

Annual Progress Report (APR)



2021 Air Quality Annual Progress Report (APR) for

Dumfries and Galloway Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

December 2021

Dumfries and Galloway Council

Information	Dumfries and Galloway Council Details
Local Authority Officer	William Jackson
Department	Environmental Health Communities Directorate
Address	Dumfries and Galloway Council Municipal Chambers Buccleuch Street Dumfries DG1 2AD
Telephone	030 3333 3000
E-mail	environmentalhealth@dumgal.gov.uk william.jackson@dumgal.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in Dumfries and Galloway

This report comprises Dumfries and Galloway Council's Annual Progress Report on air quality within the Council's area. Within this report results of NO₂ monitoring within the Council's area are also presented and evaluated in relation to national objectives.

Under the Local Government in Scotland Act 2003 Dumfries and Galloway Council is responsible for the provision of a range of services, including: mandatory powers (e.g., providing school education for 5–16-year-olds, Roads Services and Social Work Services); permissive powers (e.g. economic development and recreation services); and regulatory powers (e.g. Planning, Environmental Health, Licensing).

Dumfries and Galloway is mostly a rural region, with two hundred miles of coast line; area 6,426 square kilometres; estimated population 149,670 (2015, by 2037 the population of Dumfries & Galloway is projected to decline to 141,619). The main towns are Dumfries and Lochaberbriggs (38,900 residents), Stranraer (10,600), Annan (9,000), Lockerbie (4,300) Dalbeattie (4,200) and Castle Douglas (4,200). All other settlements have populations of less than 4,000. The entire region lies in the Solway Tweed River basin district.

Dumfries and Galloway's key economic sectors are: Volume Sectors - Agriculture; Creative Industries (cultural business); Food and drink; Health and social care; Tourism/leisure/hospitality. Value Sectors - Creative Industries (digital business); Energy—particularly renewables and their supply chain; forest and timber technologies.

The air quality in Dumfries & Galloway is generally very good and currently there are no designated Air Quality Management Areas (AQMAs). This is mainly due to the fact that there is a limited amount of heavy industry with the majority of pollution assessed to arise from road vehicles as in terms of accessibility 30% of the population are 'remote' i.e. living further than a 30-minute drive from a large town.

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Recent monitoring for NO₂ has not identified any new requirement to proceed to a detailed assessment with concentrations all below the objectives and NO₂ levels in Dumfries and Galloway have essentially been static over the past number of years.

Previous air quality assessments in Dumfries and Galloway have concluded that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide and nitrogen dioxide are all unlikely to exceed the objective and, in accordance with technical guidance, these pollutants are not currently monitored.

Details of monitoring undertaken by the Council can be found in Chapter 3 of this report.

Previous monitoring for PM₁₀ at a worst-case junction in Dumfries showed that no Air Quality Management Areas were required to be designated for PM₁₀ in Dumfries.

Due to a perceived increase in traffic levels following the re-location of the Stena Line port from Stranraer to Old House Point, Cairnryan PM₁₀ (+ PM_{2.5}) reference method monitoring was carried out at Cairnryan from 22nd March 2018 – 08th October 2018 with results provided in 2019 Annual Progress Report.

Reference method monitoring showed that no Air Quality Management Areas were required to be designated for PM₁₀ or PM_{2.5} in Cairnryan.

Actions to Improve Air Quality

In general, the air quality in Dumfries & Galloway is very good and as a result of this there are no designated Air Quality Management Areas (AQMAs) in Dumfries and Galloway. The focus of the air quality work undertaken by Dumfries and Galloway Council revolves and continues to revolve around NO₂ with transportation being the primary source of emissions.

Local Priorities and Challenges

The SARS-CoV-2 (COVID-19) pandemic placed substantial pressure on the maintenance and ability to facilitate changeover of the passive diffusion tube sites in Dumfries and Galloway with respect to staff deployment in response to the pandemic. It is in response to redeployment, increased staff workload that several passive diffusion tube sites were left

exposed for a period greater than the efficiency and accuracy of analysis. These sites with an unacceptable exposure are recorded as 'No Data'.

Environmental Health continue to monitor at several passive diffusion tube sites that have shown sustained compliance over a number of years. The 2019 report discussed the possibility of changing or expanding monitoring locations throughout Dumfries and Galloway to maximise available resources however this as yet has not been facilitated.

The triplicate tube site at Buccleuch Street Bridge remains a duplicate site and a duplicate site at Buccleuch Street West remains a single tube site in order to facilitate measurement at the entrance to the Stena Port in Cairnryan and in order to respond to a complaint of poor air quality in Kirkcudbright.

Environmental Health recognises that good air quality and health are intrinsically linked. We are keen to increase public knowledge and perception of air quality in the region and are working to create a programme of work which will increase the profile of air quality issues such as vehicle anti-idling campaigns, clean air day promotion, alternative travel etc. We have engaged with Dumfries and Galloway Council's Environment Champion and have participated in Clean Air Day Activities.

Environmental Health recognise that with the advance of technology there are mobile (non-reference) monitoring stations (that can operate independently from a mains power source) that could be used to collect hourly data from road traffic sources. Environmental Health are seeking funding options to acquire this equipment.

How to Get Involved

Several previously published air quality reports including results of monitoring in our area are available at:

<http://www.scottishairquality.co.uk/news/reports?view=laqm>

Dumfries and Galloway Council's priorities, since October 2014, have been: Build the local economy; Provide the best start in life for all our children; Protect our most vulnerable

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people; Be an inclusive council; Provide an attractive location to do business; Support children to be healthy and active and; Keep our communities safe.

By safeguarding that air quality within Dumfries and Galloway remains within national objective levels and ensuring that via the planning process and its regulatory functions any air pollution potential which may give rise to a risk of an exceedance of an air quality objective is considered at consultation phase, the Environmental Health Service works toward meeting a number of Dumfries and Galloway Council's priorities by providing a safe, attractive place to live and do business.

Members of the public can also choose to support or object to planning applications that may have an effect on air quality. All applications are published on-line and are accessible on-line via: <https://eaccess.dumgal.gov.uk/online-applications/> . Grounds for commenting can relate to planning issues such local and national planning policy and guidance; traffic, access or parking; impact of the proposal on the built or natural environment, design/materials/scale of the proposal and its relationship to its surroundings; residential amenity, overshadowing, overlooking, etc.; effect on the setting of a Listed Building or the character and appearance of a Conservation Area.

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1 Local Air Quality Management

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

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

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO ₂)	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM ₁₀)	18 µg/m ³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10 µg/m ³	Annual mean	31.12.2020
Sulphur dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m ³	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m ³	Running 8-Hour mean	31.12.2003

2 Actions to Improve Air Quality

Air Quality Management Areas

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

Dumfries and Galloway Council currently does not have any AQMAs.

Cleaner Air for Scotland

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

2.1.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. Details of measures completed, in progress or planned are contained in both the Dumfries and Galloway Council Carbon Management Plan 2 (CMP2) and the Dumfries and Galloway Council Active Travel Strategy which are accessible at:

[Carbon Management Plan 2 \(dumgal.gov.uk\)](#)

<https://www.dumgal.gov.uk/article/16715/Active-Travel-Strategy>

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

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered. Details of measures completed, in progress or planned are contained in both the Dumfries and Galloway Council Carbon Management Plan 2 (CMP2) which is accessible at:

[Carbon Management Plan 2 \(dumgal.gov.uk\)](https://www.dumgal.gov.uk/carbon-management-plan-2)

Progress and Impacts of Measures to address Air Quality in Dumfries and Galloway Council

Dumfries and Galloway Council has taken forward a number of measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in the Dumfries and Galloway Council Carbon Management Plan 2 (CMP2) which is accessible at:

[Carbon Management Plan 2 \(dumgal.gov.uk\)](https://www.dumgal.gov.uk/carbon-management-plan-2)

This Dumfries and Galloway Council document in addition to carbon reporting covers: alternatives to private vehicle use; corporate freight and delivery management; policy guidance and development control; promotion of low emission plants and promoting low emission transport; promoting travel alternatives; transport planning and infrastructure and includes initiatives such as vehicle fleet efficiency and driver training.

Many of the measures outlined in the Southwest of Scotland Transport Partnership (SWESTRANS) Climate Change Strategy together with previous SWESTRANS initiatives have had and will have direct implications for the improvement of air quality in our Council area. The Climate Change Strategy is available at:

<http://www.swestrans.org.uk/CHttpHandler.ashx?id=12123&p=0>

The Scottish Government work for the Strategic Transport Projects Review (STPR) and the Strategic Transport Projects Review 2 will inform transport investment in Scotland for the next 20 years. STPR2 is a Scotland-wide review of the strategic transport network

across all transport modes, including walking, wheeling, cycling, bus, rail and car, as well as reviewing wider island and rural connectivity.

STPR2 will help to deliver the vision, priorities and outcomes for transport set out in the National Transport Strategy (NTS2) and will align with other national plans such as the Infrastructure Investment Plan, National Planning Framework (NPF4) and the Climate Change Plan.

The key aim of previous work with SPTR was to consider the rationale for improvements to road, rail, public transport and active travel on key strategic corridors in the South West of Scotland, including those served by the A75, A76, A77, A701 and A709 as well as the railway corridors to Stranraer and Carlisle via Kilmarnock / Dumfries with a particular focus on access to the ports at Cairnryan. The report can be available at:

<https://www.transport.gov.scot/media/45046/initial-appraisal-case-for-change-south-west-scotland-transport-study.pdf>

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

Dumfries and Galloway Council undertook automatic (continuous) monitoring at one site during 2020. Results of automatic monitoring undertaken at Eskdalemuir by the British Geological Society / Met Office have also been included in this report. Table A.1 in Appendix A shows the details of the sites. National monitoring results for both sites are available at <http://www.scottishairquality.co.uk/>

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

3.1.2 Non-Automatic Monitoring Sites

Dumfries and Galloway Council undertook non-automatic (passive) monitoring of NO₂ at 14 sites during 2020. Table A.2 in Appendix A shows the details of the sites.

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

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO₂)

In 2020 there were no exceedances of air quality objectives for NO₂ recorded in Dumfries and Galloway

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³.

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

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. It is noted that there were 3 exceedances of the hourly mean were noted on 04/02/2020 18:00hrs (203.05 µg/m³), 05/03/2020 18:00hrs (215.49 µg/m³) and 06/03/2020 10:00hrs (271.76 µg/m³). It is believed that these exceedances may have been caused by idling buses at a nearby bus stop. These exceedances are the first recorded in Dumfries since 2017.

3.1.4 Particulate Matter (PM₁₀)

Previous monitoring for PM₁₀ at a worst-case junction in Dumfries showed that no air quality management areas were required to be designated for PM₁₀ in Dumfries. No PM₁₀ monitoring is currently carried out at Dumfries.

PM₁₀ monitoring was carried out at Cairnryan as a result of a perceived increase in traffic levels following the re-location of the Stena Line port from Stranraer to Old House Point, Cairnryan. An Osiris PM₁₀ monitor was deployed for a period of 10 months from 10th October 2015 to 11th August 2016 for screening purposes only as this type of monitor is not reference-method-equivalent. The monitor was situated on the northernmost façade of the recently re-built Village Hall in Cairnryan adjacent to an outdoor children's play area with swings and other play equipment. As such the location was representative of relevant public exposure in respect of both the annual and the 24-hour mean. As readings from the Osiris PM₁₀ monitor were taken over two APR reporting periods both the annualised means for PM₁₀ and PM_{2.5} for the 2016 and 2017 reporting years were in excess of prescribed limits in terms of annualised means and PM₁₀ levels exceeded seven 24-hour means greater than 50µg/m³.

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As a result of the higher than expected levels of particulate matter at Cairnryan Dumfries and Galloway Council's Environmental Health installed an approved (reference-method equivalent) Fidas 200 EN-certified fine dust monitoring and ambient air measuring system PM₁₀ (+ PM_{2.5}) monitor in order to carry out a detailed assessment of PM₁₀ levels at Cairnryan. If, as a result of reference method equivalent monitoring levels were shown to exceed the objective(s) then Environmental Health would thereafter be able to designate the whole or part of the village of Cairnryan as an Air Quality Management Area.

The Fidas 200 EN-certified fine dust monitoring and ambient air measuring system Equipment was installed and become operational in 2018 from the 22nd March 2018 – 08th October 2018

As a result of the 2018 monitoring no further PM₁₀ monitoring has carried out by Dumfries and Galloway Council in 2019 as further monitoring is not warranted

3.1.5 Particulate Matter (PM_{2.5})

An Osiris PM₁₀ monitor was deployed for a period of 10 months from 10th October 2015 to 11th August 2016 for screening purposes only as this type of monitor is not reference-method-equivalent. The monitor was situated on the northernmost façade of the recently re-built Village Hall in Cairnryan adjacent to an outdoor children's play area with swings and other play equipment. As such the location was representative of relevant public exposure in respect of both the annual and the 24-hour mean.

The annualised mean for 2015 was 10.2µg/m³ which was in excess of the annual mean objective of 10µg/m³ but using 2016 valid data capture and the same data set after ratification this result is now reduced to 8.45µg/m³.

As a result of the higher than expected levels of particulate matter at Cairnryan Dumfries and Galloway Council's Environmental Health installed an approved (reference-method equivalent) Fidas 200 EN-certified fine dust monitoring and ambient air measuring system PM₁₀ (+ PM_{2.5}) monitor in order to carry out a detailed assessment of PM_{2.5} levels at Cairnryan. If, as a result of reference method equivalent monitoring levels were shown to exceed the objective(s) then Environmental Health would thereafter be able to designate the whole or part of the village of Cairnryan as an Air Quality Management Area.

The Fidas 200 EN-certified fine dust monitoring and ambient air measuring system Equipment was installed and become operational in 2018 from the 22nd March 2018 – 08th October 2018

As a result of the 2018 monitoring no further PM_{2.5} monitoring has carried out by Dumfries and Galloway Council in 2019 as further monitoring is not warranted

3.1.6 Sulphur Dioxide (SO₂)

A detailed assessment of the influence of shipping on SO₂ levels in Cairnryan was carried out in 2004 when it was found that the SO₂ levels met the objectives and an AQMA was not required.

Currently Dumfries and Galloway Council does no LAQM monitoring for SO₂ within Council-area.

3.1.7 Carbon Monoxide, Lead and 1,3-Butadiene

Monitoring for carbon monoxide and 1,3 butadiene have been carried out previously in Dumfries, where the levels were found to meet the relevant objectives.

Currently Dumfries and Galloway Council does no LAQM monitoring for carbon monoxide, lead or 1,3 butadiene within the Council-area.

4 New Local Developments

Despite a number of large developments proposed within Dumfries and Galloway no new relevant local developments have been identified since completion of last year's report.

Road Traffic Sources

No road traffic sources relevant with respect to air quality in Dumfries and Galloway have been identified in the 2020 reporting year that may significantly change traffic flows.

Other Transport Sources

No other transport sources relevant with respect to air quality in Dumfries and Galloway have been identified in the 2020 LAQM APR reporting year.

Industrial Sources

No industrial sources relevant with respect to air quality in Dumfries and Galloway have been identified in the 2020 LAQM APR reporting year.

Commercial and Domestic Sources

No relevant industrial sources with respect to air quality in Dumfries and Galloway have been identified in the 2020 LAQM APR reporting year.

A number of Planning Consultations received in relation to installation of proposed biomass combustion systems have been assessed but these proposals are predominately in rural areas with diminutive cumulative impact.

New Developments with Fugitive or Uncontrolled Sources

No developments with fugitive or uncontrolled sources relevant with respect to air quality in Dumfries and Galloway have been newly identified in the 2020 LAQM APR reporting year

5 Planning Applications

No planning applications with significant effects with respect to air quality in Dumfries and Galloway have been newly identified in the 2020 LAQM APR reporting year.

A number of Planning Consultations have been received in relation to installation of proposed biomass combustion systems have been assessed but these proposals are predominately in rural areas with diminutive cumulative impact.

6 Impact of COVID-19 upon LAQM

The SARS-CoV-2 (COVID-19) pandemic placed substantial pressure on the maintenance and ability of Dumfries and Galloway Council to facilitate changeover of the passive diffusion tube sites throughout Dumfries and Galloway with respect to staff deployment in response to the pandemic. It is in response to redeployment (COVID Response / NHS Track & Trace / Economic Regeneration) and resultant increase in staff workload that resulted in several passive diffusion tube sites being left exposed for a period greater than the efficiency and accuracy of analysis. These sites with an unacceptable exposure are recorded as 'No Data'.

Due to the initial Lockdown in March 2020 all of the tubes for the region for March 2020 and April 2020 exposure periods were exposed for a period of 2 months before collection due to staff redeployment. The tubes have an exposure limit of 6 weeks and data whilst still analysed by the SOCOTEC lab the data has been discounted due to introduction of potential error. In addition to passive diffusion tubes in the East of the region were exposed for 2 months July 2020 & August 2020 exposure periods and a 2 month exposure period was observed December 2020 – January 2021.

Dumfries and Galloway Council undertook automatic (continuous) monitoring at one site during 2020. Due to the classification of the LSO AURN Monitoring Network. Due to the classification by the Environment Agency that AURN Monitoring Network was an essential activity Dumfries and Galloway Council maintained regular visits whilst observing strict COVID workplace isolation thereafter for a period of at least 72 hours post visit to prevent potential transmission.

The data collected on the national air quality networks, was considered extremely important to the ongoing evaluation of risk during the Covid 19 outbreak due to the potential impact of air pollution on respiratory illnesses.

Results of automatic monitoring undertaken at Eskdalemuir by the British Geological Society / Met Office have also been included in this report, but Dumfries and Galloway Council are not aware of what frequency of visits or level of impact caused due to SARS-CoV-2

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A number of changes have been implemented in the LAQM activities in that diffusion tube collection has now been reallocated to colleagues within the Community Safety Team, and a number of other staff within Environmental Health have been trained in how to safely undertake LSO visits for the AURN located at the Environmental Health Offices in Dumfries.

It is believed that having a larger number of people having LAQM responsibilities (overseen by Environmental Health) leads to a greater resilience should further restrictions ever be imposed meaning that the gaps in the diffusion tube monitoring calendar will not be repeated in the 2021 LAQM APR year.

7 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

There were no exceedances of the NO₂ air quality objectives identified within Dumfries and Galloway Council. It can be seen that in general NO₂ concentrations have been fairly stable for the past nine years up until 2020.

Results at the majority of the diffusion tube sites for the 2020 LAQM APR reporting year were seen to be significantly lower than previous years. NO₂ levels trended down significantly in all but the background sites leading to levels significantly lower than previous years. This reduction in levels is believed to be result of reduced traffic movements during the March 2020 COVID19 lockdown. Levels have since been seen to increase throughout the year but remain within acceptable limits and comparable to previous years.

Conclusions relating to New Local Developments

No new relevant local developments have been identified since completion of last year's report.

Proposed Actions

Environmental Health during 2020 continued monitoring at several passive diffusion tube sites that have shown sustained compliance over a number of years and due to the COVID response have not examined the possibility of changing monitoring locations throughout Dumfries and Galloway to maximise resources as mentioned within the 2019 APR.

Environmental Health recognises that good air quality and health are intrinsically linked. We are keen to increase public knowledge and perception of air quality in the region and are working to create a programme of work which will increase the profile of air quality issues such as vehicle anti-idling campaigns, clean air day promotion, alternative travel etc. We have engaged, and participated with elected members with respect to participation in air

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quality initiatives such as clean air day and Environmental Health intends to build on this participation in conjunction with Education, Sustainable Transport, Fleet Services with respect to work toward the Council Priorities namely: Build the local economy; Provide the best start in life for all our children; Protect our most vulnerable people; Be an inclusive council; Provide an attractive location to do business; Support children to be healthy and active and; Keep our communities safe and respond to the Climate Emergency Declaration.

Environmental Health recognise that mobile (non-reference) monitoring stations (independent from a mains power source) could be used to collect hourly air quality data. Environmental Health are currently seeking funding options to acquire this equipment and it is proposed that this type of monitoring may be implemented by condition to relevant developments that may have an impact on local air quality.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
Buccleuch Street Dumfries	Roadside	297025	576259	NO ₂	N	Chemiluminescent	<1	4.3	2.2
Eskdalemuir	Rural	323551	603022	NO ₂	N	Chemiluminescent	N/A	225	4.0

Notes:

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

(2) N/A if not applicable.

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

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to relevant exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a continuous analyser?
M74 Slip Road. Lockerbie	Other	313345	581416	NO ₂	No	32	1·9	No
Buccleuch St. (E)Dumfries	Roadside	297025	576259	NO ₂	No	<1	4·3	Yes
Buccleuch St. (W)Dumfries	Kerbside	296949	576218	NO ₂	No	<1	1·0	No
Buccleuch St. (S)Dumfries	Kerbside	296978	576219	NO ₂	No	<1	0·6	No
Buccleuch St. Bridge Dumfries	Roadside	296868	576182	NO ₂	No	<1	5·0	No
St. Michael St. Dumfries	Roadside	297457	575692	NO ₂	No	<1	3·1	No
Argyll Drive Dumfries	Background	299378	578847	NO ₂	No	1	1·7	No
Charlotte St. Stranraer	Roadside	206085	560859	NO ₂	No	<1	4·0	No
A77 Cairnryan (P&O)	Roadside	207216	567422	NO ₂	No	19	2·0	No

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to relevant exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a continuous analyser?
Nithbank Dumfries ⁽³⁾	Roadside	297712	575254	NO ₂	No	0	1.7	No
Castle Break Ecclefechan ⁽³⁾	Roadside	319272	575029	NO ₂	No	1	1.5	No
Gretna Loaning Gretna ⁽³⁾	Roadside	332110	568264	NO ₂	No	1	1.4	No
A77 Cairnryan (Stena)	Roadside	206109	569375	NO ₂	No	5	5	No
Kirkcudbright	Roadside	268574	551126	NO ₂	No	<1	2.0	No

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site Name	Site Type	Monitoring Type	Valid Data Capture 2020 (%) ⁽¹⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽²⁾												
				2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Buccleuch Street Dumfries	Roadside	Automatic	97.9	35.0	39.9	31.5	33.1	30.2	30.5	30.1	30.9	30.2	29.5	31.1	22.1	
Eskdalemuir	Rural	Automatic	84.6	4.3	3.0	3.2	3.0	2.5	2.3	2.2	2.0	2	1.9	1.8	1.65	
M74 Slip Road, Lockerbie	Other	Diffusion Tube	75	28.2	37.0	30.6	31.6	28.1	27.4	27.8	27.8	27.2	23.1	24.7	17.9	
Buccleuch St. (E) Dumfries	Roadside	Diffusion Tube (Triplicate)	56	34.2	39.8	31.5	33.2	30.3	30.4	30.2	30.7	30.6	29.9	30.8	22.4	
Buccleuch St. (W) Dumfries	Kerbside	Diffusion Tubes (Duplicate)	58 *	31.3	35.2	30.0	31.4	27.8	28.6	29.1	28.5	28.7	27	28.5	23	
Buccleuch St. (S) (Sheriff) Dumfries	Kerbside	Diffusion Tube	58	32.5	36.1	34.1	31.9	30.3	30.9	28.4	29.3	30.9	30.2	29.9	21.4	
Buccleuch St. Bridge Dumfries	Roadside	Diffusion Tubes (Triplicate)	58 **	32.3	34.0	28.2	28.8	26.6	26.8	25.1	25.0	25.2	25.3	26.2	19.1	
St. Michael St. Dumfries	Roadside	Diffusion Tube	58	24.9	28.5	23.8	26.7	22.4	20.8	20.9	23.7	21.2	20.3	21.3	15.3	
Argyll Drive Dumfries	Urban Background	Diffusion Tube	58	11.0	12.1	10.7	12.1	8.7	9.2	9.4	9.0	9.5	8.4	9.5	7.6	
Charlotte St. Stranraer	Roadside	Diffusion Tube	58	18.7	21.8	17.7	18.1	17.9	17.6	17.0	16.3	15.5	19.5	18.7	15.5	
A77 Cairnryan P&O	Roadside	Diffusion Tube	75	19.2	21.6	19.6	21.5	20.9	21.5	19.3	19.8	17.9	17.4	18.1	17.4	
Nithbank Dumfries ⁽³⁾	Roadside	Diffusion Tube	58	N/A	N/A	N/A	N/A	N/A	24.5	23.0	27.4	22.8	19.8	21	14.1	
Castle Break Ecclefechan ⁽³⁾	Roadside	Diffusion Tube	75	N/A	N/A	N/A	N/A	N/A	14.4	14.5	15.9	13.1	13.2	13.2	9.5	
Gretna Loaning Gretna ⁽³⁾	Roadside	Diffusion Tube	75	N/A	N/A	N/A	N/A	N/A	17.9	19.1	16.2	17.5	14.3	14.2	11.3	
Kirkcudbright	Kerbside	Diffusion	75 ***	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	12.9
A77 Cairnryan Stena	Kerbside	Diffusion Tube	75 ****	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.6	16
Port Rodie Car Park, Stranraer ⁽⁴⁾	Kerbside	Diffusion Tube	N/A	17.5	18.2	16.6	12.4	10.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nith Place, Dumfries ⁽⁴⁾	Kerbside	Diffusion Tube	N/A	30.8	35.0	26.8	30.0	27.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Loreburn St. Dumfries ⁽⁴⁾	Kerbside	Diffusion Tube	N/A	26.0	30.8	24.5	30.1	26.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

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

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

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

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

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

(3)

* Previously Duplicate - Single from August 2019

** Previously Triplicate - Duplicate from November 2019

*** New Site from November 2019

**** New Site from August 2019

Table A.4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site Name	Monitoring Type	Valid Data Capture 2020 (%) ⁽¹⁾	NO ₂ 1-Hour Means > 200µg/m ³											
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Buccleuch Street, Dumfries	Automatic	97.9	0	3	2	0	1	1	1	0	1	0	0	3
Eskdalemuir	Automatic	84.6	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

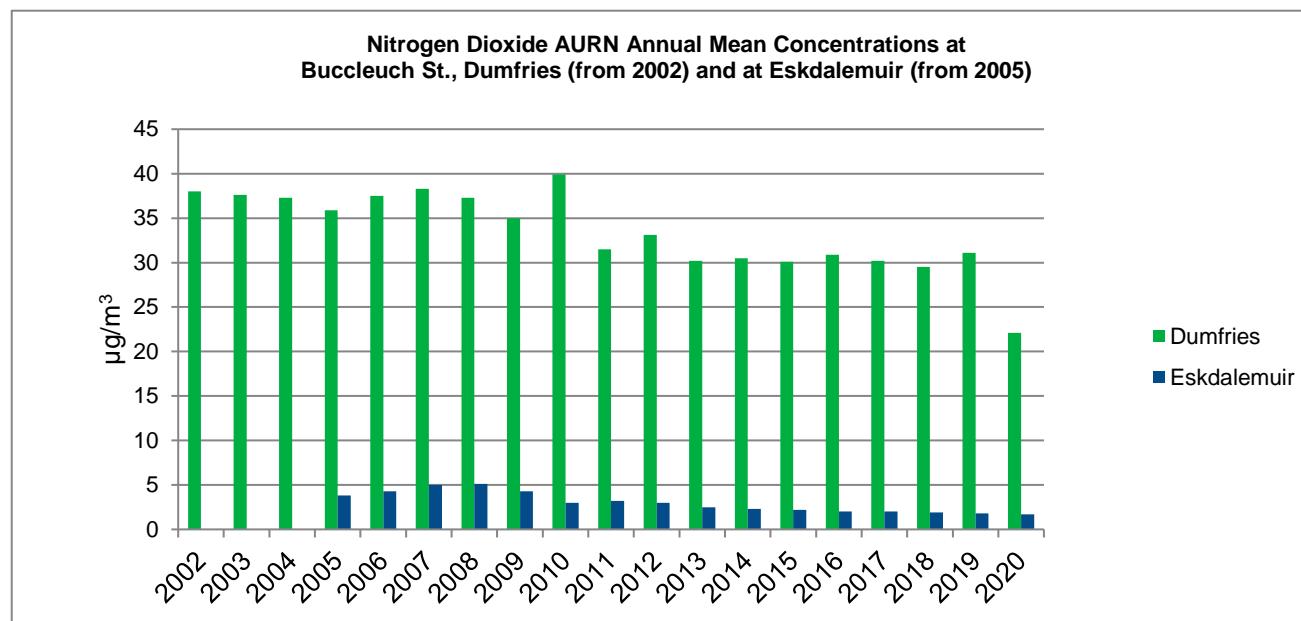
Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/year) are shown in bold.

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

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

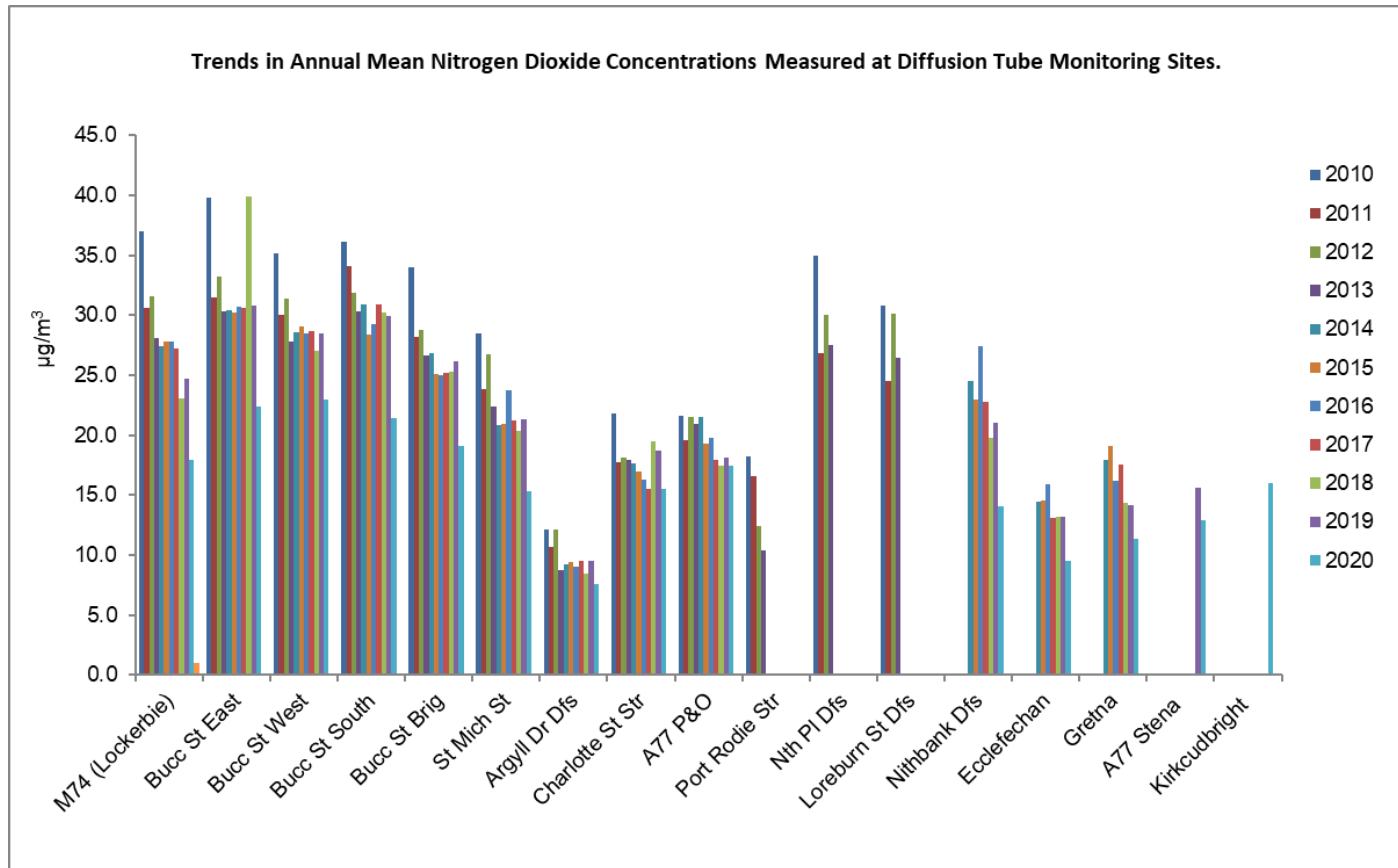
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 Trends in Annual Mean NO₂ Concentrations at Automatic Monitoring Sites at Dumfries and at Eskdalemuir.



The above chart shows that annual mean concentrations at the roadside site at Buccleuch Street, Dumfries have fallen significantly below the annual mean objective since 2010. The concentrations at Eskdalemuir remain well below the objective reflecting the site's rural background status.

Figure A.2 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites.



All Sites in 2020 showed a significant reduction in NO₂ annual average levels as a suspected result of reduced traffic due to COVID19 restrictions and lockdowns.

Figure A.3 Graph Showing Historical Annual Mean Nitrogen Dioxide Diffusion Tube Concentrations at Sites in Buccleuch Street, Dumfries.

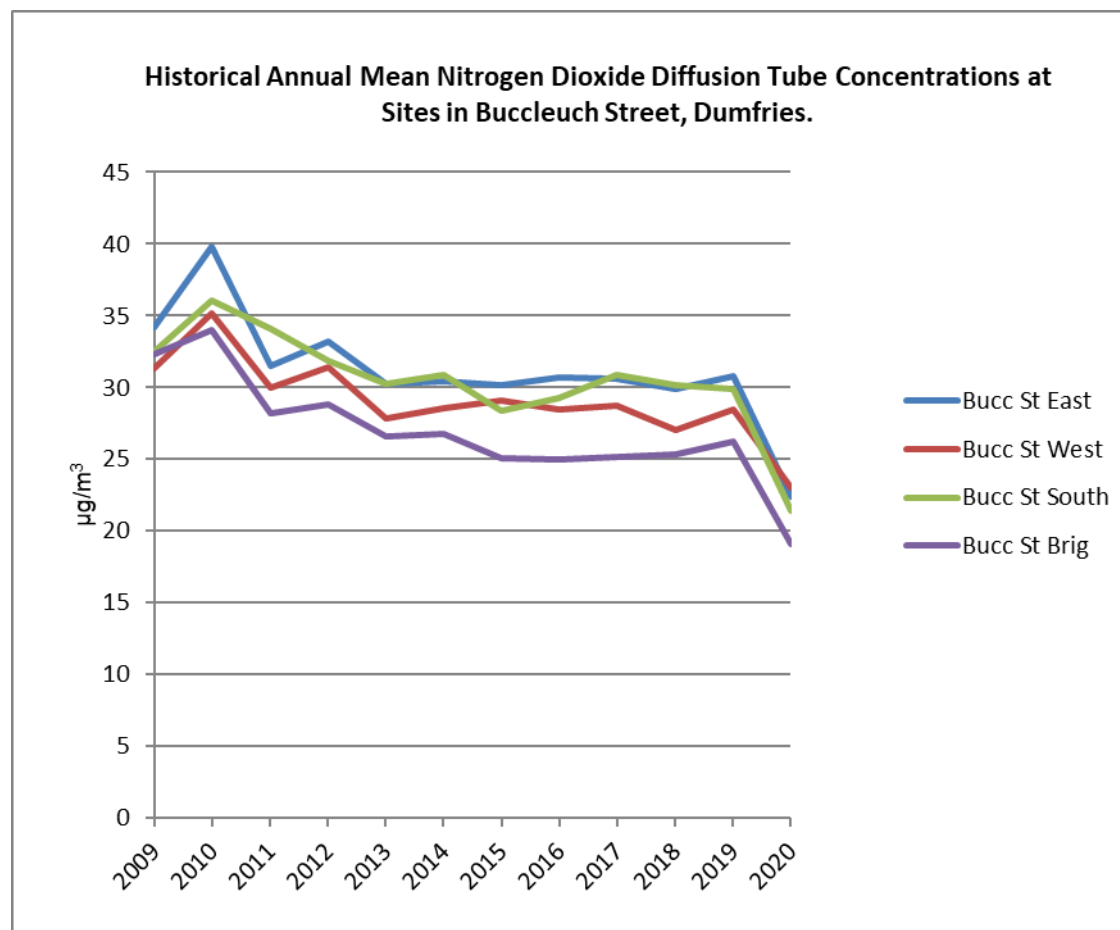


Figure A.4 Graph Showing Historical Annual Mean Nitrogen Dioxide Diffusion Tube Concentrations at Sites Other Than Buccleuch Street, Dumfries. (Excluding discontinued sites)

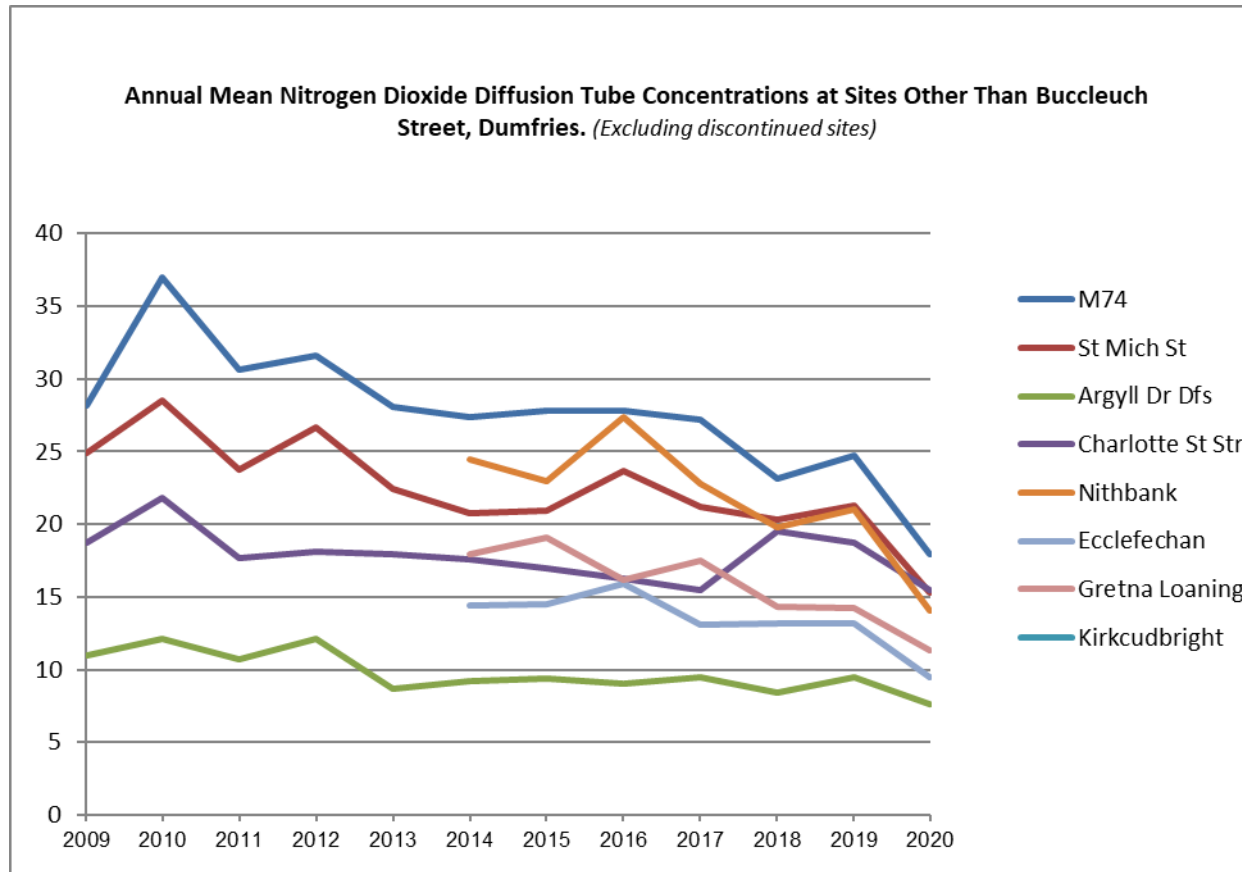
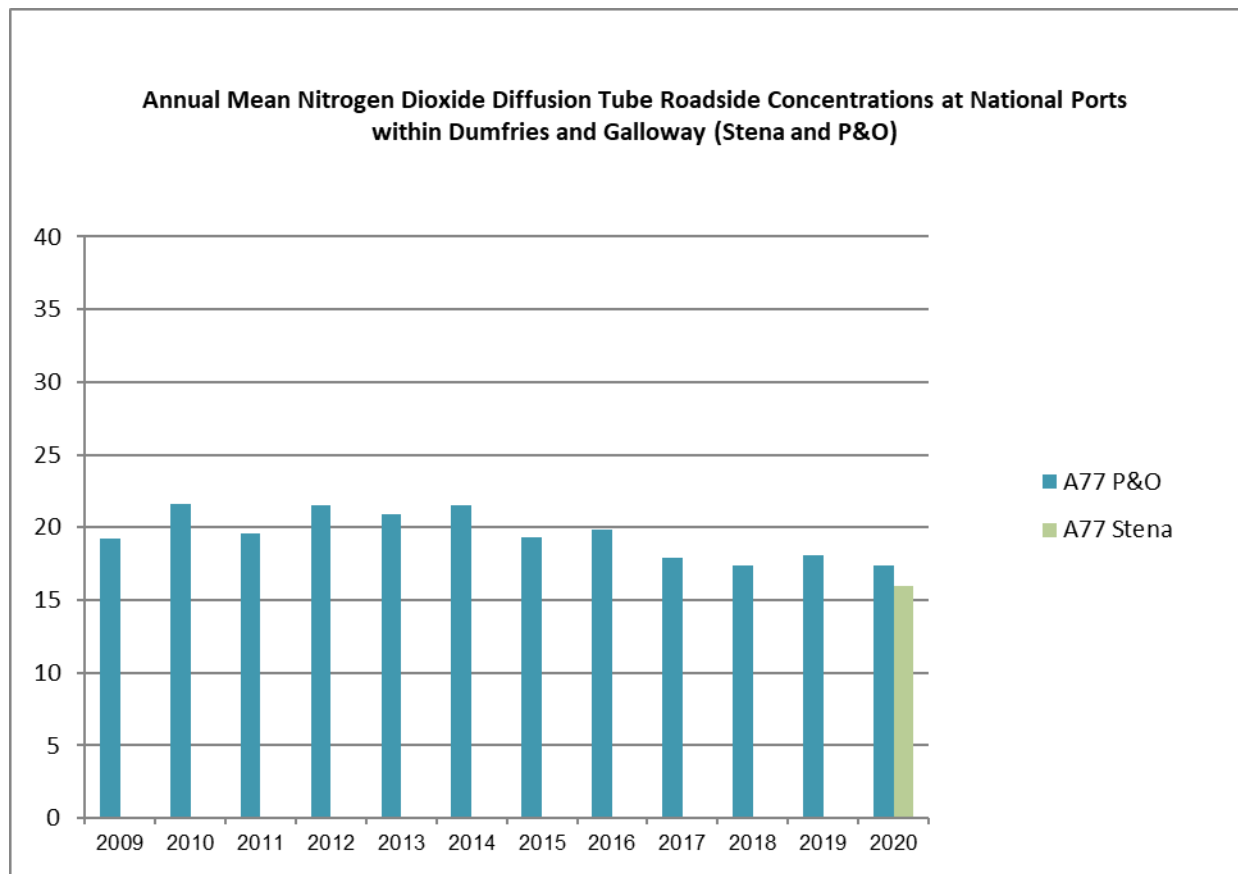


Figure A.5 Graph Showing Annual Mean Nitrogen Dioxide Diffusion Tube Roadside Concentrations at National Ports within Dumfries and Galloway (P&O and Stena Line)



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Monthly Diffusion Tube Results (µg/m³)

Site Name	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data Annualised	Bias Adjusted (1)
M74 Slip Road, Lockerbie	24.6	17.7	No Data	No Data	13.9	13.8	16.3	16.9	23.4	24.2	26	No Data	19.6	17.9
(2)Buccleuch St (East) Dumfries	42.4	28.8	No Data	No Data	13.0	16.4	No Data	No Data	25.7	25.5	28.8	No Data	24.6	22.4
	40.6	28.1	No Data	No Data	V	21.4	No Data	No Data	24.8	26.1	27.9	No Data		
	39.2	33	No Data	No Data	11.6	15.5	No Data	No Data	26	26.2	27.7	No Data		
(3)Buccleuch St (West) Dumfries													25.2	23.0
	40.5	31.5	No Data	No Data	13.2	17.0	No Data	No Data	25.5	26.9	30.0	No Data		
Buccleuch St (South)(Sheriff) Dumfries	40.7	26.3	No Data	No Data	11.4	16.8	No Data	No Data	24.2	21.3	31.7	No Data	23.6	21.4
(4)Buccleuch St Bridge, Dumfries	34	21.4	No Data	No Data	12.6	17.4	No Data	No Data	21	21	30.1	No Data	21.0	19.1
	29.5	23.2	No Data	No Data	11.7	17.3	No Data	No Data	20.1	19	29.5	No Data		
Nithbank Dumfries	20.7	14.2	No Data	No Data	10.1	13.4	No Data	No Data	17.3	18.7	18.8	No Data	15.5	14.1
St Michael St Dumfries	25.7	18.2	No Data	No Data	9.8	10.7	No Data	No Data	16.8	18.8	23.2	No Data	16.8	15.3
Argyll Drive Dumfries	14.7	9.7	No Data	No Data	4.3	4.3	No Data	No Data	6.8	8.3	13	No Data	8.4	7.6
Castle Break Ecclefechan	13.1	9.3	No Data	No Data	7.4	7.2	7.3	10.6	12.3	14.1	12.7	No Data	10.4	9.5
Gretna Loaning Gretna Green	20.5	14.2	No Data	No Data	7.4	6.6	10.3	10.0	11.0	16.0	15.3	No Data	12.4	11.3
Charlotte St Stranraer	23.3	16.1	No Data	V	11.5	10.2	V	No Data	19.9	19.3	24.4	No Data	17.0	15.5
A77 Cairnryan Stranraer P&O	26.9	16.3	No Data	No Data	14.6	18.5	15.6	18.1	20.4	16.6	24.9	No Data	19.1	17.4
A77 Cairnryan Stena Port	21.8	10.2	No Data	No Data	18.8	20.5	17.5	16.7	17.6	17.3	18.3	No Data	17.6	16.0
Kirkcudbright	22.4	12.2	No Data	No Data	9.6	10.3	12.9	13.1	13.3	14.3	19.8	No Data	14.2	12.9

Notes:

- (1) See Appendix C for details on bias adjustment and annualisation.
- (2) Triplicate tubes (co-located with automatic monitor)
- (3) Duplicate tubes
- (4) Duplicate tubes (previously Triplicate)
- (V) Tubes vandalised (or otherwise removed or sample tubes contaminated)
- (No Data) Tube exposure times in excess of tube accuracy and results omitted

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

New or Changed Sources Identified Within Dumfries and Galloway Council During 2020

Dumfries and Galloway Council has not identified any new sources relating to air quality within the reporting year of 2020

Additional Air Quality Works Undertaken by Dumfries and Galloway Council During 2020

Dumfries and Galloway Council has not completed any additional works within the reporting year of 2020. Dumfries and Galloway Council does not have any AQMA within its area as there is no exceedance, nor is there likely to be exceedance in the future of air quality objectives.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes were prepared and analysed by SOCOTEC (Didcot) using 50% triethanolamine (TEA) in acetone. SOCOTEC has been a participant in the AIR PT proficiency scheme since its inception and was a participant in its predecessor WASP also since inception. Over the past two years SOCOTEC (formerly Environmental Scientifics Group, Didcot) has achieved 100% in the Air PT proficiency scheme.

As a result of the Dumfries and Galloway Council's response to the SARS-CoV-2 pandemic (including increased workload and staff redeployment) the suggested timetable for exposure of the diffusion tubes could not be followed during March – April 2020 (all sites) July-August 2020 (11 sites) and December 2020 (all sites). As data capture was therefore less than 75% it was required to annualise monitoring data from relevant sites with reduced exposure.

Diffusion Tube Annualisation

A number of diffusion tube monitoring locations within Dumfries and Galloway Council as a result of the response to the SARS-CoV-2 pandemic has a recorded data capture of less than 75% therefore it was required to annualise any monitoring data. The sites requiring annualisation are defined along with details of the calculation method undertaken provided in Table C.2. Annualisation was required for any site with data capture less than 75% but greater than 33%.

Diffusion Tube Bias Adjustment Factors

Dumfries and Galloway Council have applied a local bias adjustment factor of 0.91 to the 2020 monitoring data. A summary of bias adjustment factors used by Dumfries and Galloway Council over the past five years is presented in Table C.1.

Triplicate diffusion tubes at Buccleuch Street (East) Dumfries are co-located with the NO₂ continuous monitor and are used to derive a local bias-adjustment factor.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.91
2019	Local	-	0.89
2018	Local	-	0.84
2017	Local	-	0.86
2016	Local	-	0.87

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Dumfries and Galloway Council required distance correction during 2020

QA/QC of Automatic Monitoring

Routine calibrations of the automatic monitor are carried out fortnightly by Council staff, with six-monthly audits carried out by Ricardo Energy and Environment. Ratification is carried out by the Quality Assurance and Control (QA/QC) Unit at Ricardo Energy and Environment. (The NO₂ continuous monitor at Eskdalemuir also forms part of the AURN and is subject to the same audit regime). Triplicate diffusion tubes at Buccleuch Street (East) Dumfries are co-located with the NO₂ continuous monitor and are used to derive a local bias-adjustment factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Dumfries and Galloway Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within Dumfries and Galloway Council required distance correction during 2020

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

				Sufficient (>85%) annual data capture	Sufficient (>85%) annual data capture	Sufficient (>85%) annual data capture	Sufficient (>85%) annual data capture			
Diffusion Tube ID	Site Name ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Annualisation Factor Edinburgh St Leonards UB	Annualisation Factor Peebles UB	Annualisation Factor Glasgow Townhead UB	Annualisation Factor Eskdalemuir RB	Average Annualisation Factor	Raw Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)	Annualised Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)
DT 1	Buccleuch Street West S3	296949	576218	0.8747	1.0643	0.9904	0.8978	0.9568	26.4	25.3
DT 2	Nithbank S5	297712	575254	0.8747	1.0643	0.9904	0.8978	0.9568	16.2	15.5
DT 3	St Michael Street DFS S6	297457	575692	0.8747	1.0643	0.9904	0.8978	0.9568	17.6	16.8
DT 4	Argyl Drive S7	299378	578847	0.8747	1.0643	0.9904	0.8978	0.9568	8.7	8.3
DT 5	Charlotte St STR S10	206085	560859	0.8747	1.0643	0.9904	0.8978	0.9568	17.8	17.0
DT 6	Buccleuch St E (i) S11	297025	576259	0.8747	1.0643	0.9904	0.8978	0.9568	25.8	24.7
DT 7	Buccleuch St E (i) S12	297025	576259	0.7877	0.9706	0.8821	0.8747	0.8788	28.2	24.8
DT 8	Buccleuch St E (i) S13	297025	576259	0.8747	1.0643	0.9904	0.8978	0.9568	25.6	24.5
DT 9	Buccleuch St S S14	296868	576182	0.8747	1.0643	0.9904	0.8978	0.9568	24.6	23.5
DT 10	Buccleuch St Bridge S15	296868	576182	0.8747	1.0643	0.9904	0.8978	0.9568	22.5	21.5
DT 11	Buccleuch St Bridge S17	296868	576182	0.8747	1.0643	0.9904	0.8978	0.9568	21.5	20.6

Table C.3 – Local Bias Adjustment Calculations

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm ⁻³	Tube 2 µgm ⁻³	Tube 3 µgm ⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	08/01/2020	06/02/2020	42.4	40.6	39.2	41	1.6	4	4.0	37.70	99.28	Good	Good
2	06/02/2020	02/03/2020	28.8	28.1	33.0	30	2.7	9	6.6	31.30	95.22	Good	Good
3	02/03/2020	01/04/2020											
4	01/04/2020	30/04/2020											
5	30/04/2020	11/06/2020	13.0		11.6	12	1.0	8	8.9	11.70	97.32	Good	Good
6	11/06/2020	08/07/2020	16.4	21.4	15.5	18	3.2	18	7.9	11.90	87.33	Good	Good
7	08/07/2020	29/07/2020											
8	29/07/2020	03/09/2020											
9	03/09/2020	01/10/2020	25.7	24.8	26.0	26	0.6	2	1.6	23.90	99.7	Good	Good
10	01/10/2020	04/11/2020	25.5	26.1	26.2	26	0.4	1	0.9	22.50	99.88	Good	Good
11	04/11/2020	30/11/2020	28.8	27.9	27.7	28	0.6	2	1.5	24.90	99.84	Good	Good
12	30/11/2020	06/01/2021								No Data	No Data		Good
13										23.41	96.94		Good

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID:	Buccleuch Street E (i)
Accuracy (with 95% confidence interval)	Precision 7 out of 7 periods have a CV smaller than 20%
without periods with CV larger than 20%	
Bias calculated using 7 periods of data	
Bias factor A 0.91 (0.8 - 1.05)	
Bias B 10% (-5% - 25%)	
Diffusion Tubes Mean: 26 µgm ⁻³	
Mean CV (Precision): 6	
Automatic Mean: 23 µgm ⁻³	
Data Capture for periods used: 97%	
Adjusted Tubes Mean: 23 (21 - 27) µgm ⁻³	

Accuracy (with 95% confidence interval)	WITH ALL DATA
without periods with CV larger than 20%	
Bias calculated using 7 periods of data	
Bias factor A 0.91 (0.8 - 1.05)	
Bias B 10% (-5% - 25%)	
Diffusion Tubes Mean: 26 µgm ⁻³	
Mean CV (Precision): 6	
Automatic Mean: 23 µgm ⁻³	
Data Capture for periods used: 97%	
Adjusted Tubes Mean: 23 (21 - 27) µgm ⁻³	

Overall survey --> **Good precision** **Good Overall DC**
(Check average CV & DC from Accuracy calculations)

Jaume Targa, for AEA
Version 04 - February 2011

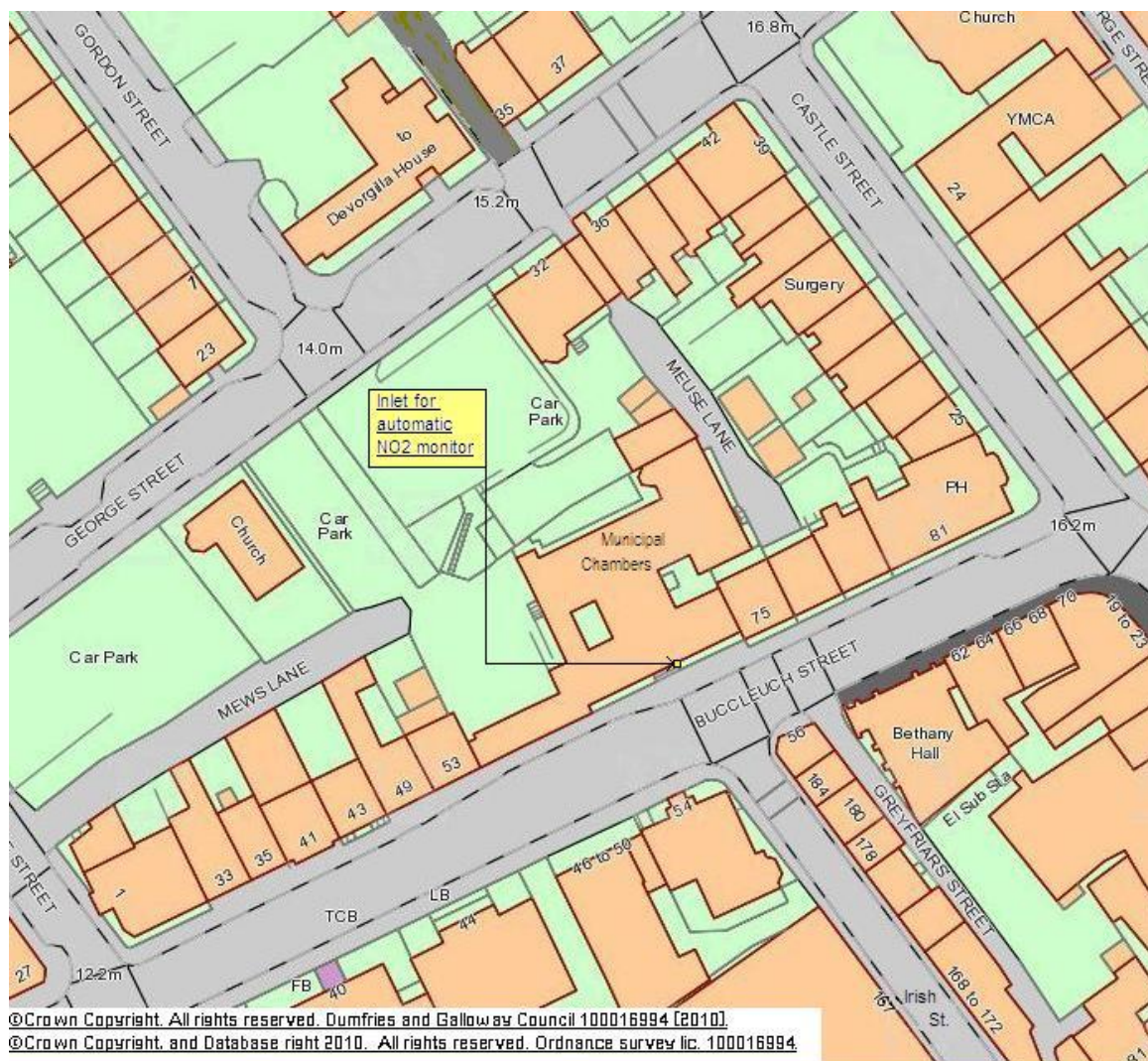
Notes:

The local bias adjustment factor of 0.91 has been used in preference to the national bias-adjustment factor of 0.79 derived by amalgamation of 24 studies. The national bias adjustment spreadsheet (version 09/21) is available to download at: <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

A single local bias adjustment factor has been used to bias adjust the 2020 diffusion tube results.

Dumfries and Galloway Council

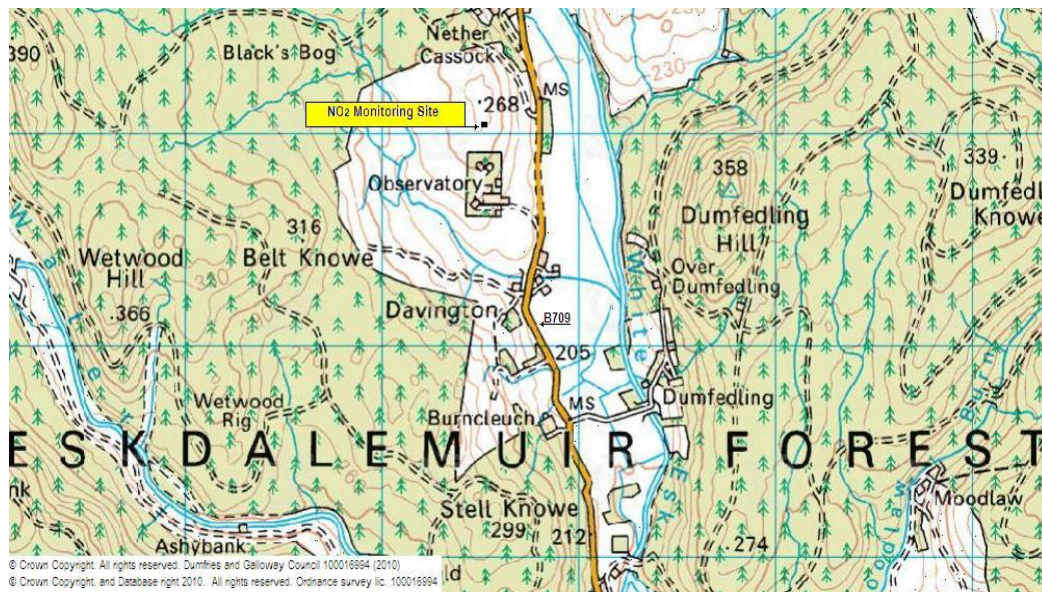
Appendix D Maps showing the location of the monitoring sites.

Figure D.1 Map of NO₂ automatic monitoring site at Buccleuch St., Dumfries.

The air intake for the AURN monitor is situated to the rear of a sign at the entrance to Municipal Chambers. The air-intake tube goes through a window to the monitor which is located in the basement of the building.

Dumfries and Galloway Council

Figure D.2 Map of NO₂ automatic monitoring site at Eskdalemuir



Since December 2004 a continuous NO₂ monitor has been located at the Observatory⁽ⁱⁱⁱ⁾ at Eskdalemuir as part of the AURN. The Observatory is currently managed by the British Geological Society and the Met Office

Figure D.3 Map of diffusion tube site at M74 Lockerbie.



Dumfries and Galloway Council

Figure D.4 Map of diffusion tube sites at (from left to right) Buccleuch St. Bridge, Buccleuch St. West, Buccleuch St. South, & Buccleuch St. East, Dumfries.

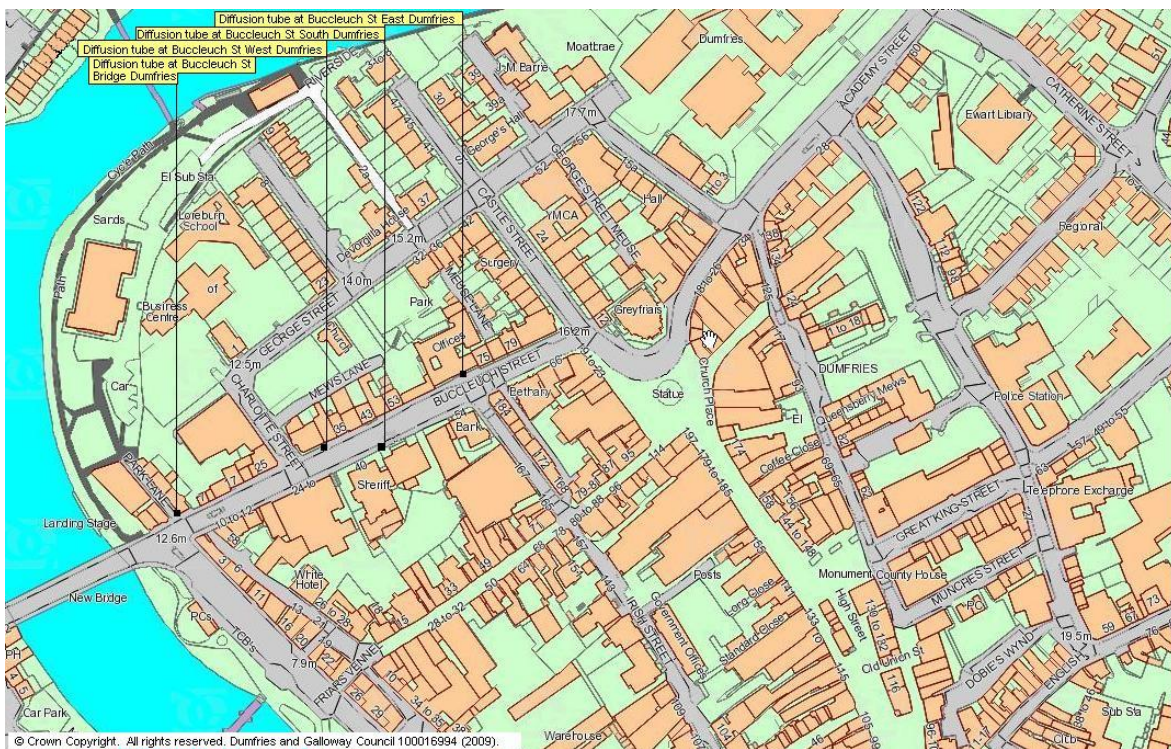


Figure D.5 Map of diffusion tube site at St Michael Street Dumfries



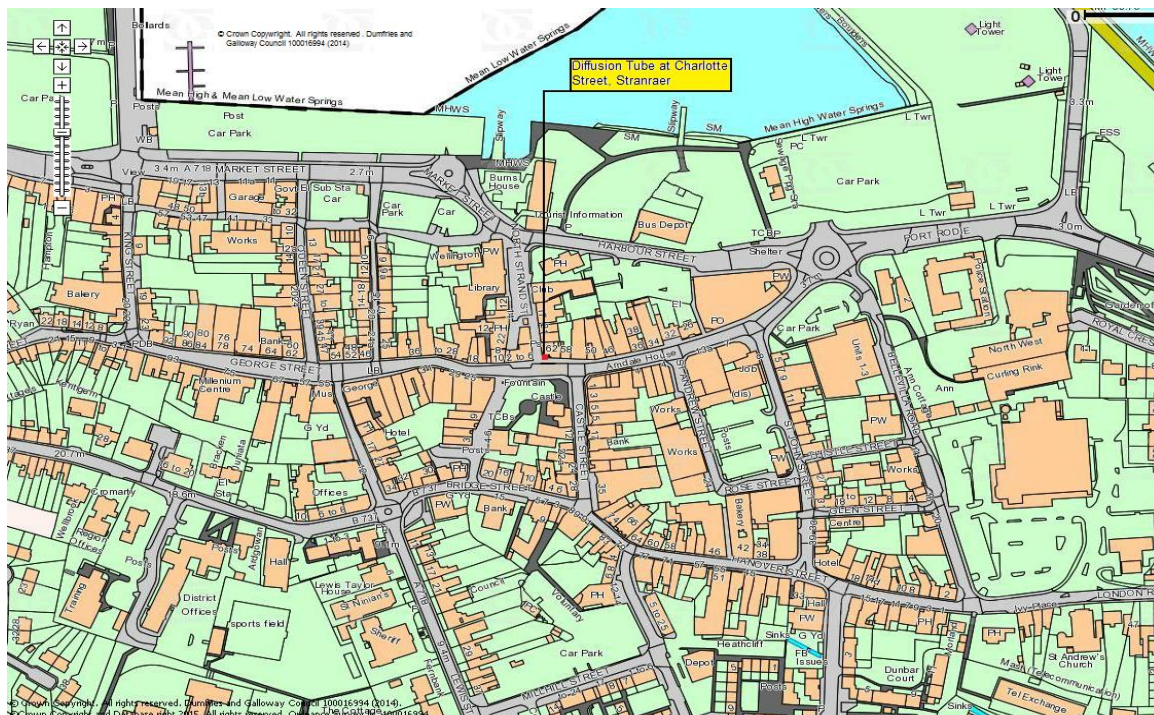
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Appendix D Maps showing the location of the monitoring sites (continued).

Figure D.6 Map of diffusion tube site at Argyll Drive, Heathhall Dumfries.



Figure D.7 Map of diffusion tube site at Charlotte St., Stranraer.



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Figure D.8 Map of diffusion tube site at A77 Cairnryan (P&O).

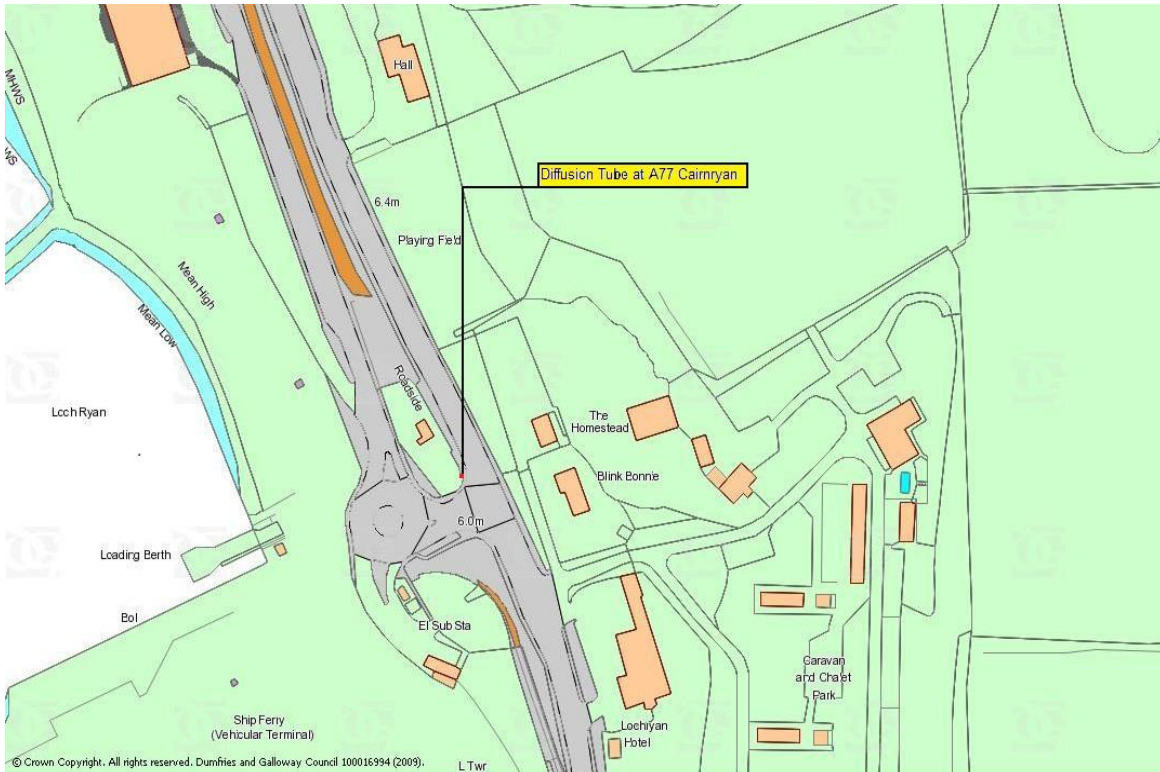


Figure D.9 Map of diffusion tube site at Nithbank, Dumfries.



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Figure D.10 Map of diffusion tube site at Castle Break, Ecclefechan.



Figure D.11 Map of diffusion tube site at Gretna Loaning, Gretna,



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Figure D.12 Map of diffusion tube site at A77 Cairnryan Stena Line Port, Stranraer



Figure D.13 Map of diffusion tube site at Kirkcudbright



Glossary of Terms

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

References

1. DEFRA Local Air Quality Management Technical Guidance (TG16) April 2016