



North Wales Authorities Collaborative Project 2022 Air Quality Progress Report

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: September 2022

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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 Seventh 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 five automatic monitoring stations measuring nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) concentrations and 159 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 2021 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 2021, it can be concluded that there is no requirement for any of the six North Wales local authorities to undertake a detailed assessment.

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 4.1, 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.

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.

WCBC has started a new site setup in Wrexham and a second continuous site in Chirk.

In terms of monitoring, there were numerous new monitoring sites were introduced in North Wales.

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

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

There were five new monitoring sites introduced in **GC** including LLY 1, BR 1, BR 2, LLNFR 1 and LLNFR 2.

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

There were four new monitoring sites introduced in **CCBC** including CCBC053 (Upper Promenade), CCBC054 (Wainwright Close), CCBC055 (Ysgol Llandrillo yn Rhos), CCBC056 (Ysgol Deganwy).

There were two new monitoring sites introduced in **FCC** (ADDC-61 Centenary Close Broughton and ADDC-104 Claremont Avenue). These locations replaced tubes at 31 The Rowans and Deeside Lane.

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 <https://airquality.gov.wales/>

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1 Actions to Improve Air Quality

1.1 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**); 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.

1.2 Air Quality Management Areas

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

authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

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

2.1 Summary of Monitoring Undertaken in 2021

2.1.1 Automatic Monitoring Sites

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

IACC undertook automatic (continuous) monitoring at three sites during 2021. Table 2.1 presents the details of the sites.

WCBC undertook automatic (continuous) monitoring at three sites during 2021. Table 2.1 presents the details of the sites. The results are only reported for two sites as the monitoring started in November 2021 for the Wrexham Chirk Community Hospital Site. National monitoring results are available at <https://airquality.gov.wales/>. A local bias adjustment factor was calculated, however, to be consistent with the previous five years, the national adjustment factor was used. The local bias adjustment factor calculation is included in Appendix C.

FCC co-located three diffusion tube monitors with an automatic monitor during 2021. However, the automatic monitor is not owned by **FCC** and an external organisation undertakes the ratification of the monitoring data from this automatic monitor. The results have been used to calculate a local bias adjustment factor. This calculated is included in Appendix C. Appendix C also presents a comparison between the monitoring results from **FCC** adjusted with the national adjustment factor and this local adjustment factor. It has been concluded that the national adjustment factor is to be used as a worse case.

Maps showing the location of the monitoring sites are provided in Figure 2.1 and Figure 2.2. 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 2021. Table 2.2 presents the details of the sites.

DCC undertook non- automatic (passive) monitoring of NO₂ at 26 sites during 2021. Table 2.2 presents the details of the sites.

GC undertook non- automatic (passive) monitoring of NO₂ at 17 sites during 2021. Table 2.2 presents the details of the sites.

WCBC undertook non- automatic (passive) monitoring of NO₂ at 33 sites during 2021. Table 2.2 presents the details of the sites.

CCBC undertook non- automatic (passive) monitoring of NO₂ at 20 sites during 2021. Table 2.2 presents the details of the sites.

FCC undertook non- automatic (passive) monitoring of NO₂ at 59 sites during 2021. Table 2.2 presents the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 2.3 to Figure 2.16. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Table 2.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with (Named) AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
IACC											
CM1 Llynfaes	Llynfaes (Creigiau)	Rural	N	239692	379774	PM ₁₀ , PM _{2.5}	Light scattering	1.5	11	1	10
CM2 Brynteg	Brynteg (Chwarelau)	Rural	N	248566	381325	PM ₁₀ , PM _{2.5}	Light scattering	4	6	1	5
CM4 Penhesgyn	IVC Penhesgyn	Rural	N	253457	374348	PM ₁₀ , PM _{2.5}	Light scattering	1.5	300	100	200
WCBC											
AURN	Victoria Road AURN	Roadside	N	332863	349913	NO ₂ , PM ₁₀ , PM _{2.5}	All continuous (PM: light scattering)	3	20	24	4
Wrexham Chirk	Wrexham Chirk	Urban industrial	N	329318	338300	NO ₂ , NO, VOC, PM ₁₀ , PM _{2.5}	All continuous (PM: light scattering)	1.5	10	15	80
Wrexham Chirk Community Hospital	Victoria Rd AURN	Urban Background	N	329329	338992	NO ₂ , NO, VOC, 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 – IACC



Figure 2.2 – Map(s) of Automatic Monitoring Sites – WCBC

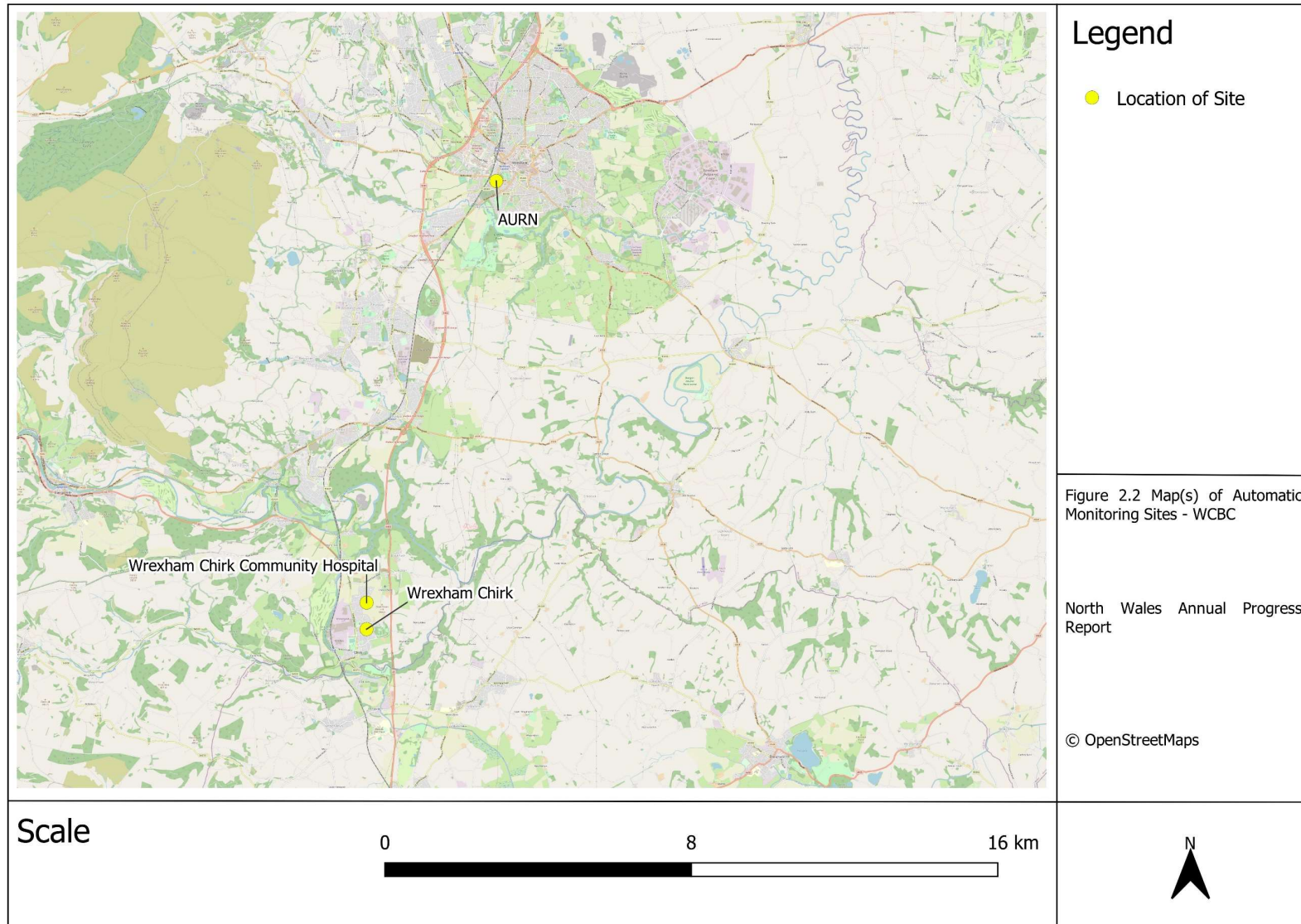


Table 2.2 – Details of Non-Automatic Monitoring Sites

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-081	Marine Sq. Holyhead	Roadside	N	224942	382866	3	N	15	17.5	2.5
IACC-082	Opp. Panton Arms, Pentraeth	Roadside	N	252360	378402	3	N	1.3	2	0.7
IACC-083	Llanfair A55 Bridge	Roadside	N	253057	372313	2	N	13	14	1
IACC-084	Orthios Penrhost Lodge	Roadside	N	226681	381486	3.5	N	6	13	7
DCC										
RHBC/006	Wellington Road, Rhyl	Roadside	N	300846	381407	2.3	N	0.5	2.7	2.2
RHBC/017	10 Kinmel Street, Rhyl	Roadside	N	300903	381292	2.5	N	2.5	2.8	0.3
RHBC/058	Adj. 7 Berwyn Street, Llangollen	Roadside	N	321500	341900	3	N	0.8	1.8	1
RHBC/060	Adj. 48 Church Street, Llangollen	Roadside	N	321800	341900	2.3	N	0	0.5	0.5
RHBC/007	2 Pant Glas, St. Asaph	Suburban	N	302938	374638	2	N	9.6	37.1	27.5
RHBC/051	Adj. 1 Vale Street, Denbigh	Roadside	N	305276	366119	2.4	N	0	1	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)
RHBC/026	31 Ruthin Road, Denbigh	Suburban	N	305878	366424	2.5	N	1.4	3.9	2.5
RHBC/062	14 Maes Helyg, Rhuddlan	Suburban	N	302180	378414	2.8	N	8.8	9	1
RHBC/011	7 Roe Park, St. Asaph	Roadside	N	303197	374830	2	N	0	14	14
RHBC/063	Hennessey Terrace, Denbigh	Roadside	N	305097	366100	2.6	N	3.7	2.5	2.5
RHBC/027	Denbigh Cutters, 21 Vale Street, Denbigh	Suburban	N	305330	366160	2.2	N	0	3	3
RHBC/059	Adj. 6-7 Castle Street, Llangollen	Roadside	N	321500	342000	2.7	N	3.4	3.8	0.4
RHBC/023	25 Park Road, Ruthin.	Roadside	N	312106	358306	2.2	N	4	5.4	1.4
RHBC/046	Adj HSBC Bank, Vale Street, Denbigh	Suburban	N	305314	366153	2.6	N	5.5	8	2.5
RHBC/047	Opp Rowlands Pharm., Vale Street, Denbigh	Roadside	N	305386	366191	2.6	N	1.7	2.9	1.2
RHBC/048	Adj 50 Vale Street, Denbigh	Roadside	N	305467	366246	2.5	N	3.9	5.9	2
RHBC/040	Haul Fryn Depot, Ruthin	Roadside	N	312789	358231	2.3	N	1	4.5	3.5

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)
RHBC/041	Adj 62 Rhos Street, Ruthin	Roadside	N	312913	358273	2.6	N	0	2.3	2.3
RHBC/055	Adj. Swayne Johnston Sol., Vale Street, Denbigh	Roadside	N	305308	366130	2.9	N	N/A	N/A	1.8
RHBC/056	7 Vale Street, Denbigh	Roadside	N	305290	366130	2.3	N	N/A	N/A	2
RHBC/034	2 Rhyl Road, Denbigh	Roadside	N	305805	366480	2.4	N	1.3	2.1	0.8
RHBC/035	47 High Street, Denbigh	Roadside	N	305193	366093	2.4	N	N/A	N/A	5.9
RHBC/036	Adj CO-OP, High Street, Denbigh	Kerbside	N	305229	366082	2.3	N	N/A	N/A	5.3
RHBC/037	Adj Fairybun, Rhyl Road, Denbigh	Roadside	N	305863	366661	2.5	N	11.4	12.3	0.9
RHBC/052	79 High Street, Prestatyn	Roadside	N	306580	382906	2.6	N	N/A	N/A	1
RHBC/061	Adj. 1 Vale View, High Street, Rhuddlan	Roadside	N	302300	378000	2.3	N	4.4	4.9	0.5
GC										
GCC 002	Roundabout A487, Caernarfon (C1)	Kerbside	N	248273	362132	2	N	9	10	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 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
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	93	95	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

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 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
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

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)
22	Holyhead Road	Intermediate	N	328900	338700	1.5	N	28	30	2
32	Sycamores	Roadside	N	333887	353222	1.5	N	N/A	25	N/A
30	Rhostyllen Rbt	Roadside	N	330950	348170	1.2	N	31	35	4
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

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)
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
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 1	Roadside	N	332900	349900	2	Y	2	7	5
CCBC										
DT/CCBC017	Kingsway, Colwyn Bay	Roadside	N	284526	379417	3	N	0.1	1	1.1
DT/CCBC018	Heol Dewi, Pensarn	Roadside	N	295049	378144	2.1	N	-0.5	3.5	3
DT/CCBC021	Llanfairfechan, A55	Roadside	N	268572	375472	3	N	-0.9	2	1.1
DT/CCBC022	Bryn Marl, Mochdre	Roadside	N	282362	378757	3	N	-0.5	2	1.5
DT/CCBC034	Victoria Drive, Llandudno Jcn.	Roadside	N	279245	377995	3	N	-0.3	2.5	2.2
DT/CCBC035	Ysgol Bod Alaw, Colwyn Bay	Roadside	N	285506	378295	3	N	0.2	2	2.2

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)
DT/CCBC036	Ysgol Tudno, Llandudno	Roadside	N	278131	381907	3	N	-1	2.5	1.5
DT/CCBC040	Rhuddlan Rd Abergele	Roadside	N	294945	377497	3	N	0	1.7	1.7
DT/CCBC041	Faenol Avenue Abergele	Roadside	N	295075	377678	3	N	-0.8	3.5	2.7
DT/CCBC042	Yr Angorfa, Conwy Morfa	Roadside	N	277318	378576	3	N	0	30	30
DT/CCBC043	Ysgol Pant Y Rhedyn, Llanfairfechan	Kerbside	N	268425	375266	3	N	-0.8	3	2.2
DT/CCBC044	Pendalar Busgate, Llanfairfechan	Roadside	N	268845	375713	3	N	-0.7	2	1.3
DT/CCBC045	Parc Yr Eryr, A470 Llanrwst	Kerbside	N	280300	361019	3	N	0	2	2
DT/CCBC046	Eagles, A470 Llanrwst	Kerbside	N	279833	361573	2.5	N	-0.3	1.5	1.2
DT/CCBC047	Maes Y Llan, Dwygyfychi	Roadside	N	273223	377460	3	N	-1	2	1
DT/CCBC048	A55 Conwy	Roadside	N	276115	378273	2.5	N	0	22	22
DT/CCBC053	Upper Promenade, Colwyn Bay	Roadside	N	284433	379529	3	N	0	1.7	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)
DT/CCBC054	Wainwright Close, Colwyn Bay	Roadside	N	284362	379559	3	N	0	35	35
DT/CCBC055	Ysgol Llandrillo yn Rhos, Rhos on Sea	Roadside	N	283523	380857	3.2	N	0	2.1	2.1
DT/CCBC056	Ysgol Deganwy, Deganwy	Roadside	N	278751	378797	3	N	0	1.7	1.7
FCC										
ADDC-008	Lamppost Aston Hill co-loc (24&51) start 2 June	Kerbside	N	330792	367434	1.8	N	0	1	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	1	11
ADDC-111	Hawarden High School CH5 3DL	Kerbside	N	330614	366195	1.6	N	7	3	10
ADDC-105	Abermorddu/Cymau Crossroads	Roadside	N	330986	356538	2.0	N	8.7	2.3	11
ADDC-013	Kelsterton Farm, Kelsterton Lane, Connah's Quay	rural	N	327307	369856	2.2	N	26	1	27
ADDC-014	Kelsterton Road, Connah's Quay	Kerbside	N	327187	371243	1.8	N	5	5	10

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-015	86, Kelsterton Road, Connah's Quay CH5 4BJ	Urban Background	N	328032	370647	1.6	N	0	22	22
ADDC-106	Outside The Nook, Village Road, Pentre Halkyn	Roadside	N	320126	372346	2.0	N	13.5	0.5	14
ADDC-107	Bryn Coch Lane, Mold (started Aug 20)	Roadside	N	323500	363397	2.0	N	15	13.36	1.64
ADDC-084	3 Davies Cottage, Mold Road, Alltami	Kerbside	N	326643	365550	2.0	N	0	4	4
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	1	2
ADDC-099	Aston Hill, Roadside - Additional Tube within 12m of ADDC/085	Kerbside	N	330727	367354	1.8	N	10	1	11
ADDC-023	4, Belvedere Close, Queensferry CH5 1TG	Urban Background	N	331663	368028	2.3	N	0	20	20

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-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	1	8
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	1	2
ADDC-029	Green Lane West, Sealand	Rural	N	333645	370898	2.0	N	29	17	46
ADDC-030	Second Avenue, Deeside Industrial Estate (Valspar)	Industrial	N	332764	370981	1.8	N	N/A		N/A
ADDC-083	Lamppost Aston Hill co-loc (1&51) start 2 June	Kerbside	N	330792	367434	1.8	N	0	1	1
ADDC-032	BASF, Deeside Industrial Park, Sealand	Industrial	N	332031	371562	2.2	N	N/A		N/A
ADDC-033	Corus rear entrance DIP, Sealand	Industrial	N	329906	370882	2.0	N	N/A		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)
ADDC-034	89, Riverside Park, Garden City	Roadside	N	333040	369051	2.2	N	5	5	10
ADDC-120	Ysgol St John Penymynydd CH4 0LG	Kerbside	N	330528	362756	1.8	N	4	1	5
ADDC-036	Weighbridge Road, Deeside Industrial Park, Sealand	Kerbside	N	330575	371802	2.0	N	N/A		N/A
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	0	4	4
ADDC-044	Flint Town Council Buildings.	Kerbside	N	324459	373141	2.4	N	0	6	6
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

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-070	43, Station Road, Queensferry CH5 1SU	Kerbside	N	331806	368271	1.8	N	0	5	5
ADDC-081	Glendale Lodge, Rhydgaled, Mold A5119	Kerbside	N	324281	364926	1.8	N	0	6	6
ADDC-119	Castell Alun Fagl Lane Hope LL129PY	Kerbside	N	330705	358429	1.8	N	8	2	10
ADDC-114	Ysgol Y Fron Halkyn St Holywell CH8 7TX	Kerbside	N	318851	375592	2.0	N	4	1	5
ADDC-052	1 Manor Road, Sealand CH5 2SB	Kerbside	N	333731	369079	1.8	N	9	8	1
ADDC-115	Ysgol Y Llan Whitford CH8 9AN	Kerbside	N	314615	378238	1.8	N	4	1	5
ADDC-112	RGHS Ffordd Llewelyn Flint CH6 5JZ	Kerbside	N	324838	372198	2.2	N	1	1	2
ADDC-113	Flint HS Fifth Avenue Flint CH6 5LW	Kerbside	N	324357	372008	1.8	N	4	1	5
ADDC-091	413 Chester Road, Oakenholt, Flint CH6 5SF	Kerbside	N	325961	371822	1.8	N	1	1	2
ADDC-108	Ysgol Bryn Coch Victoria Road Mold CH7 1EW	Kerbside	N	323975	363794	1.6	N	4	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)
ADDC-110	Ewloe Green School CH5 3AU	Kerbside	N	329284	366504	1.8	N	9	1	10
ADDC-100	3 Davies Cottage, Mold Road, Alltami - Duplicate Tube	Kerbside	N	326643	365550	2.0	N	0	4	4
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	2	10
ADDC-121	Ysgol Estyn Hawarden Road Hope LL12 9NL	Kerbside	N	330898	357996	2.0	N	2	3	5
ADDC-101	Lamppost Aston Hill co- loc (1&24) start 2 June	Kerbside	N	330792	367434	1.8	N	0	1	1
ADDC-109	Westwood CP School Padeswood Rd CH7 2JT	Kerbside	N	327843	363856	2.0	N	4	1	5
ADDC-075	17, Mill Lane, Buckley CH7 3HA	Kerbside	N	327849	364146	2.3	N	1	1	2
ADDC-102	Elm Tree Rd Saughall	Kerbside	N	335594	369179	2.3	N	10	1	11
ADDC-103	Ferry Lane, Chester	Kerbside	N	337632	366682	2.2	N	13	2	15

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-104	Claremont Ave GC opp N0. 28 Start 3 June	Kerbside	N	332558	368750	2.0	N	8	12	20
ADDC-089	Rose Cottage Junction A5119/A494	Kerbside	N	324375	365007	2.2	N	2	1	3
ADDC-122	Bryn Mair 114 Chester Road Mold CH7 1UQ	Roadside	N	324530	363839	3.0	N	8	2	10
ADDC-123	30 High Street Mold CH7 1BH	Roadside	N	324562	363840	3.0	N	0	1	1

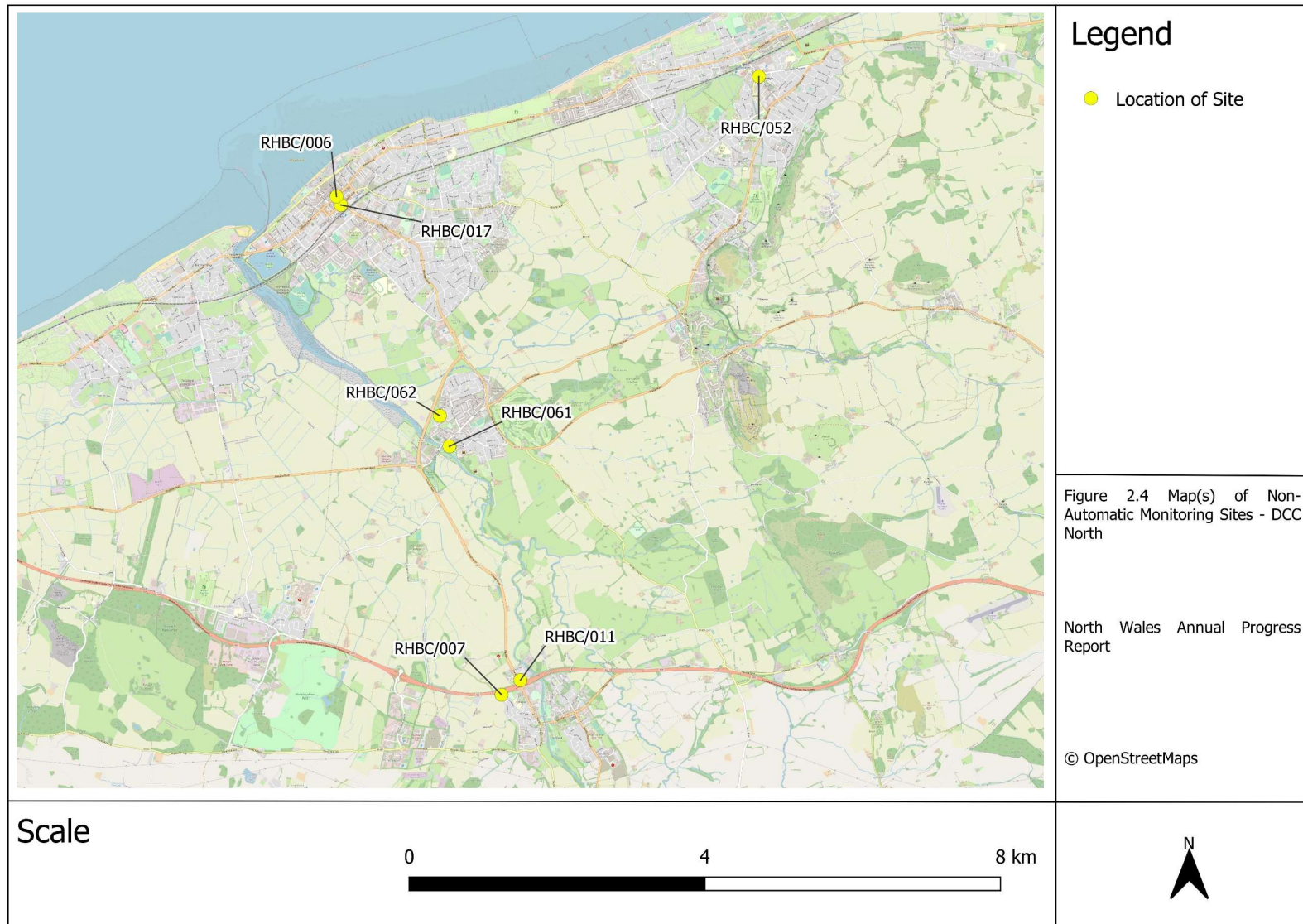
Notes:

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

Figure 2.3 – Map(s) of Non-Automatic Monitoring Sites – IACC



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



Legend

● Location of Site

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

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Scale

0 4 8 km



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

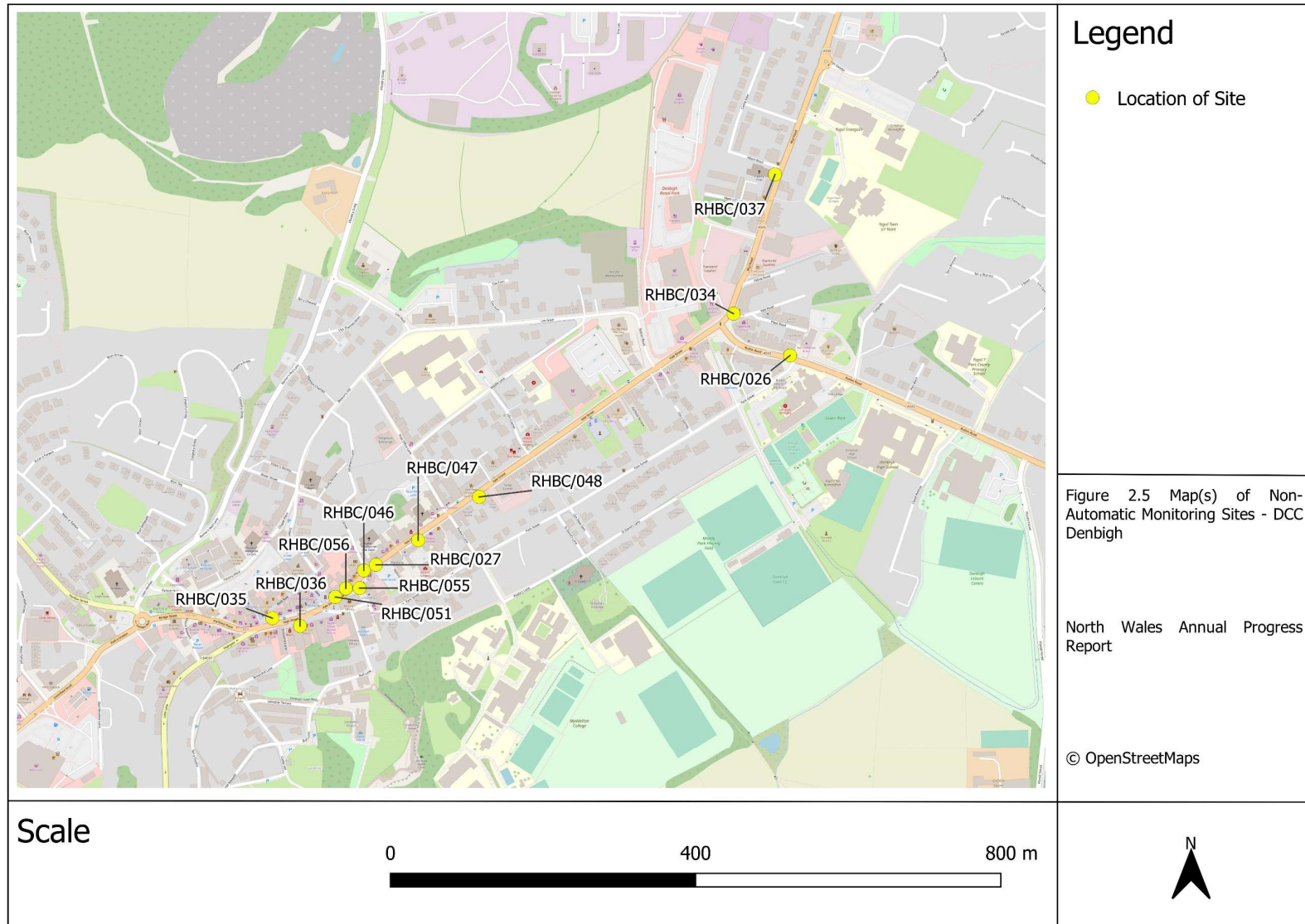


Figure 2.6 – Map(s) of Non-Automatic Monitoring Sites – DCC Ruthin

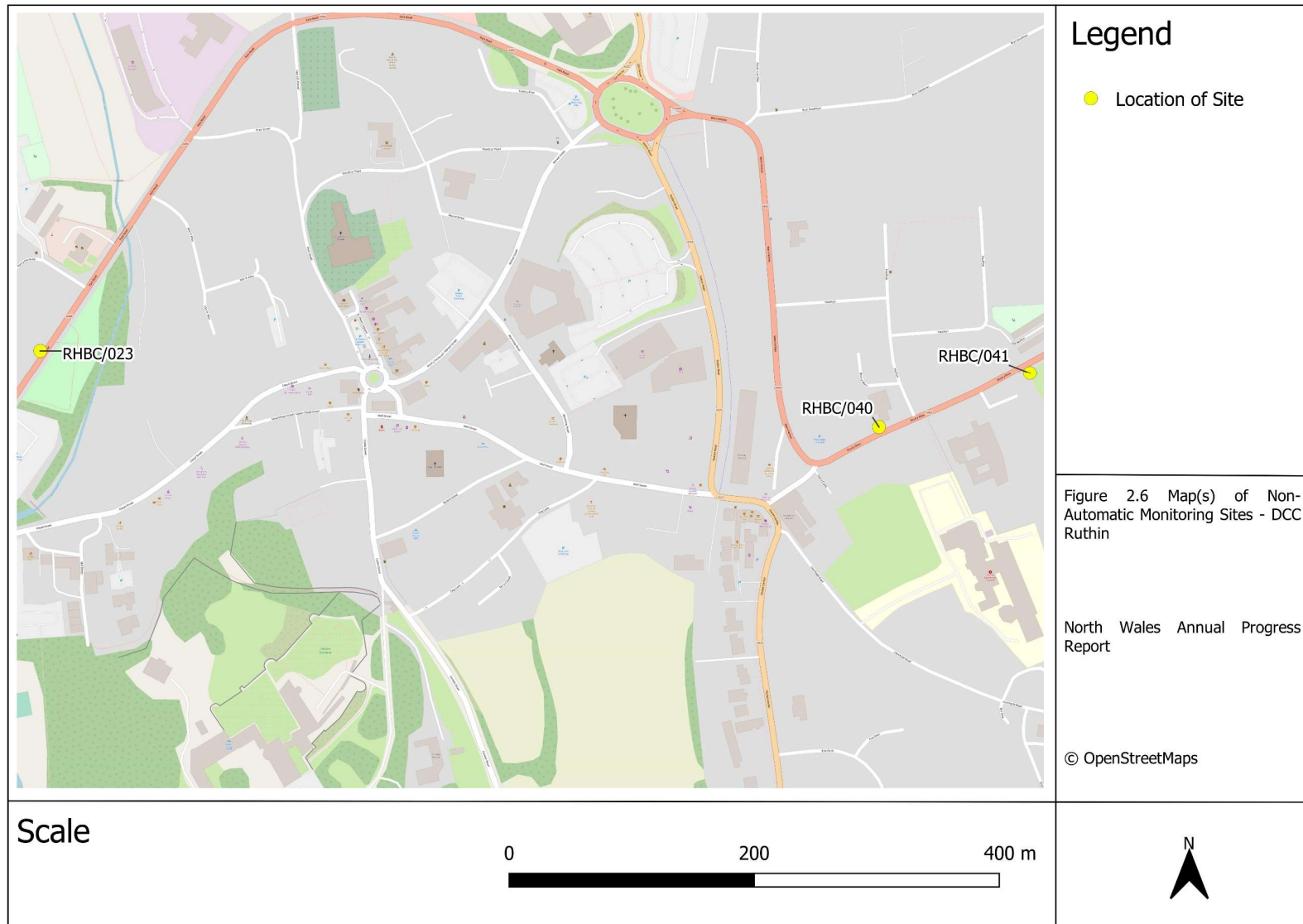


Figure 2.7 – Map(s) of Non-Automatic Monitoring Sites – DCC Llangollen



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



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



Figure 2.10 – Map(s) of Non-Automatic Monitoring Sites – GC South West

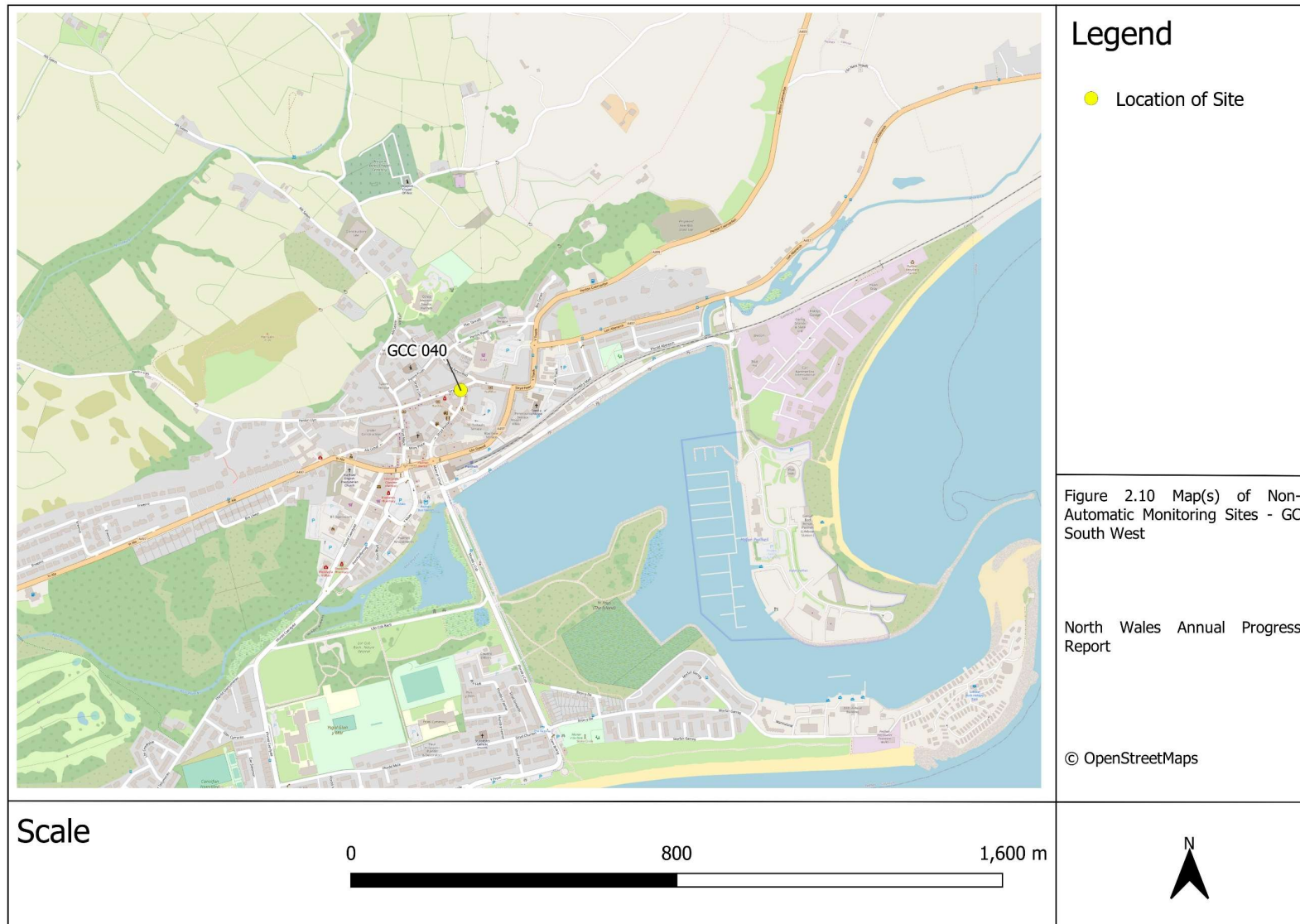


Figure 2.11 – Map(s) of Non-Automatic Monitoring Sites – WCBC North

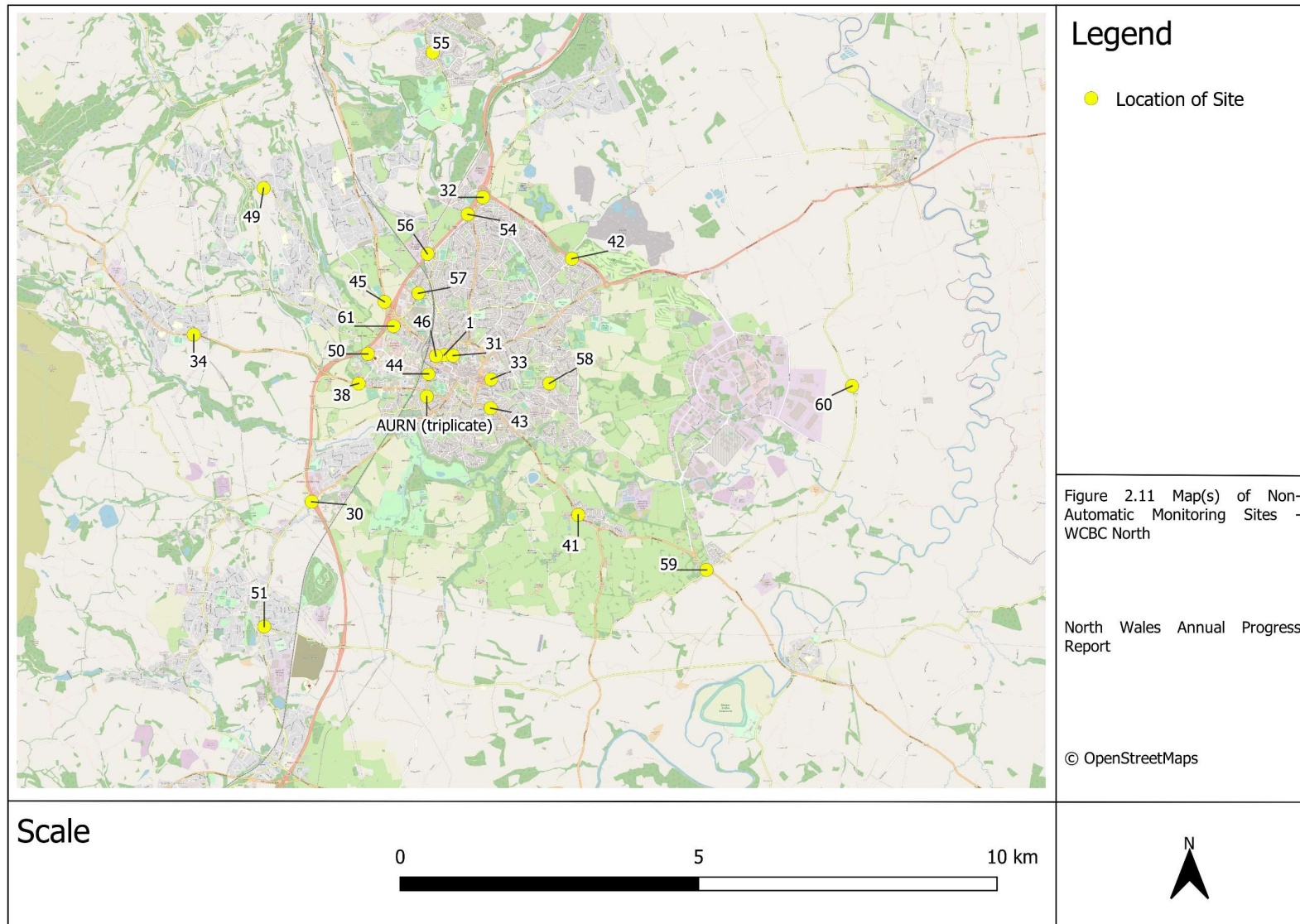
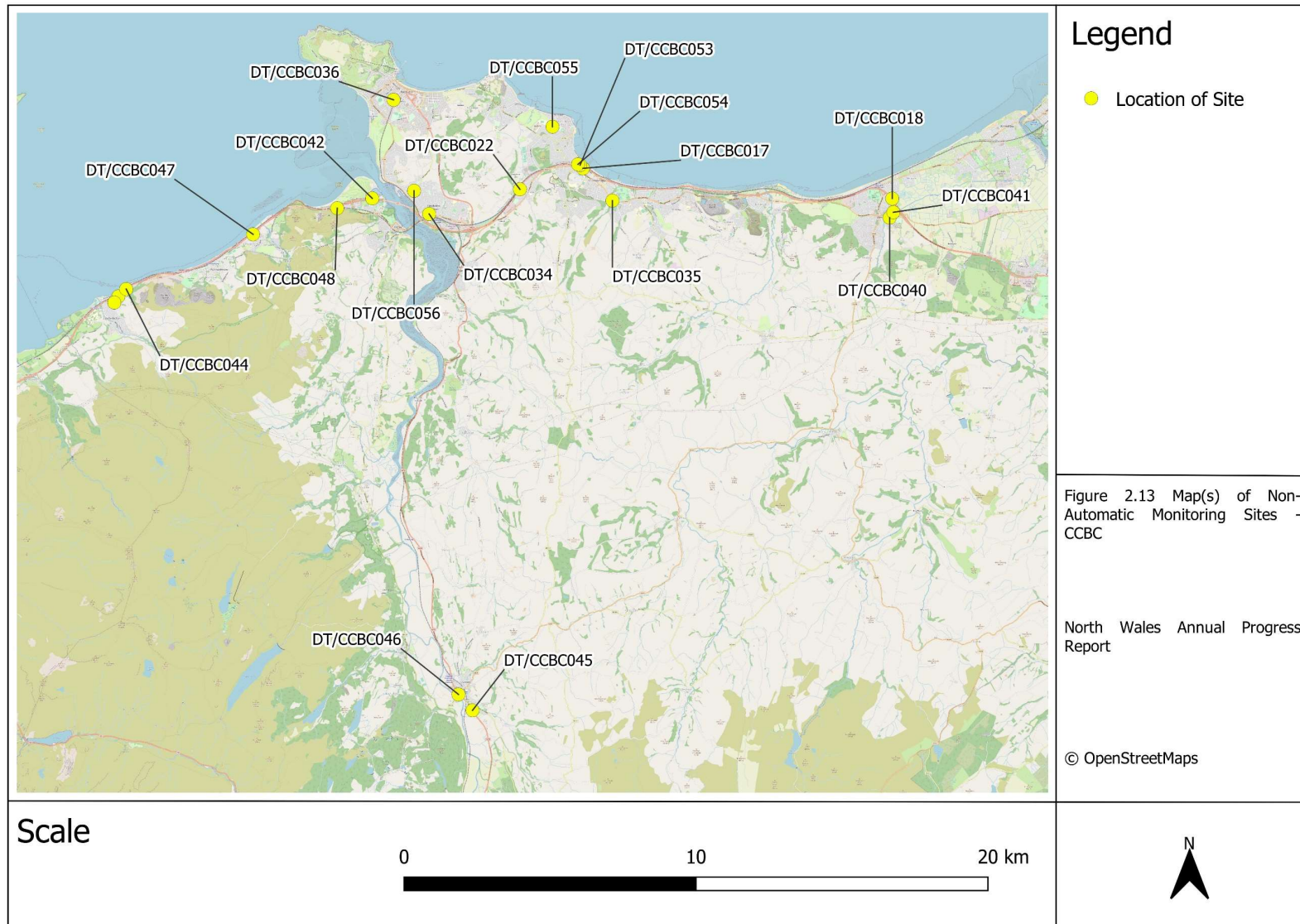


Figure 2.12 – Map(s) of Non-Automatic Monitoring Sites – WCBC South



Figure 2.13 – Map(s) of Non-Automatic Monitoring Sites – CCBC



Legend

● Location of Site

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

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Scale

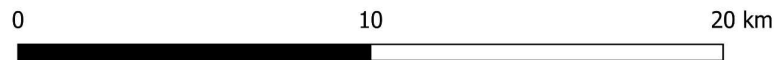


Figure 2.14 – Map(s) of Non-Automatic Monitoring Sites – FCC North West

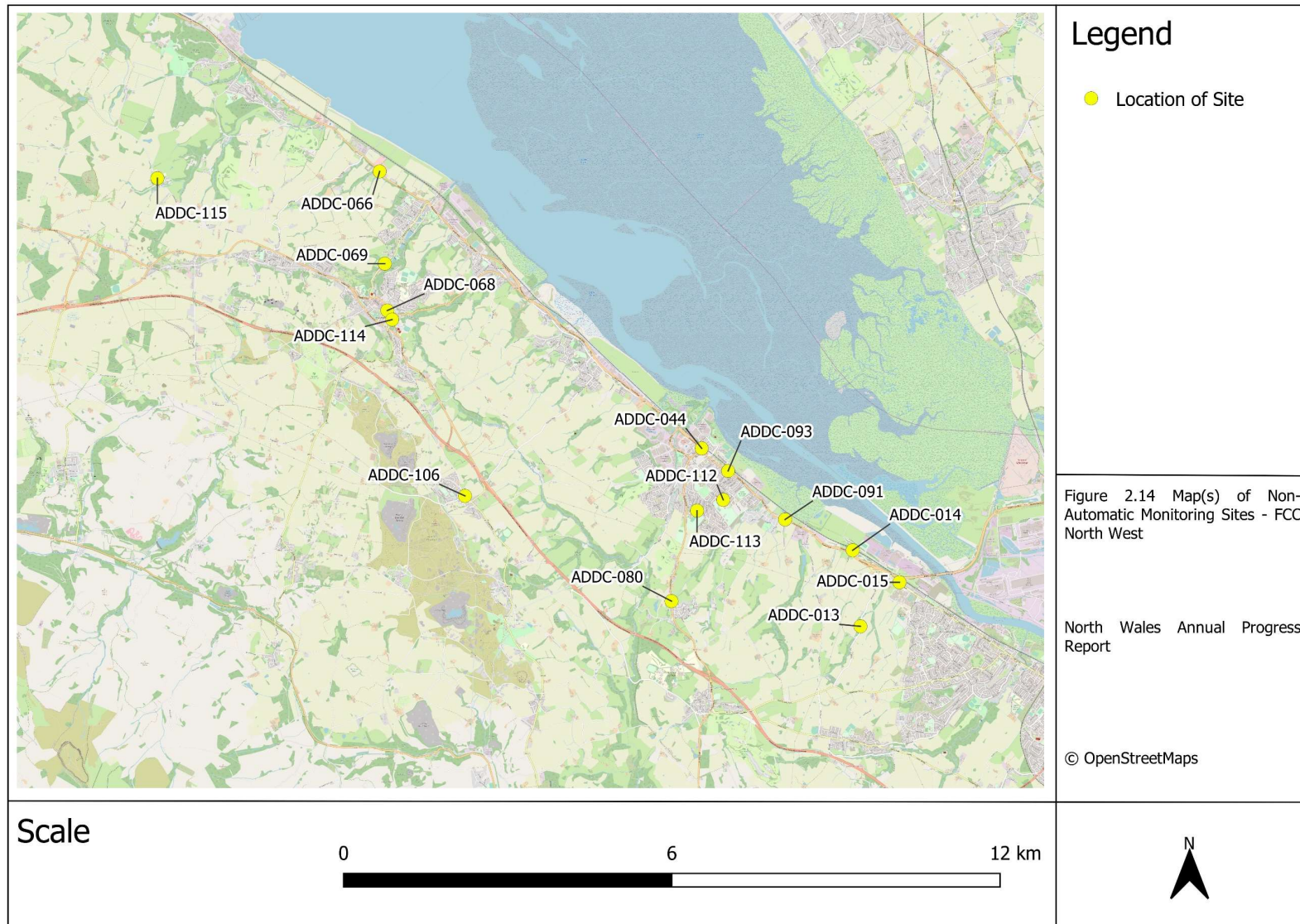


Figure 2.15 – Map(s) of Non-Automatic Monitoring Sites – FCC North East

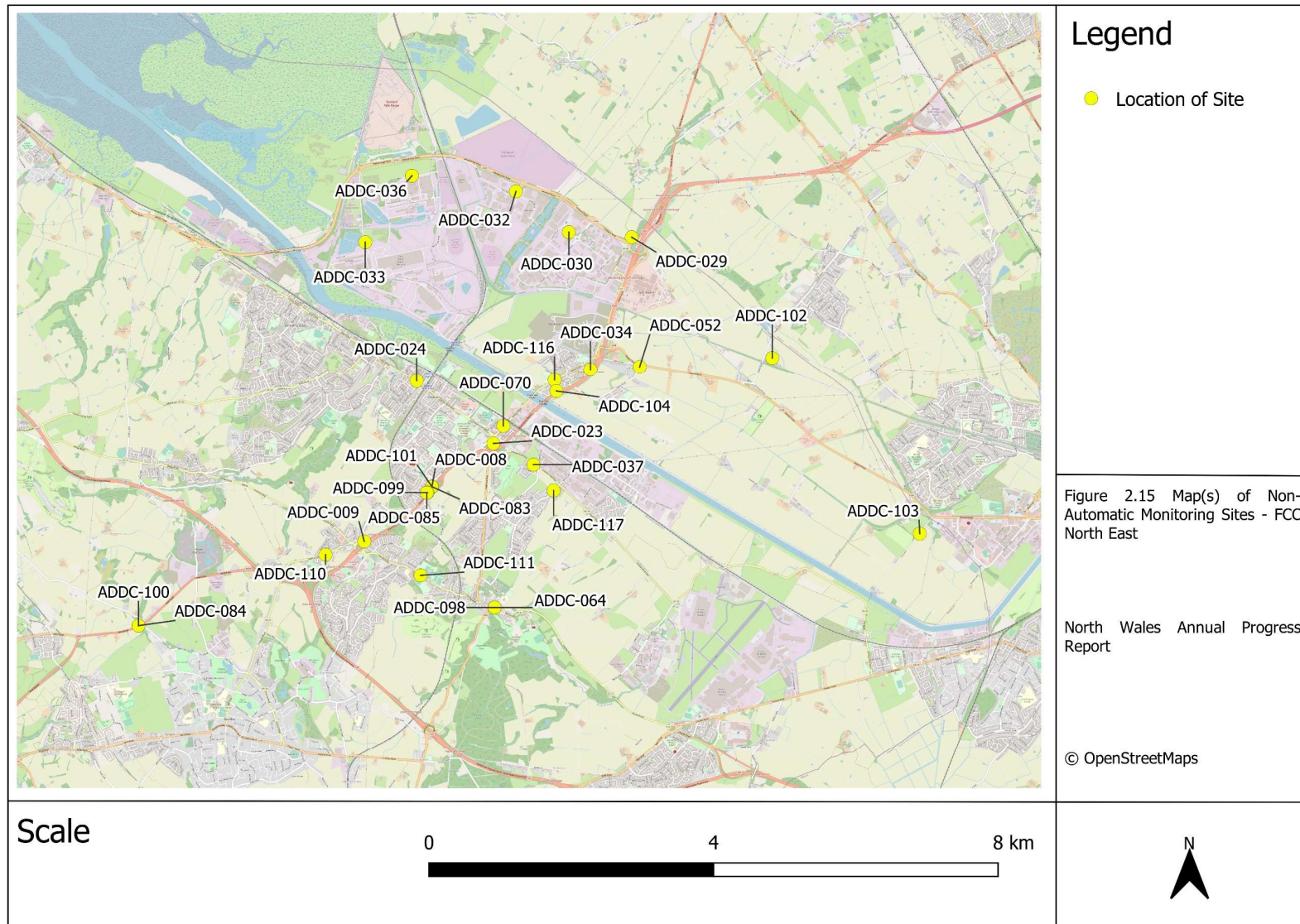
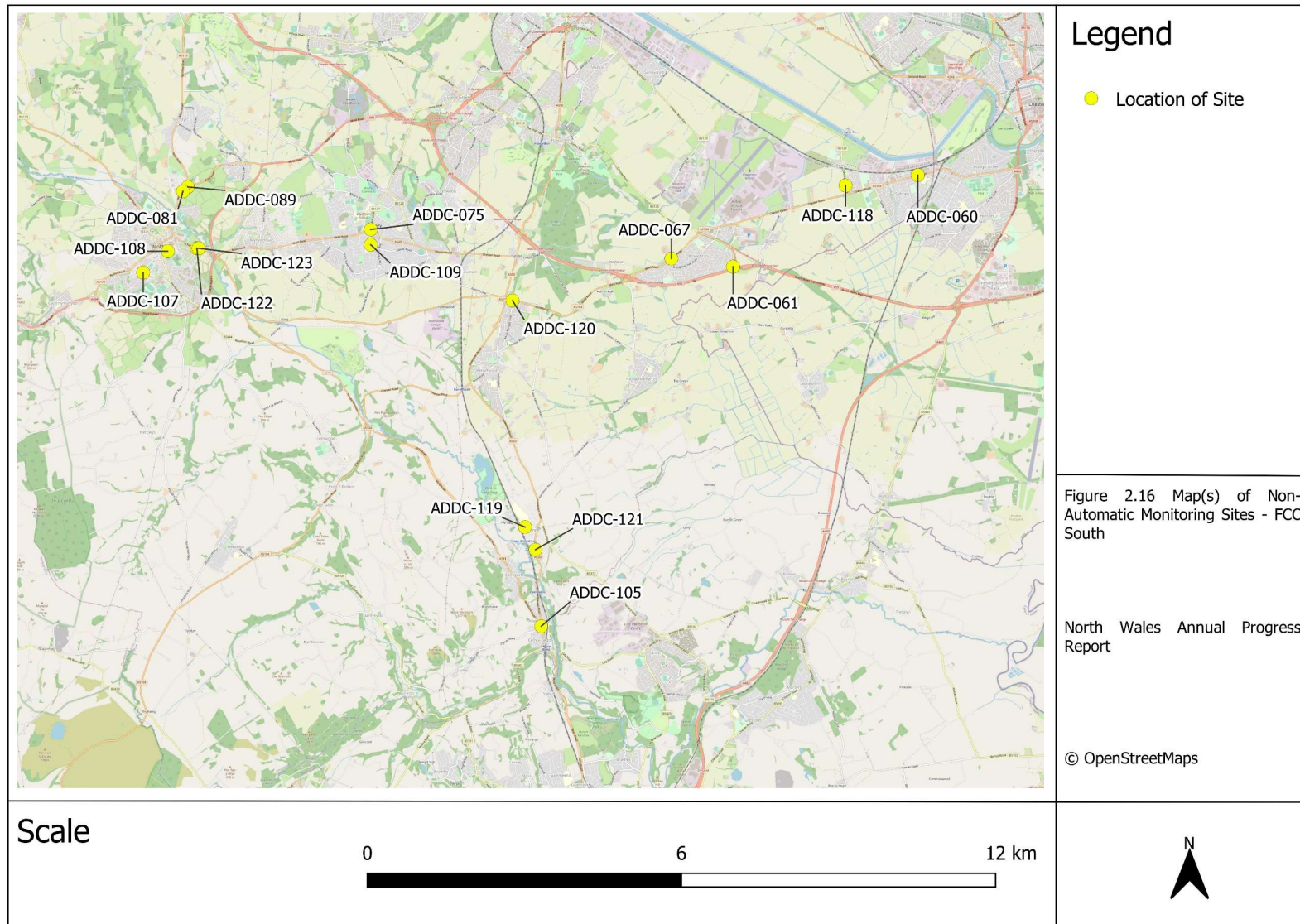


Figure 2.16 – Map(s) of Non-Automatic Monitoring Sites – FCC South



2.2 2021 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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
IACC									
IACC-081	Marine Sq. Holy	Diffusion Tube	100	100	-	19.7	18.7	14.8	14.2
IACC-082	Opp.Panton Arms	Diffusion Tube	100	100	-	18.6	18.1	13.6	16.2
IACC-083	Llanfair A55 Bridge	Diffusion Tube	100	100	-	-	10.8	7.9	8.5
IACC-084	Orthios-PenrhosLodge	Diffusion Tube	100	100	-	-	7.8	6.4	6.3
DCC									
RHBC/006	Wellington Road, Rhyl	Diffusion Tube	100.0	100.0	24.9	25.3	23.6	18.3	20.9
RHBC/017	10 Kinmel Street, Rhyl	Diffusion Tube	90.4	90.4	25.7	25.1	23.4	22.3	20.5
RHBC/058	Adj. 7 Berwyn Street, Llangollen	Diffusion Tube	100.0	100.0	-	32.7	34.2	24.5	26.2
RHBC/060	Adj. 48 Church Street, Llangollen	Diffusion Tube	100.0	100.0	-	10.8	10.4	8.3	7.7
RHBC/007	2 Pant Glas, St. Asaph	Diffusion Tube	100.0	100.0	14.1	14.5	12.9	10.5	11.7
RHBC/051	Adj. 1 Vale Street, Denbigh	Diffusion Tube	100.0	100.0	24.8	24.2	21.8	18.7	21.5

RHBC/026	31 Ruthin Road, Denbigh	Diffusion Tube	100.0	100.0	19.1	17	16.7	14.1	15.0
RHBC/062	14 Maes Helyg, Rhuddlan	Diffusion Tube	100.0	100.0	15.2	14.2	11.8	7.2	7.0
RHBC/011	7 Roe Park, St. Asaph	Diffusion Tube	100.0	100.0	21.3	19.8	18.6	15.2	14.7
RHBC/063	Hennessey Terrace, Denbigh	Diffusion Tube	100.0	100.0	15.3	14	13.8	17.6	16.8
RHBC/027	Denbigh Cutters, 21 Vale Street, Denbigh	Diffusion Tube	100.0	100.0	33.1	32.5	30	27.2	29.0
RHBC/059	Adj. 6-7 Castle Street, Llangollen	Diffusion Tube	100.0	100.0	-	13.7	14.4	11.2	12.2
RHBC/023	25 Park Road, Ruthin.	Diffusion Tube	100.0	100.0	21.3	20.5	20.3	16.1	17.6
RHBC/046	Adj HSBC Bank, Vale Street, Denbigh	Diffusion Tube	100.0	100.0	32.4	28	28.6	23.6	23.7
RHBC/047	Opp Rowlands Pharm., Vale Street, Denbigh	Diffusion Tube	100.0	100.0	26.3	24.5	22.3	20.3	21.0
RHBC/048	Adj 50 Vale Street, Denbigh	Diffusion Tube	100.0	100.0	22.3	21	21.3	20	19.4
RHBC/040	Haul Fryn Depot, Ruthin	Diffusion Tube	100.0	100.0	26.2	23.7	26.4	22.5	24.7
RHBC/041	Adj 62 Rhos Street, Ruthin	Diffusion Tube	84.6	84.6	17.2	14.6	14.1	18.7	11.8
RHBC/055	Adj. Swayne Johnston Sol., Vale Street, Denbigh	Diffusion Tube	100.0	100.0	22.2	21.7	19.7	17.1	17.2

RHBC/056	7 Vale Street, Denbigh	Diffusion Tube	100.0	100.0	29.3	28.7	26.1	23.2	23.1
RHBC/034	2 Rhyl Road, Denbigh	Diffusion Tube	100.0	100.0	17.6	14.7	16.2	14.1	13.2
RHBC/035	47 High Street, Denbigh	Diffusion Tube	100.0	100.0	17.8	18.2	16.8	13.2	14.0
RHBC/036	Adj CO-OP, High Street, Denbigh	Diffusion Tube	100.0	100.0	25.2	25.1	24.8	20	18.9
RHBC/037	Adj Fairyburn, Rhyl Road, Denbigh	Diffusion Tube	100.0	100.0	14.1	13.2	14.1	10.9	11.0
RHBC/052	79 High Street, Prestatyn	Diffusion Tube	100.0	100.0	15.7	14.8	14.8	11.6	11.9
RHBC/061	Adj. 1 Vale View, High Street, Rhuddlan	Diffusion Tube	100.0	100.0	-	16.4	14.5	12	12.5
GC									
GCC 002	Kerbside	Diffusion Tube	100.0	100.0	31.4	31.2	30.1	26	26.0
GCC 003	Urban Background	Diffusion Tube	92.2	92.2	9.9	10.2	9.3	7.1	8.1
GCC 005	Kerbside	Diffusion Tube	100.0	100.0	27.1	27.9	28.5	17.4	25.2
GCC 008	Kerbside	Diffusion Tube	100.0	100.0	22.5	23.4	22.2	15.7	17.3
GCC 011	Kerbside	Diffusion Tube	100.0	100.0	21.5	25.1	22.8	16.4	18.2
GCC 012	Kerbside	Diffusion Tube	100.0	100.0	26.1	26.8	24.6	17.8	20.5
GCC 013	Kerbside	Diffusion Tube	100.0	100.0	20.3	20	19.9	15.2	17.6
GCC 015	Roadside	Diffusion Tube	100.0	100.0	21.7	22.3	21.3	15	17.6
GCC 037	Kerbside	Diffusion Tube	100.0	100.0	32.6	25.2	21.6	17	19.6

GCC 038	Roadside	Diffusion Tube	100.0	100.0	27.5	28.1	27.5	18.5	21.2
GCC 039	Roadside	Diffusion Tube	100.0	100.0	27.1	28.6	26.1	20	20.4
GCC 040	Kerbside	Diffusion Tube	82.4	82.4	18	18.5	16.7	13.1	13.4
GCC 041	Roadside	Diffusion Tube	100.0	100.0	-	-	-	-	9.5
GCC 042	Urban Background	Diffusion Tube	100.0	100.0	-	-	-	-	9.7
GCC 043	Roadside	Diffusion Tube	92.5	92.5	-	-	-	-	8.9
GCC 044	Kerbside	Diffusion Tube	100.0	100.0	-	-	-	-	13.3
GCC 045	Roadside	Diffusion Tube	89.7	89.7	-	-	-	-	10.5
WCBC									
Wrexham AURN	Roadside	Automatic	99.1	99.1	16.5	18.2	16	13	14.7
Wrexham Chirk	Industrial	Automatic	89.7	89.7	-	-	-	21	18.1
1	Roadside	Diffusion tube	100.0	100.0	27.3	24.9	24.2	18.8	22.8
34	Roadside	Diffusion tube	100.0	100.0	14.2	14.5	13.9	10	11.4
45	Roadside	Diffusion tube	100.0	100.0	17.6	19.4	17.3	13.6	15.3
36	Roadside	Diffusion tube	100.0	100.0	19.5	17.3	17.7	12.2	14.3
10	Suburban	Diffusion tube	100.0	100.0	12.5	11.8	12.4	10	10.7
49	Suburban	Diffusion tube	100.0	100.0	-	-	9.7	7.2	7.9
42	Roadside	Diffusion tube	100.0	100.0	24.4	23.2	20.6	17.1	19.6
50	Roadside	Diffusion tube	100.0	100.0	-	-	19.6	14.7	15.1

51	Suburban	Diffusion tube	100.0	100.0	-	-	16.8	13.6	15.5
52	Intermediate	Diffusion tube	100.0	100.0	-	-	21.4	15.1	18.2
53	Roadside	Diffusion tube	100.0	100.0	-	-	20.1	16.6	18.4
22	Intermediate	Diffusion tube	100.0	100.0	15.9	15.7	14.7	13.3	13.3
32	Roadside	Diffusion tube	100.0	100.0	26.7	27.2	23.7	18.2	18.9
30	Roadside	Diffusion tube	100.0	100.0	33.1	34.9	31.7	26.3	29.5
31	Roadside	Diffusion tube	100.0	100.0	31.8	28.6	27.3	20	24.0
33	Roadside	Diffusion tube	100.0	100.0	17.5	18.5	15.6	19.3	21.0
37	Roadside	Diffusion tube	100.0	100.0	20.8	20.3	16.9	12.1	13.5
38	Roadside	Diffusion tube	100.0	100.0	-	-	16.5	12.5	14.8
44	Roadside	Diffusion tube	100.0	100.0	21.9	22.7	20.5	16.3	18.8
40	Roadside	Diffusion tube	100.0	100.0	10.9	12.1	9.7	7.4	7.5
41	Roadside	Diffusion tube	100.0	100.0	15	15.4	13.9	10.3	13.0
43	Roadside	Diffusion tube	100.0	100.0	18.4	19.3	17	14.4	16.5
46	Roadside	Diffusion tube	100.0	100.0	23	24.4	22.7	16.1	19.7
48	Roadside	Diffusion tube	100.0	100.0	-	18.3	14.3	12.3	13.7
54	Roadside	Diffusion tube	100.0	100.0	-	-	22.7	15.2	18.4
55	Suburban	Diffusion tube	100.0	100.0	-	-	11.8	9.4	9.8
56	Roadside	Diffusion tube	100.0	100.0	-	-	18.8	13.4	15.0

57	Intermediate	Diffusion tube	100.0	100.0	-	-	17.7	10	11.2
58	Suburban	Diffusion tube	100.0	100.0	-	-	12.7	10.5	10.7
59	Roadside	Diffusion tube	100.0	100.0	-	-	11.2	8.4	9.7
60	Suburban	Diffusion tube	100.0	100.0	-	-	7.7	6.8	7.4
61	Roadside	Diffusion tube	100.0	100.0	-	-	-	12.6	15.4
AURN (triplicate)	Roadside	Diffusion tube	100.0	100.0	15.1	16.3	16.1	12	13.9
CCBC									
CBC-017	Roadside	Diffusion Tube	100	100	16.5	17.3	16.3	11.6	13
CBC-018	Roadside	Diffusion Tube	100	100	19.8	18	17.2	13	14
CBC-021	Roadside	Diffusion Tube	100	100	14.2	16.3	15.9	11.3	13.2
CBC-022	Roadside	Diffusion Tube	100	100	18.7	18.3	16.7	13.2	13.5
CBC-034	Roadside	Diffusion Tube	100	100	22	20	20	15.4	16.9
CBC-035	Roadside	Diffusion Tube	100	100	15.5	16.5	16.1	11.8	13.7
CBC-036	Roadside	Diffusion Tube	100	100	10.8	11.6	11.1	8	8.6
CBC-040	Roadside	Diffusion Tube	100	100	-	15.8	14.2	11	11.9
CBC-041	Roadside	Diffusion Tube	100	100	-	14.1	14	10.2	11.2
CBC-042	Roadside	Diffusion Tube	100	100	-	-	15.8	11.7	11.4
CBC-043	Roadside	Diffusion Tube	100	100	-	-	11.4	8.8	10.2
CBC-044	Roadside	Diffusion Tube	100	100	-	-	18.5	13.4	15.4

CBC-045	Roadside	Diffusion Tube	100	100	-	-	10.8	7.8	9
CBC-046	Roadside	Diffusion Tube	100	100	-	-	21.3	15.2	16.3
CBC-047	Roadside	Diffusion Tube	100	100	-	-	15.4	12.2	12.8
CBC-048	Roadside	Diffusion Tube	100	100	-	-	16.7	12.2	10.2
CBC-053	Roadside	Diffusion Tube	100	100	-	-	-	-	11.7
CBC-054	Roadside	Diffusion Tube	100	100	-	-	-	-	13.5
CBC-055	Roadside	Diffusion Tube	100	100	-	-	-	-	9.5
CBC-056	Roadside	Diffusion Tube	100	100	-	-	-	-	8.7
FCC									
ADDC-008	Kerbside	Diffusion Tube	100.0	100.0	23.2	24.4	24.3	14.4	14.9
ADDC-009	Roadside	Diffusion Tube	92.3	92.3	17.4	17.2	17.5	13.4	13.6
ADDC-085	Kerbside	Diffusion Tube	100.0	100.0	24.4	28.2	25.2	19.1	20.4
ADDC-111	Kerbside	Diffusion Tube	100.0	100.0	16.0	16.0	16.0	10.7	11.9
ADDC-105	Roadside	Diffusion Tube	75.5	75.5	-	-	14.5	10.8	12.2
ADDC-013	Rural	Diffusion Tube	73.1	73.1	8.1	10.5	10.5	6.7	8.6
ADDC-014	Kerbside	Diffusion Tube	100.0	100.0	13.2	14.9	14.8	11.0	10.5
ADDC-015	Urban Background	Diffusion Tube	100.0	100.0	11.7	12.6	12.3	9.7	10.1
ADDC-106	Roadside	Diffusion Tube	82.7	82.7	-	-	12.5	9.6	9.7
ADDC-107	Roadside	Diffusion Tube	100.0	100.0	-	-	-	7.8	8.2

ADDC-084	Kerbside	Diffusion Tube	100.0	100.0	29.3	28.2	28.2	23.6	23.2
ADDC-064	Kerbside	Diffusion Tube	100.0	100.0	-	-	-	-	23.2
ADDC-098	Kerbside	Diffusion Tube	100.0	100.0	29.3	28.2	28.2	23.6	23.2
ADDC-117	Kerbside	Diffusion Tube	50.0	50.0	34.5	33.9	32.5	10.0	11.1
ADDC-099	Kerbside	Diffusion Tube	92.3	92.3	13.4	14.7	13.9	17.7	19.0
ADDC-023	Urban Background	Diffusion Tube	100.0	100.0	25.9	26.7	27.8	18.6	20.1
ADDC-024	Kerbside	Diffusion Tube	100.0	100.0	24.4	24.7	24.3	17.6	20.5
ADDC-118	Kerbside	Diffusion Tube	92.3	92.3	23.8	24.8	23.6	10.7	11.2
ADDC-080	Kerbside	Diffusion Tube	100.0	100.0	13.9	14.5	13.6	13.4	14.5
ADDC-066	Kerbside	Diffusion Tube	100.0	100.0	19.5	22.6	19.3	17.7	17.3
ADDC-116	Kerbside	Diffusion Tube	92.3	92.3	22.0	20.7	22.1	14.6	14.7
ADDC-029	Rural	Diffusion Tube	84.6	84.6	18.0	20.0	19.1	14.3	12.3
ADDC-030	Industrial	Diffusion Tube	100.0	100.0	14.6	17.6	17.2	17.7	18.5
ADDC-083	Kerbside	Diffusion Tube	100.0	100.0	23.2	24.4	24.3	14.4	14.9
ADDC-032	Industrial	Diffusion Tube	100.0	100.0	31.1	32.0	31.8	11.0	11.1
ADDC-033	Industrial	Diffusion Tube	100.0	100.0	16.0	17.2	16.6	12.9	14.0
ADDC-034	Roadside	Diffusion Tube	92.9	92.9	13.8	14.2	14.4	14.1	14.7
ADDC-120	Kerbside	Diffusion Tube	100.0	100.0	20.0	20.8	17.1	11.5	11.4
ADDC-036	Kerbside	Diffusion Tube	92.3	92.3	18.6	17.9	18.3	20.1	18.5

ADDC-037	Kerbside	Diffusion Tube	84.1	84.1	16.6	16.6	16.6	14.3	15.9
ADDC-093	Kerbside	Diffusion Tube	67.9	67.9	23.9	24.0	24.3	-	15.8
ADDC-044	Kerbside	Diffusion Tube	92.3	92.3	21.3	20.2	20.3	15.8	19.0
ADDC-067	Kerbside	Diffusion Tube	100.0	100.0	18.2	-	16.4	16.7	16.5
ADDC-068	Kerbside	Diffusion Tube	92.3	92.3	23.8	24.8	24.4	14.0	13.4
ADDC-069	Kerbside	Diffusion Tube	100.0	100.0	21.4	21.3	21.2	17.4	17.6
ADDC-070	Kerbside	Diffusion Tube	100.0	100.0	18.4	19.8	17.6	18.7	16.3
ADDC-081	Kerbside	Diffusion Tube	100.0	100.0	20.8	20.9	20.8	8.4	9.6
ADDC-119	Kerbside	Diffusion Tube	92.3	92.3	21.3	21.5	24.8	11.8	13.5
ADDC-114	Kerbside	Diffusion Tube	92.3	92.3	12.9	11.6	11.7	10.8	10.5
ADDC-052	Kerbside	Diffusion Tube	92.3	92.3	16.2	17.3	16.7	7.2	7.0
ADDC-115	Kerbside	Diffusion Tube	82.7	82.7	14.9	14.9	13.4	9.2	9.4
ADDC-112	Kerbside	Diffusion Tube	80.8	80.8	8.9	8.6	8.8	8.8	9.3
ADDC-113	Kerbside	Diffusion Tube	90.4	90.4	9.9	11.9	11.9	18.2	18.6
ADDC-091	Kerbside	Diffusion Tube	84.6	84.6	9.6	12.2	11.2	7.8	8.2
ADDC-108	Kerbside	Diffusion Tube	100.0	100.0	27.9	22.3	21.8	13.8	13.5
ADDC-110	Kerbside	Diffusion Tube	100.0	100.0	11.4	9.5	10.0	21.4	23.3
ADDC-100	Kerbside	Diffusion Tube	67.3	67.3	17.5	17.8	17.8	15.3	14.9
ADDC-060	Kerbside	Diffusion Tube	32.7	32.7	18.4	18.4	16.7	12.6	12.1

ADDC-061	Kerbside	Diffusion Tube	100.0	100.0	16.2	16.6	16.6	12.7	10.5
ADDC-121	Kerbside	Diffusion Tube	75.0	75.0	15.3	16.6	16.4	25.3	27.3
ADDC-101	Kerbside	Diffusion Tube	100.0	100.0	23.2	24.4	24.3	14.4	14.9
ADDC-109	Kerbside	Diffusion Tube	100.0	100.0	9.3	12.2	10.4	8.6	8.6
ADDC-075	Kerbside	Diffusion Tube	65.4	65.4	23.4	23.3	21.2	17.8	17.1
ADDC-102	Kerbside	Diffusion Tube	100.0	100.0	10.9	11.2	11.1	8.4	8.3
ADDC-103	Kerbside	Diffusion Tube	80.8	80.8	8.2	10.3	9.8	8.5	8.1
ADDC-104	Kerbside	Diffusion Tube	55.8	55.8	-	-	-	-	12.5
ADDC-089	Kerbside	Diffusion Tube	76.4	76.4	37.4	37.6	35.9	26.3	24.9
ADDC-122	Roadside	Diffusion Tube	100.0	100.0	34.8	27.0	26.5	23.3	21.6
ADDC-123	Roadside	Diffusion Tube	92.3	92.3	29.1	18.7	23.2	15.8	17.3

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.TG16 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 2.17 – Trends in Annual Mean NO₂ Concentrations – IACC

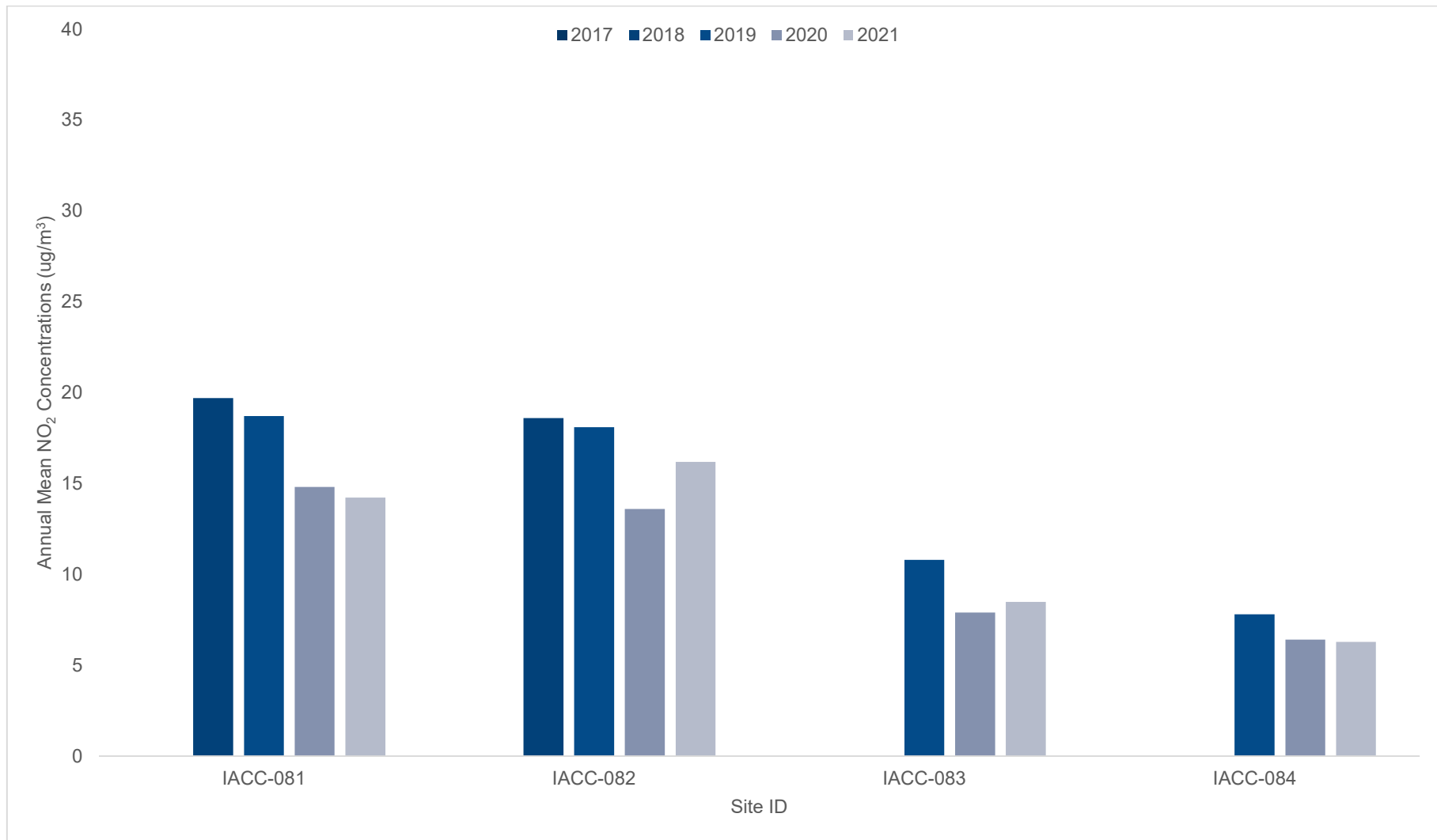


Figure 2.18 – Trends in Annual Mean NO₂ Concentrations – DCC

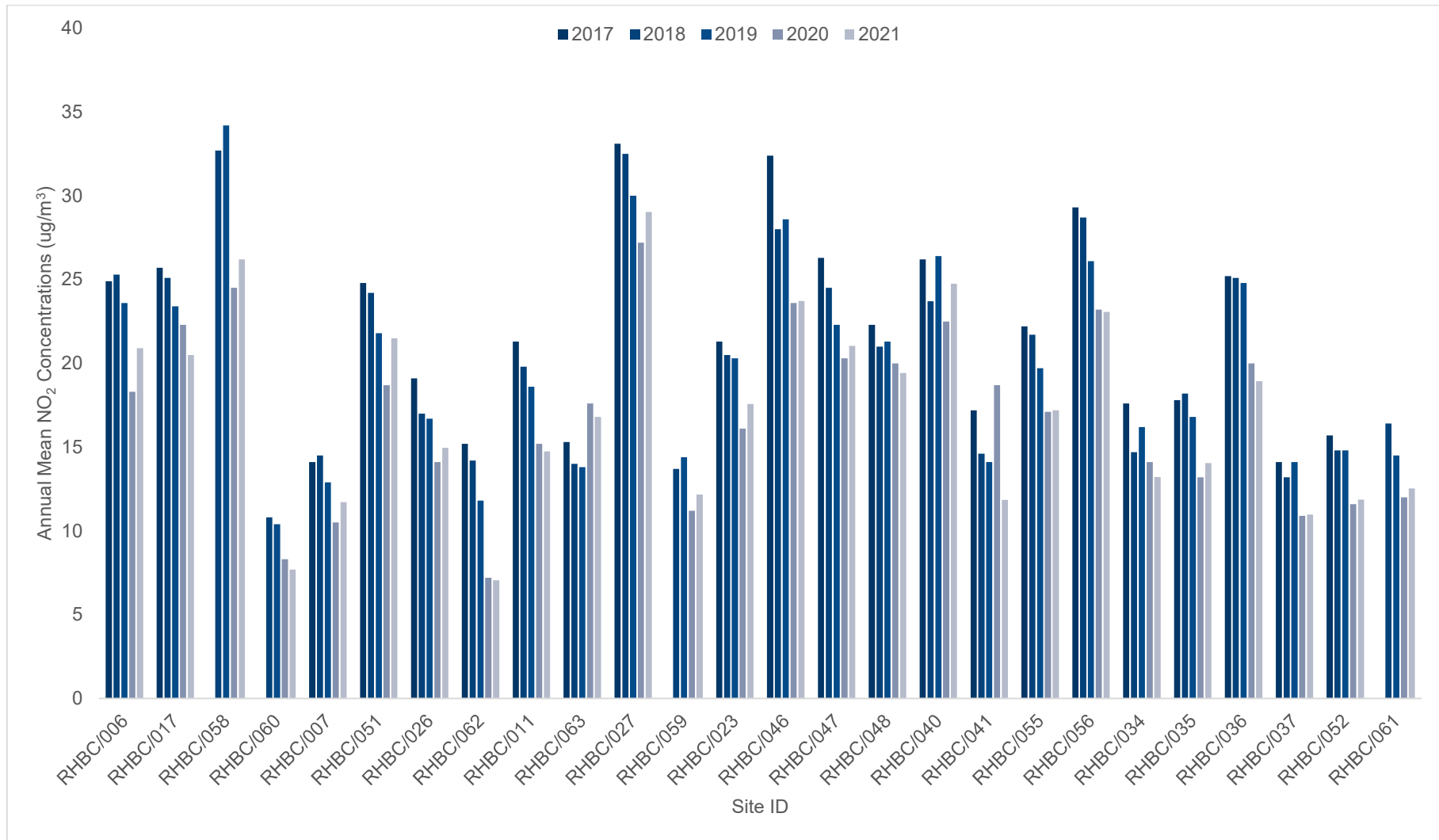


Figure 2.19 – Trends in Annual Mean NO₂ Concentrations – GC

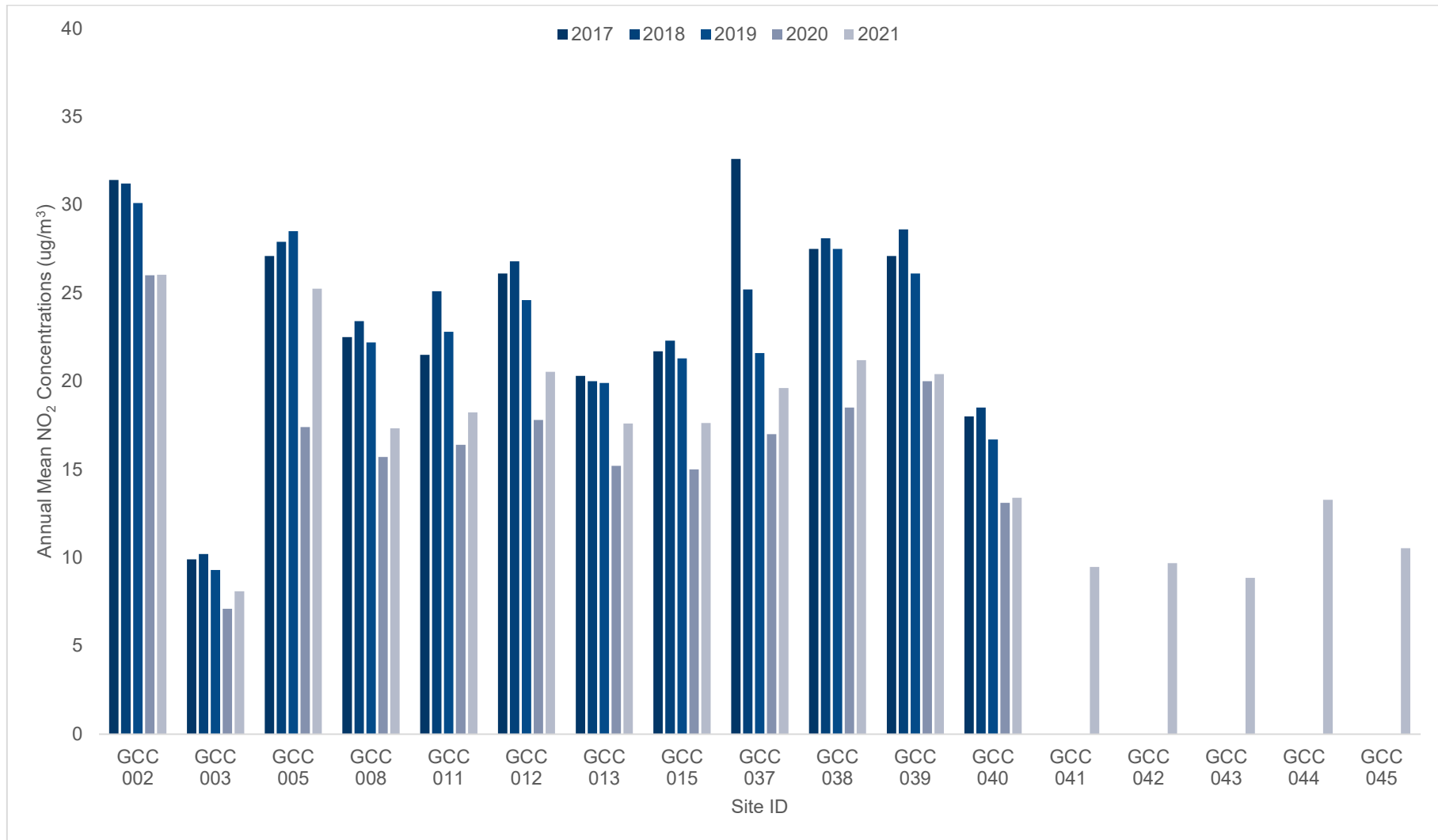


Figure 2.20 – Trends in Annual Mean NO₂ Concentrations – WCBC

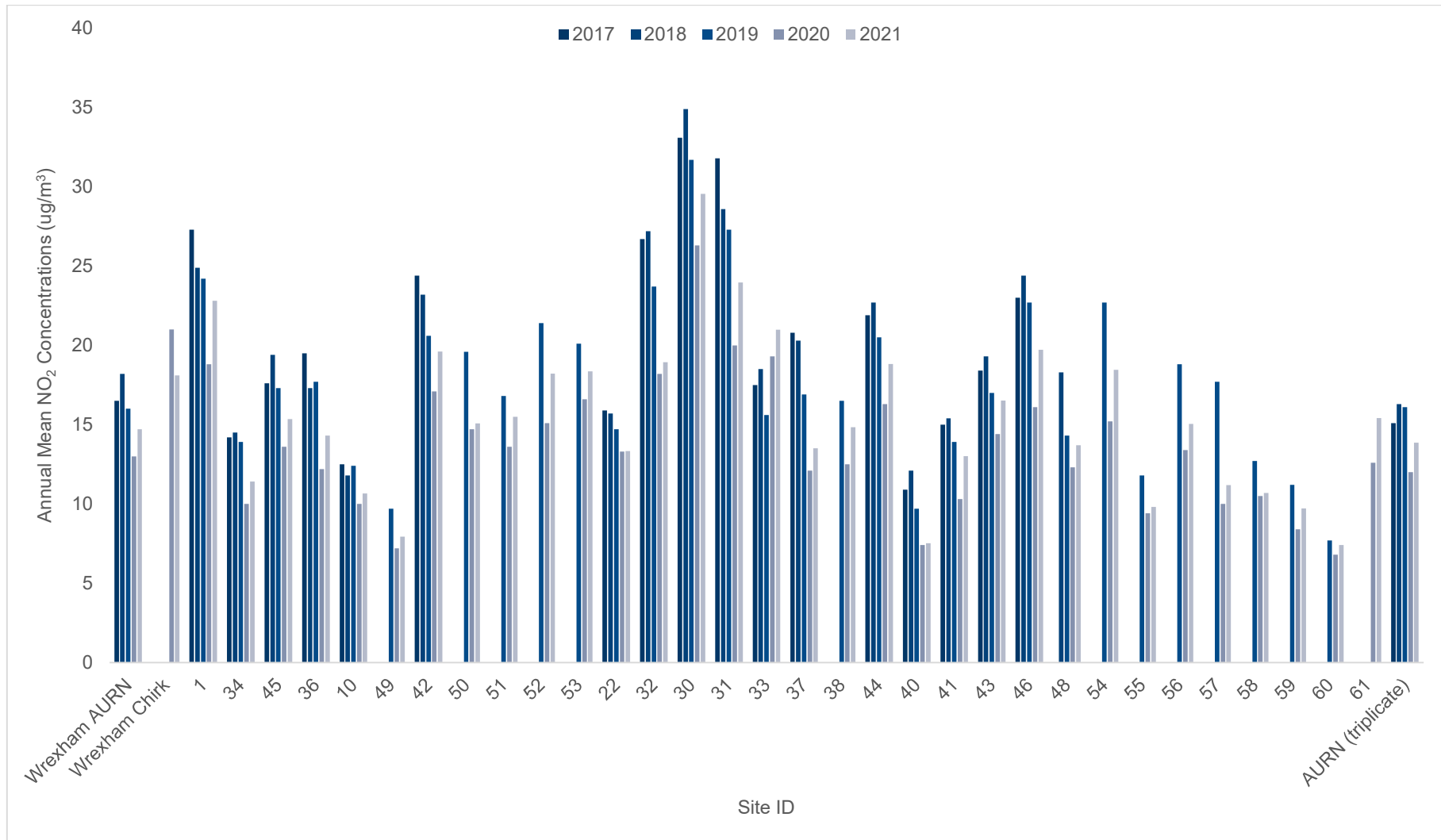


Figure 2.21 – Trends in Annual Mean NO₂ Concentrations – CCBC

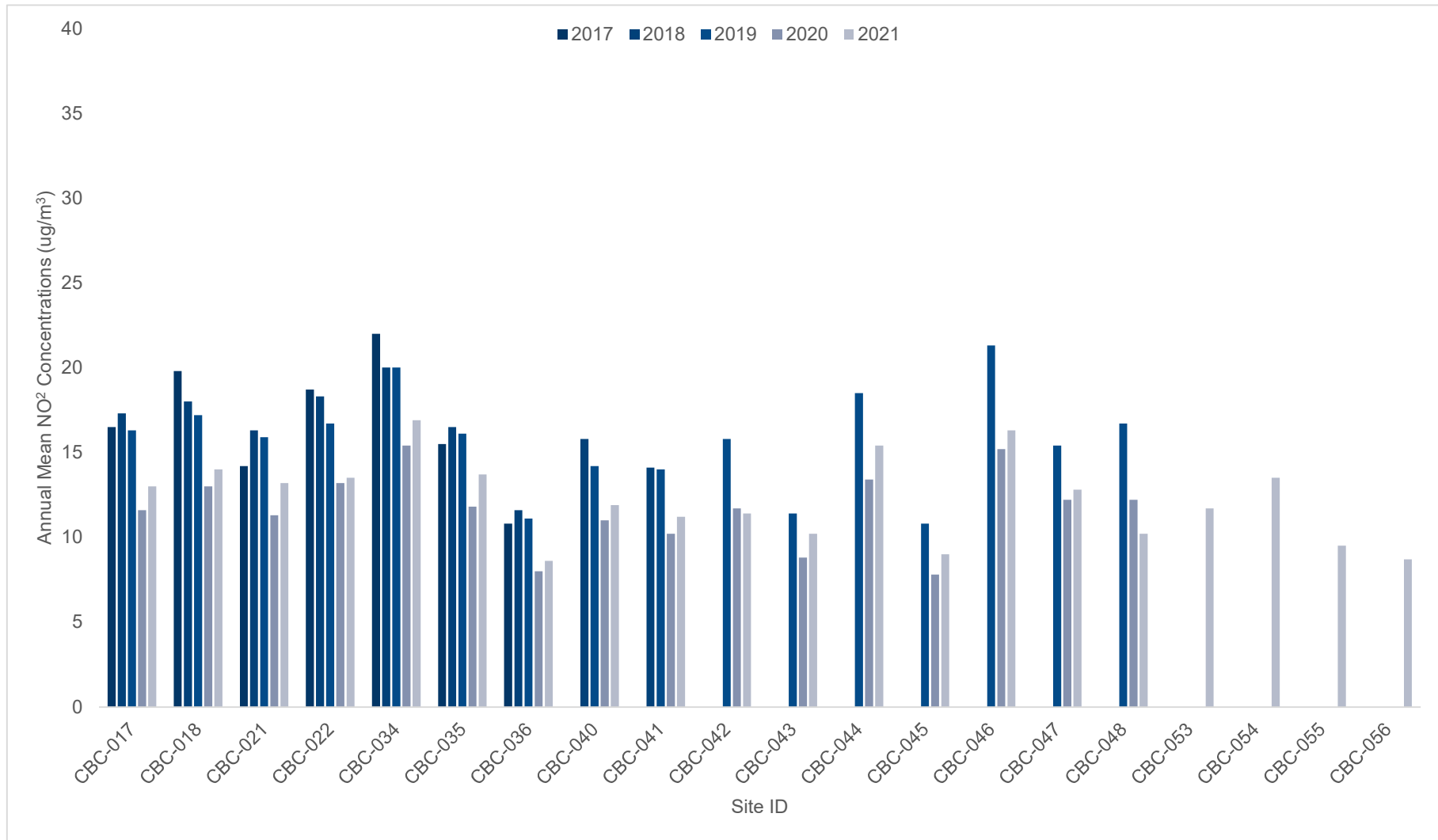


Figure 2.22 – Trends in Annual Mean NO₂ Concentrations – FCC 1/2

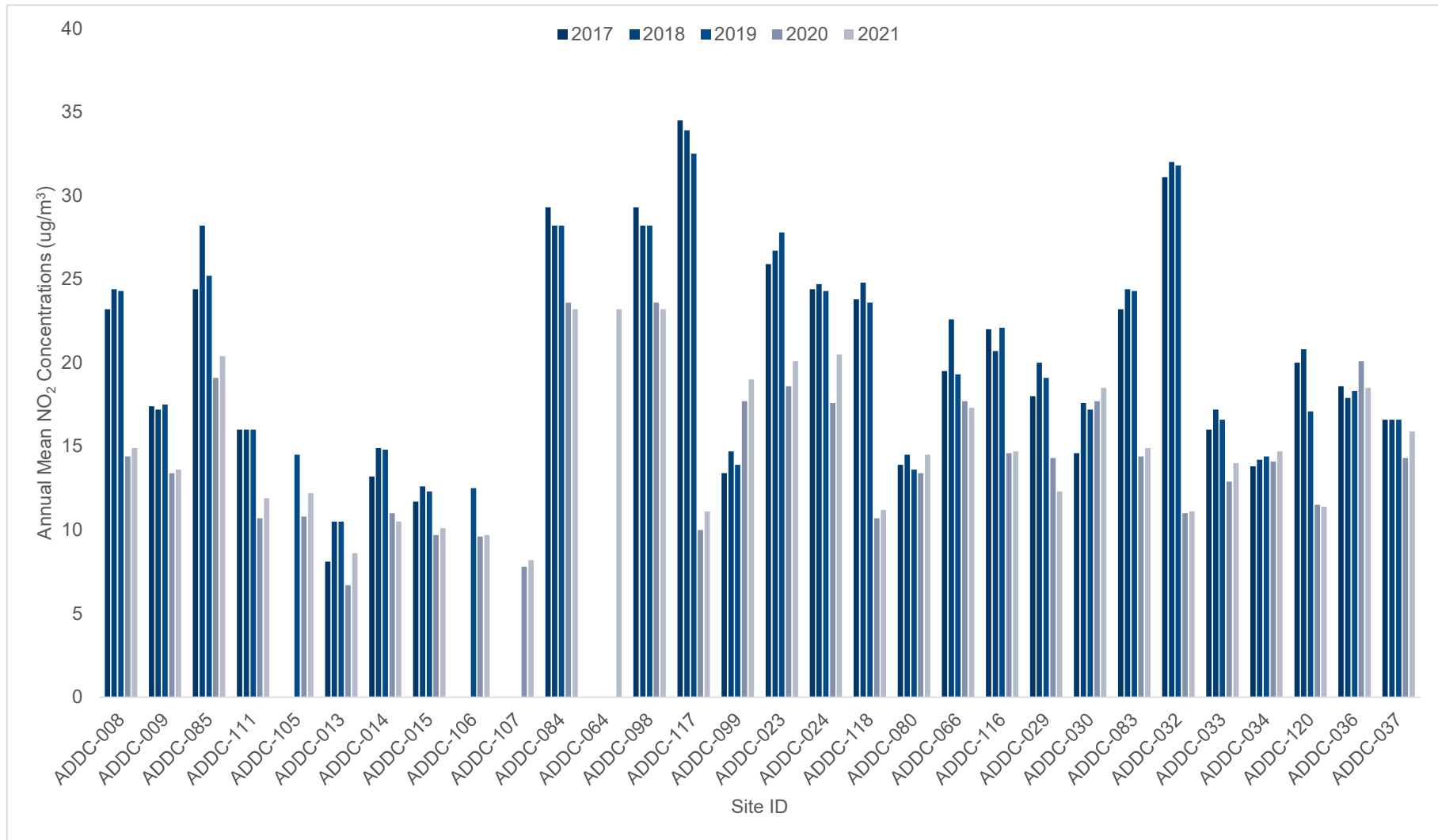


Figure 2.23 – Trends in Annual Mean NO₂ Concentrations – FCC 2/2

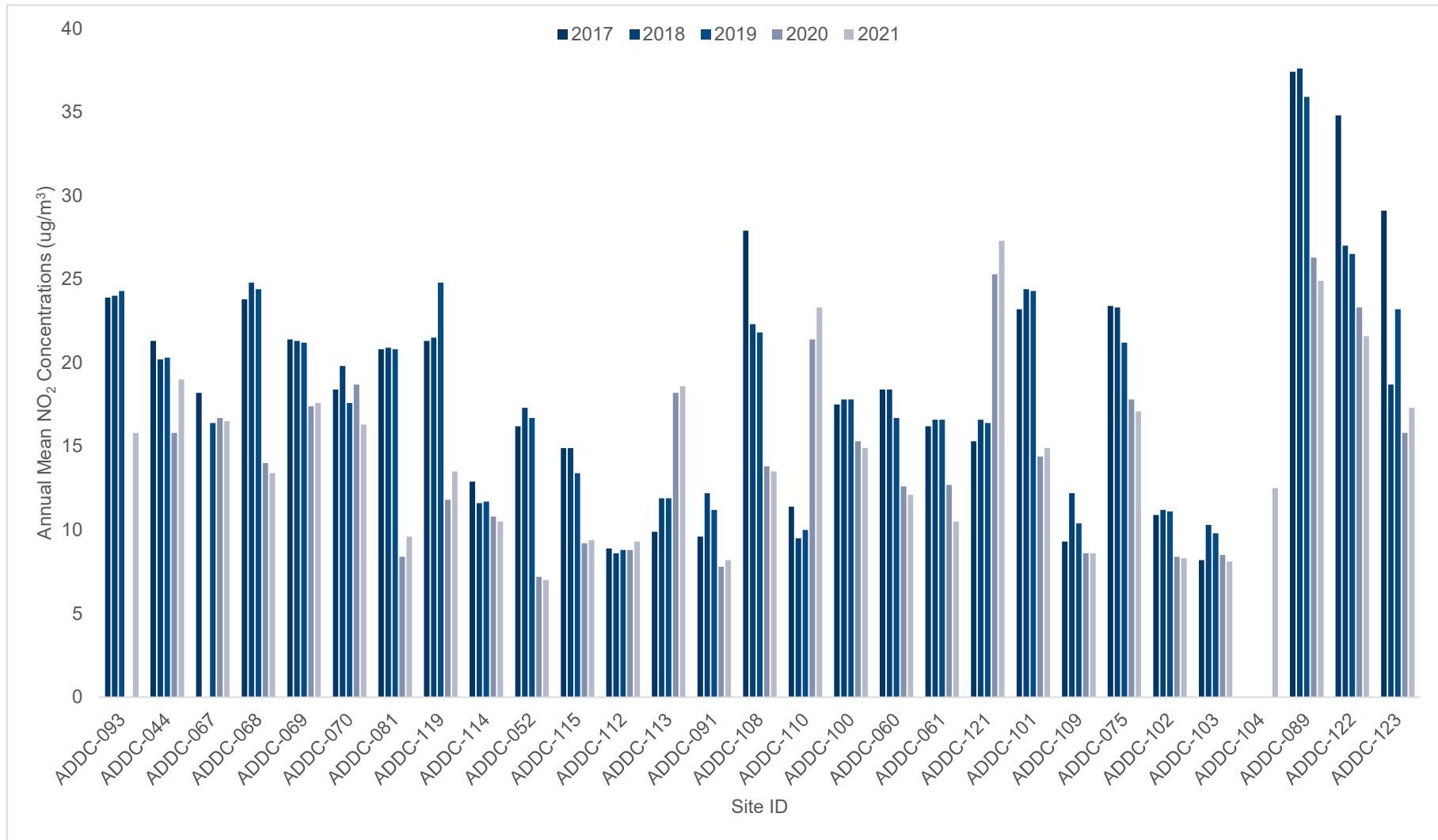


Table 2.4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
WCBC									
Wrexham AURN	Roadside	Automatic	99.1	99.1	0	0	0	0	0
Wrexham Chirk	Industrial	Automatic	89.7	89.7	-	-	-	0	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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
IACC								
CM1 Llynfaes	Rural	90.6	90.6	13.2	13	17	25.9 ⁽³⁾	16.3
CM2 Brynteg	Rural	90	90	11	10.1	14	19	15.8
CM4 Penhesgyn	Rural	90.6	90.6	8.1*	9.5	13	17	10.3
WCBC								
Wrexham AURN	Roadside	99.9	99.9	-	-	12	11	11.3
Wrexham Chirk	Industrial	86.5	86.5	-	-	-	9.3	8.3

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG16 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 PM₁₀ Concentrations

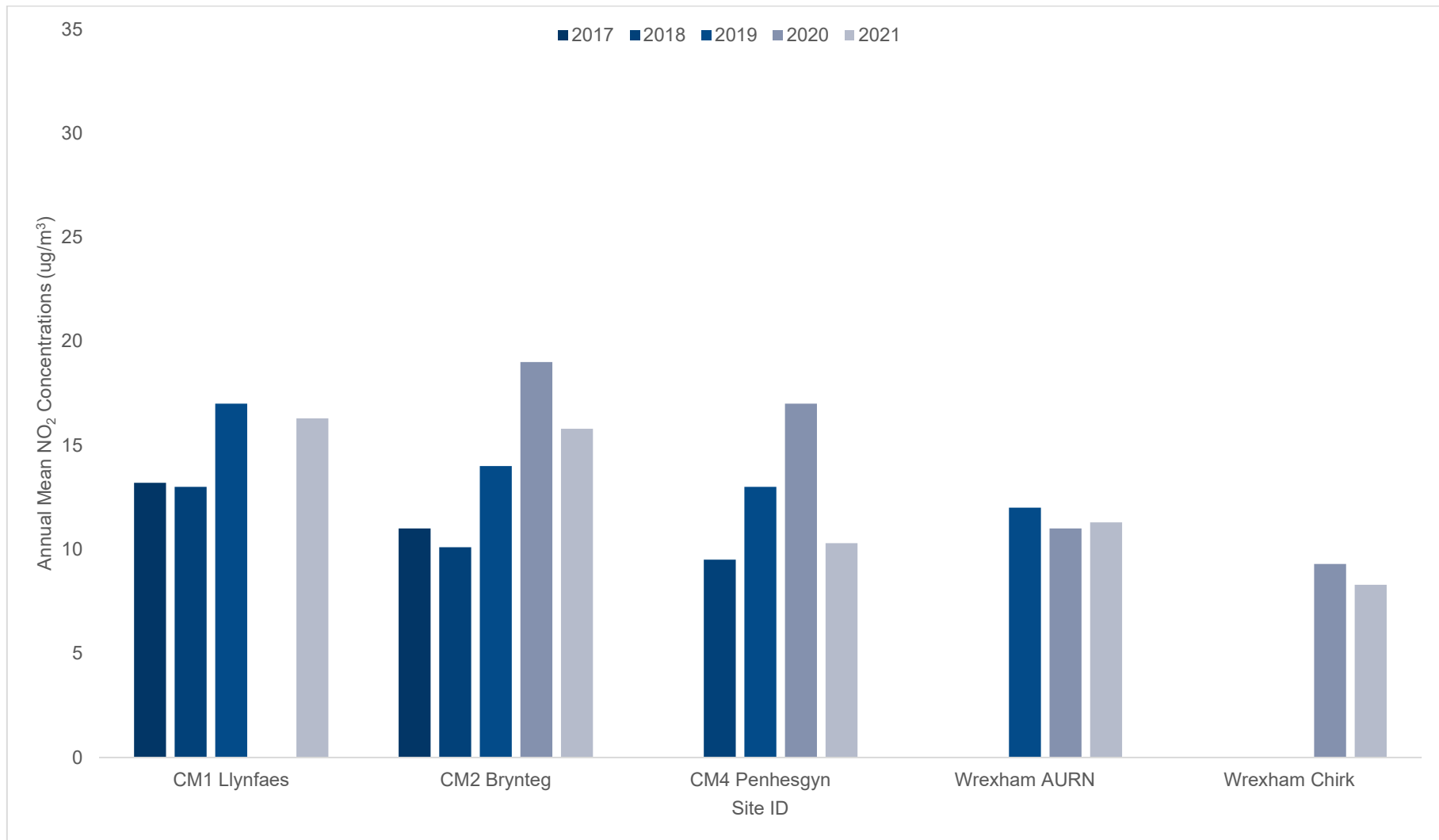


Table 2.6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
IACC								
CM1 Llynfaes	Rural	90.6	90.6	0	0	0	4	7
CM2 Brynteg	Rural	90	90	0	2	0	3	5
CM4 Penhesgyn	Rural	90.6	90.6	0	0	0	0	1
WCBC								
Wrexham AURN	Roadside	99.9	99.9	-	-	0	0	1
Wrexham Chirk	Industrial	86.5	86.5	-	-	-	0	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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
IACC								
CM1 Llynfaes	Rural	90.6	90.6	8.4	9	9	11.7	6.2
CM2 Brynteg	Rural	90	90	6.8	6	6	8	7
CM4 Penhesgyn	Rural	90.6	90.6	6.5	7	7	7	5.7
WCBC								
Wrexham AURN	Roadside	99.9	99.9	-	-	8	7	7
Wrexham Chirk	Industrial	86.5	86.5	-	-	-	3	2.9

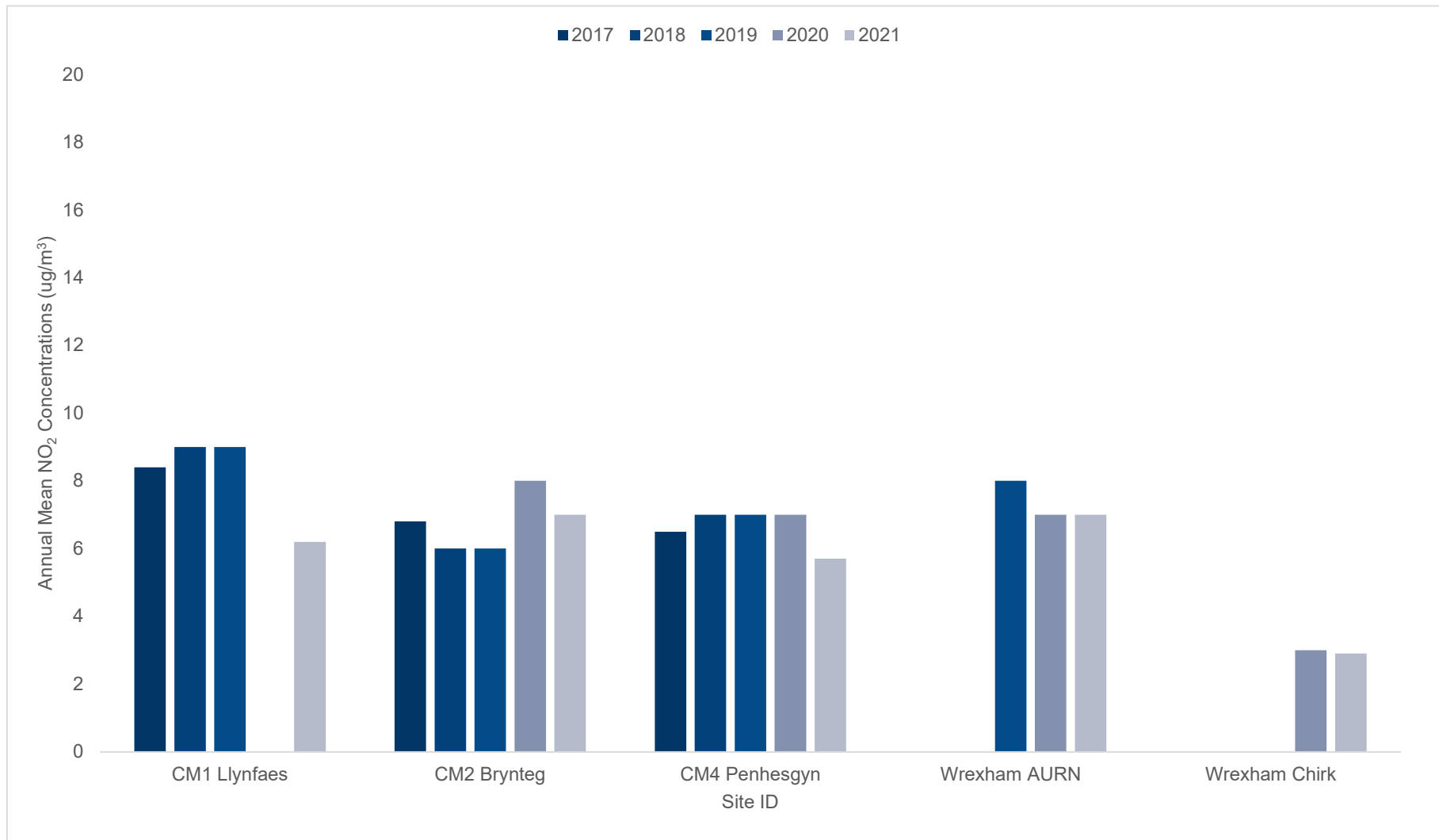
Notes:

All means have been “annualised” as per LAQM.TG16 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 2.25 – Trends in Annual Mean PM_{2.5} Concentrations



2.3 Comparison of 2021 Monitoring Results with Previous Years and the Air Quality Objectives

2.3.1 Nitrogen Dioxide (NO₂)

In 2021, NO₂ was monitored by all six local authorities at 159 diffusion tube sites. Table 2.3 presents the annual mean NO₂ concentrations monitored in 2021. 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.

Figure 2.17 shows the annual mean NO₂ concentration trend in **IACC**. IACC-081 and IACC-084 experience a decrease in NO₂ concentrations year-on-year. IACC-082 and IACC-083 shows a dip in 2020 concentrations, likely to be linked to reduced traffic flows during the Covid-19 pandemic.

Figure 2.18 shows the annual mean NO₂ concentration trend in **DCC**. Concentrations decreased between 2017-2019 and increased between 2020-2021 at the majority of the sites, showing a general decrease in trends. However, there were some sites that measured an increase in NO₂ in 2020, including RHBC/063 and RHBC/041.

Figure 2.19 shows the annual mean NO₂ concentration trend in **GC**. The figure shows a general decrease in NO₂ concentration over the monitoring period 2017-2021. NO₂ concentrations decreased in 2020, potentially owing to impacts from the Covid-19 pandemic. NO₂ concentrations increased in 2021 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.

Figure 2.20 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. However, Site 33 have measured an increase in NO₂ year-on-year since 2017 apart from 2019. Annual mean NO₂ concentrations remain below the respective AQO at this site.

Figure 2.21 shows the annual mean NO₂ concentration in **CCBC**. NO₂ concentrations in CCBC have decreased in recent years with reduced concentrations in 2020 potentially owing to the impact of the Covid-19 pandemic.

Figure 2.22 and Figure 2.23 represent the annual trends in NO₂ concentrations in **FCC**. Over the majority of the sites across the authority, NO₂ concentrations have decreased. Further details on the impact on the pandemic on LAQM duties are included in 2021 Annual progress report (Appendix E).

NO₂ was also monitored at two automatic monitoring sites in **WCBC**. Comparison with the 1-hour mean AQO at these stations is included in Table 2.4. No exceedances of the 1-hour mean AQO were recorded in 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.

2.3.2 Particulate Matter (PM₁₀)

In 2021, PM₁₀ was monitored at three automatic monitoring stations in **IACC** and at two in **WCBC**. Annual mean concentrations were obtained from the Air Quality in Wales website (<https://airquality.gov.wales/>).

The concentrations recorded were well below the annual mean AQO of 40 µg/m³ at all five stations. The highest concentration recorded was 16.3 µg/m³ at **IACC's** CM1. Annual mean concentrations were below 17 µg/m³ at all monitoring sites.

There were seven, five and one exceedances of the 24-hour mean AQO of 50 µg/m³ at **IACC's** CM1, CM2 and CM3 monitoring sites, however this is within the allowed number of exceedances per year (AQO not to be exceeded more than 35 times a year). There was one exceedance of the 24-hour mean AQO of 50 µg/m³ at the **WCBC** AURN site during 2021.

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 decreased in 2021 at all monitoring stations.

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

2.3.3 Particulate Matter (PM_{2.5})

In 2021, PM_{2.5} was monitored at three automatic monitoring stations in **IACC** and at two in **WCBC**. Annual mean concentrations were obtained from the Air Quality in Wales website (<https://airquality.gov.wales/>).

The concentrations recorded in 2021 were below the annual mean standard of 25 µg/m³ at all five stations. The highest concentration recorded was 7 µg/m³ at **WCBC** Wrexham AURN site.

Table 2.7 includes the annual mean PM_{2.5} concentrations and Figure 2.47 represents the trend in annual mean concentrations.

PM_{2.5} annual mean concentrations have slightly decreased in 2021 at all sites.

2.4 Summary of Compliance with AQS Objectives as of 2021

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.

3.1 Road Traffic Sources (and Other Transport)

IACC reports no new road traffic sources identified in 2021.

DCC reports no new road traffic sources identified in 2021.

GC reports no new road traffic sources identified in 2021.

WCBC reports no new road traffic sources identified in 2021.

CCBC reports no new road traffic sources identified in 2021.

FCC reports no new road traffic sources identified in 2021.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

IACC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2021.

DCC reports that a planning application 12/2021/1036 for a new Poultry Farm was approved on the 15th December 2021. Further details are available at: <https://planning.denbighshire.gov.uk/planning/search-applications?civica.query.FullTextSearch=12%2F2021%2F1036#VIEW?RefType=PBDC&KeyNo=32106>).

GC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2021.

WCBC confirms that the following two new processes were permitted under the Environmental Permitting (England and Wales) Regulations in 2021:

- Part B Section 6.4 Respraying of road vehicles or parts of them. Body Perfect Ltd. Unit 5/6 The Grange, Rhosddu Industrial Estate, Rhosrobin, Wrexham, LL11 4RE

- Part B Section 6.6 Manufacturing products wholly or mainly of wood. James Jones & Sons (Pallets and Packaging) Limited, Larch House, Oak Road, Wrexham Industrial Estate, Wrexham, LL13 9RG.

CCBC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2021.

FCC reports no new industrial, fugitive or uncontrolled sources, or commercial sources identified in 2021.

3.3 Other Sources

IACC received 49 complaints of domestic bonfires and 9 complaints of Industrial/commercial bonfire incidents. IACC also confirms that 2 complaints of domestic chimney smoke from wood burners were received.

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 94 domestic bonfire complaints, 13 commercial bonfire complaints, and 18 complaints of smoke from a chimney.

3.4 New planning applications

In **WCBC** the following planning applications have been received in 2021:

- P/2021/0135 Old Rhosrobin - Reserved matters relating to an outline application for residential development (up to 189 dwellings). The accompanying Air Quality assessment concluded 'The results of the dispersion modelling assessment indicated that predicted NO₂ and PM₁₀ concentrations were below the relevant AQOs at proposed residential dwellings. The site is therefore considered

suitable for the proposed use from an air quality perspective'. These conclusions were accepted.

- P/2021/0436 Wrexham – Outline planning application for residential development of up to 600 dwellings. The accompanying air quality report concluded 'Annual concentrations of NO₂ and PM₁₀ were predicted to be well below the respective air quality objectives for both 'without development' and 'with development' scenarios in 2023 and 2028 at all modelled receptor locations. Predicted annual mean NO₂ and PM₁₀ concentrations in the 'with development' scenario are all 51% or less of the AQAL. No exceedance of the short term 1-hour NO₂ and 24-hour PM₁₀ air quality objectives were predicted at sensitive receptor locations.' These conclusions were accepted.
- P/2021/0551 Llan y Pwll - Erection of 1 drive through retail unit (class a1 use) and 1 drive through restaurant (class a3 use). The accompanying air quality report concluded 'A review of local air quality concludes the site is below the indicative concentrations of when exceedance of the NO₂ one-hour objective may occur. The proposed development site is therefore considered suitable for commercial use with regards to air quality. The traffic associated with the proposed development is not expected to have a significant impact on local air quality. The vehicle generation would be below the criteria for detailed assessment on the surrounding roads. The traffic associated with the proposed development is not expected to have a significant impact on local air quality when considered following Environmental Protection UK & IAQM Institute of Air Quality Management Guidance.' These conclusions were accepted.
- P/2021/1057 Rhosrobin - erection of 92 dwellings including provision of roundabout. The accompanying air quality report examined the predicted air quality levels both with and without the proposed development and verified the model with local monitoring data it concluded 'A Review of the dispersion modelling results indicated that impacts on annual mean NO₂ and PM₁₀ concentrations as a result of road vehicle exhaust emissions were predicted to be negligible at all locations. Following consideration of the relevant factors, the overall significance of potential air quality impacts was determined as not significant, in accordance with the IAQM guidance.' These conclusions were accepted.

3.5 Updates to planning applications submitted in 2020

The 2021 APR report identified the following planning applications, further detail is now provided:

- P/2020/0649 – Brymbo - OUTLINE PLANNING PERMISSION FOR UP TO 300 DWELLINGS), A PRIMARY SCHOOL & SMALL DISTRICT CENTRE COMPRISING RETAIL, RESTAURANT / PUBLIC HOUSE. A planning condition requiring an air quality assessment for traffic be submitted as part of the full planning application was recommended. No full planning application has yet been submitted.
- P/2020/0623 - Llay - FOODSTORE WITH CAR PARK. The accompanying Air Quality assessment concluded 'A detailed road traffic emissions assessment was undertaken to consider the impact of development-generated road traffic on local air quality at identified existing receptor locations. Road traffic emissions were modelled using the dispersion model ADMS-Roads and concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted at identified sensitive receptor locations. The modelling assessment was undertaken in accordance with Defra and Welsh Government Local Air Quality Management Technical Guidance. The development was not predicted to result in any new exceedances of the relevant air quality objectives and the impact of the development on local air quality was predicted to be 'negligible' in accordance with IAQM and EPUK guidance. These conclusions were accepted.
- P/2020/0425 – Wrexham Industrial Estate – GAS FIRED POWER STATION (LESS 10 MW). The accompanying air quality assessment concluded 'Predicted concentrations of NO₂ and CO for the protection of human health were below the relevant EQSs and EA significance criteria at all sensitive human receptor locations. Impacts on NO₂ and CO concentrations were therefore deemed not significant. Nitrogen and acid gas deposition rates were also predicted at the relevant ecological sites. Impacts upon sensitive ecological designations as a result of emissions from the installation were deemed not significant at all designations. Impacts were predicted based on a maximum concentration of all meteorological years assessed. As such, predicted results are considered to be a robust estimate. Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development'. These conclusions were accepted. Furthermore this application will fall within the

Medium Combustion Plant Directive and new controls on Specified Generators and therefore require an environmental permit from Natural Resources Wales.

- P/2020/0363 – Cross Lanes - GLASSHOUSE WITH PACKING FACILITY AND OFFICES, ENERGY CENTRE, RECOVERY PLANT AND RESERVOIRS. The accompanying air quality report concluded ‘Dispersion modelling was undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the plant. The results indicated that impacts on pollutant concentrations were not predicted to be significant at any human or ecological receptor location in the vicinity of the site. Impacts were predicted based on a worst-case assessment scenario of the plant emitting the maximum permitted emission concentration over a period greater than the anticipated operational hours. As such, predicted pollutant levels are likely to overestimate air quality impacts as a result of the facility.’ These conclusions were accepted.
- P/2020/0354 - Gresford - OUTLINE APPLICATION FOR UP TO 109 DWELLINGS. The accompanying air quality report concluded ‘A detailed road traffic emissions assessment was undertaken to consider the impact of development-generated road traffic on local air quality at identified existing receptor locations. Road traffic emissions were modelled using the dispersion model ADMS-Roads and concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted at identified sensitive receptor locations. The modelling assessment was undertaken in accordance with Defra Local Air Quality Management Technical Guidance. The development was not predicted to result in any new exceedances of the relevant air quality objectives and the impact of the development on local air quality was predicted to be ‘negligible’ in accordance with IAQM and EPUK guidance. Pollutant concentrations were also predicted across the proposed development Site. Concentrations of NO₂, PM₁₀ and PM_{2.5} were all predicted to be below the relevant air quality objectives and therefore the Site was considered to be suitable for the proposed residential use with regard to air quality’. These conclusions were accepted.

4 Policies and Strategies Affecting Airborne Pollution

4.1 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.

4.2 Air Quality Planning Policies

No new local/ regional Air Quality Strategy were published in 2021. 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 [Local Development Plan \(LDP\) update | Denbighshire County Council](#).

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 has adopted Council Plan 2020-23 (available at <https://www.wrexham.gov.uk/service/council-plan-2020-2023>). 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 airtsource 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.

4.3 Local Transport Plans and Strategies

No new local transport plan was published in 2021.

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.

4.4 Active Travel Plans and Strategies

IACC submitted an Active Travel Plan to Welsh government in 2021 (available at <https://www.anglesey.gov.wales/en/Residents/Parking-roads-and-travel/Active-Travel.aspx>). 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.

4.5 Local Authorities Well-being Objectives

No new well-being objectives were published in 2021.

IACC and **GC** have published Wellbeing Plans (available at <https://www.llesiantgwyneddaron.org/eN/Asesiad-Llesiant/Asesiad-Llesiant/>) 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 (available at <https://www.flintshire.gov.uk/en/PDFFiles/Policy-and-Performance/PSB/A-Well-being-Plan-for-Flintshire.pdf>). 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'.

4.6 Green Infrastructure Plans and Strategies

IACC has started a UK CRF Adfywio Môn Renewal Programme (available at: <https://www.anglesey.gov.wales/en/Business/Regeneration/UK-CRF-Adfywio-M%C3%B4n-Renewal-Programme.aspx>). The Regeneration Function's bid for £580,000 from the UK Community Renewal Fund for this project has been successful, and these largely revenue projects are set to be delivered during 2022.

4.7 Climate Change Strategies

IACC has adopted a corporate biodiversity plan (2021-2022) (available at: <https://www.anglesey.gov.wales/documents/Docs-en/Biodiversity/Biodiversity-Plan.pdf>)

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 made a Climate Emergency Declaration to become a net zero Authority by 2030. **CCBC** has observed a reduction in Greenhouse Gas emissions from all CCBC's activities for 9 consecutive years. The LED street lighting replacement programme has seen a 74% reduction in Greenhouse Gas emissions. This equates to 3,249 tonnes of CO₂ since 2010/11. This reduction is summarised with the CCBC 2018/2019 Environmental Report (available at <https://www.conwy.gov.uk/en/Council/Strategies-Plans-and-Policies/Corporate-Plan/assets/documents/Environmental-Report-2018-19.pdf>).

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

There was no exceedance of the respective NO₂, PM₁₀, PM_{2.5} AQOs recorded at any monitoring sites in 2021. Annual mean concentrations were generally lower than previous years except when comparing annual mean concentrations from 2021 to 2020. Lower annual mean concentrations from 2020 are likely due to reduced traffic flows associated with the Covid-19 pandemic in 2020.

5.2 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.

5.3 Other Conclusions

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

5.4 Proposed Actions

The recommendations for the coming year are listed below:

- Proceed to the 2022 Updating and Screening Assessment;
- Maintain the air quality monitoring programmes in each local authority; and
- Ensure new monitoring sites are added as require

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%20Anglesey%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>
- 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 2021 ($\mu\text{g}/\text{m}^3$)

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	19.9	21.2	17.5	20.2	16.5	14.9	15.2	20.0	23.3	15.7	13.7	20.7	18.2	14.2	N/A
IACC-82	22.2	16.4	17.1	22.2	21.8	21.8	22.1	23.3	21.5	19.1	21.4	20.1	20.8	16.2	N/A
IACC-83	12.3	11.9	10.3	12.5	10.1	8.1	9.9	8.2	13.7	8.2	12.1	13.2	10.9	8.5	N/A
IACC-84	13.1	7.7	7.5	8.8	5.8	5.7	9.3	6.5	8.0	6.5	7.6	10.1	8.1	6.3	N/A
DCC															
RHBC/006	27.3	33.8	26.6	28.4	26.1	25.5	20.2	20.0	33.6	25.4	22.6	32.2	26.8	20.9	N/A
RHBC/017	28.9	31.9	24.1	-	22.1	19.4	19.4	21.7	30.0	25.1	24.5	42.0	26.3	20.5	N/A
RHBC/058	26.7	32.1	25.7	33.9	38.0	33.9	35.3	32.7	44.6	34.0	34.4	31.7	33.6	26.2	N/A
RHBC/060	12.9	12.9	7.6	9.4	8.7	6.0	6.1	7.7	10.6	9.1	11.6	15.6	9.9	7.7	N/A
RHBC/007	15.9	11.9	14.1	17.3	15.4	15.7	17.8	14.8	16.6	11.2	16.6	13.0	15.0	11.7	N/A
RHBC/051	25.6	27.1	30.6	27.3	23.9	21.5	25.3	23.9	32.9	25.0	31.2	36.4	27.6	21.5	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⁾
RHBC/026	26.2	17.5	19.5	19.6	16.6	14.6	14.4	14.3	20.5	17.9	22.3	26.7	19.2	15.0	N/A
RHBC/062	10.2	10.6	11.5	8.2	7.7	6.8	8.2	6.2	9.4	7.6	10.1	11.9	9.0	7.0	N/A
RHBC/011	20.0	21.9	18.2	18.3	16.1	13.8	13.1	15.8	20.8	20.9	21.1	26.9	18.9	14.7	N/A
RHBC/063	25.2	26.2	23.6	19.2	18.3	14.0	14.7	16.7	21.9	24.2	26.0	28.4	21.5	16.8	N/A
RHBC/027	42.7	31.2	39.5	38.8	32.5	32.5	34.6	34.1	40.3	39.0	43.2	38.3	37.2	29.0	N/A
RHBC/059	16.7	14.4	11.1	14.3	11.7	14.7	14.7	15.4	17.3	17.3	20.2	19.3	15.6	12.2	N/A
RHBC/023	26.0	22.5	20.0	21.3	20.8	19.4	21.0	20.6	21.7	20.4	27.1	29.6	22.5	17.6	N/A
RHBC/046	32.4	25.5	32.4	30.0	27.8	23.3	27.0	17.6	33.4	32.6	36.4	46.4	30.4	23.7	N/A
RHBC/047	33.3	25.4	27.0	27.2	23.8	21.2	25.6	20.0	32.1	25.4	31.9	30.7	27.0	21.0	N/A
RHBC/048	27.7	27.8	25.2	24.2	22.7	19.8	20.6	22.4	30.8	24.2	26.0	27.4	24.9	19.4	N/A
RHBC/040	30.0	25.2	31.8	33.4	29.8	31.4	36.8	29.6	38.4	29.6	37.5	27.2	31.7	24.7	N/A
RHBC/041	-	-	16.0	13.5	13.4	13.0	12.3	14.4	17.6	16.1	19.1	16.5	15.2	11.8	N/A
RHBC/055	24.4	24.3	21.6	23.4	18.2	17.4	19.0	18.0	26.9	23.2	23.6	24.5	22.0	17.2	N/A
RHBC/056	36.7	24.6	34.4	27.8	28.7	23.7	15.8	27.1	35.8	30.9	38.2	31.2	29.6	23.1	N/A
RHBC/034	24.3	21.3	18.3	13.0	14.4	11.6	8.2	14.6	21.5	17.1	19.4	19.6	16.9	13.2	N/A
RHBC/035	23.5	16.6	20.5	18.8	18.4	13.2	8.6	16.9	20.0	17.8	21.6	20.1	18.0	14.0	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⁾
RHBC/036	22.4	31.7	23.7	23.3	24.7	17.4	10.4	19.7	30.2	28.8	28.1	30.9	24.3	18.9	N/A
RHBC/037	17.8	14.0	15.3	14.8	14.2	10.8	6.6	11.6	17.6	14.8	13.9	17.4	14.1	11.0	N/A
RHBC/052	18.1	17.4	14.9	17.3	14.5	13.2	8.4	13.7	16.8	13.0	17.3	18.0	15.2	11.9	N/A
RHBC/061	19.0	18.0	19.3	15.5	14.7	14.6	8.3	16.0	17.7	16.0	18.5	15.1	16.1	12.5	N/A
GC															
GCC 002	28.4	30.8	27.9	33.2	34.1	26.4	32.0	28.2	33.4	33.3	33.9	28.6	31.0	26.0	N/A
GCC 003	10.3	11.6	8.7	10.0	8.3	8.0	9.4	8.6	<0.57	9.3	11.9	10.2	9.6	8.1	N/A
GCC 005	27.4	24.9	23.1	33.6	35.1	31.5	35.1	33.4	31.2	33.0	26.1	21.7	30.1	25.2	N/A
GCC 008	23.9	21.8	19.0	22.0	20.8	18.9	20.1	18.4	17.6	21.5	22.9	20.4	20.6	17.3	N/A
GCC 011	21.5	19.9	17.5	19.2	19.9	15.2	19.5	22.2	26.9	28.7	25.6	22.7	21.7	18.2	N/A
GCC 012	23.4	22.2	18.4	26.2	24.9	23.9	27.3	25.7	26.1	23.0	27.7	22.6	24.4	20.5	N/A
GCC 013	20.0	19.1	16.0	22.0	21.3	19.3	22.7	21.1	20.8	22.9	25.6	19.0	21.0	17.6	N/A
GCC 015	21.5	21.4	18.2	21.2	22.4	20.6	20.2	18.9	23.4	22.4	24.6	17.0	21.0	17.6	N/A
GCC 037	23.2	23.2	16.7	19.1	21.2	15.5	65.2	18.5	19.8	23.2	21.1	14.0	23.3	19.6	N/A
GCC 038	25.7	24.6	19.0	29.5	25.4	22.8	29.9	26.3	25.0	26.2	25.8	19.5	25.2	21.2	N/A
GCC 039	23.0	23.9	17.2	27.6	23.4	23.3	29.5	25.4	22.7	25.3	25.2	22.2	24.3	20.4	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⁾
GCC 040	-	15.0	16.0	15.3	15.1	12.4	16.9	-	16.6	21.6	19.8	10.1	15.9	13.4	N/A
GCC 041	12.6	13.1	9.2	13.1	8.9	8.6	11.0	10.6	9.5	11.4	15.0	11.8	11.3	9.5	N/A
GCC 042	26.2	13.0	10.7	10.8	8.5	8.1	8.6	8.9	9.9	11.0	12.5	11.4	11.5	9.7	N/A
GCC 043	14.7	-	10.2	11.3	9.1	8.2	8.1	8.8	11.1	11.9	11.7	11.0	10.5	8.9	N/A
GCC 044	14.6	14.4	12.2	15.5	16.0	11.7	18.5	19.9	12.0	18.8	17.8	15.7	15.8	13.3	N/A
GCC 045	10.8	11.7	8.6	-	11.8	18.1	11.7	12.8	18.4	11.4	11.5	11.3	12.5	10.5	N/A
WCBC															
1	31.3	21.5	24.1	31.7	28.9	27.7	25.3	25.0	32.9	31.3	37.5	33.0	29.2	22.8	N/A
34	19.4	15.0	13.1	17.0	14.3	10.4	11.5	14.8	19.1	15.0	12.4	14.9	14.6	11.4	N/A
45	23.1	25.0	18.3	24.3	18.3	16.2	19.4	15.3	21.7	15.2	18.6	20.4	19.7	15.3	N/A
36	27.5	20.2	18.8	19.2	13.7	6.5	12.4	27.9	21.1	20.4	18.9	18.6	18.3	14.3	N/A
10	22.8	13.4	14.4	20.7	7.8	15.3	9.5	9.4	13.5	11.7	12.6	14.2	13.7	10.7	N/A
49	13.4	13.4	9.9	10.6	9.2	8.0	6.9	7.9	11.7	8.7	11.4	12.3	10.2	7.9	N/A
42	29.5	11.5	22.1	26.5	23.7	20.7	21.8	23.0	36.0	30.7	33.5	23.2	25.1	19.6	N/A
50	22.9	18.6	15.8	25.1	19.9	6.8	20.2	22.1	21.4	17.5	23.2	18.4	19.3	15.1	N/A
51	26.3	23.7	19.6	11.5	18.8	18.1	18.5	16.9	21.5	21.0	23.2	21.8	19.9	15.5	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⁾
52	24.1	27.2	18.9	26.4	26.9	13.2	21.0	22.8	30.7	23.5	19.7	25.5	23.3	18.2	N/A
53	25.4	22.6	18.9	26.6	24.2	14.0	19.5	16.3	32.3	30.3	26.8	23.7	23.5	18.4	N/A
22	22.6	20.3	19.2	16.6	12.8	13.9	13.6	14.7	17.3	16.1	17.5	21.7	17.1	13.3	N/A
32	34.7	21.5	29.4	30.9	20.6	20.9	20.0	24.6	30.6	19.3	16.6	25.4	24.3	18.9	N/A
30	37.6	37.5	36.0	36.4	34.4	37.7	39.8	39.4	41.9	41.0	37.1	35.4	37.9	29.5	N/A
31	32.6	30.3	31.2	32.5	30.8	20.1	25.8	24.2	34.4	34.1	38.2	33.8	30.7	24.0	N/A
33	15.7	22.4	24.8	30.2	25.3	17.7	24.8	25.5	30.8	25.6	44.5	32.3	26.9	21.0	N/A
37	23.9	19.1	19.0	17.6	13.9	13.3	12.6	14.3	17.6	15.3	23.5	20.1	17.3	13.5	N/A
38	23.9	20.8	14.3	22.5	19.6	15.0	16.9	16.8	20.1	18.6	21.8	18.7	19.0	14.8	N/A
44	33.5	27.5	19.7	26.1	15.9	20.2	18.8	22.4	27.7	23.7	27.7	28.6	24.1	18.8	N/A
40	15.6	11.1	9.8	9.5	8.7	7.5	5.9	8.2	11.1	9.3	11.0	10.4	9.6	7.5	N/A
41	19.7	20.0	13.7	21.1	13.7	14.8	13.3	12.9	21.1	14.7	17.8	17.7	16.7	13.0	N/A
43	28.4	10.8	22.9	19.3	20.5	16.8	13.7	16.7	26.6	22.4	29.5	28.5	21.2	16.5	N/A
46	28.7	29.5	21.8	27.0	20.6	18.2	20.5	19.4	31.3	24.4	29.1	32.4	25.3	19.7	N/A
48	20.2	20.3	18.3	17.7	16.6	15.9	15.0	16.7	18.7	14.4	20.6	18.3	17.6	13.7	N/A
54	26.7	21.6	25.7	25.4	20.7	22.6	26.0	23.3	25.9	22.4	21.3	22.0	23.7	18.4	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⁾
55	15.4	16.3	12.0	11.5	10.2	9.9	9.8	11.8	13.8	12.2	15.5	14.1	12.6	9.8	N/A
56	25.1	25.0	18.9	18.3	17.3	14.0	13.3	14.0	26.1	19.5	19.0	22.8	19.3	15.0	N/A
57	20.3	18.9	14.1	15.1	11.2	9.5	11.0	11.2	14.7	13.7	16.3	17.3	14.3	11.2	N/A
58	20.7	16.2	9.8	9.6	9.9	10.8	9.7	11.7	16.4	14.2	19.1	18.7	13.7	10.7	N/A
59	14.5	13.4	12.9	13.9	11.3	11.1	9.6	11.2	13.2	9.3	15.4	14.8	12.4	9.7	N/A
60	12.2	10.0	14.8	8.9	7.0	12.6	8.5	7.1	8.2	6.8	9.9	9.3	9.5	7.4	N/A
61	25.8	20.0	19.9	23.3	15.6	9.2	17.3	18.9	23.5	17.7	25.5	21.5	19.8	15.4	N/A
NO2 1, NO2 2, NO2 3	24.0	22.9	15.4	20.1	16.3	13.8	12.1	15.5	21.5	16.4	17.7	19.9	17.8	13.9	N/A
CCBC															
DT/CCBC017	17.9	16.1	14.0	20.9	16.3	16.5	15.7	15.4	20.4	13.7	15.3	17.5	16.6	13.0	N/A
DT/CCBC018	17.5	15.2	17.3	16.0	18.4	16.8	18.9	15.4	20.9	21.4	19.0	18.2	17.9	14.0	N/A
DT/CCBC021	13.9	14.8	13.4	20.4	17.2	20.4	24.3	18.0	16.6	12.8	17.1	14.4	16.9	13.2	N/A
DT/CCBC022	22.6	10.2	15.6	17.9	15.8	15.5	17.0	16.0	21.4	17.9	17.2	20.1	17.3	13.5	N/A
DT/CCBC034	25.6	21.0	21.7	19.3	20.9	17.8	19.8	19.4	26.7	25.8	21.3	21.0	21.7	16.9	N/A
DT/CCBC035	17.5	19.4	13.5	22.4	20.2	17.6	15.7	16.2	21.3	16.4	14.7	16.3	17.6	13.7	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/CCBC036	13.4	14.9	10.3	10.4	8.7	8.4	10.2	9.2	12.1	10.5	9.9	13.6	11.0	8.6	N/A
DT/CCBC040	19.7	18.7	15.0	13.9	13.6	12.5	13.6	13.3	19.4	10.3	14.2	18.6	15.2	11.9	N/A
DT/CCBC041	22.3	18.1	12.4	11.9	12.2	11.1	11.4	10.7	17.2	13.4	14.5	17.3	14.4	11.2	N/A
DT/CCBC042	19.0	15.4	12.7	14.1	13.8	12.0	10.4	13.4	19.1	16.5	10.9	18.1	14.6	11.4	N/A
DT/CCBC043	14.3	11.4	9.8	14.5	12.2	13.0	12.9	15.1	16.0	11.9	14.0	12.3	13.1	10.2	N/A
DT/CCBC044	15.2	14.3	13.8	27.5	19.5	25.2	28.9	22.4	25.5	15.3	15.8	14.2	19.8	15.4	N/A
DT/CCBC045	14.2	10.1	9.4	12.1	10.1	10.4	9.7	9.8	13.5	12.0	13.9	13.3	11.5	9.0	N/A
DT/CCBC046	23.2	19.9	17.0	22.2	21.0	19.0	19.7	11.5	26.0	23.8	25.7	21.4	20.9	16.3	N/A
DT/CCBC047	19.4	13.2	15.7	17.5	15.8	16.2	16.2	16.3	16.9	15.9	18.0	15.9	16.4	12.8	N/A
DT/CCBC048	15.5	18.7	15.7	17.9	15.2	16.2	18.6	15.3	16.9	15.2	13.7	14.3	16.1	12.6	N/A
DT/CCBC053	18.1	18.6	14.8	10.6	12.5	10.5	12.2	12.9	17.6	15.9	16.4	19.9	15.0	11.7	N/A
DT/CCBC054	21.7	18.6	17.4	14.5	14.3	11.1	12.6	12.9	23.3	18.7	21.5	21.6	17.4	13.5	N/A
DT/CCBC055	12.5	14.2	12.0	12.5	10.3	10.3	11.3	10.3	13.9	12.0	11.0	16.1	12.2	9.5	N/A
DT/CCBC056	13.7	14.3	10.3	11.0	8.8	8.1	8.3	12.0	13.6	9.9	10.0	14.1	11.2	8.7	N/A
FCC															
ADDC-008	-	-	-	-	-	32.7	31.3	32.5	38.3	32.1	33.3	34.5	-	-	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⁾
ADDC-009	22.9	25.7	14.9	11	13.7	10.8	16.2	12.8	20.2	18.6	-	24.5	17.4	13.5	N/A
ADDC-085	34.3	38.6	21.2	14.3	21.1	19.3	20.1	25.2	33.1	28.8	25	32.1	26.1	20.4	N/A
ADDC-111	19.2	17.1	12.1	9.5	15.4	12.7	12.4	13.1	18.3	14.8	21	16.9	15.2	11.9	N/A
ADDC-105	16.7	-	-	-	13.3	14	14.5	13.9	16.2	15.3	18.3	18	15.6	12.2	N/A
ADDC-013	11.7	14.7	5.8	-	20.3	8.8	8.3	7	10.2	-	-	11.9	10.9	8.5	N/A
ADDC-014	9.6	19.1	12.9	8.6	11.5	12.1	10.6	11.4	17.1	15	17.2	16.9	13.5	10.5	N/A
ADDC-015	18.9	19.3	11.5	7.5	9.9	10.4	10.1	9.9	13.1	13	15	16.1	12.9	10.1	N/A
ADDC-106	19.2	15.3	12	8.2	11	11.2	12.8	10.3	13.5	10.8	-	-	12.4	9.7	N/A
ADDC-107	16.2	15	9.5	6.6	8.7	8.2	8.5	8	11	9	14.3	11.2	10.5	8.2	N/A
ADDC-084	33	28.5	27.9	19.3	33.1	28.7	32.5	19.5	28.9	28.7	40.3	31.4	-	-	N/A
ADDC-064	31.3	29.9	28.5	17.5	30.5	26.4	28.1	20	21.7	34.9	36.3	38.3	-	-	N/A
ADDC-098	35.4	35.2	27.8	16.4	35.1	26.9	26.8	25.9	36.1	37.6	-	32.1	29.8	23.2	N/A
ADDC-117	20.2	17.8	-	-	-	11	10	-	13.9	12.8	-	-	14.3	11.1	N/A
ADDC-099	32.4	36.8	-	16.5	27.4	21.1	15.6	21.3	21.7	24.9	21.3	29.6	24.4	19.1	N/A
ADDC-023	34.6	31.1	24.8	15.7	25.1	20.6	21.5	19.5	29.3	26.6	30.8	29.9	25.8	20.1	N/A
ADDC-024	30.7	28.7	24.2	19.3	28.5	25	27.2	24.6	25.7	23.2	30.4	27.7	26.3	20.5	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⁾
ADDC-118	23.4	16.9	12	9.1	9.9	12.7	13	12.8	15.4	13.7	-	18.4	14.3	11.1	N/A
ADDC-080	24.2	24.7	15.2	10.8	19.3	17.7	16.1	16.1	21.4	18.5	19.9	19.7	18.6	14.5	N/A
ADDC-066	29	26.1	17.2	14.8	22.5	20.9	22.3	20.2	22.9	21.7	25.5	23	22.2	17.3	N/A
ADDC-116	27.6	25.5	16.9	11.2	16.1	14.6	14.9	18.1	22.1	16.8	-	23.3	18.8	14.7	N/A
ADDC-029	-	-	15	9.6	14.6	11.6	11.6	14.3	20	18.1	21	22.1	15.8	12.3	N/A
ADDC-030	35.1	26.5	22.7	15.1	17.1	20.6	22.5	21.4	26.6	20.2	30.7	26.1	23.7	18.4	N/A
ADDC-083	36.7	40.1	-	-	-	31.9	35.2	29.3	38.4	30.4	35.7	39	-	-	N/A
ADDC-032	32.4	27.9	19.8	10.7	13.3	11.2	14	15.4	20.7	18.6	23.7	22.2	19.2	14.5	N/A
ADDC-033	25.3	23.7	12.7	7.5	9	10	9.8	12.2	13	13.8	15.8	18.7	14.3	11.1	N/A
ADDC-034	23.7	25.6	15.8	10.5	16.7	14.6	15	16.3	19	18	19.3	21	17.9	14.0	N/A
ADDC-120	24.2	-	17.4	10.8	18	16.9	18	17.4	17.7	19.5	26.1	22	18.9	14.7	N/A
ADDC-036	29	21.5	12.9	8.4	9.5	10	11.1	10.3	13.5	13.5	14.3	20.8	14.6	11.4	N/A
ADDC-037	27.6	30.1	25.7	16.9	21.7	22.2	23.8	18.8	20.5	26.5	-	27	23.7	18.5	N/A
ADDC-093	-	25.9	20.2	13.6	21.9	18	13.9	18	22.6	23.6	-	26.1	20.4	15.9	N/A
ADDC-044	35.1	-	-	-	16.8	10.3	17	14.8	20.5	19.3	-	23.5	19.7	15.7	N/A
ADDC-067	36.7	30.2	21	13.8	23.2	21.1	20.4	20.4	27.2	25.7	-	28.6	24.4	19.1	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⁾
ADDC-068	32.4	26.5	20.2	8.4	13.2	19.9	19.8	17.4	23.8	22.1	25.7	24.4	21.2	16.5	N/A
ADDC-069	25.3	22.6	17.8	11.5	17.7	16.7	17.2	17	22.1	20.9	-	0.7	17.2	13.4	N/A
ADDC-070	23.7	28.1	22.2	13.7	20.7	18	19.1	20.4	26.5	22.9	28.4	27.6	22.6	17.6	N/A
ADDC-081	30.9	28.3	18.6	13.7	21.5	16.6	16.7	11.8	26.9	20.2	23.6	21.2	20.8	16.3	N/A
ADDC-119	16.6	8.9	9	7.8	11	10.7	14.9	13.4	13.5	11.9	14.6	15	12.3	9.6	N/A
ADDC-114	21.6	18.3	11	7.8	18.2	15.5	18.7	16	-	19.2	23.8	20.5	17.3	13.5	N/A
ADDC-052	20	16.3	14	10.3	12	14.6	14.6	11.8	13.7	12.3	-	8.9	13.5	10.5	N/A
ADDC-115	10.2	14.2	7.3	5.9	8.4	10.2	9.6	7.8	10	5.9	-	9.6	9.0	7.0	N/A
ADDC-112	17.9	12.3	-	-	9.3	10.2	10	9.2	11.2	10.3	13	17.2	12.1	9.4	N/A
ADDC-113	19.8	17.3	10.3	8.5	9.5	10.2	11.2	9.9	8.8	-	13.3	-	11.9	9.3	N/A
ADDC-091	27.7	29.5	20.3	16.2	23	24.1	23.5	21.8	26	22.7	28	-	23.9	18.6	N/A
ADDC-108	16.9	14.9	-	6.4	7.1	-	8.3	7.5	11.6	8.1	12.2	11.8	10.5	8.2	N/A
ADDC-110	26.8	23.5	15.2	10.7	15.7	15.1	14.3	11.3	18.4	15.9	20.4	19.8	17.3	13.5	N/A
ADDC-100	32.7	25.4	29.7	20	32.4	30.1	31.4	29.7	32.2	29.3	39	32.7	29.9	23.3	N/A
ADDC-060	-	-	-	-	14.6	16.1	17.2	15.7	18.7	16	24.3	19.7	17.8	14.9	N/A
ADDC-061	-	-	-	-	14.2	12.8	11.7	-	18.7	-	-	-	14.4	12.1	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⁾
ADDC-121	21.2	12.1	13.1	1.6	11.8	14.9	9.4	10	16	15.6	21	15.1	13.4	10.5	N/A
ADDC-101	37.8	39.7	-	-	-	31.1	33.4	34	43.7	26.3	33.4	38.5	35.1	27.3	N/A
ADDC-109	15.9	18	8.1	6.4	8.3	9.6	10.1	9.7	10.3	8.5	13.8	13.2	10.9	8.5	N/A
ADDC-075	30.4	29	20.3	13.9	22.8	16.1	-	-	-	-	26.4	25.8	23.1	17.1	N/A
ADDC-102	18.2	14	9.7	6.2	6.1	7.7	7.9	8.4	8.9	9.5	15.3	15.8	10.6	8.3	N/A
ADDC-103	17.2	14.3	9.3	6.1	6.1	5.9	-	8	9.7	-	13	14.1	10.3	8.1	N/A
ADDC-104	18.1	13	10.1	-	-	15.8	16.1	18.1	20.6	-	-	-	15.9	12.5	N/A
ADDC-089	-	36	32.6	21.6	-	27.9	37.8	39.5	46.7	42.9	-	1.9	31.8	24.8	N/A
ADDC-122	38.8	29.1	26.1	19.7	18.8	28	27.7	23.7	30.3	29.7	36.8	24.1	27.7	21.6	N/A
ADDC-123	31.2	25.7	19	13.6	22.5	20.3	20.4	20.5	21.9	20.9	-	27.3	22.1	17.2	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 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 should then be reviewed and updated where necessary at least every five years.

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 2021. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Results are available at <https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>.

Diffusion Tube Annualisation

Data capture at all sites which recorded less than 75% data capture during 2021 has 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 data from two stations with a data capture above 85%. The selected monitoring sites are in background locations to avoid any local effects that may occur at Urban Centre, Roadside or Kerbside sites. 2021 automatic monitoring data was obtained from

<https://airquality.gov.wales/>. The details of the annualisation have been provided in Table C.2.

Diffusion Tube Bias Adjustment Factors - National

Diffusion tubes adjustment factors were obtained from the national bias adjustment calculator v06/21 (Available at: [National Bias Adjustment Factors | LAQM \(defra.gov.uk\)](#)).

Tubes were analysed by Gradko and Socotec Didcot as detailed in the table below.

Table C. 1 – Bias Adjustment Factor – National

Local authority	Laboratory	Method	2021 Bias adjustment factor	Number of studies
IACC	Socotec Didcot	50% TEA in acetone	0.78	25
DCC	Socotec Didcot	50% TEA in acetone	0.78	25
GC	Gradko	20% TEA in water	0.84	27
WCBC	Socotec Didcot	50% TEA in acetone	0.78	25
CCBC	Socotec Didcot	50% TEA in acetone	0.78	25
FCC	Socotec Didcot	50% TEA in acetone	0.78	25

Diffusion Tube Bias Adjustment Factors – Local

FCC have co-located three diffusion tubes with one of their automatic monitors. A local bias adjustment factor has therefore been calculated as shown in Table C.2. This has provided a local bias adjustment factor of 0.68.

Table C. 2 – Local Bias Adjustment Calculation - FCC

	Local Bias Adjustment Input 1
Periods used to calculate bias	8
Bias Factor A	0.68 (0.64-0.73)
Bias Factor B	47% (37% - 57%)
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	34.9
Mean CV (Precision)	5.0%
Automatic Mean ($\mu\text{g}/\text{m}^3$)	23.7
Data Capture	98%
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	24 (2-25)

Both the local and national factor are relatively close factor. It was decided that the national bias adjustment factor of 0.78 was used to show 'worst-case' concentrations. Comparison of the two datasets utilising the national BAF of 0.78 versus the local BAF of 0.68 is shown in Table C. 3.

Table C. 3 – Comparison of Bias Adjustment Factor - FCC

Site	Raw Data	National Factor (0.78)	Local Factor (0.68)
ADDC-008	-	-	-
ADDC-009	17.4	13.6	11.8
ADDC-085	26.1	20.4	17.7
ADDC-111	15.2	11.9	10.3
ADDC-105	15.6	12.2	10.6
ADDC-013	11.0	8.6	7.5
ADDC-014	13.5	10.5	9.2
ADDC-015	12.9	10.1	8.8
ADDC-106	12.4	9.7	8.5
ADDC-107	10.5	8.2	7.2
ADDC-084	-	-	-
ADDC-064	-	-	-
ADDC-098	29.8	23.2	20.3
ADDC-117	14.3	11.1	9.6
ADDC-099	24.4	19.0	16.6
ADDC-023	25.8	20.1	17.5
ADDC-024	26.3	20.5	17.9
ADDC-118	14.3	11.2	9.7
ADDC-080	18.6	14.5	12.7
ADDC-066	22.2	17.3	15.1
ADDC-116	18.8	14.7	12.8

Site	Raw Data	National Factor (0.78)	Local Factor (0.68)
ADDC-029	15.8	12.3	10.7
ADDC-030	23.7	18.5	16.1
ADDC-083	-	-	-
ADDC-032	19.2	14.9	13.0
ADDC-033	14.3	11.1	9.7
ADDC-034	18.0	14.0	12.2
ADDC-120	18.9	14.7	12.9
ADDC-036	14.6	11.4	9.9
ADDC-037	23.7	18.5	16.1
ADDC-093	20.4	15.9	13.9
ADDC-044	19.7	15.8	13.7
ADDC-067	24.4	19.0	16.6
ADDC-068	21.2	16.5	14.4
ADDC-069	17.2	13.4	11.7
ADDC-070	22.6	17.6	15.4
ADDC-081	20.8	16.3	14.2
ADDC-119	12.3	9.6	8.3
ADDC-114	17.3	13.5	11.8
ADDC-052	13.5	10.5	9.2
ADDC-115	9.0	7.0	6.1
ADDC-112	12.1	9.4	8.2
ADDC-113	11.9	9.3	8.1
ADDC-091	23.9	18.6	16.2
ADDC-108	10.5	8.2	7.1
ADDC-110	17.3	13.5	11.7
ADDC-100	29.9	23.3	20.3

Site	Raw Data	National Factor (0.78)	Local Factor (0.68)
ADDC-060	17.8	14.9	13.0
ADDC-061	14.4	12.1	10.5
ADDC-121	13.5	10.5	9.2
ADDC-101	35.1	27.3	23.8
ADDC-109	11.0	8.6	7.5
ADDC-075	23.1	17.1	14.9
ADDC-102	10.6	8.3	7.2
ADDC-103	10.4	8.1	7.1
ADDC-104	16.0	12.5	10.9
ADDC-089	31.9	24.9	21.7
ADDC-122	27.7	21.6	18.9
ADDC-123	22.1	17.3	15.0

At the time of writing **WCBC** colocation study results had not been uploaded to the national bias adjustment website. This has now been completed and it is anticipated that Wrexham's results will be included in the next update. When WCBC's result is added to the current list of 25 applicable studies on the spreadsheet the average BAF remains unchanged at 0.78. The BAF determined by Wrexham's own colocation study is 0.81 overall or 0.8, where a single result with a greater than 20% coefficient of variation is excluded. The local bias adjustment factor calculation is shown in Table C.4. This gave a local bias adjustment factor of 0.80.

Table C. 4: – Local Bias Adjustment Calculation - WCBC

	Local Bias Adjustment Input 1
Periods used to calculate bias	11
Bias Factor A	0.80 (0.76 - 0.84)
Bias Factor B	25% (19% - 31%)
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	18.0
Mean CV (Precision)	6.0%

	Local Bias Adjustment Input 1
Automatic Mean ($\mu\text{g}/\text{m}^3$)	15.0
Data Capture	99%
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	15 (14 - 16)

Comparison of the two datasets utilising the national BAF of 0.78 versus the local BAF of 0.8 has resulted in a $1 \mu\text{g}/\text{m}^3$ increase in the annual mean average, shown in Table C. 5.

Table C. 5: Comparison of Bias Adjustment Factor - WCBC

Site	Raw Data ($\mu\text{g}/\text{m}^3$)	National Factor (0.78)	Local Factor (0.80)
Bus Station	31	24	25
Pandy Lane	24	18	19
Top Farm road	19	15	16
Ysgol Plas Coch	14	11	12
St Pauls School	10	7	8
Berse Road	20	15	16

All of the above sites have remained comfortably below the objective level for NO_2 . 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. However, as has been shown above this has had made only a minor difference to the corrected annual results.

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within North Wales Authorities (**IACC, DCC, GC, WCBC, CCBC** and **FCC**) required distance correction during 2021.

QA/QC of Automatic Monitoring

PM₁₀ and PM_{2.5} Monitoring Adjustment

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 2021.

Table C. 6 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Deeside	Annualisation Factor Wrexham	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
FCC					
ADDC-117	0.98	1.00	0.99	14.3	14.2
ADDC-044	1.02	1.03	1.03	19.7	20.2
ADDC-060	1.05	1.09	1.07	17.8	19.1
ADDC-061	1.04	1.11	1.08	14.4	15.5
ADDC-075	0.97	0.93	0.95	23.1	21.9
ADDC-104	0.99	1.02	1.01	16.0	16.1

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)
CCBC	Conwy County Borough Council
DCC	Denbighshire County Council
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FCC	Flintshire County Council
FDMS	Filter Dynamics Measurement System
GC	Gwynedd Council
IACC	Isle of Anglesey County Council
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
WCBC	Wrexham County Borough Council