Swansea Council

Annual Progress Report 2024

Bureau Veritas

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Swansea 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: October 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Swansea

This report contains the latest air quality monitoring results within the City and County of Swansea. The conclusions reached are that the objectives for benzene, lead and sulphur dioxide will be met and that there is no requirement to proceed further with these pollutants.

During 2023, all passive monitoring locations were compliant with the nitrogen dioxide Air Quality Standard objective of 40 µg/m^3; 59 sites reported a decrease in comparison to 2022, with 89 sites reporting increases. There was only one site that reported a concentration within 10% of the annual mean NO_2 AQS objective of 40 µg/m^3 within Swansea, this was at site 459, situated in Graig Trewyddfa. This site continues to report the highest concentrations within the monitoring network. 459 (36.2 µg/m^3) is not at a location of relevant exposure, following fall-off with distance calculations to predict the concentration at the nearest relevant receptor, the estimated concentration was 19.7 µg/m^3.

All automatic monitoring locations reported compliance to the nitrogen dioxide Air Quality Standard objective in 2023.

Swansea Council currently have one declared Air Quality Management Area, Swansea Air Quality Management Area 2010. Details of the Air Quality Management Area can be found on the UK-Air website and the Welsh Government Website. The Air Quality Management Area has been declared due to exceedances of the nitrogen dioxide annual mean Air Quality Standard objective. All Air Quality Management Area boundaries are either close to, or have busy roads within them, recognising the influence vehicle emissions have upon local air quality. The council will look to revoke/amend their current Air Quality Management Area.

No diffusion tube monitoring sites reported an annual mean nitrogen dioxide concentration greater than 60µg/m^3, therefore in accordance with LAQM.TG(22) it is not believed that there have been any exceedances of the 1-hour nitrogen dioxide Air Quality Standard objective in these areas. Additionally, the automatic monitoring stations located in Swansea all reported no concentrations above the 1-hour NO_2 AQS objective of 200 µg/m^3.

All automatic monitoring stations reported Particular Matter compliance with both the annual and 24-hour Air Quality Standard objectives maintained. Ozone is monitored at four sites within Swansea. Compliance with the 8-hour mean UK objective (not set in regulation) was observed during 2023 at all sites.

Actions to Improve Air Quality

Swansea Council takes an active role within the Welsh Air Quality Forum https://airquality.gov.wales/ and is taking part in collaborative discussions with Swansea University to work together towards carrying out research into areas of 'public health interest' for all parties.

Collaborative works have led to Swansea Council being involved in research projects with Swansea University and now Nottingham University looking at behaviour change and Air Quality.

Local Priorities and Challenges

Swansea Council will continue to undertake monitoring at the fixed locations for pollutants reported upon in this report. The assessment of locations for nitrogen dioxide diffusion tube monitoring will continue to be carried out, sites returning low concentrations will be closed down in order to allow new sites to be created to enable Swansea Council to enhance their quantitative data.

Swansea Council is reviewing their action plan to consider the impact of the Coronavirus Pandemic and ongoing compliance. Swansea Council will continue to work towards achieving Welsh Governments aims to maintain compliance and further reduce public health exposure.

How to Get Involved

Swansea Council publishes its real-time monitoring data on their website https://swansea.airqualitydata.com/ and data can be downloaded from this site; a review of this site is scheduled.

Also, Swansea Council's data can be viewed and downloaded via the Welsh Air Quality Forum website https://airquality.gov.wales/.

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1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

The local authority review and assessment process is multi-staged. This Authority carried out its first stage review in 1999. The conclusion reached was to progress to a second and third stage review for Benzene, Particulate Matter (PM_{10}, $PM_{2.5}$), Sulphur Dioxide (SO_2) and Nitrogen Dioxide (NO_2).

In between these stages the authority had to deal with and resolve a burning, disused coal spoil tip at the former Brynlliw Colliery site. This absorbed most resources available between 1999 and 2000.

Section 83(1) of the Environment Act 1995 requires the Authority to designate Air Quality Management Areas (AQMAs) in areas where it is likely that the standards for any of the identified pollutants would be exceeded. As a result of the detailed work carried out in the authorities' third stage review and assessment it was found that areas of the Hafod were likely to fail the NO_2 annual mean objective of 40µg/m^3 by the compliance date of 31st December 2005.

On the 12th September 2001 the Authority declared The Hafod Air Quality Management Area (NO_2), cited as the City & County of Swansea (Hafod Air Quality Management Area (NO_2)) Order 2001. The Order came into force on the 14th September 2001. Appendix D contains a map indicating the AQMA area.

The Stage 4 review required under Section 84(1) of the Environment Act 1995 confirmed the earlier findings and that the declaration of the Hafod AQMA was justified as several locations were projected to fail the NO_2 annual mean objective in 2005.

Section 84 of the Environment Act 1995 requires the formulation of a written plan in pursuit of the achievement of air quality standards and objectives within the designated AQMA and has become known as the "Action Plan". The City and County of Swansea have undertaken a considerable amount of feasibility and infrastructure work in formulating its Action Plan taking a few years to produce the completed Action Plan in December 2004.

In 2004, the authority commenced works on the second round of review and assessment. In accordance with the policy and technical guidance documents, the second round of review and assessment was carried out in two stages;

- An Updating and Screening Assessment (USA) - intended to identify aspects that have changed since the first round of review and assessment (from 1999 in Swansea's case) and identify those that require further assessment; namely
- A Detailed Assessment of those pollutants that have been identified as requiring further work and investigation

Swansea Council currently has one active AQAP (The City and County of Swansea (Hafod Air Quality Management Area (NO_2)) Order 2001). This is currently outdated and Swansea council are currently in the process of updating the AQAP.

A summary of the reports produced on air quality by Swansea Council to date are accessible on the Swansea government website (https://swansea.gov.uk/laqmreports?lang=en), via previous Annual Progress Reports (APRs), which summarise previous year air quality reports.

Annual Progress Report 2023 Summary

During 2022, the monitoring network within Swansea reported an overall decrease in NO_2 concentrations, with 183 non-automatic sites reporting a decrease in comparison to 2021. All sections of the Swansea AQMA continued to report compliance. Swansea Council will continue to use their monitoring network to oversee concentrations, and will look to revoke their AQMA next year if compliance continues.

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 (Please see Appendix A)). 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.

A summary of AQMAs declared by Swansea Council can be found in Table 1.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online on the UK-Air website.

Table 1.1 – Declared Air Quality Management Areas

AQMA	Relevant Air Quality Objective(s)	Comments on Air Quality Trend	City / Town	Description	Action Plan
Swansea AQMA 2010	NO_2 Annual Mean	The 2023 monitoring results indicates decreased and minor increases of the annual mean NO_2 concentrations across all passive monitoring sites from 2022. All automatic monitors report compliance.	Hafod Sketty Fforestfach	Elevated annual mean NO_2 concentrations at residential properties alongside main arterial routes, which located within Hafod, Sketty and Fforestfach area.	https://www.swansea.gov.uk/media/4052/Air-Quality-Action-Plan/pdf/Air_Quality_Action_Plan.pdf?m=16355225007237

AQMA boundary maps within Swansea Council can be viewed in Appendix D.

1.3 Implementation of Action Plans

Swansea Council has taken forward a number of measures during 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 1.2. More detail on these measures can be found in the Air Quality Action Plan relating to any designated AQMAs.

Air Quality Action Plans are continuously reviewed and updated whenever deemed necessary, but no less frequently than once every five years. Such updates are completed in close consultation with local communities.

Table 1.2 – Progress on Measures to Improve Air Quality

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1	Nowcaster Model	Pollution reduction by prediction and behaviour change	Swansea Council	2004	2017	-	e.g. 27% Reduction in Road NOx required Neath Road.	Model Complete	Due to resource restriction and the pandemic no further works have been able to be carried out.	Unknown – funding dependant	Effects of Nowcaster Model to be verified with traffic flow data and NO_2 Concentrations.
3	Nowcaster Model Output Progression	Pollution reduction by prediction and behaviour change	Swansea Council	2017	2018/19	-	CHERISH-DE application accepted. Awaiting next stage.	Pilot study carried out – Data analysis carried out by Swansea University.	Collaborative working with Swansea University Psychology Department to look at behavioural change approach with messages.	March 2020	-
4	Collaborative Research Studies	Pollution reduction by prediction and behaviour change	Swansea University	2018	-	-	-	Ongoing work stream – has not begun to date as funding applications have been unsuccessful.	Application bids for funding with collaborative partners to undertake work looking at behavioural change at congested areas.	-	-

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
5	Morfa Distributor Road	Infrastructure change	Swansea Council		August 2017	-	Road Complete	-	Effects on Traffic Flow to be assessed alongside NO2 concentration	04/08/2017	Pollutant Concentration reduced and AADT decreased.
6	Green infrastructure	Exposure reduction, enhancing greenery	Swansea Council	-	2018-20	-	-	Green Screen installed at the junction of Fabian Way and Port Tennant Road	Installed at the end of March 2020. Real Time data being captured for analysis at a later date	March 2020	-
7	UK Prevention Research Partnership Bid	Collaborative Working	School of Management Bay Campus Swansea University Fabian Bay, Swansea	2017	2018	-	Expression of interest to apply submitted	Unsuccessful	-	-	-
8	LDP Policy RP	Policy	Swansea Council	-	2018	-	Creation of specific Air Pollution Policy within the LDP	Adopted	-	-	-

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
9	Highway Infrastructure Works	Infrastructure	Swansea Council	2018	-	-	-	Ongoing involvement when schemes required.	-	-	-
10	Council Vehicle Fleet	Reduced Emission	Swansea Council	-	-	-	-	Ongoing	Increase in electric vehicles and newer diesel vehicles within the council fleet	-	-
11	Welsh Government LAQM Support Grant	Green Infrastructure	Swansea Council	2021	2022	-	-	Grant application submitted to Welsh Government and awaiting outcome.	Grant application approved for two projects at Primary Schools in Swansea. Monitoring equipment installed and green screens purchased; installations work planned for end 2023.	Winter 2024	-

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
12	Welsh Government LAQM Support Grant	Engine idling and behaviour change	Swansea Council	2021	2022	-	-	Grant application submitted to Welsh Government and awaiting outcome	Engine idling study carried out in July 2022. Report has been submitted to Welsh Government and will be included within the APR reporting structure once submission to peer reviewed publication has been made	May 2023	-
13	Welsh Government LAQM Support Grant	City Centre AQ monitoring network and bus transport	Swansea Council	2021	2022	-	-	Grant application submitted to Welsh Government and awaiting outcome	Network has been installed and data collection commenced.	April 2025	-
14	Welsh Government LAQM Support Grant	Engine idling and behaviour change	Swansea Council	2022	2023	-	-	Grant application submitted to Welsh Government. Project ongoing for analysis comp	Engine idling study carried out in February/March 2023. Will be reported upon in the next APR	December 2024	-

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
15	Welsh Government LAQM Support Grant	Air Quality Literacy Research Project	Swansea Council	2023	2024	-	-	Grant application submitted to Welsh Government. Project ongoing for analysis comp	Intervention in operation. Will be reported upon in next APR	April 2025	-
16	Welsh Government LAQM Support Grant	Health Impact Assessment – Wood Burners in Swansea	Swansea Council	2023	2024	-	-	Grant application submitted to Welsh Government.	Report completed and final version awaiting publication.	April 2025	-

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2023

2.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how results compare with the objectives.

Swansea Council undertook automatic (continuous) monitoring at 12 sites during 2023. Table 2.1 presents the details of the sites. National monitoring results are available at https://uk-air.defra.gov.uk/data/, https://airquality.gov.wales/maps-data/measurements/downloadsubmit-data and http://swansea.airqualitydata.com/.

Maps showing the location of the monitoring sites are provided in Figure 2.1. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

2.1.2 Non-Automating Monitoring Sites

Swansea Council undertook non- automatic (passive) monitoring of NO_2 at 200 sites during 2023. Table 2.2 presents the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 2.2 – Figure 2.10. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Table 2.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with (Named) AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) [1]	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
CM1	Swansea Roadside AURN	Roadside	Swansea AQMA 2010	265299	194470	NO_2, PM_{10}, $PM_{2.5}$	Chemiluminescence and BAM1020	2.0	16.5	22.0	4.5
CM2	Morriston Groundhog	Roadside	Swansea AQMA 2010	267210	197674	NO_2, PM_{10}, $PM_{2.5}$ and O_3	Chemiluminescence, UV Absorption and BAM1020	2.0	22.0	27.0	5.0
CM3	Swansea Cwm Level Park	Urban Background	Swansea AQMA 2010	265912	195890	NO_2 and O_3	Chemiluminescence, UV Absorption	1.5	-	-	78.0
CM4	Swansea Hafod DOAS	Roadside	Swansea AQMA 2010	Transmitter 265927 Receiver 265991	Transmitter 194453 Receiver 194706	NO_2, O_3 and Benzene	Differential Optical Absorption Spectrometry	4.0	0.0	1.5	1.5
CM5	Swansea St Thomas DOAS	Roadside	No	266199	193657	NO_2, SO_2, O_3, and Benzene	Differential Optical Absorption Spectrometry	4.0	7.5	0.2	7.3
CM6	Fforestfach Cross	Roadside	Swansea AQMA 2010	263236	195489	PM_{10}	EBam	3.0	22.0	25.0	3.0
CM7	Uplands Crescent	Roadside	No	264078	192888	PM_{10}	EBam	3.0	13.0	14.0	1.0

Site ID	Site Name	Site Type	Associated with (Named) AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) [1]	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
CM8	Sketty Cross	Roadside	Swansea AQMA 2010	262681	192871	PM_{10}	EBam	3.0	15.0	16.0	1.0
CM9	Westway Quadrant Bus Station	Roadside	No	265256	192731	PM_{10}	EBam	3.0	13.0	15.0	2.0
CM11	Swansea Station Court High Street	Roadside	Swansea AQMA 2010	265705	193686	NO_2	Chemiluminescence	1.5	3.0	5.0	2.0
CM12	Morfa Road	Roadside	Swansea AQMA 2010	265905	193733	NO_2	Chemiluminescence	1.5	0.0	6.0	6.0
CM13	Junction Port Tennant	Roadside	No	266670	193179	NO_2 and $PM_{2.5}$	Chemiluminescence and BAM1020	1.5	9.0	12.0	3.0

Notes:

(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

Figure 2.1 – Map(s) of Automatic Monitoring Sites
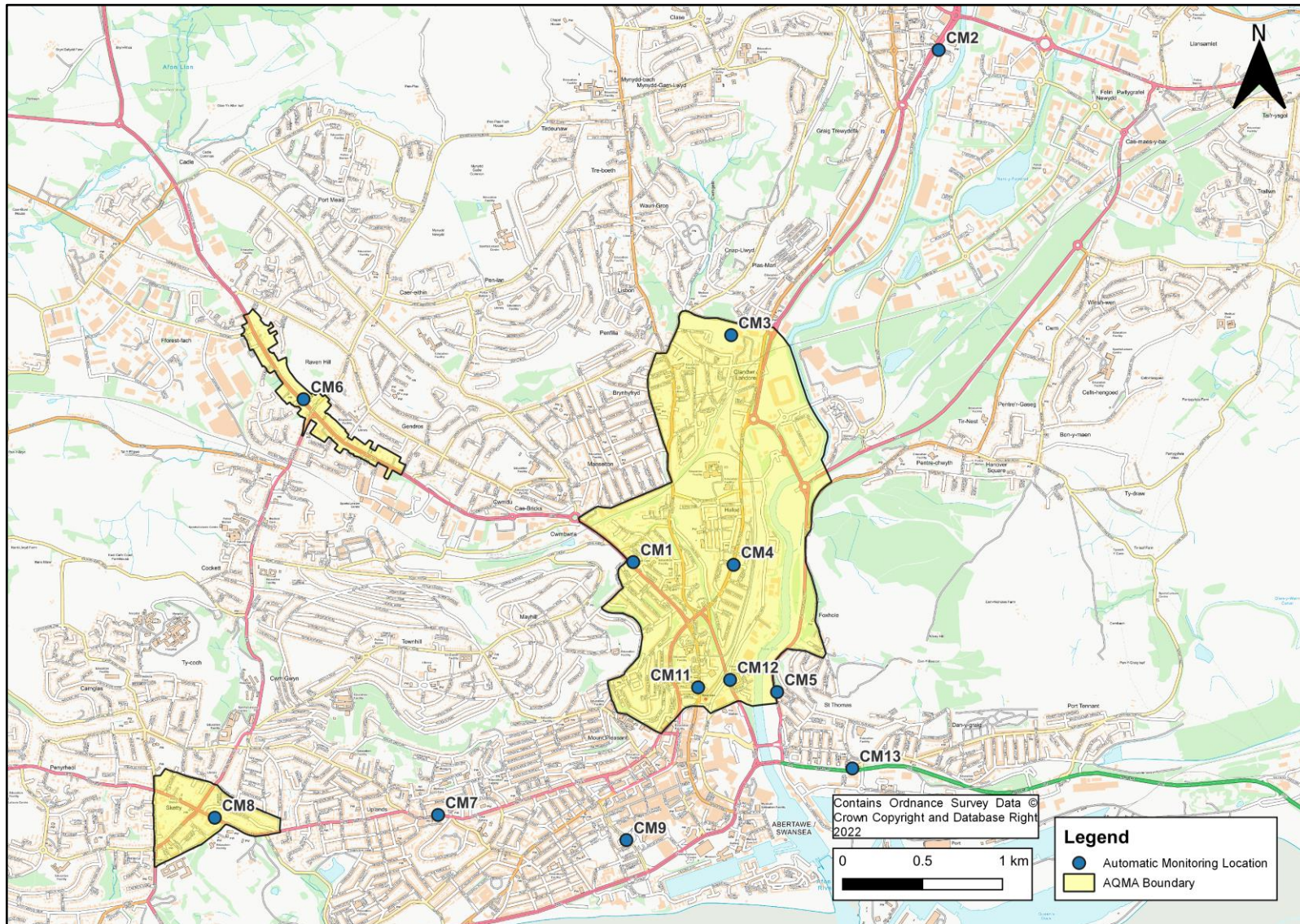
Table 2.2 – Details of Non-Automatic Monitoring Sites

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
5	Gower Road	Roadside	262548	262548	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
6	Vivian Road	Roadside	262612	192995	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
7	Goer Road	Roadside	262691	192852	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
8	Carmarthen Road	Roadside	262990	195820	NO$_2$	Y – Swansea AQMA 2010	4.5	-	No	3.0
10	Carmarthen Road	Roadside	263219	195513	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
11	Ravenhill Road	Roadside	263344	195474	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
12	Carmarthen Road	Roadside	263680	195103	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
16	Oystermouth Road	Roadside	265339	192534	NO$_2$	N	-	-	No	3.0
18	Cwm Level Road	Roadside	265526	195807	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
19	Dyfatty Street	Roadside	265597	194061	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
20	Carmarthen Road	Roadside	265594	194175	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
22	Pentreharne Road	Roadside	265682	195374	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
26	Neath Road	Roadside	265876	194318	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
27	Neath Road	Roadside	265922	194428	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
29	Neath Road	Roadside	265976	195290	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
32	Pentreguinea Road	Roadside	266209	193867	NO$_2$	N	-	-	No	3.0
33	Pentreguinea Road	Roadside	266236	193488	NO$_2$	N	-	-	No	3.0
35	Delhi Street	Roadside	266314	193298	NO$_2$	N	-	-	No	3.0
36	Delhi Street	Roadside	266455	193300	NO$_2$	N	-	-	No	3.0
40	Pentrepoeth Road	Roadside	266951	198278	NO$_2$	N	-	-	No	3.0
41	Woodfield Road	Roadside	266953	198085	NO$_2$	N	-	-	No	3.0
43	Clase Road	Roadside	267093	198063	NO$_2$	N	-	-	No	3.0
44	Ian's Walk	Roadside	267639	199543	NO$_2$	N	-	-	No	3.0
45	Glyncollen Drive	Roadside	267661	199451	NO$_2$	N	-	-	No	3.0
48	Bevans Row	Roadside	268011	193101	NO$_2$	N	-	-	No	3.0
50	Nantyffin Road	Roadside	268530	197419	NO$_2$	N	-	-	No	3.0
54	Peniel Green Road	Roadside	268693	197416	NO$_2$	N	-	-	No	3.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
55	Peniel Green Road	Roadside	268789	197420	NO$_2$	N	-	-	No	3.0
56	Ynysallan Road	Roadside	269306	198661	NO$_2$	N	166.0	-	No	3.0
58	Uplands Crescent	Roadside	264000	192800	NO$_2$	N	8.0	-	No	3.0
59	Hafod Post Office	Roadside	265918	194463	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
61	Helens Road	Roadside	264959	192878	NO$_2$	N		-	No	3.0
63	De La Beche Road	Roadside	262675	192775	NO$_2$	Y – Swansea AQMA 2010	6.0	-	No	3.0
64	Gower Road	Roadside	262719	192840	NO$_2$	Y – Swansea AQMA 2010	1.0	-	No	3.0
65	Gower Road	Roadside	262735	192855	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
66	Sketty Road	Roadside	262802	192829	NO$_2$	Y – Swansea AQMA 2010	-	-	No	3.0
67	Newcut Road	Roadside	265901	193677	NO$_2$	Y – Swansea AQMA 2010	5.0	-	No	3.0
68	Orchard Street	Roadside	265573	193432	NO$_2$	N	-	-	No	3.0
70	Copper Quarter	Roadside	266649	195435	NO$_2$	N	7.0	-	No	3.0
75	Uplands Crescent	Roadside	264072	192869	NO$_2$	N	-	-	No	2.0
84	Gower Road	Roadside	262714	192839	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
85	Gower Road	Roadside	262702	192847	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
86	Gower Road	Roadside	262704	192865	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
87	De La Beche Road	Roadside	262697	192798	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
88	Gower Road	Roadside	262605	192916	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
89	Vivian Road	Roadside	262587	192956	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
90	Vivian Road	Roadside	262631	192996	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
91	Gower Road	Roadside	262534	192950	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
94	Ravenhill Road	Roadside	263444	195572	NO$_2$	N	-	-	No	2.0
95	Carmarthen Road	Roadside	262815	196090	NO$_2$	N	-	-	No	2.0
96	Carmarthen Road	Roadside	262919	195951	NO$_2$	N	-	-	No	2.0
97	Carmarthen Road	Roadside	262946	195902	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
98	Carmarthen Road	Roadside	263142	195548	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
99	Carmarthen Road	Roadside	263387	195332	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
104	Nantyffin Road	Roadside	268538	197389	NO_2	N	-	-	No	2.0
110	Cefn Glas	Roadside	267369	199521	NO_2	N	-	-	No	2.0
115	Mansel Street	Roadside	265031	193097	NO_2	N	-	-	No	2.0
116	Mansel Street	Roadside	265192	193138	NO_2	N	-	-	No	2.0
117	De La Beche Road	Roadside	265288	193211	NO_2	N	-	-	No	2.0
118	Alexandra Road	Roadside	265483	193385	NO_2	N	-	-	No	2.0
121	High Street	Roadside	265697	193679	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
122	High Street	Kerbside	265694	193505	NO_2	N	-	-	No	3.0
123	High Street	Roadside	265655	193423	NO_2	N	-	-	No	2.0
124	High Street	Kerbside	265651	193253	NO_2	N	-	-	No	2.0
125	High Street	Kerbside	265642	193148	NO_2	N	3.0	-	No	3.0
126	The Kingsway	Roadside	265475	193144	NO_2	N	-	-	No	2.5
128	The Kingsway	Roadside	265297	193085	NO_2	N	-	-	No	2.0
129	Christina Street	Roadside	265153	193098	NO_2	N	-	-	No	2.0
131	Dilwyn Street	Roadside	265137	192846	NO_2	N	-	-	No	2.0
132	Westway	Roadside	265229	192753	NO_2	N	-	-	No	3.0
134	Dilwyn Street	Roadside	265113	192903	NO_2	N	-	-	No	2.0
180	Loughor Road	Roadside	259064	197781	NO_2	N	-	-	No	3.0
182	Loughor Road	Roadside	259050	197790	NO_2	N	-	-	No	3.0
197	Alexandra Road	Roadside	258797	198701	NO_2	N	-	-	No	3.0
198	Alexandra Road	Roadside	258811	198701	NO_2	N	-	-	No	3.0
206	Newton Road	Roadside	261565	188211	NO_2	N	-	-	No	3.0
207	Newton Road	Roadside	261561	188222	NO_2	N	-	-	No	3.0
208	Newton Road	Roadside	261541	188215	NO_2	N	-	-	No	3.0
209	Newton Road	Roadside	261534	188198	NO_2	N	-	-	No	3.0
210	Newton Road	Roadside	261516	188207	NO_2	N	-	-	No	3.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
211	Newton Road	Roadside	261501	188188	NO_2	N	-	-	No	3.0
212	Newton Road	Roadside	261486	188200	NO_2	N	-	-	No	3.0
213	Newton Road	Roadside	261490	188186	NO_2	N	-	-	No	3.0
240	Neath Road	Roadside	266169	195995	NO_2	N	-	-	No	3.0
242	High Street	Roadside	265655	193423	NO_2	N	-	-	No	3.0
243	Courtney Street	Roadside	265474	194949	NO_2	N	-	-	No	3.0
244	Courtney Street	Roadside	265466	194930	NO_2	Y – Swansea AQMA 2010	-	-	No	3.0
247	Courtney Street	Roadside	265394	194899	NO_2	Y – Swansea AQMA 2010	-	-	No	3.0
249	Courtney Street	Roadside	265326	194871	NO_2	Y – Swansea AQMA 2010	-	-	No	3.0
256	Mansel Terrace	Roadside	264995	194777	NO_2	N	-	-	No	3.0
275	Pentremawr Road	Roadside	265658	194856	NO_2	Y – Swansea AQMA 2010	3.0	-	No	3.0
276	Pentremawr Road	Roadside	265610	194871	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
277	Pentremawr Road	Roadside	265596	194875	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
278	Pentremawr Road	Roadside	265573	194882	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
279	Llangyfelach Road	Roadside	265555	194926	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
280	Llangyfelach Road	Roadside	265537	194980	NO_2	Y – Swansea AQMA 2010	2.0	-	No	2.0
281	Llangyfelach Road	Roadside	265542	194872	NO_2	Y – Swansea AQMA 2010	3.0	-	No	2.5
282	Llangyfelach Road	Roadside	265540	194840	NO_2	Y – Swansea AQMA 2010	3.0	-	No	2.5
284	Llangyfelach Road	Roadside	265452	195899	NO_2	N	-	-	No	2.0
285	Martin Street	Roadside	266955	197415	NO_2	N	-	-	No	2.0
286	Martin Street	Roadside	266938	197377	NO_2	N	-	-	No	2.0
287	High Street	Roadside	265715	193902	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
288	High Street	Roadside	265698	193878	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
289	High Street	Roadside	265702	193842	NO_2	Y – Swansea AQMA 2010	-	-	No	2.0
291	Wern Terrace	Roadside	267952	193121	NO_2	N	-	-	No	2.0
295	High Street Gorseinon	Roadside	258998	198698	NO_2	N	1.5	-	No	3.0
296	High Street Gorseinon	Roadside	259054	198679	NO_2	N	-	-	No	2.0
323	Port Tennant Road	Roadside	266765	193224	NO_2	N	-	-	No	2.0
331	High Street	Roadside	265741	193545	NO_2	N	-	-	No	2.0
334	High Street	Kerbside	265688	193483	NO_2	N	-	-	No	2.0
335	High Street	Kerbside	265682	193461	NO_2	N	-	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
336	High Street	Roadside	265664	193395	NO$_2$	N	-	-	No	2.0
337	High Street	Roadside	265637	193335	NO$_2$	N	3.5	-	No	2.0
338	High Street	Kerbside	265651	193331	NO$_2$	N	-	-	No	2.0
339	High Street	Kerbside	265652	193313	NO$_2$	N	-	-	No	2.0
340	High Street	Kerbside	265632	193292	NO$_2$	N	5.0	-	No	2.0
341	High Street	Kerbside	265635	193224	NO$_2$	N	3.0	-	No	2.0
342	Castle Street	Kerbside	265655	193197	NO$_2$	N	3.5	-	No	2.0
343	Castle Street	Kerbside	265640	193173	NO$_2$	N	-	-	No	2.0
346	Castle Street	Kerbside	265681	193096	NO$_2$	N	-	-	No	2.0
347	Orchard Street	Roadside	265562	193518	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
348	Orchard Street	Roadside	265572	193549	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
349	Orchard Street	Roadside	265578	193576	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
350	Orchard Street	Roadside	265577	193606	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
356	Grove Place	Roadside	265471	193359	NO$_2$	N	-	-	No	2.0
362	Westway	Kerbside	265271	192774	NO$_2$	N	-	-	No	2.0
363	Westway	Kerbside	265287	192797	NO$_2$	N	-	-	No	2.0
364	Westway	Kerbside	265301	192814	NO$_2$	N	-	-	No	2.0
373	Mill Street	Kerbside	258859	196513	NO$_2$	N	-	-	No	2.0
375	Mill Street	Roadside	258798	196371	NO$_2$	N	-	-	No	2.0
376	Mill Street	Roadside	258765	196368	NO$_2$	N	-	-	No	2.0
377	Sterry Road	Roadside	258763	196317	NO$_2$	N	-	-	No	2.0
385	Pentrepoeth Road	Roadside	267001	198231	NO$_2$	N	-	-	No	2.0
386	Copper Quarter	Roadside	266698	195334	NO$_2$	N	3.5	-	No	3.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
388	Bevans Row	Roadside	267964	193076	NO$_2$	N	-	-	No	2.0
390	Wern Terrace	Roadside	267974	193132	NO$_2$	N	-	-	No	2.0
391	High Street	Roadside	259467	198509	NO$_2$	N	-	-	No	2.0
394	De La Beche Road	Roadside	262445	192645	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
396	De La Beche Road	Roadside	262370	192609	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
398	Mynydd Garllwyn Road	Roadside	265584	197442	NO$_2$	N	149.0	-	No	2.0
399	Mynydd Garllwyn Road	Roadside	265224	197412	NO$_2$	N	9.0	-	No	2.0
401	Llangyfelach Road	Kerbside	265243	197312	NO$_2$	N	4.5	-	No	2.0
403	Dillwyn Street	Roadside	265115	192895	NO$_2$	N	-	-	No	5.0
404	Pontardualis Road	Roadside	261713	199051	NO$_2$	N	17.0	-	No	2.0
406	Morfa Terrace	Roadside	265973	195222	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
407	Llangyfelach Road	Roadside	265539	195664	NO$_2$	Y – Swansea AQMA 2010	-	-	No	2.0
408	Port Tennant Road	Roadside	266655	193177	NO$_2$	N	2.0	-	No	2.0
412	Victoria Road	Kerbside	258957	196766	NO$_2$	N	-	-	No	2.0
413	Victoria Road	Roadside	258950	196721	NO$_2$	N	-	-	No	2.0
415	Danycoed	Kerbside	270242	197671	NO$_2$	N	16.5	-	No	2.0
416	Birchgrove road	Kerbside	270487	197805	NO$_2$	N	7.0	-	No	2.0
417	Birchgrove road	Kerbside	270485	197705	NO$_2$	N	5.0	-	No	2.0
418	Birchgrove road	Kerbside	270449	197600	NO$_2$	N	19.0	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
419	Birchgrove road	Kerbside	270475	197714	NO_2	N	5.5	-	No	2.0
422	Victoria Road	Kerbside	260149	195425	NO_2	N	3.0	-	No	2.0
423	Victoria Road	Kerbside	260136	195411	NO_2	N	20.0	-	No	2.0
424	Cwm Road	Kerbside	265536	194752	NO_2	Y – Swansea AQMA 2010	23.0	-	No	2.0
425	Llangyfelach Road	Kerbside	265509	194748	NO_2	Y – Swansea AQMA 2010	4.0	-	No	2.5
426	New Cut Road	Kerbside	265960	193609	NO_2	N	6.0	-	No	2.5
427	Swansea Road	Kerbside	261994	197782	NO_2	N	33.5	-	No	2.5
428	Gorseinon Road	Kerbside	261518	198929	NO_2	N	13.5	-	No	2.5
429	Sterry Road	Roadside	258827	196293	NO_2	N		-	No	2.5
430	Mynydd Newydd Road	Kerbside	263930	196601	NO_2	N	26.0	-	No	2.5
431	Mynydd Newydd Road	Kerbside	264029	196852	NO_2	N	12.5	-	No	2.5
432	Llangyfelach Road	Kerbside	265345	195645	NO_2	N	10.5	-	No	2.5
434	Llangyfelach Road	Kerbside	265530	195679	NO_2	N	-	-	No	2.5
435	Gors Avenue	Kerbside	263104	194457	NO_2	N	5.0	-	No	2.5
436	Gors Avenue	Kerbside	263005	194476	NO_2	N	7.5	-	No	2.5
437	Bevans Row	Kerbside	267986	193103	NO_2	N	14.5	-	No	2.5
438	Brunel Way	Roadside	266541	195495	NO_2	N	-	-	No	2.5
439	Glanmor Road	Roadside	262949	193293	NO_2	N	-	-	No	2.5
440	Glanmor Road	Roadside	262905	193293	NO_2	N	-	-	No	2.5
441	Broadway Road	Roadside	262903	193379	NO_2	N	12.5	-	No	2.5
442	Townhill Road	Roadside	263004	193454	NO_2	N	30.0	-	No	2.5
444	Cockett Road	Roadside	262991	193759	NO_2	N	19.0	-	No	2.5
445	Vivian Road	Roadside	262879	193408	NO_2	N	41.0	-	No	2.5

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
446	Vivian Road	Roadside	262838	193374	NO$_2$	N	19.5	-	No	2.5
447	Tycoch Road	Roadside	262709	193311	NO$_2$	N	11.5	-	No	2.5
448	Vivian Road	Roadside	262788	1932813	NO$_2$	N	10.5	-	No	2.5
449	Vivian Road	Roadside	262761	193228	NO$_2$	N	9.5	-	No	2.5
450	Oystermouth School	Roadside	262812	193293	NO$_2$	N	8.0	-	No	2.5
451	Oytermouth School	Roadside	261220	188184	NO$_2$	N	10.0	-	No	2.5
452	Castle Road	Roadside	261163	188175	NO$_2$	N	17.1	-	No	2.5
453	Llangyfelach Road	Roadside	261221	188298	NO$_2$	N	5.0	-	No	2.5
454	Llangyfelach Road	Roadside	265548	195679	NO$_2$	N	4.5	-	No	2.5
455	Llangyfelach Road	Roadside	265516	195729	NO$_2$	N	4.5	-	No	2.5
458	Cockett Road	Roadside	262941	193459	NO$_2$	N	22.5	-	No	2.5
459	Neath Road	Kerbside	267019	197407	NO$_2$	N	-	-	No	2.5
460	Ystrad Road	Kerbside	262084	196454	NO$_2$	N	-	-	No	2.5
462	69 Loughor Road	Roadside	258849	197842	NO$_2$	N	-	1.5	No	2.0
463	111 Bolgoed Road	Roadside	260153	203107	NO$_2$	N	-	-	No	2.0
464	5 Bolgoed Road	Roadside	259597	203360	NO$_2$	N	-	-	No	2.0
466	St. Teilo Street	Roadside	259225	203640	NO$_2$	N	-	2	No	2.0
467	St. Teilo Street	Roadside	259074	203725	NO$_2$	N	-	-	No	2.0
468	St. Teilo Street	Roadside	258951	203791	NO$_2$	N	-	-	No	2.0
469	Fire station Junction Water Street	Roadside	259231	203862	NO$_2$	N	-	-	No	2.0
470	Caecerrig Rd. Lampost by Bus Bay	Roadside	259552	203924	NO$_2$	N	-	-	No	2.0

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) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
471	Ysgol Gynradd Gymraeg Bryniago.	Roadside	259646	203555	NO$_2$	N	-	-	No	2.0
472	Primary School James St.	Roadside	259887	203438	NO$_2$	N	-	-	No	2.0

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 2.2 – Spatial Map of Non-Automatic Monitoring Sites
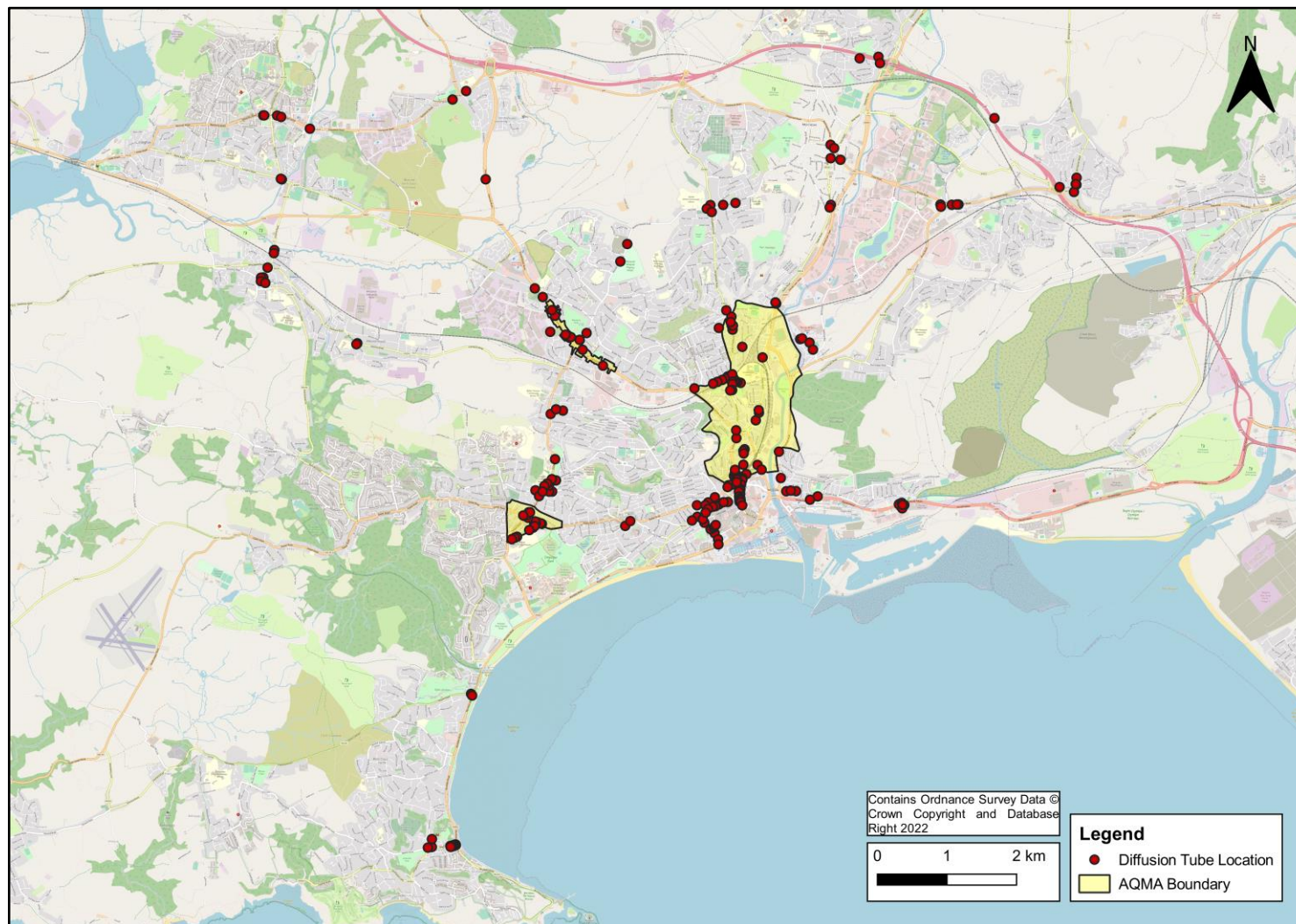
Figure 2.3 – Map of Non-Automatic Monitoring Sites (Gorseinon and Gowerton)
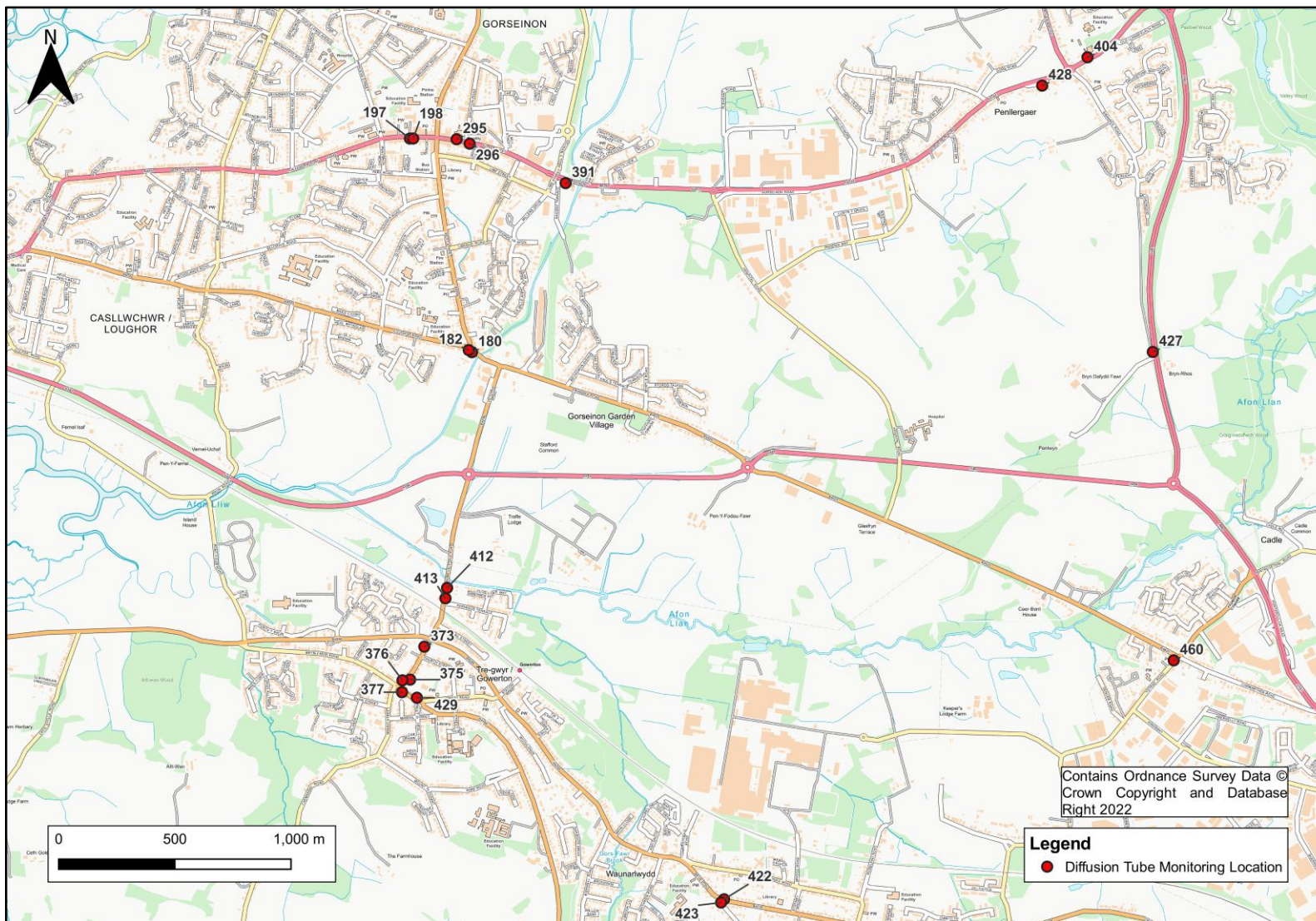
Figure 2.4 – Map of Non-Automatic Monitoring Sites (Fforestfach)
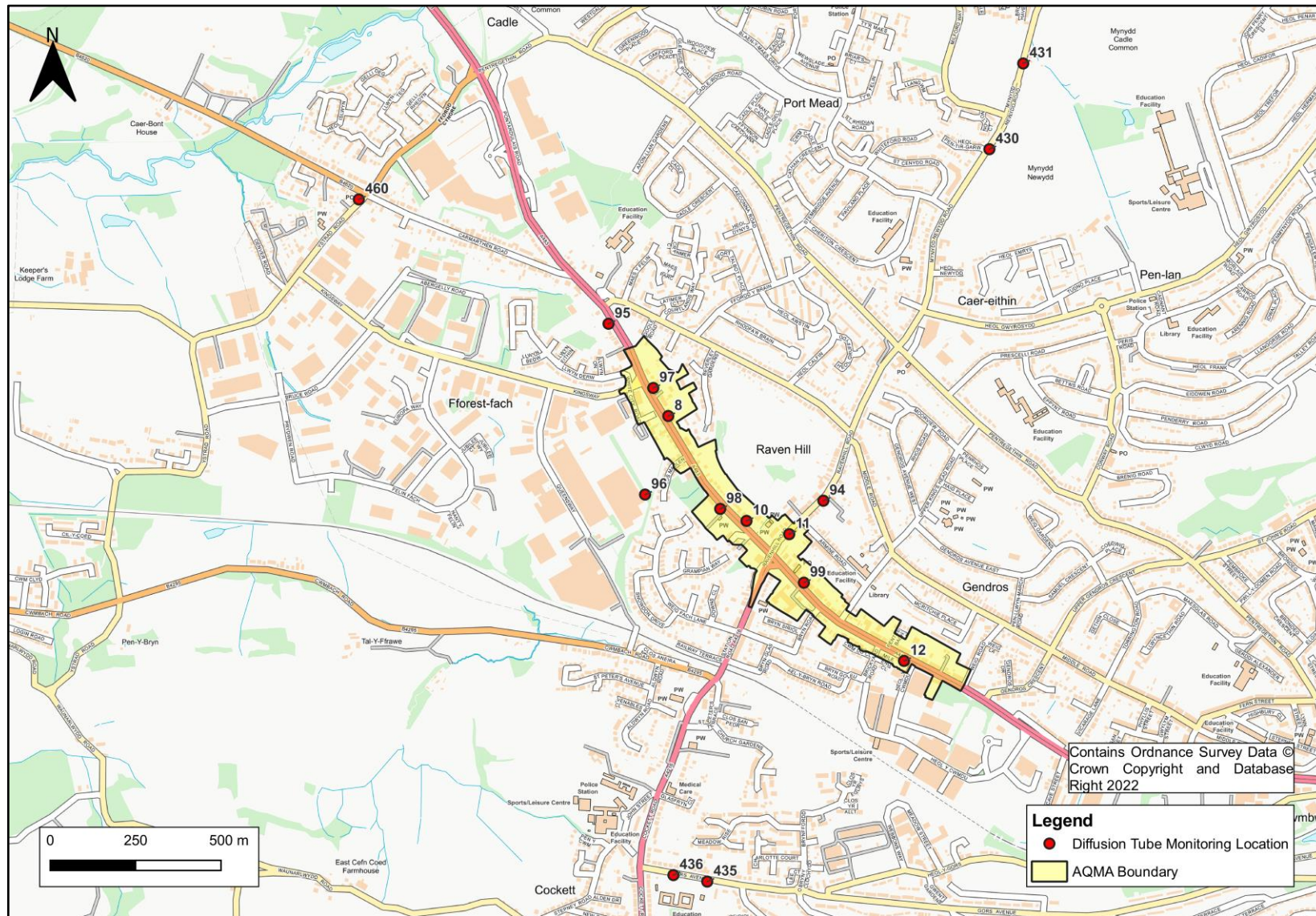
Figure 2.5 – Map of Non-Automatic Monitoring Sites (Hafod and Landore)

Figure 2.6 – Map of Non-Automatic Monitoring Sites (St Thomas and City Centre)
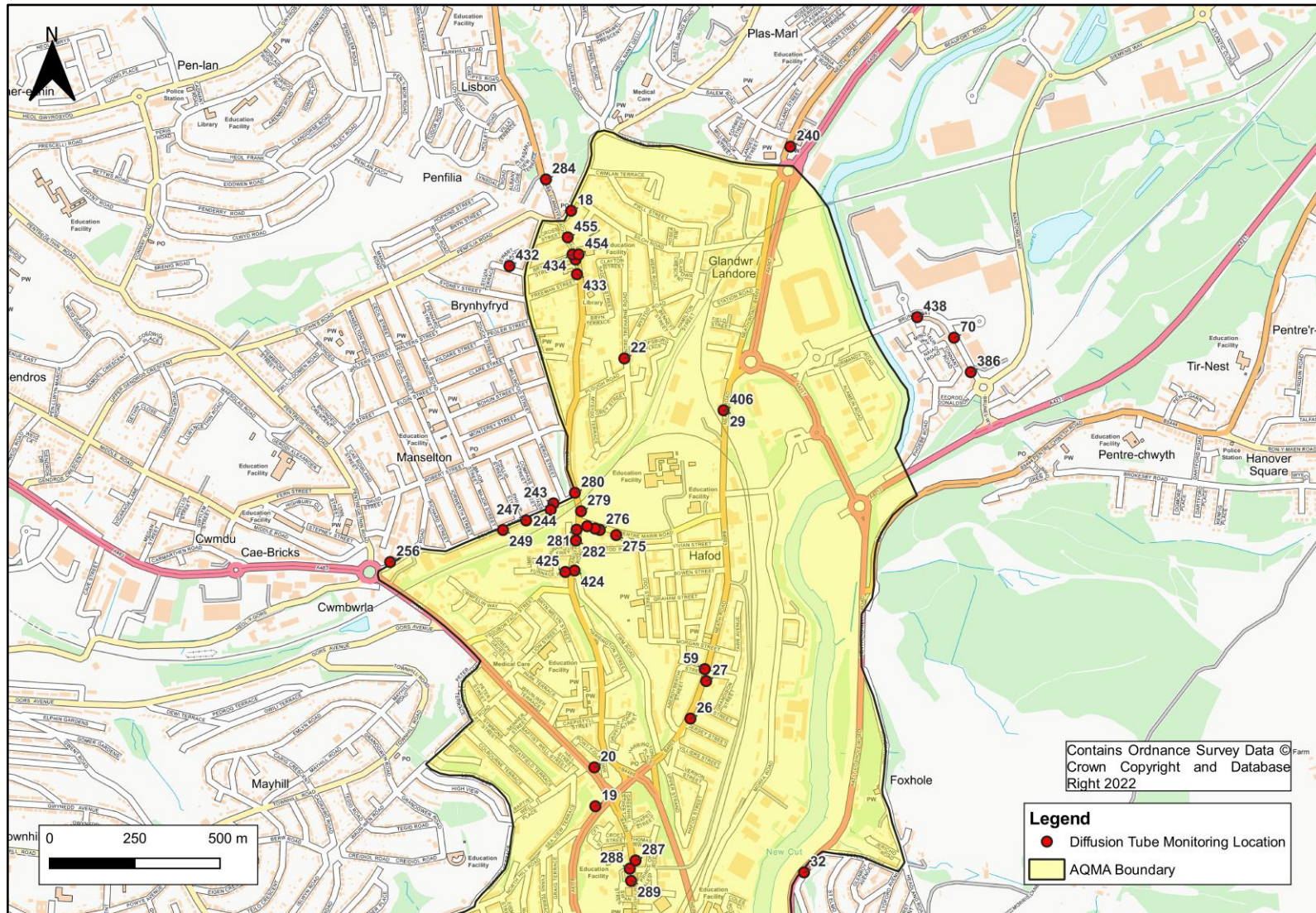
Figure 2.7 – Map of Non-Automatic Monitoring Sites (Uplands and City Centre West)
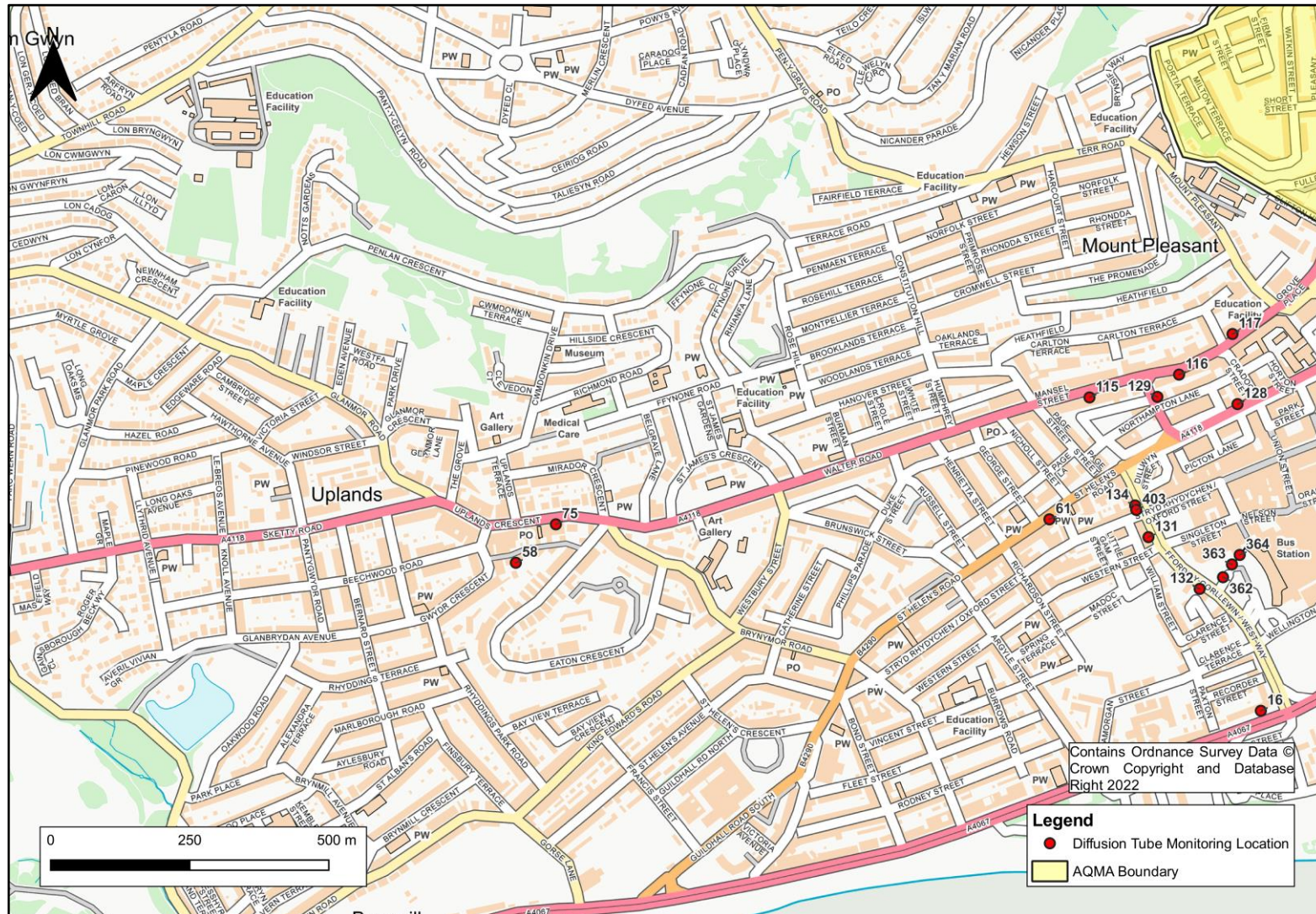
Figure 2.8 – Map of Non-Automatic Monitoring Sites (Sketty)
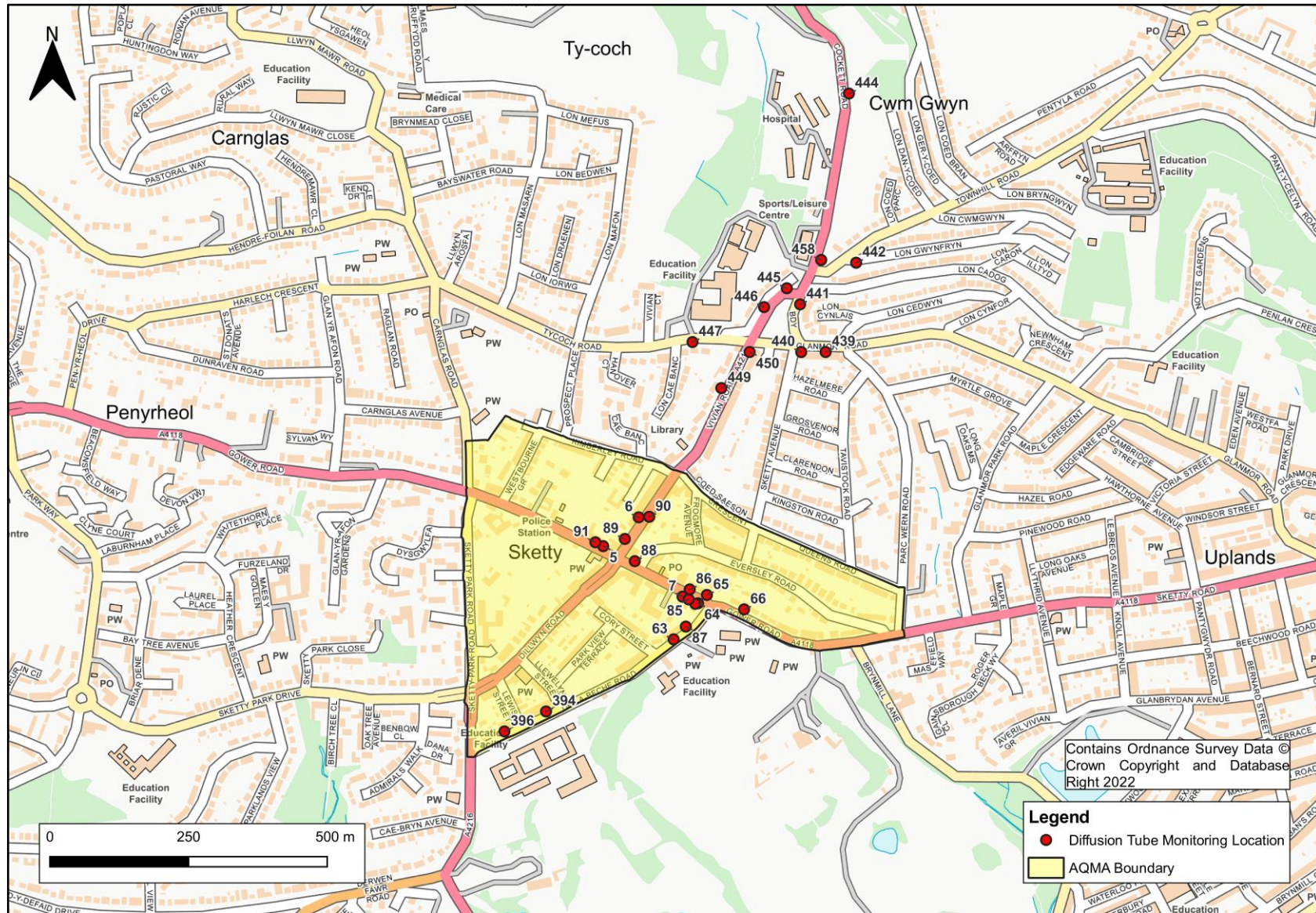
Figure 2.9 – Map of Non-Automatic Monitoring Sites (The Mumbles)
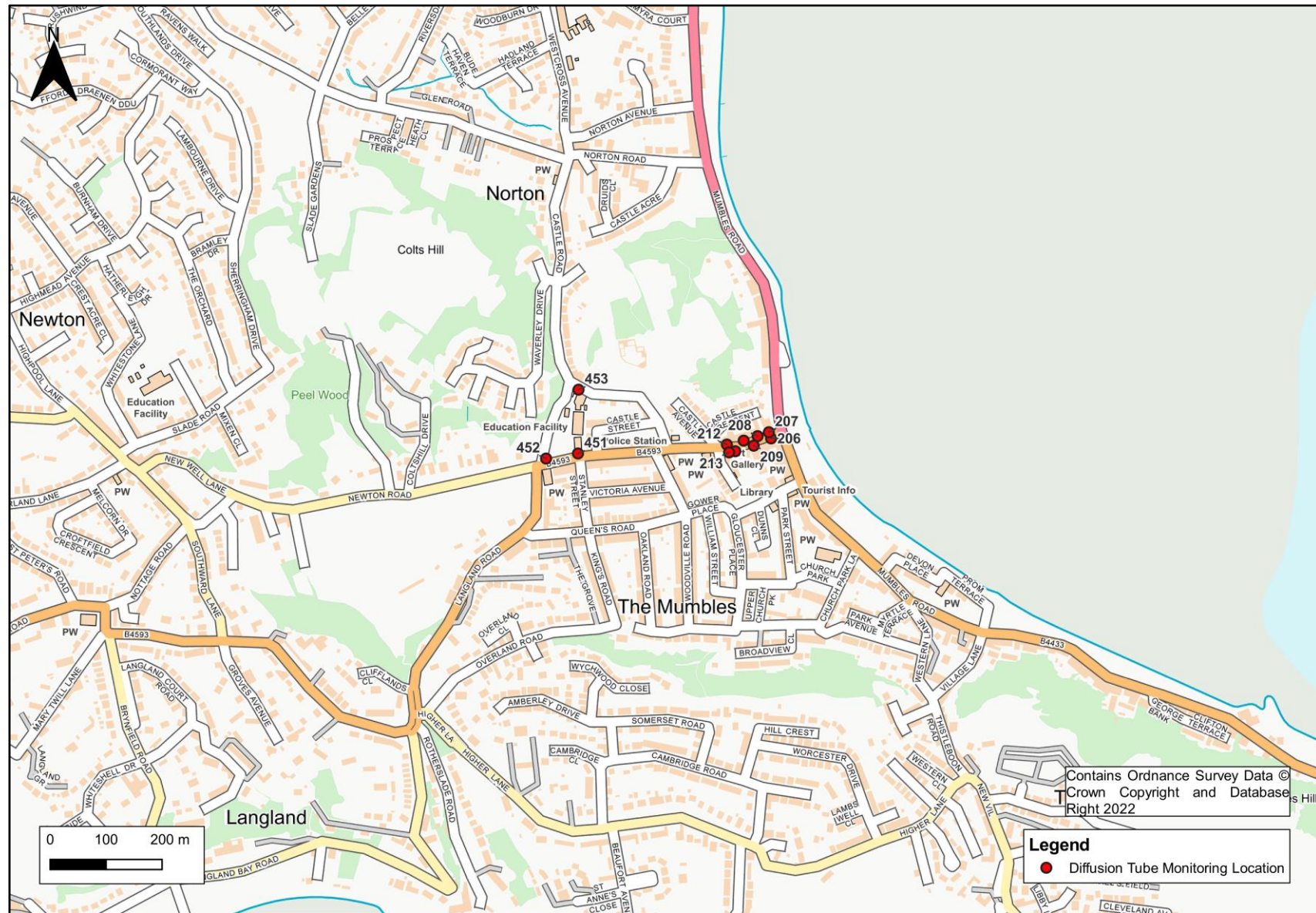
Figure 2.10 – Map of Non-Automatic Monitoring Sites (North Swansea)
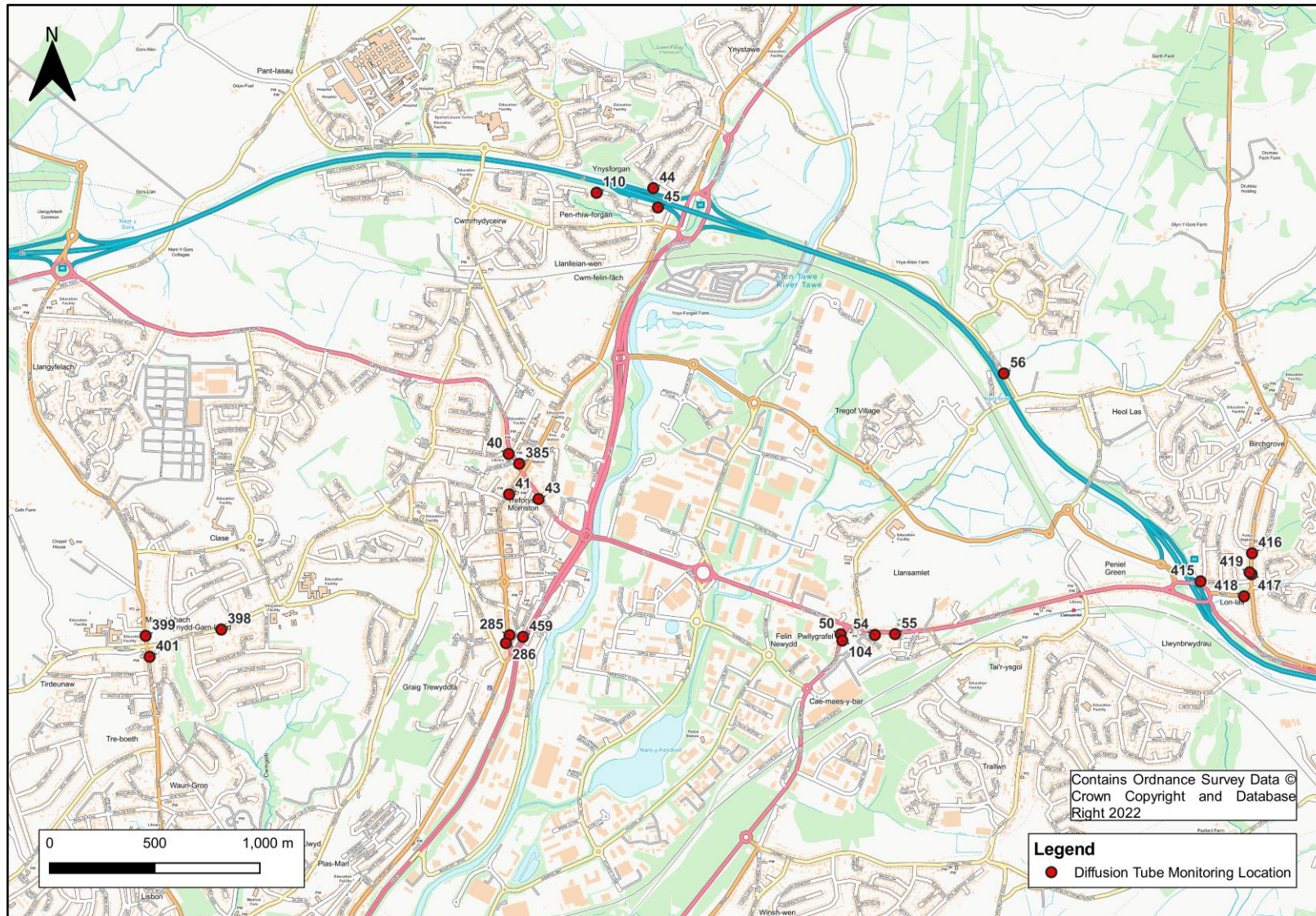
2.2 2023 Air Quality Monitoring Results

Table 2.3 – Annual Mean NO$_2$ Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	Roadside	Automatic	99.1	99.1	24.1	17.6	19.2	19.3	17.6
CM2	Roadside	Automatic	96.1	96.1	23.5	11.4	21.3	20.6	19.1
CM3	Urban Background	Automatic	93.3	93.3	13.1	10.5	11.3	12.8	10.8
CM4	Roadside	Automatic	91.9	91.9	34.8	28.8	31.4	36.2	33.7
CM5	Roadside	Automatic	93.8	93.8	34.6	25.6	35	28.4	19.1
CM11	Roadside	Automatic	98.3	98.3	44.5	31.2	35.3	34.6	35.6
CM12	Roadside	Automatic	97.1	97.1	27	21.7	26.2	26.5	24.0
CM13	Roadside	Automatic	96.6	96.6	28.5	10.8	23.8	20.7	22.2

Notes:

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

NO$_2$ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO$_2$ 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.

(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 2.11 – Trends in Annual Mean NO₂ Concentrations at Automatic Monitoring Sites
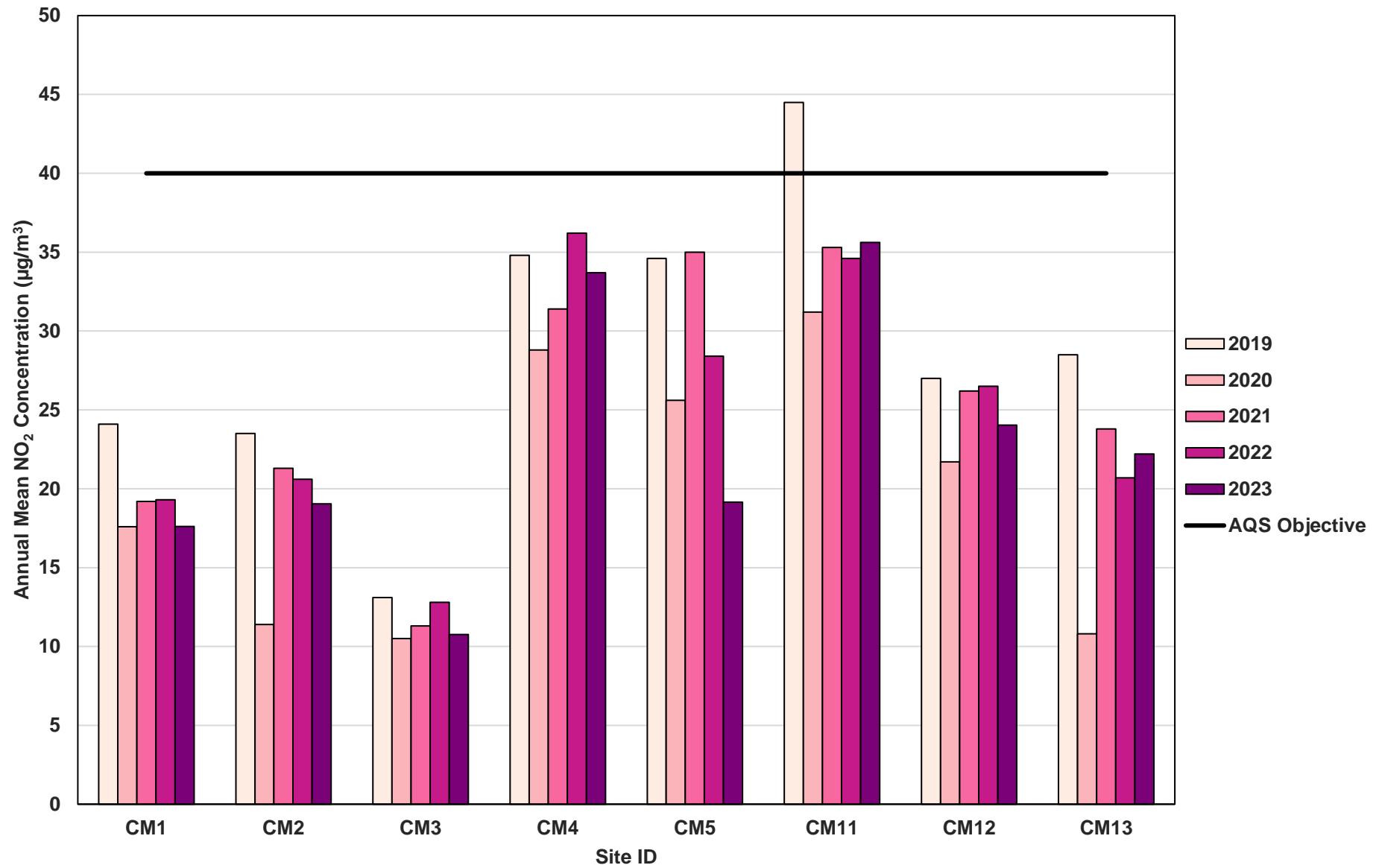
Table 2.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
5	262548	262548	Roadside	90.4	90.4	24.3	16.2	20.4	19.6	17.8
6	262612	192995	Roadside	90.4	90.4	20.6	14.8	18.8	16.6	17.4
7	262691	192852	Roadside	90.4	90.4	33.8	24.2	29.5	26.2	25.9
8	262990	195820	Roadside	84.6	84.6	37.1	26.7	33.2	28.7	31.6
10	263219	195513	Roadside	76.9	76.9	18.5	13.6	18.7	14.8	16.5
11	263344	195474	Roadside	75.0	75.0	27.8	20.4	24.7	24.5	24.6
12	263680	195103	Roadside	92.3	92.3	33.8	24.3	30.5	27.1	26.9
16	265339	192534	Roadside	100.0	100.0	23.3	16.5	22.1	19.8	19.2
18	265526	195807	Roadside	100.0	100.0	36.6	28.5	32.7	29.1	29.8
19	265597	194061	Roadside	75.0	75.0	35.2	24.5	29.1	29	31.0
20	265594	194175	Roadside	100.0	100.0	28.4	20.6	25.9	25.2	24.8
22	265682	195374	Roadside	100.0	100.0	22.4	17.8	21.3	19.8	19.9
26	265876	194318	Roadside	100.0	100.0	28.1	21.7	27.4	25.4	25.1
27	265922	194428	Roadside	92.3	92.3	28.9	21.8	27.0	24.1	26.6
29	265976	195290	Roadside	90.4	90.4	25.4	18.6	22.5	19.4	19.6
32	266209	193867	Roadside	92.3	92.3	26.9	19.8	22.8	22.6	21.9
33	266236	193488	Roadside	92.3	92.3	25.1	19.8	23.7	21.1	21.4
35	266314	193298	Roadside	67.3	67.3	27.4	20.6	25.0	23.1	23.6
36	266455	193300	Roadside	92.3	92.3	22.6	18.0	21.2	18.8	20.6
40	266951	198278	Roadside	65.4	65.4	19.9	14.3	17.7	15.6	15.7
41	266953	198085	Roadside	75.0	75.0	27.4	22.8	26.1	22.6	23.1
43	267093	198063	Roadside	90.4	90.4	26.4	20.9	25.2	22.7	22.0
44	267639	199543	Roadside	100.0	100.0	21.7	15.5	18.5	16.4	16.5
45	267661	199451	Roadside	90.4	90.4	23.0	18.2	21.4	18.4	17.7
48	268011	193101	Roadside	100.0	100.0	16.9	12.3	15.2	13.9	13.2
50	268530	197419	Roadside	92.3	92.3	26.3	21.4	24.6	22.1	20.2
54	268693	197416	Roadside	92.3	92.3	24.5	19.7	23.6	20.7	20.0
55	268789	197420	Roadside	100.0	100.0	24.6	19.5	25.2	20.5	19.4
56	269306	198661	Roadside	92.3	92.3	27.7	23.1	24.0	22.0	21.8
58	264000	192800	Roadside	100.0	100.0	30.0	20.2	25.4	22.7	23.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
59	265918	194463	Roadside	100.0	100.0	36.2	27.6	34.6	31.5	30.0
61	264959	192878	Roadside	34.6	34.6	27.5	20.5	25.3	23.4	27.8
63	262675	192775	Roadside	90.4	90.4	18.0	11.9	15.0	13.5	15.0
64	262719	192840	Roadside	82.7	82.7	32.1	19.2	24.7	25.7	24.0
65	262735	192855	Roadside	90.4	90.4	19.2	13.8	16.2	15.2	15.6
66	262802	192829	Roadside	100.0	100.0	20.6	16.5	19.4	17.9	18.9
67	265901	193677	Roadside	100.0	100.0	38.5	26.5	31	29.2	29.5
68	265573	193432	Roadside	100.0	100.0	26.5	18.8	23.8	22.6	23.6
70	266649	195435	Roadside	75.0	75.0	22.8	16.9	19.5	17.1	17.5
75	264072	192869	Roadside	90.4	90.4	27.2	21.2	23.2	22.4	23.1
84	262714	192839	Roadside	90.4	90.4	24.5	18.1	21.0	18.5	19.6
85	262702	192847	Roadside	90.4	90.4	24.6	18.9	21.1	20.5	18.1
86	262704	192865	Roadside	90.4	90.4	19.6	14.0	17.7	16.6	17.6
87	262697	192798	Roadside	90.4	90.4	14.4	9.3	12.1	10.6	12.0
88	262605	192916	Roadside	90.4	90.4	24.2	16.2	19.8	19.5	18.1
89	262587	192956	Roadside	90.4	90.4	16.8	12.5	16.1	12.3	13.2
90	262631	192996	Roadside	90.4	90.4	23.1	16.2	19.4	19.3	20.1
91	262534	192950	Roadside	82.7	82.7	21.3	15.0	18.8	18.1	16.8
94	263444	195572	Roadside	92.3	92.3	21.2	15.8	19.0	18.1	17.9
95	262815	196090	Roadside	75.0	75.0	17.9	13.5	17.8	15.8	16.4
96	262919	195951	Roadside	92.3	92.3	19.1	15.7	18.0	16.9	16.9
97	262946	195902	Roadside	84.6	84.6	24.7	19.5	22.0	20.8	20.5
98	263142	195548	Roadside	92.3	92.3	26.7	19.1	22.8	20.2	20.1
99	263387	195332	Roadside	92.3	92.3	23.1	16.1	19.7	17.4	17.9
104	268538	197389	Roadside	92.3	92.3	20.6	17.4	19.9	18.2	16.8
110	267369	199521	Roadside	82.7	82.7	18.7	14.2	17.1	15.5	15.2
115	265031	193097	Roadside	75.0	75.0	27.5	18.1	23.4	22.6	20.9
116	265192	193138	Roadside	100.0	100.0	28.9	21.6	29.5	25.6	28.4
117	265288	193211	Roadside	90.4	90.4	29.1	21.2	25.9	23.5	24.7
118	265483	193385	Roadside	40.4	40.4	24.2	16.1	18.7	15.8	17.7
121	265697	193679	Roadside	90.4	90.4	39.9	26.0	31.4	30.5	28.9
122	265694	193505	Kerbside	82.7	82.7	28.5	19.7	24.0	21.8	23.6
123	265655	193423	Roadside	84.6	84.6	34.1	23.6	30.6	29.4	27.0
124	265651	193253	Kerbside	100.0	100.0	33.3	21.0	27.4	26.2	26.9
125	265642	193148	Kerbside	100.0	100.0	37.0	24.5	30.4	26.4	26.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
126	265475	193144	Roadside	100.0	100.0	28.8	20.1	24.4	24.7	24.7
128	265297	193085	Roadside	100.0	100.0	23.2	16.3	19.6	19.5	19.1
129	265153	193098	Roadside	84.6	84.6	27.8	19.2	23.4	21.6	21.2
131	265137	192846	Roadside	92.3	92.3	29.7	22.1	29.4	25.9	27.1
132	265229	192753	Roadside	75.0	75.0	24.5	17.8	23.3	22.9	24.1
134	265113	192903	Roadside	100.0	100.0	32.7	22.6	29.9	26.5	26.5
180	259064	197781	Roadside	50.0	50.0	23.8	17.5	22.2	19.3	18.6
182	259050	197790	Roadside	50.0	50.0	21.8	16.6	18.3	18.2	15.9
197	258797	198701	Roadside	84.6	84.6	25.9	18.4	22.7	19.5	18.5
198	258811	198701	Roadside	92.3	92.3	27.2	19.9	21.8	18.6	19.4
206	261565	188211	Roadside	100.0	100.0	30.0	22.4	26.3	24.0	23.8
207	261561	188222	Roadside	82.7	82.7	26.5	19.4	23.1	20.8	23.3
208	261541	188215	Roadside	90.4	90.4	26.0	19.3	23.9	19.6	20.5
209	261534	188198	Roadside	100.0	100.0	27.3	18.8	24.7	21.8	21.3
210	261516	188207	Roadside	100.0	100.0	25.8	16.4	21.8	19.1	19.0
211	261501	188188	Roadside	90.4	90.4	23.5	17.4	22.0	19.7	17.3
212	261486	188200	Roadside	50.0	50.0	17.7	12.8	15.8	14.7	16.1
213	261490	188186	Roadside	80.8	80.8	24.7	16.5	18.1	17.7	20.0
240	266169	195995	Roadside	100.0	100.0	24.3	18.6	22.9	21.2	21.3
242	265655	193423	Roadside	100.0	100.0	32.5	21.4	30.1	28.3	26.3
243	265474	194949	Roadside	82.7	82.7	27.9	22.0	26.5	24.3	23.5
244	265466	194930	Roadside	92.3	92.3	33.3	27.7	32.3	29.1	27.2
247	265394	194899	Roadside	82.7	82.7	24.0	19.6	20.9	20.2	18.8
249	265326	194871	Roadside	100.0	100.0	23.3	18.8	21.9	19.2	20.9
256	264995	194777	Roadside	100.0	100.0	31.0	23.8	27.2	26.7	24.4
275	265658	194856	Roadside	100.0	100.0	19.6	14.8	19.2	15.9	17.2
276	265610	194871	Roadside	100.0	100.0	24.2	19.4	24.2	21.3	20.5
277	265596	194875	Roadside	100.0	100.0	26.0	20.3	24.2	22.1	21.3
278	265573	194882	Roadside	100.0	100.0	25.0	20.2	23.7	21.7	21.5
279	265555	194926	Roadside	100.0	100.0	34.0	22.6	31.1	29.4	27.5
280	265537	194980	Roadside	92.3	92.3	31.1	24.1	27.8	27.9	25.4
281	265542	194872	Roadside	100.0	100.0	32.1	23.2	29.6	26.6	25.8
282	265540	194840	Roadside	100.0	100.0	32.8	25.9	29.4	26.0	25.4
284	265452	195899	Roadside	100.0	100.0	22.5	19.2	22.3	20.9	20.3
285	266955	197415	Roadside	100.0	100.0	26.2	20.2	23.5	22.3	20.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
286	266938	197377	Roadside	100.0	100.0	24.3	19.4	22.0	21.2	20.0
287	265715	193902	Roadside	100.0	100.0	23.7	17.4	24.2	21.4	20.9
288	265698	193878	Roadside	92.3	92.3	27.2	18.6	23.5	21.5	22.5
289	265702	193842	Roadside	100.0	100.0	27.3	20.2	26.4	21.9	25.6
291	267952	193121	Roadside	92.3	92.3	33.2	23.3	28.0	24.2	23.7
295	258998	198698	Roadside	50.0	50.0	27.1	19.5	22.9	20.7	18.5
296	259054	198679	Roadside	75.0	75.0	27.6	19.5	26.4	23.3	22.5
323	266765	193224	Roadside	82.7	82.7	27.3	19.1	23.9	22.1	22.5
331	265741	193545	Roadside	92.3	92.3	30.0	21.2	27.1	25.1	24.0
334	265688	193483	Kerbside	82.7	82.7	27.2	18.2	23.1	18.9	23.2
335	265682	193461	Kerbside	100.0	100.0	24.8	17.5	23.2	19.9	20.5
336	265664	193395	Roadside	92.3	92.3	28.4	21.3	24.1	24.9	24.7
337	265637	193335	Roadside	100.0	100.0	35.6	25.9	26.4	30.5	26.3
338	265651	193331	Kerbside	84.6	84.6	28.7	20.9	25.4	23.4	22.4
339	265652	193313	Kerbside	100.0	100.0	32.7	23.4	28.1	25.7	27.8
340	265632	193292	Kerbside	100.0	100.0	39.6	26.3	32.5	30.8	27.8
341	265635	193224	Kerbside	92.3	92.3	34.8	25.1	31.2	28.2	28.4
342	265655	193197	Kerbside	92.3	92.3	34.4	22.4	29.0	26.3	27.2
343	265640	193173	Kerbside	100.0	100.0	26.0	18.2	24.0	21.8	21.3
346	265681	193096	Kerbside	90.4	90.4	28.8	17.8	23.5	21.2	22.8
347	265562	193518	Roadside	100.0	100.0	24.1	17.8	23.4	20.4	21.6
348	265572	193549	Roadside	100.0	100.0	27.0	19.8	25.8	22.3	24.0
349	265578	193576	Roadside	100.0	100.0	25.8	19.4	26.6	24.1	24.9
350	265577	193606	Roadside	100.0	100.0	28.8	23.4	30.9	29.5	26.8
356	265471	193359	Roadside	92.3	92.3	24.5	17.3	20.8	18.8	18.5
362	265271	192774	Kerbside	75.0	75.0	31.4	19.8	28.8	26.3	25.5
363	265287	192797	Kerbside	100.0	100.0	26.5	15.0	23.7	20.2	24.0
364	265301	192814	Kerbside	63.5	63.5	30.0	19.3	27.2	25.4	26.2
373	258859	196513	Kerbside	92.3	92.3	25.2	18.4	23.6	20.6	20.8
375	258798	196371	Roadside	76.9	76.9	13.4	11.2	12.6	13.1	16.1
376	258765	196368	Roadside	82.7	82.7	23.6	18.8	23.6	17.9	19.3
377	258763	196317	Roadside	84.6	84.6	26.8	20.9	24.5	21.6	21.3
385	267001	198231	Roadside	92.3	92.3	21.0	16.1	19.4	16.3	17.1
386	266698	195334	Roadside	84.6	84.6	24.8	17.5	22.3	19.7	19.1
388	267964	193076	Roadside	100.0	100.0	16.2	11.1	13.0	11.4	14.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
390	267974	193132	Roadside	92.3	92.3	27.4	20.7	24.3	22.0	22.3
391	259467	198509	Roadside	92.3	92.3	24.2	18.6	21.8	20.7	19.3
394	262445	192645	Roadside	75.0	75.0	14.4	9.9	11.3	10.8	12.3
396	262370	192609	Roadside	90.4	90.4	17.0	11.5	13.3	12.3	11.6
398	265584	197442	Roadside	100.0	100.0	16.0	13.3	13.9	12.5	13.2
399	265224	197412	Roadside	75.0	75.0	26.6	18.4	22.8	19.9	21.6
401	265243	197312	Kerbside	76.9	76.9	23.9	18.7	21.1	20.4	19.8
403	265115	192895	Roadside	82.7	82.7	30.0	19.8	26.5	25.2	23.2
404	261713	199051	Roadside	59.6	59.6	25.7	18.2	23.6	21.3	20.8
406	265973	195222	Roadside	92.3	92.3	29.1	26.4	29.3	27.9	24.6
407	265539	195664	Roadside	82.7	82.7	18.3	14.5	18.1	15.1	15.0
408	266655	193177	Roadside	92.3	92.3	32.2	22.1	27.4	24.1	25.2
412	258957	196766	Kerbside	84.6	84.6	21.1	17.1	20.7	18.5	17.5
413	258950	196721	Roadside	75.0	75.0	23.8	17.9	23.8	16.7	20.2
415	270242	197671	Kerbside	92.3	92.3	25.9	21.1	23.3	21.5	19.5
416	270487	197805	Kerbside	42.3	42.3	18.2	14.9	16.2	14.2	13.4
417	270485	197705	Kerbside	50.0	50.0	22.7	16.8	18.3	15.7	15.7
418	270449	197600	Kerbside	50.0	50.0	21.0	16.9	20.2	15.2	15.5
419	270475	197714	Kerbside	42.3	42.3	22.9	17.9	21.4	17.0	14.3
422	260149	195425	Kerbside	92.3	92.3	16.9	12.3	14.7	12.3	13.3
423	260136	195411	Kerbside	50.0	50.0	11.6	9.4	11.4	9.0	11.1
424	265536	194752	Kerbside	80.8	80.8	20.5	16.3	18.5	16.1	16.4
425	265509	194748	Kerbside	90.4	90.4	25.9	18.7	21.7	19.5	21.6
426	265960	193609	Kerbside	90.4	90.4	33.1	26.0	29.8	23.8	27.8
427	261994	197782	Kerbside	73.1	73.1	37.2	30.0	35.4	32.6	27.9
428	261518	198929	Kerbside	75.0	75.0	12.7	9.7	12.5	10.5	11.6
429	258827	196293	Roadside	92.3	92.3	18.3	13.4	17.7	16.3	15.5
430	263930	196601	Kerbside	50.0	50.0	12.1	10.0	10.8	10.2	8.4
431	264029	196852	Kerbside	50.0	50.0	14.0	10.6	10.7	10.1	10.5
432	265345	195645	Kerbside	92.3	92.3	17.6	13.7	15.8	13.8	12.3
434	265530	195679	Kerbside	82.7	82.7	23.4	18.0	22.0	19.3	17.9
435	263104	194457	Kerbside	82.7	82.7	18.4	12.0	15.1	14.4	13.9
436	263005	194476	Kerbside	50.0	50.0	17.8	14.4	16.5	15.8	13.6
437	267986	193103	Kerbside	100.0	100.0	27.0	18.4	22.2	19.4	18.9
438	266541	195495	Roadside	100.0	100.0	21.3	15.8	18.7	16.5	16.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2019	2020	2021	2022	2023
439	262949	193293	Roadside	82.7	82.7	20.0	13.7	15.9	14.0	14.6
440	262905	193293	Roadside	100.0	100.0	19.7	13.3	16.8	13.4	13.9
441	262903	193379	Roadside	90.4	90.4	28.4	18.3	19.0	17.6	17.7
442	263004	193454	Roadside	90.4	90.4	22.7	16.9	17.6	16.7	16.3
444	262991	193759	Roadside	100.0	100.0	25.5	24.2	22.7	20.4	19.9
445	262879	193408	Roadside	92.3	92.3	35.9	23.5	24.8	22.6	21.7
446	262838	193374	Roadside	82.7	82.7	32.9	13.7	24.3	22.9	21.4
447	262709	193311	Roadside	90.4	90.4	19.9	16.8	13.5	12.7	13.4
448	262788	1932813	Roadside	90.4	90.4	24.7	15.9	21.7	20.2	19.3
449	262761	193228	Roadside	90.4	90.4	22.9	18.6	26.1	19.4	19.5
450	262812	193293	Roadside	90.4	90.4	24.5	14.1	23.0	20.9	19.9
451	261220	188184	Roadside	100.0	100.0	-	10.4	16.2	15.3	14.0
452	261163	188175	Roadside	90.4	90.4	-	6.4	13.8	12.5	11.0
453	261221	188298	Roadside	90.4	90.4	-	16.3	7.2	6.5	7.7
454	265548	195679	Roadside	92.3	92.3	-	18.1	19.0	16.3	18.9
455	265516	195729	Roadside	80.8	80.8	-	16.2	23.2	19.6	20.6
458	262941	193459	Roadside	90.4	90.4	-	33.4	23.3	20.6	22.1
459	267019	197407	Kerbside	100.0	100.0	-	11.7	39.3	37.7	36.2
460	262084	196454	Kerbside	84.6	84.6	-	20.1	17.2	16.2	16.0
461	261442	189105	Roadside	25.0	25.0	-	-	-	9.1	13.6
462	258849	197842	Roadside	75.0	75.0	-	-	-	-	12.6
463	260153	203107	Roadside	50.0	50.0	-	-	-	-	17.0
464	259597	203360	Roadside	42.3	42.3	-	-	-	-	14.4
466	259225	203640	Roadside	42.3	42.3	-	-	-	-	12.8
467	259074	203725	Roadside	25.0	25.0	-	-	-	-	13.5
468	258951	203791	Roadside	42.3	42.3	-	-	-	-	12.1
469	259231	203862	Roadside	50.0	50.0	-	-	-	-	9.8
470	259552	203924	Roadside	32.7	32.7	-	-	-	-	13.5
471	259646	203555	Roadside	42.3	42.3	-	-	-	-	8.2
472	259887	203438	Roadside	40.4	40.4	-	-	-	-	6.4

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

NO$_2$ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO$_2$ 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 2.12 – Trends in Annual Mean NO₂ concentrations in Hafod and Landore

Figure 2.13 – Trends in Annual Mean NO₂ concentrations in Fforestfach
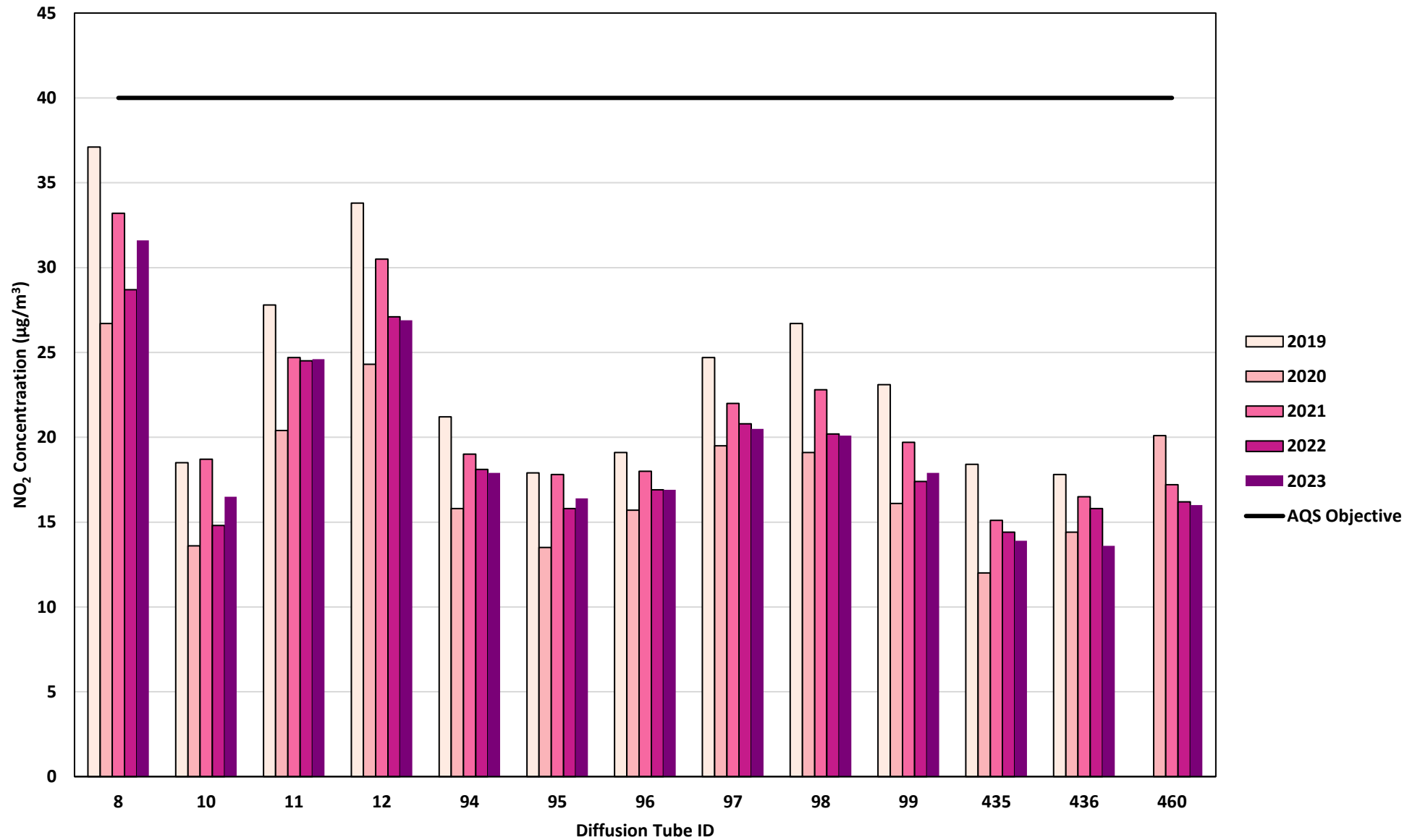
Figure 2.14 – Trends in Annual Mean NO$_2$ concentrations in Sketty
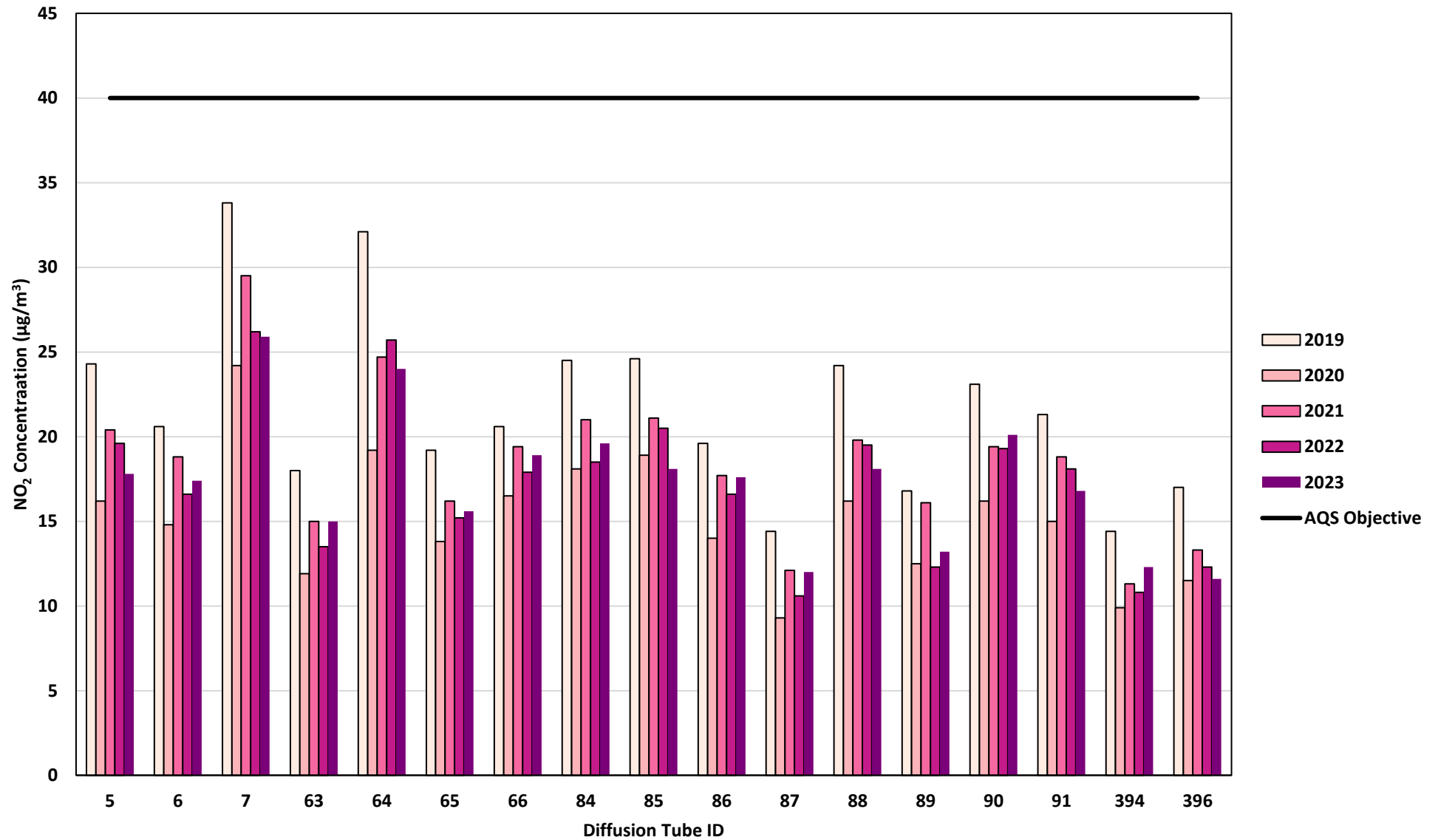
Figure 2.15 – Trends in Annual Mean NO₂ concentrations in St Thomas
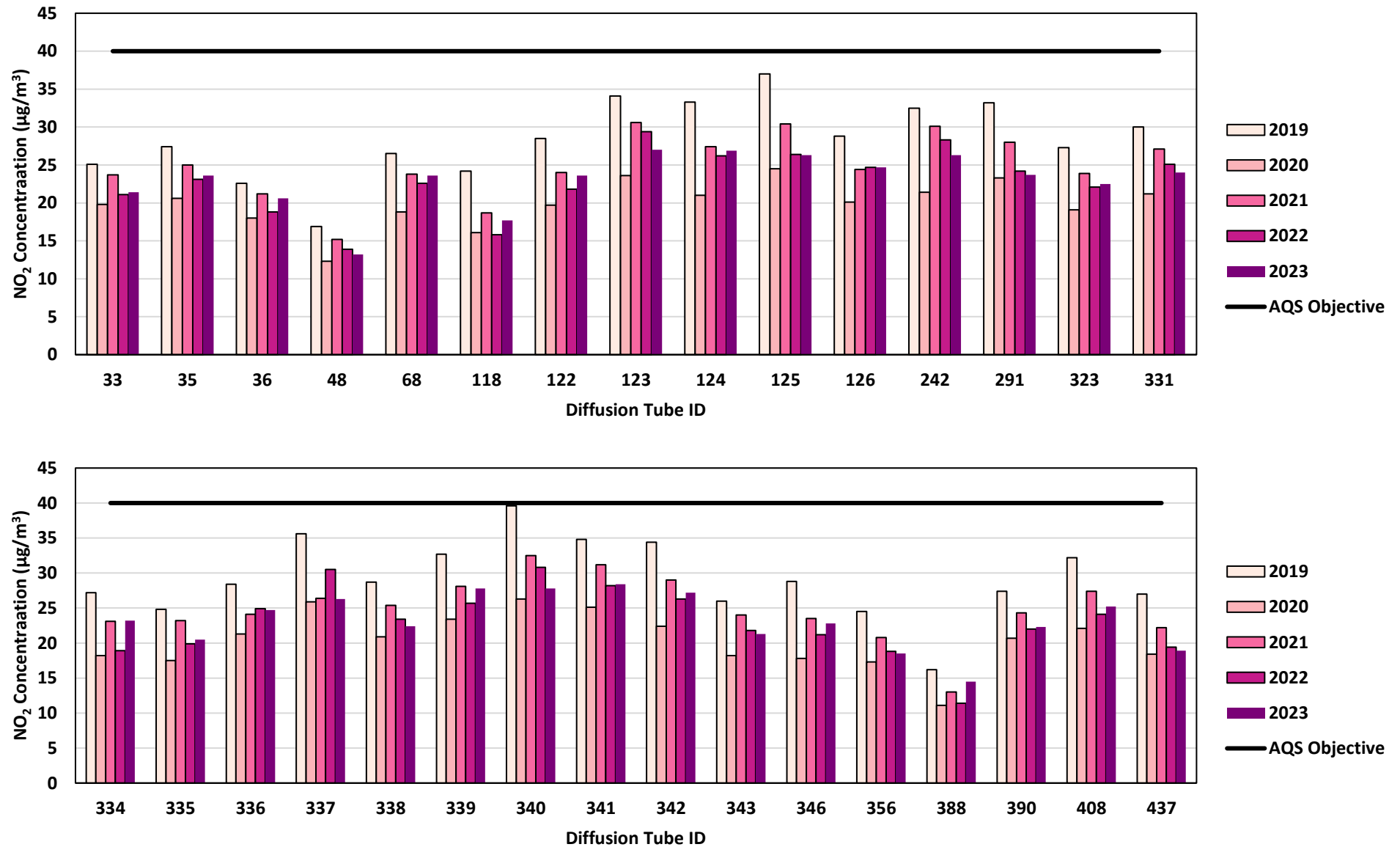
Figure 2.16 – Trends in Annual Mean NO₂ concentrations in Uplands and City Centre West
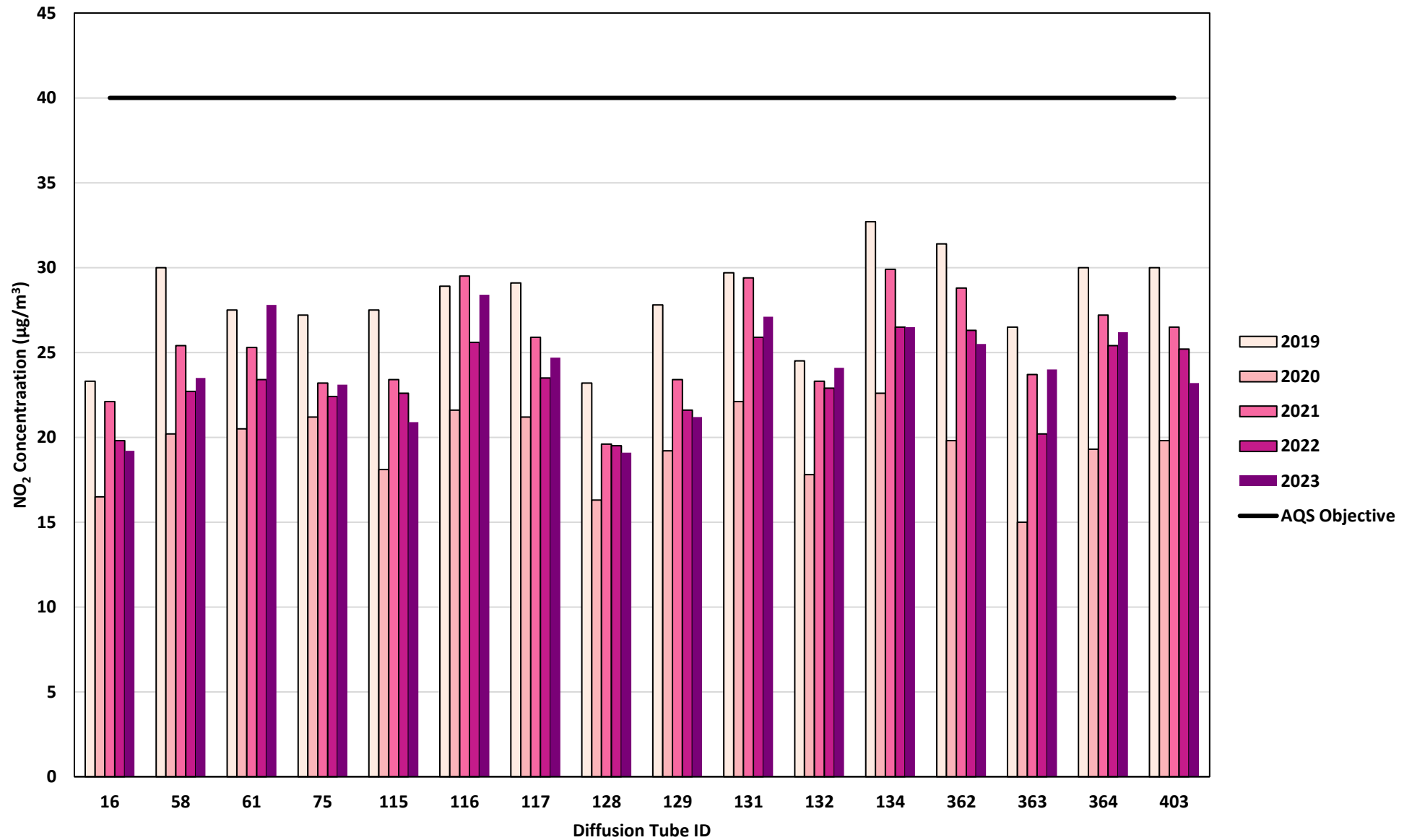
Figure 2.17 – Trends in Annual Mean NO₂ concentrations in North Swansea
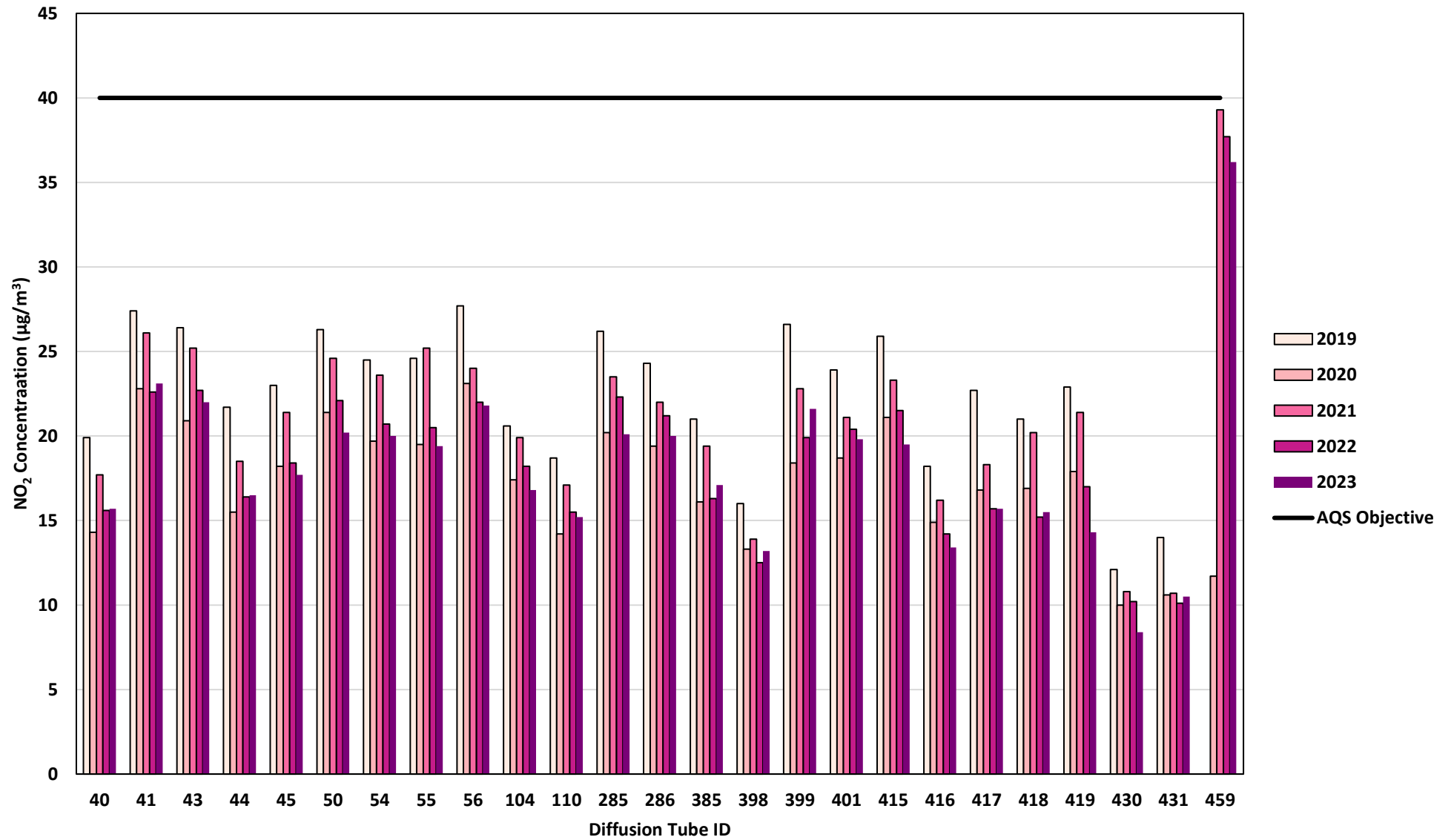
Figure 2.18 – Trends in Annual Mean NO₂ concentrations in Gorseinon and Gowerton
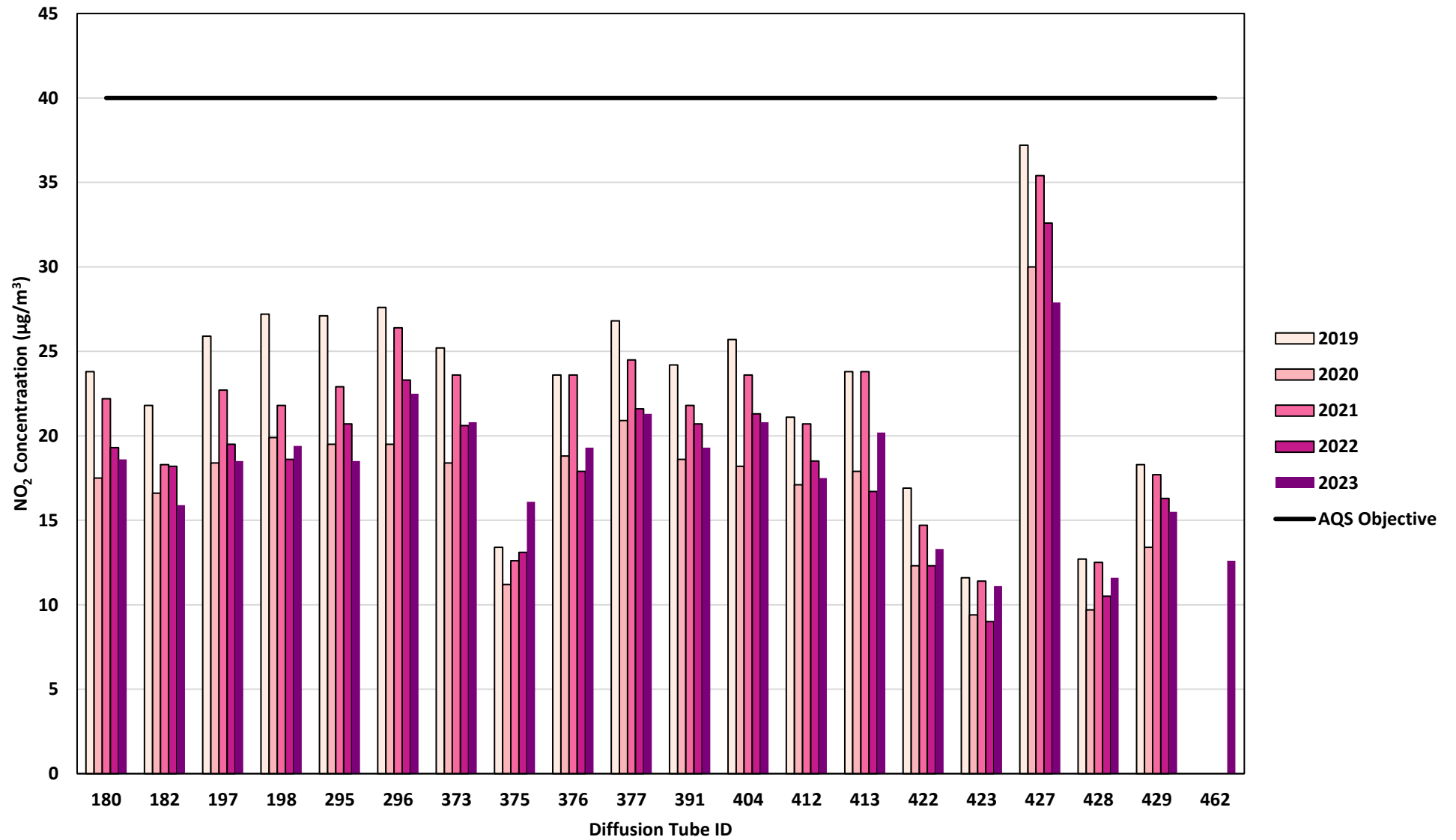
Figure 2.19 – Trends in Annual Mean NO₂ concentrations in The Mumbles
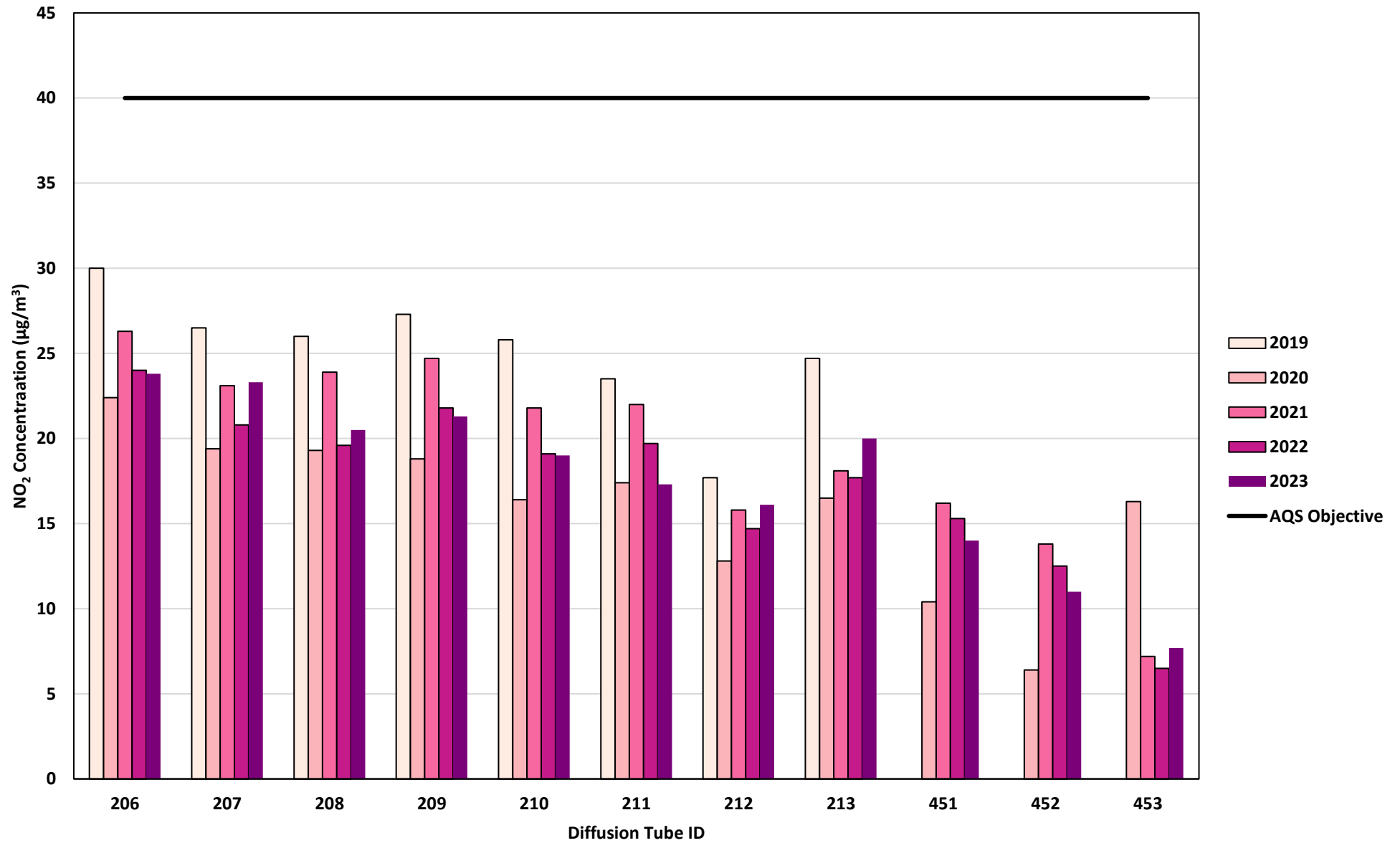
Figure 2.20 – Trends in Annual Mean NO₂ concentrations in Swansea
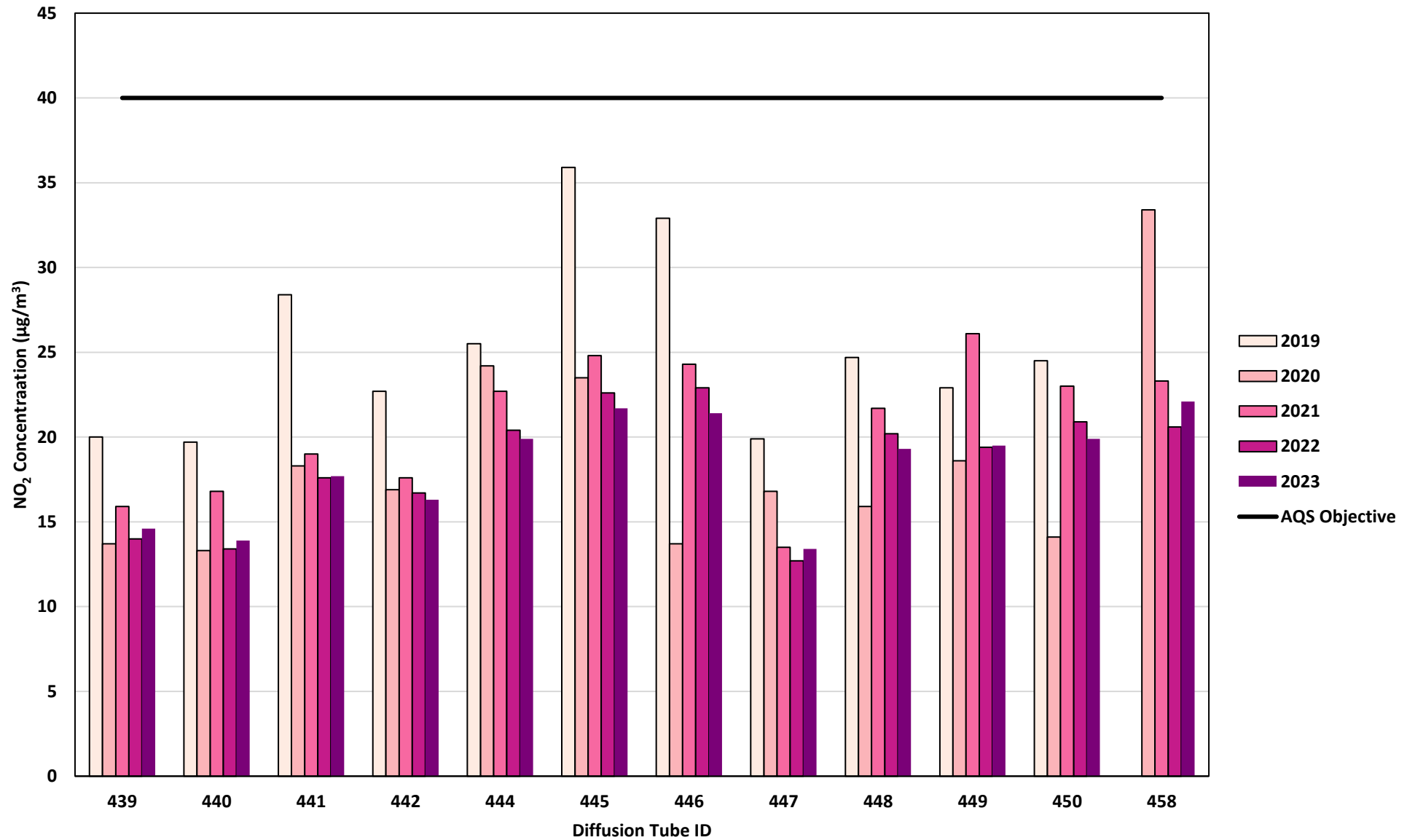
Figure 2.21 – Trends in Annual Mean NO₂ concentrations at New Diffusion Tube Sites
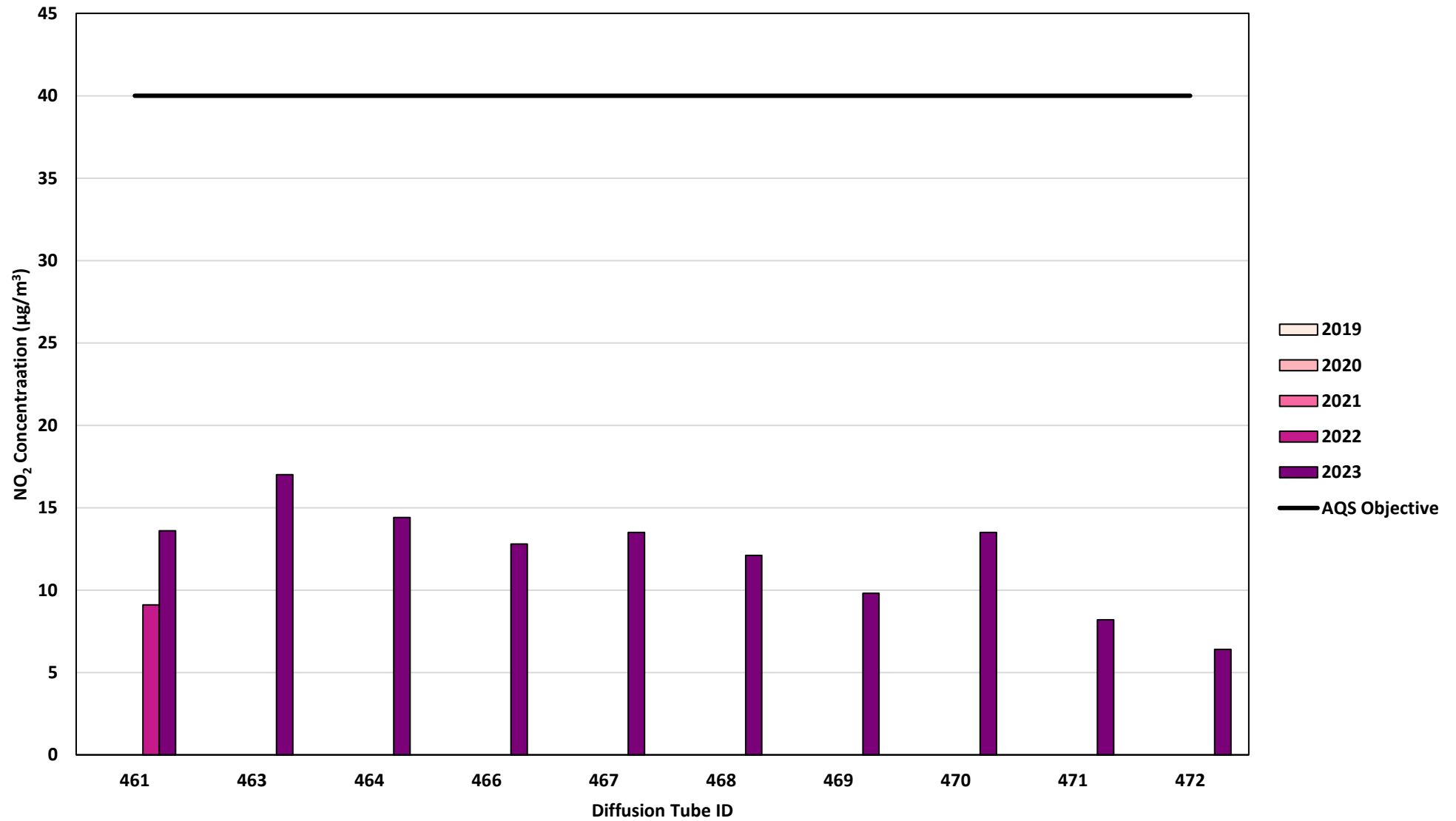
Table 2.5 – 1-Hour Mean NO$_2$ Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	Roadside	Automatic	99.1	99.1	0	0	0	0	0
CM2	Roadside	Automatic	96.1	96.1	0	3	0	0	0
CM3	Urban Background	Automatic	93.3	93.3	0	1	0	0	0
CM4	Roadside	Automatic	91.9	91.9	0	0	0	0 (152)	0
CM5	Roadside	Automatic	93.8	93.8	0	0	0 (97)	0 (123)	0
CM11	Roadside	Automatic	98.3	98.3	0 (100)	0	0	0 (113)	0
CM12	Roadside	Automatic	97.1	97.1	0	1	0 (109)	0	0
CM13	Roadside	Automatic	96.6	96.6	1	0	0	0 (78)	0

Notes:

Exceedances of the NO$_2$ 1-hour mean objective (200µg/m^3 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%).

Table 2.6 – Annual Mean PM$_{10}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	Roadside	95.5	95.5	18.4	18.3	18.1	18.4	15.0
CM6	Roadside	40.9	40.9	17.4	17.7	15.8	-	12.6
CM7	Roadside	77.0	77.0	15.1	15.6	15.3	13	10.5
CM8	Roadside	14.3	14.3	18.6	15.9	14.5	14.9	10.9
CM9	Roadside	34.7	34.7	16	18.3	14.5	-	9.7

Notes:

Exceedances of the PM$_{10}$ annual mean objective of 40µg/m^3 are shown in **bold**.

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.

(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%).
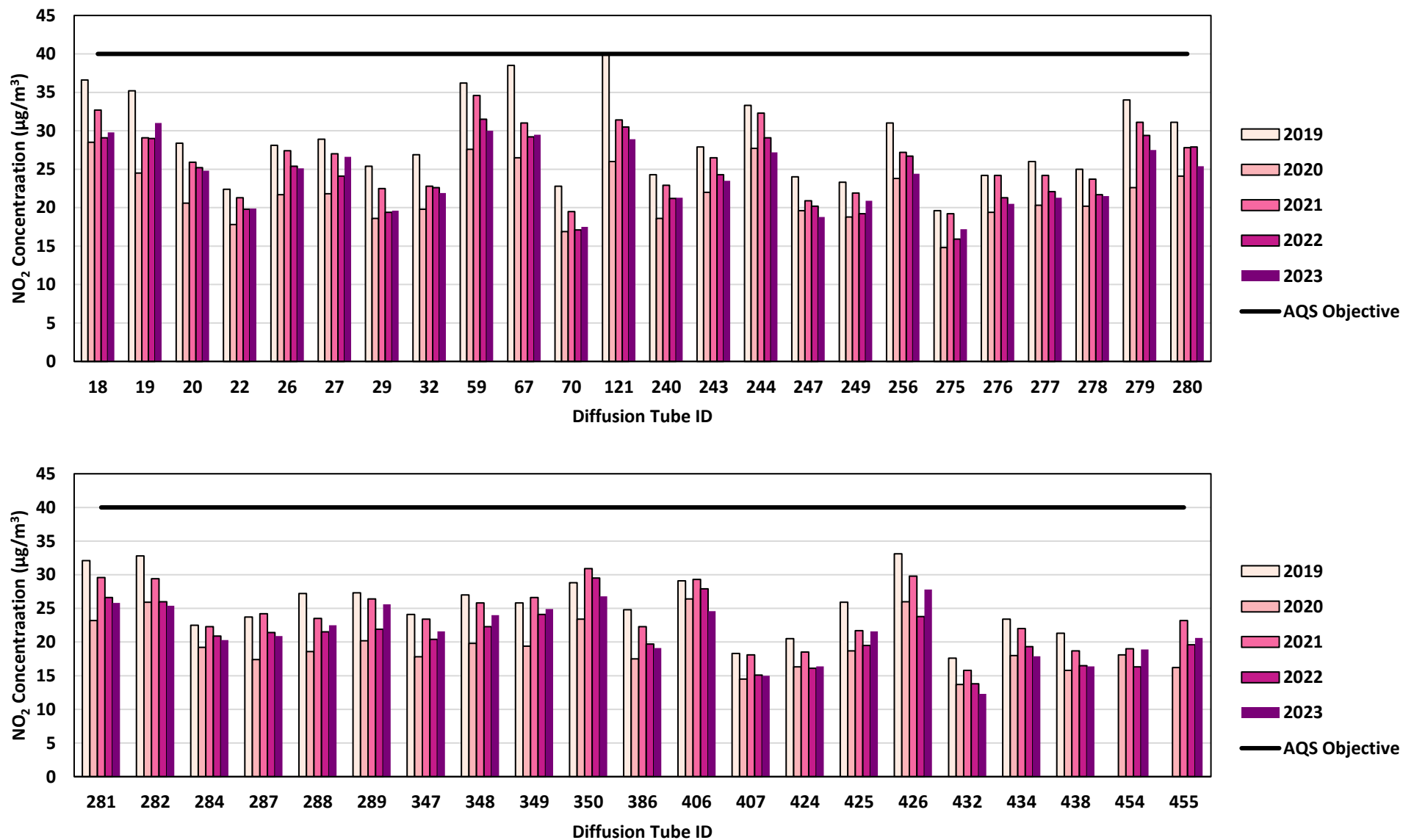
Figure 2.22 – Trends in Annual Mean PM₁₀ Concentrations
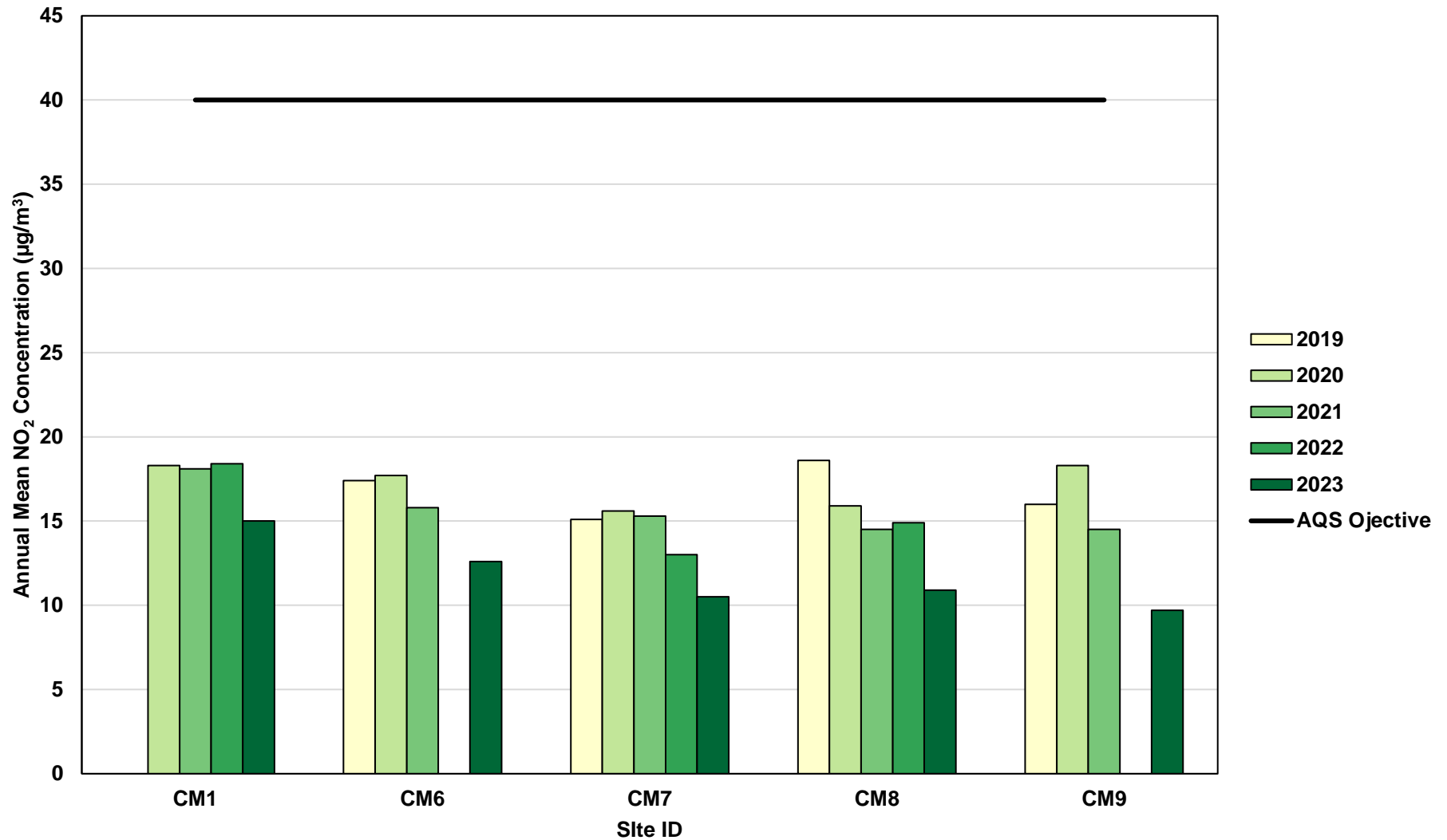
Table 2.7 – 24-Hour Mean PM$_{10}$ Monitoring Results, Number of PM$_{10}$ 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	Roadside	95.5	95.5	2	1	4	2	0
CM6	Roadside	40.9	40.9	0	1	1 (23.2)	-	0 (19.5)
CM7	Roadside	77.0	77.0	0	0 (25.0)	1	0	0
CM8	Roadside	14.3	14.3	3	0 (22.4)	1	1 (37.1)	0 (15.7)
CM9	Roadside	34.7	34.7	0 (22.8)	0	1 (21.1)	-	0 (14.1)

Notes:

Exceedances of the PM$_{10}$ 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

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

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

Table 2.8 – PM$_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	Roadside	88.2	88.2	9.9	7.9	9.1	9.9	6.9
CM2	Roadside	83.8	83.8	9.3	11.4	11.8	9.4	8.3
CM13	Roadside	94.1	94.1	9.5	10.8	11	11.3	8.6

Notes:

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.

(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 2.23 – Trends in Annual Mean PM$_{2.5}$ Concentrations
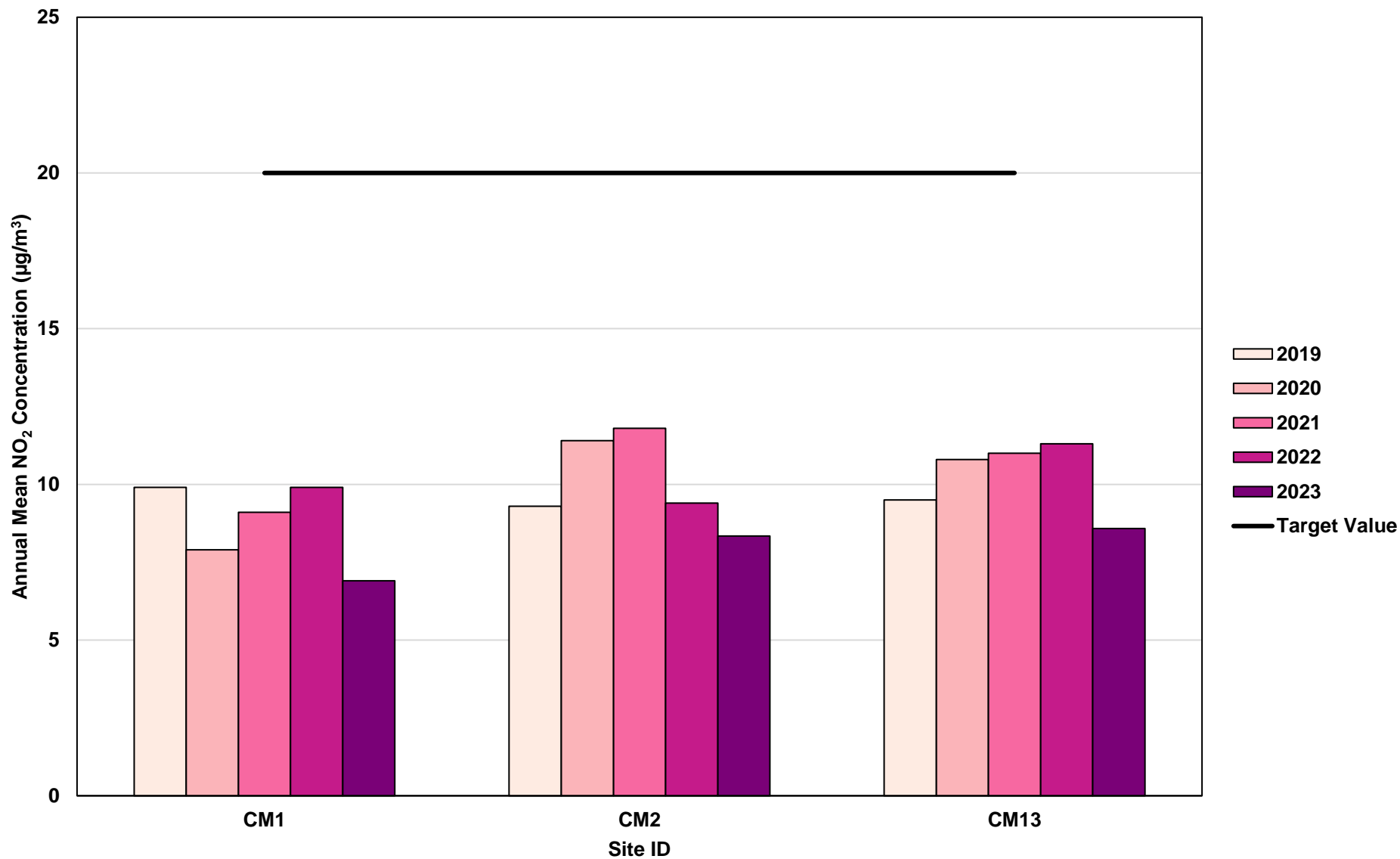
Table 2.9 – Automatic Ozone Monitoring Results, Number of 8-Hour Means > 100µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM2	Roadside	93.1	93.1	7	13	1	16	5
CM3	Urban Background	93.3	93.3	2	3	2	11	12
CM4	Roadside	57.2	57.2	1	1	0	0	3
CM5	Roadside	99.1	99.1	49	14	0	4	6

Notes:

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.

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

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

Table 2.10 – Automatic Sulphur Dioxide Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	1-hour Means> 350µg/m^3	24-hour Means> 125µg/m^3
CM5	Roadside	99.2%	99.2%	0	0

Notes:

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.

(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%).

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

2.3.1 Nitrogen Dioxide (NO$_2$)

All automatic monitoring stations located in Swansea reported compliance with the annual mean NO$_2$ AQS objective.

There were no reported exceedances of the NO$_2$ AQS objective at passive monitoring sites during 2023, with the majority of passive sites recording concentrations well below the objective. From 2022 to 2023, 59 sites reported decreases in NO$_2$. The maximum NO$_2$ annual mean concentration in 2023 was 36.2 µg/m^3, reported at Site ID: 459 which is located along the A4067 in Graig Trewyddfa.

All sections of the Swansea AQMA continue to report compliance with the NO$_2$ AQS objective, with AQMA sections within Sketty and Fforestfach reporting five years of compliance. Hafod had reported an exceedance in 2019 at automatic monitoring station CM11, but has now been compliant for 4 years.

There are no passive monitoring sites where the NO$_2$ annual mean is greater than 60 µg/m^3, therefore in accordance with Defra LAQM.TG(22) there are no sites likely to be at risk of exceeding the 1-hour mean AQS objective.

One site reported a concentration within 10% of the NO$_2$ AQS objective, fall-off with distance correction calculations was carried out in accordance with LAQM.TG(22) show in Table C.5. After distance correction calculations, Site ID: 459 reported a concentration of 19.7 µg/m^3, which is below 10% of the AQS for NO$_2$. 28 monitoring sites had a data capture between 25 and 75% and therefore, annualisation was carried out in accordance with LAQM.TG(22) and can be seen in Table C.2.

2.3.2 Particulate Matter (PM$_{10}$)

During 2023, all automatic monitoring sites recorded PM$_{10}$ concentrations well below the 40 µg/m^3 PM$_{10}$ AQS objective. There were minor decreases and reductions at all monitors since 2022, with an average decrease of 3.3%. Overall, the annual mean concentration remains relatively stable and consistent over the last five years.

There were no 24-hour mean concentrations in excess of 50 µg/m^3 in 2023, therefore compliance with the 24-hour AQS objective was achieved.

Data capture at three automatic monitoring stations (CM6, CM8 and CM9) in 2023 had a data capture below 75%, annualisation was carried out in accordance with LAQM.TG(22), as shown in Table C.3.

Sites CM6 and CM9 experienced faults and communication issues throughout 2023 causing limited data capture.

2.3.3 Particulate Matter (PM$_{2.5}$)

During 2023 all automatic monitoring sites recorded PM$_{2.5}$ concentrations well below the PM$_{2.5}$ AQS target. All three monitoring sites recorded minor decreases from 2022. Overall, the annual mean concentrations have remained relatively stable over the last five years. There is no LAQM air quality objective for PM$_{2.5}$, however concentrations continue to remain low and consistent.

2.3.4 Other Pollutants Monitored (Sulphur Dioxide (SO$_2$) and Ozone (O$_3$)

The St Thomas automatic monitor recorded no exceedances of the SO$_2$ AQS objectives in 2023.

The maximum number of 8-hour mean O$_3$ concentrations greater than 100 µg/m^3 reported at the Swansea Cwm Level Park automatic monitoring location in 2023 was 12. There is no LAQM air quality objective for O$_3$, however this does exceed the UK National air quality objective of 100 µg/m^3 not to be exceeded more than 10 times a year.

2.4 Summary of Compliance with AQS Objectives as of 2023

Swansea Council has examined the results from monitoring in the Swansea district. Passive monitoring concentrations across the monitoring networking showed full compliance with the AQS objective. There was only one site within 10% of the NO_2 AQS objective at Site ID: 459 with concentration 36.2 μg/m^3; once fall with distance calculations have been carried out, the NO_2 concentration reduces to 19.7 μg/m^3. The remaining sites displayed concentrations well below the NO_2 AQS objective.

3 New Local Developments

Swansea Council have identified the following planning applications as having the potential to impact air quality:

App Ref No.	Location	Description
2023/0253/OUT	Land Adjacent To Fairwood Terrace Gowerton Swansea	Proposed residential development of up to 216 dwellings with commercial/mixed uses (A1-A3, B1 and D1) at ground floor, a mobility hub, incorporating active travel routes, green infrastructure, drainage, play and associated works (outline).
2023/1748/FUL	Land At Kilvey Hill And Landore Park And Ride Facility Swansea	New leisure development comprising gondola stations with gondola and associated infrastructure, multi-purpose visitor building including the sale of food and drink with associated outside seating and hardstanding, together with luge tracks, chairlift, skyswing, mountain bike trails, access routes, zipline and supporting infrastructure, ancillary buildings for staff and maintenance, ground profiling works, landscaping, temporary construction access and compound, drainage works, plant, highway works, parking, demolition of park and ride terminal and associated works.

2023/0739/SCR	Land At Pantlasau Farm Clasemont Road Morriston Swansea	SCREENING OPINION for Hybrid planning application comprising A) Outline planning application with all matters reserved for residential led mixed use development of up to 460 residential dwellings in total to be developed in phases: two form entry primary school and nursery; provision of commercial hub, public open space/play provision, highways, drainage, ecological mitigation, landscaping and engineering works; B) Full application for the erection of 140 dwellings and associated works as part of phase 1 of the development alongside phase 1B comprising temporary commercial units and associated work.
2023/0539/FUL	Land Either Side Of Goole Road Goole Road Ravenhill Swansea	Residential development of 12 flats in 2 no. two storey blocks and 5 pairs of semi-detached dwellings with associated roads, pavements and fences and new pedestrian connection and public space between Goole Road and Carmarthen Road.

3.1 Road Traffic Sources (and Other Transport)

No new road traffic sources were present in 2023.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

No new Industrial/Fugitive or Uncontrolled Sources/Commercial Sources in 2023.

3.3 Other Sources

During bonfire night, particulate monitors in Swansea often record elevated concentrations as a result of Firework displays in the city.

Figure 3.1 – Diurnal PM$_{10}$ Concentration on the 5th November 2023
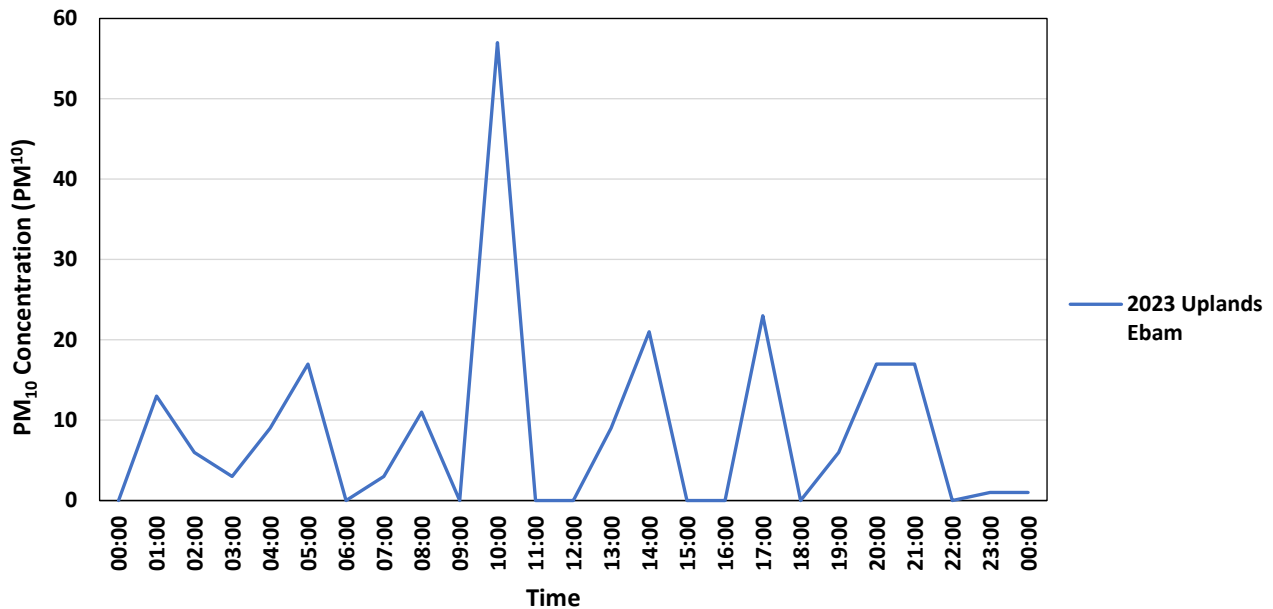
Swansea Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Swansea Council confirms that all the following have been considered:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

4 Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

Not applicable.

4.2 Air Quality Planning Policies

The Swansea Local Development Plan (LDP) was adopted on the 28th February 2019. Under the provisions of the Planning (Wales) Act, the LDP forms the statutory development plan for Swansea Council. It will be used as the primary material consideration to inform decisions on planning applications and development proposals.

https://www.swansea.gov.uk/ldp

Within the LDP are the following policies regarding Air, Noise and Light Pollution:

RP 1: Safeguarding Public Health and Natural Resources

Development will not be permitted that would result in significant risk to: life; human health and wellbeing; property; controlled waters; or the natural and historic environment, particularly in respect of:

i.   Air, noise or light pollution;

ii.   Flood risk;

iii.   The quality or quantity of water resources;

iv.   Land contamination;

v.   Land instability or subsidence;

vi.   Sustainable development of mineral resources;

and vii. Sustainable waste management.

Development will not be permitted if judged to have a significant adverse effect on the integrity of any European Designated Sites, either alone or in combination with other plans or projects

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RP 2: Noise Pollution

Where development could lead to exposure to a source of noise pollution it must be demonstrated that appropriate mitigation measures will be implemented, and incorporated into the design of the development to minimise the effects on existing and future occupants. Noise sensitive developments will not be permitted unless effective and appropriate mitigation is carried out to prevent exposure to existing noise generating uses. Development will not be permitted if it would cause, or result in, a significant increase in levels of environmental noise in an identified Noise Action Planning Priority Area, or would have unacceptable impacts on an identified Quiet Area or the characteristics of tranquillity that led to the designation of a Quiet Area.

RP 3: Air and Light Pollution

Where development could lead to exposure to a source of air or light pollution it must be demonstrated that appropriate mitigation measures will be implemented, and incorporated into the design of the development to minimise the effects on existing and future occupants.

4.3 Local Transport Plans and Strategies

LAQM.TG(16) paragraphs 4.30 – 4.31 indicates guidance on the inclusion within Progress Reports to those measures within the Local Transport Plan (LTP) that specifically relate to bringing about air quality improvements. Within Wales, the LPT had been replaced with the Regional Transport Plan (RTP). The South West Wales Integrated Transport Consortium (SWWITCH) was one of the four transport consortia in Wales which were required to produce a Regional Transport Plan. The SWWITCH consortia region relevant to the City & County of Swansea included a partnership with the neighbouring authorities of Neath Port Talbot County Borough Council, Carmarthenshire County Council and Pembrokeshire County Council. Unfortunately, the Welsh Assembly withdrew funding for the consortia from the end of the 2013/14 financial year. All staff had been redeployed following the withdrawal of funding. However, the Welsh Assembly Government reverted back to Local Transport Plans for 2015-2020. The new Local Transport Plan was adopted in January 2015. Details of the adopted plan can be found at: http://www.swansea.gov.uk/localtransportplan.

4.4 Active Travel Plans and Strategies

The Active Travel (Wales) Act (2013) places a legal duty upon local authorities in Wales to map, plan for and promote active travel journeys.

The Active Travel (Wales) Act is a landmark piece of Welsh legislation brought forward in 2013 which aims to make it easier for people to walk and cycle in Wales, specifically to promote walking and cycling as viable modes of transport for everyday journeys such as to the shops, work or college.

The Existing Route Map and Integrated Network Map will be reviewed and updated periodically in conformity to the requirements of the Act.

The Council also prepares annual reports which are submitted to the Welsh Government to monitor the costs and use of Active Travel within the City & County of Swansea. These reports can also be found in the downloads section https://www.swansea.gov.uk/activetravelact.

4.5 Local Authorities Well-being Objectives

The Corporate Plan describes the council's vision for Swansea, our 6 key council priorities (well-being objectives and improvement objectives) and our organisation values and principles that will underpin the delivery of our priorities and overall strategy.

The Corporate Plan has been refreshed for 2022/23. There will be a further review of the Council's Corporate Plan for the next five years 2022/27 following the appointment of a new Chief Executive and local government elections in May 2022.

A summary of the Council's well-being statement was updated and incorporated into the refreshed Corporate Plan 2018/22.

Our priorities for 2022/23 that are set out within our Corporate Plan can be viewed via the following link https://www.swansea.gov.uk/corporateplan2022-23.

4.6 Green Infrastructure Plans and Strategies

Swansea Central Area: Regenerating our City for Wellbeing and Wildlife

The green infrastructure strategy, published jointly by Swansea Council and Natural Resources Wales, is designed to bring more nature into the Swansea Central Area.

Green Infrastructure - commonly referred to as GI - is the term used to describe all the green space, soil, vegetation and water that provide the ecosystem services that make places

more liveable. This includes, for example, streets trees, green roofs and walls, natural play spaces, wildlife / nature gardens, pollinator corridors, landscaping, drainage and air quality management solutions.

The vision is for a city with high quality multifunctional green infrastructure, which delivers resilience, prosperity, nature, health, wellbeing and happiness to the citizens and visitors of Swansea.

The 5 Principles of Green Infrastructure to be applied to achieve this vision:

1. Multifunctional - making sure that all GI in the city centre provides as many benefits as possible. For example, it may reduce pollution and/or flooding, offer shelter and/or food for native animals (birds, insects and/or small mammals), provide shade during hot summer days, and create attractive pleasant and/or calming spaces for people to meet, relax and play.

2. Adapted for climate change - absorbing water to reduce flooding, providing summer cooling and accommodating wildlife. GI also helps mitigate climate change by capturing and locking up carbon.

3. Healthy - helping our physical and mental health by absorbing pollution, providing clean air, clean water, food and space to exercise, socialise and play and space to have contact with nature.

4. Biodiverse - supporting a wide variety of native species providing shelter and food and creating green corridors across the city centre linking to existing strategic wildlife corridors.

5. Smart and Sustainable - providing solutions, techniques and technologies that are low maintenance and reduce pollution and waste and maximise the use of recycled or sustainably sourced materials.

Success will be measured via a number of performance indicators which will work towards targets to double (from 13% to 26%) GI by 2030 and to increase tree canopy cover to 20-25% by 2044.

The strategy is designed to support the Local Development Plan and the application of the Statutory SuDS Standard 2019. It also delivers the council's duties under the Well-being of Future Generations (Wales) Act 2015 and Environment (Wales) Act 2016 through the Council's Well-being Objective: Maintaining and enhancing Swansea's natural resources and biodiversity and, the Swansea Public Service Board's Working with Nature Objective.

https://www.swansea.gov.uk/climateactiongreeninfrastructure.

4.7 Climate Change Strategies

Climate Change and Nature Strategy 2022-2030

Introduction

Climate change is the long-term alteration of temperature and typical weather patterns largely caused by human activity, like burning fossil fuels, like natural gas, oil, and coal. Burning these materials releases what are known as greenhouse gases into the atmosphere. Human health and well-being is vulnerable to such change. This shift is expected to cause fluctuating weather- heat and fire, drought and flood, an increase in waterborne diseases, poor air quality, threats to wildlife and loss of food sources.

The image below shows how the temperatures across Wales are already increasing year on year, setting a clear trend towards a hotter climate which will bring significant consequences.

We all have a responsibility to act now. A public sector target of 2030, ahead of the Welsh Government's target of 2050 for the whole of Wales, will give us our best chance of keeping global warming below 1.5°C.

This is the tipping point at which the climate impacts we're already experiencing will go from bad to potentially catastrophic. We'll see natural systems cross danger points, triggering lasting changes such as extreme storms, heatwaves, mass loss of natural habitats and species.

It is also recognised that our wellbeing and that of future generations are dependent upon the state of the natural environment. Our natural environment in Wales is under considerable pressure from over exploitation, habitat loss, pollution, climate change as well as invasive non-native species.

So, what are Swansea Council doing about it?

Legislation, Regulation and Policy

There is a range of well publicised legislation and policy helping to drive this change:

Globally

The international Paris Accord 2015 which seeks to keep global temperature increases well below 2 degrees.

The IPPC (Intergovernmental Panel on Climate Change) - In their Climate Change 2021 report, conclude that:

- there is still time to limit the worst effects of climate change
- stabilising the climate will require the globe to reach net-zero CO2 emissions by 2050
- human activities have already caused around 1.1°C warming
- the planet's climate is warming faster than anything experienced
- every part of our planet is already seeing multiple and increasing changes in their climate systems
- global warming is very likely to reach 1.5°C by 2040
- climate change is intensifying the water cycle affecting rainfall patterns
- coastal areas will see continued sea-level rise throughout the 21st century
- further warming will amplify impacts on frozen regions
- the ocean is warming and acidifying.

Nationally

In 2019 the UK Government amended the Climate Change Act 2008 by increasing the target for reducing greenhouse gas emissions in the UK to at least 100% lower than 1990 levels by 2050. This is otherwise known as the Net Zero target.

The Welsh Government Well-being of Future Generations Act 2015 which requires accountability for the impacts of long term decision making.

The Environment (Wales) Act 2016 supports finding ways to secure healthy, resilient and productive ecosystems for the future whilst still meeting the challenges of creating jobs, housing and infrastructure.

Welsh Government has set out its legal commitment to achieve net zero emissions by 2050, but is pushing to "get there sooner". It recognises that climate change will impact us all, but the stark reality remains our most vulnerable communities will be hit the hardest. Welsh Government recognises that transition towards a Net Zero Wales must be fair and just, in order to achieve a green and clean future with good quality jobs and leaves no communities behind.

Swansea will strive to align with the Net Zero Wales Carbon Budget 2 (2021-2025), embracing the Team Wales approach.

The Welsh Government in recent years has developed a forward-looking legislative framework to encourage environmental improvements, including for the preparation of

Nature Recovery Plans at national and local level. These plans which, are currently under preparation and continual review, are aimed at addressing the underlying causes of biodiversity loss by putting nature at the heart of decision-making and increasing the resilience of our natural systems (ecosystems). The Welsh Government became one of the first parliaments in the world to declare a Nature Emergency in June 2021.

Regionally

As part of the regional agenda the 4 local authorities - Carmarthenshire, Pembrokeshire, Neath Port Talbot and Swansea have progressed a new regional energy strategy. Further work is also progressing as part of the new CJC work programme.

Locally

Following the Notice of Motion on Climate Change Emergency presented to Council on 27th June 2019, the Authority reaffirms its commitment to:

- Call upon the UK and Welsh governments to provide us with the necessary powers and resources to ensure Swansea Council becomes net zero by 2030.

- Publicise climate emergency and promote a greater awareness of the truth of climate change amongst the local population aiming for a county wide target of net zero by 2050

- Work with relevant experts in research and development to:

- Review our current strategies and action plans for addressing climate change.

- Identify any further policy changes or actions which we could undertake, within the scope of our powers and resources, to meet the challenge of climate emergency.

- Seek the help of local partners such as Swansea University and other research bodies to, within one year, produce a report to share with the community, explaining work already underway and achievements already made, as well as targets for the future.

- Update on further work undertaken by the Council in this area on an annual basis through the Council Annual Review of Performance Report section on corporate objective - Maintaining and enhancing Swansea's natural resources and biodiversity.

- The Council undertook a citizen's survey in March 2021, with excellent response, but the key message taken on board is 'Go Faster, Go Further'.

Climate change survey 2021 - results

- 967 people were surveyed and 93% were concerned about climate change
- A Twitter check of 396 people found 66% were concerned about climate change

Nature Recovery

Swansea Council declared a Nature Emergency in November 2021. A Swansea Nature Recovery Action Plan is currently being prepared in collaboration with the Swansea Nature Partnership, a core ambition of which will be to reverse the current decline of nature within the City and County of Swansea and to increase the resilience of ecosystems. The aim is for Swansea to be nature positive by 2030, i.e., that current decline in nature is beginning to reverse. By 2050 the hope is that nature is thriving in Swansea, that nature is in recovery, valued, restored, sustainably managed, and wisely used.

The Vision

Swansea Council's commitment to addressing climate change is broken down into clearly defined work streams alongside its commitment to nature recovery. Nature recovery proposals will be set out in a separate action plan that sits alongside this strategy

The council will lead by example and be the focal point for response to climate and nature action across the whole city and county.

The council business will strive for net zero carbon by 2030, establishing monitoring processes for emissions and developing a robust action plan in order to achieve the target.

Working with partners, the council will call on the whole City and County of Swansea, its major employers, its citizens, community groups and businesses to contribute to achieving net zero carbon by 2050. There will be a need for collective leadership and a shared ambition.

Governance

To enable the Council to continue to make progress one of the key actions from the NoM was to review the current policy framework and how this could contribute to the achieve achievement of net zero carbon and climate emergency response.

Therefore, it has been necessary to review over 100 Council policies that contribute to this agenda and distil these down to 8 key themes as outlined below:

- Energy strategy
- Green infrastructure strategy
- Biodiversity plan
- Local development plan
- Procurement strategy
- Sustainable transport strategy

- Waste strategy
- Housing strategy

These policies overlap to firstly feed into the core short term target of net zero carbon for the council emissions by 2030, and the longer term goal of achieving a similar aim for the whole of the city by 2050. These polices are then intrinsically wrapped up in the overarching requirements of the Corporate Plan, Strategic Equality Plan and Wellbeing of Future Generations Act (Wales) 2015.

Climate Change and Nature Recovery Governance

- Cabinet
- Climate Change Corporate Development Committee
- Climate Change and Nature Recovery Steering Group (Cabinet Members, Director, lead officers)
- Climate Change and Nature Recovery Programme Board (Director, Heads of Service, key officers)

Then feeding through the structure above:

- 2030 Net Zero Carbon Action - Welsh Government emissions reporting, renewables
- Nature Recovery Action - Biodiversity Section 6, local nature partnership, nature recovery, green infrastructure strategies, food strategy, air, water and soil quality
- 2050 Net Zero Carbon Internal Action - All Programme Board Members
- 2050 Net Zero Carbon External Action - Environmental Partners, Climate Change and Nature Action Charter Signatories
- Climate Change and Nature Recovery Communications Group - One Planet Accreditation, staff, training, spreading the word to external stakeholders, develop a community of council champions, Education
- Sustainable Transport Strategy - LEV, active travel, street lighting, grey fleet, commuting etc.
- Procurement Strategy - Procurement Social Value Recording Tool, Socially Responsible and Sustainable Procurement Policy, Procurement Strategy
- Waste Strategy
- Regional Energy
- Regional Transport
- Regional Planning - local development plan

The governance structure represents a golden thread not only through the organisation, but externally with partners.

The journey so far

Swansea Council have achieved a great deal over several years to mitigate the impacts of Climate Change such as:

- Swansea Council procures its energy using Crown Commercial Services Framework Agreements, via the National Procurement Service (NPS), for its energy supplies. All electricity procured via the NPS framework is from 100% renewable energy sources; 41% sourced from Wales (Apr 20 - Mar 21); Gas - Total Gas and Power (TGP) procured as new gas supplier (from Apr 21), registered interest in purchasing 'Green Gas'- dependant on viability and cost impact.

- Refit Low Carbon Programme - Swansea Council is participating in the Welsh Government supported Re:fit Low Carbon Programme to implement energy efficiency saving opportunities in non-domestic buildings. A £1.3 million interest free loan has been secured from Welsh Government Wales Funding Programme (Salix) to deliver a Re:fit Cymru (Energy Efficiency) Phase 1 project comprising over 18 buildings which is projected to save an estimated 400 tCO2e every year. Quantifying the energy savings delivered by the Energy Conservation Measures (ECMs) will be validated using the Measurement and Verification (M and V) process.

- Carbon Reduction Retrofit (phase 2): Working towards developing a business case to implement Energy Conservation Measures for Education Services - Schools.

- Swansea Council with the support of Welsh Government Energy Services are progressing towards the development of a 3MW Ground Mounted Solar PV farm located on a capped waste land filled area. It is predicted over the asset lifespan (35 years) that 101,302,731 kWh of renewable energy will be generated equating 28,454 t/CO2. Part of this capital expenditure cost could be recovered as it would create revenue for the Authority, in the form of either Power Purchase Agreements (PPA) or private wire connection. There is the potential opportunity of extending the Solar PV site in future years as current additional waste land is capped.

- Public Sector Hub: Cabinet are considering moving from the Civic Centre to a new public sector hub in the heart of the city centre as part of Swansea Bay Central Phase 2, the £1bn project to revitalise the St David's area of the city centre. This is an opportunity for the Authority to show its commitment towards meeting its net zero

carbon aspirations by 2030 incorporating renewable technologies into the design specifications.

- Progressing work towards a world-leading Swansea Bay Tidal Lagoon, estimated electricity generation of 504,854 MWh, equating to carbon emission savings of 94,913 mT CO2e.

Community Energy

Community energy covers aspects of collective action to reduce, purchase, manage and generate energy. Community energy projects have an emphasis on local engagement, local leadership and control and the local community benefiting collectively from the outcomes.

Homes as Power Stations

Since the first development at Colliers Way, the More Homes development team, in partnership with Corporate Building Services (CBS) have developed the Swansea Standard which has incorporated Homes as Power Stations (HAPS) owing to Welsh Government (WG) Innovative Housing Programme (IHP) funding enabling Swansea Council to build exemplar homes, combining the latest Innovative renewable technologies such as Solar PV, Tesla Batteries, Mechanical Ventilation Heat Recovery (MVHR) and Ground Source Heat Pump (GSHP).

With a building fabric first approach integrating the Swansea Standard; Swansea Council has been able to build homes that are super energy efficient; achieving the EPC rating of A and which are almost self-efficient in producing their own energy to decrease energy demand and tackle fuel poverty typically generating around 60% - 80% of the energy consumed.

The HAPS properties are being monitored in collaboration with Welsh School of Architecture (WSA) at Cardiff University. The research team will work in collaboration with industry, government, academia and the public on built environment projects and evaluate renewable energy supply, energy storage and energy demand reduction technologies to create a low carbon-built environment that is both replicable and affordable.

The HAPS developments have now been completed at the Parc Yr Helyg development in Birchgrove (September 2020) and Phase 2 of the Colliers Way, Penplas development (April 2021). The Hill View Crescent/Beacons View Road HAPS development is scheduled to be completed by early 2022. The latest HAPS standard development is due to start in West Cross.

In addition, Swansea Council have retrofitted to HAPS standard several bungalows at Ffordd Ellen, Craig Cefn Parc which are also being monitored by WSA.

District Heating System

The latest consultant study from 2018 showed that there is an opportunity for Swansea Council to deliver a viable city centre District Heating System network, but this would not be without cost or risk. The options for delivery include a wholly Swansea Council owned and operated model through a Special Purpose Vehicle (SPV), or a joint venture partnership with the private sector to reduce the risk (and return). Assumptions were made that certain city centre buildings would connect to the network and the construction costs of £11.5m (excluding inflation and fees but including contingency at 30%) could attract a return of 8.2% over a 20-year period. The risks revolve around lower than forecasted energy demand, lower heat payments/tariffs, lower additional revenues and higher capital and operating costs, all of which would affect the Internal Rate Return (IRR) negatively. Since the biggest of these risks is demand, it should be noted that 55% of the energy demand came from three of our development sites (Copr Bay Phase 1, Sailbridge, Civic Centre), to date only Copr Bay has been developed, the other two are yet to come online.

The timescales of the District Heating System network proposal and the Copr Bay development weren't aligned with one another sufficiently enough for the heat network to be included within the Copr Bay scheme. Consideration was given to installing ductwork across Oystermouth Road during the Copr Bay construction which could be used in the future for district network pipework. Unfortunately the nature of the road construction, location of existing underground services and the additional complexities due to trench sizes and logistic issues with highway closures and noise considerations, there was no benefit in installing the ductwork during the Copr bay construction. That does not preclude the development from connecting to a heat network in the future, however. The heating solutions installed in Copr Bay could connect to such a heat network if one was established.

Solar PV Schemes - Swansea Community Energy and Enterprise Scheme (SCEES) and EGNI/AWEL Co-Operative

These are schemes exploring how local people in some of Swansea's most economically deprived areas can benefit from community renewable energy projects. They have installed Solar PV systems on a number of Swansea schools with a total estimated renewable generation of electricity amounting to 946,211 kWh/year (assuming 85% Solar PV generation used by schools, this equates to 804,279kWh/yr at electricity corporate rates (£0.13/kWh), estimated financial savings of £104K).

As part of the EGNI Co-operative's Solar PV proposal offer to Swansea Council, they have partnered with charity 'Energy Sparks' to provide educational and energy data visualisation programmes to several Swansea schools. Working in collaboration with Education Services and School ECO Clubs, Energy Sparks will provide access to their online energy analysis software to monitor the schools smart meter data to identify energy and financial savings, along with carbon emission reductions. The software will also show the Solar PV data generation from the Egni Co-op PV System. The programme is supported with an extensive list of built-in energy related activities and lesson plans categorised by education level (key stage); subject (Science) and topic (Climate Change).

Swansea City Deal

The Swansea Bay City Deal is a £1.3bn investment in 9 major projects across the Swansea Bay City Region - which is made up of Carmarthenshire, Neath Port Talbot, Pembrokeshire and Swansea together with the Abertawe Bro Morgannwg and Hywel Dda University Health Boards, Swansea University, the University of Wales Trinity Saint David, and private sector partners. The City Deal is being funded, subject to the approval of project business cases, by the UK Government, the Welsh Government, the public sector, and the private sector. Over the next 15 years, the City Deal will boost the regional economy by £1.8bn and generate almost 10,000 new, high-quality jobs. The new Swansea arena is part of the council's £135m Swansea Central Phase One transformation scheme which includes almost 1,000 parking spaces. The arena's external skin will be covered in tens of thousands of LED lights. It is due to open in 2021/22.

In addition, Swansea Council have been in collaboration with Welsh Government and Swansea Bay City Region partners to 'draft' a Regional Energy Strategy plan for South West Wales which will be completed towards by the end of 2021.

Promoting Welsh and UK Government campaigns and programmes to increase energy efficiency amongst private tenants and home owners, reducing fuel poverty and reducing emissions.

The Blue Eden Tidal Lagoon formally launch in October 2021, along with other community owned renewable energy schemes, like SCEES, to deliver clean energy and benefit local schools and community buildings. The lagoon alone has an estimated electricity generation of 504,854 MWh, equating to carbon emission savings of 94,913 mT CO_2e.

Working with others nationally to urge Welsh Government to develop electric car charging infrastructure.

Being leaders of good practice in Wales through having Sustainable Development policies and approaches pre-dating the Well-Being of Future Generations Act.

Building the first council housing in a generation here in Swansea to a super-energy-efficient "Swansea Standard" that will enable all components to be procured locally and reducing emissions using solar battery storage and air source heat pumps.

Using innovation in construction for flagship projects such as Pentrehafod School, showcasing waste minimisation and sustainability.

Winning investment for innovative green technology, such as "Homes as Power Stations", as part of the City Region Deal.

Securing funding for a vast increase in Active Travel (walking and cycling) routes throughout the county and supported Swansea University's community cycle scheme.

Implementing agile working so that the workforce may reduce unnecessary travel.

Developing local procurement practices to reduce carbon footprint.

In Education, Swansea is an early joiner of the international EcoSchools programmes which encourages schools to promote recycling and reduce energy and water consumption.

Encouragement of Foundation Phase pupils to learn outdoors ensuring a respect for nature, biodiversity and eco-systems.

At KS4, developing partnerships with Universities to establish STEM workshops including the impact of climate change.

Recently incorporating care for the natural environment into the corporate plan as a new priority, recognising the hugely important contribution made by the extensive work of our Nature Conservation Team.

Working with Swansea Public Services Board to improve local services. The four statutory members of the Board are Swansea Bay University Health Board, Natural Resources Wales, the Fire and Rescue Service and the council who will continue to work collectively to improve local social, economic, environmental and cultural well-being as set out in the Well-being of Future Generations Act (Wales) 2015. For this part the focus will be on a Greener Wales.

Street lighting have upgraded 21,053 street lights to LED, along with the installation of City Touch, Central Management System commissioned to control the street light output around Swansea ring road (financial and carbon savings.

Council car parks have had electric vehicle charge points installed. A total of 16 dual-headed charge points have been installed, serving 32 recharging bays. With the exception of the two Park and Ride sites, the charge points provide 22kW 'fast' charging capabilities. The Park and Ride sites feature 7-22kW charge points (load balancing depending on how many vehicles are plugged-in at the same time). All charge points provide 100% renewable electricity to users. Users can access the charge points through an App or by calling a 24/7 customer service line (bi-lingual).

Active Travel. The total network has increased in length by 25% in the past three years, with over £12million of investment made in active travel infrastructure. Of the 72,000 households in Swansea, 60% now live within 500m of a dedicated off-road cycle route.

Swansea Council Net Zero Carbon by 2030

Swansea Council is monitoring its emissions and reporting annually to Welsh Government. It is taking all possible action to achieve net zero as demonstrated in the action plan:

Buildings and Energy

- Decarbonise our public estate by reviewing our asset management strategy.
- Reduce the energy consumed across the council's buildings and estate.
- Encourage employee behaviour change through training and process improvement
- Decarbonise street lighting with more LED's
- Ensure all new buildings are constructed to the highest possible sustainability standards.

Fleet and Mobile Equipment

- Transition the Council's fleet to zero emission equivalents in accordance with the Welsh Government's expectation of light commercial vehicles by 2025 and other vehicles by 2030
- Establish a fleet vehicle charge point infrastructure that supports this transition
- Optimise fleet vehicle use and efficiency
- Establish integrated data systems for GHG measurement
- Revise and approve the appropriate supporting policies, procedures and working practices
- Decarbonise Grey Fleet travel
- Decarbonise mobile plant equipment

Land Use

- LDP policy reviewed to protect land soils and habitats rich in carbon
- Increase terrestrial Central Area GI to 26%
- Tree planting areas mapped county wide1000s new trees planted
- 30% of protected sites (local nature reserves, etc.) in positive management for biodiversity

Waste

- Encourage circular economy values within Swansea Council - to minimise and prevent - reduce, reuse, recycle,
- Reduce operational single use plastics wherever possible
- Reduce operational waste e.g. food, paper
- Encourage operational recycle and repair.
- Reduce Construction Waste

New Ways of Working

- Develop emissions data monitoring processes
- Reduce commuting miles
- Deliver agile working policy
- Develop staff active travel plan
- Implement Healthy Travel Charter in Swansea Council
- Develop an Electric Vehicle Charging Strategy

Supply Chain

- Commit to Net Carbon Zero in our supply chain by 2050
- Through forward planning and innovation develop new specifications for our contracts that deliver Net Carbon Zero
- Map and monitor our progress, with appropriate prioritisation and target setting

As the governance structure implies, 8 critical areas of the authority are working on their action plans in order to deliver the 2030 and 2050 targets.

i. Energy Strategy

Swansea Council recognise and understand the importance of effective energy and carbon management and the implications and risks of climate change, rising energy costs and the preservation of finite energy sources. The preservation of our natural environment on a

regional and national level and safeguarding of the wellbeing of our communities for current and future generations is a vital aim of the Authority.

It is within this context that the Energy and Carbon Management Strategic Plan was developed. The Energy and Carbon Management Plan provides a co-ordinated approach which will identify and analyse energy and carbon emissions from the delivery of the Authority's operational service deliveries and will:

- Provide an overarching programme that will align and integrate all legislations and policies that relate to energy, carbon management and climate change
- Clearly define Swansea Council's strategic ambition and intent for addressing energy and carbon management
- Quantify the Authority's baseline carbon emissions from its service property activities.
- Identify and evaluate energy saving projects towards reducing energy costs.
- Adaptable to the new Welsh Government Net Zero Carbon Reporting requirements.
- Adapt a low carbon / renewable technology way of working, reducing the dependency on conventional energy supplies

ii. Green Infrastructure Strategy

This strategy, which was adopted in Feb 2021, considers how green infrastructure can be increased in area and quality in the central area of Swansea in order to make it better adapted to climate change and better for people and wildlife. Green infrastructure is a term used to describe all the greenspace, soil, vegetation and water (ranging from parks to roof gardens) that provide the ecosystem services that make our cities liveable.

The strategy sets out a vision for the central area in Swansea to be much greener, creating green spaces and using a combination of street-level features like street trees and rain gardens as well as vegetation on buildings, including green roofs and green walls. The intention is to double the amount of green infrastructure (with the exception of open water) within 10 years.

The focus is to create a green infrastructure network, centred on a Green Artery that will connect Swansea Station in the north, with the beach and marina in the south and the wider area, via existing, improved greenspaces including churchyards and Castle Square. Green infrastructure will be planned and designed to be multi-functional and will involve a partnership approach, using innovative solutions, including Supplementary Planning Guidance for green infrastructure and a Green Space Factor tool (GSF). Swansea Council

is committed to using the GSF tool, designed for the Swansea Central Area, as a measure for the quantity and functionality of green space in development.

Work is now progressing on developing a countywide Green Infrastructure Strategy.

iii. Local Biodiversity Plan

Promoting Swansea's Natural Environment is a strategy and action plan for the protection, management, enhancement and promotion of Swansea's outstanding natural environment and biodiversity. It outlines a number of strategic actions required for the conservation of the wider biodiversity resource together with a set of detailed actions for the protection of priority habitats and species.

The Local Biodiversity Strategy and Action Plan (LBAP) has three key parts:

Part 1 Strategy

This part provides a background to the biodiversity action planning process, identifies key issues affecting biodiversity in Swansea and priorities for future work. It proposes a number of broad actions to meet these priorities, and outlines procedures for measuring progress.

Part 2 Audit

This part provides an overview of Swansea's biodiversity resource and contains information on protected habitats and species present in the County, together with draft proposals for the identification of a network of non-statutory Sites of Interest for Nature Conservation or candidate SINC.s.

Part 3 Habitat and species action plans

This part provides detailed action plans for priority habitats and species which occur in the County in accordance with UK and Welsh Assembly Government Guidance. At the time of printing 23 Habitat Action Plans (HAP.s) and 98 Species Action Plans (SAP's) have been included. There are plans to add additional HAP's and SAP's in due course.

The Local Biodiversity Plan will be replaced by the Local Nature Recovery Plan once it is adopted. The Council's Section 6 Action Plan for 2023-2025 will form part of the Local Nature Recovery Plan. In complying with the Section 6 (Biodiversity Duty) under the provisions of the Environment (Wales) Act 2016, the Council is required to prepare and submit to Welsh Government, every 3 years, a report (Section 6 Monitoring Report) outlining what it has done to comply with the Biodiversity Duty. The Council's latest report is due to be submitted Dec 2022.

In addition, 'Biodiversity and Development' Supplementary Planning Guidance (SPG) was adopted in February 2021. The SPG specifically focusses on how the Council will follow a "stepwise approach" to implementing the biodiversity duty through its own planning decision making process. It will integrate greater obligations around biodiversity with some major developments approved subject to Section 106 agreements providing financial contributions towards practical on/off site mitigation and/or compensation measures against biodiversity loss and in support of maintenance agreements.

iv. Local Development Plan

The 2010-2025 Plan provides a clear planning framework to address key issues facing the County, providing certainty and the basis for efficient planning decisions. Its policies and proposals will enable the delivery of sustainable development, and ensure that social, economic, environmental and cultural well-being goals are all suitably balanced in the decision making process so that the right development occurs in the right place.

The Plan is underpinned by an extensive and up to date evidence base which, in combination with extensive public and stakeholder engagement undertaken during Plan preparation, has been used to identify the key opportunities, land use requirements, and issues for the County over the Plan period.

A Trees, Hedgerows and Woodlands SPG was adopted in October 2021. This document provides guidance on how the relevant policies of the Local Development Plan should be applied to planning applications with respect to all existing, retained and newly planted trees, hedgerows, and woodland on development sites. The requirement for biodiversity conservation and enhancement has also been included in the following SPGs which were adopted in 2021:

- Gower AONB Design Guide
- Placemaking Guidance for Residential Development
- Placemaking Guidance for Infill and Backland Developments
- Placemaking Guidance for Householder Developments

All are available to view.

v. Procurement Strategy

Swansea Council procurement is underpinned by maximising the economic, social, environmental and cultural benefits that may be obtained from buying power. Best value can be viewed as the optimum combination of whole-life costs in terms of not only generating

savings and good quality outcomes for the organisation, but also benefit to society and the economy.

Procurement activity strives to deliver the goals of the Well-being of Future Generations Act through a holistic approach to procurement processes and including where relevant specific provisions within the procurement documents. There is commitment to strive to ensure that carbon reduction ambitions that underpin the sustainable development principle are integrated within procurement practice as appropriate.

vi. Sustainable Transport Strategy

A great deal of positive work has been carried out in this area to date with all activity becoming part of this overarching strategy. This includes how the council deals with its Council fleet, the grey fleet (personal mileage by employees), its emissions from street lighting, the continued promotion of active travel and the development of a local and regional sustainable public transport system.

Some specifics include:

- Continuation of planning for, and improving the active travel network. Refresh of the current Active Travel maps and consult on potential new routes for development, though a new Active Travel Network Map in 2021.
- Increase levels of active travel though promotion, engagement and encouragement of active travel with the general public, businesses, communities and educational establishments, through a behaviour change campaign, Swansea Bayways.
- Further roll out of EV charging infrastructure.
- Continue to deliver a 5 % year on year reduction in council fleet emission via its green fleet strategy.
- The development of the ULEV strategy will support further emissions reductions. Targets will gradually increase over time up to 10% per annum to align with technological advances in coming years.
- Seek to embed the reductions in grey fleet mileage which achieved 50% and 1 million miles less in 2020/21 to date.
- South West Wales Metro - Continue the development of business cases for investment in active travel, bus and rail projects across the region.
- Investigate low-emission public transport alternatives through work with partners, such as Transport for Wales and First Cymru to establish how vehicle emissions could be reduced in the future.

vii. Waste Strategy

The Council's existing strategy aligns to Welsh Government's recycling targets which aimed to achieve 64% recycling levels by 19/20 and this was achieved by Swansea. This target increases to 70% by 24/25 and the council is reviewing its option to achieve these increased levels.

In the meantime as part of the overall Climate change plan it will develop a new Waste Strategy which it will seek to align with the overarching Welsh Government plans over the coming 12 to 18 months.

viii. Housing Strategy (Decarbonisation)

Following the publication of the report, Better Homes, Better Wales, Better World (BHBWBW), Welsh Government set up a working group made up of the Welsh School of Architecture (WSA) and selected social landlords to further develop decarbonisation targets and prepare guidance for social landlords on decarbonising their housing stock.

Officers from the Housing Service have participated in the development of the study document and so are included in regular update meetings with Welsh Government's Decarbonisation Team and academics from WSA on latest developments.

Welsh Government has taken a view that a retrofit decarbonisation programme can be delivered as an extension to the existing Welsh Housing Quality Programme due for completion at the end of 2020. The revised WHQS programme that will commence in April 2021 will set a target achieving EPC A/SAP 92 to 231,000 socially owned properties by 2030, which represents almost 17% of the entire housing stock in Wales.

The next stage for Swansea will be to develop a long term Decarbonisation Strategy alongside the excellent work that is already being undertaken. Examples include:

New Homes 'Swansea Standard' are currently being developed as HAPS at Parc y Helyg, Birchgrove, Colliers Ways, Penplas development 1 and 2 and Hillview Crescent, Clase. The properties will not have a traditional gas supply, but will generate, store and then release their own electricity.

Homes as Power Stations (HAPS): The Council has retrofitted and transformed into HAPS 6 bungalows at Ffordd Ellen, Craig Cefn Parc which include external wall insulation, Ground Source Heat Pumps (GSHP), Mechanical Ventilation Heat Recovery unit (MVHRs), PV solar roofs and Tesla battery storage.

City and County wide Net Zero Carbon by 2050

All activity will be underpinned by the Well-being of Future Generations Act goals and ways of working, the Corporate Plan Priorities and the Strategic Equality Plan actions.

- The Well-being of Future Generations Act (Wales) 2015 - This legislation places a duty on the Council to carry out sustainable development improving social, economic, environmental and cultural well-being. It sets out the sustainable development principle's five ways of working and seven national well-being goals.

- Strategic equality plan - This sets out how the Council makes every effort to respect children's rights, promotes healthy lives, helps tackle poverty and play its part in treating people and communities are treated with fairness, dignity and respect. It promotes equal opportunities for all, making a real difference to the lives of those living and working in Swansea.

- Corporate plan - This details how the Council will improve well-being in practice. It lays out priorities for action in six well-being objectives and the steps to achieve them in line with the sustainable development principle. Swansea Council is taking all possible action alongside Climate Charter signatories, PSB, citizens, schools, businesses, community groups and environmental partners to help deliver the Welsh Government ambition of Net Zero Wales by 2050.

Electricity and Heat Generation

- Complete first phase of Blue Eden
- Develop Energy Parks for example Tir John Solar Farm
- Support delivery of Regional Energy Plan
- Support delivery of Local Area Energy Plan

Transport

- An integrated and affordable public transport system
- Safe active travel networks across the county to recognises work and leisure hubs

Residential Buildings

- More EV charging points
- Residents aware of and able to access advice and funding for home improvements to cut carbon emissions
- More Homes built to Swansea Standard
- Decarbonisation of Housing Stock

- Create an Energy awareness hub
- Aim for 30% of (non -residential) Council buildings with wildlife features

Industry and Business

- Engagement across the county using Swansea Project Zero branding with a strong support network that instils pride and creates a critical mass of businesses actively cutting carbon emissions and participating in the circular economy.

Agriculture

More opportunity for healthy, local food production and sales

Waste and Circular Economy

- Achieve Welsh Government recycling targets
- Promote the waste hierarchy and prevent, reduce, or reuse materials wherever feasible
- Continue to monitor technologies and engagement with partners to recycle a wider range of waste material types
- Plastic Free Swansea County to be promoted
- Education and Engagement
- Engagement across the county using Swansea Project Zero branding to instil pride and create a critical mass.
- All schools actively reducing their carbon and saving energy through behaviour change and educational initiatives
- Collaboration with Youth Groups to enable the 'youth voice' to be heard
- Environmental Project Partners successfully running projects on behalf of SC and actively engaging with citizens and community groups to increase community climate resilience and reduce community carbon emissions
- All SC staff to be given training on CC and NR as part of induction with service area/job role specific training available

Enriching our Natural Resources

- Deliver Local Area Nature Recovery Action Plan
- Deliver Biodiversity/Section 6 Plan
- Deliver county wide green infrastructure strategy

LULUCF

- More land available for CSA and allotment use
- More community orchards

All activities must align to create a long term Climate Change and Nature Strategy and demonstrate the commitment asked of the Notice of Motions.

Governance accounts for Regional, Welsh, National and European directive alongside the additional policies and strategies sitting at Council level that will support delivery.

This approach aligns with the council's pledged to "Act in Response to the Climate Emergency" within its Corporate Plan 2020-23, aiming for carbon neutrality by 2030.

Wider communication and engagement.

This will be established through a variety of routes:

- The Swansea Charter: Climate Change and Nature Action underpins the path to A Net Zero Swansea.
- The ultimate aim is 2050 Net Zero - City and County of Swansea (all emissions)
- A key milestone will be 2030 Net Zero - Swansea Council (in scope organisational emissions)
- Business, Citizens, the Council, Community, Partners, Government, Youth and the Voluntary sector all play their part. 'It is everyone's business'

There will be a continued commitment to engage with local people, groups and businesses and help them be smarter and better prepared for the impacts of climate change and nature recovery. This will be enhanced via the Climate and Nature Charter and online pledge wall.

Swansea Council recognises that it must lead by example and use its 'Sphere of Influence' to reach out to as many citizens and businesses as possible. The Leader and Cabinet Members have signed the charter, and a more generic version for Swansea Citizens and public sector, business, charities, schools, groups etc. will be used, alongside the more simplistic pledge wall as mechanisms to seek wider buy in across the whole city and county.

Involving partners will be paramount to success, and will help support Swansea Council's ambition to lead by example. Agreed strategies will provide structure and governance to ensure delivery.

Listening to and acting on community groups, school groups ideas will help shape the strategy.

Swansea council will commit to making long term and embedded behaviour change via training and support not only within its own authority but also across the City and County, for all citizens. We want everyone to shape Swansea's vision for reaching net zero carbon.

We can make changes on a huge scale if we all make small changes to how we move, shop, eat, think and live, together.

Reducing emissions and recovering nature needs businesses and households to change. We must use more renewable energy sources such as wind, solar and geothermal. We also have to change how we use energy, by cutting down on the power we use. We need to be more mindful of food sources, the nature surrounding us, its recovery and how our communities need to adapt for the future.

Swansea Council cannot make Swansea net zero carbon on its own. We need everyone in Swansea to act now and consider what they can do to reduce their impact on the planet. We all need to take action at home, in the workplace, and across the county as a whole.

The Council is well placed to work with others. We can make the most of Swansea's collective potential and create solutions together. There will need to be major investments. We will have to make changes to existing systems of how we use and interact with energy. We must change how we live our lives. We will have to redefine how we manage and interact with our environment.

Above all, to meet this challenge, we need collective leadership and shared ambition.

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

The passive NO_2 monitoring data from 2023 shows that concentrations at 97 monitoring locations decreased from 2022 levels and 89 sites reported a minor increase, with an average change of 0.9% from 2022. Four sites reported no change from 2022, and the remaining 10 sites were newly installed in 2023.

Monitored NO_2, PM_{10} and $PM_{2.5}$ concentrations at all automatic monitoring stations continue to report annual means well below the AQS annual mean objectives for NO_2, PM_{10} and $PM_{2.5}$. In regard to the short term AQS objective for NO_2, in which the $200\mu g/m^3$ must not be exceeded more than 18 times/year, and the PM_{10} AQS objective whereby there should be no more than 35 24-hour mean concentrations greater than $50\mu g/m^3$, there were no exceedances reported in both pollutants in 2023.

5.2 Conclusions relating to New Local Developments

Ongoing implementation and development of local strategies, as detailed in Table 1.2, will continue to assist in reducing pollutant concentrations and emissions. The Council also continues to request air quality assessments for new planning applications where relevant, to ensure that there is no significant degradation of air quality or that no new sensitive receptors are being introduced into areas of existing poor air quality.

5.3 Other Conclusions

The existing diffusion tube network within Swansea allows the council to closely monitor hotspot areas and help highlight areas of concern, the passive monitoring network in 2023 has shown compliance across all locations within the Swansea AQMA. In relation to the designated AQMA, passive monitoring results show full compliance within Swansea AQMA and demonstrating compliance for over four years, these areas include Fforestfach, Sketty and Hafod. All automatic monitors all show compliance from within their respective AQMAs for over 3 years.

5.4 Proposed Actions

Swansea Council will continue to actively monitor NO_2 concentrations, reviewing the diffusion tube network where necessary. With the majority of annual mean NO_2

concentrations decreasing from 2022, and with 2023 now showing another year of compliance Swansea Council will begin the revocation process of the Swansea AQMA.

References

I. Technical Guidance LAQM.TG(22)

II. Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138)

III. Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298)

IV. City & County of Swansea Progress Report 2023

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 D: AQMA Boundary Maps

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

Table A.1 – Full Monthly Diffusion Tube Results for 2023 (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
5	262548	262548	22.4	30.6	23.5	28.3	23.9	-	13.8	19.8	19.7	23.8	25.3	17.3	22.6	17.8	-	
6	262612	192995	29.9	25.6	21.7	23.0	21.5	-	18.5	18.2	19.4	23.0	23.8	18.9	22.1	17.4	-	
7	262691	192852	41.9	39.2	37.3	34.0	26.6	-	30.8	31.8	26.4	33.3	35.0	25.8	32.9	25.9	-	
8	262990	195820	48.6	39.3	38.1	44.5	42.4	34.5	-	32.9	39.6	39.8	41.6	-	40.1	31.6	-	
10	263219	195513	25.5	23.6	19.6	21.1	-	16.6	-	15.5	20.2	21.2	25.3	-	21.0	16.5	-	
11	263344	195474	35.6	33.3	30.7	37.3	28.2	29.1	-	26.4	32.6	27.6	-	-	31.2	24.6	-	
12	263680	195103	45.9	9.1	28.0	40.0	32.1	34.6	-	33.6	39.6	36.1	40.6	35.8	34.1	26.9	-	
16	265339	192534	32.1	26.2	24.0	27.9	23.8	22.1	16.0	21.1	22.8	24.5	30.0	22.6	24.4	19.2	-	
18	265526	195807	44.4	30.6	47.2	46.2	35.8	39.5	27.0	32.3	42.2	45.6	39.0	24.6	37.9	29.8	-	
19	265597	194061	48.3	33.7	43.1	44.7	49.0	-	27.3	33.3	-	-	36.9	37.7	39.3	31.0	-	
20	265594	194175	41.4	29.6	30.7	35.0	27.0	27.3	21.9	25.9	30.4	36.3	41.8	30.1	31.4	24.8	-	
22	265682	195374	36.4	25.6	22.0	23.3	18.6	20.1	17.0	21.5	28.9	28.9	33.7	26.8	25.2	19.9	-	
26	265876	194318	37.5	38.4	34.5	38.8	30.2	31.4	21.2	24.2	32.4	37.0	38.1	19.4	31.9	25.1	-	
27	265922	194428	38.1	34.9	34.9	39.1	27.7	32.3	-	26.0	29.8	42.9	35.3	31.1	33.8	26.6	-	
29	265976	195290	32.4	22.6	22.4	24.4	22.1	21.8	19.1	-	39.7	26.7	22.1	21.1	24.9	19.6	-	
32	266209	193867	33.3	-	26.2	29.9	27.9	28.6	22.3	24.6	29.5	28.4	32.9	22.9	27.9	21.9	-	
33	266236	193488	44.0	-	25.1	27.3	24.5	21.3	19.4	26.0	27.2	27.1	34.9	22.1	27.2	21.4	-	
35	266314	193298	-	-	30.6	30.6	17.1	25.8	22.5	27.6	-	29.5	-	25.9	26.2	23.6	-	
36	266455	193300	35.6	-	24.9	46.2	17.8	18.4	17.9	21.8	22.3	25.2	30.8	26.2	26.1	20.6	-	
40	266951	198278	28.4	19.5	29.7	22.6	18.7	-	14.1	5.4	17.4	-	-	-	19.5	15.7	-	
41	266953	198085	35.0	-	29.7	31.2	22.7	-	-	23.4	31.3	34.5	29.7	26.7	29.4	23.1	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
43	267093	198063	40.0	26.5	31.4	24.9	23.8	27.6	21.3	24.4	28.3	29.6	-	29.2	27.9	22.0	-	
44	267639	199543	26.6	20.4	21.4	19.8	15.0	17.7	18.5	18.2	22.6	23.2	23.0	25.1	21.0	16.5	-	
45	267661	199451	30.8	14.2	24.2	27.5	27.5	21.8	12.9	20.7	21.3	25.6	-	20.3	22.4	17.7	-	
48	268011	193101	24.1	13.7	16.2	17.8	13.0	12.3	12.8	13.3	17.5	19.3	23.0	18.5	16.8	13.2	-	
50	268530	197419	27.7	28.2	24.2	29.2	19.8	23.1	20.7	25.5	-	31.2	23.9	28.4	25.6	20.2	-	
54	268693	197416	34.6	21.0	29.7	27.5	-	23.5	21.4	22.2	22.1	26.5	26.5	24.9	25.4	20.0	-	
55	268789	197420	31.0	24.0	26.8	27.3	20.7	23.3	18.5	22.5	25.0	27.3	25.0	24.9	24.7	19.4	-	
56	269306	198661	38.0	29.2	31.9	26.9	20.1	24.9	24.6	24.0	-	27.9	29.9	27.5	27.7	21.8	-	
58	264000	192800	36.5	32.6	27.2	31.0	25.3	27.9	22.3	26.0	29.8	32.5	35.3	31.1	29.8	23.5	-	
59	265918	194463	49.5	43.4	37.5	45.5	38.5	36.3	30.0	36.1	36.3	33.0	28.4	42.6	38.1	30.0	-	
61	264959	192878	-	-	-	-	-	-	-	48.1	-	37.6	31.5	22.9	35.0	27.8	-	
63	262675	192775	32.5	21.2	15.0	18.4	15.0	-	11.9	13.6	21.3	21.1	27.6	12.6	19.1	15.0	-	
64	262719	192840	25.6	36.9	33.6	33.1	29.3	-	26.8	28.1	24.7	38.3	27.9	-	30.4	24.0	-	
65	262735	192855	32.3	21.3	19.7	18.7	18.0	-	14.6	15.4	16.5	21.7	23.3	15.9	19.8	15.6	-	
66	262802	192829	52.4	21.8	21.5	22.6	21.6	20.2	17.1	18.3	20.3	22.4	28.3	20.9	23.9	18.9	-	
67	265901	193677	36.4	44.5	33.8	39.1	35.8	34.1	24.3	33.9	35.6	40.8	49.1	42.3	37.5	29.5	-	
68	265573	193432	30.7	34.9	32.2	31.2	30.7	31.1	22.8	25.5	31.3	30.6	32.0	26.3	29.9	23.6	-	
70	266649	195435	-	27.1	-	23.2	18.9	21.6	18.5	20.8	26.4	-	24.0	19.0	22.2	17.5	-	
75	264072	192869	32.0	33.2	30.8	32.5	23.5	-	23.2	25.3	32.9	28.5	32.3	29.2	29.4	23.1	-	
84	262714	192839	35.8	26.8	24.1	25.1	18.1	-	23.7	20.9	19.3	28.4	29.8	22.5	25.0	19.6	-	
85	262702	192847	26.7	26.4	26.7	25.5	19.7	-	24.0	23.5	16.5	27.8	29.4	6.7	23.0	18.1	-	
86	262704	192865	21.4	25.8	16.7	23.4	17.4	42.9	15.3	-	17.1	22.6	25.4	17.8	22.3	17.6	-	
87	262697	192798	32.0	17.6	12.5	11.9	11.2	-	9.5	9.2	18.8	14.3	20.4	10.6	15.3	12.0	-	
88	262605	192916	22.8	27.1	21.6	25.1	20.8	-	18.1	22.1	18.2	27.3	31.1	18.5	23.0	18.1	-	
89	262587	192956	28.2	19.6	13.9	20.5	16.0	-	12.3	15.1	13.6	15.6	15.3	14.3	16.8	13.2	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
90	262631	192996	27.5	27.9	24.2	30.6	27.5	-	18.2	23.0	28.3	29.2	24.2	20.2	25.5	20.1	-	
91	262534	192950		21.0	24.9	29.5	23.0	-	14.3	18.5	17.8	22.7	25.6	15.8	21.3	16.8	-	
94	263444	195572	25.3	28.2	19.9	24.1	20.7	22.1	-	19.2	26.4	24.2	25.6	14.5	22.7	17.9	-	
95	262815	196090	28.9	21.1	15.2	21.3	16.2	13.2	-	16.4	-	22.1	-	33.2	20.8	16.4	-	
96	262919	195951	33.8	24.6	19.3	23.1	16.9	18.4	-	16.6	23.1	22.2	17.7	20.9	21.5	16.9	-	
97	262946	195902	31.0	25.5	6.9	32.7	28.4	26.1	-	22.3	26.3	-	28.2	33.1	26.0	20.5	-	
98	263142	195548	34.0	15.2	24.8	29.5	21.0	25.6	-	21.7	24.9	26.8	32.7	24.4	25.5	20.1	-	
99	263387	195332	37.8	10.9	19.5	25.1	21.7	16.5	-	20.4	22.0	21.9	32.5	22.3	22.8	17.9	-	
104	268538	197389	-	22.4	29.8	26.4	23.4	18.6	13.3	19.5	30.9	17.7	19.3	13.1	21.3	16.8	-	
110	267369	199521	32.6	-	19.4	19.7	19.3	16.4	10.7	17.0	18.1	20.6	-	19.7	19.3	15.2	-	
115	265031	193097	38.9	20.4	32.5	-	24.5	-	22.0	21.7	29.2	-	25.0	24.4	26.5	20.9	-	
116	265192	193138	38.7	43.3	37.1	39.7	31.5	38.0	27.5	30.3	36.4	43.0	38.3	28.9	36.1	28.4	-	
117	265288	193211	26.7	37.8	28.8	35.1	27.4	-	23.1	25.9	33.6	36.9	37.6	31.8	31.3	24.7	-	
118	265483	193385	46.2	23.3	22.2	18.4	18.1	-	-	-	-	-	-	-	25.6	17.7	-	
121	265697	193679	33.5	39.5	42.2	41.7	37.8	37.7	31.9	-	41.2	37.6	24.3	35.9	36.7	28.9	-	
122	265694	193505	40.9	34.0	-	31.6	34.9	30.6	15.5	23.2	-	32.0	32.6	24.7	30.0	23.6	-	
123	265655	193423	-	42.8	35.7	39.1	-	35.2	25.6	31.0	24.7	37.6	35.5	36.2	34.3	27.0	-	
124	265651	193253	44.6	20.8	31.1	38.6	36.0	39.0	26.0	29.1	35.0	38.5	47.6	23.6	34.2	26.9	-	
125	265642	193148	34.1	41.8	28.3	33.1	36.5	30.9	24.1	33.0	29.9	37.8	38.4	32.3	33.3	26.3	-	
126	265475	193144	31.0	46.9	35.0	36.5	29.3	29.9	23.3	27.3	34.3	33.6	21.8	27.0	31.3	24.7	-	
128	265297	193085	25.5	33.0	26.9	25.7	21.0	21.8	15.5	19.8	24.1	28.0	28.2	22.1	24.3	19.1	-	
129	265153	193098	42.6	-	27.5	30.0	23.0	25.4	16.4	21.1	27.6	31.5	24.3	-	26.9	21.2	-	
131	265137	192846	36.1	36.6	37.4	35.3	28.4	31.8	25.8	33.4	-	32.2	43.6	38.6	34.5	27.1	-	
132	265229	192753	40.8	37.0	29.4	35.8	27.9	-	14.6	22.4	-	37.5	30.5	-	30.7	24.1	-	
134	265113	192903	34.4	27.7	35.2	35.0	31.2	35.4	25.6	30.0	39.2	36.9	37.6	34.9	33.6	26.5	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
180	259064	197781	30.1	27.4	24.1	26.4	22.6	24.3	-	-	-	-	-	-	25.8	18.6	-	
182	259050	197790	30.6	13.5	23.0	24.9	19.1	21.0	-	-	-	-	-	-	22.0	15.9	-	
197	258797	198701	30.4	8.2	24.8	26.6	-	22.6	-	20.5	26.8	22.6	26.7	25.5	23.5	18.5	-	
198	258811	198701	32.3	31.9	23.8	24.5	17.8	24.4	-	22.5	22.8	22.5	24.5	24.0	24.6	19.4	-	
206	261565	188211	35.8	34.8	30.1	35.5	30.0	28.8	24.4	30.4	31.8	29.7	25.5	25.6	30.2	23.8	-	
207	261561	188222	35.8	33.2	24.0	34.1	27.7	-	-	29.7	27.8	25.3	30.1	28.3	29.6	23.3	-	
208	261541	188215	31.9	15.1	26.3	30.1	28.5	26.0	21.6	26.5	29.0	25.3	-	25.6	26.0	20.5	-	
209	261534	188198	29.0	32.1	24.1	33.4	27.9	29.1	22.6	21.9	28.9	26.8	28.1	20.5	27.0	21.3	-	
210	261516	188207	30.3	30.4	25.2	29.3	24.6	20.6	18.0	23.3	27.3	22.8	19.8	17.2	24.1	19.0	-	
211	261501	188188	23.7	30.8	22.5	31.3	0.6	22.5	16.2	-	25.6	25.4	23.1	19.5	21.9	17.3	-	
212	261486	188200	29.3	22.8	20.0	24.3	20.1	17.4	-	-	-	-	-	-	22.3	16.1	-	
213	261490	188186	36.4	27.1	26.1	29.4	25.9	-	17.6	-	23.3	23.4	24.4	20.9	25.5	20.0	-	
240	266169	195995	39.8	32.2	29.6	29.0	22.4	24.6	18.4	21.4	27.4	25.0	32.5	22.7	27.1	21.3	-	
242	265655	193423	33.8	38.8	35.2	36.3	36.3	32.8	9.0	30.1	37.6	39.6	39.7	31.9	33.4	26.3	-	
243	265474	194949	41.4	18.6	22.3	31.8	28.6	-	25.5	28.1	32.4	32.4	37.0	-	29.8	23.5	-	
244	265466	194930	-	37.1	37.2	42.4	31.8	36.9	30.1	33.7	44.8	45.3	14.7	25.9	34.5	27.2	-	
247	265394	194899	31.2	14.5	25.1	-	23.6	26.3	14.6	-	28.8	24.9	27.4	22.8	23.9	18.8	-	
249	265326	194871	47.6	20.4	25.0	28.9	20.4	25.0	16.9	21.4	30.7	28.1	28.3	25.4	26.5	20.9	-	
256	264995	194777	29.6	36.8	25.8	32.5	27.4	30.2	23.8	27.4	36.3	27.1	38.2	36.5	31.0	24.4	-	
275	265658	194856	29.3	27.5	19.9	21.9	16.5	17.0	13.5	16.2	28.1	22.0	27.5	22.9	21.9	17.2	-	
276	265610	194871	34.1	24.0	29.2	27.2	21.6	23.9	22.5	24.4	30.4	31.8	18.2	25.3	26.0	20.5	-	
277	265596	194875	30.3	26.2	29.5	30.1	26.6	27.0	18.2	25.0	29.6	32.2	28.7	21.3	27.1	21.3	-	
278	265573	194882	44.7	28.7	29.0	33.1	26.3	27.3	20.2	24.2	30.0	21.4	26.4	16.8	27.3	21.5	-	
279	265555	194926	44.9	40.7	39.3	40.7	33.8	35.5	27.7	28.3	35.5	34.0	31.5	26.8	34.9	27.5	-	
280	265537	194980		29.7	34.3	43.0	33.1	31.3	24.1	30.8	34.7	38.3	28.5	27.6	32.3	25.4	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
281	265542	194872	45.3	10.3	37.8	38.6	32.3	31.4	27.9	30.8	34.2	32.0	38.3	33.7	32.7	25.8	-	
282	265540	194840	32.8	36.1	37.3	34.9	35.7	30.4	24.8	30.3	35.1	36.8	18.2	35.4	32.3	25.4	-	
284	265452	195899	37.3	30.6	27.6	27.4	25.2	26.5	20.3	25.0	28.6	30.0	7.1	23.2	25.7	20.3	-	
285	266955	197415	37.4	30.7	31.3	25.2	23.8	20.9	13.4	22.1	25.0	34.5	27.4	14.9	25.6	20.1	-	
286	266938	197377	34.0	25.5	25.9	26.3	22.0	22.4	20.3	22.3	26.8	27.8	25.9	25.3	25.4	20.0	-	
287	265715	193902	34.7	26.1	28.0	31.3	26.2	22.8	15.3	22.1	25.8	31.9	33.2	21.3	26.6	20.9	-	
288	265698	193878	42.9	22.2	28.9	27.0	27.2	26.9	16.9	26.2	30.0	32.8	33.1	-	28.6	22.5	-	
289	265702	193842	45.5	38.4	37.9	29.1	29.5	28.3	21.7	28.2	29.9	33.2	38.2	29.5	32.5	25.6	-	
291	267952	193121	37.5	-	29.5	29.5	28.8	31.1	24.9	24.1	33.6	28.6	37.9	25.7	30.1	23.7	-	
295	258998	198698	-	30.1	-	-	-	23.7	-	-	27.1	19.3	32.8	17.3	25.0	18.5	-	
296	259054	198679	37.4	25.2	26.6	29.6	22.6	-	-	25.8	-	31.8	34.4	24.0	28.6	22.5	-	
323	266765	193224	38.8	-	32.6	29.9	23.0	24.6	23.2	26.3	26.1	32.7	-	28.8	28.6	22.5	-	
331	265741	193545	-	37.9	35.6	39.6	32.9	31.5	21.0	26.0	32.3	20.7	27.6	30.7	30.5	24.0	-	
334	265688	193483	33.0	34.0	29.3	35.5	-	-	16.2	41.5	30.5	25.9	28.7	20.3	29.5	23.2	-	
335	265682	193461	37.6	29.6	21.9	33.9	28.5	25.4	16.5	23.3	27.6	28.7	16.4	22.4	26.0	20.5	-	
336	265664	193395	46.5	37.4	25.3	36.0	30.5	28.8	19.1	25.1	-	32.9	35.5	28.2	31.4	24.7	-	
337	265637	193335	36.8	21.7	21.6	37.2	34.7	32.5	30.2	33.1	40.0	34.3	40.0	39.1	33.4	26.3	-	
338	265651	193331	37.8	-	31.9	-	31.1	28.3	17.5	26.3	32.3	33.9	18.3	27.0	28.4	22.4	-	
339	265652	193313	49.4	30.1	29.6	44.3	37.9	33.0	23.5	28.6	37.1	38.9	33.1	38.6	35.3	27.8	-	
340	265632	193292	43.2	10.9	40.5	38.9	36.7	38.9	30.3	42.1	35.0	44.6	36.8	26.4	35.4	27.8	-	
341	265635	193224	36.2	-	33.7	40.9	35.0	33.6	28.7	35.6	31.9	40.2	42.3	38.0	36.0	28.4	-	
342	265655	193197	37.5	-	35.4	42.7	35.4	31.8	22.3	31.6	36.0	44.8	31.0	32.1	34.6	27.2	-	
343	265640	193173	38.8	26.9	25.0	27.8	29.1	20.0	18.1	26.4	27.5	25.1	34.4	25.9	27.1	21.3	-	
346	265681	193096	34.7	41.5	26.7	29.5	33.0	20.4	16.2	24.0	25.6	39.4	-	27.7	29.0	22.8	-	
347	265562	193518	33.4	36.0	26.1	28.5	25.7	26.4	19.6	24.2	27.2	27.1	28.2	26.3	27.4	21.6	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
348	265572	193549	36.6	34.0	27.6	30.6	27.4	30.3	24.4	28.4	30.4	33.3	35.5	27.5	30.5	24.0	-	
349	265578	193576	29.7	34.4	29.4	33.3	29.7	31.0	26.4	26.8	32.2	41.8	33.8	30.3	31.6	24.9	-	
350	265577	193606	27.3	40.8	35.9	40.2	29.1	34.8	28.4	31.1	37.2	37.5	34.8	31.1	34.0	26.8	-	
356	265471	193359	-	28.5	21.7	26.8	17.7	26.0	15.8	19.8	24.0	29.6	27.5	21.4	23.5	18.5	-	
362	265271	192774	-	43.1	38.0	36.5	-	-	23.4	28.3	33.7	38.1	30.4	19.5	32.3	25.5	-	
363	265287	192797	39.4	34.8	29.1	32.2	29.3	33.2	18.3	26.3	33.5	32.7	31.7	25.3	30.5	24.0	-	
364	265301	192814	34.5	36.5	-	-	32.6	-	27.1	-	29.9	37.2	43.3	35.5	34.6	26.2	-	
373	258859	196513	20.8	28.4	20.5	26.0	39.0	26.1	-	23.3	25.1	25.5	31.3	24.5	26.4	20.8	-	
375	258798	196371	21.1	17.6	12.0	15.8	-	30.0	-	15.7	22.5	24.6	24.6	-	20.4	16.1	-	
376	258765	196368	33.5	18.2	26.5	27.2	25.2	-	-	19.1	22.3	25.2	27.2	20.5	24.5	19.3	-	
377	258763	196317	28.5	27.2	23.9	-	25.1	27.8	-	23.6	29.7	30.6	30.5	23.2	27.0	21.3	-	
385	267001	198231	33.1	18.2	22.7	29.4	19.2	19.1	13.2	17.5	21.2	-	23.9	21.4	21.7	17.1	-	
386	266698	195334	-	-	21.1	24.3	19.4	22.9	22.2	21.2	26.8	25.5	28.7	29.9	24.2	19.1	-	
388	267964	193076	37.5	20.6	18.3	14.6	11.0	16.4	10.0	11.9	13.6	27.6	21.1	18.2	18.4	14.5	-	
390	267974	193132	31.6		23.5	26.7	24.3	22.3	24.1	29.1	29.3	32.6	37.3	31.4	28.4	22.3	-	
391	259467	198509	21.3	18.5	25.6	26.7	21.2	26.0	-	22.1	26.2	27.3	28.5	25.6	24.5	19.3	-	
394	262445	192645	22.2	16.5	7.4	13.5	-	-	-	11.2	17.8	15.7	22.8	13.0	15.6	12.3	-	
396	262370	192609	21.4	18.0	14.1	13.9	12.2	-	9.7	10.1	15.9	12.1	20.2	14.6	14.7	11.6	-	
398	265584	197442	36.2	12.0	18.0	19.5	13.7	15.1	12.8	13.1	16.4	12.6	18.9	13.1	16.8	13.2	-	
399	265224	197412	32.7	21.9	-	29.2	-	25.4	-	23.6	31.1	29.9	31.2	22.2	27.5	21.6	-	
401	265243	197312	40.5	26.3	19.4	28.0	22.5	23.1	-	22.0	-	-	27.0	17.3	25.1	19.8	-	
403	265115	192895	30.4	21.6	30.9	35.5	27.4	33.2	24.4	-	37.3	-	22.0	32.2	29.5	23.2	-	
404	261713	199051	48.2	-	-	27.2	23.4	21.8	-	22.3	-	-	25.0	20.5	26.9	20.8	-	
406	265973	195222	28.8	34.4	33.1	36.5	0.7	36.9	31.0	30.9	-	31.6	37.4	41.7	31.2	24.6	-	
407	265539	195664	42.4	23.7	13.5	19.5	16.3	17.5	13.6	14.5	-	12.9	-	16.9	19.1	15.0	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
408	266655	193177	26.1	41.7	31.1	33.4	26.8	26.9	22.5	31.6	33.5	36.0	42.4	-	32.0	25.2	-	
412	258957	196766	30.1	24.6	25.3	12.3	22.8	16.9	-	19.9	26.9	20.6	23.2	-	22.3	17.5	-	
413	258950	196721	34.0	30.5	19.0	30.3	22.9	23.2	-	-	21.6	29.1	20.2	-	25.6	20.2	-	
415	270242	197671	24.6	-	26.0	25.5	18.2	21.8	21.5	27.2	31.2	27.8	22.6	25.6	24.7	19.5	-	
416	270487	197805	28.7	-	16.7	16.2	11.8	15.1	-	-	-	-	-	-	17.7	13.4	-	
417	270485	197705	24.9	25.3	23.2	22.0	15.5	19.7	-	-	-	-	-	-	21.8	15.7	-	
418	270449	197600	28.0	22.6	19.7	23.2	17.3	17.7	-	-	-	-	-	-	21.4	15.5	-	
419	270475	197714	23.7	20.1	19.9		17.8	17.4	-	-	-	-	-	-	19.8	14.3	-	
422	260149	195425	17.9	19.1	14.0	18.1	13.5	13.9	-	15.2	15.5	20.4	22.5	15.4	16.9	13.3	-	
423	260136	195411	30.4	14.1	10.3	15.5	11.9	9.7	-	-	-	-	-	-	15.3	11.1	-	
424	265536	194752	28.0	26.8	19.4	20.2	15.2	-	13.1	16.2	19.1	29.0	-	20.8	20.8	16.4	-	
425	265509	194748	51.1	25.9	26.6	27.5	23.0	-	15.7	28.4	26.5	19.4	33.4	24.5	27.4	21.6	-	
426	265960	193609	40.0	29.1	25.1	40.5	38.7	30.9	28.7	-	33.7	37.0	49.7	34.5	35.3	27.8	-	
427	261994	197782	20.2	25.0		45.8	40.8	42.5	-	-	27.3	52.8	42.2	22.2	35.4	27.9	-	
428	261518	198929	26.3	18.1	10.7	14.6	10.9	12.9	-	-	-	9.2	16.9	13.1	14.7	11.6	-	
429	258827	196293	19.1	26.1	14.4	21.9	20.1	16.2	-	13.7	17.9	30.5	17.9	18.5	19.7	15.5	-	
430	263930	196601	20.7	3.2	11.1	13.9	9.9	11.1	-	-	-	-	-	-	11.7	8.4	-	
431	264029	196852	25.0	14.3	11.1	13.0	10.4	13.7	-	-	-	-	-	-	14.6	10.5	-	
432	265345	195645	-	17.6	18.0	16.8	14.3	13.9	8.2	13.2	15.5	19.7	18.9	15.4	15.6	12.3	-	
434	265530	195679	24.8	30.2	25.6	26.8	21.2	21.2	13.7	19.9	20.1	23.5	-	-	22.7	17.9	-	
435	263104	194457	21.5	21.2	14.4	18.7	17.4	-	-	13.2	17.5	21.0	20.8	11.3	17.7	13.9	-	
436	263005	194476	36.2	12.2	18.0	18.2	13.2	15.5	-	-	-	-	-	-	18.9	13.6	-	
437	267986	193103	28.6	16.4	29.2	24.8	20.4	22.3	20.6	21.1	27.9	19.9	32.9	24.1	24.0	18.9	-	
438	266541	195495	22.0	24.6	22.7	22.0	18.6	20.0	16.2	19.9	21.9	21.2	16.9	24.4	20.9	16.4	-	
439	262949	193293	21.3	20.7	15.4	18.6	13.5	17.3	14.7	-	-	24.4	22.4	17.7	18.6	14.6	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
440	262905	193293	29.3	16.1	12.8	20.7	15.9	15.4	11.6	14.7	21.0	21.6	18.0	14.2	17.6	13.9	-	
441	262903	193379	28.9	27.5	19.2	21.6	19.5	-	17.7	21.2	21.3	24.6	26.8	19.2	22.5	17.7	-	
442	263004	193454	27.3	14.8	19.6	19.1	17.8	-	18.7	20.2	22.2	23.6	22.5	22.1	20.7	16.3	-	
444	262991	193759	29.7	21.5	18.6	28.7	27.0	24.5	20.7	24.8	26.5	23.8	29.8	27.4	25.3	19.9	-	
445	262879	193408	32.4	22.3	30.9	31.3	23.1	31.9	-	24.0	28.7	30.2	25.5	23.4	27.6	21.7	-	
446	262838	193374	22.3	21.3	31.2	35.0	28.8	-	19.4	24.2	29.7	31.1	28.3	-	27.1	21.4	-	
447	262709	193311	34.4	11.8	16.4	18.7	14.3	-	10.8	13.0	17.8	20.2	17.9	12.1	17.0	13.4	-	
448	262788	1932813	30.3	19.3	27.4	25.8	23.8	-	19.4	21.2	24.7	23.8	29.8	24.2	24.5	19.3	-	
449	262761	193228	31.5	31.7	21.7	28.5	22.3	-	19.1	19.5	25.1	21.3	29.1	22.3	24.7	19.5	-	
450	262812	193293	27.8	22.0	23.2	31.4	25.4	-	18.4	24.8	31.1	27.4	23.3	22.8	25.2	19.9	-	
451	261220	188184	19.8	14.6	11.9	21.6	17.2	19.9	13.3	18.4	18.9	20.0	21.3	16.4	17.8	14.0	-	
452	261163	188175	13.6	13.7	12.6	15.6	14.9	-	10.8	14.4	15.2	13.0	15.3	13.9	13.9	11.0	-	
453	261221	188298	30.1	8.9	7.1	8.4	8.1	-	5.0	6.3	7.4	8.1	10.7	6.9	9.7	7.7	-	
454	265548	195679	35.2	24.4	23.0	23.4	17.9	17.6	-	32.1	21.4	23.0	27.2	19.0	24.0	18.9	-	
455	265516	195729	36.1	31.8	28.5	30.4	24.4	20.3	12.8	-	25.7	27.2		24.5	26.2	20.6	-	
458	262941	193459	56.7	30.6	22.4	27.9	25.4		17.9	25.2	21.4	29.1	28.7	23.9	28.1	22.1	-	
459	267019	197407	30.8	54.2	53.0	52.3	46.8	45.4	40.3	41.4	50.8	50.9	44.0	41.5	46.0	36.2	19.7	Receptor is located more than 20m further from the kerb than the monitor – This result should be treated with caution.
460	262084	196454	-	15.7	17.1	23.5	17.9	19.9	-	15.7	22.0	23.6	25.9	21.3	20.3	16.0	-	
461	261442	189105	24.9	-	-	18.3	-	14.9	-	-	-	-	-	-	19.4	13.6	-	
462	258849	197842	-	16.8	14.0	-	13.7	-	12.7	12.7	17.0	20.2	19.8	17.5	16.0	12.6	-	
463	260153	203107	-	-	-	-	-	-	12.9	14.8	19.6	23.6	25.1	19.6	19.3	17.0	-	
464	259597	203360	-	-	-	-	-	-	-	15.1	17.6	21.0	16.8	17.9	17.7	14.4	-	
466	259225	203640	-	-	-	-	-	-	10.9	12.0	-	12.9	20.7	17.1	14.7	12.8	-	
467	259074	203725	-	-	-	-	-	-	9.4	10.9	-	-	-	14.6	11.6	13.5	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.79)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
468	258951	203791	-	-	-	-	-	-	11.6	7.7	-	15.6	18.3	16.3	13.9	12.1	-	
469	259231	203862	-	-	-	-	-	-	8.0	7.0	11.5	13.1	15.8	11.1	11.1	9.8	-	
470	259552	203924	-	-	-	-	-	-	22.7	8.4	-	12.2	-	10.4	13.4	13.5	-	
471	259646	203555	-	-	-	-	-	-	7.4	4.6	-	12.2	12.3	10.2	9.3	8.2	-	
472	259887	203438	-	-	-	-	-	-	5.1	-	6.9	8.2	8.4	9.4	7.6	6.4	-	

☒ **All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table A.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Swansea Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m^3 are shown in **bold**.

NO₂ annual means exceeding 60µg/m^3, 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

5.5 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.

5.6 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 B.1.

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

Table B.1 – 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 (NO_2)	$200 \mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO_2)	$40 \mu g/m^3$	Annual mean	31.12.2005
Particulate Matter (PM_{10})	$50 \mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	$40 \mu g/m^3$	Annual mean	31.12.2010
Sulphur dioxide (SO_2)	$350 \mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	$125 \mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	$266 \mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	$16.25 \mu g/m^3$	Running annual mean	31.12.2003
Benzene	$5 \mu g/m^3$	Annual mean	31 12 2010
1,3 Butadiene	$2.25 \mu g/m^3$	Running annual mean	31.12.2003
Carbon Monoxide	$10.0 mg/m^3$	Maximum Daily Running 8-Hour mean	31.12.2003
Lead	$0.25 \mu g/m^3$	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

5.7 QA/QC of Diffusion Tube Monitoring

Swansea Council employs the services of SOCOTEC, formerly ESG Didcot for the diffusion tube network. The method used is 50% TEA in acetone and the National Bias factor for 2023 was 0.78 (spreadsheet version 09/24).

Diffusion Tube Annualisation

The LAQM.TG(22) states that annualisation is required for any site which has a data capture of less than 75%, but greater than 25%. Annualisation was completed using version 4 of the 'Diffusion Tube Data Processing Tool'. The following diffusion tubes required annualisation: 35, 40, 61, 118, 180, 182, 212, 295, 364, 404, 416, 417, 418, 419, 423, 427, 430, 431, 436, 461, 463, 464, 466, 467, 468, 469, 470, 471 and 472. Table C.2 presents the annualisation summary.

Three continuous background monitoring locations within a 50 mile radius were used. to annualise the data:

- Cardiff Centre;
- Newport; and,
- Narberth.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Swansea Council have applied a local bias adjustment factor of 0.79 to the 2023 monitoring data. A summary of bias adjustment factors used by Swansea Council over the past five years is presented in Table C.1.

Swansea Council has been carrying out a local tri-location study for many years. The locally derived bias factor has been utilised in the reports since it began and so, for consistency of approach, the factor will continue to be used.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	0.79
2022	Local	-	0.72
2021	Local	-	0.78
2020	Local	-	0.78
2019	Local	-	0.72

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table C.5.

The annual mean NO_2 concentration was corrected for distance to relevant exposure at one diffusion tube site (459). This diffusion tube was subject to the fall-off with distance correction due to the annual mean concentrations greater than 36 µg/m^3 and the site not located at a point of relevant exposure. After distance correction calculations, 459 reported concentrations below 10% of the NO_2 AQS of 19.7 µg/m^3.

5.8 QA/QC of Automatic Monitoring

Swansea AURN

This calibration data is automatically logged as invalid by the analyser. In addition, officers from this authority performed routine fortnightly manual calibrations. The analyser is subjected zero cylinder generated zero air to assess the analyser's response to zero air. The analyser is also subjected to traceable calibration gases at a known concentration and the response of the analyser recorded. All manual calibration data is then forwarded to Ricardo to perform data management procedures. The data is then further subjected to full network QA/QC procedure's undertaken by Ricardo on behalf of the Department of Environment, Food and Rural Affairs (DEFRA). The station is serviced and maintained twice

yearly by Enviro Technology Services Plc. In addition, the authority has a 5 day call out response for any on-site equipment problems with Enviro Technology Services Plc. All equipment on site is fully audited twice yearly by Ricardo together with the calibration gases stored on site.

Swansea Morriston Roadside

This calibration data is automatically logged as invalid by the data-logger. In addition, officers from this authority perform routine fortnightly manual calibrations. The analysers are subjected to scrubbed internal generated zero air to assess the analyser's response to zero air. The analysers are also subjected to traceable calibration gases at a known concentration and the response of the analyser and data-logger is recorded. All manual calibration data is recorded as invalid data by the data-logger and is removed from any subsequent analysis.

The station is operated and calibrated in accordance with the UK National Network Local Site Operators manual. The station is serviced and maintained twice yearly by Enviro Technology Services Ltd. In addition, the authority has a 5 day call out response for any on-site equipment problems with Enviro Technology Services Plc. Since the awarding of the contract by the Welsh Assembly Government to Ricardo (formally AEA Energy & Environment) to run the Welsh Air Quality Forum in April 2004, all equipment on site will be fully audited yearly by Ricardo AEA together with the calibration gases stored on site. The L40 span gas cylinders are replaced on a regular basis and are to a certified and traceable standard.

Swansea Cwm Level Park

The API gas analysers have been configured so that a daily automatic calibration is carried out (between 00:30 hours and 01:00 hours). This calibration data is automatically logged as invalid by the data-logger. In addition, officers from this authority perform routine monthly manual calibrations. The analysers are subjected to scrubbed internal generated zero air to assess the analyser's response to zero air.

The NOx analyser is subjected to traceable calibration gas at a known concentration and the response of the analyser and data-logger is recorded. The internal span calibration is used with the ozone analyser. All manual calibration data is recorded as invalid data by the data-logger and is removed from any subsequent analysis.

The station is operated and calibrated in accordance with the UK National Network Local Site Operators manual. The station is serviced and maintained twice yearly by Enviro Technology Services Ltd. In addition, the authority has a 5 day call out response for any on-

site equipment problems with Enviro Technology Services Plc. Since the awarding of the contract by the Welsh Assembly Government to Ricardo to run the Welsh Air Quality Forum in April 2004, all equipment on site will be fully audited yearly by Ricardo AEA, together with an audit of the calibration gases stored on site. Data is re-scaled by Ricardo following the authority supplying routine monthly calibration reports. The L10 span gas cylinders (NO) will be replaced on a regular basis and are to a certified and traceable standard.

Swansea Hafod DOAS

- QA/QC for NO, Nitrogen Dioxide and Ozone

If (C1 >0 and C3 > 10) then result: = C1 else result: = C0

C0 – Null value

C1 – Pollutant Concentration

C2 – Standard Deviation of pollutant

C3 – Light Level of pollutant

- QA/QC for Benzene

If (C1 >0 and C3 > 40) then result: = C1 else result: = C0

C0 – Null value

C1 – Pollutant Concentration

C2 – Standard Deviation of pollutant

C3 – Light Level of pollutant

It should be noted that the data presented here represents the spatial average over the whole of the 250-meter measurement path and not a "point measurement" as seen within other "traditional or conventional" monitoring equipment/locations. It should also be noted that the DOAS methodology of monitoring does not comply with the EU Directive methods of measurement (chemiluminescent for NO_2, UV fluorescence for SO_2 etc.) at present but the system has achieved MCERTS certification and TUV certification.

The station is now subject to Xenon lamp changes on a quarterly basis, with zero and span calibrations now taking place on an annual basis. These works are undertaken by Enviro Technology Plc, the UK distributor for Opsis of Sweden.

Swansea St Thomas DOAS

All individual measurement points that have not met the QA/QC conditions (detailed below) are replaced with null values within the new dataset. The user can then compile 5 minute means from the validated dataset and undertake analysis.

- QA/QC for SO_2, Nitrogen Dioxide and Ozone

If (C1 >0 and C3 > 10) then result: = C1 else result: = C0

C0 – Null value

C1 – Pollutant Concentration

C2 – Standard Deviation of pollutant

C3 – Light Level of pollutant

- QA/QC for Benzene

If (C1 >0 and C3 > 40) then result: = C1 else result: = C0

C0 – Null value

C1 – Pollutant Concentration

C2 – Standard Deviation of pollutant

C3 – Light Level of pollutant

The station is subject to Xenon lamp changes on a 6 monthly basis with zero and span calibrations now taking place on a yearly basis. These works are undertaken by Enviro Technology Plc, the UK distributor for Opsis of Sweden. The frequency of lamp change differs to that of the Hafod DOAS as this station does not measure the NO channel and as such does not suffer the drop off/degradation in lamp intensity during the 5th and 6th months of operation. Changing the Xenon lamps every 6 months does not invoke any data issue concerns at this site.

Swansea Station Court High Street

In addition, officers from this authority perform routine fortnightly manual calibrations. The analyser is subjected to scrubbed internal generated zero air to assess the analyser's response to zero air. The NO_x analyser is subjected to traceable calibration gas at a known concentration and the response of the analyser and data-logger is recorded. All manual calibration data is recorded as invalid data by the data-logger and is removed from any subsequent analysis.

The station is operated and calibrated in accordance with the UK National Network Local Site Operators manual. The station is serviced and maintained twice yearly by Enviro Technology Services Ltd. In addition, the authority has a 5 day call out response for any on-site equipment problems with Enviro Technology Services Plc. At present, the data is collected by the Welsh Air Quality Forum, but it does not form part of the QA/QC contract with Ricardo. The L10 span gas cylinder (NO) will be replaced on a regular basis and is to a certified and traceable standard.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The MetOne PM_{10} units are indicative measurements, and no adjustment factors have been applied.

The Bam1020 PM_{10} data reported in the document has been ratified as part of the AURN network and so Swansea Council has not applied any factors to the dataset.

The Bam1020 $PM_{2.5}$ data is reported from a SMART Bam and so no offset is applied.

Automatic Monitoring Annualisation

The LAQM.TG(22) states that annualisation is required for any site which has a data capture of less than 75%, but greater than 25%. Three automatic monitoring sites recorded below the acceptable data capture in 2023 for PM_{10}, therefore required annualisation. Annualisation was carried out for the annual mean PM_{10} at Fforestfach, Sketty and Westway EBAMs (with data captures of 40.9%, 14.3% and 34.7, respectively). Three continuous background monitoring locations were used, the three locations within a 50 mile radius were selected to annualise the data:

- Cardiff Centre;
- Newport; and
- Narberth

These continuous background monitoring sites were applicable to use as they all had >85% data capture and therefore could be used for annualisation. Table C.3 presents the annualisation summary.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Swansea Council required distance correction during 2023.

Table C.2 – Annualisation Summary (concentrations presented in µg/m³)

Site ID	Annualisation Factor Cardiff Centre	Annualisation Factor Newport	Annualisation Factor Narberth	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
35	1.1800	1.1902	1.1891	1.1865	26.2	31.1	
40	1.0240	0.9977	1.0014	1.0077	19.5	19.6	
61	0.9328	0.9820	0.9750	0.9633	35.0	33.7	
118	0.8884	0.8626	0.8658	0.8723	25.6	22.4	
180	0.9683	0.9298	0.9333	0.9438	25.8	24.4	
182	0.9683	0.9298	0.9333	0.9438	22.0	20.8	
212	0.9683	0.9298	0.9333	0.9438	22.3	21.1	
295	0.9329	0.9442	0.9403	0.9391	25.0	23.5	
364	0.9288	0.9341	0.9318	0.9315	34.6	32.2	
404	0.9921	0.9910	0.9885	0.9905	26.9	26.7	
416	1.0245	0.9985	1.0022	1.0084	17.7	17.8	
417	0.9683	0.9298	0.9333	0.9438	21.8	20.5	
418	0.9683	0.9298	0.9333	0.9438	21.4	20.2	
419	0.9714	0.9255	0.9289	0.9419	19.8	18.6	
423	0.9683	0.9298	0.9333	0.9438	15.3	14.5	
430	0.9683	0.9298	0.9333	0.9438	14.6	13.8	
431	0.9683	0.9298	0.9333	0.9438	18.9	17.8	
436	0.9721	0.9374	0.9408	0.9501	19.4	18.4	
461	1.0330	1.0815	1.0780	1.0642	19.3	20.5	
463	0.9542	0.9990	0.9940	0.9824	17.7	17.4	
464	1.0282	1.0810	1.0762	1.0618	14.7	15.6	
466	1.3356	1.4178	1.4093	1.3876	11.6	16.1	
467	1.0282	1.0810	1.0762	1.0618	13.9	14.8	
468	1.0330	1.0815	1.0780	1.0642	11.1	11.8	
469	1.2181	1.2664	1.2599	1.2481	13.4	16.8	
470	1.0282	1.0810	1.0762	1.0618	9.3	9.9	
471	0.9825	1.0495	1.0442	1.0254	7.6	7.8	
472	1.1800	1.1902	1.1891	1.1865	26.2	31.1	

Table C.3 – Annualisation Summary for Automatic Monitors for Annual Mean PM₁₀

Site ID	Annualisation Factor Cardiff Centre	Annualisation Factor Newport	Annualisation Factor Narberth	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
CM6	1.1656	1.1567	1.2187	1.1804	10.6	12.6	
CM8	1.1550	1.1611	1.1810	1.1657	9.3	10.9	
CM9	1.1552	1.1364	1.2404	1.1773	8.3	9.7	

Table C.4 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	11	8
Bias Factor A	0.71 (0.66 - 0.78)	0.88 (0.78 - 1.03)
Bias Factor B	41% (29% - 52%)	13% (-3% - 29%)
Diffusion Tube Mean (µg/m³)	24.4	13.1
Mean CV (Precision)	5.8%	6.2%
Automatic Mean (µg/m³)	17.3	11.6
Data Capture	98%	92%
Adjusted Tube Mean (µg/m³)	17 (16 - 19)	12 (10 - 14)

Notes:

A combined local bias adjustment factor of 0.79 has been used to bias adjust the 2023 diffusion tube results.

Table C.5 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
459	1.9	30.8	36.2	10.7	19.7	

Appendix D: AQMA Boundary Maps

Figure D.1 – Swansea AQMA 2010

Swansea Air Quality Management Area 2010
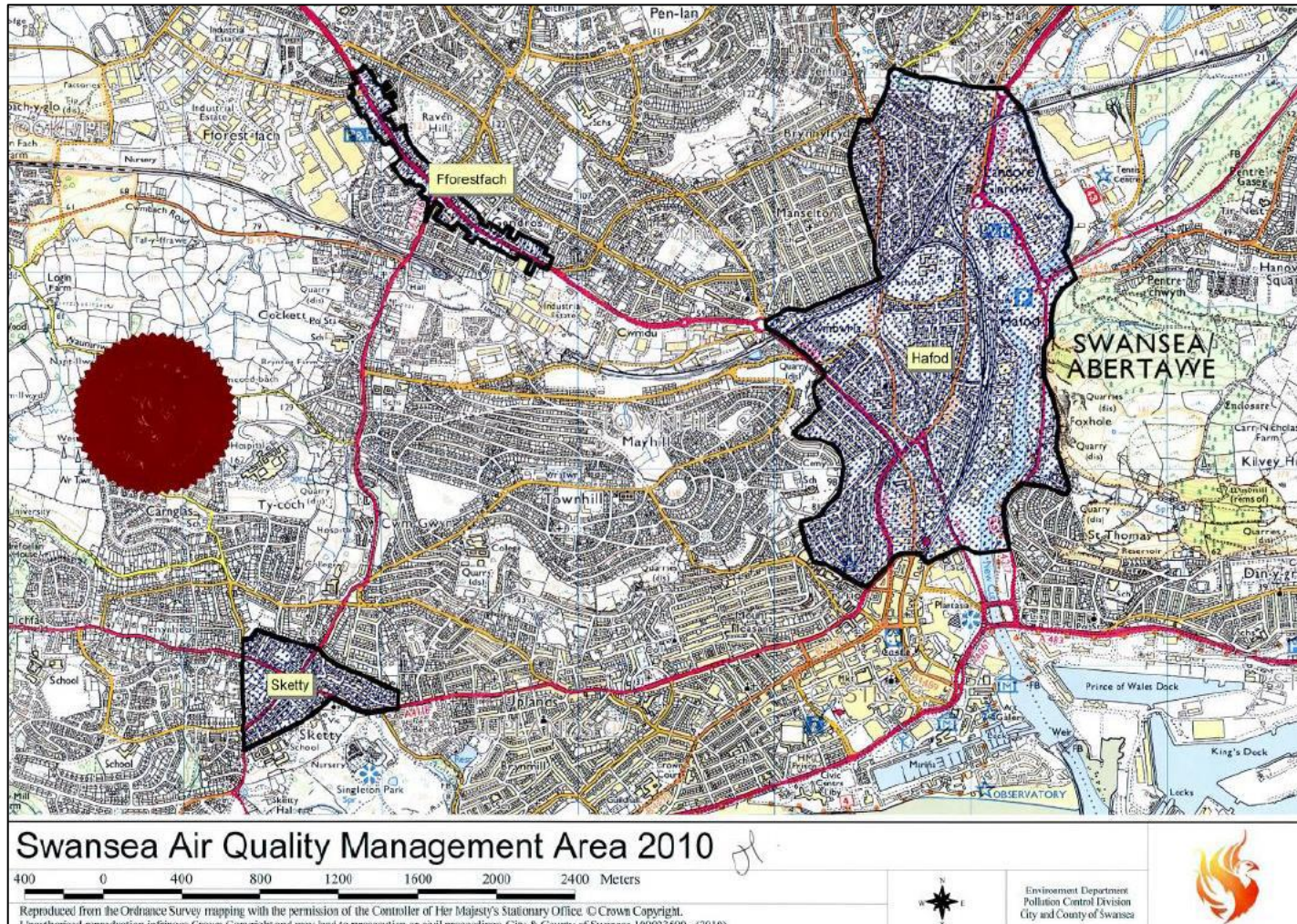
Glossary of Terms

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