



CYNGOR SIR
YNYS MÔN
ISLE OF ANGLESEY
COUNTY COUNCIL



North Wales Authorities Collaborative Project 2023 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: September 2023

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Executive Summary: Air Quality in Our Area

Air Quality in North Wales

Part IV of the Environment Act 1995 places a statutory duty on local authorities to review and assess the air quality within their area and take account of Government Guidance when undertaking such work. This Annual Progress Report is a requirement of the eighth Round of Review and Assessment and is a requirement for all local authorities. This Progress Report has been undertaken in accordance with the Technical Guidance LAQM.TG (22) and associated tools. It covers the six local authorities which encompass the North Wales region (The North Wales Authorities). The local authorities are as follows:

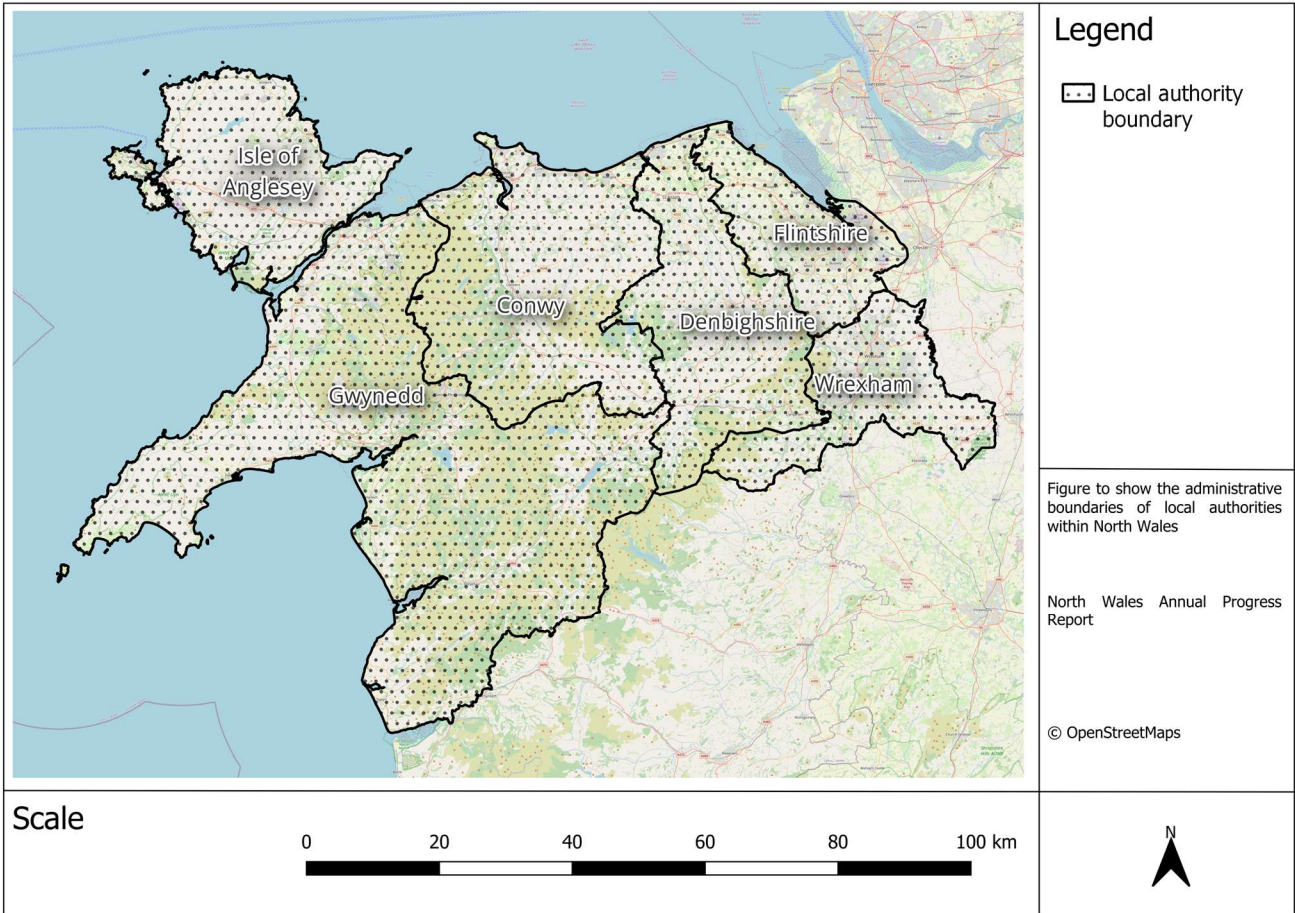
- Isle of Anglesey County Council (**IACC**);
- Denbighshire County Council (**DCC**);
- Gwynedd Council (**GC**);
- Wrexham County Borough Council (**WCBC**);
- Conwy County Borough Council (**CCBC**); and
- Flintshire County Council (**FCC**).

The North Wales Authorities have not declared any Air Quality Management Areas (AQMAs) and as a result, have not published any Action Plans. Air quality monitoring is undertaken by all six local authorities with a total of three automatic monitoring stations measuring nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) concentrations and 162 NO₂ diffusion tube monitoring sites, located at key locations within town centres and along main transport links.

Monitored concentrations are compared with Air Quality Objectives (AQO) as detailed in Appendix B. In 2022 there was no exceedance of the NO₂ annual mean AQO of 40 µg/m³. Having considered each pollutant and reviewed the new developments approved in 2022, it can be concluded that there is no requirement for any of the six North Wales local authorities to undertake a detailed assessment.

The Figure below presents the administrative boundaries of the local authorities in North Wales.

Map of local authority boundaries within North Wales



Actions to Improve Air Quality

There is currently no designated Air Quality Management Areas (AQMAs) in North Wales, and therefore no Air Quality Action Plans (AQAPs) have been published.

As detailed in Section 4, air quality is considered in the wider context in the following adopted local policies:

IACC and **GC** have adopted a joint Local Development Plan which provides the land use strategy for the next 15 years. The plan addresses the need to maintain good air quality in the area and ensure new development does not cause adverse impacts.

IACC Isle of Anglesey Electric Vehicle Charging Plan 2022 to 2030 responds to the Welsh Government's 'Electric vehicle charging strategy for Wales' and acts as an essential component of **IACC's** commitments to reduce its carbon footprint.

CCBC Local Development Plan (LDP) 2007-2022 includes strategic policies (NTE/1) to ensure natural resources including air quality are protected.

DCC Local Development Plan 2006-2021 was adopted in 2013 and includes a commitment to avoid reaching critical air quality levels.

The most visible air quality scheme in **WCBC** is the speed restriction between junctions 5 and 6 of the A483. Whereas, **WCBC** does monitor the air quality along this stretch of road, the results for which are included within this report, the implementation and maintenance of this scheme is by the North and Mid Wales Trunk Road Agency.

In terms of monitoring, a small number of new monitoring sites were introduced in North Wales.

There were no monitoring sites introduced in **IACC**.

There were three new monitoring sites introduced in **DCC**. These include DBR061, 062, and 063.

There were no new monitoring sites introduced in **GC**

There were no new monitoring sites introduced in **WCBC**.

There were three new monitoring sites introduced in **CCBC**. These include DT/CCBC057, 058 and 059. These three sites were introduced to address the concerns raised by members of the public regarding air quality in Deganwy and Penmaenmawr.

There were no new monitoring sites introduced in **FCC**

Local Priorities and Challenges

The North Wales authorities will continue to maintain their monitoring programmes and ensure new monitoring sites are installed as required. Each year new monitoring sites are introduced primarily in road traffic locations where concerns have been expressed by members of the public, locally elected members or organisations.

How to Get Involved

Further information on air quality in North Wales is available at: [Link to Welsh air quality website](#)

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in North Wales	i
Actions to Improve Air Quality	iii
Local Priorities and Challenges	iv
How to Get Involved	iv
1 Actions to Improve Air Quality	9
Previous Work in Relation to Air Quality	9
Air Quality Management Areas	11
2 Air Quality Monitoring Data and Comparison with Air Quality Objectives	13
Summary of Monitoring Undertaken in 2022.....	13
2.1.1 Automatic Monitoring Sites	13
2.1.2 Non-Automating Monitoring Sites	13
2022 Air Quality Monitoring Results.....	47
Comparison of 2022 Monitoring Results with Previous Years and the Air Quality Objectives	70
2.1.3 Nitrogen Dioxide (NO ₂)	70
2.1.4 Particulate Matter (PM ₁₀)	74
2.1.5 Particulate Matter (PM _{2.5}).....	75
Summary of Compliance with AQS Objectives as of 2022.....	75
3 New Local Developments	76
Road Traffic Sources (and Other Transport).....	76
Industrial / Fugitive or Uncontrolled Sources / Commercial Sources.....	76
Other Sources	77
New planning applications	77
Updates to planning applications submitted in 2020	78
4 Policies and Strategies Affecting Airborne Pollution	79
Local / Regional Air Quality Strategy	79
Air Quality Planning Policies.....	79
Local Transport Plans and Strategies	80
Active Travel Plans and Strategies	82
Local Authorities Well-being Objectives.....	82
Green Infrastructure Plans and Strategies.....	83
Climate Change Strategies.....	83
5 Conclusion and Proposed Actions	84
Conclusions from New Monitoring Data.....	84
Conclusions relating to New Local Developments	84
Other Conclusions.....	84
Proposed Actions	84

References	86
Appendices	88
Appendix A: Quality Assurance / Quality Control (QA/QC) Data.....	89
Appendix B: A Summary of Local Air Quality Management	101
Purpose of an Annual Progress Report	101
Air Quality Objectives	101
Appendix C: Air Quality Monitoring Data QA/QC.....	103
QA/QC of Diffusion Tube Monitoring	103
Diffusion Tube Annualisation.....	103
Diffusion Tube Bias Adjustment Factors - National.....	104
Diffusion Tube Bias Adjustment Factors – Local.....	104
NO ₂ Fall-off with Distance from the Road.....	107
QA/QC of Automatic Monitoring	107
NO _x and SO ₂ Monitoring	107
PM ₁₀ and PM _{2.5} Monitoring	108
NO ₂ Fall-off with Distance from the Road.....	108
Glossary of Terms	110

Tables

Table 1.1 – Summary of Previous Rounds of Review and Assessment in North Wales.....	9
Table 2.1 – Details of Automatic Monitoring Sites	14
Table 2.2 – Details of Non-Automatic Monitoring Sites.....	16
Table 2.3 – Annual Mean NO ₂ Monitoring Results (µg/m ³).....	47
Table 2.4 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	64
Table 2.5 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³)	65
Table 2.6 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	67
Table 2.7 – PM _{2.5} Monitoring Results (µg/m ³).....	68

Figures

Figure 2.1 – Map(s) of Automatic Monitoring Sites- WCBC	15
Figure 2.2 – Map(s) of Non-Automatic Monitoring Sites – IACC.....	33
Figure 2.3 – Map(s) of Non-Automatic Monitoring Sites – DCC North.....	34
Figure 2.4 – Map(s) of Non-Automatic Monitoring Sites – DCC Denbigh	35
Figure 2.5 – Map(s) of Non-Automatic Monitoring Sites – DCC Ruthin	36
Figure 2.6 – Map(s) of Non-Automatic Monitoring Sites – DCC Llangollen	37
Figure 2.7 – Map(s) of Non-Automatic Monitoring Sites – GC North	38
Figure 2.8 – Map(s) of Non-Automatic Monitoring Sites – GC South East	39
Figure 2.9 – Map(s) of Non-Automatic Monitoring Sites – GC South West	40
Figure 2.10 – Map(s) of Non-Automatic Monitoring Sites – WCBC North.....	41
Figure 2.11 – Map(s) of Non-Automatic Monitoring Sites – WCBC South	42
Figure 2.12 – Map(s) of Non-Automatic Monitoring Sites – CCBC	43
Figure 2.13 – Map(s) of Non-Automatic Monitoring Sites – FCC North West	44
Figure 2.14 – Map(s) of Non-Automatic Monitoring Sites – FCC North East.....	45
Figure 2.15 – Map(s) of Non-Automatic Monitoring Sites – FCC South.....	46
Figure 2.16 – Trends in Annual Mean NO ₂ Concentrations – IACC	57
Figure 2.17 – Trends in Annual Mean NO ₂ Concentrations – DCC	58
Figure 2.18 – Trends in Annual Mean NO ₂ Concentrations – GC.....	59
Figure 2.19 – Trends in Annual Mean NO ₂ Concentrations – WCBC	60
Figure 2.20 – Trends in Annual Mean NO ₂ Concentrations – CCBC	61
Figure 2.21 – Trends in Annual Mean NO ₂ Concentrations – FCC 1/2.....	62

Figure 2.22 – Trends in Annual Mean NO₂ Concentrations – FCC 2/2.....63

Figure 2.23 – Trends in Annual Mean PM₁₀ Concentrations.....66

Figure 2.24 – Trends in Annual Mean PM_{2.5} Concentrations69

1 Actions to Improve Air Quality

Previous Work in Relation to Air Quality

This Progress Report has been undertaken in accordance with the Technical Guidance LAQM.TG (16) and associated tools. It has been produced collaboratively between the six local authorities which encompass the North Wales region (The North Wales Authorities). The local authorities are Isle of Anglesey County Council (**IACC**); Denbighshire County Council (**DCC**); Gwynedd Council (**GC**); Wrexham County Borough Council (**WCBC**); Conwy County Borough Council (**CCBC**); and Flintshire County Council (**FCC**).

Previous rounds of review and assessment have identified areas in North Wales where there are potential exceedances of the various Air Quality Objectives (AQOs). Detailed assessments have been carried out when exceedances have been reported to evaluate whether there is a need to declare an Air Quality Management Area (AQMA). There are currently no AQMAs declared in North Wales.

Table 1.1 – Summary of Previous Rounds of Review and Assessment in North Wales

Year	Report Type	Detailed Assessment Recommended	AQMA Declared
2003	Updating and Screening Assessment	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2004	Progress Report	Detailed assessment carried out for PM ₁₀ and NO ₂ close to the A494 in FCC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2005	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2006	Updating and Screening Assessment	Detailed assessment required at Trimm Rock and Aberdo Limestone Quarries and at Roadrunner Waste Transfer Station in FCC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.

Year	Report Type	Detailed Assessment Recommended	AQMA Declared
2007	Progress Report	Detailed assessment carried out for sulphur dioxide (SO ₂) 15- minute mean objective for Penrhos Coastal Park in IACC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2008	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2009	Updating and Screening Assessment	Detailed assessment no longer required at Trimm Rock and Aberdo Limestone Quarries and at Roadrunner Waste Transfer Station in FCC. Detailed assessment carried out for SO ₂ 15- minute mean objective for Holyhead Railway Station in IACC. Detailed assessment required for SO ₂ as a result of steam trains in GC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2010	Progress Report	Detailed assessment required for the area around Wrexham Road in Cefn Y Bedd in FCC. Detailed assessment carried out for SO ₂ as a result of steam trains in GC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2011	Progress Report	Detailed assessment carried out for nitrogen dioxide (NO ₂) along Vale Street, Denbigh in DCC.	No AQMA declared in any Local Authority Area.
2012	Updating and Screening Assessment	Detailed assessment no longer required for the area around Wrexham Road in Cefn Y Bedd in FCC. Detailed assessment carried out for the junction of the A5119 and A494 in Mold in FCC. No other detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.

Year	Report Type	Detailed Assessment Recommended	AQMA Declared
2013	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2014	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2015	Updating and Screening Assessment	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2016	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2017	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2018	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2019	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2020	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2021	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.
2022	Progress Report	No detailed assessments required in any Local Authority Area.	No AQMA declared in any Local Authority Area.

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.

None of the local authorities in North Wales currently have an AQMA and therefore no AQAPs have been published.

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

Summary of Monitoring Undertaken in 2022

2.1.1 Automatic Monitoring Sites

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

WCBC undertook automatic (continuous) monitoring at three sites during 2022. Table 2.1 presents the details of the sites.

Maps showing the location of the monitoring sites are provided in **Error! Reference source not found.** 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

IACC undertook non- automatic (passive) monitoring of NO₂ at 4 sites during 2022. Table 2.2 presents the details of the sites.

DCC undertook non- automatic (passive) monitoring of NO₂ at 29 sites during 2022. Table 2.2 presents the details of the sites.

GC undertook non- automatic (passive) monitoring of NO₂ at 17 sites during 2022. Table 2.2 presents the details of the sites.

WCBC undertook non- automatic (passive) monitoring of NO₂ at 33 sites during 2022. Table 2.2 presents the details of the sites.

CCBC undertook non- automatic (passive) monitoring of NO₂ at 20 sites during 2022. Table 2.2 presents the details of the sites.

FCC undertook non- automatic (passive) monitoring of NO₂ at 59 sites during 2022. Table 2.2 presents the details of the sites.

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)
WCBC											
WCBC 1	Victoria Road AURN	Roadside	N	332865	349909	NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	All continuous (PM: light scattering)	3	20	24	4
WCBC 2	Wrexham Chirk	Urban industrial	N	329318	338300	NO _x , VOC's, PM ₁₀ , PM _{2.5}	All continuous (PM: light scattering)	1.5	10	15	80
WCBC 3	Wrexham Chirk community hospital	Urban Background	N	329329	338992	NO _x , VOC's, PM ₁₀ , PM _{2.5}	All continuous (PM: light scattering)	2	30	40	60

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- WCBC

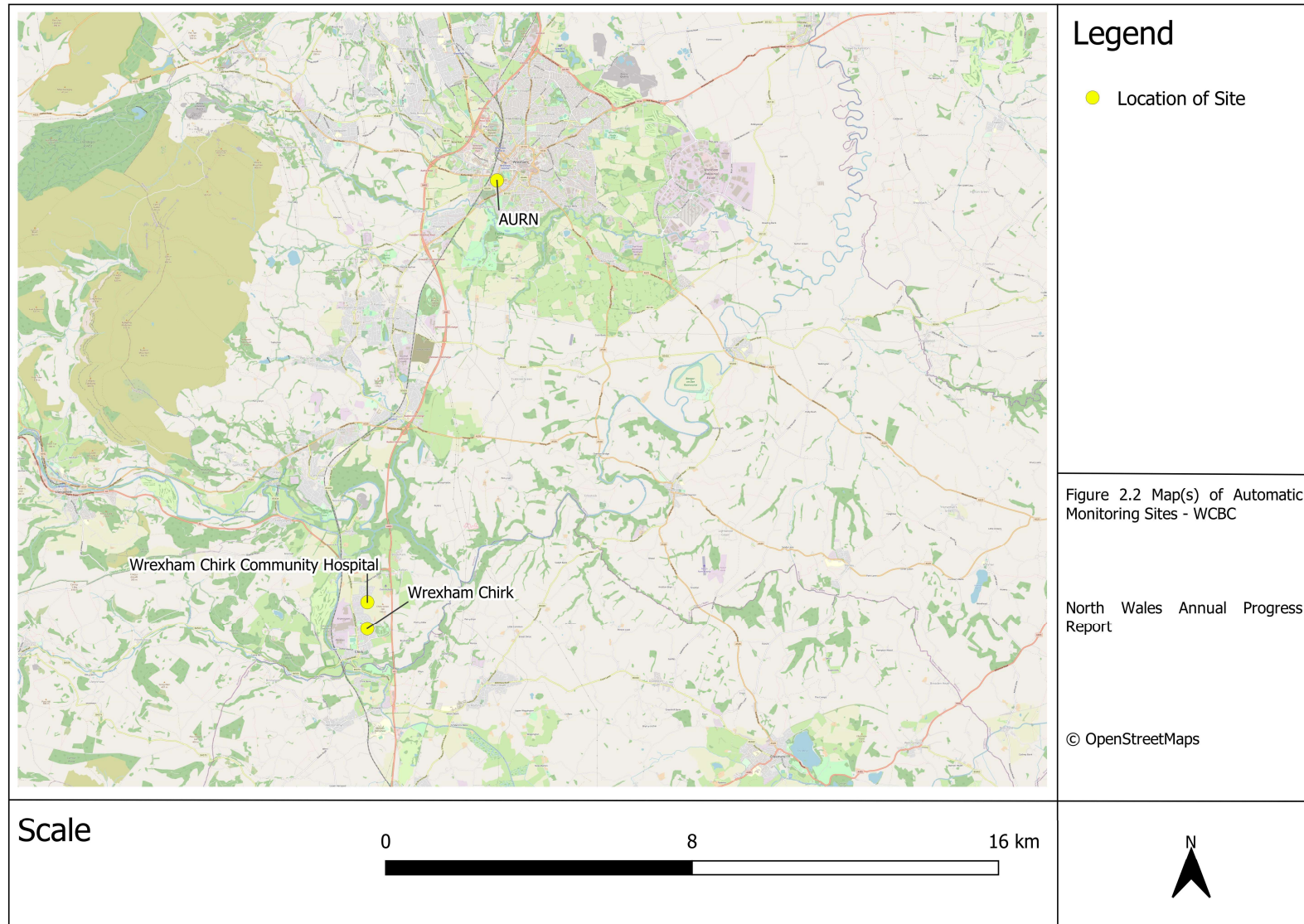


Table 2.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
IACC										
IACC-81	Marine Square, Holyhead	roadside	no	224942	382866	3	No	15	15.7	0.7
IACC-82	Opp. Panton Arms, Pentraeth	roadside	no	252360	378402	3	No	1.3	3.3	2
IACC-83	Llanfairpwll A55 Bridge	roadside	no	253057	372313	2	No	13	14	1
IACC-84	Orthios Penrhos Lodge	roadside	no	226681	381486	3.5	No	6	13	7
DCC										
DBR1	Wellington Road, Rhyl	Roadside	No	300800	381400	2.3	N	0.5	2.7	2.2
DBR2	10 Kinmel Street, Rhyl	Roadside	No	300900	381300	2.5	N	2.5	2.8	0.3
DBR55	Adj. 7 Berwyn Street, Llangollen	Roadside	No	321484	341920	3	N	0.8	1.8	1
DBR57	Adj. 48 Church Street, Llangollen	Roadside	No	321815	341914	2.3	N	0	0.5	0.5

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
DBR5	2 Pant Glas, St. Asaph	Intermediate	No	302900	374600	2	N	9.6	37.1	27.5
DBR48	Adj. 1 Vale Street, Denbigh	Roadside	No	305276	366119	2.4	N	0	1	1
DBR23	31 Ruthin Road, Denbigh	Roadside	No	305879	366425	2.5	N	1.4	3.9	2.5
DBR60	14 Maes Helyg, Rhuddlan	Suburban	No	302184	378415	2.8	N	8.8	9.8	1
DBR9	7 Roe Park, St. Asaph	Intermediate	No	303200	374900	2	N	0	14	14
DBR59	Hennessey Terrace, Denbigh	Roadside	No	305097	366100	2.6	N	3.7	6.2	2.5
DBR24	Denbigh Cutters, 21 Vale Street, Denbigh	Roadside	No	305327	366164	2.2	N	0	3	3
DBR56	Adj. 6-7 Castle Street, Llangollen	Roadside	No	321492	342091	2.7	N	3.4	3.8	0.4
DBR20	25 Park Road, Ruthin.	Roadside	No	312105	358306	2.2	N	4	5.4	1.4
DBR43	Adj HSBC Bank, Vale Street, Denbigh	Roadside	No	305314	366153	2.6	N	5.5	8	2.5

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
DBR44	Opp Rowlands Pharm., Vale Street, Denbigh	Roadside	No	305386	366191	2.6	N	1.7	2.9	1.2
DBR45	Adj 50 Vale Street, Denbigh	Roadside	No	305467	366246	2.5	N	3.9	5.9	2
DBR37	Haul Fryn Depot, Ruthin	Roadside	No	312800	358200	2.3	N	1	4.5	3.5
DBR38	Adj 62 Rhos Street, Ruthin	Roadside	No	312913	358273	2.6	N	0	2.3	2.3
DBR52	Adj. Swayne Johnston Sol., Vale Street, Denbigh	Roadside	No	305308	366130	2.9	N	N/A	N/A	1.8
DBR53	7 Vale Street, Denbigh	Roadside	No	305390	366130	2.3	N	N/A	N/A	2
DBR31	2 Rhyl Road, Denbigh	Roadside	No	305805	366480	2.4	N	1.3	2.1	0.8
DBR32	47 High Street, Denbigh	Roadside	No	305179	366089	2.4	N	N/A	N/A	5.9
DBR33	Adj CO-OP, High Street, Denbigh	Roadside	No	305253	366095	2.3	N	N/A	N/A	5.3
DBR34	Adj Fairyburn, Rhyl Road, Denbigh	Roadside	No	305868	366653	2.5	N	11.4	12.3	0.9

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
DBR49	79 High Street, Prestatyn	Roadside	No	306580	382907	2.6	N	N/A	N/A	1
DBR58	Adj. 1 Vale View, High Street, Rhuddlan	Roadside	No	302271	378074	2.3	N	4.4	4.9	0.5
DBR61	Adj. Jacobs Ladder, St. Asaph	Roadside	No	303921	374387	2.7	N	5.5	6.5	1
DBR62	Adj. The Old Rectory, High Street, St. Asaph	Roadside	No	303852	374361	2.8	N	3.8	5.3	1.5
DBR63	Adj. Barclay House, Gemig Street, St. Asaph	Roadside	No	303778	374326	2.5	N	4	8.7	4.7
GC										
GCC 002	Roundabout A487, Caernarfon (C1)	Kerbside	N	248273	362132	2	N	9	10	1
GCC 003	Lon Campbell, Caernarfon (C3)	Urban Background	N	248480	363456	2	N	N/A	5	N/A
GCC 005	Ffordd Bangor, Caernarfon (C5)	Kerbside	N	248892	364120	1.8	N	6	7	1
GCC 008	A4087, Bangor (B3)	Kerbside	N	257587	371543	1.9	N	1	2	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
GCC 011	A5122, Bangor (B5)	Kerbside	N	256292	371663	1.7	N	>25.0	>25.0	1
GCC 012	Faenol Roundabout, Bangor (B6)	Kerbside	N	254286	368835	1.8	N	>25.0	>25.0	1
GCC 013	Bethesda (BETH 1)	Kerbside	N	261529	367380	2	N	9	10	1
GCC 015	Llanwnda (LL1)	Roadside	N	247770	358663	1.9	N	3	4	2
GCC 037	Poolside, Caernarfon (C6)	Kerbside	N	248022	362757	1.9	N	1	2	1
GCC 038	A55, Bangor (B4)	Roadside	N	256871	369493	1.3	N	>25.0	>25.0	2
GCC 039	A55, Bangor (CO-LOC)	Roadside	N	256871	369493	1.3	N	>25.0	>25.0	2
GCC 040	Pwllheli (PW1)	Kerbside	N	237517	335217	2	N	1	2	1
GCC 041	LLYS 1	Roadside	N	248514	362795	2.2	N	4	5	N/A
GCC 042	BR 1	Urban Background	N	249647	362923	1.3	N	0	14	N/A
GCC 043	BR 2	Roadside	N	249634	362917	1.7	N	1	7	N/A
GCC 044	LLNFR 1	Kerbside	N	293769	336564	1.7	N	0	1	N/A
GCC 045	LLNFR 2	Roadside	N	293878	336609	1.7	N	20	6	N/A

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
WCBC										
1	Grosvenor Road	Roadside	N	333200	350600	1.5	N	10	12	2
34	Coed Poeth	Roadside	N	329017	351002	2	N	1	8	9
45	Crispin Lodge	Roadside	N	332214	351503	1.6	N	8	0	8
36	Acrefair	Roadside	N	327630	342990	2	N	0	2	2
10	Ysgol Y Waun	Suburban	N	329300	338300	2	N	18	20	2
49	Black Lane School	Suburban	N	330221	353428	2	N	1	2.5	1.5
42	Llan-Y-Pwll	Roadside	N	335359	352178	1.6	N	4	9	5
50	Llys Y Groes	Roadside	N	331924	350638	1.5	N	0	9	9
51	Ysgol Yr Hafod	Suburban	N	330125	346099	1.5	N	3.5	5	1.5
52	Woodbank Court	Intermediate	N	330703	334004	1.5	N	0	20	20
53	Froncysyllte	Roadside	N	327263	341184	1.5	N	0	2	2
22	Holyhead Road	Intermediate	N	328900	338700	1.5	N	28	30	2
32	Sycamores	Roadside	N	333887	353222	1.5	N	21	27	9
30	Rhostyllen Rbt	Roadside	N	330950	348170	1.2	N	31	35	4

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
31	Bus Station	Roadside	N	333350	350590	3	N	1	3	2
33	Smithfield Road	Roadside	N	333981	350171	1.5	N	3	4	1
37	Rossett	Roadside	N	336635	357211	1.5	N	5	7	2
38	Pentre Bach	Roadside	N	331765	350132	1.2	N	0	2	2
44	Cobden Road	Roadside	N	332935	350278	2	N	4	5	1
40	Overton	Roadside	N	337449	341702	1.5	N	12	14	2
41	Marchwiel	Roadside	N	335407	347890	2	N	1	3	2
43	Hightown	Roadside	N	333966	349691	2	N	9	10	1
46	Regent Street	Roadside	N	333063	350587	2	N	14	15	1
48	Church Street	Roadside	N	329082	337590	1.5	N	4	5	1
54	Pandy Lane	Roadside	N	333628	352942	1.5	N	4	9	5
55	Llay	Suburban	N	333078	355649	1	N	0	9	9
56	Top Farm Road	Roadside	N	332944	352293	1.5	N	0	12	12
57	Ysgol Plas Coch	Intermediate	N	332786	351637	1.5	N	0	20	20
58	St Annes School	Suburban	N	334954	350090	2	N	38.5	40	1.5

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
59	Cross Lanes	Roadside	N	337541	346942	1.5	N	0	6	6
60	St Pauls School	Suburban	N	340016	349982	2	N	13.5	15	1.5
61	Berse Road	Roadside	N	332363	351095	2	N	0	12	12
AURN (triplicate)	Victoria Road	Roadside	N	332865	349909	2	Y	9	7	5
CCBC										
CCBC017	Kingsway, Colwyn Bay	Roadside	N	284526	379417	3	N	1	2.1	1.1
CCBC018	Heol Dewi, Pensarn	Roadside	N	295049	378144	2.1	N	3.5	6.5	3
CCBC022	Bryn Marl, Mochdre	Roadside	N	282362	378757	3	N	2	3.5	1.5
CCBC034	Victoria Drive, Llandudno Junction	Roadside	N	279245	377995	3	N	2.5	4.7	2.2
CCBC035	Ysgol Bod Alaw, Colwyn Bay	Roadside	N	285506	378295	3	N	2	4.2	2.2
CCBC036	Ysgol Tudno, Llandudno	Roadside	N	278131	381907	3	N	2.5	4	1.5
CCBC041	Faenol Avenue, Abergele	Roadside	N	295075	377678	3	N	3.5	6.2	2.7

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
CCBC042	Yr Angorfa, Conwy Marina	Roadside	N	277318	378576	3	N	30	60	30
CCBC043	Ysgol Pant y Rhedyn, Llanfairfechan	Roadside	N	268425	375266	3	N	3	5.2	2.2
CCBC044	Bus gate, Llanfairfechan	Roadside	N	268845	375713	3	N	2	3.3	1.3
CCBC046	Eagles, Town Centre, Llanrwst	Kerbside	N	279833	361573	3	N	1.5	2.7	1.2
CCBC047	Maes y Llan, Dwygyfylchi	Roadside	N	273223	377460	3	N	2	3	1
CCBC048	A55 Conwy (road barrier)	Kerbside	N	276115	378273	2.5	N	22	44	22
CCBC053	Upper Prom, Colwyn Bay	Kerbside	N	284433	379529	3	N	1.7	3.4	1.7
CCBC054	Wainwright Close, Colwyn Bay	Roadside	N	284362	379559	3	N	35	70	35
CCBC055	Ysgol Llandrillo yn Rhos, Rhos on Sea	Roadside	N	283523	380857	3.2	N	2.1	4.2	2.1
CCBC056	Ysgol Deganwy, Deganwy - DT/CCBC056	Roadside	N	278751	378797	3	N	1.7	3.4	1.7

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
CCBC057	Ffordd Seiriol, Penmaenmawr	Roadside	N	271771	376105	2.5	N	2	3.2	1.2
CCBC058	Gilfach Road, Penmaenmawr	Roadside	N	271627	375978	2.5	N	2.5	2.5	0
CCBC059	Deganwy Road, Deganwy -	Roadside	N	277744	379865	2.5	N	3	5	2
FCC										
ADDC-008	Lampost Aston Hill co-loc (24&51) start 2 June	Kerbside	N	330792	367434	1.8	N	20	21	1
ADDC-009	1, St.Davids Close, Ewloe CH5 3AP	Roadside	N	329830	366682	1.8	N	0	35	35
ADDC-085	Aston Hill Roadside	Kerbside	N	330718	367350	2.0	N	10	11	1
ADDC-111	Hawarden High School CH5 3DL	Kerbside	N	330614	366195	1.6	N	7	10	3
ADDC-105	Abermorddu/Cymau Crossroads	Roadside	N	330986	356538	2.0	N	9	11	2
ADDC-013	Kelsterton Farm, Kelsterton Lane, Connah's Quay	rural	N	327307	369856	2.2	N	26	27	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-014	Kelsterton Road, Connah's Quay	Kerbside	N	327187	371243	1.8	N	5	10	5
ADDC-015	86, Kelsterton Road, Connah's Quay CH5 4BJ	Urban Background	N	328032	370647	1.6	N	0	20	20
ADDC-106	Outside The Nook, Village Road, Pentre Halkyn	Roadside	N	320126	372346	2.0	N	13	14	1
ADDC-107	Bryn Coch Lane, Mold (started Aug 20)	Roadside	N	323500	363397	2.0	N	15	17	2
ADDC-084	3 Davies Cottage, Mold Road, Alltami	Kerbside	N	326643	365550	2.0	N	0	3	3
ADDC-064	20/22 Glynne Way, Hawarden	Kerbside	N	331648	365730	1.6	N	0	1	1
ADDC-098	20/22 Glynne Way, Hawarden - Duplicate Tube	Kerbside	N	331648	365730	1.6	N	0	1	1
ADDC-117	Sandycroft CP School Leaches Lane CH5 2EH	Kerbside	N	332500	367357	2.0	N	1	2	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-099	Aston Hill, Roadside - Additional Tube within 12m of ADDC/085	Kerbside	N	330727	367354	1.8	N	10	11	1
ADDC-023	4, Belvedere Close, Queensferry CH5 1TG	Urban Background	N	331663	368028	2.3	N	0	20	20
ADDC-024	32 Chester Road West, Shotton	Kerbside	N	330599	368922	2.0	N	0	4	4
ADDC-118	Saltney Ferry CP School CH4 0BN	Kerbside	N	336904	364852	2.0	N	7	8	1
ADDC-080	Gwylfa, Northop Rd., Flint Mountain	Kerbside	N	323864	370368	2.2	N	0	3	3
ADDC-066	Coed Mawr Cott., Mostyn Road, Greenfield CH8 9DN	Kerbside	N	318669	378290	1.8	N	0	2	2
ADDC-116	Sealand CP School Welsh Road CH5 2RA	Kerbside	N	332535	368907	2.2	N	1	2	1
ADDC-029	Green Lane West, Sealand	Rural	N	333645	370898	2.0	N	29	46	17

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-030	Second Avenue, Deeside Industrial Estate (Valspar)	Industrial	N	332764	370981	1.8	N	N/A	N/A	2
ADDC-083	Lamppost Aston Hill co-loc (1&51) start 2 June	Kerbside	N	330792	367434	1.8	N	20	21	1
ADDC-032	BASF, Deeside Industrial Park, Sealand	Industrial	N	332031	371562	2.2	N	N/A	N/A	3
ADDC-033	Corus rear entrance DIP, Sealand	Industrial	N	329906	370882	2.0	N	N/A	N/A	1
ADDC-034	89, Riverside Park, Garden City	Roadside	N	333040	369051	2.2	N	5	10	5
ADDC-120	Ysgol St John Penymynydd CH4 OLG	Kerbside	N	330528	362756	1.8	N	4	5	1
ADDC-036	Weighbridge Road, Deeside Industrial Park, Sealand	Kerbside	N	330575	371802	2.0	N	N/A	N/A	2

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-037	28, Chester Road, Pentre, Deeside CH5 2DT	Kerbside	N	332221	367723	4.0	N	0	5	5
ADDC-093	Trelawney Towers 79 Chester Road, Flint CH6 5DU	Kerbside	N	324935	372722	2.4	N	1	5	4
ADDC-044	Flint Town Council Buildings.	Kerbside	N	324459	373141	2.4	N	0	3	3
ADDC-067	133, Main Road, Broughton CH4 0NR	Kerbside	N	333568	363511	2.2	N	0	1	1
ADDC-068	2, Coleshill Street, Holywell CH8 7UP	Kerbside	N	318766	375758	2.0	N	0	1	1
ADDC-069	Sycamore House, Greenfield Road, Holywell CH8 7PY	Kerbside	N	318735	376611	2.0	N	0	1	1
ADDC-070	43, Station Road, Queensferry CH5 1SU	Kerbside	N	331806	368271	1.8	N	0	4	4
ADDC-081	Glendale Lodge, Rhydgaled, Mold A5119	Kerbside	N	324281	364926	1.8	N	15	17	2

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-119	Castell Alun Fagl Lane Hope LL129PY	Kerbside	N	330705	358429	1.8	N	8	10	2
ADDC-114	Ysgol Y Fron Halkyn St Holywell CH8 7TX	Kerbside	N	318851	375592	2.0	N	6	8	2
ADDC-052	1 Manor Road, Sealand CH5 2SB	Kerbside	N	333731	369079	1.8	N	0	8	8
ADDC-115	Ysgol Y Llan Whitford CH8 9AN	Kerbside	N	314615	378238	1.8	N	4	5	1
ADDC-112	RGHS Ffordd Llewelyn Flint CH6 5JZ	Kerbside	N	324838	372198	2.2	N	1	2	1
ADDC-113	Flint HS Fifth Avenue Flint CH6 5LW	Kerbside	N	324357	372008	1.8	N	4	5	1
ADDC-091	413 Chester Road, Oakenholt, Flint CH6 5SF	Kerbside	N	325961	371822	1.8	N	3	4	1
ADDC-108	Ysgol Bryn Coch Victoria Road Mold CH7 1EW	Kerbside	N	323975	363794	1.6	N	4	5	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-110	Ewloe Green School CH5 3AU	Kerbside	N	329284	366504	1.8	N	9	10	1
ADDC-100	3 Davies Cottage, Mold Road, Alltami - Duplicate Tube	Kerbside	N	326643	365550	2.0	N	0	3	3
ADDC-060	74, High Street, Saltney CH4 8SQ	Kerbside	N	338283	365032	2.0	N	0	6	6
ADDC-061	Centenary Close Broughton CH4 0FY on lighting pole (started 6 May)	Kerbside	N	334739	363340	1.8	N	8	12	4
ADDC-121	Ysgol Estyn Hawarden Road Hope LL12 9NL	Kerbside	N	330898	357996	2.0	N	2	5	3
ADDC-101	Lamppost Aston Hill co-loc (1&24) start 2 June	Kerbside	N	330792	367434	1.8	N	20	21	1
ADDC-109	Westwood CP School Padeswood Rd CH7 2JT	Kerbside	N	327843	363856	2.0	N	4	5	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
ADDC-075	17, Mill Lane, Buckley CH7 3HA	Kerbside	N	327849	364146	2.3	N	1	2	1
ADDC-102	Elm Tree Rd Saughall	Kerbside	N	335594	369179	2.3	N	10	11	1
ADDC-103	Ferry Lane, Chester	Kerbside	N	337632	366682	2.2	N	13	15	2
ADDC-104	Claremont Ave GC opp NO. 28 Start 3 June	Kerbside	N	332558	368750	2.0	N	8	18	10
ADDC-089	Rose Cottage Junction A5119/A494	Kerbside	N	324375	365007	2.2	N	2	3	1
ADDC-122	Bryn Mair 114 Chester Road Mold CH7 1UQ	Roadside	N	324530	363839	3.0	N	8	10	2
ADDC-123	30 High Street Mold CH7 1BH	Roadside	N	324562	363840	3.0	N	0	1	1

Notes:

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

Figure 2.2 – Map(s) of Non-Automatic Monitoring Sites – IACC



Figure 2.4 – Map(s) of Non-Automatic Monitoring Sites – DCC Denbigh

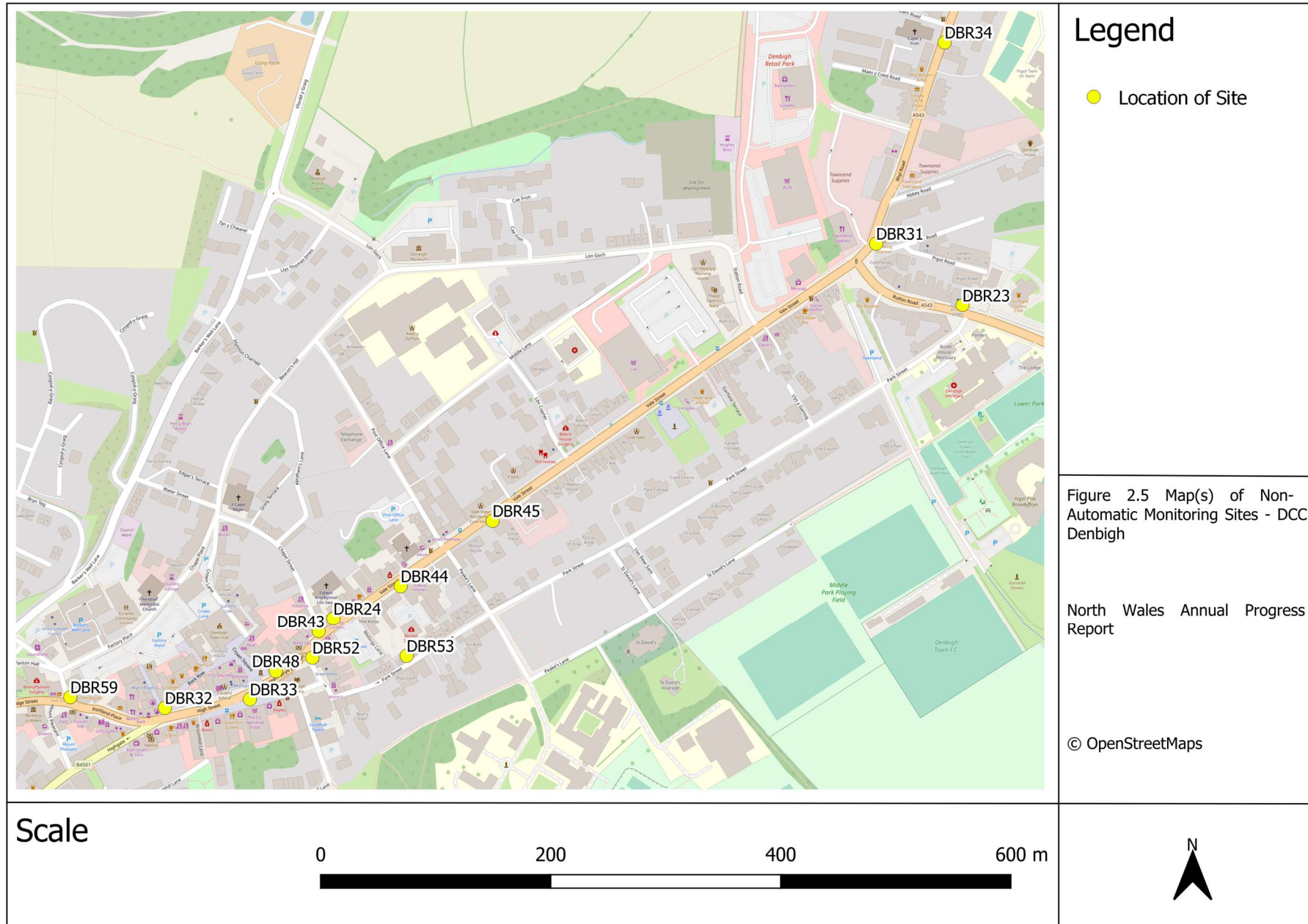


Figure 2.5 Map(s) of Non-Automatic Monitoring Sites - DCC Denbigh

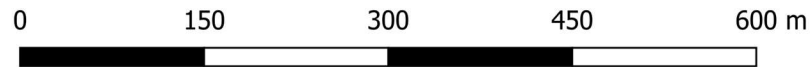
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Figure 2.5 – Map(s) of Non-Automatic Monitoring Sites – DCC Ruthin



Scale



Legend

● Location of Site

Figure 2.6 Map(s) of Non-Automatic Monitoring Sites - DCC Ruthin

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Figure 2.6 – Map(s) of Non-Automatic Monitoring Sites – DCC Llangollen

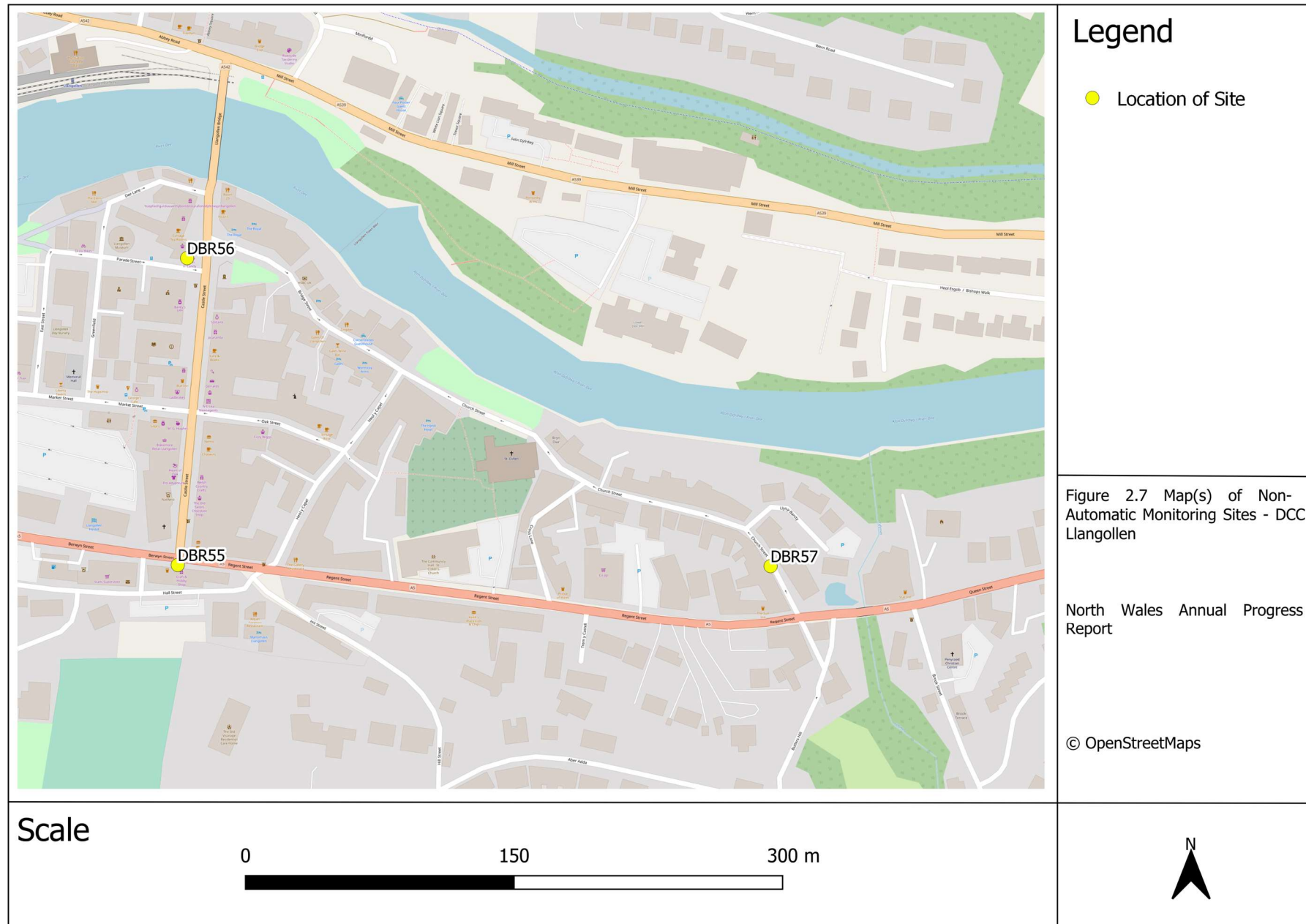
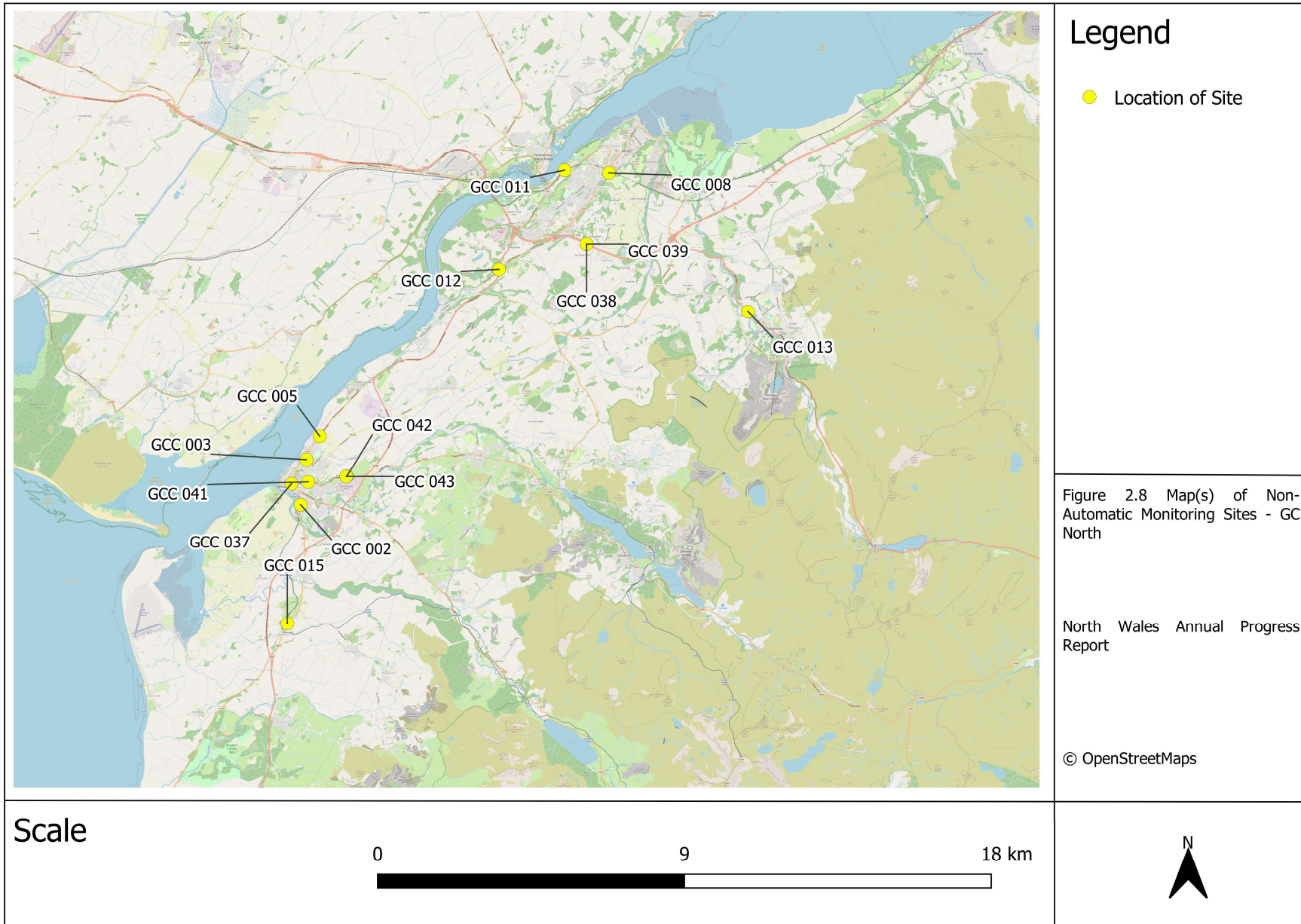


Figure 2.7 – Map(s) of Non-Automatic Monitoring Sites – GC North



Legend

● Location of Site

Figure 2.8 Map(s) of Non-Automatic Monitoring Sites - GC North

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Scale

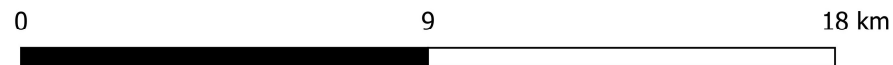


Figure 2.8 – Map(s) of Non-Automatic Monitoring Sites – GC South East



Figure 2.9 – Map(s) of Non-Automatic Monitoring Sites – GC South West

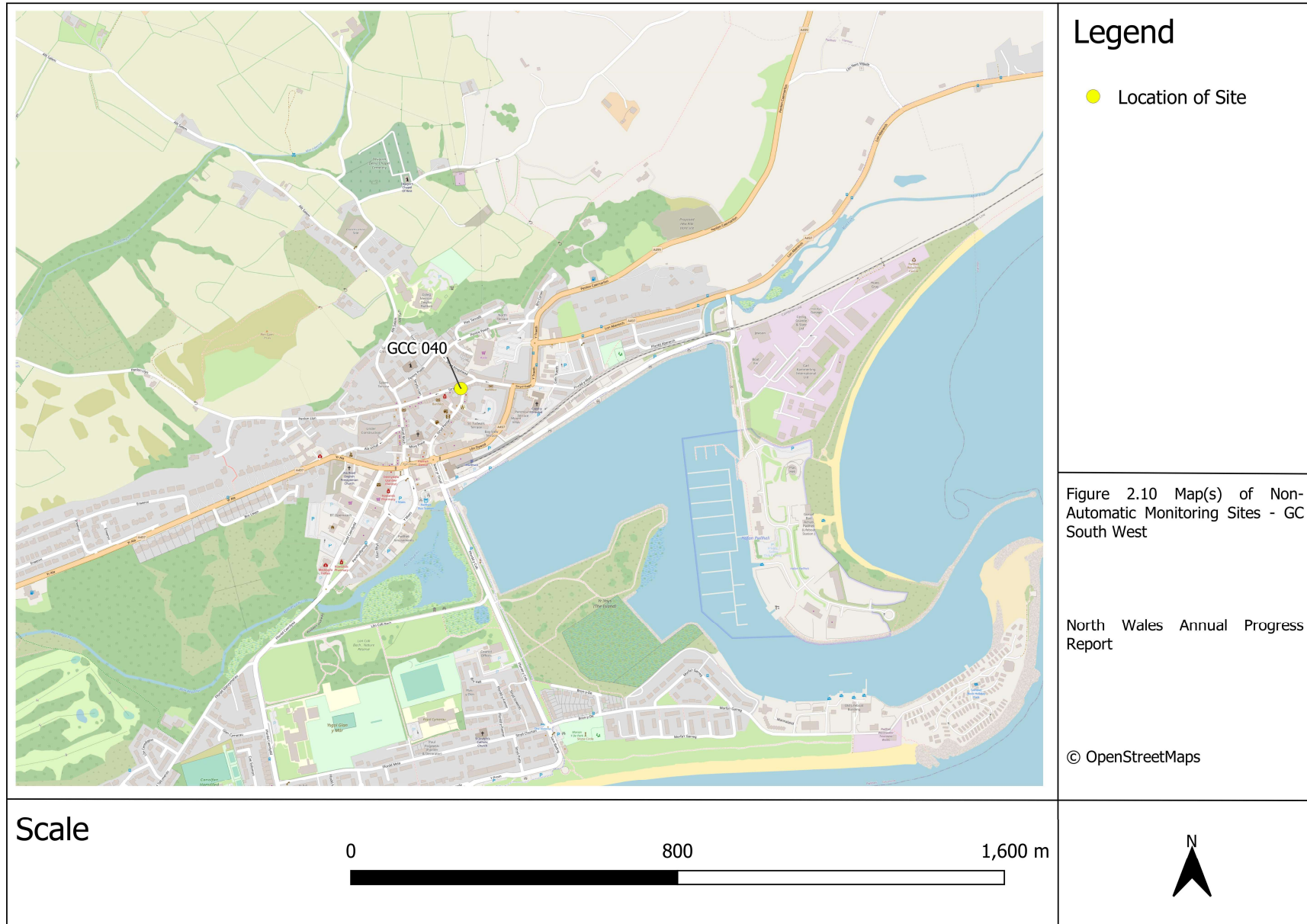


Figure 2.10 – Map(s) of Non-Automatic Monitoring Sites – WCBC North

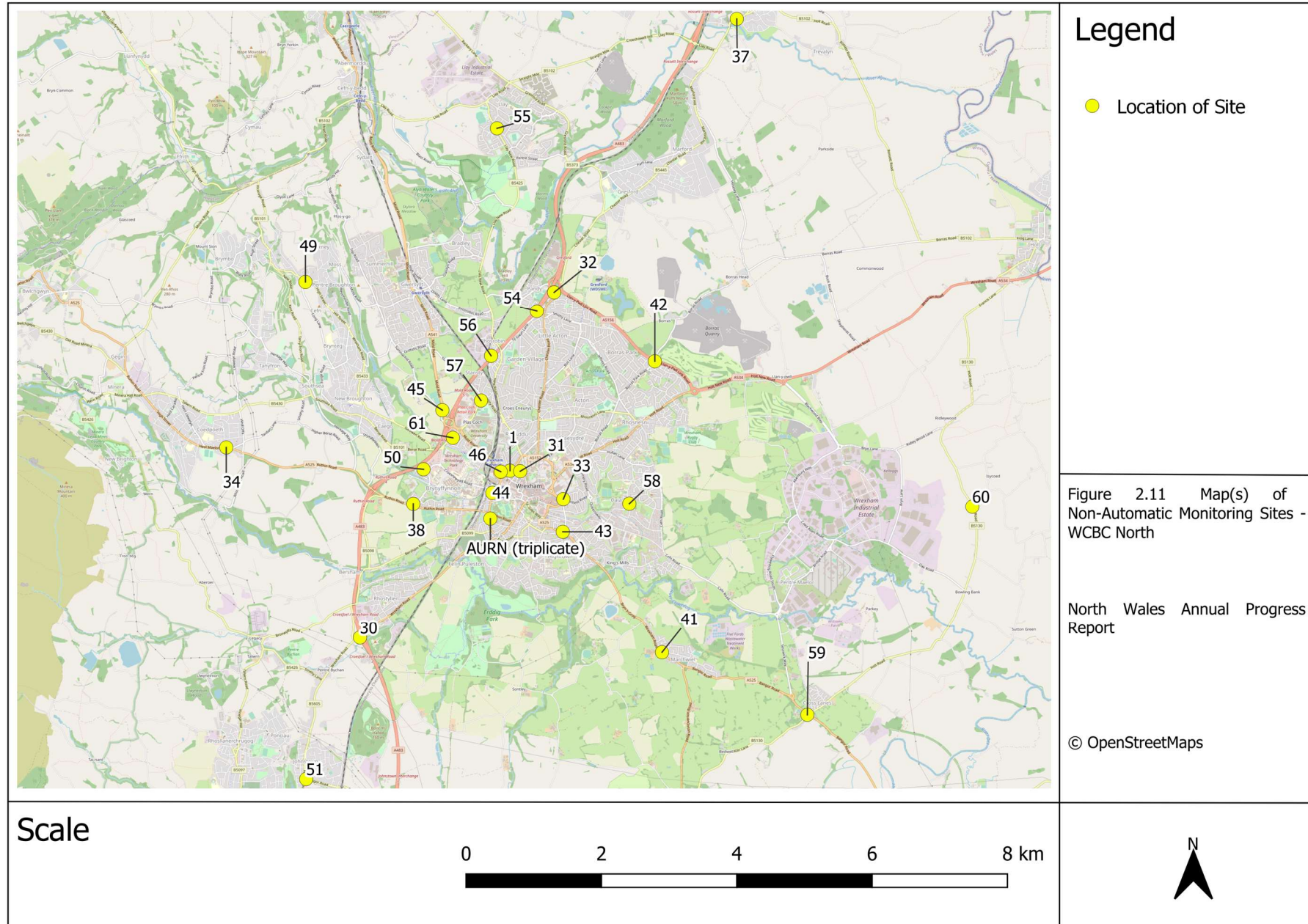


Figure 2.11 – Map(s) of Non-Automatic Monitoring Sites – WCBC South



Legend

● Location of Site

Figure 2.12 Map(s) of Non-Automatic Monitoring Sites - WCBC South

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Scale

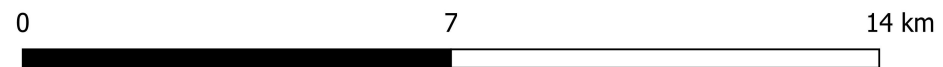
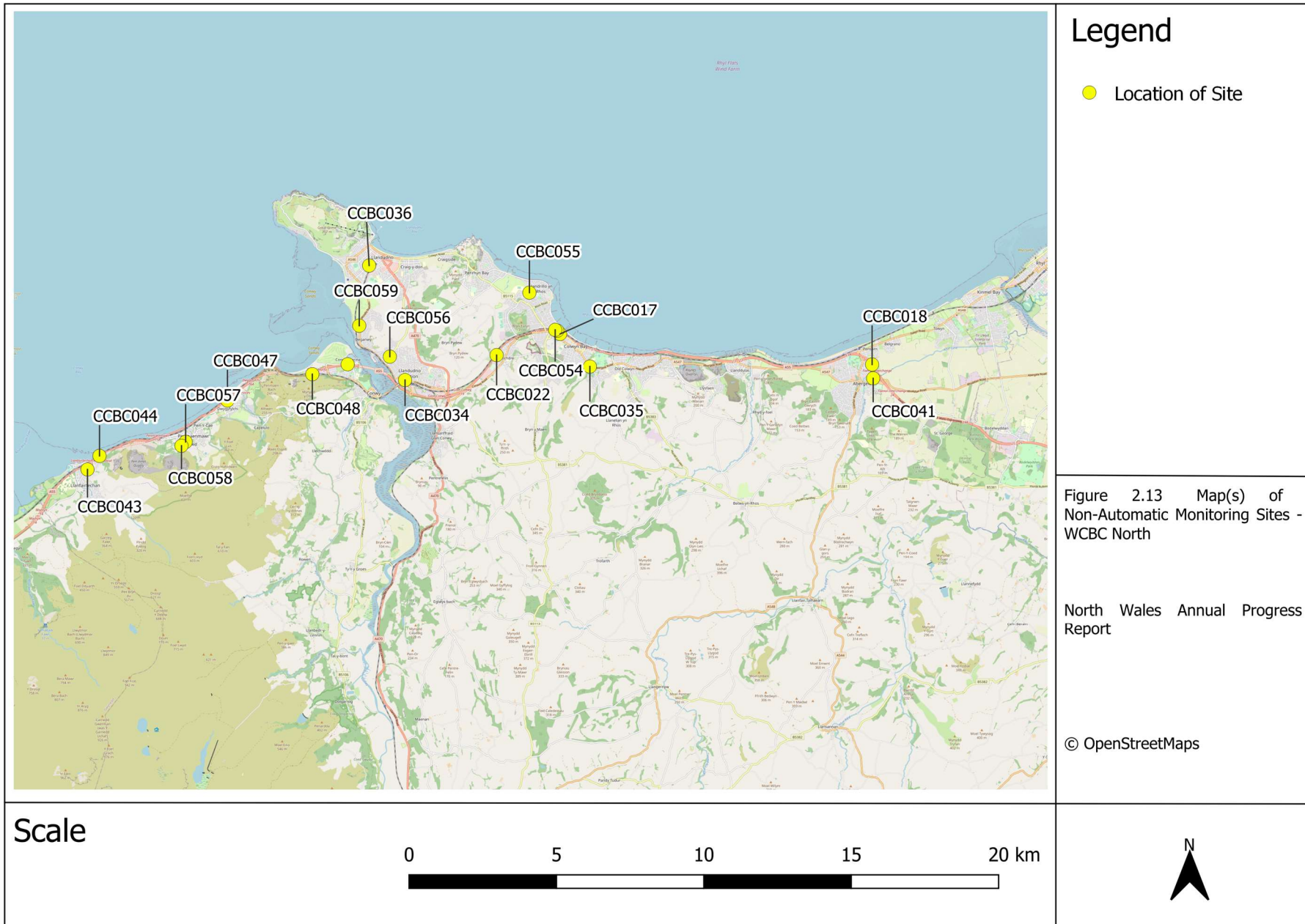


Figure 2.12 – Map(s) of Non-Automatic Monitoring Sites – CCBC



Legend

- Location of Site

Figure 2.13 Map(s) of Non-Automatic Monitoring Sites - WCBC North

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Figure 2.13 – Map(s) of Non-Automatic Monitoring Sites – FCC North West

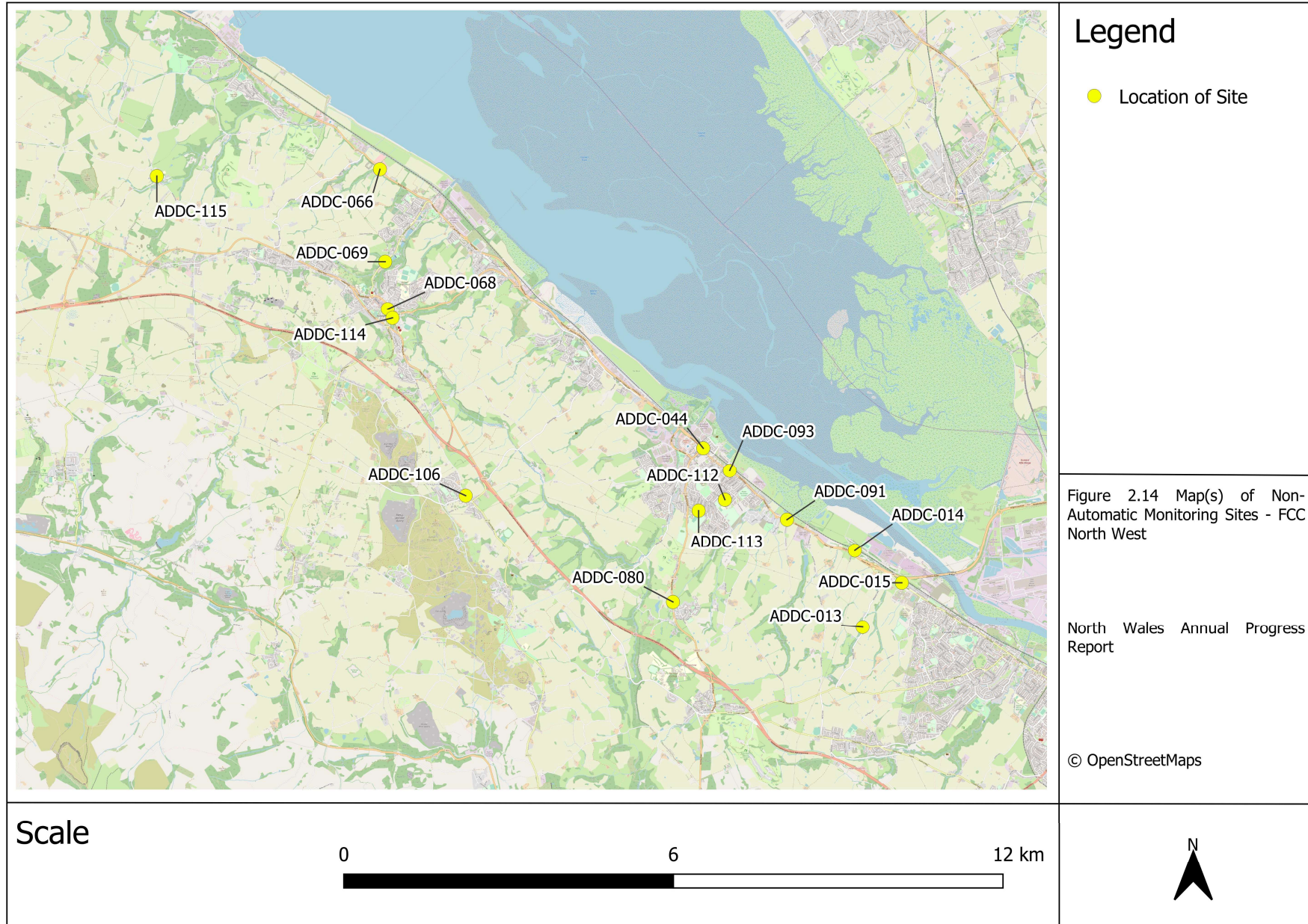
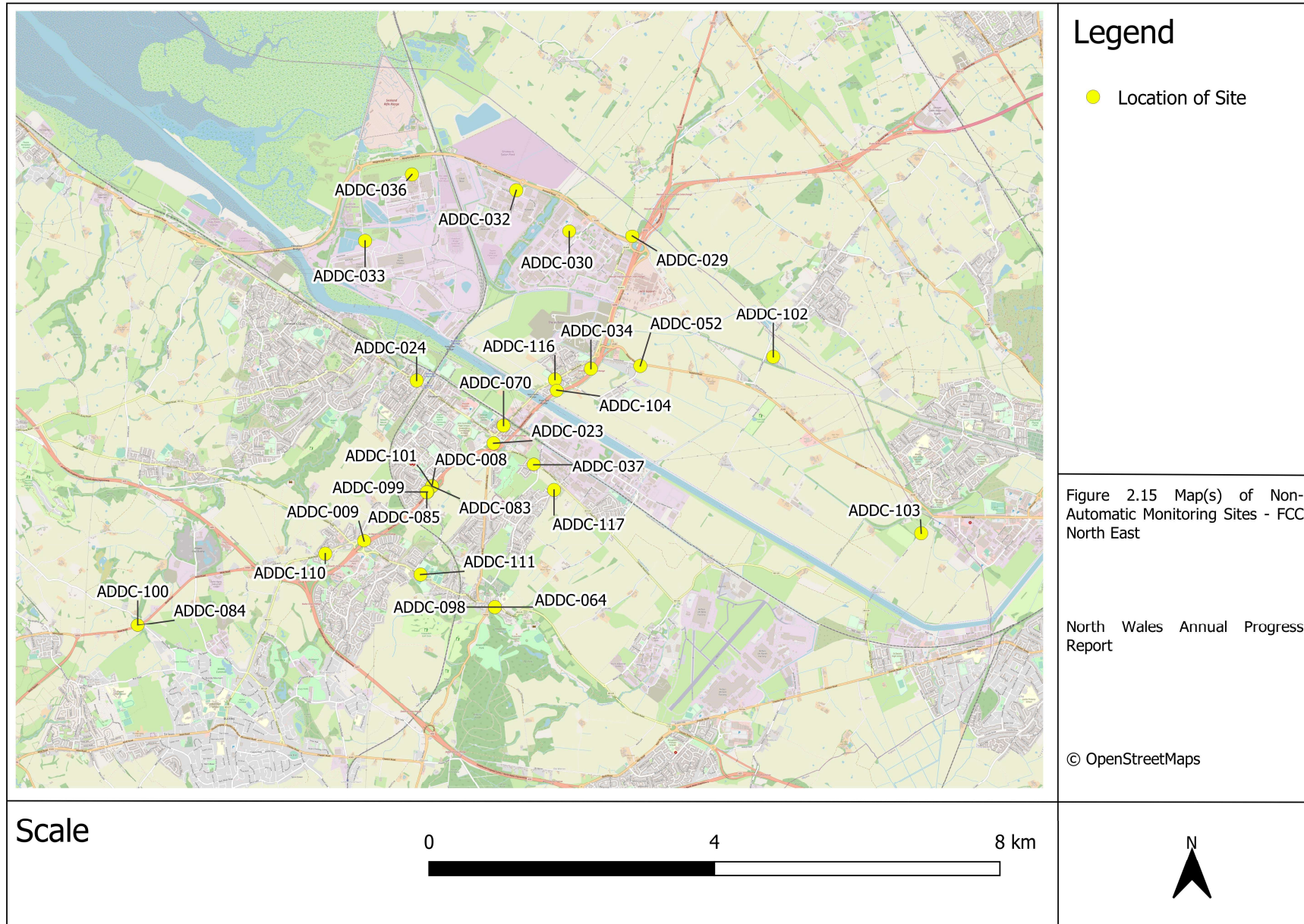


Figure 2.14 – Map(s) of Non-Automatic Monitoring Sites – FCC North East



Legend

● Location of Site

Figure 2.15 Map(s) of Non-Automatic Monitoring Sites - FCC North East

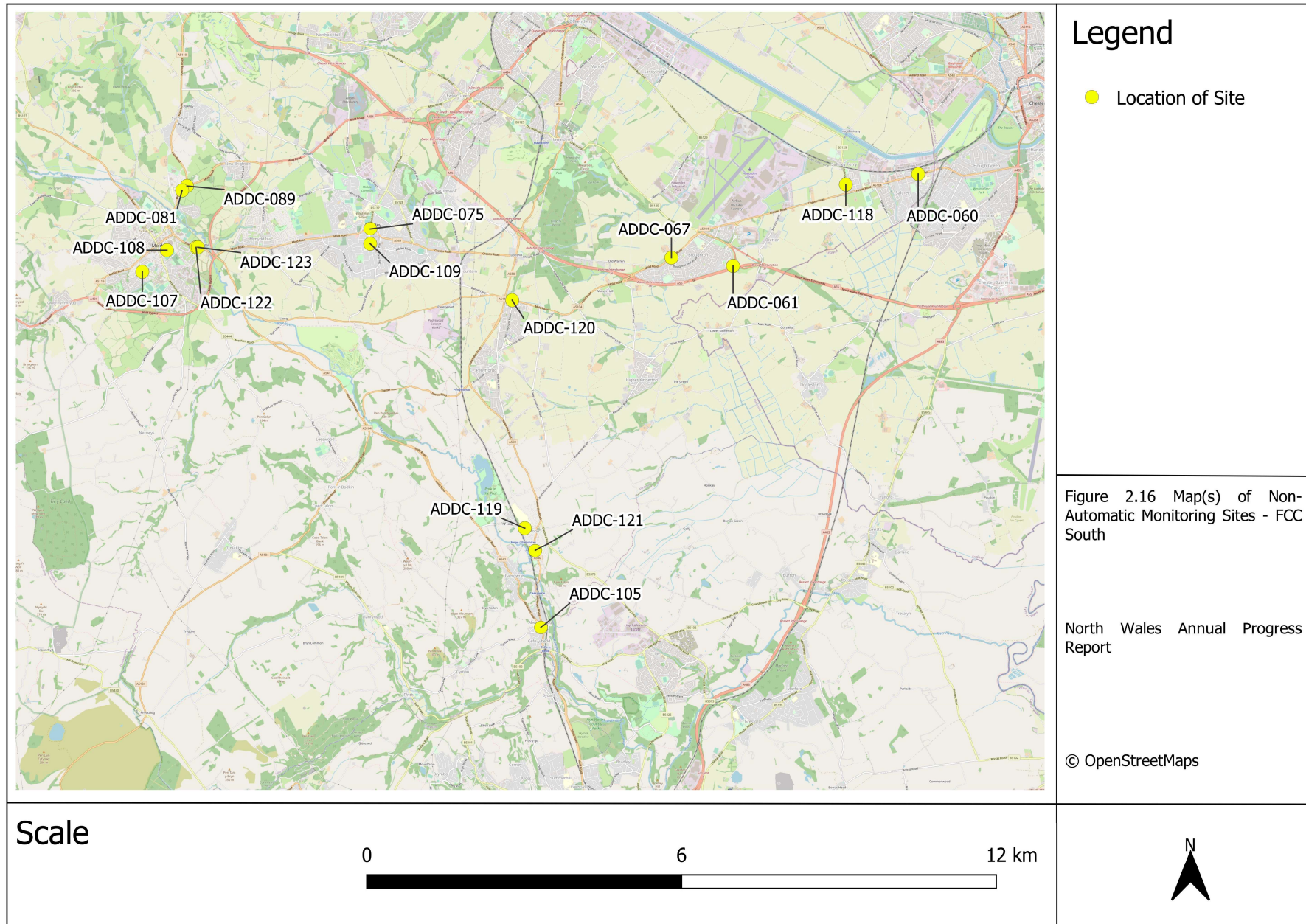
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Figure 2.15 – Map(s) of Non-Automatic Monitoring Sites – FCC South



2022 Air Quality Monitoring Results

Table 2.3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
IACC									
IACC-081	Roadside	Passive	100.0	100.0	19.7	18.7	14.8	14.2	14.1
IACC-082	Roadside	Passive	100.0	100.0	18.6	18.1	13.6	16.2	15.4
IACC-083	Roadside	Passive	100.0	100.0	-	10.8	7.9	8.5	8.0
IACC-084	Roadside	Passive	100.0	92.3	-	7.8	6.4	6.3	6.5
DCC									
DBK1	Roadside	Passive	100.0	100.0	25.3	23.6	18.3	20.9	19.7
DBR2	Roadside	Passive	100.0	75.0	25.1	23.4	22.3	20.5	18.8
DBR55	Roadside	Passive	100.0	100.0	32.7	34.2	24.5	26.2	26.3
DBR57	Roadside	Passive	100.0	100.0	10.8	10.4	8.3	7.7	7.6
DBR5	Intermediate	Passive	100.0	100.0	14.5	12.9	10.5	11.7	10.4
DBR48	Roadside	Passive	100.0	83.4	24.2	21.8	18.7	21.5	20.8
DBR23	Roadside	Passive	100.0	100.0	17	16.7	14.1	15	13.6
DBR60	Suburban	Passive	100.0	100.0	14.2	11.8	7.2	7	6.2

DBR9	Intermediate	Passive	100.0	100.0	19.8	18.6	15.2	14.7	14.8
DBR59	Roadside	Passive	100.0	100.0	14	13.8	17.6	16.8	15.7
DBR24	Roadside	Passive	100.0	100.0	32.5	30	27.2	29	25.7
DBR56	Roadside	Passive	100.0	84.8	13.7	14.4	11.2	12.2	12.0
DBR20	Roadside	Passive	100.0	100.0	20.5	20.3	16.1	17.6	15.9
DBR43	Roadside	Passive	100.0	100.0	28	28.6	23.6	23.7	23.7
DBR44	Roadside	Passive	100.0	100.0	24.5	22.3	20.3	21	18.7
DBR45	Roadside	Passive	100.0	81.8	21	21.3	20	19.4	18.1
DBR37	Roadside	Passive	100.0	100.0	23.7	26.4	22.5	24.7	22.0
DBR38	Roadside	Passive	85.7	50.3	14.6	14.1	18.7	11.8	11.5
DBR52	Roadside	Passive	100.0	91.7	21.7	19.7	17.1	17.2	15.4
DBR53	Roadside	Passive	100.0	100.0	28.7	26.1	23.2	23.1	20.3
DBR31	Roadside	Passive	100.0	83.4	14.7	16.2	14.1	13.2	12.9
DBR32	Roadside	Passive	100.0	100.0	18.2	16.8	13.2	14	13.3
DBR33	Roadside	Passive	100.0	100.0	25.1	24.8	20	18.9	19.2
DBR34	Roadside	Passive	100.0	100.0	13.2	14.1	10.9	11	10.0
DBR49	Roadside	Passive	100.0	100.0	14.8	14.8	11.6	11.9	12.3
DBR58	Roadside	Passive	100.0	100.0	16.4	14.5	12	12.5	11.8
DBR61	Roadside	Passive	100	92.5	-	-	-	-	13.7

DBR62	Roadside	Passive	100.0	92.5	-	-	-	-	18.7
DBR63	Roadside	Passive	100.0	92.5	-	-	-	-	11.6
GCC									
GCC 002	Kerbside	Passive	100.0	100.0	31.2	30.1	26	26	19.2
GCC 003	Urban Background	Passive	100.0	100.0	10.2	9.3	7.1	8.1	6.3
GCC 005	Kerbside	Passive	100.0	100.0	27.9	28.5	17.4	25.2	12.2
GCC 008	Kerbside	Passive	100.0	100.0	23.4	22.2	15.7	17.3	15.8
GCC 011	Kerbside	Passive	92.0	92.0	25.1	22.8	16.4	18.2	15.5
GCC 012	Kerbside	Passive	100.0	100.0	26.8	24.6	17.8	20.5	18.6
GCC 013	Kerbside	Passive	100.0	100.0	20	19.9	15.2	17.6	14.7
GCC 015	Roadside	Passive	100.0	100.0	22.3	21.3	15	17.6	7.8
GCC 037	Kerbside	Passive	83.0	83.0	25.2	21.6	17	19.6	15.1
GCC 038	Roadside	Passive	100.0	100.0	28.1	27.5	18.5	21.2	18.7
GCC 039	Roadside	Passive	100.0	100.0	28.6	26.1	20	20.4	18.4
GCC 040	Kerbside	Passive	92.0	92.0	18.5	16.7	13.1	13.4	12.2
GCC 041	Roadside	Passive	100.0	100.0	-	-	-	9.5	7.5
GCC 042	Urban Background	Passive	100.0	100.0	-	-	-	9.7	7.8
GCC 043	Roadside	Passive	100.0	100.0	-	-	-	8.9	8.2

GCC 044	Kerbside	Passive	92.0	92.0	-	-	-	13.3	11.5
GCC 045	Roadside	Passive	100.0	100.0	-	-	-	10.5	8.4
WCBC									
Wrexham AURN	Roadside	Automatic	98.9	98.9	18.2	16	13	14.7	14.2
Wrexham Chirk	Industrial	Automatic	92.3	92.3	-	-	21	18.1	11.6
Wrexham Chirk community hospital	Urban Background	Automatic	89.8	89.8	-	-	-	-	13.3
1	Roadside	Passive	100.0	100.0	24.9	24.2	18.8	22.8	20.5
34	Roadside	Passive	100.0	100.0	14.5	13.9	10	11.4	10.5
45	Roadside	Passive	100.0	100.0	19.4	17.3	13.6	15.3	14.3
36	Roadside	Passive	100.0	100.0	17.3	17.7	12.2	14.3	12.9
10	Suburban	Passive	100.0	100.0	11.8	12.4	10	10.7	9.2
49	Suburban	Passive	100.0	100.0	-	9.7	7.2	7.9	6.6
42	Roadside	Passive	100.0	100.0	23.2	20.6	17.1	19.6	18.3
50	Roadside	Passive	100.0	100.0	-	19.6	14.7	15.1	14.9
51	Suburban	Passive	100.0	100.0	-	16.8	13.6	15.5	15.2
52	Intermediate	Passive	100.0	100.0	-	21.4	15.1	18.2	17.6
53	Roadside	Passive	100.0	100.0	-	20.1	16.6	18.4	17.7
22	Intermediate	Passive	100.0	100.0	15.7	14.7	13.3	13.3	13.5

32	Roadside	Passive	100.0	100.0	27.2	23.7	18.2	18.9	19.1
30	Roadside	Passive	100.0	100.0	34.9	31.7	26.3	29.5	28.6
31	Roadside	Passive	100.0	100.0	28.6	27.3	20	24	22.6
33	Roadside	Passive	69.2	69.2	18.5	15.6	19.3	21	17.4
37	Roadside	Passive	92.6	92.6	20.3	16.9	12.1	13.5	11.6
38	Roadside	Passive	100.0	100.0	-	16.5	12.5	14.8	13.8
44	Roadside	Passive	100.0	100.0	22.7	20.5	16.3	18.8	16.7
40	Roadside	Passive	92.3	92.3	12.1	9.7	7.4	7.5	6.3
41	Roadside	Passive	100.0	100.0	15.4	13.9	10.3	13	12.2
43	Roadside	Passive	100.0	100.0	19.3	17	14.4	16.5	17.5
46	Roadside	Passive	100.0	100.0	24.4	22.7	16.1	19.7	18.3
48	Roadside	Passive	100.0	100.0	18.3	14.3	12.3	13.7	12.6
54	Roadside	Passive	100.0	100.0	-	22.7	15.2	18.4	16.8
55	Suburban	Passive	100.0	100.0	-	11.8	9.4	9.8	8.3
56	Roadside	Passive	100.0	100.0	-	18.8	13.4	15	14.1
57	Intermediate	Passive	100.0	100.0	-	17.7	10	11.2	10.8
58	Suburban	Passive	100.0	100.0	-	12.7	10.5	10.7	9.7
59	Roadside	Passive	100.0	100.0	-	11.2	8.4	9.7	8.4
60	Suburban	Passive	90.4	90.4	-	7.7	6.8	7.4	5.8

61	Roadside	Passive	100.0	100.0	-	-	12.6	15.4	14.6
AURN (triplicate)	Roadside	Passive	100.0	100.0	16.3	16.1	12	13.9	12.4
CCBC									
CBC-017	Roadside	Passive	100	100	17.3	16.3	11.6	13	12.3
CBC-018	Roadside	Passive	100	100	18	17.2	13	14	12.3
CBC-021	Roadside	Passive	100	100	16.3	15.9	11.3	13.2	13.1
CBC-022	Roadside	Passive	100	100	18.3	16.7	13.2	13.5	15.8
CBC-034	Roadside	Passive	100	100	20	20	15.4	16.9	13.7
CBC-035	Roadside	Passive	100	100	16.5	16.1	11.8	13.7	8.4
CBC-036	Roadside	Passive	100	100	11.6	11.1	8	8.6	10.5
CBC-040	Roadside	Passive	100	100	15.8	14.2	11	11.9	11.9
CBC-041	Roadside	Passive	100	100	14.1	14	10.2	11.2	9.2
CBC-042	Roadside	Passive	100	100	-	15.8	11.7	11.4	14.3
CBC-043	Roadside	Passive	100	100	-	11.4	8.8	10.2	15.4
CBC-044	Roadside	Passive	100	100	-	18.5	13.4	15.4	11.5
CBC-045	Roadside	Passive	100	100	-	10.8	7.8	9	11.8
CBC-046	Roadside	Passive	100	100	-	21.3	15.2	16.3	12.2
CBC-047	Roadside	Passive	100	100	-	15.4	12.2	12.8	12.5
CBC-048	Roadside	Passive	100	100	-	16.7	12.2	10.2	9.4

CBC-053	Roadside	Passive	100	100	-	-	-	11.7	7.8
CBC-054	Roadside	Passive	100	100	-	-	-	13.5	5.1
CBC-055	Roadside	Passive	100	100	-	-	-	9.5	3.9
CBC-056	Roadside	Passive	100	100	-	-	-	8.7	8.8
FCC									
ADDC-008	Kerbside	Passive	100.0	90.4	24.4	24.3	14.4	14.9	26.6
ADDC-009	Roadside	Passive	100.0	82.4	17.2	17.5	13.4	13.6	13.9
ADDC-085	Kerbside	Passive	100.0	90.4	28.2	25.2	19.1	20.4	20.7
ADDC-111	Kerbside	Passive	100.0	82.4	16.0	16.0	10.7	11.9	12.5
ADDC-105	Roadside	Passive	100.0	90.4		14.5	10.8	12.2	11.9
ADDC-013	rural	Passive	100.0	42.0	10.5	10.5	6.7	8.6	9.5
ADDC-014	Kerbside	Passive	100.0	90.4	14.9	14.8	11.0	10.5	11.3
ADDC-015	Urban Background	Passive	100.0	90.4	12.6	12.3	9.7	10.1	10.0
ADDC-106	Roadside	Passive	100.0	82.4	-	12.5	9.6	9.7	9.4
ADDC-107	Roadside	Passive	100.0	90.4	-	-	7.8	8.2	7.7
ADDC-084	Kerbside	Passive	100.0	90.4	28.2	28.2	23.6	23.2	21.8
ADDC-064	Kerbside	Passive	100.0	73.1	-	-	-	23.2	23.9
ADDC-098	Kerbside	Passive	100.0	73.1	28.2	28.2	23.6	23.2	23.6
ADDC-117	Kerbside	Passive	100.0	90.4	33.9	32.5	10.0	11.1	10.3

ADDC-099	Kerbside	Passive	100.0	73.1	14.7	13.9	17.7	19.0	18.5
ADDC-023	Urban Background	Passive	100.0	90.4	26.7	27.8	18.6	20.1	19.3
ADDC-024	Kerbside	Passive	100.0	82.4	24.7	24.3	17.6	20.5	20.1
ADDC-118	Kerbside	Passive	100.0	55.5	24.8	23.6	10.7	11.2	13.1
ADDC-080	Kerbside	Passive	100.0	73.4	14.5	13.6	13.4	14.5	14.0
ADDC-066	Kerbside	Passive	100.0	90.4	22.6	19.3	17.7	17.3	16.6
ADDC-116	Kerbside	Passive	100.0	82.7	20.7	22.1	14.6	14.7	15.5
ADDC-029	Rural	Passive	100.0	90.4	20.0	19.1	14.3	12.3	12.5
ADDC-030	Industrial	Passive	100.0	90.4	17.6	17.2	17.7	18.5	17.2
ADDC-083	Kerbside	Passive	100.0	90.4	24.4	24.3	14.4	14.9	26.0
ADDC-032	Industrial	Passive	100.0	48.1	32.0	31.8	11.0	11.1	19.2
ADDC-033	Industrial	Passive	100.0	90.4	17.2	16.6	12.9	14.0	10.6
ADDC-034	Roadside	Passive	100.0	82.4	14.2	14.4	14.1	14.7	14.3
ADDC-120	Kerbside	Passive	100.0	90.4	20.8	17.1	11.5	11.4	13.4
ADDC-036	Kerbside	Passive	100.0	90.4	17.9	18.3	20.1	18.5	11.6
ADDC-037	Kerbside	Passive	100.0	75.0	16.6	16.6	14.3	15.9	18.3
ADDC-093	Kerbside	Passive	100.0	90.4	24.0	24.3	-	15.8	16.6
ADDC-044	Kerbside	Passive	100.0	75.3	20.2	20.3	15.8	19.0	14.0
ADDC-067	Kerbside	Passive	100.0	82.4	-	16.4	16.7	16.5	17.1

ADDC-068	Kerbside	Passive	100.0	90.4	24.8	24.4	14.0	13.4	16.7
ADDC-069	Kerbside	Passive	100.0	74.7	21.3	21.2	17.4	17.6	15.0
ADDC-070	Kerbside	Passive	100.0	90.4	19.8	17.6	18.7	16.3	17.3
ADDC-081	Kerbside	Passive	100.0	75.0	20.9	20.8	8.4	9.6	17.3
ADDC-119	Kerbside	Passive	100.0	90.4	21.5	24.8	11.8	13.5	8.5
ADDC-114	Kerbside	Passive	100.0	90.4	11.6	11.7	10.8	10.5	14.0
ADDC-052	Kerbside	Passive	100.0	74.7	17.3	16.7	7.2	7.0	10.3
ADDC-115	Kerbside	Passive	100.0	90.4	14.9	13.4	9.2	9.4	5.9
ADDC-112	Kerbside	Passive	100.0	82.4	8.6	8.8	8.8	9.3	10.0
ADDC-113	Kerbside	Passive	100.0	45.9	11.9	11.9	18.2	18.6	10.8
ADDC-091	Kerbside	Passive	100.0	74.7	12.2	11.2	7.8	8.2	18.2
ADDC-108	Kerbside	Passive	100.0	72.8	22.3	21.8	13.8	13.5	7.5
ADDC-110	Kerbside	Passive	100.0	90.4	9.5	10.0	21.4	23.3	12.4
ADDC-100	Kerbside	Passive	100.0	90.4	17.8	17.8	15.3	14.9	21.2
ADDC-060	Kerbside	Passive	100.0	90.4	18.4	16.7	12.6	12.1	13.1
ADDC-061	Kerbside	Passive	100.0	82.4	16.6	16.6	12.7	10.5	12.4
ADDC-121	Kerbside	Passive	100.0	82.7	16.6	16.4	25.3	27.3	12.6
ADDC-101	Kerbside	Passive	100.0	90.4	24.4	24.3	14.4	14.9	24.3
ADDC-109	Kerbside	Passive	100.0	72.5	12.2	10.4	8.6	8.6	8.3

ADDC-075	Kerbside	Passive	100.0	90.4	23.3	21.2	17.8	17.1	15.2
ADDC-102	Kerbside	Passive	100.0	90.4	11.2	11.1	8.4	8.3	7.5
ADDC-103	Kerbside	Passive	100.0	90.4	10.3	9.8	8.5	8.1	7.3
ADDC-104	Kerbside	Passive	100.0	90.4	-	-	-	12.5	16.5
ADDC-089	Kerbside	Passive	100.0	90.4	37.6	35.9	26.3	24.9	28.6
ADDC-122	Roadside	Passive	100.0	90.4	27.0	26.5	23.3	21.6	20.6
ADDC-123	Roadside	Passive	100.0	83.0	18.7	23.2	15.8	17.3	17.5

Notes:

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

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

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.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 2.16 – Trends in Annual Mean NO₂ Concentrations – IACC

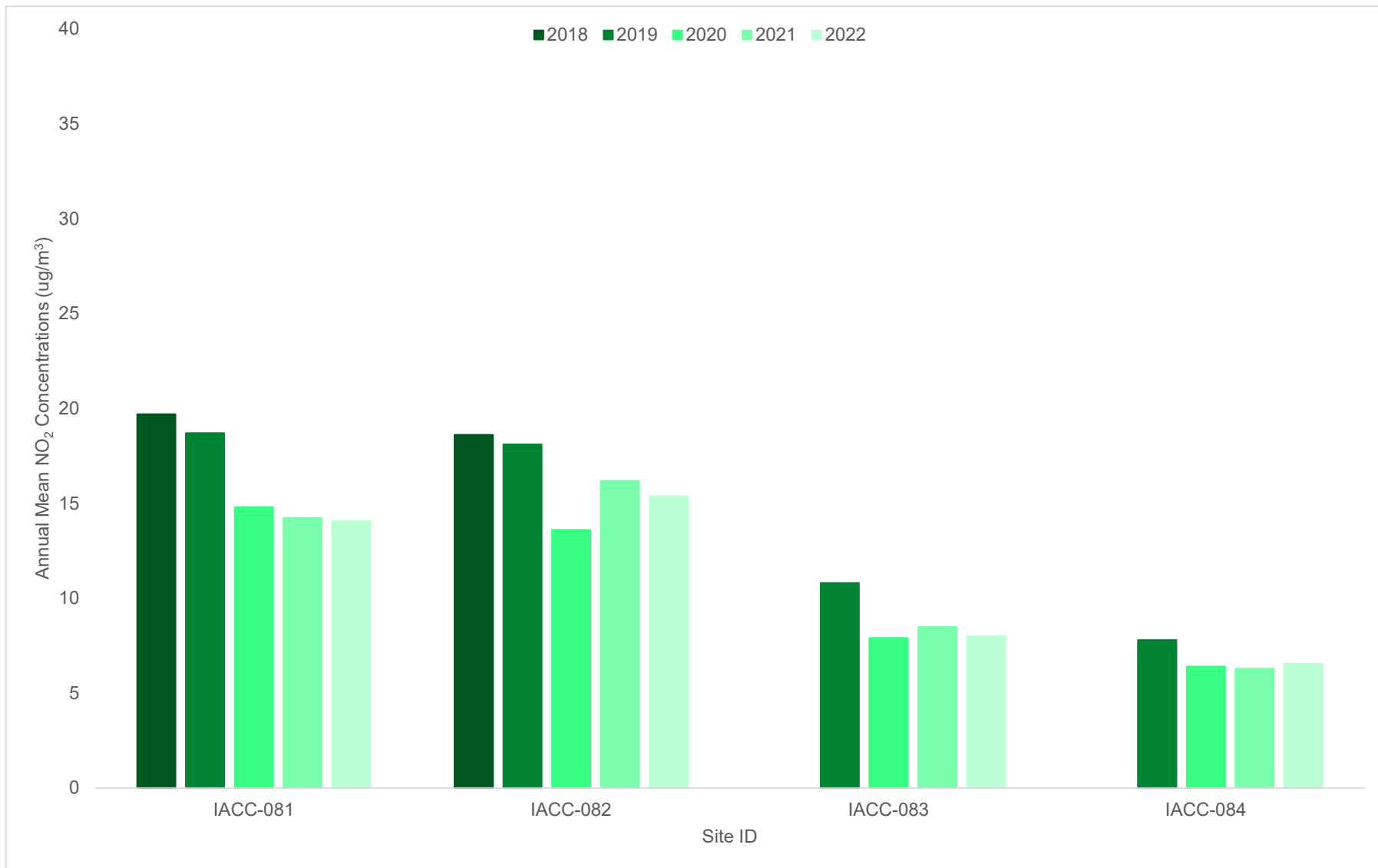


Figure 2.17 – Trends in Annual Mean NO₂ Concentrations – DCC

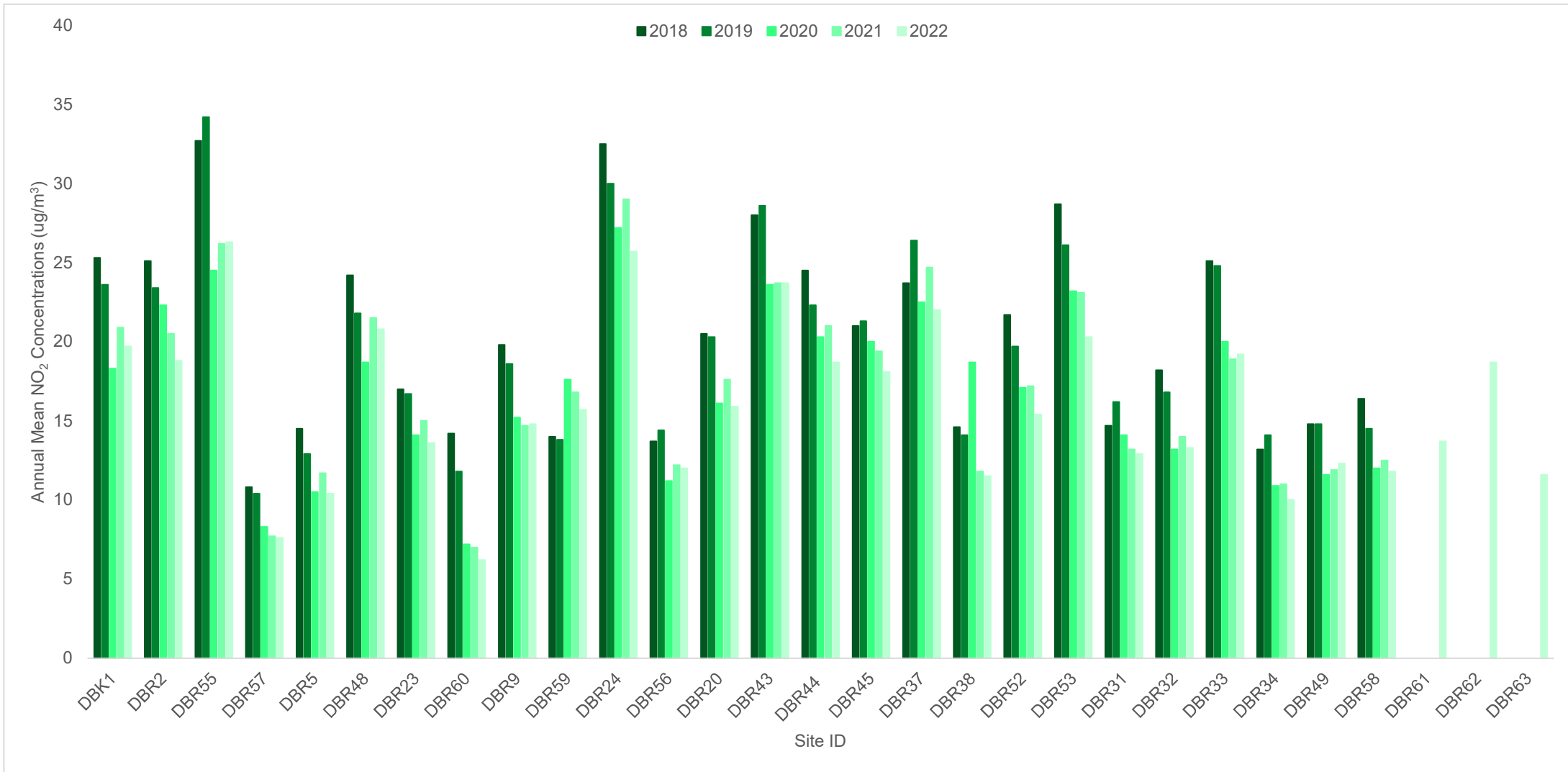


Figure 2.18 – Trends in Annual Mean NO₂ Concentrations – GC

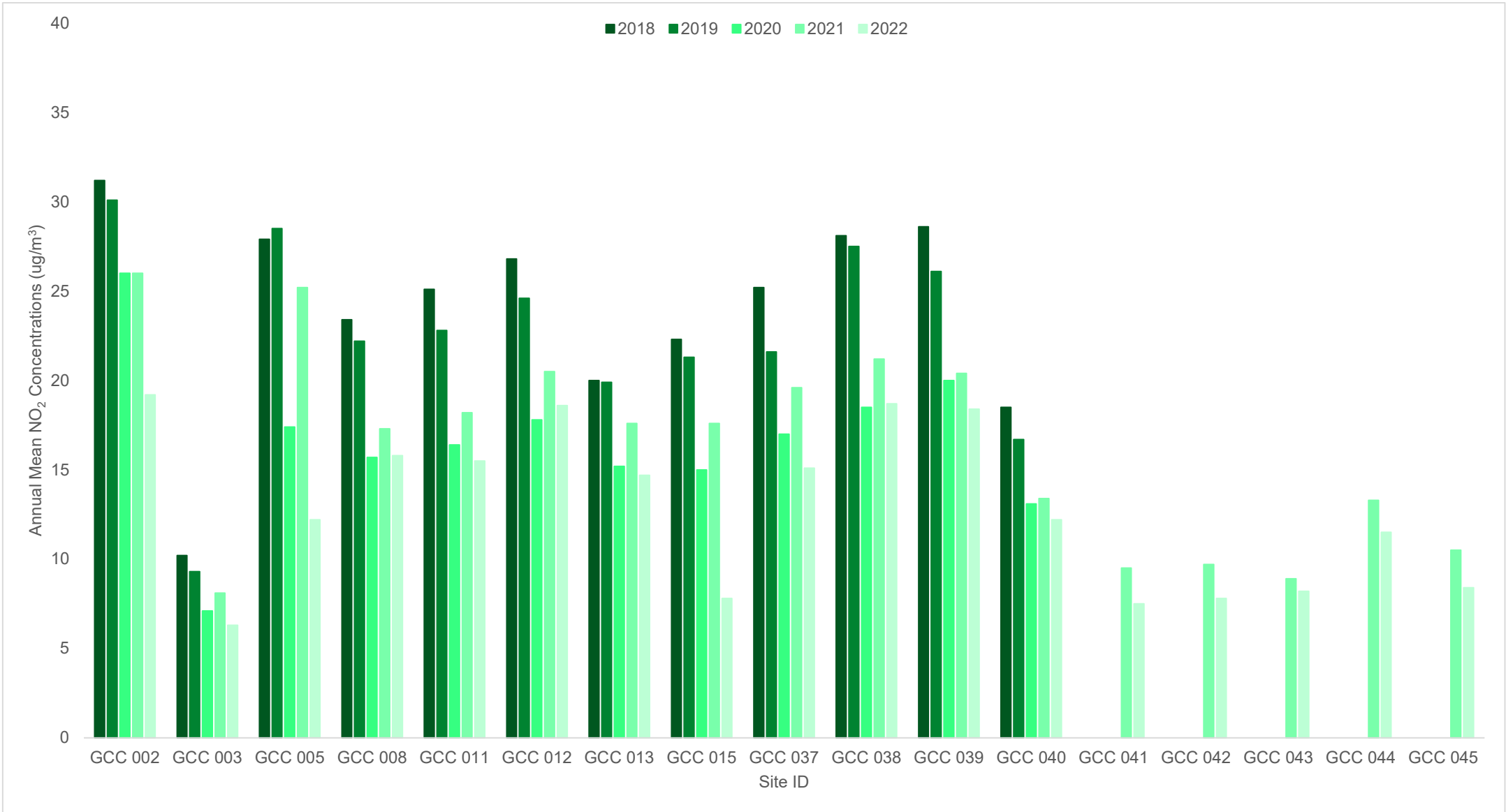


Figure 2.19 – Trends in Annual Mean NO₂ Concentrations – WCBC

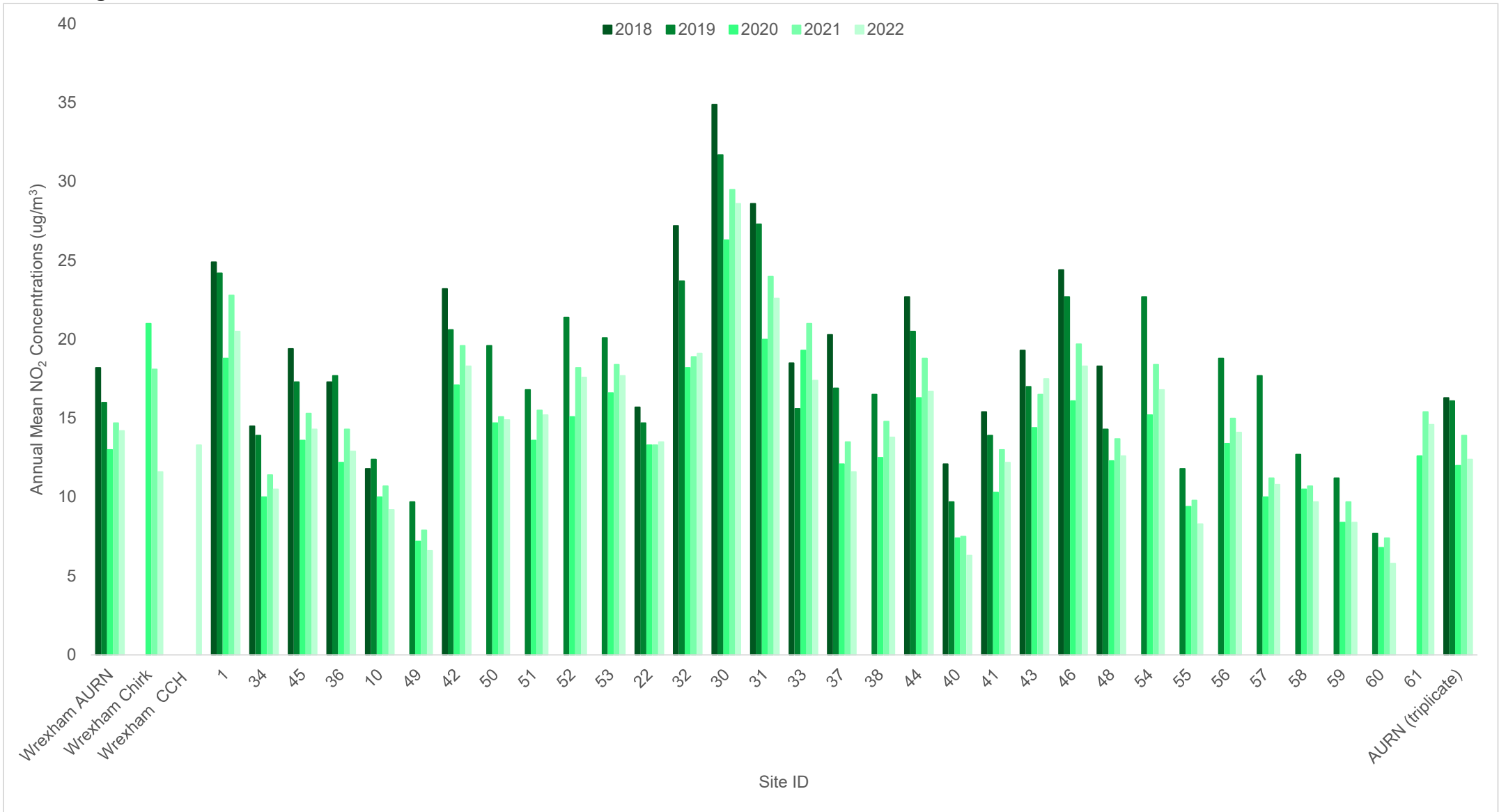


Figure 2.20 – Trends in Annual Mean NO₂ Concentrations – CCBC

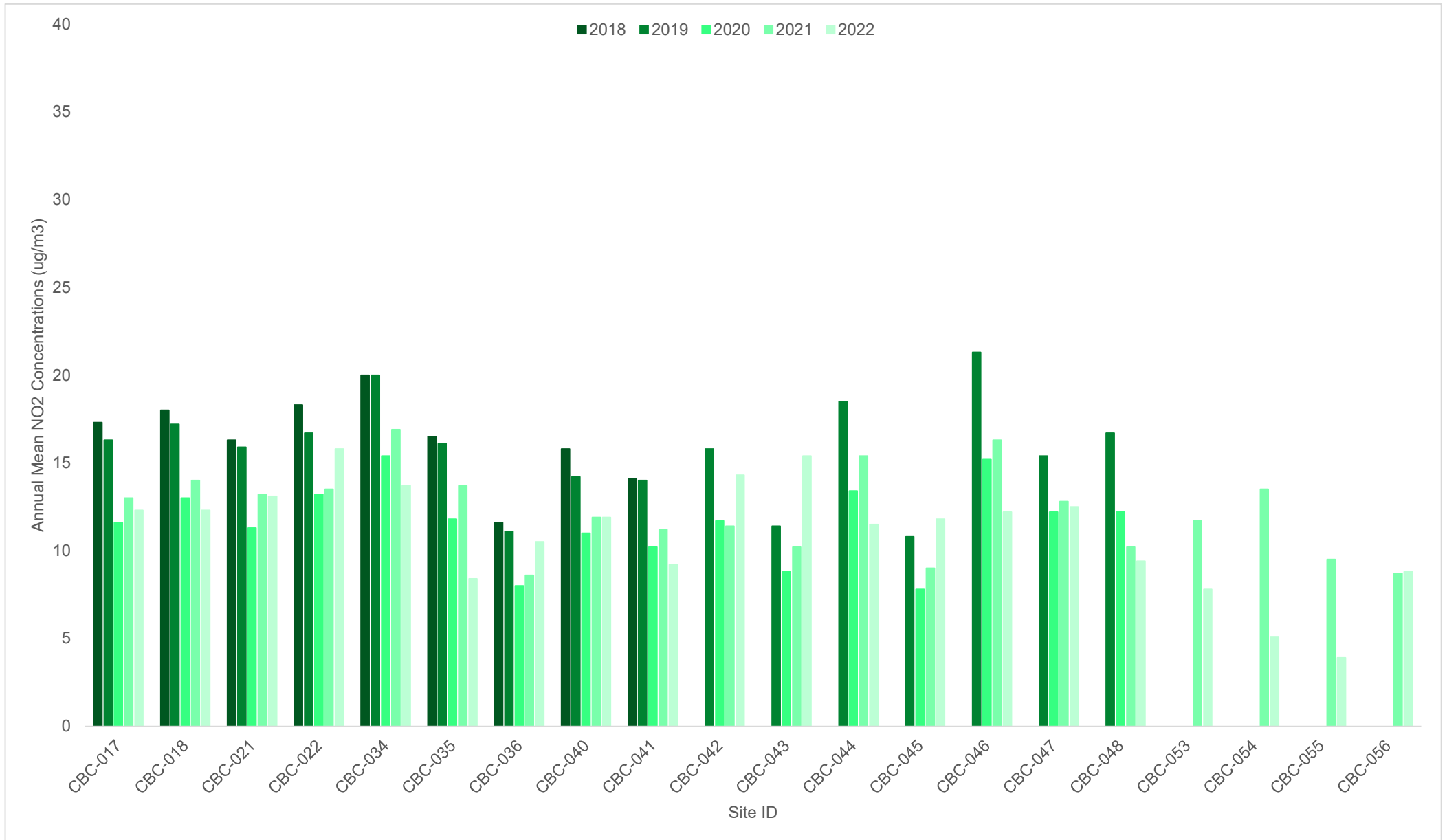


Figure 2.21 – Trends in Annual Mean NO₂ Concentrations – FCC 1/2

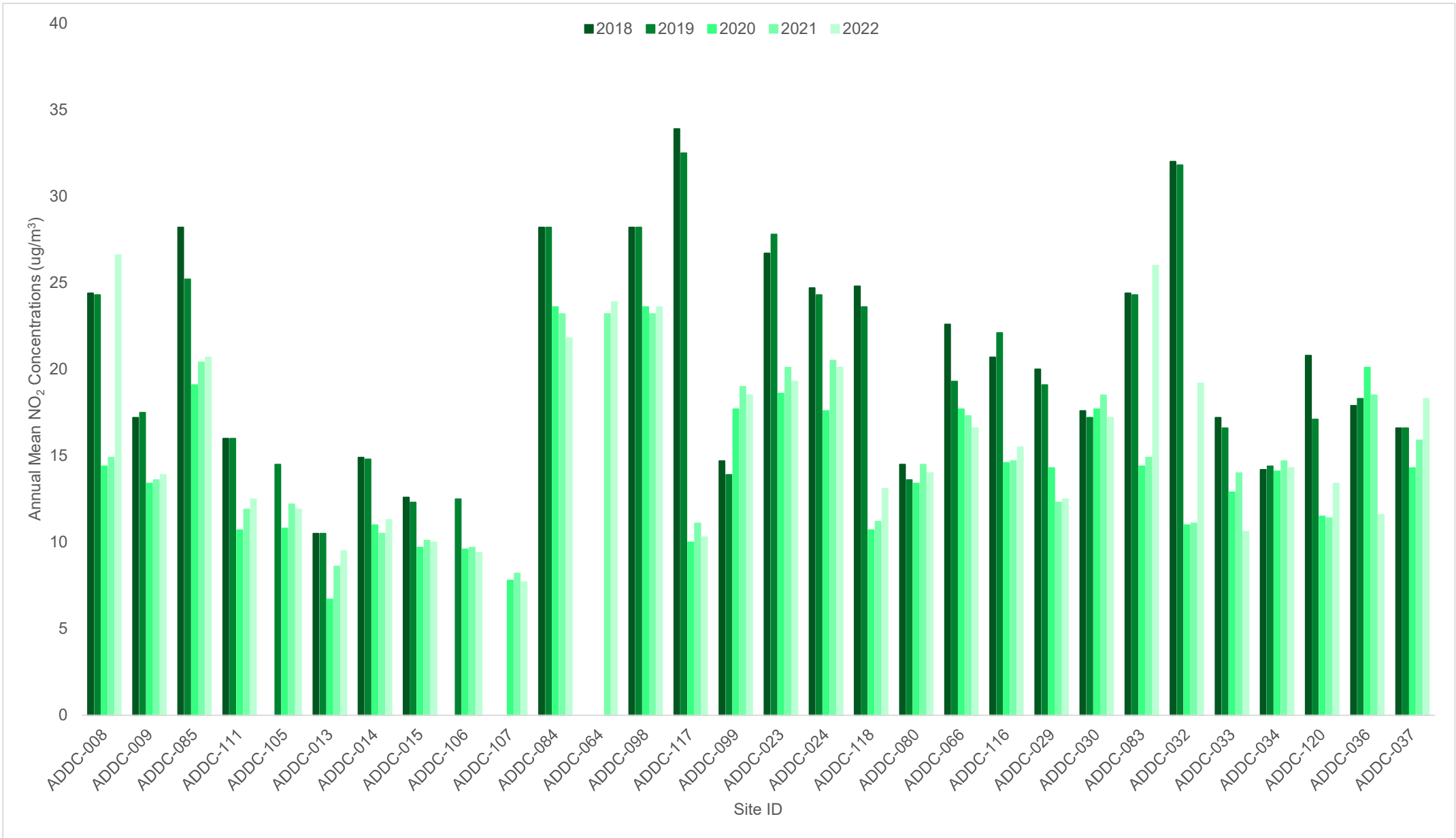


Figure 2.22 – Trends in Annual Mean NO₂ Concentrations – FCC 2/2

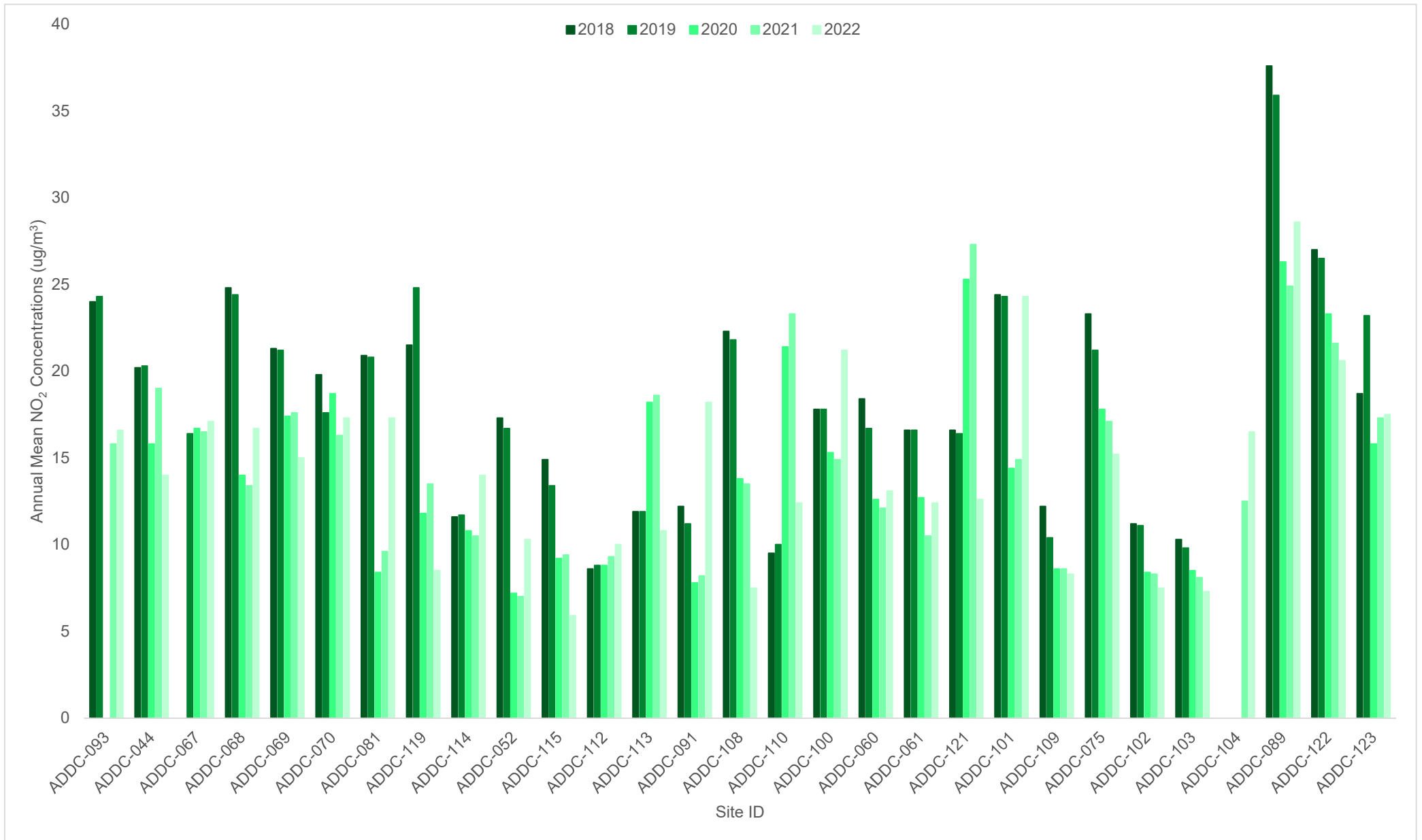


Table 2.4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WCBC									
Wrexham AURN	Roadside	Automatic	99.1	100	0	0	0	0	0
Wrexham Chirk	Industrial	Automatic	89.7	100	-	-	-	0	0
Wrexham Chirk community hospital	Urban Background	Automatic	100	100	-	-	-	-	0

Notes:

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

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

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

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

Table 2.5 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WCBC								
Wrexham AURN	Roadside	99.1	100	-	12	11	11.3	11.7
Wrexham Chirk	Industrial	92.3	100	-	-	9.3	8.3	11
Wrexham Chirk community hospital	Urban Background	90	100	-	-	-	-	10

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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 2.23 – Trends in Annual Mean PM₁₀ Concentrations

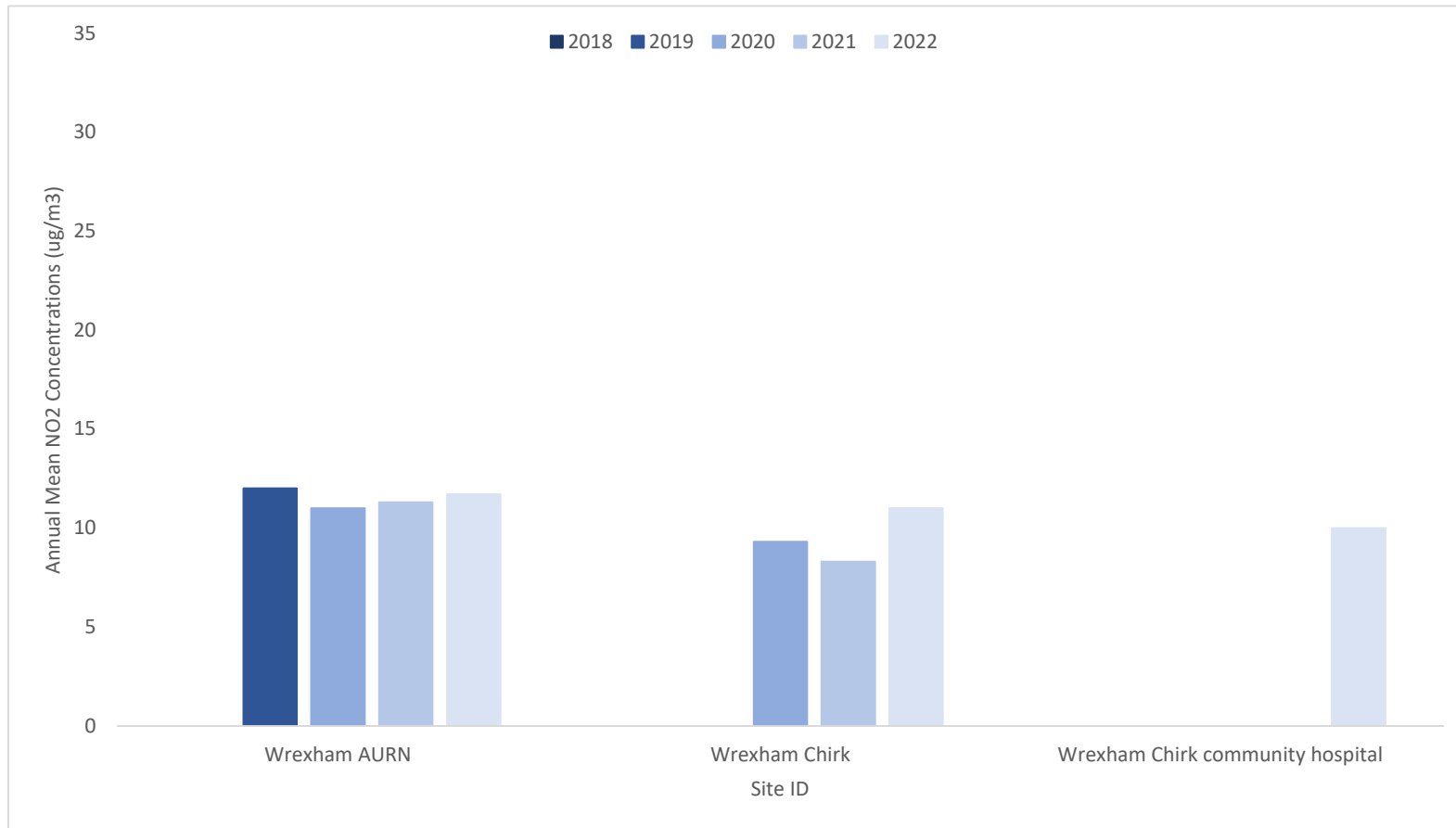


Table 2.6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WCBC								
Wrexham AURN	Roadside	98	100	-	0	0	1	0
Wrexham Chirk	Industrial	89.3	100	-	-	0	0	0
Wrexham Chirk community hospital	Urban Background	90	100	-	-	-	-	0

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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 2.7 – PM_{2.5} Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
Wrexham AURN	Roadside	98	100	-	8	7	7	7.1
Wrexham Chirk	Industrial	89.3	100	-	-	3	2.9	4
Wrexham Chirk community hospital	Urban Background	90	100	-	-	-	-	5

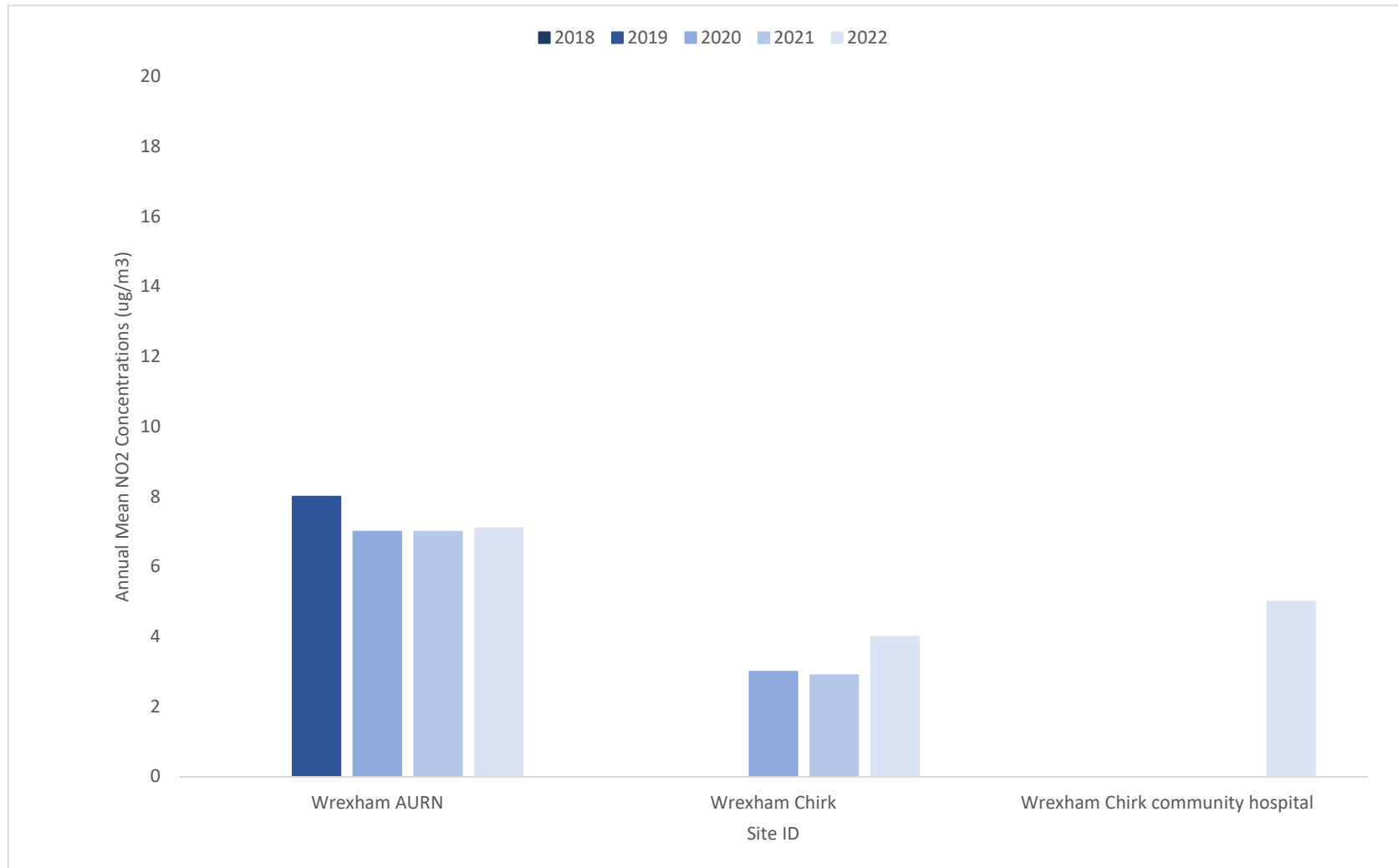
Notes:

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 2.24 – Trends in Annual Mean PM_{2.5} Concentrations



Comparison of 2022 Monitoring Results with Previous Years and the Air Quality Objectives

2.1.3 Nitrogen Dioxide (NO₂)

In 2022, NO₂ was monitored by all six local authorities at 162 diffusion tube sites. **Error! Reference source not found.** presents the annual mean NO₂ concentrations monitored in 2022. There was no exceedance of the annual mean AQO at any monitoring sites. There was also no concentration within 10% of the annual mean AQO.

Error! Reference source not found. shows the annual mean NO₂ concentration trend in **IACC**. IACC-081, IACC-082 and IACC-083 experience a decrease in NO₂ concentrations year-on-year. At IACC-084 concentrations have slightly increased when compared to 2021 levels however remain below concentration levels reported within 2019 (pre COVID-19 impacts).

Figure 2.17 shows the annual mean NO₂ concentration trend in **DCC**. Concentrations generally decreased between 2018-2019 and increased between 2020-2021. In 2022, concentrations have decreased at most of the sites when compared to 2021 levels and these 2022 concentrations also show a decrease when compared to 2019 concentrations (Pre COVID-19 impacts). Diffusion tube DBR33 reports a slight increase in annual NO₂ concentration during 2022 compared to that reported during 2021.

Figure 2.18 shows the annual mean NO₂ concentration trend in **GC**. The figure shows a general decrease in NO₂ concentration over the monitoring period 2017-2022. NO₂ concentrations decreased in 2020, potentially owing to impacts from the Covid-19 pandemic. NO₂ concentrations increased in 2022 at all sites, although they are still at a reduced concentration compared to 2019 which is representative of a period before visible Covid-19 impacts. NO₂ concentrations increased in 2021 at all sites from 2020 levels. However, these concentrations have now decreased in 2022 from 2021 levels at all sites.

Figure 2.19 shows the annual mean NO₂ concentration in **WCBC**. The figure shows a general decrease in NO₂ concentration in recent years, with lower concentrations monitored in 2020, which could be likely linked to reduced traffic flows during the Covid-19 pandemic. There has been a considerable decrease in concentrations at all sites in 2022 from 2021 levels. This includes NO₂ concentrations reported at diffusion tube 33. Previous years had reported increases in NO₂ concentrations at diffusion tube 33.

Figure 2.20 shows the annual mean NO₂ concentration in **CCBC**. NO₂ concentrations in CCBC have decreased in 2022 compared to 2021 levels at most sites.

Figure 2.21 and

Figure 2.22 represent the annual trends in NO₂ concentrations in **FCC**. Over the majority of the sites across the authority, NO₂ concentrations have decreased during 2022 compared to 2021. However, there have been increases in NO₂ concentrations during 2022 compared to concentrations reported in 2021 at 10 monitoring sites. Noticeable increases in NO₂ concentrations are reported at diffusion tube locations ADDC037, ADDC008, ADDC083 and ADDC032 during 2022 compared to the NO₂ concentrations that were reported during 2021.

Further details on the impact on the pandemic on LAQM duties are included in the 2021 Annual progress report (Appendix E).

NO₂ was also monitored at three automatic monitoring sites in **WCBC**. Comparison with the 1-hour mean AQO at these stations is included in **Error! Reference source not found.** No exceedances of the 1-hour mean AQO have been recorded since 2017.

Annual mean concentrations were processed using the LAQM diffusion tube processing tool released in June 2021¹. The diffusion tube processing tool automatically calculates time-weighted averages for tubes exposed longer than the recommended period of 5 weeks.

2.1.4 Particulate Matter (PM₁₀)

In 2022, PM₁₀ was monitored at three automatic monitoring stations in **WCBC**. Annual mean concentrations were obtained from the Air Quality in Wales website ([Link to Welsh air quality website](#)).

The concentrations recorded were well below the annual mean AQO of 40 µg/m³ at all stations. The highest concentration recorded was 11.7 µg/m³ at **Wrexham AURN** site.

There was no exceedance of the 24-hour mean AQO of 50 µg/m³ reported at any site within **WCBC** during 2022.

Annual mean PM₁₀ concentrations are included in **Table 2.5** and the number of exceedances of the 24-hour mean AQO are included in **Table 2.6**. **Figure 2.23** represents the annual trends in annual mean PM₁₀.

PM₁₀ annual mean concentrations have increased in 2022 at all sites but remain below the respective AQO.

¹ <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/>

2.1.5 Particulate Matter (PM_{2.5})

In 2022, PM_{2.5} was monitored at three automatic monitoring stations in **WCBC**. Annual mean concentrations were obtained from the Air Quality in Wales website ([Link to Welsh air quality website](#)).

The concentrations recorded in 2022 were below the annual mean standard of 25 µg/m³ at all stations. The highest concentration recorded was 7.1 µg/m³ at **WCBC** Wrexham AURN site.

Table 2.7 includes the annual mean PM_{2.5} concentrations and **Figure 2.24** represents the trend in annual mean concentrations.

PM_{2.5} annual mean concentrations have increased in 2022 at all sites but remain below the respective AQO.

Summary of Compliance with AQS Objectives as of 2022

The local authorities in North Wales (**IACC**, **DCC**, **GC**, **WCBC**, **CCBC**, and **FCC**) have examined the results from monitoring in their respective boroughs. Concentrations are all below the Objectives, therefore no further action is required.

3 New Local Developments

This sections highlights any changes in the North Wales Local Authorities that may affect the air quality.

Road Traffic Sources (and Other Transport)

IACC reports no new road traffic sources identified in 2022.

DCC reports no new road traffic sources identified in 2022.

GC reports no new road traffic sources identified in 2022.

WCBC reports no new road traffic sources identified in 2022.

CCBC reports no new road traffic sources identified in 2022.

FCC reports no new road traffic sources identified in 2022.

Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

IACC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2022.

DCC confirms the new source as Newbridge Energy (Blazers Fuels, Brickfield Lane, Ruthin UPRN: 10023750956) where one additional CHP Biomass Boiler is introduced. The permit is for 1x 5.2 MW thermal.

GC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2022.

WCBC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2022.

CCBC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2022.

FCC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2022.

Other Sources

IACC confirms that there are no reports of other sources that may affect air quality, including bonfires/ incidents, firework displays and domestic wood burners.

DCC confirms that there are no reports of other sources that may affect air quality, including bonfires/ incidents, firework displays and domestic wood burners.

GC confirms that there are no reports of other sources that may affect air quality, including bonfires/ incidents, firework displays and domestic wood burners.

CCBC confirms that there are no reports of other sources that may affect air quality, including bonfires/ incidents, firework displays and domestic wood burners.

FCC confirms that there are no reports of other sources that may affect air quality, including bonfires/ incidents, firework displays and domestic wood burners.

WCBC received 65 domestic bonfire complaints, 3 dark smoke and 12 chimney smoke complaints in 2022.

New planning applications

WCBC has received the following pre application enquires in 2022:

- Land At Stansty Fields, Mold Road, Stansty, Wrexham, LL11 4AX- Air quality report requirement recommended - Planning application awaited.
- Davy Way, Llay Industrial Estate, Llay, Wrexham- Air quality report requirement recommended - Planning application awaited.
- Land At Stansty Fields, Mold Road, Stansty, Wrexham, LL11 4AX - Air quality report requirement recommended - Planning application awaited.
- Davy Way, Llay Industrial Estate, Llay, Wrexham- Air quality report requirement recommended - Planning application awaited.

WCBC has received the following planning application in 2022:

- P/2021/1057 Land Opposite St Peters Close, Llay New Road, New Rhosrobin, Rhosrobin, Wrexham, LL11 4RB. Modelling calculated that the air quality impact from the proposed development are 'not significant' this conclusion was accepted and the condition was recommend for discharged.
- P/2022/0725 The Racecourse, Mold Road, Wrexham, LL11 2AH. Air quality report confirmed that the trigger levels for number of vehicles requiring an assessment had not been met. This conclusion was accepted.

- P/2022/0668 Land East of Clywedog Road South Wrexham Industrial Estate Wrexham. The assessment predicts that the development will have a negligible impact on concentrations of NO₂, PM₁₀ and PM_{2.5} at sensitive receptors. This conclusion was accepted.
- P/2022/0765 Kronospan Ltd, Holyhead Road, Chirk Wrexham LL14 5NT. The report modelled that there will be no significant impacts this conclusion was accepted. The technical note also confirms that the proposed development will be subject to regulatory controls for particulate matter from NRW's consolidated environmental permit.
- P/2022/0820 Wrexham Maelor Creamery Pickhill Lane Cross Lanes Wrexham LL13 0UE. Air quality report requirement recommended - Planning application in progress.

Updates to planning applications submitted in 2020

DCC has approved the following planning application:

- 40/2021/0825: Land Opposite Glan Clwyd Hospital, Rhuddlan Road, Bodelwyddan, Denbighshire

4 Policies and Strategies Affecting Airborne Pollution

Local / Regional Air Quality Strategy

There are no AQMAs declared in North Wales. Therefore, there are currently no active AQAPs. As air quality is considered to be good within all six local authority areas, there have been no local policies specifically related to air quality developed.

Air Quality Planning Policies

No new local/ regional Air Quality Strategy were published in 2022. Air quality is considered in the wider context in the following local policies:

IACC and **GC** have adopted a joint Local Development Plan which provides the land use strategy for the next 15 years. The plan addresses the need to maintain good air quality in the area and ensure new development does not cause adverse impacts.

DCC Local Development Plan (LDP) update can be accessed at [Link to Local Development Plan \(LDP\) update](#).

CCBC's Local Development Plan 2007 – 2022 contains a Spatial Objective SO9 to 'encourage efficient patterns of movements and to recognise the strategic role that the A55 and rail corridors will play in meeting the development needs of the Plan Area and to give particular attention to development locations that are convenient to pedestrians, walking and cycling in Conwy to aid the reduction of transport CO2 emissions'. The Local Development Plan also includes Strategic Policy NTE/1 – The Natural Environment. This policy 'seeks to regulate development so as to conserve and, where possible, enhance the Plan Area's natural environment, countryside and coastline'.

WCBC is committed to the sustainable development principle and the 'five ways of working' which the Welsh Government introduced to help public bodies shape their decisions to help them meet the sustainable development principle.

WCBC has adopted Council Plan 2020-23 (available at [link to Wrexham Council service plan](#)). This document lays out the Councils vision for 2020-23 across its main priority areas which includes a section on Developing and Decarbonising Our Environment. With the Councils responsibility as a community leader a Council Plan has been produced with developing and decarbonising our environment as a key policy. The plan recognises that the climate emergency is one of the most important topics of our time and we all have a

responsibility to reduce our carbon footprint. Wrexham Council declared a climate emergency in 2019 and has been working towards reducing its carbon footprint with the plan detailing such initiatives as:

- To decarbonise council-owned buildings through projects such as the introduction of airsource heating, LED lighting upgrades and improved insulation.
- WCBC will work towards reducing carbon emissions from our work related travel: both by electrifying those vehicles within our own fleet, as well as reducing the business miles travelled in personal vehicles.
- Council will seek to reduce the significant amount of carbon emissions attributed to the goods and services we procure and commission, through changing our practices and supporting our suppliers.
- WCBC will also look to off-set carbon which we cannot remove, by making environmental improvements, such as creating woodland and wildflower meadows.

Local Transport Plans and Strategies

CCBC's LDP 2007 – 2022 contains a Spatial Objective SO9 to "encourage efficient patterns of movement and to recognise the strategic role that the A55 and rail corridors will play in meeting the development needs of the Plan Area and to give particular attention to development locations that are convenient to pedestrians, walking and cycling in Conwy to aid the reduction of transport CO₂ emissions".

The North Wales Joint Local Transport Plan (LTP) (2015-2025) has been jointly produced by the six North Wales local authorities in response to the Welsh Government requirement for LTPs to be submitted by the end of January 2015. The plan preparation has been overseen by Taith as a Joint Committee of the local authorities for transport. The Plan is a statutory document for transport in the region.

A review of the Wales Transport Strategy Objectives, the Welsh Government targets for investment and the Regional Transport Plan priorities, together with the review of issues and opportunities led to the drafting of outcomes for the Local Transport Plan. The Local Transport Plan Outcomes that relate to bringing about air quality improvements includes:

- Connections to Key Destinations and Markets: Support for Economic Growth through an improvement in the efficiency, reliability, resilience, and connectivity of

movement, including freight, within and between North Wales and other regions and countries (with a particular focus on accessibility to the Enterprise Zones and an improvement in the vitality and viability of towns and other key centres); and

- **Benefits and Minimised Impacts on the Environment:** the potential for transport improvements to positively affect the local and global natural and built environment will have been maximised and negative impacts minimised, including adaptation to the effects of climate change.

A set of higher-level interventions have been developed which together aim to deliver the vision and outcomes sought for the LTP:

- **Transport network resilience improvements** – Improvements to key county corridors to remove/ improve resilience problems;
- **Integration with strategic public transport services** – Schemes to improve access to rail stations including road access and bus services and interchange facilities, support for park and ride, walking and cycling routes and facilities;
- **Improved links to Employment** – Schemes to provide improved access to Enterprise Zones (EZs), ports, employment sites and town centres;
- **Access to services** – Range of integrated transport measures to improve access to education, health, community, shopping and other services by public transport, walking and cycling as well as community transport, taxi, car share sites; and
- **Encouraging sustainable travel** – Infrastructure improvements and promotional initiatives to increase levels of walking and cycling both for travel and for leisure as well as public transport. May include road and rail bridges/ crossings, cycle routes, footway/ footpath provision, safe routes to school, travel planning as well as road safety measures to assist vulnerable users.

Transport is a key part of **WCBC's** development and for the decarbonising environment for example by ensuring that supporting infrastructure including road, rail, public transport modes and active travel solutions is developed to interface with improved A483, which will improve routes to the town centre, and contribute to decarbonisation.

Active Travel Plans and Strategies

IACC submitted an Active Travel Plan to Welsh government in 2021 (available at [Link to Active Travel Plan](#)). The IACC will take minor works to the Active Travel Network, as well as further pre scheme development focusing on the 8 settlements chosen for Active Travel improvements for 2022-2023. Further bids will be submitted for 2023-2024 in due course. The Welsh Government have successfully approved our ATNM on the 3 August 2022. The ATNM will be made available to the public on this page soon.

In **CCBC**, 5 towns and villages meet the Welsh Government requirements of Active Travel Areas ([Link to further information on towns and villages which meet requirements](#))

Local Authorities Well-being Objectives

CCBC and **DCC** have used the power within the Wellbeing of Future Generations (Wales) Act 2015 to form a single Public Services Board It can be accessed at ([Link for CCBC and DCC's single Public Services Board](#)). **CCBC** have undertaken a wellbeing assessment and the results of this can be found at the following link: ([Link for results of wellbeing assessment undertaken by CCBC](#)).

IACC and **GC** have published Wellbeing Plans (available at [Link for Wellbeing Plans within IACC and GC](#)) the report recognises that the population of Anglesey considers that the natural environment improves well-being and contributes towards quality of life. As a consequence, the Board recognised the importance of protecting the natural environment. While this does not make specific reference to Air Quality, there could be an implied reference and future plans will be required by law to report on progress made.

FCC has published its Wellbeing Plan 2017-2023 which is available at: ([Link for FCC's Wellbeing Plan 2017-2023](#)). The plan recognises the importance of protecting and enhancing the Environment. It states that the Authority wants to ensure 'air quality is the best it can be by working with partners to monitor and reduce harmful emissions'.

FCC and **WCBC** have also published their combined Well being plan 2023-2028 that is available at: ([Link for FCC and WCBC's Wellbeing Plan 2023-2028](#)).

Promoting good health and wellbeing is one of the six wellbeing and improvement priorities for **WCBC** Plan 2020 - 23. It is the Councils vision for the future is that all the people that live here are supported to fulfil their potential, prosper, and achieve a high standard of well-being.

Green Infrastructure Plans and Strategies

IACC has started a UK CRF Adfywio Môn Renewal Programme which is available at: ([Link for IACC's UK CRF Adfywio Môn Renewal Programme](#))

FCC has published a background paper on Green infrastructure that is available at: ([Link for FCC's background paper on Green infrastructure](#)).

Climate Change Strategies

IACC has adopted a corporate biodiversity plan (2021-2022) available at: ([Link for IACC's corporate biodiversity plan \(2021-2022\)](#)) The aim of the Plan is to ensure the County Council maintains and enhances the island's varied and notable biodiversity in the exercise of its statutory duties and discretionary activities and, in so doing, promote the resilience of ecosystems.

CCBC has published a Climate Emergency Declaration to become a net zero Authority by 2030. Further information on this declaration can be found at: ([Link for CCBC's Climate Emergency Declaration](#)).

DCC has published its Climate strategy that can be accessed at: ([Link for DCC's Climate Strategy](#)).

FCC has published its Climate change strategy (2022-2030) that can be accessed at [Link for FCC's Climate change strategy \(2022-2030\)](#)

WCBC is committed to play its part in being a globally responsible Wales. Council has already worked on a wealth of carbon reduction initiatives over the last decade, which have established their reputation as a leader in delivering carbon saving initiatives WCBC declared a Climate and Ecological Emergency in September 2019, and published a Decarbonisation Plan (The Plan) in May 2021. The Plan focusses on four key themes (Buildings, Transport and Mobility, Land Use and Procurement) as well as some higher-level actions which are integral to WCBC's response to addressing the climate emergency. One of the indicators of the success of this plan is for a County Borough that is becoming more resilient in planning for the effects of climate change.

5 Conclusion and Proposed Actions

Conclusions from New Monitoring Data

There were no exceedances of the respective NO₂, PM₁₀, PM_{2.5} AQOs recorded at any monitoring sites in 2022. Annual mean concentrations were generally lower than previous years except when comparing annual mean concentrations from 2023 to 2020. Lower annual mean concentrations from 2020 are likely due to reduced traffic flows associated with the Covid-19 pandemic in 2020.

Conclusions relating to New Local Developments

There are no new or newly identified local developments which are expected to cause a significant adverse air quality impact on the surrounding area within North Wales

Other Conclusions

No detailed assessments are required as a result of exceedances of pollutant concentrations and no AQMA's have been declared. Nonetheless, wider policy documents discussed in Section 4 address air quality issues to ensure concentrations remain below the AQOs.

Proposed Actions

The recommendations for the coming year are listed below:

- Proceed to the 2023 Updating and Screening Assessment;
- Maintain the air quality monitoring programmes in each local authority; and
- Ensure new monitoring sites are added as required

References

- Bureau Veritas (2017). North Wales Combined Authority Annual Progress Report 2017. <https://www.denbighshire.gov.uk/en/resident/pests-pollution-and-food-hygiene/pollution/air-quality-reports/north-wales-combined-authority-2017-air-quality-progress-report.pdf>
- Conwy County Borough Council (2016) Annual Status Report
- Denbighshire County Council (2016) Annual Status Report
- Department for Environment, Food and Rural Affairs (Defra) (2016) Local Air Quality Management Technical Guidance LAQM.TG(16).
- Flintshire County Council (2016) Annual Status Report
- Flintshire County Council Unitary Development Plan 2000-2015. <http://www.cartogold.co.uk/flintshire/>
- Gwynedd Council (2016) Annual Status Report
- Isle of Anglesey County Council (2016) Annual Status Report
- Isle of Anglesey County Council (2018) Wylfa Newydd: Supplementary Planning Guidance May 2018. <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010007/EN010007-002957-Isle%20of%20Angelesey%20-%20Wylfa%20Newydd%20SPG%20May%202018.pdf>
- National Diffusion Tube Bias Adjustment Spreadsheet, Version Number 06/19. July 2019. <https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>
- The Anglesey and Gwynedd Joint Local Development Plan. <https://www.gwynedd.llyw.cymru/en/Council/Strategies-and-policies/Environment-and-planning/Planning-policy/Joint-Local-Development-Plan/Joint-Local-Development-Plan.aspx>
- The Conwy Local Development Plan 2007-2022. http://spp.conwy.gov.uk/upload/public/attachments/629/Conwy_Adopted_LDP_2007_2022_English_.pdf

- The Denbighshire County Council Local Development Plan 2006-2021.
<https://www.denbighshire.gov.uk/en/resident/planning-and-building-regulations/local-development-plan/ldp-evidence-monitoring-information/ldp-2006-2021-amr-2017-en.pdf>
- Welsh Government (2017) Local air quality Management in Wales
- Wood Environment and Infrastructure Solutions UK Ltd (Wood) (2018) North Wales Combined Authority 2018 Air Quality Progress Report.
<https://beta.conwy.gov.uk/en/Resident/Environmental-problems/assets-Air-Quality/documents/North-Wales-Combined-Authority-Air-Quality-Progress-Report-2018.pdf>
- Wood Environment and Infrastructure Solutions UK Ltd (Wood) (2019) North Wales Combined Authority 2019 Air Quality Progress Report.
<https://www.anglesey.gov.uk/documents/Docs-en/Environmental-health/Pollution/Air-Quality-Progress-Report-2019.pdf>
- Wood Environment and Infrastructure Solutions UK Ltd (Wood) (2020) North Wales Combined Authority 2020 Air Quality Progress Report.
<https://www.anglesey.gov.uk/documents/Docs-en/Environmental-health/Pollution/Air-Quality-Progress-Report-2019.pdf>
- Wood Environment and Infrastructure Solutions UK Ltd (Wood) (2021) North Wales Combined Authority 2021 Air Quality Progress Report.
<https://www.conwy.gov.uk/en/Resident/Environmental-problems/assets-Air-Quality/documents/APR-North-Wales-2021-Final-Issued.pdf>
- WSP UK Limited (2022) North Wales Combined Authority 2021 Air Quality Progress Report. <https://www.conwy.gov.uk/en/Resident/Environmental-problems/assets-Air-Quality/documents/North-Wales-Authorities-Collaborative-Project-2022-Air-Quality-Progress-Report-v2-Final-Issue00001-C02.pdf>
- Wrexham County Borough Council (2016) Annual Status Report
- Wrexham County Borough Council Unitary Development Plan 1996 to 2011.
https://www.wrexham.gov.uk/english/planning_portal/plan_policy/wxm_udp.htm

Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

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

Table A.1 – Full Monthly Diffusion Tube Results for 2022 ($\mu\text{g}/\text{m}^3$)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
IACC															
IACC-81	19.7	11.8	29.3	26.1	22.8	14.0	15.5	18.9	12.4	14.8	15.6	21.2	18.5	14.1	N/A
IACC-82	23.8	16.5	23.9	23.0	19.2	18.1	19.4	22.6	17.9	16.2	18.2	23.9	20.2	15.4	N/A
IACC-83	17.2	8.8	11.5	11.7	8.1	7.0	8.6	9.6	9.5	8.3	9.4	16.7	10.5	8.0	N/A
IACC-84	14.2	10.1	10.7	6.9	7.6	7.4	7.6	8.6	5.2	6.1	N/A	10.3	8.6	6.5	N/A
DCC															
DBK1	27.8	20.9	32.2	26.6	25.0	21.5	23.1	24.7	21.4	27.2	29.1	31.7	25.9	19.7	N/A
DBR2	28.3	21.5	34.0	26.0	-	19.5	21.9	24.0	20.4	26.9	-	-	24.7	18.8	N/A
DBR55	38.4	30.6	40.7	38.0	29.0	27.4	32.6	38.1	31.8	36.0	34.3	38.6	34.6	26.3	N/A
DBR57	14.3	8.8	15.7	9.7	6.1	4.9	7.1	7.0	7.4	9.0	13.0	16.6	10.0	7.6	N/A
DBR5	15.2	13.4	14.6	17.8	12.4	12.0	14.8	16.8	14.7	8.5	10.5	13.9	13.7	10.4	N/A
DBR48	36.1	19.4	35.8	28.1	19.5	21.0	23.7	28.1	26.9	-	-	35.3	27.4	20.8	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DBR23	28.2	16.3	22.4	17.3	14.5	13.3	15.3	16.3	17.7	13.0	16.7	23.9	17.9	13.6	N/A
DBR60	11.3	7.9	11.4	8.8	6.8	6.3	7.3	7.6	6.5	5.2	7.6	11.2	8.2	6.2	N/A
DBR9	24.6	18.2	28.2	19.5	16.4	14.6	16.3	18.3	18.4	22.2	8.6	27.9	19.4	14.8	N/A
DBR59	30.2	19.9	25.3	19.9	17.7	15.7	17.3	18.4	18.8	23.2	7.0	34.3	20.6	15.7	N/A
DBR24	48.7	32.6	32.2	35.1	31.7	31.7	32.8	32.4	35.7	17.5	33.2	41.7	33.8	25.7	N/A
DBR56	15.8	-	-	17.9	12.7	12.5	16.0	13.2	15.1	15.7	17.9	21.4	15.8	12.0	N/A
DBR20	24.4	22.5	23.5	21.6	18.2	17.9	19.1	22.1	20.7	20.4	18.5	21.9	20.9	15.9	N/A
DBR43	44.1	31.0	32.0	29.3	27.8	25.2	28.0	29.5	29.7	26.7	31.7	39.6	31.2	23.7	N/A
DBR44	36.3	22.9	25.7	25.7	20.9	19.0	19.5	25.6	24.2	19.7	23.2	32.0	24.6	18.7	N/A
DBR45	30.7	21.0	25.8	-	19.9	-	20.7	24.5	20.1	20.0	19.2	36.0	23.8	18.1	N/A
DBR37	37.3	26.4	30.5	33.7	27.0	27.3	29.5	36.6	27.6	22.9	23.7	24.6	28.9	22.0	N/A
DBR38	19.1	15.9	16.7	15.1	13.5	13.5	-	-	-	-	-	-	15.6	11.5	N/A
DBR52	29.5	19.3	28.6	21.8	17.3	15.6	16.6	19.6	-	20.8	14.3	19.8	20.3	15.4	N/A
DBR53	39.8	26.9	30.3	28.3	25.6	22.2	25.6	27.9	29.3	19.5	12.9	32.0	26.7	20.3	N/A
DBR31	23.7	14.8	19.0	18.1	13.3	11.8	12.7	-	14.8	-	15.1	27.0	17.0	12.9	N/A
DBR32	23.6	15.7	23.2	18.6	15.4	12.9	16.6	16.2	19.8	12.8	10.7	24.1	17.5	13.3	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DBR33	36.6	24.0	31.0	25.9	20.7	17.5	18.6	20.1	20.9	28.2	31.7	28.1	25.3	19.2	N/A
DBR34	17.3	11.5	20.4	15.5	10.7	9.7	10.6	12.5	11.4	14.3	3.9	20.7	13.2	10.0	N/A
DBR49	20.9	12.2	21.7	19.4	13.7	12.2	15.7	18.4	15.3	13.2	9.6	22.5	16.2	12.3	N/A
DBR58	18.6	15.4	17.7	18.6	15.6	13.0	13.7	15.5	12.8	13.7	10.7	21.6	15.6	11.8	N/A
DBR61	-	20.0	22.6	18.0	17.5	15.8	15.0	15.5	14.9	17.3	14.9	27.0	18.0	13.7	N/A
DBR62	-	24.7	27.6	27.6	22.6	18.1	18.3	22.9	21.3	23.3	28.7	34.9	24.5	18.7	N/A
DBR63	-	12.1	20.6	17.5	12.1	9.5	11.9	15.6	13.9	14.1	21.4	18.6	15.2	11.6	N/A
GC															
GCC 002	36.8	22.5	25.5	27.2	21.7	21.3	23.3	26.7	22.0	22.5	28.4	24.7	25.2	19.2	N/A
GCC 003	12.9	8.0	8.3	9.4	5.9	5.1	6.2	7.4	6.9	7.1	12.1	10.7	8.3	6.3	N/A
GCC 005	27.0	15.4	15.9	18.9	13.7	12.0	14.1	17.4	14.7	12.3	17.3	14.1	16.0	12.2	N/A
GCC 008	24.8	19.1	22.4	23.7	17.9	15.3	18.7	20.8	20.3	19.7	24.8	22.5	20.8	15.8	N/A
GCC 011	26.7	18.9	20.3	19.7	18.7	15.7	16.3	23.8	21.4	20.3	21.8	-	20.3	15.5	N/A
GCC 012	27.0	20.0	25.2	30.8	22.7	17.8	22.6	30.9	27.5	19.7	27.4	22.8	24.5	18.6	N/A
GCC 013	21.6	16.1	20.2	21.7	18.6	13.9	19.6	22.4	22.8	15.7	22.8	17.5	19.4	14.7	N/A
GCC 015	23.0	10.8	9.3	10.4	7.3	6.5	7.8	9.3	9.0	8.3	12.2	9.6	10.3	7.8	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
GCC 037	25.4	17.7	21.4	-	16.1	14.3	16.4	18.2	19.2	-	26.9	23.1	19.9	15.1	N/A
GCC 038	24.2	19.5	22.1	33.0	22.2	20.0	24.8	30.3	26.8	22.1	27.9	22.3	24.6	18.7	N/A
GCC 039	26.3	19.6	24.5	33.0	21.2	18.2	24.9	30.7	27.0	19.8	25.8	20.4	24.3	18.4	N/A
GCC 040	20.9	16.3	15.3	13.8	13.7	12.8	13.3	-	12.7	16.5	18.5	22.2	16.0	12.2	N/A
GCC 041	15.5	8.9	11.9	11.7	7.2	5.7	7.6	8.8	9.9	7.1	15.0	10.1	9.9	7.5	N/A
GCC 042	14.9	9.8	11.2	10.9	7.2	6.0	7.2	8.7	9.5	11.5	14.6	12.2	10.3	7.8	N/A
GCC 043	16.3	8.9	11.9	11.0	8.2	7.0	8.0	8.7	9.0	10.8	16.6	13.0	10.8	8.2	N/A
GCC 044	17.7	12.6	13.6	14.8	15.6	13.6	-	18.2	15.9	14.3	16.1	14.4	15.2	11.5	N/A
GCC 045	12.1	9.5	11.6	12.3	10.9	9.2	10.4	13.1	10.7	10.4	12.8	10.5	11.1	8.4	N/A
WCBC															
1	24.1	25.8	35.9	30.6	25.4	24.7	26.5	25.7	30.5	32.8	7.2	33.9	26.9	20.5	N/A
34	15.4	12.2	24.3	16.0	11.0	7.9	13.0	12.4	14.5	15.0	9.7	15.1	13.9	10.5	N/A
45	18.0	13.6	23.1	24.0	4.8	14.8	18.6	21.5	20.6	22.9	14.5	29.1	18.8	14.3	N/A
36	26.3	20.2	26.5	20.6	15.7	13.4	16.4	0.6	15.6	19.7	6.6	21.8	17.0	12.9	N/A
10	19.4	14.8	15.9	14.6	12.1	9.2	10.7	11.2	9.5	12.4	7.3	8.5	12.1	9.2	N/A
49	11.1	8.5	12.7	10.5	8.4	7.8	6.5	8.3	6.7	8.1	6.3	10.0	8.7	6.6	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
42	31.3	20.7	30.1	26.6	19.2	20.4	22.5	24.6	27.6	22.1	22.4	21.9	24.1	18.3	N/A
50	26.5	15.3	21.9	23.9	17.3	15.2	19.5	22.5	22.6	16.5	13.0	21.7	19.7	14.9	N/A
51	24.6	14.8	26.3	21.9	17.1	15.0	16.7	20.3	21.4	21.5	10.8	28.9	19.9	15.2	N/A
52	25.6	15.3	34.3	28.3	20.1	17.7	20.6	25.7	20.8	24.4	27.0	18.6	23.2	17.6	N/A
53	31.0	14.4	30.2	24.7	22.6	20.2	25.1	26.2	27.3	26.0	6.2	24.8	23.2	17.7	N/A
22	21.4	21.6	23.8	19.2	17.3	14.5	15.4	15.8	14.0	21.3	5.9	22.6	17.7	13.5	N/A
32	35.9	19.9	30.8	31.6	19.6	17.0	19.8	25.0	24.3	21.2	23.3	32.8	25.1	19.1	N/A
30	40.6	31.2	44.4	38.5	37.3	34.1	36.0	42.6	37.9	42.7	26.8	39.0	37.6	28.6	N/A
31	43.4	28.7	39.9	33.5	28.8	24.5	28.0	32.2	34.9	32.9	14.2	16.4	29.8	22.6	N/A
33	-	31.1	33.2	32.1	23.2	-	-	-	22.3	23.1	14.5	30.8	26.3	17.4	N/A
37	20.3	16.9	-	17.1	12.3	10.5	12.2	15.0	13.3	14.4	13.0	22.3	15.2	11.6	N/A
38	25.2	16.0	21.8	16.0	14.3	13.4	17.9	18.0	21.2	17.5	21.0	15.5	18.2	13.8	N/A
44	30.7	19.9	31.4	25.0	18.9	16.3	20.1	20.9	19.6	25.1	18.3	17.5	22.0	16.7	N/A
40	12.9	6.5	10.9	9.4	7.8	5.3	7.2	8.7	-	7.3	4.7	10.0	8.2	6.3	N/A
41	18.6	9.1	25.1	18.4	12.3	10.1	13.5	16.9	15.5	13.4	15.0	25.1	16.1	12.2	N/A
43	30.3	21.2	30.9	26.3	17.1	15.1	17.7	18.2	20.8	24.5	24.8	30.0	23.1	17.5	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
46	33.1	19.5	40.4	27.8	20.9	16.6	19.4	22.2	21.4	28.7	9.3	29.0	24.0	18.3	N/A
48	24.8	8.4	20.5	17.3	13.8	11.9	17.1	17.6	17.6	13.3	14.9	21.0	16.5	12.6	N/A
54	27.9	24.0	25.8	25.6	22.6	19.6	20.1	21.1	22.1	18.7	13.0	24.8	22.1	16.8	N/A
55	14.6	8.9	16.9	11.9	9.3	6.3	9.1	10.6	10.5	12.5	5.5	15.1	10.9	8.3	N/A
56	22.0	15.1	29.6	21.3	14.4	11.3	14.5	17.6	17.7	22.3	11.9	25.4	18.6	14.1	N/A
57	21.0	12.2	20.5	15.3	10.1	7.9	10.5	12.6	11.4	14.2	14.7	20.8	14.3	10.8	N/A
58	20.8	12.2	19.2	12.1	10.8	9.1	11.3	12.4	13.5	11.7	12.6	8.0	12.8	9.7	N/A
59	14.6	9.2	16.1	14.2	9.6	7.6	10.1	13.4	11.5	9.9	9.6	6.6	11.0	8.4	N/A
60	11.2	6.7	12.6	-	5.8	5.2	5.9	8.5	7.5	6.2	5.6	9.0	7.7	5.8	N/A
61	27.0	15.6	25.2	27.1	15.7	13.7	16.7	20.3	19.9	17.6	11.6	19.4	19.2	14.6	N/A
AURN (triplicate)	20.2	12.9	27.6	19.5	13.5	10.8	13.2	15.2	17.1	16.9	4.8	24.7	16.4	12.4	N/A
CCBC															
DT/CCBC017	18.3	10.8	24.0	20.8	14.4	11.4	14.6	20.4	16.5	11.5	14.7	18.1	16.2	12.3	N/A
DT/CCBC018	23.2	16.9	19.8	15.5	15.8	19.3	17.7	20.3	19.0	0.8	18.4	15.3	16.2	12.3	N/A
DT/CCBC021	23.3	17.2	19.8	17.8	15.2	13.7	14.8	18.6	14.9	14.9	15.1	21.1	17.2	13.1	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT/CCBC022	27.2	24.2	24.4	22.0	16.0	17.7	17.8	21.2	17.6	18.9	22.5	22.2	20.8	15.8	N/A
DT/CCBC034	15.6	13.5	25.7	21.2	18.4	16.9	16.8	18.2	21.2	15.6	20.3	14.2	18.0	13.7	N/A
DT/CCBC035	14.4	10.1	15.6	11.9	8.6	7.5	8.8	9.8	8.3	9.4	12.8	15.0	11.0	8.4	N/A
DT/CCBC036	17.7	12.8	16.6	15.9	11.2	8.9	10.6	12.6	11.7	11.5	15.7	20.3	13.8	10.5	N/A
DT/CCBC040	19.0	14.1	20.9	15.8	12.6	15.7	12.9	13.7	11.5	11.7	18.9	22.0	15.6	11.9	N/A
DT/CCBC041	12.9	11.0	17.0	15.6	10.9	9.2	11.7	13.5	12.4	8.8	9.9	12.4	12.1	9.2	N/A
DT/CCBC042	15.5	11.4	23.1	28.6	21.1	20.3	24.0	29.6	19.2	10.1	10.4	13.8	18.8	14.3	N/A
DT/CCBC043	25.5	17.8	13.9	21.6	17.8	16.9	18.3	23.2	21.7	19.1	21.9	25.1	20.2	15.4	N/A
DT/CCBC044	18.9	15.6	14.4	17.7	16.7	16.9	18.3	20.4	13.9	10.4	9.9	10.4	15.1	11.5	N/A
DT/CCBC045	16.2	14.6	19.6	16.9	14.4	15.0	15.5	18.4	15.8	12.8	13.9	14.7	15.6	11.8	N/A
DT/CCBC046	21.2	15.5	21.1	14.4	13.6	10.8	11.9	13.8	14.8	15.5	19.7	21.3	16.1	12.2	N/A
DT/CCBC047	26.7	19.2	6.0	16.3	14.1	13.0	12.5	15.9	12.9	16.9	20.4	23.7	16.5	12.5	N/A
DT/CCBC048	16.5	11.2	12.2	10.4	11.5	9.8	10.5	12.9	9.9	12.4	15.0	15.9	12.3	9.4	N/A
DT/CCBC053	11.7	7.9	15.9	11.6	6.6	6.4	7.6	9.5	7.9	9.3	13.1	16.3	10.3	7.8	N/A
DT/CCBC054	7.4	5.9	9.2	7.9	8.6	5.1	6.9	8.0	5.2	3.6	4.6	7.8	6.7	5.1	N/A
DT/CCBC055	6.0	5.6	6.6	5.9	4.6	4.6	5.6	6.1	4.0	3.1	4.1	6.4	5.2	3.9	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT/CCBC056	10.4	7.9	18.6	13.9	5.9	7.3	9.6	13.3	10.2	9.7	13.3	18.2	11.5	8.8	N/A
FCC															
ADDC-008	38	27.5	50.4	34.9	-	26.6	32.2	37.8	18.2	33.8	41.9	43.8	35.0	26.6	N/A
ADDC-009	21.5	-	27.2	19.1	-	11.4	13	10.2	7	21.5	26	26.1	18.3	13.9	N/A
ADDC-085	29.6	22.7	46.9	25.8	-	18.9	16.8	22.3	12.7	28.6	41.9	33.5	27.2	20.7	N/A
ADDC-111	23	-	19.5	16.7	-	11	15.2	19.4	7.9	14.5	19.3	18	16.5	12.5	N/A
ADDC-105	17.4	13.2	21.5	15.9	-	12.2	13.1	16.5	7.7	13.7	20.3	20.6	15.6	11.9	N/A
ADDC-013	-	-	-	9.9	-	-	7.9	10.5	-	-	14.7	14.8	11.6	9.5	N/A
ADDC-014	19.8	11.6	20.5	14.8	-	10.8	13.6	14.8	7.4	13.3	17.8	19.6	14.9	11.3	N/A
ADDC-015	17.3	10.3	19	13.5	-	7.7	9.7	14	5.8	12.1	17.2	18.6	13.2	10.0	N/A
ADDC-106	15.7	-	17.9	13.5	-	9.3	10.5	12.4	5.7	9.6	16.7	12.7	12.4	9.4	N/A
ADDC-107	11.3	7.3	14.3	10.7	-	6.6	7.4	7.6	4	9.1	13.6	19.1	10.1	7.7	N/A
ADDC-084	37.4	29.5	32.6	32.9	-	26.9	26.4	32.5	15.7	27.2	25.3	29.8	28.7	21.8	N/A
ADDC-064	42.6	31.7	39.9	32.3	-	29.7	25.9	27.9	14.3	-	-	38.8	31.5	23.9	N/A
ADDC-098	41.4	33.1	38.1	30.9	-	31.3	26.8	27.1	13.9	-	-	36.9	31.1	23.6	N/A
ADDC-117	20.6	11.4	19.3	14.4	-	9.5	10.1	11.5	6.3	12.8	17.8	15.6	13.6	10.3	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
ADDC-099	22.9	18	40	26.3	-	16.5	21.2	26	9.5	<0.5	<0.6	38.2	24.3	18.5	N/A
ADDC-023	32.1	24.8	30.1	26.5	-	20.5	21.1	25	12.5	26.7	28.4	31.9	25.4	19.3	N/A
ADDC-024	32.8	-	32.9	28.5	-	20	23.7	31	13.4	22.5	28.2	31.7	26.5	20.1	N/A
ADDC-118	21.9	-	20.1	-	-	9.5	11.2	12.7	7.7	-	-	24.1	15.3	13.1	N/A
ADDC-080	26.1	15.3	-	-	-	14.1	14	17.5	8.2	18.7	24.8	26.8	18.4	14.0	N/A
ADDC-066	28	27.3	29.5	25.2	-	20	20.2	23.6	10	19	23.6	13.5	21.8	16.6	N/A
ADDC-116	26.5	17.3	27.8	20.3	-		15	16.4	8.4	20.1	26.3	25.3	20.3	15.5	N/A
ADDC-029	24.9	17.9	23.5	18.4	-	12.1	12.1	13.7	6.4	18	22.3	12.2	16.5	12.5	N/A
ADDC-030	32.4	19	31	30.1	-	17.6	19.2	23.8	12.4	17.9	21	25	22.7	17.2	N/A
ADDC-083	40.4	28.5	47.7	33.2	-	27.7	31.8	37	18.1	31.8	38.5	42.3	34.3	26.0	N/A
ADDC-032	29.1	19.7	27.8	19.4	-	12	12.4	-	-	-	-	-	20.1	19.2	N/A
ADDC-033	19.5	11.9	22.3	14.3	-	9.9	9.2	11.9	5.7	13.9	19.1	15.9	14.0	10.6	N/A
ADDC-034	22.5	-	23.8	20.5	-	12.1	14.9	18.1	7.9	18.9	23	25.8	18.8	14.3	N/A
ADDC-120	26.2	15.7	20.5	21.8	-	16.3	16.8	18.3	7.7	17.1	9.6	23.9	17.6	13.4	N/A
ADDC-036	21.2	12.1	23.8	16	-	9.9	10.3	14.2	6.6	15.5	16.5	22.1	15.3	11.6	N/A
ADDC-037	20.9	23.5	34.1	26.8	-	19.6	-	-	11.9	23.7	26.8	29.1	24.0	18.3	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
ADDC-093	29.6	20	29	21	-	15.2	20.2	19.8	10.7	19.9	27.7	27.7	21.9	16.6	N/A
ADDC-044	-	15.1	26.1	18.9	-	15.1	16.5	18.5	10.5	19.7	-	25.7	18.5	14.0	N/A
ADDC-067	28.5	-	28	21.9	-	17.4	18.4	23.5	9.8	26	29.8	22	22.5	17.1	N/A
ADDC-068	27.6	20.4	29.3	20.6	-	18.1	17.6	21.3	10.2	22.1	25.3	28.9	21.9	16.7	N/A
ADDC-069	25.8	-	21.6	18.5	-	-	10.5	18.8	8.9	20.2	25.4	27.8	19.7	15.0	N/A
ADDC-070	30.6	20.4	32.5	24.7	-	15.5	16.4	21.3	9.9	21.3	27.5	30.6	22.8	17.3	N/A
ADDC-081	25.5	18.2	30.6	25.3	-	-	15.2	20	-	22	20.5	28.1	22.8	17.3	N/A
ADDC-119	15.1	8.6	14.9	12.8	-	9.7	8.7	10.6	5	10	9.3	18.6	11.2	8.5	N/A
ADDC-114	23.5	17.6	25.3	18.2	-	15.2	14.8	18.2	9	15.9	21.5	24	18.5	14.0	N/A
ADDC-052	-	-	16.3	14.9	-	12	12	14	6.9	10.1	14.5	21	13.5	10.3	N/A
ADDC-115	8.6	5.8	10.3	9.5	-	6.5	6.7	7.3	3.7	6.2	8.4	12	7.7	5.9	N/A
ADDC-112	15.3	-	18.3	12.7	-	7.9	11.2	12.8	4.6	11.7	16.5	20.6	13.2	10.0	N/A
ADDC-113	16.8	-	17.9	-	-	8.4	9.6	11.3	5	-	-	-	11.5	10.8	N/A
ADDC-091	-	-	34.3	26.4	-	19.2	22.5	27.3	12.4	22.5	23.3	27.7	24.0	18.2	N/A
ADDC-108	15.9	-	15.8	11.3	-	5.5	6.9	9.4	3.6	7.9	12.4	-	9.9	7.5	N/A
ADDC-110	24.2	12.9	22.2	19.8	-	13	12.6	19.5	7.5	13.9	19.7	14.4	16.3	12.4	N/A

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (See Table C.1) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
ADDC-100	36.1	27.5	30.8	32.7	-	26	28.8	32.9	15.4	25	22.9	28.1	27.8	21.2	N/A
ADDC-060	22.1	13	21.2	19.8	-	14.3	15.1	18.7	9.1	15.4	16.8	23.5	17.2	13.1	N/A
ADDC-061	18.8	-	20.4	17.4	-	10.6	11.9	15.6	7.2	15.9	21.1	24.1	16.3	12.4	N/A
ADDC-121	20.9	12.1	23.2	17	-	-	12.9	14.5	7.9	15.9	17.9	23.3	16.6	12.6	N/A
ADDC-101	30.2	26.7	35.1	35	-	29	30.4	35.8	15.8	34.3	41.9	38	32.0	24.3	N/A
ADDC-109	2.4	-	15.1	10.5	-	7.7	7.8	16.8	4.5	-	14.4	19.1	10.9	8.3	N/A
ADDC-075	22.1	17.6	27.6	18.8	-	17.8	17.5	22	9.5	22.1	18.7	27	20.1	15.2	N/A
ADDC-102	16.9	8.9	15.3	11.8	-	6.5	7.4	9	4	7.9	12.5	7.8	9.8	7.5	N/A
ADDC-103	14.8	8	14.5	9.7	-	5.9	7.2	7.3	3.6	7.5	11.2	16.3	9.6	7.3	N/A
ADDC-104	25.6	16.1	29.9	22.5	-	15.7	17.5	19.9	9.7	23	27.1	31.3	21.7	16.5	N/A
ADDC-089	47.9	33.5	39	40	-	38.8	40	39	20.7	37.9	41.2	35.8	37.6	28.6	N/A
ADDC-122	43.1	23.3	32.2	30.1	-	21.8	25.3	29.3	14.2	21.9	29.4	27.3	27.1	20.6	N/A
ADDC-123	31.5	21.8	30.6	22.8	-	18.9	19.2	20.2	10.8	22.6		32.3	23.1	17.5	N/A

Notes:

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

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

- (1) See Appendix C for details on bias adjustment and annualisation.
- (2) Distance corrected to the nearest relevant public exposure

Appendix B: A Summary of Local Air Quality Management

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.

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

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

Appendix C: Air Quality Monitoring Data QA/QC

QA/QC of Diffusion Tube Monitoring

Socotec Didcot and Gradko are both UKAS accredited laboratories who participates in the new AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for NO₂ tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance.

Socotec Didcot and Gradko both scored 75% or above on all results for 2022. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Diffusion Tube Annualisation

Data capture at all sites which recorded less than 75% data capture during 2022 have been annualised according to the method set out in Boxes 7.9 and 7.10 of LAQM.TG16.

NO₂ diffusion tubes concentrations were annualised using automatic monitoring sites which reported data capture above 85% during 2022. Monitoring sites in background locations where prioritised to avoid any local effects that may occur at Urban Centre, Roadside or Kerbside sites.

The diffusion tube 33 operated within **WCBC** has been annualised since data capture at this site was reported below 75% during 2022. One of the three automatic monitoring sites used to undertake the annualization calculation is at a roadside location rather than being representative of a background location. This monitoring site is the *Victoria Road AURN* automatic monitoring site. The *Victoria Road AURN* automatic monitoring site is the closest automatic monitor to diffusion tube 33 and is thought to represent the surrounding environment of diffusion tube 33 the most.

2022 automatic monitoring data was obtained from ([Link for monitoring data within Wales](#)). Details of the annualisation calculations have been provided in Table C.4.

Diffusion Tube Bias Adjustment Factors - National

Diffusion tubes adjustment factors were obtained from the national bias adjustment calculator v06/21 (Available at: [Link for National Bias Adjustment Factors](#)). Tubes were analysed by Socotec Didcot as detailed in the table below.

Table C. 1 – Bias Adjustment Factor – National

Local authority	Laboratory	Method	2022 Bias adjustment factor	Number of studies
IACC	Socotec Didcot	50% TEA in acetone	0.76	27
DCC	Socotec Didcot	50% TEA in acetone	0.76	27
GC	Socotec Didcot	50% TEA in acetone	0.76	27
WCBC	Socotec Didcot	50% TEA in acetone	0.76	27
CCBC	Socotec Didcot	50% TEA in acetone	0.76	27
FCC	Socotec Didcot	50% TEA in acetone	0.76	27

Diffusion Tube Bias Adjustment Factors – Local

The BAF determined by Wrexham's own colocation study is 0.88. The calculation is shown in **Table C.2** below.

Table C. 2 – Local Bias Adjustment Calculation - WCBC

	Local Bias Adjustment Input 1
Periods used to calculate bias	12
Bias Factor A	0.88 (0.74 - 1.06)
Bias Factor B	14% (-6% - 34%)
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	16.4

	Local Bias Adjustment Input 1
Mean CV (Precision)	6.8%
Automatic Mean ($\mu\text{g}/\text{m}^3$)	14.3
Data Capture	99%
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	14 (12 - 17)

Comparison of the two datasets utilising the national BAF of 0.76 versus the local BAF of 0.88 has resulted in an average $2.3 \mu\text{g}/\text{m}^3$ increase in the annual mean average, shown in **Table C.3**.

Table C. 3: Comparison of Bias Adjustment Factor - WCBC

Site	Raw Data ($\mu\text{g}/\text{m}^3$)	National Factor (0.76)	Local Factor (0.88)
1	26.9	20.5	23.7
34	13.9	10.5	12.2
45	18.8	14.3	16.5
36	17.0	12.9	14.9
10	12.1	9.2	10.7
49	8.7	6.6	7.7
42	24.1	18.3	21.2
50	19.7	14.9	17.3
51	19.9	15.2	17.5
52	23.2	17.6	20.4
53	23.2	17.7	20.4
22	17.7	13.5	15.6
32	25.1	19.1	22.1
30	37.6	28.6	33.1
31	29.8	22.6	26.2
33	26.3	18.6	21.6
37	15.2	11.6	13.4

Site	Raw Data ($\mu\text{g}/\text{m}^3$)	National Factor (0.76)	Local Factor (0.88)
38	18.2	13.8	16.0
44	22.0	16.7	19.3
40	8.2	6.3	7.3
41	16.1	12.2	14.2
43	23.1	17.5	20.3
46	24.0	18.3	21.1
48	16.5	12.6	14.5
54	22.1	16.8	19.5
55	10.9	8.3	9.6
56	18.6	14.1	16.4
57	14.3	10.8	12.6
58	12.8	9.7	11.3
59	11.0	8.4	9.7
60	7.7	5.8	6.7
61	19.2	14.6	16.9
AURN (triplicate)	16.4	12.4	14.4

All of the above sites have remained comfortably below the objective level for NO₂. Box 7.13 of LAQM.TG(16) leaves the decision of which BAF to use up to the local authority providing helpful reasons to favour one over the other. There are aspects within the favourable reasons reported in box 7.13 of the LAQM.TG(16) document for both the locally obtained and national BAF's which describe Wrexham's circumstances, namely:

For local BAF: Co-location sites with "good" precision for the diffusion tubes and with high quality chemiluminescence results, i.e. to national AURN standards.

For national BAF: Where the survey consists of tubes exposed over a range of settings, which differ from the co-location site.

WCBC has historically used the nationally derived BAF and for this report has continued to do so. This provides consistency across the monitoring period discussed in this report,

allowing for reasonable comparisons and conclusions to be made on the local air quality during recent years.

The diffusion tubes placed across Wrexham can differ in settings compared to the open nature of the co-location study area contrasting with monitoring location, e.g. building facades.

FCC has collocated three diffusion tubes, these are ADDC-008, ADDC-083 and ADDC-101. These diffusion tubes have been located with an automatic monitor operated locally, but one that is operated by an external organisation. Data from this automatic monitoring site for 2022 was inaccessible and therefore **FCC** have been unable to calculate a local bias adjustment factor using this co-location study. The LAQM.TG(22) states that if there have been problems with data quality from an automatic monitoring site, a national bias adjustment factor would be favourable. Therefore, the national bias adjustment factor has been applied to monitoring results reported within **FCC** during 2022. **FCC** are looking to relocate these tubes during 2024 with a look to including an AURN monitor in the network.

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within any local authority required distance correction during 2022.

QA/QC of Automatic Monitoring

NO_x and SO₂ Monitoring

WCBC

Monitoring methods at the Victoria Rd AURN site include Chemiluminescence monitoring of NO/NO₂ and UV fluorescence monitoring of SO₂. The automatic monitoring sites at Chirk use 4-electrode electrochemical cells for the monitoring of NO_x.

Data from these sites is initially uploaded as provisional hourly mean data and undergo basic screening criteria to exclude faulty data as far as possible. A data verification process is then undertaken which includes:

- Further manual review of the data to exclude any data from instrument malfunctions or faulty calibrations;
- Incorporation of any data which were initially missing due to communications failure with a monitoring station; and
- Updates to data scaling following application of the most recent calibration factors.

Further information on the ratification process can be found on the *Air Quality for Wales* website at the following link: ([Link for more information on ratification process](#)).

PM₁₀ and PM_{2.5} Monitoring

WCBC

The particulate monitoring undertaken at Victoria Rd AURN site is with a FIDAS analyser which is a light scattering type analyser. As this is an AURN site and therefore owned by DEFRA and Welsh Government, WCBC has no control over the analysers.

The particulate monitors used at both the sites in Chirk are also light scattering analysers. They are classed as MCERTs indicative. Hence, they will measure within +/- 5% of the EU Equivalent monitors. These were seen as giving sufficiently robust monitoring versus costs, ease of use and availability of the monitoring data for public access. They can also easily be redeployed where monitoring is required at short notice, such as in the event of a fire for example.

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within North Wales Authorities required distance correction during 2022.

Table C.4 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Victoria Road AURN	Annualisation Factor Wrexham Chirk	Annualisation Factor Wrexham Chirk Community Hospital	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
WCBC							
33	0.922	0.943	0.755	0.873	26.3	23.0	
DCC							
DBR38		1.043	0.890	0.967	15.6	15.1	
FCC							
ADDC-013		0.926	0.719	0.823	11.6	9.5	
ADDC-118		0.832	0.883	0.857	15.3	13.1	
ADDC-032		0.877	1.037	0.957	20.1	19.2	
ADDC-113		0.883	1.00	0.942	11.5	10.8	

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