
# Derry City and Strabane District Council

## 2020 Progress Report, 2021 Updating and Screening Assessment and 2022 Progress Report

In fulfillment of Environment (Northern Ireland) Order 2002
Local Air Quality Management

June 2022

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| **Local Authority Officers** | Mark Mc Chrystal, Derry City and Strabane District Council |
| | |
| **Department** | Health and Community Well-being |
| **Address** | 98 Strand Road, Derry, BT48 7N |
| **Telephone** | 02871 253 253 |
| **E-mail** | info@derrystrabane.com |
| | |
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# Executive Summary

This report fulfils the requirements of the Local Air Quality Management process as set out in the Environment (Northern Ireland) Order 2002, the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. Results from monitoring by the Council are presented and sources of air pollution are identified.

This report confirms that air quality within Derry City and Strabane District Council area continues to meet the relevant air quality objectives at locations of relevant exposure, with the exception of locations within existing Air Quality Management Areas (AQMAs). There were no exceedances of any objectives outside the existing AQMA boundaries.

In the 2019 Progress report, Council recommended that the Spencer Road AQMA should be revoked due to reduced pollutant concentrations, well below the limit value, over the previous number of years. DAERA subsequently advised that more recent monitoring results be compiled for this AQMA to determine if pollutant concentrations continued to decline: this has been shown to be the case and it is now hoped that this AQMA can be revoked. The remaining AQMAs are considered appropriate and should remain unchanged. Although the Buncrana Road AQMA has not had exceedences of the Nitrogen Dioxide (NO2) annual mean limit value of 40 ugm3 for the last 2 years, Council will observe trends at this location with the possibility of revocation of the AQMA should NO2 levels remain lower. There is no requirement to proceed to a Detailed Assessment for any pollutant.

The report has not identified any significant changes in emissions sources within Derry City and Strabane District Council area. There have been no new relevant industrial installations and no new significant commercial, domestic or fugitive sources of emissions.

An update has also been provided on the measures contained in Council's Air Quality Action Plan. It is proposed to amend the Action Plan to take account of additional measures that Council has undertaken and to also account for the recommendations to be contained in the imminent Clean Air Strategy for Northern Ireland by DAERA.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Derry City and Strabane District Council is located in the west of Northern Ireland. Derry City is the second-largest city in Northern Ireland, situated on the River Foyle, and includes Foyle Port and the City of Derry Airport within its boundaries. Road transport emissions have previously been found to be the dominant source of air pollution in the Derry City area. The remainder of the district is largely rural in character, the largest population centre outside Derry being Strabane Town.

## 1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment (Northern Ireland) Order 2002, the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedances are considered likely, the local authority must then 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.

For Local Authorities in Northern Ireland, Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the LAQM process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

## 1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Northern Ireland** are set out in the Air Quality Regulations (Northern Ireland) 2003, Statutory Rules of Northern Ireland 2003, no. 342, and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre µg/m$^3$ (milligrammes per cubic metre, mg/m$^3$ for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

**Table 1.1 – Air Quality Objectives included in Regulations for the purpose of LAQM in Northern Ireland**

| Pollutant | Air Quality Objective | | Date to be achieved by |
|---|---|---|---|
| | Concentration | Measured as | |
| **Benzene** | 16.25 µg/m$^3$ | Running annual mean | 31.12.2003 |
| | 3.25 µg/m$^3$ | Running annual mean | 31.12.2010 |
| **1,3-butadiene** | 2.25 µg/m$^3$ | Running annual mean | 31.12.2003 |
| **Carbon monoxide** | 10 mg/m$^3$ | Running 8-hour mean | 31.12.2003 |
| **Lead** | 0.50 µg/m$^3$ | Annual mean | 31.12.2004 |
| | 0.25 µg/m$^3$ | Annual mean | 31.12.2008 |
| **Nitrogen dioxide** | 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 ($PM_{10}$) (gravimetric)** | 50 µg/m$^3$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 µg/m$^3$ | Annual mean | 31.12.2004 |
| **Sulphur dioxide** | 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 |

## 1.4 Summary of Previous Review and Assessments

As part of the review and assessment process, Derry City and Strabane District Council has prepared a number of air quality reports. A summary is provided in Table 1.2. In 2005 an AQMA was declared at the Creggan Road / Infirmary Road junction in Derry City, in 2011 two additional AQMAs were declared at Dale's Corner and at the Buncrana Road / Racecourse Road junction. In 2012/2013 two further AQMAs were declared at Spencer Road and Strand Road, all for exceedances of the annual mean $NO_2$ objective.

In October 2018 the Strand Road AQMA was revoked and the Spencer Road AQMA was reduced in size.

The remaining AQMAs are shown in Figures 1.1 to 1.4

Three AQMAs were declared in Strabane, Newtownstewart and Castlederg in 2004 for exceedances of the annual and 24-hour mean $PM_{10}$ objectives due to domestic heating. These 3 AQMA's were revoked in October 2018. An Action Plan was developed in order to identify measures to reduce ambient concentrations of particles and to attempt to comply with the objectives for $PM_{10}$.

The Council has also completed updating and screening assessments that did not highlight any other areas of concern that required a detailed assessment to be undertaken.

Table 1.2 summarises the Review and Assessment work carried out by the former Derry City Council up to and including 2014. After the new DCSDC was formed in April 2015, a single report was produced – "the 2015 Updating and Screening Assessment, 2016 Progress Report and 2017 Progress Report" and showed all the required LAQM report data including updated monitoring. The 2018 Updating & Screening Assessment was then followed by the 2019 Progress Report. The current report amalgamates the 2020 Progress Report, 2021 Updating and Screening Assessment and 2022 Progress Report into one report.

**Table 1.2 Summary of Review and Assessment by Derry City Council**

| Report | Summary |
|---|---|
| 2004 Detailed Air Quality Modelling of Domestic Fuel Use and Road Traffic Emissions in Derry (Stage 3) | Exceedances of the annual mean $NO_2$ concentrations were modelled at the Creggan Road / Infirmary Road junction, and the Council subsequently declared an AQMA in February 2005, and a draft Air Quality Action Plan was released in November 2006. The 2004 Detailed Assessment concluded that $PM_{10}$ exceedances were not expected; however, it was not possible to rule out potential exceedances of the $SO_2$ or $PM_{10}$ objectives due to the resolution of the modelling undertaken. |
| 2005 Progress Report | The 2005 Progress Report provided a review of the most recent monitoring data within the local authority. Automatic monitoring of $SO_2$ and $PM_{10}$ at Brandywell indicated a large drop in the number of 15-minute and daily mean exceedances, reflecting the decreased use of solid fuel in the area. |
| 2006 Updating & Screening Assessment | The Updating & Screening Assessment identified 2 locations to consider for the Detailed Assessment of $NO_2$: Dale's Corner and the Buncrana Road / Racecourse Road Junction. It was concluded that no further assessment was required for carbon monoxide, benzene, 1,3-butadiene, lead or sulphur dioxide, however, assessment was required for $PM_{10}$ at a rural area near Claudy, and in the Culmore Point area. |
| 2007 Detailed Assessment and Further Assessment | A Detailed Assessment was undertaken for Dale's Corner and Buncrana Road / Racecourse Road Junction following measured exceedance of the $NO_2$ annual mean objective. It was determined that a declaration of an AQMA at either location was not required at the time, as the modelling did not confirm exceedances of the air quality objectives at locations of relevant exposure.<br>A Further Assessment was undertaken for the existing AQMA at Creggan Road / Infirmary Road, and it was concluded that there was a continuing need for the AQMA, though no extension was considered necessary. |
| 2008 Progress Report | Review of updated $NO_2$ monitoring data for the Creggan Road / Infirmary Road junction confirmed the continuing need for the AQMA. Decreases were seen in concentrations of $SO_2$. The Progress Report proposed that a new detailed dispersion modelling be undertaken at the Dale's Corner junction due to exceedances of the $NO_2$ annual mean objective recorded at a new monitoring diffusion tube site at no.5 Glendermott Road. |
| 2008 Final Air Quality Action Plan | The final Air Quality Action Plan, released in September 2008, included detailed dispersion modelling to quantify the potential impact of a number of traffic measures, which may be implemented to reduce air pollution in the area of the Creggan Road / Infirmary Road junction. Proposals included the removal of HGVs on specific road links within the AQMA. |

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| 2008 Dale's Corner Detailed Assessment | The assessment confirmed that exceedances of the $NO_2$ annual mean AQS objective were likely at the façade of properties along Glendermott Road and Limavady Road close to the junction and it was recommended that an AQMA encompassing these properties be declared. The Council declared the Dale's Corner AQMA in 2010. |
| 2009 Updating & Screening Assessment | The Updating & Screening Assessment reviewed and assessed new monitoring data and potential new sources of pollutants within the Council area. There were no new or significantly changed sources identified which may cause potential exceedances of the AQS objectives. However, the assessment highlighted that a new Detailed Assessment was required with regard to $NO_2$ at Buncrana Road / Racecourse Road junction based on updated monitoring data. |
| 2010 Air Quality Progress Report and Buncrana Road Detailed Assessment | Based on updated 2009 monitoring data, the air quality Progress Report 2010 confirmed exceedances of the $NO_2$ annual mean objective at several monitoring sites within the Creggan Road / Infirmary Road and Dale's Corner AQMAs and at the junction of Buncrana Road and Racecourse Road. The Detailed Assessment of Buncrana Road confirmed that a third AQMA was required at the junction for NO2. The Council declared an AQMA at the junction in 2010. |
| 2010 Dale's Corner Further Assessment | The report confirmed the need for an AQMA at Dale's Corner and provided detailed information related to source apportionment, population exposure and required reduction of NOx emissions to comply with the AQS objectives. The Further Assessment also considered the impact of several mitigation measures.<br>Conclusions were that the combined effect of these measures would result in significant reductions in $NO_2$ levels, and compliance with the annual mean objective. |
| 2011 Buncrana Road Further Assessment | The report confirmed the need for an AQMA at Buncrana Road and provided detailed information related to source apportionment, showing that road traffic is the main contributor to overall $NO_2$ levels, population exposure and required reduction of emissions to comply with the AQS objectives. The Further Assessment estimated that the annual mean objective would be met at all locations by 2014, however it was noted that this was an optimistic estimate, as predicted concentrations were likely to be underestimated as shown by recent $NO_2$ monitoring trends across the UK. |
| 2011 Progress Report | Review of updated monitoring data showed that areas within the existing AQMAs were still exceeding the $NO_2$ objective. In addition, four new areas of where exceedances were identified in Spencer Road, John Street, Strand Road and Abercorn Road. A Detailed Assessment was therefore recommended. |
| 2012 Air Quality Action Plan Update | The Air Quality Action Plan update reviewed the first AQAP to incorporate the new AQMAs. The AQAP included details of the traffic measures which may be implemented to reduce air pollution in the identified |

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|---|---|
| | AQMAs together with an update as to how measures identified in 2008 have been implemented. |
| 2012 Updating & Screening Assessment | Review of updated monitoring data showed that areas within the existing AQMAs were still exceeding the $NO_2$ objective. It was noted that concentrations in John Street, Strand Road and Abercorn Road had fallen below objective levels and it was recommended to continue monitoring in these locations. Concentrations at Spencer Road were still exceeding the objectives and a Detailed Assessment was recommended. |
| 2012 Detailed Assessments | Based on monitoring results, the Council decided to undertake Detailed Assessments at Spencer Road, John Street, Strand Road and Abercorn Road. It was concluded, based on a combination of pollutant monitoring and predictive modelling, that AQMA's be declared at Spencer Road and Strand Road. The report found that there was no requirement to declare for John Street and Abercorn Road. |
| 2012/2013 AQMA declaration | Based upon the outcome of the Detailed Assessments at Spencer Road and Strand Road, two new small AQMA areas were declared. |
| 2013 Progress Report | Review of updated monitoring data showed that sites within the existing AQMAs were still exceeding the annual mean $NO_2$ objective. It was therefore recommended to continue to monitor within the AQMAs and surrounding areas including Abercorn Road. The Council proceeded to the review of the Air Quality Action Plan to include the new AQMAs in Strand Road and Spencer Road. |
| 2014 Detailed Assessment (Draft) | The modelling confirmed exceedances of the annual mean $NO_2$ objective within all AQMAs, with the exception of the Strand Road AQMA. The area of exceedance in the Creggan Road and Buncrana Road AQMAs is smaller than when they were declared, therefore, amended AQMA boundaries were recommended. |
| 2014 Progress Report | Review of updated monitoring data showed that sites within the existing AQMAs were still exceeding the annual mean $NO_2$ objective, with the exception of the Strand Road AQMA. It was therefore concluded that the Council could consider potential revocation of the Strand Road AQMA. All other AQMAs are to remain in place. |

| | |
|---|---|
| 2015 Updating and Screening Assessment, 2016 Progress Report and 2017 Progress Report | The report confirmed that air quality within the Council area continued to meet the relevant air quality objectives at locations of relevant exposure, with the exception of locations within existing Air Quality Management Areas (AQMAs). There were no objectives exceedances outside the existing AQMA boundaries, or within the Strand Road AQMA. It was recommended that the extent of the Spencer Road AQMA be reduced to reflect the 2014 Detailed Assessment and that the Strand Road AQMA be revoked. The remaining AQMAs were considered appropriate and should remain unchanged with no requirement to proceed to a Detailed Assessment. No significant changes in emissions sources within the Council area were identified with no new relevant industrial installations/ significant commercial, domestic or fugitive sources of emissions. |
| 2015- 2017 Action Plan Progress Report | The Council is now in the process of revoking the AQMA's declared for Strabane, Newtownstewart and Castlederg in relation to exceedances of the air quality objectives for particulates ($PM_{10}$). The former SDC Action Plan measures have now been realised and pollution levels have reduced to well below health limit values. However, the Smoke Control Areas shall be maintained and enforced. The AQMA at Strand Road, declared due to nitrogen dioxide emissions, shall be revoked and the AQMA at Spencer Road shall be reduced in size to reflect updated monitoring and modelling results. The Council is currently revising the Air Quality Action Plan to reflect the new Council boundary. The Action Plan shall contain measures to be introduced to work towards achieving air quality objectives within the remaining AQMAs to improve health and wellbeing across the Council area. |
| 2018 Updating & Screening Assessment | There were no exceedances of any objectives outside the existing AQMA boundaries, or within the Strand Road AQMA. No significant changes in emission sources or no new developments within the Derry and Strabane District Council area were identified that would significantly impact on air quality at relevant locations. In 2018, the Council revoked the Strabane, Newtownstewart and Castlederg AQMA's for particulates (PM10). The former SDC Action Plan measures were realised and pollution levels reduced to well below health limit values.The Smoke Control Areas still remain. The Strand Road AQMA for nitrogen dioxide was revoked in 2018 and the Spencer Road AQMA was reduced in size to reflect updated monitoring and modelling results. The remaining AQMAs are considered appropriate for the time-being. The Council is revising the Air Quality Action Plan to reflect the new Council boundary. Measures shall be introduced to work towards achieving air quality objectives within the remaining AQMAs to improve health and wellbeing across the Council area. |
| | |

| | |
|---|---|
| 2019 Progress Report | The report confirmed that air quality within the Council area continued to meet the relevant air quality objectives at locations of relevant exposure, with the exception of locations within the existing Air Quality Management Areas (AQMAs) at Creggan Road and Dale's Corner. There were no objectives exceedances outside the existing AQMA boundaries.<br>Council recommended in the report that the Spencer Road AQMA should be revoked due to reduced pollutant concentrations, well below the limit value, over the last number of years. DAERA subsequently advised that more recent monitoring results be compiled for this AQMA to determine if pollutant concentrations continued to decline: this has been shown to be the case and it is now hoped that this AQMA can be revoked. The remaining AQMAs are considered appropriate and should remain unchanged. There is no requirement to proceed to a Detailed Assessment for any pollutant.<br>The report has not identified any significant changes in emissions sources within Derry City and Strabane District Council area and there have been no new relevant industrial installations and no new significant commercial, domestic or fugitive sources of emissions.<br>An update has also been provided on the measures contained in Council's Air Quality Action Plan. It is proposed to amend the Action Plan to take account of DAERA's imminent Clean Air Stragy for Northern Ireland and also additional measures that Council has proposed. |

The following Figures 1.1 – 1.4 show the AQMA's in the Derry City and Strabane District Council area. These 4 AQMA's are within the Derry area of the council. They have been declared for $NO_2$ from traffic sources.

## Maps of the AQMA's declared for Nitrogen Dioxide (Annual Mean)

Figure 1.1 – Creggan Road Air Quality Management Area

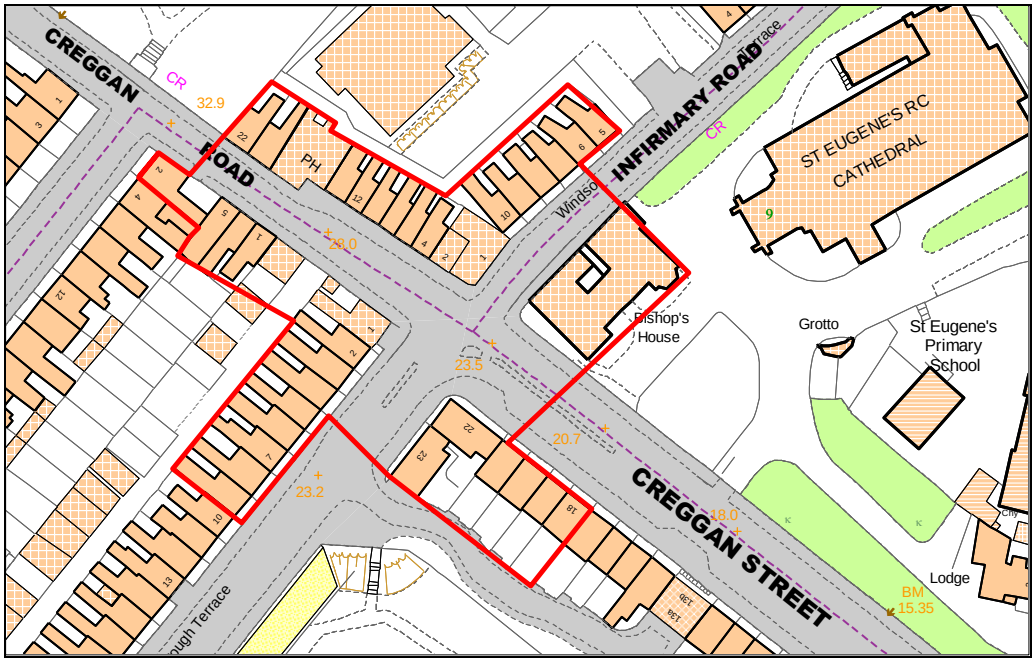


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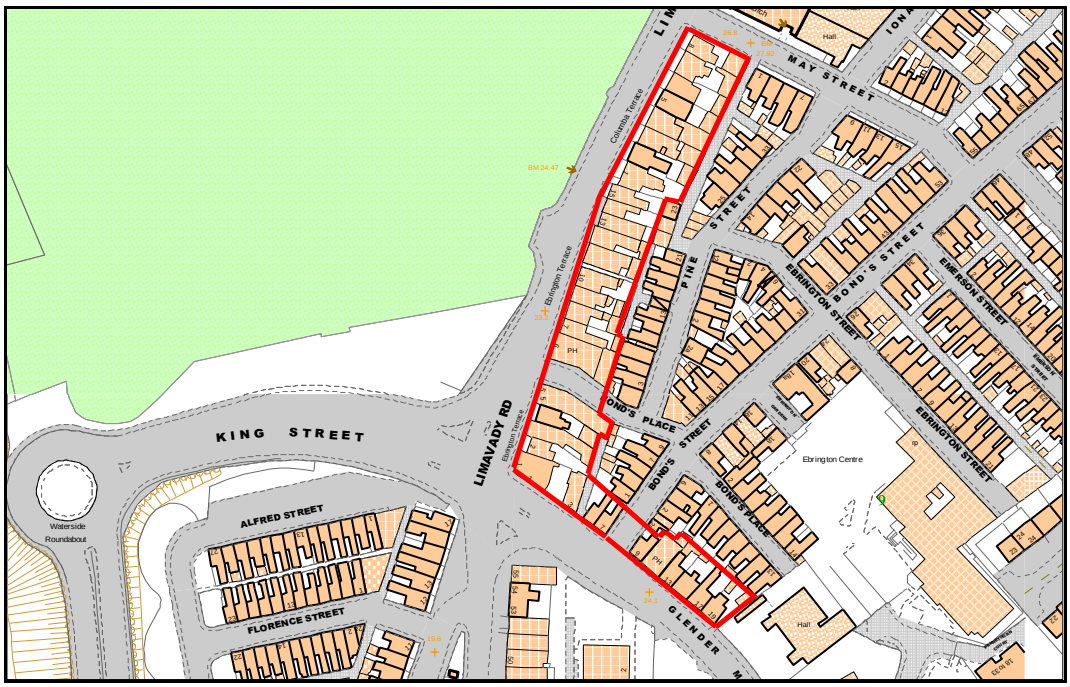
Figure 1.2 – Dale's Corner Air Quality Management Area

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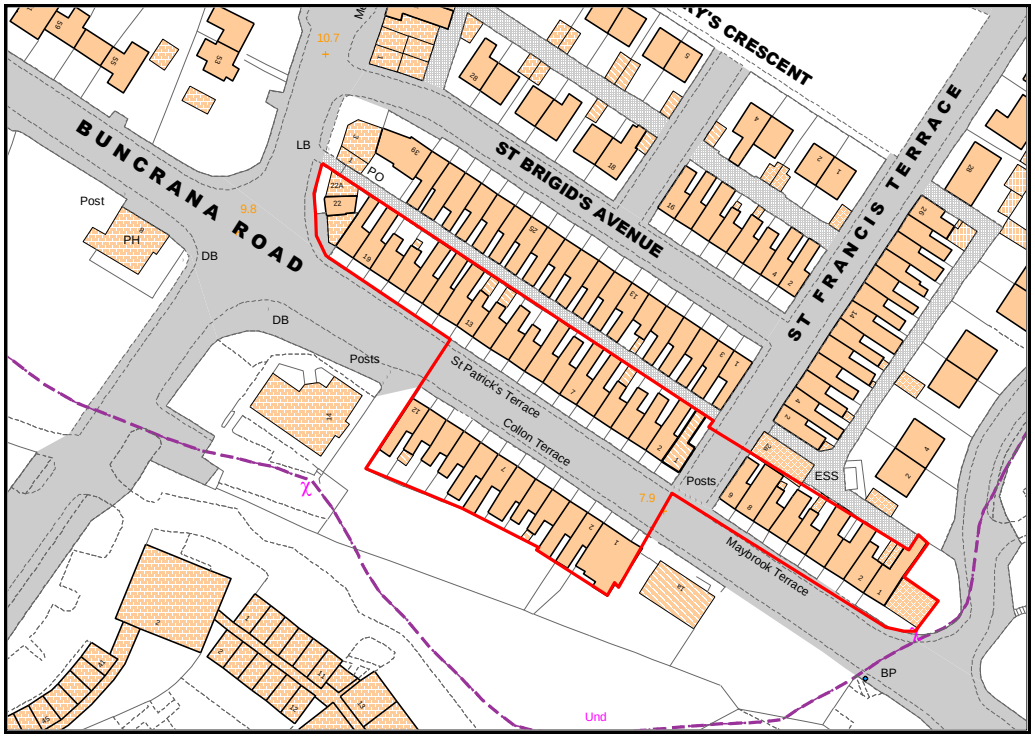
## Figure 1.3 – Buncrana Road Air Quality Management Area

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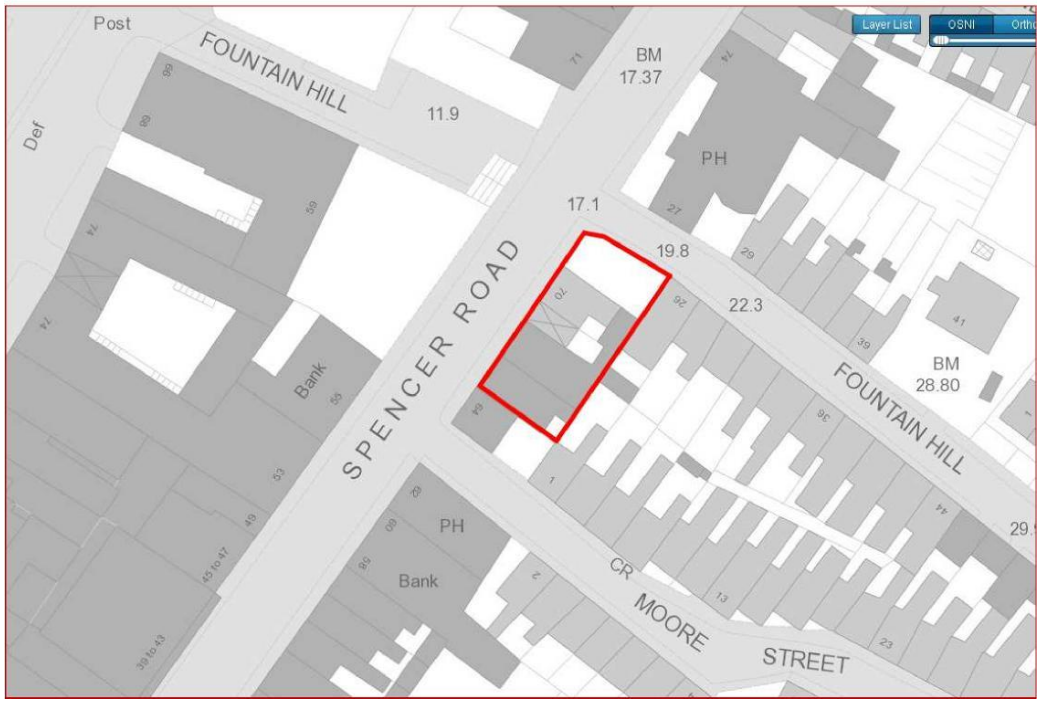
## Figure 1.4 – Spencer Road Air Quality Management Area

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# 2 New Monitoring Data

## 2.1 Summary of Monitoring Undertaken

### 2.1.1 Automatic Monitoring Sites

The Council monitors $NO_2$ at two locations, Derry Rosemount and Dale's Corner. $PM_{10}$ was monitored at Derry Rosemount, Bawnmore Place at Strathfoyle and the Springhill Park site in Strabane. A new site at Newtownstewart was commissioned in April 2021 measuring PM10. $PM_{2.5}$ was also monitored at Derry Rosemount, as was Ozone. The Council monitors $SO_2$ at two locations, Derry Rosemount and Springhill Park. Details of the automatic monitoring sites are summarised in Table 2.1 and shown in Figures 2.1 to 2.3. Figure 2.4 shows the location of the Aeroqual sensor analyser which is discussed later in Section 2.2.1.

Monitoring techniques used at the sites include; chemi-luminescence at Dale's Corner, FDMS and chemi-luminescent at Derry Rosemount, beta ray attenuation and UV florescence at Springhill Park and TEOM $PM_{10}$ at Bawnmore Place, Strathfoyle and also Newtownstewart. Within the last 6 months, Council has replaced all TEOM analysers with new FIDAS instruments measuring $PM_{10}$ and $PM_{2.5}$ at Strathfoyle, Springhill Park and Newtownstewart.

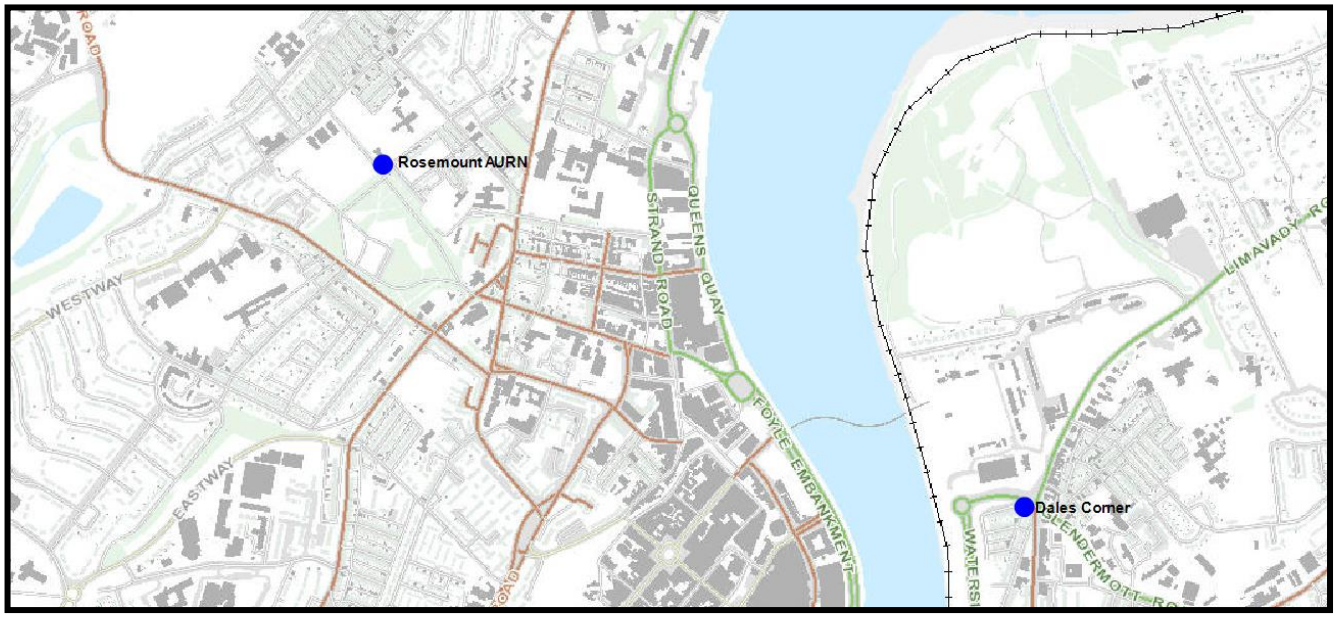
$NO_2$ concentrations were below both the annual mean at the Rosemount and Dale's Corner sites in all years and 1-hour objectives were below the threshold at both sites.

There were no exceedances of the 1-hour objective at any of the sites in 2019, 2020 or 2021.

The Rosemount AURN site is managed to the UK Automatic Urban and Rural Network (AURN) QA standards. QA/QC details and overview monitoring graphs and exceedance statistics for the non-AURN sites are included in the Appendices.

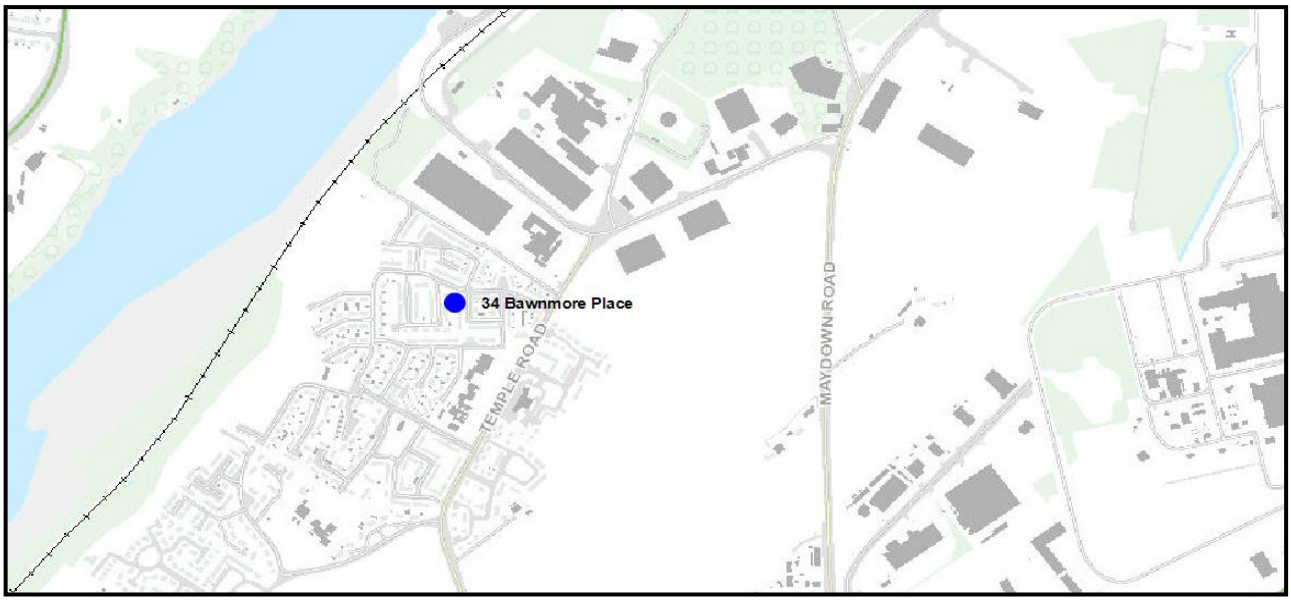
## Figure 2.1 – Map of Automatic Monitoring Sites in Derry

Rosemount AURN and Dales Corner



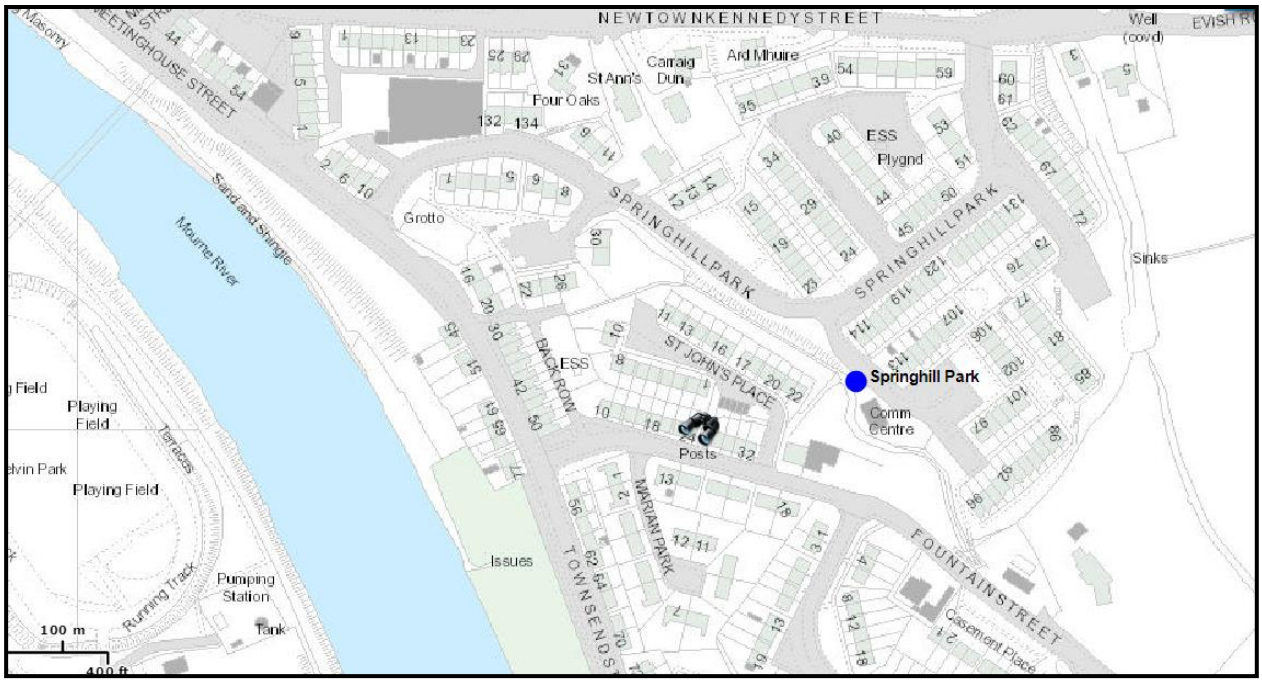



34 Bawnmore Place



## Figure 2.2 Map of Automatic Monitoring Site in Strabane

Springhill Park






## Figure 2.3 Map of Automatic Monitoring Site in Newtownstewart

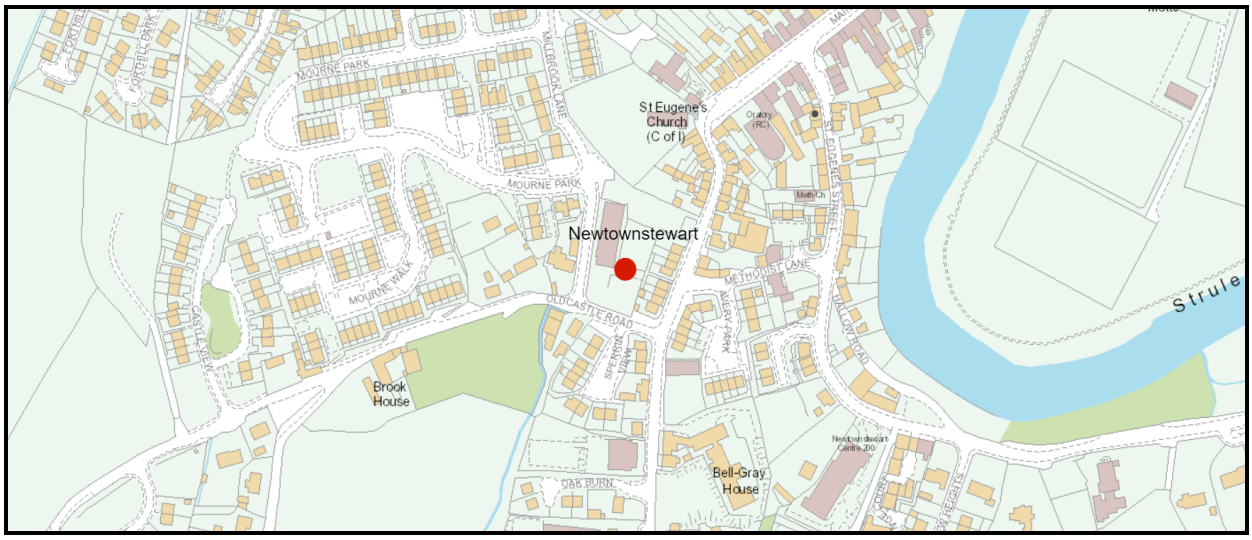


**Figure 2.4 Map of Automatic Aeroqual Sensor Analyser Monitoring Site in Castlederg**

**Table 2.1 – Details of Automatic Monitoring Sites**

| Site Name | Site Type | X OS Grid Reference | Y OS Grid Reference | Inlet Height (m) | Pollutants Monitored | In AQMA? | Monitoring Technique | Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure) | Distance to Kerb of Nearest Road (m) (N/A if not applicable) | Does this Location Represent Worst-Case Exposure? |
|---|---|---|---|---|---|---|---|---|---|---|
| Dales Corner | Roadside | 244186 | 416761 | 1.5m | $NO_2$ | N | chemiluminescence monitor | Y | 3m | Y |
| Derry Rosemount | Urban | 242850 | 417468 | 3m | O3, $NO_2$ | N | FDMS (changed to BAM early 2020) and chemiluminescence monitor | Y | 161m | N/A |
| Strathfoyle | Suburban | 247007 | 421004 | 1.5m | $PM_{10}$ | N | TEOM (changed to FIDAS early 2022) | Y | 27m | N/A |
| Springhill Park, Strabane | Urban Background | 235175 | 397222 | 2.5 | $PM_{10}$, $SO_2$ | N | beta ray attenuation (changed to FIDAS early 2022) and UV florescence | Y | 2m | Y |
| Derg Leisure Centre | Urban | 226773 | 384585 | 3.5m | $PM_{10}$, PM2.5, $PM_1$, $NO_2$, O3 | N | Aeroqual sensor analyser | Y | 22m | Y |

### 2.1.2 Non-Automatic Monitoring Sites

The Council operates 24 Nitrogen Dioxide ($NO_2$) diffusion tube monitoring sites within its area situated across Derry City. 50 tubes in all were exposed, with triplicate tubes at the continuous $NO_2$ monitoring stations at Dale's Corner and Rosemount and duplicate tubes at all other sites. The locations of these sites are shown in Figures 2.5 to 2.10 and described in detail in Table 2.2. The maps show current and historical monitoring locations since 2015.

It was decided to use the local bias correction factor for the $NO_2$ diffusion tubes and this is discussed later in Section 2.2.

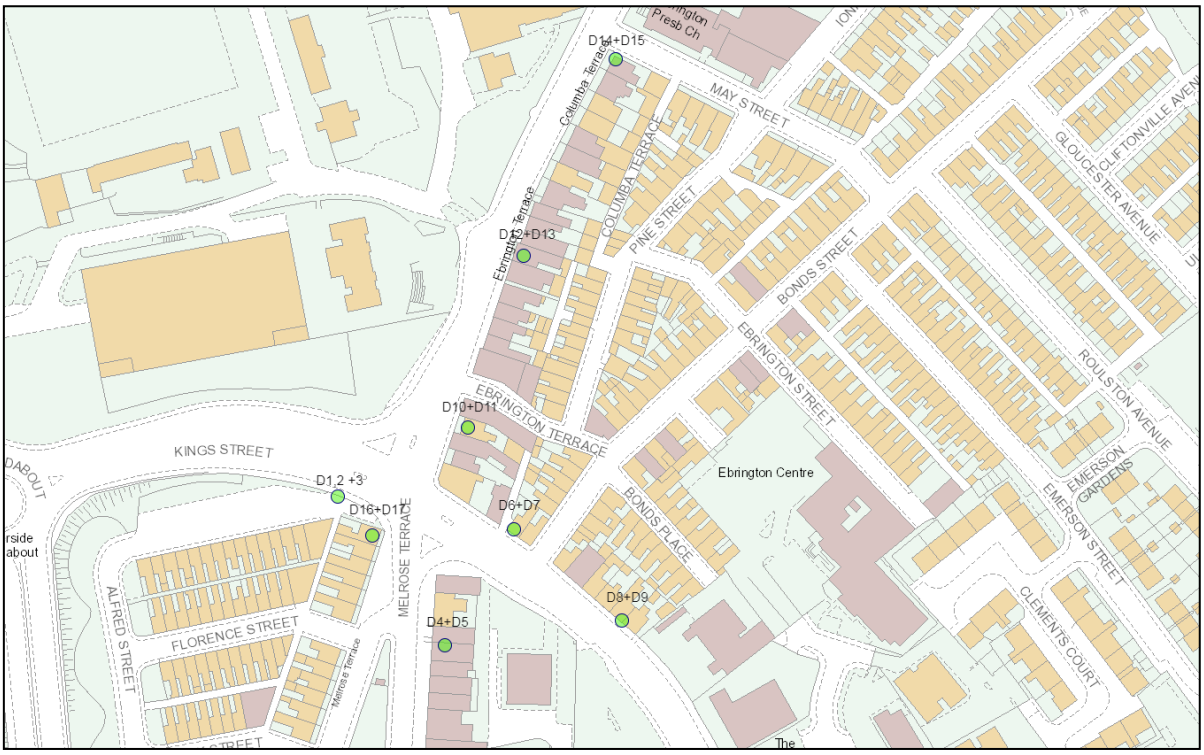
Full details of the QA/QC procedure for the diffusion tubes are provided in the Appendix.

**Figure 2.5 – Map of Rosemount (AURN) Non-Automatic Monitoring Sites**




**Figure 2.6 - Map of Creggan Road, Marlborough Terrace, Windsor Terrace, Creggan Street and Francis Street Non- Automatic Monitoring Sites.**

**Figure 2.7 – Map of Dales Monitor, Clooney Terrace, Glendermott Road, Ebrington Terrace, Columba Terrace and Melrose Terrace Non – Automatic**




**Monitoring Sites.**



**Figure 2.8 – Map of Messines Park, Maybrook Terrace, St Patrick's Terrace and Collon Terrace Non – Automatic Monitoring Sites**

**Figure 2.9 Map of Spencer Road Non-Automatic Monitoring Site**

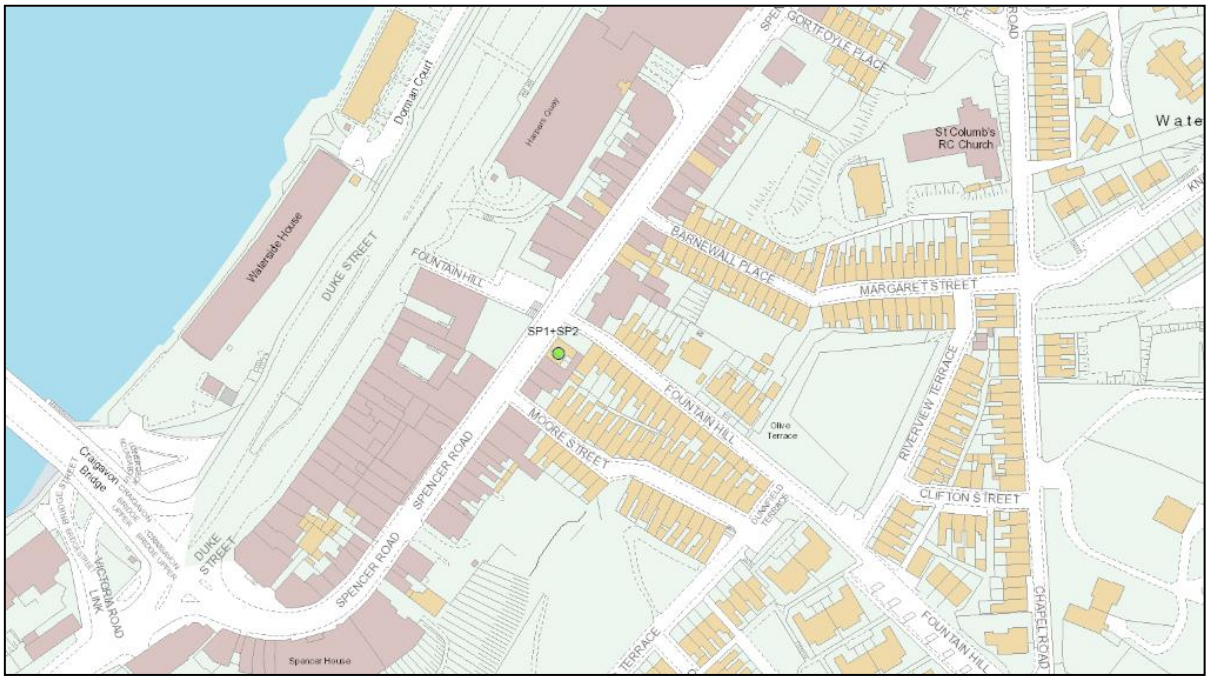
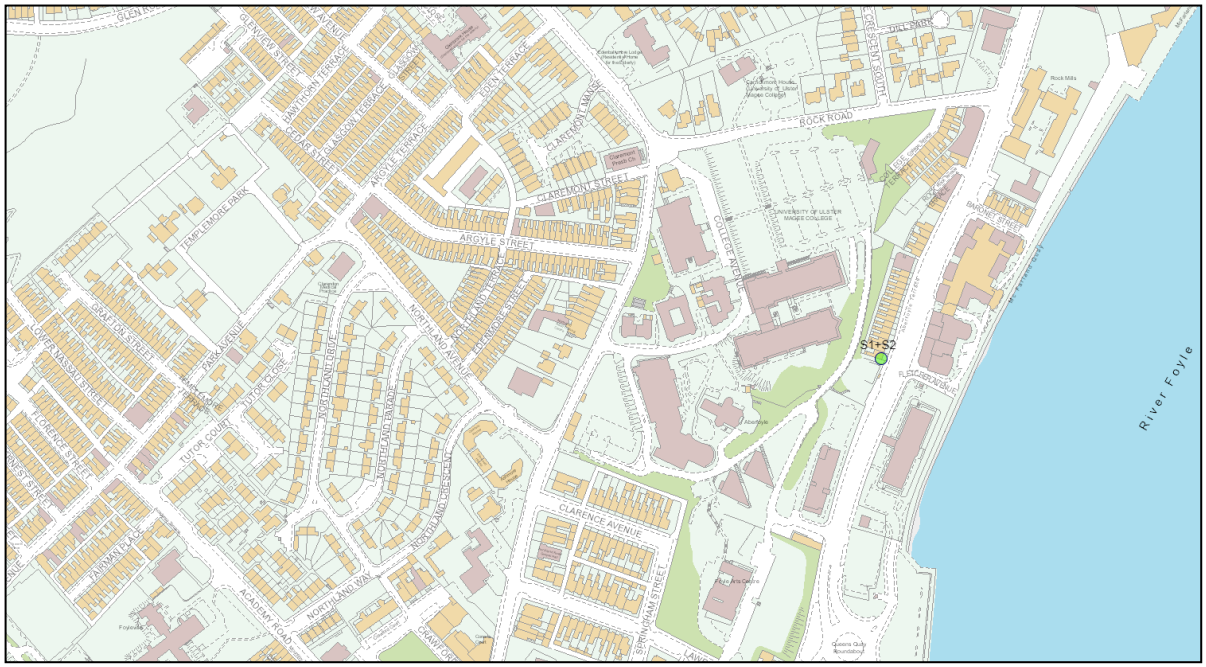





**Figure 2.10 Map of Aberfoyle Terrace Non-Automatic Monitoring Site**



## Table 2.2 – Details of Non- Automatic Monitoring Sites

| Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Site Height (m) | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? *(Y/N with distance (m) to relevant exposure)* | Distance to kerb of nearest road *(N/A if not applicable)* | Does this location represent worst-case exposure? |
|---|---|---|---|---|---|---|---|---|---|---|
| A1-3 | Urban background | 242962 | 417217 | 2.5 | NO2 | N | Y (triplicate) | Y (161m) | 161m | Y |
| C1-2 | Roadside | 242913 | 417144 | 2.5 | NO2 | Y | N (duplicate) | Y (0m) | 1m | Y |
| C3-4 | Roadside | 242921 | 417101 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| C5-6 | Urban Background | 242959 | 417102 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 3m | Y |
| C7-8 | Roadside | 243017 | 417191 | 2 | NO2 | N | N (duplicate) | Y (0m) | 3m | Y |
| C9-10 | Roadside | 242928 | 417148 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 3m | Y |
| D1-3 | Roadside | 244178 | 416760 | 1.5 | NO2 | N | N (triplicate) | Y (0m) | 3m | Y |
| D4-5 | Roadside | 244210 | 416714 | 2.5 | NO2 | N | N (duplicate) | Y (0m) | 5m | Y |
| D6-7 | Roadside | 244238 | 416753 | 2.5 | NO2 | Y | N (duplicate) | Y (0m) | 1m | Y |
| D8-9 | Roadside | 244283 | 416718 | 2.5 | NO2 | Y | N (duplicate) | Y (0m) | 1m | Y |
| D10-11 | Roadside | 244219 | 416794 | 3 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| D12-13 | Roadside | 244240 | 416856 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |

| Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Site Height (m) | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? *(Y/N with distance (m) to relevant exposure)* | Distance to kerb of nearest road *(N/A if not applicable)* | Does this location represent worst-case exposure? |
|---|---|---|---|---|---|---|---|---|---|---|
| D14-15 | Roadside | 244277 | 416931 | 1.5 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| D16-17 | Roadside | 244189 | 416756 | 2 | NO2 | N | N (duplicate) | Y (0m) | 7.3m | Y |
| P1-2 | Roadside | 243449 | 419013 | 2 | NO2 | N | N (duplicate) | Y (0m) | 5m | Y |
| P3-4 | Roadside | 243418 | 419016 | 2.5 | NO2 | N | N (duplicate) | Y (0m) | 5m | Y |
| P5-6 | Roadside | 243571 | 418910 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 5m | Y |
| P7-8 | Roadside | 243480 | 418970 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| P9-10 | Roadside | 243539 | 418908 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| P11-12 | Roadside | 243519 | 418921 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 4m | Y |
| S7-8 | Roadside | 243483 | 417801 | 2 | NO2 | Y | N (duplicate) | Y (0m) | 6m | N |
| SP1-2 | Roadside | 243557 | 417907 | 2.5 | NO2 | Y | N (duplicate) | Y (0m) | 2m | Y |
| FR1-2 | Roadside | 243084 | 417075 | 3 | NO2 | N | N (duplicate) | Y (0m) | 2m | Y |
| FR3-4 | Roadside | 243110 | 417225 | 3 | NO2 | N | N (duplicate) | Y (0m) | 2m | Y |

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### 2.2.1 Nitrogen Dioxide ($NO_2$)

**Automatic Monitoring Data**

Details of results from both automatic monitoring sites, compared with the annual mean objective from 2019-2021, are documented in Table 2.3 and shown in Figure 2.11. The annual limit value of 40µg/$m^3$ is shown by the red line. Comparison with the 1-hour mean Objective is also documented in Table 2.4.

The monitoring results at both the Rosemount site and Dales Corner site show a decrease in the annual mean from 2019 to 2020, however this increased again in 2021 at both sites. Despite this increase in 2021, the annual mean for 2021 at both sites has not increased to the levels previously recorded in 2019.

**Derg Leisure Centre**

The Aeroqual Sensor Analyser was set up on the side façade of the Centre (shown in Fig 2.4) to primarily monitor PM concentrations from emissions from solid domestic fuel use occurring in nearby properties in the town. The analyser also measures $NO_2$ and Ozone. As the results from the analyser cannot undergo the same detailed QA/QC procedures as the chemi-luminescent/ FIDAS/BAM analysers, they are not included in the tabulated results of the main report. These type of sensor analysers are more of a screening tool; if high pollutant concentrations are found, it is advisable to undertake monitoring that is MCerts compliant for official reporting purposes.

There were no exceedances of any of the pollutant limit values or AQ Objectives but it must be acknowledged that the results are indicative.

All monitoring results, including tables and graphs for each pollutant can be seen in the Appendix F

**Automatic Monitoring Data**

**Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for period of monitoring %[a] | Valid Data Capture 2019 % [b] | Valid Data Capture 2020% [b] | Valid Data Capture 2021 % [b] | Annual Mean Concentration μg/m$^3$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2019* [c] | 2020* [c] | 2021* [c] |
| Derry Dale's Corner | Roadside | N | - | 97 | 99 | 97 | 33 | 27 | 30 |
| Derry Rosemount | Urban background | N | - | 98 | 99 | 99 | 11 | 8 | 9 |

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] Means should be "annualised" as per Boxes 7.9 and 7.10 of LAQM.TG16, if monitoring was not carried out for the full year.
*Annual mean concentrations for previous years are optional.

**Trends in Annual Mean $NO_2$ Concentrations Measured at Automatic Monitoring Sites**

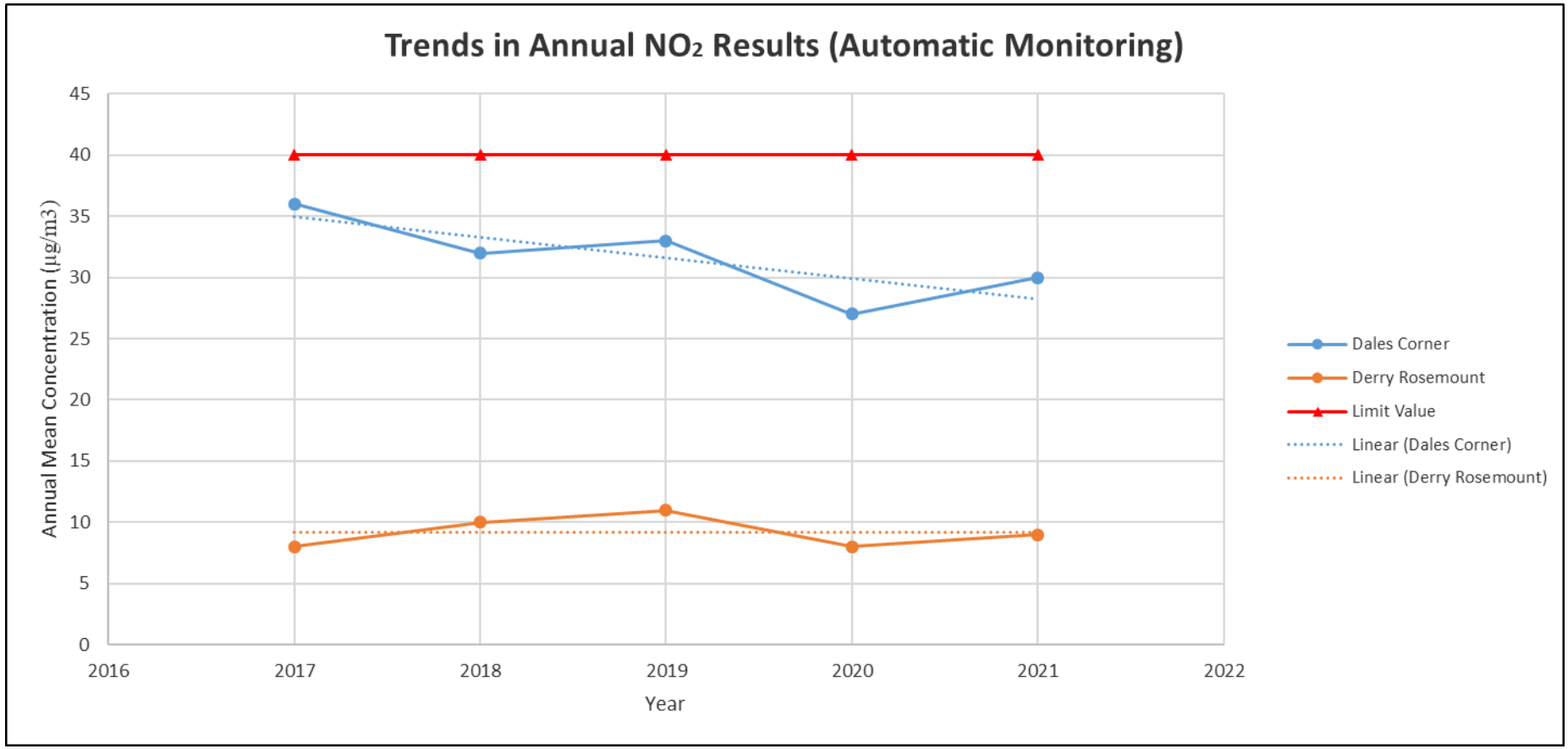



**Figure 2.11**

**Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for period of monitoring %[a] | Valid Data Capture 2019 % [b] | Valid Data Capture 2020 % [b] | Valid Data Capture 2021% [b] | Number of Exceedances of Hourly Mean (200 μg/m³) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2019* [c] | 2020* [c] | 2021* [c] |
| Derry Dale's Corner | Roadside | N | - | 97% | 99% | 97% | 0(158) | 0 (127) | 0 (147) |
| Derry Rosemount | Urban background | N | - | 98% | 99% | 99% | 0 (76) | 0 (77) | 0 (73) |

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] If the period of valid data is less than 85%, include the 99.8$^{th}$ percentile of hourly means in brackets
*Number of exceedances for previous years are optional.

**In bold**, exceedence of the $NO_2$ hourly mean AQS objective (200μg/m$^3$ – not to be exceeded more than 18 times per year)

## Diffusion Tube Monitoring Data

Long term trends have been illustrated in the following graphs for different locations within the AQMA's. Results of monitoring trends over the various periods 2017-2021 show that most locations with elevated pollutant concentrations within the AQMA's are projected to display decreases to below the pollutant objective values.

This is encouraging and it is hoped that these trends continue. It must be acknowledged that the trends can be affected by several important parameters, not least the choice of bias correction factor. The local bias correction factor has shown a decrease from 2017 to 2018 from 0.86 to 0.75, but then in 2019 this increased slightly to 0.77 before decreasing slightly again to 0.76 in 2020. In 2021 the local bias adjustment factor increased up to 0.88.

The national bias adjustment factor increased slightly from 2017 to 2018 from 0.76 to 0.77, then in 2019 the figure decreased to 0.75 before rising to 0.83 in 2020. In 2021 the national bias adjustment factor decreased to 0.78.

Council choose to use the Local Co-location Factors in this report for years 2019, 2020 and 2021 as opposed to the National Diffusion Tube Bias Adjustment Factors for the ESG laboratory at Didcot (using the 50% triethanolamine (TEA) in acetone preparation method) for DCSDC's tube analyses. The use of the higher local bias adjustment factor of 0.88 in 2021 will of course have an effect on the corrected concentrations and this will be reflected in the graphs. For comparison purposes, the National Diffusion Tube Bias Adjustment Factors have been included also in some graphs.

All diffusion tube monitors are located on façade of dwellings with the exception of the Rosemount AURN site and the Dale's Corner continuous roadside monitoring site. The tubes at the AURN site cannot be distance corrected as they are over 50m from kerb. At Dale's Corner, the distance correction calculator shows a reduction of over 4 ug/$m^3$ to give an $NO_2$ annual mean concentration of 25.7 ug/$m^3$ at the façade of the nearest dwelling.

The NO2 diffusion tube data is summarised in Table 2.6.1 and 2.6.2 (Exceedances shown in bold). The annual mean objective was exceeded using both local and national factors at seven sites in 2017, 4 sites in 2018, four sites in 2019, one site in 2020 and one site in 2021.

This demonstrates that between 2017 and 2021 the annual mean objective. It is hoped this is a strong indication of a drop in overall $NO_2$ pollution levels from traffic sources. No exceedances have been recorded outside the existing AQMAs within the past number of years.

The following sites were found to be exceeding in 2017:

· C1-2 (Creggan Road AQMA);

. C3-4 (Creggan Road AQMA);

· D6-7 (Dale's Corner AQMA);

· D8-9 (Dale's Corner AQMA);

· D10-11 (Dale's Corner AQMA);

· D12-13 (Dale's Corner AQMA); and

· P11-12 (Buncrana Road AQMA)

The following sites were found to be exceeding in 2018:

· C1-2 (Creggan Road AQMA);

· D6-7 (Dale's Corner AQMA);

· D8-9 (Dale's Corner AQMA) and;

· D10-11 (Dale's Corner AQMA)

The following sites were found to be exceeding in 2019:

· C1-2 (Creggan Road AQMA);

· D6-7 (Dale's Corner AQMA);

· D8-9 (Dale's Corner AQMA);

· D10-11 (Dale's Corner AQMA) and

· P11-12 (Buncrana Road AQMA) only when using the local bias adjustment factor

The following sites were found to be exceeding in 2020:

· C1-2 (Creggan Road AQMA);

The following sites were found to be exceeding in 2021:
· C1-2 (Creggan Road AQMA);
· D6-7 (Dale's Corner AQMA) only when using the local bias adjustment factor
· D8-9 (Dale's Corner AQMA) only when using the local bias adjustment factor
· D10-11 (Dale's Corner AQMA) only when using the local bias adjustment factor

The above illustrates a marked decline in the number of exceedances at monitored locations within the AQMA's

The Buncrana Road AQMA has only shown one exceedance between 2018 and 2021 which was a slight exceedance of 40.8 with the local bias adjustment factor in 2019.

It is worth noting that, had the National bias adjustment factor been chosen, there would be less exceedances at some of the sites.

**Creggan Road AQMA**

Exceedances of the annual mean $NO_2$ objective continue to occur within the AQMA as shown by the monitoring results. Diffusion tube monitoring site C1-2 showed concentrations greater than 60µg/m$^3$ using the local bias adjustment factor in 2017 but this figure dropped to 53.6µg/m$^3$ in 2018 using the local bias adjustment factor and 55.1µg/m$^3$ using the national factor. In 2019 the concentrations increased to 55.7µg/m$^3$ using the local bias adjustment factor but decreased slightly to 54.3 µg/m$^3$ using the national bias adjustment factor. In 2020 both figures decreased to 42.1µg/m$^3$ using the local bias adjustment factor and 46 µg/m$^3$ using the national bias adjustment factor, however these figures have increased again in 2021 showing concentrations of 51.4 µg/m$^3$ using the local bias adjustment factor and 45.5 µg/m$^3$ using the national bias adjustment factor.
It is therefore recommended that this AQMA remains as declared.

**Dale's Corner AQMA**

Exceedances of the annual mean $NO_2$ objective continue to occur within the AQMA as shown by the monitoring results. In 2017 diffusion tube monitoring site D 8-9 (19 Glendermott Road) showed concentrations of 49.7 ug/$m^3$ using the local bias adjustment factor. This exceedance has decreased to 43.6 using the local bias adjustment factor in 2021 and there is no exceedance at this site in 2021 using the national bias adjustment figure.
In 2017 diffusion tube monitoring site D10-12 (4 Ebrington Terrace) showed concentrations of 50.7 ug/$m^3$ using the local bias adjustment factor and in 2021 this exceedance has decreased to 42 ug/$m^3$ using the local bias adjustment factor and shows no exceedance using the national bias adjustment factor.

It is recommended that this AQMA remains as declared.

**Buncrana Road AQMA**

Exceedance of the annual mean $NO_2$ objective was recorded at only one site within the AQMA (P11-12) since 2014. When using the national bias adjustment factor, this site was only marginally exceeding the pollutant objective value in 2017 with a concentration of 40.6 ug/$m^3$ and a concentration of 45.4 ug/$m^3$ using the local bias adjustment factor. In 2018 using both the local and national bias adjustment factor the concentrations were below the annual mean $NO_2$ objective. In 2019 using the local bias adjusement factor at this site there was a slight exceedance with a concentration of 40.8 ug/$m^{3.}$
The levels in 2020 and 2021 at this site have remained below the annual mean $NO_2$ objective.

Measurements at all other sites within this AQMA have remained below the objective in the last 8 years. A proposed road widening scheme for this section of the A2 has undergone public consultation. The preferred route would appear to follow the existing road with vesting of all properties along Collon Terrace and the construction of a roundabout at the current cross junction at Buncrana Road/

Racecourse Road. There have been no exceedances of the pollutant objective value for the last 2 years, but previously there was marginal exceedance at No.5 Collon Terrace. However, this site shall be monitored carefully to determine if concentrations continue to decline and it may be possible to revoke the AQMA. Council is also cognisant of the fact that the pandemic resulted in traffic reduction in year 2020 with lower $NO_2$ levels as a result.

It is noteworthy that Northern Ireland (Belfast and Derry fleets) is to get 100 zero-emission buses, which will come into service by December 2022. Twenty will be hydrogen powered and the other 80 battery operated. As a major Translink bus station is adjacent the AQMA on Buncrana Road, it is anticipated that this will result in a reduction in emissions at this location. Updated monitoring results will hopefully demonstrate this.

**Spencer Road AQMA**

No exceedances have been recorded within the Spencer Road AQMA since 2014.

On 16th October 2018, under the Derry City and Strabane District Council Air Quality Management Area No 4 Order, the AQMA at Spencer Road was reduced in size. The AQMA formerly incorporated numbers 32 to 70a Spencer Road under the Derry City Council Air Quality Management Area No 3 Order and was changed to incorporate numbers 66 to 70a Spencer Road.

Based on the sustained decrease in annual mean concentrations over the last 5 years, Council is again recommending that this AQMA should be revoked.

**Table 2.5.1 Results of Nitrogen Dioxide Diffusion Tubes in 2019**

| Site ID | Location | Site Type | Within AQMA ? | Triplicate or Collocated Tube | Data Capture 2019 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2019 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.77 | National Bias Adjustment factor = 0.75 |
| A1-3 | AURN | B | N | Triplicate | 12 months | N | N/A | 11.5 | 11.2 |
| C1-2 | 3 Creggan road | R | Y | Duplicate | 12 months | N | N/A | **55.7** | **54.3** |
| C3-4 | 6 Marlborough Terrace | R | Y | Duplicate | 12 months | N | N/A | 32.5 | 31.7 |
| C5-6 | 22a Creggan Street | R | Y | Duplicate | 12 months | N | N/A | 35.3 | 34.4 |
| C7-8 | 1 Windsor Terrace | R | N | Duplicate | 12 months | N | N/A | 20.9 | 20.4 |
| C9-10 | 14 Creggan Road | R | N | Duplicate | 7 months | N | N/A | 37.5 | 36.5 |
| D1-3 | Dale's Corner | R | N | Duplicate | 12 months | N | Y | 29.9 | 29.1 |
| D4-5 | 52 Clooney Terrace | R | N | Duplicate | 12 months | N | N/A | 26.8 | 26.1 |
| D6-7 | 5 Glendermott Road | R | Y | Duplicate | 12 months | N | N/A | **43.4** | **42.3** |
| D8-9 | 19 Glendermott Road | R | Y | Duplicate | 12 months | N | N/A | **47.9** | **46.7** |

**Derry City and Strabane District Council**

| Site ID | Location | Site Type | Within AQMA ? | Triplicate or Collocated Tube | Data Capture 2019 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2019 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.77 | National Bias Adjustment factor = 0.75 |
| D10-11 | 4 Ebrington Terrace | R | Y | Duplicate | 12 months | N | N/A | **46.2** | **45.0** |
| D12-13 | 12 Ebrington Terrace | R | Y | Duplicate | 9 months | N | N/A | 35.9 | 35.0 |
| D14-15 | 9 Columba Terrace | R | Y | Duplicate | 12 months | N | N/A | 29.4 | 28.7 |
| D16-17 | 17 Melrose Terrace | R | N | Duplicate | 11 months | N | N/A | 28.6 | 27.9 |
| P1-2 | 53 Messines Park | R | N | Duplicate | 12 months | N | N/A | 20.5 | 20.0 |
| P3-4 | 57 Messines Park | R | N | Duplicate | 12 months | N | N/A | 25.3 | 24.6 |
| P5-6 | 8 Maybrook Terrace | R | Y | Duplicate | 12 months | N | N/A | 26.0 | 25.3 |
| P7-8 | 19 St Patricks Terrace | R | Y | Duplicate | 12 months | N | N/A | 32.1 | 31.3 |
| P9-10 | 1 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | 33.6 | 32.7 |
| P11-12 | 5 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | **40.8** | 39.8 |
| S7-8 | 35 Aberfoyle Terrace | R | Y | Duplicate | 12 months | N | N/A | 26.9 | 26.2 |

| Site ID | Location | Site Type | Within AQMA ? | Triplicate or Collocated Tube | Data Capture 2019 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2019 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.77 | National Bias Adjustment factor = 0.75 |
| SP1-2 | 70 Spencer Road | R | Y | Duplicate | 12 months | N | N/A | 35.1 | 34.2 |
| FR1-2 | 3 Francis Street | R | N | Duplicate | 12 months | N | N/A | 23.9 | 23.3 |
| FR3-4 | 45 Francis Street | R | N | Duplicate | 12 months | N | N/A | 25.5 | 24.8 |

[b] If an exceedance is measured at a monitoring site not representative of public exposure, $NO_2$ concentration at the nearest relevant exposure should be estimated based on the $NO_2$ fall-off with distance calculator (https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.77 to 7.79 of LAQM.TG16.

**Table 2.5.2 Results of Nitrogen Dioxide Diffusion Tubes in 2020**

| Site ID | Location | Site Type | Within AQMA ? | Triplicate or Collocated Tube | Data Capture 2020 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2020 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.76 | National Bias Adjustment factor = 0.83 |
| A1-3 | AURN | B | N | Triplicate | 12 months | N | N/A | 8.2 | 8.9 |
| C1-2 | 3 Creggan road | R | Y | Duplicate | 12 months | N | N/A | **42.1** | **46.0** |
| C3-4 | 6 Marlborough Terrace | R | Y | Duplicate | 11 months | N | N/A | 25.7 | 28.1 |
| C5-6 | 22a Creggan Street | R | Y | Duplicate | 12 months | N | N/A | 26.0 | 28.4 |
| C7-8 | 1 Windsor Terrace | R | N | Duplicate | 12 months | N | N/A | 15.1 | 16.5 |
| C9-10 | 14 Creggan Road | R | N | Duplicate | 12 months | N | N/A | 27.3 | 29.8 |
| D1-3 | Dale's Corner | R | N | Duplicate | 12 months | N | Y | 22.0 | 24.1 |
| D4-5 | 52 Clooney Terrace | R | N | Duplicate | 12 months | N | N/A | 19.3 | 21.1 |
| D6-7 | 5 Glendermott Road | R | Y | Duplicate | 12 months | N | N/A | 32.0 | 35 |
| D8-9 | 19 Glendermott Road | R | Y | Duplicate | 12 months | N | N/A | 33.2 | 36.2 |
| D10-11 | 4 Ebrington Terrace | R | Y | Duplicate | 12 months | N | N/A | 33 | 36 |
| D12-13 | 12 Ebrington Terrace | R | Y | Duplicate | 12 months | N | N/A | 23.5 | 25.6 |
| D14-15 | 9 Columba Terrace | R | Y | Duplicate | 12 months | N | N/A | 24.8 | 27.1 |

| Site ID | Location | Site Type | Within AQMA ? | Triplicate or Collocated Tube | Data Capture 2020 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2020 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.76 | National Bias Adjustment factor = 0.83 |
| D16-17 | 17 Melrose Terrace | R | N | Duplicate | 12 months | N | N/A | 21.6 | 23.6 |
| P1-2 | 53 Messines Park | R | N | Duplicate | 12 months | N | N/A | 15.8 | 17.2 |
| P3-4 | 57 Messines Park | R | N | Duplicate | 12 months | N | N/A | 18.7 | 20.5 |
| P5-6 | 8 Maybrook Terrace | R | Y | Duplicate | 12 months | N | N/A | 19.2 | 21.0 |
| P7-8 | 19 St Patricks Terrace | R | Y | Duplicate | 12 months | N | N/A | 24.2 | 26.4 |
| P9-10 | 1 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | 26.0 | 28.4 |
| P11-12 | 5 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | 31.1 | 34.0 |
| S7-8 | 35 Aberfoyle Terrace | R | Y | Duplicate | 12 months | N | N/A | 20.3 | 22.2 |
| SP1-2 | 70 Spencer Road | R | Y | Duplicate | 12 months | N | N/A | 27.7 | 30.2 |
| FR1-2 | 3 Francis Street | R | N | Duplicate | 12 months | N | N/A | 19.2 | 21.0 |
| FR3-4 | 45 Francis Street | R | N | Duplicate | 12 months | N | N/A | 18.2 | 19.8 |

[b] If an exceedance is measured at a monitoring site not representative of public exposure, $NO_2$ concentration at the nearest relevant exposure should be estimated based on the $NO_2$ fall-off with distance calculator (https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.77 to 7.79 of LAQM.TG16.

**Table 2.5.3 Results of Nitrogen Dioxide Diffusion Tubes in 2021**

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2021 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2021 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.88 | National Bias Adjustment factor = 0.78 |
| A1-3 | AURN | B | N | Triplicate | 12 months | N | N/A | 10.0 | 8.9 |
| C1-2 | 3 Creggan road | R | Y | Duplicate | 12 months | N | N/A | **51.4** | **45.5** |
| C3-4 | 6 Marlborough Terrace | R | Y | Duplicate | 12 months | N | N/A | 31.3 | 27.7 |
| C5-6 | 22a Creggan Street | R | Y | Duplicate | 12 months | N | N/A | 32.6 | 28.9 |
| C7-8 | 1 Windsor Terrace | R | N | Duplicate | 12 months | N | N/A | 18.7 | 16.6 |
| C9-10 | 14 Creggan Road | R | N | Duplicate | 12 months | N | N/A | 36.0 | 31.9 |
| D1-3 | Dale's Corner | R | N | Duplicate | 12 months | N | Y | 27.8 | 24.6 |
| D4-5 | 52 Clooney Terrace | R | N | Duplicate | 12 months | N | N/A | 25.2 | 22.3 |
| D6-7 | 5 Glendermott Road | R | Y | Duplicate | 10 months | N | N/A | **42.0** | 37.2 |
| D8-9 | 19 Glendermott Road | R | Y | Duplicate | 12 months | N | N/A | **43.6** | 38.6 |
| D10-11 | 4 Ebrington Terrace | R | Y | Duplicate | 12 months | N | N/A | **42.0** | 37.2 |
| D12-13 | 12 Ebrington Terrace | R | Y | Duplicate | 12 months | N | N/A | 31.2 | 27.6 |
| D14-15 | 9 Columba Terrace | R | Y | Duplicate | 12 months | N | N/A | 31.3 | 27.7 |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2021 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration 2021 (µg/m³) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Local Bias Adjustment factor = 0.88 | National Bias Adjustment factor = 0.78 |
| D16-17 | 17 Melrose Terrace | R | N | Duplicate | 12 months | N | N/A | 26.0 | 23.0 |
| P1-2 | 53 Messines Park | R | N | Duplicate | 12 months | N | N/A | 19.0 | 16.8 |
| P3-4 | 57 Messines Park | R | N | Duplicate | 12 months | N | N/A | 23.4 | 20.8 |
| P5-6 | 8 Maybrook Terrace | R | Y | Duplicate | 12 months | N | N/A | 25.7 | 22.8 |
| P7-8 | 19 St Patricks Terrace | R | Y | Duplicate | 12 months | N | N/A | 31.6 | 28.0 |
| P9-10 | 1 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | 32.6 | 28.9 |
| P11-12 | 5 Collon Terrace | R | Y | Duplicate | 12 months | N | N/A | 37.8 | 33.5 |
| S7-8 | 35 Aberfoyle Terrace | R | Y | Duplicate | 12 months | N | N/A | 26.0 | 23.1 |
| SP1-2 | 70 Spencer Road | R | Y | Duplicate | 12 months | N | N/A | 34.5 | 30.6 |
| FR1-2 | 3 Francis Street | R | N | Duplicate | 12 months | N | N/A | 24.6 | 21.8 |
| FR3-4 | 45 Francis Street | R | N | Duplicate | 12 months | N | N/A | 24.0 | 21.2 |

[b] If an exceedance is measured at a monitoring site not representative of public exposure, $NO_2$ concentration at the nearest relevant exposure should be estimated based on the $NO_2$ fall-off with distance calculator (https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.77 to 7.79 of LAQM.TG16. (Although there was not an exceedance at no 17 Melrose Terrace, this calculation was undertaken out of interest; the triplicate diffusion tubes are located at the inlet to the continuous monitor and relevant exposure is several metres away).

**Table 2.6.1 Results of Nitrogen Dioxide Diffusion Tubes, using Local and National Bias Adjustment Factors (2017-2018)**

| Site ID | Site Type | Within AQMA? | 2017 | | 2018 | |
|---|---|---|---|---|---|---|
| | | | Local Bias Adjustment Factor = 0.86 | National Bias Adjustment Factor = 0.76 | Local Bias Adjustment Factor = 0.75 | National Bias Adjustment Factor = 0.77 |
| A1-3 | AURN | N | 11.8 | 10.6 | 11.2 | 11.5 |
| C1-2 | 3 Creggan road | Y | **66.1** | **59.2** | **53.6** | **55.1** |
| C3-4 | 6 Marlborough Terrace | Y | **52.2** | **46.7** | 28.9 | 29.6 |
| C5-6 | 22a Creggan Street | Y | 39.8 | 35.6 | 33.6 | 34.5 |
| C7-8 | 1 Windsor Terrace | N | 31.9 | 28.6 | 21.9 | 22.5 |
| C9-10 | 14 Creggan Road | N | 30.9 | 27.7 | 30.6 | 29 |
| D1-3 | Dale's Corner | N | 30.4 | 27.2 | 27.9 | 28.7 |
| D4-5 | 52 Clooney Terrace | N | 28.8 | 25.8 | 25 | 25.7 |
| D6-7 | 5 Glendermott Road | Y | **48.7** | **43.6** | **40.6** | **41.7** |
| D8-9 | 19 Glendermott Road | Y | **49.7** | **44.5** | **44.5** | **45.6** |
| D10-11 | 4 Ebrington Terrace | Y | **50.7** | **45.4** | **44.1** | **45.3** |
| D12-13 | 12 Ebrington Terrace | Y | **44.9** | **40.2** | 34.3 | 35.2 |
| D14-15 | 9 Columba Terrace | Y | 37.3 | 33.4 | 27.7 | 28.4 |
| D16-17 | 17 Melrose Terrace | N | 33.1 | 29.6 | 27.1 | 27.8 |
| P1-2 | 53 Messines Park | N | 22.9 | 20.5 | 20 | 20.0 |
| P3-4 | 57 Messines Park | N | 24.8 | 22.2 | 24 | 24.6 |

| Site ID | Site Type | Within AQMA? | 2017 | | 2018 | |
|---|---|---|---|---|---|---|
| | | | Local Bias Adjustment Factor = 0.86 | National Bias Adjustment Factor = 0.76 | Local Bias Adjustment Factor = 0.75 | National Bias Adjustment Factor = 0.77 |
| P5-6 | 8 Maybrook Terrace | Y | 27.7 | 24.8 | 24.5 | 25.2 |
| P7-8 | 19 St Patricks Terrace | Y | 31.8 | 28.5 | 30.3 | 31.1 |
| P9-10 | 1 Collon Terrace | Y | 38.2 | 34.2 | 31.5 | 32.3 |
| P11-12 | 5 Collon Terrace | Y | **45.4** | **40.6** | 38 | 39 |
| S7-8 | 35 Aberfoyle Terrace | | 32.3 | 28.9 | 25.3 | 26 |
| SP1-2 | 70 Spencer Road | | 38.5 | 34.5 | 32.9 | 33.8 |
| FR 1-2 | 3 Francis Street | N | 29.4 | 26.3 | 25.2 | 25.8 |
| FR 3-4 | 45 Francis Street | N | 29.8 | 26.7 | 26.2 | 26.9 |

**Table 2.6.2 Results of Nitrogen Dioxide Diffusion Tubes, using Local and National Bias Adjustment Factors (2019 to 2021)**

| Site ID | Site Type | Within AQMA? | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|---|---|
| | | | Local Bias Adjustment Factor = 0.77 | National Bias Adjustment Factor = 0.75 | Local Bias Adjustment Factor = 0.76 | National Bias Adjustment Factor = 0.83 | Local Bias Adjustment Factor = 0.88 | National Bias Adjustment Factor = 0.78 |
| A1-3 | AURN | N | 11.5 | 11.2 | 8.2 | 8.9 | 10 | 8.9 |
| C1-2 | 3 Creggan road | Y | **55.7** | **54.3** | **42.1** | **46.0** | **51.4** | **45.5** |
| C3-4 | 6 Marlborough Terrace | Y | 32.5 | 31.7 | 25.7 | 28.1 | 31.3 | 27.7 |
| C5-6 | 22a Creggan Street | Y | 35.3 | 34.4 | 26.0 | 28.4 | 32.6 | 28.9 |
| C7-8 | 1 Windsor Terrace | N | 20.9 | 20.4 | 15.1 | 16.5 | 18.7 | 16.6 |
| C9-10 | 14 Creggan Road | N | 37.5 | 36.5 | 27.3 | 29.8 | 36.0 | 31.9 |
| D1-3 | Dale's Corner | N | 29.9 | 29.1 | 22.0 | 24.1 | 27.8 | 24.6 |
| D4-5 | 52 Clooney Terrace | N | 26.8 | 26.1 | 19.3 | 21.1 | 25.2 | 22.3 |
| D6-7 | 5 Glendermott Road | Y | **43.4** | **42.3** | 32.0 | 35.0 | **42.0** | 37.2 |
| D8-9 | 19 Glendermott Road | Y | **47.9** | **46.7** | 33.2 | 36.2 | **43.6** | 38.6 |
| D10-11 | 4 Ebrington Terrace | Y | **46.2** | **45.0** | 33.0 | 36.0 | **42.0** | 37.2 |
| D12-13 | 12 Ebrington Terrace | Y | 35.9 | 35.0 | 23.5 | 25.6 | 31.2 | 27.6 |
| D14-15 | 9 Columba Terrace | Y | 29.4 | 28.7 | 24.8 | 27.1 | 31.3 | 27.7 |
| D16-17 | 17 Melrose Terrace | N | 28.6 | 27.9 | 21.6 | 23.6 | 26.0 | 23.0 |
| P1-2 | 53 Messines Park | N | 20.5 | 20.0 | 15.8 | 17.2 | 19.0 | 16.8 |
| P3-4 | 57 Messines Park | N | 25.3 | 24.6 | 18.7 | 20.5 | 23.4 | 20.8 |

| Site ID | Site Type | Within AQMA? | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|---|---|
| | | | Local Bias Adjustment Factor = 0.77 | National Bias Adjustment Factor = 0.75 | Local Bias Adjustment Factor = 0.76 | National Bias Adjustment Factor = 0.83 | Local Bias Adjustment Factor = 0.88 | National Bias Adjustment Factor = 0.78 |
| P5-6 | 8 Maybrook Terrace | Y | 26.0 | 25.3 | 19.2 | 21.0 | 25.7 | 22.8 |
| P7-8 | 19 St Patricks Terrace | Y | 32.1 | 31.3 | 24.2 | 26.4 | 31.6 | 28.0 |
| P9-10 | 1 Collon Terrace | Y | 33.6 | 32.7 | 26.0 | 28.4 | 32.6 | 28.9 |
| P11-12 | 5 Collon Terrace | Y | **40.8** | 39.8 | 31.1 | 34.0 | 37.8 | 33.5 |
| S7-8 | 35 Aberfoyle Terrace | | 26.9 | 26.2 | 20.3 | 22.2 | 26.0 | 23.1 |
| SP1-2 | 70 Spencer Road | | 35.1 | 34.2 | 27.7 | 30.2 | 34.5 | 30.6 |
| FR 1-2 | 3 Francis Street | N | 23.9 | 23.3 | 19.2 | 21.0 | 24.6 | 21.8 |
| FR 3-4 | 45 Francis Street | N | 25.5 | 24.8 | 18.2 | 19.8 | 24.0 | 21.2 |

The following section considers the use of both the local and the national bias adjustment factors to demonstrate trends in $NO_2$ concentrations at locations within the AQMA's. Figures 2.12 - 2.22 show these trends.

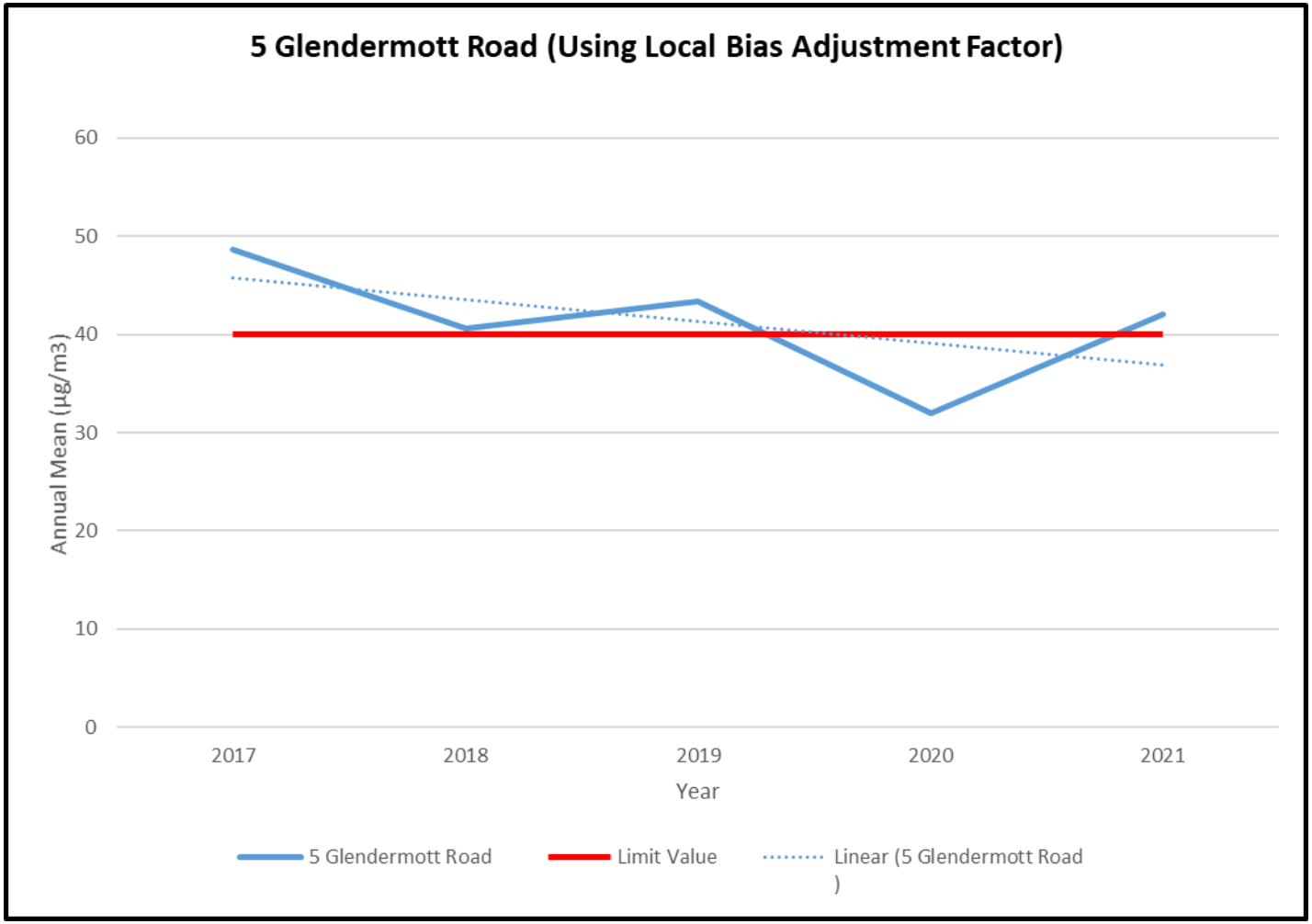
**Dale's Corner AQMA**

It can be seen in Figures 2.12 and 2.14 that sites within the AQMA at Dale's Corner, namely No.4 Ebrington Terrace and No. 5 Glendermott Road with the use of the local bias adjustment factor, show a larger decrease in projected pollutant concentrations than No.19 Glendermott Road (Figure 2.13).

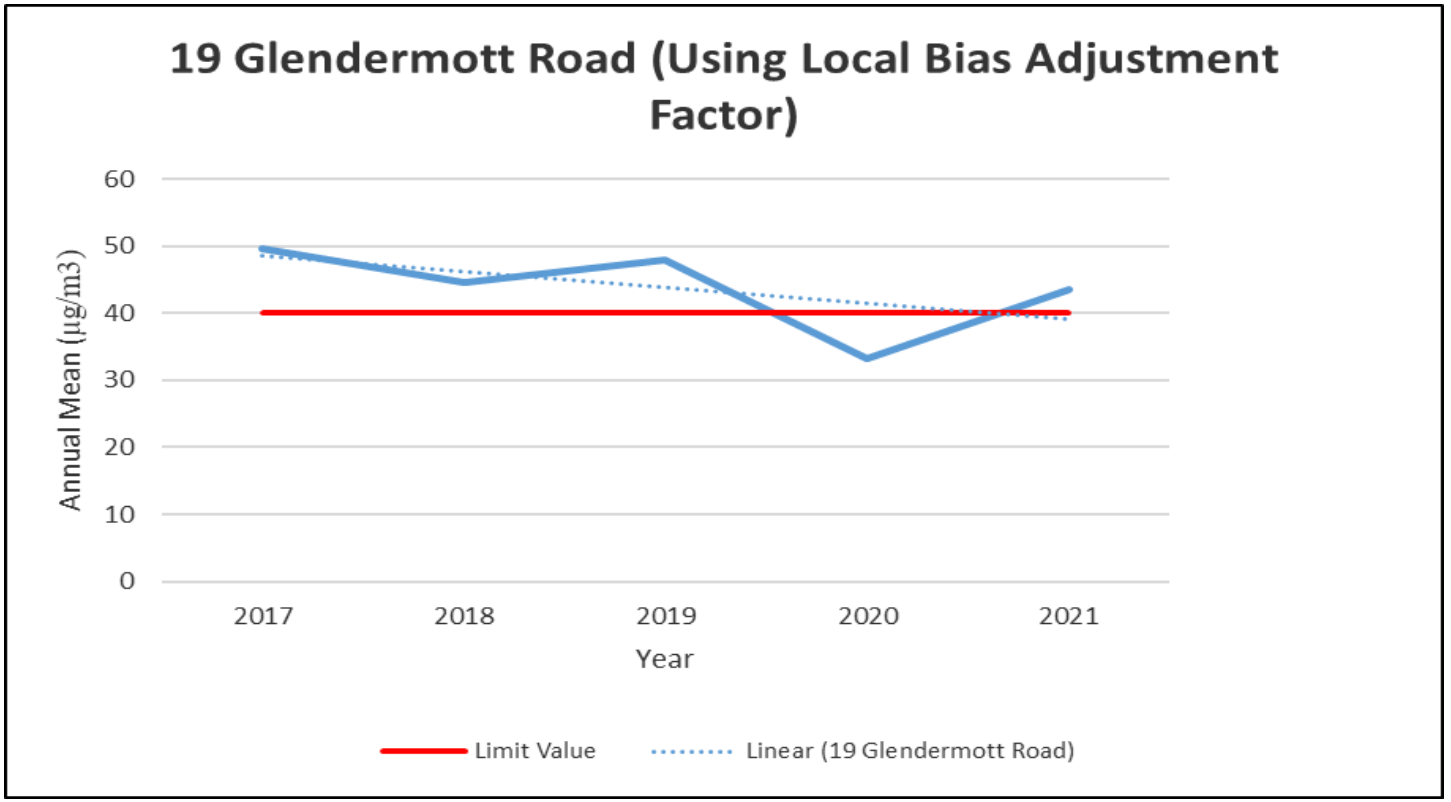
Levels at all sites decreased in 2020 below the annual mean $NO_2$ limit value of 40ug/m3. Although the levels all increased in 2021 they are still below the 2019 level.

There is a downward trend at the three sites although at No.19 Glendermott Road it is slightly less pronounced. Figure 2.15 shows the general downward trend for all 3 sites in the Dale's Corner AQMA.

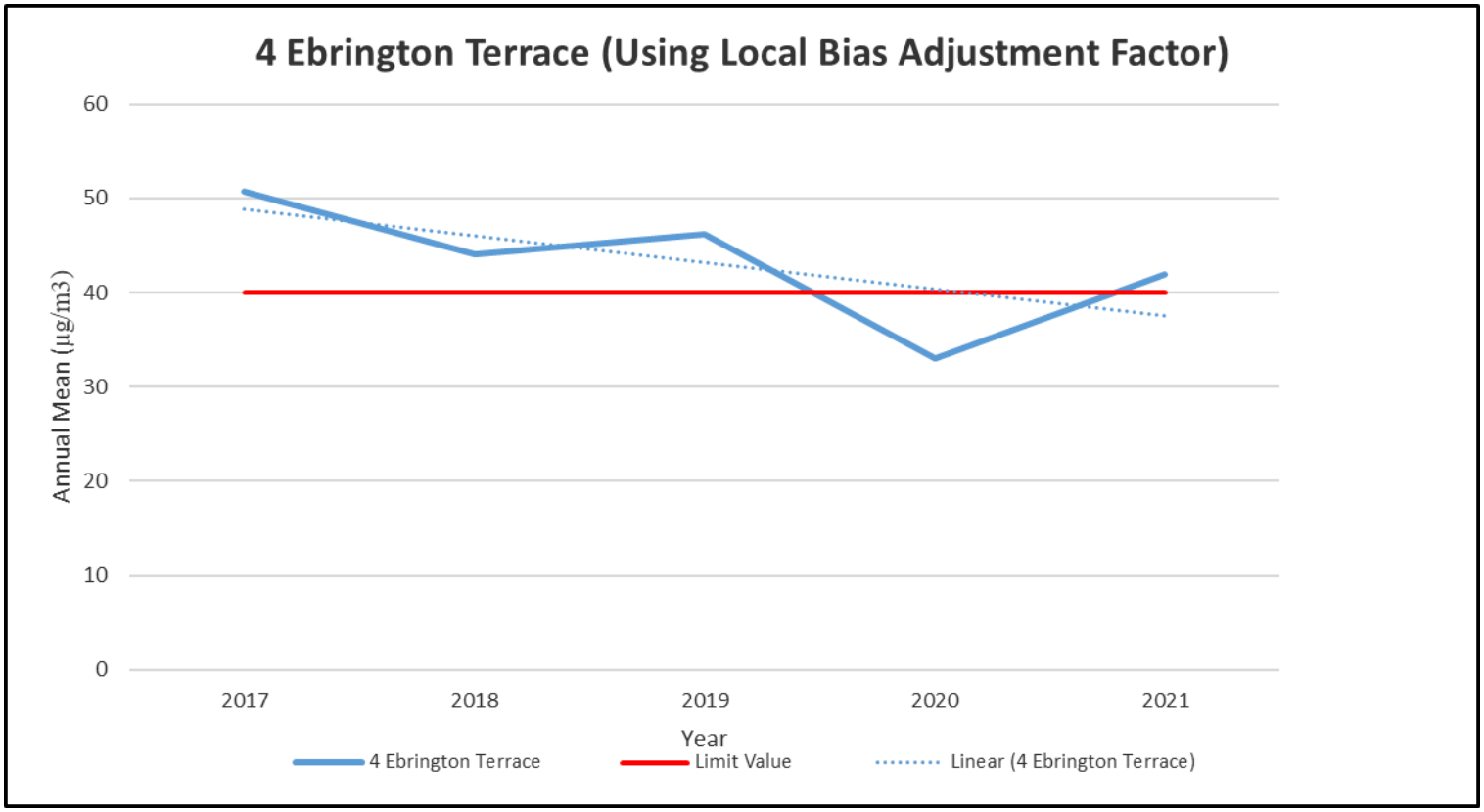
**Figure 2.11 - 2.20 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites**



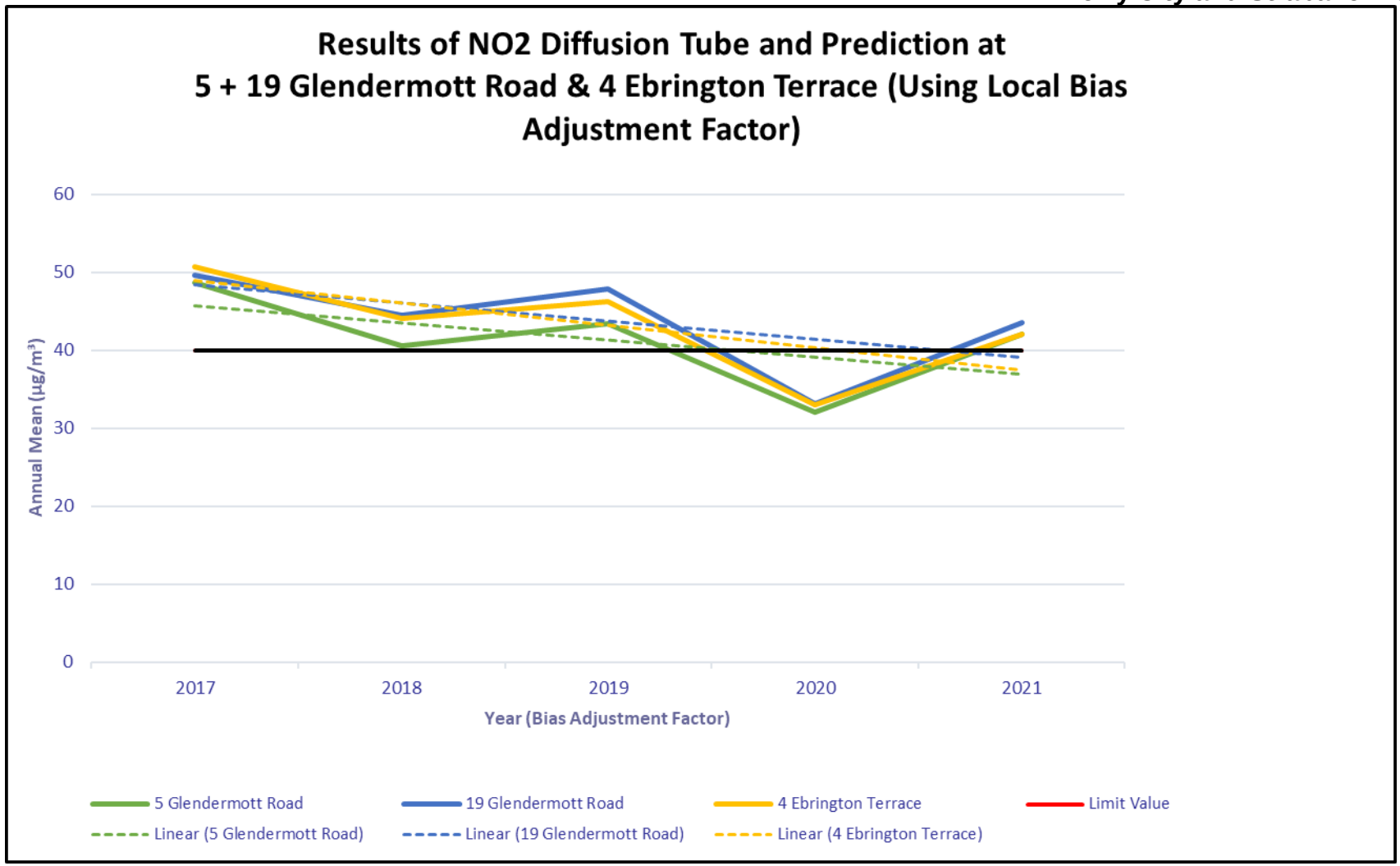

**(Fig 2.12)**


19 Glendermott Road (Using Local Bias Adjustment Factor)
Annual Mean (µg/m3)
60
50
40
30
20
10
0
2017
2018
2019
2020
2021
Year
Limit Value
Linear (19 Glendermott Road)

**(Fig. 2.13)**


4 Ebrington Terrace (Using Local Bias Adjustment Factor)
60
50
40
30
20
10
0
Annual Mean (µg/m3)
2017
2018
2019
2020
2021
Year
4 Ebrington Terrace
Limit Value
Linear (4 Ebrington Terrace)

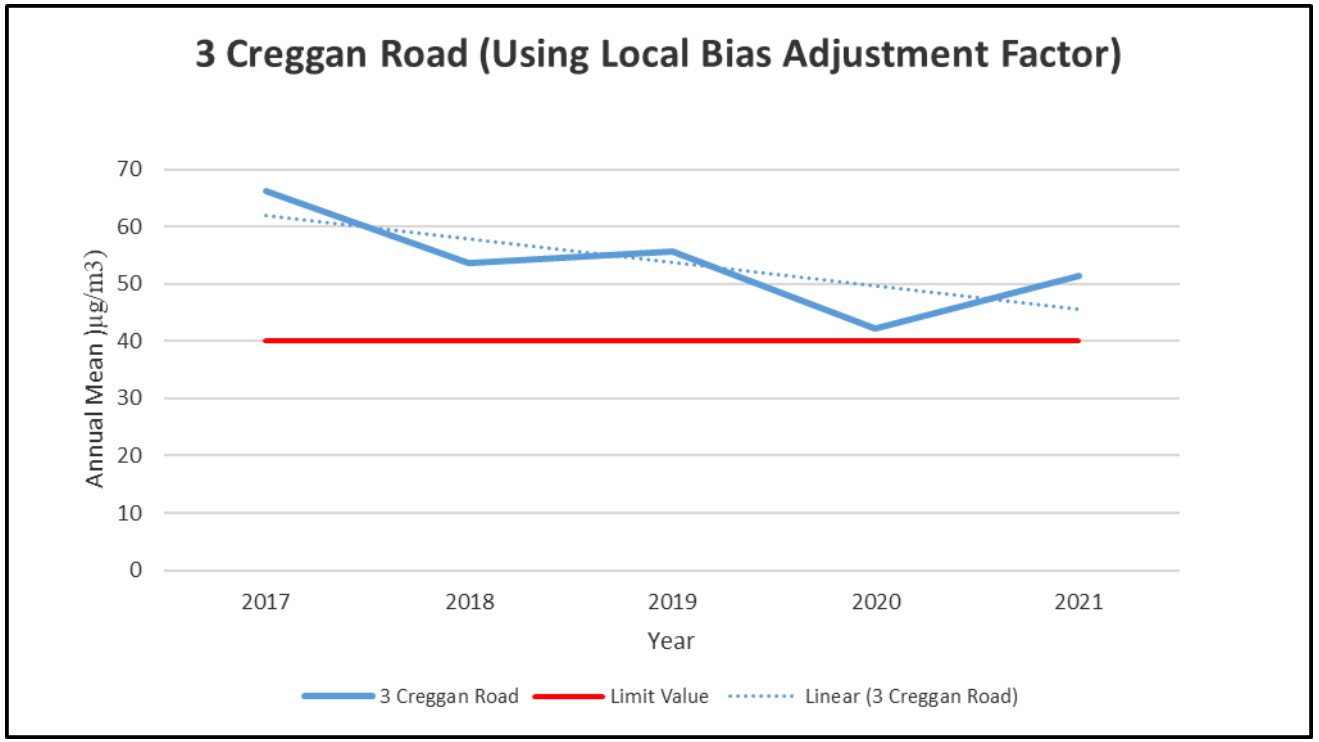
**(Fig 2.14)**


Results of NO2 Diffusion Tube and Prediction at 5 + 19 Glendermott Road & 4 Ebrington Terrace (Using Local Bias Adjustment Factor)
Annual Mean (µg/m³)
60
50
40
30
20
10
0
2017
2018
2019
2020
2021
Year (Bias Adjustment Factor)
5 Glendermott Road
19 Glendermott Road
4 Ebrington Terrace
Limit Value
Linear (5 Glendermott Road)
Linear (19 Glendermott Road)
Linear (4 Ebrington Terrace)

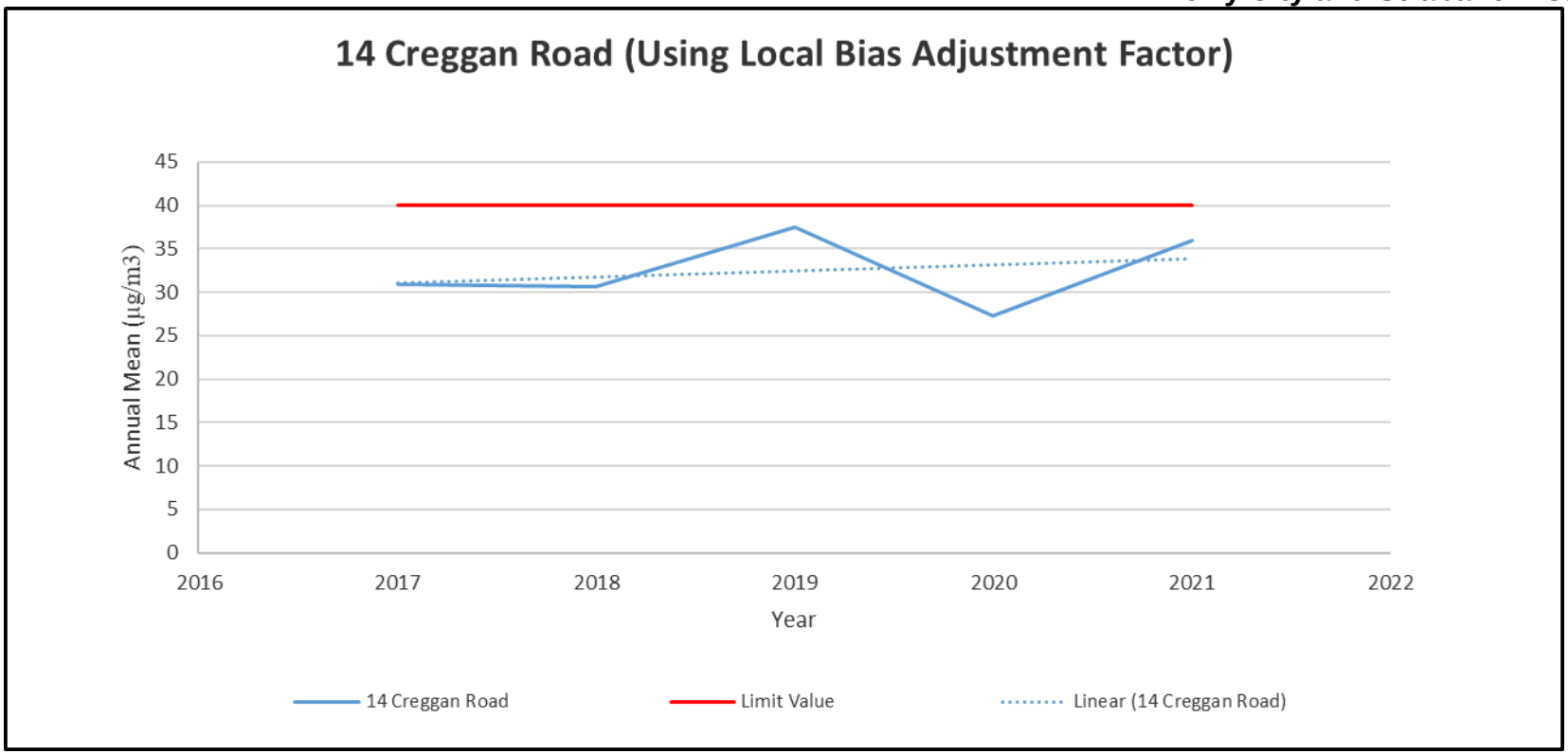
**(Fig 2.15)**

It can be seen in Figure 2.16 that No.3 Creggan Road is projected to be below the annual mean NO2 limit value of 40ug/m3 as indicated in red on the graph, by 2023. There is a clear downward trend displayed on the graph.

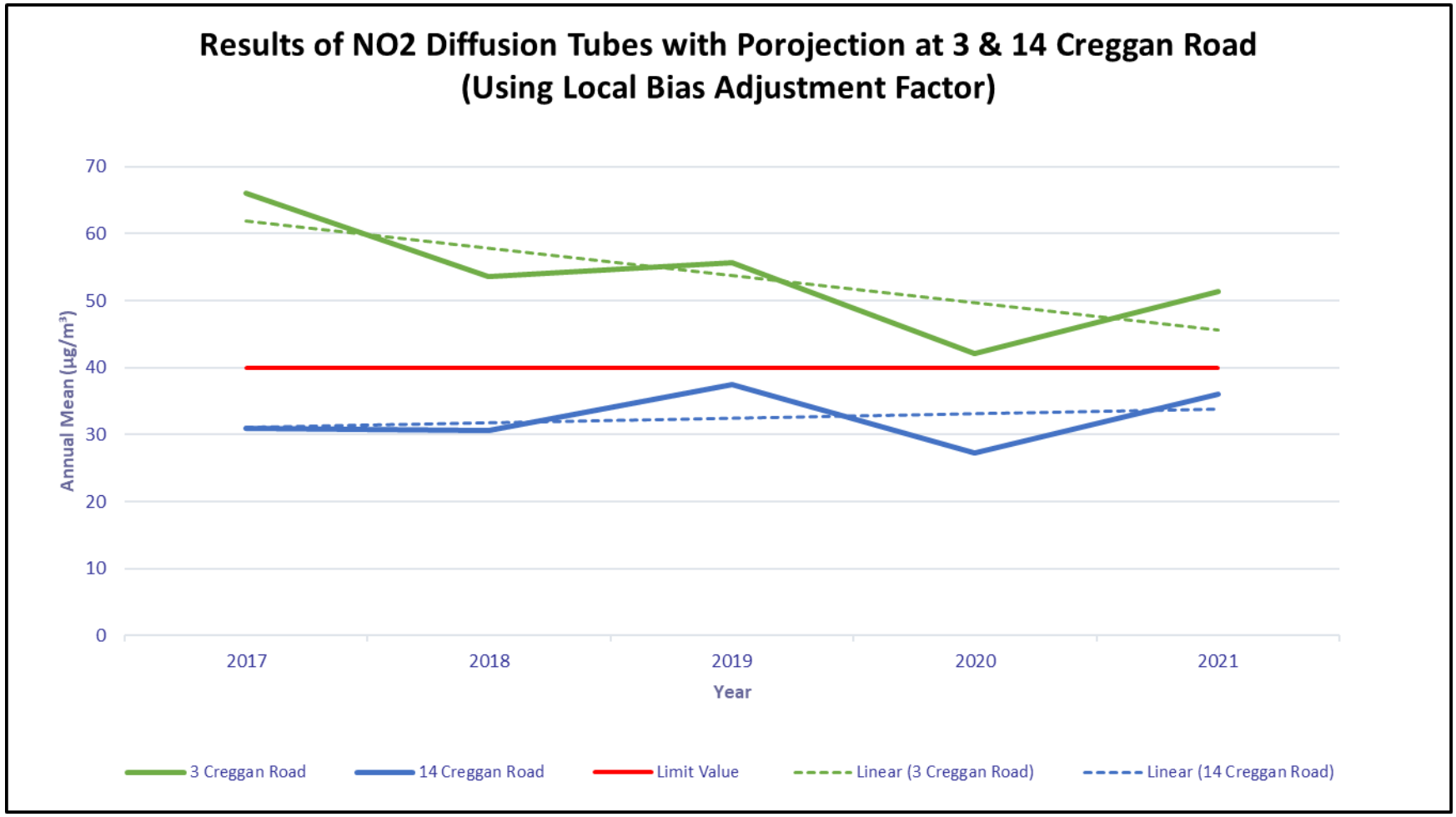
No.14 Creggan Road (Figure 2.17), shows levels consistently remain below the annual mean NO2 limit value. Although there is a slight upward trend showing on the graph, the 2021 level is slightly lower than the 2019 level.


3 Creggan Road (Using Local Bias Adjustment Factor)
Annual Mean µg/m3)
70
60
50
40
30
20
10
0
2017
2018
2019
2020
2021
Year
3 Creggan Road
Limit Value
Linear (3 Creggan Road)

**(Fig 2.16)**


14 Creggan Road (Using Local Bias Adjustment Factor)
Annual Mean (µg/m3)
45
40
35
30
25
20
15
10
5
0
2016
2017
2018
2019
2020
2021
2022
Year
14 Creggan Road
Limit Value
Linear (14 Creggan Road)

**(Fig 2.17)**


Results of NO2 Diffusion Tubes with Porojection at 3 & 14 Creggan Road
(Using Local Bias Adjustment Factor)
Annual Mean (µg/m³)
70
60
50
40
30
20
10
0
2017
2018
2019
2020
2021
Year
3 Creggan Road
14 Creggan Road
Limit Value
Linear (3 Creggan Road)
Linear (14 Creggan Road)

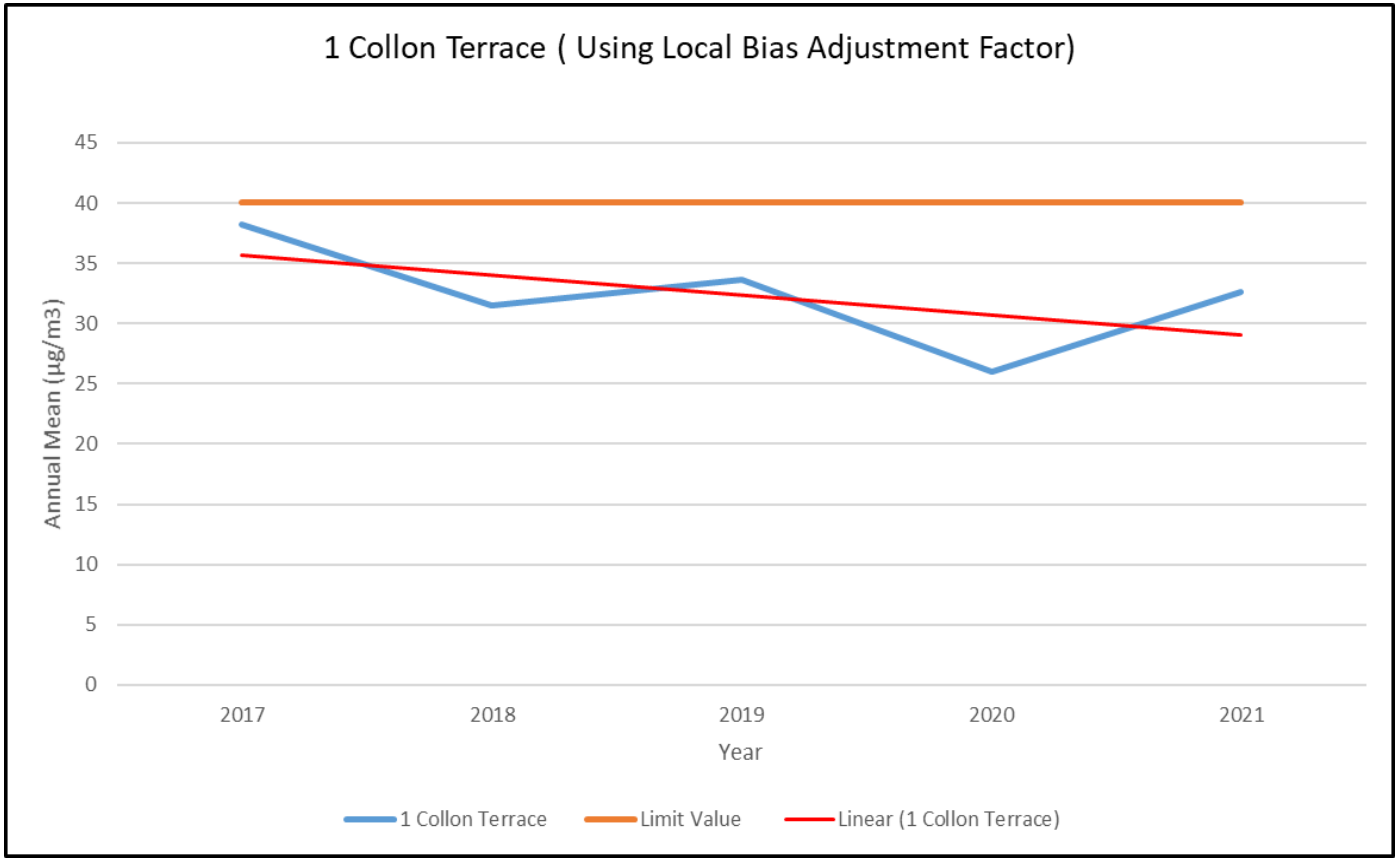
**(Fig 2.18)**

**Buncrana Road AQMA**

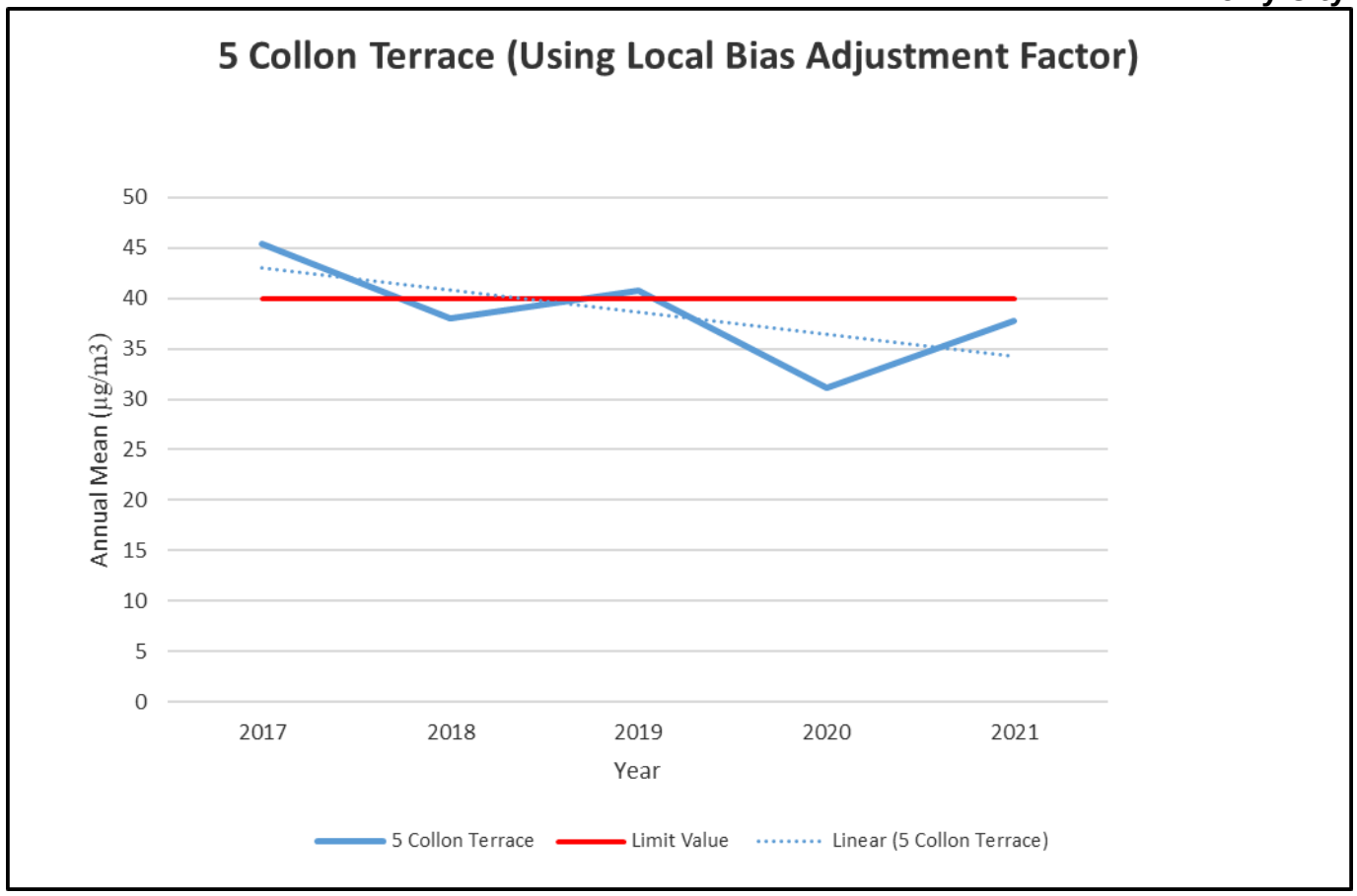
Using the local bias correction factor, Figure 2.19 shows that No.1 Collon Terrace is consistently below the annual mean limit value of 40ug/$m^3$ whilst No. 5 Collon Terrace (Figure 2.20) has been below the mean limit value in 2018 and 2020. But there was a slight exceedance of the mean limit value shown in 2019 at 5 Collon Terrace. There is an overall downward trend at both sites.

As mentioned previously, a proposed road widening scheme for a section of the A2 road has undergone public consultation with the preferred route following the existing road with vesting and demolition of all properties along Collon Terrace.

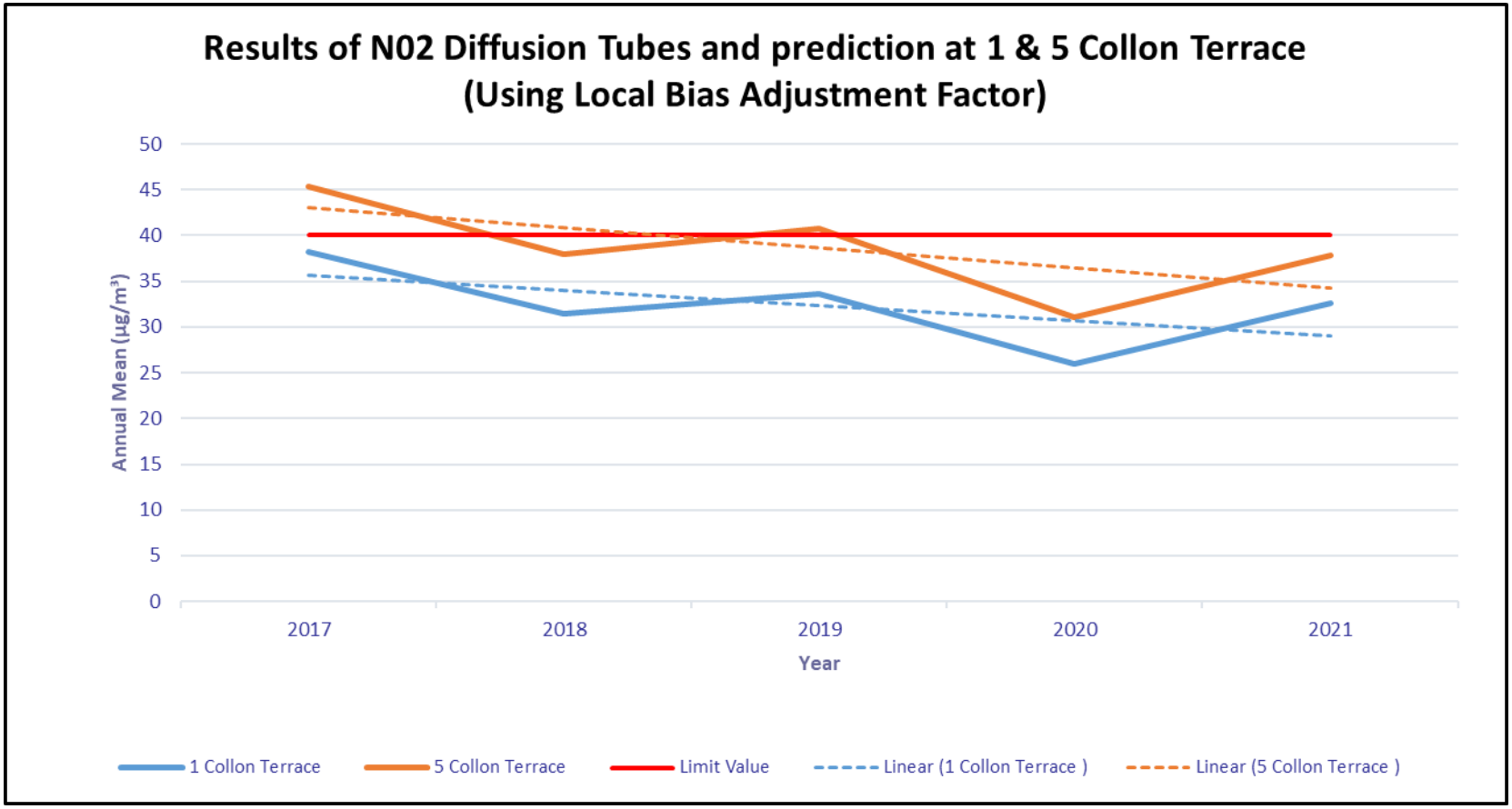
There have been no exceedances of the pollutant objective value for the last 2 years, apart from marginal exceedance at No.5 Collon Terrace previously mentioned. However, this site shall be monitored carefully to determine if concentrations continue to decline and it may be possible to revoke the AQMA. Council is also cognisant of the fact that the pandemic resulted in traffic reduction in year 2020 with lower $NO_2$ levels as a result.


1 Collon Terrace ( Using Local Bias Adjustment Factor)
45
40
35
30
25
20
15
10
5
0
Annual Mean (µg/m3)
2017
2018
2019
2020
2021
Year
1 Collon Terrace
Limit Value
Linear (1 Collon Terrace)

**(Fig 2.19)**


5 Collon Terrace (Using Local Bias Adjustment Factor)
Annual Mean (µg/m3)
50
45
40
35
30
25
20
15
10
5
0
2017
2018
2019
2020
2021
Year
5 Collon Terrace
Limit Value
Linear (5 Collon Terrace)

**(Fig 2.20)**


Results of N02 Diffusion Tubes and prediction at 1 & 5 Collon Terrace
(Using Local Bias Adjustment Factor)
Annual Mean (µg/m³)
50
45
40
35
30
25
20
15
10
5
0
2017
2018
2019
2020
2021
Year
1 Collon Terrace
5 Collon Terrace
Limit Value
Linear (1 Collon Terrace )
Linear (5 Collon Terrace )

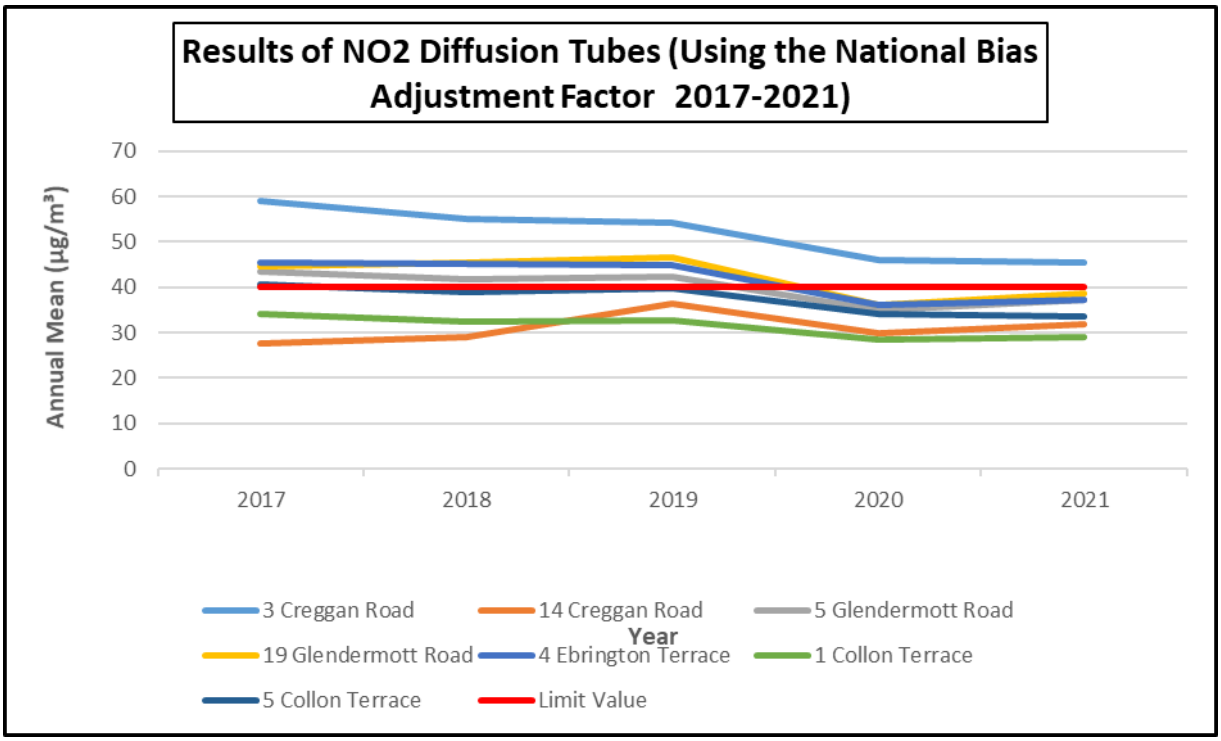
**(Fig 2.21)**

Figure 2.22 shows data collected from the reviewed monitoring sites, using the National Bias Adjustment Factor for 2017-2021.

There is minor difference between the local and national factors and the graph below shows the worst case for illustration purposes.

All sites show downward trends except for 14 Creggan Road which shows a slight upwards trend. 14 Creggan Road and 1 Collon Terrace have been consistently below the annual mean NO2 limit value of 40ug/m3. 5 Collon Terrace is shown to be just above the annual mean objective but dropping below in 2018 then increasing again in 2019 slightly. In 2020 and 2021, 5 Collon Terrace Annual Mean objective decreased further.

3 Creggan Road, 4 Ebrington Terrace and 19 Glendermott Road have been recorded consistently higher than the annual mean objective of 40ug/m3. 3 Creggan Road has historically shown the highest concentrations but the downward trends are encouraging for these 3 sites.




**(Fig 2.22)**

### 2.2.2 Particulate Matter ($PM_{10}$)

The Council monitors $PM_{10}$ at four locations in the district;

- Derry AURN Rosemount
- Springhill Park, Strabane.
- Strathfoyle
- Newtownstewart

The monitoring data is summarised in Table 2.7 for $PM_{10}$ Annual Mean Concentrations in comparison to its Objective and in Table 2.8 for the 24-hour Mean number of exceedances. Prior to the installation of the FIDAS analysers, concentrations for Springhill, Strathfoyle and Newtownstewart have been automatically adjusted by AQDM to gravimetric equivalent using the VCM methodology, where possible.

Figure 2.23 shows the trends in annual mean $PM_{10}$ concentrations at all sites.

Concentrations at Springhill Park show the same levels for 2017 and 2018 with an increase in 2019. Levels since 2019 have shown a downward trend.

Results from Derry Rosemount site show an upward trend from 2017 to 2020 but 2021 results show a decrease in the Annual Mean Concentration.

Concentrations at Bawnmore Place show a downward trend from 2017 to 2020 but in 2021 this figure increased however the annual mean objective at all sites monitored from 2017 to 2021 have been below the annual mean objective.

Newtownstewart monitoring station only became operational in 2021 and so data for this site is limited. The results gathered however are below the annual mean objective.

There was 1 exceedance of the 24-hour Mean concentration at Rosemount in 2020 and none at Rosemount in 2019 and 2021.
There were 3 exceedances of the 24-hour mean concentration at Springhill in 2019, 1 exceedance in 2020 and 2 exceedances in 2021.
There were 0 exceedances of the 24-hour mean concentration at Bawnmore place between 2019 and 2021.

**Table 2.7 – Results of Automatic Monitoring for $PM_{10}$: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2019 %[b] | Valid Data Capture 2020 %[b] | Valid Data Capture 2021 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration µg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2017 [c] | 2018 [c] | 2019* [c] | 2020* [c] | 2021 [c] |
| Derry Rosemount | Urban background | N | - | 77%* | 97% | 96% | Y | 11 | 12 | 12 | 14 | 13 |
| Springhill Park, Strabane | Urban background | Y | - | 97% | 94% | 93% | Y | 15 | 15 | 17 | 15 | 14 |
| Bawnmore Place Strathfoyle | Suburban | N | - | 71% | 85% | 91% | Y | N/A | 15 | 13 | 10 | 12 |
| Newtownstewart | | N | - | - | - | 71% | - | N/A | N/A | - | - | 10 |

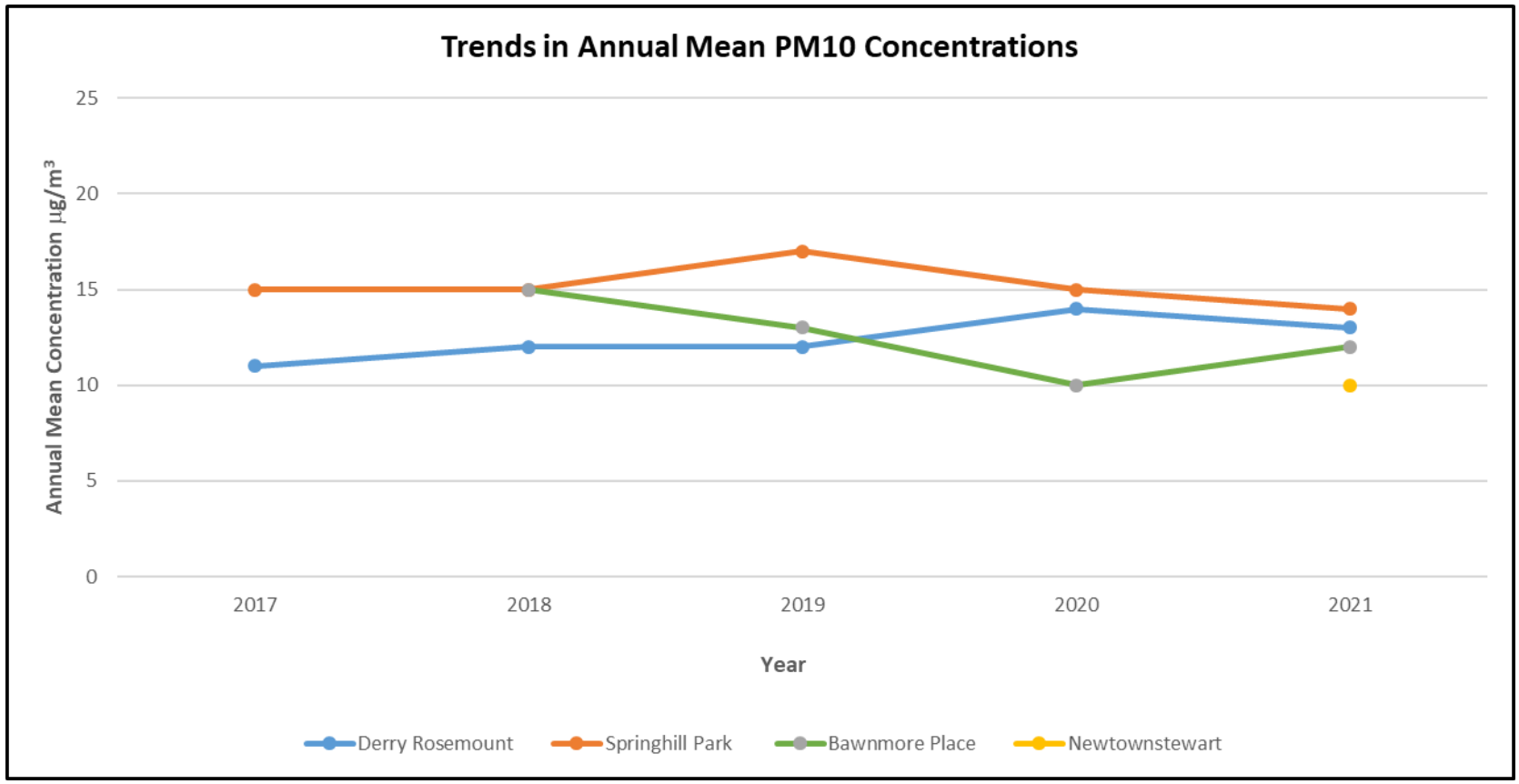
**In bold**, exceedance of the $PM_{10}$ annual mean AQS objective of 40µg/m$^3$

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%) [c] Means should be "annualised" as in Boxes 7.9 and 7.10 of LAQM.TG16, if valid data capture is less than 75% Note: this was not undertaken for Strathfoyle and Newtownstewart as the recorded concentrations are substantially below the limit value and is not a DEFRA or affiliated site.

* Annual mean concentrations for previous years are optional

## Trends in Annual Mean $PM_{10}$ Concentrations




**(Fig 2.23)**

**Table 2.8 – Results of Automatic Monitoring for $PM_{10}$: Comparison with 24-hour Mean Objective**

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2019 %[b] | Valid Data Capture 2020 %[b] | Valid Data Capture 2021 %[b] | Confirm Gravimetric Equivalent | Number of Exceedances of 24-Hour Mean (50 μg/m³) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2019* [c] | 2020* [c] | 2021 [c] |
| Derry Rosemount | Urban Background | N | - | 77% | 97% | 96% | Y | 0 | 1 | 0 |
| Springhill road, Strabane | Urban Background | Y | - | 97% | 94% | 93% | Y | 3 | 1 | 2 |
| Bawnmore Place Strathfoyle | Suburban | N | - | 71% | 85% | 91% | Y | 0 | 0 | 0 |
| Newtownstewart | | N | - | - | - | 71% | | - | - | 0 |

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] if data capture is less than 85%, include the 90.4th percentile of 24-hour means in brackets
* Optional

**In bold**, exceedance of the $PM_{10}$ daily mean AQS objective (50μg/m³ – not to be exceeded more than 35 times per year)

### 2.2.3 Sulphur Dioxide ($SO_2$)

The monitoring data is shown in Table 2.9.

Concentrations of Sulphur at both Derry Rosemount and Springhill Park have remained below the below the annual mean objective between 2017 and 2021.

**Table 2.9 - Results of Automatic Monitoring for Sulphur: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2019 %[b] | Valid Data Capture 2020 %[b] | Valid Data Capture 2021 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration μg/m³ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2017 | 2018 | 2019* [c] | 2020* [c] | 2021 [c] |
| Derry Rosemount | Urban background | N | - | 96% | 96% | 96% | Y | 2 | 2 | 2 | 2 | 2 |
| Springhill Park, Strabane | Urban background | Y | - | 99% | 99% | 93% | Y | 3 | 3 | 2 | 3 | 3 |

There were no exceedances of any of the objectives at either site between 2017 and 2021 (2019 to 2021 shown in below tables)

**Table 2.10.1 – Results of Automatic Monitoring for $SO_2$: Comparison with Objectives (2019)**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2019 %[b] | Number of Exceedances (percentile in bracket μg/m³)[c] | | |
|---|---|---|---|---|---|---|---|
| | | | | | 15-minute Objective (266 μg/m³) | 1-hour Objective (350 μg/m³) | 24-hour Objective (125 μg/m³) |
| Derry Rosemount | Urban Background | N | - | 96% | 0 | 0 | 0 |
| Springhill Road, Strabane | Urban Background | Y | - | 99% | 0 | 0 | 0 |

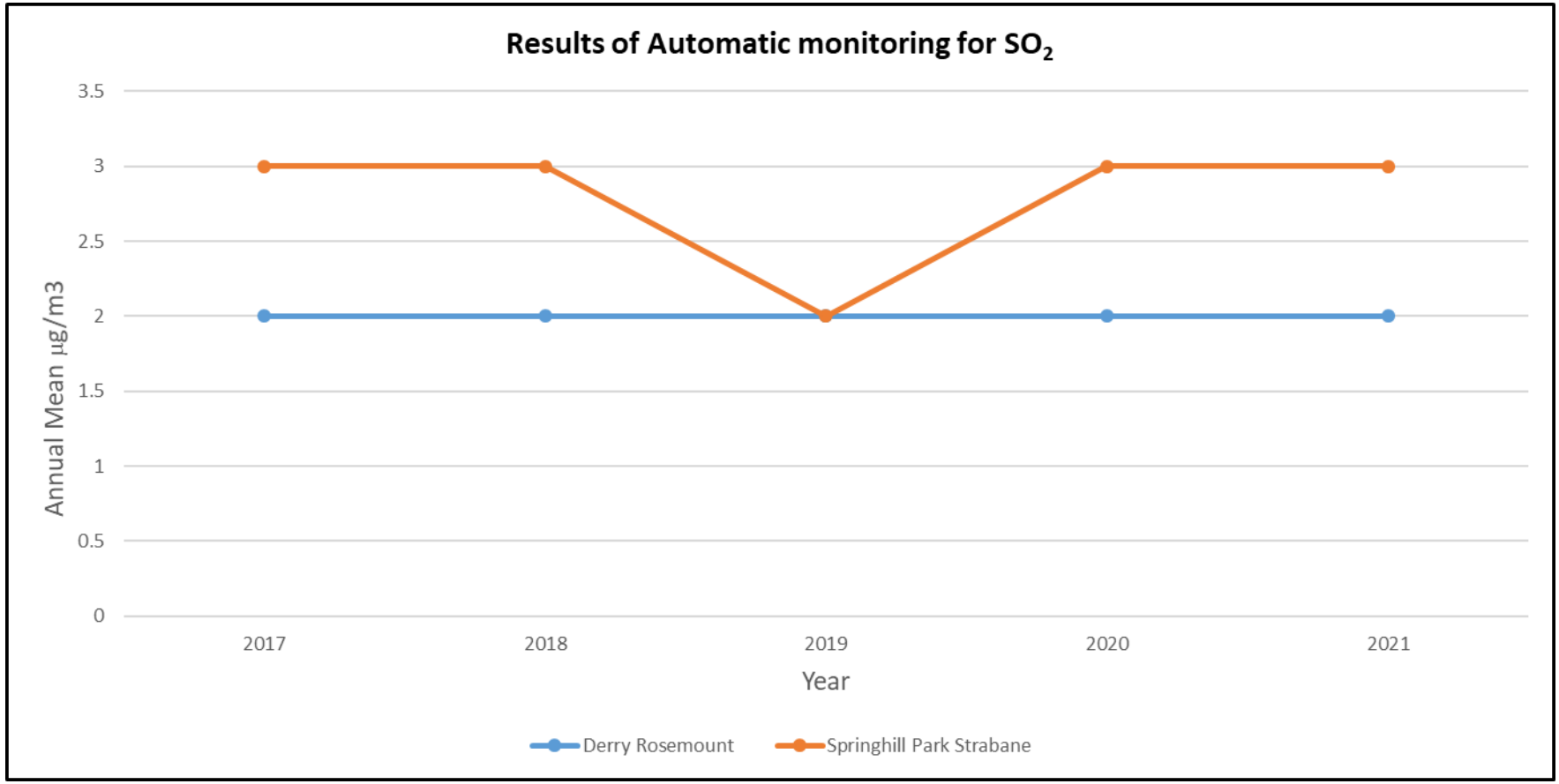
**Table 2.10.2 – Results of Automatic Monitoring for $SO_2$: Comparison with Objectives (2020)**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2020 %[b] | Number of Exceedances (percentile in bracket μg/m³)[c] | | |
|---|---|---|---|---|---|---|---|
| | | | | | 15-minute Objective (266 μg/m³) | 1-hour Objective (350 μg/m³) | 24-hour Objective (125 μg/m³) |
| Derry Rosemount | Urban Background | N | - | 96 % | 0 | 0 | 0 |
| Springhill Road, Strabane | Urban Background | Y | - | 99% | 0 | 0 | 0 |

**Table 2.10.3 – Results of Automatic Monitoring for $SO_2$: Comparison with Objectives (2021)**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2020 %[b] | Number of Exceedances (percentile in bracket μg/m³)[c] | | |
|---|---|---|---|---|---|---|---|
| | | | | | 15-minute Objective (266 μg/m³) | 1-hour Objective (350 μg/m³) | 24-hour Objective (125 μg/m³) |
| Derry Rosemount | Urban Background | N | - | 96 % | 0 | 0 | 0 |
| Springhill Road, Strabane | Urban Background | Y | - | 93% | 0 | 0 | 0 |

**Figure 2.24 - Graph showing Results of Automatic Monitoring for $SO_2$.**




**(Fig 2.24)**

### 2.2.4 Benzene

No benzene monitoring takes place within Derry City and Strabane District Council area.

### 2.2.5 Other pollutants monitored

**$PM_{2.5}$**

$PM_{2.5}$ is measured at the Derry Rosemount site. $PM_{2.5}$ objectives have been set out in the UK Air Quality Regulations, although, there is no requirement for local authorities to review and assess $PM_{2.5}$ against these objectives as part of the LAQM regime. Results have been reported as recommended by Technical Guidance LAQM.TG16, shown in Table 2.11.

**Table 2.11 Results of Automatic Monitoring of $PM_{2.5}$: Comparison with Annual Mean Objectives**

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for monitoring Period % | Valid Data Capture 2019 % | Valid Data Capture 2020 % | Valid Data Capture 2021 % | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration μg/m³ | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2019 | 2020 | 2021 |
| Derry Rosemount | Urban background | N | % | 83% | 97% | 96% | Y | 9 | 7 | 7 |

**Ozone (O3)**

Ozone is measured at the Derry Rosemount site. O3 is a transboundary pollutant; the sources of O3 are frequently spatially distant from the measured site of the concentrations. This pollutant is not a prescribed air quality objective for LAQM purposes; however, it has been reported as recommended by Technical Guidance LAQM.TG16.

The monitoring data are shown in Table 2.12. There were no exceedances of 8-Hour Running Mean in 2019, 2020 or 2021.

**Table 2.12 Results of Automatic Monitoring of Ozone: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2019 %[b] | Valid Data Capture 2020 %[b] | Valid Data Capture 2021 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Number of exceedances of 8-Hour Running Mean (100 μg/m$^3$) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2019 | 2020 | 2021 |
| Derry Rosemount | Urban background | N | - | 97% | 94% | 98% | Y | 0 | 0 | 0 |

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

**Polycyclic Aromatic Hydrocarbons (PAH)**

As part of the UK network, PAH is measured on behalf of DEFRA/DAERA at the Derry Brandywell site. Exceedences of the target value of 1 nanogram/$m^3$ for the annual mean concentration of B[a]P had been measured in 2010 and 2016. The monitoring results for years 2017 to 2021 were 0.76, 0.74, 0.82, 0.73 and 0.47 nanogram/$m^3$ respectively, all below the target value. DAERA had previously compiled a draft Action Plan in 2017 to address the exceedances identified. However, pollutant levels have been consistently lower in recent years.

Full results can be found at: https://uk-air.defra.gov.uk/data/non-auto-data?uka_id=UKA00499&view=data&network=paha&year=2017&pollutant=1080#view

### 2.2.6 Summary of Compliance with AQS Objectives

The Council has examined the results from monitoring in the district. There were no exceedances of any objectives outside the existing AQMA boundaries, or within the Spencer Road AQMA since 2014 or indeed within the Buncrana Road AQMA for the last 2 years.

In 2018, DCSDC revoked the Strabane, Newtownstewart and Castlederg AQMA's for particulates (PM10). The former SDC Action Plan measures were realised and pollution levels reduced to well below health limit values. The Smoke Control Areas still remain at these locations.

The Strand Road AQMA for nitrogen dioxide was revoked in 2018 and the Spencer Road AQMA was reduced in size to reflect updated monitoring and modelling results.

It is recommended that the Spencer Road AQMA be revoked due to continually reduced $NO_2$ concentrations. The remaining AQMAs are considered appropriate for the time-being.

# 3 Road Traffic Sources

The following road traffic sources which may have an impact on air quality have been considered since the last Progress Report: The Council confirms that as there has been no significant change to any of the above-mentioned sources since the 2019 Progress Report, there is no need to proceed to a Detailed Assessment.

## 3.1 Narrow congested streets with residential properties close to the kerb

All narrow congested streets with residential properties close to the kerb in the Council area have been considered in previous assessments

## 3.2 Busy streets where people may spend 1-hour or more close to traffic

Busy streets where people may spend 1-hour or more close to traffic were considered in previous assessments.

## 3.3 Roads with a High Flow of buses and/or HGVs

Roads with a high flow of buses and/or HGVs were considered in previous assessments.

## 3.4 Junctions

Relevant junctions were considered in previous assessments.

## 3.5 New Roads constructed or proposed since the last round of review and assessment

No new roads have been identified that were not previously considered.

## 3.6 Roads with significantly changed traffic flows

No roads with significantly changed traffic flows have been identified.

## 3.7 Bus and Coach Stations

These were considered in previous assessments.

# 4 Other Transport Sources

## 4.1 Airports

Airports were considered in previous assessments.

## 4.2 Railway (Diesel and Stream Trains)

**Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m**

Stationary and moving trains were cosidered in previous assessments**.** The Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

## 4.3 Ports

Ports and shipping were considered in previous assessments.

# 5 Industrial Sources

## 5.1 Industrial Installations

### 5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

No new installations have been identified. The Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

### 5.1.2 Existing Installations where Emissions have increased substantially or New Relevant Exposure has been introduced.

No relevant installations have been identified. The Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

### 5.1.3 New or significantly changed installations with no previous Air Quality Assessment

All installations were considered in previous assessments.

## 5.2 Major Fuel (Petrol) Storage Depots

Major fuel storage depots were considered in previous assessments.

## 5.3 Petrol Stations

Petrol stations were considered in previous assessments. The Council confirms that there are no petrol stations meeting the specified criteria**.**

## 5.4 Poultry Farms

No relevant poultry farms have been identified. The Council confirms that there are no poultry farms meeting the specified criteria.

# 6 Commercial and Domestic Sources

## 6.1 Biomass Combustion – Individual Installations

Biomass combustion was considered in previous assessments.

## 6.2 Biomass Combustion – Combined Impacts

Biomass combustion was considered in previous assessments.

## 6.3 Domestic Solid Fuel Burning

Domestic solid-fuel burning was considered in previous assessments. In addition, a Fuel Use Survey was commissioned by Council and a report produced in March 2019. 10% of properties were surveyed within each of 20 designated 1km X 1km geographical areas (approx. sample total of 2760 properties) across the Council area, with a response rate of at least 75%, totalling 2077 surveys. The main types of fuel used were Oil (73.62%), followed by Gas (22.81%) , Coal/solid fuel (2%), Electricity (1.35%), wood (0.14%) and other (0.09%). The survey confirmed the very low incidence of burning of domestic solid fuel, particularly wood.

The Council confirms that there are no areas of significant solid domestic fuel use in the Local Authority area.

**Combined Heat and Power (CHP) Plant**

The Council confirms that there are no new installations meeting the specified criteria that require a Detailed Assessment.

The Council confirms that the above installations are considered as a part of the council's planning process. Where necessary, an Air Quality Assessment is requested to demonstrate that the proposal will not lead to exceedance of any relevant pollutants and impact on localised air quality or relevant receptors. Further information on planning applications, which required an Air Quality Assessment, is provided in Section 9 of this report.

# 7 Fugitive or Uncontrolled Sources

The following new developments with fugitive or uncontrolled sources may have an impact on air quality:

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

Fugitive sources were considered in previous assessments. There were a number of applications for quarries/ extensions to quarries in the Council district where the potential existed for $PM_{10}$ emissions to affect nearby dwellings. The quarries were screened in accordance with Table 7.5 – Screening Assessment of Fugitive or Uncontrolled Sources of the Technical Guidance LAQM.TG16**.**

The Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area other than quarries which were considered in a previous assessment.

# 8 Local / Regional Air Quality Strategy

A Clean Air Strategy for Northern Ireland has been pending for some time. In advance of developing a Clean Air Strategy for Northern Ireland DAERA launched a Public Discussion Document (PDD) on the 23rd November 2020.
The PDD presented evidence and research on a range of ambient air pollutants. It also outlines the current policy and legislation and the measures currently in place to control air pollution.

The PDD posed questions around pollutant source activities, with the aim of promoting discussion and the exchange of ideas. The full document can be viewed at https://www.daera-ni.gov.uk/clean_air_strategy_discussion_document

The Public Discussion Document is set out in a number of chapters that provide information on pollutants of concern, sources of emissions including road transport, households, agriculture and industry. The Discussion Document reviews the current arrangements for local air quality management and communication of air quality information. It recommended that the WHO guidelines for particular matter are adopted. Clear policy measures should be identified in the Clean Air Strategy defining actions to ensure they are met.

The PDD refers to household emissions in relation to particulate matter and suggests Councils could extend existing Smoke Control Areas. The banning of the sale of both bituminous coal and unseasoned wood to control emissions of particulate matter at source is also suggested.

Derry City and Strabane District Council awaits the publication of the Clean Air Strategy for Northern Ireland that would inform Council on future approaches to Local Air Quality Management.

# 9 Planning Applications

The Council considers all planning applications that are submitted in the district. If any proposed development has the potential to adversely affect air quality in relation to the relevant public exposure criteria, as described in the most recent Technical Guidance LAQM.TG16, the developer is requested to submit an air quality assessment.

Further to the proposed developments with potential air quality issues that were considered in the previous Progress Report, the following approved developments have the potential to adversely affect air quality:

**Planning Application Reference no:** LA11/2021/0109/RM.

**Proposal**: Proposed major mixed use development comprising 793 No. dwellings consisting of a mix of social, affordable and private housing; part delivery of High Street to include retail store, cafe/restaurant, retail units, office units, live/work units, gym, community centre; provision of new road network to connect to re-aligned Coshquin and Whitehouse Road, new pedestrian and cycle ways; public squares; open spaces; children's play areas; hard and soft landscaping; pumping station and all other site and access works on lands accessed from Skeoge Roundabout, to the West of Buncrana Road, North of River Glen and South West of Nos. 30,32 & 34 Coshquin Road (Identified as H2 zone in Derry Area Plan 2011)

The proposed development is estimated to result in changes of Low Density Vehicle (LDV) flows in excess of 500 Annual Average Daily (AADT) traffic on a number of links in the surrounding area, including Council’s Air Quality Management Area (AQMA) declared at the junction of Buncrana Road and Racecourse Road, as well as introducing new receptors where they have potential exposure to pollution.
The proposed development is unlikely to be fully occupied by 2022 given that it will be built in phases over the subsequent years. However, for the purposes of the air quality assessment (and to ensure a robust analysis), the report states that it was assumed that the proposed development will be fully occupied in the opening year.
The road classification used was “urban roads”.

Council noted that all the receptors within the proposed development were expected to have concentrations below the AQS objective, with the highest concentration estimated to be 28.6 µg/m3.

In relation to total annual mean concentrations of PM2.5, the council noted that the report advised that all modelled receptors are predicted to be well below the AQS objective of 25 µg/m3, either with or without the proposed development in place, and also at all proposed receptors and as such, that impacts on annual mean PM2.5 concentrations as a result of the proposed development can be described as negligible at all receptor locations.

The council accepted that the report concluded that, given that NO2, PM10 and PM2.5 concentrations are expected to be below AQS objectives at all selected receptors, even with the highly conservative assumption that the proposed development is fully open in 2022, the effect of the proposed development on air quality is considered unlikely to be significant.

**Planning Application Reference**: LA11/2021/0112/PAD

**Proposal**: Proposed mixed use development comprising 1no commercial unit and 32no apartments along with associated parking court and hard and soft infrastructure at 31C Abercorn Road, Derry, BT48 6SA.

Council highlighted on the Pre Application Discussion that Air Quality Assessment Strategic Planning Policy Statement (SPPS) for Northern Ireland states that “any future planning application shall have to be submitted with sufficient supporting information to allow full consideration of the impact on local air quality.”

Council requested that the develop should determine if an air quality assessment is identified as being required; if so, this may take the form of either a Simple Assessment or a Detailed Assessment. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality.

The source of heating was also highly recommended to be smokeless.

Council has not received an Air Quality Assessment in respect of this application to date.

**Planning Application Reference no**: LA11/2018/0343/F

**Proposal:** Demolition of all buildings on site and construction of replacement convenience shop, off licence, two hot food units, petrol filling station and associated access, parking and servicing arrangements (amended description) at 1 Rossdowney Park & 10 Rossdowney Road, Waterside, Londonderry, BT47 5NR

The council requested an Air Quality Assessment be carried out on the proposed development as part of the Construction Environmental Management Plan (CEMP). The Air Quality Assessment was carried out and an Air Quality Dust Management Plan was developed as part of the CEMP. The Council accepted the CEMP summary that if the mitigation measures identified within the CEMP were implemented that the effects would be minimal.

**Planning Application Reference no:** LA11/2019/0007/RM

**Proposal:** Demolition of existing buildings, site remediation, repositioning of existing vehicular access on Woodside Road and the erection of 71 residential units and associated car parking provided both in-curtilage and on-street, together with the provision of centrally located public open space, located at Lands at former IAWS site located at Woodside Road, Newbuildings together with existing residential land at Nos 61-63 Woodside Road, Newbuildings

The Council requested an Air Quality Assessment be carried out on the proposed development. An assessment was completed into the Air Quality and Odour Impact Assessment Report in November 2016 by Envest.

The council noted that in terms of increased traffic flow volumes, the relatively small increase due to the proposed development was concluded to have a negligible impact on air quality.

**Planning Application Reference no:** LA11/2020/0251/F

**Proposal:** Proposed demolition of existing vacant buildings at 66, 68 & 70 Duke Street and construction of new residential buildings 1 + 2 to include individual entrances from Duke Street and a shared entrance to Spencer Road. Building 1 will house 31 units which consist of 2 no. accessible units, 22 no. 2 bedroom units and 7 no. 1 bedroom units. Building 2 will house 32 units which consist of 3 no. accessible units, 17 no. 2 bedroom units and 12 no. 1 bedroom units. Building 3 will be refurbished and 11 residential units (consisting of 7 no. x 1 bedroom apartments & 4 no. x 2 bedroom apartments) will be provided on its upper floors. External works include a new entrance from Spencer Road which will be landscaped and provide access to the proposed scheme, with further works for hard and soft landscaping to the new courtyard providing access to central bin store, formal garden, soft planting, sensory garden path & soft play area for residents use located at 66-74 Duke Street Waterside Derry.

An Air Quality Impact Assessment Report, dated May 2020, was produced by AQNA Environmental Consulting Ltd on behalf of Martin Property Group. The impact prediction model used in the Air Quality Impact Assessment report is the Design Manual for Roads and Bridges (DMRB) Screening Method, Highways Agency. The model requires data on Annual Average Daily Traffic flow (AADT), annual average speeds, the proportion of different vehicle types, the type of road and the distance from the centre of the road to the receiver location. The DRMB Screening Method predicts pollutant concentrations at receiver locations near to roads.

The air quality impact assessment focused on pollutants produced by vehicular traffic, in particular nitrogen dioxide ($NO_2$) and particulates ($PM_{10}$). Receiver locations assessed in DRMB Screening Method within the report depicts the proposed development and identifies the receiver location assessed in DRMB Screening Method in Table 2. The table also identifies the location of the non-automatic diffusion tube monitoring location at 32 Spencer Road, which was used for model verification. Traffic flows for Duke Street were taken from the Department for Infrastructure NI, 2017 and 2018 Traffic and Travel Information Reports.

A % annual increase was derived to estimate the AADT value in 2022, presented in Table 3. DEFRA 2017 background pollution maps were used within the modelling process and data from DCSDC continuous AQ monitoring sites and the diffusion tube monitoring location at 32 Spencer Road, with Table 6 indicating that the annual mean $NO_2$ concentrations on Spencer Road are below the annual $NO_2$ limit value of 40 g/m. Model verification was carried out with the verification of the modelled data against monitored data based on methodology outlined in the Government Technical Guidance Document LAQM TG(16).

Calculations as presented in the report show the DRMB screening method result adjusted by a factor of 3.51. DRMB Screening Method predicted pollutant concentrations at the front façade of the proposed development (R1) and the rear façade of the proposed development (R2) due to traffic emissions in 2022, without and with development presented in Table 8. $NO_x$ and $PM_{10}$ concentrations in Table 8 were multiplied by model verification adjustment factor of 3.51.

Predicted $NO_2$ and $PM_{10}$ concentrations at the receiver locations at the proposed development locations are presented in Table 9. Adjusted annual mean NO2 concentration with development at Receiver R1 (front façade) was calculated to be 31.82µg/m³ and without development 31.77µg/m³ and at Receiver R2 (rear façade), 29.19µg/m³ with development and 29.13µg/m³ without development. Adjusted annual mean $PM_{10}$ concentration with development at Receiver 1 was calculated to be 15.02µg/m³, without development 14.98µg/m³ and at Receiver 2 14.56µg/m³ with development and without development. Predicted $NO_2$ and $PM_{10}$ concentrations were compared with the Relevant Air Quality Limit Regulations (NI) 2010.

The council noted that the results showed that there will be no exceedances of the relevant Air Quality Limit values for $NO^2$ and PM10 at the proposed development site. The magnitude of impact on air quality was considered negligible at the receiver locations in 2022. (the year the report surmised the development would be occupied).

**Derry City and Strabane District Council**

**Planning Application Reference no:** LA11/2020/0222/F

**Proposal:** Residential development comprising of 45 No. apartments (26 No. 1 bed apartments and 19 No. 2 bed apartments) in 3 No. blocks, associated infrastructure, car parking, landscaping and all site works, with access from Infirmary Road, Derry located at : Lands at Nos. 11, 11A and 12 Windsor Terrace, Infirmary Road, Derry and adjacent to the rear of Nos. 2, 4, 6, 8, 10, 12, 14, 18, 20 and 22 Creggan Road, Derry, No.1 Infirmary Road, Derry and Nos. 1-10 Windsor Terrace, Infirmary Road, Derry

A number of letters of objection were received from residents in respect of the development in relation to concerns regarding Air Quality. Council advised that there is an existing Air Quality Management Area (AQMA) at the Creggan Road/Infirmary Road junction. This area has been declared due to elevated levels of Nitrogen Dioxide from traffic sources. This part of Creggan Road is in effect a canyon-type street being narrow in character and with buildings up to 3 storeys so that the pollutants are more concentrated. Also, as the Road is on a steep incline, pollution levels are higher as engines accelerate to climb.

Council has been monitoring the main pollutant of concern from traffic sources- Nitrogen Dioxide ($NO_2$) at various locations throughout the city, including at a property at the end of Windsor Terrace going away from the Creggan Road junction. The $NO_2$ levels at this location have been substantially below health limit values over the last number of recent years. As Infirmary Road is not inclined, pollution levels are not as high as those at the Creggan Road junction with Infirmary Road.

Council noted that the monitoring results show that pollution levels on Infirmary Road lessen as distance increases from Creggan Road.

**Planning Application Reference no:** LA11/2019/0727/F

**Proposal:** Proposed redevelopment of existing building to provide 27 unit self contained apartment accommodation for over 55 active elderly persons including wheelchair accessible unit at ground floor located at 125-139 Strand Road, Derry (Formerly Café Roc Bar/Night Club). Council considered an Air Quality Impact Assessment (AQIA) Report (Project Ref. ENV – 5077) was undertaken by AONA Environmental Consulting Ltd (January 2020). The Atmospheric Dispersion Modelling System (ADMS) Roads model was used to assess the potential air quality impact from the traffic flows in the vicinity of the proposed development.

The conclusions set out the highest bias corrected NO2 predicted level at Receptor 1 (R1) to be 32.13 µg/m³. This is below the EU Air Quality Limit Value. The highest bias corrected $PM_{10}$ at Receptor 1 (R1) is predicted to be 13.21µg/m³. This again is below the EU Air Quality Limit Value.
It is considered that there will be a negligible air quality impact upon the future residents of the proposed development.

Based on model inputs, including the DEFRA estimated $NO_2$ and $PM_{10}$ background levels and estimated traffic volumes in the vicinity of the proposed development, used within the assessment, the council would concur with the conclusions provided within the report that the pollutant emissions from traffic and the predicted slight change in traffic flows, as a result of the proposed development will result in 'negligible' impact on $NO_2$ and $PM_{10}$ concentrations in the area

**Planning Application Reference no:** LA11/2021/0717/O

**Proposal:** Proposed residential development providing approximately 180 No. houses with driveways and private gardens. New road connection to Baronscourt Road and new road access at Oldcastle Road with linkage road and pedestrian footpaths through site, Open green spaces, associated landscaping. Proposed house types include 4 Nr: 2-3 bed, 3 bed, 3-4 bed and 4 bed homes located at land fronting Baronscourt Road and Oldcastle Road Newtownstewart

Council considered the report by RPS “Air Quality and Climate” Chapter 7 of the Environmental Statement. It states that there are no significant increases in traffic associated with the proposed development and as such, the operational phase emissions are considered to be “not significant” and can be screened out.

It also states that the development does not, in air quality terms, conflict with national or local policies or with measures set out in Derry City and Strabane’s Air Quality Action Plan.

Council concurred with the above. The site is rural and remote from any Air Quality Management Areas (AQMA) with the nearest being located in Derry City. The background Nitrogen Dioxide levels in this rural area are much lower than in the City so that the joint contribution of pollutants from traffic associated with the development and the background levels are highly unlikely to lead to exceedance of health limit values.

**Planning Application Reference no:** LA11/2019/0880/F

**Proposal:** Proposed residential-led mixed use development comprising 160 residential units in a mix of dwellings and apartments of mixed tenure, two retail units (class A1), office space (class B1), multi-functional space & ancillary accommodation with public and private amenity space, parking, landscaping, access arrangements from Beechmount Avenue and associated ancillary site works located at Lands at east of 10-32 (evens) Melmount Road, south of Beechmount Avenue, west of 19 Beechmount Avenue, 11-16 Delaney Crescent & 33-37 Olympic Drive and north of 31,33, 35 & 37-46 Ashgove Park, Strabane, BT82 9BE

The council advised in its consultation response dated March 2020 that a Simple Assessment will be appropriate, if it can provide this evidence.

To date, an Air Quality Assessment has not been submitted in respect of this application.

**Planning Application Reference no:** A/2014/0035/RM

**Proposal:** Residential housing development comprising a mix of detached and semi detached units (164 in total) with garages. All associated site works including amendment of levels, landscaping, waste water pumping station and off site road works located at Drumahoe Industrial Estate Drumahoe Road Londonderry.

Air Quality was detailed within the Addenum to Environmental Statement Part 1, July 2020. An assessment of the dust impact associated with works was also completed. This assessment considered the construction dust impact against the baseline before such works were undertaken and relevant typical construction dust limits. Dust suppression measures were implemented by the contractor on site and the potential impacts upon receptors in terms of dust were found to be negligible.

**Planning Application Reference no:** LA11/2017/0665/RM

**Proposal:** Proposed residential development of 241 no dwellings comprising a mix of 102 detached; 124 semi-detached and 15 apartments, associated domestic garages, new right hand turn lane; public open space including equipped children's play area; all associated landscaping and site and access works. (updated drainage assessment, further Environmental Information) | Lands situated to the north and east of The Beeches; and north east of Old School Field Glenshane Road Drumahoe Country Londonderry (Lands part of H25 housing zoning in Derry Area Plan 2011)

Council noted an air quality addendum assessment had been undertaken to quantify the effects of traffic from the proposed development on the existing AQMA at Dale's Corner in the Waterside district of the city.

The results of the assessment have shown that the proposed development, in its operational phase, is expected to have a moderate adverse impact, as the estimated concentrations at two relevant receptors within the AQMA are above the Air Quality Strategy (AQS) objective for Nitrogen Dioxide ($NO_2$). The report predicted the impact at both receptors to amount to 0.1ug/$m^3$ and concluded that the change in

concentrations can be considered negligible and it was considered that the proposed development was not likely to have a significant effect on local air quality at existing receptors within Dales Corner AQMA.

Whilst the council acknowledged the very small increase in pollutant concentrations, more importantly in the $NO_2$ levels as opposed to the Particulate Matter ($PM_{10}$) concentrations as the former is the pollutant of concern at the AQMA, it was accepted that the authors of this air quality assessment had used a conservative approach, namely the Highways Agency's Design Manual for Roads and Bridges (DMRB) screening model, rather than a detailed dispersion model so that ultimately, it was possible that results had been overestimated and presented a worst-case scenario.

The council concurred with the conclusions of the air quality addendum assessment that it is considered that specific mitigation measures to control emissions associated with the proposed development are not required.

The council however strongly recommended that consideration be given, as suggested in the report, to the application of good design and good practice measures for example, cycle parking provisions, encouraging the uptake of sustainable modes of transport and also a Travel to Work Plan to be prepared which seeks to reduce vehicle trips made by construction workers.

**Planning Application Reference no:** LA11/2018/0115/F

**Proposal:** Proposed housing development comprising of 26no detached two storey dwellings and 118 no semi detached dwellings & 1 No proposed shop and apartment over and retention of 30no semi detached 2 storey dwellings and 8no detached 2 storey dwellings with associated access roads and proposed link road to Evish Road (amended description and layout) | Approx. 30M East of Mount Carmel Heights Bracken Gate and Altiskane Heights Strabane and accessing through Bracken Gate Mount Carmel Heights and Altiskane Heights Strabane

The Council reviewed an O'Sullivan Macfarlane document titled *"Proposed Residential Development and Associated Link Road, on lands 30m East of Mount Carmel Heights, Bracken Gate and Altiskane Heights, Strabane,"* dated 4th September 2019. The document was submitted to address comments previously made by the Environmental Health Service.

In relation to dust, the submitted document provides details of techniques that will be implemented to suppress dust at the site during construction works, including the dampening of haul roads during periods of dry weather and daily visual inspections to assess the effectiveness of mitigation measures.

The Council recommended that an informative be attached to the planning application to ensure the mitigation measures used in the report were adhered to.

# 10 Air Quality Planning Policies

The Councils Local Deveopment Plan Team continues to progress the Council's Local Development Plan (LDP) 2032. The Local Development Plan Team submitted the Derry City & Strabane District Local Development Plan (LDP 2032) – draft Plan Strategy and supporting documents to the Department for Infrastructure on 20th May 2022 as part of the Independent Examination process.

When adopted the Council's LDP will replace the current Derry Area Plan 2011 (adopted May 2000) and the Strabane Area Plan 2001 (adopted 1991). The new LDP will replace most existing regional policies. The LDP will consist of two development plan documents:

- The Plan Strategy (PS); and
- The Local Policies Plan (LPP).

The LDP is to take account of the Councils overall vision for the District set out in our Community Plan – the Inclusive Growth Plan for Derry City and Strabane District Council (2017) which has as its Vision for the District:
"To make Derry City and Strabane District a thriving, prosperous and sustainable development, whilst protecting our environment, and also promoting well-being with equality of opportunity for all."

The draft LDP sets out a number of objectives including putting in place the Councils Planning framework of policies that will deliver high quality sustainable development across the City and District to 2032, contributing to climate change prevention/adaptation, protecting the environment and meeting the needs ( including health and well-being and amenity) of residents and visitors.

General Development Principles have been stated within the draft LDP to achieve sustainable development (GDP1), tackle climate change (GDP 2) and improve health and wellbeing (GDP3) by promoting active travel, limiting emissions and ensuring development proposals do not significantly impact on air quality.

The General Development Principles outlined above will be delivered through the policies contained in the LDP and the application of best practice guidance.

General Development Management Policy (GDPOL 1) is one of a number of essential criteria that must be met by all developments and indicates that planning permission will be granted where there is no significant impact on amenity as a result of air pollution. In justifying this policy, the LDP recognises the impact on health of poor air quality, current Air Quality Management Areas, Smoke Control Areas and the forthcoming Air Quality Strategy for Northern Ireland. The need to sustainably manage and improve air quality is recognised as an important objective. In addition to the proposed Air Quality Strategy for Northern Ireland, the LDP is one of the more effective mechanisms to be utilised to improve air quality. This includes taking into account existing and future air quality in an area and having regard to any local Air Quality Management Areas.

The Council is currently developing a Climate Change Adaptation Plan and is considering further supplementary best practice guidance on air quality. The Institute of Air Quality Management (IAQM) have produced their 2017 guidance document entitled, ‘Land-Use Planning & Development Control: Planning For Air Quality. The Council’s Environment and Neighbourhoods Team refers to this document in order to determine when an Air Quality Impact Assessment is required.

# 11 Local Transport Plans and Strategies

THE NORTH WEST TRANSPORT PLAN - TRANSPORT STUDY (June 2021)

The Department for Infrastructure (the Department) has undertaken a Transport Study (TS) of the North West area focused on the Derry City and Strabane District Council (DCSDC) area. The purpose of the was to set out an objective evidence-based assessment of current and future transport issues in the context of the Council's growth ambitions. The transport measures identified are in line with the Draft Programme for Government (PfG) of the NI Executive, current government policies and with the direction of the Council's Strategic Growth Plan.

The Department is working co-operatively with councils across NI to produce a new family of Local Transport Plans (LTP) to integrate with their Local Development Plans (LDP). These plans move through different stages, and increase in detail from an overall strategic direction, through to specific local policies and schemes.
The initial North West Transport Plan (NWTP) LTS has been prepared by the Department in collaboration with DCSDC to inform the Council's LDP – Draft Plan Strategy stage.The purpose of the LTS is to set out an objective evidence-based assessment of in relation to current and future transport issues in the context of Council growth ambitions and future indicative transport measures required to facilitate growth ambitions during the LDP period to 2032 in the Council area.

In view of the complex issues faced by the Derry urban area, a computer transport model was used to estimate strategic impacts. Issues in the town of Strabane have drawn upon a specifically commissioned evidence base whilst standard datasets are used to consider the Council area as a whole.

A review of the policy context generated the following seven transport objectives for the development and assessment of transport options in the Council area:

Objective 1 - Improving external linkages: Enhance accessibility by road and public transport to the City of Derry from Letterkenny, Belfast, Dublin, Strabane and other gateways / hubs, to support greater levels of inward investment and tourism.

Objective 2 - Improving public transport accessibility: Ensure financially viable and sustainable public transport accessibility to essential services including health and education for people living in DCSDC.

Objective 3 - Improving active travel accessibility: Ensure there are attractive and safe active travel networks (walking and cycling) linking all residential, retail, leisure, culture, office and commercial uses within the urban areas of the DCSDC.

Objective 4 - Providing high quality public realm: Deliver high quality public realm in Derry City centre (especially the central riverfront area) and Strabane town centre with reduced vehicle dominance and permeability / walkability, to make them attractive, shared spaces to live and work and improve safety for active modes.

Objective 5 - Improving town centre accessibility: Enhance transport accessibility and manage traffic congestion in Derry City and Strabane town to strengthen Derry's role as the principal city of the cross border North West City Region.

Objective 6 - Improving public safety including air quality: Enhance safety for all modes of travel, reduce the number and severity of casualties and improve air quality. Transportation should contribute to / not worsen the health and well-being of the people of the region.

Objective 7 - Promoting sustainability and resilience: Protect and enhance the built and natural environment by ensuring our transport systems operate sustainably and can integrate climate change adaptation requirements.

Fully details of the Transport Study and its conclusions can be found at: https://www.infrastructure-ni.gov.uk/articles/north-west-transport-study

# 12 Climate Change Strategies

**Air Quality and Climate Change**

Air quality and climate change are fundamentally interrelated. Many common air pollutants are 'climate active', and reducing emissions will lessen the warming effect on our climate. A warming climate also threatens to make air quality worse, with the prevalence of harmful photochemical smog's likely to increase throughout longer, hotter summers.

Response to the challenge of climate change can be defined as mitigation (measures to reduce emissions) and adaptation (actions to adapt and deliver resilience).

The UK Government has set a legal target for the UK to reach net zero carbon emissions by 2050. The following section outlines the initiatives currently being delivered by Council to address the issue of climate change.

In Northern Ireland, it is not currently a statutory requirement for local authorities to undertake adaptation planning, however Council declared a climate emergency in July 2019 followed by the Climate Emergency Pledge:

> Council undertakes to:
>
> Ensure that all strategic and policy decisions and budgets will immediately fall are in line with the shift to net zero greenhouse gas emissions by 2045 while also ensuring that the Derry City and Strabane District Council area as far as practically possible is prepared for and resilient to the effects of climate change.
>
> DCSDC Climate Pledge 2020

screening process which considers both adaptation and mitigation.

**Commitments**

Council have committed to the following national and international declarations:

- Global Covenant of Mayors for Climate & Energy
- Glasgow Food & Climate Change Declaration
- United Nations Race to Zero & Race to Resilience
- Council currently report to the Global Covenant of Mayors, CDP and ICLEI EU climate change platforms and NI National Adaptation Programme in an annual basis.

**Adaptation Planning**

The Council is currently leading the way across Northern Ireland in relation to climate action planning. The Council was the first local authority in NI to develop a 'climate adaptation plan'.

A dedicated working group and task force were set up and have developed the Climate Adaption Plan which was passed by Council in July 2020. The vision of the plan is that Council is prepared for and resilient to the effects of climate change, creating a safe and sustainable region for all. Progress is underway to deliver the 5 year Adaptation Action Plan with 69% actions either complete or ongoing for the 2021/22 period.

The adaptation planning process followed by DCSDC has been developed into a model and toolkit to be shared across all NI councils to assist in the delivery of their respective climate adaptation plans. Climate Northern Ireland will support the council adaptation planning process.

The following draft actions relating to air quality and environmental health have been identified within the Climate Adaptation Plan:

- Continue air quality awareness campaigns
- Undertake further analysis of air quality throughout the city and district to understand impact of climate change and areas / locations of high vulnerability
- Continue the 'Life Tree Project' planting programme where trees are planted for all births, deaths and marriages in the district and create several woodlands, to address air quality issues
- Include Climate Change Safety Fact Sheet in Birth Registration Pack

In addition a significant number of actions have been identified to further develop green infrastructure across the city and district including increased tree and vegetation coverage to improve air quality.

**DCSDC Green Infrastructure (GI) Plan 2019-2032 (Part 1)**

A GI stakeholder group was set up by DCSDC in September 2017 to develop a Green Infrastructure Framework (DCSDC, 2018a) to develop a holistic approach for a planned, high quality, well connected and multi-functional GI network; which provides a range of benefits for residents and the environment. One of the four key strategic themes of this plan is climate change. The Green Infrastructure Plan 2019-2032 (Part 1) is to be followed with an associated Action Plan (Part 2) to outline the

short medium and long term actions to protect, improve and increase the GI network. This network will connect green spaces (vegetated areas) and blue spaces (waterways) and increase tree and vegetation coverage to improve air quality. The GI plan covers the Council area plus a 20km buffer around the district to capture cross boundary opportunities.

If strategically designed with the right vegetation in the right place GI can offer considerable health benefits in terms of public health on air pollution by altering the amount of emissions that people are exposed to. Vegetation at smaller scales (street level) can be used to control the flow/distribution of pollutants by controlling their dispersion. Woodlands, plants, grasslands and other vegetation remove significant quantities of air pollutants.

Regional engagement is ongoing through networks such as Sustainable NI, Regional Community Resilience Groups, Regional Coastal Forum, Sustainable Travel Forum, Storm Water Management Group and collaboration with universities and other local authorities.

**Infrastructure & Regeneration – Climate Smart Development**

Council are the first NI local authority to develop a Climate Change Risk & Opportunities Assessment for infrastructure projects. This will inform a template for climate proofing capital projects within the City Deal and wider developments. Work is underway to develop a checklist and guidelines for Climate Smart development across Council.

**Carbon Management Plan, Net Zero GHG Roadmap & Climate Action Plan**

A carbon management plan has been produced the scope of which is the operations and estate of the Council. It aims to develop a plan to reduce the council's own carbon footprint and to work internally to benchmark the carbon footprint of Councils events as well as a feasibility study to convert the Councils fleet to low carbon alternatives

Opal Consulting are currently developing a greenhouse gas baseline for the city and district including a roadmap to net zero, (due for completion June 2022).

This will be followed by a detailed cross sectoral Climate Action Plan for the City & District aligned to global targets, Council's climate pledge, carbon budgets and greenhouse gas emissions in the region.

**North West Greenway Project**

In 2015 the Council, in partnership with Transport NI (TNI), Donegal County Council (DCC) and Sustrans NI, formally established the Active & Sustainable Travel Forum (ASTF). The partnership's strategic vision is set within the context of the North West Greenway Action Plan: "*To develop a cross border network of greenways that link people with places locally, regionally and nationally- bringing social, economic & environmental wellbeing to all*."

In December 2016 DCSDC, DCC, the Department for Infrastructure (NI) and Sustrans (the UK-based cycling and walking charity), were awarded €14.8 million funding from the EU's INTERREG VA programme, administered by the Special EU Programmes Body (SEUPB), to construct 46.5kms of cross-border greenway. Match-funding has been provided by the Department for Infrastructure in Northern Ireland and the Department of Transport, Tourism and Sport in Ireland. New greenway routes will link Derry to Buncrana via Bridgend; Muff to Derry via Culmore; and Lifford to Strabane. One of the objectives of this 'North West Greenway Project' is to reduce carbon dioxide emissions by over 300 carbon tonnes per year by 2023.

**Energy Projects**

A number of energy projects are underway within DCSDC these include:

**SECURE 2016-2019**

- Solar PV and Battery Storage System installed in a community centre with associated data analytics app. 40% energy savings.
- Solar PV installed in leisure centre savings of 35-40% achieved.
- Solar PV installed in recycling centre with savings of 15% achieved.
- Cloud Based Energy Monitoring System installed in 10 council buildings.
- Natural gas heating system upgrade in a theatre with savings of 10-15% achieved.

**STARDUST SMART Cities 2017-2022**

- Facilitate information and data sharing
- Development of a Replication Plan to mirror good practices in other European Cities.

**CLEAN 2017-2021**

- Low carbon economy & policy influence

**SMARTrenew 2018-2022**

- Renewable energy & storage in rural areas
- Heatboss Smart Heating Controls installed in a Heritage building with savings of 30% achieved.

**SMARCTIC Project (Smarter Energy Communities) 2019-2022**

- Developing test beds for smart energy projects
- Smart Grid / Virtual Power Plant Research and Development within a community of buildings. Data monitoring of 5 solar PV generating systems which are installed in council buildings.
- BMS software upgrade to facilitate remote access for building operational settings. Completion May 2022.
- Installation of Battery Storage Unit in Alley Theatre

**Energy Strategy/Energy Agency**

- Developing a Business Case for the formation of a Regional Energy Agency in partnership with Donegal County Council

**Electric Vehicle Infrastructure Consortium**

- Leading a Consortium to install On-Street EV Charge points throughout NI
- ORCS (On-Street Charge point Scheme) application submitted for evaluation with EST (Energy Saving Trust)
- Collaboration with DfI to install charge points and progress legislation for parking enforcement
- Appointing a Charge point Operator to Operation and Maintain the On-Street EV Charge point Network.

**Other Electric Vehicle Initiatives**

- FASTER Project – a partner in the INTERREG Project to install Rapid Charge points in NI, the border counties in ROI and western Scotland

- Engaged with ESB eCars to investigate the feasibility of installing an Electric Vehicle Rapid Charge point Hub within the Council area.

**Circular Economy Zero Waste Strategy**

Developed in 2017 the strategy provides the way forward to achieving a zero waste circular economy for the city and district. 70% of the 37 policy actions are currently live. This includes

- Awareness and Call to Action campaigns including a waste app, website, and chatbot
- Resource matching, social economy opportunities and resource efficiencies have been promoted to the private and third sectors
- Council has supported community-led initiatives on upcycling of furniture, white goods, computers, bicycles and the reduction in consumption in products such as nappies and food. A programme of engagement has been undertaken with the Local Growth Partnerships to demonstrate how they can activate within their communities
- Council has developed a draft Sustainable Events Checklist with emphasis on reduction of waste and single use plastic.
- We are the first City Region in the UK and Ireland to receive Zero Waste City Region designation. This involves intensified collaboration with local environmental group Zero Waste North West and a more focused approach to implementing Zero Waste best practice across our Council
- Discussions on the development of sustainable/circular procurement with alignment to Community Wealth Building is ongoing.
- A structure to support the implementation of the CE/ZW priorities is currently under consideration which aligns with the SIGP and the Climate Action Working Group.
- The Council is represented on the coalition hosted by DfE and SIB to develop the first NI Framework for the CE

**Peoples Climate Story**

Council secured funding through the Northern Ireland Museum's Council Climate Action fund to deliver the People's Climate Story. This included engagement across

the city and district and collection of local stories and perspectives on climate change which will be showcased in an exhibition in The Tower Museum opening summer 2022. Carbon Literacy training was also provided to the Museums, Heritage and Arts sector in the city and district.

**Active & Sustainable Travel**

Council has developed with partners 100km of traffic free routes across the city and district. An additional 45km are under development with a further 120km of routes identified.

**Sustainable Food System**

Council are working across a portfolio of projects to deliver a sustainable food system for the city and district. These include:

- Acorn Farm I Can Grow Project

The 'I Can Grow' Project is funded by the National Lottery and led by the Community Foundation for Northern Ireland, delivered in partnership with DCSDC. The project will increase the capacity of local people to grow their own food alongside research into our local food systems, resilience and climate change.

- Sustainable Food Place

Council is currently working towards designation of the city and district as a Sustainable Food Place and has established Acorn Food Network working across a range of stakeholders to deliver change.

- Growing Food, Growing Communities
  Working in partnership with Holywood Transition Towns Council have delivered a food democracy programme including a local Food Summit to help inform the emerging Sustainable Food Plan for the city and district

- Acorn Farm Hub

Council has been awarded £5.6m from the UK Government Levelling Up Fund to develop the Acorn Farm Sustainable Food Hub which will see the development of Geodesic Domes, growing spaces and learning centres within

St Columb's Park. The sustainable food hub will embrace innovative climate smart technology for local food production while progressing new culinary practices and food systems. It will be an iconic eco-tourism and visitor destination as well as a focal point for local community climate action and food growing.

The total project is £6.2m with DCSDC and LUF funding provided.

**GAA Green Clubs**

Council supported a number of local GAA clubs which were selected across the North West to pilot the national Green Clubs initiative. This saw the creation of dedicated climate action working groups in clubs, tree planting, energy studies, waste reduction and climate awareness programmes.

**Research Projects**

DCSD is also involved in an EPA Transboundary Climate Risk research project led by the University of Maynooth and the TaLX project lead by Climate Ireland, Climate NI and Adaptation Scotland – this includes the development of an adaptation and resilience capability model and assessment for place based climate adaptation projects. Council has also contributed to a number of climate change reports and publications including the National Economic and Social Council All Island Climate & Biodiversity research programme, UK Climate Change Risk Assessment and inclusion of a chapter in Creating Resilience Futures book published in 2022.

**Consultations**

Council provides responses to relevant consultation processes and feeds into national strategies and policies including: NI Climate Change Bill, DAERA Green Growth Strategy, Planning Policies and Energy Strategy.

**Regional Networks**

Council officers are involved in a number of climate and sustainability networks and working groups across Northern Ireland including the Local Government Climate Action Network, Regional Community Resilience Group, Living with Water Programme, NI Coastal Forum and Sustainable NI.

## Cross Border & North West Region Climate Action

DCSDC recognises that climate change transcends local boundaries and is working in partnership with Donegal County Council to address the climate emergency. This includes the development of the Regional Energy Strategy, Green Transformation Statement and North West Climate Action Framework. Discussions are also ongoing with partners across Ireland to submit funding applications to the Shared Island Unit.

### North West Climate Action Framework

# 13 Implementation of Action Plans

In 2008, the Council, along with relevant partner organisations launched its Final Air Quality Action Plan (AQAP) for the city designed to address areas of air quality concern, safeguard good air quality and to achieve national air quality strategy objectives and EU limit values.

In 2017, Council produced an Air Quality Action Plan Progress Report 2015-2017 that gave an update on progress on the measures in the Action Plan. The Plan draws upon all forms of air quality and transport planning activities, including sustainable transport options as well as engineering solutions. The aim of this AQAP is to improve road vehicle operations and to promote and enable a shift onto more sustainable modes of transport to achieve compliance with the $NO_2$ annual mean EU limit value.

In 2018, DCSDC revoked the Strabane, Newtownstewart and Castlederg AQMA's for particulates ($PM_{10}$). The measures outlined in the former Action Plan for Strabane were realised and pollution levels reduced to well below health limit values. The Smoke Control Areas still remain. The Strand Road AQMA for nitrogen dioxide was revoked in 2018 and the Spencer Road AQMA was reduced in size to reflect updated monitoring and modelling results. Due to continued decrease in $NO_2$ levels at the Spencer Road AQMA, it is recommended this AQMA be revoked also.

Although the air quality limit values for particulate matter have been achieved in Strabane town, Castlederg and Newtownstewart and the AQMA's there revoked, the limit values for nitrogen dioxide continue to be exceeded and give cause for concern in a few remaining locations.

Council has continued to provide updates on progress on the AQAP measures in subsequent annual Local Air Quality Management Progress reports, including the present report. Pending the imminent publication of DAERA's Clean Air Strategy for Northern Ireland, which will include recommendations for the reduction of emissions

from transport, homes, farming and industry, Council will undertake a major revision of its Action Plan that will include all local air quality issues and national policies.

**Table 3 – Action Plan Progress**

Table 3 provides an update on the measures incorporated in Council's Air Quality Action Plan.

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specific measures to be implemented in Creggan Road AQMA** | **M1** | Restriction of HGV's on Creggan Road plus a 5% reduction in overall traffic at the junction | DfI Roads pass Order restricting >3tonne axle weight vehicles and erect signage at strategic locations (Alternate Routes) | DfI Roads | Completed | Part completed 2013 - signage | Reduce numbers of highly polluting vehicles on Creggan Road. Direct reduction in $NO_2$ levels | Reduction of 30% to 35% in $NO_2$ annual mean | Regular liaison with DfI Roads DfI Roads to review feasibility of 3T restriction. HGV alternative route signage erected | DfI Roads continuing to review feasibility of 3T restriction. | Due to to the coronavirus (COVID-19) pandemic, measure not progressed. Target-2022/2023 | Access/ deliveries for HGV's will reduce efficiency of the measure. Enforcement of 3T restriction to be revisited as part of review. |
| | **M2** | Changed to Attitudinal Survey targeted at 150 households in and around the AQMA | Make residents in and around AQMA aware of alternative-to-car travel options | Derryy City and Strabane District Council (DCSDC) | Completed | Completed | Reduce number of vehicles at AQMA. Reduction in $NO_2$ levels | As yet unknown | Student undertook survey as part of Master's degree | Completed | Completed | Direct reduction in car usage - Healthier lifestyles. Car-dependency culture barrier to be weakened |
| **Measures Proposed in ITS Short-Term Strategy (S1)** | **M3** | Quality Bus Corridor and Bus Priority Measures | 3 no. Cross-city QBC's and bus services via city centre and bus priority at key congestion hot spots | DfI Roads | Completed | Following review by DfI Roads and their consultants measure not feasible | Implementation of QBC's and priority measures – not implemented after review | N/A | Following review by DfI Roads and consultants measure not feasible | | | Direct reduction in car. Derry Translink fleet upgraded to Euro 6 (2017). Northern Ireland (Belfast and Derry fleets) is to get 100 zero-emission buses, which will come into service by December 2022. Twenty will be hydrogen powered and the other 80 battery operated. |
| | **M4** | Improve Cark Parking Management | Continuous city centre Controlled Parking Zone to restrain commuter parking and contribute to modal shift | DCSDC DfI Roads | Ongoing | Not completed | Implementation of CPZ | N/A | Car parking considered as part of development and delivery of a sub-regional integrated transport strategy with implementation plan as part of Council Strategic Community Plan | | 5-10 years | Small number of controlled parking schemes being reviewed in Derry city centre area. Direct reduction in car usage - Healthier lifestyles. Car-dependency culture barrier to be weakened |
| **To reduce air pollution by department for Infrastructure Travelwise NI Department of Transport in the Republic of Ireland** | **M5** | Establish a Cross Border Travelwise Car Share scheme in the North West that will service the Derry and Donegal areas | DfI Travelwise NI group to target organisations / Employers / stakeholders to assess needs and possibilities | DfI Travelwise NI | Completed | Completed | Direct reduction in car usage | N/A | The CarshareNW car share scheme was discontinued after the end of the two-year pilot scheme | Due to the coronavirus (COVID-19) pandemic, the current public health advice was/is that everyone should work from home if they can and limit contact with other people | Due to to the coronavirus (COVID-19) pandemic, measure not progressed | Scheme piloted for Car-dependency culture barrier to be weakened |
| **To reduce air pollution from Derry city Council fleet vehicles** | **M6** | Vehicle emission testing | Assess the feasibility of testing vehicle emissions when routine servicing is carried out / compliance with MOT emissions criteria | DCSDC | Completed | Ongoing | Reduce numbers of highly polluting vehicles on the road. | N/A | Implemented | Implemented | Ongoing | All vehicles undergo annual PSV and emission testing |
| | **M7** | Cleaning up Council vehicles | Fitting pollution abatement equipment to older heavy | DCSDC | Completed | Ongoing | Reduction in polluting | N/A | All Refuse Collection Vehicles/large sweepers are now Euro 6 category. | | Ongoing | Potential capital costs and maintenance |

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | goods vehicles depending on EURO classification | | | | emissions from Council vehicles | | | | | implications |
| | **M8** | Promotion of newer cleaner vehicles or alternative fuels where possible | Use of electrically powered vehicles | DCSDC | Completed | Ongoing | Reduction in polluting emissions from Council vehicles | N/A | 1 electric van<br>5 new vehicles purchased through the Enterprise Car Club. Vehicles – 4 hybrid and 1 e-car for use by staff on council duties travelling from Council Offices in Derry and Strabane.Due to to the coronavirus (COVID-19) pandemic, vehicles not able to be shared. | | Completed | Reduced emissions from vehicles being used for Council business. |
| | **M9** | Vehicle upgrading programme to comply with EURO emission standards | Replacement programme for Council vehicles | DCSDC | Completed | Ongoing | Reduction in pollution / noise emissions from Council vehicles and increased fuel efficiency. | N/A | All Refuse Collection Vehicles/large sweepers are now Euro 6 category | | 8 vehicles due replacement in current financial year | Capital cost of purchasing new vehicles |
| | | Establish vehicle replacement programme | Programmed replacement of heavy goods vehicles every 7 years | DCSDC | Completed | Ongoing | Reduction in pollution / noise emissions from Council vehicles. Less maintenance for newer vehicles and increased fuel efficiency | N/A | **2020 -** Euro 4 vehicles - 1<br>Euro 5 - 36.<br>Euro 6 Vehicles -84<br>(Up to date information to be supplied in next LAQM annual report) | | 8 vehicles replaced in 2018 current financial year<br>(Up to date information to be supplied in next LAQM annual report) | Capital cost of purchasing new vehicles |
| | **M10** | Vehicle Fuel Efficiency | Assess Councils vehicle and mobile plant fuel consumption efficiency and make improvement | DCSDC | Completed | Completed | Better fleet and mobile plant management operations. Increase vehicle and mobile plant fuel use efficiency | N/A | Telemetry and GIS systems monitor vehicle efficiency and route optimisation. | | Completed | Increased Council vehicle and mobile plant fuel efficiency. |
| | **M11** | Investigate options for better travel planning amongst Derry City and Strabane District Council employees | Encourage walking and cycling among staff and uptake of sustainable modes of transport<br><br>Completion of Travel to Work Survey | DCSDC & Sustrans | Completed and Ongoing | Completed and Ongoing | Reduced vehicle pollution from staff travelling to / from and at work. Cost savings. Healthier workforce | As yet unknown | 5 new vehicles purchased through the Enterprise Car Club. Vehicles – 4 hybrid and 1 e-car for use by staff on council duties travelling from Council Offices in Derry and Strabane. Due to to the coronavirus (COVID-19) pandemic, vehicles not able to be shared.<br><br>Be Well- Group within Council promotes health and well-being through promotion of walking and cycling among staff.<br>Bike to work scheme (200 employees uptake )<br>Provision of cycling facilities<br>Active Travel Challenge encouraging staff to make more of their journeys by walking, cycling, running, using public transport and lift-sharing. | | Completed 2017 Ongoing | Promotes modal shift among staff and overcomes reluctance to give up car and safety concerns. Reduces car journeys. Improves health. |
| **To reduce air pollution from Derry City operations throughout the City** | **M12** | Adopt an environmentally friendly source of power for Council buildings | Power Council buildings with electricity generated from renewable sources | DCSDC | Completed | Completed | Percentage of electricity from renewables | N/A | All Council facilities are supplied by electricity from 100% renewable sources | Council has installed:<br>- 50Kw of solar panels on the roof of the Alley Theatre Strabane.<br>- 12Kw of solar PV on Derg Valley LC,<br>- 20Kw on Melvin | Complete | Promotion of renewable energy sources for the generation of electricity. |

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
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| | | | | | | | | | | Sports Complex,<br>- 12 Kw solar on Irish Street CC which is connected to 15Kw of battery storage<br>- 50Kw's of solar panels on the roof of the Recycling Centre on Strahan's Road.<br>- Plan to connect 15Kw of battery storage to Alley Theatre by Sept 22.<br>Council are also bidding for funding for supplying and installing 15 on-street EV charge points and DCSDC are also associate partners in the FASTER project where plans to install 2 rapid charge points within the council area are underway. | | |
| | **M13** | Employment of a Council Energy Manager | Assessment of Council energy needs and usage. Adopt recommendations made by the Energy Manager to ensure the minimisation of energy consumption and reduction of carbon emissions | DCSDC | Completed | Completed | Reduction in carbon emissions from Council facilities | N/A | 13% reduction in C02 emissions achieved between 2008 and 2010. Reduction of 28% by 2016. Council have pledged to reduce carbon to net zero by 2045 and is working with consultants to set incremental carbon reduction targets on a 5-year basis to be completed before September 2022. | Implemented | Ongoing | |
| | **M14** | Reduce Carbon Dioxide | Manage landfill gas production at Culmore landfill site. Explore the viability of using landfill gas produced at Culmore landfill site emissions. | DCSDC | Completed | Completed | Offsetting Council power requirements | N/A | Landfill Gas to be used to generate electricity to be used in Council facilities on-site with excess electricity sold to NI Water via a private wire arrangement. | Implemented | Complete | Elimination of flaring off of landfill gas from the landfill site |
| **To reduce air pollution through education and community initiatives** | **M15** | Managing bonfire sites | Establish a Council Policy on dealing with bonfires. Educate communities on the types of material that should be burned on bonfires and promote alternatives to bonfires. | DCSDC | Completed 2016/2017 | Ongoing | Reduction of pollution from bonfires. Reduction in the number and size of bonfires | N/A | Appointment of officer within Council to specifically engage on bonfire issues | Policy completed and officer appointed 2017 | Policy completed and officer appointed | Implementation of bonfire policy to consider alternatives to bonfires , better managed sites resulting in reduced emissions of pollutants from bonfires |

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
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| | | | | | | | | | | | | held in July (1day) and August (2days) . |
| | **M16** | Education initiatives, Develop an awareness of environmental issues amongst young people | Education campaign for young people highlighting the health and environmental problems associated with air pollution, via a targeted education programmed, which could be delivered online or through schools.eg Step-Up Programme, | DCSDC | Ongoing | Ongoing | Creation of sustainable attitudes to our environment among young people | N/A | Ongoing – develop an education programme for schools and communities | | Ongoing | Identify partners and funding opportunities in supporting such initiatives |
| | **M17** | Active and Sustainable Travel Initiatives | Derry City and Strabane District Council Active and Sustainable Transport Forum | DCSDC | Ongoing | Ongoing | Reduced peak hour congestion | N/A | Continue working partnerships with Sustrans to ensure that walking cycling initiatives are supported through the Derry City and Strabane District Council Active and Sustainable Transport Forum; Progress made notably in the development of urban greenway network in Council area | | Ongoing | Currently 80km of traffic free routes in Council area with a further 47.5km of traffic free greenways to be completed by the end of 2021 through cross border EU funding |
| | **M18** | Cycling Initiatives | Promote cycling among staff. Encourage Derry City and Strabane District Council employees to consider the use of bicycles in their daily duties. | DCSDC | Ongoing | | Health benefits. Reduced pollution from non-use of vehicles | N/A | Council promotes cycle to work scheme once a year among staff | | Scheme for 50 members to progress in summer 2012 Up to 2017 scheme utilised by 200 staff. Due to to the coronavirus (COVID-19) pandemic, measure not progressed in last 2-3 years | Promotes modal shift among staff reducing car journeys a |
| | **M19** | Improve information provision via electronic methods | Provide the public with air quality information through the Councils web site and links to the Northern Ireland air quality website (www.airqualityni.co.uk) | DCSDC | Completed | Completed | | N/A | Central Northern Ireland Environment Agency (NIEA) web-site up and running and containing Derry CC's LAQM Reports and all monitoring site data/pollutant monitoring | | Ongoing | Allows public to keep up to date on current local and provincial air quality issues. Website reviewed and updated |
| | **M20** | Vehicle emission tests | Consider the provision of free vehicle emissions testing for motorists and supporting information about responsible car ownership, highlight vehicle pollution issues, eco driving and alternatives to the motor car | DCSDC | To be considered as part of future action plan and | To be considered as part of future action plan | No of vehicles checked | N/A | No emissions testing due to lack of funds - grant bid not supported. To be reviewed as part of revised Action Plan. | | To be considered as part of future action plan | To be considered as part of future action plan |
| **To reduce air pollution through Statutory Functions** | **M21** | Development Control | Use Planning Process to ensure potential air quality issues are assessed. Comment upon planning applications to ensure that all relevant air quality issues are highlighted and mitigation measures are considered wherever possible | DCSDC | Completed | Ongoing | Sustainable development which considers environmental as well as socio-economic impact | N/A | Ongoing | | Ongoing | Increased capital cost of development. Perceived reduction in development opportunities |
| | **M22** | Sustainable Development | Sustainable policies | DCSDC | Ongoing | Ongoing | Incorporation of | N/A | Draft Regeneration Plan - One Plan now | | Ongoing | Development of sub- |

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | incorporated into Councils Local Development Plan and Community Plan and includes development and implementation of a revised sub-Regional Integrated Transport Strategy. Continue to comment on forthcoming development policies for DCSDC to ensure that sustainable development and air quality considerations are included. _ | | Consultation | | sustainable development in draft Local Development Plan and Community Plan | | replaced by Community Plan and Local Development Plan currently out for consultation | | | Regional Integrated Transport Strategy linked to the progression (2025) of a number of capital development projects such as an orbital route and third road bridge which will relieve congestion in AQMA's |
| | **M23** | Pollution Prevention Control | Permitting and inspection of industrial processes and installations under Part C of the Pollution Prevention and Control (Industrial Emissions) Regulations (NI) 2013 | DCSDC | Completed | Ongoing | Compliance with conditions and air pollutant emission limits within permit | N/A | Ongoing inspection programme based on risk assessment | | Ongoing | |
| | **M24** | Deal with burning of commercial and domestic waste | Take enforcement action under Clean Neighbourhoods and Environment Act (NI) 2011 | DCSDC | Completed | Ongoing | Reduced pollution from burning of commercial and domestic waste | N/A | Ongoing response to complaints | | Ongoing | |
| | **M25** | Recycling | Promoting domestic composting and use of Civic Amenity centres in a bid to reduce pollution from domestic garden bonfires | DCSDC | Completed | Ongoing | Reduced pollution from uncontrolled burning of commercial and domestic waste | N/A | Council's website updated with advice on recycling and composting | | Ongoing | |
| **To ensure Air Pollution is Monitored** | **M26** | Monitor ambient air quality throughout the City Council area. | Continue ambient air quality monitoring programmes | DCSDC | Completed | Ongoing | Decisions on future air quality policies based on accurate and ratified monitoring data. Identification of areas of poor air quality. | N/A | Ongoing | | Ongoing | Assessment of continuous $NO_2$ levels at Creggan Road |
| | **M27** | | Evaluate results from air quality monitoring against air quality objectives | | | | | N/A | Detailed Assessments, USA and Progress Reports undertaken | | | |
| | **M28** | | Install and maintain air quality equipment in areas of potential poor air quality | | | | | N/A | NO2 diffusion tube network maintained<br><br>NOx monitor previously installed at Creggan Road and subsequently decommissioned to facilitate domestic development.<br><br>Springhill Air Quality Monitoring Station maintained.<br><br>PM10 monitor installed at Strathfoyle. | | Ongoing<br><br>Aug 2016 | |
| | **M29** | | Continue to assist Governmental in the development and implementation of polices in relation to Air quality. | | | | | N/A | New NOx monitor to be installed at Dale's Corner AQMA (replacement of existing monitor)<br><br>New PM10+2.5 BAM units, new SO2, NO2 and Ozone analysers installed at | | February 2023<br><br>Throughout 2020 and 2021 | |

| Category | No. | Measure | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in AQMA | Progress to Date | Progress in last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Rosemount AURN site<br><br>New FIDAS analysers installed at Springhill Park, Strathfoyle and Newtownstewart air monitoring stations | | Late 2021 / early 2022 | |
| **Measures considered as part of the Further Assessments of Dale's Corner and Buncrana Road AQMAs** | **M30** | Realignment of the A2 Limavady Road away from nearest properties | Major works programme with land- owner compensated | DfI Roads) | Measure not feasible. | | | | | | | |
| | **M31** | Change in traffic lights sequence to allow more free-moving traffic on the A2 Limavady Road | Deter traffic crossing main through route to allow more traffic to more quickly traverse worst affected part of the AQMA | DfI Roads | Design options being investigated | Ongoing | Reduction in polluting emissions due to more vehicles moving through more quickly through junction | 5% to 10% of total $NO_2$ (2µg/$m^3$ to 6µg/$m^3$) | All traffic light sequencing adjusted to minimise congestion through AQMA's DfI Roads looking at traffic movement through junction as a result of proposed development | | Liaison with DfI Roads ongoing. Due to to the coronavirus (COVID-19) pandemic, measure not progressed | 2-3 years (2021). Works to junction may be development led |
| | **M32** | Implement restrictions on HGV traffic at Dale's Corner junction | Remove the worst polluting vehicles | DfI Roads | Measure previously not feasible. Consideration to be given to the feasibility of a Low Emissions Zone / Orbital route with 3rd road-bridge as part of Strategic Community Plan. Currently no alternative route until completion of 3rd Orbital route. LEZ may be explored as part of revised Action plan | | | | | | | |
| | **M33** | Implement restrictions on HGV traffic at Buncrana Road | Remove the worst polluting vehicles | DfI Roads | Measure previously not feasible. Consideration to be given to the feasibility of a Low Emissions Zone / Orbital route with 3rd road-bridge as part of the Strategic Community Plan. $NO_2$ diffusion tube results show NO2 compliance limits by 2018 (38ug/$m^3$) | | | | | | | |

# 14 Conclusions and Proposed Actions

## 14.1 Conclusions from New Monitoring Data

The Council has examined the results from monitoring in the district. There were no exceedances of any objectives outside the existing AQMA boundaries, or within the Spencer Road AQMA. In 2018, DCSDC revoked the Strabane, Newtownstewart and Castlederg AQMA's for particulates (PM10). The measures outlined in the former Action Plan for Strabane were realised and pollution levels reduced to well below health limit values. The Smoke Control Areas still remain. The Strand Road AQMA for nitrogen dioxide was revoked in 2018 and the Spencer Road AQMA was reduced in size to reflect updated monitoring and modelling results. It is again recommended that the Spencer Road AQMA be revoked due to continually reduced $NO_2$ concentrations. The remaining AQMAs are considered appropriate for the time-being.

## 14.2 Conclusions relating to New Local Developments

Having assessed the relevant planning applications in the Council district, it was concluded that they would have no significant negative impact on existing local air quality. In addition, no significant changes in local circumstances were identified within the Council district, which would require further assessment. It is therefore not considered necessary to proceed to a 'Detailed Assessment' for any of the new local developments or potential sources.

## 14.3 Other Conclusion

No significant changes in emissions sources within the Council area have been identified. No new developments have been identified which would significantly impact on air quality at relevant locations.

## 14.4 Proposed Actions

It is recommended that the AQMA at Spencer Road should be revoked. The remaining AQMAs are considered appropriate and should remain unchanged for the time-being.

The Council is currently in process of revising the Air Quality Action Plan to reflect the imminent Clean Air Stragegy for Nothern Ireland. The Action Plan shall contain measures to be introduced to work towards achieving air quality objectives within the remaining AQMAs and Particulater Matter reduction form different sources to improve health and wellbeing across the Council area.

# 15 References

Defra (2007*) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Defra.

Defra (2016) *Review & Assessment: Technical Guidance LAQM.TG16*, Defra.

Defra 'Workplace Analysis Scheme for Proficiency (WASP) NO2 diffusion tubes proficiency tests'. http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

Northern Ireland Air – Air Quality in Northern Ireland website http://www.airqualityni.co.uk/

The Environment (Northern Ireland) Order 2002, Statutory Instrument 3153 (2002), HMSO. 2. http://www.legislation.gov.uk/nisi/2002/3153/contents/made

# 16 Appendices

Appendix A: QA/QC Data

Appendix B: Air Quality Reports- Dale's Corner, Derry 2019,2020 and 2021

Appendix C: Air Quality Reports- Springhill Park, Strabane 2019,2020 and 2021

Appendix D: Air Quality reports – Strathfoyle, Derry 2020 and 2021

Appendix E: Air Quality report- Newtownstewart 2021

Appendix F: Derg Lesiure Centre Aeroqual Sensor Analyser report 2021/22

Appendix G: Calculations of Precision and Accuracy

Appendix I: Distance Correction for $NO_2$ diffusion tubes at Dale's Corner Roadside site

# Appendix A: QA/QC Data

## Diffusion Tube Bias Adjustment Factors

The diffusion tubes for 2021 were supplied and analysed by Socotec Didcot utilising the 50% triethanolamine (TEA) in acetone preparation method. Bias adjustment factors of 0.75, 0.83 and 0.78 for the years 2019, 2020 and 2021 respectively have been obtained from the national bias adjustment calculator.

## Factor from Local Co-location Studies (if available)

Two local co-location studies have been undertaken at the Rosemount AURN and Dale's Corner automatic sites. Local bias adjustment factors of 0.77, 0.76 and 0.88 have been calculated for the years 2019, 2020 2021 respectively, as shown in the table below.

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Rosemount AURN | 0.71 | 0.73 | 0.78 |
| Dale's Corner | 0.83 | 0.79 | 0.98 |
| Overall Factor [a] | 0.77 | 0.76 | 0.88 |

An example Diffusion Tube Co-location Data Questionnaire for Derry Rosemount for the latest year 2021 is shown below:

## Diffusion Tube Collocation Data Questionnaire For Local Authorities

**Please Read the "Notes" sheet and then fill in the white boxes of this questionnaire**
**Should you require assistance, email nick.martin@npl.co.uk or phone 020 8943 7088**

| | Date form filled in | Name of Local Authority | Your name | Phone number | Contact email |
|---|---|---|---|---|---|
| **Your Details** | 15/03/2022 | Derry City and Strabane District Council | Mark McChrystal | 2871 253 253 | info@derrystrabane.com |

| | Distance from kerb (m) | Site type (e.g. roadside, background). Definitions of site types are given on the "Notes" sheet | Distance from diffusion tube(s) to continuous analyser inlet (m) (this should be less than 1m from the analyser inlet) | Location (site name or a brief description) | Grid Reference of Site (if available) |
|---|---|---|---|---|---|
| **Site Details** | **55m** | Urban background | <1m | Derry Rosemount | 242962, 417217 |

| | Prepared by | Analysed by | Example results sheet attached? (please attach a results sheet provided by the analysis laboratory) | Preparation method (e.g. 50% TEA in acetone; 50% TEA in water) | How are diffusion tubes deployed? (e.g. with a clip, spacer, shelter box, just tape) |
|---|---|---|---|---|---|
| **Diffusion Tube Details** | Socotec Didcot | Socotec Didcot | Attached | 50% TEA in acetone | Clip spacer |

| | Analyser type | QA/QC (e.g. local or network) |
|---|---|---|
| **Continuous Analyser Details** | Chemiluminescent monitor | Network |

**Data from the Automatic Analyser (Matching Individual Diffusion Tube Periods)**

| Period | Start Date (dd/mm/yy) | End Date (dd/mm/yy) | % Data Capture | Ratified / Provisional | NOx (if available) (ug/m$^3$) | Nitrogen Dioxide (ug/m$^3$) |
|---|---|---|---|---|---|---|
| 1 | 04/01/2021 | 01/02/2021 | 100% | | | 14 |
| 2 | 01/02/2021 | 01/03/2021 | 100% | | | 10.75 |
| 3 | 01/03/2021 | 29/03/2021 | 100% | | | 7.65 |
| 4 | 29/03/2021 | 04/05/2021 | 99% | | | 9.66 |
| 5 | 04/05/2021 | 01/06/2021 | 97% | | | 7 |
| 6 | 01/06/2021 | 28/06/2021 | 100% | | | 4.84 |
| 7 | 28/06/2021 | 03/08/2021 | 100% | | | 5.76 |
| 8 | 03/08/2021 | 31/08/2021 | 97% | | | 6.16 |
| 9 | 31/08/2021 | 27/09/2021 | 100% | | | 9.65 |
| 10 | 27/09/2021 | 01/11/2021 | 100% | | | 7.3 |
| 11 | 01/11/2021 | 29/11/2021 | 100% | | | 7.98 |
| 12 | 29/11/2021 | 04/01/2022 | 100% | | | 13.3 |
| 13 | | | | | | 8.67 |

Please express NOx as $NO_2$ (e.g. ppb x 1.913) or alternatively note the approach / units here:

When you are identifying the automatic monitoring periods that match your diffusion tube exposure periods, please be as precise as possible. It is not, however, necessary to match start times to the exact hour that you put out your tubes.

**Individual Period (monthly) Mean Nitrogen Dioxide Data from the Diffusion Tubes (ug/m$^3$)**

| Period | | Tube 1 | Tube 2 (if available) | Tube 3 (if available) | Tube 4 (if available) |
|---|---|---|---|---|---|
| 1 | | 17 | 18.8 | 18.1 | 17.96 |
| 2 | | 15.3 | 13.6 | 12.2 | 13.7 |
| 3 | | 6.7 | 9.4 | 10.4 | 8.83 |
| 4 | | 10.8 | 10.9 | 11.3 | 11 |
| 5 | | 8.8 | 7.6 | 9.9 | 8.76 |
| 6 | | 5.8 | 7.2 | 7.8 | 6.93 |
| 7 | | 7.6 | 7.7 | 7.8 | 7.7 |
| 8 | | 7.8 | 9.1 | 9 | 8.63 |
| 9 | | 10.9 | 11.2 | 11.7 | 11.26 |
| 10 | | 9 | 10.2 | 9 | 9.4 |
| 11 | | 13.3 | 11 | 12 | 12.1 |
| 12 | | 17.9 | 18.1 | 15.9 | 17.3 |
| 13 | | | | | 11.13 |

| | Are the concentrations stated in ug/m$^3$? | Did the diffusion tube supply or analysis method change during the monitoring period? When, from what, to what? | Were there any significant problems with the continuous analyser during the monitoring period? | Are there any other relevant issues with your data? |
|---|---|---|---|---|
| **Other Information** | Yes | No | No | No |

**Please Return Completed Questionnaires to: nick.martin@npl.co.uk**
This questionaire is now maintained and distributed by the National Physical Laboratory on behalf of Defra and the DAs

## Discussion of Choice of Factor to Use

The Technical Guidance LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tubes. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data from NOx / NO2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias adjustment factors for the relevant laboratory and preparation method.

The local bias adjustment factor was used in this report as the Technical Guidance suggests this should be used unless there is a strong alternative argument for using the National Bias Adjustment factor.

## PM Monitoring Adjustment

No adjustment to the PM monitoring data was required.

## Short-term to Long-term Data Adjustment

There was no requirement to undertake this in the report.

## QA/QC of Automatic Monitoring

The Rosemount AURN site is managed to the UK Automatic Urban and Rural Network (AURN) QA procedures and standard. The National Physical Laboratory (NPL) undertook the Quality Assurance/Quality Control (QA/QC) procedures at the three non-AURN monitoring sites during 2019 -2021, ensuring that measurements from the analysers were as accurate as possible. Manual calibration of automatic monitors was undertaken every two weeks by the Council's officers. This allowed the instrument drifts to be fully quantified and documented using traceable calibration gas standards and the results are used to scale data. The analysers were checked and serviced every six months by the appointed equipment support contractors, EnviroTechnology. The reports were then sent to AQDM for data ratification.

# QA/QC of Diffusion Tube Monitoring

SOCOTEC, formerly ESG Didcot, has participated in the AIR NO2 PT scheme since it started in April 2014, and participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO2 diffusion tube analysis prior to this. These schemes provide strict performance criteria for participating laboratories to meet, thereby ensuring NO2 concentrations reported are of a high calibre. AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme. AIR offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in ambient indoor, stack and workplace air. One such sample is the AIR NO2 test sample type that is distributed to participants in a quarterly basis. AIR NO2 PT forms an integral part of the UK NO2 Network's QA/QC. The scores achieved by SOCOTEC are shown in Table A.2. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2.

Laboratory summary performance for AIR NO2 PT rounds AR0030, 31, 33, 34, 36, 37, 39, 40 and 42.

| **AIR PT Round** | **AIR PT AR030** | **AIR PT AR031** | **AIR PT AR033** | **AIR PT AR034** | **AIR PT AR036** | **AIR PT AR037** | **AIR PT AR039** | **AIR PT AR040** | **AIR PT AR042** |
|---|---|---|---|---|---|---|---|---|---|
| **Round conducted in the period** | January – February 2019 | April – May 2019 | July – August 2019 | September – November 2019 | January – February 2020 | May – June 2020 | July – August 2020 | September – October 2020 | January – March 2021 |
| SOCOTEC | 87.5 % [1] | 100 % [1] | 100 % [1] | 100 % [1] | 100 % [1] | NR [3] | NR [3] | 100 % [1] | 100 % [1] |

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.

# Precision versus Accuracy (Bias)

The spreadsheet of diffusion tube co-location results, used for calculating a national bias adjustment factor, also contains information on the precision of the diffusion tubes, in those cases where duplicate or triplicate tubes were exposed. At the request of a number of local authorities, the precision data for each laboratory have been brought together in a summary form.

Precision should not be confused with accuracy. Diffusion tube precision can be described as the ability of a measurement to be consistently reproduced, i.e., how similar the results of duplicate or triplicate tubes are to each other. Accuracy represents the ability of the measurement to represent the “true” value, which, in this case, is defined as the result from the automatic analyser. When averaged over a number of sets of results, bias can become evident. This represents the overall tendency of the diffusion tubes to depart from the “true” value, i.e., to systematically over- or under-read when compared against the reference method.

Once identified, bias can be adjusted for in order to improve the accuracy of diffusion tube results. This is completed using bias adjustment factors, which have been found to be specific to a laboratory and tube preparation method.

Unlike bias, poor precision cannot be adjusted for. It can only be improved by careful handling of the tubes in both the laboratory and the field.

### Precision Summary Table

| Diffusion Tube Preparation Method | 2019 Good | 2019 Bad | 2020 Good | 2020 Bad | 2021 Good | 2021 Bad |
|---|---|---|---|---|---|---|
| ESG Didcot / SOCOTEC, TEA in Acetone 50% | 40 | 1 | 24 | 0 | 22 | 3 |

The table above shows that there were very few bad results with the vast majority classified as “good.”

Full results can be found at

https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/

# Appendix B: Air Quality Report- Dale's Corner, Derry 2019,2020 & 2021

## DERRY DALE'S CORNER 2019

## Site Environment and Description

KERBSIDE: Corner of King Street and Melrose Terrace

## Statistical Summary Report

This 2019 report contains all the statistics required for the LAQM reporting. The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

## First table – Air Quality Statistics

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra on January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $NO_2$ | 0 hours | 0 | 0 |

**Data Captures**

The annual data captures are shown on the bottom line. These were above the 85% target.

## Second table – Air Quality Exceedences

***$NO_2$ – annual data capture was 97.0 %***

The annual mean was 33 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective. The maximum hourly mean was 159 µg $m^{-3}$ so there were no exceedences of the $NO_2$ hourly limit of 200 µg $m^{-3}$. There is an annual allowance of 18 hours so this Objective was not exceeded.

| Pollutant | $NO_2$ | NO | $NO_X$ |
|---|---|---|---|
| Number Very High # | 0 | - | - |
| Number High # | 0 | - | - |
| Number Moderate # | 0 | - | - |
| Number Low # | 8496 | - | - |
| Maximum 15-min mean | 176 µg $m^{-3}$ | 359 µg $m^{-3}$ | 700 µg $m^{-3}$ |
| Maximum hourly mean | 159 µg $m^{-3}$ | 435 µg $m^{-3}$ | 826 µg $m^{-3}$ |
| Maximum running 8-hr mean | 111 µg $m^{-3}$ | 218 µg $m^{-3}$ | 443 µg $m^{-3}$ |
| Maximum running 24-hr mean | 79 µg $m^{-3}$ | 123 µg $m^{-3}$ | 267 µg $m^{-3}$ |
| Maximum daily mean | 75 µg $m^{-3}$ | 111 µg $m^{-3}$ | 245 µg $m^{-3}$ |
| Average | 33 µg $m^{-3}$ | 27 µg $m^{-3}$ | 74 µg $m^{-3}$ |
| Data capture | 97.0 % | 97.0 % | 97.0 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
Mass units for the gases are at 20'C and 1013mb
$NO_X$ mass units are $NO_X$ as $NO_2$ µg $m^{-3}$

## Air Quality Exceedences

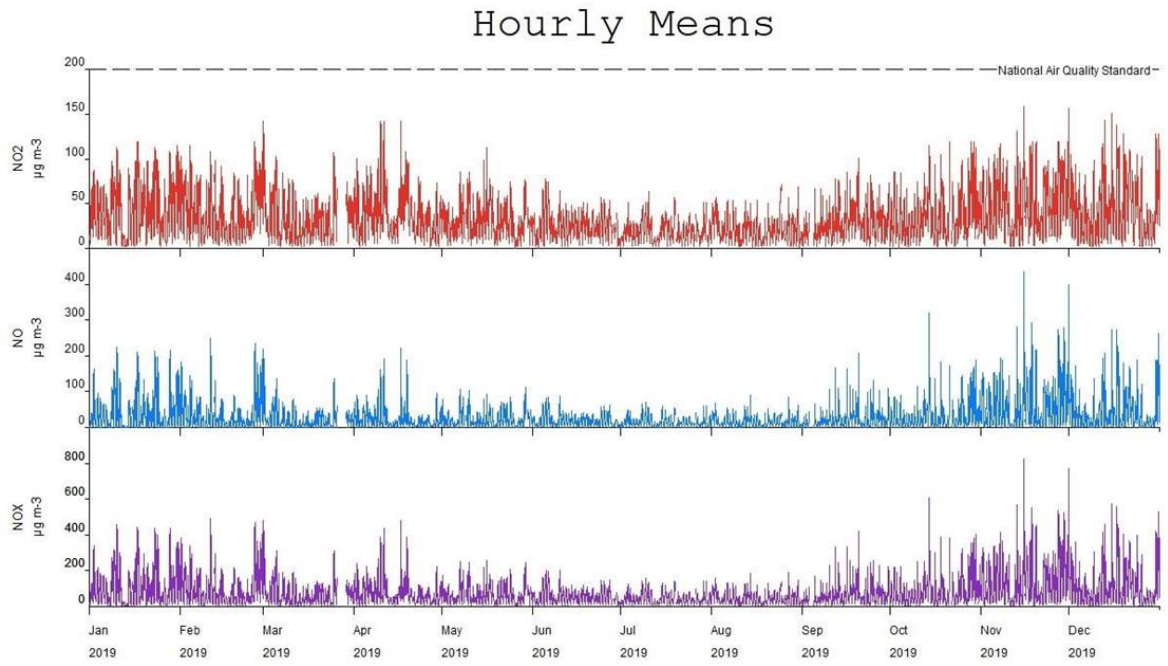
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 33 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 159 µg $m^{-3}$ | 0 | 0 | 18 hours | No |

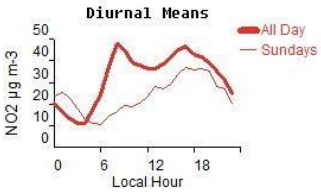
## Monthly Data Captures %

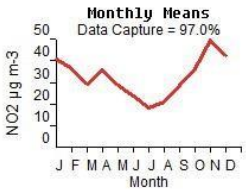
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide | 99.9 | 98.7 | 89.4 | 99.0 | 97.2 | 97.5 | 94.6 | 99.3 | 94.7 | 96.0 | 98.8 | 99.1 |

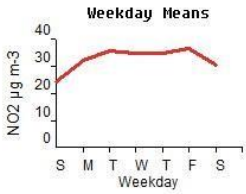
## Monthly Means

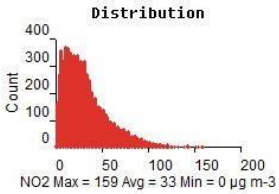
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide µg $m^{-3}$ | 40 | 36 | 29 | 36 | 28 | 24 | 18 | 21 | 29 | 36 | 50 | 42 |



Derry City and Strabane District Council

# DERRY DALE'S CORNER 2020

**These data have been fully ratified by AQDM to the LAQM (TG16) standards**

## Site Environment and Description

KERBSIDE: Corner of King Street and Melrose Terrace

## Statistical Summary Report

This 2020 report contains all the statistics required for the LAQM reporting.

## First table – Air Quality Statistics

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra in January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $NO_2$ | 0 hours | 0 | 0 |

**Data Captures**

The annual data captures are shown on the bottom line. These were above the 85% target.

## Second table – Air Quality Exceedences

***$NO_2$ – annual data capture was 98.7 %***

The annual mean was 27 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective. The maximum hourly mean was 126 µg $m^{-3}$ so there were no exceedences of the $NO_2$ hourly limit of 200 µg $m^{-3}$. There is an annual allowance of 18 hours so this Objective was not exceeded.

| Pollutant | $NO_2$ | NO | $NO_X$ |
|---|---|---|---|
| Number Very High # | 0 | - | - |
| Number High # | 0 | - | - |
| Number Moderate # | 0 | - | - |
| Number Low # | 8670 | - | - |
| Maximum 15-min mean | 164 µg $m^{-3}$ | 481 µg $m^{-3}$ | 876 µg $m^{-3}$ |
| Maximum hourly mean | 126 µg $m^{-3}$ | 399 µg $m^{-3}$ | 738 µg $m^{-3}$ |
| Maximum running 8-hr mean | 101 µg $m^{-3}$ | 262 µg $m^{-3}$ | 494 µg $m^{-3}$ |
| Maximum running 24-hr mean | 79 µg $m^{-3}$ | 149 µg $m^{-3}$ | 302 µg $m^{-3}$ |
| Maximum daily mean | 75 µg $m^{-3}$ | 145 µg $m^{-3}$ | 298 µg $m^{-3}$ |
| Average | 27 µg $m^{-3}$ | 20 µg $m^{-3}$ | 57 µg $m^{-3}$ |
| Data capture | 98.7 % | 98.7 % | 98.7 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
Mass units for the gases are at 20'C and 1013mb
$NO_X$ mass units are $NO_X$ as $NO_2$ µg $m^{-3}$

# Air Quality Exceedences

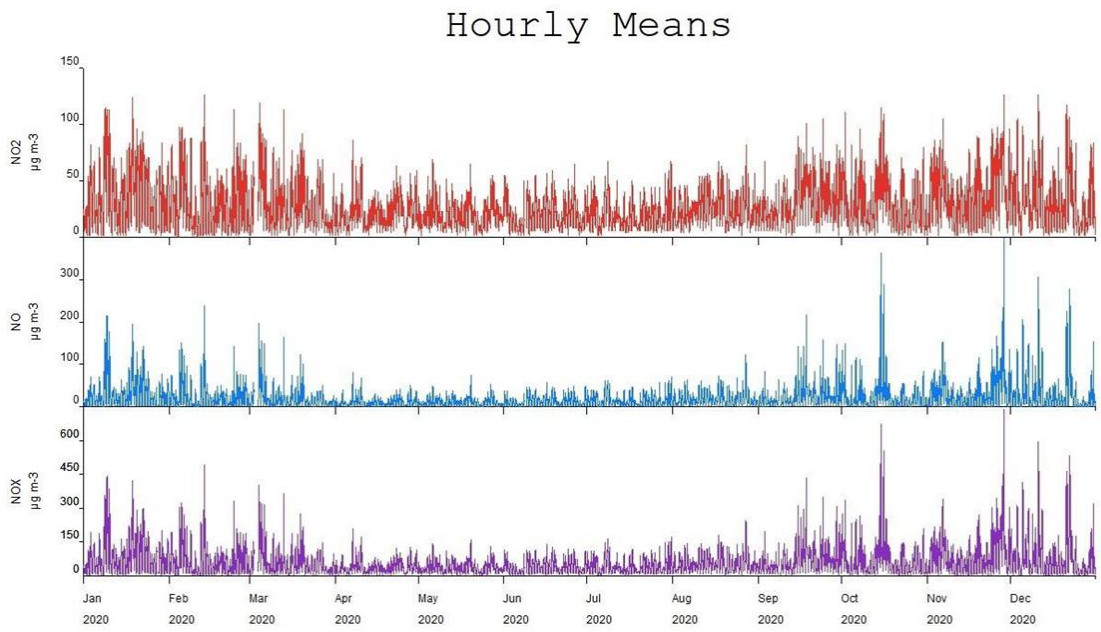
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 27 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 126 µg $m^{-3}$ | 0 | 0 | 18 hours | No |

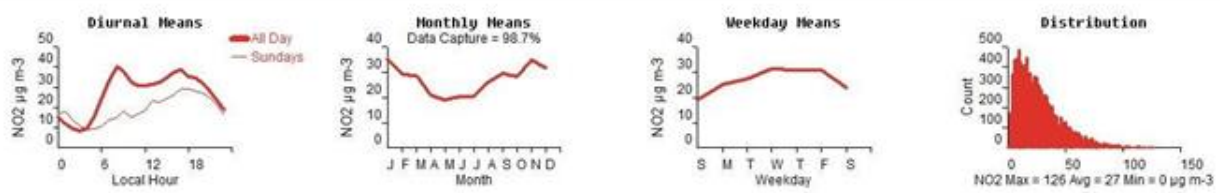
## Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide | 98.0 | 99.4 | 94.6 | 99.6 | 98.9 | 97.5 | 99.5 | 99.7 | 97.6 | 100.0 | 99.6 | 100.0 |

## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide µg $m^{-3}$ | 35 | 29 | 29 | 21 | 19 | 21 | 20 | 26 | 30 | 28 | 35 | 32 |



# DERRY DALE'S CORNER 2021

**Fully ratified by AQDM to the LAQM (TG16) standards using the AURN methodology**

## Site Environment and Description

KERBSIDE: Corner of King Street and Melrose Terrace

## Statistical Summary Report

This 2021 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

## Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI). The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Nitrogen Dioxide | 0 hours | 0 | 0 |

## Air Quality Exceedences of the AQS Objectives

**$NO_2$ - annual data capture was 96.5 %**

The annual mean was 30 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum hourly mean was 147 µg $m^{-3}$ so there were no exceedences of the $NO_2$ hourly limit of 200 µg $m^{-3}$. There is an annual allowance of 18 hours so the Objective was not exceeded.

# DERRY DALE'S CORNER 2021 Air Quality Statistics

| Pollutant | $NO_2$ | NO | $NO_X$ |
|---|---|---|---|
| Number Very High # | 0 | - | - |
| Number High # | 0 | - | - |
| Number Moderate # | 0 | - | - |
| Number Low # | 8456 | - | - |
| Maximum 15-min mean | 182 µg $m^{-3}$ | 586 µg $m^{-3}$ | 1061 µg $m^{-3}$ |
| Maximum hourly mean | 147 µg $m^{-3}$ | 446 µg $m^{-3}$ | 832 µg $m^{-3}$ |
| Maximum running 8-hr mean | 111 µg $m^{-3}$ | 293 µg $m^{-3}$ | 556 µg $m^{-3}$ |
| Maximum running 24-hr mean | 87 µg $m^{-3}$ | 187 µg $m^{-3}$ | 373 µg $m^{-3}$ |
| Maximum daily mean | 80 µg $m^{-3}$ | 176 µg $m^{-3}$ | 350 µg $m^{-3}$ |
| Average | 30 µg $m^{-3}$ | 22 µg $m^{-3}$ | 64 µg $m^{-3}$ |
| Data capture | 96.5 % | 96.5 % | 96.5 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
Mass units for the gases are at 20'C and 1013mb NOx mass units are NOx as $NO_2$ µg $m^{-3}$

## Air Quality Exceedences

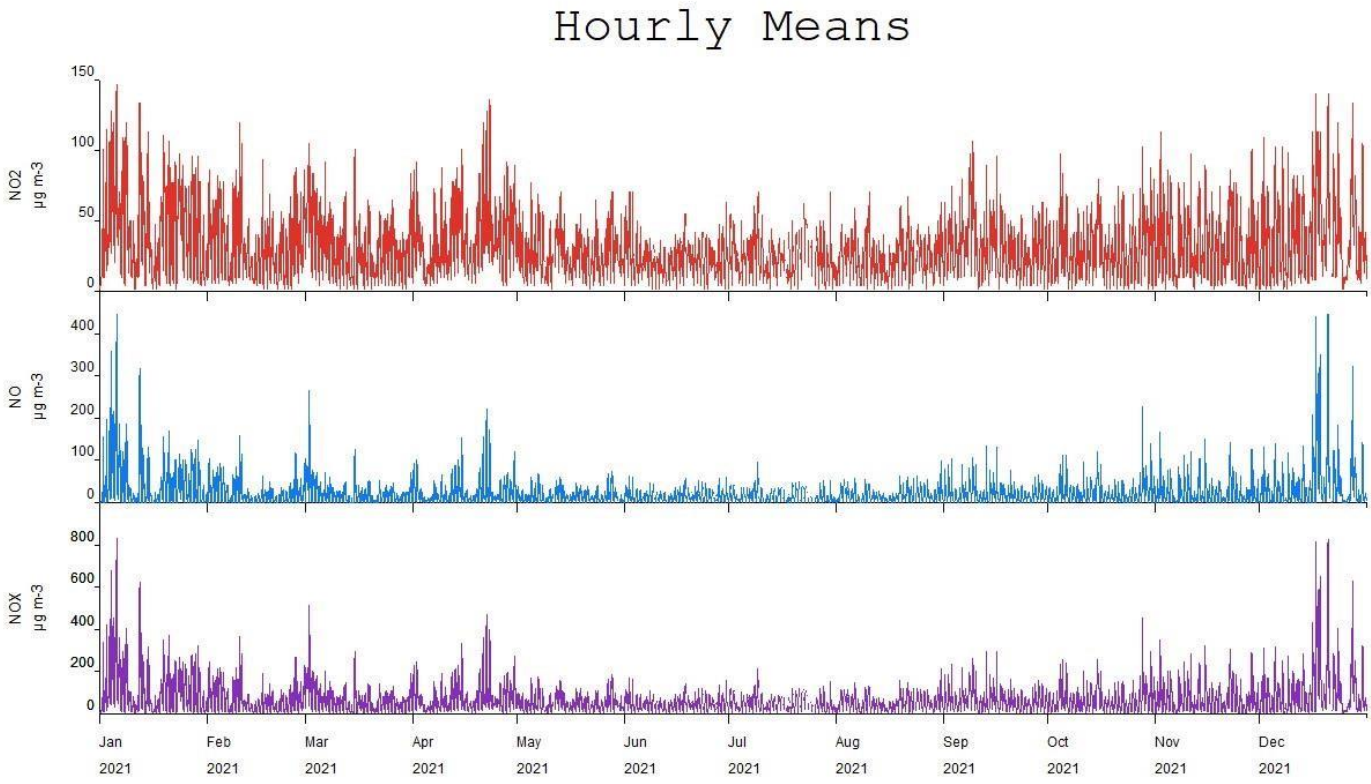
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 30 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 147 µg $m^{-3}$ | 0 | 0 | 18 hours | No |

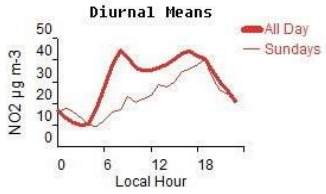
## Monthly Data Captures %

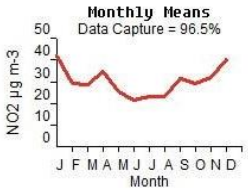
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide | 100.0 | 100.0 | 100.0 | 100.0 | 96.0 | 89.4 | 79.7 | 96.5 | 99.6 | 100.0 | 100.0 | 97.6 |

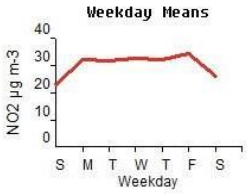
## Monthly Means

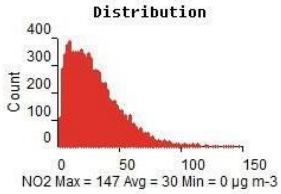
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide µg $m^{-3}$ | 42 | 29 | 28 | 35 | 25 | 22 | 23 | 23 | 31 | 30 | 32 | 40 |


Hourly Means
NO2 µg m-3
NO µg m-3
NOX µg m-3
Jan 2021
Feb 2021
Mar 2021
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021


Diurnal Means
All Day
Sundays
NO2 µg m-3
Local Hour


Monthly Means
Data Capture = 96.5%
NO2 µg m-3
J F M A M J J A S O N D
Month


Weekday Means
NO2 µg m-3
S M T W T F S
Weekday


Distribution
Count
NO2 Max = 147 Avg = 30 Min = 0 µg m-3

**Appendix C: Air Quality Report-Springhill Park, Strabane 2019, 2020 & 2021**

# Produced by AQDM on behalf of Strabane

# STRABANE SPRINGHILL PARK 2019

## Site Environment and Description

URBAN BACKGROUND: Springhill Park

## Statistical Summary Report

This 2019 report contains all the statistics required for the LAQM reporting. The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

### First table – Air Quality Statistics

The gravimetric $PM_{10}$ (BAM x 0.833) is shown in the 2nd column while the uncorrected BAM $PM_{10}$ is in the 3rd.

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra on January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Gravimetric $PM_{10}$ | 3 days | 0 | 0 |
| $SO_2$ | 0 15-minutes | 0 | 0 |

Gravimetric $PM_{10}$ was Moderate on 27th Feb, 18th 19th Apr with a daily mean reaching 72 µg $m^{-3}$.

**Data Captures**

The annual data captures are shown on the bottom line. These were above the 85% target.

### Second table – Air Quality Exceedences

***Gravimetric $PM_{10}$ – annual data capture was 97.2 %***

The maximum daily mean was 72 µg $m^{-3}$ so the daily mean limit value of 50 µg $m^{-3}$ was exceeded on 3 days. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 18 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

***$SO_2$ – annual data capture was 99.3%***

The maximum 15-minute mean was 72 µg $m^{-3}$ so the 266 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 35 15-minute means so the Objective was not exceeded.

The maximum hourly mean was 61 µg $m^{-3}$ so the 350 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 24 hours so the Objective was not exceeded.

The maximum daily mean was 11 µg $m^{-3}$ so the 125 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 3 days so the Objective was not exceeded.

The annual mean was 2 µg $m^{-3}$ which did not exceed the 20 µg $m^{-3}$ Objective.

| Pollutant | $PM_{10+}$ | $SO_2$ |
|---|---|---|
| Number Very High # | 0 | 0 |
| Number High # | 0 | 0 |
| Number Moderate # | 3 | 0 |
| Number Low # | 353 | 34250 |
| Maximum 15-min mean | - | 72 µg $m^{-3}$ |
| Maximum hourly mean | 146 µg $m^{-3}$ | 61 µg $m^{-3}$ |
| Maximum running 8-hr mean | 92 µg $m^{-3}$ | 29 µg $m^{-3}$ |
| Maximum running 24-hr mean | 78 µg $m^{-3}$ | 13 µg $m^{-3}$ |
| Maximum daily mean | 72 µg $m^{-3}$ | 11 µg $m^{-3}$ |
| Average | 18 µg $m^{-3}$ | 2 µg $m^{-3}$ |
| Data capture | 97.2 % | 99.3 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
+ $PM_{10}$ as measured by a BAM using 0.833 gravimetric factor for Indicative Gravimetric Equivalent
Mass units for the gases are at 20'C and 1013mb

## Air Quality Exceedences

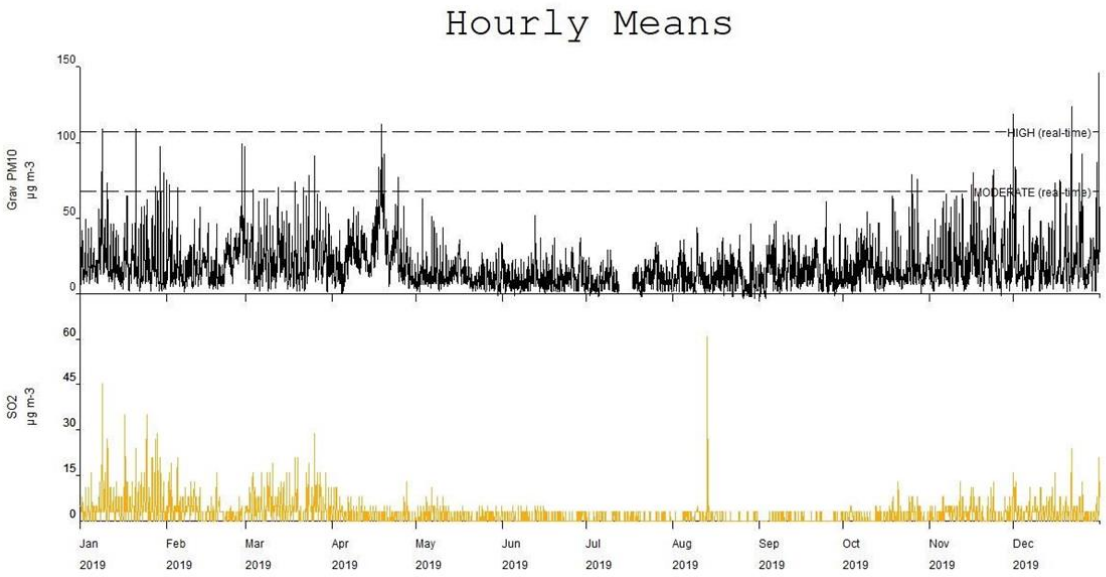
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 72 µg $m^{-3}$ | 3 | 3 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 18 µg $m^{-3}$ | 0 | - | - | No |
| Sulphur Dioxide | 15-minute mean > 266 µg $m^{-3}$ | 72 µg $m^{-3}$ | 0 | 0 | 35 15 mins | No |
| Sulphur Dioxide | Hourly mean > 350 µg $m^{-3}$ | 61 µg $m^{-3}$ | 0 | 0 | 24 hours | No |
| Sulphur Dioxide | Daily mean > 125 µg $m^{-3}$ | 11 µg $m^{-3}$ | 0 | 0 | 3 days | No |
| Sulphur Dioxide | Annual mean > 20 µg $m^{-3}$ | 2 µg $m^{-3}$ | 0 | - | - | No |

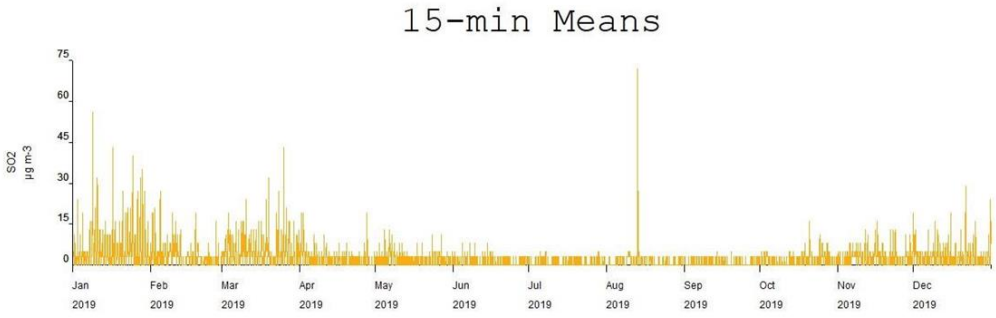
## Monthly Data Captures %

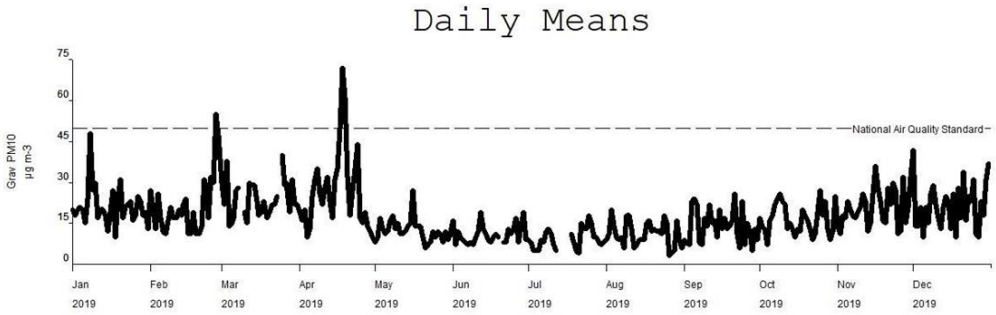
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ | 99.9 | 99.7 | 95.3 | 99.6 | 99.5 | 95.4 | 82.7 | 96.9 | 98.1 | 99.9 | 99.9 | 99.7 |
| Sulphur Dioxide | 99.7 | 99.4 | 97.2 | 99.7 | 99.9 | 99.7 | 99.5 | 98.1 | 99.3 | 99.6 | 99.7 | 99.6 |

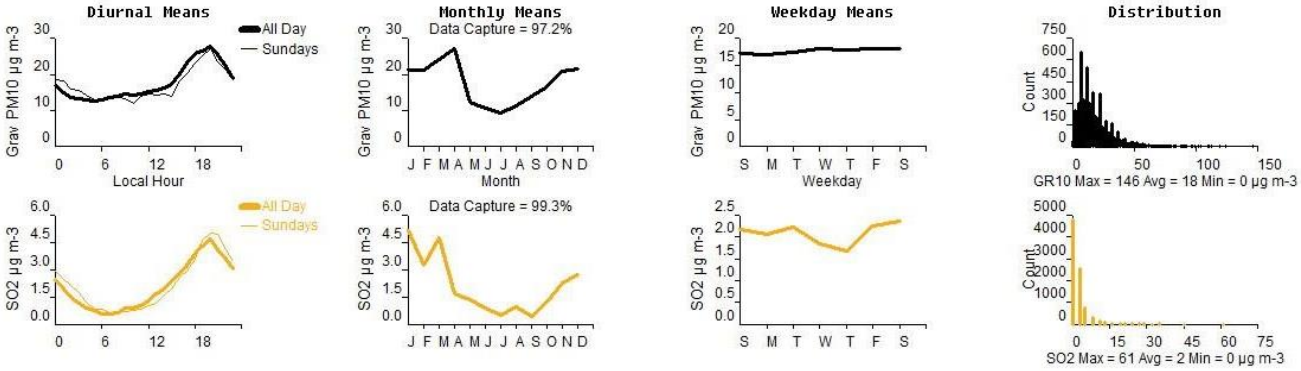
## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ µg $m^{-3}$ | 21 | 21 | 24 | 27 | 12 | 11 | 9 | 11 | 14 | 16 | 21 | 21 |
| Sulphur Dioxide µg $m^{-3}$ | 5 | 3 | 5 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 3 |




Diurnal Means
All Day
Sundays
Grav PM10 µg m-3
Local Hour
Monthly Means
Data Capture = 97.2%
Month
Weekday Means
Weekday
Distribution
Count
GR10 Max = 146 Avg = 18 Min = 0 µg m-3
SO2 µg m-3
Data Capture = 99.3%
SO2 Max = 61 Avg = 2 Min = 0 µg m-3

# STRABANE SPRINGHILL PARK 2020

**These data have been fully ratified by AQDM to the LAQM (TG16) standards**

## Site Environment and Description

URBAN BACKGROUND: Springhill Park

## Statistical Summary Report

This 2020 report contains all the statistics required for the LAQM reporting.

## First table – Air Quality Statistics

The gravimetric $PM_{10}$ (BAM x 0.833) is shown in the 2nd column while the uncorrected BAM $PM_{10}$ is in the 3rd.

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra in January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Gravimetric $PM_{10}$ | 1 day | 0 | 0 |
| $SO_2$ | 0 15-minutes | 0 | 0 |

Gravimetric $PM_{10}$ was Moderate on 28th Nov with a daily mean reaching 53 µg $m^{-3}$.

**Data Captures**

The annual data captures are shown on the bottom line. These were above the 85% target.

## Second table – Air Quality Exceedences

***Gravimetric $PM_{10}$ – annual data capture was 94.2 %***

The maximum daily mean was 53 µg $m^{-3}$ so the daily mean limit value of 50 µg $m^{-3}$ was exceeded on 1 day. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 15 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

***$SO_2$ – annual data capture was 98.7 %***

The maximum 15-minute mean was 40 µg $m^{-3}$ so the 266 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 35 15-minute means so the Objective was not exceeded.

The maximum hourly mean was 35 µg $m^{-3}$ so the 350 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 24 hours so the Objective was not exceeded.

The maximum daily mean was 16 µg $m^{-3}$ so the 125 µg $m^{-3}$ limit was not exceeded. There is an annual allowance of 3 days so the Objective was not exceeded.

The annual mean was 3 µg $m^{-3}$ which did not exceed the 20 µg $m^{-3}$ objective.

# STRABANE SPRINGHILL PARK 2020 Air Quality Statistics

| Pollutant | $PM_{10+}$ | $PM_{10}$* | $SO_2$ |
|---|---|---|---|
| Number Very High # | 0 | - | 0 |
| Number High # | 0 | - | 0 |
| Number Moderate # | 1 | - | 0 |
| Number Low # | 343 | - | 34307 |
| Maximum 15-min mean | - | - | 40 µg $m^{-3}$ |
| Maximum hourly mean | 154 µg $m^{-3}$ | 185 µg $m^{-3}$ | 35 µg $m^{-3}$ |
| Maximum running 8-hr mean | 104 µg $m^{-3}$ | 125 µg $m^{-3}$ | 25 µg $m^{-3}$ |
| Maximum running 24-hr mean | 65 µg $m^{-3}$ | 78 µg $m^{-3}$ | 16 µg $m^{-3}$ |
| Maximum daily mean | 53 µg $m^{-3}$ | 64 µg $m^{-3}$ | 16 µg $m^{-3}$ |
| Average | 15 µg $m^{-3}$ | 17 µg $m^{-3}$ | 3 µg $m^{-3}$ |
| Data capture | 94.2 % | 94.2 % | 98.7 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
+ $PM_{10}$ as measured by a BAM using 0.833 gravimetric factor for Indicative Gravimetric Equivalent
* $PM_{10}$ as measured by a BAM
Mass units for the gases are at 20'C and 1013mb

## Air Quality Exceedences

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 53 µg $m^{-3}$ | 1 | 1 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 15 µg $m^{-3}$ | 0 | - | - | No |
| Sulphur Dioxide | 15-minute mean > 266 µg $m^{-3}$ | 40 µg $m^{-3}$ | 0 | 0 | 35 15 mins | No |
| Sulphur Dioxide | Hourly mean > 350 µg $m^{-3}$ | 35 µg $m^{-3}$ | 0 | 0 | 24 hours | No |
| Sulphur Dioxide | Daily mean > 125 µg $m^{-3}$ | 16 µg $m^{-3}$ | 0 | 0 | 3 days | No |
| Sulphur Dioxide | Annual mean > 20 µg $m^{-3}$ | 3 µg $m^{-3}$ | 0 | - | - | No |

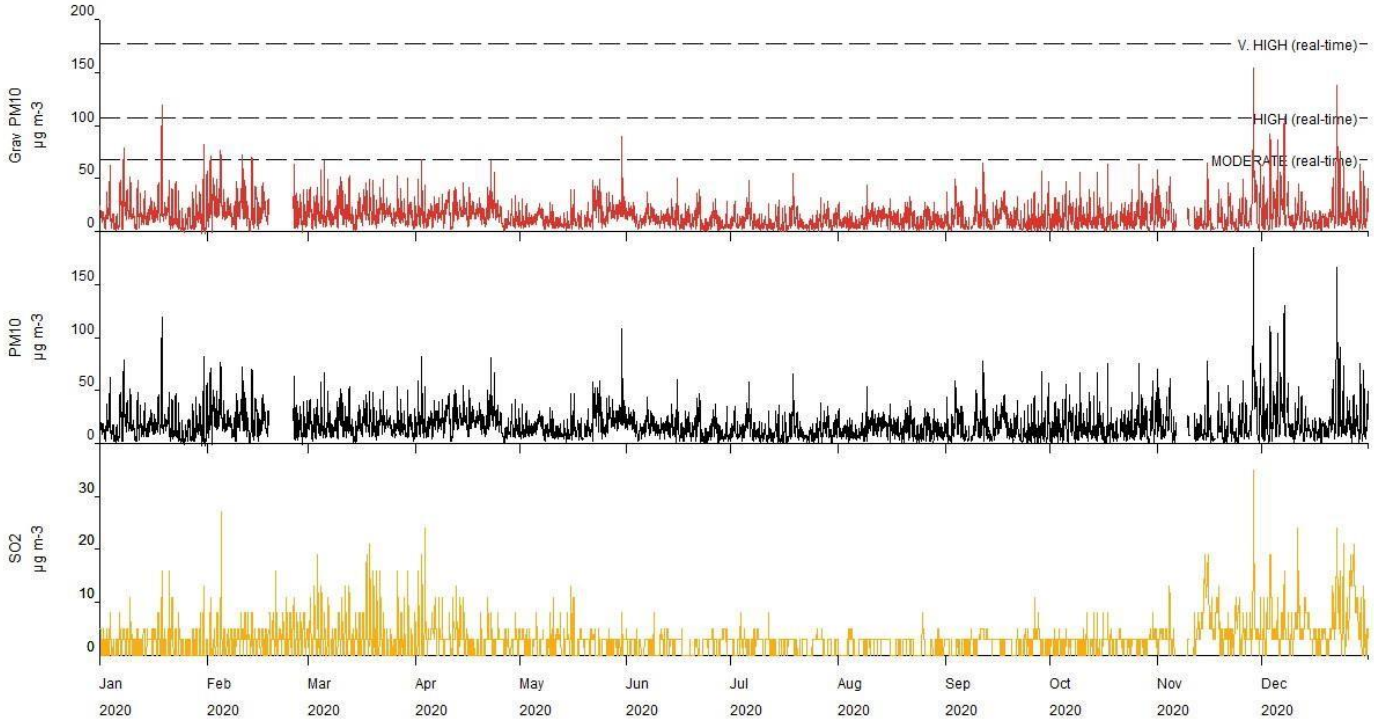
## Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM10 | 100.0 | 74.7 | 98.9 | 99.4 | 99.2 | 97.5 | 94.8 | 98.9 | 92.2 | 94.6 | 80.1 | 98.5 |
| Sulphur Dioxide | 99.2 | 99.6 | 99.7 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 86.5 | 100.0 |

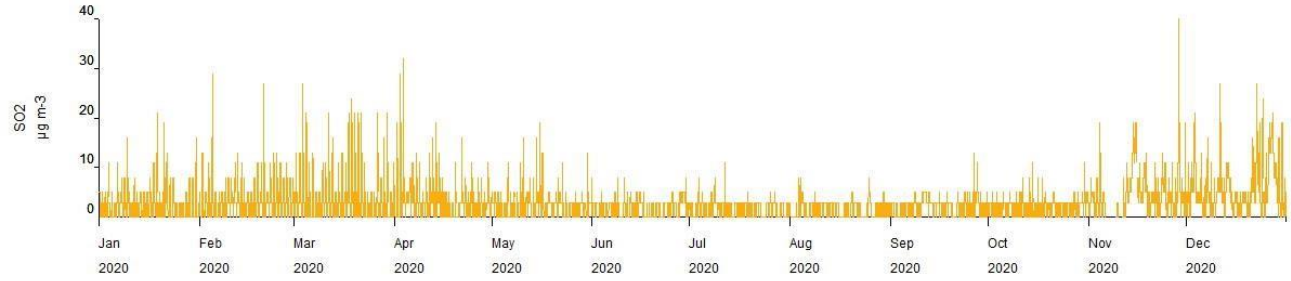
## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ µg $m^{-3}$ | 17 | 21 | 18 | 17 | 14 | 12 | 10 | 11 | 13 | 13 | 16 | 18 |
| Sulphur Dioxide µg $m^{-3}$ | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 6 |

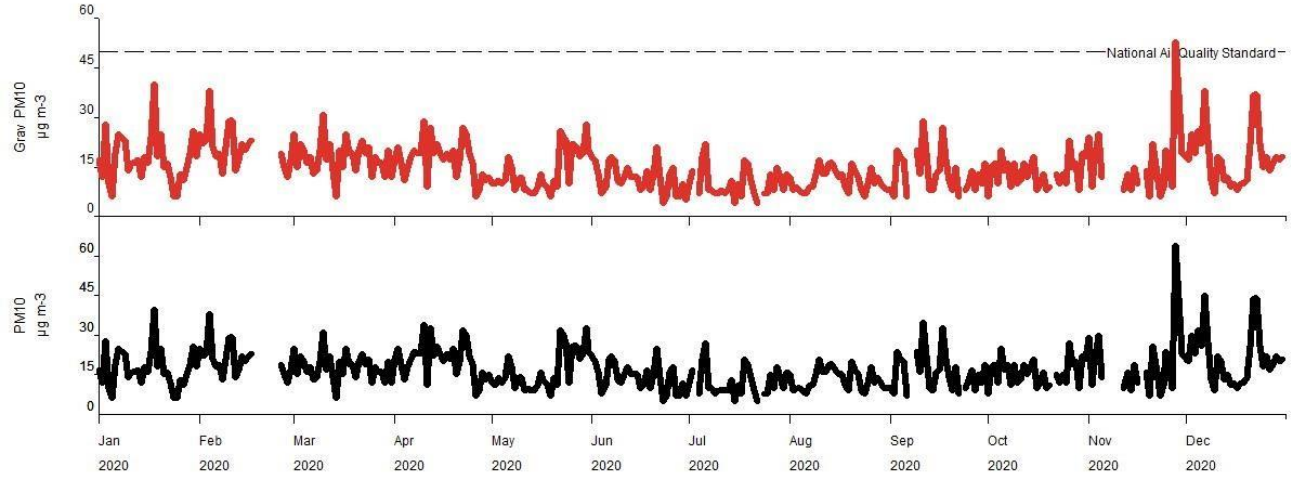
## Hourly Means

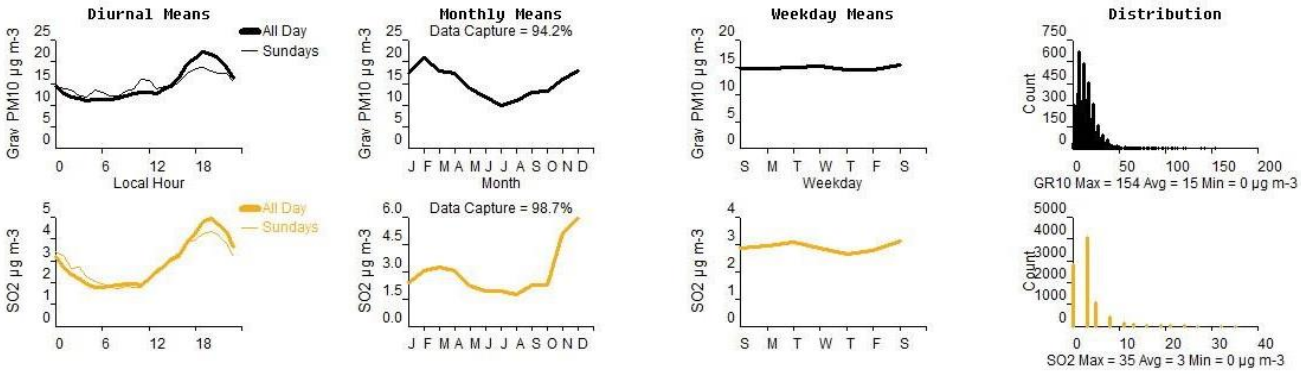



## 15-min Means




## Daily Means






# STRABANE SPRINGHILL PARK 2021

## Statistical Summary Report

This 2021 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

**Gravimetric $PM_{10}$**

The Gravimetric $PM_{10}$ is the BAM $PM_{10}$ x 0.833.

Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI). The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $PM_{10}$ Particulate Matter | 1 day | 1 | 0 |
| Sulphur Dioxide | 0 15-minutes | 0 | 0 |

Gravimetric $PM_{10}$ was Moderate on 9th Sept with a daily mean reaching 64 µg $m^{-3}$. Gravimetric $PM_{10}$ was High on 10th Sept with a daily mean reaching 81 µg $m^{-3}$.

## Air Quality Exceedences of the AQS Objectives

**Gravimetric $PM_{10}$ - annual data capture was 92.6 %**

The annual mean was 14 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum daily mean was 81 µg $m^{-3}$ so there were 2 exceedences of the $PM_{10}$ daily limit of 50 µg $m^{-3}$. There is an annual allowance of 35 days so the Objective was not exceeded.

**$SO_2$ - annual data capture was 93.0 %**

The maximum 15-minute mean was 32 µg $m^{-3}$ so there were no exceedences of the $SO_2$ 15-minute limit of 266 µg $m^{-3}$. There is an annual allowance of 35 15-minute means so the Objective was not exceeded.

The maximum hourly mean was 29 µg $m^{-3}$ so there were no exceedences of the $SO_2$ 1-hour limit of 350 µg $m^{-3}$. There is an annual allowance of 24 hours so the Objective was not exceeded.

The maximum daily mean was 12 µg $m^{-3}$ so there were no exceedences of the $SO_2$ daily limit of 125 µg $m^{-3}$. There is an annual allowance of 3 days so the Objective was not exceeded.

The annual mean was 3 µg $m^{-3}$ which did not exceed the 20 µg $m^{-3}$ Objective.

## Air Quality Statistics

| Pollutant | Grav $PM_{10+}$ | $SO_2$ |
|---|---|---|
| Number Very High # | 0 | 0 |
| Number High # | 1 | 0 |
| Number Moderate # | 1 | 0 |
| Number Low # | 332 | 32255 |
| Maximum 15-min mean | - | 32 µg $m^{-3}$ |
| Maximum hourly mean | 671 µg $m^{-3}$ | 29 µg $m^{-3}$ |
| Maximum running 8-hr mean | 204 µg $m^{-3}$ | 20 µg $m^{-3}$ |
| Maximum running 24-hr mean | 125 µg $m^{-3}$ | 14 µg $m^{-3}$ |
| Maximum daily mean | 81 µg $m^{-3}$ | 12 µg $m^{-3}$ |
| Average | 14 µg $m^{-3}$ | 3 µg $m^{-3}$ |
| Data capture | 92.6 % | 93.0 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
+ Grav $PM_{10}$ as measured by a BAM using 0.833 gravimetric factor for Indicative Gravimetric Equivalent  Mass units for the gases are at 20'C and 1013mb.

## Air Quality Exceedences

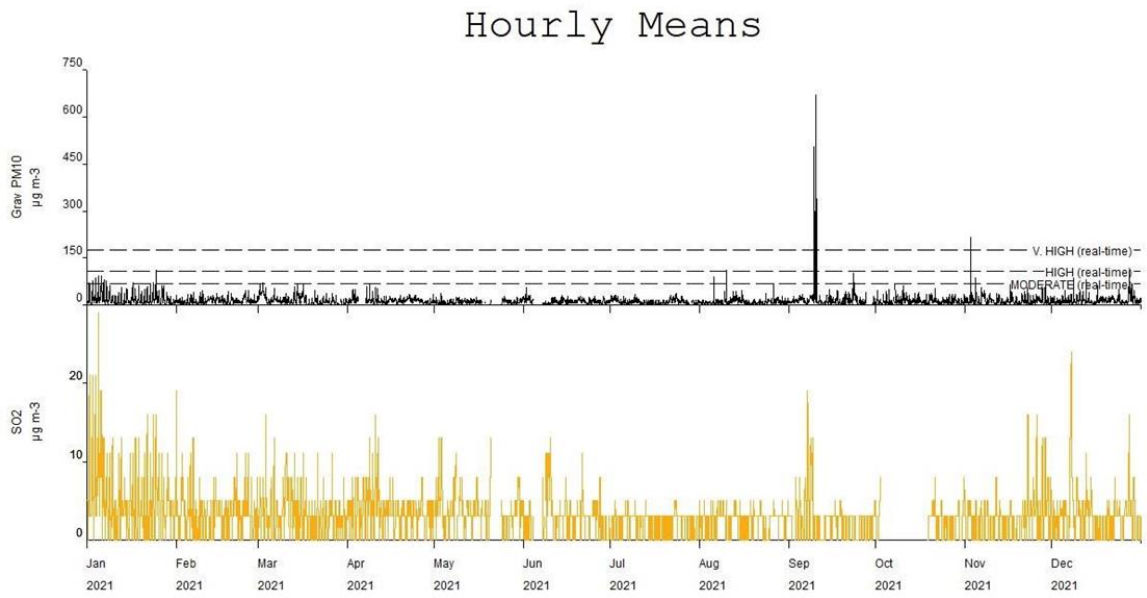
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 14 µg $m^{-3}$ | 0 | - | - | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 81 µg $m^{-3}$ | 2 | 2 | 35 days | No |
| Sulphur Dioxide | 15-minute mean > 266 µg $m^{-3}$ | 32 µg $m^{-3}$ | 0 | 0 | 35 15 mins | No |
| Sulphur Dioxide | Hourly mean > 350 µg $m^{-3}$ | 29 µg $m^{-3}$ | 0 | 0 | 24 hours | No |
| Sulphur Dioxide | Daily mean > 125 µg $m^{-3}$ | 12 µg $m^{-3}$ | 0 | 0 | 3 days | No |
| Sulphur Dioxide | Annual mean > 20 µg $m^{-3}$ | 3 µg $m^{-3}$ | 0 | - | - | No |

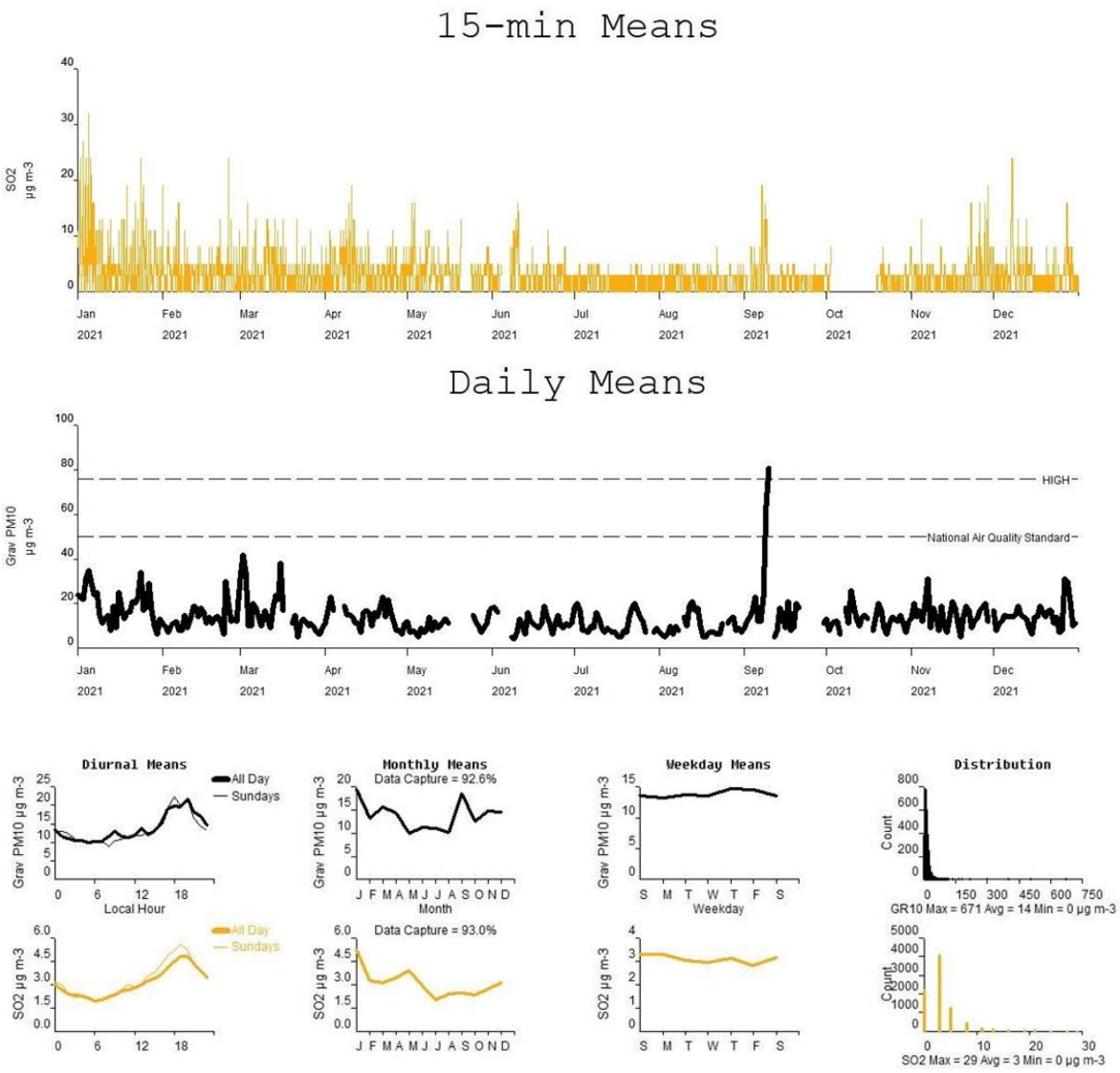
## Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ | 98.8 | 98.7 | 94.4 | 91.7 | 78.4 | 87.1 | 94.4 | 92.6 | 83.8 | 93.0 | 98.5 | 100.0 |
| Sulphur Dioxide | 99.9 | 99.9 | 99.2 | 100.0 | 85.5 | 88.3 | 99.9 | 99.7 | 97.2 | 48.1 | 100.0 | 100.0 |

## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ µg $m^{-3}$ | 19 | 13 | 16 | 14 | 10 | 11 | 11 | 10 | 19 | 13 | 15 | 14 |
| Sulphur Dioxide µg $m^{-3}$ | 5 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 |




15-min Means
SO2 µg m-3
Jan 2021
Feb 2021
Mar 2021
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Daily Means
Grav PM10 µg m-3
HIGH
National Air Quality Standard
Diurnal Means
All Day
Sundays
Local Hour
Monthly Means
Data Capture = 92.6%
Data Capture = 93.0%
Month
Weekday Means
Weekday
Distribution
GR10 Max = 671 Avg = 14 Min = 0 µg m-3
SO2 Max = 29 Avg = 3 Min = 0 µg m-3

# Appendix D: Air Quality reports – Strathfoyle, Derry 2019, 2020 and

## Site Environment and Description

URBAN BACKGROUND: 33 Bawnmore Place, Strathfoyle

## DERRY STRATHFOYLE BAWNMORE PLACE 2019

### Site Environment and Description

URBAN BACKGROUND: 33 Bawnmore Place, Strathfoyle
Statistical Summary Report

This 2019 report contains all the statistics required for the LAQM reporting. The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

The Volatile Correction Model (VCM) has been run on the TEOM data to calculate the EU Reference Equivalent PM10 required for the LAQM reports. This uses data from nearby FDMS instruments http://www.volatile-correction-model.info.

**First table – Air Quality Statistics**.
The TEOM gravimetric PM10 is shown in the 2nd column. The uncorrected TEOM PM10 is in the 3rd.

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra on January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Gravimetric PM10 | 1 day | 0 | 0 |

Gravimetric PM10 was Moderate on 28th Feb with a daily mean reaching 53 µg m-3 . Data Captures The annual data captures are shown on the bottom line. These were above the 85% target.

**Second table** – **Air Quality Exceedences Gravimetric PM10** – **annual data capture was 95.4 %** The maximum daily mean was 53 µg m-3 so the daily mean limit value of 50 µg m-3 was exceeded on 1 day. The annual allowance is 35 days so this Objective was not exceeded.
The annual mean was 14 µg m-3 which did not exceed the 40 µg m-3 Objective.

DERRY STRATHFOYLE BAWNMORE PLACE 2019 Air Quality Statistics

# Air Quality Statistics 2019 AQ Standards

| Pollutant | $PM_{10+}$ |
|---|---|
| Number Very High # | 0 |
| Number High # | 0 |
| Number Moderate # | 1 |
| Number Low # | 346 |
| Maximum hourly mean | 226 µg $m^{-3}$ |
| Maximum running 8-hr mean | 90 µg $m^{-3}$ |
| Maximum running 24-hr mean | 63 µg $m^{-3}$ |
| Maximum daily mean | 53 µg $m^{-3}$ |
| Average | 14 µg $m^{-3}$ |
| Data capture | 95.4 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013 + $PM_{10}$ as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent

# Air Quality Exceedences

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 53 µg $m^{-3}$ | 1 | 1 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 14 µg $m^{-3}$ | 0 | - | - | No |

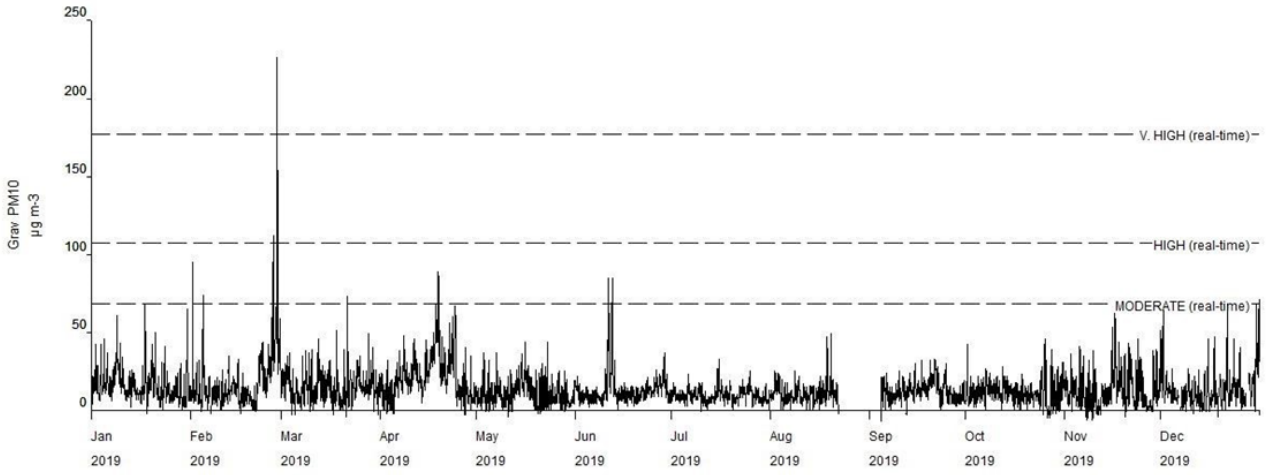
## Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ | 99.1 | 99.4 | 96.6 | 99.9 | 100.0 | 100.0 | 99.1 | 68.7 | 88.1 | 100.0 | 99.7 | 95.2 |

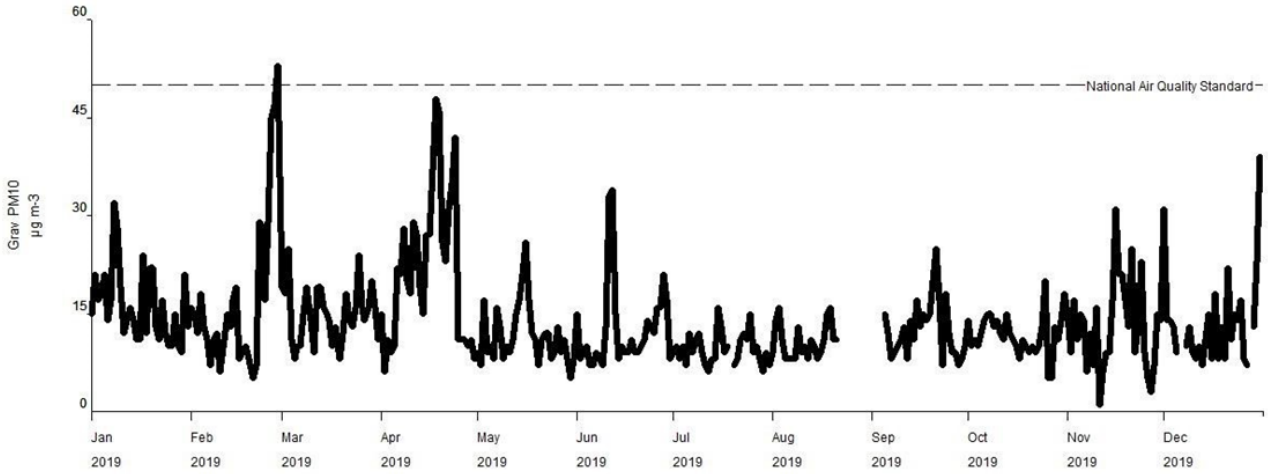
## Monthly Means

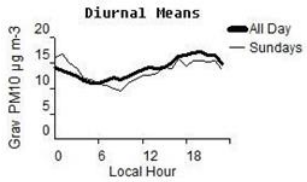
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ µg $m^{-3}$ | 16 | 17 | 15 | 22 | 12 | 13 | 9 | 11 | 12 | 12 | 13 | 14 |

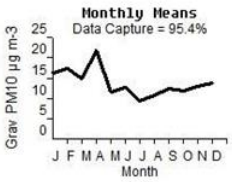
## Hourly Means

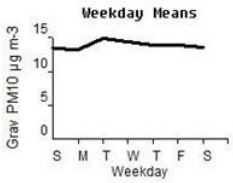


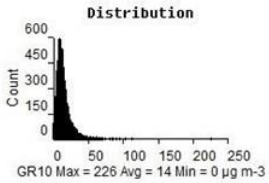

## Daily Means



# DERRY STRATHFOYLE BAWNMORE PLACE 2020

## Air Quality Statistics

| Pollutant | $PM_{10+}$ | $PM_{10}$* |
|---|---|---|
| Number Very High # | 0 | - |
| Number High # | 0 | - |
| Number Moderate # | 0 | - |
| Number Low # | 348 | - |
| Maximum 15-min mean | - | 744 µg $m^{-3}$ |
| Maximum hourly mean | 322 µg $m^{-3}$ | 316 µg $m^{-3}$ |
| Maximum running 8-hr mean | 64 µg $m^{-3}$ | 62 µg $m^{-3}$ |
| Maximum running 24-hr mean | 39 µg $m^{-3}$ | 31 µg $m^{-3}$ |
| Maximum daily mean | 37 µg $m^{-3}$ | 28 µg $m^{-3}$ |
| Average | 14 µg $m^{-3}$ | 13 µg $m^{-3}$ |
| Data capture | 94.2 % | 94.2 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
+ $PM_{10}$ as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent
* $PM_{10}$ as measured by a TEOM

## Air Quality Exceedences

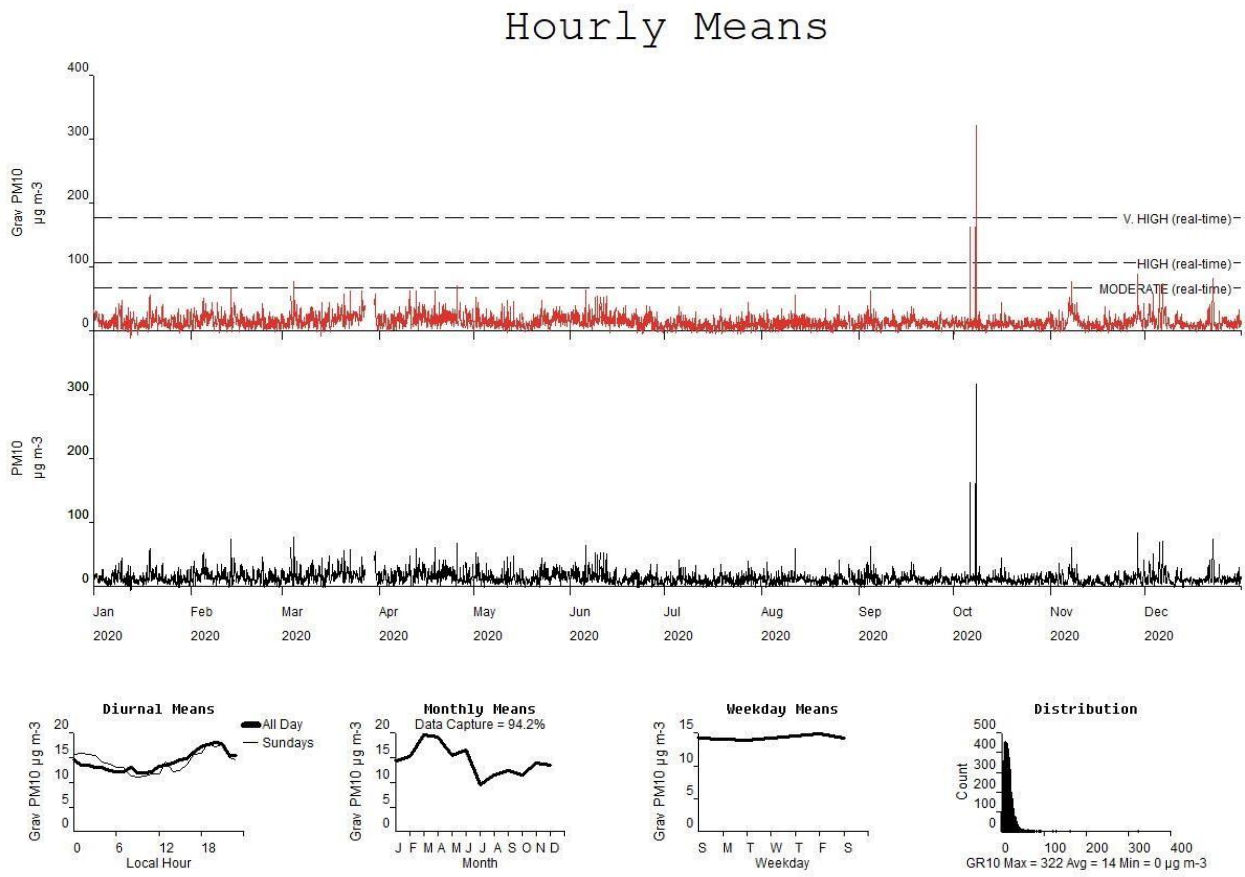
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 37 µg $m^{-3}$ | 0 | 0 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 14 µg $m^{-3}$ | 0 | - | - | No |

## Monthly Data Captures %

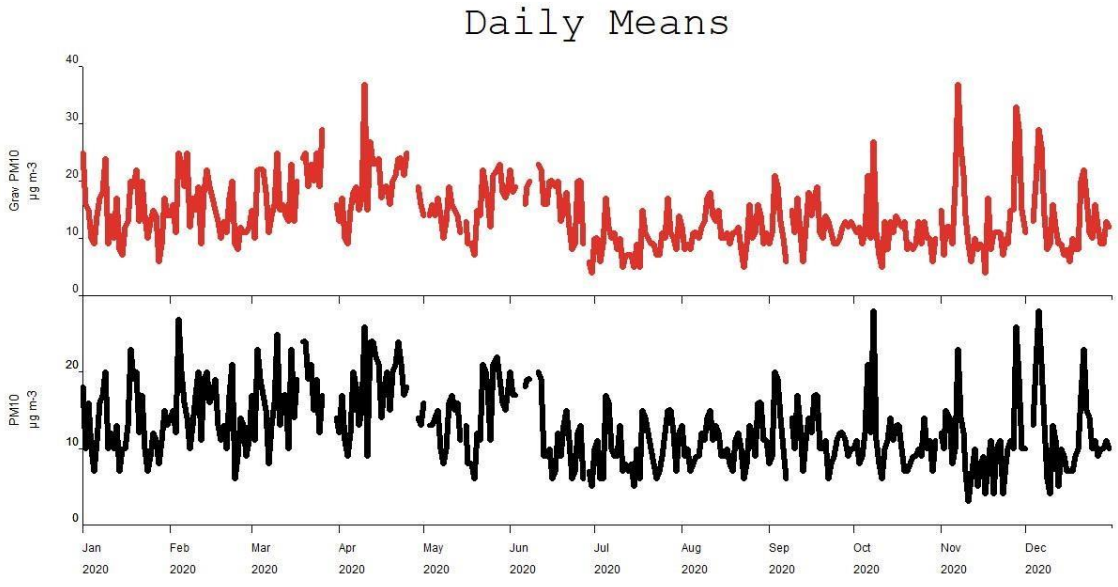
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ | 100.0 | 98.6 | 85.1 | 90.4 | 91.4 | 88.1 | 94.1 | 95.3 | 94.3 | 98.3 | 97.6 | 97.2 |

## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $PM_{10}$ µg $m^{-3}$ | 14 | 15 | 20 | 19 | 15 | 17 | 10 | 11 | 12 | 11 | 14 | 13 |




## Data Captures



The annual data captures are shown on the bottom line. These were above the 85% target.

### Second table – Air Quality Exceedences

***Gravimetric $PM_{10}$ – annual data capture was 94.2 %***

The maximum daily mean was 37 µg $m^{-3}$ so the daily mean limit value of 50 µg $m^{-3}$ was not exceeded. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 14 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

## 2021 DERRY STRATHFOYLE BAWNMORE PLACE

## Statistical Summary Report

**Fully ratified by AQDM to the LAQM (TG16) standards using the AURN methodology**

## Site Environment and Description

URBAN BACKGROUND: 33 Bawnmore Place, Strathfoyle

# Statistical Summary Report

This 2021 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

Gravimetric $PM_{10}$

The Gravimetric $PM_{10}$ is the TEOM $PM_{10}$ after running the Volatile Correction Model (VCM) to calculate the EU Reference Equivalent $PM_{10}$ required for the LAQM reports. This uses data from nearby FDMS instruments http://www.volatile-correction-model.info.

# Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI). The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $PM_{10}$ Particulate Matter | 0 days | 0 | 0 |

# Air Quality Exceedences of the AQS Objectives

**Gravimetric $PM_{10}$ - annual data capture was 90.7 %**
The annual mean was 15 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum daily mean was 42 µg $m^{-3}$ so there were no exceedences of the $PM_{10}$ daily limit of 50 µg $m^{-3}$. There is an annual allowance of 35 days so the Objective was not exceeded.

# Air Quality Statistics

| Pollutant | Grav $PM_{10+}$ |
|---|---|
| Number Very High # | 0 |
| Number High # | 0 |
| Number Moderate # | 0 |
| Number Low # | 337 |
| Maximum hourly mean | 656 µg $m^{-3}$ |
| Maximum running 8-hr mean | 105 µg $m^{-3}$ |
| Maximum running 24-hr mean | 57 µg $m^{-3}$ |
| Maximum daily mean | 42 µg $m^{-3}$ |
| Average | 15 µg $m^{-3}$ |
| Data capture | 90.7 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013 + Grav $PM_{10}$ as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent

# Air Quality Exceedences

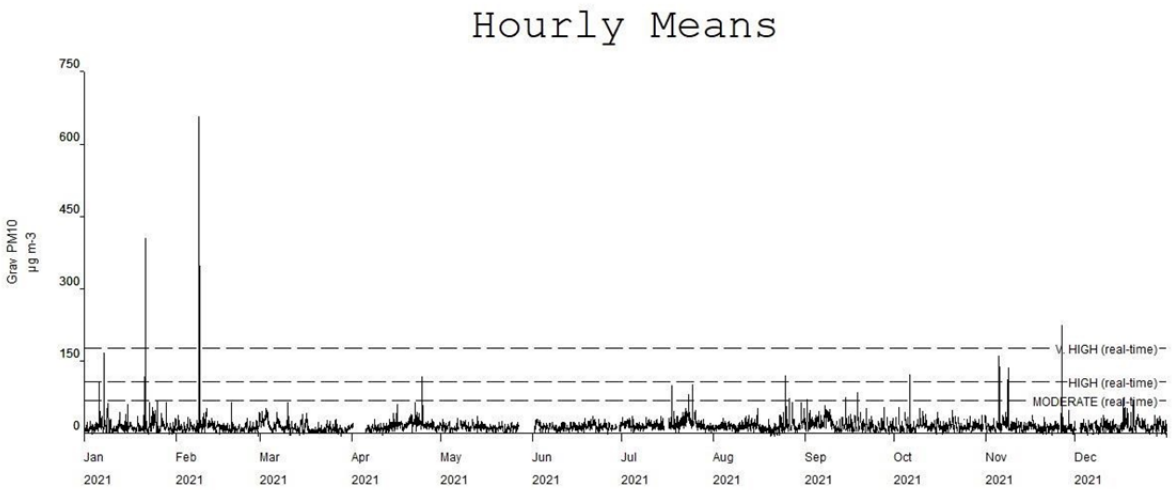
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 15 µg $m^{-3}$ | 0 | - | - | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 42 µg $m^{-3}$ | 0 | 0 | 35 days | No |

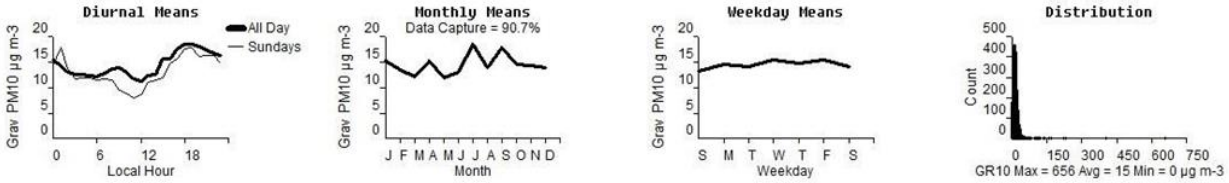
# Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ | 99.6 | 95.4 | 96.5 | 85.0 | 78.9 | 91.4 | 89.1 | 89.4 | 88.1 | 88.8 | 92.6 | 93.4 |

# Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ µg $m^{-3}$ | 15 | 13 | 12 | 15 | 12 | 13 | 18 | 14 | 18 | 15 | 14 | 14 |





Diurnal Means
All Day
Sundays
Grav PM10 µg m-3
Local Hour
Monthly Means
Data Capture = 90.7%
Grav PM10 µg m-3
J F M A M J J A S O N D
Month
Weekday Means
Grav PM10 µg m-3
S M T W T F S
Weekday
Distribution
Count
GR10 Max = 656 Avg = 15 Min = 0 µg m-3

# Appendix E: Air Quality reports - Newtownstewart 2021

## NEWTOWNSTEWART 2021

**Fully ratified by AQDM to the LAQM (TG16) standards using the AURN methodology**

**Site started 8th April 2021**

## Site Environment and Description

SUBURBAN: Behind Oldcastle Street and Dublin Street, Newtownstewart

## Statistical Summary Report

This 2021 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Northern Ireland website https://www.airqualityni.co.uk.

## Gravimetric $PM_{10}$

The Gravimetric $PM_{10}$ is the TEOM $PM_{10}$ after running the Volatile Correction Model (VCM) to calculate the EU Reference Equivalent $PM_{10}$ required for the LAQM reports. This uses data from nearby FDMS instruments http://www.volatile-correction-model.info.

## Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI). The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $PM_{10}$ Particulate Matter | 0 days | 0 | 0 |

# Air Quality Exceedences of the AQS Objectives

**Gravimetric $PM_{10}$ - annual data capture was 71.1 % and 96.9 % for the monitored period.** The annual mean was 13 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum daily mean was 34 µg $m^{-3}$ so there were no exceedences of the $PM_{10}$ daily limit of 50 µg $m^{-3}$. There is an annual allowance of 35 days so the Objective was not exceeded.

# Air Quality Statistics

| Pollutant | Grav $PM_{10+}$ |
|---|---|
| Number Very High # | 0 |
| Number High # | 0 |
| Number Moderate # | 0 |
| Number Low # | 263 |
| Maximum hourly mean | 95 µg $m^{-3}$ |
| Maximum running 8-hr mean | 39 µg $m^{-3}$ |
| Maximum running 24-hr mean | 35 µg $m^{-3}$ |
| Maximum daily mean | 34 µg $m^{-3}$ |
| 90.4th percentile of daily means† | 19 µg $m^{-3}$ |
| 90th percentile of daily means† | 18 µg $m^{-3}$ |
| 98.1st percentile of daily means† | 23 µg $m^{-3}$ |
| Average | 13 µg $m^{-3}$ |
| Data capture | 71.1 % |
| *Data capture from 8th April* | *96.9 %* |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
† Percentile required for annual data capture < 85%
+ Grav $PM_{10}$ as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent

# Air Quality Exceedences

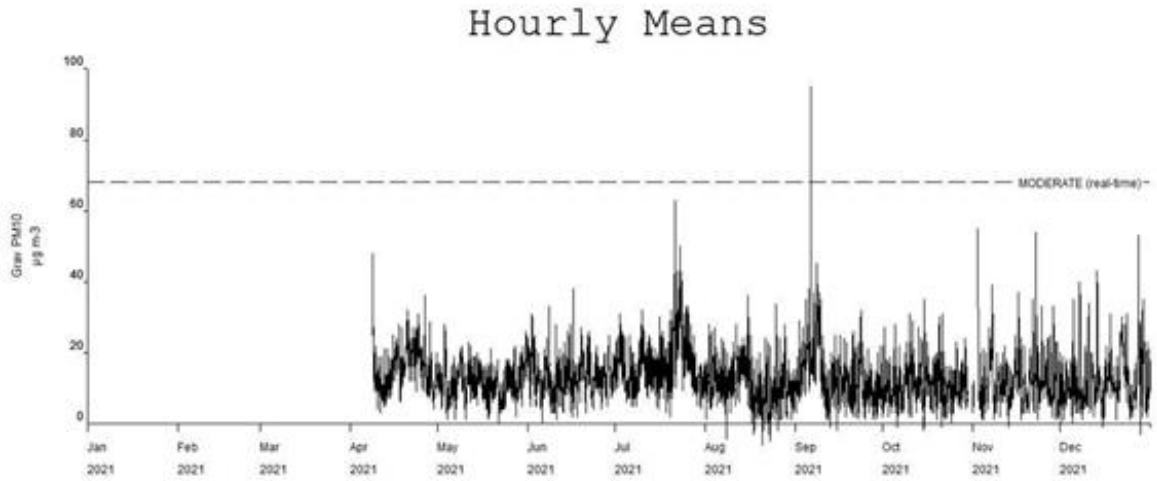
| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 13 µg $m^{-3}$ | 0 | - | - | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 34 µg $m^{-3}$ | 0 | 0 | 35 days | No |

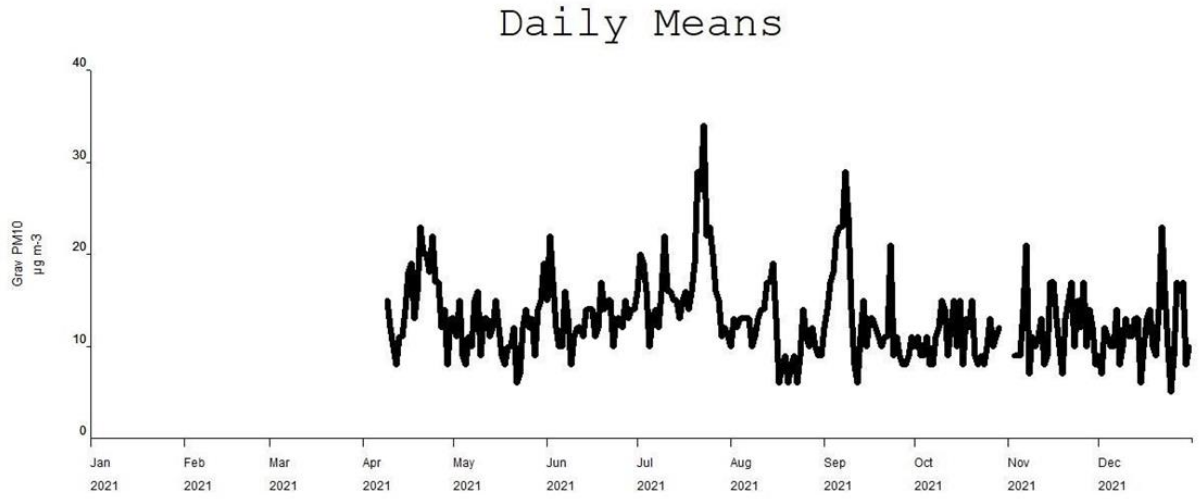
## Monthly Data Captures %

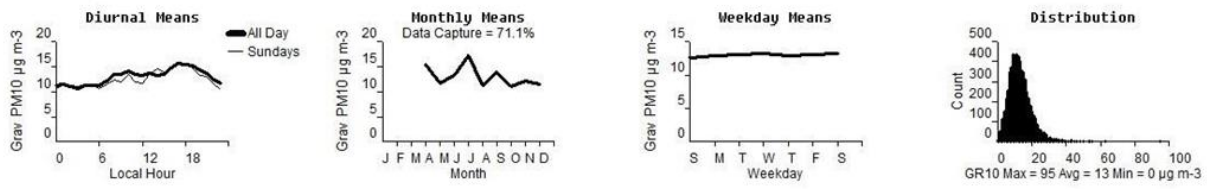
| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ | 0.0 | 0.0 | 0.0 | 73.8 | 98.9 | 98.8 | 96.5 | 96.8 | 97.6 | 92.1 | 95.4 | 99.3 |

## Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grav $PM_{10}$ µg $m^{-3}$ | - | - | - | 15 | 12 | 13 | 17 | 11 | 14 | 11 | 12 | 12 |



# Appendix F: Derg Lesiure Centre Aeroqual Sensor

# Analyser report March 2021 – April 2022

The measurements from the Derg Leisure Centre AQY monitoring sites are completed for 22nd March 2021 to 3rd April 2022. The data are not ratified like the automatic instruments since there are no calibrations. The obvious glitches have been removed although there may be some suspect periods remaining.

This report summarises the individual Statistical Reports and includes network comparison plots. The results should be treated as indicative. AQY measurements are not normally reported in the ASR.

## Site Environment and Description

| Station | Site Environment and Description |
|---|---|
| Derg Leisure Centre | URBAN BACKGROUND: AQY at Derg Valley Leisure Centre, Strabane Road, Derry<br>**Map** **Photo** |

## Spreadsheets

The spreadsheets contain the full monthly, daily, hourly and 15-minute mean datasets for 22nd March 2021 to 3rd April 2022. These spreadsheets can act as a historical record of the measurements.

## LAQM Statistics

Here are the LAQM statistics for the ASR. Concentrations are calculated to the number of decimal places consistent with the measurement technique and are reported to one decimal place.

Data captures in brackets are for the monitored period if less than the full period.

## Nitrogen Dioxide $NO_2$

The $NO_2$ annual mean and hourly mean Objectives were not exceeded.

The $NO_2$ annual means and annual data captures are shown below. The AQS annual mean Objective is 40 µg $m^{-3}$ and the annual data capture target is 85%.

| Station | Data Capture % | Mean µg $m^{-3}$ | Objective Exceeded |
|---|---|---|---|
| Derg Leisure Centre | 69.5 | 20.0 | No |

The $NO_2$ hourly mean AQS Objective is 200 µg $m^{-3}$. The number of exceedences are shown below. There is an annual allowance of 18 hours.

| Station | Number of Hourly Means > 200 µg $m^{-3}$ | Objective Exceeded |
|---|---|---|
| Derg Leisure Centre | 0 | No |

## $PM_{10}$

The gravimetric $PM_{10}$ annual mean and daily mean Objectives were not exceeded.

The gravimetric $PM_{10}$ annual means and annual data captures are shown below. The annual mean AQS Objective is 40 µg $m^{-3}$ and the annual data capture target is 85%.

| Station | Data Capture % | Mean µg $m^{-3}$ | Objective Exceeded |
|---|---|---|---|
| Derg Leisure Centre | 69.8 | 19.0 | No |

The gravimetric $PM_{10}$ daily mean AQS Objective is 50 µg $m^{-3}$. The number of exceedences are shown below. There is an annual allowance of 35 days.

| Station | Number of Daily Means > 50 µg $m^{-3}$ | Objective Exceeded |
|---|---|---|
| Derg Leisure Centre | 6 | No |

## $PM_{2.5}$

The gravimetric $PM_{2.5}$ annual means and annual data captures are shown below. The annual data capture target is 85%.

There should be a 15% cut in urban background exposure (annual mean) for all Local Authorities from 2010 to 2020.

| Station | Data Capture % | Mean µg $m^{-3}$ |
|---|---|---|
| Derg Leisure Centre | 69.8 | 7.0 |

## Ozone

The AQS Objective for Ozone is based on the daily maximum running 8-hour mean. The limit is 100 µg $m^{-3}$ and there is an annual allowance of 10 days.

The Ozone standard is not set in regulations.

| Station | Data Capture % | Number of Daily Max Running 8-Hour > 100 µg $m^{-3}$ | Objective Exceeded |
|---|---|---|---|
| Derg Leisure Centre | 69.8 | 10 | No |

# Daily Air Quality Index

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra in January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| $NO_2$ | 0 hours | 0 | 0 |
| Gravimetric $PM_{10}$ | 5 days | 0 | 1 day |
| Gravimetric $PM_{2.5}$ | 1 days | 0 | 0 |
| Ozone | 52 hours | 0 | 0 |

## Derg Leisure Centre

Gravimetric $PM_{10}$ was Moderate on 18th 28th Dec, 10th 28th 29th Mar with a daily mean reaching 74 µg $m^{-3}$.

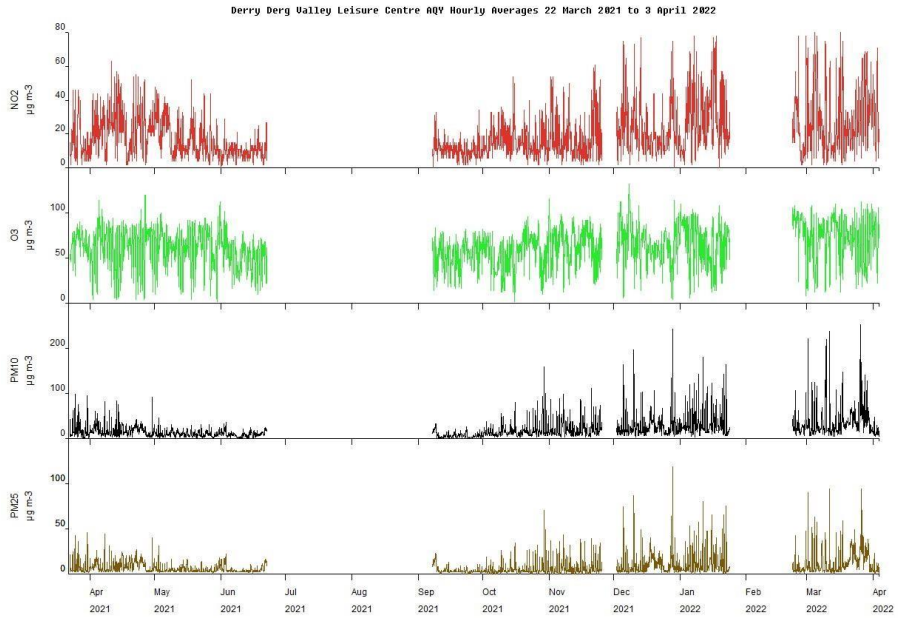
Gravimetric $PM_{10}$ was Very High on 26th Mar with a daily mean reaching 112 µg $m^{-3}$.

Gravimetric $PM_{2.5}$ was Moderate on 26th Mar with a daily mean reaching 38 µg $m^{-3}$.

Ozone was Moderate on 26th Apr, 31st May, 1st Nov, 4th 8th 9th Dec, 1st Jan, 23rd Feb, 14th 31st Mar with a running 8-hour mean reaching 127 µg $m^{-3}$.

## Timeseries Plots

These timeseries plots show the hourly mean measurements at the monitoring stations.



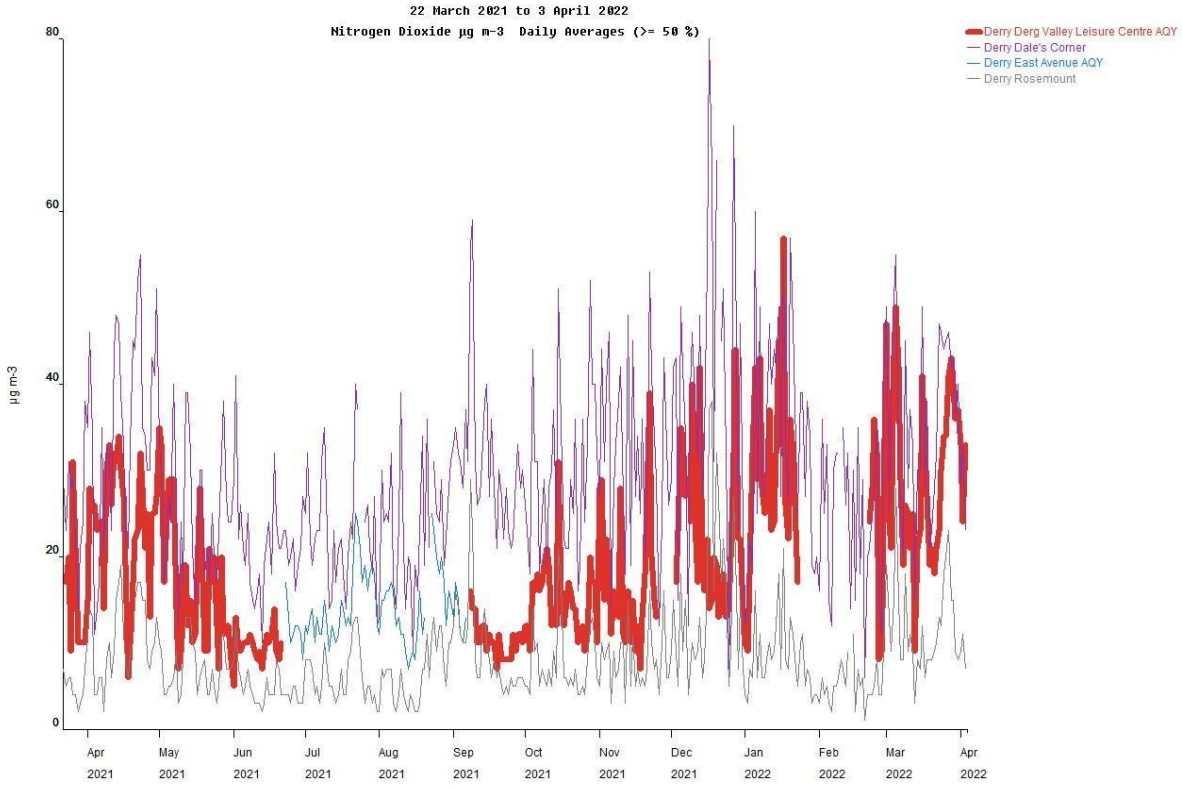

**Hourly Means**

# Timeseries Comparison Plots

These timeseries plots compare the measurements with the provisional data from nearby AURN sites. Measurements from individual stations should never viewed in isolation.

## $NO_2$

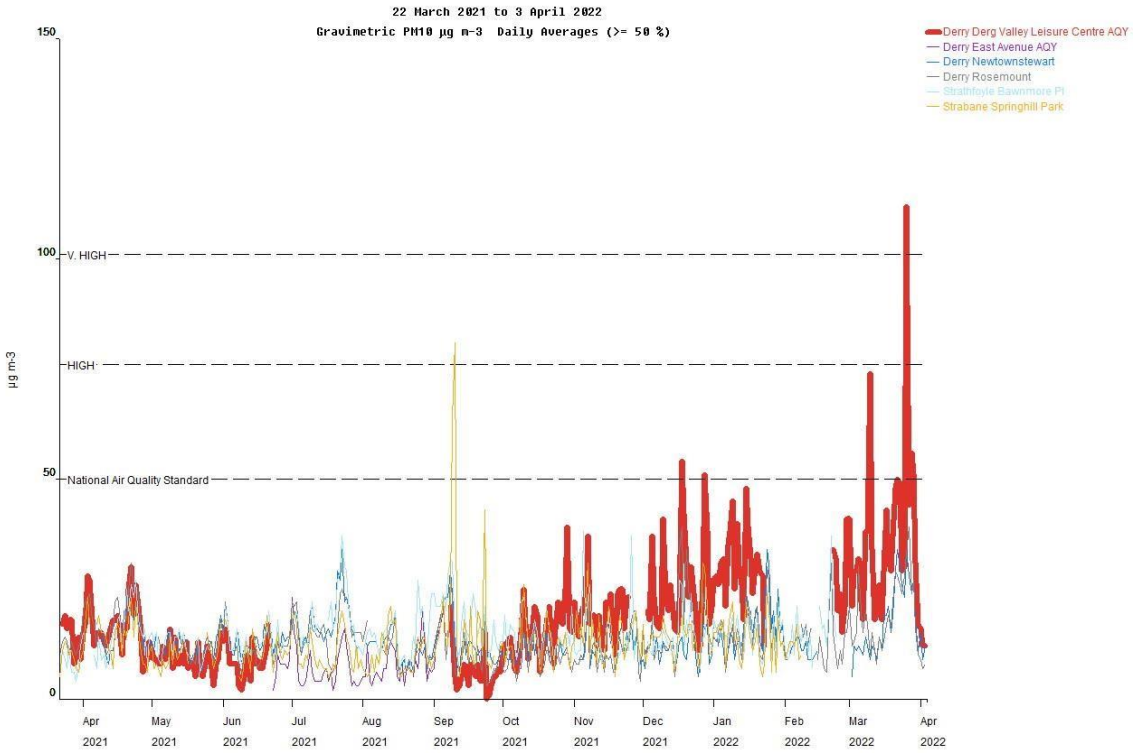
The $NO_2$ measurements compared well with the nearby stations with similar mean and peak concentrations.




**$NO_2$ Daily Means**

# Gravimetric $PM_{10}$

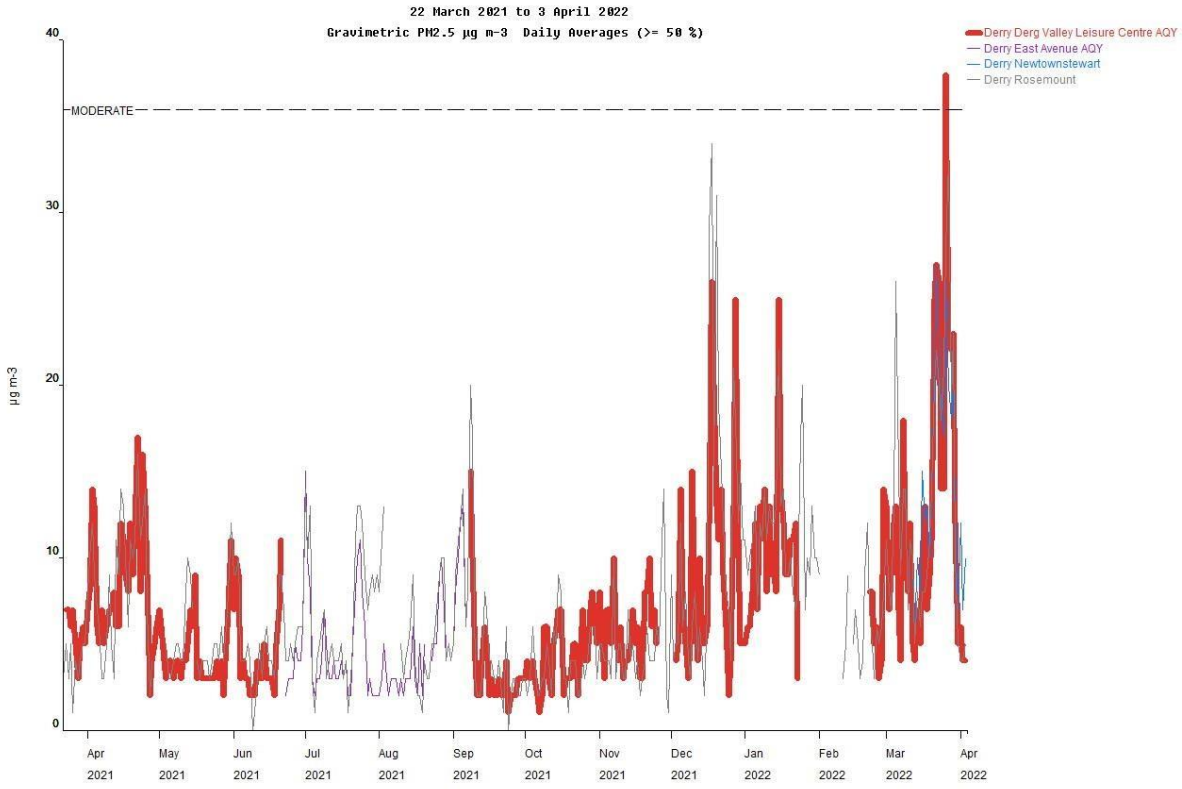
The $PM_{10}$ measurements compared well with the nearby stations with similar mean and peak concentrations.




**Gravimetric $PM_{10}$ Daily Means**

# PM2.5

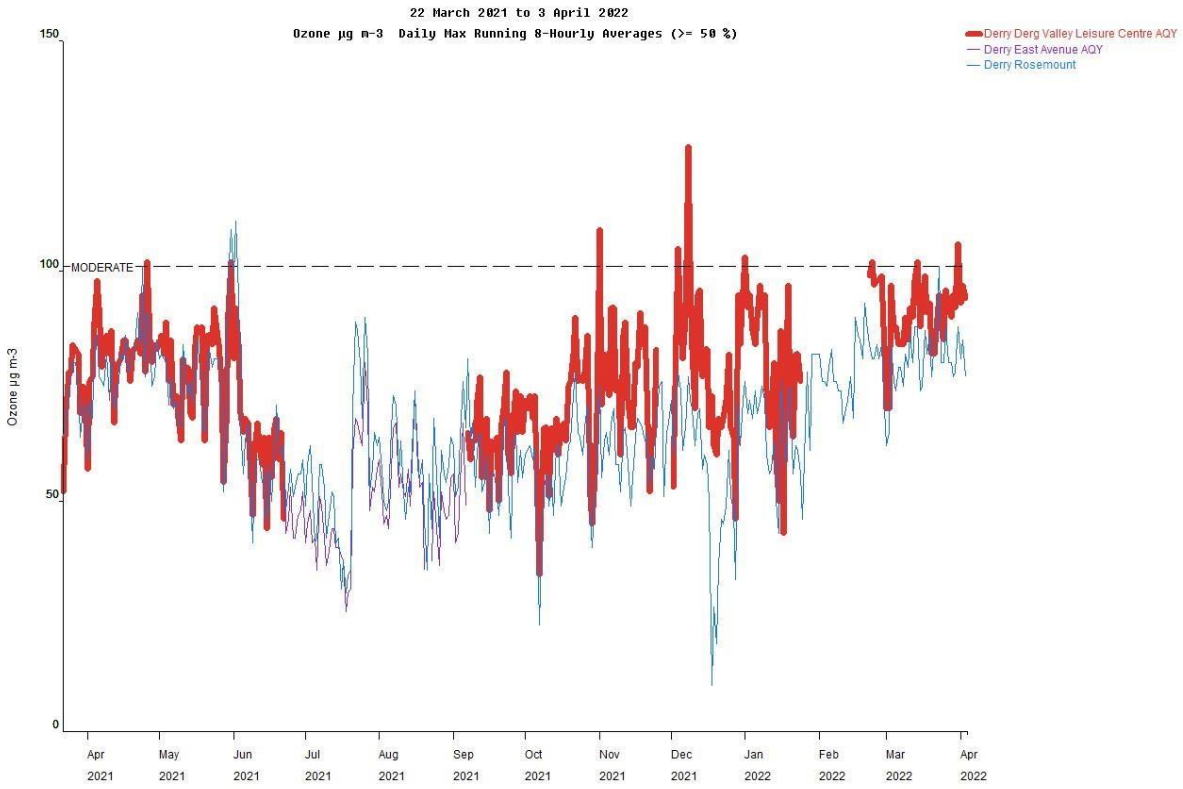
The $PM_{2.5}$ measurements compared well with the nearby stations with similar mean and peak concentrations.




**Gravimetric $PM_{2.5}$ Daily Means**

# Ozone

The Ozone measurements compared well with the nearby stations except in July.




**Ozone Maximum Running 8-Hour Means**

# DERRY DERG VALLEY LEISURE CENTRE AQY
# 22 March 2021 to 3 April 2022

## Site Environment and Description

URBAN BACKGROUND: AQY at Derg Valley Leisure Centre, Strabane Road, Derry

## Statistical Summary Report

This 2021 report contains all the statistics required for the LAQM reporting.

## Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI). The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Nitrogen Dioxide | 0 hours | 0 | 0 |
| $PM_{10}$ Particulate Matter | 5 days | 0 | 1 |
| $PM_{2.5}$ Particulate Matter | 1 day | 0 | 0 |
| Ozone | 52 hours | 0 | 0 |

Gravimetric $PM_{10}$ was Moderate on 18th 28th Dec, 10th 28th 29th Mar with a daily mean reaching 74 µg $m^{-3}$.

Gravimetric $PM_{10}$ was Very High on 26th Mar with a daily mean reaching 112 µg $m^{-3}$.

Gravimetric $PM_{2.5}$ was Moderate on 26th Mar with a daily mean reaching 38 µg $m^{-3}$.

Ozone was Moderate on 26th Apr, 31st May, 1st Nov, 4th 8th 9th Dec, 1st Jan, 23rd Feb, 14th 31st Mar with a running 8-hour mean reaching 127 µg $m^{-3}$.

## Air Quality Exceedences of the AQS Objectives

**$NO_2$ - annual data capture was 69.5 %**

The annual mean was 20 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum hourly mean was 80 µg $m^{-3}$ so there were no exceedences of the $NO_2$ hourly limit of 200 µg $m^{-3}$. There is an annual allowance of 18 hours so the Objective was not exceeded.

**Gravimetric $PM_{10}$ - annual data capture was 69.8 %**

The annual mean was 19 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum daily mean was 112 µg $m^{-3}$ so there were 6 exceedences of the $PM_{10}$ daily limit of 50 µg $m^{-3}$. There is an annual allowance of 35 days so the Objective was not exceeded.

**Gravimetric $PM_{2.5}$ - annual data capture was 69.8 %**

The annual mean was 7 µg $m^{-3}$ which did not exceed the 25 µg $m^{-3}$ Objective. Note that the $PM_{2.5}$ standard is not set in the regulations.

There should be a 15% cut in urban background exposure (annual mean) for all Local Authorities from 2010 to 2020.

**$O_3$ - annual data capture was 69.8 %**

The maximum running 8-hour mean was 127 µg $m^{-3}$ so there were 10 days with exceedences of the Ozone limit of 100 µg $m^{-3}$. There is an annual allowance of 10 days so the Objective was not exceeded. Note that the Ozone standard is not set in the regulations.

# March 2021 to 3 April 2022 Air Quality Statistics

| Pollutant | $NO_2$ | Grav $PM_{10+}$ | Grav $PM_{2.5\sim}$ | $O_3$ |
|---|---|---|---|---|
| Number Very High # | 0 | 1 | 0 | 0 |
| Number High # | 0 | 0 | 0 | 0 |
| Number Moderate # | 0 | 5 | 1 | 52 |
| Number Low # | 6307 | 253 | 259 | 6250 |
| Maximum 15-min mean | 92 µg $m^{-3}$ | - | - | 138 µg $m^{-3}$ |
| Maximum hourly mean | 80 µg $m^{-3}$ | 253 µg $m^{-3}$ | 119 µg $m^{-3}$ | 132 µg $m^{-3}$ |
| Maximum running 8-hr mean | 73 µg $m^{-3}$ | 179 µg $m^{-3}$ | 56 µg $m^{-3}$ | 127 µg $m^{-3}$ |
| Maximum running 24-hr mean | 59 µg $m^{-3}$ | 113 µg $m^{-3}$ | 39 µg $m^{-3}$ | 112 µg $m^{-3}$ |
| Maximum daily mean | 57 µg $m^{-3}$ | 112 µg $m^{-3}$ | 38 µg $m^{-3}$ | 112 µg $m^{-3}$ |
| 99.8$^{th}$ percentile of hourly means† | 77 µg $m^{-3}$ | - | - | - |
| 90.4$^{th}$ percentile of daily means† | - | 37 µg $m^{-3}$ | - | - |
| 90$^{th}$ percentile of daily means† | - | 37 µg $m^{-3}$ | - | - |
| 98.1$^{st}$ percentile of daily means† | - | 51 µg $m^{-3}$ | - | - |
| Average | 20 µg $m^{-3}$ | 19 µg $m^{-3}$ | 7 µg $m^{-3}$ | 62 µg $m^{-3}$ |
| Data capture | 69.5 % | 69.8 % | 69.8 % | 69.8 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
† Percentile required for annual data capture < 85%
+ Grav $PM_{10}$ as measured by a AQY using 1 gravimetric factor
~ Grav $PM_{2.5}$ as measured by a AQY using 1 gravimetric factor
Mass units for the gases are at 20'C and 1013mb

## Air Quality Exceedences

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 20 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 80 µg $m^{-3}$ | 0 | 0 | 18 hours | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 19 µg $m^{-3}$ | 0 | - | - | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 112 µg $m^{-3}$ | 6 | 6 | 35 days | No |
| $PM_{2.5}$ Particulate Matter (Gravimetric) * | Annual mean > 25 µg $m^{-3}$ | 7 µg $m^{-3}$ | 0 | - | - | No |
| Ozone * | Daily max run 8hr mean > 100 µg $m^{-3}$ | 127 µg $m^{-3}$ | 10 | 10 | 10 days | No |

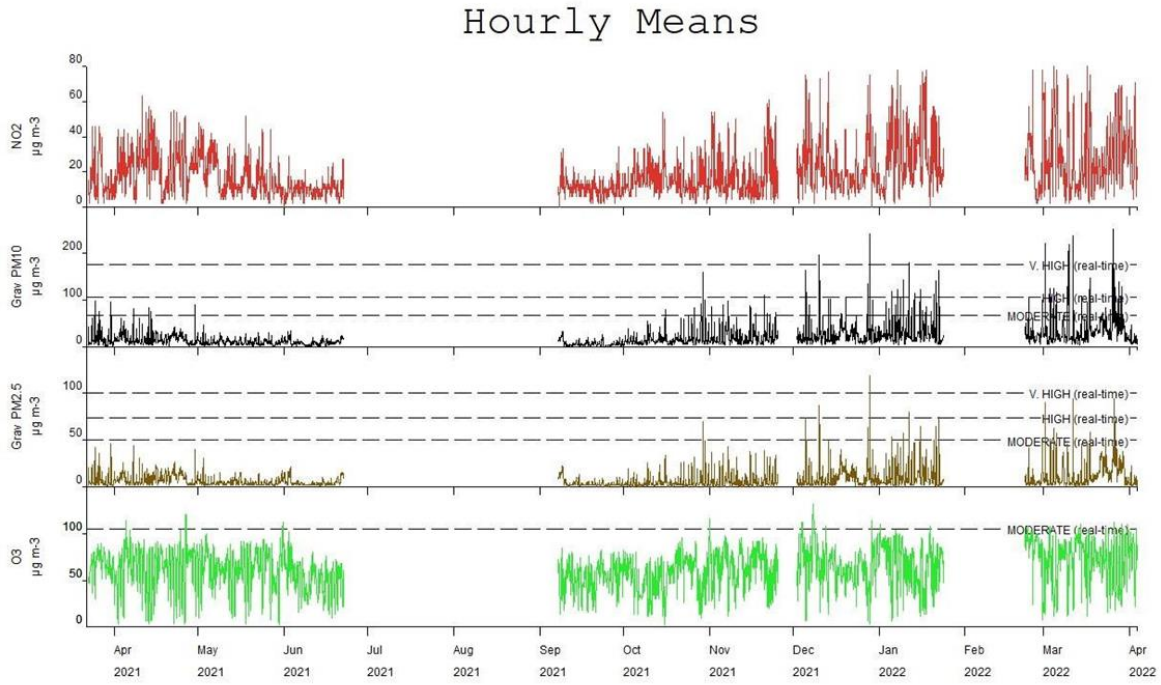
* Not set in regulations

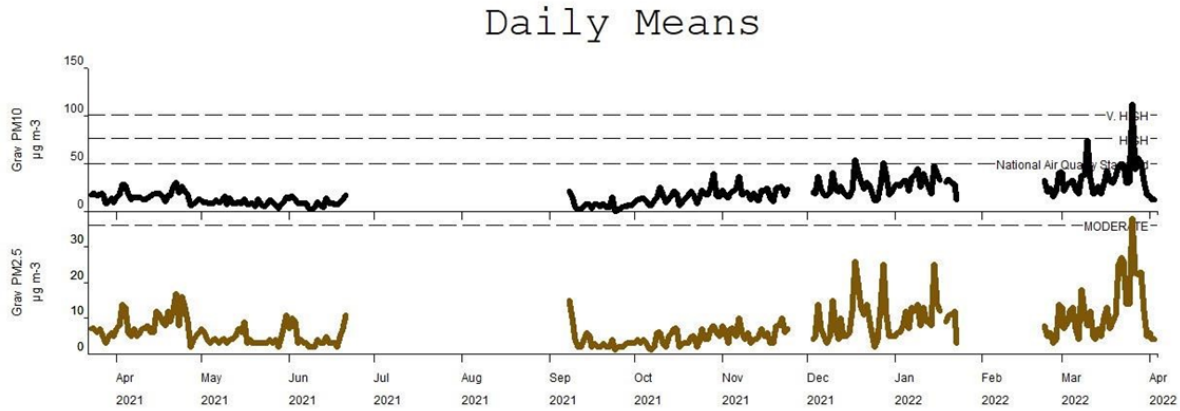
## Monthly Data Captures %

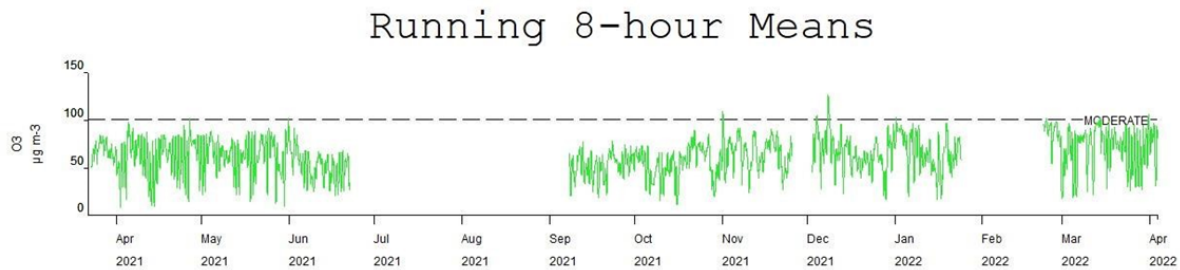
| Pollutant | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide | 98.0 | 100.0 | 100.0 | 1.3 | 0.0 | 46.4 | 99.9 | 98.9 | 75.0 | 98.9 | 7.8 | 98.2 | 99.7 |
| Grav $PM_{10}$ | 98.0 | 100.0 | 100.0 | 1.3 | 0.0 | 46.5 | 100.0 | 100.0 | 76.8 | 99.1 | 7.8 | 98.5 | 99.7 |
| Grav $PM_{2.5}$ | 98.0 | 100.0 | 100.0 | 1.3 | 0.0 | 46.5 | 100.0 | 100.0 | 76.8 | 99.1 | 7.8 | 98.5 | 99.7 |
| Ozone | 98.0 | 100.0 | 100.0 | 1.3 | 0.0 | 46.4 | 100.0 | 100.0 | 76.8 | 99.1 | 7.8 | 98.4 | 99.7 |

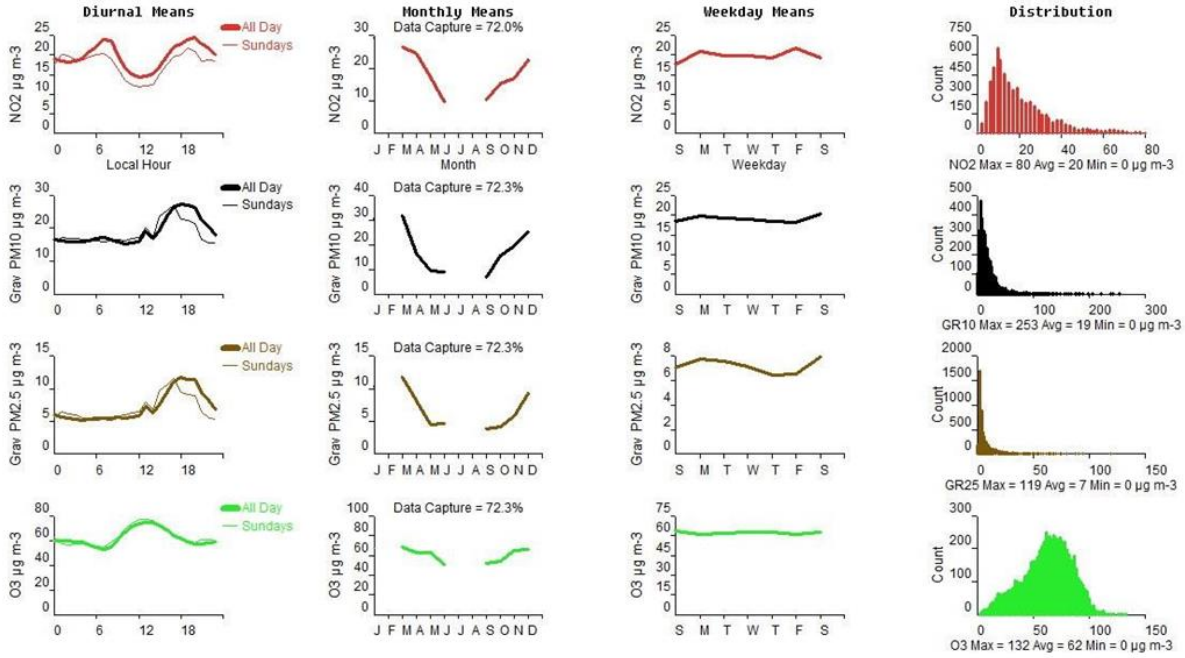
## Monthly Means

| Pollutant | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen Dioxide µg $m^{-3}$ | 21 | 20 | 11 | 16 | - | 11 | 14 | 15 | 23 | 27 | 21 | 27 | 33 |
| Grav $PM_{10}$ µg $m^{-3}$ | 16 | 12 | 9 | 18 | - | 7 | 11 | 19 | 25 | 29 | 20 | 31 | 39 |
| Grav $PM_{2.5}$ µg $m^{-3}$ | 8 | 6 | 4 | 12 | - | 5 | 3 | 5 | 9 | 10 | 7 | 9 | 17 |
| Ozone µg $m^{-3}$ | 63 | 63 | 55 | 33 | - | 49 | 54 | 65 | 66 | 65 | 71 | 74 | 67 |


Hourly Means
NO2 µg m-3
Grav PM10 µg m-3
V. HIGH (real-time)
HIGH (real-time)
MODERATE (real-time)
Grav PM2.5 µg m-3
V. HIGH (real-time)
HIGH (real-time)
MODERATE (real-time)
O3 µg m-3
MODERATE (real-time)
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Jan 2022
Feb 2022
Mar 2022
Apr 2022


Daily Means
Grav PM10 µg m-3
V. HIGH
HIGH
National Air Quality Standard
Grav PM2.5 µg m-3
MODERATE
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Jan 2022
Feb 2022
Mar 2022
Apr 2022


Running 8-hour Means
O3 µg m-3
MODERATE
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Jan 2022
Feb 2022
Mar 2022
Apr 2022


Diurnal Means
Monthly Means
Weekday Means
Distribution
All Day
Sundays
NO2 µg m-3
Grav PM10 µg m-3
Grav PM2.5 µg m-3
O3 µg m-3
Local Hour
Month
Weekday
Count
Data Capture = 72.0%
Data Capture = 72.3%
NO2 Max = 80 Avg = 20 Min = 0 µg m-3
GR10 Max = 253 Avg = 19 Min = 0 µg m-3
GR25 Max = 119 Avg = 7 Min = 0 µg m-3
O3 Max = 132 Avg = 62 Min = 0 µg m-3

# Appendix G: Distance Correction for $NO_2$ diffusion tubes at Dale's Corner Roadside site

| | | | |
|---|---|---|---|
| **Step 1** | **How far from the KERB was your measurement made (in metres)?** | 3.2 | metres |
| **Step 2** | **How far from the KERB is your receptor (in metres)?** | 7.3 | metres |
| **Step 3** | **What is the local annual mean background $NO_2$ concentration (in $\mu g/m^3$)?** | 10 | $\mu g/m^3$ |
| **Step 4** | **What is your measured annual mean $NO_2$ concentration (in $\mu g/m^3$)?** | 30 | $\mu g/m^3$ |
| **Step 5** | **The predicted annual mean $NO_2$ concentration (in $\mu g/m^3$) at your receptor** | 25.7 | $\mu g/m^3$ |