

# Annual Progress Report (APR)



2021 Air Quality Annual Progress Report (APR) for Stirling Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

May 2021

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## Executive Summary: Air Quality in Our Area

### Air Quality in Stirling Council

This Annual Progress Report provides an overview of air quality in the Stirling Council area. Air quality monitoring was performed at the automatic monitoring station on Craig's Roundabout in the City of Stirling (measuring nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>)) and passive monitoring for NO<sub>2</sub>, using diffusion tubes, at 12 sites in the wider urban area.

Based on the available monitoring data for NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> there were no exceedances of the relevant Air Quality Objectives and it is considered unlikely that they will be exceeded in the near future. Therefore, it is not considered necessary to declare an AQMA in the Stirling area.

### Actions to Improve Air Quality

When we breathe polluted air, pollutants get into our lungs, they can enter the bloodstream and be carried to our internal organs such as the brain. This can cause severe health problems such as asthma, cardiovascular diseases and even cancer and reduces the quality and number of years of life. Vulnerable groups, namely children, people with chronic diseases, and the elderly, are particularly sensitive to the dangerous effects of toxic air pollution and so it is critical that human health and the environment are protected. Stirling Council have a number of initiatives and actions to improve air quality, such as, a sustainable transport strategy, a comprehensive monitoring programme and developmental control requirements.

Stirling Council has partnered with East Central Scotland Vehicles Emissions Partnership, which is a coalition of East Lothian, Falkirk, Midlothian and West Lothian Councils. The aim is to actively deal with reports from members of the public who identify idling vehicles. The remit of the Vehicles Emissions Partnership is to reduce

vehicle emissions by encouraging drivers to switch off their engines and handle idling complaints. Further information can be found at:

<http://switchoffandbreathe.org/about/>

As part of the Sustainable Growth Agreement Actions, Stirling Council procured mobile air quality monitoring equipment called Zephyrs. The Zephyr is a compact and lightweight air pollution sensor measuring NO<sub>2</sub>, NO, O<sub>3</sub>, PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>. Stirling Council purchased 10 Zephyr units and located them across urban areas of Stirling. They are rotated every 6 months based on a prioritisation matrix and will be used to monitor pollution connected with some of the larger projects within Stirling. Locations chosen can also include, main traffic junctions and close to schools to determine trends in pollutant levels during school hours with the aim of spreading awareness to local schools regarding air quality.

At the end of December 2020 Stirling Council had 14 electric vehicles (10 cars and 4 vans) within its fleet, with an order being placed for 13 more cars. This order has been delayed due to Covid related issues but they should be delivered by autumn 2021. Stirling Council have installed 18 electric vehicle charging points at council buildings across the Stirling area and also own 69 public charging points, with a further 50 charging points across the Stirling area which are not owned by the council.

New development in the Stirling Area is a key issue affecting air quality. Where relevant, development applications are requested to submit an Air Quality Impact assessment to allow for the potential impact to be assessed and any necessary mitigation measures to be applied. Applications that primarily require this, are those that include biomass installations and increased traffic emissions e.g. major housing developments.

## Stirling Council



Stirling Councils Local Transport Strategy (LTS) establishes a long-term strategic vision for transport management, provision and services, and sets out how Stirling Council will work to promote and deliver sustainable travel and transportation.

Routine reviews of the LTS, and the associated consultations, have identified that progress towards achieving many of the objectives is largely positive.

The Local Transport Strategy is delivered via a number of supporting plans including the City Transport Plan 2013; the Towns, Villages and Rural Transport Plan 2014; and the Walking and Cycling to a Healthier Stirling: Active Travel Action Plan. The Active Travel Plan focuses on encouraging walking and cycling through improving infrastructure and changing behaviours via training and promotion activities.

Stirling Councils Sustainable Development Strategy establishes a collective vision to balance the needs of its communities and businesses with the needs of the environment. The strategy establishes objectives which focus on five main areas: energy, transport, sustainable eco-systems, sustainable resource/waste management and climate change adaptation. This includes reducing fuel poverty levels to zero by 2040; Stirling City Centre Emissions Free Zones by 2030; 40% natural vegetation cover by 2040; Zero Waste City by 2040; and 80% reduction in carbon emissions by 2050.

## Stirling Council



Stirling Council actively participates in and promotes the Cycle to Work Scheme and the NextBikes cycle hire scheme, encouraging staff to use sustainable methods of transport for both commuting and work purposes.

A number of Schools within the Stirling Council area deliver the Level 1 Bikeability Scotland Cycle Training, providing children with the skills, confidence and encouragement to cycle safely on the roads. Further information can be found at:

<http://www.bikeabilityscotland.org/>

Stirling Council have partnered with East Central Scotland Vehicles Emissions Partnership, which is a coalition of East Lothian, Falkirk, Midlothian and West Lothian Councils. The aim is to actively deal with reports from members of the public who identify idling vehicles. The remit of the Vehicles Emissions Partnership is to reduce vehicle emissions by encouraging drivers to switch off their engines and handle idling complaints. Further information can be found at:

<http://switchoffandbreathe.org/about>

Stirling Council are part of the Tactran Electric Vehicle Steering Group and have contributed to the Regional Electric Vehicle Strategy which was published at the end of 2019. Tactran stand for the Tayside and Central Scotland Transport Partnership and has the primary purpose of developing a regional transport strategy setting out a vision for the medium to long term future of transport in the area and to oversee its implementation.

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## Local Priorities and Challenges

The anticipated growth in traffic volume is seen as a priority air quality issue and the above plans were developed to manage this issue in to the future. The reports and other related documents can be viewed at:

<http://my.stirling.gov.uk/services/transport-and-streets/transport-policy>

An ongoing priority that Stirling Council have is to continue to meet the national objectives as has been done through the comprehensive monitoring programme. It is felt that the challenges presented in 2020 have been overcome and that there should be no further disruption to the monitoring programme.

## How to Get Involved

A number of local and national organisations exist to promote more active and sustainable travel and members of the public can access further information or become directly involved by following the links below:

<https://www.livingstreets.org.uk/who-we-are/scotland>

<http://www.sustrans.org.uk/scotland>

<http://www.stirlingcyclehub.org>

<http://nextbike.co.uk>

Members of the public who wish to access information and advice on air quality across Scotland can do so at:

<http://www.scottishairquality.co.uk/>

Air quality data specific to the Stirling Council area can be found at:

[http://www.scottishairquality.co.uk/latest/site-info?site\\_id=STRL](http://www.scottishairquality.co.uk/latest/site-info?site_id=STRL)

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# 1 Local Air Quality Management

This report provides an overview of air quality in Stirling Council during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by Stirling Council to improve air quality and any progress that has been made.

**Table 1.1 – Summary of Air Quality Objectives in Scotland**

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO <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
Nitrogen dioxide (NO <sub>2</sub> )	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
Particulate Matter (PM <sub>10</sub> )	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
Sulphur dioxide (SO <sub>2</sub> )	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO <sub>2</sub> )	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

## 2 Actions to Improve Air Quality

### Air Quality Management Areas

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

Stirling Council currently does not have any AQMAs and the results of past and present monitoring indicate that it will not be necessary to declare any AQMA's in the future.

### Cleaner Air for Scotland

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

#### 2.1.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. Stirling Council has an Active Travel Action Plan – Walking and Cycling to a Healthier Stirling which identifies ways Stirling Council intends to build upon, and promote, existing work to increase opportunities for walking and cycling across the Stirling area.

#### 2.1.2 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. Stirling Council has a Sustainable Development Strategy that aims: 'to enable all people throughout the Stirling Council area to satisfy their basic needs and enjoy a good quality of life without compromising the quality of life of future generations'.

## **Progress and Impacts of Measures to address Air Quality in Stirling Council**

Stirling Council has taken forward a number of measures during the current reporting year of 2020 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:

- The procurement of 13 additional electric fleet vehicles;
- Stirling Council are part of the Tactran Electric Vehicle Steering Group and have contributed to the Regional Electric Vehicle Strategy;
- Through the development control process, when required, AQIA were requested as part of the consultation process.

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

- The Climate and Nature Emergency Plan is expected to be passed by committee in 2021 which will steer us to a fossil fuel-free ready climate area by 2045;
- The additional electric fleet vehicles are to be delivered by the autumn of 2021;
- Stirling Council are delivering Transport Scotland's Switched on Towns and Cities project which will deliver a further 134 charging bays including dedicated bus and taxi chargers, and 65 electric fleet vehicles in 2021/22. With suitable infrastructure in place, it is hoped that people will be encouraged to consider changing to EV's and also bus and taxi companies to consider switching their vehicles to electric.
- The draft Electric Vehicle Policy should be finalised and through council for approval.

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	Title	Vehicle Fleet Efficiency	Procurement of additional fleet EV's.	Sustainable Development		2020				2021	
2	EV Policy	Promoting low emission transport		Sustainable Development		2021/22				2022	
3	Climate and Nature Emergency Plan	This will cover a number of the 9 categories	Transition to a fossil fuel-free climate ready area by 2045	Sustainable Development		2021/22				2022	
4	Transport Scotlands Switched on Towns and Cities	Promoting low emission transport	To encourage the uptake of EV's in towns and cities	Sustainable Development		2021/22				2022	
5	Planning Applications	Policy Guidance and Development Control	Requesting AQIA when necessary	Environmental Health		Ongoing				Ongoing	

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

### Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

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

Stirling Council undertook automatic (continuous) monitoring at one site during 2020. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at [http://www.scottishairquality.scot/latest/site-info?site\\_id=STRL&view=graphing](http://www.scottishairquality.scot/latest/site-info?site_id=STRL&view=graphing)

A map showing the location of the automatic monitoring site is provided in Figure A.1 in Appendix A. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

#### 3.1.2 Non-Automatic Monitoring Sites

Stirling Council undertook non-automatic (passive) monitoring of NO<sub>2</sub> at 12 sites during 2020. Table A.2 in Appendix A shows the details of the sites.

A map showing the location of the monitoring sites are provided in Figure A.2 in Appendix A. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

### Individual Pollutants

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

#### 3.1.3 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 five years with the air quality objective of 40 µg/m<sup>3</sup>.

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

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Table B.1 in Appendix B.

Figure B.1 shows the trends in annual mean NO<sub>2</sub> concentrations between 2016 and 2020.

There were no exceedences of the objectives.

### **3.1.4 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 five years with the air quality objective of 18µg/m<sup>3</sup>.

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

There were no exceedences of the objectives.

### **3.1.5 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 five years with the air quality objective of 10µg/m<sup>3</sup>. Stirling Council has only been monitoring PM<sub>2.5</sub> since 2019 and so there is limited data for this pollutant. There have been no exceedences of the objectives so far.

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

Stirling Council does not monitor for SO<sub>2</sub>.

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

Stirling Council does not monitor for Carbon Monoxide, Lead or 1,3-Butadiene.



## 4 New Local Developments

This section discusses the new developments that could potentially have a significant impact on air quality in the Stirling area.

### Road Traffic Sources

A planning application was submitted and subsequently approved during 2019 for a new link road, including a pedestrian and cycle route, through the city centre of Stirling. The air quality assessment was reviewed as part of the planning consultation process.

Results from the detailed atmospheric dispersion modelling used in the assessment, predict that the annual mean concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are to be below the respective air quality objectives at all modelled sensitive receptors. Similarly, no exceedances of the short term NO<sub>2</sub> and PM<sub>10</sub> objectives were predicted at any of the identified sensitive locations.

It has been stipulated that prior to the commencement of construction, the applicant is to submit a construction environmental management plan (CEMP) in order to detail appropriate measures and mitigation to control fugitive dust emissions, site plant emissions and construction traffic emissions. We will monitor this site as development takes place.

Apart from the above, there are no new road traffic sources, as listed below, that would have a significant impact on air quality.

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- Bus or coach stations.

## Other Transport Sources

There are no new road traffic sources, as listed below, that would have a significant impact on air quality.

- 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 movement of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

The Stirling Council Public Transport Co-ordinator confirmed that the total number of movements at Stirling Bus Station in the Thistle Centre was approximately 12,226 every 4 weeks, or less than 475/day. The criterion for assessment where there is relevant exposure within 10m is 2,500 movements a day. It is therefore concluded that a DMRB assessment is not required.

It should be noted that for a period of time during 2018, one of the main arterial roads (Kerse Road) within Stirling City Centre was closed in both directions due to the rail electrification works as part of the Edinburgh Glasgow Improvement Programme. The road was closed from April 16<sup>th</sup> 2018 to 19<sup>th</sup> October 2018 to enable carriageway completion and removal of temporary structures. The automatic monitor and four of the NO<sub>2</sub> tubes are situated within 75m of this site, however there were no substantial variations of results during this period.

## Industrial Sources

It is confirmed that there are none of the following that would warrant further assessment:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- Industrial installations: new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.

- Poultry farms.

A planning permission in principal application has been received for a new roadside service station near Dunblane comprising a petrol filling station, truck stop, restaurants and drive-thru. Comments have been provided but it is still under consideration. The effect this development would have on air quality is unknown at present, but an air quality impact assessment has been requested to be undertaken. This would help to identify existing air quality in the surrounding area and to quantify the impact of the proposed development on local air quality using methodology outlined in the guidance from Environmental Protection UK and Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes (January 2017).

At the end of 2019, an AQIA was submitted as part of an application for a proposed tomato growing facility comprising greenhouses, a river source heat pump and associated infrastructure, including an energy centre, within the Bandeath Industrial Estate, Throsk on the outskirts of Stirling city centre. Detailed dispersion modelling was undertaken to predict the concentrations of total NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and SO<sub>2</sub> at sensitive receptor locations within the study area and it was undertaken in accordance with IAQM, EPUK and DEFRA technical guidance. From the assessment it is considered that the potential impact of the proposed development on local air quality is low risk and therefore not significant. This consultation is still out for comment and will be monitored in due course should development occur.

## Commercial and Domestic Sources

The locations of previously assessed, new and proposed biomass installations are summarised in Table 4.4.1. There are no clusters of installations in 500 x 500 metre squares that could result in cumulative impacts of emissions of PM<sub>10</sub>. With the exception of the Acharn Development, which has been approved and is operational, all are small scale plants with minimal potential for significant release of PM<sub>10</sub> or NO<sub>x</sub>. The applications were screened using the DEFRA review and assessment tools and further assessment was not considered necessary.

**Table 4.4.1 – Locations of Installed, Permitted and Proposed Biomass Combustion Plant within Stirling Council**

Name Location	Planning Reference	Status	OS Easting	OS Northing
West Rosburn Lane Farm, Stirling, FK9 4AH	20/00142/FUL (retrospective)	Permitted  18 May 2020  Status: Operational		
Stockbridge Nursery Kilbryde and Brack Road, Doune, FK15 9ND	18/00712/FUL	Permitted  27 November 2018  Status: Unknown		
Land adjacent to North and West of 27 Whitehouse Rd, Forthside Way	16/00775/FUL	Permitted  27/02/2017  Status: Unknown	280695	693347

Carsten Mews, Drumbeg Rd, Killearn	16/00749/FUL	Permitted 15/02/2017  Status: Unknown	250499	684139
48 Glasgow Road, Blanefield	15/00644/FUL	Permitted 30/11/2015  Status: Unknown	255744	679621
Muirmill Farm, Fintry	15/00436/FUL	Permitted 02/12/2015  Status: Unknown	272876	683932
Lochend Chalets, Port of Menteith	2014/00265/DET	Operational January 2015	259156	699702
Wallace View, Stirling	15/00251/FUL	Permitted 18/06/15  Status unknown	281462	696157
Blairdrummond House, Stirling	15/00239/FUL	Permitted 15/06/2015  Operational 9/16	273189	699059
Stewarts House, 14 Main St, Fintry	15/00151/FUL	Permitted 09/06/2015  Status: Unknown	261623	686730
1 Riverside Cottages, Deanston	15/00139/FUL	Permitted 09/07/2015  Status: Unknown	271475	701710
Finnich Malise, Blanefield	15/00044/FUL	Permitted Notice: 07/04/2015  Status: Unknown	247928	685329

14 Back 'o Hill Industrial Estate	14/00768/FUL	Operational	278999	694526
Coldoch, Thornhill	14/00761/FUL	Operational 2015	269836	698062
The Stables, Burnside Farm, Bannockburn	14/00331/FUL	Permitted 22/07/2014  Status: unkown	280619	689961
Buchanan Arms Hotel Drymen	2014/0051/DET	Not Installed	247500	688393
An T Seann Sgoil, Balquidder	2014/0150/DET	Operational early 2015	253660	720902
Upper Drumbane Farm	13/00785/FUL	Permitted 30/05/2014  Status: Unknown		
Cambusmore House, Doune	13/00774/FUL	Permitted 07/02/2014  Status: unknown	265088	706218
Land 50m North Ballagan House, Strathblane	13/00690/FUL	Permitted 16/12/2013  Status; unknown		
Aucheneck Lodge, Stockiemuir Rd, by Killearn	13/00562/FUL	Permitted 08/11/2013  Status: unknown		

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

There are no new developments with fugitive or uncontrolled sources, as listed below that would have a significant impact on air quality:

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

A planning application was received to extend Cambusmore quarry in Callander and an Environmental Impact Assessment was requested. The impact on air quality is to be assessed in terms of PAN 50 and the Institute of Air Quality Management Guidance on the Assessment of Mineral Dust Impacts for Planning May 2016 (v1.1).

## 5 Planning Applications

Stirling Council's Local Development Plan (LDP) identifies a number of sites for large scale development between 2014 and 2034. Each development site shall be assessed for its impact on air quality as it goes through the planning consultation process. Where appropriate detailed air quality impact assessments shall be required to be submitted.

A full application for a development site called Durieshill has been received. This is an application for a 3,000 house residential development, village centre, employment land, community campus and primary school located on land between Pleun and the Bannockburn Interchange. The air quality assessment has been reviewed. Modelling used in the assessment indicated that there are mainly negligible impacts on NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from the development at the 29 receptors selected, with the exception of NO<sub>2</sub> which has a minor impact at 4 of the 29 receptors. This application is awaiting a decision, but we will monitor this site should development take place.

A development site called South Stirling Gateway was included in the Local Development Plan. The development proposals include affordable housing, superstore, school and a linear park. Stirling Council's Strategic Infrastructure Plan identifies a range of infrastructure projects required to support the LDP Spatial Strategy as a whole, of which development at South Stirling Gateway forms a strategic part.

A permission in principle application has been submitted for the redevelopment of the Craigforth Campus to comprise offices, retail, leisure, public houses, restaurants, residential premises, hotel, care home, nursery, landscaping, car park and associated infrastructure. It is unclear whether a full application will be submitted for this development, but if so an AQIA would be required and assessed accordingly.

It was previously noted in the 2018 Annual Progress Report that a planning application for a new crematorium in Bannockburn had been received and approved. This has now been built and is operational. SEPA have regulatory control over the facility, but it appears that the air quality objectives are not going to be breached as a result of the operation of the crematorium.



## 6 Impact of COVID-19 upon LAQM

For the majority of 2020, the monthly collection of the diffusion tubes was not affected by COVID-19. The only time during the year that collection was affected was when we first went in to lockdown in March. The tubes were put out on the 4<sup>th</sup> March and then due to lockdown restrictions were not collected until the 29<sup>th</sup> April. Due to overexposure the data that was collected from these tubes has been discarded for the purposes of the data analysis in this report, as it was not representative of the sites.

Although it's recommended that LSO calibrations are carried out fortnightly, due to a shortage in resources, LSO calibrations in Stirling Council get carried out monthly. During lockdown the calibrations were maintained monthly throughout 2020 apart from in April when no calibration was carried out due to lockdown restrictions.

The 10 Zephyrs that Stirling Council have, continued to record data which was still analysed by an Environmental Technician in the Council's Sustainable Development team, with no impact in this regard. The officer was not permitted to go on site at the peak of lockdown to move them (as per the 6 monthly rotation schedule), but they are going to be moved imminently to their new locations in line with the prioritisation decision matrix.

Stirling Council have no ongoing issues with the local air quality network due to COVID.

## 7 Conclusions and Proposed Actions

### Conclusions from New Monitoring Data

Based on the data in Tables A.3 to A.7 and the graph in Figure B.1 of Appendix B, it can be seen that in 2020 there was an overall falling trend in those areas monitored for NO<sub>2</sub> after a slight rise in 2018. During 2019 there was one site, DT3, which actually slightly increased but it can be seen from the new data that this site has decreased again to follow the average trend in 2020.

With regards to PM<sub>10</sub>, there was a falling trend up until 2016 but levels did increase in 2017, decreased in 2018, 2019 and then further still in 2020. This site (CM1) is well below the annual mean concentration of 18µg/m<sup>3</sup>, measuring 8.7µg/m<sup>3</sup> in 2020 which is a decrease from the annual mean concentration of 11µg/m<sup>3</sup> that was measured in 2019.

PM<sub>2.5</sub> has only been measured since 2019, and has measured 5.6 µg/m<sup>3</sup> and 4.25 µg/m<sup>3</sup> in 2019 and 2020 respectively which is well below the annual mean objective of 10 µg/m<sup>3</sup>. From this it can be assumed that the national objective will not be exceeded anytime in the future.

Based on the available monitoring data, the following conclusions can be made:

- Looking at all the air quality data collected throughout 2020, there are no exceedances of the relevant Air Quality Objectives and it is considered unlikely that they will be exceeded in the near future.
- On this basis it is not considered necessary to declare an AQMA within the Stirling area.

In 2020 the annual average daily traffic across all of Stirling has decreased by 13.9% with 454,175 vehicles entering the Stirling area in 2019 which reduced to 390,630 vehicles in 2020. Within the city centre area alone the annual average daily traffic count has decreased from 385,237 vehicles in 2019 to 325,251 vehicles in 2020, which is a reduction of 15.6%. This reduction in traffic flow, possibly as a result of lockdown restrictions, could have attributed to the reduction in pollution levels.

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

In relation to new local developments, it is determined that the key issue regarding air quality is the potential for increased road traffic. It is recognised that future and pending applications (e.g. Durieshill, South Stirling Gateway, Viewforth Link Road) may increase traffic numbers and as a result negatively impact on the air quality within the Stirling Council area.

Biomass installations are also still considered a potential source of increased emissions affecting air quality. As such, biomass applications are screened using the Defra review-and-assessment tools and are not expected to have a significant impact on local air quality.

It has been highlighted that there is an increased demand for domestic households to install alternative heat and power sources into their homes. The installation of wood burning stoves may require planning permission depending if a chimney/flue has to be installed and would protrude more than one metre. As such, the Residential Alterations and Extensions Supplementary Guidance SG12 is referred to.

## **Proposed Actions**

Stirling Council will continue with the following actions:

- Monitor for NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> at the locations detailed in this report. Data recovery from the automatic monitor appears to be reasonably stable for 2020, to date. Results of the monitoring and other air quality assessment work will be presented in the next Annual Progress Report in 2022.
- Require air quality assessments where a development may result in significant increases in traffic as outlined in Defra Local Air Quality Guidance Management, Technical Guidance (TG16).
- Screening of biomass applications to assess the potential impact on local air quality.
- Provide information and support to Stirling Council Sustainable Development Team on future developments in the Stirling area.

To deliver the Local Transport Strategy objectives, the Sustainable Development Team developed a City Transport Plan 2013/17 – 2015/16 and a Towns, Villages and Rural Area Transport Plan 2014. This includes an Active Travel Policy (The Walking and Cycling to a Healthier Stirling: Active Travel Action Plan 2017) to encourage walking and cycling by infrastructure improvements and behaviour change (training and promotion activities). Stirling Council will also be actively participating in and promoting, the Cycle to Work Scheme and NextBikes cycle hire scheme, encouraging staff to use sustainable methods of transport for both commuting and work purposes. Statistics gathered from NextBikes show that in 2018 the total rentals reached 34,485, a significant increase from the 2017 rental total which was 17,989. The figures for 2019 are unavailable, but it would be anticipated that the number of rentals would have increased again.

The Sustainable Development Team have also been awarded £2.3 million to install more electric vehicle charging points and buy more electric fleet vehicles. This is currently in the procurement stage and so will be mentioned further in next year's annual progress report.

As part of the East Central Scotland Vehicle Emissions Partnership, Stirling will coordinate testing, idling and campaigning activities to promote better air quality in the Stirling area.

Reviews and assessment will include monitoring of: the rate of development (which will be informed by the LDP Monitoring Reports); the rate of traffic growth; the rate of modal shift from car to walking, cycling and public transport, and a measure of congestion.

Stirling Council will continuously review the location of the NO<sub>2</sub> tubes. The current tubes have been in the same locations for a long period of time and so it would be ideal if some of them are relocated. Relocation may help to identify new areas that may potentially exceed the objectives. New locations for the tubes have been discussed.

The new Zephyr units will be utilised further to establish areas of concern. They will also be used to give us a snapshot of what air quality is like in different parts of the City, which will be particularly helpful surrounding larger developments and projects taking place within Stirling. The equipment undergoes filter replacement every year (and a few other consumable parts), and they are tested against controls before being sold and distributed.

In relation to new electric vehicle work, Stirling Council are delivering Transport Scotland's Switched on Towns and Cities project which will deliver a further 134 charging bays, including dedicated bus and taxi chargers, and 65 electric fleet vehicles in 2021/22. Stirling

Council also have an Electric Vehicle policy document. It is currently in draft form but it is hoped to get approved at the next council meeting.

Stirling Council is preparing a Climate and Nature Emergency Plan which has the vision of leading the transition to a fossil fuel-free climate ready area by 2045 through 5 objectives, with themes of energy; transport; resource efficiency; nature and biodiversity; and preparing for impacts of climate change. The Plan is currently in draft format and has not been approved by committee and so further details will be provided in the 2022 Annual Progress Report.

## Appendix A: Monitoring Results

**Table A.1 – Details of Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
CM1	Craig's Roundabout	Roadside	279944	693005	PM <sub>10</sub> ; PM <sub>2.5</sub>	N	FDMS (Palas Fidas)	10m	3	2.2
CM2	Craig's Roundabout	Roadside	279944	693005	NO <sub>x</sub>	N	Chemiluminescent (Serinus)	10m	3	2.2

**Notes:**

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT1	Dumbarton Road	Kerbside	279655	693240	NO <sub>2</sub>	N	2	0.5	N	
DT2	Port Street	Kerbside	279634	693160	NO <sub>2</sub>	N	2	0.5	N	
DT3	Craigs Roundabout no. 1	Roadside	279987	693043	NO <sub>2</sub>	N	10	2	N	
DT4A,B,C	Craigs Roundabout no.2	Roadside	279944	693005	NO <sub>2</sub>	N	10	3	Y	
DT5	Lennox Avenue, Stirling	Urban Background	279354	691933	NO <sub>2</sub>	N	4	1.5	N	
DT6	Barnsdale Road, Stirling	Roadside	279520	691252	NO <sub>2</sub>	N	18	1.5	N	
DT7	Main Street, Plean	Roadside	283222	687582	NO <sub>2</sub>	N	6	1.5	N	
DT8	Alloa Road	Roadside	282075	695057	NO <sub>2</sub>	N	9	2	N	
DT9	Henderson Street, Bridge of Allan	Roadside	279177	697497	NO <sub>2</sub>	N	7	1.5	N	
DT10	Stirling Road, Dunblane	Roadside	278081	700580	NO <sub>2</sub>	N	8	1.5	N	
DT11	Stirling University	Roadside	280346	696339	NO <sub>2</sub>	N	>50	2	N	

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT12	Airthrey Road, Stirling	Roadside	280505	695719	NO <sub>2</sub>	N	3	2	N	

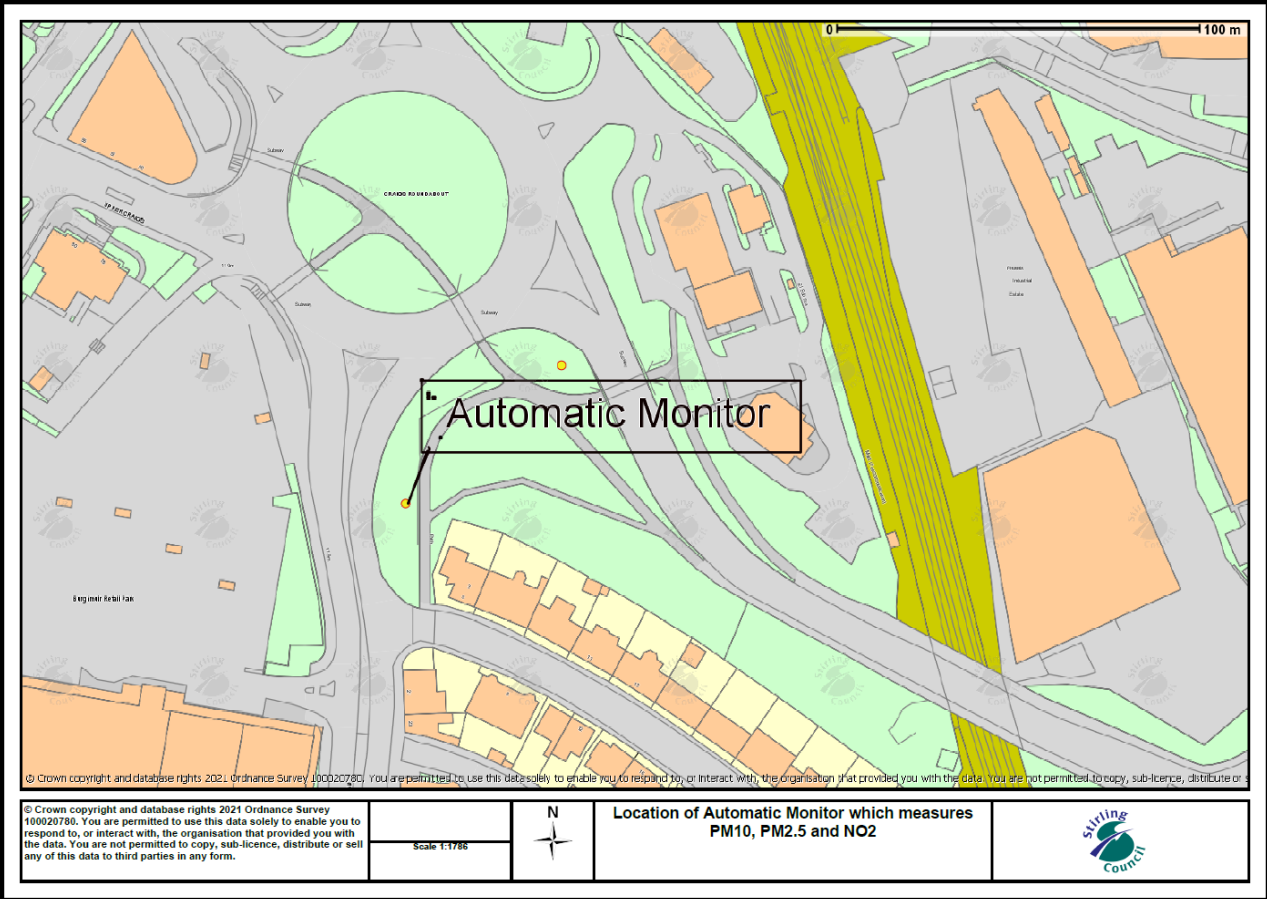
**Notes:**

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

(2) N/A if not applicable.



Figure A.1 - Map showing Location of Automatic Monitor



Created by Kirsty Cheape on 25 June 2021

Figure A.2 – Map showing the location of Diffusion Tube Sites

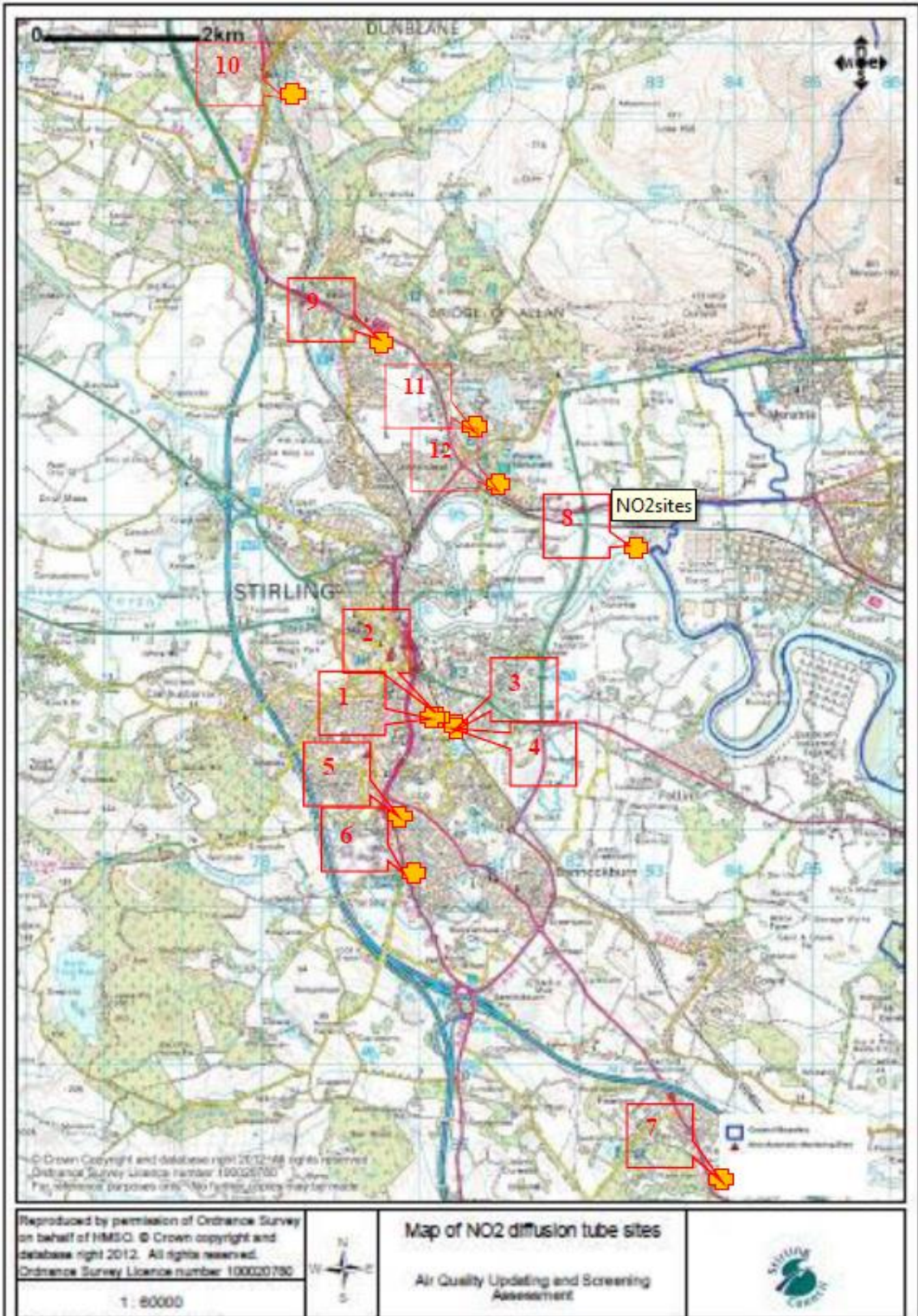


Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results (µg/m<sup>3</sup>)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
CM1	Roadside	Automatic	99.6	99.6	<b>23</b>	22	23	20	14.25
DT1	Kerbside	Diffusion Tube	84.6	84.6	28.7	24.0	24.1	20.4	16.4
DT2	Kerbside	Diffusion Tube	84.6	84.6	<b><u>23.2</u></b>	24.1	21.7	19.7	14.5
DT3	Roadside	Diffusion Tube	84.6	84.6	27.2	25.1	20.5	22.0	17.6
DT4A, 4B, 4C	Roadside	Diffusion Tube	84.6	84.6	21.3	21.1	20.1	19.6	14.2
DT5	Urban Background	Diffusion Tube	84.6	84.6	11.3	10.2	11.5	10.3	8.3
DT6	Roadside	Diffusion Tube	84.6	84.6	15.2	15.7	16.5	14.0	10.5
DT7	Roadside	Diffusion Tube	84.6	84.6	17.5	16.0	16.4	13.8	10.5
DT8	Roadside	Diffusion Tube	84.6	84.6	25.4	23.5	26.8	22.3	16.2
DT9	Roadside	Diffusion Tube	84.6	84.6	20.8	21.2	22.7	17.6	12.2
DT10	Roadside	Diffusion Tube	84.6	84.6	16.0	16.1	15.4	11.6	9.2
DT11	Roadside	Diffusion Tube	84.6	84.6	21.9	19.4	19.0	16.3	11.5
DT12	Roadside	Diffusion Tube	84.6	84.6	22.9	21.9	22.4	16.7	13.9

**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**.

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

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

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

**Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
CM2	Roadside	Automatic	100	100	0	0	0	0	0

**Notes:**

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

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

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

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

**Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results (µg/m<sup>3</sup>)**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
CM1	Roadside	100	100	13	13	14	11	8.7

**Notes:**

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

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.

(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.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results, Number of PM<sub>10</sub> 24-Hour Means > 50µg/m<sup>3</sup>**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
CM1	Roadside	100	100	0	0	0	0	0

**Notes:**

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

If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

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

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

**Table A.7 – Annual Mean PM<sub>2.5</sub> Monitoring Results (µg/m<sup>3</sup>)**

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
CM1	Roadside	100	100	N/A	N/A	N/A	5.6	4.25

**Notes:**

Exceedances of the PM<sub>2.5</sub> annual mean objective of 10 µg/m<sup>3</sup> are shown in bold.

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.

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

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

## Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO<sub>2</sub> 2020 Monthly Diffusion Tube Results (µg/m<sup>3</sup>)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted <sup>(1)</sup>
DT1	20.5	17.8	COVID	COVID	10.7	16.9	7.4	19.8	13.8	19.6	25.7	28.1	18.2	16.4
DT2	21.7	17.9	COVID	COVID	9.1	11.3	10.0	14.6	16.7	12.8	23.2	24.6	16.1	14.5
DT3	24.1	17.7	COVID	COVID	12.7	19.0	10.4	20.4	14.7	24.8	26.5	24.7	19.6	17.6
DT4A	23.9	20.9	COVID	COVID	7.8	13.0	7.3	13.8	15.0	18.3	26.3	25.0	-	-
DT4B	25.2	14.2	COVID	COVID	6.6	13.0	8.5	12.8	14.2	17.1	19.3	24.9	-	-
DT4C	23.5	21.4	COVID	COVID	8.1	13.1	7.5	12.3	14.9	1.7	24.5	23.6	15.8	14.2
DT5	11.8	11.4	COVID	COVID	4.7	6.6	3.6	7.5	7.0	9.4	14.0	15.7	9.2	8.3
DT6	13.7	12.9	COVID	COVID	6.9	9.7	5.8	11.7	10.1	12.5	17.2	16.5	11.7	10.5
DT7	7.1	14.1	COVID	COVID	8.0	11.4	6.7	12.4	12.1	14.6	17.2	12.7	11.7	10.5
DT8	24.1	21.1	COVID	COVID	10.6	14.5	8.8	19.9	14.6	19.2	25.8	21.4	18.0	16.2
DT9	25.8	11.4	COVID	COVID	8.1	12.1	9.0	16.0	14.5	14.9	5.1	18.1	13.6	12.2
DT10	16.3	2.2	COVID	COVID	6.4	8.6	5.4	8.0	9.0	12.8	13.8	18.3	10.2	9.2
DT11	19.0	15.1	COVID	COVID	8.4	10.8	7.0	13.9	12.2	13.6	13.6	14.4	12.8	11.5
DT12	24.6	17.1	COVID	COVID	8.4	11.7	8.2	13.2	21.1	17.3	12.2	21.2	15.5	13.9

### Notes:

(1) See Appendix C for details on bias adjustment



Figure B.1 Trends in Annual Mean Concentration of NO<sub>2</sub> at Diffusion Tube Sites 2016-2020

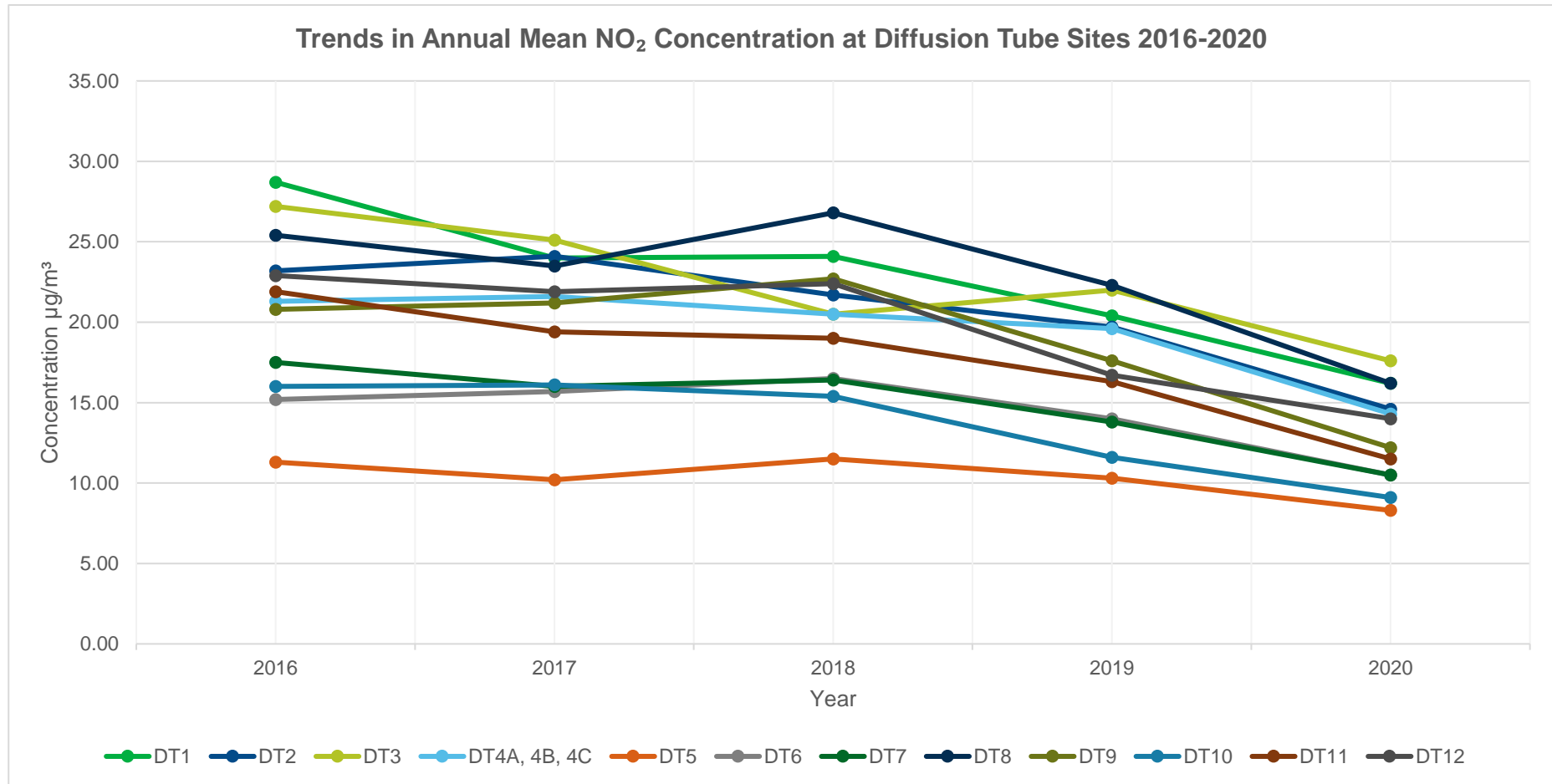
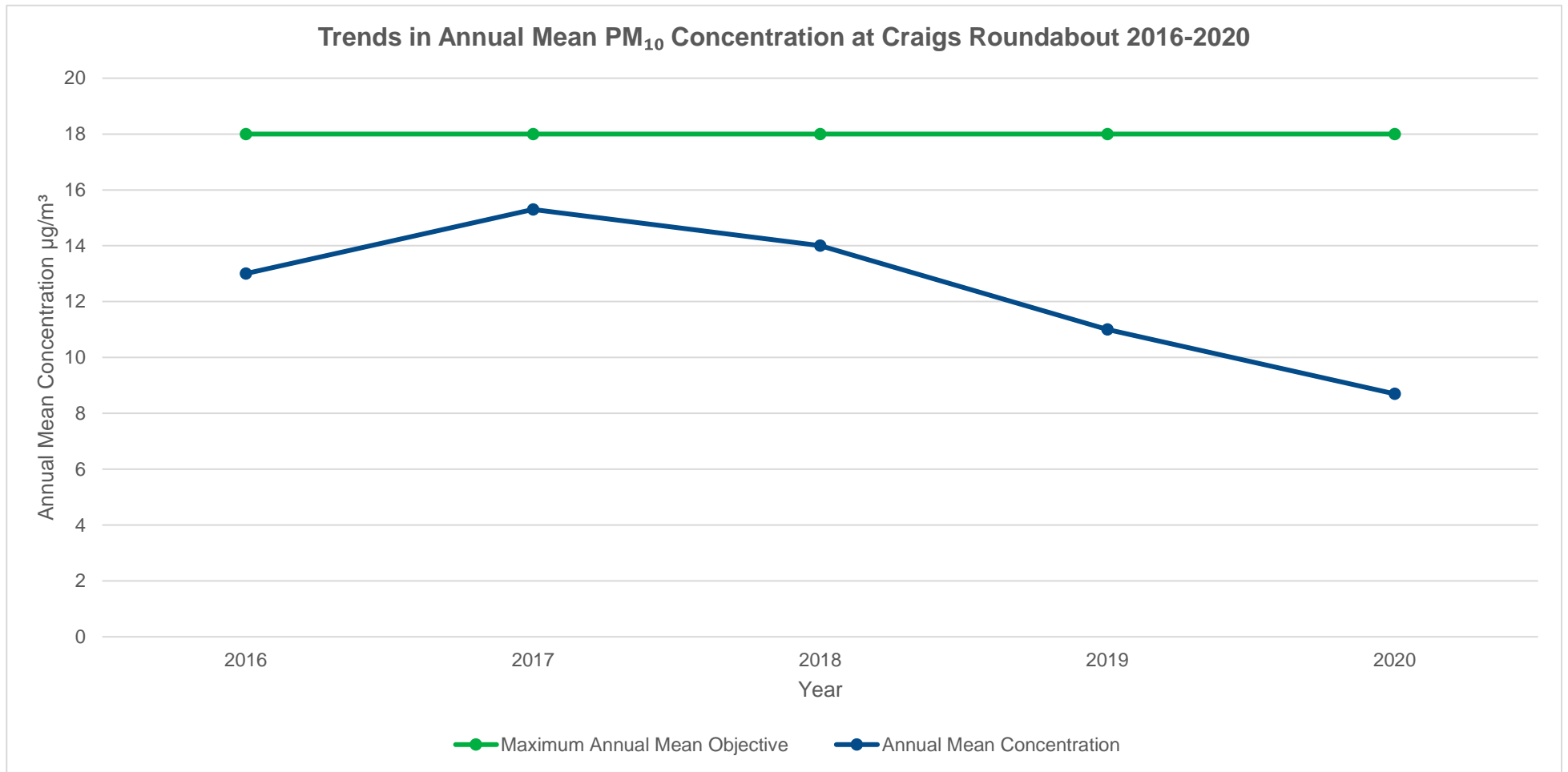


Figure B.2 Trends in Annual Mean PM<sub>10</sub> Concentration at Craigs Roundabout 2016-2020



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

### **New or Changed Sources Identified Within Stirling Council During 2020**

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

### **Additional Air Quality Works Undertaken by Stirling Council During 2020.**

Stirling Council has 10 Zephyrs located in and around the town centre which have been recording data throughout 2020. The data has been analysed by Stirling Council's Environmental Technician. The zephyrs showed improved air quality throughout 2020 which matched the reduced total traffic volumes and lack of peak hour traffic.

### **QA/QC of Diffusion Tube Monitoring**

Stirling Council receive the tubes from Edinburgh Scientific Services who prepare the tubes themselves, using components sourced from a company called Gradko. The tubes are prepared using 50% TEA in acetone.

Edinburgh Scientific Services are a United Kingdom Accreditation Service (UKAS) accredited for the analysis method that they use. The analysis is a colorimetric method with the absorbance being measured at 540nm using a spectrophotometer.

Apart from their own internal quality control samples, they take part in two external quality analysis schemes; the first one run by the National Physics Laboratory (NPL) and the second scheme is the AIR\_PT scheme, run by LGC.

The most recent results from the NPL were all graded as good, apart from one month where there was no results recorded due to COVID related issues and the tubes not being collected in time.

For the AIR\_PT scheme, Edinburgh Scientific Services participated in 2 rounds in 2020 (February and October). The four results for October were all fine, with Z scores of less than 2. Two of the results for February were satisfactory, but two had a negative bias (Z

scores of -2.46 and -4.01). After investigation, the laboratory believed that this was due to the solution in the tubes not being shaken and mixed sufficiently. There should have been another round in July 2020, but LGC couldn't prepare the tubes in time due to COVID related issues.

The diffusion tube monitoring at Stirling Council has been completed in adherence with the 2020 Diffusion Tube Monitoring Calendar apart from in April 2020 when lockdown first started and the tubes were not collected that month. The tubes were not collected until the end of May meaning that they had been out for almost 2 months and were overexposed. After discussions with the LAQM helpdesk, the data for those two months has been omitted from this APR due to site misrepresentation.

### **Diffusion Tube Annualisation**

All diffusion tube monitoring locations within Stirling Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

### **Diffusion Tube Bias Adjustment Factors**

Stirling Council have applied a national bias adjustment factor of 0.90 to the 2020 monitoring data. This factor was taken from the 03/21 version of the national spreadsheet which can be viewed at the following link:

<https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

A summary of bias adjustment factors used by Stirling Council over the past five years is presented below in Table C.1. A national bias adjustment factor was chosen as this is the factor that has been used in Stirling Council for the last five years ensuring consistency. The national factor of 0.90 is closer to the previous years figure of 1.01 than the local bias adjustment factor of 0.78, again ensuring consistency. The length of the studies applicable to the national factor was 11 months and the site that the co-location study has been completed at was the Craigs roundabout site (CM1 and CM2).

**Table C.1 – Bias Adjustment Factor**

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.90
2019	National	09/20	1.01
2018	National	06/19	1.05
2017	National	09/18	1.07
2016	National	06/17	1.08

**NO<sub>2</sub> Fall-off with Distance from the Road**

No diffusion tube NO<sub>2</sub> monitoring locations within Stirling required distance correction during 2020.

**QA/QC of Automatic Monitoring**

The automatic monitoring equipment is audited every 6 months by Ricardo Energy and Environment and a routine service and breakdown call out service is contracted to Air Monitors. Local Site Operator (LSO) calibrations are also performed. Ricardo advises that they be done fortnightly but due to resourcing issues, Stirling Council is limited to monthly calibrations. Data recorded by the station is analysed by Ricardo Energy and Environment. The data used within this APR is ratified and live and historic data can be viewed through the Scottish Air Quality website which can be accessed via the below link:

[http://www.scottishairquality.scot/latest/site-info?site\\_id=STRL](http://www.scottishairquality.scot/latest/site-info?site_id=STRL)

**PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring Adjustment**

The type of PM<sub>10</sub>/PM<sub>2.5</sub> monitors utilised within Stirling Council do not require the application of a correction factor.

**Automatic Monitoring Annualisation**

All automatic monitoring locations within Stirling Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation

## 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

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- (3) <https://laqm.defra.gov.uk/technical-guidance/index.html>
- (4) <https://laqm.defra.gov.uk/technical-guidance/index.html?d=Chapter7>
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