Clackmannanshire Council

Annual Progress Report 2023

Bureau Veritas

June 2023

Move Forward with Confidence

Document Control Sheet

Identification	
Client	Clackmannanshire Council
Document Title	Clackmannanshire Council – 2023 Annual Progress Report
Bureau Veritas Ref No.	AIR13297450

Contact Details		
Company Name	Bureau Veritas UK Limited	Clackmannanshire Council
Contact Name	Callum Danby	Suzanne McIntyre
Position	Graduate Air Quality Consultant	Senior Environmental Health Officer
Address	Bureau Veritas Atlantic House, Atlas Business Park Manchester M22 5PR	Clackmannanshire Council Kilncraigs Greenside Street, Alloa FK10 1EB
Telephone	07929 665406	01259 452580
e-mail	callum.danby@bureauveritas.com	SMcIntyre2@clacks.gov.uk
Websites	www.bureauveritas.co.uk	www.clacks.gov.uk

Configuration				
Version	**Date**	**Author**	**Reason for Issue/Summary of Changes**	**Status**
V1	20/06/2023	C Danby	Draft for comment	Draft
V2	26/06/2023	C Danby	Second Issue: Minor Amendments	Final

	Name	Job Title	Signature
Prepared By	C Danby	Graduate Air Quality Consultant	
Approved By	H Pearson	Senior Air Quality Consultant	

Bureau Veritas UK Limited
5th Floor, 66 Prescott Street,
London
E1 8HG

Telephone: +44 (0) 161 446 4600
Registered in England 1758622
www.bureauveritas.co.uk

Registered Office
Suite 206 Fort Dunlop
Fort Parkway
Birmingham B24 9FD

Annual Progress Report (APR)

Clackmannanshire Council

2023 Air Quality Annual Progress Report (APR) for Clackmannanshire Council

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

Local Air Quality Management

June 2023

Information	Clackmannanshire Council Details
Local Authority Officer	Suzanne McIntyre
Department	Development Services
Address	Clackmannanshire Council Kilncraigs Greenside Street Alloa FK10 1EB
Telephone	01259 450000
E-mail	SMcIntyre2@clacks.gov.uk
Report Reference Number	Clackmannanshire_2023_APR
Date	June 2023

Executive Summary: Air Quality in Our Area

This report provides an overview of air quality within Clackmannanshire during 2022. This is done by reviewing pollutant monitoring data and comparing the results to the national air quality objectives in accordance with the guidance in LAQM TG(22).

Air Quality in Clackmannanshire

Clackmannanshire is dominated by large amounts of rural land, giving rise to a generally good level of air quality. During 2022, both the automatic and passive monitoring networks recorded concentrations below the air quality objectives. This is a continuing trend observed within Clackmannanshire over many years. As such, Clackmannanshire has no declared Air Quality Management Areas, and there is no intention to declare one in the coming years.

Clackmannanshire Council continued to monitor concentrations of NO_2, PM_{10} and $PM_{2.5}$ to determine if any air quality objectives were exceeded during 2022. This was done passively via a network of six diffusion tube sites and automatically via a continuous analyser. Clackmannanshire Council also utilised an 'AQ Mesh'; however as this data cannot be relied upon for compliance reporting against the air quality objectives, data is instead only reported for the automatic monitor on King Street (CM1).

Across the diffusion tube network, all sites reported NO_2 annual mean concentrations below the air quality objective of 40 µg/m^3. In 2022, the maximum NO_2 annual mean concentration was 16.1 µg/m^3, which was at the same site where the maximum NO_2 concentration was recorded in 2021. However, the NO_2 annual mean was lower at every diffusion tube site in 2022 than that recorded in 2021, demonstrating continuing improvements in air quality in Clackmannanshire. At the automatic monitoring station (CM1), the NO_2 annual mean concentration in 2022 was 14.8 µg/m^3, which is a reduction from the previous year (17.7 µg/m^3). During 2022, there was no exceedance of the NO_2 hourly objective (200 µg/m^3 not to be exceeded 18 times), as the maximum NO_2 hourly concentration recorded at site CM1 was 81.1 µg/m^3. As no single passive diffusion tube recorded an annual mean NO_2 concentration greater than 60 µg/m^3, it is also unlikely that the hourly objective was exceeded at these locations during 2022.

The Fidas analyser located at the CM1 monitoring station recorded an annual mean concentration of 11.2 µg/m^3 and 6.4 µg/m^3 for PM_{10} and $PM_{2.5}$, respectively. During 2022, the annual mean objective was therefore not exceeded for both PM_{10} and $PM_{2.5}$. The daily mean objective for PM_{10} was exceeded on two occasions, with 24-hour mean concentrations of 55.8 µg/m^3 (22nd March 2022) and 65.1 µg/m^3 (23rd March 2022) being recorded. However, these two exceedances are below the seven times per year that is permitted by the air quality objective, meaning that the PM_{10} daily mean objective was not exceeded in 2022.

Actions to Improve Air Quality

As Clackmannanshire Council have not declared an Air Quality Management Area, there is no specific Air Quality Action Plan within Clackmannanshire. However, Clackmannanshire Council continue to:

- Monitor concentrations of NO_2 via a passive diffusion tube network and automatically via a continuous analyser on King Street, Alloa. Concentrations of PM_{10} and $PM_{2.5}$ are also recorded by this automatic monitoring station. Clackmannanshire Council also continue to deploy an ‘AQ Mesh’, which measures the concentrations of NO_2, PM_{10} and $PM_{2.5}$; during 2022, this was situated on Hallpark Road (A908).
- Promote sustainable travel alternatives (i.e., walking, cycling and car sharing) through the ‘Local Active Travel Strategy’[1], the promotion of cycle routes, and the introduction of travel plans and cycle/walk to work initiatives. Clackmannanshire Council also promote the investment in technology to facilitate video conferencing, which reduces the need to travel.
- Decrease emissions from vehicles by reducing the number of vehicles in Clackmannanshire Council’s fleet and replacing older inefficient vehicles with low emission alternatives (subject to funding availability).
- Facilitate the uptake of low emission transport through the installation of Electric Vehicle (EV) charging points. At present, there are 30 EV charging points installed in Clackmannanshire, with a further seven in progress and nearing completion. This continued expansion of the EV charging network has resulted in two EV accessibility charging points in each main town (except one).
- Review and develop policies which impact on air quality. During 2022, a Climate Change and Sustainability Officer was appointed by Clackmannanshire Council,

which saw over 30 meetings held to discuss environmental topics such as air quality.

Clackmannanshire Council continue to participate in initiatives which have a positive impact on air quality, such as the UK wide 'School Streets' scheme. The School Streets within Clackmannanshire were originally developed to meet one of the main priorities identified in the Community Plan (Theme 3: Parking, Roads and Transport)[2]. However, this initiative has had an inadvertent positive impact on air quality. The temporary road closure that is in place from 8:30 – 9:10am and 2:50 – 3:20pm on Lochies Road, Castle Terrace, Garden Terrace, and Bruce Street, reduces the exposure to vehicle emissions during what would otherwise be a busy period of vehicle activity. Engagement in the School Streets initiative demonstrates the commitment of Clackmannanshire Council to take action to improve air quality.

Local Priorities and Challenges

A key priority for Clackmannanshire Council is to continue the review and assessment of the primary pollutants of concern (NO_2, PM_{10} and $PM_{2.5}$), by maintaining the current monitoring network (passive and automatic). Clackmannanshire Council have the ability to widen the area of coverage from year to year by utilising the portable 'AQ Mesh'; however, during 2023 this is to remain in the same place as 2022 (Hallpark Road – A908).

Another key priority for Clackmannanshire Council is to continue with plans for the promotion of low emission transport and sustainable travel alternatives, which are identified in the 'Local Transport Strategy'[1]. Consideration is also to be given to the newly developed strategy 'Clean Air for Scotland 2'[3] that replaces the old strategy that was established in 2015.

During 2023, Clackmannanshire Council are to continue discussions with the newly appointed Climate Change and Sustainability Officer to raise any concerns relating to air quality. Since appointment in 2022, there has been over 30 meetings to discuss key environmental topics, during which air quality was discussed in some of the meetings.

How to Get Involved

Improving air quality in Clackmannanshire requires a collective effort beyond the Council, including the involvement of local businesses, members of the public, logistics companies

and transport operators. For example, choosing to walk or cycle instead of using the car, car sharing where possible and opting to buy a hybrid or lower emission vehicle will all play a part in reducing the pollution level within Clackmannanshire.

It is also important that individuals make informed decisions about the installation and use of biomass boiler systems and domestic wood or multi-fire stoves as they have the potential to contribute to increased concentrations of gases and particulate matter in the air. Further information on such appliances is available on the Clackmannanshire Council website at: https://www.clacks.gov.uk/environment/woodburningstoves/.

There are multiple ways through which members of the public can actively engage with the topic of air quality within Clackmannanshire. For example, the public can engage with Clackmannanshire Council's efforts by logging onto the www.Clacksweb.org.uk website and searching for air quality. Live up-to date monitoring results for the Clackmannanshire area can be viewed by visiting https://www.scottishairquality.scot/; on this website, there is an option to register to receive air quality alerts using the 'Know and Response' system.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Clackmannanshire 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 that is being undertaken by Clackmannanshire 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, 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.

Clackmannanshire Council currently does not have any AQMAs. Based on the monitoring data, there are also no recommendations in this year's report to declare a new AQMA.

2.2 Cleaner Air for Scotland 2

Cleaner Air for Scotland 2 – Towards a Better Place for Everyone (CAFS2)[3] 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 Clackmannanshire 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.

National Planning Framework 4 (NPF4)[4], the national spatial strategy for Scotland, makes reference to air quality in various policies, notably Policy 23 ('Health and Safety') and Annex D ('Six Qualities of Successful Places'). Clackmannanshire Council's next 'Local Development Plan' (LDP) will be developed to incorporate these policies to ensure that the NPF4 outcome B ('Improving the Health and Wellbeing of People Living in Scotland') is achieved.

The land use planning system is an important tool to improve air quality in the longer term and ensure existing air quality does not deteriorate in the short term due to development protocols. Clackmannanshire Council's Local Development Plan (adopted August 2015)[5] seeks to help Clackmannanshire transition to a vibrant low carbon economy whilst delivering a high quality of life. One of its strategic objectives is to deliver environmental sustainability, including by managing and reducing pollution to contribute to the improvement of air quality. LDP Policy EA11 ('Environmental Quality') requires developers to demonstrate how any potential environmental impacts, in particular air pollution, can be avoided or satisfactorily mitigated. The LDP position informs the Planning Service's negotiations with developers about applications for planning permission, including those for larger residential and commercial developments where the potential impact on air quality is likely to be more significant. This process includes consultation with the Environmental Health Service and the Scottish Environmental Protection Agency (SEPA) to help identify and address pollution issues. This ranges from site selection to help reduce the need to travel, ensuring the provision of infrastructure to encourage and support sustainable modes of transport, to requiring air quality impact assessments to be submitted (where appropriate).

Clackmannanshire Council have started the review of the Local Development Plan that was originally adopted on 19th August 2015 (https://www.clacks.gov.uk/document/6862.pdf). As part of the review, Clackmannanshire Council are required to consider NPF4, which is the Scottish Government's strategy for Scotland's long term spatial development and includes national planning policies, as well as any Regional Spatial Strategy (RSS) for the area and any Local Plan Plans (LPP) which may have been prepared. The new LDP is due to be adopted early 2027, with consultation of the relevant authorities starting and continuing throughout 2023.

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 Low Emission Zones (LEZ) structure.

Clackmannanshire Council have no LEZ established within the Local Authority area, and there are no current plans for a LEZ to be declared within Clackmannanshire. However, if the measured concentrations start to demonstrate an increasing trend, or if there is an unacceptable rise in the number of exceedances of the permitted levels, then the possibility of a LEZ will be explored further by Clackmannanshire Council.

2.3 Implementation of Air Quality Action Plan(s) and/or Measures to Address Air Quality

Defra's appraisal of last year's APR concluded that the report was well structured, detailed, and provided the information specified in the guidance. It also noted that:

"Despite not having a formal AQAP, the Council have highlighted six measures which they are implementing to improve air quality within their jurisdiction, providing an update on progress made in 2021. This is commended, the Council is encouraged to include an update on these measures, for example the Officers Group, in the 2023 APR".

- Clackmannanshire Council made progress with this measure during 2022, and a more in-depth update is provided in the measures section below.

"Diffusion tubes were overexposed for several months in 2021, rendering the data inadmissible. Whilst annualisation adjustments can rectify this, this will introduce uncertainties to the data. The Council is reminded to do changeovers regularly to ensure good data capture".

- From January – November (inclusive), diffusion tubes were changed every month (following the national calendar from May), giving rise to a high data capture across the entire diffusion tube network (88%). Due to operational demands within the Council, diffusion tubes were not changed at the end of December, and were instead overexposed into February 2023. This data was therefore removed from the analysis presented within this report. However, as only one month's data was missing across 2022, the results did not need to be annualised (as was the case in 2021), meaning the 2022 results have a high degree of certainty.

Clackmannanshire Council have taken forward a number of measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress, or planned are set out in Table 2.1.

Key completed measures for this reporting year are:

- **Monitoring Equipment:** The NO_x analyser on King Street, Alloa, was replaced with a Serinus model in 2022. This replacement was provided through an application for grant funding from the Scottish Government. In May 2022, the air conditioning unit was also replaced on the automatic monitoring station at King Street (CM1), fixing

the issue of the cooler temperature being too high which was noted during LSO calibrations in the beginning of 2022. Furthermore, the optics for the Fidas analyser were replaced through successful grant funding in November 2022. This is in line with the manufacturer's operational recommendation to replace the optics after five years of use. The installation of this equipment demonstrates Clackmannanshire Council's commitment to have an automatic monitoring station that can record accurate and reliable pollutant concentrations.

- **Schools Streets:** Road closures are in place around Clackmannan Primary School during the morning drop-off and afternoon pick-up. Vehicles are excluded from entering the specified roads around the school during the times stated.
- **EV Charing Points:** A total of 30 EV charging points have been installed across Clackmannanshire, with two EV charging points in each main town (except one).
- **Community Engagement:** Clackmannanshire Council appointed a 'Climate Change and Sustainability Officer' in 2022. Throughout 2022, a meeting was held with the officer who undertook a series of meetings with local community groups to promote efforts to help climate change. Part of the discussions with the local community was air pollution from vehicles and the role of Environmental Health in monitoring air pollution from vehicles and the location and types of monitoring sites. This engagement helped to raise the awareness of air pollution amongst the community and increased individual's recognition of the APR.

Progress on the following measures has been slower than expected due to:

- **Officers Group:** Meetings were held with individual officers from the Roads services, who provided information on trials to be held in 2023 (i.e. use of "warm" asphalt for road resurfacing), plans to carry out traffic data management in 2023 – 2024, and seeking alternative funding methods to provide more EV charging points. Despite the success of these meetings with individual officers, it was Clackmannanshire Council's intention to form a small group with officers from the Roads, Planning and Fleet Services to discuss air quality issues. However, due to operational demands on the Council's services, this has not been possible to form during 2022.

Clackmannanshire Council expects the following measures to be completed over the course of the next reporting year:

- **Officers Group:** Clackmannanshire Council are to formalise the Officer's Group which is to meet a few times a year to discuss air quality issues and if any changes are required. This is however dependent on operational demands.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/ Actual Completion Year	Measure Status	Funding Status	Key Milestones	Progress	Barriers to Implementation
1	Grant Funding	Other	2022	Completed	Fully Funded (Scottish Government)	NO_x analyser upgraded at King Street, Alloa (CM1)	NOx analyser replaced with a Serinus model in May 2022. Since installation, the analyser has provided continuous monitoring data, ensuring a high level of data capture	-
2	Replacement of AC Unit	Other	2022	Completed	Not Funded	AC unit replaced at King Street, Alloa (CM1)	AC unit replaced May 2022, resolving the issue of the internal cabinet temperature being too high	-
3	Electrical Vehicle Charing Points	Promoting Low Emission Transport	2022 - 2023	Ongoing	Fully Funded (Transport Scotland)	30 EV charging points installed	7 planned installs nearing completion	Funding
4	School Streets Imitative	Promoting Travel Alternatives	2022 - 2023	Ongoing	Not Funded	One School Street in place around Clackmannan Primary School	School Street effective from 8:30 – 9:10am / 2:50 – 3:20pm	-
5	Control of New Builds	Policy Guidance and Development Control	Ongoing	Ongoing	Not Funded	Air Quality included in LDP	Any new development will be monitored and necessary action taken	-
6	Cycle to Work Scheme	Promoting Travel Alternatives	Ongoing	Ongoing	Fully Funded (Salary Sacrifice)	15 orders since scheme began	8 orders during 2022	-

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.

Clackmannanshire Council undertook automatic (continuous) monitoring at one site during 2022. Table A.1 in Appendix A shows the details of the site. National monitoring results are available at https://www.scottishairquality.scot/.

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

It should be noted that an 'AQ Mesh' has also been utilised by the Council, which is a type of low-cost sensor. As this data should not be relied upon for compliance against the air quality objectives, the results from the 'AQ Mesh' are instead presented in Appendix D: Supplementary Data (AQ Mesh). For further information on low-cost sensors, please refer to FAQ 140 on the LAQM website – https://laqm.defra.gov.uk/faqs/faq140/.

3.1.2 Non-Automatic Monitoring Sites

Clackmannanshire Council undertook non-automatic (passive) monitoring of NO_2 at six sites during 2022. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix A. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3.

In 2022, there were no exceedances of the NO_2 annual mean objective. The maximum NO_2 annual mean concentration recorded by a passive diffusion tube was 16.1 µg/m^3 at site DT4, which is the same diffusion tube site at which the maximum NO_2 concentration was recorded in the previous year (18.6 µg/m^3). However, across the entire diffusion tube network, the NO_2 concentration was lower at every site than that which was recorded at the site in 2021, demonstrating continuing improvements in air quality in Clackmannanshire. At the automatic monitoing station on King Street, Aloa (CM1), the NO_2 annual mean concentration in 2022 was 14.8 µg/m^3, which is a reduction from that which was measured in 2021 (17.7 µg/m^3).

For diffusion tubes, the 2022 dataset of monthly mean values is provided in Appendix B.

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

There was no exceedances of the NO_2 hourly mean objective at the automatic monitoring station (CM1) during 2022, with a maximum hourly concentration of 81.1 µg/m^3 recorded. As no single passive diffusion tube recorded an annual mean NO_2 concentration greater than 60 µg/m^3, it is also unliekly that the hourly NO_2 objective would have been exceeded at these locations.

As a result of both the automatic monitoring station and the passive diffusion tube network recording NO_2 concentrations below the annual and hourly objectives, no AQMA has been declared for NO_2 within Clackmannanshire.

3.2.2 Particulate Matter (PM_{10})

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

The PM_{10} annual mean objective was not exceeded in 2022, with a maximum PM_{10} annual mean concentration of 11.2 µg/m^3 recorded at the automatic monitoring station (CM1). In comparison to the previous year, this is a slight increase from the 10.7 µg/m^3 recorded.

Table A.6 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 µg/m^3, not to be exceeded more than seven times per year.

During 2022, the PM_{10} daily mean objective of 50 µg/m^3 was exceeded on two occasions, with daily concentrations of 55.8 µg/m^3 (22nd March 2022) and 65.1 µg/m^3 (23rd March 2022) recorded. However, these two exceedances are below the seven times per year permitted by the objective, meaning the PM_{10} daily mean objective was not excceded in 2022.

As a result of the automatic monitoring station recording PM_{10} concentrations below both the annual and daily objectives, no AQMA has been delcared for PM_{10} in Clackmannanshire.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 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 µg/m^3.

The $PM_{2.5}$ annual mean objective was not exceeded in 2022, with a maximum $PM_{2.5}$ annual mean concentration of 6.4 µg/m^3 recorded at the automatic monitoring station (CM1). In comparison to the previous year, this is a slight increase from 5.6 µg/m^3 recorded in 2021.

3.2.4 Sulphur Dioxide (SO_2)

The concentration of SO_2 is not routinely monitored in Clackmannanshire, and there are no immediate plans to do so.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

The concentration of Carbon Monoxide, Lead and 1,3-Butadiene is not routinely monitored in Clackmannanshire, and there are no immediate plans to do so.

4 New Local Developments

The following section has been completed based on consultation with other relevant Council services and departments including Roads & Transportation and Development Control.

4.1 Road Traffic Sources

Clackmannanshire Council's Transport Planning Department were consulted to check if there were any new potential road traffic sources or significantly changed traffic sources within the area that could result in a likely exceedance of the air quality objectives. During 2022, there were however no new roads either introduced or significantly modified within Clackmannanshire and there are no future plans for the development of a new major road.

In order to reduce the emissions from road transport, Clackmannanshire Council continue to expand the network of EV charging points. At present, there are 30 EV charging points in place across Clackmannanshire, with a further 7 in progress and nearing completion. As a result of this expansion, there are now two EV accessibility charging points in each main town (except one). Funding for the installation of the EV charging was provided by Transport Scotland to the Roads Service; this funding has ended and, as a result, Clackmannanshire Council are seeking an alternative source of funding to continue to expand the network of EV charging points.

The Roads Service department within Clackmannanshire Council are also investigating trialling the use of Warm Mix Asphalt during 2023, instead of the Traditional Hot Mix. This is thought to have various benefits to air quality, namely the less power needed to heat and the reduced fumes generated. Clackmannanshire Council hope actions such as this can act as a catalyst for a journey towards lower carbon emissions.

4.2 Other Transport Sources

Clackmannanshire Council can confirm that there are no new or significantly changed transport sources within the following categories:

- Airports;
- Ports for shipping;

- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m; and
- Locations with a large number of movements of diesel locomotives and potential long-term exposure within 30m.

4.3 Industrial Sources

There were no new industrial sources proposed or installed within Clackmannanshire during 2022 which may have a negative effect on local air quality.

4.4 Commercial and Domestic Sources

Clackmannanshire Council's Environmental Health and Planning Departments were consulted on any new commercial and domestic emission sources within the area which may have a negative effect on local air quality.

Commercial Emission Sources:

During 2022, there were no new commercial emission sources introduced that may have an impact on the air quality within Clackmannanshire.

Domestic Emission Sources:

During 2022, there were no new areas of development with significant amounts of solid fuel burning. However, Clackmannanshire Council do continue to receive intermittent complaints relating to smoke from domestic wood burning stoves, garden bonfires and fire pits. Each complaint is logged and a reminder is provided to residents of alternative ways to dispose their garden waste. With regard to wood burning stoves, all residents are reminded to ensure they use the appropriate fuel for the wood burning stove.

4.5 New Developments with Fugitive or Uncontrolled Sources

Clackmannanshire Council confirms that there are no new or significantly changed fugitive or uncontrolled sources at: landfill sites, quarries, unmade haulage roads on industrial sites, waste transfer stations, and other potential sources of fugitive particulate matter emissions.

5 Planning Applications

Clackmannanshire Council's Development and Planning Department was consulted to identify if there was any major planning applications during 2022 which may have a negative effect on local air quality. The applications and outcomes are summarised in Table 5.1.

Table 5.1 – Planning Applications Requiring an Air Quality/Screening Assessment

Date	Planning Application	Development Information	Air Quality Interest?	Air Quality Assessment Requested?	Decision
17 January 2022	22/00012/FULL	Erection of Air Separation Plant and Associated Infrastructure	Yes	Yes	Approved November 2022
18 January 2022	22/00015/FULL	Demolition of Farm Buildings and Erection of Bonded Warehouses, Midtown Farm	Yes – dust generation during construction and demolition	No	Approved July 2022
24 February 2022	22/00060/FULL	Installation of EVE Fast Charger and EV Charging Unit	Yes	No	Approved April 2022
1 March 2022	22/00072/FULL	Demolition of Farmhouse and Erection of Bounded Warehouses, Garvel Farm	Yes – dust generation during construction and demolition	No	Approved July 2022
16 March 2022	22/00089/HAZ	Hazardous Substance Consolidation	Yes	No	Approved August 2022

27 June 2022	22/00187/FULL	Land North and South of A91, Alva	Yes – 244 houses	Yes	Refused May 2023
14 November 2022	22/00287/FULL	Installation of CHP Plant Equipment and Exhaust Stack	Yes	Yes	Withdrawn
24 November 2022	22/00298/FULL	OI Manufacturing Ltd. Engineering Works to form Piled Concrete Pad	No	No	Approved February 2023

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Clackmannanshire Council undertook monitoring of NO_2, PM_{10} and $PM_{2.5}$ concentrations during 2022, at locations detailed in the report. The concentration of NO_2 was passively monitored at six locations via the diffusion tube network, and automatically monitored at one location. The concentration of PM_{10} and $PM_{2.5}$ was concurrently measured at one site in 2022. However, Clackmannanshire Council also utilised an 'AQ Mesh' during 2022, which is a type of low-cost sensor. As this data cannot be used for compliance against the air quality objectives, the results from the other automatic monitoring station (CM1) are only referred to in this report.

The data from both the diffusion tube network and the automatic monitoring station indicates that the concentrations of all measured pollutants complied with the air quality objectives. This is a continuing trend observed within Clackmannanshire and, as a result, there is no AQMA declared for any pollutant. As the recorded values are again significantly below the objective limit, Clackmannanshire therefore continues to enjoy good air quality.

6.2 Conclusions relating to New Local Developments

This assessment has been conducted in accordance with TG(22)[6]. Updated information has been obtained on road, rail, industrial, domestic and fugitive emission sources and compared to the criteria and conditions described in the guidance.

Any new or proposed development which may have a negative impact on the air quality within Clackmannanshire is presented in Table 5.1. Actions as to whether an assessment on the potential air quality impact was either required or requested are also shown.

6.3 Proposed Actions

Clackmannanshire Council will continue to monitor and improve air quality, progressing with the actions outlined in Table 2.1. For example, continuing to promote Clan Air Day through the Council's website and raising the topic of air quality at Council meetings. During 2022, Clackmannanshire Council appointed a Climate Change and Sustainability

Officer, which saw over 30 meetings held to discuss environmental topics, of which air quality was one.

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	King Street, Alloa	Roadside	288665	693072	NO_2 PM_{10} $PM_{2.5}$	No	NO_2 – Chemiluminescent $PM_{10}/PM_{2.5}$ – Fidas	1.2	2.5	2.3

Notes:

(1) 0 m 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)
DT2	Clackmannan Road, Alloa	Kerbside	289228	692943	NO_2	No	2.0	2.0	No	3.3
DT3	Bus Station, Alloa	Kerbside	288818	692878	NO_2	No	2.0	1.3	No	3.5
DT4	Shillinghill/Bridge Terrace, Alloa	Kerbside	288911	692940	NO_2	No	2.0	1.4	No	3.1
DT5	King Street, Alloa	Kerbside	288665	693072	NO_2	No	8.0	2.5	Yes	2.9
DT6	Auld Brig Road, Alloa	Kerbside	288927	692878	NO_2	No	3.0	1.8	No	3.3
DT7	Pearson View, Sauchie	Kerbside	289371	693727	NO_2	No	0.0	2.4	Yes	2.4

Notes:

(1) 0 m 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.

Figure A.1 – Location of Air Quality Monitoring Sites within Clackmannanshire

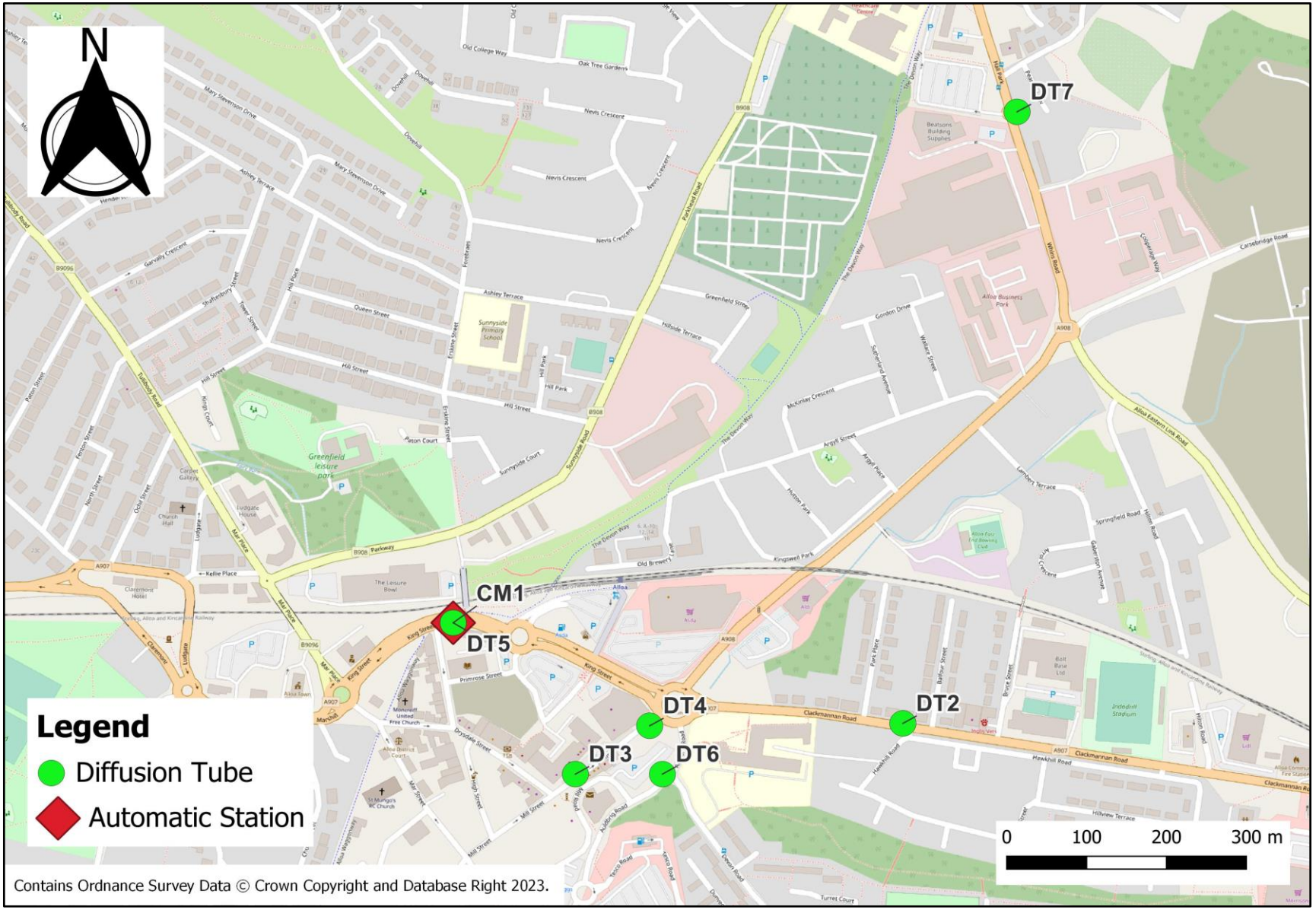


Table A.3 – Annual Mean NO_2 Monitoring Results (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	Automatic	99.7	99.7	23.0	22.0	19.0	17.7	14.8
DT2	Roadside	Diffusion Tube	88.2	88.2	23.4	21.7	16.1	18.4	15.7
DT3	Kerbside	Diffusion Tube	88.2	88.2	26.3	25.2	15.6	17.7	15.6
DT4	Kerbside	Diffusion Tube	88.2	88.2	25.2	22.5	15.2	18.6	16.1
DT5	Kerbside	Diffusion Tube	88.2	88.2	21.9	18.3	13.0	15.8	12.9
DT6	Kerbside	Diffusion Tube	88.2	88.2	21.8	16.8	13.0	16.2	14.2
DT7	Kerbside	Diffusion Tube	88.2	88.2	-	20.6	11.8	14.5	12.0

Notes:

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(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%).

Figure A.2 – Annual Mean NO_2 Monitoring Results from 2018 – 2022 within Clackmannanshire

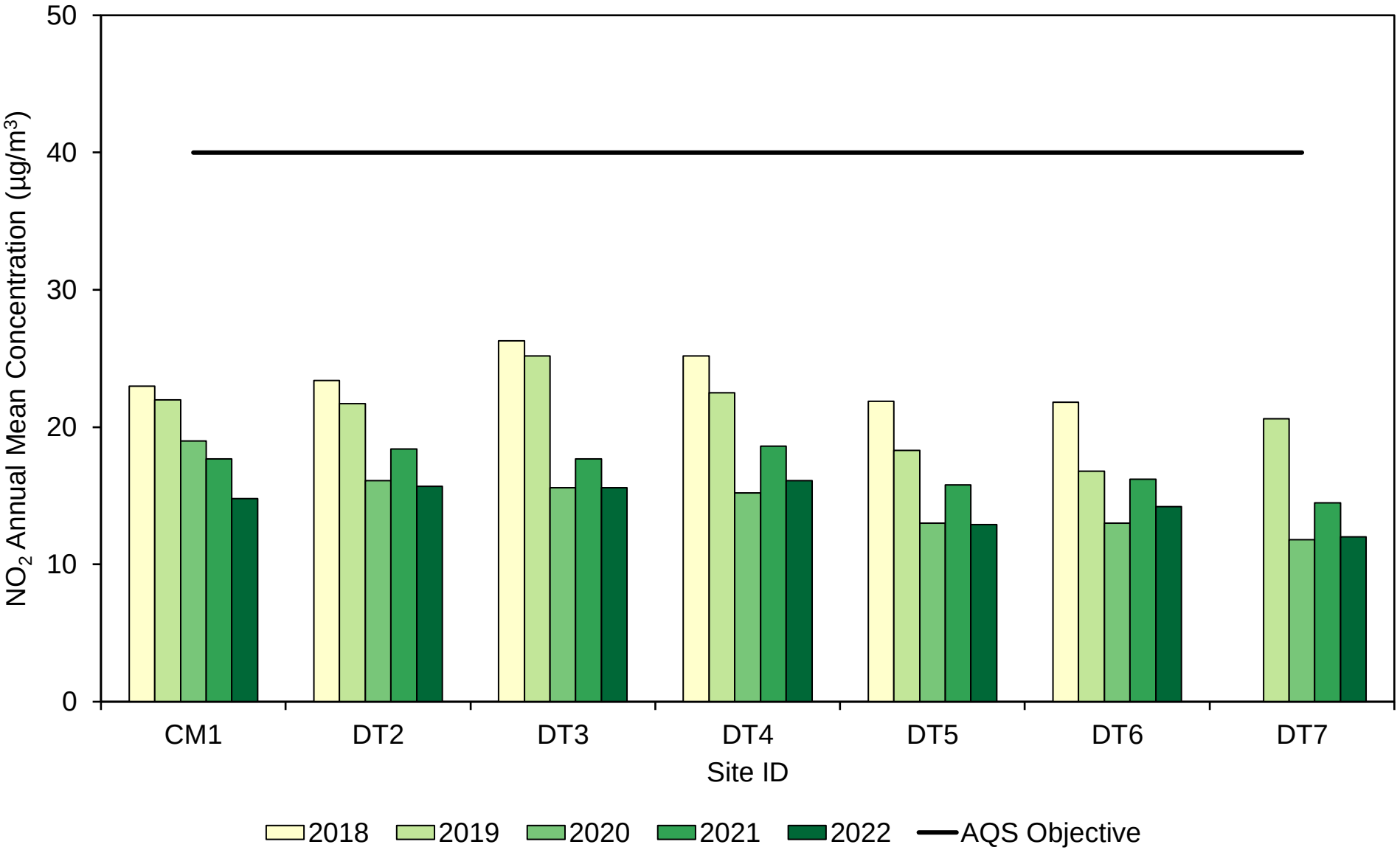


Table A.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	Automatic	99.7	99.7	0	0	0	0 (61.2)	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200 µg/m^3 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 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	91.0	91.0	11.0	11.0	9.0	10.7	11.2

Notes:

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

All means have been "annualised" as per LAQM.TG(22), 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%).

Figure A.3 – Annual Mean PM_{10} Monitoring Results from 2018 – 2022 within Clackmannanshire

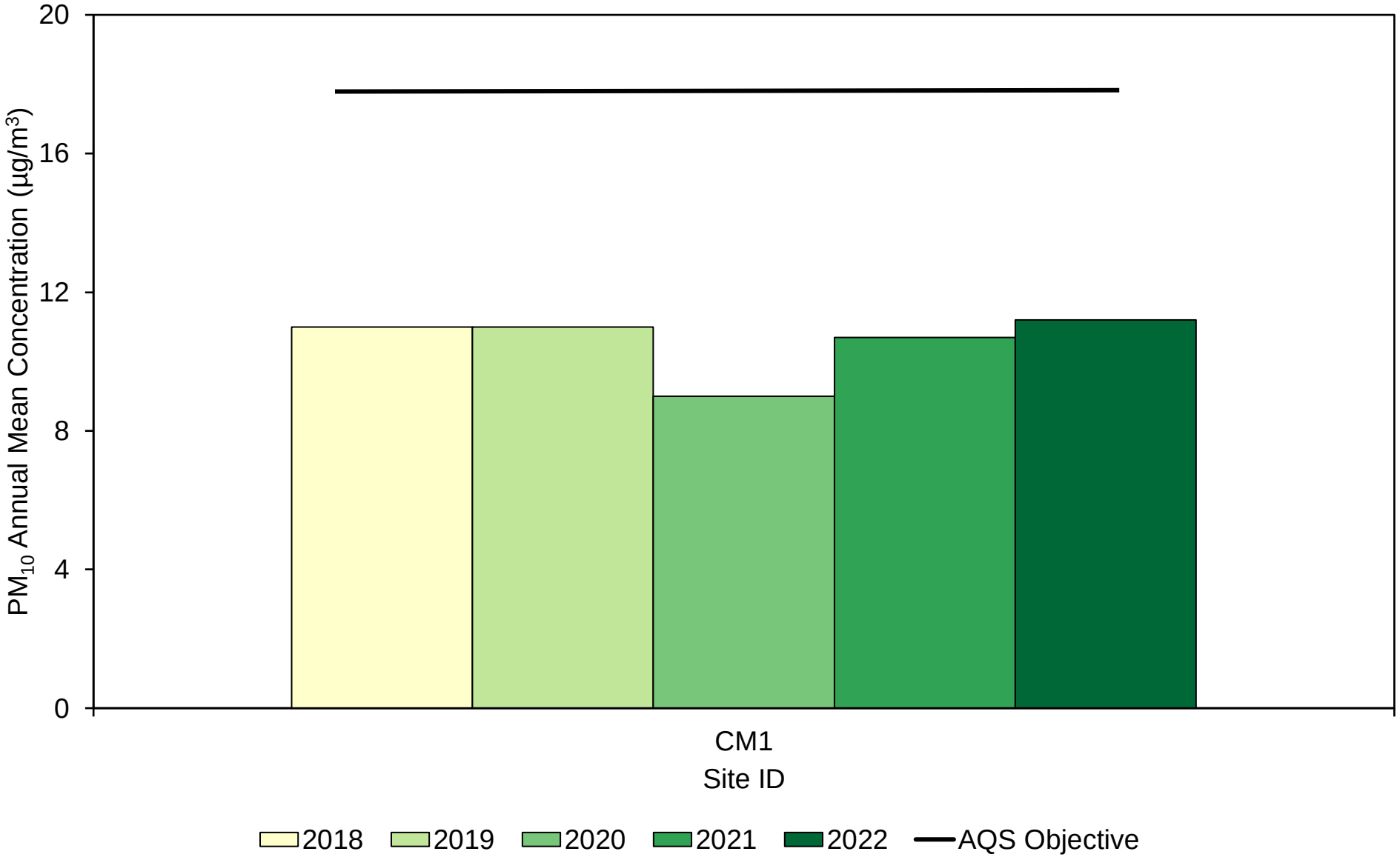


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	91.0	91.0	0	1	0	3	2

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 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.

(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.7 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	Roadside	91.0	91.0	6.0	6.0	5.0	5.6	6.4

Notes:

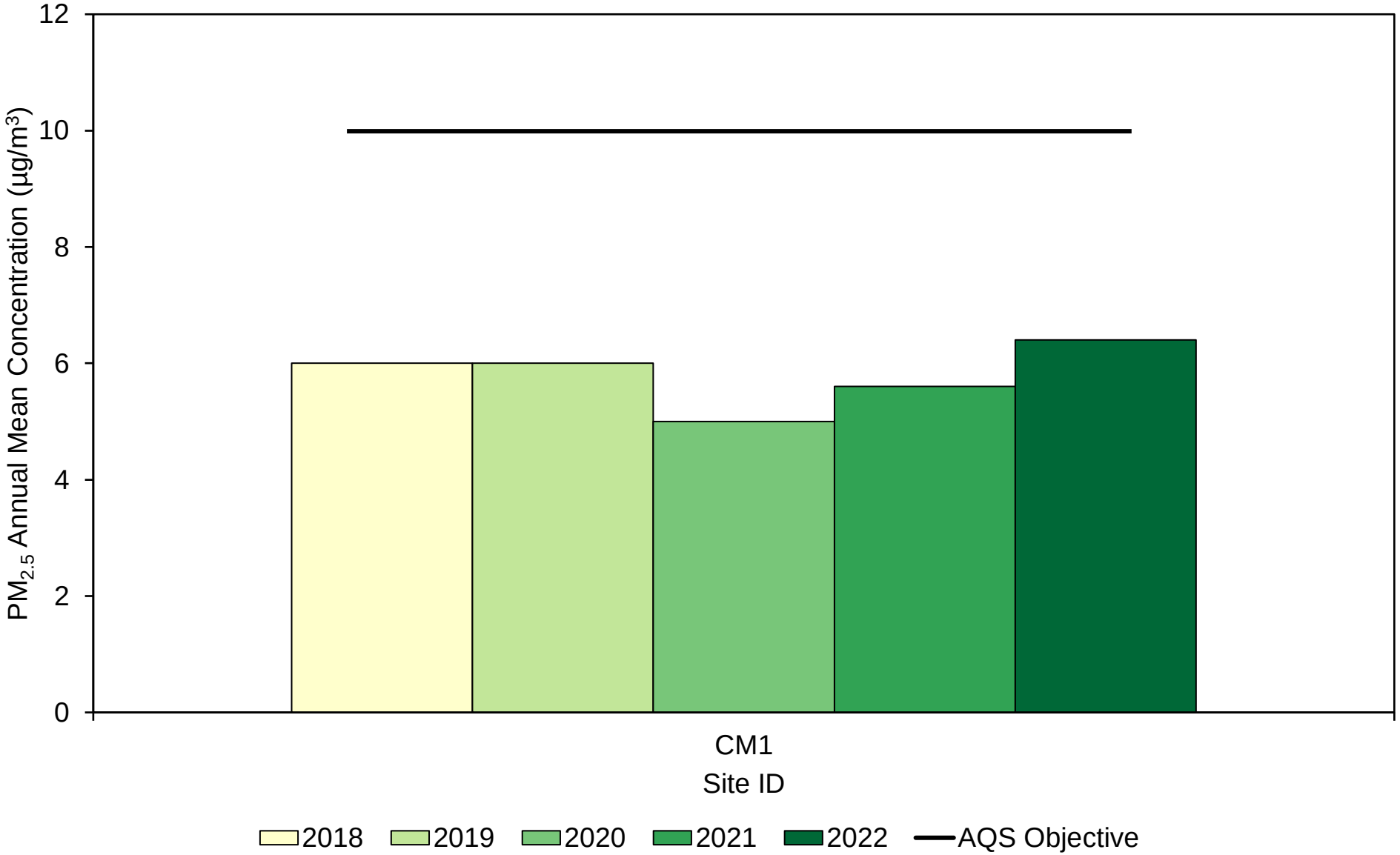
Exceedances of the $PM_{2.5}$ annual mean objective of 10 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(22), 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%).

Figure A.4 – Annual Mean $PM_{2.5}$ Monitoring Results from 2018 – 2022 within Clackmannanshire



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Monthly Diffusion Tube Results ($\mu g/m^3$)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec [1]	Time-Weighted Annual Mean ($\mu g/m^3$)	
													Annual Mean: Raw Data	Annual Mean: Bias Adjusted [2]
DT2	31.4	29.4	16.9	19.3	15.6	11.4	7.1	18.4	10.4	19.6	25.7	31.4	18.3	15.7
DT3	24.2	24.4	14.2	22.5	17.9	13.7	7.0	15.7	17.2	18.9	27.1	27.6	18.2	15.6
DT4	24.8	25.6	16.3	21.3	17.8	13.4	9.5	17.1	9.2	23.4	29.7	20.3	18.8	16.1
DT5	21.4	20.1	16.9	17.0	8.9	11.1	11.5	14.7	5.4	17.4	22.7	23.5	15.0	12.9
DT6	22.1	22.0	18.6	20.4	14.1	10.7	10.5	9.4	8.1	19.6	26.5	15.8	16.5	14.2
DT7	16.0	18.0	10.8	18.6	12.6	7.7	6.5	14.7	9.0	16.1	25.6	12.6	14.0	12.0

Notes:

(1) Red values were overexposed beyond the 4-5 week recommendation and were omitted from the annual mean calculation.

(2) 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 Clackmannanshire During 2022

With the exception of the planning applications listed above, Clackmannanshire Council have not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Clackmannanshire Council During 2022

Clackmannanshire Council have not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes deployed during 2022 were supplied and analysed by Glasgow Scientific Services (GSS), and were prepared using the 20% TEA in water preparation method. All results have been bias adjusted and annualised (if required). GSS is a UKAS accredited laboratory that participates in the AIR-PT scheme for NO_2 diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentration reported are of a high calibre. In the most recent AIR-PT results, AIR-PT AR049 (January – February 2022) and AIR-PT AR050 (May – June 2022), GSS were awarded a score of 100% on both occasions. This therefore indicates that all results were deemed to be satisfactory, based on a z-score of less than ± 2, highlighting a good performance of GSS during 2022. As a result, there is a high degree of confidence in the diffusion tube results presented within this report.

During 2022, the diffusion tubes were not deployed in line with the national calendar for the whole year. Primarily, this is owing to the fact that the first diffusion tube changeover from the previous year did not occur until the 13th January and, as a result, the national calendar was not followed from January – April. However, from May – November, the diffusion tubes were deployed and collected in line with the national calendar. As the

results for December were overexposed into February 2023, they were omitted from the annual mean analysis.

The results for December were not included in the annual mean analysis as they were overexposed beyond the recommended four to five weeks. Section 7.199 of TG(22) states:

"If diffusion tubes are left out for significantly longer or shorter periods than the four and five weeks recommended, then the data may not be reliable as the rate may not have been accurately defined".

However, for completeness, these results are presented in red in Appendix B: Full Monthly Diffusion Tube Results for 2022.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Clackmannanshire 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

Clackmannanshire Council have applied a national bias adjustment factor of 0.86 to the 2022 monitoring data. A summary of bias adjustment factors used by Clackmannanshire Council over the past five years is presented in Table C.1.

The national bias adjustment spreadsheet (version 03/23) was used to derive the national bias adjustment factor for diffusion tubes analysed by GSS during 2022. The national bias adjustment factor for GSS was 1.05, derived from six co-location studies. However, as shown in Figure C.1, three of these studies were of low precision. Therefore, the three studies of good precision were instead used to determine the bias adjustment factor. The methodology for determining the factor followed that outlined in Section 7.222 of TG(22):

"If there is more than one local co-location study, then the A factors should not be averaged. Instead, a reasonable approximation can be derived from averaging the B values. For example, if there were two studies of 22% and 28%, then the average would be 25%. This is then expressed as a factor, e.g. 25% is 0.25. next add 1.00 to this value,

e.g. 0.25 + 1.00 = 1.25. Finally, take the inverse to give the bias adjustment factor, e.g. 1/1.25 = 0.80".

Therefore, the following calculation determined the bias adjustment factor that was used:

Average Bias B: (11.9 + 6.6 + 28.6) / 3 = 15.7% → Expressed as factor: 15.7% = 0.157

Add 1 to value: 0.157 + 1 = 1.157 → Take inverse of value: 1/1.157 = **0.86**

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
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.

This spreadsheet will be updated at the end of June 2023
LAQM Helpdesk Website

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List
If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List
If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List
If a year is not shown, we have no data[2]

Step 4:
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[3] shown in blue at the foot of the final column.
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 (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	12	30	27	11.9%	G	0.89
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	11	14	19	-24.3%	P	1.32
Glasgow Scientific Services	20% TEA in Water	2022	KS	Glasgow City Council	12	41	39	6.6%	G	0.94
Glasgow Scientific Services	20% TEA in Water	2022	R	Glasgow City Council	12	16	21	-25.1%	P	1.33
Glasgow Scientific Services	20% TEA in Water	2022	UB	Glasgow City Council	12	14	17	-15.8%	P	1.19
Glasgow Scientific Services	20% TEA in water	2022	KS	Marylebone Road Intercomparison	12	55	42	28.6%	G	0.78
Glasgow Scientific Services	20% TEA in water	2022		Overall Factor[3] (6 studies)				Use		1.05

Figure C.1 – 2022 National Bias Adjustment Factor for Glasgow Scientific Services

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.86 (1)
2021	National	03/22	0.89 (1)
2020	National	03/21	0.89 (1)
2019	National	03/20	0.82 (1)
2018	National	03/19	0.92 (1)

(1) Adjustment factor derived using co-location studies of good precision only.

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Clackmannanshire required distance correction during 2022.

QA/QC of Automatic Monitoring

Automatic monitoring of NO_2, PM_{10} and $PM_{2.5}$ is completed within Clackmannanshire using Chemiluminescence (NO_2) and Fidas (PM_{10} and $PM_{2.5}$) analysers.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The PM_{10} and $PM_{2.5}$ data was corrected in accordance with the guidance note issued by the Scottish Government in relation to the monitoring of particulate matter (PM) data. For PM data measured via a Fidas 200 instrument, the ratified PM_{10} annual mean value was divided by 0.909 whilst the annual mean $PM_{2.5}$ value was multiplied by 1.06. Further information on the adjustments applied to the PM data in this report is available at the following webpage: https://www.scottishairquality.scot/technical-reports/local-authority-guidance-note-laqm-reporting-scottish-pm-data.

Automatic Monitoring Annualisation

All automatic monitoring locations within Clackmannanshire 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.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Clackmannanshire required distance correction during 2022.

Appendix D: Supplementary Data (AQ Mesh)

Table D.1 – Supplementary Monitoring Data, AQ Mesh

		Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2022 (%)	2018	2019	2020	2021	2022
NO_2	Annual Mean ($\mu g/m^3$)	86.2	86.2	**43.0**	15.2	14.6	17.9	15.6
	1-hr Means > 200 $\mu g/m^3$			0	0 (91.1)	0	0	0
PM_{10}	Annual Mean ($\mu g/m^3$)	99.7	99.7	6.5	4.8	3.9	3.7	3.7
	24-hr Means > 50 $\mu g/m^3$			0	0	0	0	0
$PM_{2.5}$	Annual Mean ($\mu g/m^3$)	99.7	99.7	3.5	2.8	2.0	2.1	2.0

(1) Values exceeding the air quality objective are shown in bold.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

(1) Clackmannanshire Council – Local Transport Strategy. 2014. Available at: https://www.clacks.gov.uk/document/4655.pdf.

(2) Coalfields Community Futures – Clackmannanshire Community Action Plan. 2015 – 2020. Available at: https://www.coalfields-regen.org.uk/wp-content/uploads/2019/10/Clackmannan-Community-Action-Plan-2015-2020.pdf.

(3) Scottish Government – Cleaner Air for Scotland 2: Towards a Better Place for Everyone. 2021. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2021/07/cleaner-air-scotland-2-towards-better-place-everyone/documents/cleaner-air-scotland-2-towards-better-place-everyone/cleaner-air-scotland-2-towards-better-place-everyone/govscot%3Adocument/cleaner-air-scotland-2-towards-better-place-everyone.pdf.

(4) Scottish Government – National Planning Framework 4. 2023. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf.

(5) Clackmannanshire Council – Local Development Plan. 2015. Available at: https://www.clacks.gov.uk/document/6862.pdf.

(6) Department for Environment, Food & Rural Affairs (DEFRA) – Local Air Quality Management Technical Guidance (TG22). 2022. Available at: https://www.scottishairquality.scot/sites/default/files/publications/2023-04/LAQM-TG22-August-22-v1.0_0.pdf.