Annual Progress Report (APR)

2017 Air Quality Annual Progress Report (APR) for
Inverclyde 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 Inverclyde Council

Inverclyde Council currently monitors the levels of NO_2 throughout the area with a diffusion tube network of 17 sites. There is also an Automatic Air Quality Monitoring Station which records the levels of NO_2, $PM_{10,}$ $PM_{2.5}$ and PM_1 at East Hamilton Street, Greenock.

The results have consistently shown NO_2 and PM_{10} levels to be below the Air Quality Objectives therefore there has been no requirement to proceed to a Detailed Assessment for any of the pollutants. There has also never been an Air Quality Management Area declared within Inverclyde.

There have been no significant changes to the existing road network identified that could have a negative impact on air quality or any new domestic or industrial sources since the previous report in 2016.

Actions to Improve Air Quality

Inverclyde Council is currently aiming to reduce emissions from road traffic emissions in conjunction with Scottish Passenger Transport through the following three joint work streams; ‘Park and Ride’, ‘Cycling’ and ‘Travel Behaviour Change’
The Council also aims to reduce carbon emissions from fleet vehicles and from business travel. The targets set are a 15% and 10% reduction respectively from a 2011/12 baseline.

Local Priorities and Challenges

Inverclyde Council does not have any specific priorities or challenges for the coming year. Statutory monitoring will continue and the next report to be submitted will be the 2018 Air Quality Annual Progress Report.

How to Get Involved

Air Quality information and Inverclyde Council's Air Quality Annual Progress Reports can be found at the following link on the Inverclyde Council website, www.inverclyde.gov.uk/environment/environmental-health/air-quality(1)

Up to date monitoring results from the automatic monitoring station can be found on the Scottish Air Quality website, www.scottishairquality.co.uk(2)

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1. Local Air Quality Management

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

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

Inverclyde Council currently does not have any AQMAs.

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 Inverclyde Council against relevant actions within this strategy is demonstrated below.

2.2.1 Transport – Avoiding travel – T1

Inverclyde is well served in terms of transport, with the A8 and A78 trunk roads running through the area, as well as two train lines with fourteen stations, all of which connect Inverclyde with the rest of the Glasgow city-region and beyond. A number of bus companies also operate across Inverclyde, while four ferry services provide connections to various locations in Argyll and Bute.

Inverclyde is also connected by a comprehensive core path network and National Cycle Network routes NCN75 and NCN 753, which provide active travel connections to Renfrewshire and Glasgow.

The Council has identified the need to tackle climate change by cutting transport emissions, reducing the need to travel by car and prioritising sustainable travel modes in its Local Development Plan [(3)] which was published in 2014. A new Local Development Plan is scheduled to be submitted to the Scottish Ministers in March 2018.

One of the key objectives in current Plan is to ensure future developments promote the use of active travel and public transport. It states that planning can improve connectivity and promote sustainable travel by locating new development near active travel and public transport networks, thereby offering people the choice of walking, cycling or using public transport to reach their place of work and local services.

This is also a key theme of the Transport Outcomes Report, Inverclyde 2016/17[(6)] which was published by Scottish Passenger Transport (SPT) in partnership with Inverclyde Council. It identifies one of the strategic outcomes as being a 'Reduction in Emissions' and highlights 3 SPT and Inverclyde Council joint work streams to help achieve this outcome. These are 'Park and Ride', 'Cycling' and 'Travel Behaviour Change'.

Inverclyde Council also has a Carbon Management Plan[(8)] which has set a target for 2016/17 to have reduced Carbon from fleet vehicles by 15% and from business travel by 10% (2011/12 baseline). To help achieve this, the Council refreshes its vehicles every 5 years to ensure they are operational and fuel efficient. A driver training programme has also been established and vehicle tracking introduced.

Inverclyde Council, being the biggest employer within Inverclyde is also continuing identify ways to promote green travel options for staff to carry out their work duties. It has purchased 4 electric vehicles and introduced 11 electric charging points throughout Inverclyde as well as promoting the Government Cycle to Work Scheme and Inverclyde Journey Share for its employees.

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

Inverclyde Council's Carbon Management Plan 2012/17[8] outlines how the Council aims to reduce its carbon emissions through the delivery of corporate strategies. It set out individual targets for various sources of carbon including;

* Energy use in buildings
* Street Lighting
* Fleet Transport
* Business Travel
* Water
* Waste

Inverclyde Council also published guidance in 2015 to supplement the Local Development Plan policy for renewable energy. The document states that the Council will support development required for the generation of energy from renewable sources unless any economic, environmental and social benefits of the proposal are outweighed by significant adverse effects upon a set criteria, air quality being a key consideration.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

Inverclyde Council undertook automatic (continuous) monitoring at one site during 2016. Table A.1 in Appendix A shows the details of this site. National monitoring results are available at http://www.scottishairquality.co.uk/[(2)]

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

3.1.2 Non-Automatic Monitoring Sites

Inverclyde Council undertook non- automatic (passive) monitoring of NO_2 at sites during 2016. Table A.2in 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

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.3 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/m^3. For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The data from the Automatic Monitoring Site shows no exceedances of the hourly mean objective or the annual mean objective in 2016. There were also no exceedances of the annual mean objective at the 17 non-automatic monitoring sites.

In previous years, both automatic and non-automatic monitoring has shown all sites to have concentrations below the annual mean objective with the exception of one diffusion tube East Hamilton Street, prior to the installation of the automatic monitor.

Data from the diffusion tube located at the nearest residential property at East Hamilton Street has also consistently shown lower values than the diffusion tubes located at the roadside.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 18µg/m^3.

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

The data from the Automatic Monitoring Site shows no exceedances of the annual mean or daily mean objectives for 2016.

There have been no exceedances of the annual mean or the daily mean since PM_{10} moniotoring was first introduced at the East Hamilton Street in 2014.

3.2.3 Particulate Matter ($PM_{2.5}$)

Inverclyde Council currently monitors $PM_{2.5}$ at the Automatic Monitoring Site in East Hamilton Street. As this was not fully operational during 2016 there is currently no data included in this report.

4. New Local Developments

4.1 Road Traffic Sources

Inverclyde Council confirms that there are no road traffic sources that have not been considered in previous rounds of Review and Assessment.

4.2 Other Transport Sources

There are no airports located in Inverclyde and there have been no significant changes in the Shipping Port operations.

4.3 Industrial Sources

There are no new or proposed industrial installations for which an air quality assessment has been carried out in 2016. Inverclyde Council is not aware of any significant changes to existing installations or the introduction of new relevant exposure.

4.4 Commercial and Domestic Sources

There have been no new planning applications approved for the installation of biomass combustion plants since the previous round of Review and Assessment in 2016.

4.5 New Developments with Fugitive or Uncontrolled Sources

Inverclyde Council has not identified any new potential sources of fugitive or uncontrolled particulate matter.

5. Conclusions and Proposed Actions

5.1 Conclusions from New Monitoring Data

The 2016 monitoring data has shown that all sites within the NO_2 diffusion tube monitoring network, measured below the annual mean objective of 40 $\mu g/m^3$.

The automatic monitoring station at East Hamilton Street, Greenock, recorded no exceedances of the hourly and annual mean Objectives for NO_2. The PM_{10} levels were also below the annual mean Objective and there were no exceedances of the daily mean.

5.2 Conclusions relating to New Local Developments

Inverclyde Council has not identified any changes to the existing road infrastructure since the last round of Review and Assessment. There have been no biomass plants, industrial installations or fugitive sources identified that are considered likely to impact on local air quality.

5.3 Proposed Actions

Inverclyde Council will continue to monitor $N0_2$ levels throughout the area using diffusion tubes.

The automatic air quality monitoring station will continue to monitor NO_2, PM_{10} and additionally $PM_{2.5}$ and PM_1 at East Hamilton Street. The site will be included in the Automatic Urban and Rural Network (AURN) and data available on the Scottish Air Quality website.

The collocation study will continue at the East Hamilton Street with data from the automatic monitoring station used in combination with the three $N0_2$ diffusion tubes to develop a local bias adjustment factor.

The next report to be submitted will be the 2018 Air Quality Annual Progress Report.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
Inverclyde Greenock A8	Roadside	229365	675700	NO_2, PM_{10}, $PM_{2.5}$, PM_1	N	TEOM	12	2.5	1.8

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

(2) N/A if not applicable.

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

Site ID Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?
Carwood Court	Roadside	229503	675400	NO_2	N	Y(13.5m)	5m	N
Brown Street, PG	Roadside	231699	674620	NO_2	N	Y (1m)	1m	N
Bridge of Weir Rd	Roadside	235824	669909	NO_2	N	Y(1m)	1m	N

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?
East Hamilton Street (1)	Roadside	229365	675700	NO_2	N	Y(12m)	2.5m	Y
East Hamilton Street (2)	Roadside	229365	675700	NO_2	N	Y(12m)	2.5m	Y
East Hamilton Street (3)	Roadside	229365	675700	NO_2	N	Y(12m)	2.5m	Y
East Hamilton Street (property)	Roadside	229301	675712	NO_2	N	Y (0m)	14.25m	N
Dellingburn St	Roadside	228422	675735	NO_2	N	Y(3.5m)	5m	N
Dalrymple St	Roadside	228311	675993	NO_2	N	Y(15m)	3m	N
Inverkip St	Roadside	227563	676246	NO_2	N	Y(1m)	2.5m	N
Dunlop St	Roadside	226827	675622	NO_2	N	Y (4m)	2m	N
Nelson St	Roadside	227092	676134	NO_2	N	Y(1m)	5m	N
Inverkip Rd	Roadside	224441	675224	NO_2	N	Y(15m)	4m	N

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?
Larkfield Rd	Roadside	224869	675757	NO_2	N	Y(3m)	2m	N
Main St, WB	Roadside	219407	668573	NO_2	N	Y(1m)	2m	N
Kempock St,	Roadside	224097	677910	NO_2	N	Y(1m)	1m	N
Cardwell Rd	Roadside	224664	677168	NO_2	N	Y(3m)	4m	N
Newark St	Roadside	225460	677501	NO_2	N	Y(1m)	5m	N
Brougham St	Roadside	227242	677032	NO_2	N	Y(7m)	5.5m	N
Macdougall St	Roadside	229605	675593	NO_2	N	Y(13m)	3m	N

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

(2) N/A if not applicable

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
				2012	2013	2014	2015	2016
Inverclyde Greenock A8	Roadside	Automatic	97	xxx	xxx	27	28	28
Carwood Court	Roadside	Diffusion Tube	100	11.9	14	9.8	10.2	10.6
Brown Street, PG	Roadside	Diffusion Tube	83	21.3	23.5	19	19.1	20.8
Bridge of Weir Rd	Roadside	Diffusion Tube	100	17.6	19.8	15.2	14.8	16.1
East Hamilton Street (1)	Roadside	Diffusion Tube	92	36.9	**43.8**	34.3	29.4	34.1
East Hamilton St (2)	Roadside	Diffusion Tube	100	35.3	**43.7**	31.8	31.3	34.1
East Hamilton St (3)	Roadside	Diffusion Tube	100	xxx	xxx	30.3	31.5	29.7
East Hamilton St (property)	Roadside	Diffusion Tube	100	23.5	24.4	19.8	21	21.7
Dellingburn St	Roadside	Diffusion Tube	100	33.6	39.3	30.1	33.2	34.3
Dalrymple St	Roadside	Diffusion Tube	100	24.2	28.6	23.9	21.5	23.4
Inverkip St	Roadside	Diffusion Tube	100	31.3	36.5	31.9	28.9	27.5
Dunlop St	Roadside	Diffusion Tube	100	22	22	17.4	16.3	18.3

Site ID	Site Type	Monitoring Type	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
Nelson St	Roadside	Diffusion Tube	92	29.3	30.5	28.9	26.4	25.3
Inverkip Rd	Roadside	Diffusion Tube	100	22.6	23.8	19.5	19.7	19.9
Larkfield Rd	Roadside	Diffusion Tube	100	20.7	21.9	16.8	17.7	18.2
Main St, WB	Roadside	Diffusion Tube	100	19.1	16.9	14.4	14.3	13.6
Kempock St,	Roadside	Diffusion Tube	92	25	22.1	18.2	20	14.4
Cardwell Rd	Roadside	Diffusion Tube	100	29.6	30.4	24.1	26	22.8
Newark St	Roadside	Diffusion Tube	100	21.2	20.8	14.7	16.4	15.1
Brougham St	Roadside	Diffusion Tube	83	18.8	18.5	15.1	21.8	20.7
Macdougall St	Roadside	Diffusion Tube	100	24	25.7	20	20.8	23

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.

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site Name	Site Type	Valid Data Capture 2016 (%) (1)	NO_2 1-Hour Means > 200µg/m^3 (2)		
			2014	2015	2016
Inverclyde Greenock A8	Roadside	97	0	0	0

Notes: Exceedences of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

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

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

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

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site Name	Site Type	Valid Data Capture 2016 (%) (1)	PM_{10} Annual Mean Concentration (µg/m^3) (2)		
			2014	2015	2016
Inverclyde Greenock A8	Roadside	94	16	15	11

Notes: Exceedences of the PM_{10} annual mean objective of 18µg/m^3 are shown in **bold.**

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

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

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

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site Name	Site Type	Valid Data Capture 2016 (%) (1)	PM_{10} 24-Hour Means > 50µg/m^3 (2)		
			2014	2015	2016
Inverclyde Greenock A8	Roadside	94	0	**2**	**0**

Notes: Exceedences of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 7 times/year) are shown in **bold.**

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

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

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

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)
Carwood Court	12.9	11.7	10.3	8	5.2	8.3	3.9	8.5	10.8	15.6	19.2	16.7	10.9	10.6
Brown street	19.7	18.9	22.9	-	16.5	10.1	-	16.1	20.1	29.4	35	25.7	21.4	20.8
Bridge of weir Rd	22.2	21.9	17.9	12.6	14.3	9.9	7.2	12.9	16.8	22.4	27	14.4	16.6	16.1
E.Ham St	-	31.3	30.5	19.2	23.7	36.9	30.9	30.3	46.1	46.9	57.2	34.5	35.2	34.1
E. Ham St 2	31.5	30.8	27.3	22.1	27.7	30.2	30.2	33.1	41.9	44.5	56.3	46.7	35.2	34.1
E.Ham St 3	19.6	27.5	21.7	19.4	12.5	16.8	28.5	37.3	44.8	43.5	54.5	41.6	30.6	29.7
E. Ham St (prop)	16.9	18.3	26.3	10.4	16.4	20.6	15.5	19.1	28.3	29.9	35	31.6	22.4	21.7
Dellingburn st	28.3	40.2	28.1	32.7	28.5	18.1	30.1	31.3	44.7	44.3	52	46	35.4	34.3
Dalrymple St	18.4	20	24.4	16.1	20.3	18.6	15	21.6	28.3	31.3	42.9	31.8	24.1	23.4
Inverkip St	20.6	35.3	31.1	17.5	26.2	14.8	22	25.1	36.2	33.7	41.5	35.6	28.3	27.5
Dunlop St	13.8	27.1	18.9	9.5	11.6	9.3	9.9	18.2	19.1	23.2	39	27.4	18.9	18.3
Nelson St	23.4	28.2	26.3	12.2	21	13.5	-	22.7	24.6	35.1	44.7	35.1	26.1	25.3

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)
Inverkip Road	11.5	21.4	19.7	13.8	15.9	13.1	14.1	21.7	22.8	25.8	36.2	29.5	20.5	19.9
Larkfield Rd	15.2	19	23.1	10.5	13.9	13.1	15.1	18.7	17.3	24.7	29.7	25.5	18.8	18.2
Main St, WB	12.6	14.8	16.8	5.1	12.2	10.4	10.4	15.4	15.5	17.5	19.3	18.5	14	13.6
Kempock St,	15.2	13.6	7.7	10.3	12.7	13.6	9.8	15.4	15.5	20.4	28.1	-	14.8	14.4
Cardwell Rd,	18.6	26.1	23.8	12.9	6.2	13.6	21.1	24.7	28.7	30.5	41.7	34.6	23.5	22.8
Newark St	13.4	17.1	13.3	9	14.5	9.9	9.8	16.5	17	19.8	25.3	21	15.6	15.1
Brougham St	23.3	15.2	26.4	13.8	23.2	15.1	21.4	16.7	29.6	30.6	-	-	21.3	20.7
Macdougall St	17	26.6	23.7	17.9	21.9	27.5	14.6	27.4	21.2	21.8	39.3	24.9	23.7	23

(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

Glasgow Scientific Services supply and analyse the NO_2 diffusion tubes on a monthly basis. The preparation method used for NO_2 diffusion tubes is 20% TEA in Water. The Laboratory has adopted the procedures for preparation and analysis of the diffusion tubes contained in the document 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance' [(9)]

There are 3 diffusion tubes currently located at the automatic monitoring site at East Hamilton Street. The 2016 data from Glasgow Scientific Services was entered into the AEA spreadsheet for 'Checking Precision and Accuracy of Triplicate Tubes'. The local bias adjustment factor was reported at 0.75 and with 'good precision'.

The national bias adjustment factor of 0.97 for 2016 was obtained from the Scottish Air Quality website [(10)]. For the purposes of this report, the national bias adjustment factor of 0.97 has been used.

PM Monitoring Adjustment

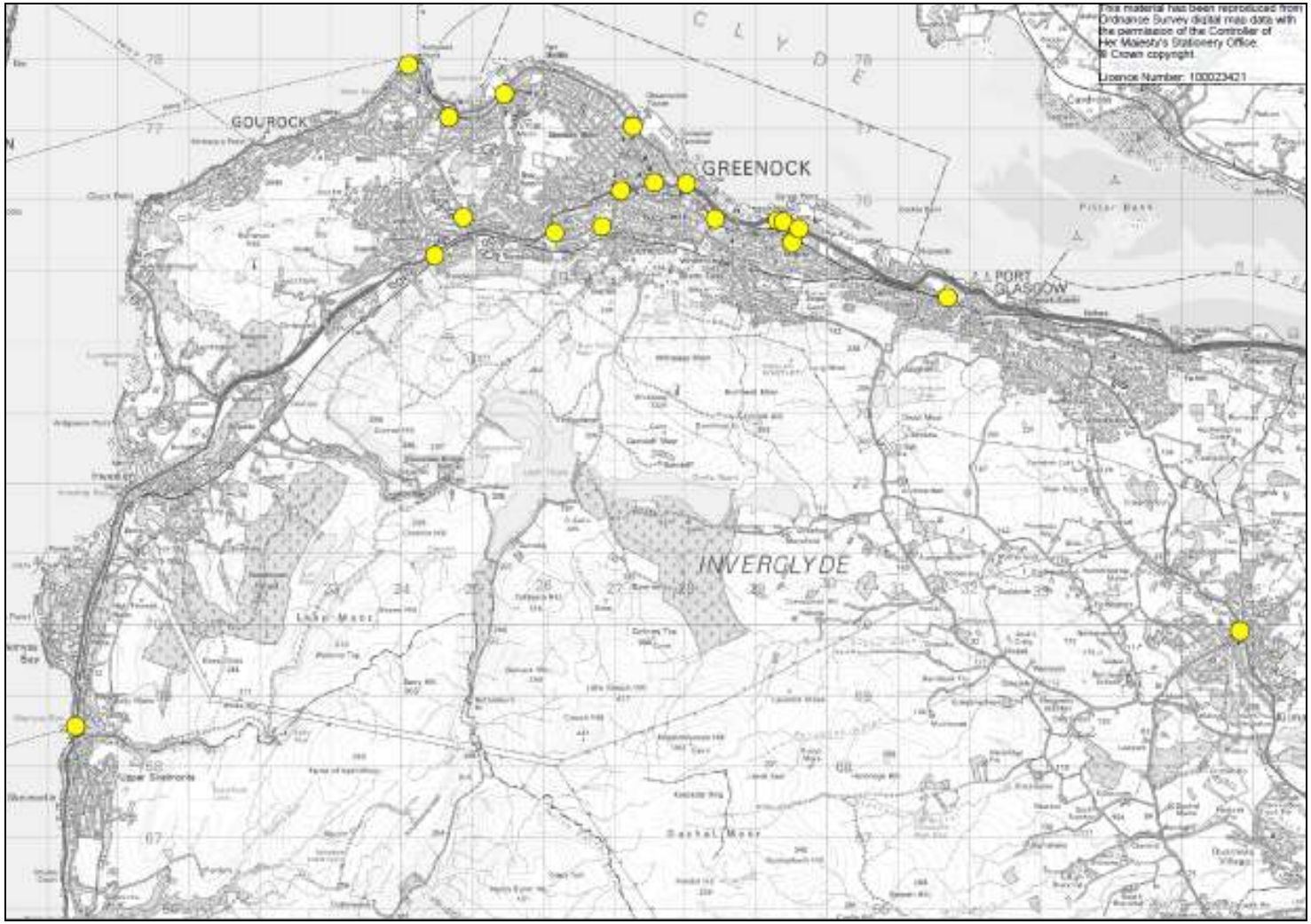
The PM_{10} data contained in this report has been obtained from the Scottish Air Quality website[(2).] The data provided is the VCM corrected data from the TEOM within at the automatic monitoring site at East Hamilton Street, Greenock.

QA/QC of automatic monitoring

The automatic monitoring site at East Hamilton Street contains one NOx/NO_2 analyser and one TEOM Ambient Particulate Monitor. Throughout 2016 site audits and calibrations were undertaken by Ricardo AEA and services carried out every 6 months by Air Monitors. Routine maintenance was carried out by Inverclyde Council.

The site is included in the UK Automatic Urban and Rural Network (AURN) and the data available through the Scottish Air Quality website

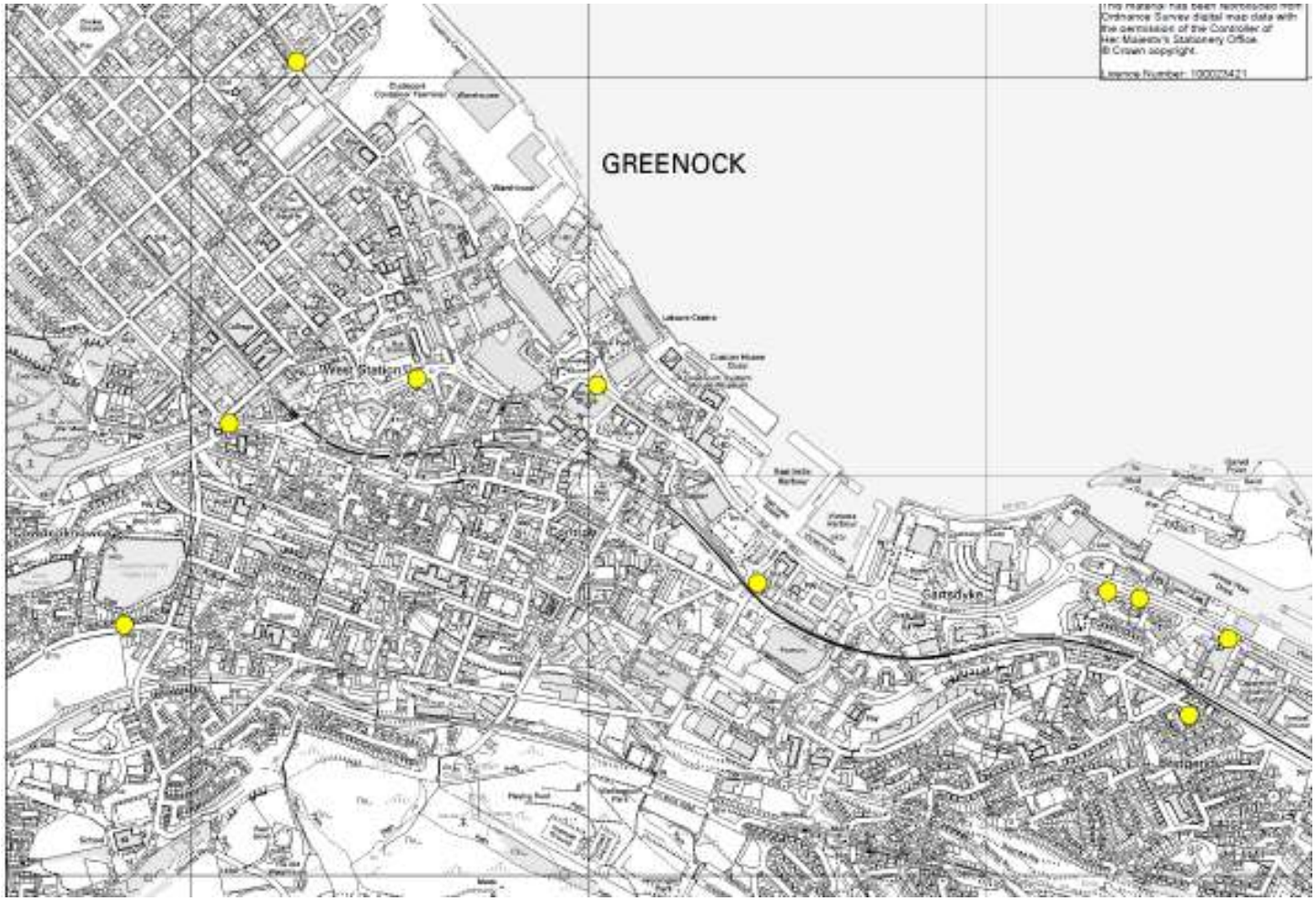
Appendix D: Maps of Monitoring Locations in Inverclyde



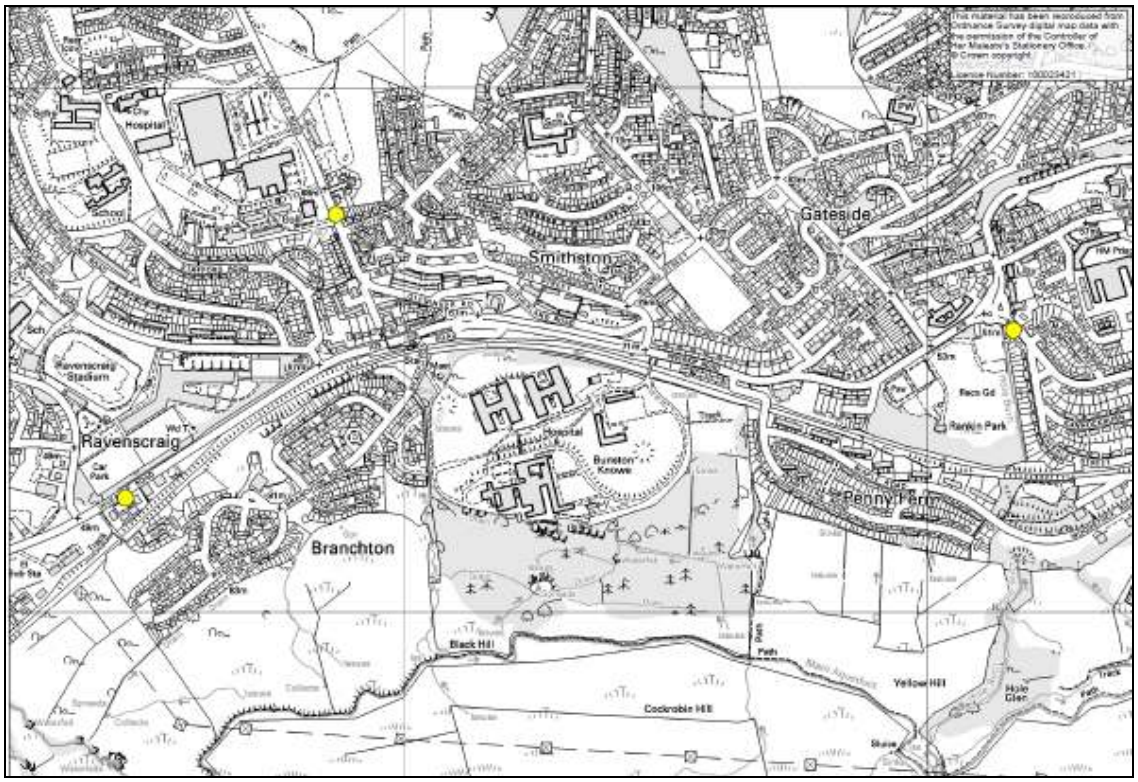
Map of Automatic Air Monitoring Site and Collocation study at East Hamilton Street

- NO_2 diffusion tube at façade of nearest property (East Hamilton Street)
- Automatic Air Quality Monitor with 3 x NO_2 diffusion tubes (East Hamilton Street)
- 1 x NO_2 diffusion tube (MacDougall Street)

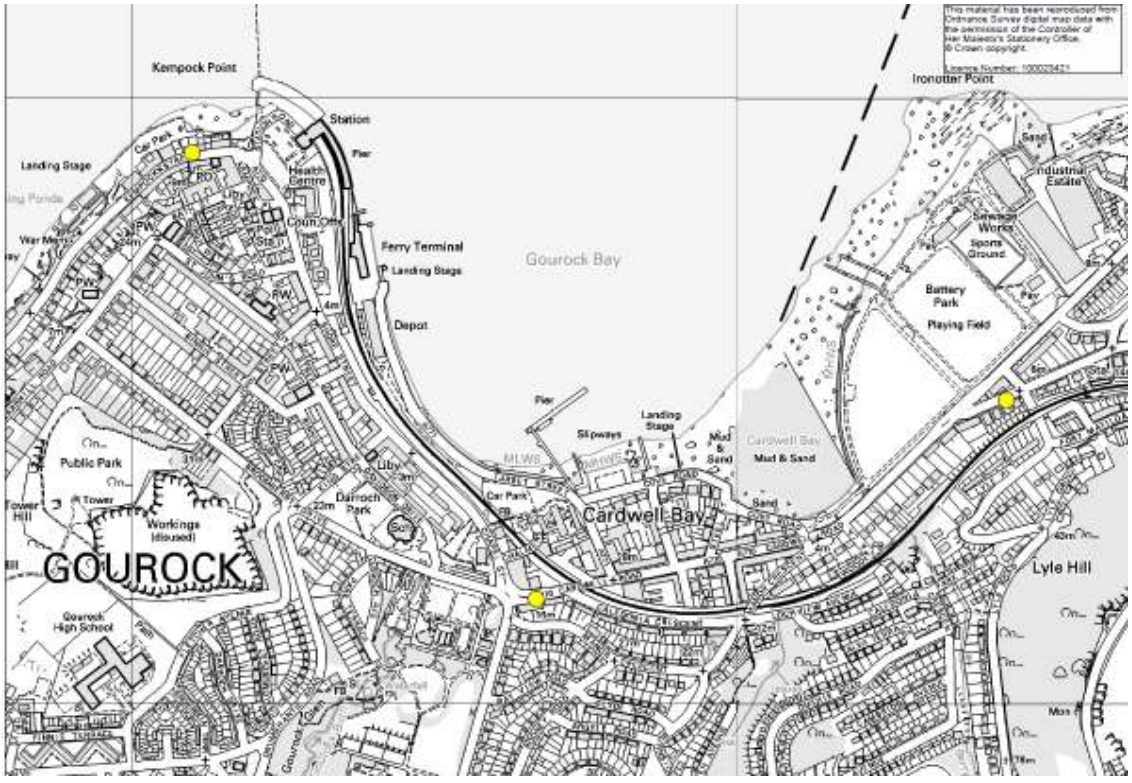
Map of NO_2 Diffusion Tube Monitoring Network: Greenock Central



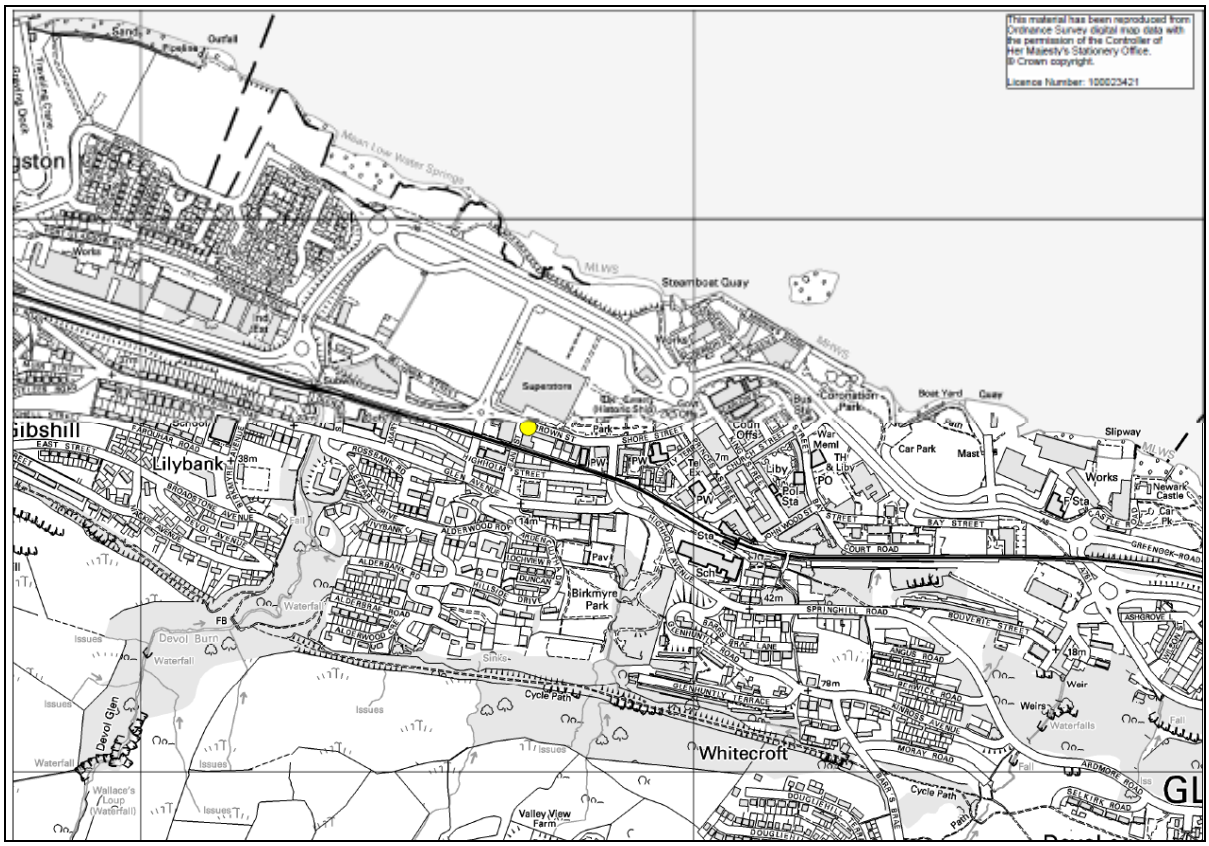
Map of NO_2 Diffusion Tube Monitoring Network: Greenock South



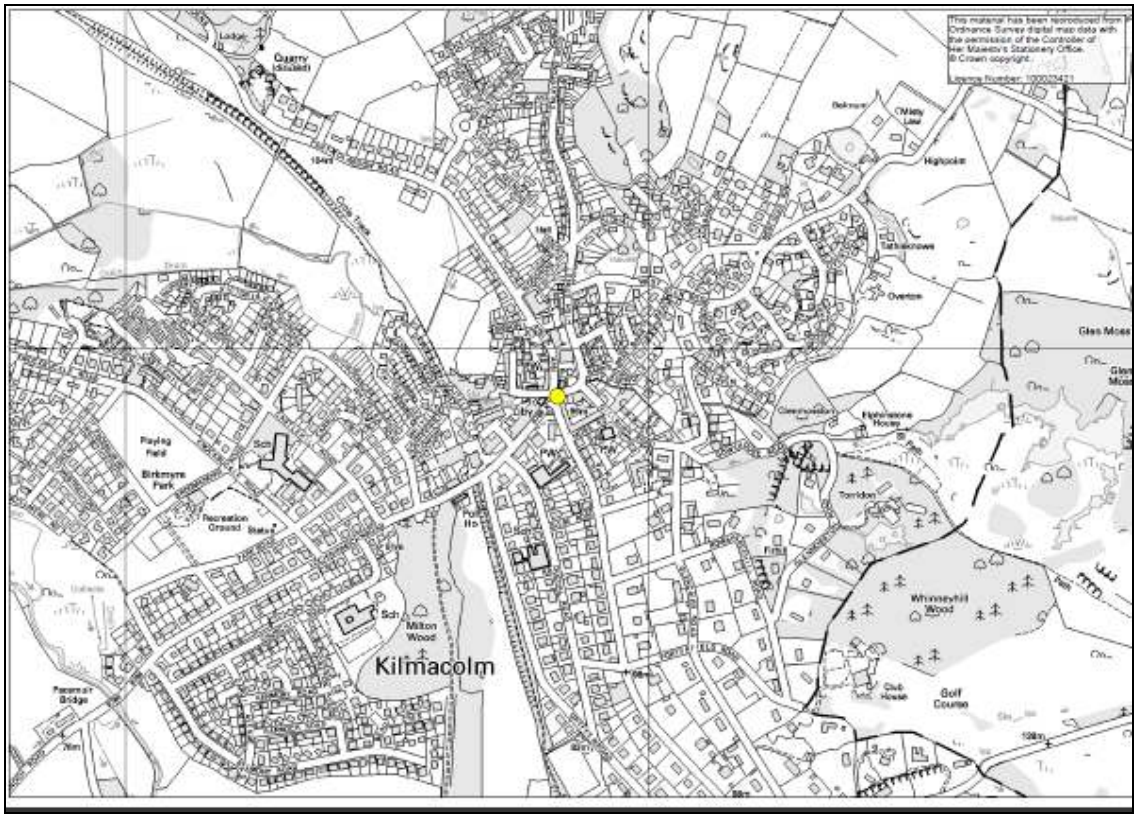
Map of NO_2 Diffusion Tube Monitoring Network: Gourock/Greenock West



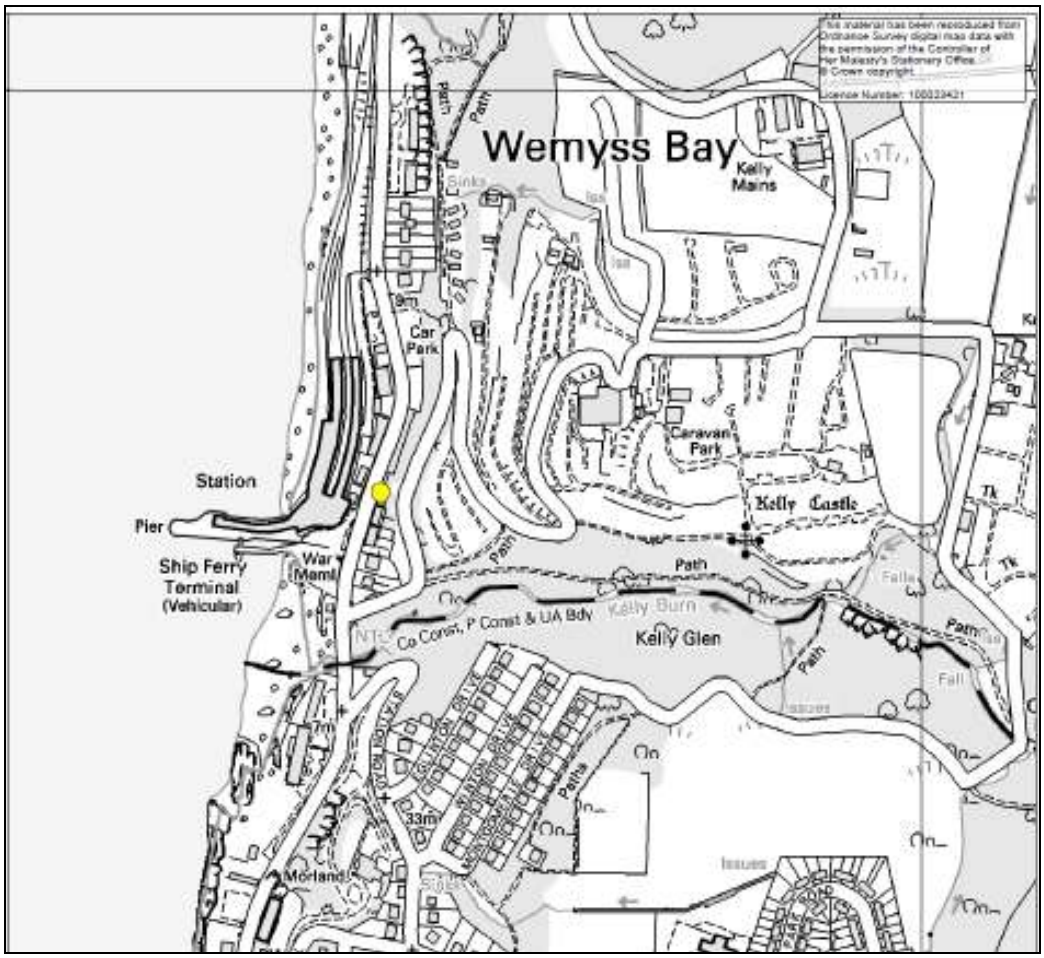
Map of NO_2 Diffusion Tube Monitoring Network: Port Glasgow



Map of NO_2 Diffusion Tube Monitoring Network: Kilmacolm



Map of NO_2 Diffusion Tube Monitoring Network: Wemyss Bay



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 Inverclyde Council Air Quality (www.inverclyde.gov.uk/environment/environmental-health/air-quality)

2 Scottish Air Quality Website (www.scottishairquality.co.uk)

3 Inverclyde Council Local Development Plan 2014 (www.inverclyde.gov.uk/ldp)

4 Inverclyde Council Main Issues Report 2017

5 Inverclyde Council Scottish Climate Change Declaration 2007

6 Transport Outcomes Report Inverclyde 2016/17, Scottish Passenger Transport (www.spt.co.uk)

7 Regional Transport Strategy Delivery Plan 2014-17 (www.spt.co.uk)

8 Inverclyde Council Carbon Management Plan 2012-2017 (www.inevrclyde.gov.uk)

9 GSS Diffusion Tubes for Ambient NO_2 Monitoring Practical Guidance

10 Scottish Air Quality Bias Adjustment factor, Spreadsheet Version Number 06/17, (www.scottishairquality.co.uk/laqm/tools)

11 Part IV of the Environment Act 1995 Local Air Quality Management Technical Guidance LAQM.TG(16), DEFRA, April 2016

12 Inverclyde Council Update and Screening Assessment 2012

13 Inverclyde Council Progress Report 2013

14 Inverclyde Council Progress Report 2014

15 Inverclyde Council Update and Screening Assessment 2015

16 Inverclyde Council Annual Progress Report 2016