

Annual Progress Report (APR)



2023 Air Quality Annual Progress Report (APR) for Scottish Borders Council

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

Local Air Quality Management

June 2023

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Report Reference Number	SBC/PR/2023
Date	June 2023

Executive Summary: Air Quality in Our Area

Air Quality in the Scottish Borders

Scottish Borders Council undertakes a programme of air quality assessment in accordance with the guidance produced by the UK Government and Devolved Administrations.

The Scottish Borders is located between Dumfries and Galloway in the west, South Lanarkshire and West Lothian in the north west, City of Edinburgh, East Lothian, Midlothian to the north, and the counties of Northumberland and Cumbria in England to the south.

Parts of the area have historically been heavily industrialised, although much of this has now gone and the area as a whole is predominantly rural. The main routes through the area are the A1, A68, and A7, and the East Coast Mainline railway. The Borders Railway also connects Tweedbank and Edinburgh.

This report sets out the results of air quality monitoring carried out by Scottish Borders Council during 2022 and considers the potential impacts from a range of sources such as road traffic and other transport emissions, industrial processes, commercial and domestic fuel use and fugitive emission sources.

There are no existing significant air quality issues identified within the area. Earlier rounds of review and assessment have identified only NO₂ from road traffic requiring to be considered, however there is no evidence that the annual mean concentration of NO₂ may exceed the specific Air Quality Objectives. In the Scottish Borders monitoring showed concentrations of NO₂ to be relatively stable prior to 2020. A reduction in concentrations was seen in 2020 which has generally been maintained in 2021 and 2022.

Scottish Borders Council has found no evidence that the levels of any other relevant pollutants may exceed the specific Air Quality Objectives and therefore has not identified the need to designate any Air Quality Management Areas.

Actions to Improve Air Quality

Scottish Borders Council is not currently engaged in any active air quality initiatives other than ongoing monitoring.

In June 2021 Scottish Borders Council agreed a Climate Change Route Map (CCRM) which sets a strategic direction for the Council and its partners and communities to move to a net zero economy by 2045, in line with the national target set by the Scottish Government. As the emissions that pollute our air and those that warm the planet have common sources: vehicles, buildings, power generation and industry, it is recognised that this strategy may result in a positive impact on air quality. In March 2022 full Council approved the 'Climate Change Route Map – Priority Action Plan 2022/24'. The priority actions respond to the Milestones identified within the themes of CCRM. Actions include a new Local Transport and Access Strategy, active travel Feasibility Studies to identify the infrastructure for active travel to be the natural first choice for our regions daily activities, and a bus network review.

Local Priorities and Challenges

Scottish Borders Council has no specific priorities or challenges for the coming year beyond the statutory monitoring and reporting requirements.

How to Get Involved

Members of the public can get involved in improving local air quality by taking alternative modes of transport where possible. This could include joining a cycle to work scheme, walking short distances instead of driving and when driving is unavoidable, taking part in car sharing schemes. Information on local transport can be obtained from the [Scottish Borders Council](#) website.

The Local Access and Transport Strategy promotes the use of electric vehicles. In the Scottish Borders we have a network of charging points for electric vehicles located throughout the area. Further information on the location of charging points is available on the [Scottish Borders Council](#) website.

Clean Air Day took place in June 2023 and is a chance to find out more about air pollution, share information with others and help make the environment and air quality cleaner for everyone. Further details can be found on the [Clean Air Day](#) campaign website.

Further information can also be obtained by contacting Environmental Health at:
PLACEhealth@scotborders.gov.uk.

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1 Local Air Quality Management

This report provides an overview of air quality in the Scottish Borders during 2022. 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 Scottish Borders 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	31.12.2021
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/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 and publish 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.

Scottish Borders Council currently does not have any AQMAs.

2.2 Cleaner Air for Scotland 2

[Cleaner Air for Scotland 2 – Towards a Better Place for Everyone \(CAFS2\)](#) 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 [Cleaner Air for Scotland – The Road to a Healthier Future \(CAFS\)](#), 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.

Progress by Scottish Borders Council against relevant actions for which local authorities are the lead delivery bodies within this strategy is demonstrated 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.

We seek to ensure air quality considerations are part of decision making. Further information on relevant plans/policies is provided in Section 2.3.

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.

Scottish Borders Council has no Low Emission Zones established within the local authority area.

Scottish Borders Council has produced a Local Access and Transport Strategy which is available on the [Scottish Borders Council](#) website. This strategy is currently being updated, and alongside the ESESCR (Edinburgh and South East Scotland City Region Deal) Workforce Mobility project, will form the Council's approach to travel planning.

2.3 Implementation of Air Quality Action Plan(s) and/or measures to address air quality

Scottish Borders Council does not have an Air Quality Action Plan, however this section provides details of other strategies or policies likely to have a beneficial impact on air quality.

2.3.1 Local Development Plan

The Scottish Government reviewed its national planning policies, National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP), bringing them together into the single policy document National Planning Framework 4 (NPF4). The Planning (Scotland) Act 2019 requires that the revised National Planning Framework has regard to any national strategy in respect of the improvement of air quality prepared by Scottish ministers. Scottish Borders Council will ensure the Local Development Plan is updated in accordance with the principles of NPF4.

The Scottish Borders Council Local Development Plan recognises the area's good air quality and our aim to maintain this standard. The Plan is founded on the premise of supporting and encouraging sustainable development in accordance with the Council's environmental strategy and the need for action on climate change. In determining planning applications and preparing document briefs, the Council has regard to sustainability

principles, including the preservation of air quality, which underpin all the Plan's policies and which developers will be expected to incorporate into their developments.

Development proposals that, individually or cumulatively, could adversely affect the quality of air in a locality to a level that could potentially harm human health and wellbeing or the integrity of the natural environment, must be accompanied by provisions that the Council is satisfied will minimise such impacts to an acceptable degree. Where it is considered appropriate the Council may request that an Air Quality Assessment is undertaken to assist determination of an application

The Scottish Borders is a largely rural area with significant remoteness, resulting in a high number of households that have access to a car. Transport policies seek to promote the most sustainable means of travel, giving priority to walking and cycling for local journeys, and to public transport in preference to travel by car.

The Local Development Plan is available on the [Scottish Borders Council](#) website.

2.3.2 Climate Change Route Map (CCRM)

The benefits of a joined up approach to air quality and climate change policy areas are recognised. Air quality and climate change are inextricably linked, with air pollution often originating from the same activities that contribute to climate change. In September 2020, Scottish Borders Council agreed a series of recommendations contained within the report 'Responding to the Climate Emergency' which led to the Climate Change Route Map (CCRM) for the Scottish Borders being agreed by the Council in June 2021. This is available to view on the [Scottish Borders Council](#) website. The CCRM sets a strategic direction for the Council and its partners and communities to move to a net zero economy by 2045, in line with the national target set by the Scottish Government. Scottish Borders Council intends to lead by example by controlling its own estate in line with the aims and objectives of the CCRM. It is hoped that this will motivate other individuals and organisations to do likewise.

The CCRM is based around 5 themes; Resilience, Transport Use, Nature Based Solutions, Energy and Waste Management. The CCRM is a new approach which will evolve and be populated with development work streams and action as progress is made. In March 2022 full Council approved the 'Climate Change Route Map – Priority Action Plan 2022/24'. The priority actions respond to the Milestones identified within the themes of

CCRM. The Plan recognises that it would not be possible to deliver everything at the same pace or time, so an assessment has been undertaken to determine which actions should be prioritised over the next two years. Additional and subsequent actions will continue to be developed to add to and support the activity reflected in the Plan of Priority Actions, as this is a continually evolving and changing programme of action. Key developments will include the roll out of the Council's Place Making Programme.

The Council is currently being supported by the Edinburgh Climate Change Institute in delivering the CCRM. This includes establishing an emissions baseline and developing priority actions for emissions reduction.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

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

During 2022 no changes took place to the air quality monitoring carried out by Scottish Borders Council, however monitoring resumes at location DT12 after a period of building renovation work which prevented monitoring being undertaken.

3.1.1 Automatic Monitoring Sites

In the Scottish Borders automatic (continuous) monitoring for NO₂ and O₃ was undertaken at one site in Peebles during 2022. This was part of the Automatic Urban and Rural Network (AURN). Table A.1 in Appendix A shows the details of the site. National monitoring results are available at <https://www.scottishairquality.scot/latest>.

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

3.1.2 Non-Automatic Monitoring Sites

Scottish Borders Council undertook non-automatic (passive) monitoring of NO₂ at 4 sites on *High Street, Galashiels* during 2022. Table A.2 in Appendix A shows the details of the sites.

During 2020 and 2021 monitoring was not carried out at location DT12 due to building renovation work, however monitoring resumed in January 2022.

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.

The 2022 Air Quality Annual Progress Report provided an update on a review undertaken of NO₂ monitoring locations. The last review was undertaken in 2017 when the number of monitoring locations was reduced from fourteen to four.

The four current monitoring sites were introduced on *High Street, Galashiels* in 2006 in order to assess the impact of the new A7 inner relief road. The Inner Relief Road resulted in a significant reduction in NO₂ concentrations and the Council has continued to monitor at these four locations since. Monitoring in recent years has shown concentrations have remained relatively stable, with 2019 concentrations ranging from 17-21µg/m³ across the locations. There was a reduction in concentrations in 2020, however this appears to be as a result of the COVID-19 pandemic and associated restrictions on activity. Levels in 2021 remained at similar levels to those in 2020.

The Council recognises that long term monitoring is important for trend analysis to monitor improvements or worsening of air quality in the area, even where limit values are being met, however the review has determined that four locations on *High Street, Galashiels* are no longer required. *High Street, Galashiels* is still considered to be a “hotspot” due to its busy town centre location and canyon-like street, and therefore we proposed to reduce the number of locations by two.

We have considered other “hotspots” and propose to re-commence monitoring on *High Street, Hawick* at two locations, although based on the results of previous monitoring no exceedance of the objective is envisaged. Hawick, like Galashiels, is a principal town and has a canyon-like High Street which is a main traffic route through the town with relevant exposure. *High Street, Hawick* was last monitored in 2016 with results of 19µg/m³.

As a result of the review the Council proposed to (1) reduce the number of monitoring locations on *High Street, Galashiels* by two and (2) introduce two monitoring locations on *High Street, Hawick*.

Consultation on the proposed changes was carried out with the Scottish Government and SEPA. The Scottish Government reported they are content with the proposed changes and SEPA provided its support to the reintroduction of monitoring on *High Street, Hawick*.

Scottish Borders Council implemented these changes in January 2023 and results will be reported in the 2024 Air Quality Annual Progress Report.

3.1.3 Other Monitoring Activities

No further monitoring activities were undertaken during 2022.

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 and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³.

The 2022 annual mean concentrations of NO₂ at all diffusion tube monitoring locations are shown to be well within the air quality objective, with the highest concentration recorded being 15µg/m³ at location DT14. The full 2022 dataset of monthly mean values is provided in Appendix B.

Results of non-automatic monitoring over the last five years have shown no exceedances of the NO₂ objective. The annual mean concentrations were relatively stable at all locations prior to 2020, when there was an average reduction of 5µg/m³ compared to concentrations recorded in 2019. This reduction was maintained in 2021, with the exception of location DT13 which saw an increase of 2µg/m³ compared to 2020. This is illustrated in Figure A.1. These monitoring locations are within a town centre kerbside location, therefore the reduction in concentrations appears to have been a result of the reduction in vehicle movements due to COVID-19 and the associated restrictions on activity from March 2020 to April 2021. Since then we have seen a continuation of many people working from home or adopting a hybrid working arrangement. In 2022 monitoring locations DT11, DT13 and DT14 saw a further decrease of 1-2µg/m³ compared to 2021.

Due to building renovation work being carried out at monitoring location DT12, no results were obtained during 2020 and 2021. Compared to the last period of monitoring in 2019, there was a reduction of 6µg/m³ at this location in 2022. This is generally consistent with the other monitoring sites.

The annual mean concentration of NO₂ at the automatic monitoring site (CM1) has also been very stable over the past 5 years, ranging from 4-6µg/m³ between 2018 and 2022.

As the automatic monitoring site is classified as urban background, and is distanced from sources, this location was impacted to a lesser extent by COVID-19 and the associated restrictions on activity.

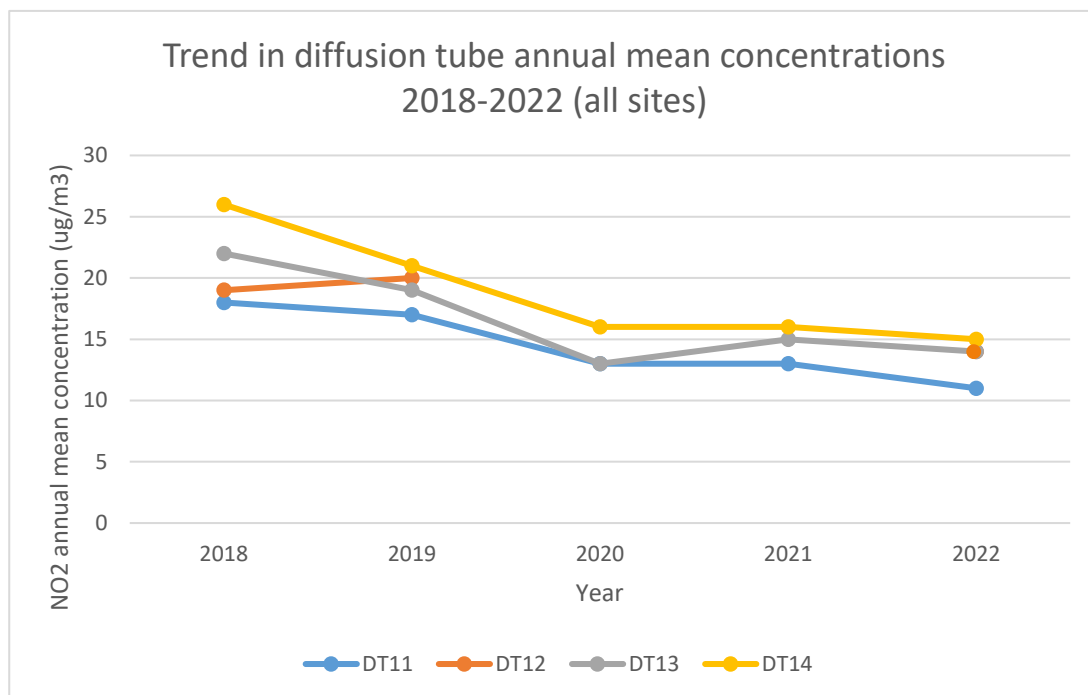


Figure A.1 - Trend in diffusion tube measured annual mean 2018-2022 (all sites)

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. No exceedances were identified in 2022, or indeed within the last five years.

Measurement of NO₂ will continue using the diffusion tube method to monitor the ongoing trends in NO₂ concentrations.

3.2.2 Particulate Matter (PM₁₀)

Scottish Borders Council currently does not monitor PM₁₀ and has no plans to do so in the future.

3.2.3 Particulate Matter (PM_{2.5})

Scottish Borders Council currently does not monitor PM_{2.5} and has no plans to do so in the future.

3.2.4 Sulphur Dioxide (SO₂)

Scottish Borders Council currently does not monitor SO₂ and has no plans to do so in the future.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Scottish Borders Council currently does not monitor Carbon Monoxide, Lead or 1,3-Butadiene and has no plans to do so in the future.

3.2.6 Ozone (O₃)

Automatic (continuous) monitoring for O₃ was undertaken at one site in Peebles during 2022 as part of the Automatic Urban and Rural Network (AURN). The results have been compared with the Air Quality Strategy Objective running 8-hour mean which states the running 8-hour mean should not exceed 100µg/m³ on more than 10 days per year. No exceedances were identified in 2022, or indeed within the last five years.

4 New Local Developments

This section considers new developments in the Scottish Borders that may affect air quality.

4.1 Road Traffic Sources

No new road traffic sources have been identified.

4.2 Other Transport Sources

No new other transport sources have been identified.

4.3 Industrial Sources

Scottish Borders Council consulted SEPA in order to identify any new industrial installations, or any existing installations which have increased substantially. No new, or substantially changed, industrial sources which might impact on local air quality have been identified.

4.4 Commercial and Domestic Sources

During 2022 there were a number of planning applications in respect of new biomass boilers and stoves. These are routinely screened using the approved Screening Tool and no installations have been identified as impacting adversely on local air quality.

4.5 New Developments with Fugitive or Uncontrolled Sources

No new potential sources of fugitive or uncontrolled particulate matter have been identified.

5 Planning Applications

The Council continues to assess the impact of proposed developments. No major planning applications have been identified which may impact on local air quality.

It is noted, in August 2022, Network Rail submitted to the Council a Request for Screening Opinion for the proposed electrification of the Borders Railway. The Borders Railway connects Tweedbank to Edinburgh and passes through Galashiels. A move to greener electric trains is likely to have a positive impact on air quality.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

The monitoring undertaken by Scottish Borders Council has not identified any potential or actual exceedances of the Air Quality Objectives at any relevant locations. Analysis of NO₂ concentrations between 2018 and 2022 show NO₂ concentrations follow a relatively stable trend. A reduction in concentrations was seen during 2020 which was generally maintained in 2021 and 2022. This is believed to be as a result of the COVID-19 pandemic and associated restrictions on activity, and the continuation of many people working from home or adopting a hybrid working arrangement.

6.2 Conclusions relating to New Local Developments

A review has identified no new developments which might impact on local air quality.

6.3 Proposed Actions

Scottish Borders Council will continue to carefully consider future planning applications which may have the potential to impact on air quality.

The 2022 Annual Progress Report provided details of a review of the current monitoring locations. The proposed changes, detailed in Section 3.1.2, were implemented in January 2023.

The results of air quality monitoring, including the new monitoring locations, and other air quality work will be included in the 2024 Annual Progress Report.

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)
CM1	Peebles	Urban background	324812	641083	O3; NO2	NO	UV Absorption; Chemiluminescent	5	N/A	2.8

Notes:

(1) 0m 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?	Tube Height (m)
DT11	Rogerson's, High Street, Galashiels	Kerbside	349063	636287	NO ₂	NO	1	1.5	NO	2.4
DT12	Border Angling, High Street, Galashiels	Kerbside	348976	636371	NO ₂	NO	1	1.5	NO	2.4
DT13	Edingtons, High Street, Galashiels	Kerbside	348982	636384	NO ₂	NO	1	1.5	NO	2.4
DT14	Iceland, High Street, Galashiels	Kerbside	349063	636272	NO ₂	NO	1	1.5	NO	2.4

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.3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	Urban background	Automatic	-	99	6	6	4	5	5
DT11	Kerbside	Diffusion Tube	-	100	18	17	13	13	11
DT12	Kerbside	Diffusion Tube	-	100	19	20	-	-	14
DT13	Kerbside	Diffusion Tube	-	100	22	19	13	15	14
DT14	Kerbside	Diffusion Tube	-	100	26	21	16	16	15

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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.

(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%).

Table A.4 – 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 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	Urban Background	Automatic	-	99	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.

(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%).

Table A.5 – 8-Hour Mean O₃ Monitoring Results, Number of 8-Hour Means > 100µg/m³

Site ID	Site Name	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	Number of 8-hour Means > 100 µg/m ³				
				2018	2019	2020	2021	2022
CM1	Peebles	Urban Background	99	0	0	0	0	0

Notes:

Exceedances of the O₃ objective are shown in red and bold.

(1) 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).

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO₂ 2022 Monthly Diffusion Tube Results (µg/m³)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted ⁽¹⁾
DT11	12.7	11.2	16.9	14.6	9.5	6.6	10.5	12.5	13.9	13.2	19.2	23.1	13.66	11.1
DT12	16.7	14.4	27.5	15.3	11.7	11.2	14.2	16.0	18.2	17.7	23.0	26.3	17.68	14.3
DT13	17.9	13.4	21.3	22.3	14.4	9.0	13.3	16.1	20.5	16.9	19.3	23.8	17.35	14.1
DT14	21.3	15.2	21.7	18.1	14.8	12.0	15.3	16.8	15.1	19.0	25.0	23.0	18.10	14.7

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 Scottish Borders Council During 2022

Scottish Borders Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Scottish Borders Council During 2022

Scottish Borders Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

All diffusion tubes used by the Council are mounted and handled in accordance with the guidance contained in LAQM (TG16). Sites have been selected in consultation with the Scottish Government and SEPA to be representative of human exposure.

The laboratory used for the analysis of the Council's diffusion tubes was Edinburgh Scientific Services. The laboratory is United Kingdom Accreditation Service (UKAS) accredited and is listed as 'satisfactory' in the AIR NO₂ Proficiency Testing Scheme. The analytical method of 50% TEA in Acetone is used.

Monitoring has been completed in adherence with the 2022 Diffusion Tube Monitoring Calendar. In accordance with Chapter 7 of the LAQM Technical Guidance (TG16) the results have been reviewed for erroneous data.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within the Scottish Borders recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

Scottish Borders Council have applied a national bias adjustment factor of 0.81 to the 2022 monitoring data. One study is applicable to this factor. Supporting evidence is provided in Figure C.1 in the form of a screen capture from the National Diffusion Tube Bias Adjustment Spreadsheet (Version 3/23). A summary of bias adjustment factors used by Scottish Borders Council over the past five years is presented in Table C.1.

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/23				
Follow the steps below in the correct order to show the results of relevant co-location studies						This spreadsheet will be updated at the end of June 2023 LAQM Helpdesk Website				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods						Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.						The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.				
Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ² shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ²	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953							
Analysed By ¹	Method <small>To do your selection, choose 50% from the pop-up list</small>	Year <small>To do your selection, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services	50% TEA in acetone	2022	KS	Marylebone Road Intercomparison	12	52	42	22.9%	G	0.81
Edinburgh Scientific Services	50% TEA in acetone	2022	Overall Factor² (1 study)						Use	0.81

Figure C.1 – Screen capture of National Diffusion Tube Bias Adjustment Spreadsheet

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.81
2021	National	03/22	0.87
2020	National	03/21	0.88
2019	National	03/20	0.87
2018	National	03/19	0.96

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within the Scottish Borders required distance correction during 2022.

QA/QC of Automatic Monitoring

The QA/QC work on the Peebles site is carried out under the auspices of the Automatic Urban and Rural Network (AURN) system. Routine calibrations are undertaken every four weeks by Council Staff as Local Site Operatives.

Data validation and ratification is undertaken by Bureau Veritas, Contractors appointed by DEFRA/Scottish Government.

Site audits are undertaken at regular intervals by AEA Technology and no significant issues were identified in 2022.

Live and historic monitoring data is available on the Air Quality in Scotland website (<http://www.scottishairquality.scot/>).

Automatic Monitoring Annualisation

All automatic monitoring locations within the Scottish Borders recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within the Scottish Borders required distance correction during 2022.

Appendix D: Location of monitoring sites

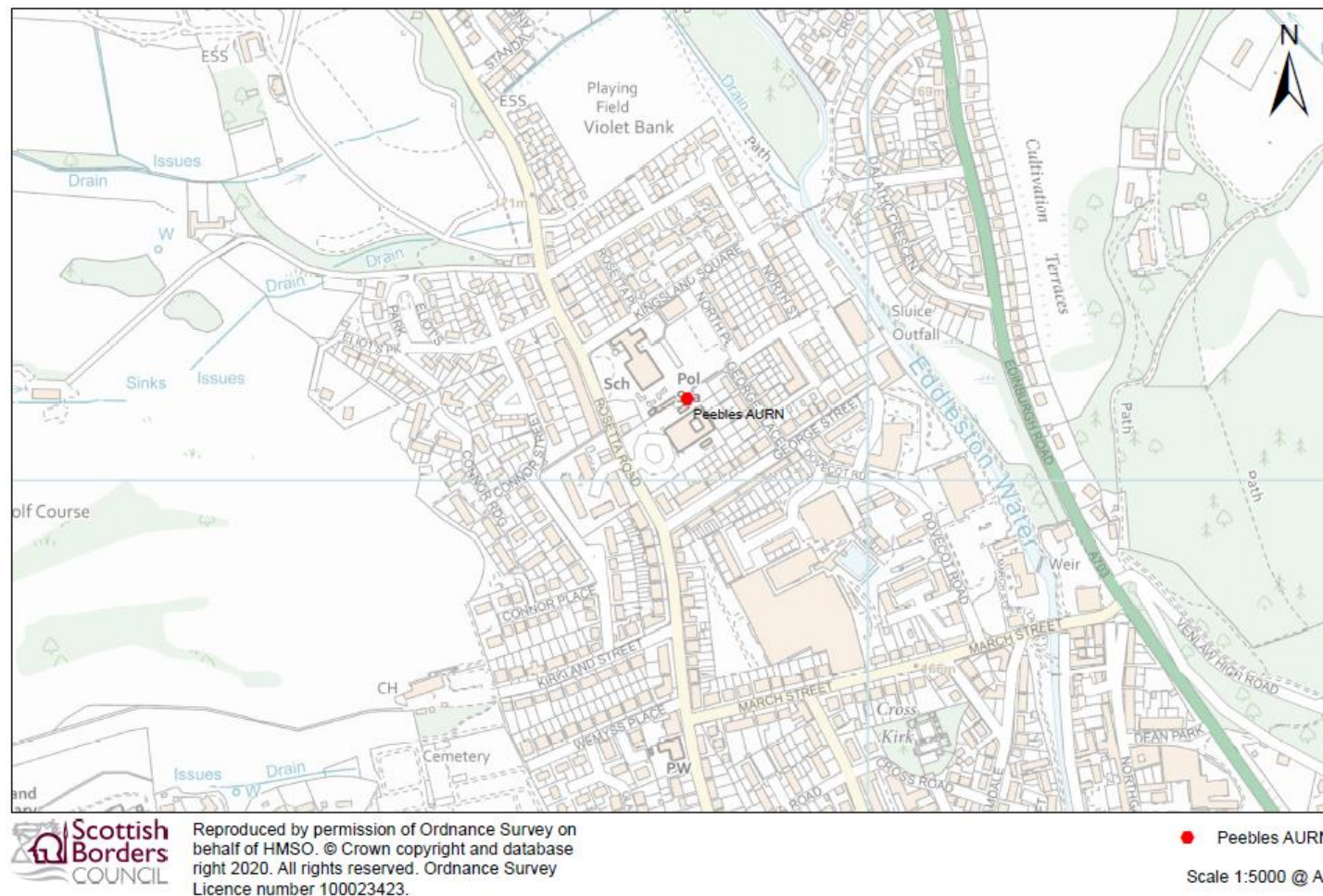
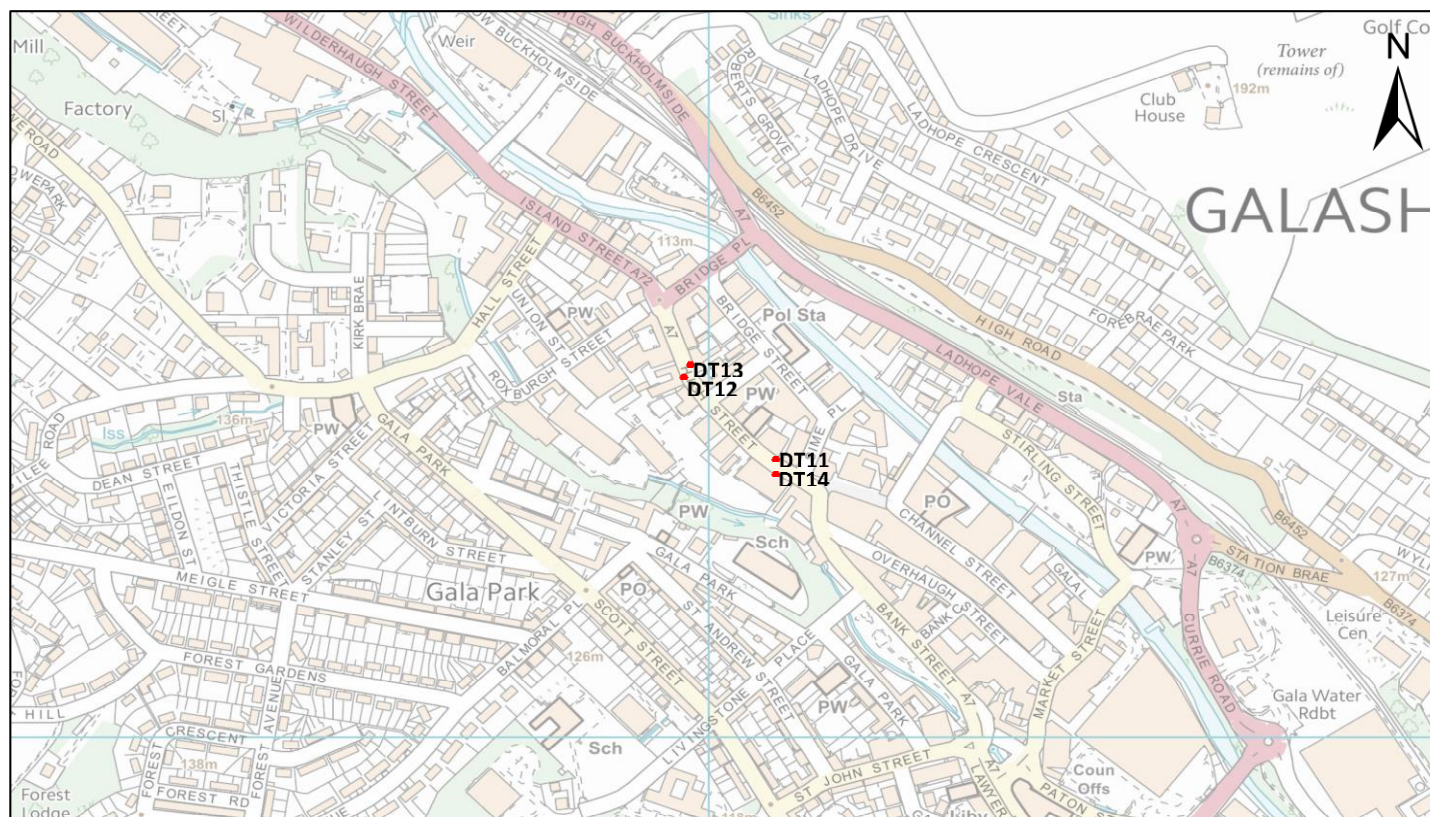


Figure D.1 – Map showing location of automatic monitoring site (AURN)



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• NO2 Diffusion Tube Monitoring Location

Scale 1:5000 @ A4

Figure D.2 – Map showing location of diffusion tube monitoring sites

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
CCRM	Climate Change Route Map for the Scottish Borders
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

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