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Chlach Mhanann

Annual Progress Report (APR)



2018 Air Quality Annual Progress Report (APR) for
Clackmannanshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2018

Clackmannanshire Council

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Executive Summary: Air Quality in Our Area

This report provides an overview of air quality within Clackmannanshire Council during 2017. 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

The Council continued to monitor emissions of NO₂ and PM₁₀ to determine if any air quality objectives were exceeded during 2017.

During 2016, the Council removed the sensors from the continuous monitoring unit in King Street, Alloa in order to protect them during the construction of the adjacent residential flats. The sensors were reinstated in April 2017, therefore the data capture for both NO₂ and PM₁₀ was less than 75% for the whole year.

The Council maintained a network of six passive diffusion tubes to monitor ambient concentrations of NO₂ throughout 2017.

All monitored concentrations were found to be below the air quality objectives.

Results for NO₂ from the chemiluminescent monitor at the automatic monitoring station at King Street, Alloa have shown the annual mean concentration of 22.6-28 µg/m³ over the last five years with an overall average of 26.1µg/m³. Results from the AQ Mesh pod installed at Hallpark Road in Alloa in June 2017, have shown a 6-month mean concentration of 37.3 µg/m³ with monthly values in the range 25.7-48.4 µg/m³, the highest concentrations being in the winter months.

Results from the FDMS monitor and those from the previous TEOM sampler have shown the annual mean concentration of particulate matter PM₁₀ of 12 –17 µg/m³ over the last five years with an overall average of 14.7 µg/m³.

Examination of the previous five years of data shows that there was no obvious trend in annual mean NO₂ concentrations across the diffusion tube network. In 2017 there were increases in NO₂ levels at five out of six diffusion tube sites when compared with 2016 while NO₂ levels decreased at the King Street, Alloa automatic monitoring site.

There has been a continued downward trend in annual mean PM₁₀ concentrations.

A review of planning applications submitted in 2017 showed there were no new developments likely to have a significant impact and result in any exceedances of the Air Quality Standard (AQS) objectives for any pollutant, although further information has been requested for one application.

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.

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_{2.5}, PM₁₀ and NO₂ in the Alloa area;
- 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 (expected 2018/2019);
- promote low emission transport (installation of electric charging points); and
- review and develop policies which impact on air quality.

Local Priorities and Challenges for Clackmannanshire Council in 2017/2018

The Council is committed to continuing the review and assessment of pollutants affecting the air quality in Clackmannanshire. The priority is to continue monitoring

emissions primarily of NO₂, PM_{2.5} and PM₁₀, and widen the area of coverage of the monitoring network by utilising the AQ Mesh monitor.

The AQ Mesh was installed on the A908, Hallpark Road, Alloa where increased traffic levels and congestion have been detected over the last two years. The results are available from July-December 2017 and show that the 6-month period mean concentrations are below the annual mean objectives for each pollutant. Monitoring is planned to continue at this location for two years with the AQ Mesh Pod.

SEPA was contacted in March 2017 regarding possible monitoring at the Cambusview Poultry farm. However, the cost of this exercise compared to the number of complaints received meant it was not feasible. SEPA could also not give a guarantee that the resources were definitely available to conduct such a monitoring exercise. Hence, no further work on this matter has taken place.

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 <https://www.clacks.gov.uk/environment/woodburningstoves/>

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

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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 2017. 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 ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	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
	18 µg/m ³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10 µg/m ³	Annual mean	31.12.2020
Sulphur dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	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

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Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
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
Lead	0.25 µg/m ³	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 does not currently have any AQMAs. There are no recommendations in this year's report to declare any new AQMAs in the Council area.

2.2 Progress and Impact of Measures to address Air Quality in Clackmannanshire Council

Clackmannanshire Council has continued to monitor levels of pollutants related to emissions from transport in 2017 in pursuit of improving local air quality. From February 2015, the authority started to monitor NO_x levels at its fixed monitoring site on King Street, Alloa, however this was suspended in September 2016 for the protection of the instruments during the adjacent construction work, but recommenced in April 2017. Going forward, this will provide more accurate data regarding the levels of NO_x emissions from traffic than the previous method of using a diffusion tube only. A FIDAS analyser was also installed on 5 December 2017, which replaces the TEOM/FDMS and will monitor both PM_{2.5} and PM₁₀. Monitoring results from this analyser will feature in the 2019 annual report. Within the wider Council, other measures are being taken forward which will have an impact on air quality.

The Council has a Sustainability and Climate Change Strategy adopted in 2010 which includes actions to reduce environmental impacts including reducing car use. The Council has a legal obligation to carry out Strategic Environmental Assessment (SEA) of its plans, programmes and strategies. This should include air quality considerations where the plan is likely to have an impact. SEA was used in the production of the Local Development Plan and potential negative impacts on air quality were identified and either avoided, mitigated or flagged for consideration at the development management stage.

The Development Quality section of the Council is also required to consider the potential impact on Air Quality as part of Environmental Impact Assessments (EIA) where required for new developments. Where an EIA is not required and it is considered that a development has the potential to be detrimental to the environment, Policy EA11 of the Local Development Plan adopted in 2015 is used by the Council to ensure a developer demonstrates to the satisfaction of the Council that all reasonable measures have been taken to minimise or mitigate any such impacts.

The Local Transport Strategy is currently being updated and outlines plans for proposed roads and sustainable means of transportation within Clackmannanshire. It recognises the need to consider Air Quality and the health effects of emissions from transport and the draft plan is due for publication in 2018. Public transport plays an important part in the Council's transport strategy. The Public Transport Unit operates jointly with Stirling Council and undertakes the assessment of need 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.

In Autumn 2016 Clackmannanshire Council was invited by the Scottish and United Kingdom Governments to become part of the Stirling City Region Deal negotiations. Amongst the proposals being developed are:

- Active Travel Networks with the aim of extending the current active travel routes focusing on routes adjacent to the River Forth and connections to major development proposals forming part of the bid;
- Public Transport Networks with the aim of increasing access to local jobs and services and improving connections between Stirling and Clackmannanshire to job and leisure opportunities ; and
- e-Bikes with the aim of developing a network of publicly available electric bikes throughout Clackmannanshire.

Details of measures to address air quality and their status are set out in Table 2.1.

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	New automatic NO _x monitor at King Street	Transport planning and infrastructure	NO _x monitoring	Development and Environment	Feb 2015	Complete	None	N/A, no AQMAs	Ongoing	First full year of data expected end 2018	Was removed in 2016 for protection due to construction works – reinstated April 2017
3	Install a mobile emissions monitor at A908 Hallpark Road, Sauchie where it was identified that traffic levels had increased.	Transport planning and infrastructure	The authority proposes to monitor PM _{2.5} , PM ₁₀ and NO _x levels using this equipment.	Development and Environment	Funding has been awarded	Autumn 2017.	None	N/A, no AQMAs	Monitoring since June 2017	2 years from the date of installation	

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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
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	
5	Council provides 5 electric pool cars for use by staff	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 10 electric charging bays throughout Clackmannanshire for use by the public with an additional dual plug 22kW public unit to be installed in Alva in 2018	Promoting low emission transport	Electric car charging points located at Kilncraigs, Greenside Street, Alloa, Dumyat Centre, Menstrie, Murray Square, Tillicoultry, Dollar Community Access Point Office, Dollar, Tron Court, Tullibody and soon Lower Coden Street, Alva	Development and Environment	Complete	Complete	None	N/A, no AQMAs	Complete	Complete for the moment but may increase if funding allows	
7	Promotion of walking and cycling. Part of this is the Smarter Choices, Smaller Places initiative which is promoted to the public	Alternative to Private vehicle use	Local Active Travel strategy	Development and Environment	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing	Ongoing	

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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
8	Council utilises the TripShare Clacks 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	12 Active Car Sharing Teams	Ongoing	
9	Existing cycle routes and paths have been upgraded/ maintained	Promoting travel alternatives		Development and Environment	Ongoing	Ongoing	None	N/A, no AQMAs	Ongoing	Ongoing	
10	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	
11	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	
12	Install a PM _{2.5} /PM ₁₀ continuous analyser at King Street, Alloa site	Policy Guidance and development control	To obtain data for this statutory pollutant	Development and Environment	Complete	Complete	Monitored emissions	N/A, no AQMAs	Installed Dec 17	Ongoing	Data Capture <7% in 2017 so not reported in this APR

2.3 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 <http://www.gov.scot/Publications/2015/11/5671/17>. Progress by Clackmannanshire Council against relevant actions within this strategy is demonstrated below.

2.3.1 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 is due to be published in 2018. 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 undertakes the assessment of need 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.

2.3.2 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 and reports on its Public Sector climate change duties in an annual report <http://www.keepsotlandbeautiful.org/media/1557927/clackmannanshire-council-ccr-2016.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 demonstrates that greenhouse gas emissions have reduced from 9493 tCO₂e in 2015/16 to 8844 tCO₂e in 2016/17.

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

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

3.1 Summary of Monitoring Undertaken

The monitoring undertaken in 2017 was a continuation of the 2016 programme.

Automatic monitoring had been suspended during 2016 at the site on King Street Alloa due to neighbouring construction works, however it was reinstated in April 2017 as detailed in Section 3.1.1.

A portable monitor (AQ Mesh) was installed on the A908, Hallpark Road, Alloa where increased traffic levels have been observed and recorded in recent years. This commenced in June 2017 and is still operational.

No new diffusion tube monitoring sites were introduced in 2017 and 6 sites were monitored as detailed in Table A2.

Some data was obtained from the new FIDAS particulate monitor after it was installed in December 2017, however as the data capture was so low (<7%), the results are not included within this report.

3.1.1 Automatic Monitoring Sites

Clackmannanshire Council undertook automatic (continuous) monitoring at two sites during 2017. Table A.1 in Appendix A shows the details of the sites. Results from the affiliated monitoring site at King Street, Alloa are available at:

http://www.scottishairquality.co.uk/latest/site-info?site_id=ALO2&view=report

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.

A map showing the location of the monitoring site is provided in Figure 3.3. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

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The data capture for the site in 2017 was 65.4% for PM₁₀ and for NO₂ was 72.5%. Routine calibrations are carried out by Clackmannanshire Council staff and biannual site audits are carried out by Ricardo AEA. The audit report is reproduced in Appendix A. The low data capture for 2017 is due to the decision of the Council, in agreement with the Scottish Government, to shut down and cover the sensors from the unit to protect them during the construction of the new residential flats adjacent to the unit.

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 Air Monitors Ltd, as shown in Figure 3.2.

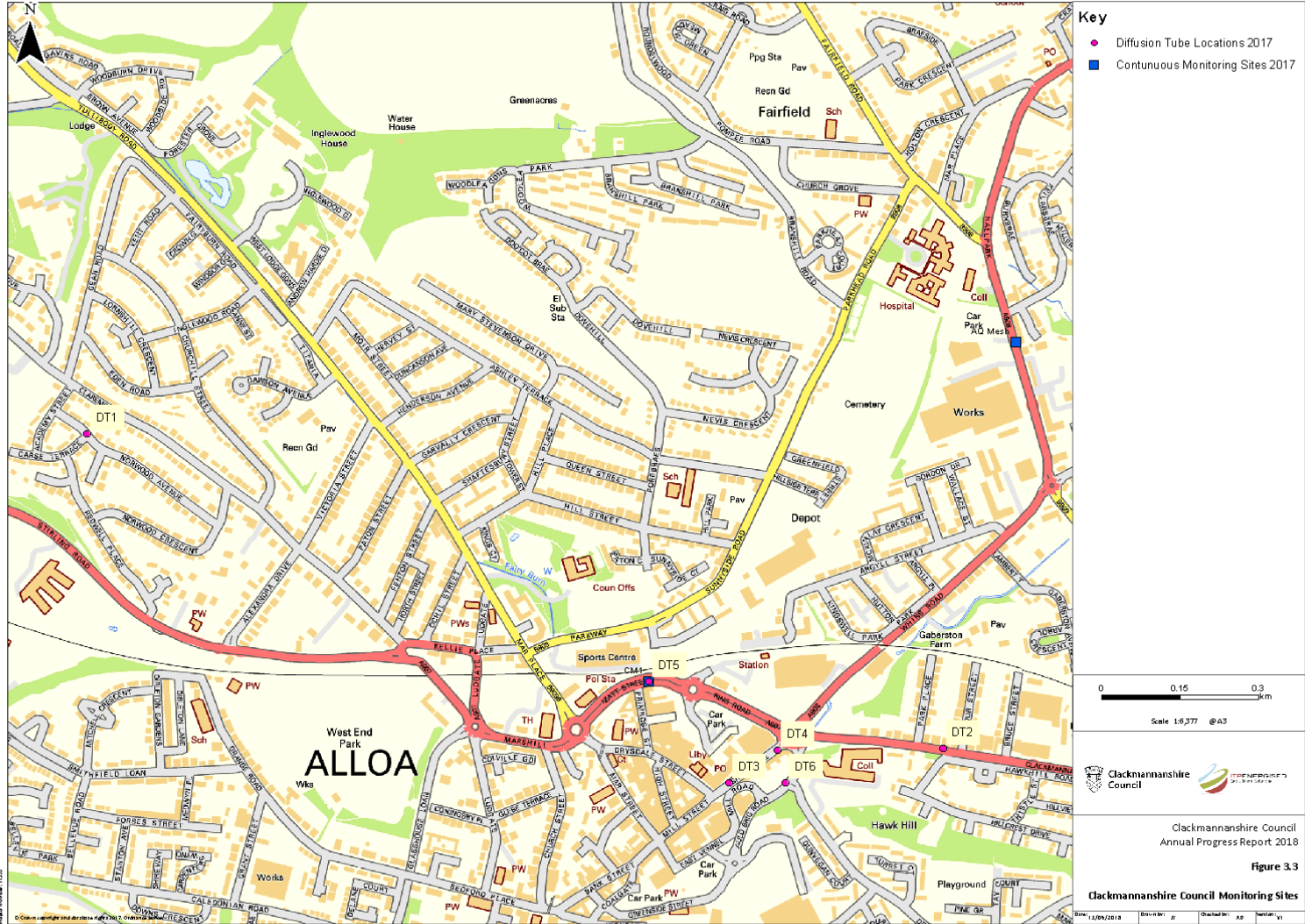
The AQ mesh pod is not a DEFRA accredited/quality assured method of monitoring, but it is able to provide the Council with continuously monitored data demonstrating the effects of diurnal traffic flows and periods of congestion on local air quality and has the benefit of including more pollutants than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

The AQ Mesh was first installed at the King Street automatic monitoring station in May 2017 in order to calibrate the monitor and was then deployed to Hallpark Road during June at the location shown on Figure 3.3. This site was chosen after examination of traffic data and from officer knowledge of traffic 'hot-spots' at peak times. Analysis of six complete months of available data from July to December shows that the period-mean concentration of NO₂ was 37.3µg/m³ with monthly values in the range 25.7-48.4 µg/m³, the highest concentrations being in the winter months. The period-mean concentrations of PM₁₀ and PM_{2.5} were 9.2 and 3.9 µg/m³ respectively. Due to the significant variation in monthly figures, it will remain in this location until for up to two years from installation, in order that data can be collected for comparison with the relevant air quality objectives. The data available from the site so far are shown in Appendix A.

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



Figure 3.3 – Location Map of Automatic and Non-Automatic Monitoring Sites

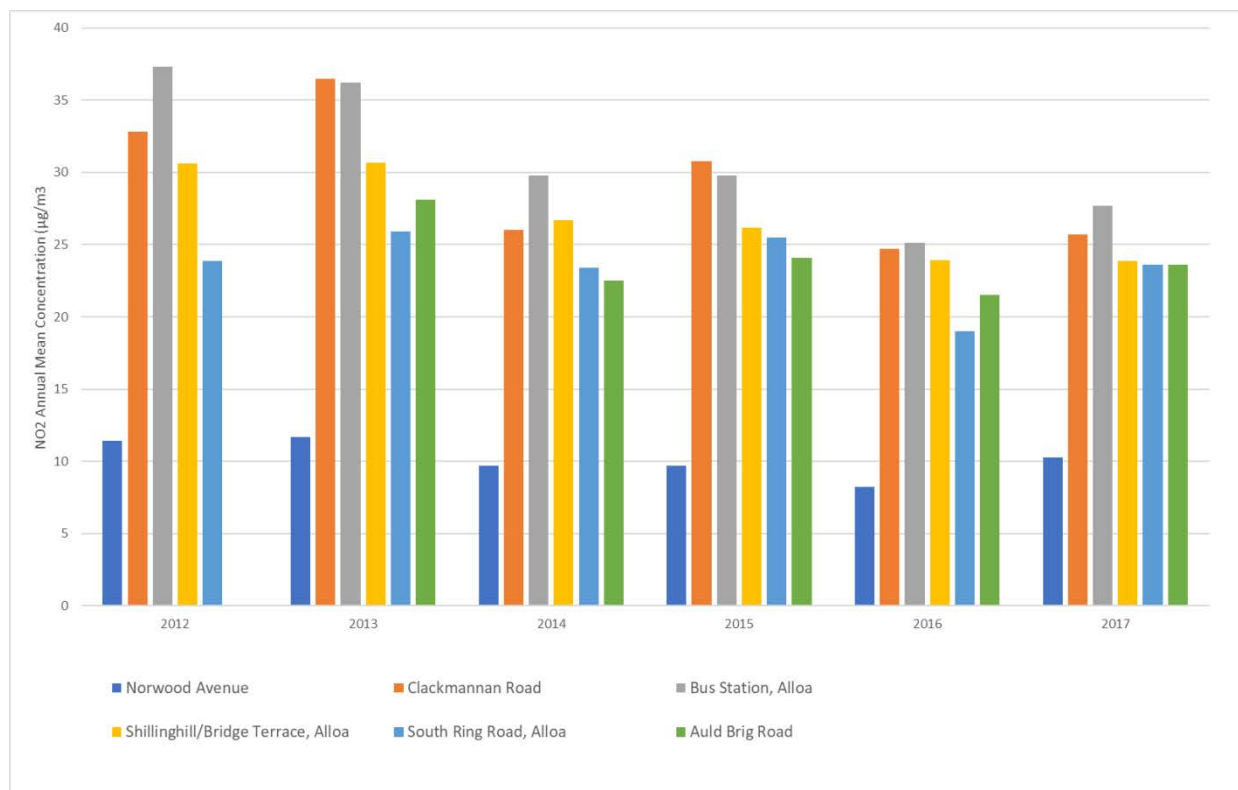


3.1.2 Non-Automatic Monitoring Sites

Clackmannanshire Council undertook non- automatic (passive) monitoring of NO₂ at six sites during 2017. Table A.2 in Appendix A shows the details of these sites.

A map showing the location of the monitoring sites is provided in Figure 3.3. 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 NO₂ concentrations are shown in Figure 3.4 below.

Figure 3.4 – Trends in Annual Mean Nitrogen Dioxide 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 (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³. The period-mean results from the AQ Mesh unit are also presented.

There have been no exceedances of the NO₂ annual mean objective in 2017.

For diffusion tubes, the full 2017 dataset of raw monthly mean values is provided in Appendix B, Table B1.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. There are no annual means greater than 40µg/m³, which would indicate that an exceedance of the 1 hour mean objective is unlikely at these sites. There were no hourly exceedances recorded by the AQ Mesh pod at Hallpark Road.

No AQMA requires to be declared with regard to NO₂ levels in Clackmannanshire.

3.2.2 Particulate Matter (PM₁₀)

Automatic Monitoring Data

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 18µg/m³. The annual mean concentration of PM₁₀ over the period 2012 to 2017 lies between 12 and 17 µg/m³ with an average of 14.7 µg/m³. The period-mean result of 9.2 µg/m³ from the AQ Mesh unit are also presented.

The annual mean PM₁₀ concentration recorded at the automatic site was below the annual mean objective in 2017. For part of 2017, the method of monitoring was TEOM/FDMS, then from December 2017, it was a FIDAS analyser.

There have been no exceedances of the PM₁₀ annual mean objective in 2017.

A trend graph is shown in Figure 3.5 below.

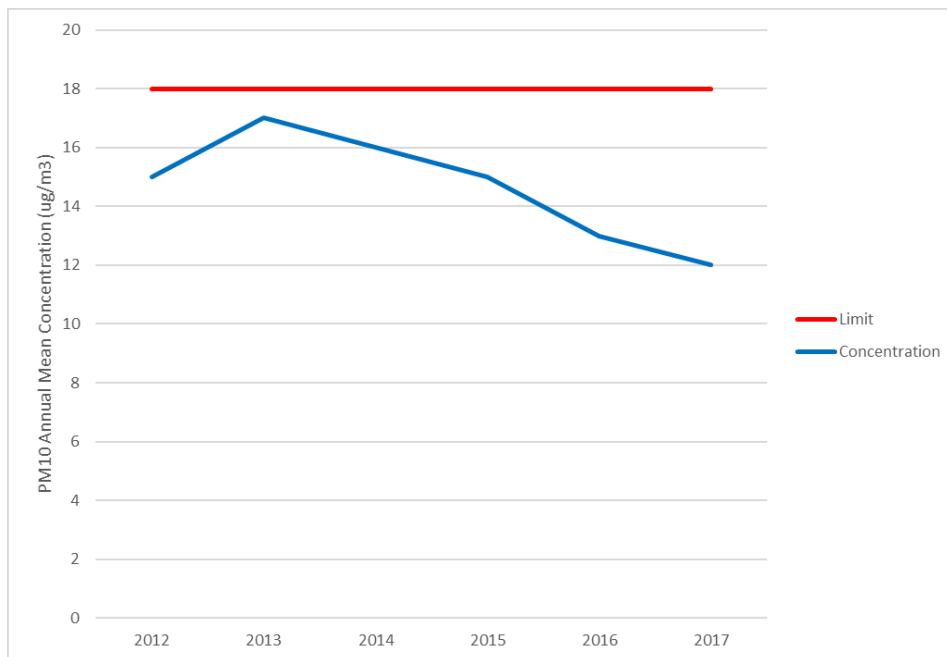
Figure 3.5 – Trends in Annual PM₁₀ Concentration

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 7 times per year.

There have been no exceedances over 50 µg/m³ at the King Street site in 2017, however there was one exceedance in September 2017 and one in December 2017 at the AQ Mesh site in Hallpark Road, Alloa.

No AQMA requires to be declared with regard to PM₁₀ levels in Clackmannanshire.

3.2.3 Particulate Matter (PM_{2.5})

The Council received funding from the Scottish Government to purchase and install a PM₁₀ and PM_{2.5} analyser at the King Street, Alloa site. The analyser has been installed but only began monitoring in December 2017. The total annual data capture for 2017 was 6.2% and the results are therefore not reported in this APR.

The 6-month period-mean concentration of PM_{2.5} was 3.9 µg/m³ at the AQ Mesh site in Hallpark Road, Alloa, significantly below the limit of 10 µg/m³.

No AQMA currently requires to be declared with regard to PM_{2.5} levels in Clackmannanshire.

3.2.4 Sulphur Dioxide (SO₂)

Concentrations of SO₂ 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 SO₂ 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.

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 28 counters operated by the Council, 20 sites showed an increase in vehicle movements, five of which were greater than 10%. These were:

- B909, Hilton Road;
- B9096 Tullibody Road;
- Victoria Street, Alloa opposite No. 24;
- Gean Road, Alloa at No.33; and
- Redwell Place, Alloa at No. 42.

The total flows on the former two roads are approximately 12,000 AADT which is considered to be a “busy” road. These locations will continue to be monitored for

changes in road traffic counts and may be selected for future short-duration ambient air quality monitoring utilising the AQ Mesh unit in the future. The total flows for the latter three roads are very low at <1000 AADT.

Six sites showed a decrease or no change in AADT, and the change could not be calculated for 2 locations due to missing data.

Traffic count figures for 2011 – 2017 are summarised in Table 4.1. A location map of the monitoring sites showing 2017 AADT counts is shown in Figure 4.1.

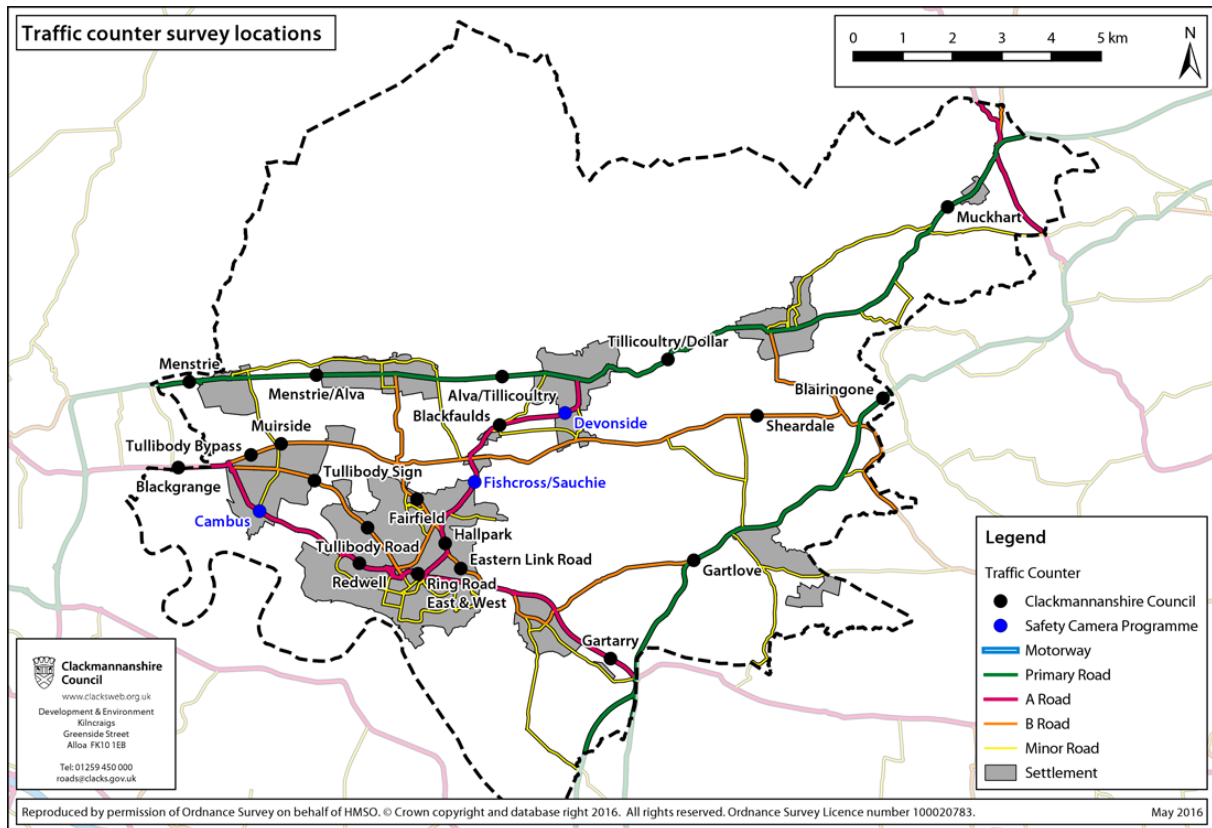
Table 4.1 – Summary of Traffic Survey Data 2011 – 2017

Link	Description	Speed limit (mph)	Annual Average Daily traffic (vehicles per day)							
			2011	2012	2013	2014	2015	2016	2017	% change 2016-2017
49	A977 Gartlove	60	5603	6334	6139	6706	7358	7331	7706	5.1%
287	A907 Blackgrange	60	20036	19945	19478	19522	21238	21100	21169	0.3%
288	A907 Cambus	40	8548	n/a	7750	6851	7993	8175	8585	5.0%
289	A907 Redwell Primary School	20/30					8527	8643	8602	-0.5%
292	A907 Ring Road Westbound	30	11151	n/a	9768	11503	11341	11199	11203	0.0%
295	A907 Clackmannanshire bypass	60	14672	14617	15050	15024	14820	14848	-	-
299	A908 Hallpark Road	30					17088	18588	18684	0.5%
300	A908 Fishcross Primary School	30	12452	12326	11657	11693	12569	12339	12554	1.7%
301	A908 Blackfaulds	40	9074	8886	9069	9059	-	9142	9213	0.8%
302	A908 Devonside	30	7612	7481	6809	7336	7220	7648	7927	3.6%
309	A91 Menstrie Mains	60	8815	8457	8205	8102	8469		7975	-
311	A91 Menstrie/Alva	60	9016	8362	8599	8140	8871	8188	8127	-0.7%
314	A91 Tillicoultry	30	6734	n/a	n/a	6095	6889	6188	6207	0.3%
317	A91 Taits Tomb	60	5163	n/a	5178	5429	5444	5398	5489	1.7%
321	A91 Muckhart	60	3098	3123	3267	3014	3334	3205	3372	5.2%
501	A977 Blairingone	60	4904	4759	-	-	5693	5973	6232	4.3%
581	B908 Fairfield	30	6368	6547	6696	6834	7384	7194	7393	2.8%
586	B909 Hilton Road	40					10811	10908	12002	10.0%
589	B9096 Tullibody sign	30	9459	9185	9126	9449	9334	9431	9477	0.5%
590	B9096 Tullibody Road	30	10343	10086	10131	10337	8636	10102	11902	17.8%
625	B9096 Tullibody bypass	60	7789	7815	8668	8310	8191	8956	8357	-6.7%
626	B9140 Muirside	60	8267	n/a	8487	8821	8278	9264	9848	6.3%
634	B9140 Sheardale	60	1492	n/a	1520	1438	1636	2092	1870	-10.6%
1292	A907 Ring Road Eastbound	30					9794	9602	9790	2.0%
68800002	Victoria Street, Alloa opposite No. 24	20	-	-	-	-	-	560	698	24.6%
90700003	Gean Road, Alloa @ No.33	20	-	-	-	-	-	463	558	20.5%
68800001	Alexandria Drive, Alloa @ No.17	20	-	-	-	-	-	768	663	-13.7%

Link	Description	Speed limit (mph)	Annual Average Daily traffic (vehicles per day)							
			2011	2012	2013	2014	2015	2016	2017	% change 2016-2017
92800000	Redwell Place, Alloa @ No. 42	20	-	-	-	-	-	773	929	20.2%
31900000	A91 Harviestoun Road, Dollar @ Strachan Crescent	30	-	-	-	-	-	-	6259	-
58800001	B9096 Alloa Road, Tullibody @ No. 33	30							8890	-
75400001	Port Street, Clackmannan @ No. 11	20							1255	-
10460000	North Street, Clackmannan opposite No. 3	20							311	-
76600000	Main Street, Clackmannan @ No. 32	20							1130	-
93500000	South Pilmuir Street, Clackmannan opposite No. 29	20							940	-

Links highlighted in green are new sites where traffic counts have commenced in 2017

Figure 4.1 – Location map of Automatic Traffic Counts in Clackmannanshire



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 sign 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. There has been no increase in the number of stationary trains with engines running within relevant exposure.

No further assessment of stationary trains has been undertaken.

During 2017, there was no change in the number of diesel passenger trains on the main train lines throughout the Clackmannanshire Council area since the last round of Review and Assessment. Since the closure of Longannet Power Station in early 2016, this line does not currently handle regular freight trains. Additionally, as part of the Edinburgh Glasgow Improvement Programme (EGIP) Network Rail is committed to the electrification of the Stirling/Alloa/Dunblane lines which is expected to be completed by December 2018.

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.

With regard to existing industrial sources, it has been identified in previous air quality assessments using recommended screening processes, that, due to the number of birds and proximity of receptors, Cambusview Poultry Farm (regulated under the

Pollution Prevention and Control (Scotland) Regulations 2012 (PPC) permit ref: PPC/A/1016782) has the potential to cause exceedance of the 24-hour mean PM₁₀ objective limit value of 50 µg/m³ at nearby residential receptors. SEPA were contacted in 2016 to discuss a way forward with this matter and it was agreed that some ambient monitoring should be undertaken to determine if there was an issue. SEPA were again contacted in March 2017 with regard to organising a monitoring exercise, however the cost, compared to lack of complaints reported was concluded to be prohibitive. SEPA could also not guarantee that there were available resources to carry out such an exercise.

Once monitoring has been completed at Hallpark Road with the AQ Mesh, the Council may look to conduct a short term survey of 3-months duration at a residential receptor adjacent to the facility utilising the mobile AQ Mesh unit. However, this monitoring will not be a priority as the deployment of the AQ Mesh unit will be planned at locations of high traffic flows/known traffic congestion with proximity to larger numbers of sensitive receptors.

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 2017 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
17/00261/FULL Abercromby Primary School, School Road, Tullibody, Clackmannanshire	Application submitted November 2017. Granted planning permission in January 2018.	Biomass boiler compliant with Clean Air Act and exempt appliance on Defra website. Detailed Air Quality Modelling submitted and accepted from external consultant which concluded insignificant effect.	The council stated that: <i>‘It is considered that the development would accord with the provisions of the adopted Clackmannanshire Local Development Plan.’</i>
17/00143/PPP Land North of Blackfaulds Street and Wardlaw Street Coalsnaughton, Clackmannanshire	Application for a proposed 244 house residential development and associated infrastructure submitted May 2017.	Council Environmental Health officer assessed that impact on air quality was not considered adequately in the application and this may be an issue due to potential increase in traffic movements and construction phase	Awaiting Decision

There was one new application for small domestic woodburning stove and one application for a domestic fuel burner and external flue received in 2017 and added to the register.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

During 2017, Clackmannanshire Council undertook monitoring of NO₂ and PM₁₀ concentrations at locations detailed in the report. The results indicate that concentrations at all fixed monitoring locations complied with the air quality objectives and there were no exceedances of the 24-hour mean for PM₁₀ in 2017 at King Street, Alloa, compared with three in 2016 and the objective level of seven. There were two exceedances of the 24-hour mean for PM₁₀ at the AQ Mesh pod, compared with the objective value of seven. For a strict comparison against the objectives, there must be a data capture of 85% or greater throughout the calendar year – this was not the case at either location.

There are no existing AQMAs within the Council area and based on the monitoring data obtained during 2017, 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 plans to maintain the monitoring network throughout 2018. There are no planned changes to existing fixed monitoring locations.

There was an increase in traffic flow greater than 10% on the following roads:

- B909, Hilton Road;
- B9096 Tullibody Road;
- Victoria Street, Alloa opposite No. 24;

- Gean Road, Alloa at No.33; and
- Redwell Place, Alloa at No. 42.

Automatic traffic monitoring will continue at these locations during 2017 and consideration will be given to undertaking air quality monitoring along these links using additional diffusion tubes in 2018.

The next report to be published is the 2019 Annual Progress Report.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Inlet Height (m)
CM1	King Street Alloa	Roadside	288665	693072	PM ₁₀ , PM _{2.5} , NO ₂	N	NO ₂ Chemiluminescent; PM ₁₀ & PM _{2.5} FDMS/FIDAS	1.22	2.45	2.3
AQ Mesh	Hallpark Road A908	Roadside	289368	693722	PM ₁₀ , PM _{2.5} NO ₂	N	NO ₂ electrical sensors, PM ₁₀ and PM _{2.5} using optical spectrometry	1.34	2.38	2.68

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)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?
DT1	Norwood Avenue, Alloa	Kerbside	287588	693546	NO ₂	N	2	1.7	N
DT2	Clackmannan Road, Alloa	Kerbside	289228	692943	NO ₂	N	2	2	N
DT3	Bus Station, Alloa	Kerbside	288818	692878	NO ₂	N	2	1.3	N
DT4	Shillinghill/Bridge Terrace, Alloa	Kerbside	288911	692940	NO ₂	N	2	1.4	N
DT5	King Street, Alloa	Kerbside	288665	693072	NO ₂	N	8	2.45	Y
DT6	Auld Brig Road, Alloa	Kerbside	288927	692878	NO ₂	N	3	1.8	N

Table A.3 – Annual Mean NO₂ Monitoring Results – 2013-2017

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2013	2014	2015	2016	2017
CM1	Roadside	Automatic	96%	72.5	-	-	28	27.6 (29.3) ⁽⁴⁾	22.6
AQ Mesh	Roadside	Automatic	100	50	-	-	-	-	37.3 ⁽⁵⁾
DT1	Kerbside	Diffusion tube	100	91.7	11.7	9.7	9.7	8.2	10.3
DT2	Kerbside	Diffusion tube	100	91.7	36.5	26.0	30.8	24.7	25.7
DT3	Kerbside	Diffusion tube	100	100	36.2	29.8	29.8	25.1	27.7
DT4	Kerbside	Diffusion tube	100	100	30.7	26.7	26.2	23.9	23.9
DT5	Kerbside	Diffusion tube	100	50	25.9	23.4	25.5	19 (20) ⁽⁴⁾	22.2 (23.2) ⁽⁴⁾
DT6	Kerbside	Diffusion tube	100	100	28.1	22.5	24.1	21.5	23.6

Notes: Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(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) Annual mean concentrations for diffusion tubes have been corrected for bias.

(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

Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2013	2014	2015	2016	2017
CM1	Roadside	Automatic	N/A	72.5%	-	-	0 (90)	0 (96)	0 (87)
AQ Mesh	Roadside	Automatic	100	50%					0 (117)

Notes: Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³)				
				2013	2014	2015	2016	2017
CM1	Roadside	N/A	65.4	17	16	15	13	12
AQ Mesh	Roadside	100	50	-	-	-	-	9.2 ⁽³⁾

Notes: Exceedances of the PM₁₀ annual mean objective of 18µg/m³ 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. Annualised data are presented in between brackets.

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

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³				
				2013	2014	2015	2016	2017
CM1	Roadside	N/A	65.4	0	0	2	3	0
AQ Mesh	Roadside	100	50	-	-	-	-	2

Notes: Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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%).

Table A.7 – Annual Mean PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³)				
				2013	2014	2015	2016	2016
AQ Mesh	Roadside	100	50	-	-	-	-	3.9

(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) Period Mean for AQ Mesh PM_{2.5}

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO₂ Monthly Diffusion Tube Results for 2017

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (Bias = 0.97) ⁽¹⁾
	DT1	21.3	21.2	13	6.2	-	4	6.4	5.7	8.4	8.8	12.5		
DT2	2.7	41	31	30.4	20.3	21.1	NR ⁽²⁾	19	24.2	28.6	40.6	51.8	28.25	25.70
DT3	48	39.3	31.4	24.1	26.7	22.6	14.7	21.8	25.7	29.7	41.3	40.1	30.45	27.71
DT4	42.5	38.3	31.4	2	26.6	20.6	17.2	19.8	23.9	26.5	32.3	33.5	26.22	23.86
DT5	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	NR ⁽²⁾	13.8	18.5	21.8	21.5	32.3	38.6	24.42	22.22 (23.16) ⁽³⁾
DT6	41.3	32.5	18.3	16.5	20.2	15.1	11.7	15.6	21	47.6	32.6	39	25.95	23.61

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment

(2) NR: No Return

(3) Annualised data

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 03/17 V2 was used to derive the national bias adjustment factor for diffusion tubes analysed by Glasgow Scientific Services during 2017. The factor was found to be 0.91. See Figure C.1 below.

Figure C.1 Glasgow Scientific Services – National average bias adjustment factor 2017

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/18				
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of June 2018				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							LAQM Helpdesk Website				
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.											
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.											
Step 1:		Step 2:		Step 3:		Step 4:					
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.					
If a laboratory is not chosen, we have no data for this laboratory.		If a preparation method is not chosen, we have no data for this method at this laboratory.		If a year is not chosen, we have no data.		If you have your own co-location study then see footnote ¹ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953					
Analysed By ¹	Method ²	Year ³	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)	
Glasgow Scientific Services	20% TEA in water	2017	UB	Glasgow City Council	12	34	25	32.3%	G	0.75	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	12	38	37	2.3%	G	0.97	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	10	35	34	3.6%	P	0.97	
Glasgow Scientific Services	20% TEA in water	2017	KS	Glasgow City Council	12	63	59	6.2%	G	0.94	
Glasgow Scientific Services	20% TEA in water	2017	R	Glasgow City Council	12	45	36	24.5%	P	0.80	
Glasgow Scientific Services	20% TEA in water	2017	KS	Marylebone Road Intercomparison	12	77	79	-2.2%	G	1.02	
Glasgow Scientific Services	20% TEA in water	2017	Overall Factor³ (6 studies)						Use		0.91

PM Monitoring Adjustment

All PM₁₀ measurements at CM1 were made using an FDMS unit. The measurements are therefore gravimetric and no adjustments have been applied to the data.

All FDMS data were fully ratified by Ricardo Energy and Environment to AURN standards. The certificates of ratified data are included in Figure C.2.

QA/QC of automatic monitoring

The automatic monitoring equipment is audited every 6 months by Ricardo AEA, 18, Blythswood Square, Glasgow, G2 4AD. It is serviced and calibrated by Air Monitors Ltd., Unit 2 Bredon Court, Brockridge Park, Twynning, Tewksbury, Gloucestershire, GL20 6FF.

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

Air Pollution Report

1st January to 31st December 2017



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 ³	NO ₂ µg/m ³	NO _x asNO ₂ µg/m ³	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³
Number Days Low	-	267	-	238	21
Number Days Moderate	-	0	-	0	0
Number Days High	-	0	-	0	0
Number Days Very High	-	0	-	0	0
Max Daily Mean	98	56	206	38	12
Annual Max	326	96	584	151	32
Annual Mean	17	23	48	12	6
98th Percentile of daily mean	-	-	-	31	-
90th Percentile of daily mean	-	-	-	19	-
99.8th Percentile of hourly mean	-	87	-	-	-
98th Percentile of hourly mean	100	65	213	39	21
95th Percentile of hourly mean	59	55	143	29	16
50th Percentile of hourly mean	9	19	32	10	5
% Annual data capture	72.53%	72.48%	72.48%	65.37%	6.18%

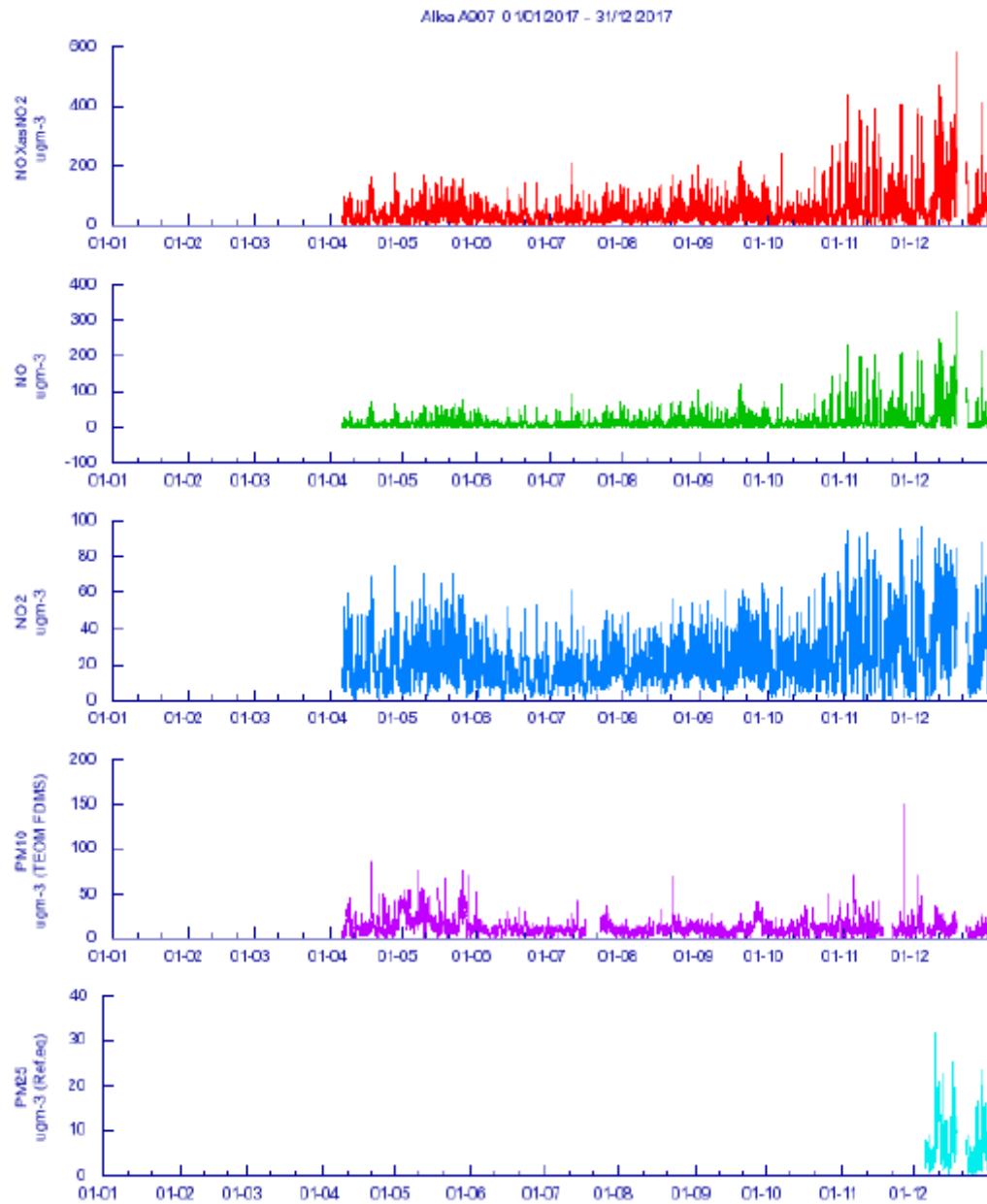
Instruments: PM₁₀: FDMS TEOM (no correction) (05/04/2017 to 05/12/2017), FIDAS (05/12/2017 to 31/12/2017)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO_x mass units are NO_x as NO₂ µg m⁻³

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	0	0
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	-

Annual Graph



QA/QC of Diffusion Tube Monitoring

NO₂ diffusion tubes are supplied and analysed by Glasgow Scientific Services using a preparation mixture of 20 triethanolamine (TEA) in water. Glasgow Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis. The laboratory prepares the diffusion tubes using the 20 triethanolamine (TEA) in water method.

Glasgow Scientific Services have participated in recent AIR NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory during the previous five rounds in 2017 and 2018 based upon a z-score of $<\pm 2$ were as follows:

- January to February 2017: 100
- April to May 2017: 50
- July to August 2017: 0
- October to November 2017: 100
- January to February 2018: 100

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
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

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