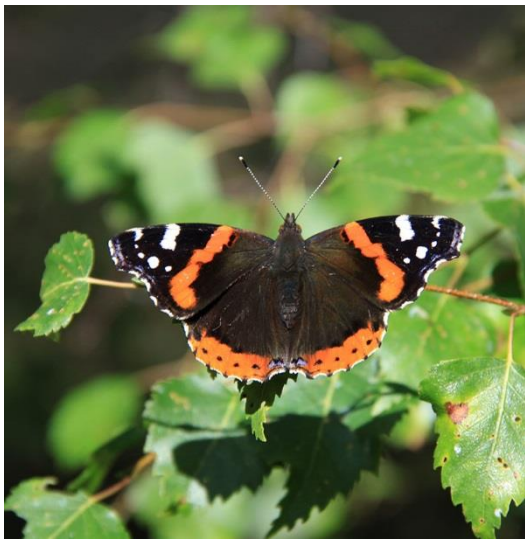
North Wales Combined Authority

2018 Air Quality Progress Report

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management



Wood Environment & Infrastructure Solutions UK Limited – September 2018

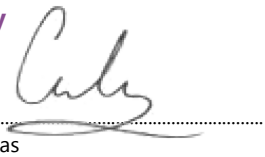
Report for

North Wales Combined Authority

Main contributors

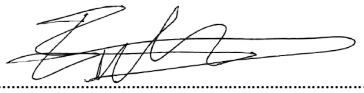
Ellénore Calas

Issued by



Ellénore Calas

Approved by



Ben Warren

Wood

Floor 12
25 Canada Square
Canary Wharf
London E14 5LB
United Kingdom
Tel +44 (0) 203 215 1610

Doc Ref. 41033rri1

\\att5-fs7\shared2\projects\41033 sth aq north wales laqm usa\design\report\2018 north wales progress report_issued.doc

Copyright and non-disclosure notice

Third party disclaimer

Management systems

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with the management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

Document revisions

No.	Details	Date
1	Draft	17/09/2018
2	Final	26/09/2018

North Wales Combined Authority 2018 Air Quality Progress Report

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

September, 2018

Huw Thomas Isle of Anglesey County Council HuwThomas3@ynysmon.gov.uk 01248 752823	**Sean Awbery** Denbighshire County Council sean.awbery@denbighshire.gov.uk 01824 706178
Dave Jones Flintshire County Council dave.l.jones@flintsire.gov.uk 01352703276	**David A Williams** Gwynedd County Council gwenanmairoberts@gwynedd.llyw.cymru 01758704020
Simon Cottrill Conwy County Borough Council simon.cottrill@conwy.gov.uk 01492575266	**Paul Campini** Wrexham County Borough Council paul.campini@wrexham.gov.uk 01978297431
Report Reference number	41033rri1
Date	September 2018

Executive Summary: Air Quality in Our Area

Air Quality in the North Wales Combined Authority

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 (16) and associated tools. It covers the six local authorities which encompass the North Wales region (The North Wales Combined Authority). The local authorities are as follows:

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

Actions to Improve Air Quality

The North Wales Combined Authority has not declared an Air Quality Management Area (AQMA) and in consequence has not published an Action Plan.

Air quality monitoring is undertaken in all six local authorities with a total of five automatic monitoring sites and 177 nitrogen dioxide (NO_2) diffusion tube monitoring sites, located at key locations within town centres and along main transport links.

Particulate matter (PM_{10} and $PM_{2.5}$) concentrations are monitored at all automatic sites. This includes four IACC sites and one WCBC site.

WCBC automatic site also monitors NO_2 and sulphur dioxide (SO_2). Additionally, benzene (C6H6) is monitored at one diffusion tube site in WCBC administrative area.

Monitored concentrations are compared with Air Quality Objectives (AQO) as detailed in Appendix B. In 2017 there were two exceedances of the NO_2 annual

mean AQO of 40 µg/m^3, at one IACC diffusion tube site located along the A55 and at one GC diffusion tube site also located along the A55.

Having considered each pollutant and reviewed the new developments approved in 2017, it can be concluded that there is no requirement for any of the six local authorities within the North Wales Combined Authority to undertake a detailed assessment.

Actions to Improve Air Quality

In June 2016, the Chirk Environmental Liaison Group (CELG) in WCBC agreed to undertake an air quality survey following community concerns about the perceived levels of emissions from Kronospan wood-based panel manufacturer. An air quality monitoring sub group of the CELG was set up consisting of:

- Elected Councillors (Members and town);
- Wrexham County Borough Council, Public Protection Service;
- Natural Resources Wales;
- Kronospan Ltd; and
- Public Health Wales (PHW) (as a Consultee).

It was agreed to monitor Nuisance Dusts, Formaldehyde, Fine particles and NO_2.

PHW assessed the results and commented that there was no evidence of a public health concern. Standards for the protection of human health for the range of pollutants, as measured, were not exceeded during this monitoring program. However, PHW supported the recommendations that reactive nuisance dust assessment may be beneficial in identifying any local dust sources. Nuisance dust does not have a direct health impact but can otherwise adversely affect public amenity and wellbeing. PHW also supported the recommendation to undertake reactive monitoring of formaldehyde, in response to odour complaints, using an appropriate analyser. This action may serve to further asses any health impacts arising from peak formaldehyde emissions.

Priorities and Challenges

The North Wales Combined Authority 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. In CCBC, two new monitoring sites were introduced at the start of 2017 outside two infant/junior schools. This was in response to national concerns highlighted by the British Lung Foundation due to the absence of air pollution monitoring stations outside school facilities where children could be exposed to traffic pollutants near school. Two sites were selected representing suitable school locations serving two main urban areas within CCBC. The schools are both situated on a main through road experiencing regular through traffic during the day and with significant additional traffic flows generated during school drop-off and pick-up times.

How to Get Involved

Further information on air quality in our area is available at https://airquality.gov.wales/.

Table of Contents

List of Tables

List of Figures

1. Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

Previous rounds of review and assessment have identified areas in the North Wales Combined Authority where exceedances of the annual mean Air Quality Objectives (AQOs) have occurred. 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 the North Wales Combined Authority.

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

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.
2007	Progress Report	Detailed assessment carried out for 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.

Year	Report Type	Detailed Assessment Recommended	AQMA Declared
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 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.
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.

Year	Report Type	Detailed Assessment Recommended	AQMA Declared
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.

1.2 Air Quality Management Areas

AQMAs are declared when air quality is close to or above an acceptable level of pollution, known as the AQO (See Appendix B for details).

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.

The North Wales Combined Authority currently does not have any AQMA and in consequence has not published an AQAP.

2. Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2017

2.1.1 Automatic Monitoring Sites

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

IACC undertook automatic (continuous) monitoring at four sites during 2017 (with indicative light-scattering particulate monitors) and there was one site in WCBC. Table 2.1 presents the details of the sites. National monitoring results are available at https://airquality.gov.wales/.

Maps showing the locations 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.

The monitoring sites were as follow:

- CM1: Llynfaes – Measuring PM_{10} and $PM_{2.5}$ at Gwyndy Quarry;
- CM2: Brynteg – Measuring PM_{10} and $PM_{2.5}$ at Rhuddlan Back Quarry;
- CM3: Felin Cafnan – Measuring PM_{10} and $PM_{2.5}$ at a National Trust Property located near to the Wylfa Newydd construction site;
- CM4: IVC Penhesgyn (opened in November 2017) – Measuring PM_{10} and $PM_{2.5}$ at Penhesgyn Recycling Centre; and
- AURN: Victoria Road – Measuring NO_2, SO_2, PM_{10} and $PM_{2.5}$ at a roadside location in Wrexham.

Monitoring site CM4 was opened in November 2017 near the site offices in order to determine the possible impacts on the nearby traveller site being proposed next door. Results of this survey will be highlighted in a planning application. Data is only available since November 2017.

In 2017 IACC began utilising a spare Osiris monitor to fill in for other monitors when they are away for calibration. This has greatly improved the capture efficiency.

2.1.2 Non-Automatic Monitoring Sites

In 2017 Non-automatic monitoring of NO_2 using passive diffusion tubes were undertaken within all six local authorities at roadside, kerbside, industrial and urban background locations. The number of monitoring locations within each local authority is as follows:

- IACC undertook monitoring at 35 locations. This included a 12 monitoring sites survey commenced in February 2016 to gather baseline data for the Horizon Nuclear Power Project. 2017. Site DT2 (Bulkeley Square, Llangefni) was closed and two new sites were opened in August and September 2017. Additionally, a 19 monitoring sites survey was commenced in March 2017.
- CCBC undertook monitoring at 15 locations. Two new monitoring sites were introduced at the start of 2017 outside two infants- junior schools.
- DCC undertook monitoring at 26 locations. No changes to the monitoring locations or number of tubes deployed have occurred in 2017.
- FCC undertook monitoring at 54 locations, including duplicate diffusion tube monitoring at 3 sites (3 Davies Cottage, 20/22 Glynne Way and Llys Alun) and triplicate diffusion tubes monitoring at one site (South Bank, Aston Park, Queensferry CH5 1XZ). Two monitoring sites were added in July 2017.
- GC undertook monitoring at 22 locations. Ten new sites were added in 2017 as part of a survey for the North Wales Grid Improvement Project.
- WCBC undertook NO_2 monitoring at 25 locations, including one triplicate site which is co-located with the Victoria Road AURN station. WCBC also undertook benzene monitoring at one diffusion tube site. 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 2.19. 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?	OS Grid Reference		Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y					
IACC										
CM1	Llynfaes (Creigiau)	Rural	N	239692	379774	PM_{10}, $PM_{2.5}$	Light scattering	1.5	11	10
CM2	Brynteg (Chwarelau)	Rural	N	248566	381325	PM_{10}, $PM_{2.5}$	Light scattering	4	6	5
CM3	Felin Cafnan, Cemlyn	Rural	N	234355	393310	PM_{10}, $PM_{2.5}$	Light scattering	1.5	220.5	233
CM4	IVC Penhesgyn	Rural	N	253457	374348	PM_{10}, $PM_{2.5}$	Light scattering	1.5	300	200
WCBC										
AURN	Victoria Road AURN	Roadside	N	332863	349913	NO_2, SO_2	Continuous	3	24	4
AURN	Victoria Road AURN	Roadside	N	332863	349913	PM_{10}, $PM_{2.5}$	Daily gravimetric	3	24	4

Notes:

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

(2) N/A if not applicable.

Figure 2.1 – Map of Automatic Monitoring Sites: IACC

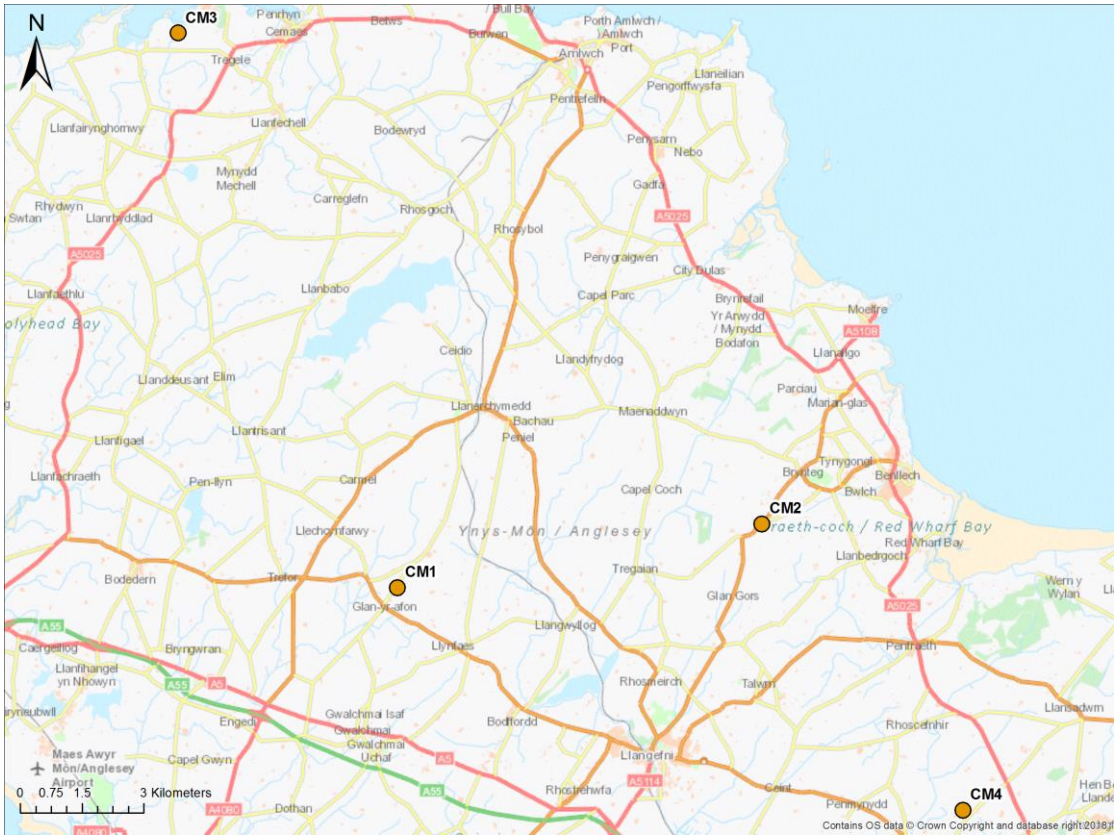


Figure 2.2 – Map of Automatic Monitoring Sites: WCBC

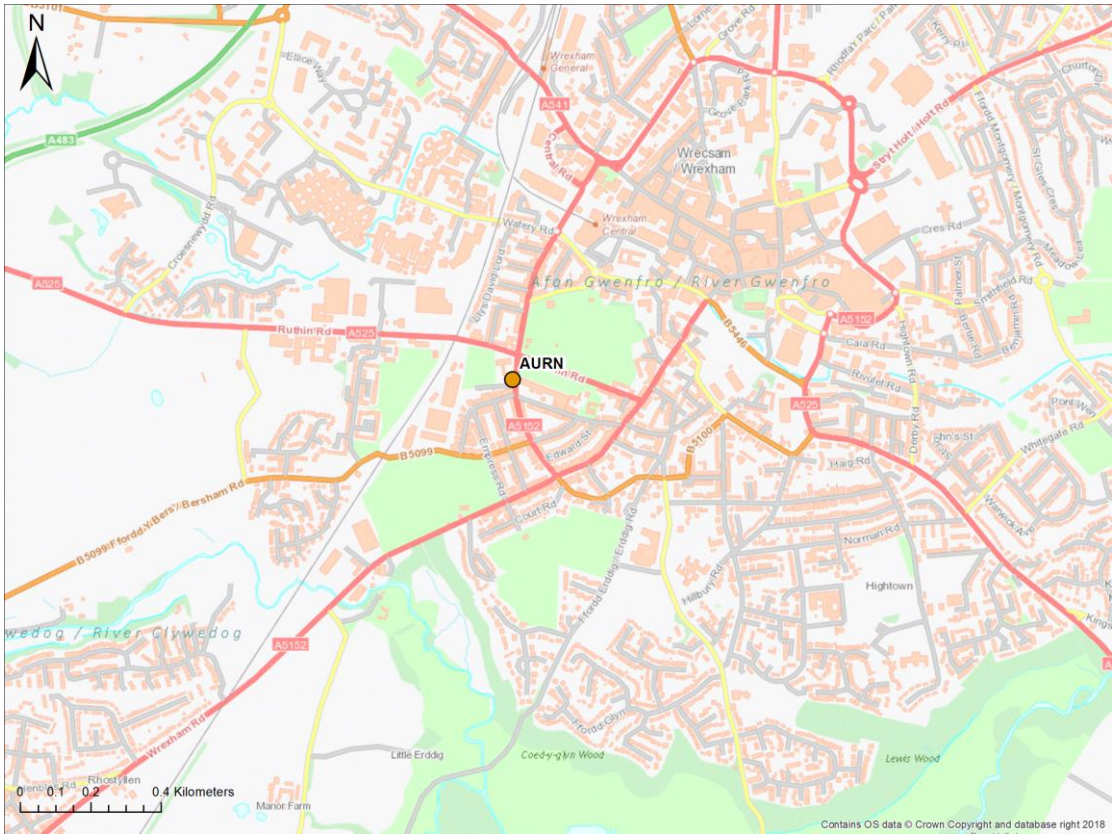


Table 2.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
IACC									
DT1	Llanfair P.G	Kerbside	N	252567	372057	1.2	N	21	1
DT3	Penmynydd	Roadside	N	247084	375511	2.8	N	11.9	1.9
DT16	Warren Rd, Rhosneigr	Suburban	N	232074	373807	2.0	N	1.9	1.9
DT17	Felin Cafnan	Rural Background	N	234348	393294	2.1	N	N/a	1.8
DT4	Llanfair P.G	Roadside	N	253265	372372	1.4	N	33	3
DT5	Bridge A55	Roadside	N	237267	376129	1.8	N	51.2	1.2
DT6	A55 J4	Roadside	N	232573	378407	2.4	N	41.5	1.5
DT7	Valley	Roadside	N	229513	379321	1.5	N	N/a	1
DT8	Llanfachraeth	Roadside	N	231593	382274	2.8	N	9.7	1.7
DT9	Llanfaethlu	Roadside	N	231555	387112	1.9	N	76.5	1.5
DT10	Crossroads	Roadside	N	234152	390193	1.9	N	119.7	3.5
DT11	Tregele	Roadside	N	235575	392545	2.5	N	16.6	1.6
DT12	Cemaes 1	Roadside	N	236752	393090	2.7	N	11.7	1.7
DT13	Cemaes J	Roadside	N	236908	393378	2.6	N	11.7	1.7
DT14	Amlwch K	Roadside	N	244126	392914	2.8	N	2.4	1.4
DT15	Amlwch L	Roadside	N	244270	392498	2.2	N	11.2	1.2
A1	A1 Valley	Roadside	N	229457	379255	2	N	23.4	1
A2	A2 Llanfachraeth	Roadside	N	231638	382131	1.5	N	45.1	1
A3	A3 Llanerchymedd	Roadside	N	241834	384189	2.5	N	N/a	1
A4	A4 Capel Coch	Roadside	N	245860	382097	2.5	N	2.9	1
A5	A5 Rhosmeirch	Roadside	N	245694	377120	2.5	N	21.1	1
A6	A6 Llangefni	Roadside	N	245885	375809	2.5	N	8.4	1
A7	A7 Llangefni	Roadside	N	246044	375712	2	N	11.1	1
A8	A8 Llangefni	Roadside	N	247098	375506	2	N	13.5	1
A9	A9 Caeau Talwrn SSSI	Roadside	N	247755	376974	2	N	51.2	3
A10	A10 Ceint	Roadside	N	248952	374865	1.5	N	29.2	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
A11	A11 Ffordd Caergybi SSSI	Roadside	N	245410	373461	1.5	N	21.1	1
A12	A12 Star	Roadside	N	250101	371995	1.5	N	24	0.5
A13	A13 Star	Roadside	N	251100	371994	2	N	39.2	1.5
A14	A14 Star	Roadside	N	251107	371946	2	N	90.2	1.5
A15	A15 Llanfair	Roadside	N	252567	372057	1	N	21.5	1.5
A16	A16 Llanfair	Roadside	N	252942	371387	1.8	N	48.4	1
A17	A17 Llanfair	Roadside	N	253756	371529	2	N	27.8	1
A18	A18 Llanfair	Roadside	N	253788	371936	2.5	N	18.1	1
A19	A19 Menai	Roadside	N	254549	372661	2.5	N	18.5	1
CCBC									
DT/CCBC001	Theatre Colwyn, Colwyn Bay	Roadside	N	285119	378817	3	N	7	3.5
DT/CCBC017	Kingsway, Colwyn Bay	Roadside	N	284526	379417	3	N	2.1	1.1
DT/CCBC018	Heol Dewi, Pensarn	Roadside	N	295049	378144	2.1	N	6.5	3
DT/CCBC021	Llanfairfechan, A55	Roadside	N	268572	375472	3	N	3.1	1.1
DT/CCBC022	Bryn Marl, Mochdre	Roadside	N	282362	378754	3	N	3.5	1.5
DT/CCBC026	Chapel Street, Abergele	Roadside	N	294571	377534	3	N	2	1
DT/CCBC027	Llandudno Junction, New Roundabout	Roadside	N	280271	377692	3	N	4	2
DT/CCBC031	Conwy Road East, Llandudno Jcn	Roadside	N	279235	377936	2.5	N	3.8	1.75
DT/CCBC032	Conwy Road West, Llandudno Jcn	Roadside	N	279279	377946	3	N	4	1
DT/CCBC033	Coed Pella Rd, Colwyn Bay	Roadside	N	284789	378985	3	N	3	1
DT/CCBC034	Victoria Drive, Llandudno Jcn	Roadside	N	279245	377995	3	N	4.7	2.2
DT/CCBC035	Ysgol Bod Alaw, Colwyn Bay	Roadside	N	285506	378295	3	n	4.2	2.2
DT/CCBC036	Ysgol Tudno, Llandudno	Roadside	N	278131	381907	3	N	4	1.5
DT/CCBC037	Mochdre Town Centre	Roadside	N	282614	378630	2.4	N	7.5	2.5

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
DT/CCBC038	Dolwydd, Mochdre	Roadside	N	281863	377844	2	N	5	2.5
DCC									
DBK1	Wellington Road, Rhyl	Roadside	N	300846	381407	2.3	N	2.7	2.2
DBR2	10 Kinmel Street, Rhyl	Roadside	N	300903	381292	2.5	N	2.8	0.3
DBB3	5 St. Georges Cres., Rhyl	Suburban	N	301640	381800	2.1	N	15.1	15.1
DBB4	73 Bryn Coed Park, Rhyl	Suburban	N	302128	380611	2.3	N	6.4	1.7
DBR5	2 Pant Glas, St. Asaph	Suburban	N	302938	374638	2	N	37.1	27.5
DBR48	Adj. 1 Vale Street, Denbigh	Roadside	N	305276	366119	2.4	N	1	1
DBR23	31 Ruthin Road, Denbigh	Suburban	N	305878	366424	2.5	N	3.9	2.5
DBR8	1 Plas Elwy Orchard, The Roe, St. Asaph	Roadside	N	303270	374640	2	N	19.4	19.4
DBR9	7 Roe Park, St. Asaph	Roadside	N	303197	374830	2	N	14	14
DBR10	13 Roe Park, St. Asaph	Suburban	N	303263	374867	2	N	47	47
DBR24	Denbigh Cutters, 21 Vale Street, Denbigh	Suburban	N	305330	366160	2.2	N	3	3
DBR54	Adj. 2 Market Street, Ruthin	Suburban	N	312502	358376	2.2	N	2.9	2.9
DBR20	25 Park Road, Ruthin.	Roadside	N	312106	358306	2.2	N	5.4	1.4
DBR43	Adj HSBC Bank, Vale Street, Denbigh	Suburban	N	305314	366153	2.6	N	8	2.5
DBR44	Opp Rowlands Pharm., Vale Street, Denbigh	Roadside	N	305386	366191	2.6	N	2.9	1.2
DBR45	Adj 50 Vale Street, Denbigh	Roadside	N	305467	366246	2.5	N	5.9	2
DBR37	Haul Fryn Depot, Ruthin	Roadside	N	312789	358231	2.3	N	4.5	3.5
DBR38	Adj 62 Rhos Street, Ruthin	Roadside	N	312913	358273	2.6	N	2.3	2.3
DBR52	Adj. Swayne Johnston Sol., Vale Street, Denbigh	Roadside	N	305308	366130	2.9	N	N/a	1.8

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
DBR53	7 Vale Street, Denbigh	Roadside	N	305290	366130	2.3	N	N/a	2
DBR31	2 Rhyl Road, Denbigh	Roadside	N	305805	366480	2.4	N	2.1	0.8
DBR32	47 High Street, Denbigh	Roadside	N	305193	366093	2.4	N	N/a	5.9
DBR33	Adj CO-OP, High Street, Denbigh	Kerbside	N	305229	366082	2.3	N	N/a	5.3
DBR34	Adj Fairyburn, Rhyl Road, Denbigh	Roadside	N	305863	366661	2.5	N	12.3	0.9
DBR49	79 High Street, Prestatyn	Roadside	N	306580	382906	2.6	N	N/a	1
DBR50	Adj., Saronie Court, High Street, Prestatyn	Kerbside	N	306795	382638	2.6	N	N/a	1
FCC									
Site 1	10A Wrexham Road, Mold	Kerbside	N	323800	363856	2.2	N	1	1
Site 2	1, St.Davids Close, Ewloe CH5 3AP	Urban	N	329830	366682	1.8	N	35	35
Site 3	Aston Hill Roadside	Kerbside	N	330718	367350	2	N	11	1
Site 4	Hawarden High School CH5 3DL	Urban Background	N	330614	366195	1.6	N	121	116
Site 5/9/10	South Bank, Aston Park, Queensferry CH5 1XZ	Kerbside	N	330969	367674	2.2	N	10	5
Site 6	Kelsterton Farm, Kelsterton Lane, Connah's Quay	Rural Background	N	327307	369856	2.2	N	41	1
Site 7	Kelsterton Road, Connah's Quay	Kerbside	N	327187	371243	1.8	N	20	5
Site 8	86, Kelsterton Road, Connah's Quay CH5 4BJ	Urban background	N	328032	370647	1.6	N	22	22
Site 11/47	3 Davies Cottage, Mold Road, Alltami	Kerbside	N	326643	365550	1.6	N	4	4
Site 12/13	20/22 Glynne Way, Hawarden	Kerbside	N	331648	365730	2	N	1	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
Site 14	Sandycroft CP School Leaches Lane CH5 2EH	Rural Background	N	332500	367357	1.6	N	N/a	290
Site 15	Aston Hill, Roadside - Additional Tube within 12m of ADDC/085	Kerbside	N	330727	367354	2	N	11	1
Site 16	4, Belvedere Close, Queensferry CH5 1TG	Urban	N	331663	368028	1.8	N	20	20
Site 17	32 Chester Road West, Shotton	Kerbside	N	330599	368922	2.3	N	4	4
Site 18	Saltney Ferry CP School CH_4 0BN	Urban Background	N	336904	364852	2	N	8	1
Site 19	Gwylfa, Northop Rd., Flint Mountain	Kerbside	N	323864	370368	2	N	3	3
Site 20	Coed Mawr Cott., Mostyn Road, Greenfield CH8 9DN	Kerbside	N	318669	378290	2.2	N	2	2
Site 21	Sealand CP School Welsh Road CH5 2RA	Urban Background	N	332535	368907	1.8	N	7	7
Site 22	Green Lane West, Sealand	Rural Background	N	333645	370898	2.2	N	85	70
Site 23	Second Avenue, Deeside Industrial Estate (Valspar)	Kerbside	N	332764	370981	2	N	N/a	1
Site 24/51	Llys Alun, Wrexham Road, Cefn Y Bedd	Kerbside	N	331079	356100	1.8	N	2	2
Site 25	BASF, Deeside Industrial Park, Sealand	Industrial	N	332031	371562	1.8	N	N/a	20
Site 26	Corus rear entrance DIP, Sealand	Industrial	N	329906	370882	1.8	N	N/a	1
Site 27	89, Riverside Park, Garden City	Urban Background	N	333040	369051	2.2	N	15	15
Site 28	Ysgol St John Penymynydd CH_4 0LG	Industrial	N	330528	362756	2	N	N/a	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
Site 29	Weighbridge Road, Deeside Industrial Park, Sealand	Industrial	N	330575	371802	2.2	N	N/a	1
Site 30	28, Chester Road, Pentre, Deeside CH5 2DT	Kerbside	N	332221	367723	1.8	N	5	5
Site 31	Trelawney Towers 79 Chester Road, Flint CH6 5DU	Kerbside	N	324935	372722	2	N	18	18
Site 32	Flint Town Council Buildings.	Kerbside	N	324459	373141	4	N	6	6
Site 33	133, Main Road, Broughton CH_4 0NR	Kerbside	N	333568	363511	2.4	N	1	1
Site 34	2, Coleshill Street, Holywell CH8 7UP	Kerbside	N	318766	375758	2.4	N	1	1
Site 35	Sycamore House, Greenfield Road, Holywell CH8 7PY	Kerbside	N	318735	376611	2.2	N	1	1
Site 36	43, Station Road, Queensferry CH5 1SU	Kerbside	N	331806	368271	2	N	5	5
Site 37	Glendale Lodge, Rhydgaled, Mold A5119	Kerbside	N	324281	364926	2	N	6	6
Site 38	Castell Alun Fagl Lane Hope LL129PY	Urban	N	330705	358429	1.8	N	23	23
Site 39	Ysgol Y Fron Halkyn St Holywell CH8 7TX	Kerbside	N	318851	375592	1.8	N	4	4
Site 40	1 Manor Road, Sealand CH5 2SB	Kerbside	N	333731	369079	1.8	N	15	15
Site 41	Ysgol Y Llan Whitford CH8 9AN	Kerbside	N	314615	378238	2	N	20	15
Site 42	RGHS Ffordd Llewelyn Flint CH6 5JZ	Kerbside	N	324838	372198	1.8	N	7	7

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
Site 43	Flint HS Fifth Avenue Flint CH6 5LW	Urban Background	N	324357	372008	1.8	N	15	15
Site 44	413 Chester Road, Oakenholt, Flint CH6 5SF	Urban Background	N	325961	371822	2.2	N	15	15
Site 45	Ysgol Bryn Coch Victoria Road Mold CH7 1EW	Kerbside	N	323975	363794	1.8	N	21	20
Site 46	Ewloe Green School CH5 3AU	Urban Background	N	329284	366504	1.8	N	45	40
Site 48	74, High Street, Saltney CH_4 8SQ	Kerbside	N	338283	365032	1.8	N	6	6
Site 49	31, The Rowans, Broughton CH_4 0TD	Kerbside	N	333531	363028	2	N	30	25
Site 50	Ysgol Estyn Hawarden Road Hope LL12 9NL	Kerbside	N	330898	357996	1.8	N	5	5
Site 52	Westwood CP School Padeswood Rd CH7 2JT	Kerbside	N	327843	363856	2	N	8	8
Site 53	17, Mill Lane, Buckley CH7 3HA	Kerbside	N	327849	364146	2.3	N	5	1
Site 54	Elm Tree Rd Saughall	Kerbside	N	335594	369179	2.3	N	11	1
Site 55	Ferry Lane, Chester	Kerbside	N	337632	366682	2.2	N	17	2
Site 56	Deeside Lane, Sealand	Kerbside	N	335292	368346	2.2	N	N/a	1
Site 57	Rose Cottage Junction A5119/A494	Kerbside	N	324375	365007	2.2	N	3	1
S1	Bryn Mair 114 Chester Road Mold CH7 1UQ		N	324530	363839		N	N/a	N/a
S2	30 High Street Mold CH7 1BH		N	324562	363840		N	N/a	N/a
GC									
GCC 002	Roundabout A487, Caernarfon (C1)	Kerbside	N	248273	362132	1.96	N	10	1

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
GCC 003	Lon Campbell, Caernarfon (C3)	Urban Background	N	248480	363456	2	N	5	N/a
GCC 005	Ffordd Bangor, Caernarfon (C5)	Kerbside	N	248892	364120	1.84	N	7	1
GCC 008	A4087, Bangor (B3)	Kerbside	N	257587	371543	1.9	N	2	1
GCC 011	A5122, Bangor (B5)	Kerbside	N	256292	371663	1.73	N	>25	1
GCC 012	Faenol Roundabout, Bangor (B6)	Kerbside	N	254286	368835	1.8	N	>25	1
GCC 013	Bethesda (BETH 1)	Kerbside	N	261529	367380	2.03	N	10	1
GCC 015	Llanwnda (LL1)	Roadside	N	247770	358663	1.93	N	95	2
GCC 037	Poolside, Caernarfon (C6)	Kerbside	N	248022	362757	1.93	N	2	1
GCC 038	A55, Bangor (B4)	Roadside	N	256871	369493	1.32	N	>25	2
GCC 039	A55, Bangor (CO-LOC)	Roadside	N	256871	369493	1.32	N	>25	2
GCC 040	Pwllheli (PW1)	Kerbside	N	237517	335217	2.04	N	2	1
G1	Pont Britannia A55 laybye - eastbound	Roadside	N	254570	370440	1.5	N	81	3
G2	Pont Britannia A55 laybye - westbound	Roadside	N	254541	340430	1.5	N	91	3
G3	Capel Graig A487 Bangor	Roadside	N	254633	369564	2	N	43	10
G4	Ffordd Bronwydd Bangor	Roadside	N	254985	370082	2.2	N	17	7
G5	B4547 Garth	Roadside	N	255050	367624	1.5	N	42	2
G6	Ty Mawr Roundabout B4366	Kerbside	N	255836	366883	2.8	N	5	1
G7	Treborth Road, Bangor	Kerbside	N	255816	371124	2.5	N	8.5	1.5
G8	453 Caernarfon Road, Bangor	Kerbside	N	256911	370613	2.8	N	8	2
G9	Cycle path A4244 Pentir	Kerbside	N	257340	366904	2.5	N	12	2
G10	Our Lady's RC Primary School Bangor (Same location as GCC/008)	Kerbside	N	257563	371522	1.5	N	2	2

Site ID	Site Name	Site Type	Associated with Named AQMA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from Kerb to Nearest Relevant Exposure (m) (1)	Distance from Kerb to Monitor (m) (2)
				X	Y				
WCBC									
WBC-001	Grosvenor Rd, Wrexham	Roadside	N	333200	350600	2.75	N	N/a	5
WBC-010	Ceiriog School, Chirk	Suburban	N	329300	338300	2	N	25	2
WBC-015	Gardden View, Ruabon	Roadside	N	330300	344600	2	N	15	7
WBC-018	Old Farm Rd, Rhostyllen	Roadside	N	332000	349000	1.75	N	40	2
WBC-019	Mold Rd, Wrexham	Roadside	N	332600	351000	2	N	30	7
WBC-020	Chester Rd, Wrexham	Intermediate	N	333700	352900	2	N	16	3
WBC-021	Holt Rd, Wrexham	Roadside	N	334100	350700	1.75	N	30	2
WBC-022	Holyhead Rd, Chirk	Intermediate	N	328900	338700	1.5	N	30	30
WBC-030	Rhostyllen Roundabout, Wrexham (A483)	Roadside	N	330950	348170	1.5	N	35	4
WBC-031	Bus Station, Wrexham	Roadside	N	333350	350590	3	N	3	2
WBC-032	The Sycamores, Chester Road	Roadside	N	333887	353222	1.75	N	25	N/a
WBC-033	Smithfield Road	Roadside	N	333981	350171	1.5	N	4	1
WBC-034	Coed Poeth	Roadside	N	329017	351002	2	N	8	9
WBC-036	Acrefair	Roadside	N	327630	342990	2	N	2	2
WBC-037	Rossett	Roadside	N	336635	357211	1.5	N	7	3
WBC-039	Pentre Bach	Roadside	N	331765	350132	1.5	N	2	2
WBC-040	Overton	Roadside	N	337449	341702	1.5	N	14	4
WBC-041	Marchwiel	Roadside	N	335407	347890	2	N	3	8
WBC-042	Llan-Y-Pwll	Roadside	N	335359	352178	1.75	N	9	5
WBC-043	Hightown	Roadside	N	333966	349691	2	N	10	1
WBC-044	Cobden Road	Roadside	N	332935	350278	2	N	5	1
WBC-045	STANSTY	Roadside	N	332214	351503	1.75	N	8	8
WBC-046	Regent Street	Roadside	N	333063	350587	2	N	15	1
WBC-047	Chapel Lane	Roadside	N	329023	338348	3	N	15	1
AURN 1	Victoria Road 1	Roadside	N	332900	349900	2	Y	7	5
AURN 2	Victoria Road 2	Roadside	N	332900	349900	1.75	Y	7	5
AURN 3	Victoria Road 3	Roadside	N	332900	349900	2.75	Y	7	5
WBC-26 (benzene)	Llwyneinion Rd Rhosllanerchrugog	Urban Background	N	347400	328700	1.5	N	N/a	N/a

Notes:

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

(2) N/A if not applicable.

Figure 2.3 – Map of Non-Automatic Monitoring Sites: IACC South East

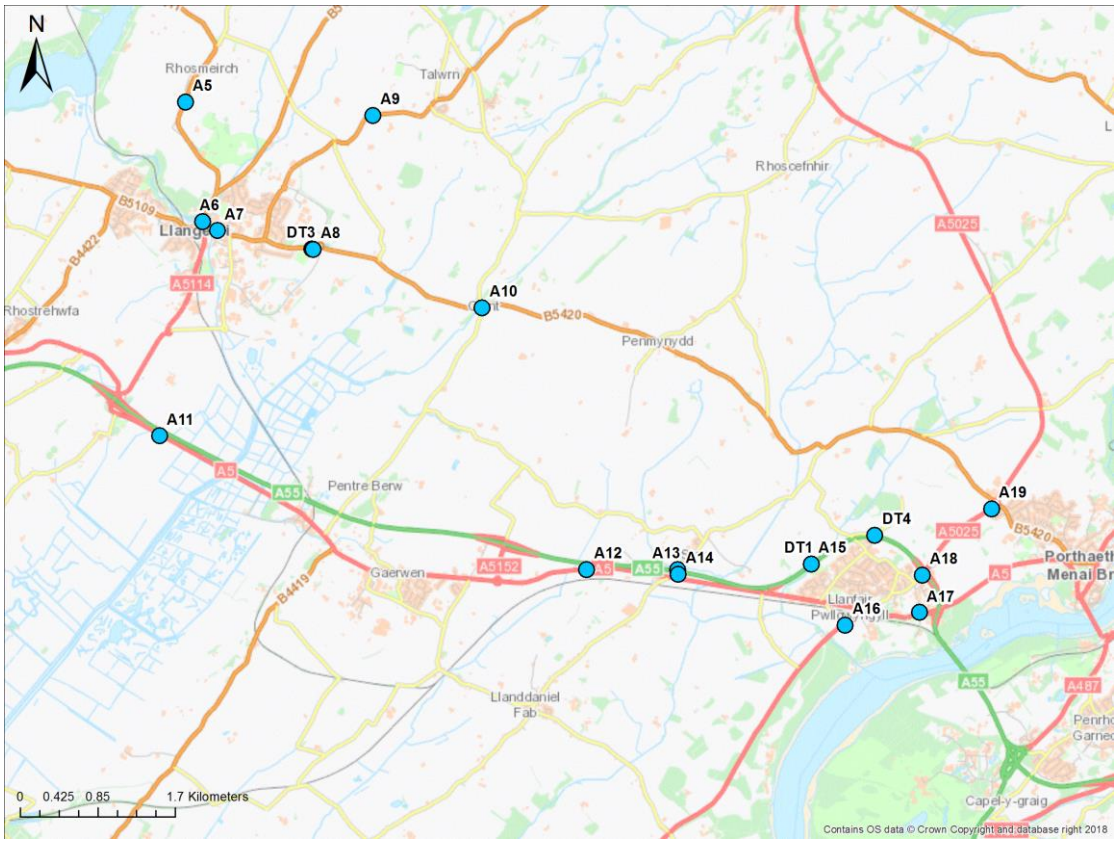


Figure 2.4 – Map(s) of Non-Automatic Monitoring Sites: IACC North

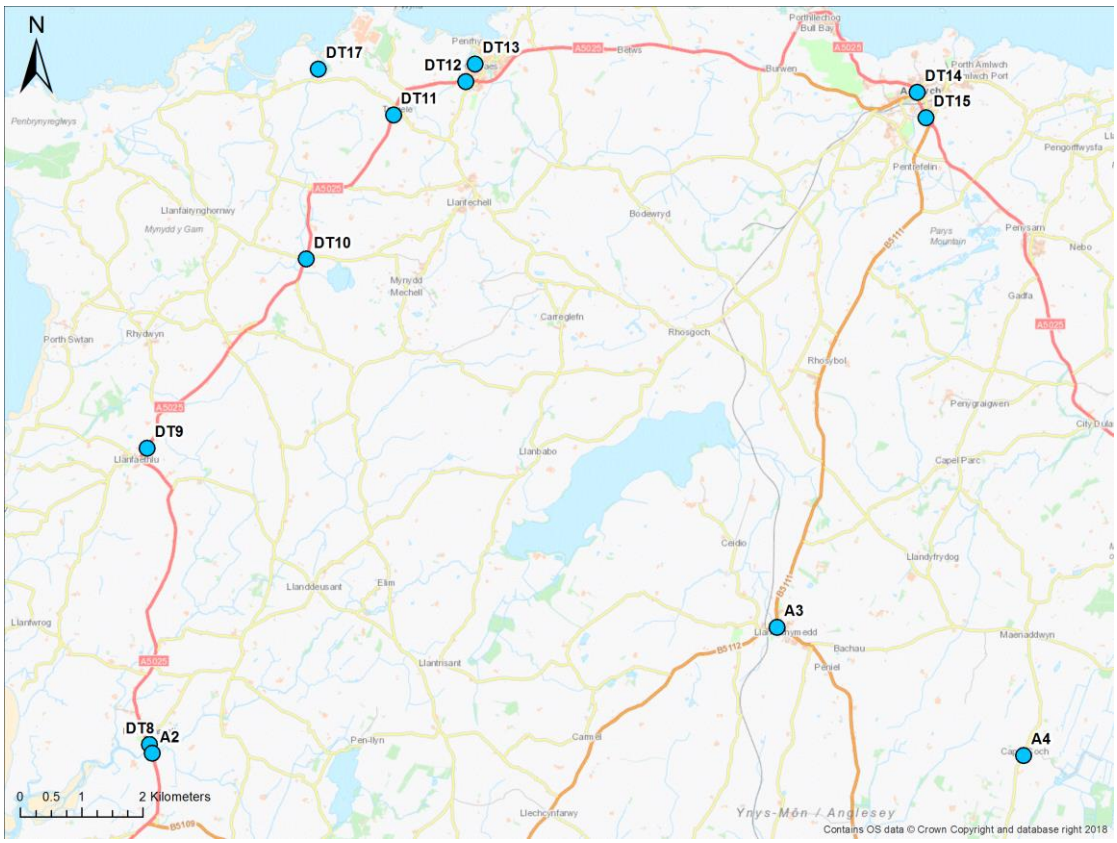


Figure 2.5 – Map of Non-Automatic Monitoring Sites: IACC South West

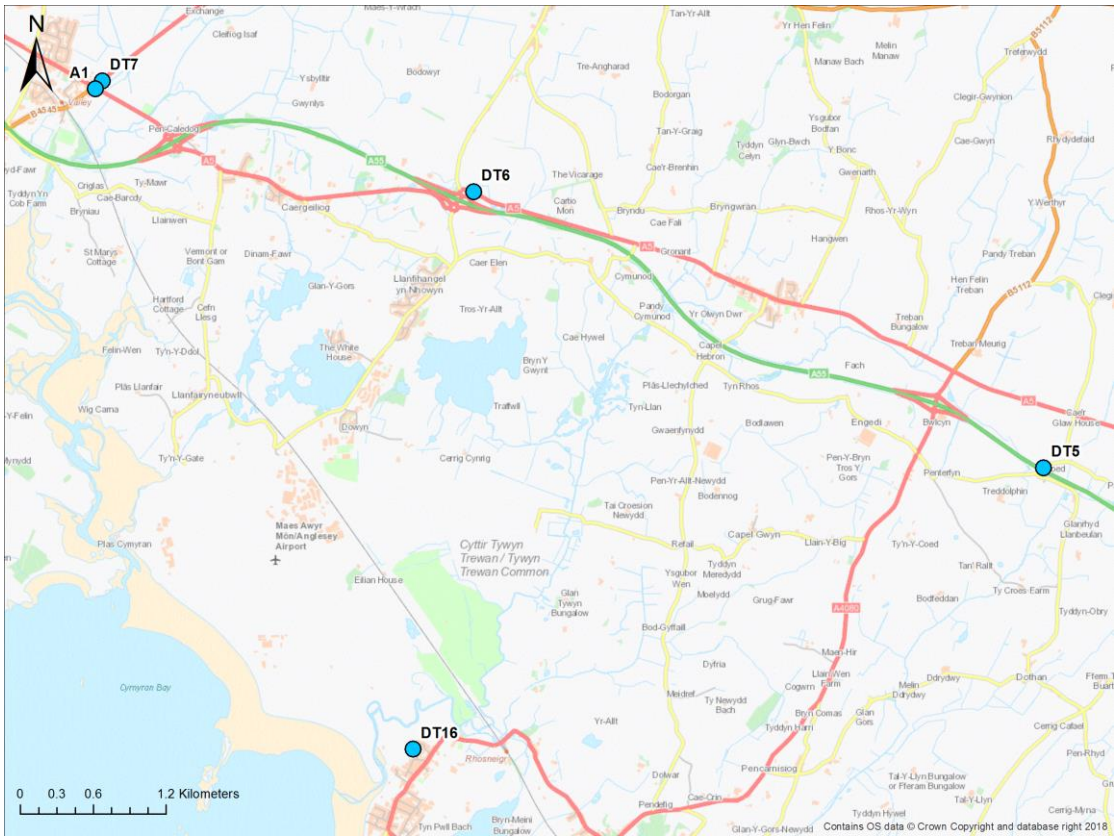


Figure 2.6 – Map of Non-Automatic Monitoring Sites: CBC North

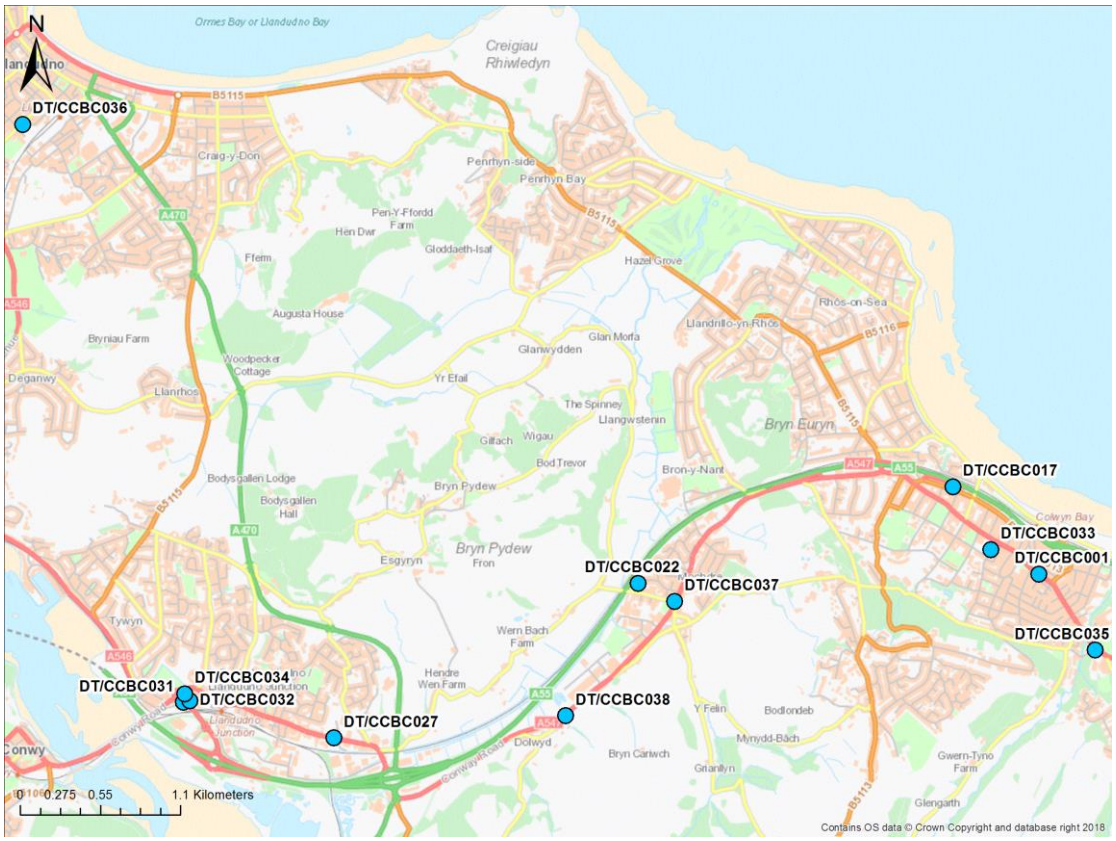


Figure 2.7 – Map of Non-Automatic Monitoring Sites: CBC West

Figure 2.8 – Map of Non-Automatic Monitoring Sites: CBC East

Figure 2.9 – Map of Non-Automatic Monitoring Sites: DCC North

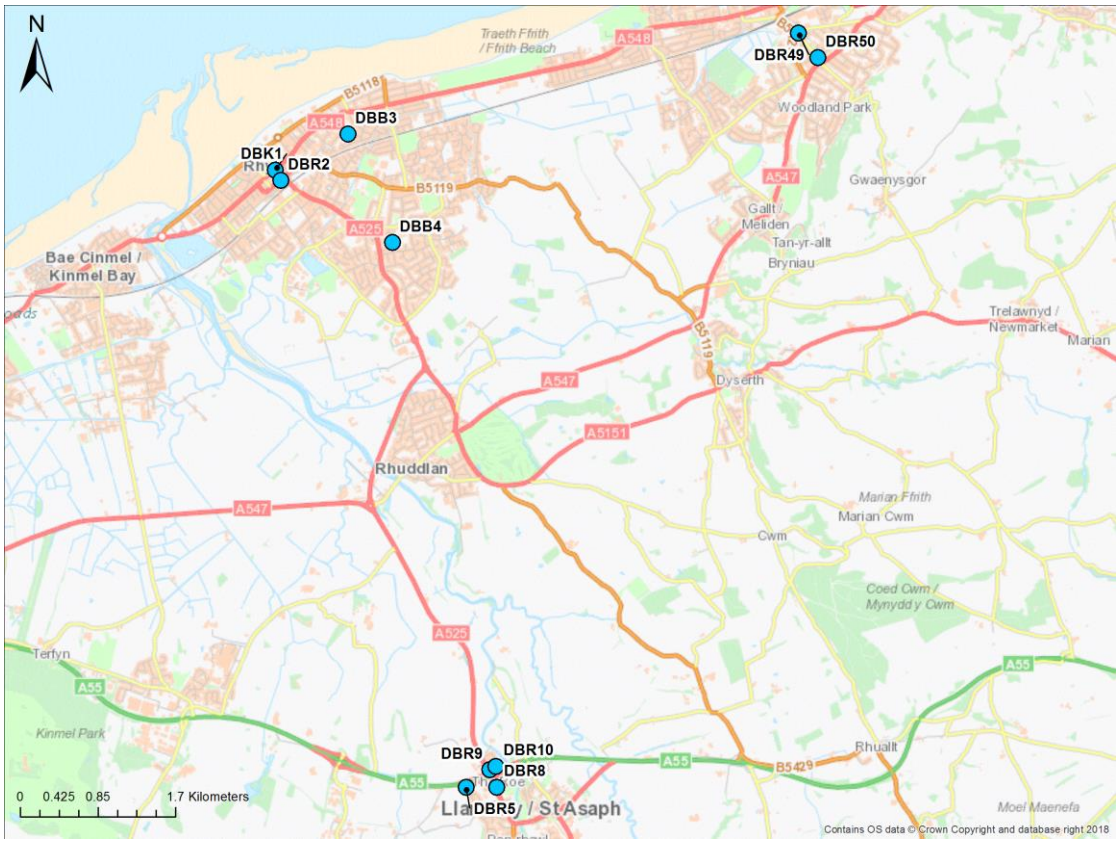


Figure 2.10 – Map of Non-Automatic Monitoring Sites: DCC A543

Figure 2.11 – Map of Non-Automatic Monitoring Sites: DCC South

Figure 2.12 – Map of Non-Automatic Monitoring Sites: FCC

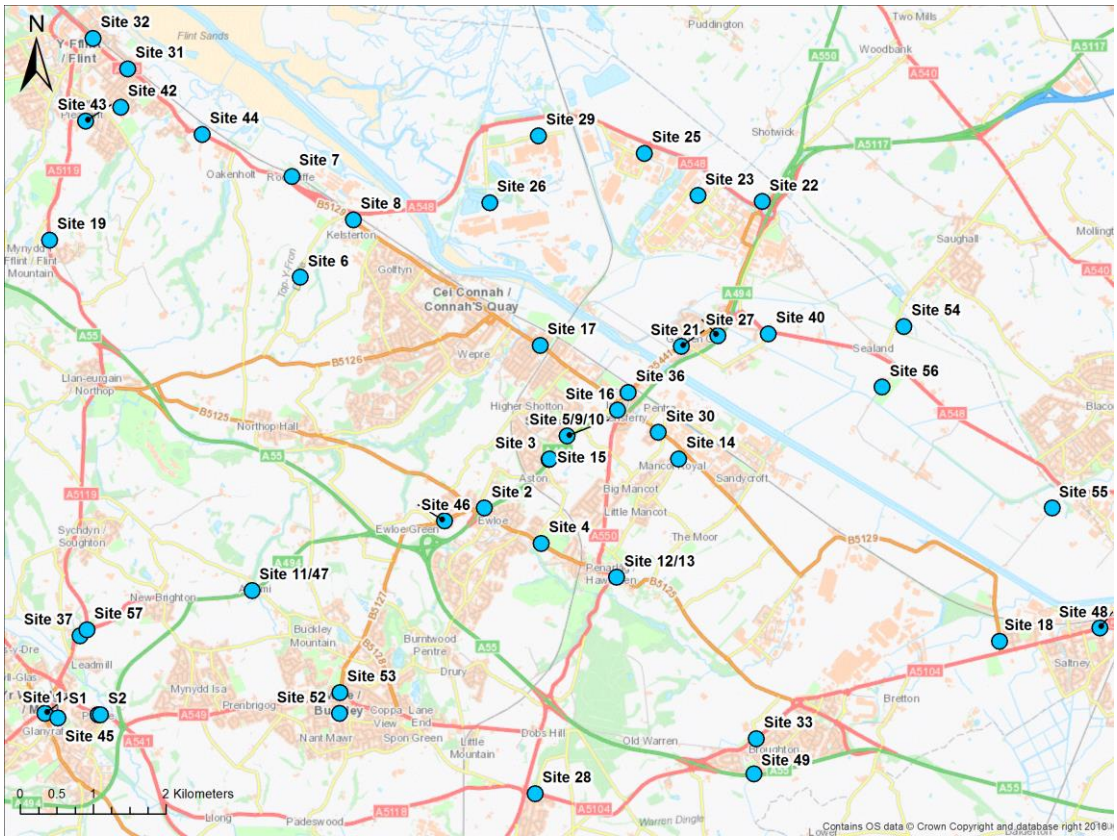


Figure 2.13 – Map of Non-Automatic Monitoring Sites: FCC North

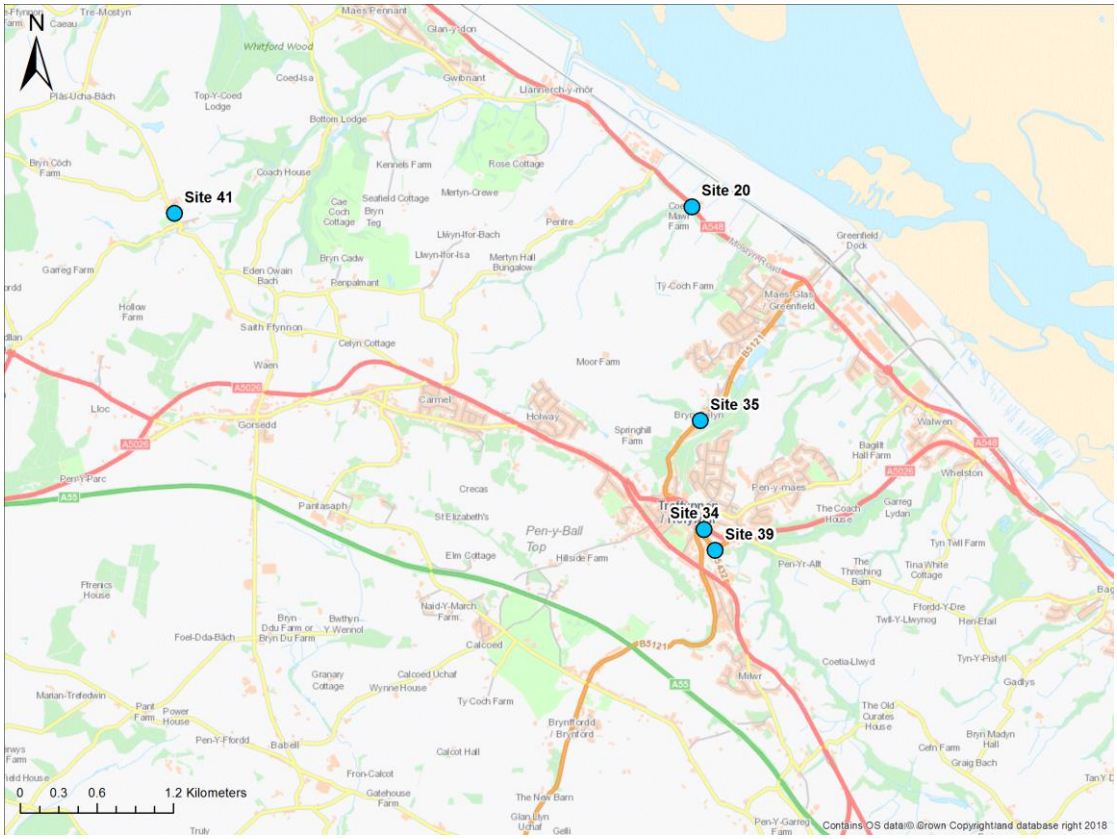


Figure 2.14 – Map of Non-Automatic Monitoring Sites: FCC South

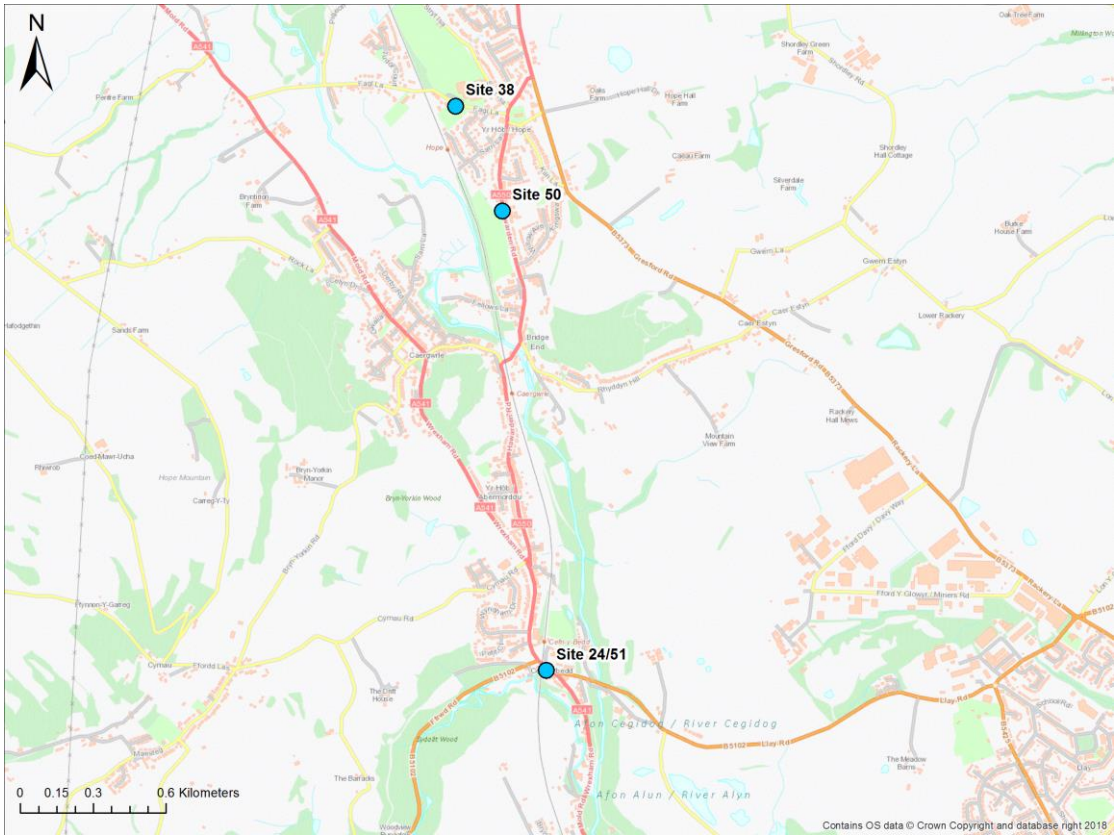


Figure 2.15 – Map of Non-Automatic Monitoring Sites: GC North

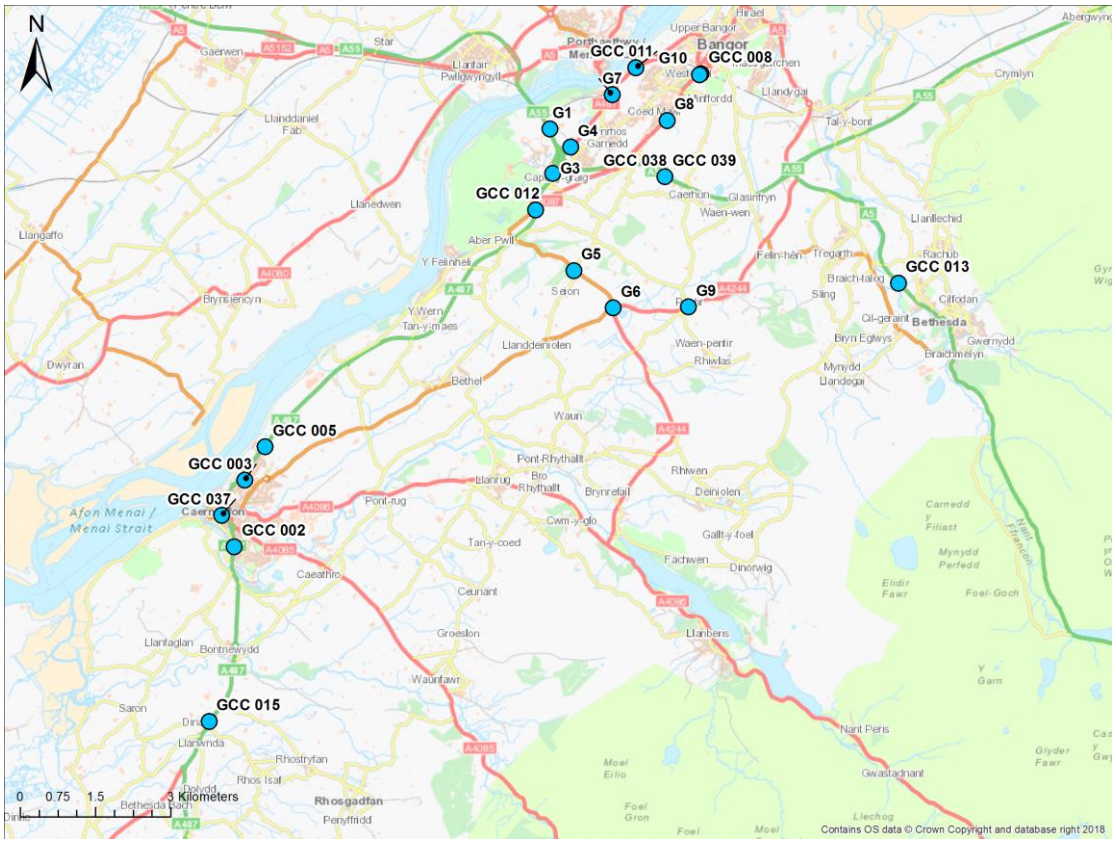


Figure 2.16 – Map of Non-Automatic Monitoring Sites: GC South

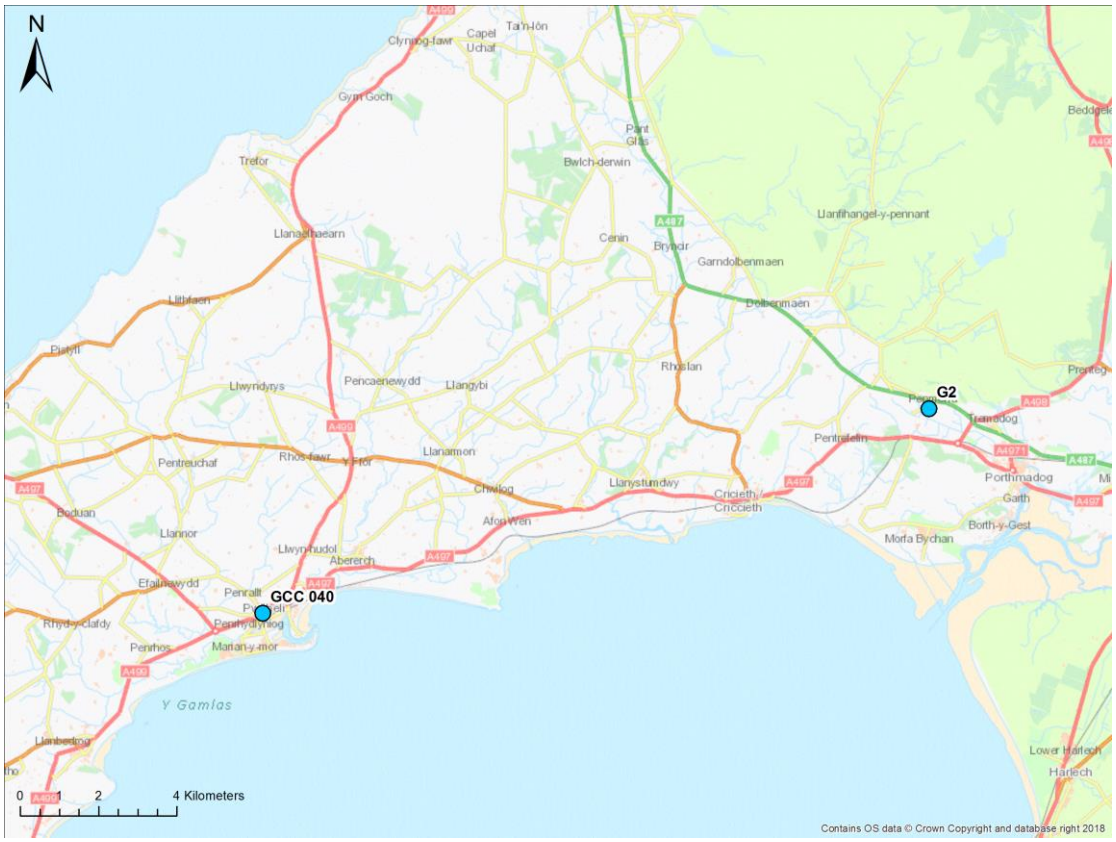


Figure 2.17 – Map of Non-Automatic Monitoring Sites: WCBC

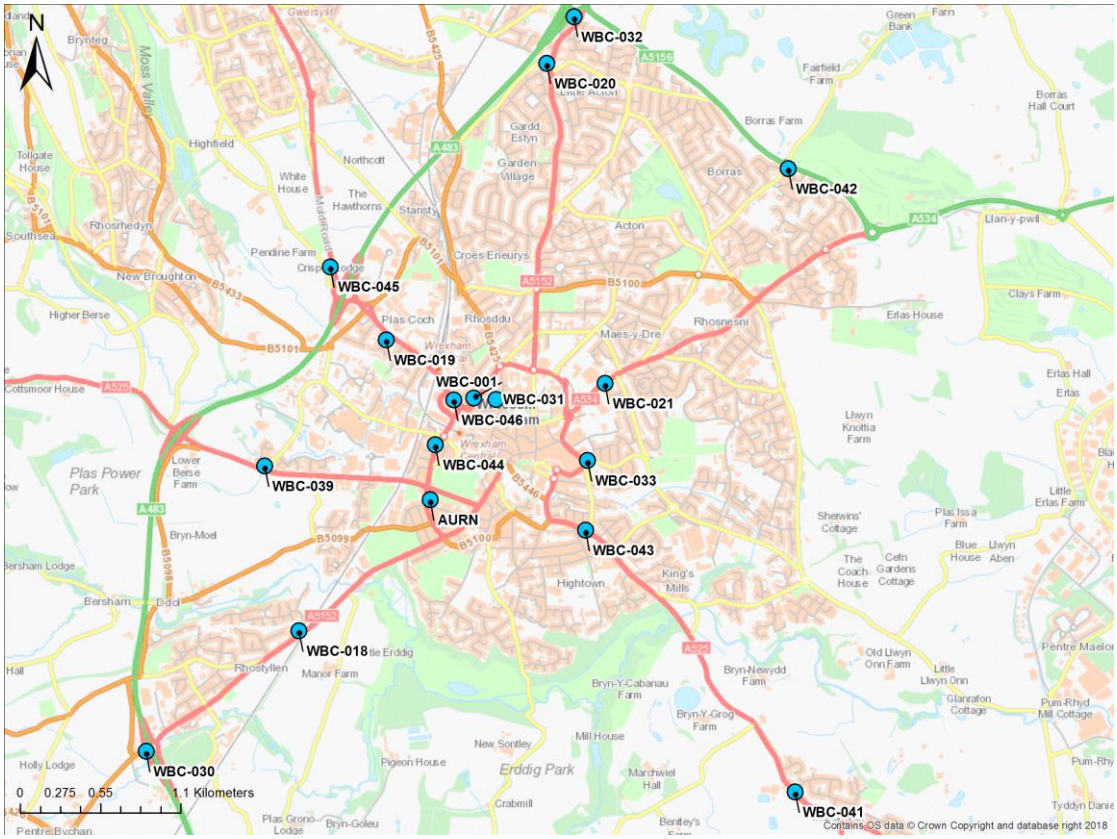


Figure 2.18 – Map of Non-Automatic Monitoring Sites: WCBC South

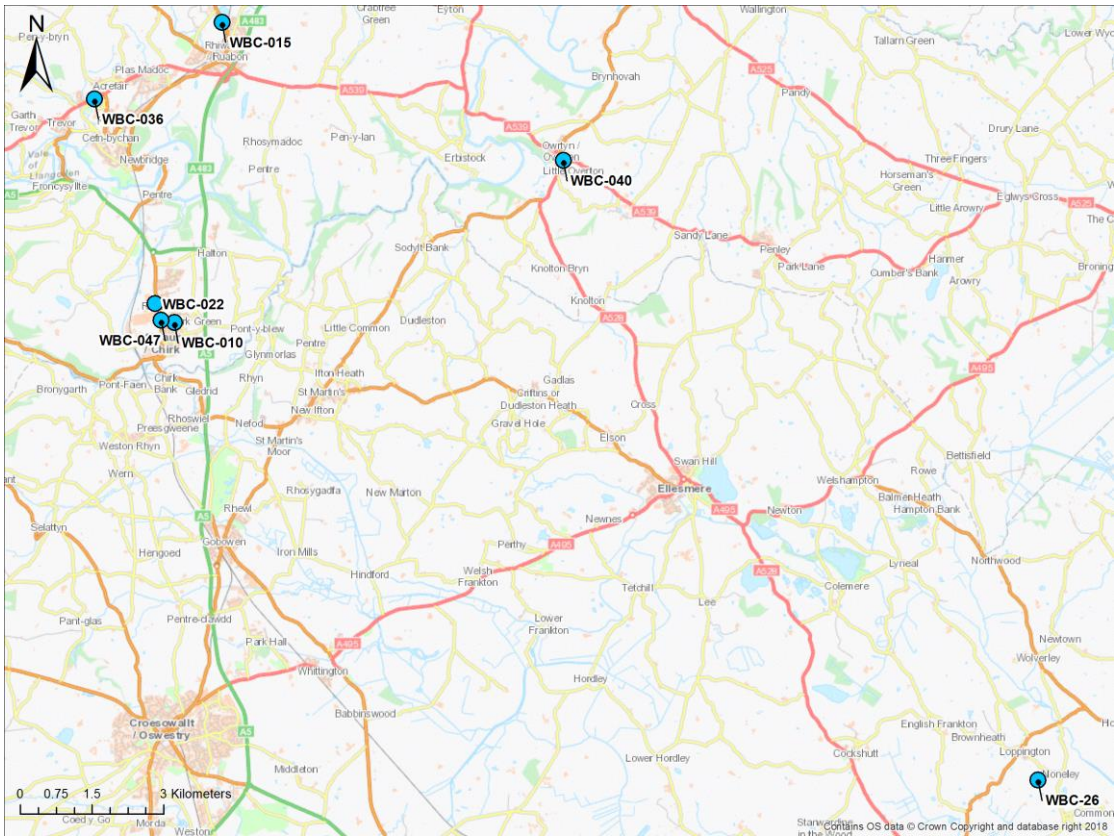
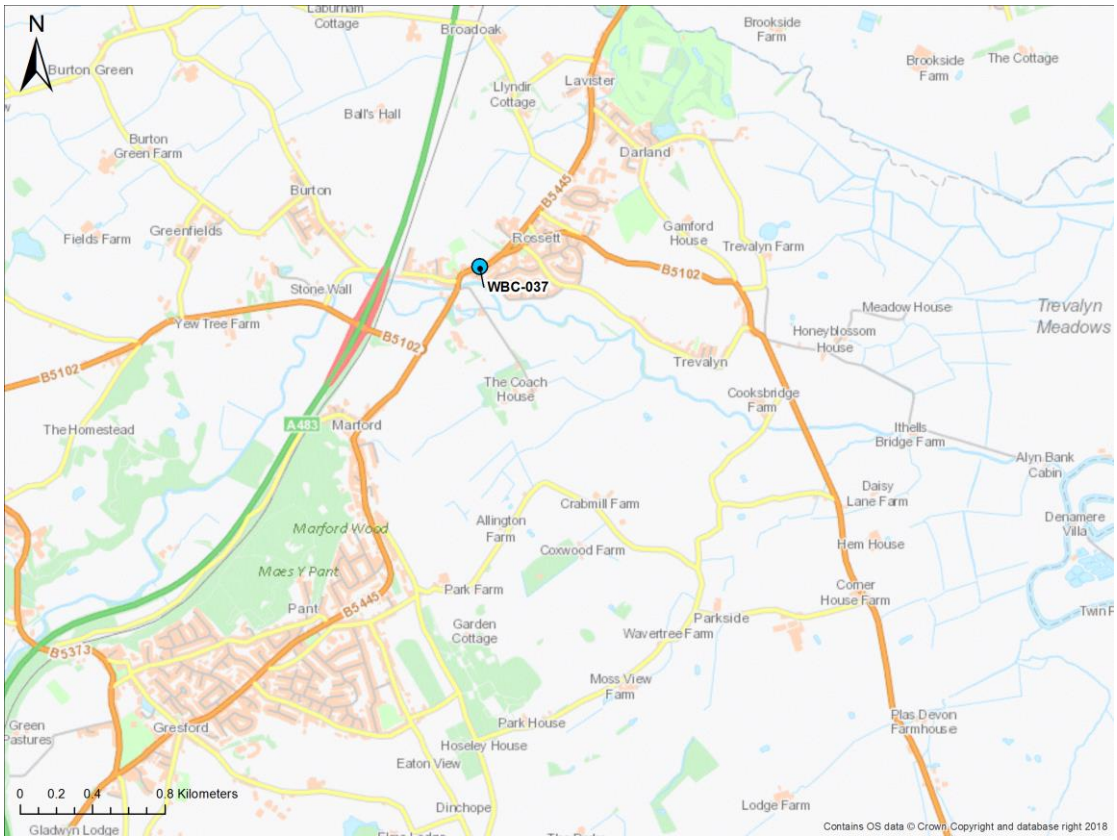


Figure 2.19 – Map of Non-Automatic Monitoring Sites: WCBC North



2.2 Comparison of 2017 Monitoring Results with Previous Years and the Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

In 2017 NO_2 was monitored in all six local authorities at 177 diffusion tube sites and at one automatic monitoring site in WCBC. Two exceedances of the annual mean AQO were recorded at:

- Site DT4 in IACC with 44.8 µg/m^3. However, distance correction predicts that the annual mean was 20.7 µg/m^3 at the nearest relevant exposure (See Appendix C).
- Site G1 in GC with 53.1 µg/m^3. The monitoring site is located more than 50m (78m) away from the nearest relevant exposure so distance correction was not possible.

Five additional annual mean concentration within 10% of the annual mean AQO were also distance corrected (See Appendix C).

The 2017 annual mean concentration at the Automatic Urban and Rural Network (AURN) automatic monitoring station in WCBC was 16.5 µg/m^3 with a data capture of 94%. This is well below the annual mean AQO of 40 µg/m^3. There was also no exceedance of the 1-hour mean of 200 µg/m^3. The AQO is for 200 µg/m^3 not to be exceeded more than 18 times per year.

Annual mean NO_2 concentrations are included in Table 2.3. Figure 2.19 to Figure 2.24 represent the annual trends in NO_2 concentrations. These show a general decrease in NO_2 concentration at the majority of sites. Comparison with the 1-hour mean AQO at the AURN station is included in Table 2.4.

Table 2.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
IACC									
DT1	Kerbside	Diffusion Tube	92	92	**44.3**	38.7	38.1	39.7	37.8
DT3	Roadside	Diffusion Tube	83	83	-	-	-	9.5	9.0*
DT16	Suburban	Diffusion Tube	42	42	-	-	-	-	4.0*
DT17	Rural Background	Diffusion Tube	33	33	-	-	-	-	2.8
DT4	Roadside	Diffusion Tube	100	100	-	-	-	**45.2**	**44.8**
DT5	Roadside	Diffusion Tube	100	100	-	-	-	9.8	9.6
DT6	Roadside	Diffusion Tube	100	100	-	-	-	11.3	10.2
DT7	Roadside	Diffusion Tube	100	100	-	-	-	15.3	14.0
DT8	Roadside	Diffusion Tube	100	100	-	-	-	9.9	8.3
DT9	Roadside	Diffusion Tube	92	92	-	-	-	9.5	8.0
DT10	Roadside	Diffusion Tube	100	100	-	-	-	7.0	5.5
DT11	Roadside	Diffusion Tube	100	100	-	-	-	10.2	8.6
DT12	Roadside	Diffusion Tube	100	100	-	-	-	9.0	7.6
DT13	Roadside	Diffusion Tube	100	100	-	-	-	6.7	4.7
DT14	Roadside	Diffusion Tube	100	100	-	-	-	12.7	9.3
DT15	Roadside	Diffusion Tube	100	100	-	-	-	11.2	8.9
A1	Roadside	Diffusion Tube	83	83	-	-	-	-	13.9
A2	Roadside	Diffusion Tube	50	50	-	-	-	-	5.3*
A3	Roadside	Diffusion Tube	83	83	-	-	-	-	11.2
A4	Roadside	Diffusion Tube	83	83	-	-	-	-	4.0
A5	Roadside	Diffusion Tube	83	83	-	-	-	-	6.4
A6	Roadside	Diffusion Tube	83	83	-	-	-	-	14.7
A7	Roadside	Diffusion Tube	67	67	-	-	-	-	12.0*
A8	Roadside	Diffusion Tube	58	58	-	-	-	-	7.6*
A9	Roadside	Diffusion Tube	58	58	-	-	-	-	5.0*
A10	Roadside	Diffusion Tube	83	83	-	-	-	-	6.2
A11	Roadside	Diffusion Tube	75	75	-	-	-	-	12.4
A12	Roadside	Diffusion Tube	83	83	-	-	-	-	12.3
A13	Roadside	Diffusion Tube	83	83	-	-	-	-	14.7

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2013	2014	2015	2016	2017
A14	Roadside	Diffusion Tube	83	83	-	-	-	-	11.7
A15	Roadside	Diffusion Tube	83	83	-	-	-	-	37.1
A16	Roadside	Diffusion Tube	75	75	-	-	-	-	9.8
A17	Roadside	Diffusion Tube	75	75	-	-	-	-	13.2
A18	Roadside	Diffusion Tube	67	67	-	-	-	-	14.8*
A19	Roadside	Diffusion Tube	83	83	-	-	-	-	38.1
CCBC									
DT/CCBC001	Roadside	Diffusion Tube	100	100	19.4	17.5	17.3	19.1	16.9
DT/CCBC017	Roadside	Diffusion Tube	92	92	19.6	18.1	19.1	24.4	16.5
DT/CCBC018	Roadside	Diffusion Tube	100	100	21.8	19.4	22.6	20.7	19.8
DT/CCBC021	Roadside	Diffusion Tube	100	100	16.2	15.2	16.8	17.5	14.2
DT/CCBC022	Roadside	Diffusion Tube	100	100	19.9	18.9	19.3	20.4	18.7
DT/CCBC026	Roadside	Diffusion Tube	100	100	28.0	27.4	25.2	27.4	23.0
DT/CCBC027	Roadside	Diffusion Tube	100	100	15.6	13.3	14.3	14.5	14.7
DT/CCBC031	Roadside	Diffusion Tube	100	100	-	-	20.8	20.7	20.9
DT/CCBC032	Roadside	Diffusion Tube	100	100	-	-	17.7	18.7	17.1
DT/CCBC033	Roadside	Diffusion Tube	100	100	-	-	-	13.7	13.0
DT/CCBC034	Roadside	Diffusion Tube	100	100	-	-	-	20.8	22.0
DT/CCBC035	Roadside	Diffusion Tube	100	100	-	-	-	-	15.5
DT/CCBC036	Roadside	Diffusion Tube	100	100	-	-	-	-	10.8
DT/CCBC037	Roadside	Diffusion Tube	92	92	-	-	-	-	12.7
DT/CCBC038	Roadside	Diffusion Tube	100	100	-	-	-	-	15.3
DCC									
DBK1	Roadside	Diffusion Tube	100	100	25.9	25.8	23.1	23.5	24.9
DBR2	Roadside	Diffusion Tube	92	92	29.3	29.1	26.7	26.4	25.7
DBB3	Suburban	Diffusion Tube	100	100	10.4	9.8	9.3	9.8	8.7
DBB4	Suburban	Diffusion Tube	92	92	11.9	10.5	9.9	10.3	9.5
DBR5	Suburban	Diffusion Tube	92	92	15.3	14.0	14.0	15.5	14.1
DBR48	Roadside	Diffusion Tube	100	100	29.3	25.1	25.7	26.7	24.8
DBR23	Suburban	Diffusion Tube	100	100	19.5	17.3	17.2	18.6	19.1
DBR8	Roadside	Diffusion Tube	100	100	16.9	15.1	14.7	15.5	15.2
DBR9	Roadside	Diffusion Tube	92	92	21.3	21.8	21.2	21.1	21.3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2013	2014	2015	2016	2017
DBR10	Suburban	Diffusion Tube	92	92	16.2	16.4	14.5	16.1	15.3
DBR24	Suburban	Diffusion Tube	92	92	34.1	32.6	32.5	33.1	33.1
DBR54	Suburban	Diffusion Tube	58	58	-	16.1	13.2	13.7	12.0*
DBR20	Roadside	Diffusion Tube	92	92	24.0	21.3	21.2	19.8	21.3
DBR43	Suburban	Diffusion Tube	100	100	36.7	31.9	32.8	29.1	32.4
DBR44	Roadside	Diffusion Tube	92	92	28.8	25.9	24.2	25.0	26.3
DBR45	Roadside	Diffusion Tube	100	100	24.9	23.0	21.6	23.3	22.3
DBR37	Roadside	Diffusion Tube	100	100	29.4	28.5	28.0	26.6	26.2
DBR38	Roadside	Diffusion Tube	100	100	19.9	17.9	16.5	16.8	17.2
DBR52	Roadside	Diffusion Tube	92	92	30.5	30.3	21.7	24.1	22.2
DBR53	Roadside	Diffusion Tube	83	83	31.7	30.7	28.2	31.2	29.3
DBR31	Roadside	Diffusion Tube	92	92	19.6	18.0	17.0	18.9	17.6
DBR32	Roadside	Diffusion Tube	100	100	20.9	19.1	18.5	18.9	17.8
DBR33	Kerbside	Diffusion Tube	92	92	25.7	22.1	29.0	28.2	25.2
DBR34	Roadside	Diffusion Tube	100	100	15.8	14.7	13.6	15.2	14.1
DBR49	Roadside	Diffusion Tube	100	100	18.8	16.7	16.0	17.1	15.7
DBR50	Kerbside	Diffusion Tube	92	92	18.5	16.5	16.4	16.0	15.6
FCC									
Site 1	Kerbside	Diffusion Tube	100	100	30.3	25.4	21.1	25.6	23.7
Site 2	Urban	Diffusion Tube	100	100	20.4	20.8	17.4	20.6	17.4
Site 3	Kerbside	Diffusion Tube	100	100	32.9	30.2	26.3	33.7	24.4
Site 4	Urban Background	Diffusion Tube	100	100	16.7	14.1	15.9	18.0	16.0
Site 5/9/10	Kerbside	Diffusion Tube	92	92	33.7	29.8	31.2	33.2	20.1
Site 6	Rural Background	Diffusion Tube	83	83	11.0	14.6	9.3	14.0	8.1
Site 7	Kerbside	Diffusion Tube	100	100	16.4	14.7	14.9	15.0	13.2
Site 8	Urban background	Diffusion Tube	100	100	16.4	13.8	12.9	14.5	11.7
Site 11/47	Kerbside	Diffusion Tube	100	100	31.8	31.5	32.9	35.6	29.3
Site 12/13	Kerbside	Diffusion Tube	100	100	35.1	33.4	35.4	34.0	34.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2013	2014	2015	2016	2017
Site 14	Rural Background	Diffusion Tube	92	92	10.0	8.7	8.6	12.7	13.4
Site 15	Kerbside	Diffusion Tube	100	100	28.9	27.3	27.9	27.9	25.9
Site 16	Urban	Diffusion Tube	100	100	28.9	26.8	26.2	26.7	24.4
Site 17	Kerbside	Diffusion Tube	100	100	27.1	23.9	24.8	29.2	23.8
Site 18	Urban Background	Diffusion Tube	92	92	15.5	12.1	11.5	14.5	13.9
Site 19	Kerbside	Diffusion Tube	100	100	23.2	22.1	20.7	25.0	19.5
Site 20	Kerbside	Diffusion Tube	100	100	24.0	21.5	20.7	23.4	22.0
Site 21	Urban Background	Diffusion Tube	92	92	15.3	13.7	13.0	15.2	18.0
Site 22	Rural Background	Diffusion Tube	100	100	20.8	19.4	18.7	18.6	14.6
Site 23	Kerbside	Diffusion Tube	92	92	28.1	21.8	21.4	24.4	23.2
Site 24/51	Kerbside	Diffusion Tube	100	100	37.4	34.9	34.9	31.4	31.1
Site 25	Industrial	Diffusion Tube	92	92	19.0	16.9	18.1	21.3	16.0
Site 26	Industrial	Diffusion Tube	100	100	16.5	14.5	15.0	16.3	13.8
Site 27	Urban Background	Diffusion Tube	83	83	24.3	21.8	21.7	21.3	20.0
Site 28	Industrial	Diffusion Tube	100	100	18.5a	15.7	17.4	15.5	18.6
Site 29	Industrial	Diffusion Tube	100	100	19.0	17.6	15.8	18.0	16.6
Site 30	Kerbside	Diffusion Tube	100	100	30.7	25.0	23.2	24.9	23.9
Site 31	Kerbside	Diffusion Tube	92	92	23.1	22.2	20.3	23.6	21.3
Site 32	Kerbside	Diffusion Tube	83	83	22.6	19.9	24.6	20.2	18.2
Site 33	Kerbside	Diffusion Tube	92	92	27.1	23.1	25.1	26.9	23.8
Site 34	Kerbside	Diffusion Tube	100	100	23.0	23.5	24.7	25.3	21.4
Site 35	Kerbside	Diffusion Tube	100	100	19.0	17.5	18.3	21.0	18.4
Site 36	Kerbside	Diffusion Tube	100	100	23.6	22.0	21.5	23.2	20.8
Site 37	Kerbside	Diffusion Tube	100	100	27.4	25.3	26.2	26.3	21.3
Site 38	Urban	Diffusion Tube	100	100	18.7	16.6	16.8	19.1	12.9
Site 39	Kerbside	Diffusion Tube	100	100	19.4	16.7	15.9	17.2	16.2
Site 40	Kerbside	Diffusion Tube	92	92	16.9	14.9	15.7	16.8	14.9

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
Site 41	Kerbside	Diffusion Tube	83	83	11.8	10.6	9.9	12.0	8.9
Site 42	Kerbside	Diffusion Tube	33	33	13.4	11.9	10.6	12.3	9.9*
Site 43	Urban Background	Diffusion Tube	67	67	9.9	8.6	9.3	9.2	9.6*
Site 44	Urban Background	Diffusion Tube	67	67	28.1	24.7	25.6	25.5	27.9*
Site 45	Kerbside	Diffusion Tube	92	92	18.3	17.5	16.1	17.8	11.4
Site 46	Urban Background	Diffusion Tube	100	100	15.1	11.6	12.5	12.7	17.5
Site 48	Kerbside	Diffusion Tube	100	100	22.0	18.1	23.0	36.6	18.4
Site 49	Kerbside	Diffusion Tube	100	100	19.4	19.3	17.8	18.8	16.2
Site 50	Kerbside	Diffusion Tube	83	83	17.6	14.3	15.1	16.9	15.3
Site 52	Kerbside	Diffusion Tube	100	100	18.1	17.2	15.1	16.6	9.3
Site 53	Kerbside	Diffusion Tube	100	100	23.6	24.2	25.3	26.7	23.4
Site 54	Kerbside	Diffusion Tube	100	100	-	-	10.5	13.2	10.9
Site 55	Kerbside	Diffusion Tube	83	83	-	-	10.5	13.0	8.2
Site 56	Kerbside	Diffusion Tube	50	50	-	-	12.7	13.2	10.3*
Site 57	Kerbside	Diffusion Tube	100	100	**40.0**	34.8	35.9	37.8	37.4
S1	-	Diffusion Tube	33	33	-	-	-	-	34.8*
S2	-	Diffusion Tube	25	25	-	-	-	-	29.1*
GC									
GCC 002	Kerbside	Diffusion Tube	100	100	33.9	34.3	31.1	31.4	31.4
GCC 003	Urban background	Diffusion Tube	58	58	11.6	12.6	11.3	10.5	9.9*
GCC 005	Kerbside	Diffusion Tube	92	92	32.0	33.0	29.6	27.6	27.1
GCC 008	Kerbside	Diffusion Tube	100	100	26.6	25.6	23.4	22.8	22.5
GCC 011	Kerbside	Diffusion Tube	83	83	24.4	23.7	21.8	23.8	21.5
GCC 012	Kerbside	Diffusion Tube	100	100	28.1	27.5	25.3	26.9	26.1
GCC 013	Kerbside	Diffusion Tube	100	100	20.7	21.0	19.6	21.9	20.3
GCC 015	Roadside	Diffusion Tube	100	100	24.2	23.9	21.4	24.8	21.7
GCC 037	Kerbside	Diffusion Tube	33	33	31.1	31.5	27.1	25.5	32.6*
GCC 038	Roadside	Diffusion Tube	83	83	28.3	29.9	27.5	28.6	27.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
GCC 039	Roadside	Diffusion Tube	75	75	26.5	28.0	27.7	28.4	27.1
GCC 040	Kerbside	Diffusion Tube	100	100	29.1	19.6	18.9	19.1	18.0
G1	Roadside	Diffusion Tube	92	92	-	-	-	-	**53.1**
G2	Roadside	Diffusion Tube	92	92	-	-	-	-	33.9
G3	Roadside	Diffusion Tube	100	100	-	-	-	-	21.7
G4	Roadside	Diffusion Tube	100	100	-	-	-	-	20.4
G5	Roadside	Diffusion Tube	100	100	-	-	-	-	8.7
G6	Kerbside	Diffusion Tube	92	92	-	-	-	-	11.6
G7	Kerbside	Diffusion Tube	83	83	-	-	-	-	33.4
G8	Kerbside	Diffusion Tube	92	92	-	-	-	-	23.1
G9	Kerbside	Diffusion Tube	100	100	-	-	-	-	10.9
G10	Kerbside	Diffusion Tube	100	100	-	-	-	-	27.8
WCBC									
AURN	Roadside	Automatic	94	94	21.8	21.0	19.1	18.8	16.5
WBC-001	Roadside	Diffusion Tube	92	92	19.8	17.9	18.4	27.8	27.3
WBC-010	Suburban	Diffusion Tube	100	100	13.6	13.1	12.2	13.2	12.5
WBC-015	Roadside	Diffusion Tube	100	100	18.7	15.8	15.7	16.4	14.7
WBC-018	Roadside	Diffusion Tube	100	100	18.5	18.8	17.0	16.9	18.3
WBC-019	Roadside	Diffusion Tube	100	100	22.3	21.6	20.1	21.4	18.0
WBC-020	Intermediate	Diffusion Tube	100	100	26.3	25.6	24.2	25.5	23.5
WBC-021	Roadside	Diffusion Tube	100	100	19.6	22.3	18.8	19.9	17.8
WBC-022	Intermediate	Diffusion Tube	100	100	16.8	17.3	16.4	16.3	15.9
WBC-030	Roadside	Diffusion Tube	100	100	36.5	39.9	36.9	35.8	33.1
WBC-031	Roadside	Diffusion Tube	100	100	33.7	33.9	37.5	35.9	31.8
WBC-032	Roadside	Diffusion Tube	100	100	28.1	27.6	25.7	29.1	26.7
WBC-033	Roadside	Diffusion Tube	100	100	20.9	20.2	17.8	19.2	17.5
WBC-034	Roadside	Diffusion Tube	100	100	16.5	15.2	14.5	14.6	14.2
WBC-036	Roadside	Diffusion Tube	100	100	22.5	21.6	19.6	20.0	19.5
WBC-037	Roadside	Diffusion Tube	92	92	23.0	21.7	24.3	22.3	20.8
WBC-039	Roadside	Diffusion Tube	100	100	-	-	-	19.7	18.7

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2013	2014	2015	2016	2017
WBC-040	Roadside	Diffusion Tube	100	100	14.6	13.3	11.4	11.9	10.9
WBC-041	Roadside	Diffusion Tube	100	100	15.5	16.5	14.3	15.2	15.0
WBC-042	Roadside	Diffusion Tube	100	100	25.9	23.0	24.6	25.6	24.4
WBC-043	Roadside	Diffusion Tube	100	100	-	25.6	19.1	17.9	18.4
WBC-044	Roadside	Diffusion Tube	75	75	-	-	22.7	23.6	21.9
WBC-045	Roadside	Diffusion Tube	100	100	-	-	18.8	19.8	17.6
WBC-046	Roadside	Diffusion Tube	92	92	-	-	22.4	24.1	23.0
WBC-047	Roadside	Diffusion Tube	100	100	-	-	-	21.2	24.6
AURN	Roadside	Diffusion Tube	100	100	22.6	17.2	15.6	16.7	15.1

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

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

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

(3) Means for diffusion tubes have been corrected for bias.

*Means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 as valid data capture for the full calendar year was less than 75%. See Appendix C for details.

Figure 2.20 – Trends in Annual Mean NO_2 Concentrations: IACC

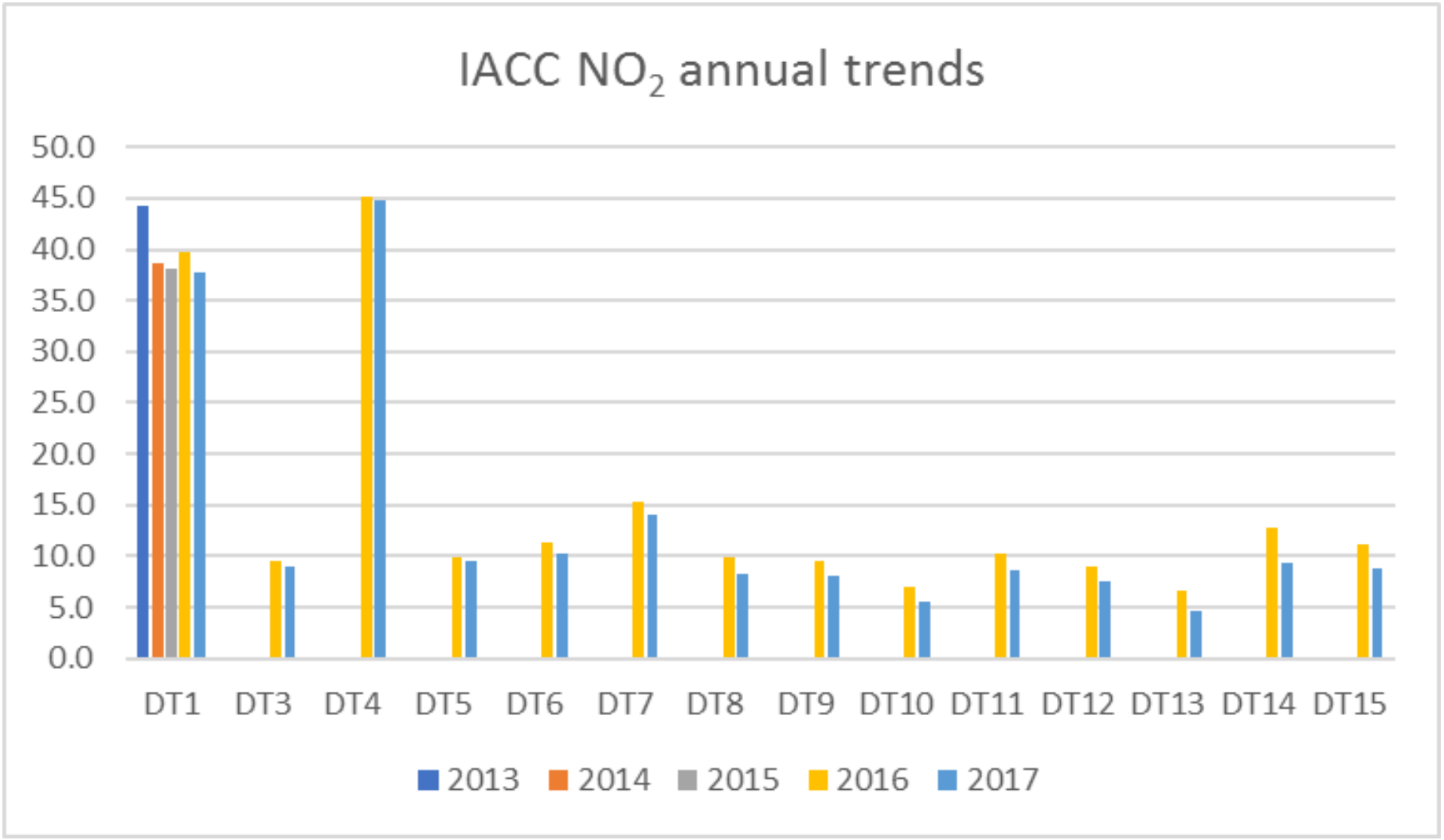


Figure 2.21 – Trends in Annual Mean NO_2 Concentrations: CCBC

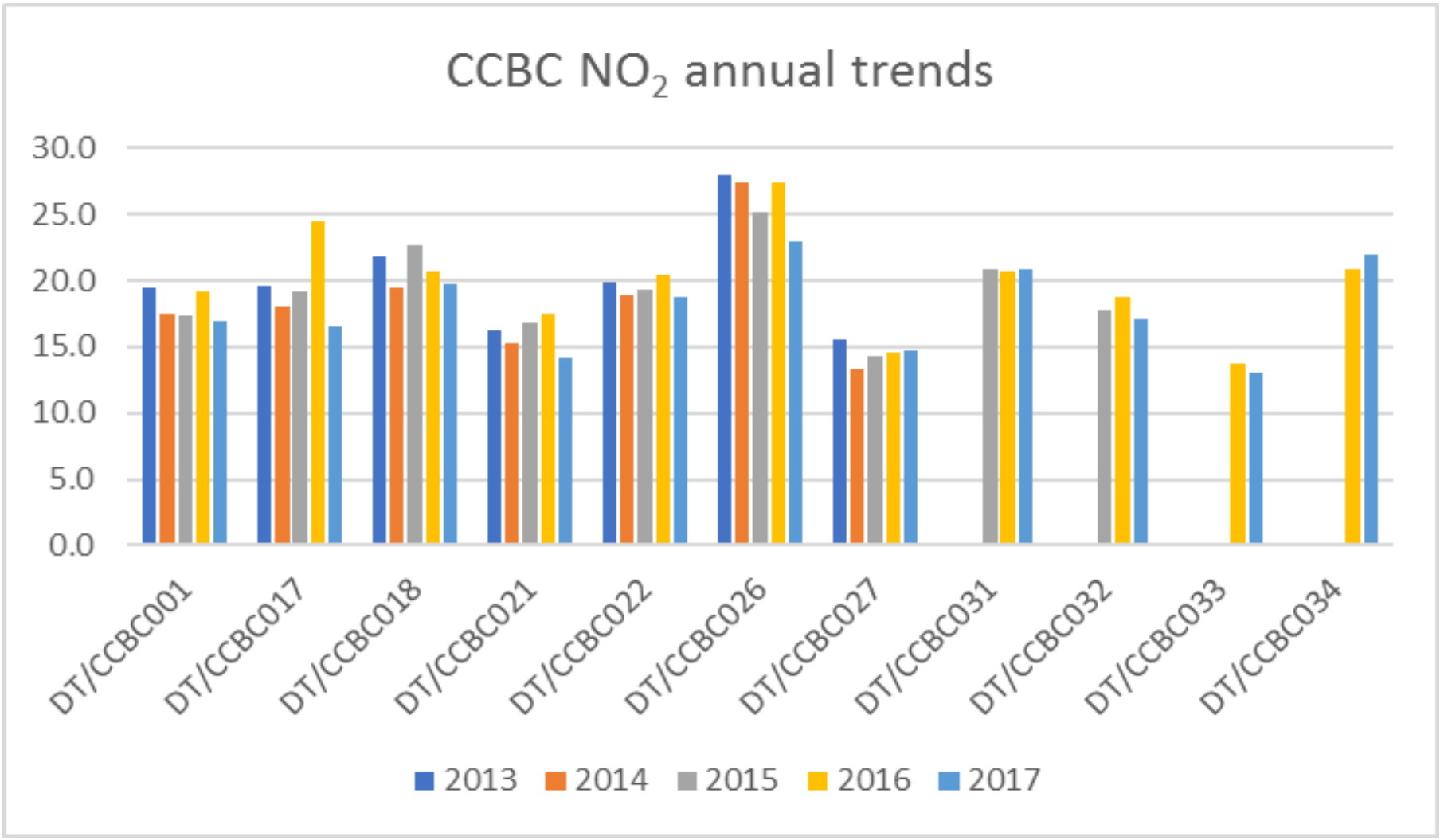


Figure 2.22 – Trends in Annual Mean NO_2 Concentrations: DCC

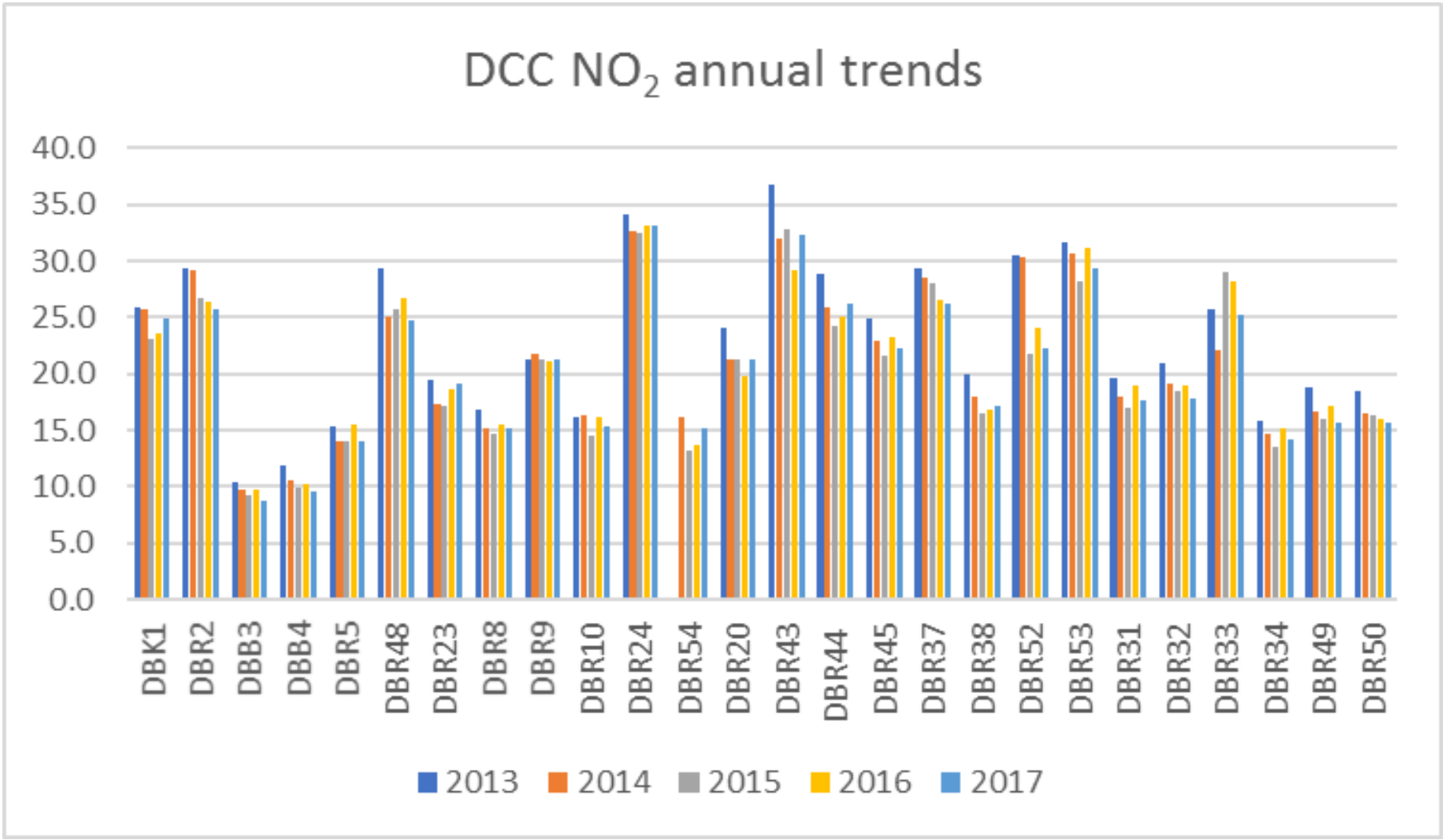


Figure 2.23 – Trends in Annual Mean NO_2 Concentrations: FCC

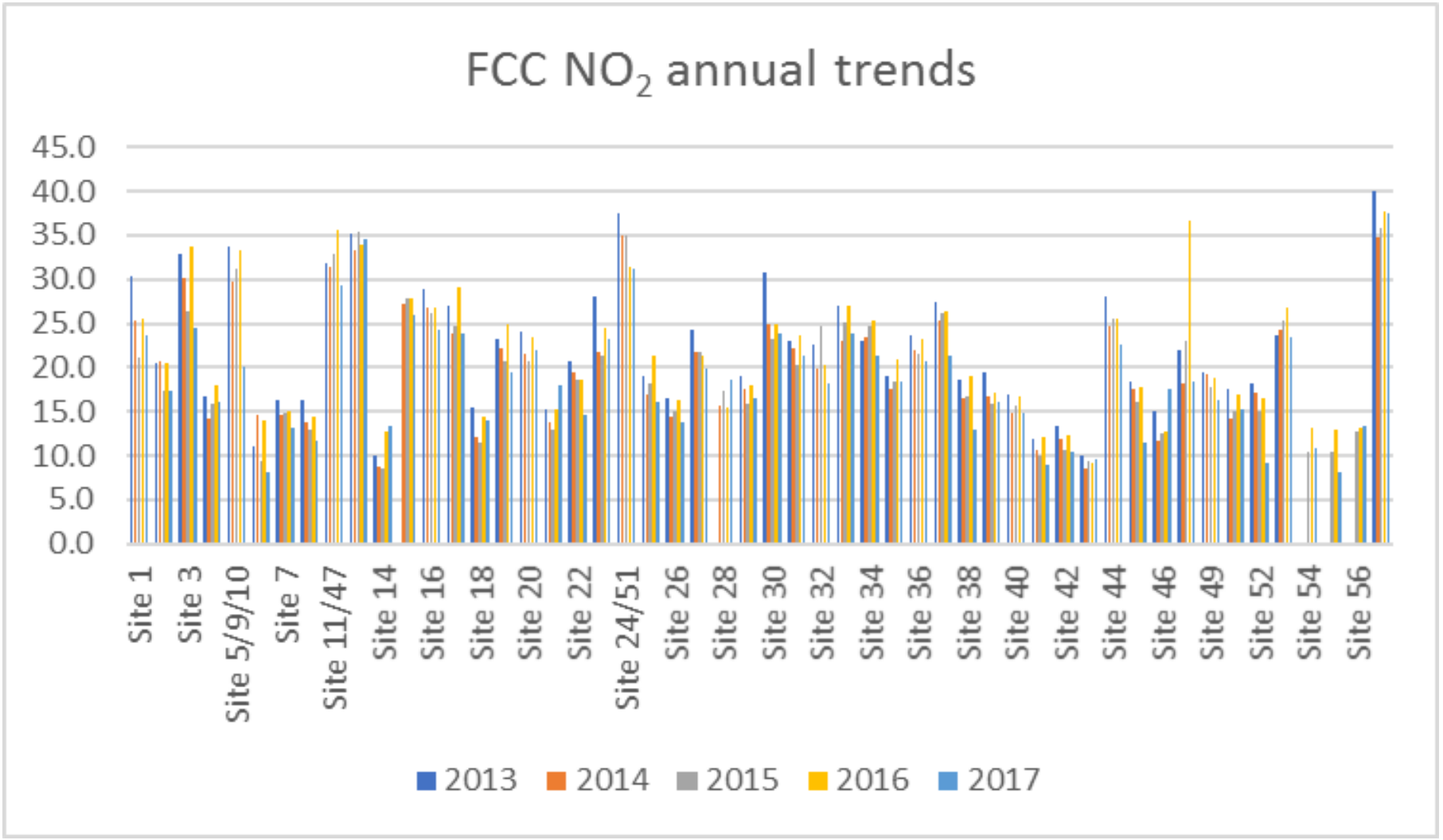


Figure 2.24 – Trends in Annual Mean NO_2 Concentrations: GCC

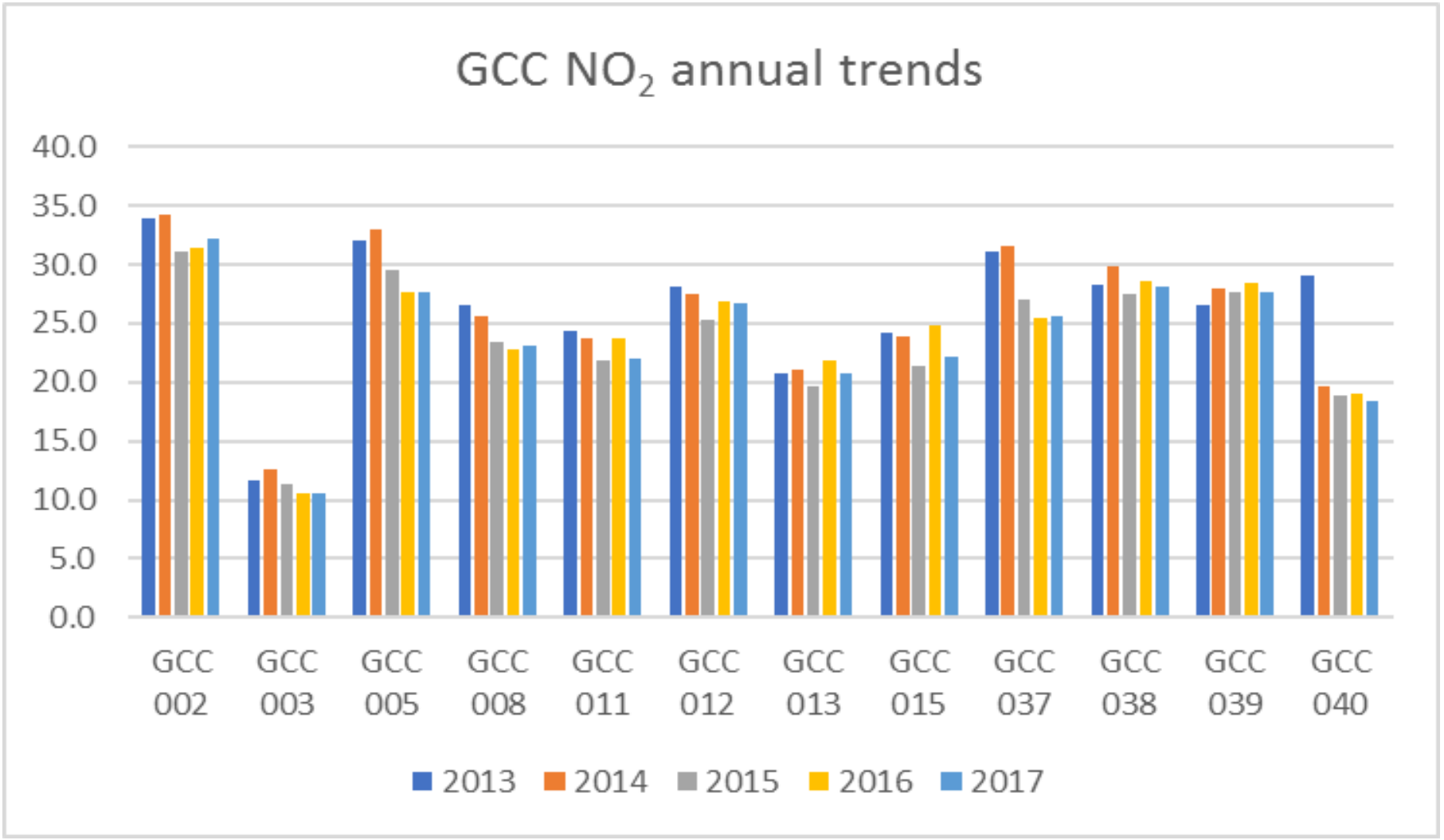


Figure 2.25 – Trends in Annual Mean NO_2 Concentrations: WCBC

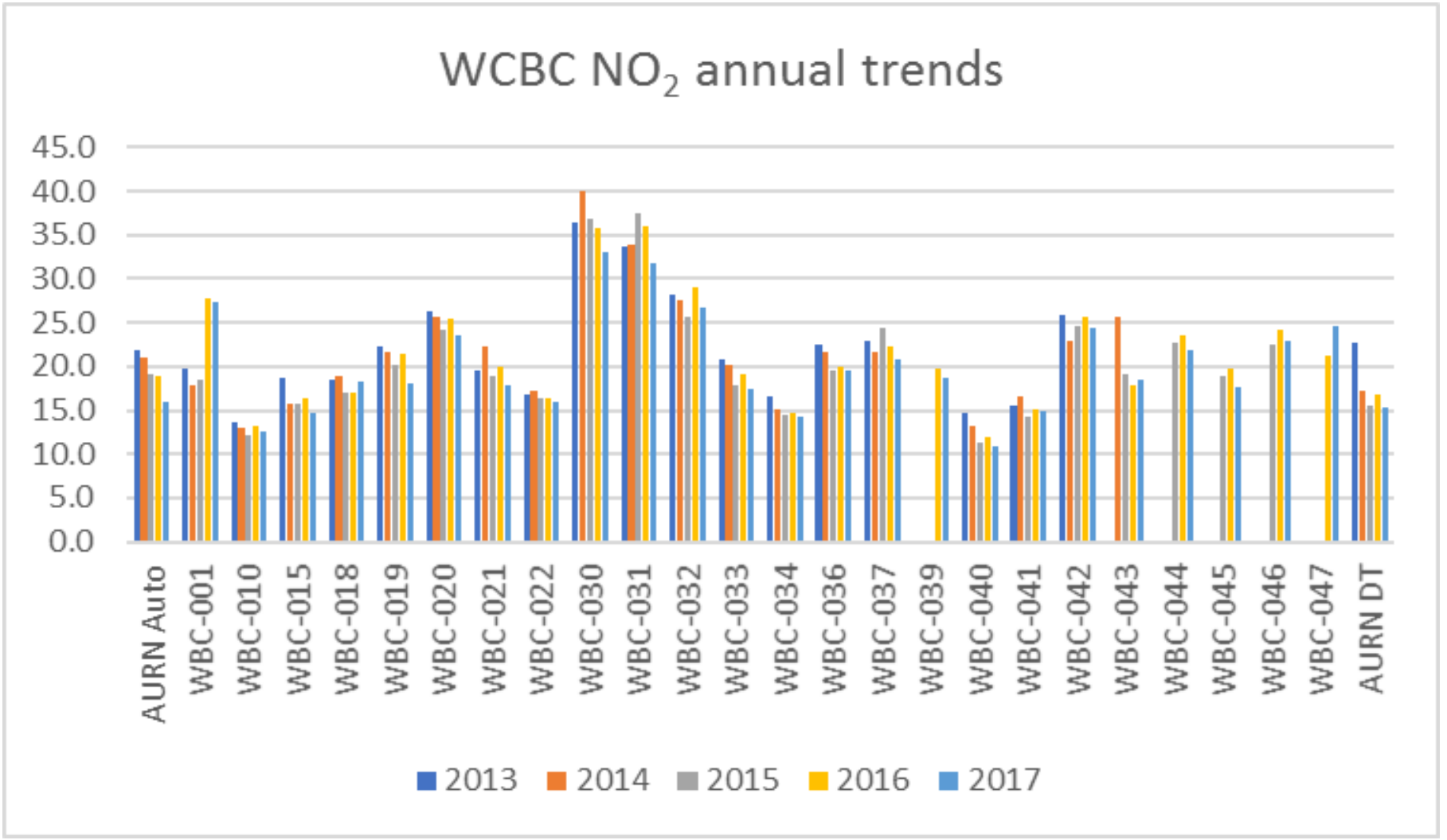


Table 2.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2013	2014	2015	2016	2017
AURN	Roadside	Continuous	94	94	0	0	0	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

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

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

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

2.2.2 Particulate Matter (PM_{10})

In 2017 PM_{10} was monitored with three Osiris light-scattering monitoring stations in IACC. IACC added an additional site in November 2017 to support a planning application. The annual mean recorded at all stations were well below the annual mean AQO of 40 µg/m^3. The highest concentration recorded was 13.3 µg/m^3 at CM3.

There was also no exceedance of the 24-hour mean AQO of 50 µg/m^3 not to be exceeded more than 35 times per year.

Annual mean PM_{10} concentration are included in Table 2.6 and comparison with 24-hour mean AQO are included in Table 2.7. Figure 2.25 represents the annual trends in annual mean PM_{10}.

Table 2.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
				2013	2014	2015	2016	2017
IACC								
CM1	Rural	91.2	91	19.2	13.8	17.2	18.8	13.2
CM2	Rural	88	88	15.2	17.6	13.1	8.1	11.0
CM3	Rural	100	100	-	-	34.8	14.9	13.3
CM4	Rural	100	13	-	-	-	-	8.1*
WCBC								
AURN	Roadside	96	96	17.1	14.1	13.3	12.2	11.5

Notes:

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

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

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

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

*Site was opened in November 2017.

Figure 2.26 – Trends in Annual Mean PM_{10} Concentrations

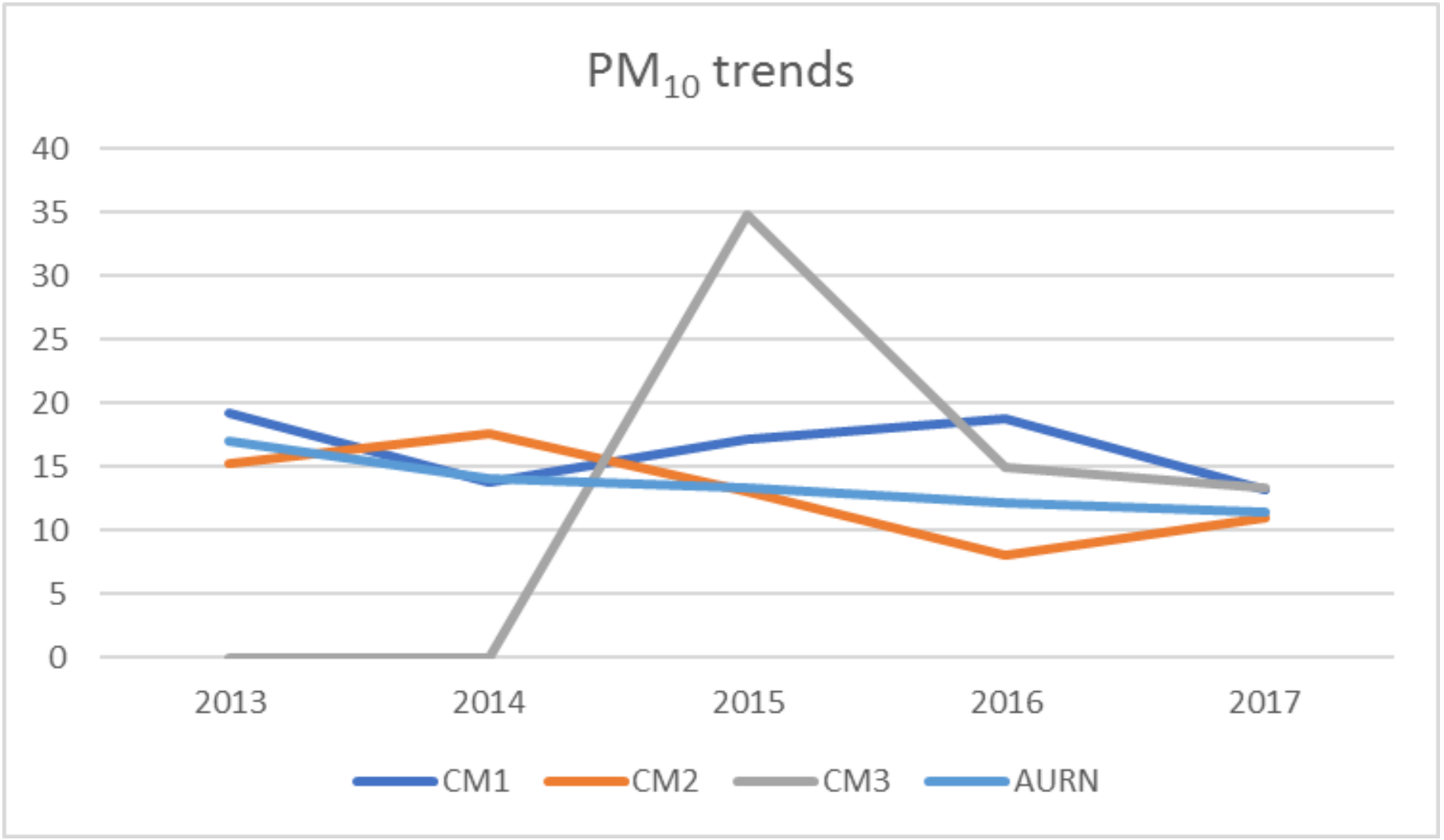


Table 2.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2013	2014	2015	2016	2017
IACC								
CM1	Rural	91.2	91	5	2	2	4	0
CM2	Rural	88	88	0	6	3	0	0
CM3	Rural	100	100	-	-	3	4	0
CM4	Rural	100	13	-	-	-	-	0 (15.3 µg/m^3)
WCBC								
AURN	Roadside	96	96	12	8	3	0	4

Notes:

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

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

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

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

2.2.3 Particulate Matter ($PM_{2.5}$)

In 2017 $PM_{2.5}$ was monitored with three Osiris stations in IACC and IACC added an additional site in November 2017 to support a planning application. The annual mean recorded at all stations were below the annual mean standard of 25 µg/m^3. The highest concentration recorded was 8.6 µg/m^3 at CM1. Table 2.7 includes the annual mean $PM_{2.5}$ concentrations and figure 2.26 represent the trend in annual mean concentrations.

Table 2.7 – $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	$PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$) [3]				
				2013	2014	2015	2016	2017
IACC								
CM1	Rural	91	91	-	-	-	6.1	8.6
CM2	Rural	88	88	-	-	-	4.0	6.4
CM3	Rural	100	100	-	-	-	7.4	8.5
CM4	Rural	100	13	-	-	-	5.4	6.7*
WCBC								
AURN	Roadside	94	94	10.5	9.3	8	7.8	6.6

Notes:

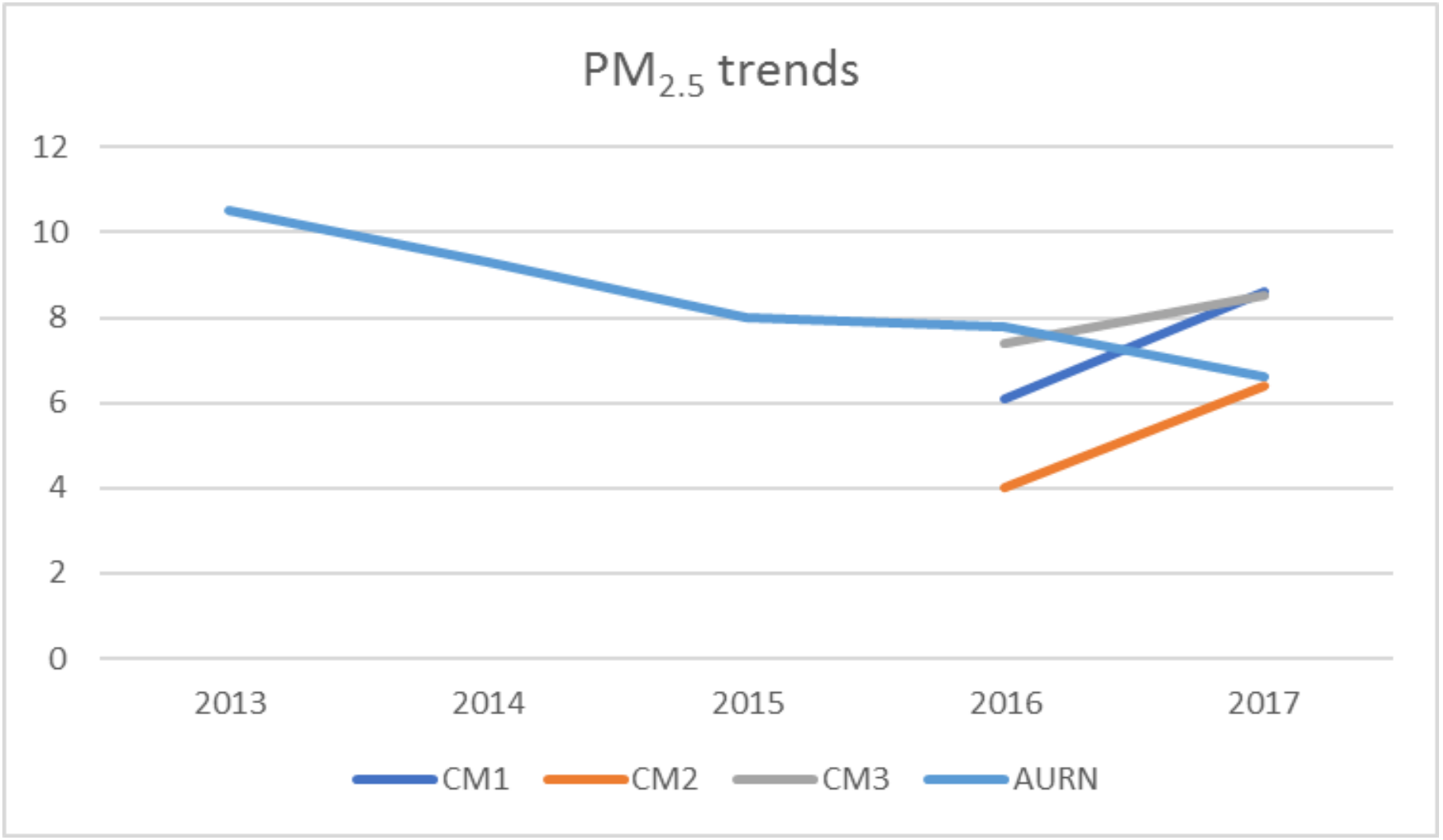
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

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

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

*Site was opened in November 2017

Figure 2.27 – Trends in Annual Mean $PM_{2,5}$ Concentrations



2.2.4 Other Pollutants Monitored

Sulphur Dioxide (SO_2)

SO_2 monitoring is only carried out in WCBC, at the AURN Victoria Road automatic monitoring station. Table 2.8 include the comparison with the 15-min, 1-hour and 24-hour means AQO. In 2017 there was no exceedance of any AQO.

Table 2.8 – SO_2 Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	Number of		
				15-minute Means > 266 µg/m^3	1-hour Means > 350 µg/m^3	24-hour Means > 125 µg/m^3
WCBC						
AURN	Roadside	77	77	0	0	0

Benzene

Benzene monitoring is only carried out in WCBC who maintain one diffusion tube for monitoring benzene near to an acid tar lagoon. It has been placed in this location to monitor for benzene levels that may be released from the lagoon. Table 2.9 includes the annual mean concentration from the benzene monitoring site. The 2017 concentration was well below the annual mean AQO of 5µg/m^3.

Table 2.9 – Benzene Monitoring Results

Site ID	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	Benzene annual Mean Concentration (µg/m^3)				
			2013	2014	2015	2016	2017
WCBC							
AURN	92	92	0.7	0.9	0.8	0.7	0.9

2.3 Summary of Compliance with AQS Objectives as of 2017

The North Wales Combined Authority has examined the results from monitoring in IACC, DCC, FCC, CBC, GC, WCBC. Concentrations are all below the Air Quality Objectives, therefore no further action is required.

3. New Local Developments

3.1 Road Traffic Sources (& other transport)

In **CCBC**, a planning decision was issued for the demolition of former Daily Post and Arriva buildings and erection of supermarket (A1 Use Class) and the formation of a new access off new road (A546) and associated highway works and proposed roundabout (Application No. 0/44106). An Air Quality Assessment was carried out by Wardell Armstrong which concluded that for both NO_2 and PM_{10} existing receptor locations are predicted to experience a negligible impact and “not significant” effect, as a result of the proposed development.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

IACC received Preliminary Air Quality Appraisal Reports for the Anglesey Gypsy and Traveller Project including the Penhesgyn Permanent Travel site and the Temporary Stopping Place in Star. Regarding Penhesgyn, the assessment recommended to provide appropriate dust impact mitigation measures at the CA/Composting site. Subsequent to this, the Waste Management Section installed their own Osiris PM monitor at the site offices downwind of the CA/Composting site and in a similar wind direction to the proposed traveller site, which is some distance further. Therefore, the results obtained at this location will be very much worse case. The location at Star site occupies an area of land sandwiched between the A5 and A55, north of a mainline railway and has the potential to introduce a new receptor. The Air Quality Assessment shows there is unlikely to be an exceedance of the AQO.

In **CCBC** a planning decision was issued for a proposed Wood Drying Facility and Associated CHP Plant at Tir Llwyd Industrial Estate, Kinmel Bay (Application No. 0/44590). An Air Quality Assessment was carried out for AXIS / Newbridge Energy by Smith Grant LLP. The assessment concluded that significant adverse impacts on local relevant human health receptors or ecological receptors are not predicted and the site is considered suitable for the proposed use.

3.3 Planning Applications

IACC received a full application for the erection of a hotel, associated infrastructure and earthworks at Parc Cybi, Caergybi/Holyhead. The development introduces a new receptor close to the A55, however, no exceedance of the AQOs was considered likely.

3.4 Other Sources

A week-long wildfire was observed in July 2018 in Llantysilio Mountain and the Horseshoe Pass in Llangollen. Residents living as far as 30 miles away have reported a strong smell of smoke.

There was no incident recorded in 2017.

The North Wales Combined Authority confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

The North Wales Combined Authority confirms that all the following have been considered:

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

4. Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

There are no AQMAs declared in the North Wales Combined Authority. Therefore, there are currently no active air quality action plans. 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

Air quality is considered in the wider context in several local policies including:

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.

The Conwy Local Development Plan 2007-2022 includes strategic policies (NTE/1) to ensure natural resources including air quality are protected (available at http://spp.conwy.gov.uk/upload/public/attachments/629/Conwy_Adopted_LDP_2007__2022_English_.pdf).

The DCC Local Development Plan 2006-2021 was adopted in 2013 and includes a commitment to avoid reaching critical air quality levels. It acknowledges that assessments of the environmental impact of transport proposals will need to also include air pollution along with noise and ecological impacts.

FCC is currently preparing their Local Development Plan. However, in the interim their Unitary Development Plan for the 15-year period, from 2000 to 2015 remains adopted. The plan identifies sites where new housing, employment and other development can take place, as well as setting out policies to protect important countryside, habitats, resources and heritage. Specific to air quality, Policy STR1 addresses the need to minimise pollution to air, water and land when proposing new developments and STR7 highlights the need to safeguard the natural environment.

WCBC is currently preparing the Local Development Plan 2 2013 to 2028 which will replace the adopted Unitary Development Plan 1996 to 2011. The plan is a long-term land use and development strategy focused on achieving sustainable development. It will set out policies that will be used to decide planning applications and safeguard

areas of land requiring protection including strategies to ensure the environment is protected from adverse effects of pollution.

4.3 Local Transport Plans and Strategies

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);
- 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.
- 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 Local Authorities Well-being Objectives

IACC and **GC** have published Wellbeing Plans (available at https://www.llesiantgwyneddamon.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.

4.5 Climate Change Strategies

CCBC has progressively reduced carbon emissions from its vehicle fleet and as a result of energy consumed within its buildings. This reduction is summarised with the Conwy CBC 2017 Environmental Report (available at http://www.conwy.gov.uk/en/Council/Strategies-Plans-and-Policies/Corporate-Plan/assets/documents/Environmental-Report-2016-17.pdf).

5. Conclusions and Proposed Actions

5.1 Conclusions from New Monitoring Data

Two exceedances of the NO_2 annual mean AQO were recorded in 2017:

- Site DT4 in IACC with 44.8 µg/m^3. However, distance correction predicts that the annual mean was 20.7 µg/m^3 at the nearest relevant exposure (See Appendix C).
- Site G1 in GC with 53.1 µg/m^3. The monitoring site is located more than 50m (78m) away from the nearest relevant exposure so distance correction was not possible.

PM_{10}, $PM_{2.5}$, SO_2 and benzene concentrations were below the AQO at every monitoring sites.

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 the North Wales Combined Authority area.

5.3 Other Conclusions

No detailed assessments are required as a result of exceedances of pollutant concentrations and no AQMA need to be declared. Consequently, there are no AQAP in the North Wales Combined Authority. 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 2019 Updating and Screening Assessment;
- Maintain the air quality monitoring programmes in each local authority; and
- Ensure new monitoring sites are added as required.

References

- Department for Environment, Food and Rural Affairs (Defra) (2016) Local Air Quality Management Technical Guidance LAQM.TG(16).
- Department for Environment, Food and Rural Affairs (Defra) (2016) Local Air Quality Management Policy Guidance LAQM.PG(16).
- Welsh Government (2017) Local air quality Management in Wales
- Isle of Anglesey County Council (2016) Annual Status Report
- Conwy County Borough Council (2016) Annual Status Report
- Denbighshire County Council (2016) Annual Status Report
- Gwynedd Council (2016) Annual Status Report
- Flintshire County Council (2016) Annual Status Report
- Wrexham County Borough Council (2016) Annual Status Report
- National Diffusion Tube Bias Adjustment Spreadsheet, Version Number 06/18. July 2017. https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html
- North Wales Combined Authority Annual Progress Report 2017. http://www.conwy.gov.uk/en/Resident/Environmental-problems/assets-Air-Quality/documents/North-Wales-Combined-Progress-Report-2017English.pdf
- 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
- Flintshire County Council Unitary Development Plan 2000-2015. http://www.cartogold.co.uk/flintshire/
- 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

- 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: Monthly Diffusion Tube Monitoring Results

Table A.1 – Full Monthly Diffusion Tube Results for 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
IACC															
DT1	**54.2**		**63.1**	**57.8**	**47.4**	**42.3**	**45.9**	**46.4**	**46.5**	**46.7**	**44.7**	**45.4**	**49.1**	37.8	17.8
DT3	11.9	12.9	10.8	9.2	-	6.6	7.4	15.0	16.7	14.6	-	11.8	11.7	9.0	-
DT16	-	-	-	-	-	-	-	5.5	5.9	4.3	5.6	3.2	4.9	4.0	-
DT17	-	-	-	-	-	-	-	-	3.5	3.5	3.9	3.5	3.6	2.8	-
DT4	**69.4**	**57.4**	**64.0**	**67.1**	**51.0**	**44.6**	**50.9**	**57.7**	**59.4**	**56.6**	**70.4**	**49.3**	**58.2**	**44.8**	20.7
DT5	15.0	16.2	13.5	14.7	9.8	8.9	9.8	9.2	11.7	12.5	15.0	12.8	12.4	9.6	-
DT6	10.5	14.3	16.4	14.8	11.0	11.2	11.4	15.9	14.4	13.8	13.9	10.7	13.2	10.2	-
DT7	17.7	17.2	19.1	18.7	18.8	14.8	17.8	18.5	21.4	19.6	20.5	14.7	18.2	14.0	-
DT8	15.7	13.1	12.3	11.2	11.2	8.4	9.3	8.6	9.9	9.4	11.4	8.4	10.7	8.3	-
DT9	10.7		12.2	14.5	11.0	10.5	11.7	10.0	10.2	10.1	8.6	4.8	10.4	8.0	-
DT10	8.0	9.9	10.1	6.8	7.9	5.8	6.9	5.4	7.2	7.0	4.8	5.2	7.1	5.5	-
DT11	11.5	16.6	10.2	11.2	8.9	10.9	11.6	9.2	12.5	10.4	10.6	11.0	11.2	8.6	-
DT12	13.4	11.9	11.2	10.5	11.1	7.9	9.5	6.9	9.7	9.0	9.5	7.1	9.8	7.6	-
DT13	9.2	8.2	9.3	5.5	6.6	5.1	5.3	3.7	5.0	6.7	3.9	4.4	6.1	4.7	-
DT14	12.2	16.3	15.9	14.3	14.0	10.1	10.1	9.0	10.9	10.9	12.2	8.8	12.1	9.3	-
DT15	15.6	12.1	12.8	14.7	9.8	8.5	9.5	8.7	13.5	11.9	11.3	9.7	11.5	8.9	-
A1	-	-	15.8	21.6	16.3	9.9	15.9	14.1	15.8	14.2	20.6	16.2	16.0	13.9	-
A2	-	-	7.0	-	-	4.9	-	6.3	-	6.4	5.8	7.3	6.3	5.3	-
A3	-	-	15.0	14.8	15.7	9.7	11.9	10.7	10.0	12.4	16.1	12.5	12.9	11.2	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
A4	-	-	9.2	4.5	4.9	3.9	3.9	4.3	2.4	4.3	4.5	4.4	4.6	4.0	-
A5	-	-	5.0	7.9	7.8	7.0	5.4	7.6	6.3	8.6	9.3	9.1	7.4	6.4	-
A6	-	-	19.9	19.4	16.2	13.1	14.1	13.1	14.4	16.3	21.7	20.7	16.9	14.7	-
A7	-	-	14.7	14.5	-	9.3	10.6	11.3	12.0	-	19.8	16.6	13.6	12.0	-
A8	-	-	8.4	7.2	-	7.1	7.5	7.4	8.1	-	12.1	-	8.3	7.6	-
A9	-	-	-	-	6.5	-	4.5	5.2	3.8	6.0	6.3	6.1	5.5	5.0	-
A10	-	-	6.8	6.6	6.6	5.9	6.1	6.4	6.4	7.9	10.9	7.8	7.1	6.2	-
A11	-	-	13.7	19.3	18.6	-	12.5	13.2	10.3	4.7	20.2	16.1	14.3	12.4	-
A12	-	-	15.9	18.2	15.5	8.2	9.9	10.6	12.5	12.3	20.6	17.6	14.1	12.3	-
A13	-	-	20.3	16.9	13.8	14.7	13.8	16.8	15.1	19.4	19.8	18.4	16.9	14.7	-
A14	-	-	15.1	17.4	13.9	8.1	9.9	10.5	11.0	11.7	19.9	16.6	13.4	11.7	-
A15	-	-	**47.0**	**47.9**	**47.0**	37.7	39.8	**40.6**	**40.0**	**42.0**	**43.4**	**41.5**	**42.7**	37.1	17.6
A16	-	-	12.5	14.7	11.0	-	7.9	8.6	8.5	10.6	15.0	13.1	11.3	9.8	-
A17	-	-	16.4	17.5	14.9	10.7	12.6	-	13.6	14.0	19.8	16.9	15.2	13.2	-
A18	-	-	20.7	20.6	19.7	11.7	14.6	-	15.2	-	22.2	19.2	18.0	14.8	-
A19	-	-	36.7	**49.4**	**42.6**	36.4	**43.8**	**44.6**	**59.1**	**41.0**	**44.8**	39.4	**43.8**	38.1	18.9
CBCC															
DT/CCBC001	34.1	24.3	26.4	23.1	24.9	18.5	16.8	15.5	20.1	17.4	20.5	21.5	21.9	16.9	
DT/CCBC017	34.2	21.9	29.9	25.2	23.1	15.5	14.5	16.8	18.7	15.4	20.5	-	21.4	16.5	
DT/CCBC018	33.5	27.8	30.7	28.7	21.8	21.9	18.4	24.5	25.1	25.0	26.0	24.5	25.7	19.8	
DT/CCBC021	8.9	20.1	26.2	0.9	25.7	19.6	20.7	19.2	22.8	18.4	24.4	14.5	18.5	14.2	
DT/CCBC022	22.0	26.6	29.1	31.7	21.7	20.5	18.0	22.4	22.7	24.6	28.5	24.2	24.3	18.7	
DT/CCBC026	**46.6**	37.2	40.9	28.6	36.1	22.6	22.6	24.1	28.0	26.4	27.8	16.9	29.8	23.0	
DT/CCBC027	27.3	24.8	27.9	18.6	15.2	11.5	13.5	14.1	17.8	19.6	18.2	20.1	19.1	14.7	
DT/CCBC031	28.7	30.2	34.5	31.9	24.6	22.3	21.1	22.3	24.1	29.1	28.1	28.7	27.1	20.9	

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT/CCBC032	30.5	26.7	28.0	25.0	23.1	17.5	17.2	17.3	17.2	17.4	22.8	24.1	22.2	17.1	-
DT/CCBC033	26.4	22.6	23.6	20.3	8.3	12.8	12.7	11.6	15.3	15.5	18.0	15.1	16.9	13.0	-
DT/CCBC034	37.7	31.6	34.3	29.5	24.7	24.0	23.1	26.2	25.3	30.1	31.9	23.8	28.5	22.0	-
DT/CCBC035	29.2	21.5	24.8	20.7	27.3	21.0	15.9	9.9	19.2	18.8	17.7	15.7	20.1	15.5	-
DT/CCBC036	20.1	19.7	21.4	13.1	15.1	9.6	8.1	9.1	14.0	12.0	12.7	13.7	14.1	10.8	-
DT/CCBC037	9.4	21.6	24.1	17.4	16.2	13.8	12.4	13.6	13.4	19.4	-	19.8	16.5	12.7	-
DT/CCBC038	28.0	23.5	19.3	25.0	21.0	16.0	13.9	15.2	17.3	18.6	23.2	17.8	19.9	15.3	-
DCC															
DBK1	**44.5**	39.1	**41.9**	28.9	37.0	29.1	26.7	27.1	27.2	28.8	27.4	29.6	32.3	24.9	-
DBR2	**47.6**	**42.0**	**45.8**	-	34.0	29.4	26.3	26.5	27.4	27.9	28.3	31.8	33.4	25.7	-
DBB3	15.4	17.6	15.7	10.3	8.6	7.4	8.2	6.5	8.1	10.4	12.6	14.9	11.3	8.7	-
DBB4	24.1	15.6	16.2	-	8.4	8.2	8.3	7.1	8.5	10.1	15.8	13.5	12.3	9.5	-
DBR5	26.1	19.6	18.9	-	17.1	14.0	17.1	15.2	18.4	14.0	23.8	16.6	18.3	14.1	-
DBR48	**44.8**	38.0	36.4	36.3	32.6	24.7	26.4	22.6	29.5	27.1	38.9	29.1	32.2	24.8	-
DBR23	37.0	30.1	28.4	27.3	17.5	17.7	18.2	16.0	22.5	20.5	34.6	28.2	24.8	19.1	-
DBR8	28.3	22.1	24.0	20.9	16.1	13.6	15.5	14.2	17.1	19.5	26.6	18.6	19.7	15.2	-
DBR9	**44.7**	36.4	37.8	-	23.6	20.8	17.6	20.5	22.8	24.9	28.7	27.1	27.7	21.3	-
DBR10	30.1	26.3	24.9	-	16.8	14.7	16.2	15.1	15.1	16.9	21.1	21.4	19.9	15.3	-
DBR24	**51.4**	**43.1**	**44.1**	-	38.8	38.7	41.8	33.7	38.7	35.1	**60.0**	**46.8**	**42.9**	33.1	-
DBR54	26.9	23.1	16.1	16.9	13.8	-	-	-	-	-	21.1	19.8	19.7	12.3	-
DBR20	35.7	35.4	27.9	-	24.8	21.6	22.1	21.5	25.1	26.2	33.9	29.5	27.6	21.3	-
DBR43	**48.6**	**45.2**	**48.4**	**45.2**	33.2	27.6	38.6	31.6	**50.8**	39.0	**51.8**	**44.4**	**42.0**	32.4	-
DBR44	**45.5**	38.7	39.6	-	27.8	27.5	31.1	27.3	28.2	31.8	**41.7**	36.1	34.1	26.3	-
DBR45	**42.0**	26.5	34.4	25.2	27.3	24.5	27.7	24.0	25.4	27.2	31.6	31.5	28.9	22.3	-
DBR37	**40.1**	35.5	35.0	**40.6**	32.2	27.0	33.3	28.2	33.2	29.7	**41.0**	33.0	34.1	26.2	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DBR38	28.8	29.8	25.6	19.9	19.1	19.3	16.4	17.9	21.0	20.3	24.8	24.6	22.3	17.2	-
DBR52	**43.0**	34.4	33.8	-	24.4	19.0	24.7	21.2	24.5	25.8	34.1	32.0	28.8	22.2	-
DBR53	**47.3**	**42.4**	**41.9**	-	32.4	27.6	34.1	30.9	33.9	-	**46.6**	**44.0**	38.1	29.3	-
DBR31	33.3	23.9	27.4	-	21.7	17.4	18.1	17.5	19.6	19.3	26.1	27.2	22.9	17.6	-
DBR32	31.7	24.7	24.7	25.5	19.1	16.7	19.9	16.9	22.0	19.9	29.7	26.9	23.1	17.8	-
DBR33	**45.3**	**43.8**	**40.6**	28.4	27.8	30.7	25.5	26.1	27.3	33.8	-	31.4	32.8	25.2	-
DBR34	28.6	28.5	19.2	15.4	18.4	14.8	14.1	12.7	16.2	15.2	18.0	19.2	18.4	14.1	-
DBR49	31.1	29.2	23.7	20.7	20.0	17.3	15.0	14.4	16.1	15.4	21.2	20.3	20.4	15.7	-
DBR50	27.9	28.9	20.1	-	21.4	17.6	17.6	16.2	16.8	13.7	23.3	19.7	20.3	15.6	-
FCC															
Site 1	**41.1**	**41.1**	**42.2**	29.5	37.3	33.3	29.7	22.1	25.4	24.2	14.9	29.2	30.8	23.7	-
Site 2	37.0	31.1	30.7	16.9	21.3	17.3	14.1	14.6	18.8	21.2	21.7	27.1	22.7	17.4	-
Site 3	**51.7**	39.2	**42.5**	20.0	32.8	23.7	19.9	19.3	25.7	34.3	30.8	**40.6**	31.7	24.4	-
Site 4	30.5	25.6	22.7	19.7	17.9	15.8	14.4	14.1	22.1	18.2	25.4	23.6	20.8	16.0	-
Site 5/9/10													26.1	20.1	-
Site 5	**43.5**	-	39.0	22.7	28.4	20.4	16.2	18.8	20.6	25.2	26.6	35.3	27.0	20.8	-
Site 6	-	-	15.7	10.6	12.0	8.2	7.8	6.2	10.5	10.6	9.4	14.1	10.5	8.1	-
Site 7	31.8	21.8	23.8	14.6	15.4	11.5	13.1	13.1	15.7	6.9	17.3	21.0	17.2	13.2	-
Site 8	26.3	12.9	21.9	13.5	12.5	10.1	9.7	9.2	13.4	14.2	16.6	21.6	15.2	11.7	-
Site 9	38.3	-	35.4	22.9	27.2	20.0	16.0	17.5	21.4	26.7	25.2	34.0	25.9	19.9	-
Site 10	39.7	-	34.0	22.2	27.2	21.9	17.0	18.6	21.4	25.3	26.2	26.0	25.4	19.6	-
Site 11/47													38.0	29.3	-
Site 12/13													**44.9**	34.5	-
Site 11	**46.9**	**44.0**	**48.0**	**48.2**	27.5	37.1	29.4	33.6	39.7	35.6	**47.1**	11.0	37.3	28.8	-
Site 12	**56.4**	**51.8**	**52.9**	37.8	**40.1**	39.7	31.8	32.2	**46.2**	**43.4**	**54.5**	**49.2**	**44.7**	34.4	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Site 13	**55.6**	**54.1**	**54.2**	**42.0**	39.3	38.1	30.8	32.8	**40.8**	**46.6**	**53.4**	**52.8**	**45.0**	34.7	-
Site 14	18.5	21.4	22.8	16.6	16.6	11.5	12.4	10.2	15.7	-	21.8	24.4	17.4	13.4	-
Site 15	**44.4**	**52.6**	**49.7**	24.5	33.1	31.3	25.3	26.8	29.6	28.6	26.8	31.2	33.7	25.9	-
Site 16	**41.0**	38.8	32.3	31.8	28.8	26.5	23.2	24.1	28.8	28.8	37.9	37.5	31.6	24.4	-
Site 17	**41.1**	35.5	**40.8**	33.1	31.9	22.8	22.6	21.1	30.6	21.6	33.9	35.5	30.9	23.8	-
Site 18	29.4	23.2	22.1	15.6	15.3	11.5	10.8	11.5	16.3	-	19.4	24.1	18.1	13.9	-
Site 19	36.6	32.3	35.8	21.4	25.5	14.2	17.9	19.3	23.6	25.2	28.1	23.5	25.3	19.5	-
Site 20	37.8	35.5	37.2	27.3	27.5	24.2	20.9	22.4	24.3	25.8	28.7	31.4	28.6	22.0	-
Site 21	29.5	-	29.2	17.9	25.9	17.7	17.1	17.4	21.8	24.2	26.0	30.2	23.4	18.0	-
Site 22	20.5	18.7	18.0	12.7	17.7	16.5	12.9	17.1	18.1	24.4	25.6	25.6	19.0	14.6	-
Site 23	**41.8**		38.2	24.0	28.3	21.8	22.3	21.5	27.9	32.0	38.5	34.5	30.1	23.2	-
Site 24/51													**40.5**	31.1	-
Site 24	**43.8**	**48.2**	**52.0**	38.1	37.8	31.2	32.7	30.4	39.9	**41.6**	**50.5**	**41.3**	**40.6**	31.3	-
Site 25		30.4	30.0	12.5	21.1	15.7	14.3	15.9	19.4	17.2	26.5	25.9	20.8	16.0	-
Site 26	35.3	24.9	25.3	12.4	14.5	11.1	9.8	10.8	15.5	15.3	16.8	23.5	17.9	13.8	-
Site 27	-	30.9	35.7	17.9	27.4	18.6	18.3	18.1	-	24.5	29.3	38.4	25.9	20.0	-
Site 28	24.1	27.0	31.0	22.2	21.9	23.4	17.8	19.0	21.4	22.9	30.0	28.8	24.1	18.6	-
Site 29	37.1	27.4	29.3	29.9	17.4	13.4	11.9	12.5	17.8	20.3	19.1	22.0	21.5	16.6	-
Site 30	39.0	37.1	39.6	17.2	30.3	28.5	25.5	23.4	28.9	26.9	38.7	37.2	31.0	23.9	-
Site 31	36.6	35.2	37.4	27.0	24.6	21.6	18.6	16.3	24.5	-	29.0	32.8	27.6	21.3	-
Site 32	29.3	26.4	31.0	22.7	20.0	-	-	16.8	21.1	18.3	24.2	26.9	23.7	18.2	-
Site 33	37.1	-	41.1	25.5	31.5	27.9	23.5	22.8	26.4	30.5	35.5	38.0	30.9	23.8	-
Site 34	34.5	35.2	40.0	29.2	27.4	22.4	19.2	16.3	25.2	25.7	29.3	28.9	27.8	21.4	-
Site 35	34.9	29.2	32.3	22.4	21.2	19.4	20.0	15.0	20.5	21.3	28.4	21.6	23.9	18.4	-
Site 36	37.3	34.6	35.6	20.3	25.8	21.7	20.5	20.8	21.2	26.5	30.9	28.2	27.0	20.8	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Site 37	27.8	36.4	34.0	25.1	26.5	22.8	20.9	19.2	26.0	28.7	30.5	33.8	27.6	21.3	-
Site 38	34.4	26.7	27.9	15.5	12.4	9.9	9.6	7.9	14.2	11.6	13.3	17.6	16.8	12.9	-
Site 39	24.7	21.9	24.4	23.8	19.3	18.3	15.2	14.7	20.6	19.4	26.5	23.0	21.0	16.2	-
Site 40	25.2	18.9	21.4	21.7	15.4	13.2	-	13.0	17.7	15.1	25.6	25.7	19.4	14.9	-
Site 41	17.5	12.4	11.0	10.7	10.3	-	-	5.6	11.0	18.9	9.4	8.5	11.5	8.9	-
Site 42	22.3	-		-	13.5	-	9.8	9.0	-	-	-	-	13.7	9.9	-
Site 43	14.8	-	16.6	13.7	13.4	9.5	9.7	8.4	13.2	-	-	-	12.4	9.6	-
Site 44	-	-	38.5	33.7	29.1	21.0	26.7	23.8	30.7	-	31.2	-	29.3	28.7	-
Site 45	29.2	16.1	15.8	11.4	14.5	8.0	7.8	7.0	10.0	-	29.0	14.4	14.8	11.4	-
Site 46	23.0	28.0	30.4	21.0	21.5	16.3	14.8	17.1	21.0	21.8	26.6	31.2	22.7	17.5	-
Site 47	**44.0**	**44.1**	39.6	**47.9**	35.5	34.8	33.2	29.3	38.0	34.2	**49.5**	34.0	38.7	29.8	-
Site 48	30.7	26.7	26.8	27.3	20.9	17.8	17.1	16.3	20.4	19.2	32.9	30.7	23.9	18.4	-
Site 49	24.8	28.1	27.0	18.4	19.8	15.9	14.2	16.9	17.5	17.5	26.2	26.7	21.1	16.2	-
Site 50	27.5	22.6	23.3	-	-	15.5	15.1	13.2	20.2	15.5	22.8	22.5	19.8	15.3	-
Site 51	**48.5**	**46.6**	**50.3**	39.5	**40.1**	33.6	32.9	33.1	35.2	37.1	**48.7**	37.8	**40.3**	31.0	-
Site 52	22.0	13.2	14.3	12.8	11.5	7.4	7.7	6.0	13.1	9.3	12.7	14.4	12.0	9.3	-
Site 53	36.7	35.8	36.5	31.5	30.6	26.0	21.2	20.1	28.5	27.9	36.8	33.8	30.5	23.4	-
Site 54	23.2	19.6	16.6	11.7	13.8	9.7	7.9	7.6	11.6	11.7	17.0	19.8	14.2	10.9	-
Site 55	22.0	-	2.4	11.4	9.0	8.0	7.8	6.6	11.0	9.2	-	18.7	10.6	8.2	-
Site 56	20.2	-	17.4	13.3	-	-	13.6	-	-	-	18.5	20.3	17.2	10.6	-
Site 57	**53.2**	**51.9**	**53.9**	**47.6**	**46.4**	**40.4**	**42.4**	**42.6**	**44.0**	**50.5**	**59.3**	**51.4**	**48.6**	37.4	30.9
S1	-	-	-	-	-	-	-	-	29.9	27.9	49.8	42.0	37.4	34.0	-
S2	-	-	-	-	-	-	-	-	31.3	-	36.7	28.8	32.3	30.6	-
GC															
GCC 002	36.4	36.5	35.8	43.8	37.0	33.3	35.1	35.5	30.6	37.6	33.1	38.7	36.1	31.4	**-**

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
GCC 003	18.0	-	-	13.6	-	-	-	8.8	8.6	9.9	11.2	13.0	11.9	10.0	-
GCC 005	34.1	33.2	31.5	35.1	33.3	28.6	-	29.2	28.8	30.4	29.8	28.2	31.1	27.1	-
GCC 008	30.3	28.5	29.2	28.6	23.9	19.8	19.7	16.6	24.7	24.3	32.6	32.5	25.9	22.5	-
GCC 011	-	27.6	32.3	27.5	24.1	5.6	-	24.5	27.0	29.6	27.0	21.3	24.7	21.5	-
GCC 012	35.8	32.0	29.8	33.5	31.3	26.3	26.9	25.3	31.2	28.1	28.8	31.7	30.1	26.1	-
GCC 013	27.3	23.9	24.3	26.4	23.5	20.6	20.8	20.2	23.8	18.4	26.1	24.9	23.3	20.3	-
GCC 015	30.0	28.8	26.1	22.9	26.5	23.2	23.0	20.8	24.8	24.4	24.6	24.2	24.9	21.7	-
GCC 037	-	-	-	26.2	-	24.7	-	-	32.0	32.1	-	-	28.7	25.3	-
GCC 038	36.0	32.7	33.5	36.6	-	28.5	30.5	24.4	31.2	29.2	33.3	-	31.6	27.5	-
GCC 039	31.8	30.8	34.1	31.7	-	26.8	30.5	-	28.3	30.0	36.0	-	31.1	27.1	-
GCC 040	21.3	23.1	22.1	21.3	15.5	19.0	19.0	19.4	16.7	22.6	22.2	25.8	20.7	18.0	-
G1	**73.4**	**57.9**	-	37.5	**77.5**	**43.5**	**71.7**	**70.3**	**74.7**	26.9	**72.8**	**65.4**	**61.1**	**53.1**	-
G2	32.5	-	36.2	98.9	40.8	27.6	26.7	29.8	37.7	26.9	44.6	26.8	38.9	33.9	-
G3	27.3	23.0	27.5	22.0	25.6	26.2	21.5	29.2	24.2	24.4	25.3	23.5	25.0	21.7	-
G4	23.9	23.7	26.4	24.2	21.1	21.0	19.8	24.3	21.8	23.9	28.0	23.6	23.5	20.4	-
G5	10.4	12.7	10.0	12.5	10.2	7.4	9.1	8.1	7.7	8.2	14.0	9.8	10.0	8.7	-
G6	14.9	12.8	13.5	16.2	16.6	10.1	13.7	10.0	11.5	-	15.2	12.4	13.3	11.6	-
G7	-	29.1	**42.7**	**43.1**	39.4	38.5	**44.5**	**46.0**	**42.2**	29.9	-	028.7	38.4	33.4	-
G8	26.6	28.8	32.0	27.1	28.8	22.9	-	20.9	22.8	22.5	30.5	29.3	26.5	23.1	-
G9	14.9	0.3	14.1	14.7	12.9	11.1	12.7	11.0	14.1	13.2	17.0	14.1	12.5	10.9	-
G10	31.8	28.8	35.5	29.6	28.1	21.9	22.7	75.0	24.9	25.2	30.0	30.2	32.0	27.8	-
WCBC															
WBC-001	**43.6**	35.1	36.7	27.3	-	30.3	27.6	34.0	29.5	34.1	**44.2**	**47.2**	35.4	27.3	-
WBC-010	28.6	20.4	20.1	11.1	12.2	12.2	9.8	9.8	14.7	16.2	15.5	24.1	16.2	12.5	-
WBC-015	34.1	20.3	21.2	16.1	15.0	13.5	13.2	18.6	16.6	18.8	20.8	20.6	19.1	14.7	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (See Appendix C) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
WBC-018	35.5	26.0	24.9	**47.5**	22.9	17.3	15.1	16.2	17.6	18.9	19.5	23.7	23.8	18.3	-
WBC-019	**42.3**	32.9	28.1	13.7	20.5	17.8	17.3	18.9	15.3	26.5	14.9	32.3	23.4	18.0	-
WBC-020	**43.2**	38.6	35.1	28.9	26.5	23.7	21.3	24.5	25.0	27.9	33.9	37.5	30.5	23.5	-
WBC-021	37.9	29.0	28.6	18.4	19.2	16.6	15.0	15.7	18.3	23.2	27.6	28.2	23.1	17.8	-
WBC-022	31.7	23.1	22.7	14.0	16.9	18.2	13.6	14.5	15.5	37.8	15.9	23.6	20.6	15.9	-
WBC-030	**59.5**	45.2	**50.4**	15.2	**45.5**	35.0	**43.5**	39.5	**45.2**	**46.7**	**45.7**	**43.9**	**42.9**	33.1	-
WBC-031	**61.8**	39.5	**46.4**	**43.8**	31.9	34.9	36.5	33.3	34.5	**43.7**	**47.3**	**41.9**	**41.3**	31.8	-
WBC-032	38.8	38.4	41.2	38.0	32.9	25.7	25.6	28.0	26.1	31.5	42.6	47.2	34.7	26.7	-
WBC-033	33.6	22.8	25.1	20.8	20.5	16.8	14.8	17.7	19.7	21.5	30.1	28.9	22.7	17.5	-
WBC-034	39.5	25.7	23.9	16.0	19.2	13.0	12.6	12.6	15.1	16.2	13.9	13.5	18.4	14.2	-
WBC-036	**41.3**	30.3	31.5	22.5	13.6	17.5	17.2	21.0	24.6	26.0	29.7	29.1	25.4	19.5	-
WBC-037	**40.0**	31.2	32.5	-	27.1	19.2	17.8	25.2	22.1	24.6	24.0	33.6	27.0	20.8	-
WBC-039	32.5	27.9	27.0	25.6	20.8	19.7	17.5	21.6	22.8	24.4	28.7	22.9	24.3	18.7	-
WBC-040	28.1	15.9	15.8	13.5	11.7	10.7	9.3	10.3	10.9	12.6	14.6	16.6	14.2	10.9	-
WBC-041	**43.7**	24.0	19.2	16.2	20.9	14.1	12.8	13.5	15.3	15.9	13.9	23.5	19.4	15.0	-
WBC-042	**44.2**	33.5	37.3	40.0	29.4	23.0	25.3	18.9	26.0	28.7	37.5	36.0	31.7	24.4	-
WBC-043	**41.4**	20.7	30.6	21.7	20.7	17.0	16.5	17.7	21.9	24.5	23.7	30.8	23.9	18.4	-
WBC-044	**42.9**	37.6	34.0	22.3	28.3	21.8	20.0	20.2	-	28.7	-	-	28.4	21.9	-
WBC-045	31.9	26.6	23.7	19.9	27.7	17.0	18.0	16.9	24.0	17.0	29.1	22.5	22.9	17.6	-
WBC-046	**48.1**	36.4	32.5	-	30.2	19.5	20.9	19.4	29.9	27.9	29.6	33.9	29.8	23.0	-
WBC-047	**41.0**	37.7	**42.4**	35.1	24.2	32.5	24.3	26.8	31.4	19.5	38.3	29.5	31.9	24.6	-
AURN 1	33.0	25.7	22.9	16.8	22.1	12.7	12.5	13.1	16.9	17.9	17.5	25.0	19.7	15.1	-
AURN 2	36.5	27.0	24.3	13.7	21.0	11.4	13.1	13.0	18.8	17.2	20.5	23.1	20.0	15.4	-
AURN 3	34.0	24.5	22.7	19.5	21.4	9.2	13.8	14.2	17.7	17.2	20.7	22.9	19.8	15.3	-

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

Table A.2 – Full Monthly Benzene Diffusion Tube Results for 2017 - WCBC

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average mean concentration
WBC-026	1	0.6	1	0.5	0.5	3	0.4	-	0.6	0.5	0.6	0.7	0.9

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 5 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 µg/m3 (milligrammes per cubic metre, mg/m3 for carbon monoxide) with the number of exceedences 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		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40µg/m^3	Annual mean	31.12.2004
Particulate Matter ($PM_{2.5}$)	25 µg/m^3 (EU limit) (10µg/m^3 WHO guideline)	Annual mean	-
Sulphur dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	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
	5.0µg/m^3	Annual mean	31.12.2011
1,3 Butadiene	2.25µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m^3	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

Diffusion Tube Bias Adjustment Factors

Diffusion tubes adjustment factors were obtained from the national bias adjustment calculator v06/18 (July 2018).

The diffusion tubes for CCBC, DCC, FCC, WCBC and IACC (except the new ones A1 to A19) were supplied and analysed by Environmental Scientific Group (ESG) Didcot utilising the 50% triethanolamine (TEA) in acetone preparation method. The bias adjustment factor for 2017 is 0.77 (based on 29 studies).

The diffusion tubes for GC, as well as the new IACC tubes (A1 to A19) were supplied and analysed by Gradko utilising 20% TEA in water preparation method. The bias adjustment factor for 2017 is 0.87 (based on 39 studies) as obtained from the national bias adjustment calculator.

PM Monitoring Adjustment

The particulate monitoring undertaken in WCBC was via use of daily gravimetric Partisols. These meet the European equivalence testing and therefore are not subject to any correction.

The Osiris instruments run by IACC have not been adjusted. The IACC have previously demonstrated that an adjustment factor of 1.3 would lead to a significant overestimation of the impact of coarse dust (e.g. quarry dust). Therefore, it was deemed inappropriate to adjust the data gathered using the Osiris monitors as these instruments are normally monitoring for the coarse fractions e.g. quarry dust.

Short-Term to Long-Term Data Adjustment

Data capture at all sites which recorded less than 75% data capture during 2017 has been annualised according to the method set out in Boxes 7.9 and 7.10 of LAQM.TG16. The details of the annualisation have been provided in Table C.1. 2017 data for the automatic monitoring station used for the annualisation were obtained from https://airquality.gov.wales/.

Table C.1 – NO_2 Short-Term to Long-Term Monitoring Data Adjustment Ratios

	Diffusion tube	Aston Hill (Urban)	Cwmbran (Urban background)	Narberth (Rural)	Swansea Cwm Level Park (Urban background)	Average Ratio
IACC	A2	1.07	0.89	1.03	0.89	0.97
	A7	1.04	0.97	1.04	1.00	1.01
	A8	1.01	1.06	1.05	1.08	1.05
	A9	1.12	0.98	1.06	1.01	1.04
	A18	0.94	0.96	0.94	0.95	0.95
	DT16	1.31	0.85	1.17	0.93	1.06
	DT17	1.26	0.77	1.11	0.84	0.99
GC	GCC 003	1.06	0.85	1.00	0.91	0.96
	GCC 037	1.21	1.26	1.43	1.32	1.30
FCC	Site 42	0.81	1.09	0.76	1.11	0.94
	Site 43	0.90	1.10	0.86	1.19	1.01
	Site 44	1.19	1.23	1.30	1.23	1.24
	Site 56	0.87	0.73	0.78	0.74	0.78
	S1	1.54	0.87	1.46	0.97	1.21
	S2	1.57	0.79	1.41	0.90	1.17
DCC	DBR54	0.82	0.80	0.78	0.77	0.79

QA/QC of Automatic Monitoring

The Victoria Road AURN automatic monitoring station in WCBC is part of the Automatic Urban and Rural Network (AURN). The data ratification and station audit are carried out by Ricardo-AEA under contract with Defra and the Devolved Administrations.

The four PM_{10} automatic monitoring stations in IACC are run by the local authority. Routine filter changes and air flow checks (600ml/min) on the Turnkey Osiris instruments are carried out normally on a quarterly basis. This is in addition to an annual service and calibration undertaken by Turnkey Instruments under the terms of the service contract.

In 2017 The GSM modems have been replaced with Webservers which continuously upload the data into the AirQWeb website. The software immediately notifies the local authority by email of any issues with the monitors.

This enables the performance of the instrument to be monitored and enables problems to be rectified quickly and with minimum loss of data. Data is normally analysed as 15-minute averages and is exported hourly from AirQWeb into the Welsh Air Quality Website. A visual data ratification process is employed, to safeguard against erroneous peaks etc., before any results are reported. Utilizing a spare Osiris monitor, while normal monitors are away for calibration, has significantly improved data capture.

QA/QC of Diffusion Tube Monitoring

ESG 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 NO_2 tube analysis and the Annual Field Inter- Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The labs follow the procedures set out in the Harmonisation Practical Guidance. The AIR-PT results for 2017 are AIR PT AR018 (January to February 2017), AIR PT AR019 (April to May 2017), AIR PT 021 (July to August 2017) and AIR AR022 (September to October 2017).

ESG Didcot and Gradko both scored 100% on all results. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Fall-off with Distance Correction of Sites Exceeding and within 10% of the NO_2 Annual Mean Objective

Monitoring site DT4 in IACC exceeded the annual AQO of 40 $\mu g/m^3$ and four other sites (DT1, A15, A19 in IACC and Site 57 in FCC) were within 10% of this AQO. Consequently, their annual means were distance-corrected using the NO_2 fall-off

with distance calculator (Version 4.2). It should be noted that at sites DT1, DT4 and A15, the closest receptors are situated more than 20m further from the kerb than the monitor, so results should be treated with caution. The figure below represents the calculator's results.

Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
DT1	1.0	21.0	5.3	37.8	17.8	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
DT4	3.0	33.0	6.0	44.8	20.7	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
A15	1.0	21.0	5.3	37.1	17.6	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
A19	1.0	18.5	5.5	38.1	18.9	
Site 57	1.0	3.0	7.7	37.4	30.9	

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide