



Vale of Glamorgan Council 2024 Air Quality Progress Report

In fulfilment of Part IV of the Environment Act 1995, as
amended by the Environment Act 2021

Local Air Quality Management

Date: July 2024

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Executive Summary: Air Quality in Our Area

What has become distinctly apparent is that air Pollution is a local and national problem. Long-term exposure reduces life expectancy by increasing mortality, as well as increasing morbidity risks from heart disease and strokes, respiratory diseases, lung cancer and other effects.

What we know is that poor air quality in Wales poses a significant concern for Public Health and is regarded as the most significant environmental determinant of health. Its associated adverse risk to public health is particularly prevalent within urban areas and near major roads. The pollutants of concern for public health are particulate matter and primary/secondary derived nitrogen dioxide (NO₂). Both pollutants primarily originate from motor vehicles.

The UK expert Committee on the Medical Effects of Air Pollution (COMEAP) estimated that air pollution is responsible for “an effect equivalent of between 28,000 and 36,000 deaths (at typical ages) each year” in the UK. In 2022, the UK Health Security Agency updated this estimate; the burden range is now reported as the equivalent of between 29,000 and 43,000 deaths per year¹.

The burden range does not reflect ‘actual’ deaths from air pollution exposure but is an estimate of the ‘equivalent’ reduced life expectancy, when summed, which everyone experiences because of air pollution exposure (6-8 months on average but could range from days to years).

In Wales – based on modelled air pollution data pre-pandemic – Public Health Wales estimated the burden of long-term air pollution exposure to be around the equivalent of 1,000 to 1,400 deaths each year². This estimate was calculated using a more accurate method that considers the combined effects of different pollutants, meaning that the overlapping effects of PM_{2.5} and NO₂ are accounted for. Impact estimates are uncertain, however, which is why they should always be presented as a range of values, rather than a single, central estimate.

¹ <https://airquality.gov.wales/about-air-quality/health-advice>

² <https://phw.nhs.wales/services-and-teams/environmental-public-health/air-quality/air-pollution-and-health-fact-sheet/>

Although estimating the burden of air pollution is difficult, there is clear and strong evidence that it does harm health. It is therefore important to take action to reduce air pollution and the harms that go with it.

Air Quality in the Vale of Glamorgan

Air pollution concentrations continue to meet the relevant Air Quality Objective limits within the Vale of Glamorgan.

The Vale of Glamorgan Council undertook non- automatic (passive) diffusion tube monitoring of NO₂ at 52 sites during 2023. New non-automatic sites were installed at Millfield Road in Cowbridge, the A48 in Bonvilston, Colcott Road in Barry, Penarth Portway and Penarth Esplanade. These sites were selected due to air quality concerns raised by residents and Councillors.

From the period of 2019 to 2023, annual average roadside NO₂ concentrations have decreased by 21.4% from 20.1µg/m³ to 15.8µg/m³. A decrease of 6.5% from 16.9µg/m³ to 15.8µg/m³ in annual average roadside NO₂ concentrations is evident between 2022 and 2023. This shows an overall improving trend in NO₂ concentrations.

The highest concentration of monitored NO₂ is at diffusion tube site 79, located on the A4160 in Cogan. At a total of 28µg/m³, the concentration of NO₂ at this site is still well within the annual objective limit of 40µg/m³. However, this is a kerbside site and not representative of relevant exposure with regard to the annual objective limit.

Actions to Improve Air Quality

Since January 2021 and the revocation of the Windsor Road, Penarth Air Quality Management Area AQMA, there are no Air Quality Management Areas (AQMAs) within the Vale of Glamorgan.

The Vale of Glamorgan Council continues to implement a substantial network of non-automatic diffusion tube monitoring sites. These locations are reviewed annually, and additional locations can be added to the network if requested to address any concerns by residents or Councillors.

Funding for three automatic sensor locations was approved via the Welsh Government Local Air Quality Management Support fund in 2023. The sensors record pollutant

concentrations every five minutes and will enable assessment for a range of pollutants at a hyperlocal level.

Project Zero

The Vale of Glamorgan Council continues to support measures to reduce emissions as part of Project Zero³, it's strategy to achieve net zero by 2030.

Figure 1 - Project Zero Logo



All relevant planning applications are required to be accompanied by a travel plan to promote sustainable travel choices and prevent unnecessary car use. Since March 2019 at least 10% of car parking spaces on non-residential developments are required to have electric vehicle charging points infrastructure.

The Council introduced its first fleet of electric vehicles in 2022 and plans to replace diesel-powered vehicles across its service areas. 12 new Hyundai Kona electric vehicles have replaced a number of diesel-powered pool cars. With over 4000 miles on each vehicle, the new EV cars have reduced the Council's CO₂ emissions by an estimated 13,554kg so far. They will continue to significantly reduce carbon emissions as 2030 draws nearer. Each Kona EV vehicle can travel up to 300 miles on a single charge and can be recharged in just one hour using a rapid charge point.

With further plans to replace Council fleet vehicles with electric-powered alternatives, the Council has recently acquired a number of electric vans which are now in use.

³ <https://www.valeofglamorgan.gov.uk/en/living/Climate-Change/Project-Zero.aspx>

The vehicles are maintained by the Council's in-house Transport Services team in partnership with Clenergy EV, who monitor the EV charging stations at the Civic Offices in Barry and The Alps Depot in Wenvoe.

To support residents and visitors to the Vale who have made the switch to electric vehicles, a number of EV charging stations have been installed in public spaces across the County and are now available for public use.

Local Priorities and Challenges

As all areas remain in compliance with Air Quality Objectives, the priority for 2024 is to ensure pollutant concentrations continue a downward trend. This will be achieved by continuing to promote active travel, sustainable travel, and the use of public transport.

How to Get Involved

The Vale of Glamorgan Council welcomes any correspondence relating to air quality enquiries or concerns. Shared Regulatory Services (SRS) Specialist Services Team represents VoGC for air quality management and therefore is contactable via the webpage www.srs.wales/en/Home.aspx.

Further information including previous Annual Progress Reports for Air Quality can be found at the following link <https://www.srs.wales/en/Environmental-Health/Noise-and-Air-Pollution/Air-quality-and-pollution/Air-Quality-and-Pollution.aspx>

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in the Vale of Glamorgan	ii
Actions to Improve Air Quality	ii
Local Priorities and Challenges	iv
How to Get Involved	iv
1 Actions to Improve Air Quality	1
1.1 Previous Work in Relation to Air Quality	1
1.2 Air Quality Management Areas	5
2 Air Quality Monitoring Data and Comparison with Air Quality Objectives	5
2.1 Summary of Monitoring Undertaken in 2023	5
2.1.1 Relationship between the Annual Mean and 1-hour NO ₂ Objectives	6
2.1.2 Non-Automating Monitoring Sites	7
2.2 2023 Air Quality Monitoring Results	18
2.3 Comparison of 2023 Monitoring Results with Previous Years and the Air Quality Objectives	27
2.3.1 Nitrogen Dioxide (NO ₂)	27
2.4 Summary of Compliance with AQS Objectives as of 2023	27
3 New Local Developments	28
3.1 Road Traffic Sources (and Other Transport)	29
3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources	30
3.3 Other Sources	30
4 Policies and Strategies Affecting Airborne Pollution	31
4.1 Local / Regional Air Quality Strategy	31
4.2 Local Transport Plans and Strategies	31
4.3 Active Travel Plans and Strategies	32
4.4 Local Authorities Well-being Objectives	33
4.5 Climate Change Strategies	34
5 Conclusion and Proposed Actions	37
5.1 Conclusions from New Monitoring Data	37
5.2 Proposed Actions	37
References	38
Appendices	39
Appendix A: Quality Assurance / Quality Control (QA/QC) Data	40
Appendix B: A Summary of Local Air Quality Management	43
5.3 Purpose of an Annual Progress Report	43

5.4	Air Quality Objectives	43
Appendix C: Air Quality Monitoring Data QA/QC.....		45
5.5	QA/QC of Diffusion Tube Monitoring	45
	Diffusion Tube Annualisation.....	45
	NO ₂ Fall-off with Distance from the Road.....	46
Glossary of Terms		49

List of Tables

Table 1 - Air Quality Objectives for the Purpose of LAQM in Wales	6
Table 2 – Details of Non-Automatic Monitoring Sites.....	8
Table 3 - Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)	18
Table 4 - – Full Monthly Diffusion Tube Results for 2023 (µg/m ³).....	40
Table 5 - Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales	44
Table 6 – Bias Adjustment Factor	46
Table 7 - Annualisation Summary (concentrations presented in µg/m ³)	47

List of Figures

Figure 1 - Project Zero Logo	iii
Figure 2 – Map of Non-Automatic Monitoring Sites in Barry	13
Figure 3 - Map of Non-Automatic Monitoring Sites in Dinas Powys.....	14
Figure 4 - Map of Non-Automatic Monitoring Sites in Penarth	15
Figure 5 - Map of Non-Automatic Monitoring sites in the North of the Vale of Glamorgan.	16
Figure 6 - Map of Non-Automatic Monitoring Sites in the West of the Vale of Glamorgan.	17
Figure 7 – Trends in Annual Mean NO ₂ Concentrations in Barry.....	23
Figure 8 - Trends in Annual Mean NO ₂ Concentrations in Dinas Powys	24
Figure 9 - Trends in Annual Mean NO ₂ Concentrations in Penarth	25
Figure 10 - Trends in Annual Mean NO ₂ Concentrations in Vale of Glamorgan West	26
Figure 11 – Wellbeing of Future Generations Act.....	33

1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

First Round of Review and Assessment

Between 1999 and 2001, the Vale of Glamorgan Council published reports corresponding to stages 1, 2 and 3 of the first round of review and assessment of air quality. These assessments predicted no exceedances of any of the objectives but concluded that monitoring should continue for nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and particulate matter (PM₁₀).

Second Round of Review and Assessment

Following new technical and policy guidance issued by Defra, the Vale published its first Updating and Screening Assessment (USA) in June 2003. The USA concluded that no nitrogen dioxide or (PM₁₀) exceedances were likely but that monitoring should continue. However, it was suggested that there was a requirement to continue to a Detailed Assessment for the 15- minute limit of SO₂ in Rhoose.

The Council proceeded to publish Progress Reports in 2004 and 2005, which identified exceedances of the 15-minute SO₂ objectives in Rhoose. The Council therefore proceeded to publish a Detailed Assessment in 2005 which concluded that there was no need to declare an AQMA but to continue monitoring.

Third Round of Review and Assessment

The published its second USA in June 2006, which again concluded that there was no requirement to go onto the detailed stage. However, the USA did note that NO₂ concentrations were close to the limit at Penarth due to road works and recommend that a Detailed Assessment to be carried out if there was no change.

The Council published Progress Reports in 2007 and 2008, which identified that nitrogen dioxide concentrations continued to be close to the limit value at Penarth. A Detailed Assessment was recommended.

The Detailed Assessment of NO₂ in the Penarth area was published in June 2009. It concluded that there were no exceedances of either NO₂ limit but recommended continued monitoring.

Fourth Round of Review and Assessment

The Council published its third USA in June 2009. Nitrogen Dioxide, Sulphur Dioxide and Particulate Matter (PM₁₀) were being monitored in the area by both the Vale and RWENpower. There were no recorded nitrogen dioxide exceedances however; annual mean concentrations at Windsor Road in Penarth were close to the limit. There were no exceedances of SO₂ 15-minute or 24-hour means. There were 6 exceedances of the PM₁₀ daily mean concentration and no exceedances of the PM₁₀ annual mean objective.

The 2010 Progress Report concluded that there were no exceedances of the relevant standards for any of the pollutants measured and that there was no need to proceed to a Detailed Assessment. The 2011 Progress Report concluded that there were no exceedances of the NO₂ or SO₂ objectives; however, NO₂ concentrations remain close to objectives in some places. Several exceedances of the 24-hour mean for PM₁₀ were recorded in Fonmon and Penarth but remained within the permitted 35 exceedances per annum.

Fifth Round of Review and Assessment

The Vale of Glamorgan Council published its fourth USA in April 2012, which again concluded that some locations continued to be at or close to the annual mean NO₂ concentrations. Appendix D of the report contained a Detailed Assessment of the air quality in Cogan.

The Detailed Assessment identified several locations on Windsor Road in Penarth, where the annual mean NO₂ objective was likely to be exceeded and that no exceedances of the 1-hour mean were likely. It was therefore recommended that an Air Quality Management Area (AQMA) be declared to include, as a minimum the residential properties with concentrations $\geq 36 \mu\text{g}/\text{m}^3$. It was also recommended that the monitoring network be extended to include locations at the façade of properties on Windsor Road, the results of which could be used to inform a further assessment.

The 2013 Progress Report recommended that; diffusion tubes with consistently low, compliant concentrations, be re-deployed in new locations; additional tubes be placed at locations where the NO₂ concentrations are consistently close to the annual mean objective with relevant exposure; Penarth's automatic monitor be relocated to within the proposed AQMA; and that the indicative PM₁₀ monitor be replaced with a gravimetric equivalence monitor.

The 2014 Progress Report concluded that there was no need to proceed to a Detailed Assessment for any of the pollutants monitored. An AQMA was declared on 1st August 2013 for a section of Windsor Road, Penarth with respect to the annual mean objective NO₂. NO₂ concentrations were high due to congested traffic moving through a partial 'street canyon' with residential exposure along the western flank.

Sixth Round of Review and Assessment

The Council published its fifth USA in May 2015 which confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (Windsor Road, Penarth). 2015's USA also highlighted the need for further investigations with regards to three biomass boiler installations.

The 2016 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (Windsor Road, Penarth). It was highlighted that it would be decided following the examination of the 2016 dataset whether to revoke the Windsor Road, Penarth AQMA. Three biomass boiler installations were investigated, and it was ascertained if their emissions would breach targeted emission thresholds.

The 2017 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (AQMA) on Windsor Road, Penarth.

Following a review of the 2016 NO₂ diffusion tube network, it was agreed to assign and relocate new monitoring locations. The new locations have been allocated based on known areas of particularly elevated traffic flows and foreseeable development, all with nearby

relevant exposure. These newly monitored areas for 2017 are Llantwit Major, Gileston, St Athan, Rhoose (Fonmon), Barry Docks and Saint Brides Major.

The 2018 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (AQMA) on Windsor Road, Penarth.

The 2019 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (AQMA) on Windsor Road, Penarth. It was made a priority that the decision to revoke the Windsor Road, Cogan, Penarth AQMA was supported by a detailed assessment and a public consultation was undertaken to review the supporting assessment prior to submission to Welsh Government to formalise the revocation of the AQMA Order.

The 2020 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives, including within the existing Air Quality Management Area (AQMA) on Windsor Road, Penarth. The revocation order for the Windsor Road, Cogan, Penarth AQMA came into force on 1st January 2021.

The 2021 Annual Progress Report confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives. The Covid-19 pandemic and associated restrictions had a considerable impact on air quality during the period of 2020. In 2020 an average reduction of 19% in NO₂ annual mean concentrations was experienced at all roadside diffusion tube monitoring sites relative to 2019. The automatic monitor located at Windsor Road; Penarth showed a reduction in NO₂ daily mean concentrations of 41% for the months of April to June 2020 relative to the previous months of January to March 2020. A total reduction of 22% in NO₂ annual mean concentration was also experienced at Windsor Road, Penarth monitoring station compared to 2019.

The 2022 and 2023 Annual Progress Reports confirmed that air quality within the Vale of Glamorgan continued to meet the relevant air quality objectives. Measured air pollutant concentrations remain lower than pre-pandemic levels at most monitoring locations.

Previous Air Quality Annual Progress Reports can be found at the following link <https://www.srs.wales/en/Environmental-Health/Noise-and-Air-Pollution/Air-quality-and-pollution/Air-Quality-and-Pollution.aspx>

1.2 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when air quality is close to or above an acceptable level of pollution (known as the air quality objective). After declaring an AQMA the authority must prepare an Air Quality Action Plan (AQAP) within 18 months setting out measures it intends to put in place to improve air quality to at least the air quality objectives, if not even better. AQMA(s) are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

At present, the Vale of Glamorgan does not have any AQMAs.

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2023

Local authorities have a statutory duty under Part IV of the Environment Act 1995 (as amended by the Environment Act 2021) & Air Quality Strategy for England, Scotland, Wales, and Northern Ireland 2007 to ensure a programme of Local Air Quality Management (LAQM) is implemented. Under Section 82 of the Environment Act 1995 every local authority has an obligation to regularly review and assess air quality in their areas, and to determine whether air quality objectives are likely to be achieved.

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138) and Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298). Table 1 highlights the air quality objectives included in regulations for the purpose of LAQM in Wales.

Table 1 - Air Quality Objectives for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as	Date to be achieved by
Nitrogen Dioxide (NO₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO₂)	40µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2010
Particulate Matter (PM₁₀)	40µg/m ³	Annual mean	31.12.2010
Sulphur dioxide (SO₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	16.25µg/m ³	Running annual mean	31.12.2003
Benzene	5µg/m ³	Annual mean	31 12 2010
1,3 Butadiene	2.25µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m ³	Maximum Running Daily 8-Hour mean	31.12.2003
Lead	0.25µg/m ³	Annual Mean	31.12.2008

2.1.1 Relationship between the Annual Mean and 1-hour NO₂ Objectives

Predicting exceedances of the NO₂ 1-hour objective is not straightforward, as these will be highly variable from year to year, and from site to site. If monitoring is to be relied upon, then this should be carried out for an extended period (preferably a full calendar year) to ensure that the occurrence of occasional peaks is adequately captured.

A study carried out on behalf of Defra and the Devolved Administrations identified that exceedances of the NO₂ 1-hour mean are unlikely to occur where the annual mean is **below**

60µg/m³. Analysis of data in more recent years has shown local authorities should continue to use this assumption where NO₂ 1-hour mean monitoring data is not available (typically if monitoring NO₂ using passive diffusion tubes). It should be noted that this relationship is based upon observations made predominantly at roadside and kerbside monitoring sites where road traffic is the primary source of emissions.

2.1.2 Non-Automated Monitoring Sites

The Vale of Glamorgan Council undertook non- automatic (passive) diffusion tube monitoring of NO₂ at 52 sites during 2023. Table 2 presents the details of these sites. No automatic monitoring was undertaken in the Vale of Glamorgan in 2023.

New non-automatic sites were installed at Millfield Road in Cowbridge, the A48 in Bonvilston, Colcott Road in Barry, Penarth Portway and Penarth Esplanade. These sites were selected due to air quality concerns raised by residents and Councillors.

Due to team resource issue's, diffusion tubes where not collected in May, June, and July. However, all effected sites have been annualised using the methodology provided in Chapter 7 of [Technical Guidance LAQM.TG22](#). Diffusion tube collections now resume as normal.

Analysis of the exposed tubes is conducted by Socotec UK Ltd, Didcot operating procedure ANU/SOP/1015. The tubes are prepared by spiking acetone: triethanolomine (50:50) on the grids prior to the tubes being assembled. The tubes are desorbed with distilled water and the extract analysed using a segmented flow auto analyser with ultraviolet detection. As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of 11°C and then adjusted to 20°C to allow direct comparison with EU limits. Adopting best practice guidance and adopting a conservative approach a national bias adjustment factor of 0.78 was obtained and applied using the DEFRA website which is available using the following link: <https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in appendix c.

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

⁴ https://laqm.defra.gov.uk/documents/NO2relationship_report.pdf

Table 2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with Continuous Analyser	Height (m)
46	46 Cardiff Road, Dinas Powys	Roadside	315747	171369	NO2	No	0.0	5.0	No	1.5
110	103 Cardiff Rd, Dinas Powys	Roadside	315846	171556	NO2	No	0.0	6.5	No	1.5
72a	Dinas Infants School, Dinas Powys	Roadside	315841	171527	NO2	No	0.0	7.0	No	1.5
93	Le Pouligan Way, Llantwit Major	Roadside	297171	168741	NO2	No	0.0	4.8	No	1.5
94	5 Boverton Rd, Llantwit Major	Roadside	297069	168715	NO2	No	0.0	7.4	No	1.5
61	Railway Terrace, Dinas Powys	Roadside	316433	171932	NO2	No	0.0	2.0	No	1.5
67	2 Matthew Terrace, Dinas Powys	Roadside	316488	172004	NO2	No	0.0	2.5	No	1.5
92	9 Wayside Cottages, Dinas Powys	Roadside	316447	171963	NO2	No	0.0	3.0	No	1.5
91	16 Railway Terrace, Dinas Powys	Roadside	316453	171945	NO2	No	0.0	3.0	No	1.5
70	Ty Isaf Penarth, Llandough	Roadside	316731	172391	NO2	No	0.0	2.0	No	1.5
121	Buttrills Road, Barry	Roadside	311270	168363	NO2	No	2.5	0.5	No	1.5
123	Murch Road near infant school, Dinas Powys	Roadside	315803	171492	NO2	No	4.0	1.0	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with Continuous Analyser	Height (m)
112	Cogan Hill Flats	Roadside	317434	172729	NO2	No	0.0	10.0	No	1.5
124	The Green, Leckwith	Kerbside	315736	174160	NO2	No	4.0	15.0	No	1.5
125	48 Millfield Drive, Cowbridge	Suburban	299952	174670	NO2	No	0.0	47.0	No	1.5
56	134 Andrew Rd, Penarth	Roadside	316731	172391	NO2	No	0.0	10.0	No	1.5
90	159 Windsor Rd, Penarth	Roadside	317597	172433	NO2	No	0.0	2.0	No	1.5
53	168 Windsor Rd, Penarth	Roadside	317589	172411	NO2	No	0.0	5.0	No	1.5
62	154 Windsor Rd, Penarth	Roadside	317633	172357	NO2	No	0.0	2.0	No	1.5
55	134 Windsor Rd, Penarth	Roadside	317668	172312	NO2	No	0.0	3.5	No	1.5
74	114 Windsor Rd, Penarth	Roadside	317708	172259	NO2	No	0.0	2.5	No	1.5
100	141 Plassey Street, Penarth	Roadside	317968	172105	NO2	No	0.0	4.5	No	1.5
79	Snowdrop, Cogan	Kerbside	317549	172572	NO2	No	2.5	1.0	No	1.5
113	03 Plassey Street, Penarth	Roadside	317999	172067	NO2	No	0.0	3.0	No	1.5
103	September Cottage, Saint Brides Major	Roadside	289530	174896	NO2	No	0.0	6.5	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with Continuous Analyser	Height (m)
82	98B Windsor Road, Penarth	Roadside	318061	171944	NO2	No	0.0	8.0	No	1.5
22	Stanwell Road, Penarth	Kerbside	318505	171496	NO2	No	8.0	1.0	No	1.5
38	2 Horseshoes, Brooklands Terrace	Roadside	311892	174513	NO2	No	8.0	2.0	No	1.5
96	Old Froglands Farm, St Athan	Urban Background	299045	169126	NO2	No	0.0	86.0	No	1.5
8	Tynewydd Road, Barry	Roadside	311797	168503	NO2	No	0.0	1.0	No	1.5
120	Cross Common Road, Dinas Powys	Roadside	312405	167951	NO2	No	0.0	0.5	No	1.5
127	Red Lion, A48, Bonvilston	Roadside	306644	174049	NO2	No	0.0	4.0	No	1.5
126	186 Colcot Road, Barry	Roadside	310879	169481	NO2	No	0.0	12.0	No	1.5
119	Dock View Road, Barry	Kerbside	315445	170577	NO2	No	2.5	1.0	No	1.5
66	17 Churchill Terrace, Barry	Roadside	313342	168823	NO2	No	0.0	1.5	No	1.5
117	Riverside Place, Barry	Roadside	313612	168807	NO2	No	0.0	1.0	No	1.5
102	Powell Dyffryn Way, Barry	Roadside	311115	167041	NO2	No	0.0	1.0	No	1.5
115	Barry Road Cadoxton, Barry	Roadside	312681	169051	NO2	No	0.0	2.0	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with Continuous Analyser	Height (m)
64	Holton Road, Barry	Roadside	311690	168042	NO2	No	2.0	3.0	No	1.5
114	107 Dockview Road, Barry	Roadside	312585	168171	NO2	No	0.0	5.0	No	1.5
116	Ffordd y Mileniwm, Barry	Roadside	311371	167628	NO2	No	0.0	5.0	No	1.5
41	Despencer Road, Sully	Urban Background	315278	168451	NO2	No	0.0	128.0	No	1.5
108	4 Cardiff Road, Cowbridge	Roadside	299967	174311	NO2	No	0.0	0.8	No	1.5
65	1 Riverside Mews, Cowbridge	Roadside	299614	174592	NO2	No	0.0	3.0	No	1.5
89	160 Windsor Road, Penarth	Roadside	317627	172371	NO2	No	0.0	2.5	No	1.5
104	Greengate Cottage, Saint Brides Major	Roadside	289473	174752	NO2	No	0.0	1.0	No	1.5
105	Saint Brides Primary School entrance	Roadside	289473	174752	NO2	No	0.0	1.0	No	1.5
106	Dan Y Bryn House, Saint Brides Major	Roadside	289496	174858	NO2	No	0.0	12.5	No	1.5
107	Hillboro, Saint Brides Major	Roadside	289512	174805	NO2	No	0.0	7.5	No	1.5
101	37 Westgate House, Cowbridge	Roadside	298903	174907	NO2	No	0.0	0.8	No	1.5
128	Penarth Portway	Kerbside	318367	172342	NO2	No	3.0	2.0	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
129	Penarth Esplanade	Kerbside	318864	171109	NO2	No	3.0	5.0	No	1.5

Notes:

- (1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.
(2) N/A if not applicable.

Figure 2 – Map of Non-Automatic Monitoring Sites in Barry

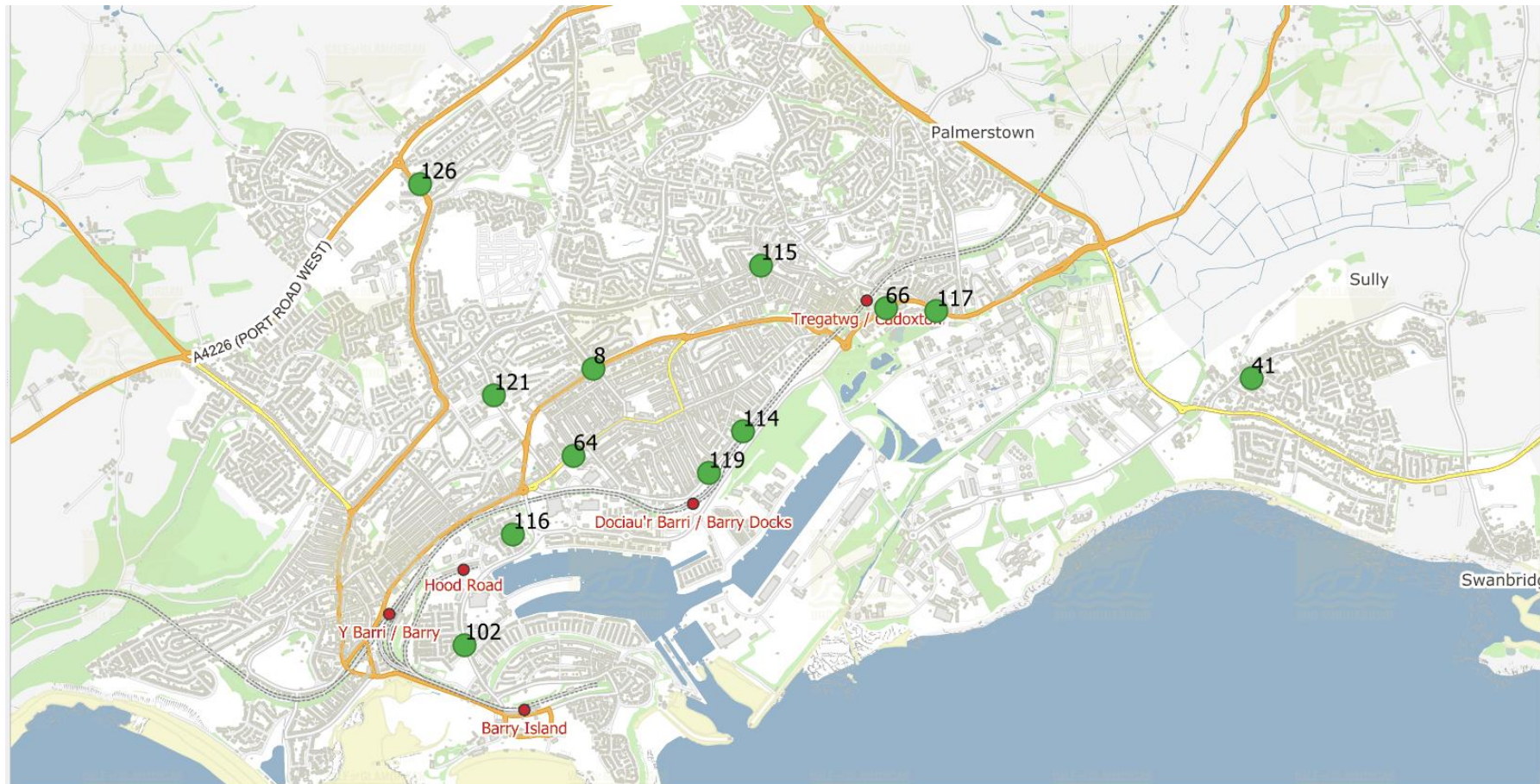


Figure 3 - Map of Non-Automatic Monitoring Sites in Dinas Powys

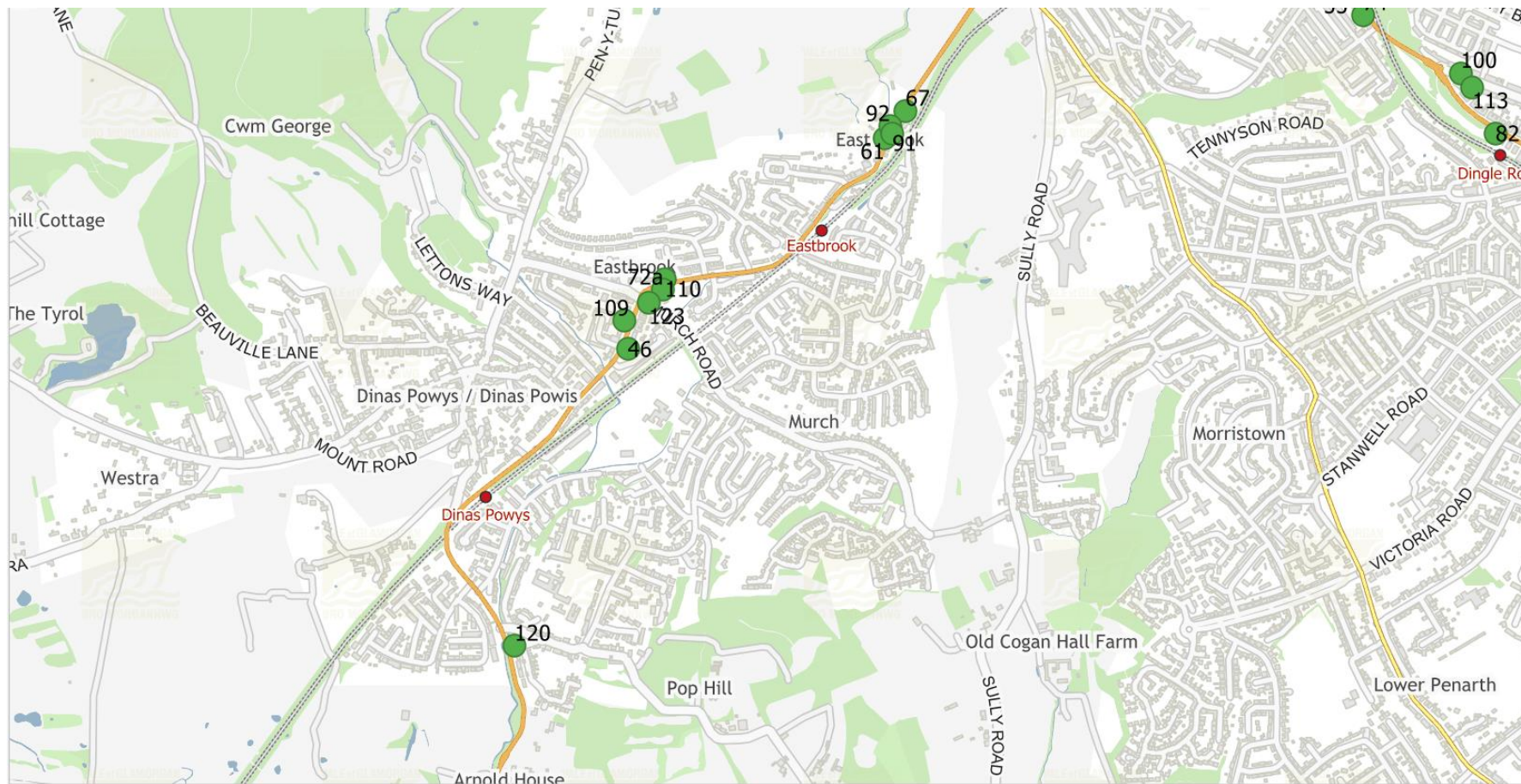


Figure 4 - Map of Non-Automatic Monitoring Sites in Penarth

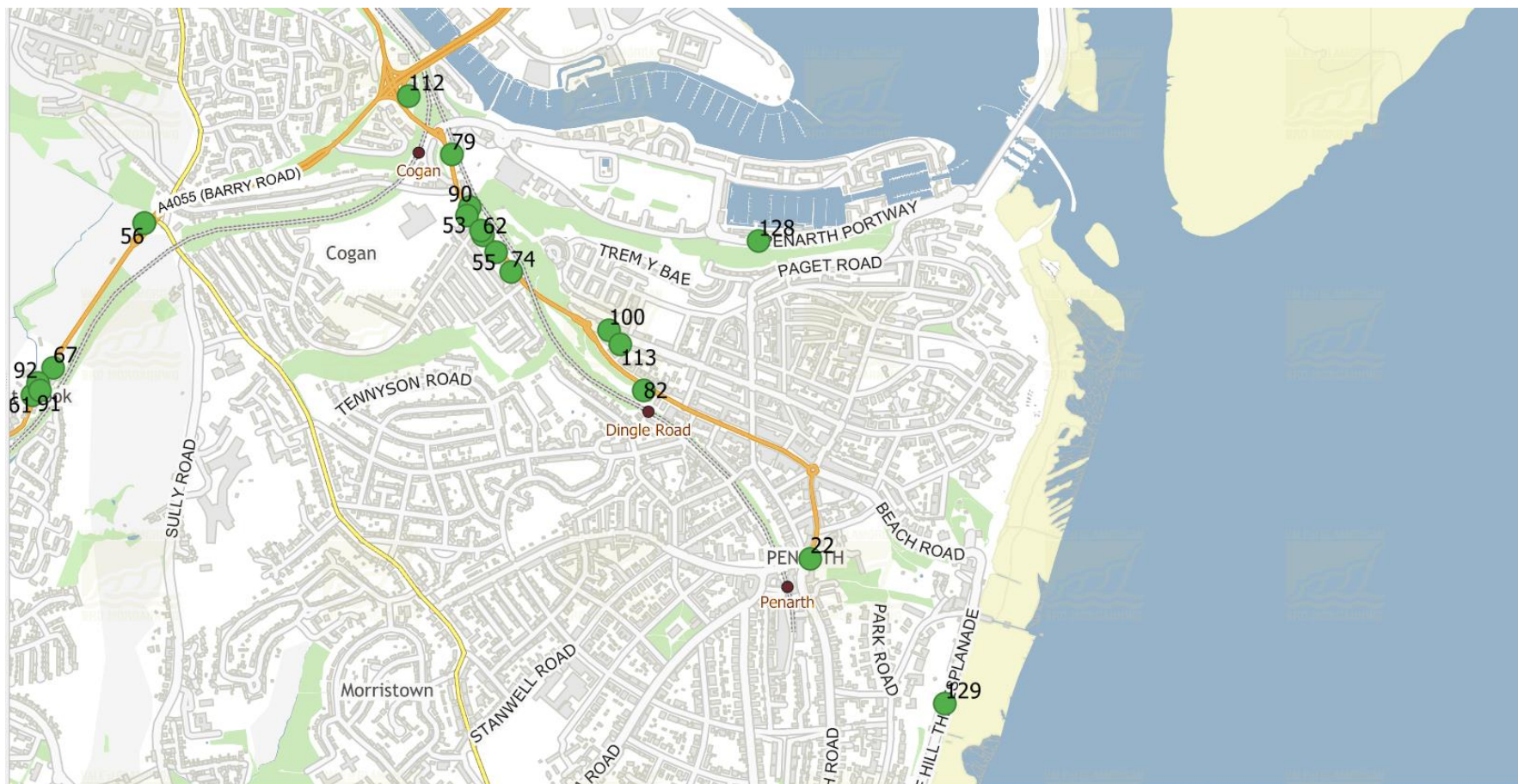


Figure 5 - Map of Non-Automatic Monitoring sites in the North of the Vale of Glamorgan

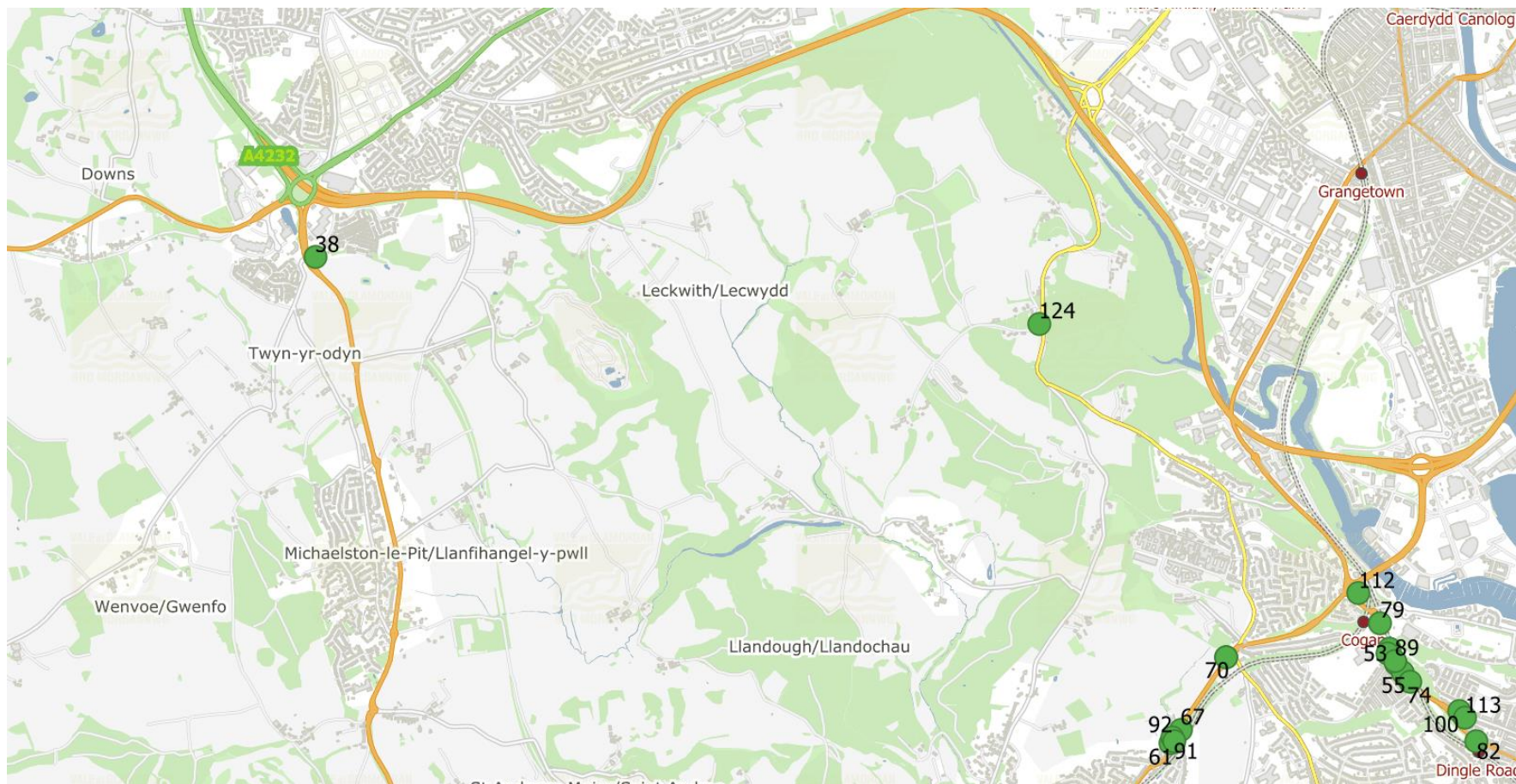
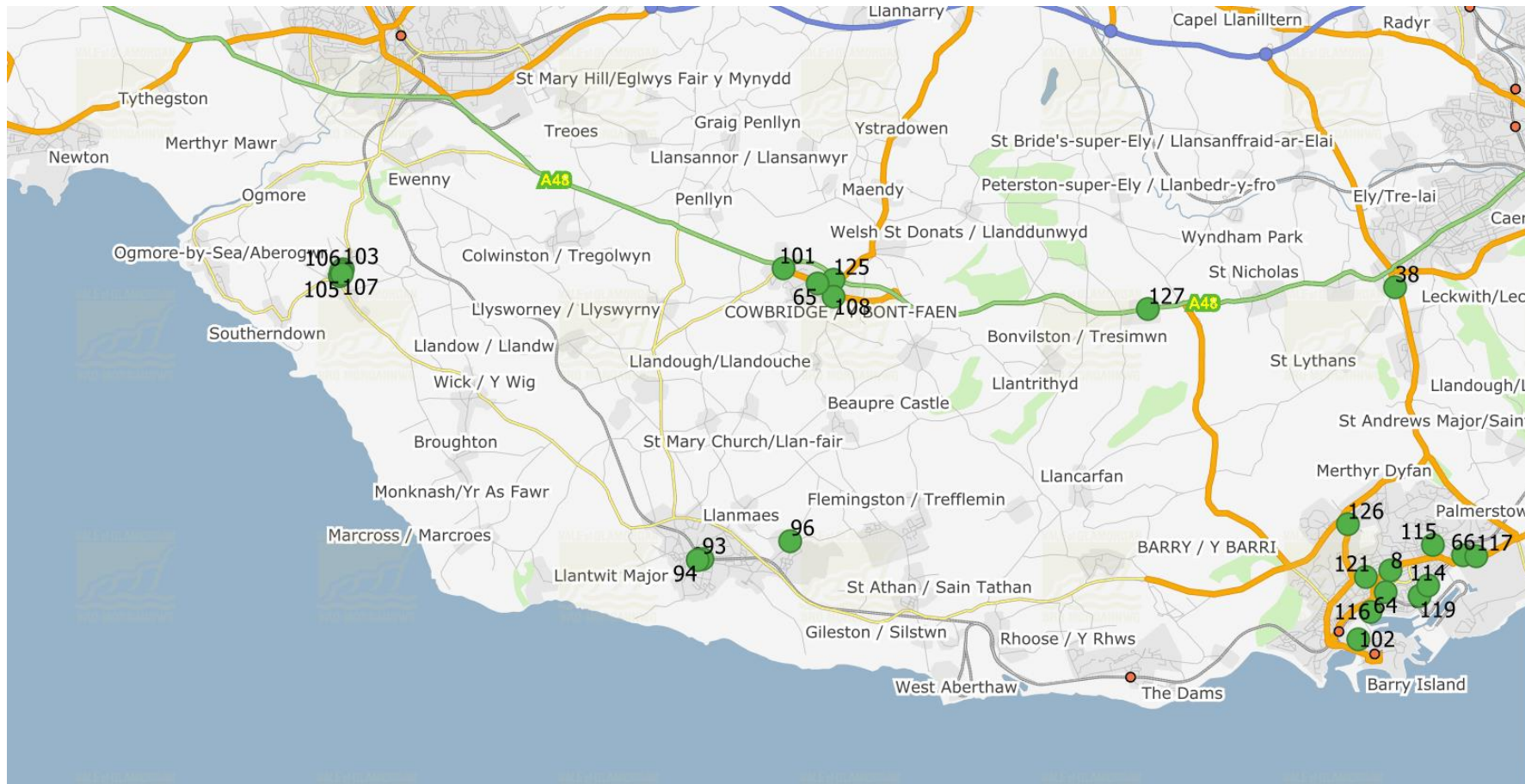


Figure 6 - Map of Non-Automatic Monitoring Sites in the West of the Vale of Glamorgan



2.2 2023 Air Quality Monitoring Results

Table 3 - Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2023 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2019	2020	2021	2022	2023
46	315747	171369	Roadside	77.5	77.5	16.7	11.6	15.1	14.6	14.0
110	315846	171556	Roadside	77.5	77.5	19.3	16.8	18.2	17.5	18.7
72a	315841	171527	Roadside	77.5	77.5	18.5	15.1	14.1	14.3	14.6
93	297171	168741	Roadside	77.5	77.5	10.4	8.1	8.6	8.3	8.4
94	297069	168715	Roadside	77.5	77.5	8.8	7.3	7.5	7.3	7.4
61	316433	171932	Roadside	77.5	77.5	28.8	26.5	20.7	27.6	23.7
67	316488	172004	Roadside	77.5	77.5	22.7	18.1	20.7	19.4	19.9
92	316447	171963	Roadside	67.9	67.9	26.2	21.7	20.2	24.0	20.4
91	316453	171945	Roadside	77.5	77.5	20.9	15.8	23.8	17.1	16.8
70	316731	172391	Roadside	77.5	77.5	19.8	15.8	18.2	17.9	21.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2023 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2019	2020	2021	2022	2023
121	311270	168363	Roadside	45.1	45.1			22.4	23.3	24.4
123	315803	171492	Roadside	77.5	77.5				19.9	19.3
112	317434	172729	Roadside	67.9	67.9	19.8	15.9	17.4	17.4	16.7
124	315736	174160	Kerbside	40.7	40.7				9.5	8.0
125	299952	174670	Suburban	57.7	57.7					4.9
56	316731	172391	Roadside	69.5	69.5	22.2	17.1	17.1	17.4	14.7
90	317597	172433	Roadside	77.5	77.5		18.1		18.9	19.0
53	317589	172411	Roadside	77.5	77.5	28.7	24.4	22.6	22.5	22.4
62	317633	172357	Roadside	77.5	77.5	29.2	22.2	24.5	24.4	22.1
55	317668	172312	Roadside	77.5	77.5	28.4	15.9	22.3	22.5	22.4
74	317708	172259	Roadside	77.5	77.5	25.4	27.5	21.1	20.7	20.9
100	317968	172105	Roadside	67.9	67.9	22.9	17.6	17.2	18.2	17.8
79	317549	172572	Kerbside	52.5	52.5	30.1	27.5	30.9	31.5	28.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2023 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2019	2020	2021	2022	2023
113	317999	172067	Roadside	69.5	69.5	22.3	17.6	19.3	17.8	15.0
103	289530	174896	Roadside	67.9	67.9	10.8	7.7	8.3	7.3	7.6
82	318061	171944	Roadside	77.5	77.5	16.0	17.1	13.6	13.9	13.1
22	318505	171496	Kerbside	70.1	70.1	19.7	15.8	17.2	14.7	14.4
38	311892	174513	Roadside	77.5	77.5	18.6	14.4	14.6	14.3	13.9
96	299045	169126	Urban Background	67.9	67.9	7.9	5.7	6.1	6.1	5.9
8	311797	168503	Roadside	77.5	77.5	27.5	22.9	24.1	25.0	24.1
120	315455	170577	Roadside	77.5	77.5		13.2	14.8	14.8	14.0
127	306644	174049	Roadside	69.5	69.5					18.3
126	310879	169481	Roadside	45.1	45.1					10.5
119	312405	167951	Kerbside	42.9	42.9		18.9	15.4	15.7	13.3
66	313342	168823	Roadside	77.5	77.5	26.3	23.8	24.4	22.4	22.7
117	313612	168807	Roadside	60.4	60.4	26.7	21.9	22.2	22.3	19.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2023 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2019	2020	2021	2022	2023
102	311115	167041	Roadside	77.5	77.5	17.0	14.6	15.6	15.4	14.3
115	312681	169051	Roadside	69.5	69.5	25.9	21.9	23.0	23.2	19.2
64	311690	168042	Roadside	68.1	68.1	17.8	12.8	14.7	13.7	12.5
114	312585	168171	Roadside	34.9	34.9	13.4	11.5	11.8	11.6	11.4
116	311371	167628	Roadside	60.4	60.4	17.5	15.3	16.7	14.6	13.4
41	315278	168451	Urban Background	77.5	77.5	10.6	8.4	8.3	8.3	8.2
108	299967	174311	Roadside	77.5	77.5	24.4	23.3	18.5	17.9	16.4
65	299614	174592	Roadside	77.5	77.5	16.0	11.6	11.5	12.1	10.5
89	317627	172371	Roadside	77.5	77.5	28.1	11.8	24.0	23.6	22.7
104	289473	174752	Roadside	77.5	77.5	11.9	8.3	9.3	8.7	8.6
105	289473	174752	Roadside	60.4	60.4	11.8	8.5	9.3	9.3	7.8
106	289496	174858	Roadside	69.5	69.5	10.3	7.3	8.1	7.6	6.4
107	289512	174805	Roadside	67.9	67.9	7.9	6.1	6.6	6.0	5.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2023 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2019	2020	2021	2022	2023
101	298903	174907	Roadside	77.5	77.5	15.9	13.1	12.8	12.2	11.9
128	318367	172342	Kerbside	60.4	60.4					10.8
129	318864	171109	Kerbside	67.3	67.3					9.0

Notes:

The annual mean concentrations are presented as µg/m³.

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.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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 7 – Trends in Annual Mean NO₂ Concentrations in Barry

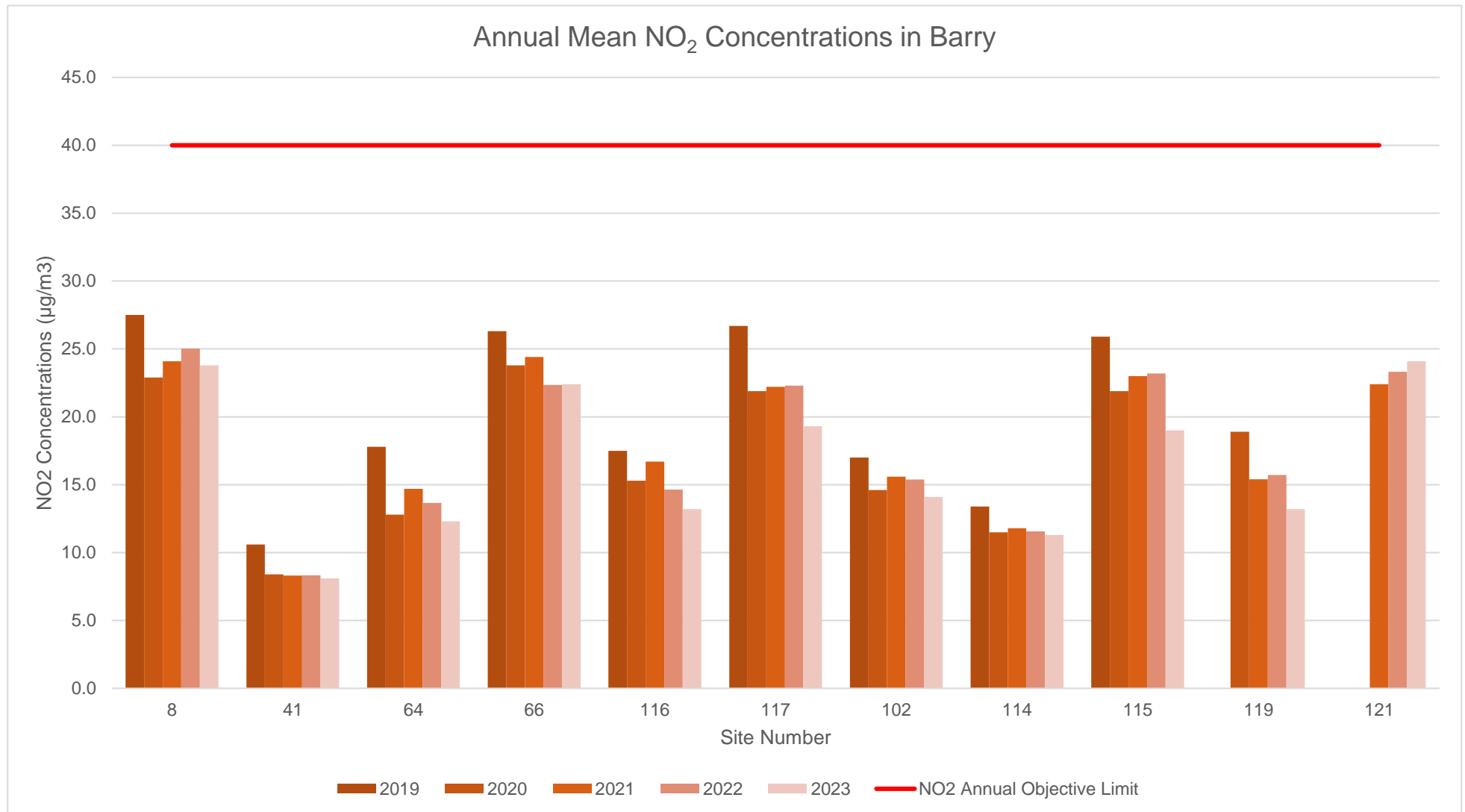


Figure 7 displays all monitoring sites in Barry within the Annual Objective NO₂ limit. There is an improving trend at most locations.

Figure 8 - Trends in Annual Mean NO₂ Concentrations in Dinas Powys

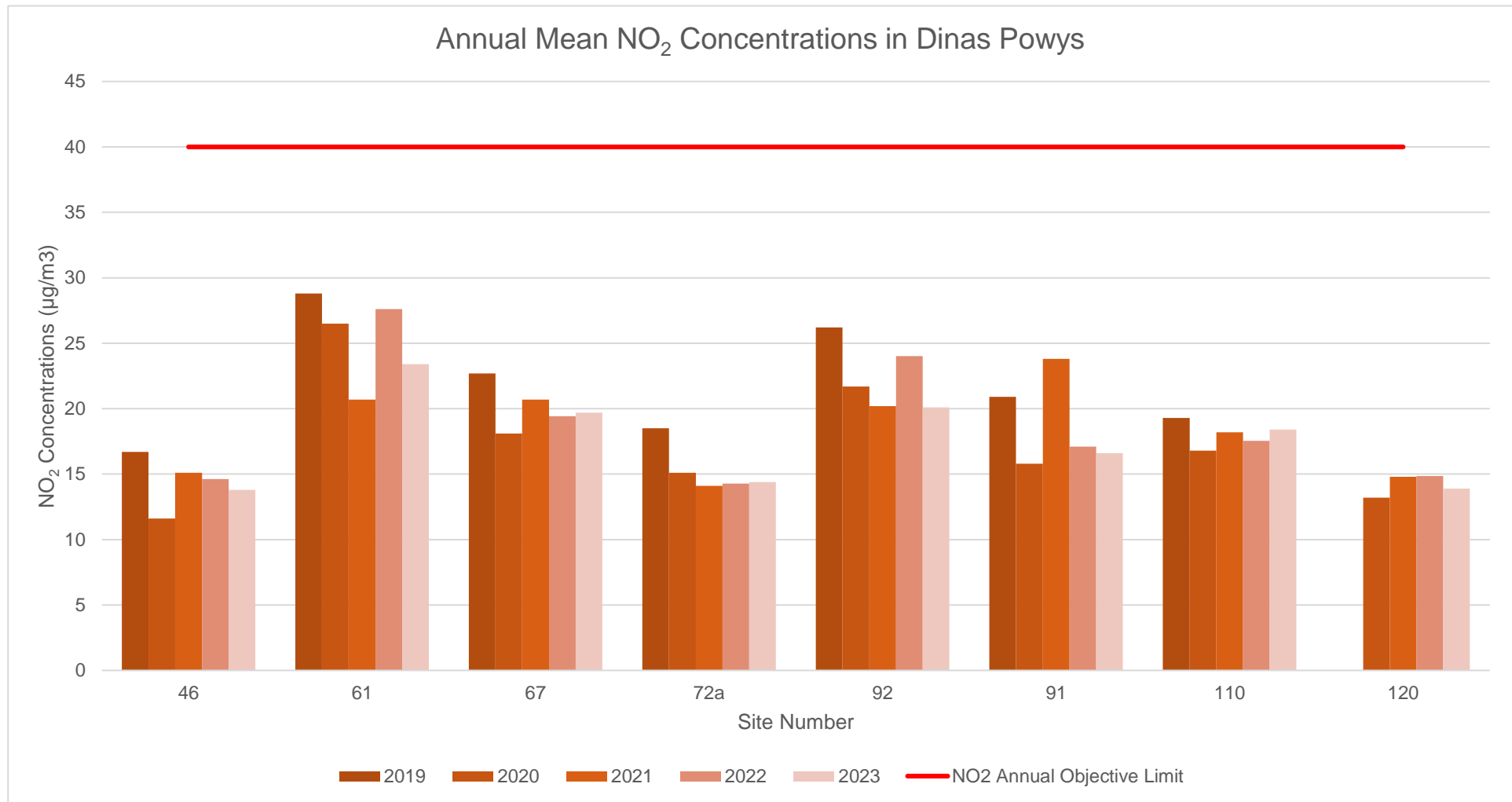


Figure 8 displays all monitoring sites in Dinas Powys within the Annual Objective NO₂ limit.

Figure 9 - Trends in Annual Mean NO₂ Concentrations in Penarth

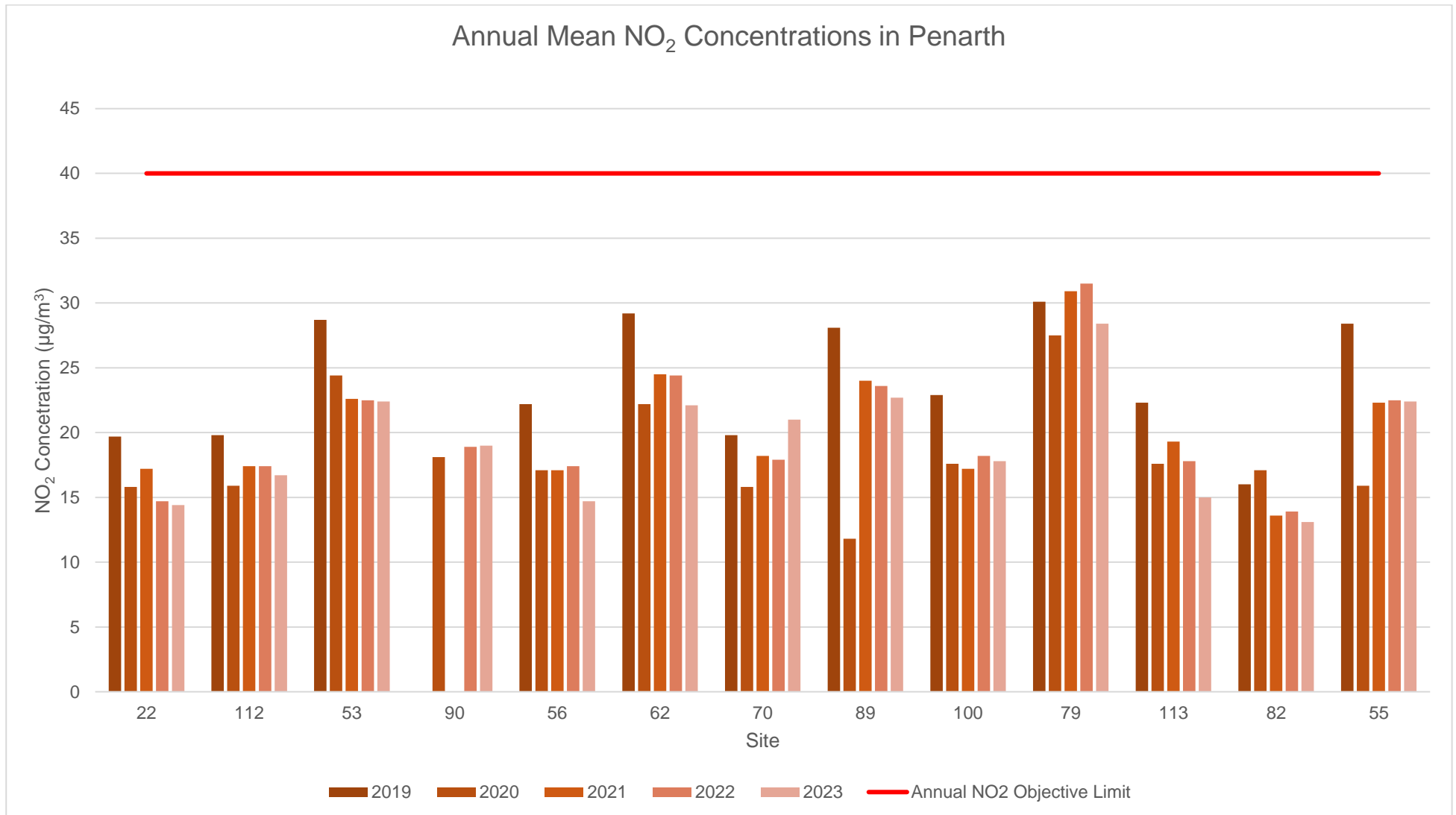


Figure 9 displays all monitoring sites in Penarth within the Annual Objective NO₂ limit. There is an improving trend at most locations.

Figure 10 - Trends in Annual Mean NO₂ Concentrations in Vale of Glamorgan West

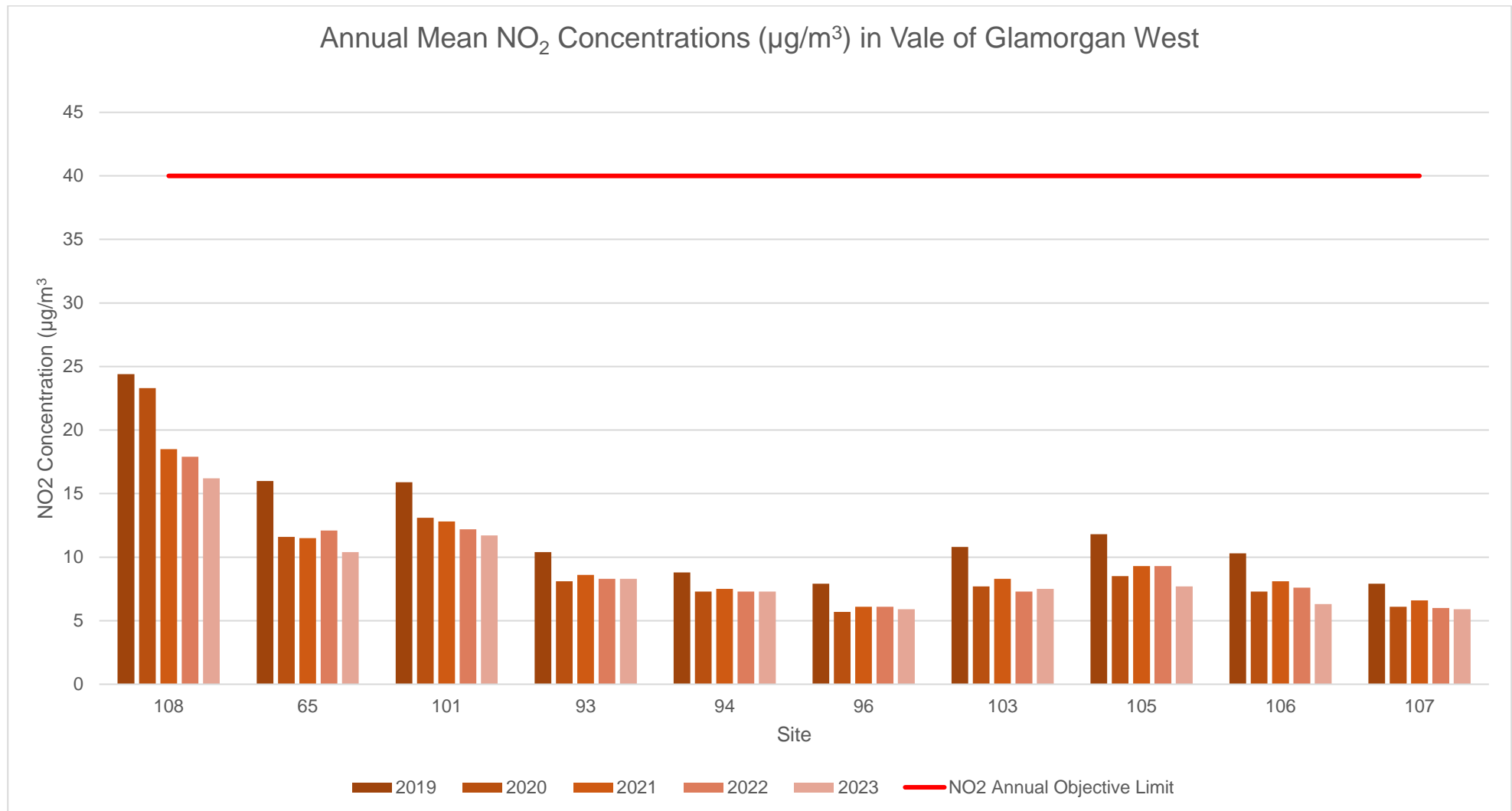


Figure 11 displays all monitoring sites in the Vale of Glamorgan within the Annual Objective NO₂ limit. There is an improving trend at most locations.

2.3 Comparison of 2023 Monitoring Results with Previous Years and the Air Quality Objectives

2.3.1 Nitrogen Dioxide (NO₂)

The Vale of Glamorgan Council undertook non- automatic (passive) monitoring of NO₂ at 52 sites during 2023. From the period of 2019 to 2023, annual average roadside NO₂ concentrations have decreased by 21.4% from 20.1µg/m³ to 15.8µg/m³. A decrease of 6.5% from 16.9µg/m³ to 15.8µg/m³ in annual average roadside NO₂ concentrations evident between 2022 and 2023. This shows an overall improving trend in NO₂ concentrations.

There are no breaches in the NO₂ annual objective limit at any monitoring site in the Vale of Glamorgan. The highest concentration of monitored NO₂ is at diffusion tube site 79. However, this is a kerbside site and not representative of relevant exposure related to the annual objective for NO₂.

Automatic monitoring was not undertaken for NO₂ or any other pollutant during 2023.

2.4 Summary of Compliance with AQS Objectives as of 2023

Shared Regulatory Services have examined the results from monitoring in the Vale of Glamorgan. Concentrations are all below the Objectives, therefore no further action is required.

Extensive non-automatic monitoring will continue throughout all areas in the Vale of Glamorgan and will be reviewed on an annual basis.

3 New Local Developments

The Vale of Glamorgan Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area. SRS on behalf of VoGC review all planning applications regarding air quality in line with local and national planning policy. Technical guidance related to air quality and planning applications is obtained by using IAQM Guidance⁵ 'Guidance on land use planning and development control', and 'assessment of dust from demolition and construction'.

Aberthaw Power Station Demolition

An Air Quality Dust Management Plan (AQDMP) has been submitted as part of the application for the demolition of Aberthaw Power Station. The AQDMP identifies nearby sensitive receptors in which on site activities may impact these locations with regard to air quality. The assessment includes robust mitigation measures which aim to reduce these impacts.

The AQDMP also includes plans to monitor both particulate matter (PM) and dust nuisance generation. Alerts and site action levels for PM have been stated within the assessment which ensures mitigation measures are reviewed for effectiveness in reducing PM generation. In the event of complaints, monitoring data will be made available to the local authority for review.

Forest Wood Quarry

An Air Quality Assessment was submitted for the Forest Wood Quarry, Cowbridge Road planning application.

The road network will see an increase in HGV movements as a result of the proposed development. The assessment used dispersion modelling software is used to evaluate the possible influence of these additional movements on local air quality.

In light of the slight increase in traffic, it is estimated that the impact on air quality will be minimal for all pollutants at all simulated receptors. Therefore, it is believed that there would

⁵ <https://iaqm.co.uk/guidance/>

be little to no impact on local air quality from the proposed development. It is not necessary to implement additional mitigation measures.

Therefore, as the proposed development does not have a significant impact on air quality, it is not deemed to be in conflict with local, regional, or national air quality planning guidelines.

Replacement Local Development Plan

Local Development Plans (LDPs) need to be reviewed at least every four years to make sure they are up to date.

We reviewed our LDP in June 2021 and published an [LDP Review Report](#). The report recommended an RLDP be prepared for the period 2021 to 2036. We also published an [RLDP Delivery Agreement](#) which sets out the processes, resources and timescales involved in preparing the RLDP. You can view these documents online, or view a hard copy at the [Civic Offices](#) or [libraries managed by the Vale of Glamorgan](#).

We are now working on the RLDP which will help shape the Vale of Glamorgan for the next 15 years. It will help us decide what developments will and will not be permitted at different locations and highlight areas that we need to protect. ⁶

Air quality impacts will be considered and assessed with regard to LDP locations. Air Quality Assessments will be carried out where necessary and mitigation measures recommended to ensure that the air quality impacts of new developments will not cause any adverse effects to new and existing residents.

3.1 Road Traffic Sources (and Other Transport)

No new road traffic sources have been identified which require consideration in this report.

⁶ [Replacement Local Development Plan \(valeofglamorgan.gov.uk\)](https://www.valeofglamorgan.gov.uk)

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

There are no new industrial / fugitive or uncontrolled sources / commercial Sources that require consideration in this report.

3.3 Other Sources

Previous reports have confirmed that there are no known areas in The Vale of Glamorgan where coal or solid fuel burning provides a significant level of primary household heating. Nothing has changed in this regard since the 2023 APR, despite the potential for increasing popularity of solid fuel heating with increased fossil-fuel prices, and there is no need to consider this further at this time.

It should be noted that the Council receives several enquiries each year from residents in respect of national or local requirements where they wish to install log-burners or similar appliances in their homes. There are no smoke control areas in the Vale and hence no legal requirements regarding appliances that may be installed. However, residents are always reminded of the legislation in respect of statutory smoke nuisance and, where they can't be persuaded otherwise for reasons of air quality and health, recommended to seek out a Defra approved appliance certified for use in a smoke control area.

SRS on behalf of the VoGC can confirm that there are no areas of significant domestic fuel use in the Local Authority area.

4 Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

The Vale of Glamorgan Council does not currently have an Air Quality Strategy. As a long-term measure, SRS would recommend that the Vale of Glamorgan Council consider developing an Air Quality Strategy with its main objective to improve air quality and protect public health, whilst considering the sustainable development and future growth within the authority.

4.2 Local Transport Plans and Strategies

The Vale of Glamorgan authority is part of the Capital Region which comprises of Cardiff and the nine south east unitary authorities. The implementation of this policy was carried out to support Welsh Government's vision in the future development of the Capital Region and commitment to a low carbon future.

The Capital Region is committed to a low carbon future, which has a transport network and mobility culture that positively contributes to a thriving economy and the health and wellbeing of its citizens and where sustainable travel is the option of choice.

The LTP looks to tackle growing traffic levels (and hence air quality impacts) by providing strategies which focus upon providing efficient and effective transport networks. In order to be successful, the plans need a collaborative approach for the future development of the Capital Region's transport needs, therefore providing improved mobility for both residents and visitors, enhanced accessibility to jobs and services and fundamentally sustainable economic growth.

This Local Transport Plan (LTP) seeks to identify the sustainable transport measures required to ensure the Vale of Glamorgan Council adheres to current requirements and good practices to allow for a sustainable transport environment for the period 2015 to 2020 as well as looking forward to 2030.

The LTP policy recognises the Council's objective to achieving sustainable travel (alternatives to using cars) and reducing negative impacts on the environment. The policy suggests that through improved transport infrastructure and transport services this can be achieved.

Further information can be found at the following link <https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/LTP/Local-Transport-Plan.pdf>

4.3 Active Travel Plans and Strategies

Active travel means walking and cycling (including the use of mobility scooters) for everyday journeys. This includes journeys to school, to work to the shops or to access services e.g. health or leisure centres. Active travel does not include walking and cycling for recreational or social reasons.

In September 2014, the Welsh Government introduced the Active Travel (Wales) Act 2013 which makes it a legal requirement for local authorities in Wales to map and plan for suitable routes for active travel within certain settlements, as specified by Welsh Government.

The Council submitted their Integrated Network Maps in November 2017 which set out the Authority's aspirations for improving active travel routes across the County over the next 15 years.

They included routes that were currently used but may not have met the standard of Active Travel routes, or they were routes that did not exist but were identified within other strategic plans or identified through the consultation process.

Section 4 of the Act requires that the next edition of the INM should be submitted by local authorities three years following the previous edition, or no later than a date specified by the Welsh Ministers. In view of the Covid-19 pandemic, Ministers considered it appropriate to extend the submission of the next round of integrated networks maps and updated existing routes maps to 31 December 2021.

The Vale of Glamorgan Council held extensive consultation with the public throughout 2021, and the new Active Travel Network Map was approved by Welsh Government in August 2022.

Further information can be found at the following link.

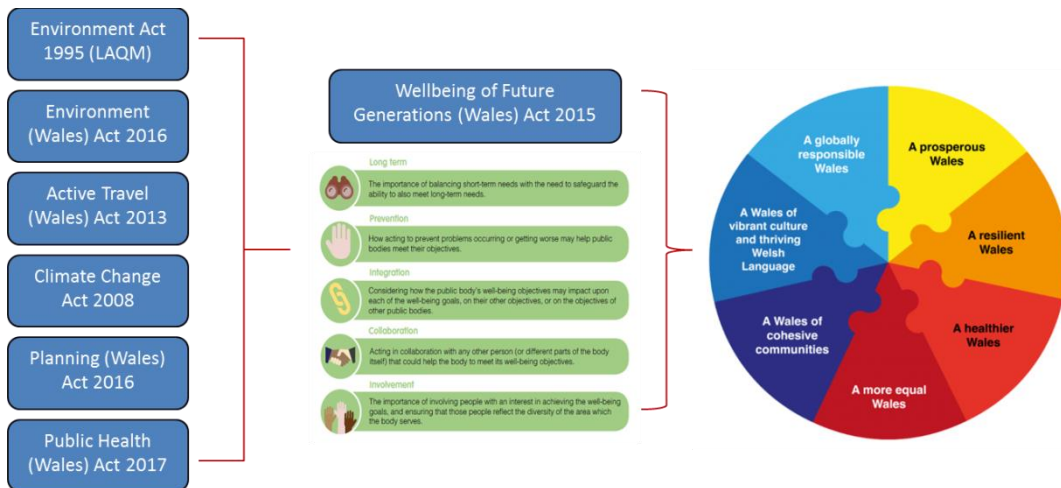
<https://www.valeofglamorgan.gov.uk/en/living/transportation/Active-Travel.aspx>

4.4 Local Authorities Well-being Objectives

SRS/ VoGC adopts the principles of The Well-being of Future Generations (Wales) Act 2015. The Act is a significant enabler to improve air quality as it calls for sustainable cross-sector action based on the principles of long-term, prevention-focused integration, collaboration, and involvement. It intends to improve economic, social, environmental, and cultural well-being in Wales to ensure the needs of the present are met without compromising the ability of future generations to meet their own needs. The Act places responsibilities on public bodies in Wales to work in new ways (including via Public Services Boards) towards national Well-being goals. Progress is measured against a suite of well-being and Public Health Outcomes Framework indicators; there is one specifically concerned with air pollution.

As Figure 15 illustrates below, the Act is the legislative vehicle for “Health in all Policies in Wales” and provides the underpinning principles for all policy and decision making, including economic development, in Wales. Reducing air pollution, health risks and inequalities can help contribute to most, if not all, of the well-being goals. As such, the Act presents excellent opportunities to change policy and practice to enhance air quality management arrangements across The Vale (and wider).

Figure 11 – Wellbeing of Future Generations Act



Welsh Government, Clean Air Plan for Wales, Healthy Air Healthy Wales

Welsh Government has published its latest plan which underpins its commitment and long-term ambition to improve air quality in Wales. The plan sets out WG’s policy direction and proposed actions to reduce air pollution to support improvement in public health and the

natural environment. Actions are proposed across four thematic themes, examined as People, Environment, Prosperity, and Place.

The plan and its proposed actions are available at the following link.

<https://gov.wales/sites/default/files/publications/2020-08/clean-air-plan-for-wales-healthy-air-healthy-wales.pdf>

4.5 Climate Change Strategies

Project Zero



Project Zero is the Vale of Glamorgan Council's response to the climate change emergency. It brings together the wide range of work and opportunities available to tackle the climate emergency, reduce the Council's carbon emissions to net zero by 2030 and encourage others to make positive changes.

Some of the work the Council is already taking forward as part of Project Zero is detailed below and demonstrates the breadth of activity across our services.

Planning

The Local Development Plan (LDP) provides the local planning policy framework for delivering sustainable development, and specific guidance has also been developed seeking enhancements on Biodiversity, Trees and Development, Travel Plans and Renewable Energy.

The 2022-23 LDP target of granting planning permissions sufficient to meet 10.6% (56.68 GWh) of projected electricity demand through renewable energy sources by 2020 has been met.

Since July 2018 we have secured a replanting ratio of 2:1 for the removal of trees with a preservation orders (TPO) or trees in a conservation area (TCA) in accordance with the Trees, Woodlands, Hedgerows and Development Supplementary Planning Guidance

Energy

The Council purchases 100% of electricity from renewable sources and has granted planning permission to a number of solar farms.

We have undertaken over 100 energy saving projects across council buildings including switching old inefficient lighting to LED lighting and the introduction of better energy controls.

We have begun switching heating from gas to electricity by installing a Ground Source Heat pump at Cadoxton House in Barry and an Air Source Heat pump at BSC2 (the Engine Room) in Barry. These sites have seen significant improvements in energy consumption and there are plans for further installations.

We have installed Solar panels on 23 buildings with a combined capacity of almost 1 Megawatt. All systems are sized appropriately to match demand at the buildings on which they are mounted.

90% of the Council's street lighting has been converted to LED against a target of 95% for 2022-23.

Transport

All relevant planning applications are required to be accompanied by a travel plan to promote sustainable travel choices and prevent unnecessary car use and since March 2019 at least 10% of car parking spaces on non-residential developments are required to have electric vehicle charging points infrastructure.

The Council introduced its first fleet of electric vehicles in 2022 and plans to replace diesel-powered vehicles across its service areas. 12 new Hyundai Kona electric vehicles replaced a number of diesel-powered cars earlier this year. With over 4000 miles on each vehicle, the new EV cars have reduced the Council's CO2 emissions by an estimated 13,554kg so far. They will continue to significantly reduce carbon emissions as 2030 draws nearer. Each Kona EV vehicle can travel up to 300 miles on a single charge and can be recharged in just one hour using a rapid charge point.

With further plans to replace Council fleet vehicles with electric-powered alternatives, the Council has recently acquired a number of electric vans which are now in use.

The vehicles are maintained by the Council's in-house Transport Services team in partnership with Clenergy EV, who monitor the EV charging stations at the Civic Offices in Barry and The Alps Depot in Wenvoe.

To support residents and visitors to the Vale who have made the switch to electric vehicles, a number of EV charging stations have been installed in public spaces across the County and are now available for public use.

Further information can be found at the following link.

<https://participate.valeofglamorgan.gov.uk/plans>

Conclusion and Proposed Actions

4.6 Conclusions from New Monitoring Data

SRS on behalf of the VoGC has examined the results from monitoring undertaken in 2023. There were no exceedances of any pollutant objective.

4.7 Proposed Actions

The Specialist Services Team of SRS will work with VoGC representatives from Highways & Transport and Planning Department, and outline measures which have been undertaken, the effectiveness of these measures and future commitments/initiatives that the Council may need to consider to be implemented in the area to ensure compliance is maintained and improved upon.

As a long-term measure, SRS would recommend that the Vale of Glamorgan Council consider developing a Clean Air Strategy with its main objective to improve air quality and protect public health, whilst considering the sustainable development and future growth within the authority.

References

Air Quality Annual Progress Reports (APRs) <https://www.srs.wales/en/Environmental-Health/Noise-and-Air-Pollution/Air-quality-and-pollution/Air-Quality-and-Pollution.aspx>

Air Quality Health Advice <https://airquality.gov.wales/about-air-quality/health-advice>

IAQM Planning Guidance <https://iaqm.co.uk/guidance/>

Local Air Quality Management Technical Guidance (TG22) <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

Project Zero <https://participate.valeofglamorgan.gov.uk/plans>

UK National Air Quality Archive LAQM <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

Vale of Glamorgan Local Development Plan 2011- 2026
<http://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/LDP/LDP-Adoption/Adopted-LDP-Written-Statement-June-2017-final-interactive-web-version.pdf>

Vale of Glamorgan the Local Transport Plan (2015- 2030)
https://www.valeofglamorgan.gov.uk/en/living/planning_and_building_control/Planning/planning_policy/Local-Transport-Plan.aspx

Vale of Glamorgan Active Travel
<https://www.valeofglamorgan.gov.uk/en/living/transportation/Active-Travel.aspx>

Welsh Government Clean Air Plan <https://gov.wales/sites/default/files/publications/2020-08/clean-air-plan-for-wales-healthy-air-healthy-wales.pdf>

Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Table 4 -- Full Monthly Diffusion Tube Results for 2023 ($\mu\text{g}/\text{m}^3$)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations ($\mu\text{g}/\text{m}^3$)												Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.78) and Annualised	Distance Corrected to Nearest Exposure
46	315747	171369	19.3	20.9	20.7	21.3				13.7	16.8	16.6	18.6	13.5	17.9	14.0	-
110	315846	171556	29.0	25.4	24.4	34.6				16.9	19.1	21.7	24.3	19.4	23.9	18.7	-
72a	315841	171527	23.7	19.9	20.3	19.1				13.2	18.1	18.8	21.1	15.7	18.7	14.6	-
93	297171	168741	15.8	13.6	11.0	10.4				8.8	10.4	9.1	12.8	6.4	10.8	8.4	-
94	297069	168715	9.1	15.1	9.6	10.1				7.0	9.2	8.4	9.8	7.1	9.4	7.4	-
61	316433	171932	38.7	32.8	35.5	30.7				29.1	32.4	28.7	23.2	22.6	30.4	23.7	-
67	316488	172004	27.6	28.1	29.9	29.4				18.5	35.7	21.9	23.9	15.5	25.6	19.9	-
92	316447	171963	34.2	33.6	31.3	32.9				22.9	27.4		27.6	21.3	28.9	20.4	-
91	316453	171945	25.4	22.4	26.6	23.9				15.5	21.0	21.0	21.7	16.9	21.6	16.8	-
70	316731	172391	28.1	26.7	26.2	26.7				14.1	24.7	53.1	24.6	14.9	26.9	21.0	-
121	311270	168363			32.2	29.0				26.3	30.8			27.1	29.1	24.4	-
123	315803	171492	35.0	29.9	28.1	24.0				20.7	25.9	26.1	29.4	4.7	24.7	19.3	-
112	317434	172729	30.3	26.5	21.3	22.7				16.5	22.0		43.7	10.2	23.7	16.7	-
124	315736	174160	15.0	15.6	12.7						10.1			5.3	11.7	8.0	-
125	299952	174670	11.0	8.5	6.8						5.3	6.4	9.7	5.2	7.5	4.9	-
56	316731	172391	29.2	26.2	21.7	19.3				17.3		20.1	22.4	14.2	21.1	14.7	-
90	317597	172433	26.1	26.2	26.6	25.6				19.7	24.0	21.5	31.8	18.9	24.3	19.0	-

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations (µg/m ³)												Time Weighted Annual Mean (µg/m ³)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.78) and Annualised	Distance Corrected to Nearest Exposure
53	317589	172411	33.2	31.1	29.2	29.9				23.8	28.3	24.4	34.2	26.6	28.7	22.4	-
62	317633	172357	32.7	32.1	30.2	32.0				20.5	30.9	25.8	30.7	21.6	28.4	22.1	-
55	317668	172312	32.5	34.1	38.2	28.3				22.0	20.6	26.8	33.1	23.7	28.7	22.4	-
74	317708	172259	34.7	34.0	26.8	25.6				22.5	26.8	24.4	25.0	24.1	26.9	20.9	-
100	317968	172105	31.3	29.5	23.4	27.2				20.6	26.9		28.1	16.4	25.3	17.8	-
79	317549	172572			35.9	45.4					45.6	32.6	43.0	30.5	38.8	28.4	-
113	317999	172067	26.5	23.3	18.7	15.2				13.7		36.5	23.1	16.1	21.5	15.0	-
103	289530	174896	12.9	12.5	9.6	10.8				7.1	9.8		18.7	6.3	10.8	7.6	-
82	318061	171944	25.1	20.3	16.1	16.8				11.8	16.5	14.4	19.6	12.6	16.8	13.1	-
22	318505	171496	30.4	26.6	17.9	17.3				15.3	18.2	19.1		14.6	19.6	14.4	-
38	311892	174513	23.3	18.6	17.8	15.7				15.1	17.7	0.6	45.6	13.5	17.9	13.9	-
96	299045	169126	8.7	10.8	8.9	8.5				4.8	5.9		19.7	1.6	8.4	5.9	-
8	311797	168503	36.4	36.2	31.3	31.5				24.3	35.3	27.5	33.5	24.9	30.9	24.1	-
119	312405	167951	25.6	17.4	15.5	17.4				13.4	19.6	16.9	23.6	15.3	18.0	14.0	-
127	306644	174049	11.7		24.2	28.7				24.3	28.5	23.5	36.1	22.7	25.0	18.3	-
126	310879	169481			12.1	13.3				10.8	15.2			11.3	12.5	10.5	-
120	315445	170577	23.0	22.3	18.4	19.5								16.0	19.7	13.3	-
66	313342	168823	36.3	37.7	22.2	26.9				25.5	28.9	28.1	33.0	26.4	29.1	22.7	-
117	313612	168807	29.9	31.7	26.0	25.2					28.5	29.5		25.6	27.9	19.5	-
102	311115	167041	28.0	24.9	11.6	18.3				14.5	17.9	17.2	22.6	13.4	18.4	14.3	-

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations (µg/m ³)												Time Weighted Annual Mean (µg/m ³)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.78) and Annualised	Distance Corrected to Nearest Exposure
115	312681	169051	30.6		26.0	25.7				23.3	31.1	21.3	34.5	20.7	26.3	19.2	-
64	311690	168042	22.1	20.4		20.9				11.7	17.5	17.1	21.0	14.0	17.9	12.5	-
114	312585	168171	18.8	19.8	14.0	18.7									17.7	11.4	-
116	311371	167628	24.6	21.6	18.2	19.3				13.1	17.9			13.9	18.2	13.4	-
41	315278	168451	16.6	14.6	9.8	10.3				6.5	8.1	9.5	12.5	8.8	10.5	8.2	-
108	299967	174311	28.2	23.3	22.1	22.1				14.7	22.9	19.4	24.0	15.0	21.1	16.4	-
65	299614	174592	18.4	15.9	14.8	13.7				4.5	14.7	13.4	18.1	10.1	13.5	10.5	-
89	317627	172371	34.9	32.8	32.7	31.6				24.0	30.4	21.5	33.6	22.0	29.1	22.7	-
104	289473	174752	15.3	12.0	11.2	12.1				8.8	10.7	10.6	12.6	6.5	11.0	8.6	-
105	289473	174752	16.8	12.4	11.4	10.0				7.8	10.0			7.1	10.6	7.8	-
106	289496	174858	13.9	11.0	9.0	8.8				5.9	8.6	5.1	14.2		9.3	6.4	-
107	289512	174805	14.2	9.9	7.7	8.3				4.9	6.3		12.9	4.8	8.4	5.9	-
101	298903	174907	20.5	17.4	13.8	14.4				12.7	14.5	14.7	19.9	10.8	15.2	11.9	-
128	318367	172342		20.2	15.4	13.1					14.6	15.0	17.7	12.3	15.4	10.8	-
129	318864	171109	22.3	14.2	9.2					10.6	12.8	12.1	13.9	9.9	12.9	9.0	-

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**.

See Appendix C for details on bias adjustment and annualisation.

Appendix B: A Summary of Local Air Quality Management

4.8 Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995, as amended by the Environment Act 2021, and associated government guidance. 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 being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans must then be reviewed and updated no later than every five years; or if a local authority considers there is a need for further or different measures to be taken in order to achieve air quality standards; or if significant changes to sources occur within your local area.

For Local Authorities in Wales, an Annual Progress Report replaces all other formal reporting requirements and have a very clear purpose of updating the general public on air quality, including what ongoing actions are being taken locally to improve it if necessary.

4.9 Air Quality Objectives

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), and are shown in Table 5.

The table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table 5 - Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as	Date to be achieved by
Nitrogen Dioxide (NO₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO₂)	40µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2010
Particulate Matter (PM₁₀)	40µg/m ³	Annual mean	31.12.2010
Sulphur dioxide (SO₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	16.25µg/m ³	Running annual mean	31.12.2003
Benzene	5µg/m ³	Annual mean	31 12 2010
1,3 Butadiene	2.25µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m ³	Maximum Running Daily 8-Hour mean	31.12.2003
Lead	0.25µg/m ³	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

4.10 QA/QC of Diffusion Tube Monitoring

A database of bias adjustment factors determined from Local Authority co-location studies throughout the UK has been collated by the LAQM Helpdesk. The National Diffusion Tube Bias Adjustment Factor Spreadsheet (Version 03/24) was used to obtain an overall adjustment factor of 0.78 from the input data shown in the following screenshot. This overall factor is based on 35 co-location studies where the tube preparation method and analysis laboratory used were the same as those used by VoGC.

Discussion of Choice of Factor to use

The bias adjustment factor applied to all 2023 data is 0.78. The applied bias adjustment factor has been calculated using the national diffusion tube bias adjustment factor spreadsheet version 09/24.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Socotec UK Ltd Didcot, using the 50% triethanolamine (TEA) in water method. Socotec UK Ltd Didcot participates in the Annual Field Inter-Comparison Exercise and Workplace Analysis Scheme for Proficiency (WASP) inter-comparison scheme for nitrogen dioxide diffusion tube analysis. From April 2014 the WASP Scheme was combined with the STACKS scheme to form the new AIR scheme, which Socotec UK Ltd Didcot participates in. The AIR scheme is an independent analytical proficiency testing scheme operated by LGC Standards and supported by the Health and Safety Laboratory (HSL).

The laboratory Socotec UK Ltd Didcot is regarded ranked as the highest rank of satisfactory in relation to the WASP intercomparison scheme for spiked nitrogen dioxide diffusion tubes. Information regarding tube precision can be obtained via <http://laqm.defra.gov.uk/diffusion-tubes/precision.html> Information regarding WASP results can be obtained via <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

Diffusion Tube Annualisation

In 2023, 25 non-automatic monitoring sites required annualisation.

Table 6 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	09/24	0.78
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	09/20	0.76
2019	National	06/19	0.75

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within the Vale of Glamorgan required distance correction during 2023.

Table 7 - Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Diffusion Tube ID	Annualisation Factor Cardiff City Centre	Annualisation Factor St Julians Comprehensive, Newport.	Average Annualisation Factor	Raw Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)	Annualised Weighted Annual Data Time Mean ($\mu\text{g}/\text{m}^3$)
92	0.8924	0.9135	0.9030	28.9	26.1
121	1.0486	1.1048	1.0767	29.1	31.3
112	0.8924	0.9135	0.9030	23.7	21.4
124	0.8626	0.8848	0.8737	11.7	10.2
125	0.8364	0.8641	0.8502	7.5	6.3
56	0.8821	0.9039	0.8930	21.1	18.8
100	0.8924	0.9135	0.9030	25.3	22.8
79	0.9090	0.9657	0.9373	38.8	36.4
113	0.8821	0.9039	0.8930	21.5	19.2
103	0.8924	0.9135	0.9030	10.8	9.7
22	0.9329	0.9485	0.9407	19.6	18.4
96	0.8924	0.9135	0.9030	8.4	7.6
127	0.9177	0.9576	0.9377	25.0	23.5
126	1.0486	1.1048	1.0767	12.5	13.5
119	0.8545	0.8776	0.8661	19.7	17.1

Diffusion Tube ID	Annualisation Factor Cardiff City Centre	Annualisation Factor St Julians Comprehensive, Newport.	Average Annualisation Factor	Raw Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)	Annualised Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)
117	0.8850	0.9074	0.8962	27.9	25.0
115	0.9177	0.9576	0.9377	26.3	24.7
64	0.8838	0.8994	0.8916	17.9	16.0
114	0.8269	0.8294	0.8282	17.7	14.7
116	0.9349	0.9494	0.9421	18.2	17.1
105	0.9349	0.9494	0.9421	10.6	10.0
106	0.8857	0.8944	0.8900	9.3	8.2
107	0.8924	0.9135	0.9030	8.4	7.6
128	0.8834	0.9126	0.8980	15.4	13.8
129	0.8881	0.9093	0.8987	12.9	11.6

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