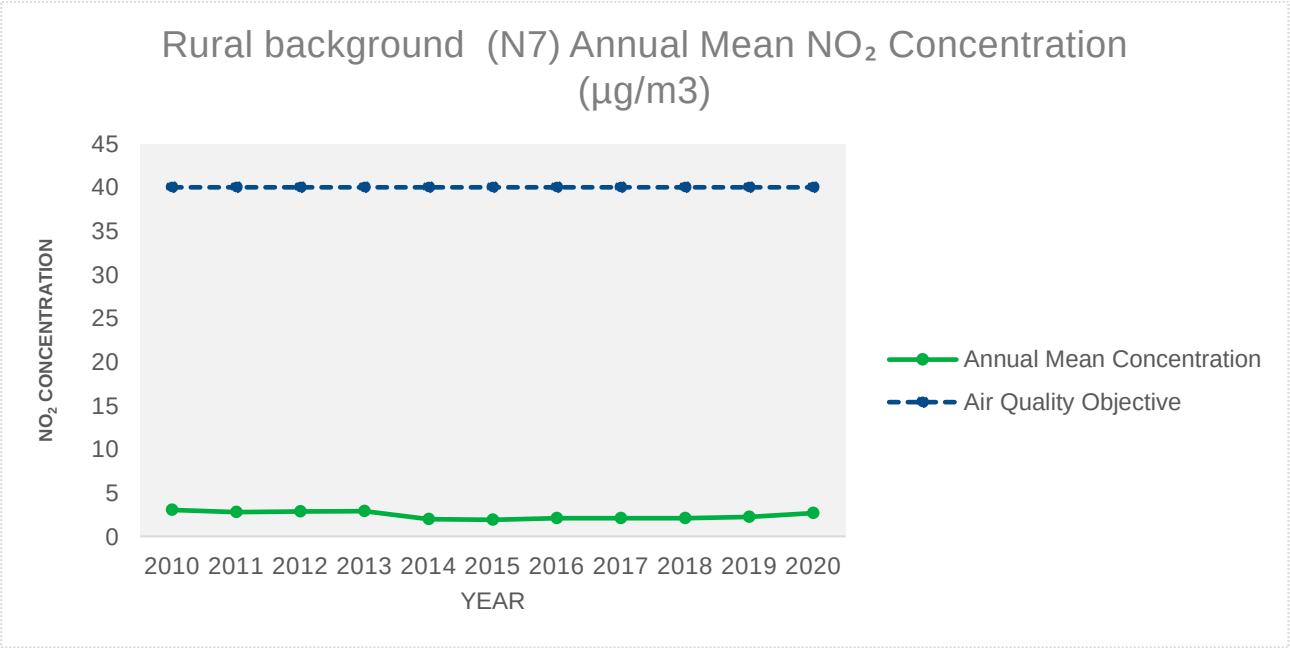

Figure 7 Annual mean NO_2 concentrations for site N7 rural background 2010 to 2020

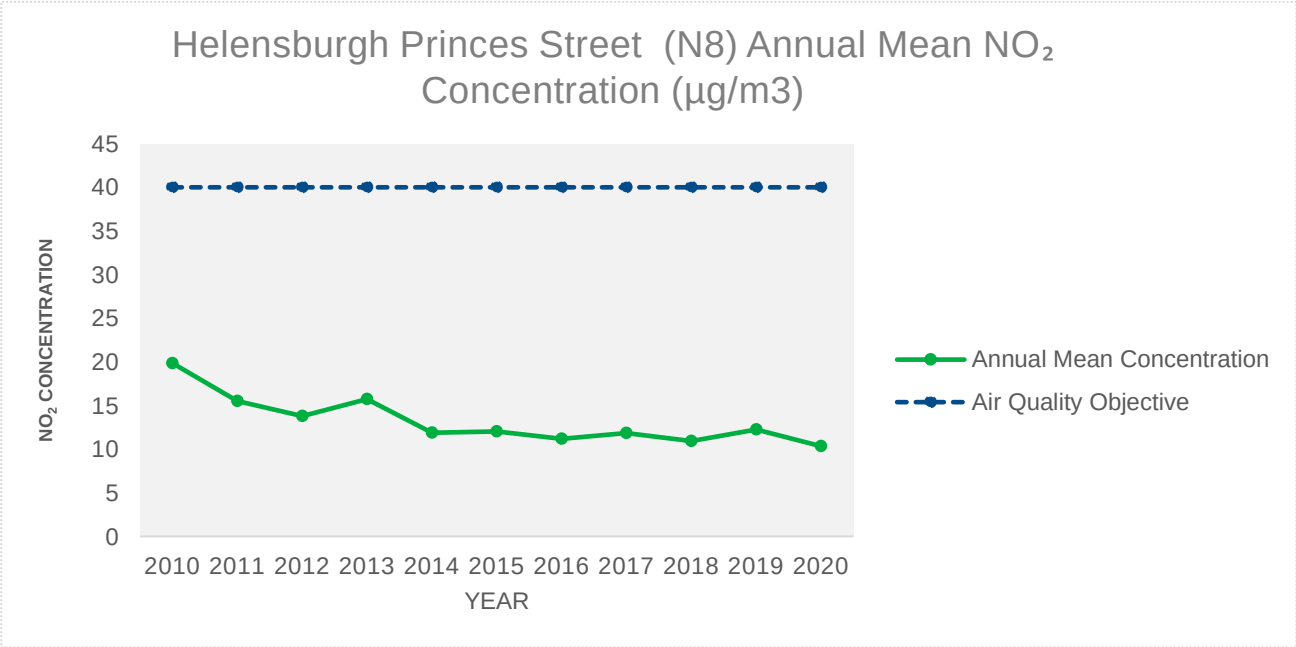

Figure 8 Annual mean NO_2 concentrations for site N8 Helensburgh 2010 to 2020

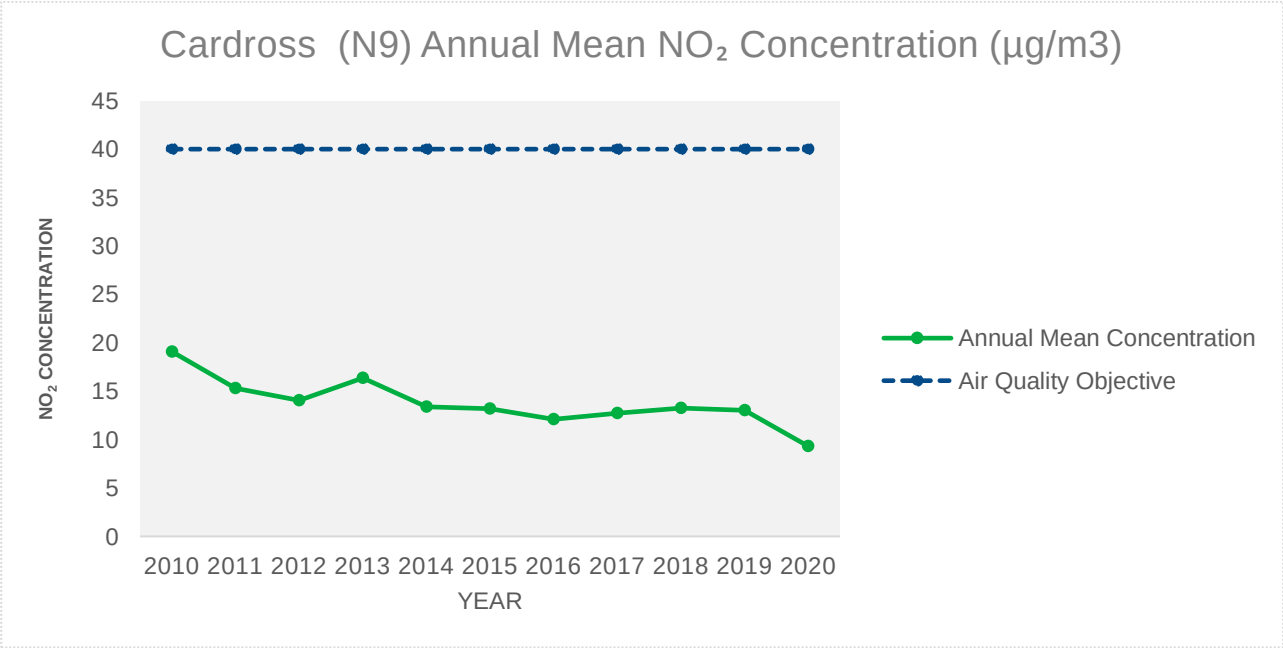

Figure 9 Annual mean NO_2 concentrations for site N9 Cardross 2010 to 2020

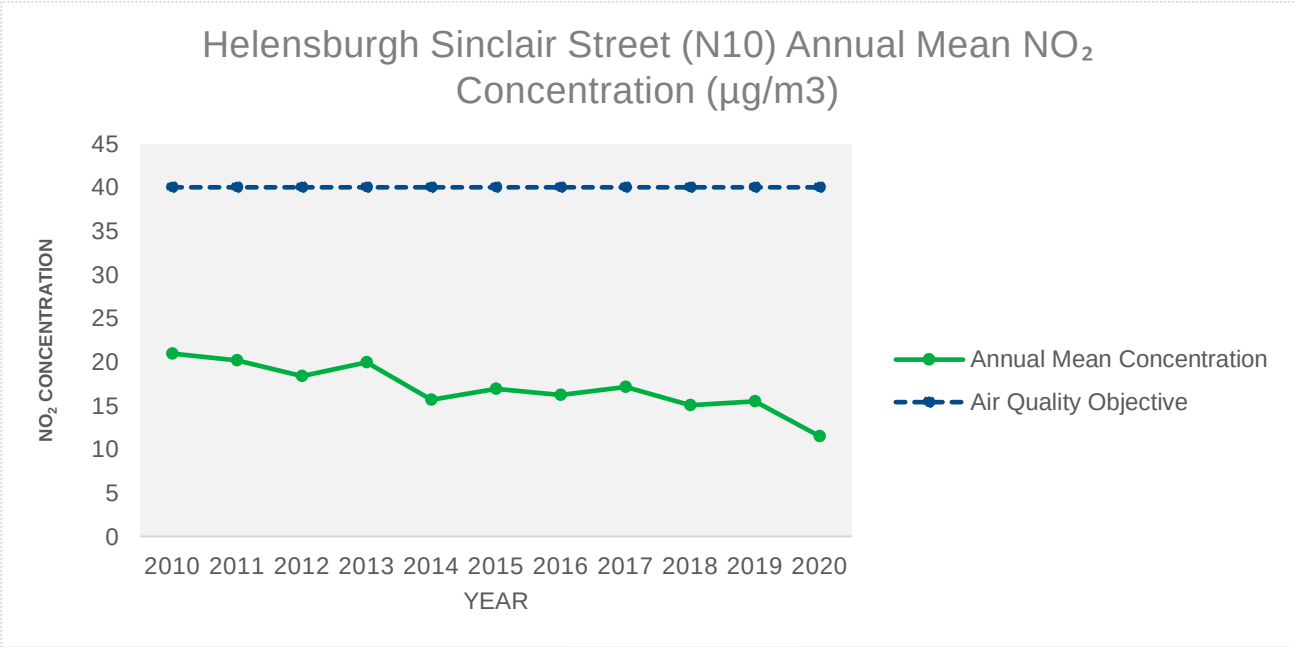

Figure 10 Annual mean NO_2 concentrations for site N10 Helensburgh 2010 to 2020

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Monthly Diffusion Tube Results ($\mu g/m^3$)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
N1	22.6	22.3	14.7	14.2	14.2	9.9	12.2	8.5	16.8	11.8	12.6	16.1	14.7	14
N2	23.9	18.5	14.8			7.9	14.5	20.5	17.5	19.3	11.9	11.5	16	15.2
N3	27.2	20.7	17.2	10.4	10.4	8.8	11.3	20.1	17.5	21.2	19.3	13.0	17	16.1
N4	12.8	7.1	9.0	6.3	6.3	4.4	6.1	10.2	11.1	15.4	7.5	5.5	8.7	8.2
N5	13.3	15.1	9.1	10.3	10.3	7.8	6.0	6.4	11.7	12.7	8.9	10.3	10.1	9.6
N6	14.4	12.4	10.8	7.2	7.2	5.9	9.0	10.8	11.3	18.3	12.3	7.1	10.9	10.3
N7	2.1	2.5	2.4	1.6	1.6	1.9	2.2	1.8	1.6		2.1	1.6	2.8	2.7
N8	40.9	13.1	7.1	6.1	6.1	1.8	3.5	3.2	11.3	12.7	10.3	9.7	11	10.3
N9	11.6	14.5	8.1	7.7	7.7	7.1	6.9	9.0	11.2	11.5	10.7	9.5	9.8	9.3
N10	13.6	18.0	9.4	8.4	8.4	9.7	10.9	8.6	12.5	12.6	14.3	8.5	11.5	10.9

Notes:

(1) See Appendix C for details on bias adjustment

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

New or Changed Sources Identified Within Argyll and Bute Council During 2020

Argyll and Bute Council has not identified any new sources relating to air quality within the reporting year of 2020.

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. GSS 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.

The laboratory scored 100% in the 2 rounds of the AIR NO_2 PT assessment covering the period of the reported sampling results[12]. 2 of the 4 rounds were cancelled due to COVID-19 pandemic response

A national bias adjustment factor of 0.95[10] (for GSS laboratory) was applied to the annual mean NO_2 concentrations for 2020.

No local co-location studies in Argyll and Bute were available to produce local bias adjustment factors.

There were unavoidable deviations from the from the 2020 Diffusion Tube Monitoring Calendar due to COVID-19 response. Given the low levels modelled and previously monitored across Argyll and Bute this is not considered to have had a significant effect on the calculated annual mean concentrations.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Argyll and Bute Council recorded data capture of more than 75% therefore annualisation of monitoring data it was not required.

Diffusion Tube Bias Adjustment Factors

Argyll and Bute Council have applied a national bias adjustment factor of 0.95 to the 2020 monitoring data. A summary of bias adjustment factors used by Argyll and Bute Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	v06_21	0.95
2019	National	v03_20	0.86
2018	National	v0319	0.86
2017	National	v03_18	0.91
2016	National	3_17ver2	0.97

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Argyll and Bute Council required distance correction during 2020.

Appendix D: Maps

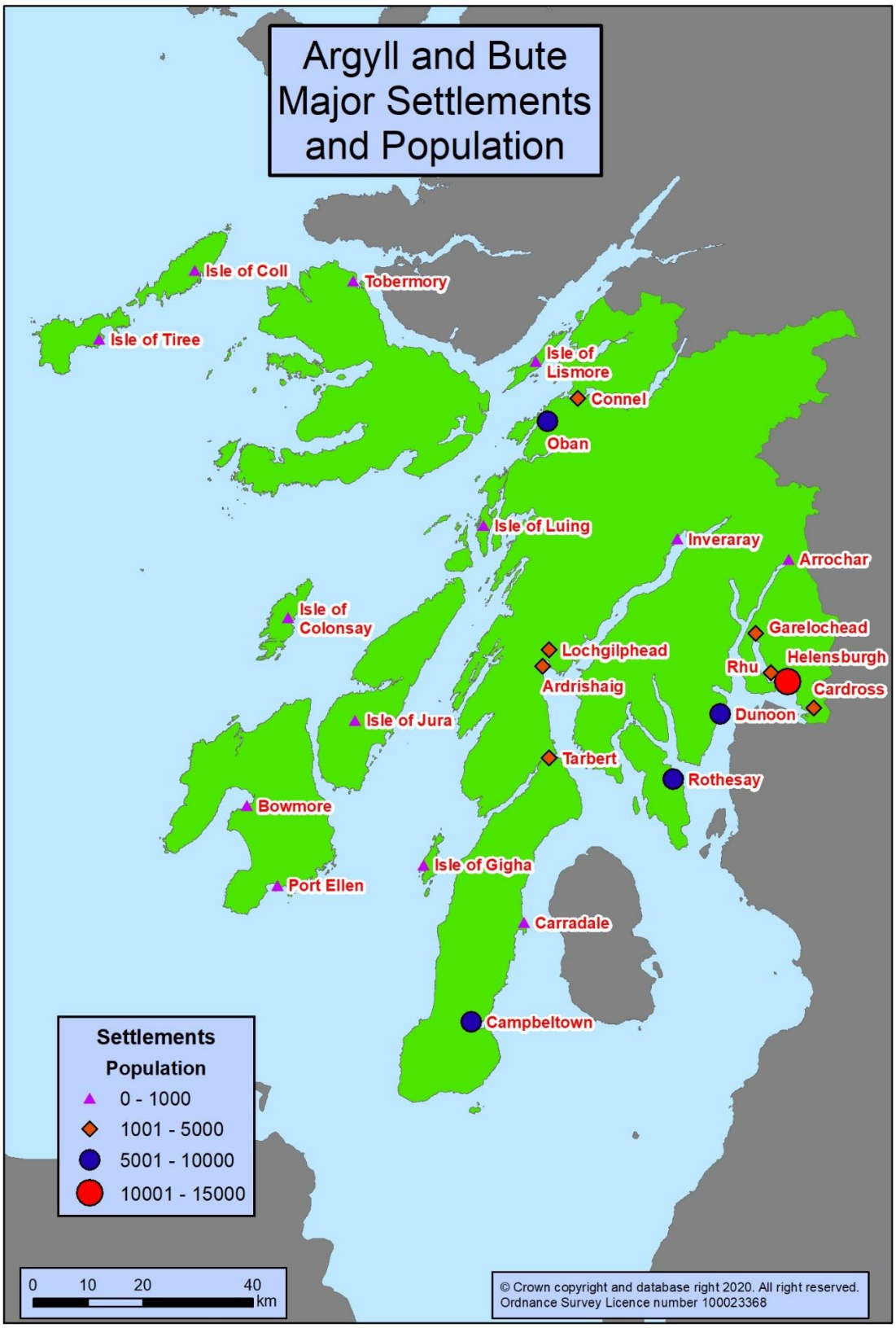

Figure 11 Map of Major Settlements and Population

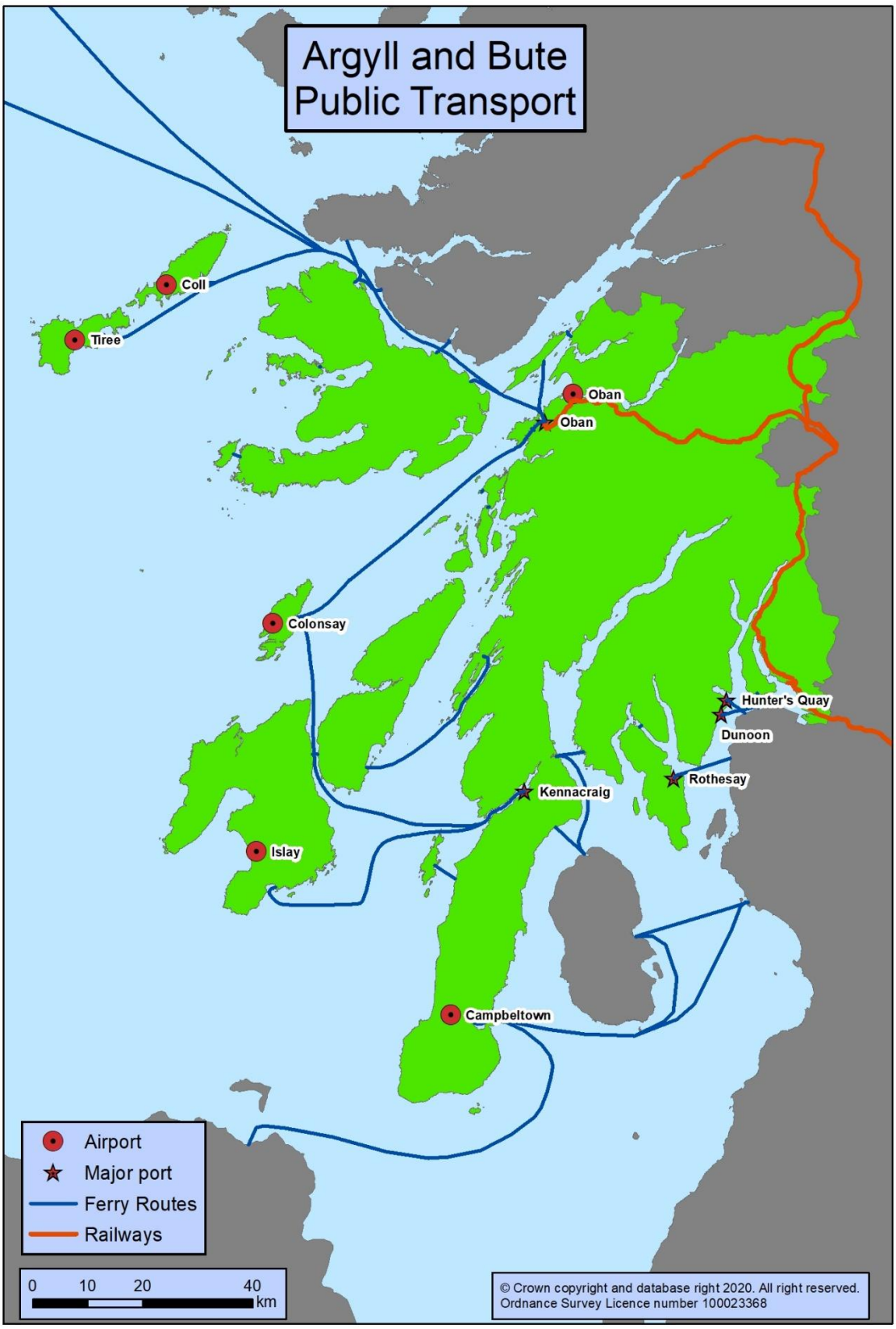

Figure 12 Map of Transport Routes

Figure 13 Map of Monitoring Locations

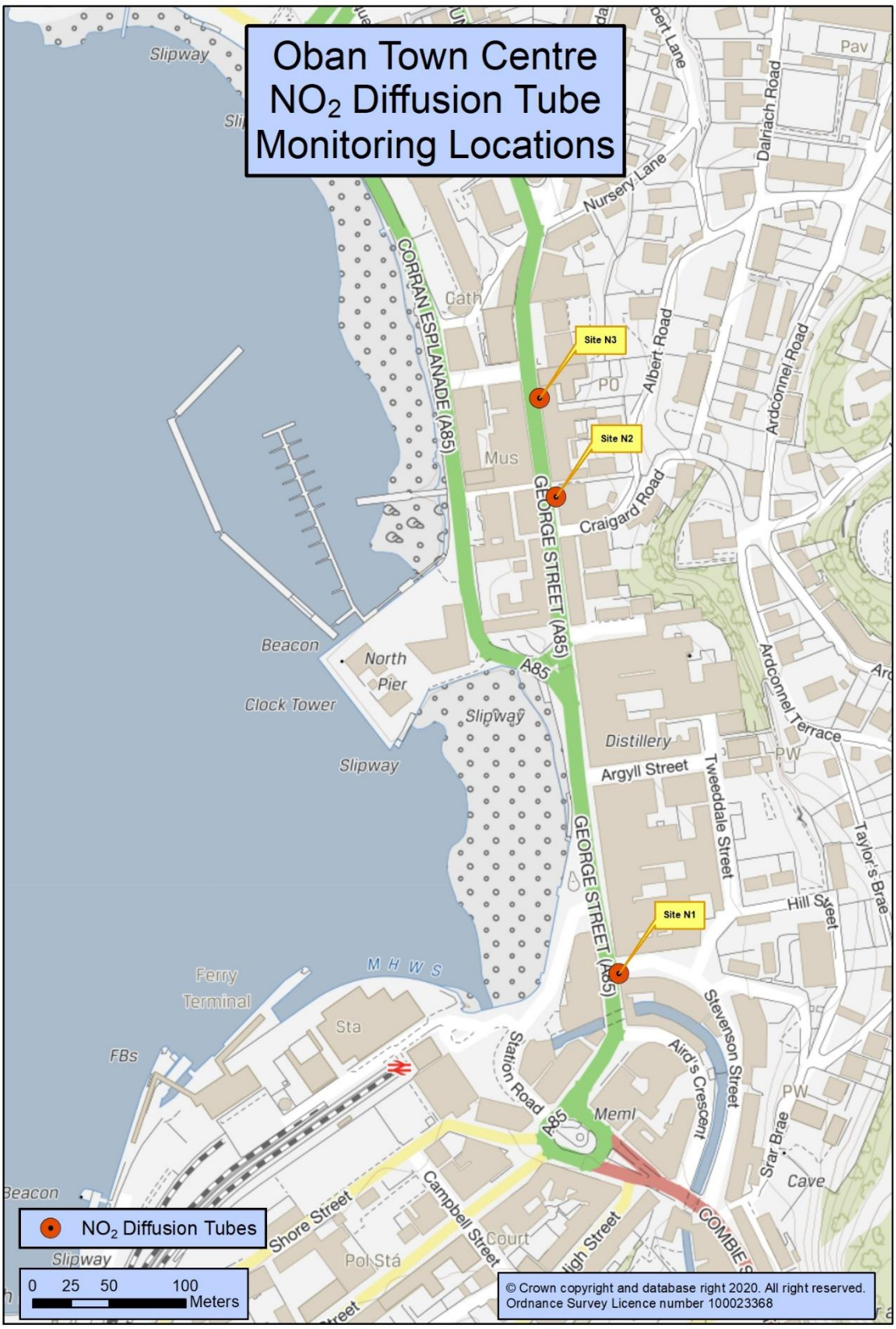

Figure 14 Map of Diffusion Tube Sites, Oban Town Centre

Figure 15 Map of Diffusion Tube Sites, Helensburgh Town Centre

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
GSS	Glasgow Scientific Services
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. Local development Plan.

(3) Argyll and Bute Council. Economic Strategy.

(4) 2020 Air Quality Annual Progress Report for Argyll and Bute Council

(5) Defra in partnership with the devolved administrations, Technical Guidance LAQM.TG(16), February 2018

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

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

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

(9) Loch Lomond and Trossachs National Park Authority. Online access to planning applications is available at https://eplanning.lochlomond-trossachs.org/OnlinePlanning/?agree=0

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

(11) Consultee Response - General/Other - Environmental Health - 20/08/2020 Argyll and Bute - Document Viewer (argyll-bute.gov.uk)

(12) WASP – Annual Performance Criteria for NO2 Diffusion Tubes (defra.gov.uk)