

Annual Progress Report (APR)



2021 Air Quality Annual Progress Report (APR) for
Scottish Borders Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2021

Information	Scottish Borders Council Details
Local Authority Officer	Craig Liddle
Department	Protective Services
Address	Council Headquarters, Newtown St Boswells, Melrose, TD6 0SA
Telephone	0300 100 1800
E-mail	PLACEhealth@scotborders.gov.uk
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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.

This report sets out the results of air quality monitoring carried out by Scottish Borders Council since the last Annual Progress Report 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 has shown concentrations of NO₂ to be relatively stable over recent years, however 2020 saw a noticeable decrease. This is expected to be associated with the COVID-19 pandemic and associated restrictions on activities.

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. However, Scottish Borders Council has recently (June 2021) approved a Climate Change Route Map (CCRM). 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. As air pollution often originates from the same activities that contribute to climate change, it is recognised that this strategy may result in a positive impact on air quality.

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.

Further information can 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 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) 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	31.12.2020
Sulphur dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m ³	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m ³	Running 8-Hour mean	31.12.2003

2 Actions to Improve Air Quality

Air Quality Management Areas

Air Quality Management Areas (AQMAS) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

Scottish Borders Council currently does not have any AQMAS.

Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available on the [Scottish Government](#) website. Progress by Scottish Borders Council against relevant actions within this strategy is demonstrated below.

2.1.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan which is consistent with any local air quality action plan. 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.

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

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. Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable

Energy Action Plan to ensure that air quality considerations are covered. In September 2020, Scottish Borders Council agreed a series of recommendations contained within the report 'Responding to the Climate Emergency' which has led to the Climate Change Route Map (CCRM) for the Scottish Borders being recently agreed by the Council (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 wants to lead people along the CCRM by controlling its own estate and through enabling and motivating change by others. 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. We will seek to ensure air quality considerations are part of decision making.

2.1.3 Local Development Plan

The Scottish Borders Council Local Development Plan recognises the area's good air quality and our aim to maintain this standard. Policies apply not only to commercial and industrial development but also to other land uses that, through the generation of traffic, for example, could impact on air quality.

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.

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.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

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 2020 no changes took place to the air quality monitoring carried out by Scottish Borders Council. Automatic monitoring for NO₂ and O₃ was carried out as part of the Automatic Urban and Rural Network (AURN). Non-automatic monitoring was also carried out for NO₂.

Monitoring location DT12 (non-automatic monitoring site) was not available during 2020 therefore no results can be reported. Monitoring has recommenced at this site and results for 2021 will be reported in the 2022 Annual Progress Report.

3.1.1 Automatic Monitoring Sites

In the Scottish Borders automatic (continuous) monitoring was undertaken at one site in Peebles during 2020. 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 <http://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 three sites on High Street, Galashiels during 2020. Table A.2 in Appendix A shows the details of the sites. Unfortunately monitoring location DT12 was not available during 2020 due to building renovations, therefore no results are reported for this location. Monitoring recommenced during 2021 and these results will be reported in the 2022 Annual Progress Report.

A map showing the location of the monitoring sites is 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.

Individual Pollutants

The air quality monitoring results presented in this section are adjusted for bias. Due to the data capture achieved, annualisation of the data was not required. Further details on adjustments are provided in Appendix C.

3.1.3 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 40µg/m³.

The 2020 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 16µg/m³ at location DT14.

Monitoring results for the last five years have shown no exceedences of the NO₂ objective in the current diffusion tube monitoring locations. The annual mean concentrations have been relatively stable at all locations with the exception of results in 2020. Between 2016 and 2019 concentrations reduced by an average of 2.5µg/m³, while 2020 saw an average reduction of 5µg/m³ compared to concentrations recorded in 2019. This is illustrated in Figure A.1. These monitoring locations are within a town centre kerbside location, therefore it is assumed this is a result of the reduction in vehicle movements due to COVID-19 and the associated restrictions on activity from March 2020. The full 2020 diffusion tube dataset of monthly mean values is provided in Appendix B.

The annual mean concentration of NO₂ at the automatic monitoring site (CM1) has also been very stable over the past 5 years, ranging from 5-6µg/m³ between 2016 and 2019, and 4µg/m³ in 2020. As the automatic monitoring site is classified as urban background, and is distanced from sources, it is expected that this location will be impacted to a lesser extent by COVID-19 and the associated restrictions on activity.

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 2020, or indeed within the last five years.

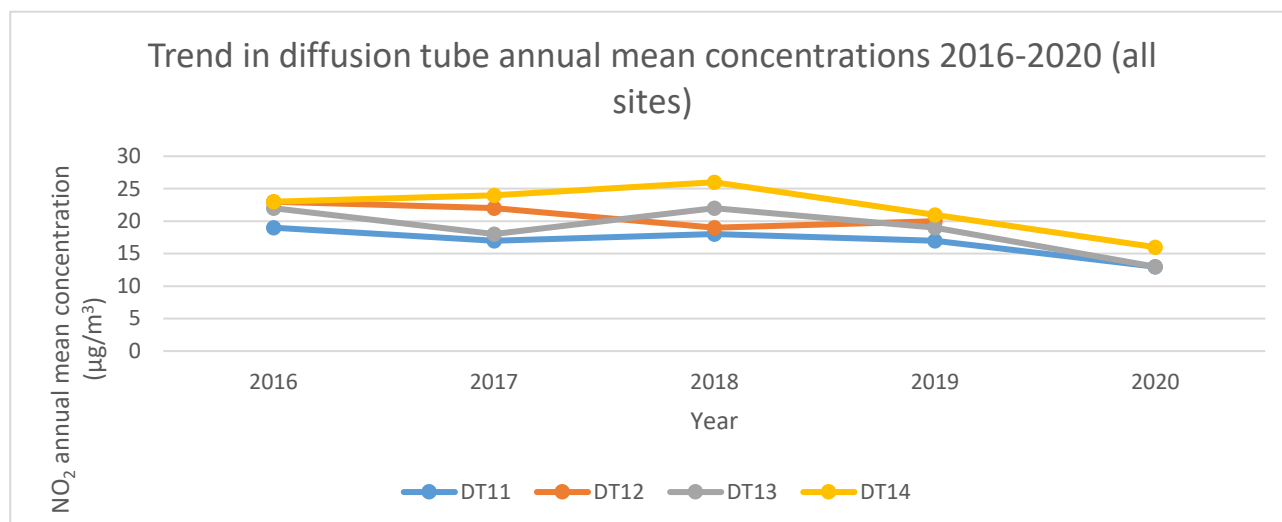


Figure A.1 - Trend in diffusion tube measured annual mean 2016-2020 (all sites)

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

3.1.4 Particulate Matter (PM₁₀)

Previous rounds of Review and Assessment have indicated that no site in the Scottish Borders is at risk of exceeding the air quality objectives for PM₁₀. Scottish Borders Council do not monitor PM₁₀ and there are no plans to undertake monitoring for this pollutant.

3.1.5 Particulate Matter (PM_{2.5})

Previous rounds of Review and Assessment have indicated that no site in the Scottish Borders is at risk of exceeding the air quality objectives for PM_{2.5}. Scottish Borders Council do not monitor PM_{2.5} and there are no plans to undertake monitoring for this pollutant.

3.1.6 Sulphur Dioxide (SO₂)

Previous rounds of Review and Assessment have indicated that no site in the Scottish Borders is at risk of exceeding the air quality objectives for SO₂. Scottish Borders Council do not monitor SO₂, and there are no plans to undertake monitoring for this pollutant.

3.1.7 Carbon Monoxide, Lead and 1,3-Butadiene

Previous rounds of Review and Assessment have indicated that no site in the Scottish Borders is at risk of exceeding the air quality objectives for Carbon Monoxide, Lead and 1,3-Butadiene. No monitoring has been undertaken for these pollutants, and no changes have occurred in their status since submission of the Annual Progress Report 2020.

4 New Local Developments

No new developments in the area that may affect air quality have been identified.

Road Traffic Sources

From October 2020, temporary 20mph trial areas were introduced in over 90 towns and villages in the Scottish Borders. The main aims of the trial are to reduce the risk and severity of injuries as a result of collisions between vehicles and vulnerable road users, encourage more active travel, reduce CO₂ emissions, make the Scottish Borders a more attractive place to visit, and to alter the culture within the Scottish Borders to having 20mph as the default when entering built up areas. Improvement in air quality is not a primary aim of the project but it is recognised that it may have an impact, however there is some uncertainty regarding direct improvements as the relationship between speed and air quality is complex and influenced by a mix of factors.

Both the Scottish Government's 'Local air quality management for Scotland: policy guidance' and Defra's 'Local Air Quality Management Policy Guidance (PG16)' make reference to the reduction of speed limits to 20mph or lower. The Scottish Government reports that these very low speeds are unlikely to reduce emissions significantly and may increase emissions of some pollutants, however it recognises the reduction from 30mph to 20mph has proved to be very effective in reducing road traffic collisions. Defra has expanded on this and comments on the possible effectiveness in reducing exhaust emissions, encouraging positive changes in driver behaviour (e.g. fewer acceleration/deceleration events), as well as reducing particulate matter due to tyre and brake wear and road dirt (including through reducing re-suspension of particulate matter in the air). It also recognises the co-benefits in reducing crashes, noise reduction, promoting cycling and walking and increasing community cohesion.

Studies have been carried out into the effects that 20mph limits have on air pollution. A 2013 study carried out by Imperial College London for City of London¹ considered the estimated impacts on vehicle emissions of a 20mph speed restriction in central London. The effects of a 20mph speed restriction were shown to be mixed, with particular benefit seen for emissions of particulate matter and for diesel vehicles. The methodology was

¹ An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London. Imperial College London. 2013. <https://www.edinburgh.gov.uk/downloads/file/25178/city-of-london-emissions-report>

validated by consideration of real-world tailpipe emissions test data. The study concluded that air quality is unlikely to be made worse as a result of 20mph speed limits being introduced.

We have reviewed available evidence and determined that it is not necessary to quantify the effect this change will have on concentrations within the area. The evidence indicates support for the 20mph trial. We currently monitor NO₂ concentrations at locations identified as worst case exposure, and these concentrations are comfortably within the air quality objective.

The success of the trial is being assessed by Edinburgh Napier University. A report will be taken to full Council later this year and a final decision will be made on which streets should be retained at 20mph or revert back to 30mph.

No new road traffic sources have been identified.

Other Transport Sources

No new other transport sources have been identified.

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.

Commercial and Domestic Sources

During 2020 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.

New Developments with Fugitive or Uncontrolled Sources

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

4 Planning Applications

The Annual Progress Report 2020 provided details of an application (reference: 19/00210/PPP) requesting Planning Permission in Principle for the redevelopment of land at Auction Mart, Newtown St Boswells, TD6 0PP. The proposal is classed as a 'Major' development as the area of the development site exceeds 2 hectares. The proposal comprises of a significant mixed use development in the centre of the town and forms part of a greater masterplan for the re-development of the town centre. This application has now been approved by the Planning and Building Standards Committee, subject to a Section 75 legal agreement being signed. A condition of the planning approval requires the applicant to consider air quality, including consideration towards cumulative impacts of other developments in the area.

Permission has been requested for a grain distillery on land at Charlesfield Industrial Estate, St Boswells (reference: 21/00851/FUL). The proposal includes a combined heat and power plant with a rated thermal input in excess of 1MW. An air quality assessment accompanies the application which concludes there will be no predicted exceedances of air quality objectives. The application is pending decision.

Permission has been requested for the extraction of sand and gravel by quarrying on land at South Slipperfield Farm, West Linton (reference: 21/00152/FUL). The proposal would allow the extraction of 1.4 million tonnes of sand and gravel over a period of 14 years. An Environmental Impact Assessment has been submitted which considers the impacts on air quality due to the generation of dust. The assessment has been carried out in accordance with relevant guidance and concludes the impact on air quality is not considered significant. The application is pending decision.

Planning applications can be viewed on the [Scottish Borders Council](#) website.

No other major Planning Applications have been identified which may impact on local air quality.

5 Impact of COVID-19 upon LAQM

The COVID-19 pandemic has put significant pressure on the Council's ability to maintain its services, however our air quality monitoring has not been affected and there are no ongoing issues with the monitoring network relating to the COVID-19 response. We were able to carry out the maintenance visits on the automatic and diffusion tube sites as normal over the lockdown period.

It appears that the Scottish Borders has seen a positive impact on air quality as a result of the COVID-19 pandemic and associated restrictions. Further detail on this is provided in Section 3.2.1.

6 Conclusions and Proposed Actions

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 2016 and 2020 show NO₂ concentrations follow a relatively stable trend. A reduction in concentrations was seen during 2020, however this is expected to be as a result of the COVID-19 pandemic and associated restrictions on activity.

Conclusions relating to New Local Developments

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

Proposed Actions

New monitoring has not identified any new exceedances of the objective for any pollutant, or the need for any additional monitoring. The 2020 Annual Progress Report proposed a review of the current monitoring locations due to there being no formal review since 2016. Unfortunately this has been delayed and has not yet taken place. The results of the review, to be carried out in consultation with SEPA and the Scottish Government, will be reported in the 2022 Annual Progress Report.

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

The results of air quality monitoring and other air quality work will be included in the 2022 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)	Distance to kerb of nearest road (m)	Inlet Height (m)
CM1	Peebles	Urban background	324812	641083	O ₃ ; NO ₂	No	UV Absorption; Chemiluminescent	5	N/A	2.8

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)	Distance to kerb of nearest road (m)	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT11	Rogerson's, High St, Galashiels	Kerbside	349063	636287	NO ₂	N	1	1.5	N	2.4
DT12	Border Angling, High St, Galashiels	Kerbside	348976	636371	NO ₂	N	1	1.5	N	2.4
DT13	Edingtons, High St, Galashiels	Kerbside	348982	636384	NO ₂	N	1	1.5	N	2.4
DT14	Iceland, High St, Galashiels	Kerbside	349063	636272	NO ₂	N	1	1.5	N	2.4

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1	Urban Background	Automatic	-	99	6	5	6	6	4
DT11	Kerbside	Diffusion Tube	-	92	19	17	18	17	13
DT12	Kerbside	Diffusion Tube	-	0	23	22	19	20	-
DT13	Kerbside	Diffusion Tube	-	100	22	18	22	19	13
DT14	Kerbside	Diffusion Tube	-	100	23	24	26	21	16

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(16) 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%).

(-) Result not available.

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1	Urban background	Automatic	N/A	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%).

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 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	-	15.1	17.5	11.2	12.6	12.3	8.3	12.8	14.8	16.2	17.5	20.5	14.4	13
DT12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DT13	16.1	17.2	16.3	12.3	11.7	11.4	9.5	15.0	11.2	16.5	19.4	21.9	14.9	13
DT14	25.1	23.1	24.4	13.1	12.7	15.4	13.0	16.4	19.9	19.5	20.7	19.9	18.6	16

Notes:

(1) See Appendix C for details on bias adjustment

(-) Result not available

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

New or Changed Sources Identified Within the Scottish Borders During 2020

Scottish Borders Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Scottish Borders Council During 2020

Scottish Borders Council has not completed any additional works within the reporting year of 2020.

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.

It was reported in the 2020 Annual Progress Report that monitoring had not been carried out in accordance with the Diffusion Tube Monitoring Calendar, however this was rectified and monitoring in 2020 was carried out in accordance with the 2020 calendar.

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.

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/21					
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 2021 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 chosen, we have no data for this laboratory.		If a preparation method is not chosen, we have no data for this method at this laboratory.	If a year is not chosen, we have no data.	If you have your own co-location study then see footnote ¹ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953							
Analysed By ¹		Method Trends your selection, choose [All] from the pop-up list	Year Trends your selection, choose [All]	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 ⁴	Bias Adjustment Factor (A) (Cm/Dm)
Edinburgh Scientific Services		50% TEA in acetone	2020	KS	Marjlebone Road Intercomparison	10	51	43	17.4%	G	0.85
Edinburgh Scientific Services		50% TEA in acetone	2020	R	Stirling Council	11	16	15	11.6%	G	0.90
Edinburgh Scientific Services		50% TEA in acetone	2020		Overall Factor ² (2 studies)				Use		0.88

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

Diffusion Tube Bias Adjustment Factors

Scottish Borders Council have applied a national bias adjustment factor of 0.88 to the 2020 monitoring data. Two studies are 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 3/21). A summary of bias adjustment factors used by the Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.88
2019	National	03/20	0.87
2018	National	03/19	0.96
2017	National	03/18	0.89
2016	National	03/17	0.87

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within the Scottish Borders required distance correction during 2020.

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 2020.

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

Automatic Monitoring Annualisation

The automatic monitoring location 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 2020.

Appendix D: Location of monitoring sites

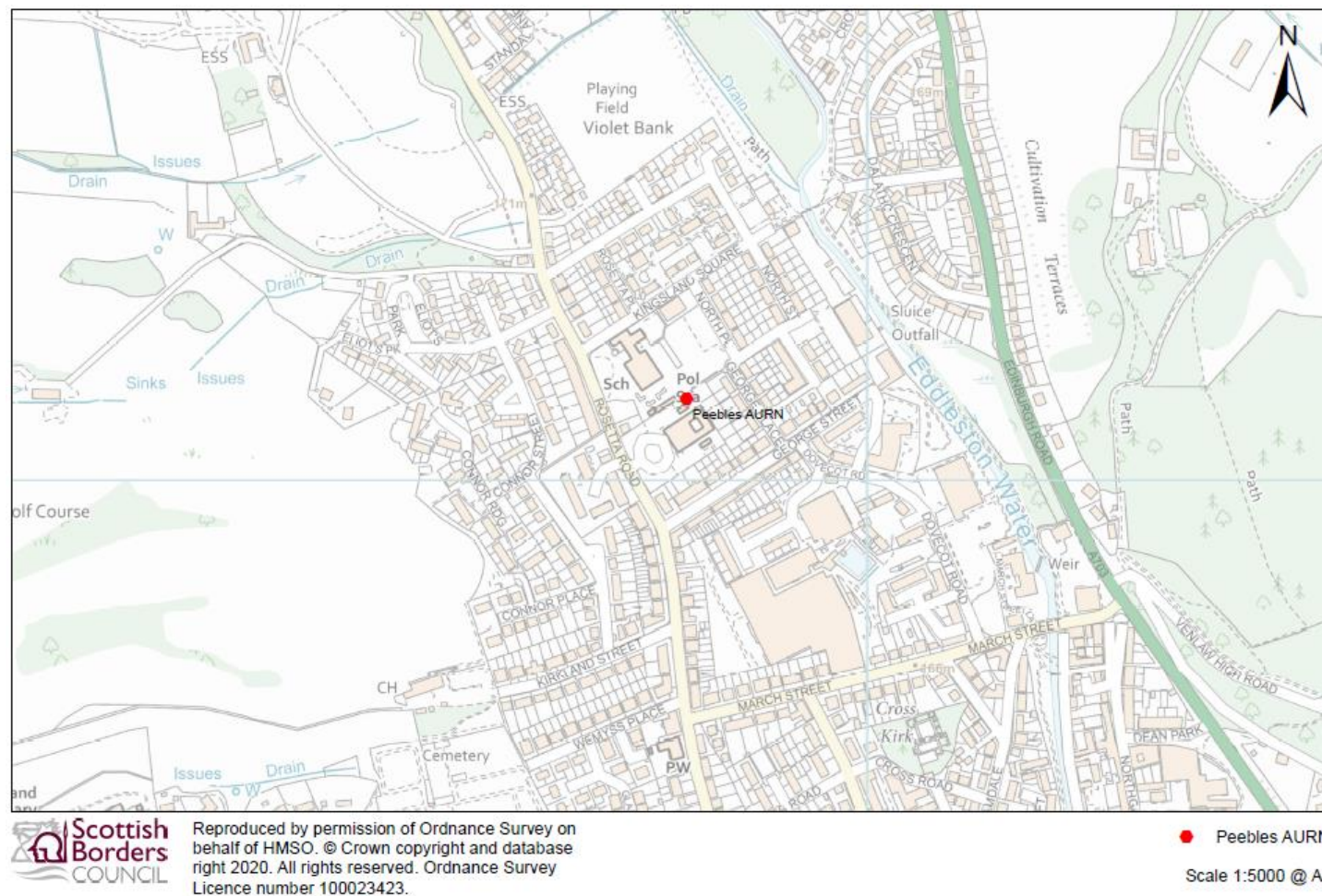


Figure D.1 – Map showing location of automatic monitoring site (AURN)

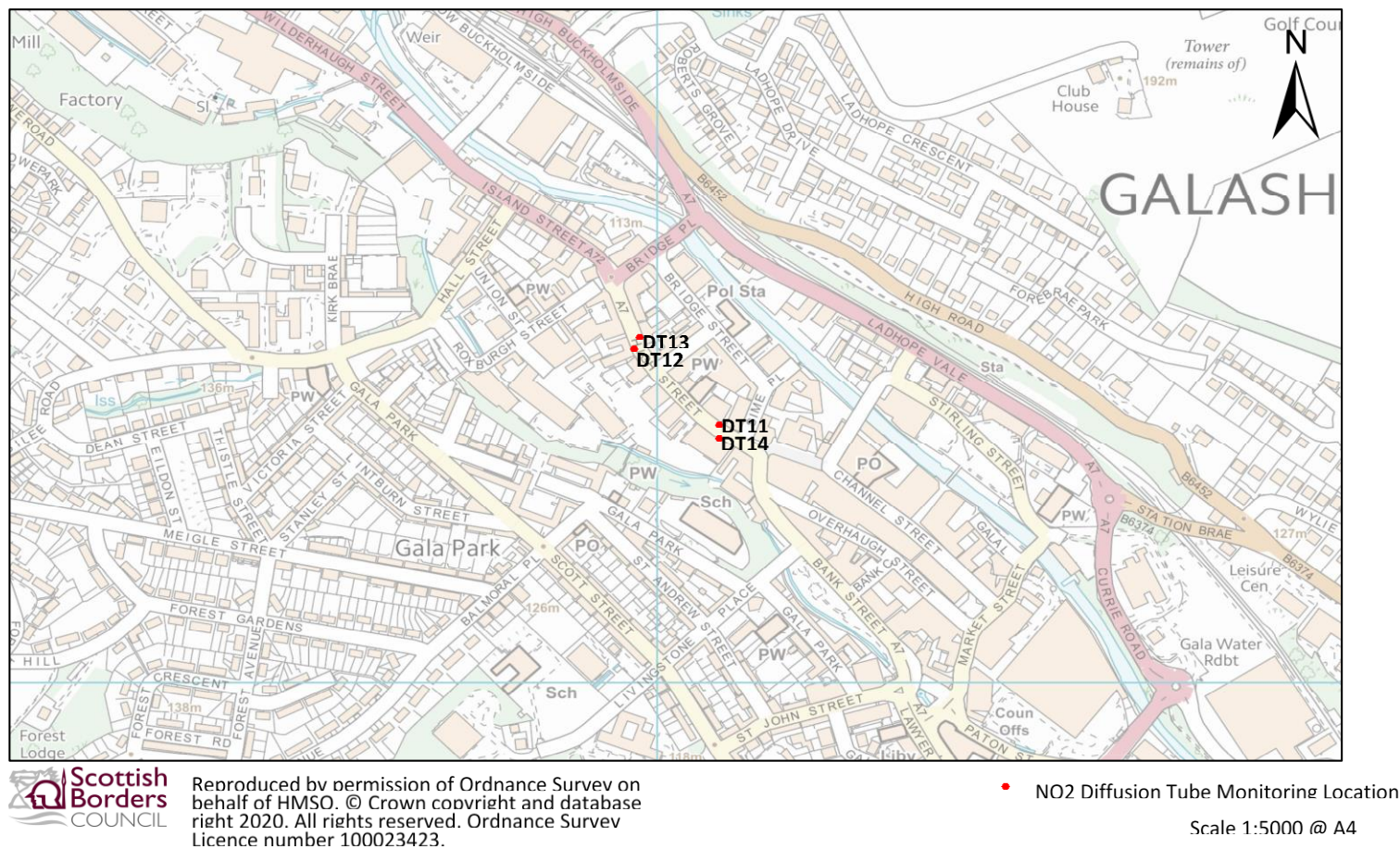


Figure D.2 – Map showing location of diffusion tube monitoring sites

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

References

Defra (2021). *Local Air Quality Management Technical Guidance (TG16)*

Defra (2016). *Local Air Quality Management Policy Guidance (PG16)*

Imperial College London (2013). *An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London*. Retrieved from:

<https://www.edinburgh.gov.uk/downloads/file/25178/city-of-london-emissions-report>

Scottish Borders Council (2008). *Local Access and Transport Strategy 2015*. Retrieved from:

https://www.scotborders.gov.uk/downloads/file/90/local_access_and_transport_strategy_mir

Scottish Borders Council (2016). *Scottish Borders Local Development Plan 2016*, Retrieved from:

https://www.scotborders.gov.uk/info/20051/plans_and_guidance/121/local_development_plan

Scottish Borders Council (2021). *Climate Change Route Map*. Retrieved from:

<https://scottishborders.moderngov.co.uk/documents/s56082/Item%20No.%2012%20-%20Appendix%201%20-%20SB%20CLIMATE%20CHANGE%20ROUTE%20MAP%20FINAL.pdf>

Scottish Government (2015). *Cleaner air for Scotland: the road to a healthier future*.

Retrieved: <https://www.gov.scot/publications/cleaner-air-scotland-road-healthier-future/>

Scottish Government (2016). *Local air quality management for Scotland: policy guidance*.

Retrieved from: <https://www.gov.scot/publications/local-air-quality-management-policy-guidance-scotland/>