Inverclyde Council

Annual Progress Report (APR)

Inverclyde council

2024 Air Quality Annual Progress Report (APR) for Inverclyde Council

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

28 June 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Inverclyde

Under the requirement of the Environment Act 1995, Invercive Council regularly monitors air quality within the local area. There is a diffusion tube network in place which monitors NO₂ at 19 different sites. There is also an Automatic Air Quality Monitoring Station in place to measure the levels of NO₂, PM₁₀, PM_{2.5} and PM₁ at East Hamilton Street, Greenock.

The results have consistently shown NO₂, PM₁₀ and PM_{2.5} levels to be below the National Air Quality Objective, therefore there has been no requirement to proceed to a Detailed Assessment for any of the pollutants. To date there has been no declaration of an Air Quality Management Area within Inverced.

There has been no significant changes which have taken place within the local area that could have a negative impact on air quality or any new domestic or industrial sources since the previous report in 2023.

Actions to Improve Air Quality

The Scottish Government's goal is to improve air quality in Scotland with the vision of having 'the best air quality in Europe'. The national air quality strategy <u>Cleaner Air For</u> <u>Scotland 2: Towards a Better Place for Everyone (www.gov.scot)</u>⁽¹⁾ sets out various actions required to attain this goal. At a local level, Inverclyde Council recognises the importance of implementing plans, polices and strategies that coincide with the national air quality strategy to improve air quality locally whilst helping achieve Scotland's vision. Inverclyde Council strives to have "*Success for all - Getting it right for every child, citizen and community*". Over the years, the air quality measured in Inverclyde has always been acceptable meeting the limit values set out in <u>The Air Quality Standards (Scotland)</u> <u>Regulations 2010 (legislation.gov.uk)</u>⁽²⁾. Inverclyde Council continuously strives to improve local air quality further and give people within the community the opportunity and the means to make better choices.

Past and present, actions have been taking to promote active travel within the community through effective planning and development. Inverclyde Council's active travel strategy ⁽³⁾ aims to '*Make active travel a realistic, convenient and attractive choice for everyone to make everyday journeys in Inverclyde*'. Continuous improvements in infrastructure are

hoped to encourage better travel choices within the community. The Inverclyde Green Connection Programme goal was to achieve better network links within the community with a focus on reconstructing areas within Greenock and Port Glasgow. An additional cycle track/footpath was created adjacent to the A8 connecting Greenock to Port Glasgow in 2023. Furthermore, Inverclyde Council received funding from the Scottish Government through Sustrans, to enable the development of an active travel route through Gourock Train Station to allow the continuation of the National Cycle Route 75. These changes will support the mission set out in Inverclyde's active travel strategy as well as improve local air quality.

Working towards achieving net zero by 2045, Inverclyde Council's Net Zero Strategy (<u>Net</u> <u>Zero Strategy - Inverclyde Council</u>)⁽⁴⁾ details measures that will be taking to attain this target, this will be implemented through a series of action plans. Since 2012/13 Inverclyde Council has reduced carbon emissions by over 46%. Inverclyde Council anticipates further reductions in carbon emissions by achieving the goals set out in the 2022-2027 action plan, helping tackle climate change and improve local air quality.

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 2025 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, <u>Air quality - Inverclyde</u> <u>Council</u>⁽⁵⁾.

Up to date monitoring results from the automatic monitoring station can be found on the Scottish Air Quality website, <u>Site Data | Scottish Air Quality</u> ⁽⁶⁾.

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1 Local Air Quality Management

This report provides an overview of air quality in Inverclyde Council during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 Invercive Council to improve air quality and any progress that has been made.

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO2)	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/m³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10 µg/m³	Annual mean	31.12.2021
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/m³	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

Table 1.1 – Summar	y of Air Quality	Objectives in	Scotland
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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 publish and implement an Air Quality Action Plan (AQAP) within the shortest possible time and no later than 12 months of the date of AQMA Designation Order. The AQAP must set out measures the local authority intends to put in place in pursuit of the objectives within the shortest possible time. Measures should be provided with milestones and a final date for completion. The action plan itself should have a timescale for completion and for revocation of the AQMA. Where measures to reduce air pollution may require a longer timescale an action plan shall be reviewed and republished within five years of initial publication and then five-yearly thereafter.

There has been no exceedance or likely exceedance of any air quality objectives in Inverclyde, therefore, no AQMA has been declared.

Whilst no action plans or local air quality strategies have been produced by Inverclyde Council, decisions and actions that impact on local air quality are taken with regard to the national air quality strategy.

2.2 Cleaner Air for Scotland 2

<u>Cleaner Air for Scotland 2 – Towards a Better Place for Everyone (CAFS2)</u>⁽¹⁾ is Scotland's second air quality strategy. CAFS2 sets out how the Scottish Government and its partner organisations propose to further reduce air pollution to protect human health and fulfil Scotland's legal responsibilities over the period 2021 – 2026. CAFS2 was published in July 2021 and replaces <u>Cleaner Air for Scotland – The Road to a Healthier Future</u> (<u>CAFS</u>)⁽⁷⁾ which was published in 2015. CAFS2 aims to achieve the ambitious vision for Scotland "to have the best air quality in Europe". A series of actions across a range of policy areas are outlined, a summary of which is available on the Scottish Government's website.

Inverclyde Council has successfully incorporated air quality into a variety of plans, polices, City Deals and other initiatives. Further information to evidence this will be provided in the sections below.

2.2.1 Placemaking – Plans and Policies

Local authorities with support from the Scottish Government will assess how effectively air quality is embedded in plans, policies, City Deals and other initiatives, and more generally in cross departmental working, identifying, and addressing evidence, skills, awareness and operational gaps.

Inverclyde Council has successfully incorporated air quality into a variety of plans, polices, City Deals and other initiatives. Further information to evidence this will be provided in the sections below.

2.2.2 Transport – Low Emission Zones

Local authorities working with Transport Scotland and SEPA will look at opportunities to promote zero-carbon city centres within the existing LEZs structure. To date Inverclyde Council has no Low Emission Zones established within the Local Authority area.

2.2.3 Transport– Electric Vehicles/Charging Points

To achieve net-zero by 2045 the Scottish Government are hoping to phase out the need for petrol and diesel fuelled cars by 2030. Working towards achieving net zero, Inverclyde Council aims to have a fully electric car/van fleet by 2025 and have an electric refuse collection fleet in place by 2028. Currently the Council owns a wide range of vehicles including cars, vans, buses, refuge collection lorries, road sweepers etc., these account for 75% of Inverclyde Council's carbon footprint. With a view of protecting the natural environment, The Environment and Regeneration Committee Delivery and Improvement Plan 2023/26⁽⁸⁾ also calls for the replacement of council vehicles. This plan promises to minimise diesel usage by March 2026 a reduction in one million litres per year which will in turn allow for a 286,000 kg reduction of CO₂ emissions. Similarly, Inverclyde Council's Net Zero Strategy sets out targets for reducing emissions, the graph below (Figure 1) forecasts the gradual decline hoped to be achieved by 2030/31.





To meet these goals a 12-month procurement programme is in place for the purchasing of Electric Vehicles (EV) and the development of the EV fleet charging infrastructure. Since 2011, Inverclyde Council has been replacing vehicles within its fleet. By the end of 2023, the Council had a total of 42 EVs within its fleet. The electric charging infrastructure was upgraded this year with an additional electrical charging point. In total there are now 28 council owned public chargers with 18 fleet chargers available. In addition to the council owned charging stations there are also several privately owned charging stations throughout the local area these can be found using Live Map - Charge Place Scotland ⁽⁹⁾. Private charging points are commonly found in car parks of supermarkets, train stations and business establishments. The number of privately owned charging points are also increasing in numbers with new commercial premises installing these within their public car parks.

Inverclyde Council commissioned a third-party company to review the current local electrical charging infrastructure against future needs. In March 2023 the Inverclyde Council Public Electric Vehicle Charging Strategy and Expansion Plan was published ⁽¹⁰⁾. This document considers various factors in the development of the electric charging system. For example, few dwellings in Inverclyde have off-road parking (39%). A survey

revealed the main barrier to the uptake of electrical vehicles is people believe the infrastructure is not enough (71%). There are different models that have been created within Inverclyde Council Public Electric Vehicle Charging Strategy and Expansion Plan, despite the delivery model that is chosen the goal will remain the same which is to develop the charging network. This has been incorporated into Inverclyde Council's Local Development Plan ⁽¹¹⁾ now requiring new housing developments to provide electrical vehicle charging infrastructure. The above strategy states the site arrangement for the proposed EV chargers will allow for a 100% of properties collocated nearby charging facilities, with each household being a ten-minute drive from an EV charger.

2.2.4 Transport - Inverciyde's Transport Routes

Inverclyde is well situated and has a great transport network in place to keep people well connected. The A8 and A78 are two trunk roads that run through the area. There are several bus companies that operate. The rail network is comprised of two train lines and fourteen stations. Situated on the coastal route, Inverclyde has ferry services that operate providing travel links to several locations in Argyll and Bute.

Inverclyde is also connected by a comprehensive core path network and National Cycle Network routes, NCN75 and NCN753 provide active travel to Renfrewshire, Glasgow and Ayrshire.

2.2.5 Active Travel

Encouraging active travel is crucial to improving air quality and public health. To increase active travel within the community, it is important to have routes that are accessible and safe. Inverclyde Council's Local Development plan ⁽¹¹⁾ recognises the importance of keeping people connected and the significance of a green infrastructure. Similarly, the Clydeplan ⁽¹²⁾ sets out strategies to promote sustainable transport, promote active travel and increase connectivity within the region. Involvement in the Glasgow City –Region City Deal Project provides funding opportunities for major infrastructure projects.

Funding was received by the Spaces for People and the Safer Walking, Safer Roads groups to make improvements to cycling, walking, and wheeling infrastructure within the local community. These two funding schemes allow permanent and temporary measures to be installed in the local area to improve active travel routes.





In 2020 Invercive Council set out plans to develop a dedicated cycle route from Gourock to Greenock, with an option for a second phase from Greenock to Port Glasgow. The following year a cycle lane and footway from Battery Park to Container Way, Greenock was completed. In 2022, further progress was made as a new cycle lane and footpath was installed from the Beacon Art Centre, Greenock to the East India and Victoria harbours. This additional route allowed the West and East of Greenock to be connected, reshaping the National Cycle Network Route 75 (NCN75). In 2023, the active travel routes underwent further development with the creation of a dedicated cycle lane in Port Glasgow. In April, the existing footpath along the full length of Ardgowan Street was widened to provide a 2m footpath and 3m cycle lane. Additional upgrades to the cycle routes are planned for Gourock in the future, with a view of incorporating Gourock train station into the NCN75, to allow the continuation of the route.

Scotland's Active Travel Vision is that by 2030, "Scotland's communities are shaped around people, with walking or cycling the most popular choice for shorter everyday journeys" ⁽¹³⁾. Similarly, Inverclyde Council's ambition is to "Make active travel a realistic, convenient and attractive choice for everyone to make everyday journeys in Inverclyde" Inverclyde Council's 'Our Place Our Future' survey found respondents would like more cycle path provisions and the interlinking of cycle paths ⁽³⁾. The active travel strategy set a series of long-term plans in response to feedback provided from the community. Since the survey, significant upgrades have been undertaken to the active travel routes. A recent Environmental Committee report revealed an increase in cyclists locally since the development of the new cycle lane along Eldon Street Greenock ⁽¹⁴⁾. Inverclyde Council recognises the importance of public engagement in encouraging active travel, a public consultation is planned for next year to acquire the publics views on enhancing the connectivity of active travel routes within the community.

Improvements in local infrastructure and marketing of these developments are elements of Inverclyde Council's Active Travel Strategy ⁽³⁾. Information relating to active travel routes and events can be found on Inverclyde Council website as well as social media outlets ⁽¹⁵⁾. Inverclyde Council works in partnership with stakeholders to promote and encourage active travel within the community. Stakeholders include local community groups such as Inverclyde Bothy and Community Tracks.

Inverclyde Bothy ⁽¹⁶⁾ is a local organisation with an online platform providing similar information and has a walk-in hub situated at Gourock railway station. The hub can help people plan walking and cycling routes, allow people to access history walks, health walks or led bike rides. Community Tracks is an online hub that similarly offers a wide range of advice and support for locals. The hub can provide people with access to cycle maintenance classes, bike fixing workshops, cycling for confidence sessions and led bike rides. In addition, Community Tracks has had a project titled' flattening hills' which allows people to hire e-bikes. The topography in Inverclyde contains a vast number of hills and this can often be a barrier to encouraging active travel. The Community tracks 'flattening hills' project was an initiative that would attract more people within the community to uptake cycling. Links to these community organisations can be found at <u>Active Travel -</u><u>Inverclyde Council</u> along with other useful websites that provide information surrounding active travel within the community ⁽¹⁵⁾.



Image 2: McGill's Bus Operator and Inverclyde Council working together to create Free Bus Friday on World Car Free Day.

2.2.6 World Car Free Day

To celebrate World Car Free Day (22nd September 2023), McGill's and Inverclyde Council worked in partnership to provide the residents of Inverclyde a day of free bus travel (Image 2). Funding obtained from Paths for All combined with the local bus operators support led to the creation of Free Bus Friday. This initiative was to encourage the public to leave the car at home and use public transport in its place. Free Bus Friday promoted the benefits of using public transport on the local environment, notably the reduction in carbon emissions and easing of congestion. Various active travel events and activities also took place in Greenock town centre to support World Car Free Day.

2.2.7 Developmental Planning in Inverclyde

Encouraging active travel and the use of public transport as opposed to the use of household vehicles requires effective developmental planning. Place making is an important factor that helps to improve air quality by reducing the number of vehicles on the road by land allocation and spatial development strategy. Making urban areas in our jurisdiction well-connected is one of the objectives set out in Inverclyde Council's Local Development Plan ⁽¹¹⁾. The Council strives to ensure new housing, business and industry, retail and other commercial and community developments are easily accessible. This objective coincides with the CAFS2 place making action on the creation of 20-minute neighbourhoods, as well as the proposals set out in the National Planning Framework 4.

2.2.8 Integrated Policy – Climate Change Plan

Inverclyde Council produced the Carbon Management Plan in 2007, with the objective of minimising the generation of carbon emissions from the Councils operation. Since the initial publication the Council has often revised the plan to introduce future targets to achieve further reduction in carbon emissions. The Carbon Management Plan was reinvented and entitled the Climate Change Plan ⁽¹⁷⁾, this plan focused not only on decreasing carbon emissions but on measures that are required to mitigate climate change at present and in the future. Upon implementation of the Carbon Management Plan the carbon emissions omitted from the Councils operations have been reducing each year. Inverclyde Council has introduced various measures which include minimising energy and water use, switching to electrical vehicles, placing LED lamps in streetlights, promoting waste reduction, improving the recycling infrastructure and other initiatives has collectively led to a significant reduction in the Councils total carbon emissions.

In the 2022 Air Quality Annual Progress Report it was stated that Invercive Council set out to achieve a 16% reduction on carbon emissions based on 2007/08 figures, this target was met. The installation of wood pellet heating systems and solar panels in schools along with the various measures that have been previously mentioned has helped to reduce carbon emissions. Since 2012/13 Invercive Council has reduced carbon emissions by over 46%.

In compliance with the Climate Change Act 2009, Inverclyde Council has a statutory duty to report the total amount of greenhouse gas emissions, in tonnes, created by the Council

operations over the year (April to March) ⁽¹⁸⁾. Table 2.1 details the amount of greenhouse gas emissions generated by Inverclyde Council over the last five years.

Table 2.1 Inverclyde Council's Greenhouse Gas Emissior
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Greenhouse Gas Emissions Generated by Inverclyde Council for the last 5 years									
Year 2018/2019 2019/2020 2020/2021 2021/2022 2022/									
tCO ₂ e	10,928	10,212	10,564	11,705	9,362				

pThe Climate Change Plan also documents the total greenhouse gas emissions generated by the whole of Inverclyde. The most current data on greenhouse gas emissions generated by Inverclyde has been generated by Department for Energy Security and Net Zero ⁽¹⁹⁾. Table 2.2 shows the levels of greenhouse gas emissions recorded for the past for all of Inverclyde over a five-year period. The data presented in the Table 2.2 has been revised following the last update in national statistics July 2023. The Government advises that statistics dating back to 2005 may be altered due to methodological improvements. The latest data for the past five years shows the greenhouse gas emissions generated by Inverclyde have been consistent.

Table 2.2 Inverclyde's Greenhouse Gas Emissions

Greenhouse Gas Emissions Generated by all of Inverclyde in the last 5 years									
Year	2017	2018	2019	2020	2021				
ktCO ₂ e	363.9	344.3	331.2	319.2	339.7				

2.2.8 Integrated Policy – Net Zero Strategy 2021-2045

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, set the target of reducing Scotland's carbon emissions to net zero by 2045. Local Governments have a major role, legally and morally in the reduction of carbon emissions to achieve the net zero target. In 2021, Inverclyde Council published the Net Zero Strategy 2021-2045⁽⁴⁾. This strategy aims to implement a series of actions to secure a 73% reduction in carbon emissions by the period 2030/2031 based on the 2012/2013 baseline. From 2030/2031 Inverclyde Council will look to reduce carbon emissions even more by undertaking an improvement process (Plan-Do-Check-Act), working collaboratively with organisations and where needed using certified carbon sinks to offset remainder emissions to attain the net zero target.

Inverclyde Council is continuing its work to implement the measures detailed in the Climate Change Plan and introduce additional measures that will become viable to secure further reduction in carbon emissions. Possible solutions are those detailed in the Net Zero Strategy 2021-2045 include switching to hydrogen as a fuel source for vehicles, alternative heating appliances such as water-based heat pumps to decarbonise heating systems or introducing advanced thermal insulation products to buildings to increase the retention of heat and making them more energy efficient.

In addition, the Environment and Regeneration Committee Delivery and Improvement Plan 2023/26 has set out to deliver the Net Zero Strategy and Action Plan 2022/27 by carrying out energy efficiency improvements and carbon reduction measures with the goal of protecting our natural environment.

2.2.9 Integrated Policy - Local Heat and Energy Efficiency Strategy

The Scottish Government has proposed a statutory duty upon local authorities to produce Local Heat and Energy Efficiency Strategies. This will require local authorities to create and implement projects to improve the energy efficiency of buildings and decarbonise heating systems in the local area. Actions to reduce reliance on heat and the use of low carbon technology will help tackle climate change and improve air quality. Heating domestic properties within Inverclyde is estimated to generate 41% of Inverclyde's CO₂ emissions.

Although the Local Heat and Energy Efficiency Strategy will not be produced till the near future, financial assistance to improve the energy efficiency of properties within Inverclyde has been underway for the last 10years through The Scottish Government 'Energy Efficient Scotland Area Based Schemes' (ABS). ABS funding has enabled the local authority to provide funding to private homeowners to carry out energy efficiency measures to their homes. The funding helps households that are in or at risk of fuel poverty to undertake measures to reduce energy usage and costs. The objective of the funding is to support eligible households to have an energy performance certificate rating of C or better by 2030. Whilst the aim of the funding is to improve the energy efficiency of properties within Inverclyde, simultaneously it reduces energy usage and carbon emissions which helps to improve air quality over time.

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 East Hamilton Street, Greenock sites during 2023. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available <u>Site Data | Scottish Air Quality</u> ^{(6).}

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

Ricardo Energy & Environment have published an air pollution report for Inverclyde which provides an analytical overview of the air quality measured throughout 2023 ⁽²⁰⁾.

3.1.2 Non-Automatic Monitoring Sites

Inverclyde Council undertook non- automatic (passive) monitoring of NO₂ at 19 sites during 2023. The decision was made to remove the NO₂ diffusion tube located at East Hamilton Street (MS08). It was reported that the placement of this NO₂ diffusion tube was problematic at times due to the siting. A discussion was had about repositioning the diffusion tube; however, the decision was taking to remove the tube from the network. The reasons for this were due to a history of low NO₂ concentrations at this site and the presence of other monitors in close proximity. It was agreed that the NO₂ diffusion tube would be reinstated should the concentrations become heightened.

Appendix A shows the details of the NO₂ diffusion network.

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 (NO₂)

Table A.3 in Appendix A compares the ratified monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 μ g/m³ at the automatic monitoring site.

Table A.4 in Appendix A compares the adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 μ g/m³ at non automatic monitoring sites.

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. The NO₂ concentration measured at Bridge of Weir Road, Kilmacolm in April was particularly high. There was no explanantion as to why the concentration was unsually high. Road works were being carried out in Kilmacolm in 2023 but not until the following month. Although the Diffusion Tube Processing Tool advises to remove erroneous data, the decision was taking to keep these concentrations in to error on the side of caution as advised in the LAQM Technical Gudiance.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of $200\mu g/m^3$, not to be exceeded more than 18 times per year.

In 2023, NO₂ was measured continuously throughout the year (100% Data Capture) with an annual mean concentration of 19.1 μ g/m³, below the National Air Quality Objective Limit (Annual mean > 40 μ g/m³). This has been the lowest annual mean concentration recorded for NO₂ in the past five years. In addition, there was no execeedances of the 1hour mean objective (> 200 μ g/m³ for more than 18 hours).



Figure 2 - NO₂ Concentrations measured over 5 years in Inverclyde.

Analysing the NO₂ concentrations over the past five years there are notable differences in the concentrations measured during this time (Figure 1). The highest concentrations were measured at the start of the period in 2018. The NO₂ concentrations in 2023 have shown a significant decrease, on average there is a 41% reduction. In March 2020, the coronavirus pandemic occurred and the government restrictions resulted in a reduction in NO₂ concentrations which then started to increase towards the end of the year as restrictions eased. NO₂ concentrations have not returned to pre-covid levels, they have remained low. The graph illustrates the NO₂ concentrations measured between July and December of 2023 were lower than those measured during the coronavirus pandemic. The concentrations measured between March and June 2023 were higher than those recorded in those months in 2020. However, the averages highlight that the NO₂ concentrations measured last year were the lowest recorded in the last five years (Table A.4 in Appendix A).

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 18µg/m³.

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

In 2023, PM₁₀ was measured continuously throughout the year (100% Data Capture) with an annual mean concentration of 10 μ g/m³, below the National Air Quality Objective Limit (Annual mean > 18 μ g/m³). In addition, there was no exceedences in the 24-hour mean objective.



Figure 3 – PM₁₀ Concentrations measured over 5 years in Inverclyde

The PM₁₀ concentrations measured in the past five years are depicted in Figure 2. The graph shows the PM₁₀ concentrations are comparative over the years with the exception of some increased concentrations in April 2019, April 2021 and March 2022. On average the PM₁₀ concentration has reduced in comparison to the previous year. The lowest PM₁₀ concentrations were recorded during 2020, the year of covid, measuring 9.6 μ g/m³. The average annual PM₁₀ concentration measured for 2023 showed only a slight increase, measuring 10 μ g/m³.

3.2.3 Particulate Matter (PM_{2.5})

Table A.8 in Appendix A compares the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years with the air quality objective of $10\mu g/m^3$.

In 2023, PM_{2.5} was measured continuously throughout the year (100% Data Capture) with an annual mean concentration of 5 μ g/m³, below the National Air Quality Objective Limit (Annual mean > 10 μ g/m³).



Figure 4 – PM_{2.5} Concentrations measured over 5 years in Inverclyde

The PM_{2.5} concentrations measured in the past five years are depicted in Figure 4. Similar to PM₁₀ concentrations, there was an increase in concentrations recorded in April 2019, April 2021 and March 2022. On average the PM_{2.5} concentration have reduced in comparison to the previous year. The lowest PM_{2.5} concentrations was recorded during 2020, the year of the coronavirus pandemic, measuring $4.9\mu g/m^3$. Similar levels were recorded in 2023 with a small increase, measuring only $0.1\mu g/m^3$ more.

3.2.4 Sulphur Dioxide (SO₂)

Inverclyde Council does not monitor for SO2.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Inverclyde Council does not monitor for Carbon Monoxide, Lead and 1,3-Butadiene.

4 New Local Developments

4.1 Road Traffic Sources

In 2023, Scottish Water undertook a large flood alleviation project along the A8 trunk road through Inverclyde. During periods of heavy rainfall this location is susceptible to localised flooding. The project involved installing a new Combined Sewage Overflow (CSO) chamber underneath Inverclyde Council's Depot at Pottery Street, Greenock. In addition, sections of the local sewer were upgraded in this area and connected to the new CSO chamber. The Greenock A8 trunk road is a major road used by approximately 28,000 vehicles daily ⁽²¹⁾. Thus, a contraflow system was set up reducing the road to one lane in both directions. It was expected that the congestion would have affected local air quality. However, the data recorded by the continuous analyser (located 0.3km away from the works) showed no significant impact.

4.2 Other Transport Sources

There is no airport situated within Inverclyde Council and no significant changes have occurred 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 2023. Inverclyde Council is not aware of any significant changes to existing installations or the introduction of a new receptor that is exposed.

4.4 Commercial and Domestic Sources

There have been no new planning applications approved for the installation of biomass combustion plants.

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

In 2023, the annual concentrations for NO₂, PM₁₀ and PM_{2.5} remained low, measuring below the National Air Quality Limits. Therefore, Invercive does not need to declare an AQMA.

The annual average NO₂ concentration measured by the automatic monitoring station in 2023 was at the lowest on record. NO₂ was measured throughout Inverclyde via the diffusion tube network. The annual average NO₂ concentrations measured at each diffusion tube site was also found to be below the National Air Quality Objective.

In 2023, a NO₂ diffusion tube located at East Hamilton Street was removed from the monitoring network, the decision was made in response to reports that the replacement of the tube was difficult due to site location. Due to the presence of the colocation study in close proximity, the decision was to remove the site. This judgement will be reviewed should concentrations heighten continuously over a period of time. No additional NO₂ diffusion tube sites were added to the network this year.

PM₁₀ and PM_{2.5} were measured continuously throughout the year by the automatic monitoring station at East Hamilton Street, Greenock. The annual average concentrations for both pollutants remained below the National Air Quality Objectives, with no exceedances reported.

The data within this report and within Ricardo's Energy and Environment Annual Statistics Report for Inverclyde ⁽¹⁷⁾ have shown that air pollution in Inverclyde continues to be low.

Inverclyde Council strives to better local air quality through the implementation of many national and local strategies/plans (CAFS2, Active Travel Strategy, Net Zero Strategy, Local Development Plan etc.). Working continuously to deliver these strategies and plans will in the long term improve air quality directly and indirectly. It is expected that the air quality within Inverclyde in 2024 will continue to remain within the permitted levels, although aiming for the annual average pollutant concentrations to be lower than those reported for 2023.

5.2 Proposed Actions

Inverclyde Council will continuously monitor and review air quality within the local area. If there appears to be an unexplained reason for heightened concentrations of pollutants, this will be investigated, and the current monitoring network will be reviewed.

The automatic monitoring machine will remain situated at East Hamilton Street. The collocation study will continue at East Hamilton Street, obtaining data from the air monitor and three NO₂ diffusion tubes to develop a local bias adjustment factor.

Results from previous annual progress reports have documented that road traffic is the main source of air pollution within Inverclyde Council. No new sources of air pollution have been identified within Inverclyde and to date road traffic emissions are the predominant cause of air pollution. Thus, Inverclyde Council continues to implement plans and polices which aims to increase active travel within the area which in turn will decrease air pollution and improve the health of people within society.

Inverclyde Council also commissioned a report into the current electrical infrastructure and what is required in the future to enable citizens to switch to electrical vehicles. Inverclyde Council will take further actions to minimise carbon emissions over the course of the year to better local air quality and help Scotland achieve its net zero target.

The next Air Quality Annual Progress Report will be submitted June 2025.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
MS01	Inverclyde Greenock A8	Roadside	229365	675700	NO ₂ , PM ₁₀ , PM _{2.5} , PM ₁	Ν	TEOM	12	2.5	1.8

Notes:

(1) Om 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? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube co-located with a Continuous Analyser?
MS02	Carwood Court, Greenock	Roadside	229503	675400	NO2	Ν	13.5m	5m	Ν
MS03	Brown Street, Port Glasgow	Roadside	231699	674620	NO2	Ν	1m	1m	Ν
MS04	Bridge of Weir Rd, Kilmacolm	Roadside	235824	669909	NO2	Ν	1m	1m	Ν
MS05	East Hamilton Street (1), Greenock	Roadside	229365	675700	NO2	Ν	12m	2.5m	Y
MS06	East Hamilton Street (2), Greenock	Roadside	229365	675700	NO2	Ν	12m	2.5m	Y
MS07	East Hamilton Street (3), Greenock	Roadside	229365	675700	NO2	Ν	12m	2.5m	Y
MS08 (3)	East Hamilton Street (property), Greenock	Roadside	229301	675712	NO2 discontinued	Ν	Om	14.25m	Ν
MS09	Dellingburn St, Greenock	Roadside	228422	675735	NO2	Ν	3.5m	5m	Ν
MS10	Dalrymple St, Greenock	Roadside	228311	675993	NO2	Ν	15m	3m	Ν
MS11	Inverkip St, Greenock	Roadside	227563	676246	NO2	Ν	1m	2.5m	Ν
MS12	Dunlop St, Greenock	Roadside	226827	675622	NO2	Ν	4m	2m	Ν
MS13	Nelson St, Greenock	Roadside	227092	676134	NO2	Ν	1m	5m	Ν

MS14	Inverkip Rd, Greenock	Roadside	224441	675224	NO2	Ν	15m	4m	Ν
MS15	Larkfield Rd, Greenock	Roadside	224869	675757	NO2	Ν	3m	2m	Ν
MS16	Main St, Wemyss Bay	Roadside	219407	668573	NO2	Ν	1m	2m	Ν
MS17	Kempock St, Gourock	Roadside	224097	677910	NO2	Ν	1m	1m	Ν
MS18	Cardwell Rd, Gourock	Roadside	224664	677168	NO2	Ν	3m	4m	Ν
MS19	Newark St, Gourock	Roadside	225460	677501	NO2	Ν	1m	5m	Ν
MS20	Brougham St, Greenock	Roadside	227242	677032	NO2	Ν	7m	5.5m	Ν
MS21	MacDougall St, Greenock	Roadside	229605	675593	NO2	Ν	13m	3m	Ν
MS22	Brisbane St, Greenock	Roadside	227287	676410	NO2	Ν	0m	2.7m	Ν
MS23	Blairmore Rd, Greenock	Roadside	228915	674682	NO2	Ν	4.5m	2.5m	Ν

Notes:

(1) Om 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.
- (3) Monitoring Station MS08 discontinued due to restrictions that meant this monitoring station could not be safely accessed by the contractor. Revised positioning or access arrangements to be made if this station needs to be reinstated.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MS01	Roadside	Automatic	100	100	28	21	24	21	19

Notes:

Exceedances of the NO₂ annual mean objective of $40\mu g/m^3$ are shown in bold.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Diffusion Tube ID	X OS Grid	Y OS Grid	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MSO2	229503	675400	Roadside	100	100	7.8	8.0	5.5	6.9	5.9
MS03	231699	674620	Roadside	100	100	14.4	13.4	9.3	11.0	9.4
MS04	235824	669909	Roadside	100	100	12.3	9.0	9.6	12.2	10.4
MS05, MS06, MS07	229365	675700	Roadside	100	100	27.7	23.5	19.1	20.5	17.6
MS09	228422	675735	Roadside	100	100	24.8	20.5	17.2	25.9	19.9
MS010	228311	675993	Roadside	100	100	18.5	15.3	11.3	16.1	14.4
MS011	227563	676246	Roadside	100	100	24.1	23.5	15.9	23.2	17.0
MS12	226827	675622	Roadside	100	100	14.8	13.1	11.0	14.5	11.4
MS13	227092	676134	Roadside	100	100	22.9	18.0	15.0	18.1	15.5
MS14	224441	675224	Roadside	100	100	16.5	13.0	12.5	15.5	10.3
MS15	224869	675757	Roadside	100	100	15.8	11.8	10.9	13.7	9.5
MS16	219407	668573	Roadside	100	100	11.2	8.2	7.4	9.3	6.9
MS17	224097	677910	Roadside	100	100	11.6	9.2	7.6	10.8	8.2
MS18	224664	677168	Roadside	100	92.3	20.1	16.4	14.1	19.4	14.7
MS19	225460	677501	Roadside	100	100	11.8	9.7	7.7	9.5	7.6

Diffusion Tube ID	X OS Grid	Y OS Grid	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MS20	227242	677032	Roadside	100	100	20.3	14.8	12.6	16.0	13.3
MS21	229605	675593	Roadside	100	100	16.7	12.8	13.8	14.7	12.7
MS22	227287	676410	Roadside	100	100				10.2	7.3
MS23	228915	674682	Roadside	100	90.4				7.0	5.1

Notes:

Exceedances of the NO₂ annual mean objective of $40\mu g/m^3$ are shown in bold.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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(22) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MSO1	Roadside	Automatic	100	100	0	0	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/year) are shown in bold.

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

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

Table A.6 –	Annual Mean	PM 10	Monitorina	Results	$(\mu \alpha/m^3)$
					(rg//

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MS01	Roadside	100	100	12	10	11	12	10

Notes:

Exceedances of the PM₁₀ annual mean objective of $18 \mu g/m^3$ are shown in bold.

All means have been "annualised" as per LAQM TG22, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MS01	Roadside	100	100	5	0	0	4	0

Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50 µg/m³ not to be exceeded more than seven times/year) are shown in bold.

If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
MS01	Roadside	100	100	7	5	6	6	5

Notes:

Exceedances of the PM_{2.5} annual mean objective of 10 μ g/m³ are shown in bold.

All means have been "annualised" as per LAQM TG22, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Appendix B: Full Monthly Diffusion Tube Results for 2023

Site ID	Site Name	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted
MS02	Carwood Court, Greenock	10.3	8.1	10.8	7	4.9	3.4	5.2	6.2	5.8	2.1	12.8	6.3	6.9	5.9
MS03	Brown Street, Port Glasgow	16.9	12.4	17.1	12.6	6.9	8	7.8	9.8	10.1	8.6	16.4	5.6	11	9.4
MS04	Bridge of Weir Road, Kilmacolm	11.5	9.9	13	<mark>55.7</mark>	5.7	4.3	7.7	6.6	7.5	4.3	12.8	7.3	12.2	10.4
MS05	East Hamilton St, Greenock (a)	25.3	28	29	20	19.3	16.7	20.4	19.9	23.2	14.8	28.3	22.2	Triplicate site wi	th MS07- Annual
MS06	East Hamilton St, Greenock (b)	26.9	27.4		9.5	19.7	18	16.1	17.9	24.3	7.2	29.1	17.9	data provi	ded below
MS07	East Hamilton Street, Greenock	29.8	24.6	28.8	23.1	18	17.4	20.4	20.9	21.4	10.7	1.6	18.4	20.7	17.6
MS09	Dellingburn Street, Greenock	25.4	32.1	36.8	20.8	17.9	17.8	20.7	16.7	26.2	10.2	30.1	26.8	23.5	19.9
MS10	Dalrymple Street, Greenock	21.6	21.4	25.9	17.8	10.9	13.8	11.9	12.6	17	7.6	29.2	13.7	17	14.4
MS11	Inverkip Street, Greenock	29.4	30.5	24.2	16.7	12.2	14	17.6	18.1	20.7	15.2	27.2	14.5	20	17
MS12	Dunlop Street, Greenock	20.8	17	18.2	13.4	8.5	9.3	10	10.6	10.2	10.7	23	8.7	13.4	11.4
MS13	Nelson Street, Greenock	26.9	24.8	27.8	15	12.6	16.4	14.1	16	14	10.5	29.3	10.9	18.2	15.5
MS14	Inverkip Road, Greenock	16.6	17.4	17.7	10	7.8	7.9	9	10.2	8.3	6.5	20.7	13.2	12.1	10.3
MS15	Larkfield Road, Greenock	14.8	14.6	16.1	11	7.8	6.9	9.1	9.4	11.5	5.8	17.5	9.9	11.2	9.5
MS16	Main Street, Wemyss Bay	9.2	10	12	6.1	5.9	10.1	8.8	5.4	6.6	6.9	9.3	6.7	8.1	6.9
MS17	Kempock Street, Gourock	13.2	9.8	10.9	8.8	9.2	13.4	12.9	8.5	6.6	2.1	14.2	6.2	9.7	8.2
MS18	Cardwell Road, Gourock		22.5	25.4	15	13.9	19.1	15.7	16.3	13.8	11.4	24.2	12.9	17.3	14.7
MS19	Newark Street, Greenock	13.5	12.9	14.5	8.6	6.4	9.6	5.1	7.6	8.2	3.4	12.9	5.2	9	7.6
MS20	Brougham Street, Greenock	19.3	19	21.4	12	12	21	13	16.8	11.5	8.8	20.3	12.9	15.7	13.3
MS21	MacDougall Street, Greenock	18.9	19.7	21	15.3	16.9	21.2	9.7	10.2	10.2	7.9	19.9	7.8	14.9	12.7
MS22	Brisbane Street, Greenock	9.7	10.6	15.6	9	5.1	10.5	6.1	6.7	5.2	5.6	12.9	5.9	8.6	7.3
MS22	Blairmore Road, Greenock	8.2	7	9.9	5.9	2.9		3.4	4.8	4.1	3.7	11.9	4	6	5.1

Table B.1 – NO₂ 2023 Monthly Diffusion Tube Results (µg/m³)

All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22

Local bias adjustment factor used

□ National bias adjustment factor used

□ Where applicable, data has been distance corrected for relevant exposure in the final column

Invercive Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

Notes:

Exceedances of the NO₂ annual mean objective of $40\mu g/m^3$ are highlighted and shown in **bold**.

 NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are **highlighted** shown in **bold and underlined**. See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Inverclyde Council During 2023.

Inverclyde Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Inverclyde Council During 2023.

Inverclyde Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Glasgow Scientific Services supply and analyse the NO₂ diffusion tubes monthly. The NO₂ diffusion tubes were deployed/collected in adherence with the Diffusion Tube Monitoring Calendar (\pm 2 days). The preparation method used for NO₂ 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 NO₂ Monitoring: Practical Guidance' ⁽²²⁾.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Inverclyde Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

Inverclyde Council have applied a local bias adjustment factor of 0.85 to the 2023 monitoring data. A summary of bias adjustment factors used by Inverclyde Council over the past five years is presented in Table C.1.

Inverclyde Council has one co-location study in place with three diffusion tubes (MS05, MS06, MS07) positioned at the automatic monitoring site (MSO1) at East Hamilton Street. The data input into the DEFRA's Diffusion Tube Processing Tool had overall good precision with a local bias adjustment factor of 0.85 obtained.

The National Bias adjustment factor of 0.74 for 2023 was retrieved from Glasgow Scientific Services data provided in the DEFRA National Diffusion Tube Bias Adjustment Factor Spreadsheet (03/23) ⁽²³⁾. However, in accordance with LAQM TG22⁽²⁴⁾, the decision was taking to apply the Local Bias adjustment factor, 0.85 to the data obtained.

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	0.85
2022	National	03/23	1.05
2021	National	03/22	1.12
2020	Local	-	0.81
2019	Local	-	0.73

Table C.1 – Bias Adjustment Factor

NO2 Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Inverclyde Council required distance correction during 2023.

QA/QC of Automatic Monitoring

The automatic monitoring site at East Hamilton Street contains one NO_x/NO₂ analyser and one TEOM Ambient Particulate Monitor. Throughout 2023 site audits and calibrations were undertaken by Ricardo Energy & Environment and services carried out every 6 months by Air Monitors. Fortnightly manual calibrations were carried out by Inverclyde Council. The monitoring data obtained from the Inverclyde Greenock A8 automatic air quality monitor is uploaded onto the Scottish Air Quality website ⁽⁶⁾. This data provided within the report has undergone ratification by Ricardo Energy & Environment.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The PM₁₀ and PM_{2.5} data contained in this report has been obtained from the Scottish Air Quality website ⁽⁶⁾. The data provided is the VCM corrected data from the TEOM within the automatic monitoring site at East Hamilton Street, Greenock. Correction factors are detailed within LAQM TG22 Chapter 7: Particulate Matter Monitoring ⁽²⁴⁾.

Automatic Monitoring Annualisation

All automatic monitoring locations within Inverclyde Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO2 Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within Inverclyde Council required distance correction during 2023.

Table C.2 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input 1
Periods used to calculate bias	9
Bias Adjustment Factor A	0.85 (0.77 - 0.94)
Diffusion Tube Bias B	18% (6% - 30%)
Diffusion Tube Mean (µg/m³)	22.3
Mean CV (Precision)	7.0%
Automatic Mean (µg/m ³)	18.8
Data Capture	100%
Adjusted Tube Mean (μg/m ³)	19 (17 - 21)

Overall Diffusion Tube Precision	Good Overall Precision
Overall Continuous Monitor Data Capture	Good Overall Data Capture

Local Bias Adjustment Factor 0.85	
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Notes:

A single local bias adjustment factor has been used to bias adjust the 2023 diffusion tube results.

Appendix D: Maps

- Map 1: Monitoring locations across Inverclyde
- Map 2: Automatic air monitoring site and colocation study at East Hamilton Street
- Map 3: NO2 diffusion tube monitoring network Greenock Central
- Map 4: NO2 diffusion tube monitoring network Greenock South
- Map 5: NO2 diffusion tube monitoring network Gourock & Greenock West
- Map 6: NO2 diffusion tube monitoring network Port Glasgow
- Map 7: NO2 diffusion tube monitoring network Kilmacolm
- Map 8: NO2 diffusion tube monitoring network Wemyss Bay





LAQM Annual Progress Report 2024





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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 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	
DT	Diffusion Tube	
FDMS	Filter Dynamics Measurement System	
LAQM	Local Air Quality Management	
NO ₂	Nitrogen Dioxide	
NOx	Nitrogen Oxides	
PM10	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	

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