



**Clackmannanshire  
Council**

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Comhairle Siorrachd  
Chlach Mhanann

## **Annual Progress Report (APR)**



2020 Air Quality Annual Progress Report (APR) for  
Clackmannanshire Council

In fulfilment of Part IV of the  
Environment Act 1995

Local Air Quality Management

September 2020

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## **Executive Summary: Air Quality in Our Area**

This report provides an overview of air quality within Clackmannanshire Council during 2019. It provides a review of pollutant monitoring data and atmospheric emissions sources within Clackmannanshire and compares the available monitoring data to national air quality standards in accordance with the guidance in LAQM.TG (16) Technical Guidance.

### **Air Quality in Clackmannanshire Council**

There are no Air Quality Management Areas in Clackmannanshire Council.

The Council continued to monitor emissions of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> to determine if any air quality objectives were exceeded during 2019.

The Council operated a network of six passive diffusion tubes to monitor ambient concentrations of NO<sub>2</sub> throughout 2019. All monitored concentrations were found to be below the air quality objectives.

Results for the annual mean concentration of NO<sub>2</sub> from the chemiluminescent monitor at the automatic monitoring station at King Street, have been in the range 22 - 29.3µg/m<sup>3</sup> over the last five years.

Measurements from the AQ Mesh pod installed at Hallpark Road in Alloa, have recorded an annual mean NO<sub>2</sub> concentration of 15.2 µg/m<sup>3</sup> for 2019. This represents a significant reduction from the 43 µg/m<sup>3</sup> measured in 2018, however the data capture at the AQ Mesh in 2019 was 75.4% and the reported value for 2019 must therefore be treated with caution. A diffusion tube was located at the closest sensitive receptor façade to Hallpark Road (DT7 Pearson View, Sauchie) from August 2019 and measured a five-month annual mean NO<sub>2</sub> concentration of 20.6µg/m<sup>3</sup>.

Examination of the previous five years of data shows that there was no obvious trend in annual mean NO<sub>2</sub> concentrations across the diffusion tube network.

Results from the FDMS monitor and those from the previous TEOM sampler have shown the annual mean concentration of particulate matter PM<sub>10</sub> of 11–15 µg/m<sup>3</sup> over the last five years with an overall downward trend. Similarly, the annual mean

concentration of particulate matter PM<sub>2.5</sub> has remained equal to 6 µg/m<sup>3</sup> since PM<sub>2.5</sub> started being monitored in 2018.

Measurements from the AQ Mesh pod installed at Hallpark Road in Alloa, recorded annual mean concentrations of 4.8µg/m<sup>3</sup> and 2.8µg/m<sup>3</sup> for PM<sub>10</sub> and PM<sub>2.5</sub> respectively in 2019. The data capture at the AQ Mesh in 2019 was 75.1% for PM<sub>10</sub> and 94.6% for PM<sub>2.5</sub>.

A review of planning applications submitted in 2019 showed there was one new development likely to result in the generation of significant new traffic on the local road network and hence have the potential to adversely impact on local air quality. A detailed air quality impact assessment has been requested from the applicant but not yet received. The application is awaiting decision. There is one application that was submitted in 2018 for which an air quality assessment is still outstanding and is awaiting decision.

Clackmannanshire Council Roads and Transportation confirmed there were no new roads constructed with the potential to result in an exceedance of the AQS objectives. Transport Planning officers have collated data from traffic count sites throughout the area in recent years which is detailed later in this report. Figures were also obtained for vehicular traffic from Transport Scotland for roads within Clackmannanshire in order to give an indication of the growth across the area. These data were only available up to 2018.

### **Actions to Improve Air Quality**

There are currently no Air Quality Management Areas (AQMAs) or action plans in the Clackmannanshire area, however the annual progress report summarises potential increases in emissions which may adversely affect air quality (like new roads or commercial developments). Where potential air pollution 'hotspots' are considered likely, monitoring will be considered for those areas.

The Council continues to:

- monitor the ambient concentration of PM<sub>2.5</sub>, PM<sub>10</sub> and NO<sub>2</sub> in the Alloa area, including additional monitoring at Hallpark Road;
- promote sustainable travel alternatives (walking, cycling, and car sharing) through the Local Active Travel Strategy, the promotion of cycle routes, and

the introduction of travel plans and cycle/walk to work initiatives and investment in technology to allow video conferencing;

- reduce the number of vehicles in the Council fleet and replace older inefficient vehicles with low emissions alternatives when funding is available);
- promote low emission transport (installation of electric charging points); and
- review and develop policies which impact on air quality.

### **Local Priorities and Challenges**

The Council is committed to continuing the review and assessment of pollutants affecting the air quality in Clackmannanshire. The priority is to continue monitoring concentrations of NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>, and widen the area of coverage of the monitoring network by utilising the AQ Mesh monitor, however this will remain at Hallpark Road during 2020.

Roads and Transportation will continue with plans for the promotion of low emission transport and sustainable travel alternatives as identified in the Local Transport Strategy. Continued consideration to be given to the 'Cleaner Air for Scotland Strategy' and the formation of an officer group to identify any required changes to policy and current working practices in relation to Air Quality across the Council.

### **How to Get Involved**

Improving air quality in Clackmannanshire is not only the responsibility of the Council. There are many ways members of the public, local businesses, logistics companies and transport operators can get involved. Choosing to walk or cycle instead of using the car, car sharing, and buying 'hybrid' or lower emission vehicles will all play a part in reducing pollutant levels in the area. Careful consideration should also be given to the installation/use of biomass systems and domestic wood or multi-fuel 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 at <http://www.clacksweb.org.uk/environment/woodburningstoves/>.

The public can engage with the Council's efforts by logging onto the [www.Clacksweb.org.uk](http://www.Clacksweb.org.uk) website and searching for air quality. Monitoring results for the Clackmannanshire area can be viewed by visiting [www.scottishairquality.co.uk](http://www.scottishairquality.co.uk)

and typing in your postcode. On this website, there is also the option to register for air quality alerts using the `Know and Respond' System.

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## 1. Local Air Quality Management

This report provides an overview of air quality in Clackmannanshire Council during 2019. 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 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		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m <sup>3</sup>	Annual Mean	31.12.2008

## **2. Actions to Improve Air Quality**

### **2.1 Air Quality Management Areas**

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

Clackmannanshire Council currently does not have any AQMAs. There are no recommendations in this year's report to declare any new AQMAs in the Council area.

### **2.2 Cleaner Air for Scotland**

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available at <https://www.gov.scot/Publications/2015/11/5671/17>. Progress by Clackmannanshire Council against relevant actions within this strategy is demonstrated below.

#### **2.2.1 Transport – Avoiding travel – T1**

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. Clackmannanshire Council has developed a revised Local Transport Strategy for up to 2019 which has not yet been formally adopted or updated. In the interim period, the existing strategy for 2010-2014 will remain valid for use. Public transport plays an important part in the Council's transport strategy.

The Public Transport Unit operates jointly with Stirling Council and will in the future work with Falkirk Council to undertake the assessment of the needs for public transport services and the provision of appropriate infrastructure.

The Council continues to work with "Sustrans", "Cycling Scotland" and "Paths for All" to deliver and promote our Active Travel Network and have published a leaflet for

members of the public “Get Active-Go Green”, available for download from <https://www.clacks.gov.uk/document/2538.pdf>.

Clackmannanshire Council operates a trip-share scheme aimed at reducing congestion and pollution by encouraging staff to car share on journeys to and from work. Other initiatives include promotion of the Cycle to Work scheme. The Council web site (<https://www.clacks.gov.uk/transport/travelplans/>) provides a summary of existing Council Travel Plans and advice to existing businesses and new developments on measures for inclusion in travel plans aimed at reducing journeys by car.

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

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. Clackmannanshire Council has a Sustainability and Climate Change Strategy (<https://www.clacks.gov.uk/document/2858.pdf>) which includes replacing vehicles with the latest engine specifications and providing training to reduce fleet vehicle fuel-use through fuel efficient driver training programmes. Additionally, lighting, heating and other electrical upgrades in council buildings are expected to have led to reduced energy consumption and therefore atmospheric emissions.

Clackmannanshire Council's annual statement report on climate change (<https://www.clacks.gov.uk/document/5801.pdf>) demonstrates that greenhouse gas emissions reduced from 9493 tCO<sub>2</sub>e in 2015/16 to 8844 tCO<sub>2</sub>e in 2016/17. The figures are not yet published for 2017/2018 or 2018/2019.

### **2.2.3 Progress and Impact of Measures to address air quality in Clackmannanshire Council**

Clackmannanshire Council has maintained a number of measures during the current reporting year of 2019 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 are:

- Continuous PM<sub>2.5</sub> / PM<sub>10</sub> analyser installation – installation at the end of 2017 of a continuous analyser for PM<sub>2.5</sub> / PM<sub>10</sub> at King Street, Alloa. The second full

year of data recorded by the new analyser is for 2019 and is included in this report.

- Relocation of diffusion tube (DT1) on Norwood Avenue, Alloa to Pearson View, Sauchie (façade on Hallpark Road) such that the new DT (DT7) is collocated with the AQ Mesh.
- Active Schools programme including Walk Once a Week (WOW) – a programme introduced into schools in the local area to encourage walking into school at least once a week, instead of taking private transport. Pupils record their method of travel to school each week and are awarded a badge if they have walked to school at least once a week for a whole month. The active schools programme is ongoing with the development of a programme of physical activity and sports opportunities tailored to suit each establishment and can be downloaded from <https://www.clacks.gov.uk/learning/asprogs/>
- TripShare Clacks – Clackmannanshire Council continue to encourage staff to car share through their TripShare Clacks website. The council reported that for 2018-2019 there were 10 active car sharing teams.
- Electric Vehicle Charging Points – The council are planning for a further 11 electric vehicle charging points with one awaiting commissioning (Dollar), four in progress (Muckart, Clackmannan and 2 x Alloa), and six delayed due to restrictions and delays imposed by the Covid-19 crisis. Progress will recommence as soon as possible.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Control of new developments	Policy Guidance and development control	Continue to monitor concentrations of pollutants in the Council area	Development and Environment	Ongoing	Ongoing	Monitored emissions	N/A, no AQMAs	Satisfactory	Ongoing New developments will continue to be monitored and where necessary action will be taken	
2	Mobile emissions monitor installed at A908 Hallpark Road, Sauchie where it was identified that traffic levels had increased.	Transport planning and infrastructure	Monitoring of PM <sub>2.5</sub> , PM <sub>10</sub> and NO <sub>x</sub> levels using this equipment.	Development and Environment	Funding has been awarded	Autumn 2017.	Comparison with AQOs	N/A, no AQMAs	Monitoring since June 2017	At least to end of 2020	Annual Mean NO <sub>2</sub> below AQO
3	Relocate DT1 from Norwood Place to DT7 Pearson View (façade on Hallpark Road) for co-location with AQ Mesh	Transport planning and infrastructure	Monitoring of NO <sub>2</sub> at sensitive receptor with passive sampling to verify AQ Mesh	Development and Environment	complete	complete	Comparison with AQOs and AQ Mesh measurements	N/A, no AQMAs	Monitoring since August 2019	At least to end of 2020 to obtain a full year	5-month average for 2019 c. 50% below the AQO
4	Environmental Health work closely with other departments of the Council such as roads and transportation, fleet management, development planning, sustainability and planning policy	Policy guidance and development control	Advice set out in the Cleaner Air for Scotland strategy (CAFS)	Development and Environment	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing upgrades to low emissions vehicles when funding allows and retirement of older stock.	Ongoing	

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	Council provides 5 electric pool cars for use by staff and a further	Promoting low emission transport	Electric car charging points	Development and Environment	Complete	Complete	None	N/A, no AQMAs	Additional vehicles when funding allows	Ongoing	
6	Council provides 11 electric charging bays throughout Clackmannanshire for use by the public – further 11 planned awaiting progress or final commissioning	Promoting low emission transport	Details of active sites available at <a href="https://www.clack.gov.uk/environment/chargingpoints/">https://www.clack.gov.uk/environment/chargingpoints/</a>	Development and Environment	Complete	Complete	None	N/A, no AQMAs	Complete	To recommence when Covid-19 restrictions permit	
7	Promotion of walking and cycling. Part of this is the Smarter Choices, Smaller Places initiative which is promoted to the public and introduction of the Walk Once a Week (WOW) initiative into local schools	Alternative to Private vehicle use	Local Active Travel strategy	Development and Environment	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing	Ongoing	
8	Council utilises the <b>TripShare Clacks</b> website aimed at reducing congestion and pollution by encouraging staff to car share on journeys to and from work	Promoting travel alternatives	Car sharing	Development and Environment	Ongoing	Ongoing	No of shared journeys/ teams	N/A, no AQMAs	10 Active Car Sharing Teams	Ongoing	

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
9	Council has invested in technology in an effort to reduce car journeys for meetings	Promoting travel alternatives	Video and telephone conferencing	Information Technology	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing	Ongoing	Expected to increase post Covid-19 restrictions due to increased home working
10	Cycle to work scheme for staff is promoted by the Council	Promoting travel alternatives	Cycle to work scheme	Development and Environment (Transportation)	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing	Ongoing	
11	Continue PM <sub>2.5</sub> /PM <sub>10</sub> continuous analyser at King Street, Alloa site	Policy Guidance and development control	To obtain data for this statutory pollutant with accredited equipment and analyser	Development and Environment	Complete	Complete	Monitored emissions	N/A, no AQMAs	Installed Dec 17	Ongoing	Second full year of monitoring data included in this report

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

#### **3.1 Summary of Monitoring Undertaken**

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives. The monitoring undertaken in 2019 was a continuation of the 2018 programme.

The main notable change was the relocation of DT1 on Norwood Avenue, Alloa to Pearson View, Sauchie (façade on Hallpark Road) such that the new DT (DT7) is collocated with the AQ Mesh.

Monitoring at DT1 was undertaken until the End of July 2019 and the DT was relocated to DT7 in August 2019.

A map showing the locations of all the monitoring sites is provided in Appendix A.

##### **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 two sites during 2019.

The accredited monitoring station is located on King Street, Alloa on the pavement outside a new residential development. It is a busy road with a pedestrian crossing, supermarket and housing nearby. The location is classified as a “roadside” site. A photograph of the unit is shown in Figure 3.1.



**Figure 3.1 – Automatic Monitoring Site - King Street, Alloa**



Additional automatic monitoring was undertaken on the A908 at Hallpark Road, using a lamppost-mounted AQ Mesh pod supplied by ACOEM.

Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

The data capture at the King Street site in 2019 was 98.4% for NO<sub>2</sub> and 99.8% for PM<sub>10</sub> and PM<sub>2.5</sub>. Routine calibrations are carried out by Clackmannanshire Council staff and biannual site audits are carried out by Ricardo AEA. The 2019 annual mean concentrations were 22µg/m<sup>3</sup>, 11µg/m<sup>3</sup> and 6µg/m<sup>3</sup> for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> respectively. The measured values are significantly

below the annual mean Scottish Air Quality Objectives for the respective pollutants (Table 1.1) and there are no predicted exceedances of any of the relevant short-term (1-hour or 24-hour objectives for any pollutant).

**Figure 3.2 – AQ Mesh Unit and DT7 on Location at Hallpark Road, Alloa**



The AQ mesh pod is not a DEFRA accredited/quality assured method of monitoring, but it is able to provide the Council with continuously monitored data demonstrating the effects of diurnal traffic flows and periods of congestion on local air quality and has the benefit of including more pollutants than using a passive diffusion tube.

The AQ Mesh was installed on the A908, Hallpark Road, Alloa in June 2017.

The data capture at the site in 2019 was 75.4% for NO<sub>2</sub>, 75.1% for PM<sub>10</sub> and 94.6% for PM<sub>2.5</sub>. The 2019 annual mean concentrations were 15.2µg/m<sup>3</sup>, 4.8µg/m<sup>3</sup> and 2.8µg/m<sup>3</sup> for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> respectively. The measured values are significantly below the

annual mean Scottish Air Quality Objectives for the respective pollutants (Table 1.1) and there are no predicted exceedances of any of the relevant short-term (1-hour or 24-hour objectives for any pollutant).

Once a full year of data is available for 2020 at DT7, the measured concentration at the AQ Mesh site can be compared to the DT7 concentrations and further analysis undertaken in the 2021 APR.

**Figure A.1 – Monitoring Locations within Clackmannanshire**

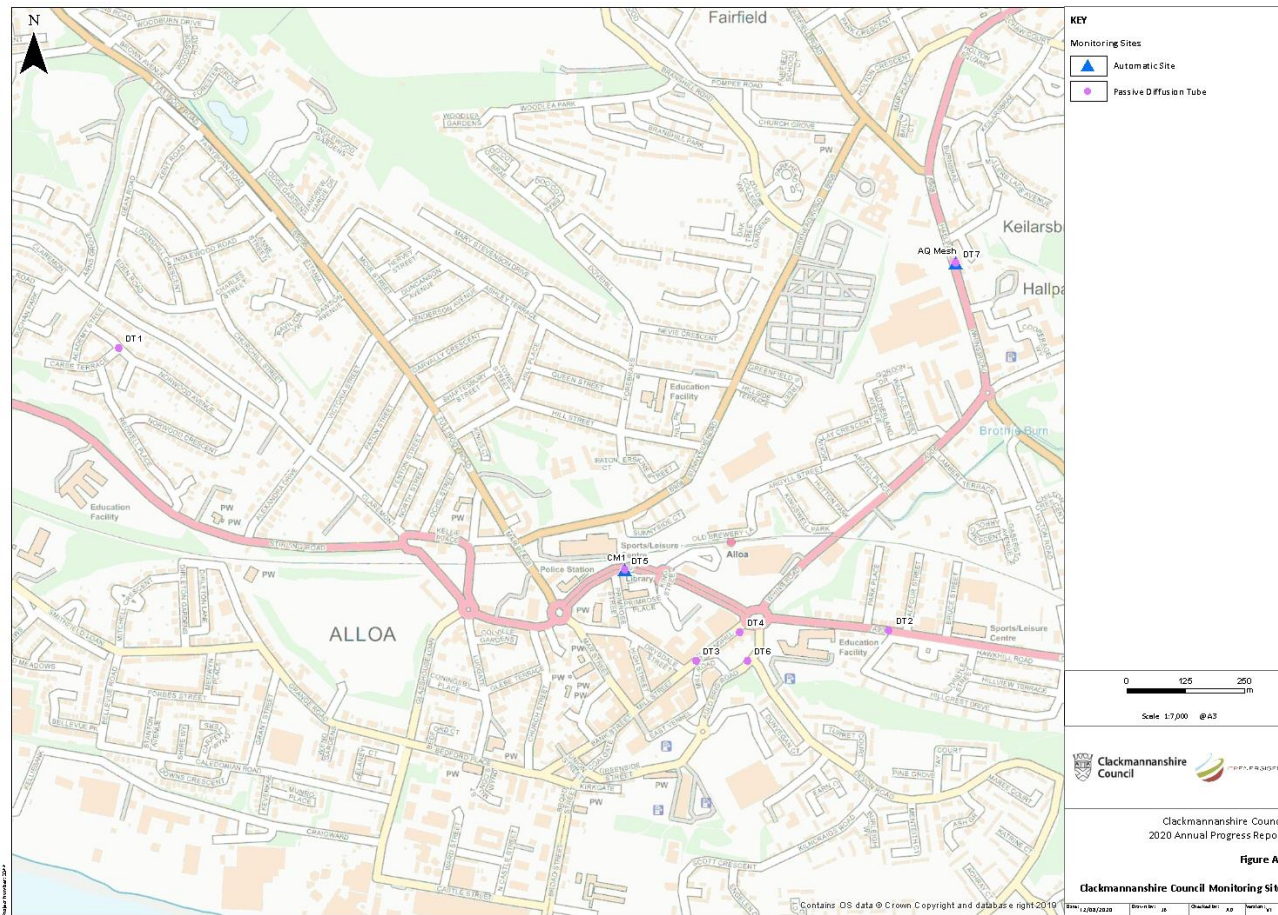


Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at: <http://www.scottishairquality.scot/latest/?la=clackmannanshire>

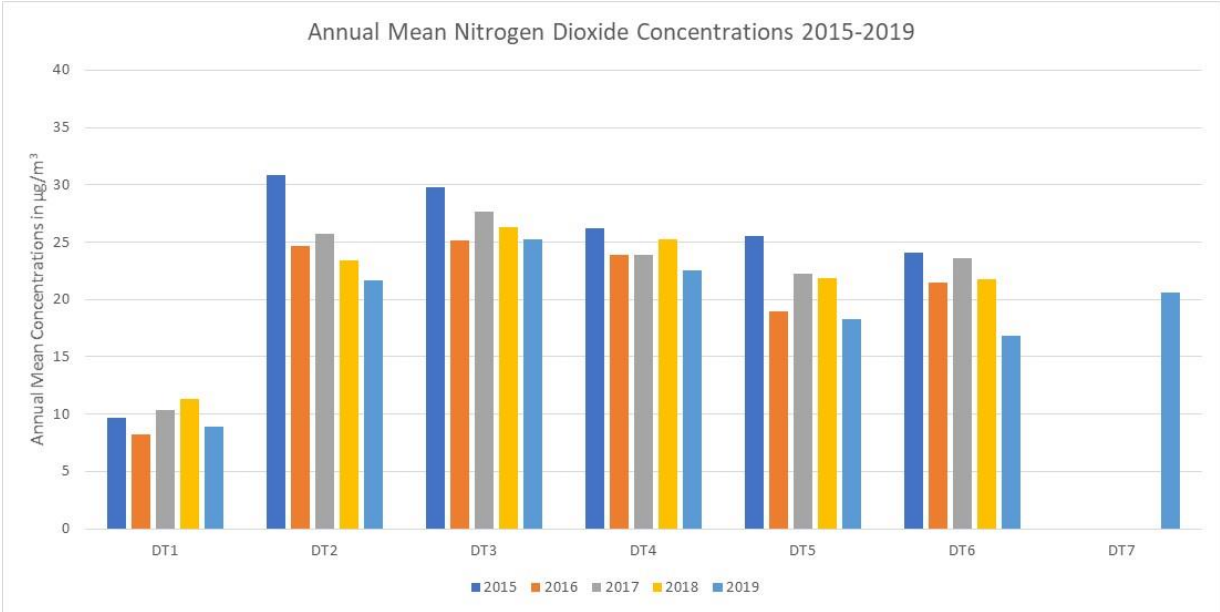
A map showing the location of the monitoring sites is provided in Appendix A. Further details on how the monitors are calibrated and how the data have been adjusted are included in Appendix C.

### **3.1.2 Non-Automatic Monitoring Sites**

Clackmannanshire Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at seven sites during 2019. 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. Trends in annual mean NO<sub>2</sub> concentrations are shown in Figure 3.3 below.

**Figure 3.3 – Trends in Annual Mean Nitrogen Dioxide (NO<sub>2</sub>) Concentrations**



**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<sub>2</sub>)**

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

There were no exceedances of the NO<sub>2</sub> annual mean objective in 2019.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

There are no annual means of NO<sub>2</sub> greater than 60µg/m<sup>3</sup> at any automatic or diffusion tube sites which would indicate that an exceedance of the 1 hour mean objective is unlikely at these sites.

There are no exceedances of the hourly mean objective recorded at either of the continuous monitoring sites.

**No AQMA requires to be declared with regard to NO<sub>2</sub> levels in Clackmannanshire.**

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

Table A.5 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past 5 years with the air quality objective of 18µg/m<sup>3</sup>.

There were no exceedances of the PM<sub>10</sub> annual mean objective in 2019.

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

There have been no exceedances of the daily mean objective for PM<sub>10</sub> of 50µg/m<sup>3</sup> at the CM1 King Street or AQ Mesh sites.

**No AQMA requires to be declared with regard to PM<sub>10</sub> levels in Clackmannanshire.**

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

Table A.7 in Appendix A compares the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past 5 years with the air quality objective of 10µg/m<sup>3</sup>.

There were no exceedances of the PM<sub>2.5</sub> annual mean objective in 2019.

**No AQMA requires to be declared with regard to PM<sub>2.5</sub> levels in Clackmannanshire.**

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

Concentrations of SO<sub>2</sub> are not monitored in the Clackmannanshire Council area and there are no immediate plans to do so.

**No AQMA requires to be declared with regard to SO<sub>2</sub> levels in Clackmannanshire.**

### **3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene**

Concentrations of carbon monoxide lead and 1,3-Butadiene are not monitored in the Clackmannanshire Council area and there are no immediate plans to do so.

**No AQMA currently requires to be declared with regard to Carbon Monoxide, Lead and 1,3-Butadiene in Clackmannanshire.**

## **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**

The Transport Planning Department of Clackmannanshire Council was consulted in order to check if there were any new potential road traffic sources or significantly changed traffic sources within the Council area that could result in exceedances of air quality standards.

In the network of 41 counters operated by the Council in partnership with neighbouring local authorities, data were only available for 2018 and for 12 sites. Of these data, 4 could be compared to 2017 values; 2 showed an increase in vehicle movements, and 2 showed a decrease, all changes being less than 10%.

Traffic count figures for 2017 – 2018 are summarised in Table 4.1. Figures are not available for 2019.



**Table 4.1 Summary of Traffic Survey Data: 2017 – 2018**

Link	Description	Speed limit (mph)	Annual Average Daily Traffic (vehicles per day)		
			2017	2018	% change 2017-2018
00000049	A977 Gartlove (loop)	60	7706	-	
00000287	A907 Blackgrange (loop)	60	21169	-	
00000288	A907 Cambus (loop)	40	-	-	
00000289	A907 Redwell Primary School	20/30	8602	-	
00000292	A907 Ring Road Westbound (loop)	30	11203	-	
00000295	A907 Clackmannan Bypass (loop)	60	-	-	
00000299	A908 Hallpark Road	30	18684	-	
00000300	A908 Fishcross Primary School (loop)	30	-	-	
00000301	A908 Blackfaulds (loop)	40	9213	-	
00000302	A908 Alexandra Street, Devonside (loop)	30	-	-	
00000309	A91 Menstrie Mains (loop)	60	7975	-	
00000311	A91 between Menstrie & Alva (loop)	60	8127	-	
00000314	A91 West of Lower Mill Street, Tillicoultry (loop)	30	6207	-	
00000317	A91 Tait's Tomb (loop)	60	5489	-	
00000321	A91 Muckhart (loop)	60	3372	-	
00000501	A977 Blairingone (loop)	60	6232	-	
00000581	B908 Fairfield (loop)	30	7393	-	
00000586	B909 Hilton Road (loop)	40	12002	-	
00000589	B9096 Tullibody Sign (loop)	30	9477	-	
00000590	B9096 Tullibody Road (loop)	30	11902	-	

Link	Description	Speed limit (mph)	Annual Average Daily Traffic (vehicles per day)		
			2017	2018	% change 2017-2018
00000625	B9140 Tullibody Bypass (loop)	60	8357	-	
00000626	B9140 Muirside (loop)	60	9848	-	
00000634	B9140 Sheardale (loop)	60	1870	-	
00001292	A907 Ring Road Eastbound (loop)	30	9790	-	
00005891	B9096 Tullibody Road, Alloa @ Gavin's Road	30	-	9079	
58800001	B9096 Alloa Road, Tullibody @ No. 33	30	8890	8565	-3.8%
L1044	Carsebridge Road, Alloa @ No. 8	30	-	730	
75400001	Port Street, Clackmannan @ No. 11	20	1255	1191	-5.4%
10460000	North Street, Clackmannan opp No. 3	20	311	341	8.8%
76600000	Main Street, Clackmannan @ No. 32	20	1130	-	
93500000	South Pilmuir Street, Clackmannan opp No. 29	20	940	948	0.8%
L982	Lochies Road, Clackmannan opp No.26	20	-	-	
L868	Castle Street, Clackmannan @ No.36	20	-	-	
31000001	A91 Main Street, Menstrie @ Petrol Station	30	-	7289	
76600001	Cattlemarket, Clackmannan @ No.34	20	-	1052	
95200000	Beauclerc Street, Alva opp. No.24	20	-	481	
L871	Claremont, Alloa @ No.20	20	-	-	
L302	Alexandria Street, Devonside	30	-	-	
L1048	Birch Grove, Menstrie btw No.5/7	20	-	339	
30300000	Moss Road, Tillicoultry opp No 6/8	30	-	7163	
76700000	Alloa Road, Clackmannan @ No.62 (during bypass closure w/b, 20mph limit in place)	20	-	10093	

On consideration of the information relating to traffic count data and from discussions with the roads and transportation department at the Council, it can be confirmed that:

- There are no new narrow congested streets with residential properties close to the kerb;
- There are no new busy streets where people may spend one hour or more close to traffic;
- There are no new roads with a high flow of buses and/or HGV's;
- There are no new junctions;
- There are no new roads constructed or proposed;
- There are no new roads with significantly changed traffic flows.
- There are no new bus or coach stations.

#### **4.2 Other Transport Sources**

Clackmannanshire Council can confirm that there are none of the following new or significantly changed transport sources:

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

There is one train station within the Clackmannanshire Council area at Alloa which has been assessed in previous rounds of Review and Assessment for the potential impact from stationary trains. The electrification of the Stirling/Alloa/Dunblane lines was completed in 2018 and there is no longer any diesel freight utilising this route.

No further assessment of rail emissions was therefore undertaken.

#### **4.3 Industrial Sources**

The Scottish Environment Protection Agency, (SEPA) was contacted to obtain up-to-date information on regulated industrial processes within the Clackmannanshire

Council area. They were unaware of any applications or plans for new or increased sources of atmospheric emissions in the Council area during 2019.

#### **4.4 Commercial and Domestic Sources**

There are no new commercial energy centre installations or Combined Heat and Power (CHP) plants.

Previous reports concluded that there were no areas of domestic solid fuel burning with a density greater than 100 houses within a 500 x 500m area. There have been no new areas of development with significant solid fuel burning and it is therefore not necessary to undertake any further assessment.

The Council has received some complaints regarding smoke from small, domestic wood burning stoves which are investigated on a case-by-case basis. Such installations do not always require planning permission and it is therefore difficult to track their numbers within the Council area. However, it is the intention of Clackmannanshire Council to log all complaints as they become aware of them to monitor density.

New planning applications for combustion sources, including biomass boilers are considered in Section 5.

#### **4.5 New Developments with Fugitive or Uncontrolled Sources**

Clackmannanshire Council confirms that there are none of the following new or significantly changed fugitive or uncontrolled sources:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc.
- Other potential sources of fugitive particulate matter emissions.

## 5. Planning Applications

The Development Quality section of the Council was consulted with regard to major planning applications during 2018 which might affect air quality.

The applications and outcomes are summarised in Table 5.1.

**Table 5.1 – Details of Planning Applications Requiring Air Quality Assessments or Screening Assessments by Clackmannanshire Council**

Name of Establishment	Data Submitted by Applicant	Assessment	Outcome
<b>18/00283/PPP</b> Mixed Use Development Comprising Residential, Employment, Commercial and Community Uses, Sports Hall, Sports Pitches And Running Track, Including Associated Landscaping And Supporting Infrastructure On Agricultural Land And Playing Fields   Land South Of Dollar Clackmannanshire	Application Validated 18 <sup>th</sup> December 2018 – Awaiting Decision	<b>AQ Assessment Requested –</b> There are 70+ objections to the proposals and increased congestion envisaged due to 300+ homes and new school. The Roads & Transportation Department have raised concerns about the assumptions made in the Transport Assessment and SEPA have raised concerns about flood risk. A revised Masterplan and Design and Access Statement has	No AQIA yet received

		been submitted in August 2020	
<b>19/00272/FULL</b> Erection of 67 houses, Stables/livery building with associated parking, formation of 6 serviced plots for houses with equestrian related use, change of use of agricultural land to paddock, construction of roads, bridge, parking, SUDS and treatment plant, Landscaping and associated works at Former Solsgirth Mine Site, Dollar	Application Received 21 <sup>st</sup> November 2019, validated 7 <sup>th</sup> January 2020 Awaiting decision	<b>The Environmental Health officer has recommended the following condition:</b>  The applicant is required to make an assessment of the environmental impact of the development with particular emphasis on sustainable development and minimising contributions to air pollution from vehicle usage and road layout, biomass heating systems and use of fossil fuels. In addition, the applicant must consider control of odour emissions from sewage treatment works.	No AQIA yet received

## **6. Conclusions and Proposed Actions**

### **6.1 Conclusions from New Monitoring Data**

During 2019, Clackmannanshire Council undertook monitoring of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at locations detailed in the report. The results indicate that concentrations complied with the air quality objectives.

There are no existing AQMAs within the Council area and based on the monitoring data obtained during 2019, it is concluded that no AQMAs are required to be declared.

### **6.2 Conclusions relating to New Local Developments**

This assessment has been conducted in accordance with the TG(16) Technical Guidance. Updated information has been obtained on road, rail, industrial, domestic and fugitive emission sources and compared to criteria and conditions described in the Guidance.

It was concluded that there are no new local developments that require further assessment.

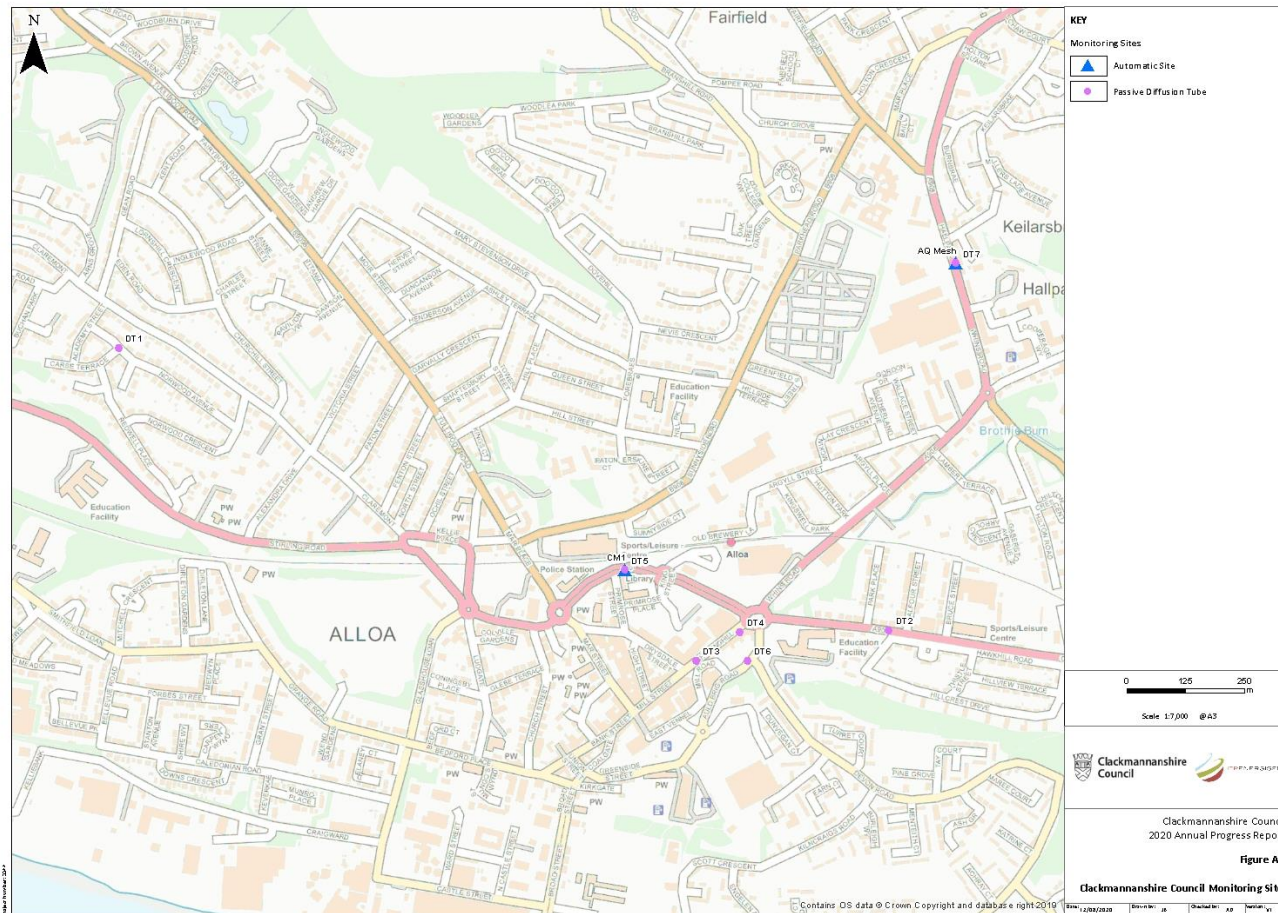
### **6.3 Proposed Actions**

Clackmannanshire Council will continue monitoring air quality at the current locations and progressing the Actions to Improve Air Quality as outlined in Table 2.2.

It is planned to continue monitoring of NO<sub>2</sub> with the AQ Mesh and passive diffusion tube at Hallpark Road until at least the end of 2020.

# Appendix A: Monitoring Results

## Figure A.1 – Monitoring Locations within Clackmannanshire





**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?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
CM1	King Street, Alloa	Roadside	288665	693072	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	N	NO <sub>2</sub> Chemiluminescent; PM <sub>10</sub> & PM <sub>2.5</sub> FIDAS	1.22	2.45	2.3
AQ Mesh	Hallpark Road A908	Roadside	289371	693727	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	N	NO <sub>2</sub> electrical sensors, PM <sub>10</sub> and PM <sub>2.5</sub> using optical spectrometry	0	2.38	2.68

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
DT1	Norwood Avenue, Alloa <sup>(3)</sup>	Kerbside	287588	693546	NO <sub>2</sub>	N	2	1.7	N
DT2	Clackmannan Road, Alloa	Kerbside	289228	692943	NO <sub>2</sub>	N	2	2	N
DT3	Bus Station, Alloa	Kerbside	288818	692878	NO <sub>2</sub>	N	2	1.3	N
DT4	Shillinghill/Bridge Terrace, Alloa	Kerbside	288911	692940	NO <sub>2</sub>	N	2	1.4	N
DT5	King Street, Alloa	Kerbside	288665	693072	NO <sub>2</sub>	N	8	2.45	Y
DT6	Auld Brig Road, Alloa	Kerbside	288927	692878	NO <sub>2</sub>	N	3	1.8	N
DT7	Pearson View, Sauchie <sup>(3)</sup>	Roadside	289371	693727	NO <sub>2</sub>	N	0	2.38	Y

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

(2) N/A if not applicable.

(3) DT1 was relocated in August 2019 to Pearson View Sauchie (Façade on Hallpark Road) to be collocated with the AQMesh site and is now DT7.

**Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
CM1	Roadside	Automatic	98.4%	98.4%	28	27.6 (29.3) <sup>(4)</sup>	22.6	23.0 <sup>(7)</sup>	22.0
AQ Mesh	Roadside	Automatic	75.4%	75.4%	-	-	37.3 <sup>(5)</sup>	<b>43</b> <b>(37.5)</b> <sup>(6)</sup>	15.2
DT1	Kerbside	Diffusion Tube	100%	58.3%	9.7	8.2	10.3	11.3	8.9
DT2	Kerbside	Diffusion Tube	100%	100%	30.8	24.7	25.7	23.4	21.7
DT3	Kerbside	Diffusion Tube	100%	100%	29.8	25.1	27.7	26.3	25.2
DT4	Kerbside	Diffusion Tube	100%	100%	26.2	23.9	23.9	25.2	22.5
DT5	Kerbside	Diffusion Tube	100%	100%	25.5	19 (20) <sup>(4)</sup>	22.2 (23.2) <sup>(4)</sup>	21.9	18.3
DT6	Kerbside	Diffusion Tube	100%	100%	24.1	21.5	23.6	21.8	16.8
DT7	Roadside	Diffusion Tube	100%	41.7%	-	-	-	-	20.6

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) All means have been “annualised” as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details. Annualised data are presented in brackets.

(5) Period Mean for AQ Mesh

(6) Annual Mean for AQ Mesh – Distance Corrected in brackets for closest receptor location

(7) 2018 Concentration for CM1 was updated due to a change in ratified data report on the Scottish Air Quality website (reduce from 24 to 23 µg/m<sup>3</sup>)

**Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2015	2016	2017	2018	2019
CM1	Roadside	Automatic	96.3%	96.3%	0 (90)	0 (96)	0 (87)	0	0
AQ Mesh	Roadside	Automatic	75.4%	75.4%			0 (117)	0	0 (91.1)

Notes: Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

**Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2015	2016	2017	2018	2019
CM1	Roadside	99.8%	99.8%	15	13	12	11	11
AQ Mesh	Roadside	75.1%	75.1%	-	-	9.2 <sup>(3)</sup>	6.5	4.8

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 18µg/m<sup>3</sup> are shown in **bold**.

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

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

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

**Table A.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> <sup>(3)</sup>				
				2015	2016	2017	2018	2019
CM1	Roadside	99.8%	99.8%	2	3	0	0	1
AQ Mesh	Roadside	75.1%	75.1%	-	-	2	0	0

Notes: Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 7 times/year) are shown in **bold**.

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

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

(3) If the period of valid data is less than 85%, the 98.1<sup>st</sup> percentile of 24-hour means is provided in brackets.

**Table A.7 – Annual Mean PM<sub>2.5</sub> Monitoring Results**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2015	2016	2017	2018	2019
CM1	Roadside	99.8%	99.8%	-	-	-	6	6
AQ Mesh	Roadside	94.6%	94.6%	-	-	3.9	3.5	2.8

Notes: Exceedances of the PM<sub>10</sub> annual mean objective of 10µg/m<sup>3</sup> are shown in **bold**.

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

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

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

## Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2019

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data <sup>(2)</sup>	Bias Adjusted <sup>(1)</sup>
	DT1	20.0	15.4	9.2	10.1	6.0	7.5	5.0	-	-	-	-		
DT2	47.4	36.7	28.1	24.7	20.8	17.1	16.6	19.8	24.1	23.9	33.1	24.6	26.4	21.7
DT3	44.5	46.5	32.7	31.2	23.6	23.4	22.6	21.5	22.0	26.4	32.9	40.8	30.7	25.2
DT4	41.3	39.5	26.4	30.0	24.9	22.3	14.1	19.5	20.3	25.0	31.2	35.0	27.5	22.5
DT5	34.0	35.0	18.4	24.3	17.1	15.8	12.9	19.1	20.6	18.2	23.3	29.7	22.4	18.3
DT6	2.0	38.7	20.8	26.1	16.4	15.7	15.0	15.9	18.8	12.1	30.3	33.6	20.5	16.8
DT7	-	-	-	-	-	-	-	16.3	20.3	23.1	32.8	27.5	24.0	20.6

(1) See Appendix C for details on bias adjustment

(2) Data have been annualised where required

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

### Factor from local Co-location Studies

There is no co-location study within Clackmannanshire Council.

### Diffusion Tube Bias Adjustment Figures

The National bias adjustment factor spreadsheet 03/20 was used to derive the national bias adjustment factor for diffusion tubes analysed by Glasgow Scientific Services during 2019. Using all sites, the factor was found to be 0.86. Using only those with Good Precision, the factor was 0.82. The factor of 0.82 was used in this assessment. See Figure C.1 below.

**Figure C.1 Glasgow Scientific Services – National average bias adjustment factor 2019**

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/20			
<p>Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p> <p>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.</p>							<p>This spreadsheet will be updated at the end of June 2020</p> <p><a href="#">LAQM Helpdesk Website</a></p> <p>Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.</p>			
<b>Step 1:</b>		<b>Step 2:</b>		<b>Step 3:</b>		<b>Step 4:</b>				
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 <sup>2</sup> shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data.		If you have your own co-location study then see footnote <sup>3</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953				
<b>Analysed By<sup>1</sup></b>	<b>Method</b> <small>To undo your selection, choose (All) from the pop-up list</small>	<b>Year</b> <small>To undo your selection, choose (All)</small>	<b>Site Type</b>	<b>Local Authority</b>	<b>Length of Study (months)</b>	<b>Diffusion Tube Mean Conc. (Dm) (µg/m<sup>3</sup>)</b>	<b>Automatic Monitor Mean Conc. (Cm) (µg/m<sup>3</sup>)</b>	<b>Bias (B)</b>	<b>Tube Precision<sup>4</sup></b>	<b>Bias Adjustment Factor (A) (Cm/Dm)</b>
Glasgow Scientific Services	20% TEA in water	2019	R	East Dunbartonshire Council	12	36	32	12.7%	P	<b>0.89</b>
Glasgow Scientific Services	20% TEA in water	2019	R	East Dunbartonshire Council	12	23	21	10.6%	P	<b>0.90</b>
Glasgow Scientific Services	20% TEA in water	2019	R	East Dunbartonshire Council	12	33	26	23.7%	G	<b>0.81</b>
Glasgow Scientific Services	20% TEA in water	2019	KS	Marylebone Road Intercomparison	12	79	65	21.0%	G	<b>0.83</b>
<b>Overall Factor<sup>2</sup> (4 studies)</b>									<b>Use</b>	<b>0.86</b>

### QA/QC Automatic Monitoring Data

Automatic monitoring of NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> is completed within Clackmannanshire Council using Chemiluminescence (NO<sub>x</sub>), FDMS (PM<sub>10</sub>) and FIDAS (PM<sub>10</sub> and PM<sub>2.5</sub>) analysers. All data is available in real-time, and following data dissemination is ratified by Ricardo Energy and Environment to AURN standards.

The certificates of ratified data are included in Figure C.2.

Figure C.2 Ratified Data from Ricardo Energy and Environment for King Street Alloa

## Air Pollution Report

1st January to 31st December 2019



### Alloa A907 (Site ID: ALO2)

These data have been fully ratified

Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	NO µg/m <sup>3</sup>	NO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> asNO <sub>2</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>25</sub> µg/m <sup>3</sup>
Number Days Low	-	361	-	364	365
Number Days Moderate	-	0	-	1	0
Number Days High	-	0	-	0	0
Number Days Very High	-	0	-	0	0
Max Daily Mean	86	59	184	62	32
Annual Max	277	99	493	102	74
Annual Mean	15	22	44	11	6
98th Percentile of daily mean	-	-	-	34	-
90th Percentile of daily mean	-	-	-	20	-
99.8th Percentile of hourly mean	-	81	-	-	-
98th Percentile of hourly mean	86	61	185	38	25
95th Percentile of hourly mean	54	51	131	29	19
50th Percentile of hourly mean	7	18	29	9	5
% Annual data capture	98.42%	98.40%	98.40%	99.77%	99.78%

Instruments: PM<sub>10</sub>: FIDAS

PM<sub>25</sub>: FIDAS

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO<sub>x</sub> mass units are NO<sub>x</sub> as NO<sub>2</sub> µg m<sup>-3</sup>

**Note:** For a strict comparison against the objectives there must be a data capture of 85% or greater throughout the calendar year.



Pollutant	Air Quality Standards (Scotland) Regulations 2010	Exceedances	Days
PM10 particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	1	1
PM10 particulate matter (Hourly measured)	Annual mean > 18 microgrammes per metre cubed	0	-
PM2.5 particulate matter (Hourly measured)	Annual mean > 12 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	0	0
Nitrogen dioxide	Annual Mean > 40 microgrammes per metre cubed	0	-

## QA/QC of Diffusion Tube Data

The diffusion tubes for the year 2019 were supplied and analysed by GSS, the tubes were prepared using the 20% TEA in water preparation method. All results have been bias adjusted and annualised (where required). GSS is a UKAS accredited laboratory and participates in the AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for NO<sub>2</sub> tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO<sub>2</sub> concentrations reported are of a high calibre.

The latest AIR-PT results were as follows:

- AIR-PT AR028 (September – October 2018) – 100%
- AIR-PT AR030 (January to February 2019) – 100%
- AIR-PT AR031 (April to May 2019) – 100%
- AIR-PT AR033 (July-August 2019) – 100%
- AIR-PT AR034 (September to November 2019) – 50%

Over a rolling five round AIR-PT window, it is expected that 95% of laboratory results should be  $\leq +2$ . If this percentage is substantially lower than 95% for a particular laboratory, within this five round window, then one can conclude that the laboratory in question may have sources of error within their analytical procedure.

The AIR-PT AR034 result of 50% was investigated by the laboratory to the satisfaction of their accreditation body UKAS and no reprocessing was required.

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

1. Local Air Quality Management Guidance LAQM.TG(16), Department for Environment, Food and Rural Affairs (DEFRA), 2016
2. 2019 LAQM Air Quality Updating and Screening Assessment, ITP Energised Limited, Ref: EDI\_1471-2019, 2<sup>nd</sup> July 2019
3. 2018 LAQM Air Quality Updating and Screening Assessment, ITP Energised Limited, Ref: 11354-001, 13<sup>th</sup> June 2018
4. 2017 LAQM Air Quality Updating and Screening Assessment, ITP Energised Limited, Ref:11032-001, 28<sup>th</sup> June 2017
5. 2016 LAQM Air Quality Updating and Screening Assessment, TSI Scotland Limited, TSI/CLA.007-04-01, 20 October 2016
6. 2015 LAQM Air Quality Updating and Screening Assessment, TSI Scotland Limited, TSI/CLA.006-04-04, 24 July 2015
7. 2014 Air Quality Progress Report for Clackmannanshire Council, TSI Scotland Limited, TSI/CLA.005-04-01, April 2014
8. 2013 Air Quality Progress Report for Clackmannanshire Council, TSI Scotland Limited, TSI/CLA.003-04-02, May 2013
9. 2012 LAQM Air Quality Updating and Screening Assessment, TSI Scotland Limited, TSI/CLA.003-04-02, 24 July 2012
10. 2011 Air Quality Progress Report for Clackmannanshire Council, TSI Scotland Limited, CLA-001-03-03, April 2011
11. LAQM TG(16), Page 7 to 14, Box 7.2
12. The Clackmannanshire Sustainability and Climate Change Strategy, 2010
13. Clackmannanshire Local Development Plan, 2015
14. Clackmannanshire Council Local Transport Strategy 2009-2014
15. Clackmannanshire Council Climate Change Duties Annual Statement 2016/17  
<https://www.clacks.gov.uk/site/documents/sustainability/annualstatementreportonclimatechange/>