Torfaen County Borough Council

Economy and Environment

Housing Safety and Environmental Protection

2024 Air Quality Progress Report

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

Local Air Quality Management

Date: August 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Torfaen County Borough Council

Air pollution results from the introduction of a range of substances into the atmosphere from a wide variety of sources. It can cause both short term and long term effects on health, but also on the wider environment. The air quality in Wales is generally better now than it has been at any time since before the Industrial Revolution.

These improvements have been achieved through the introduction of legislation enforcing tighter controls on emissions of pollutants from key sources, notably industry, domestic combustion and transport. However, despite the improvements made, air pollution is still recognised as a risk to health, and many people are concerned about pollution in the air that they breathe.

Government statistics estimate that air pollution in the UK reduces the life expectancy of every person by an average of 7–8 months, with an associated cost of up to £20 billion each year. Legislation and policies aiming to further minimise and track the impact of air pollution on health and the environment have been introduced in Europe, the UK and Wales.[1]

Air Quality Management Areas (AQMAs) can be declared when there is an exceedance or likely to be an exceedance of an air quality objective. In Torfaen, in 2019, a single, air quality monitoring, diffusion tube breached the national objective of 40 µg/m^3 with an annual average of 47 µg/m^3. The local authority decided that we needed more information and data in order to establish the spatial extent of any potential breach of the national objective, before moving forward to declare an AQMA. In 2020. The diffusion tube network was expanded around the identified ‘hotspot’ and although 2020 results did not reveal any further national objective breaches, we considered that, the reductions in traffic pollution due to pandemic lockdowns, gave a-typical results. Comparisons of traffic pollution levels, between years with and without lockdowns, were examined in the appendices of the 2021 Torfaen Air quality Progress Report. Since traffic levels have normalised, we have not seen a re-occurrence of the 2019 exceedance of the national objective.

Torfaen Council continuously monitors ozone, particulates and the oxides of nitrogen at an automatic, urban background site, located in Croesyceiliog comprehensive school. Each month in 2023, we also deployed 28 passive diffusion tubes on lamp posts to monitor nitrogen dioxide across the borough.

The automatic site had a consistently high level of data collection for particulates, ozone and oxides of nitrogen, however approximately 60% of initially verified data for both nitrogen dioxide and ozone were subsequently rejected from the verified data set by the QA/QC team due to an issue with the sampling heads. Out of the 327 diffusion tubes deployed over the year, 3 went missing.

In 2023 we continued with our co-location study for nitrogen dioxide at the automatic Urban Background site. This involved siting three of the diffusion tubes in close proximity to the automatic station's sample inlet. Results between the different types of monitoring are then compared and appropriate bias adjustments calculated. These bias adjustments are used when calculating the annual average results for this report.

Monitoring data shows the background trend of particulates since 2004 to be quite static. Background nitrogen dioxide has remained quite static since 2006.

The 2023 diffusion tube results are very similar to the 2021 data set and have not shown a repeat of the 2019 exceedance of the national objective.

In conclusion, the 2023 monitoring results do not show any exceedances of any of the national objectives.

[1] The Welsh Government Air Quality Website

Actions to Improve Air Quality

Torfaen County Borough Council has not yet declared any AQMAs and is continuing to closely monitor the 'hotspot' area identified in 2019. The 2023 results for this area have not exceeded national objectives. The remainder of the borough generally has low traffic pollution levels. In November 2022 a Praxis/Urban, air quality sensor was installed on the same lamppost as the diffusion tube which recorded an objective exceedance of Nitrogen Dioxide levels in 2019. The sensor is considered a more accurate method of monitoring than diffusion tubes and monitors particulates as well as Nitrogen Dioxide.

Diffusion tubes have a 25% uncertainty the sensor has a 15% uncertainty. The sensor data will not be used to formally assess compliance with National objectives but will help inform decision making regarding the local air quality.

The Council also seeks to maintain and improve the current air quality within the borough, through working relationships with the Welsh Government, other Council departments and external organisations. We also undertake scrutiny of planning applications potentially

detrimental to air quality, the monitoring of Environmental Permit emission limits along with Statutory Nuisance and Clean Air Act regulation and enforcement.

Torfaen County Borough Council works with local industry and Natural Resources Wales through the Environmental Permitting regime to help manage air quality. The Council is also a member of the Welsh Air Quality forum.

The Public Health team deal with complaints of nuisance burning, dark and black smoke and provide advice on appropriate fuels for domestic wood burning stoves. The Council is also involved in a number of schemes to improve green infrastructure, to promote active travel and improve to the active travel routes in the borough.

Local Priorities and Challenges

Torfaen County Borough Council is keen to increase its understanding of air quality in the borough. Since 2016 the Council has expanded the diffusion tube network every year from 13 tubes in 2016 to 28 tubes in 2023.

We have purchased an air quality sensor which is placed in the area showing the highest levels of traffic pollution in the borough.

We are continuing our co-location study for nitrogen dioxide at the Cwmbran Crownbridge automatic monitoring site, the bias adjustment figures achieved from this study are used to calculate the annual averages in this progress report.

How to Get Involved

Further information regarding air quality both in the Torfaen area and in general can be obtained by visiting the air quality section of our website here;

Torfaen Council website (pollution section)

By visiting the Welsh Government, air quality website here;

The Cwmbran site on the Welsh Government Air Quality Website

The Welsh Government Air Quality Website

If you have specific questions, you can contact the Public Health team by email;

public.health@torfaen.gov.uk

Alternatively, call us on 01495 762200.

The latest published report and the Welsh translation of the executive summary can be found here.

Torfaen County Borough Council Website

Copies of previous reports are available on request.

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1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. It represents Torfaen County Borough Council's fourteenth progress report. Results from monitoring in the Borough are presented and any potentially significant sources of air pollution are identified. The progress report evaluates those changes since the last assessment, which could lead to the risk of an air quality objective being exceeded.

Table 1 Previous Reports

REPORT TITLE	PUBLISHED	OUTCOME
Updating and Screening Assessment 2003	October 2003	No breaches of Objectives
Air Quality Progress Report 2003	September 2004	No breaches of Objectives
Air Quality Progress Report 2004	August 2005	No breaches of Objectives
Updating and Screening Assessment 2006	November 2006	No breaches of Objectives
Air Quality Progress Report 2006	July 2007	No breaches of Objectives
Air Quality Progress Report 2007	April 2008	No breaches of Objectives
Updating and Screening Assessment 2009	April 2009	No breaches of Objectives
Air Quality Progress Report 2010	April 2010	No breaches of Objectives
Air Quality Progress Report 2011	April 2011	No breaches of Objectives
Updating and Screening Assessment 2012	April 2012	No breaches of Objectives
Air Quality Progress Report 2013	March 2013	No breaches of Objectives
Air Quality Progress Report 2014	April 2014	No breaches of Objectives
Updating and Screening Assessment 2015	April 2015	No breaches of Objectives
Air Quality Progress Report 2016	May 2016	No breaches of Objectives
Air Quality Progress Report 2017	May 2017	No breaches of Objectives
Air Quality Progress Report 2018	August 2018	No breaches of Objectives
Air Quality Progress Report 2019	September 2019	No breaches of Objectives
Air Quality Progress Report 2020	September 2020	Single diffusion tube breaches objective
Air Quality Progress Report 2021	October 2021	No breaches of Objectives
Air Quality Progress Report 2022	September 2022	No breaches of Objectives
Air Quality Progress Report 2023	September 2023	No breaches of Objectives

1.2 Air Quality Management Areas

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

Torfaen County Borough Council currently does not have any AQMAs.

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2023

2.1.1 Automatic Monitoring Sites

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

Torfaen County Borough Council undertook automatic (continuous) monitoring at the Cwmbran Crownbridge site in 2023. **Error! Reference source not found.** presents the details of the site. National monitoring results are available at;

The Welsh Government air quality monitoring database

Maps showing the location of the monitoring sites are provided in **Error! Reference source not found.**. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Torfaen County Borough Council currently operates one automatic monitoring site located in the grounds of Croesyceiliog Comprehensive School in the town of Cwmbran in the south of the County Borough. Nitrogen dioxide is monitored continuously as part of the National Automatic Urban and Rural Network (AURN) by means of a chemiluminescent analyser manufactured by API. Levels of PM_{10} are continuously measured at the Cwmbran Crownnbridge monitoring site using a Tapered Element Oscillating Microbalance (TEOM) monitor manufactured by Rupprecht and Pattaschnick. Ozone is also continuously monitored at the site as part of the National AURN using a dual cell ultra violet photometric analyser manufactured by Thermo Instruments.

Figure 2.1 shows the location of the Cwmbran Crownbridge automatic monitoring site. More detailed tube maps can be found in Appendix D. Figure 2.2 shows a map of the non-automatic monitoring site. Quality control procedures as detailed as in the AEA site operator's manual are followed. The analysers are calibrated once every four weeks using gases traceable to national standards. All data are scaled in line with four weekly calibration checks. The analysers also perform internal overnight checks and are serviced every 6 months. Routine monthly calibration visits are carried out by Torfaen County

Borough Council. Other calibrations and audits are carried out by Bureau Veritas and Ricardo who also ratify the data. Services were also carried out twice a year by Enviro Technology Ltd. who also hold the repair contract for the site.

2.1.2 Non-Automating Monitoring Sites

Torfaen County Borough Council undertook non- automatic (passive) monitoring of NO_2 at 25 sites plus a triplicate tube, co-location study during 2023.

Appendix A presents more details of the results from these sites.

A map showing the relative location of all the monitoring sites is provided in Figure 2.2. Individual site maps, results and trends are included in Appendix D.

Details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

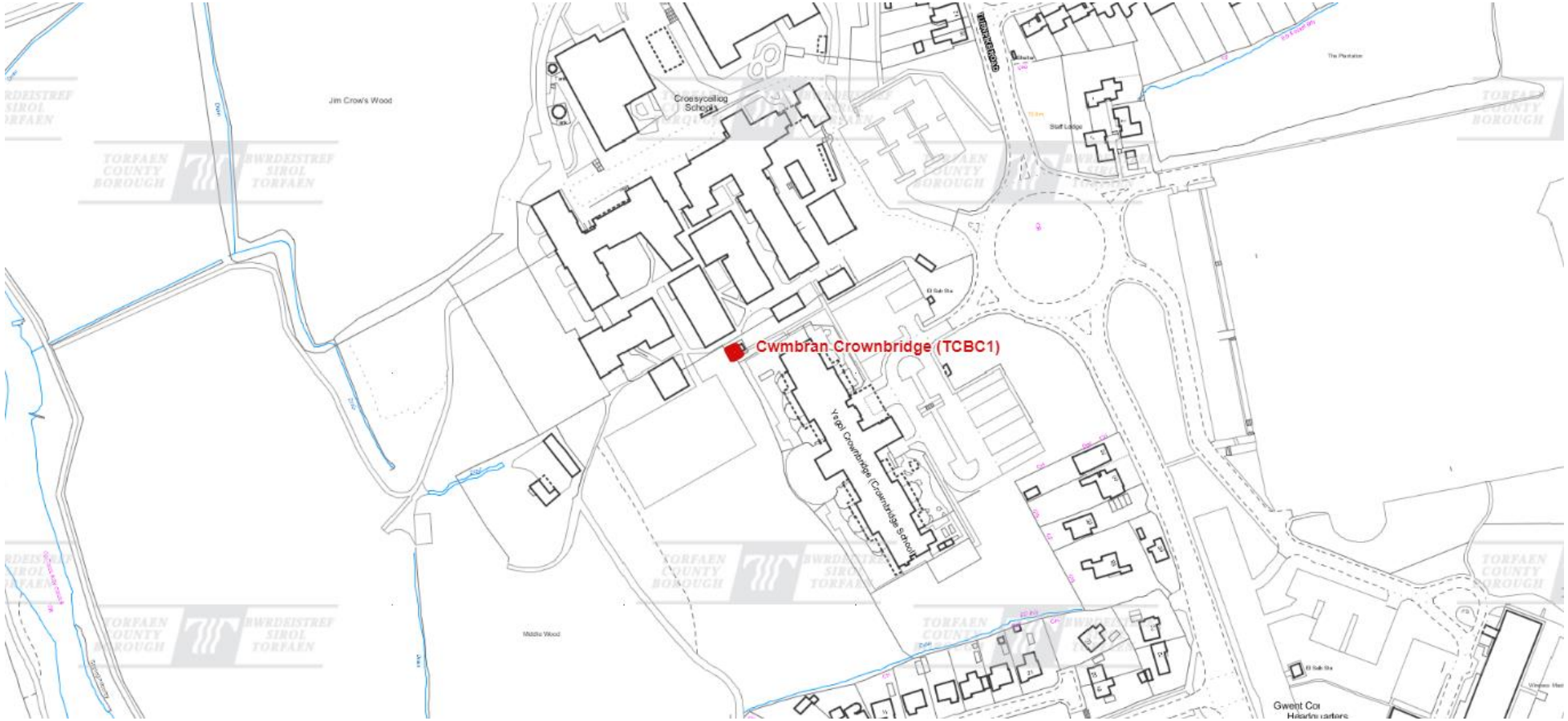
Table 0.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with (Named) AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) (1)	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
Cwmbran Crownbridge	Cwmbran Crownbridge	Urban Background	NO	330476	195483	NO_2	Chemiluminesce	3.0	0	1	135
Cwmbran Crownbridge	Cwmbran Crownbridge	Urban Background	NO	330476	195483	NO	Chemiluminesce	3.0	0	1	135
Cwmbran Crownbridge	Cwmbran Crownbridge	Urban Background	NO	330476	195483	PM_{10}	TEOM	3.0	0	1	135
Cwmbran Crownbridge	Cwmbran Crownbridge	Urban Background	NO	330476	195483	O_3	Ultra violet absorption	3.0	0	1	135

Notes:

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

Figure 0.1 – Map of Automatic Monitoring Site [Link to Welsh Air Quality Forum (WAQF) Website GIS]



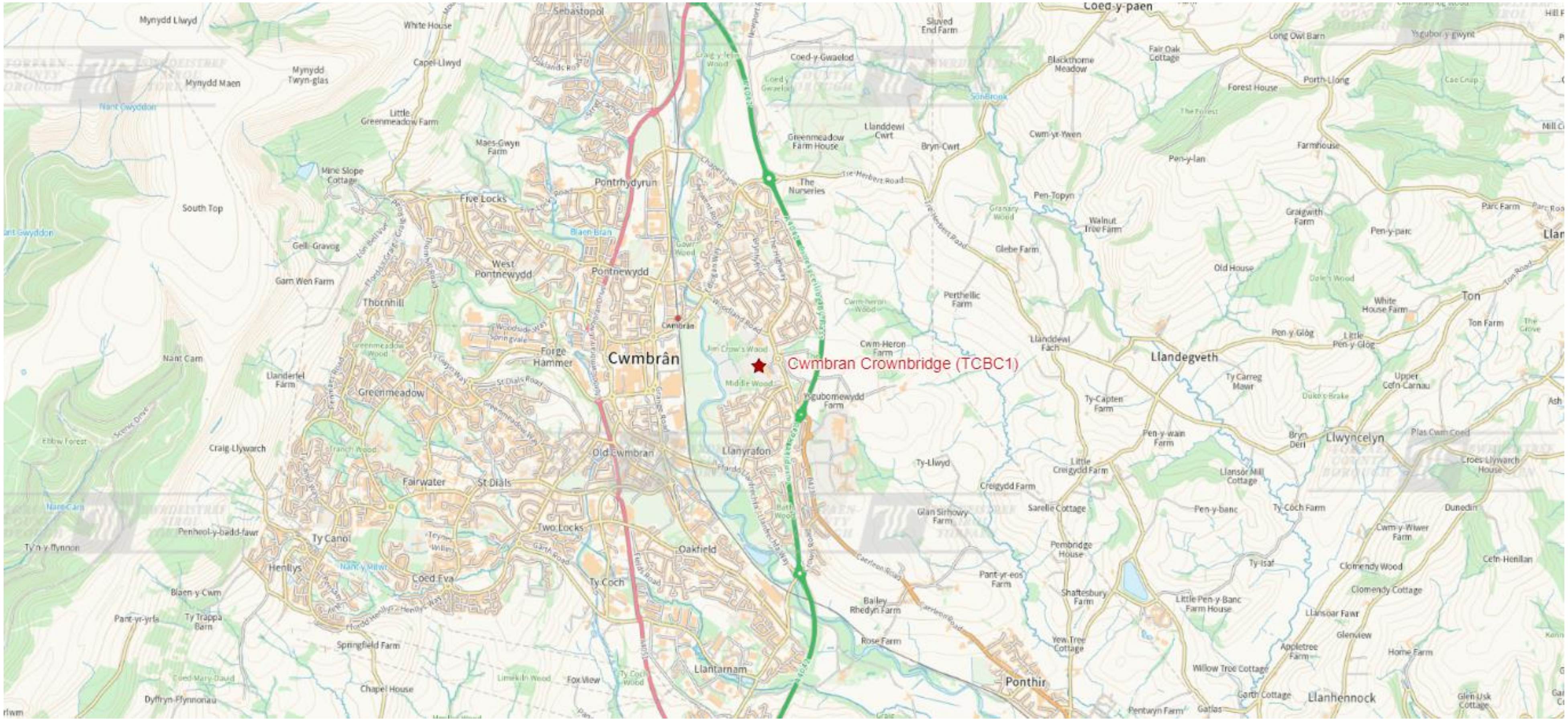

Cwmbran Crownbridge (TCBC1)
Cwmbrân
Coed-y-paen
Sebastopol
Pontrhydyrun
Five Locks
West Pontnewydd
Pontnewydd
Thornhill
Forge Hammer
Greenmeadow
Old Cwmbran
Llanyrafon
Fairwater
St Dials
Two Locks
Ty Canol
Henllys
Coed Eva
Ty Coch
Oakfield
Llantarnam
Ponthir
Llandegveth
Llwyncelyn
Llanhennock
Ton

Table 0.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
TCBC3	Pontypool Town Centre	Roadside	325111	208826	NO_2	No	0	2	No	3
TCBC5	Cwmbran Drive Mosely Terrace	Roadside	329308	198177	NO_2	No	4	1	No	3
TCBC6	Henllys Way	Roadside	327274	201928	NO_2	No	5	2	No	3
TCBC8	Caerleon Rd Ponthir	Roadside	327237	201967	NO_2	No	1	1	No	3
TCBC9	Llanyrafon Way	Roadside	327214	202005	NO_2	No	N/A	3	No	3
TCBC10	Edlogan Way	Roadside	327187	202051	NO_2	No	2	1	No	3
TCBC11	Golf Rd New Inn	Urban background	327308	201912	NO_2	No	N/A	2	No	3
TCBC15	Station Rd Griffithstown	Roadside	328206	201300	NO_2	No	1	1	No	3
TCBC16	Richmond Rd Pontnewydd	Roadside	330743	196609	NO_2	No	1	1	No	3
TCBC17	Turnpike Rd Croesyceiliog	Roadside	326914	202933	NO_2	No	10	1	No	3
TCBC18	Rockhill Rd Pontymoile	Roadside	326907	202741	NO_2	No	1	1	No	3
TCBC19	21 Station St Abersychan	Roadside	330478	195480	NO2	No	1	0	No	3
TCBC20	Cwmbran Drive (Sainsbury)	Roadside	330478	195480	NO_2	No	20	1	No	3
TCBC21	Pen y Lan Lane Mamhilad	Roadside	330478	195480	NO_2	No	10	15	No	3
TCBC22	Church Road Blaenavon	Roadside	325111	208826	NO_2	No	3.5	1	No	3
TCBC23	Sebastopol South Street	Roadside	329308	198177	NO_2	No	0.5	1	No	3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
TCBC24	Pontnewynydd St Lukes Road	Roadside	327274	201928	NO_2	No	0.5	0.5	No	3
TCBC24/1	Nisa shop lamppost	Roadside	327237	201967	NO_2	No	1	1	No	3
TCBC24/2	12 St Lukes Road	Roadside	327214	202005	NO2	No	3	1	No	3
TCBC24/3	1 Groveside Villas	Roadside	327187	202051	NO_2	No	2	1	No	3
TCBC24/5	Flat 24 / Tonic Hairdressers	Roadside	327308	201912	NO_2	No	1	1	No	3
TCBC25	Penygarn Hill	Roadside	328206	201300	NO_2	No	6	1	No	3
TCBC26	A4042 Croyseyceiliog By-pass	Roadside	330743	196609	NO_2	No	11.5	3	No	3
TCBC27	Snatchwood, 3 Hollyoake Terrace	Roadside	326914	202933	NO_2	No	3	1	No	3
TCBC28	Snatchwood Rd 57	Roadside	326907	202741	NO_2	No	4	1	No	3
COLO 1	Croesyceiliog AQMS 1	Urban Background	330478	195480	NO_2	No	0	135	Yes	3
COLO 2	Croesyceiliog AQMS 2	Urban Background	330478	195480	NO_2	No	0	135	Yes	3
COLO 3	Croesyceiliog AQMS 2	Urban Background	330478	195480	NO_2	No	0	135	Yes	3

Notes:

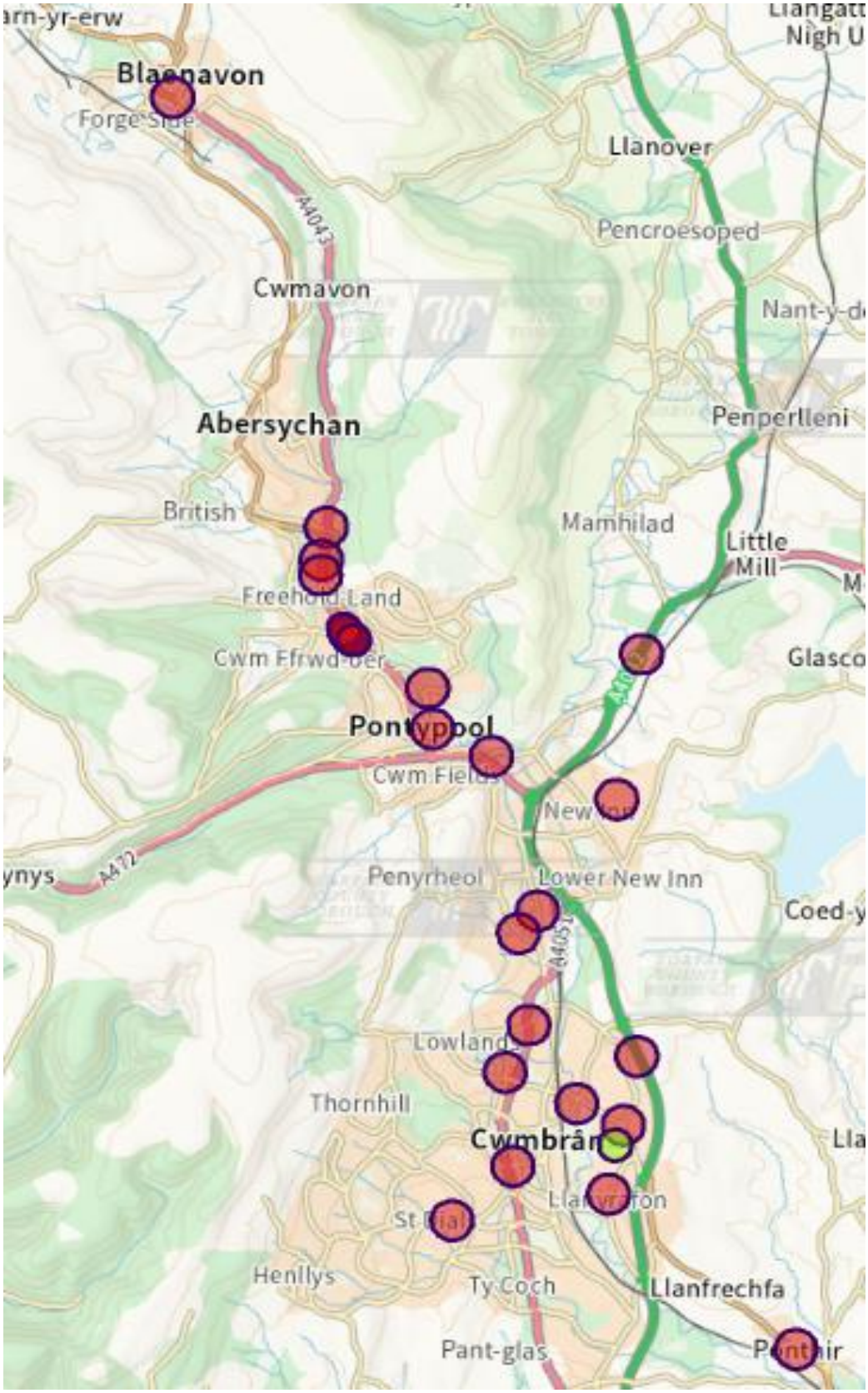
(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

(2) N/A if not applicable

Figure 0.2 – Map of Non-Automatic Monitoring Sites

More detailed maps are in Appendix D.

(Red circles represent diffusion tubes; the green circle is the automatic monitoring station)



2.2 2023 Air Quality Monitoring Results

Table 0.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
Cwmbran Crownbridge	Urban background	Automatic	41.9	41.9	12	9	10	10	8.4

Notes:

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Table 0.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
TCBC3	325111	208826	Roadside	100	100	27	22	21	23	18.9
TCBC5	329308	198177	Roadside	100	100	34	27	29	29	24.6
TCBC6	327274	201928	Roadside	91.7	91.7	18	16	16	16	14.3
TCBC8	327237	201967	Roadside	100	100	16	13	13	13	11.2
TCBC9	327214	202005	Roadside	100	100	16	13	12	13	10.9
TCBC10	327187	202051	Roadside	100	100	22	17	18	19	16
TCBC11	327308	201912	Urban background	100	100	13	11	11	11	9.5
TCBC15	328206	201300	Roadside	100	100	20	15	16	17	14.4
TCBC16	330743	196609	Roadside	100	100	31	22	24	25	21.5
TCBC17	326914	202933	Roadside	91.7	91.7	20	13	14	14	12.5
TCBC18	326907	202741	Roadside	100	100	31	23	24	25	21.7
TCBC19	330478	195480	Roadside	100	100	29	25	24	24	20.5
TCBC20	330478	195480	Roadside	91.7	91.7	30	24	26	27	22.8
TCBC21	330478	195480	Roadside	100	100	16	13	13	13	11.3
TCBC22	325111	208826	Roadside	100	100	17	13	13	14	11.5
TCBC23	329308	198177	Roadside	100	100	21	15	16	15	13.9
TCBC24	327274	201928	Roadside	100	100	**47**	37	37	39	33.1
TCBC24/1	327237	201967	Roadside	100	100	NA	30	30	29	26.1
TCBC24/2	327214	202005	Roadside	100	100	NA	33	34	34	28.9
TCBC24/3	327187	202051	Roadside	100	100	NA	29	31	31	26.5
TCBC24/5	327308	201912	Roadside	100	100	NA	30	32	32	29
TCBC25	328206	201300	Roadside	100	100	25	20	22	24	21.1
TCBC26	330743	196609	Roadside	100	100	30	23	26	27	21.5
TCBC27	326914	202933	Roadside	100	100	NA	33	33	31	25.5
TCBC28	326907	202741	Roadside	100	100	NA	29	30	30	24.3
COLO 1	330478	195480	Urban Background	100	100	NA	NA	9	10	8.5
COLO 2	330478	195480	Urban Background	100	100	NA	NA	9	9	8.1
COLO 3	330478	195480	Urban Background	100	91.7	NA	NA	9	10	8.3

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

☒ **Diffusion tube data has been bias adjusted using a factor of 0.706 from a local co-location study.**

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

Notes:

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

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure 0.3 – Trends in Annual Mean NO_2 Concentrations

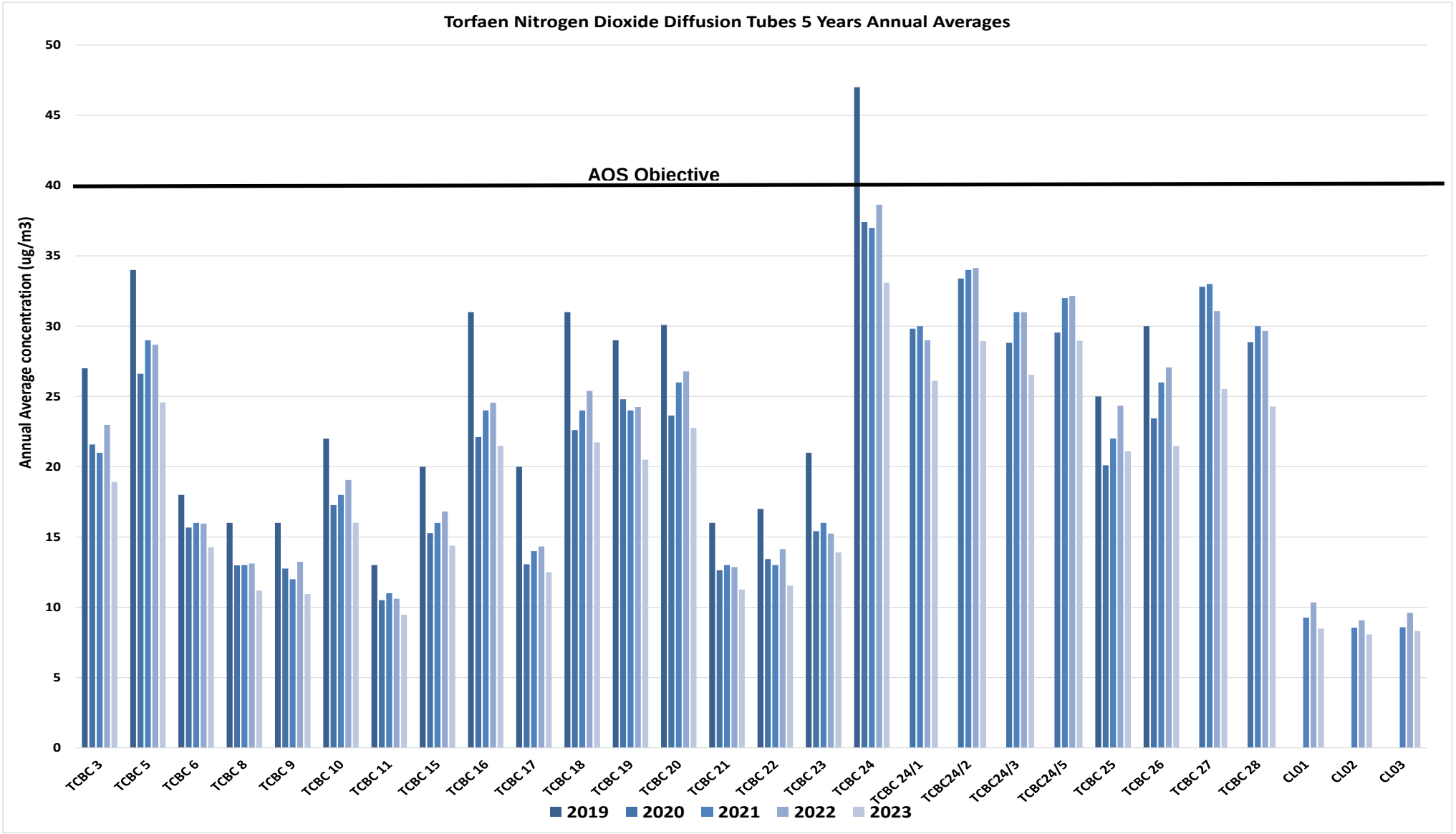


Table 0.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
Cwmbran Crownbridge	Urban background	Automatic	41.9	41.9	0	0	**0**	0	0(69.9)

Notes:

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

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

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

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

Table 0.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
Cwmbran Crownbridge	Urban Background	96.4	96.4	17.9	18 (3)	18.5	20.2	18.4

Notes:

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure 0.4 – Trends in Annual Mean PM_{10} Concentrations

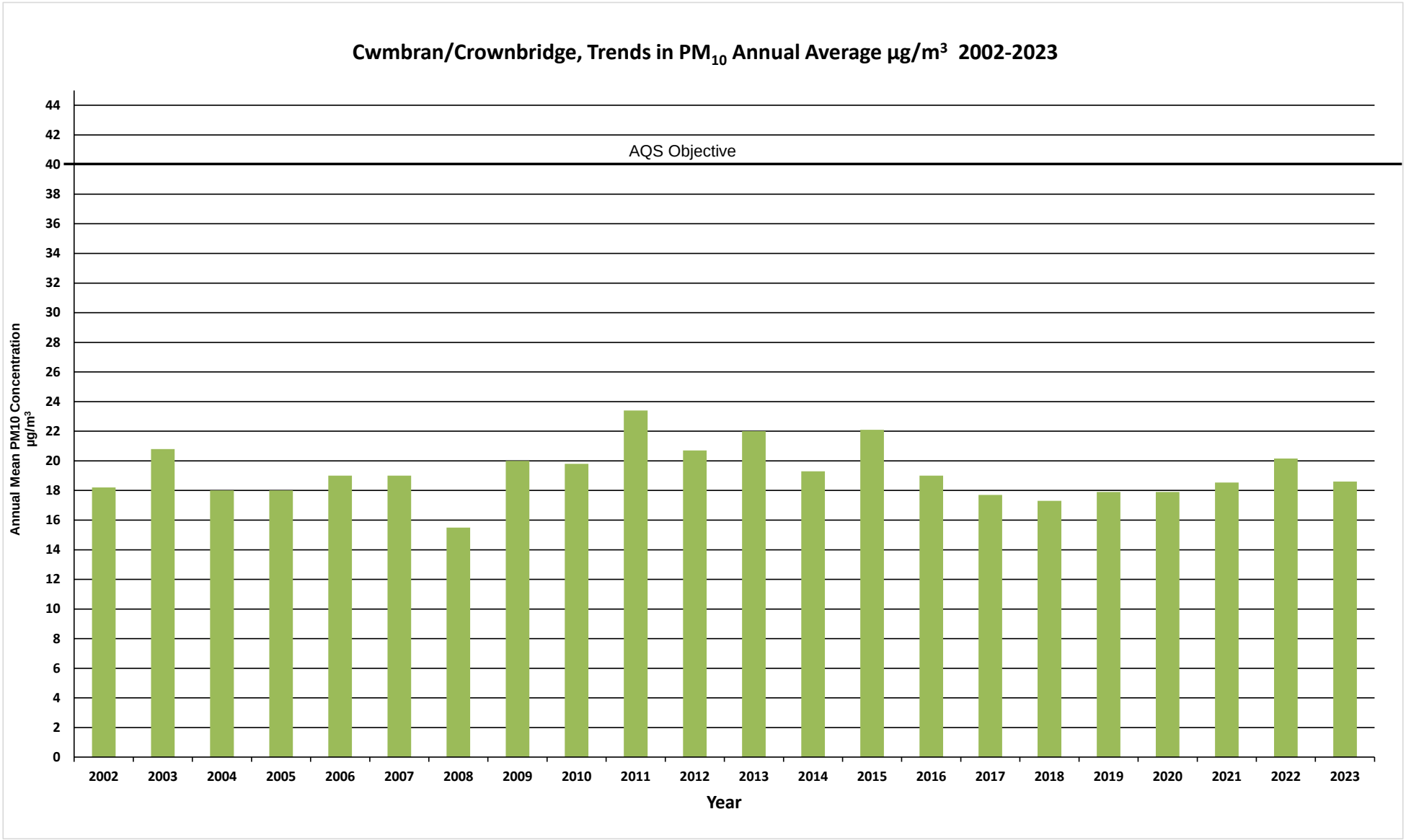


Table 0.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
Cwmbran Crownbridge	Urban Background	96.4	96.4	4	2 (29)	2	1	1

Notes:

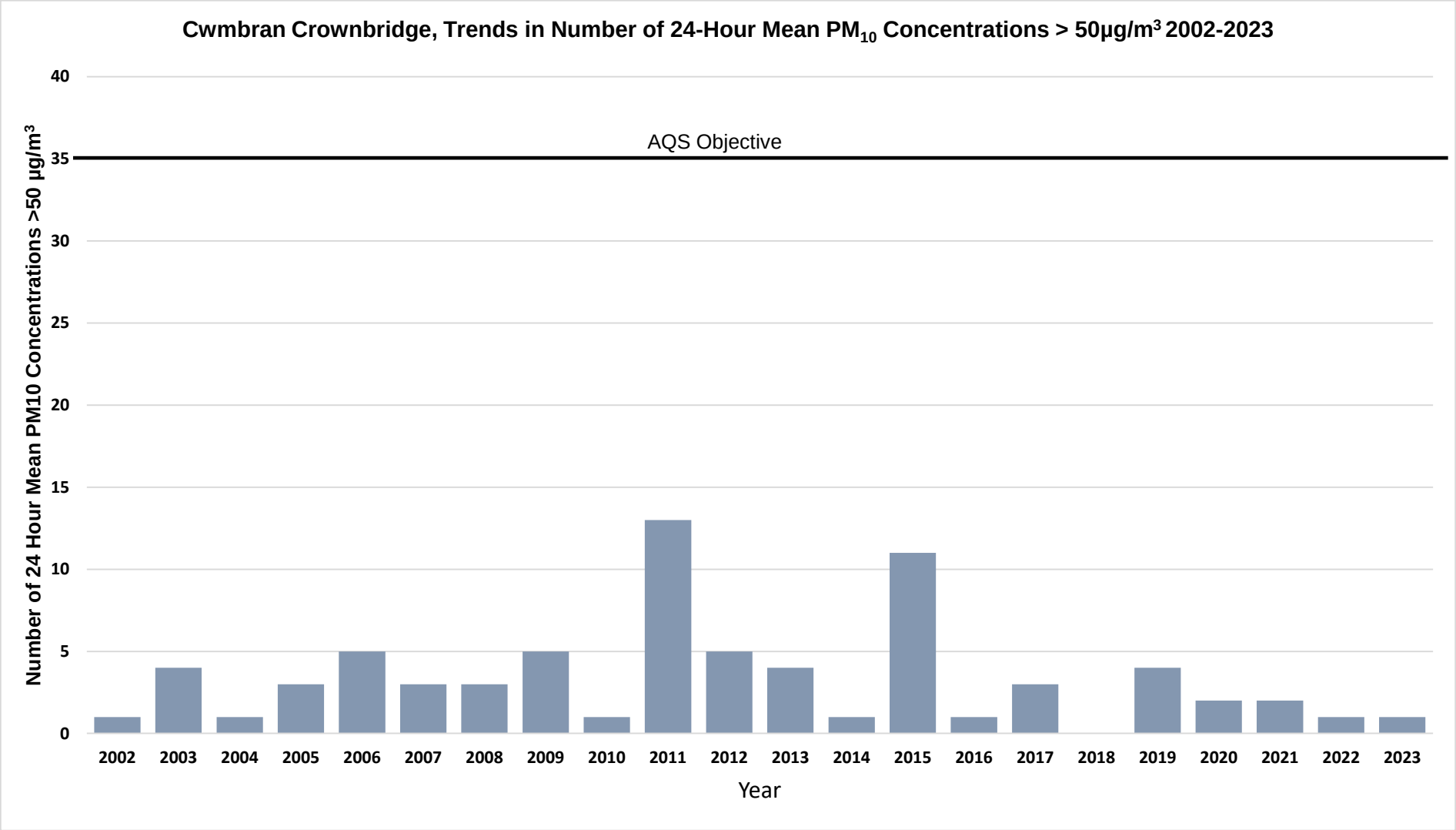
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Figure 0.5 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3



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

2.3.1 Nitrogen Dioxide (NO_2)

Automatic and diffusion tube monitoring of nitrogen dioxide in Torfaen in 2023 has not identified any exceedances of the air quality objectives (Tables 2.3 & 2.4)

The nitrogen dioxide results from the automatic monitor show that following annualisation of the data, the annual mean and the hourly mean objectives have been met. Due to an issue with the sampling inlet, over 6 months of originally verified data was subsequently rejected by the QA/QC team, leading to a low data capture of 41.9%. Trends have remained similar for the previous 5 years. There was just one exceedance of the 200µg/m^3, 1 hour mean objective and the 99.8 percentile of 1 hour mean concentrations did not exceed the objective.

Non Automatic, Diffusion Tube Monitoring Data

The nitrogen dioxide concentrations measured by diffusion tubes show that the annual mean objective has been met at all locations.

2.3.2 Particulate Matter (PM_{10})

Automatic monitoring of PM_{10} in Torfaen in 2023 has not identified any exceedance of the air quality objectives and there has been no need to declare an AQMA. Trends have remained broadly similar for the previous 5 years.

Tables 2.6 and 2.7 display the PM_{10} monitoring results from the automatic monitor operated by Torfaen County Borough Council. These results show that both the annual mean and the 24-hour mean objectives for PM_{10} have been met. Results for previous years up to and including 2020 have been corrected using the appropriate Volatile Correction Model (VCM) to provide a more accurate estimate of the gravimetric concentration. The 2021 to 2023 data set could not be corrected in this way due to a lack of TEOM Filter Dynamics Measurement System (FDMS) data.

Section 7.161 of TG(22) states;

> *"It should be noted that due to the gradual withdrawal of TEOM-FDMS instruments and phased replacement with new compliant PM monitoring equipment on the AURN, the extent of data available to maintain the VCM has significantly reduced in recent years.*

As such, the extent of geographical coverage for the applicability and future viability of the VCM has become limited

Despite the recent modification the VCM correction website to allow FDMSs to be within 200km to be used for VCM correction (up from the previous 130 km), unfortunately Torfaen still had no know sites within the valid range of the correction model.

For 2021 to 2023 data, we have therefore reverted to the historical recommendation of applying a 1.3 multiplication factor to the TEOM results, this being the best method available to account for the loss of volatile particulates in the monitor. Any comparisons made in this report of the 2023 data, with data prior to 2021, are therefore merely indicative.

2023 results for PM_{10} were the broadly similar to the previous 5 years. The monitor was moved 40m northeast in 2020 and subsequent results are considered comparable. There were no days in 2023 where the 24 hour average level was above 50µg/m^3.

The particulate monitor performed well and data capture for the 2023 period was 96.4%.

2.3.3 Particulate Matter ($PM_{2.5}$)

Torfaen County Borough Council do not directly monitor $PM_{2.5}$ at the Cwmbran Crownbridge site however, this may change if it becomes necessary to comply with the proposed new clean air legislation for Wales.

Using the methodology within the LAQM Technical Guidance (TG) Note 22, an estimate of $PM_{2.5}$, at the Cwmbran Crownbridge automatic site, can be derived from the PM_{10} annual average and subtracting a nationally derived correction factor. This background site correction factor for 2023 is 4.7, which applied to the 2023 annual average of 18.4 µg/m^3 gives a $PM_{2.5}$ estimate of 13.7 µg/m^3 for the site. This figure is indicative only.

For all years prior to 2021, the previous methodology as specified in LAQM.TG(16), is to multiply the ratio of 0.7 to the PM_{10} concentration.

1. https://laqm.defra.gov.uk/air-quality/air-quality-assessment/estimating-pm2-5-from-pm10-measurements/

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Table 2.8 Estimates of $PM_{2.5}$ Concentrations at Cwmbran Crownbridge Urban Background Site (Indicative Figures)

PM_{10} Annual Mean Concentration ($\mu g/m^3$)				
2019	**2020**	**2021**	**2022**	**2023**
17.9	18	18.7	20.2	18.4
Estimated $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)				
2019	**2020**	**2021**	**2022**	**2023**
12.5	12.6	14.3	14.7	13.7

2.3.4 Other Pollutants Monitored

The Cwmbran Crownbridge site monitors Ozone, however due to a very low data capture in 2023, following QA/QC data rejection, Ozone will not be reported for 2023.

2.4 Summary of Compliance with AQS Objectives as of 2023

Torfaen County Borough Council has examined the results from monitoring in the borough. Concentrations in some areas have been found to be close to the Objectives, therefore further investigation is required before deciding on whether action is necessary.

3 New Local Developments

3.1 Road Traffic Sources (and Other Transport)

Torfaen County Borough Council has no new road traffic (and other transport) sources since the last assessment.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

Torfaen County Borough Council has no new Industrial / Fugitive or Uncontrolled Sources / Commercial Sources since the last assessment

3.3 Other Sources

There have been no significant pollution incidents reflected in monitoring data in Torfaen during 2023. The Public Health team respond to between 80 and 100 complaints of domestic and industrial smoke each year and this figure does not appear to be rising. Domestic wood burning stoves account for around 0.5% of these complaints and do not appear to be rising.

Torfaen County Borough Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Torfaen County Borough Council confirms that all the following have been considered:

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

4 Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

The requirement for all Local Authorities who have not designated an AQMA to draw up a Local Air Quality Strategy only applies in England and is not a requirement in Wales under Chapter 3, LAQM, TG22.

Torfaen are considering an application for funding in the next round of Welsh Government, air quality project grants, to develop a Local Air Quality Strategy.

4.2 Air Quality Planning Policies

Torfaen County Borough Council's approach to air quality and planning is considered within the sustainability appraisal objectives of the Local Development Plan (LDP). A statutory review of the LDP was completed in 2018 and the replacement plan is expected to be adopted in October 2026, the replacement plan will cover the 2022-2037 period with the section on air quality revised.

All planning applications are considered under the guidance of Planning Policy Wales, edition 11 that approaches air quality and planning more robustly in the light of The Well-being of Future Generations Act (Wales) 2015. It is also noted that the associated Technical Advice Note 11 on 'Noise' (October 1997) is expected to be replaced shortly with a new TAN11 on 'Air Quality, Noise and Soundscape'.

4.3 Local Transport Plans and Strategies

The South East Wales Valleys Local Transport Plan, which has been jointly produced by Blaenau Gwent, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taff and Torfaen County Borough Councils, sets out the local authority's priorities for transport schemes in the five year period 2015 to 2020, and their medium and longer term aspirations up to 2030. The document also sets out the Councils' policies for safe, integrated, efficient and economic transport facilities and services to, from and within their area. Air quality is referenced within Table 1 (Issues, Opportunities and Interventions in the South East Valleys Area) and Table 17 (Monitoring and Evaluation Plan for Highway Improvement Schemes)

The Transport Plan can be found here.

The South East Wales Valleys Local Transport Plan [2]

1. https://datamap.gov.wales/maps/active-travel-network-maps/edit#/

2. https://www.torfaen.gov.uk/en/Related-Documents/Roads-Highways-and-Pavements/Local-Transport-Plan/South-East-Wales-Valleys-Local-Transport-Plan.pdf

4.4 Active Travel Plans and Strategies

Fewer car journeys will generate less vehicle based traffic emissions and less pollution. We are encouraging people to choose to leave the car at home and walk, wheel or cycle for their everyday journeys to work, school and other local destinations. Since year 2000 Torfaen Highways have been actively developing our walking and cycling network initially with specific focus on walking and cycling routes to school. In 2008 this was broadened out to also include key destinations in the local communities. The introduction of the Active Travel (Wales) Act 2013 profoundly impacted the road user hierarchy and progressively funded a much greater expansion of the non-motorised transport network so that more people can more easily get around by bicycle or as a pedestrian, scooter, mobility scooter and wheelchair user.

The whole of Wales Active Travel Network Map (ATNM) Consultation was undertaken in 2021, following an extensive consultation process a final ATNM map identifying 175 future routes and 64 existing active travel routes was produced. The completed ATNM and supporting documentation was submitted to Welsh Government in March 2022 and approved on 1st December 2022. The ATNM became live and available for the public to view on DataMap Wales on 7 December 2022, which can be found here.

Wales Active Travel Network Map [1]

Road safety teams have led many initiatives to reduce school gate congestion and associated pollution from vehicle emissions. In recent years, this work is increasingly jointly promoted by active travel groups. A new generation Active Travel School Plans have been produced in conjunction with several schools in Torfaen. This has resulted in an increase in walking wheeling and cycling to our school sites at the majority of schools whom have taken part in the plans, evidence from the results of the annual Public Health Wales hands up surveys have shown.

To support sustainable travel and provide a viable alternate to car use, Cwmbran railway station was substantially redeveloped and expanded several years ago as a transport

interchange. The redevelopment of Pontypool & New Inn railway station as a second transport interchange are nearing completion. This is an out of town location that serves a wide catchment area including rural communities of Torfaen & neighbouring Monmouthshire and will offer the opportunity for multi-mode journeys through park & ride facilities, reducing the need for car journeys and associated vehicle pollution.

The Active Travel Plan can be found here.

Torfaen Active Travel Plan [2]

[2] https://www.torfaen.gov.uk/en/RoadsTravelParking/WalkingCycling/Active-Travel-Plan/Active-Travel-Plan.aspx

4.5 Local Authorities Well-being Objectives

The Council has set nine interconnected well-being objectives in its County Plan which can be found here.

County Plan 2022-27 [1.]

An update on progress towards achieving the Council's Well-being Objectives can be found here.

2022-2023-Annual-Self-Assessment-and-Wellbeing-Report.pdf (torfaen.gov.uk)

The Council's Climate and Nature Emergency Action Plan was approved by Cabinet in February 2022. The Plan forms part of the Council's Strategic Framework of strategies and policies that are supporting delivery of the County Plan and its Wellbeing Objectives. The Plan also responds to the Council's declaration of both climate and a nature emergency.

The Climate and Nature Emergency Action Plan's actions are set out under 4 work streams, that reflect the Council's overall objectives in relation to the climate and nature emergency:

1: The Council itself becomes net zero carbon by 2030.

2: The Council leads, supports, facilitates, and encourages Torfaen's communities, residents, and businesses towards net zero carbon by 2050.

3: Our changing climate is factored into the way we plan, so that our communities and the services we deliver are resilient.

4: Torfaen's precious natural resources, and the biodiversity they support are protected and enhanced.

A wide range of officers from across the Council are involved in delivering the plan and many of the actions are contributing towards supporting good air quality in the borough.

During 2023-24, we have:

- Reduced carbon emissions from our buildings by **32**% from the baseline year of 2019/20. Making good progress to reduce the carbon footprint of our buildings is critical to reaching our net zero goal.

- Increased Electric Vehicle (EV) charging provision at Council sites by installing 23 double chargers & 2 single chargers. This reduces the carbon impact of our vehicles.

- Delivered the 20MPH zones project. Welsh Government has made a policy commitment to make 20 Miles Per Hour the default speed in built-up areas. Reducing the speed of traffic in these areas will reduce air pollution and improve road safety for pedestrians and cyclists.

- Supporting behaviour change towards active travel by delivering 9 Active Travel School Plans and Road Safety Training to 1,300 pupils.

- Produce a flood risk management strategy which will identify future priorities for action and investment to protect Torfaen from the risks of a changing climate

The Torfaen Climate and Nature Emergency Action Plan can be found here:

Climate and Nature Emergency Action Plan [3.]

Partnership working through the Public Services Board (PSB)

The 5 Public Services Boards in Gwent merged in September 2021 to form one regional PSB for Gwent simplifying and strengthening existing partnership arrangements.

Gwent PSB adopted its first Well-being Plan in July 2023, setting out how public services will collaborate to respond to some of the key issues identified in Gwent Well-being Assessment which included information on air quality and can be found here:

·Gwent Well-being Assessment [4.]

The plan sets out two interconnecting well-being objectives and five underpinning steps across the five-year delivery period of 2023-28. It also provides a framework for the next 25 – 30 years recognising that Gwent's well-being challenges are big and complex and will require much longer-term solutions that will begin with acting in the short and medium term.

Gwent PSB well-being objectives:

1. *We want to create a fairer, more equitable and inclusive Gwent for all.*

2. *We want a climate-ready Gwent, where our environment is valued and protected, benefitting our well-being now and for future generations.*

1. *https://www.torfaen.gov.uk/en/AboutTheCouncil/ImprovingTorfaen/County-Plan/County-Plan-2022-2027.aspx*
2. *https://www.torfaen.gov.uk/en/Related-Documents/Performance-Improvement/Our-Performance/2022-2023-Annual-Self-Assessment-and-Wellbeing-Report.pdf*
3. *https://www.torfaen.gov.uk/en/Related-Documents/Climate-Change/Climate-and-Nature-Emergency-Action-Plan.pdf*
4. *https://www.gwentpsb.org/en/well-being-plan/well-being-assessment/*

4.6 Green Infrastructure Plans and Strategies

A Public Service Board, green infrastructure strategy to fulfil Objective 1 in the Torfaen Well-being Plan has been adopted which aims to bring all publicly owned land in Torfaen under prescriptive management regime aimed at maximising ecosystem services provision including improved air quality. The Strategy includes a 15 year Action Plan. This has informed Torfaen Council's own GI Assessment which looks at how the Council can implement the PSB GI Strategy on its own land.

The GI Strategy can be found here.

Green Infrastructure Strategy

Green Infrastructure, Supplementary Planning Guidance (SPG) was approved at Council in Feb 24, this provides guidance to developers on what is required to safeguard and enhance green infrastructure within new developments

The SPG can be found here

Green Infrastructure, Supplementary Planning Guidance

Opportunity mapping is underway to look at where interventions can take place to reduce flood risk and noise pollution and improve air quality through nature-based solutions. The Council has published the Tree Strategy for Torfaen which focuses on the multi-functional benefits of trees for society and future generations, including the role of trees in tackling air pollution. A review and updating of the Grounds Maintenance GIS layer has been undertaken to identify potential grassland sites which can be managed for biodiversity and this is now being used to inform grassland management regime. The Gwent Green Grid project and Local Places for Nature funding is increasing tree cover across the borough through a series of planting schemes with plans to improve the management of publicly owned woodlands. Through the auspices of the Torfaen Climate and Nature Emergency

Plan, work is also taking place to assess the potential for enhanced tree planting on road verges and other urban green space within the county borough.

Stakeholder consultations are underway on the Preferred Strategy for the Replacement LDP which aims to protect all existing green infrastructure assets from development.

A Green Infrastructure and separate Biodiversity Supplementary Planning Guidance (SPG) have been formally adopted to assist developers to protect and enhance existing GI on development sites and inform design decisions which will reduce impact of and amount of noise pollution on any site.

A joint draft Nature Recovery Action Plan (NRAP) has been produced setting out the priorities for the recovery of nature across Blaenau Gwent and Torfaen. The plan will highlight the important of urban green infrastructure and its contribution to mitigating the impacts air and noise pollution. A review of the Torfaen Biodiversity and Ecosystem Resilience Plan has also commenced. This will set the priorities for compliance with the Council's public bodies biodiversity under section 6 of the Environment (Wales) Act 2016.

[1] *https://www.torfaen.gov.uk/en/Related-Documents/Green-Infrastructure/Green-Infrastructure-Strategy.pdf*

2. https://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/Supplementary-Planning-Guidance/Green-Infrastructure-Supplementary-Planning-Guidance.pdf

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

This Progress Report confirms that measured air quality within Torfaen continues to meet national standards, as concentrations of all monitored pollutants are within the stipulated limits.

The exceedance of the annual objective for Nitrogen Dioxide recorded at St Lukes Road, Pontnewynydd (Tube TCBC 24) and reported in the 2020 Progress report has not been repeated in subsequent years including 2023, despite traffic returning to pre-pandemic levels. The local authority has continued to closely monitor this section of highway in 2023, using the additional 6 diffusion tubes sited along the road.

5.2 Conclusions relating to New Local Developments

There have been no new industrial installations and no new or substantially altered roads within Torfaen. There are no new fugitive sources of emissions. Emissions from domestic solid fuel burning have been assessed and the results indicate that there is an insufficient density of coal-fired homes to be considered significant. This assessment therefore determines that further investigation is not necessary

5.3 Proposed Actions

This Progress Report confirms that during 2023 the Air Quality in Torfaen met national objectives. There is therefore no requirement to proceed to a fast track AQMA declaration.

Torfaen intends to continue the annual review of diffusion tube monitoring, which began in 2020.

Torfaen began a co-location study in April 2021, siting a triplicate of diffusion tubes at the Cwmbran Crownbridge automatic monitoring station, this study will continue for subsequent years. Comparisons between the tube results and the automatic results will continue to give more accurate bias factors.

We will review the 2024 data from our sensor and make a decision on whether to continue with this resource.

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27. Welsh Government (2024) *Environment (Air Quality and Soundscapes) (Wales) Act 2024*

28. Torfaen Public Service Board (2022), *Well-being Plan for Torfaen 2022-2027*

29. Torfaen Public Service Board (2023), *Torfaen Well-being Assessment. May 2023*

Appendices

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

Appendix B: A Summary of Local Air Quality Management.

Appendix C: Air Quality Monitoring Data QA/QC.

Appendix D: Individual Diffusion Tube Maps and Monthly Results for 2023.

Appendix E: Sensor Results.

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

Table A.1 – Full Monthly Diffusion Tube Results for 2023 (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Simple Annual Mean (µg/m3)			
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.706)	Distance Corrected to Nearest Exposure	Comment
TCBC3	328264	200781	27.3	34.0	31.0	24.1	20.2	21.6	24.2	22.7	29.9	29.1	32.4	25.4	26.8	18.9	-	
TCBC5	329430	197006	43.3	41.8	37.0	32.9	27.3	29.6	26.3	30.7	40.5	41.5	40.9	26.1	34.8	24.6	-	
TCBC6	328500	194522	28.4	24.1	20.1	22.1	17.0	22.6		11.2	20.0	22.1	20.5	14.5	20.2	14.3	-	1 missing tube
TCBC8	332672	192878	22.4	22.7	17.0	16.9	14.4	12.6	10.0	9.8	16.8	15.6	20.1	12.1	15.9	11.2	-	
TCBC9	330400	194857	19.7	22.8	16.6	16.7	13.1	10.1	9.9	8.9	17.0	18.3	19.1	13.9	15.5	10.9	-	
TCBC10	330011	196009	23.7	28.3	24.2	21.9	18.8	19.2	18.0	18.1	26.6	25.2	27.6	20.8	22.7	16	-	
TCBC11	330498	199884	19.8	19.2	16.1	12.2	9.0	7.9	9.1	8.6	15.4	15.8	15.2	12.8	13.4	9.5	-	
TCBC15	329539	198464	27.5	26.6	22.5	20.8	15.7	16.4	14.8	15.1	22.1	22.2	25.0	16.0	20.4	14.4	-	
TCBC16	329147	196408	35.2	37.2	34.8	30.8	24.2	22.8	23.7	25.3	35.2	32.7	36.4	27.2	30.5	21.5	-	
TCBC17	330578	195735	26.0	23.3		16.4	13.7	13.8	12.3	12.5	19.6	21.1	19.4	16.6	17.7	12.5	-	1 missing tube
TCBC18	328978	200434	38.0	39.2	34.5	32.7	26.9	27.9	25.2	24.1	24.7	34.1	31.9	30.5	30.8	21.7	-	
TCBC19	326974	203354	39.1	37.9	33.9	33.9	22.4	22.5	23.5	22.6	30.2	29.9	29.4	23.4	29.1	20.5	-	
TCBC20	329240	195210	40.2	37.6		31.9	26.3	29.0	24.4	27.9	39.6	30.5	36.5	31.0	32.3	22.8	-	1 missing tube
TCBC21	330801	201731	21.4	22.5	14.4	15.1	11.5	12.7	11.3	12.7	17.0	16.4	23.0	13.6	16.0	11.3	-	
TCBC22	325111	208826	20.2	20.5	16.5	18.5	14.2	15.1	12.0	14.3	19.0	18.4	17.6	10.0	16.4	11.5	-	
TCBC23	329308	198177	24.7	25.8	19.0	22.6	19.0	16.5	11.1	17.2	21.2	23.1	25.5	10.8	19.7	13.9	-	

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Simple Annual Mean (µg/m3)			
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.706)	Distance Corrected to Nearest Exposure	Comment
TCBC24	327274	201928	58.7	56.0	54.9	51.6	40.1	40.6	40.0	38.4	49.9	37.4	53.9	41.2	46.9	33.1	-	
TCBC24/1	327237	201967	44.9	44.4	43.7	40.6	29.9	30.4	30.7	29.4	40.3	39.1	38.5	32.3	37.0	26.1	-	
TCBC24/2	327214	202005	41.4	50.7	39.0	42.0	34.0	39.1	35.8	35.3	48.5	40.7	48.8	36.9	41.0	28.9	-	
TCBC24/3	327187	202051	44.9	47.2	35.5	38.9	35.1	33.1	30.3	32.3	42.6	38.1	40.3	33.2	37.6	26.5	-	
TCBC24/5	327308	201912	50.0	49.3	37.6	47.2	42.9	41.5	29.1	32.6	43.8	40.6	46.6	31.4	41.1	29	-	
TCBC25	328206	201300	34.8	33.4	32.1	31.7	28.8	28.4	21.3	24.8	31.4	35.2	34.2	22.7	29.9	21.1	-	
TCBC26	330743	196609	34.4	43.0	29.9	35.8	30.5	26.0	17.6	25.3	31.7	36.1	34.8	20.2	30.4	21.5	-	
TCBC27	326914	202933	40.4	46.4	43.4	41.3	29.2	31.1	26.8	30.1	41.2	41.6	37.0	25.8	36.2	25.5	-	
TCBC28	326907	202741	48.4	41.0	36.3	37.9	27.3	29.6	24.8	24.0	36.4	37.0	42.1	28.1	34.4	24.3	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table A.1**

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

☒ **Local bias adjustment factor used.**

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

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

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**.

See Appendix C for details on bias adjustment and annualisation.

Appendix B: A Summary of Local Air Quality Management

5.4 Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995, as amended by the Environment Act 2021, and associated government guidance. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas and to determine whether or not the air quality objectives are being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans must then be reviewed and updated no later than every five years; or if a local authority considers there is a need for further or different measures to be taken in order to achieve air quality standards; or if significant changes to sources occur within your local area.

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

5.5 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 micrograms per cubic metre µg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table B.1 – Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as	Date to be achieved by
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO_2)	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	31.12.2010
Particulate Matter (PM_{10})	40µg/m^3	Annual mean	31.12.2010
Sulphur dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	16.25µg/m^3	Running annual mean	31.12.2003
Benzene	5µg/m^3	Annual mean	31 12 2010
1,3 Butadiene	2.25µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m^3	Maximum Daily Running 8-Hour mean	31.12.2003
Lead	0.25µg/m^3	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

5.6 QA/QC of Diffusion Tube Monitoring

Torfaen County Borough Council uses tubes provided and analysed by SOCOTEC (former Environmental Scientifics Group (ESG)) using 50% TEA (Triethanolamine) in acetone, which are typically exposed for four-week periods in accordance with the National NO_2 Network exposure calendar.

SOCOTEC is accredited to NAMAS and UKAS BS EN ISO 9001 and has implemented the methodology set out in the Harmonisation Practical Guidance. In the AIR PT[1] intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, 100% of the available SOCOTEC results for 2023 scored the highest possible result of **satisfactory**.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Torfaen County Borough Council recorded data capture of 75% or more therefore it was not required to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

Torfaen County Borough Council have applied a local bias adjustment factor of **0.706,** to the 2023 monitoring data, derived from triplicate diffusion tubes co-located at the Cwmbran Crownbridge automatic monitoring station. A summary of bias adjustment factors used by Torfaen County Borough Council over the past five years is presented in **Error! Reference source not found.**

[1] Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (2022 – June 2024).
[2] Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies, by Laboratory

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local		0.706
2022	Local		0.74
2021	Local		0.74
2020	National	03/21	0.77
2019	National	06/20	0.75

5.7 QA/QC of Automatic Monitoring

Torfaen County Borough Council operates one automatic monitoring site; Cwmbran Crownbridge, located in the grounds of Croesyceiliog Comprehensive School in the town of Cwmbran in the south of the County Borough. The Council's own officers undertake the Local Site Operator duties. Quality control procedures as detailed in AEA Technology's site operator's manual are followed. The analysers are calibrated once every four weeks using gases traceable to national standards. All data are scaled in line with four weekly calibration checks. The analysers also perform an internal overnight span check and are serviced every 6 months. Routine monthly calibration visits are carried out by the Council. Site audits and QA/QC calibrations are carried out by Bureau Veritas and Ricardo and who also manage and ratify the data. The data presented in this report are ratified. Live and historic data are available here.

Air Quality in Wales

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

Levels of PM_{10} are continuously measured at the Cwmbran monitoring site using a Tapered Element Oscillating Microbalance (TEOM) particulate monitor manufactured by Rupprecht and Pattaschnick. As in 2021, the 2022 data set could not be corrected as previous years by using a Volatile Correction Model (VCM). This was due to a lack of TEOM Filter Dynamics Measurement System (FDMS) data.

Section 7.149 of TG(16) states;

> *"It should be noted that due to the gradual withdrawal of TEOM-FDMS instruments and phased replacement with new compliant PM monitoring equipment on the AURN, the extent of data available to maintain the VCM has significantly reduced in recent years. As such, the extent of geographical coverage for the applicability and future viability of the VCM has become limited"*

Despite the recent modification the VCM correction website to allow FDMSs to be within 200km to be used for VCM correction (up from the previous 130 km), unfortunately Torfaen still had no coverage.

For 2023 data, we have therefore reverted to the historical recommendation of applying a 1.3 multiplication factor to the TEOM results, this being the best method available to

account for the loss of volatile particulates in the monitor. Any comparisons made in this report of the 2023 data, with data prior to 2021, are therefore merely indicative.

Automatic Monitoring Annualisation

The automatic monitoring site at Cwmbran Crownbridge only managed a 42% data capture due to data being rejected during the QA/QC process because of an issue with the sampling head. Data has therefore been annualised. Annualisation details are presented in **Table C.2.**

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Torfaen County Borough Council required distance correction during 2023.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Site 1 Name	Annualisation Factor Site 2 Name	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Cwmbran Crownbridge (NO_2)	Newport St Julians,Urban Background	Narberth Rural	None Available	None Available	0.87	9.62	8.4	Only 1 suitable site within a 50 mile radius. Narberth is 75 miles away

Table C.3 – Local Bias Adjustment Calculations

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	04/01/2023	01/02/2023	19.3	16.8	19.3	18	1.4	8	3.6	13.8	99.4	Good	Good
2	01/02/2023	01/03/2023	15.2	17.4	17.1	17	1.2	7	3.0	13.4	100.0	Good	Good
3	01/03/2023	05/04/2023	12.9	13.2	12.1	13	0.6	4	1.4	8.0	96.9	Good	Good
4	05/04/2023	03/05/2023	8.8	11.3	12.4	11	1.8	17	4.6	7.9	99.9	Good	Good
5	03/05/2023	31/05/2023	9	8	8.6	9	0.5	6	1.3	5.6	100.0	Good	Good
6	31/05/2023	05/07/2023	7.4	7	6.9	7	0.3	4	0.7	5.7	52.0	Good	or Data Capture
7	05/07/2023	02/08/2023	6.5	5.3	5.6	6	0.6	11	1.6	4.2	99.4	Good	Good
8	02/08/2023	06/09/2023	8.6	7.3	7.6	8	0.7	9	1.7	5.8	96.3	Good	Good
9	06/09/2023	04/10/2023	13.5	10.6	12.2	12	1.5	12	3.6	7.4	99.7	Good	Good
10	04/10/2023	01/11/2023	15.7	14		15	1.2	8	10.8	9.3	99.7	Good	Good
11	01/11/2023	06/12/2023	18.3	16.9	18.2	18	0.8	4	1.9	12.1	100.0	Good	Good
12	06/12/2023	03/01/2024	9.1	9.4	9.6	9	0.3	3	0.6	6.3	99.9	Good	Good
13													
										Overall survey -->		Good precision	Good Overall DC

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID: Cwmbran Crownbridge

Precision: 12 out of 12 periods have a CV smaller than 20%

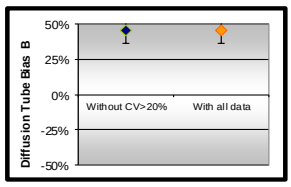
(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%

Bias calculated using 11 periods of data
Bias factor A 0.7 (0.66 - 0.74)
Bias B 44% (35% - 53%)
Diffusion Tubes Mean: 12 µgm^{-3}
Mean CV (Precision): 8
Automatic Mean: 9 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 9 (8 - 9) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 11 periods of data
Bias factor A 0.7 (0.66 - 0.74)
Bias B 44% (35% - 53%)
Diffusion Tubes Mean: 12 µgm^{-3}
Mean CV (Precision): 8
Automatic Mean: 9 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 9 (8 - 9) µgm^{-3}



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Version 04 - February 2011

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	04/01/2023	01/02/2023	19.3	16.8	19.3	18.5	1.44	7.82	3.59	Good
2	01/02/2023	01/03/2023	15.2	17.4	17.1	16.6	1.19	7.20	2.96	Good
3	01/03/2023	05/04/2023	12.9	13.2	12.1	12.7	0.57	4.47	1.41	Good
4	05/04/2023	03/05/2023	8.8	11.3	12.4	10.8	1.84	17.03	4.58	Good
5	03/05/2023	31/05/2023	9	8	8.6	8.5	0.50	5.90	1.25	Good
6	31/05/2023	05/07/2023	7.4	7	6.9	7.1	0.26	3.73	0.66	Good
7	05/07/2023	02/08/2023	6.5	5.3	5.6	5.8	0.62	10.77	1.55	Good
8	02/08/2023	06/09/2023	8.6	7.3	7.6	7.8	0.68	8.69	1.69	Good
9	06/09/2023	04/10/2023	13.5	10.6	12.2	12.1	1.45	12.00	3.61	Good
10	04/10/2023	01/11/2023	15.7	14		14.9	1.20	8.09	10.80	Good
11	01/11/2023	06/12/2023	18.3	16.9	18.2	17.8	0.78	4.39	1.94	Good
12	06/12/2023	03/01/2024	9.1	9.4	9.6	9.4	0.25	2.69	0.63	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA
Version 04 - February 2011

Site Name/ ID: Cwmbran Crownbridge

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%

Bias calculated using 11 periods of data
Tube Precision: 8 Automatic DC: 99%
Bias factor A: 0.7 (0.66 - 0.74)
Bias B: 44% (35% - 53%)

Information about tubes to be adjusted
Diffusion Tube average: 12 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: 8 +/- 1 µgm^{-3}

Adjusted measurement (95% confidence level) with all data

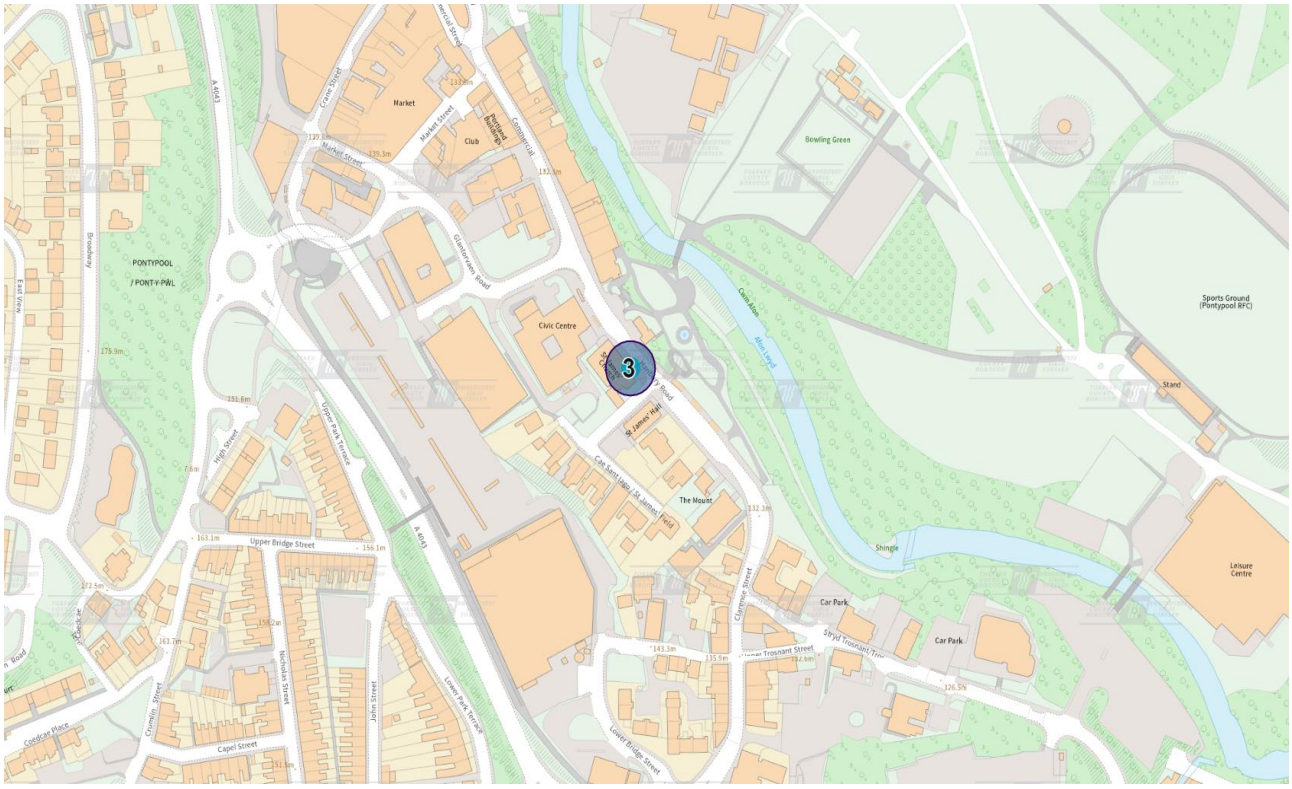
Bias calculated using 11 periods of data
Tube Precision: 8 Automatic DC: 99%
Bias factor A: 0.7 (0.66 - 0.74)
Bias B: 44% (35% - 53%)

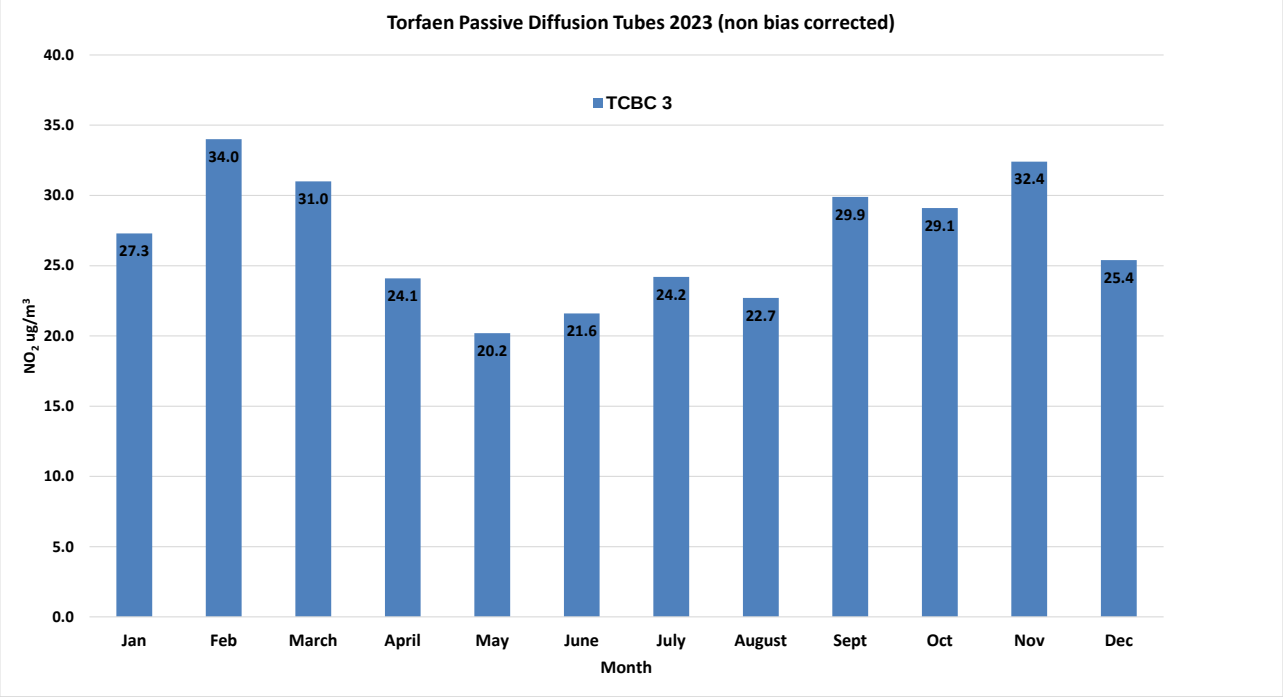
Information about tubes to be adjusted
Diffusion Tube average: 12 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: 8 +/- 1 µgm^{-3}

Notes: A single local bias adjustment factor has been used to bias adjust the 2023 diffusion tube results

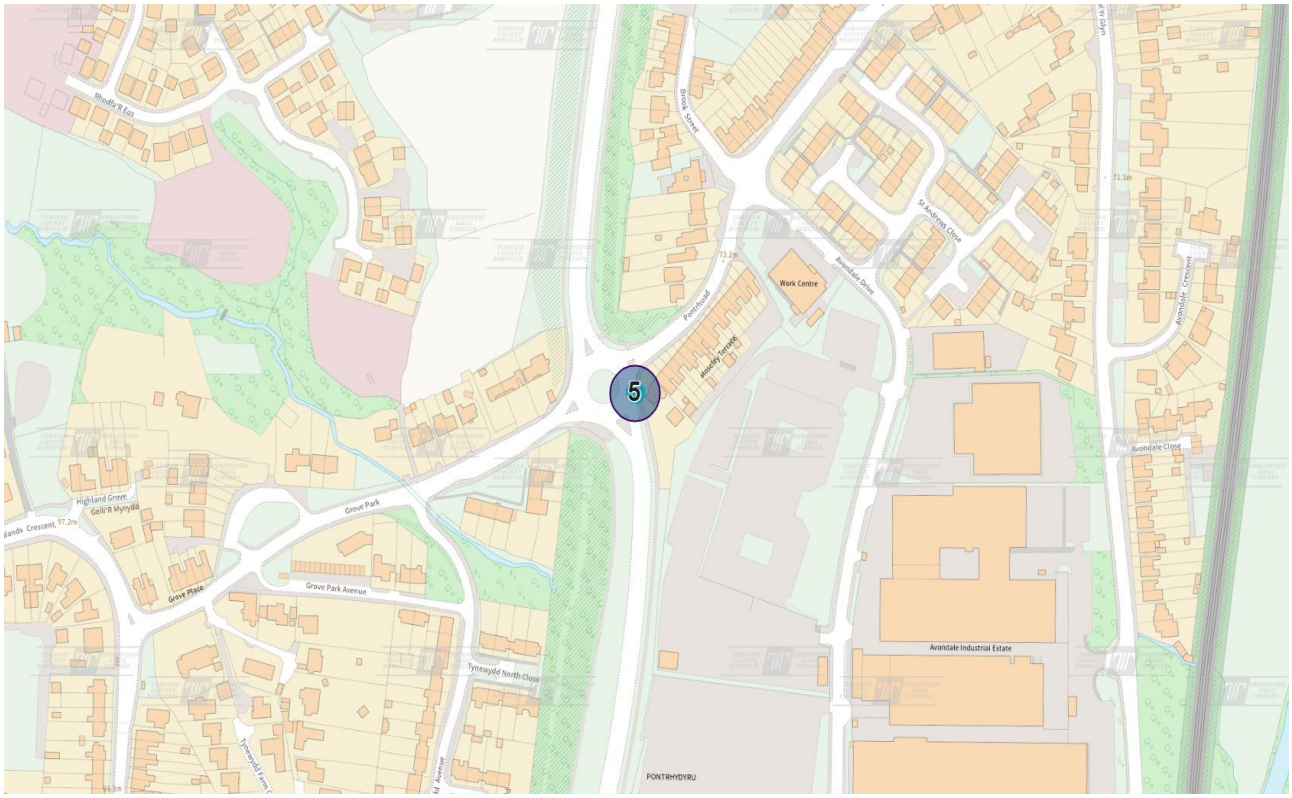
Appendix D: Individual Diffusion Tube Maps and Monthly Results for 2023

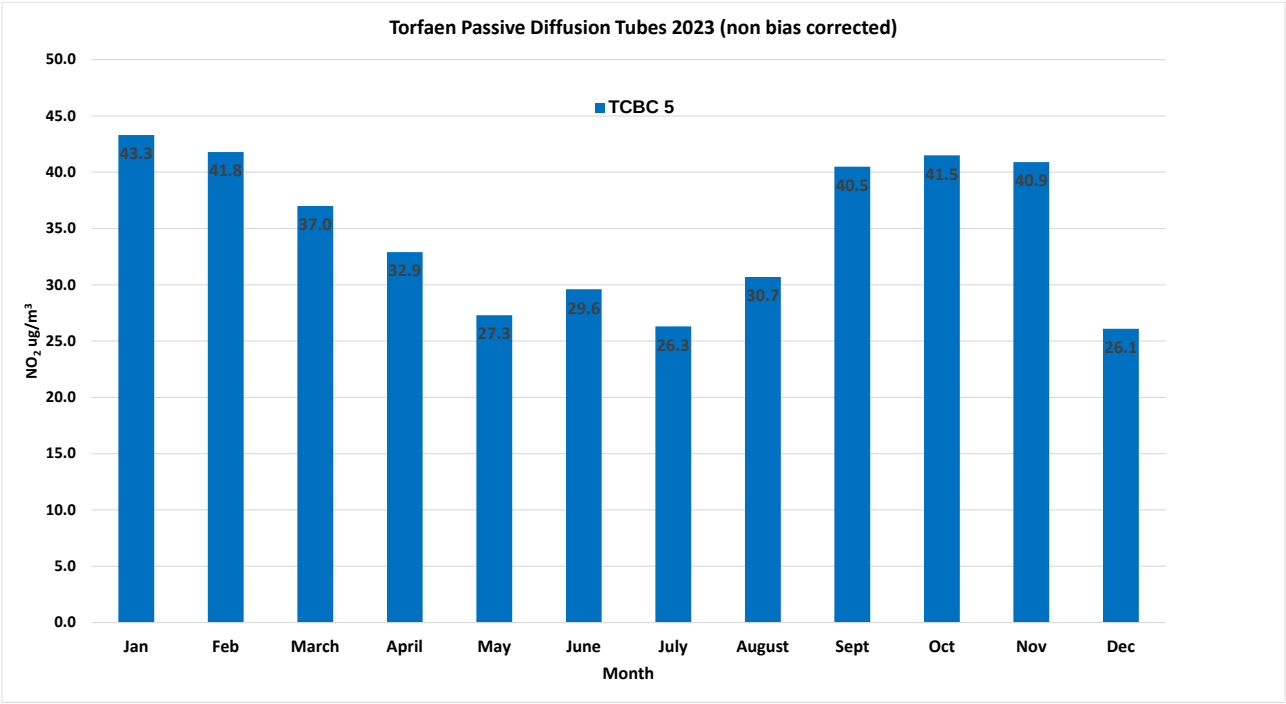
TCBC3	Pontypool Town Centre	Roadside	X328264 , Y200781



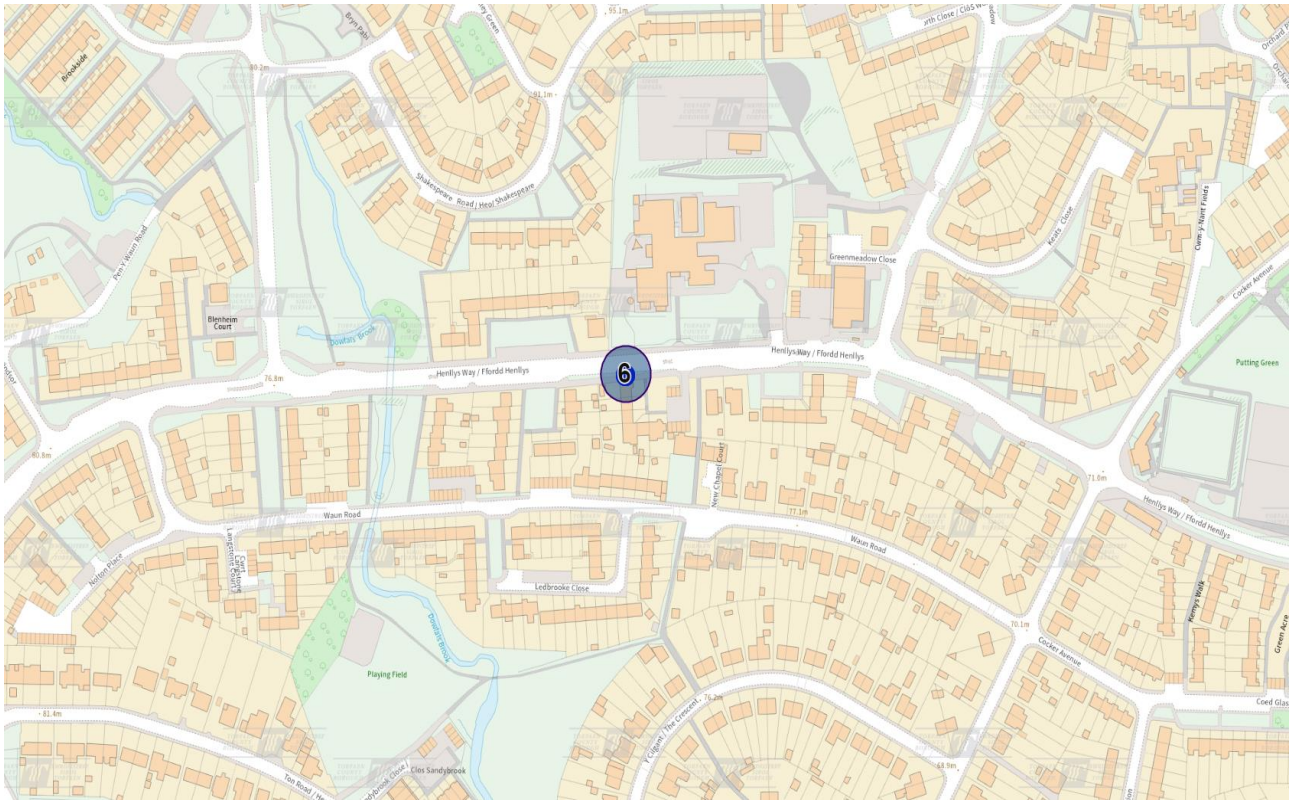


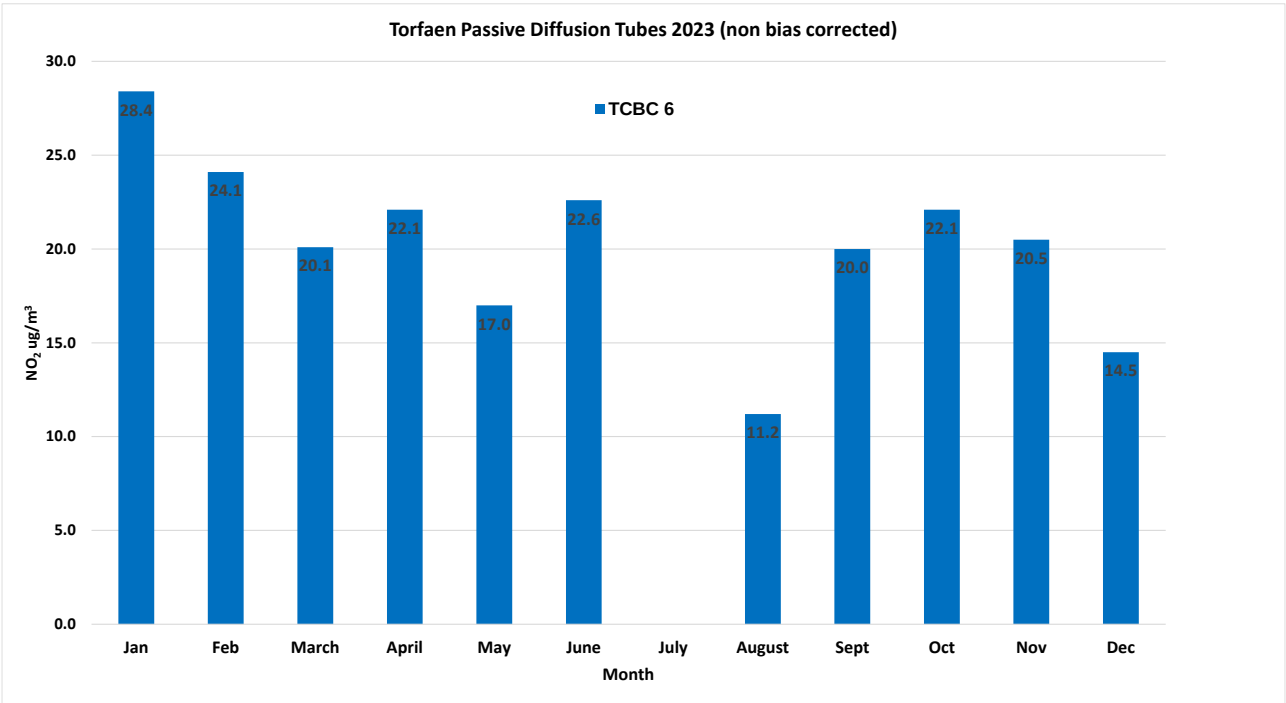
TCBC5	A4051, Cwmbran Drive, Cwmbran	Roadside	X328500, Y194522



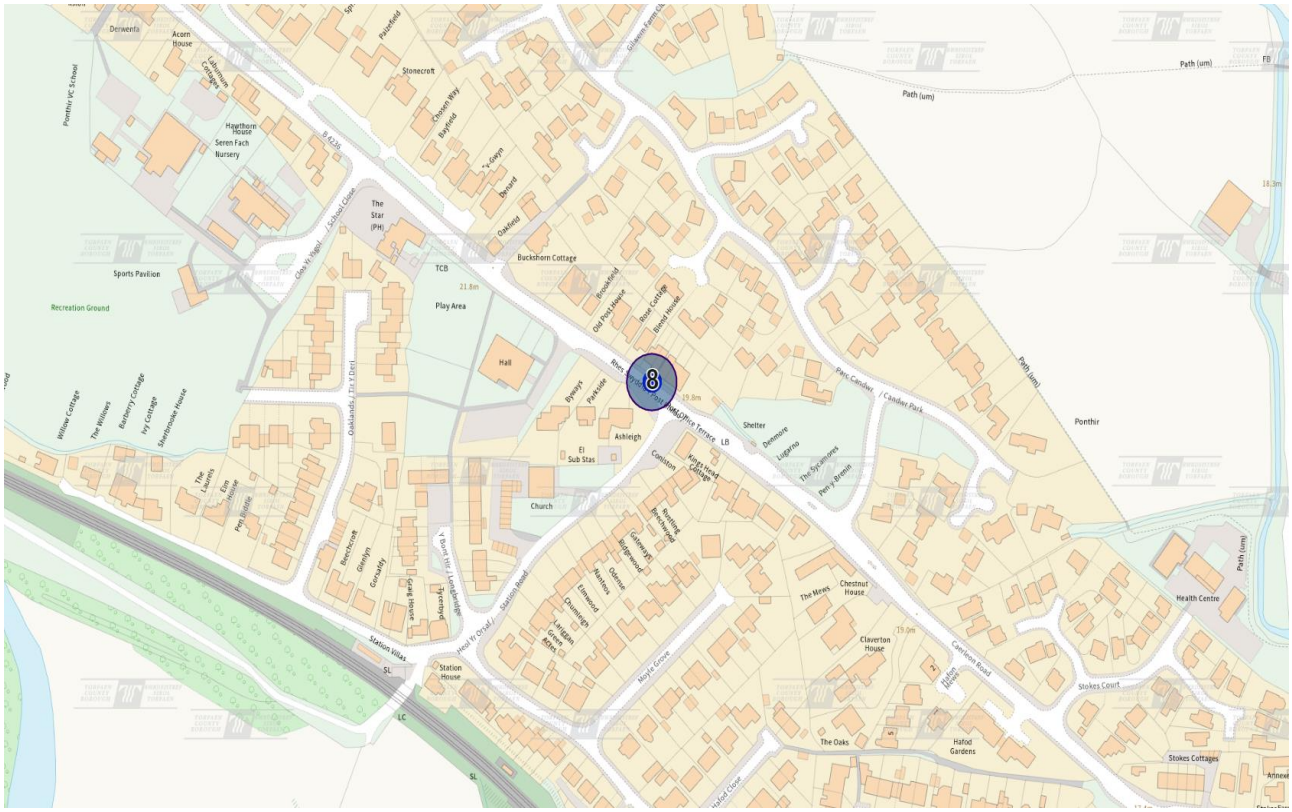


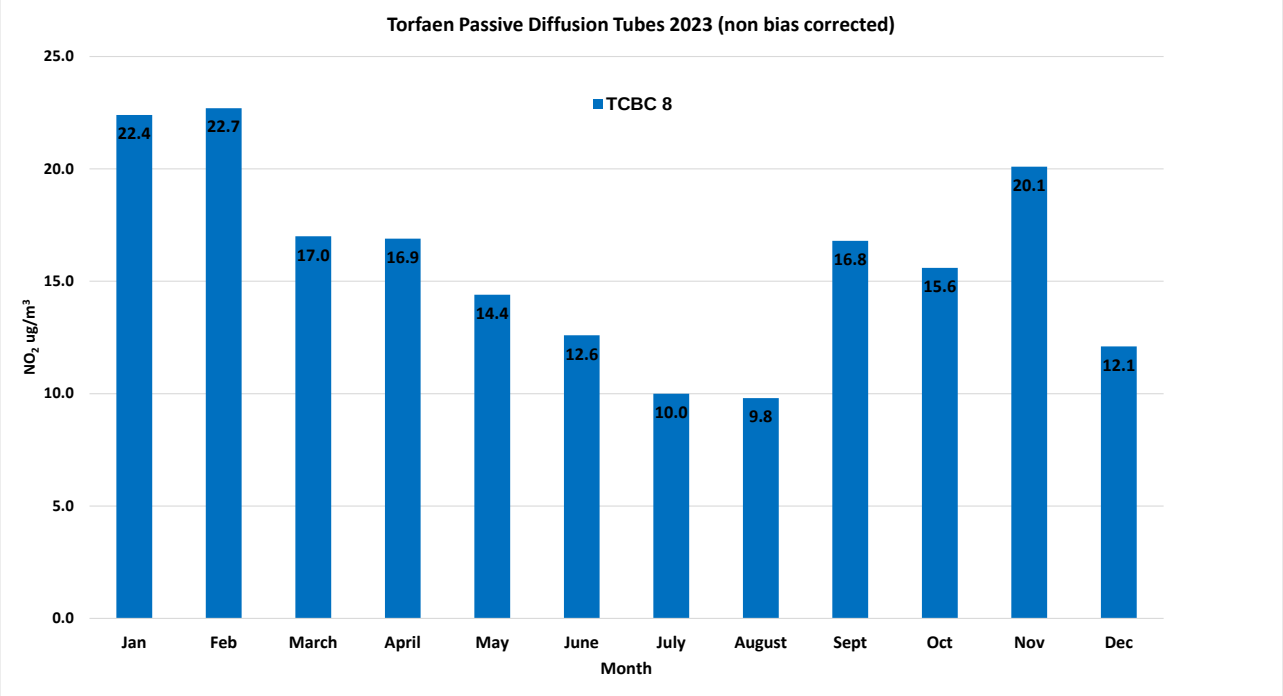
TCBC6	Henllys Way, Cwmbran	Roadside	X328500, Y194522



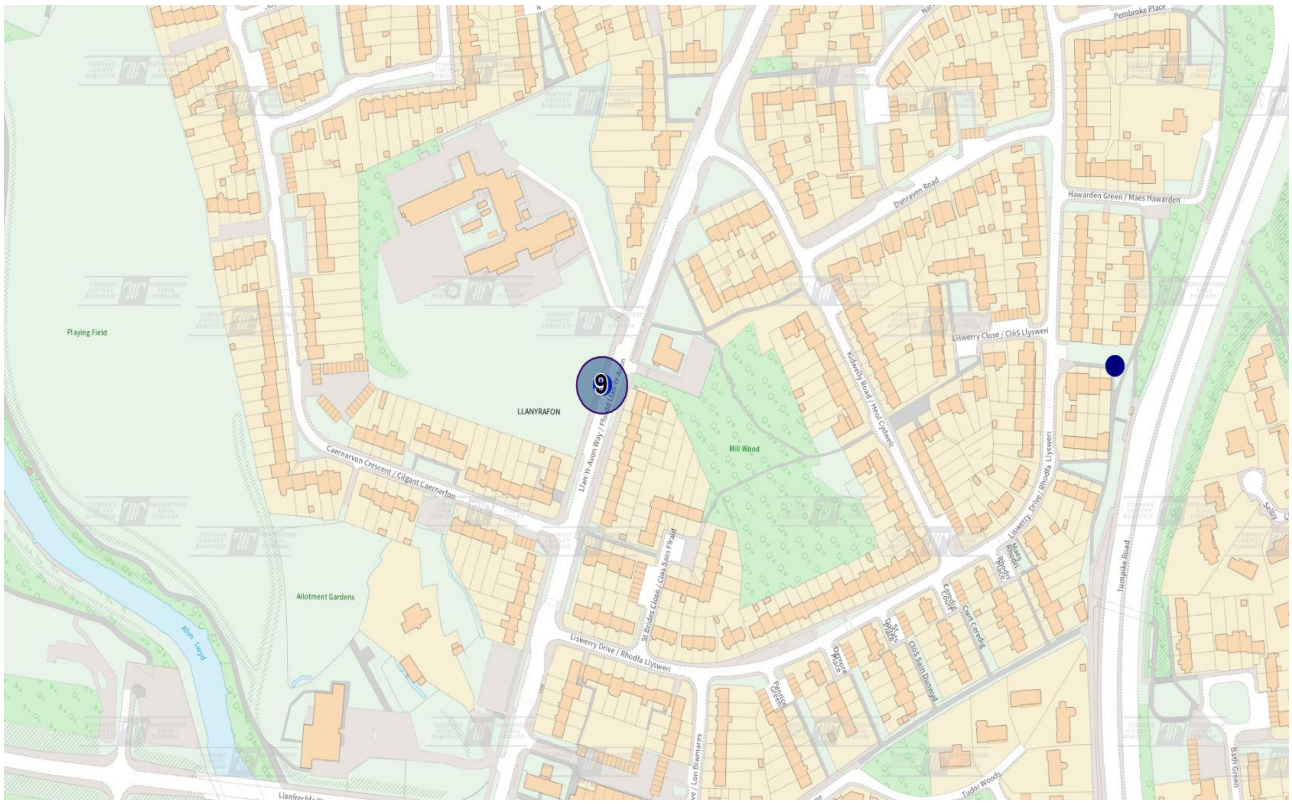


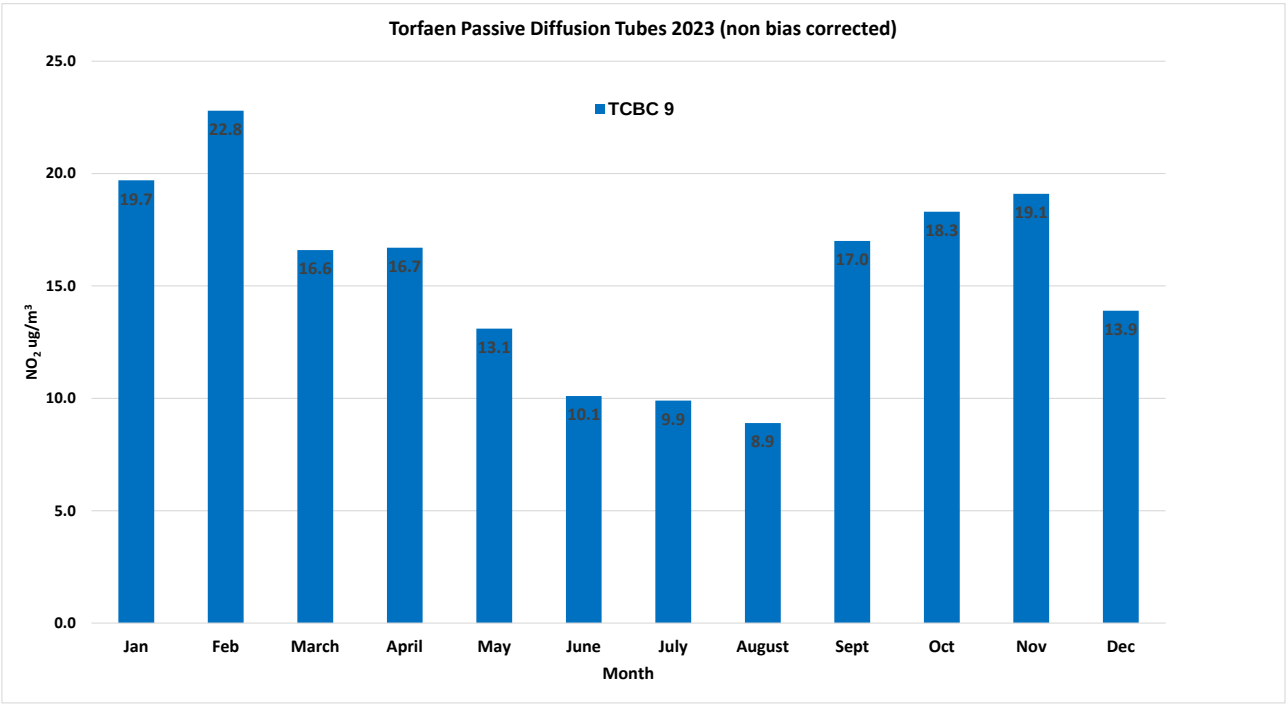
TCBC8	Caerleon Road, Ponthir	Roadside	X332672, Y192878



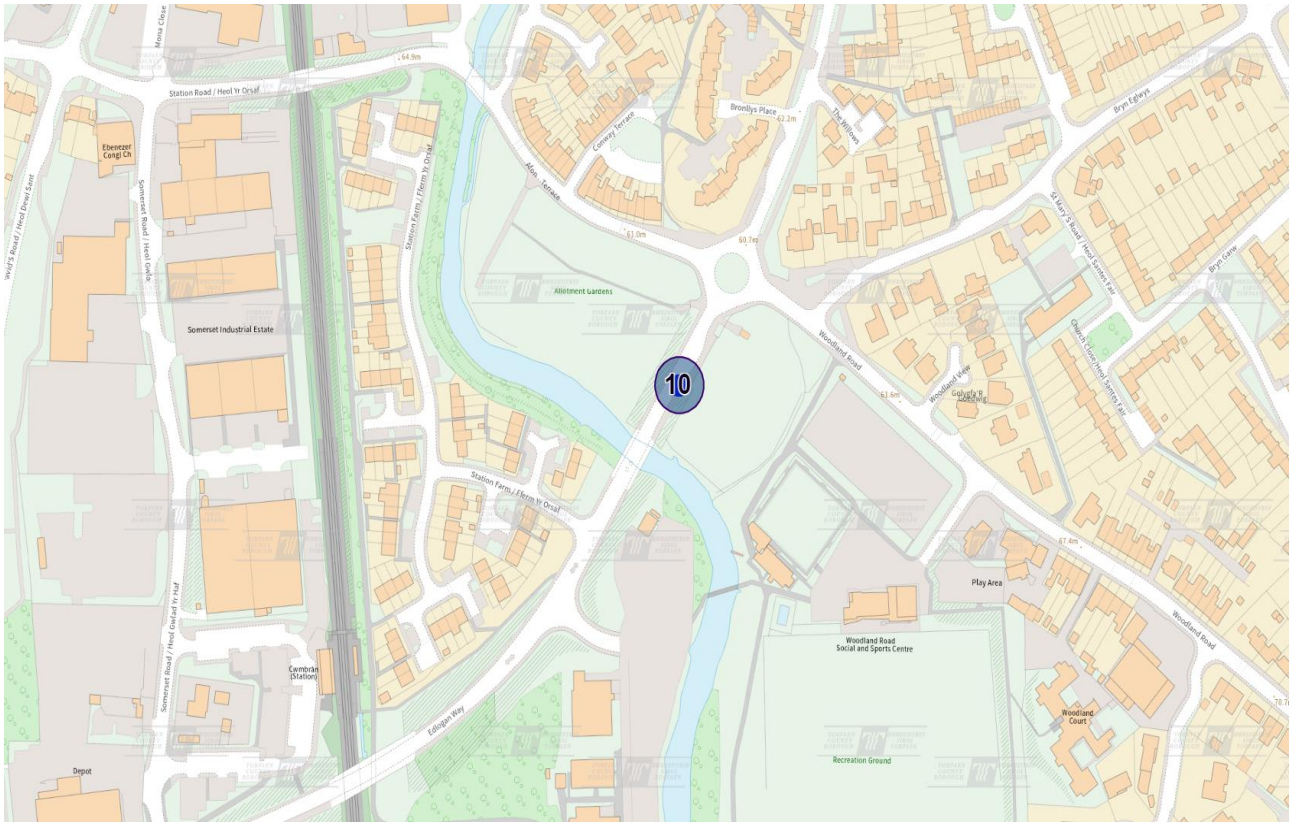


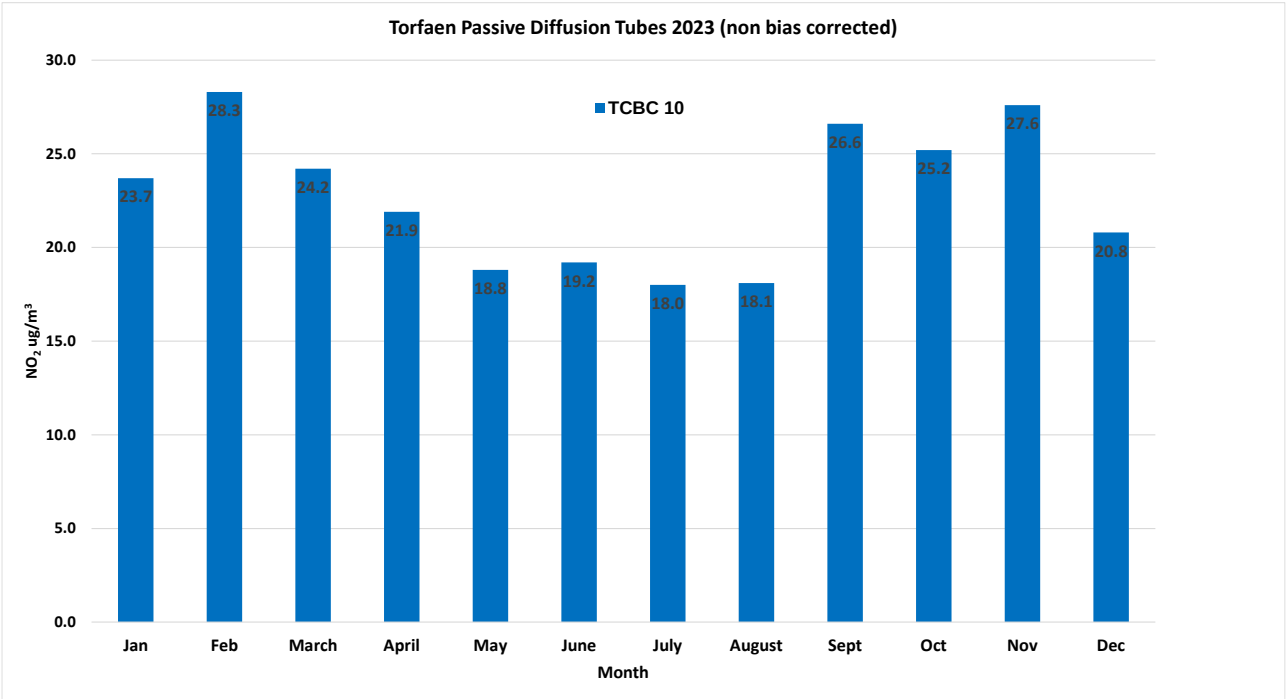
TCBC9	Llanyravon Way, Cwmbran	Roadside	X330400, Y194857



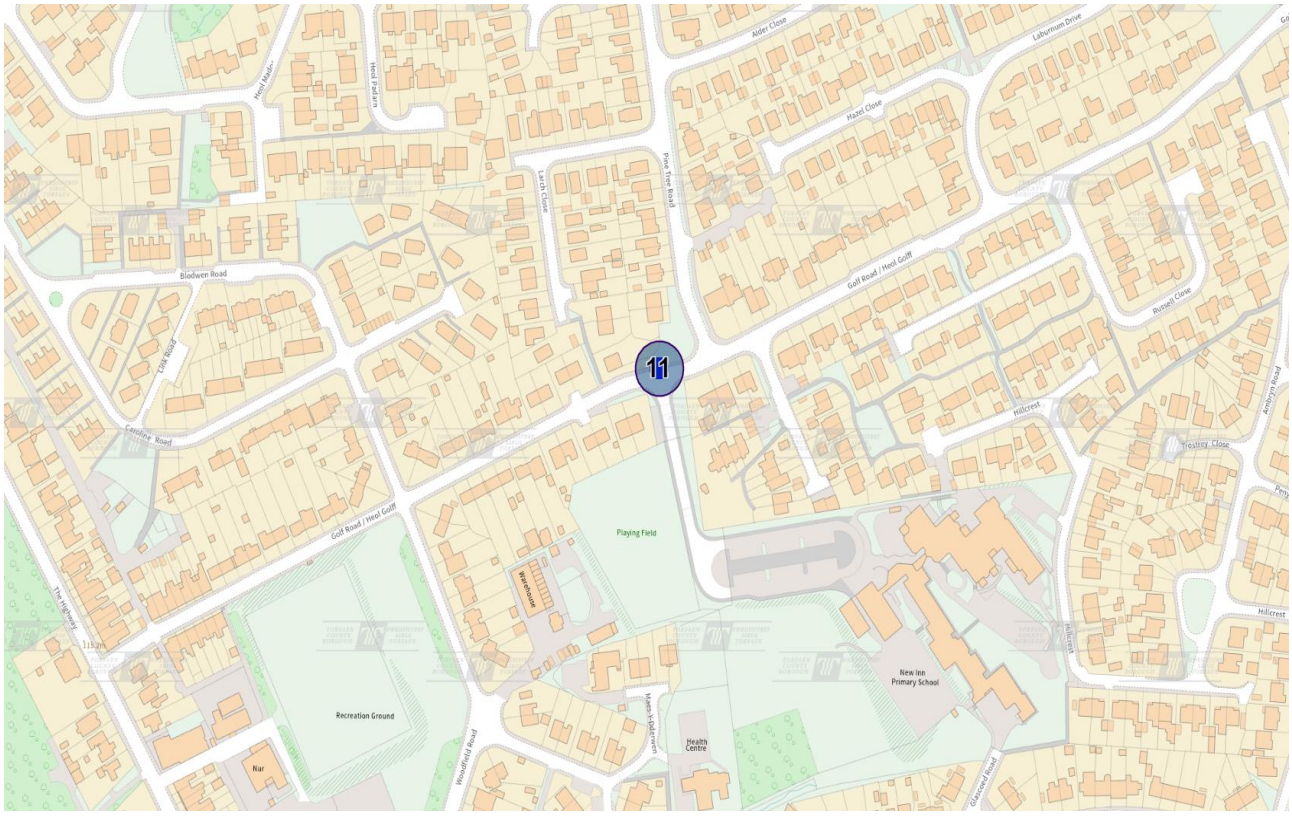


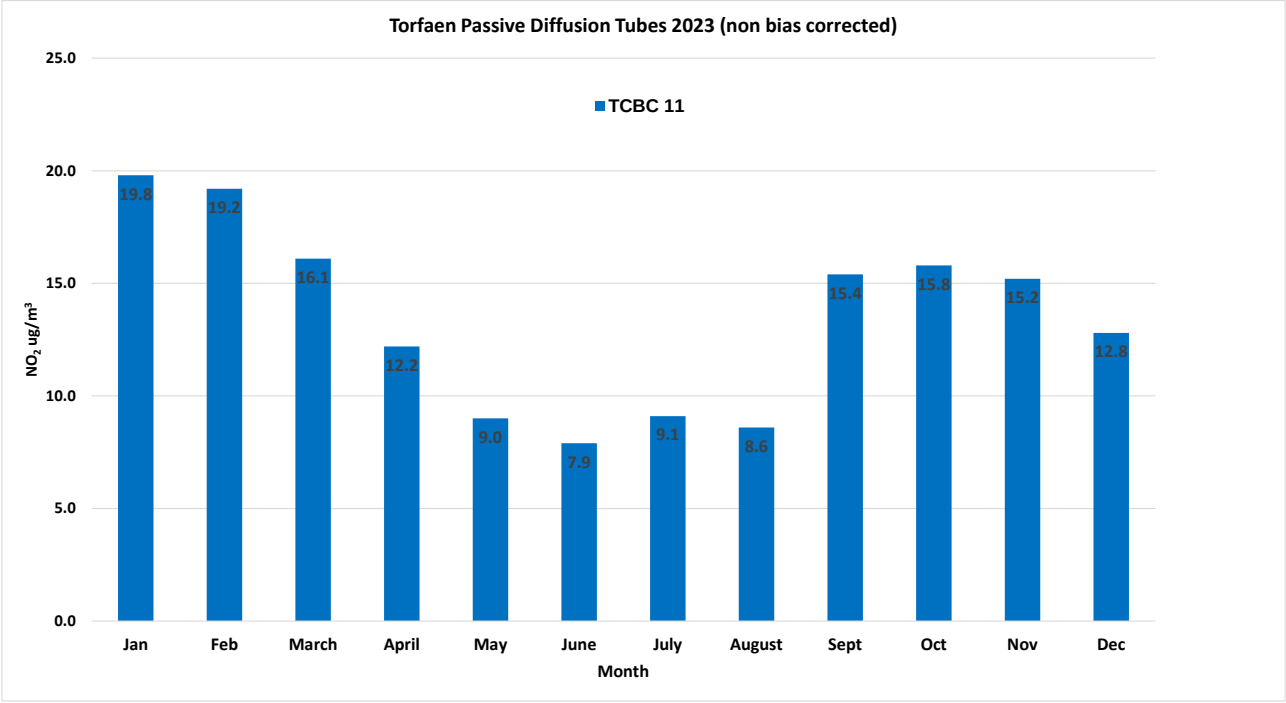
TCBC10	Edlogan Way, Cwmbran	Roadside	X330011, Y196009



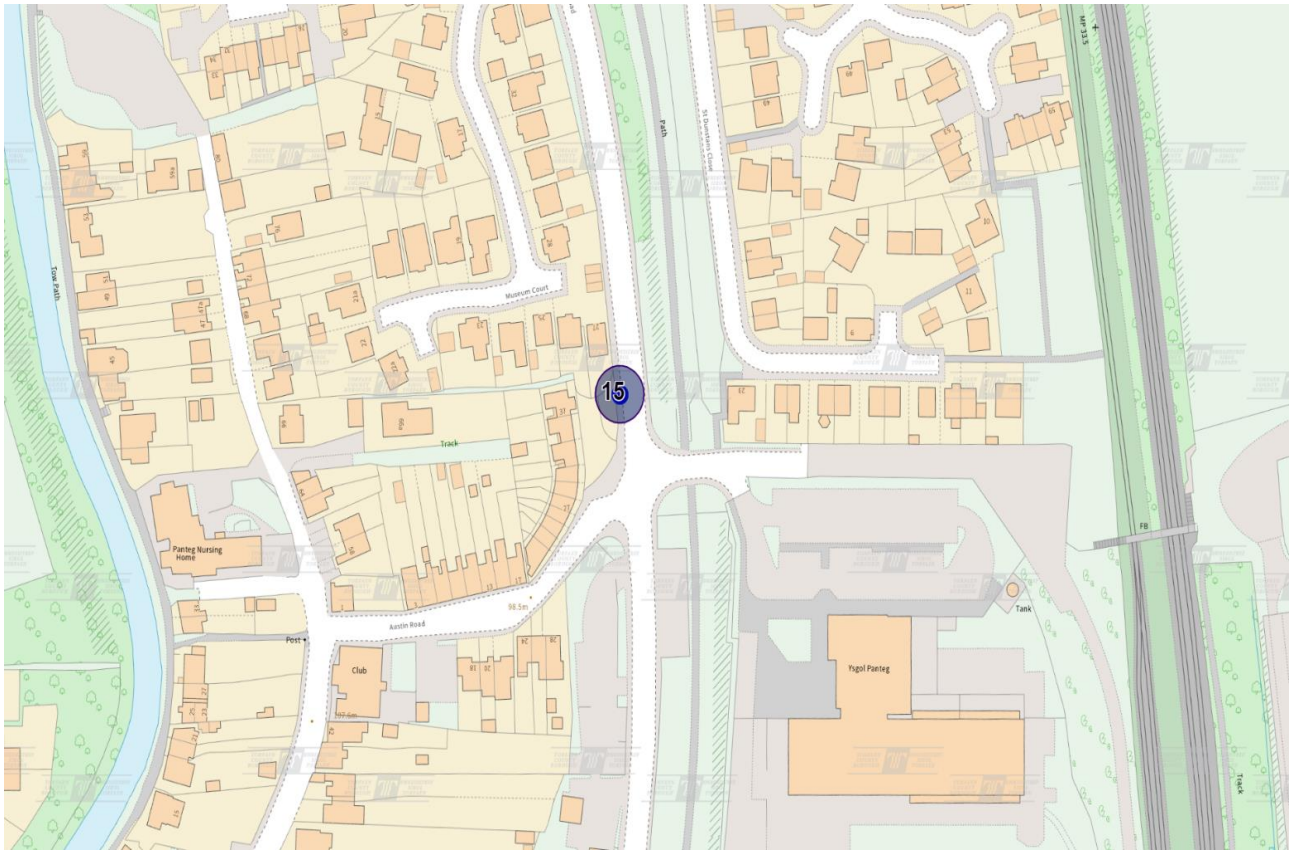


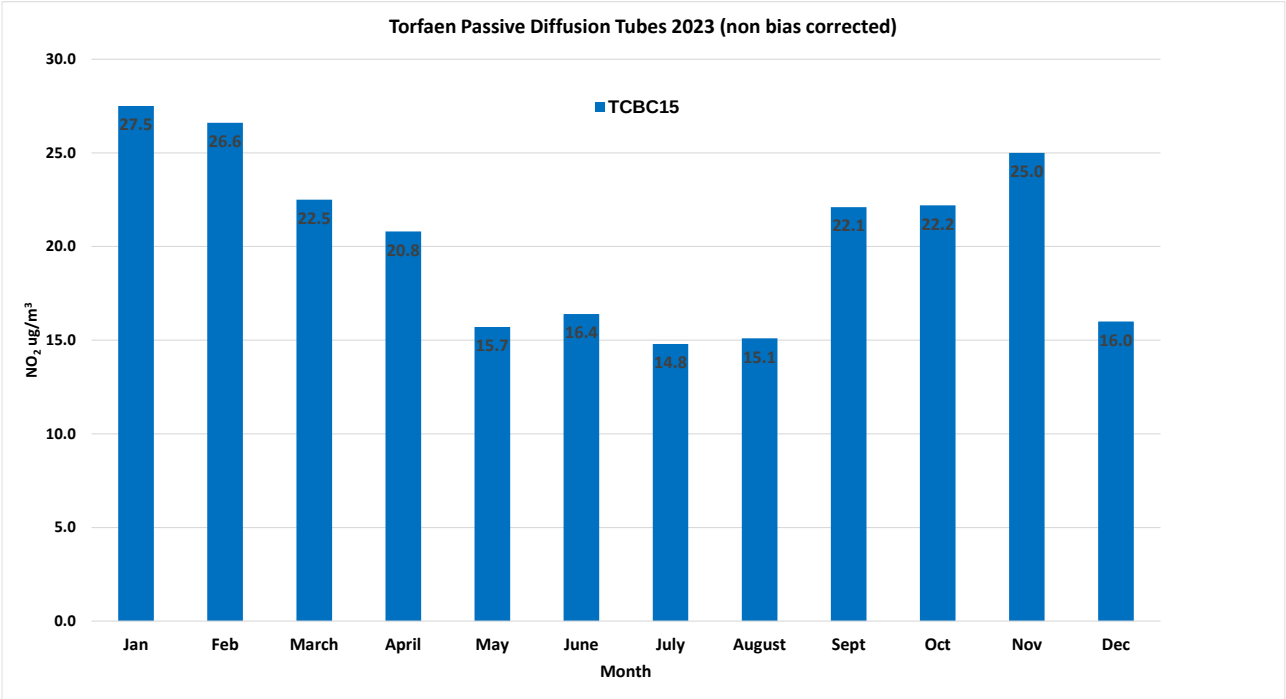
TCBC11	Golf Road, New Inn, Pontypool	Urban Background	X330498, Y199884



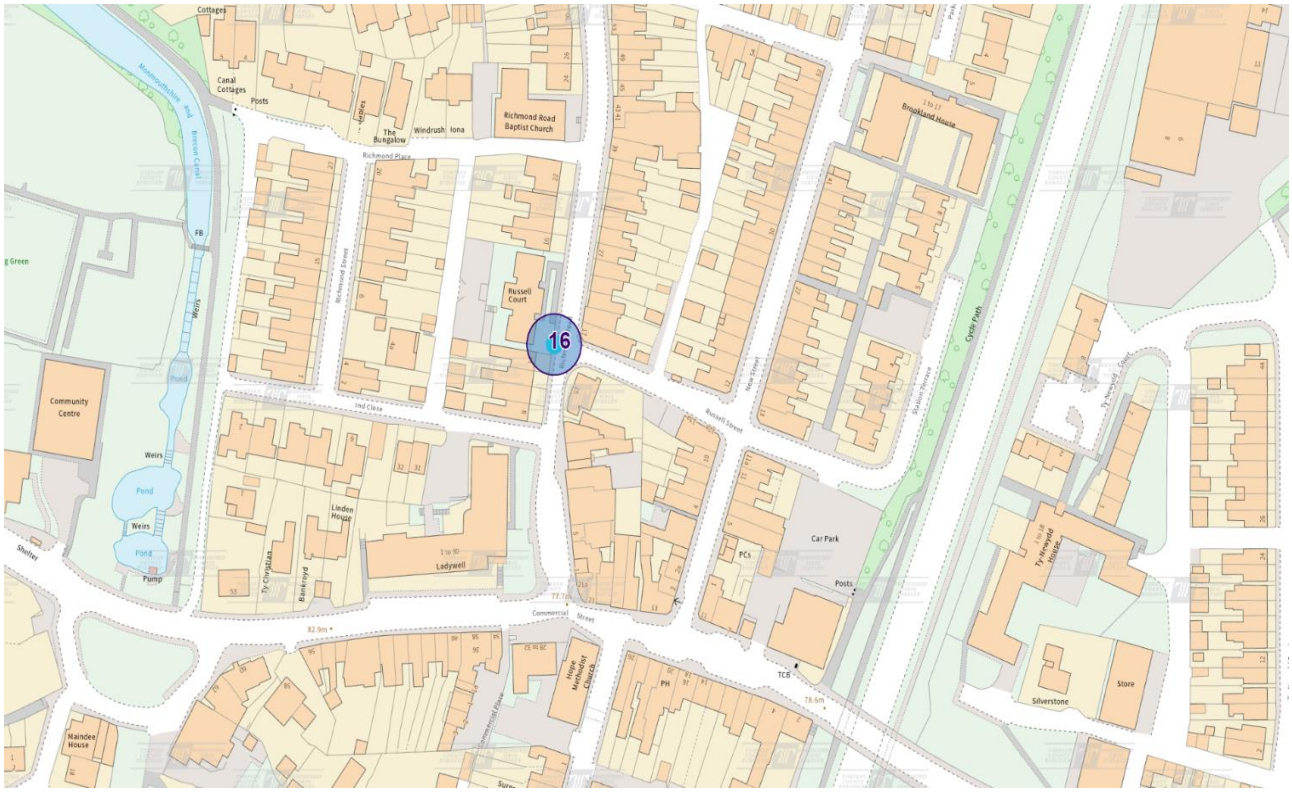


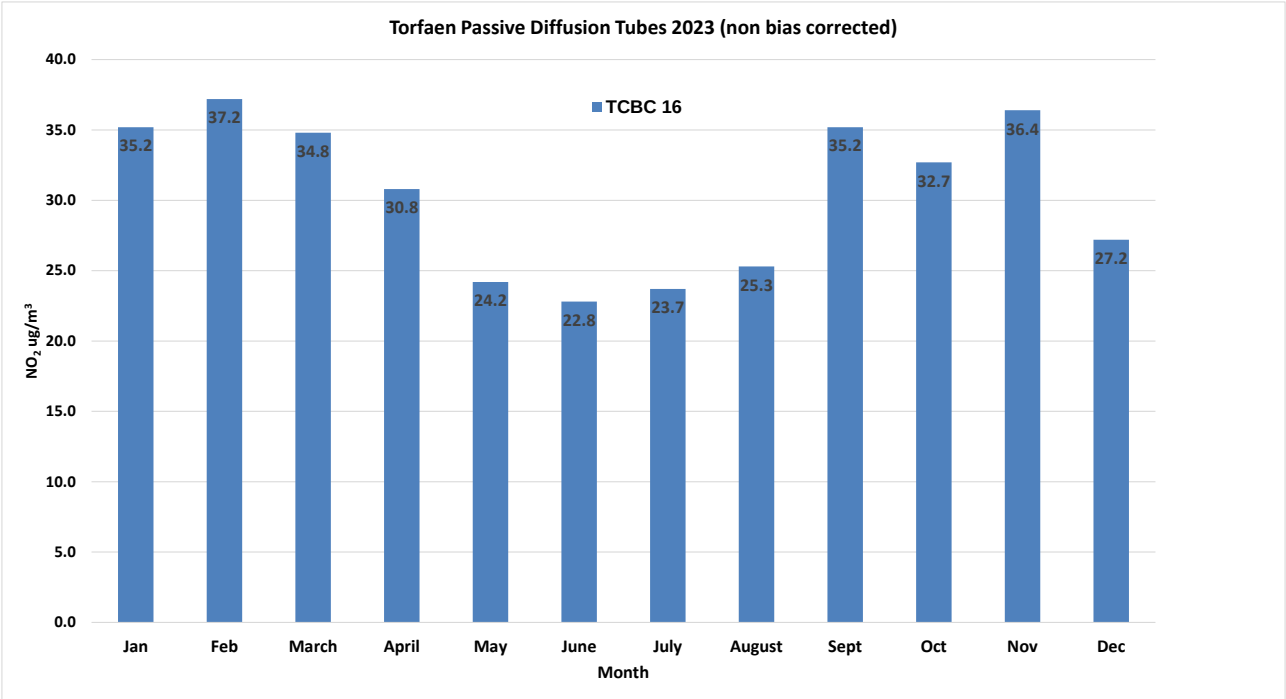
TCBC15	Station Rd, Griffithstown	Roadside	X 329540, Y198458



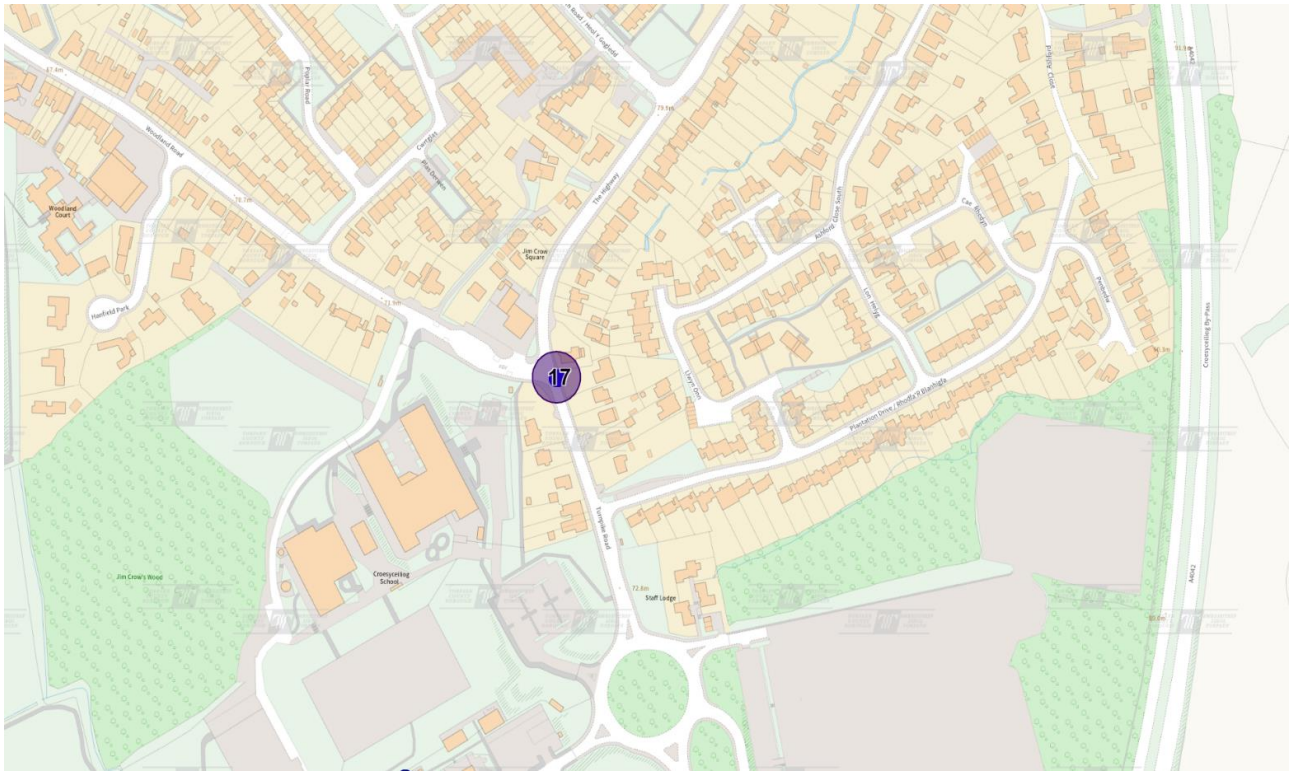


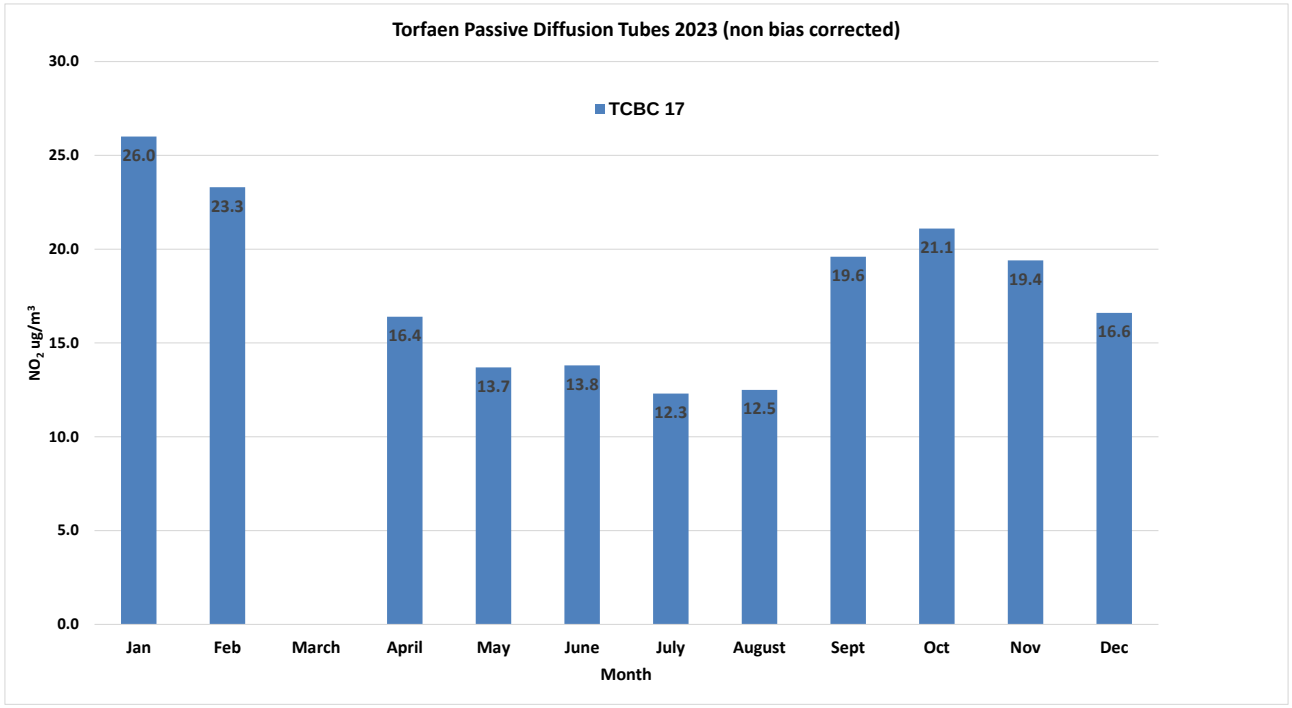
TCBC16	Richmond Rd, Pontnewydd	Roadside	X329147, Y196408



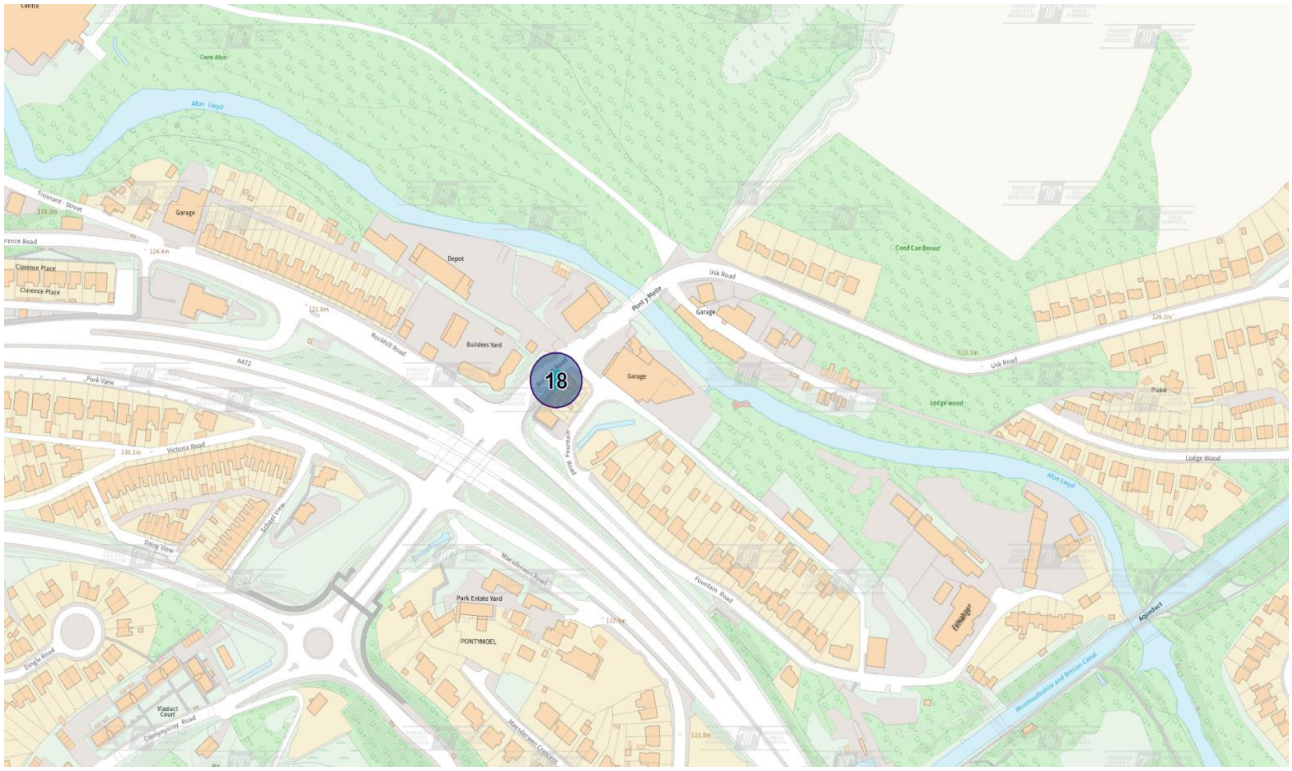


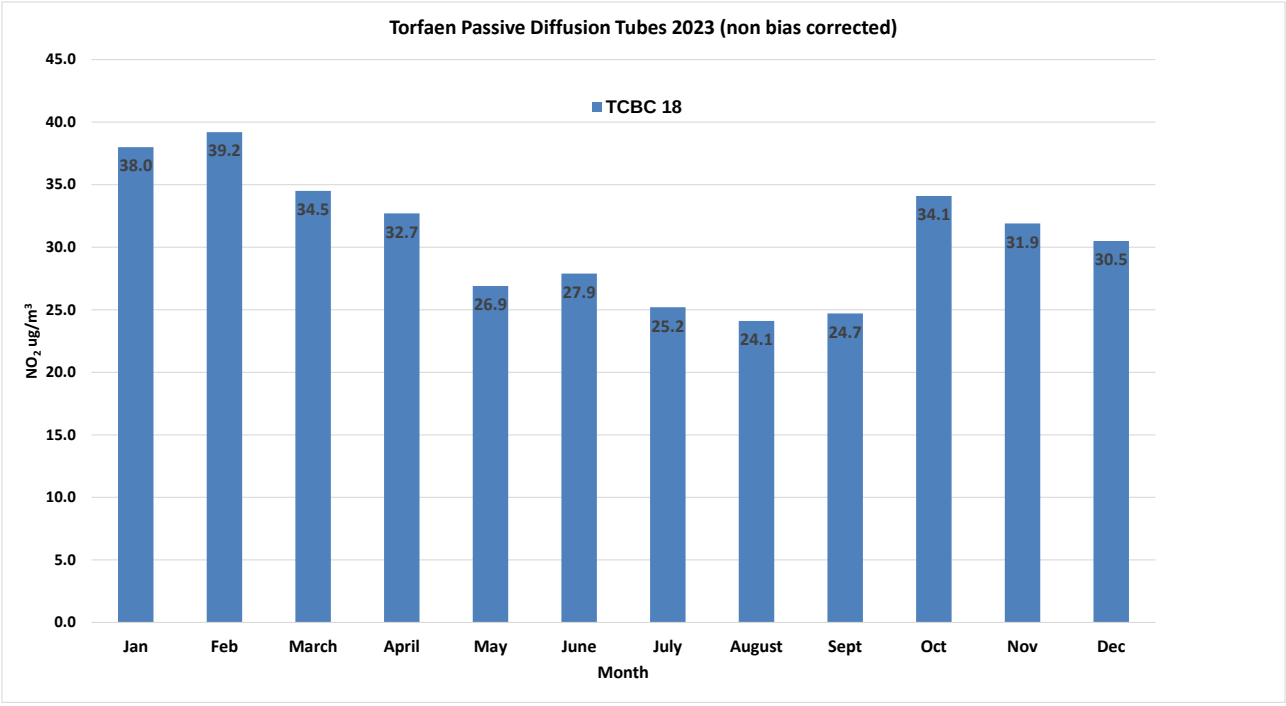
TCBC17	Turnpike Rd, Croesyceiliog	Roadside	X330578, Y195735



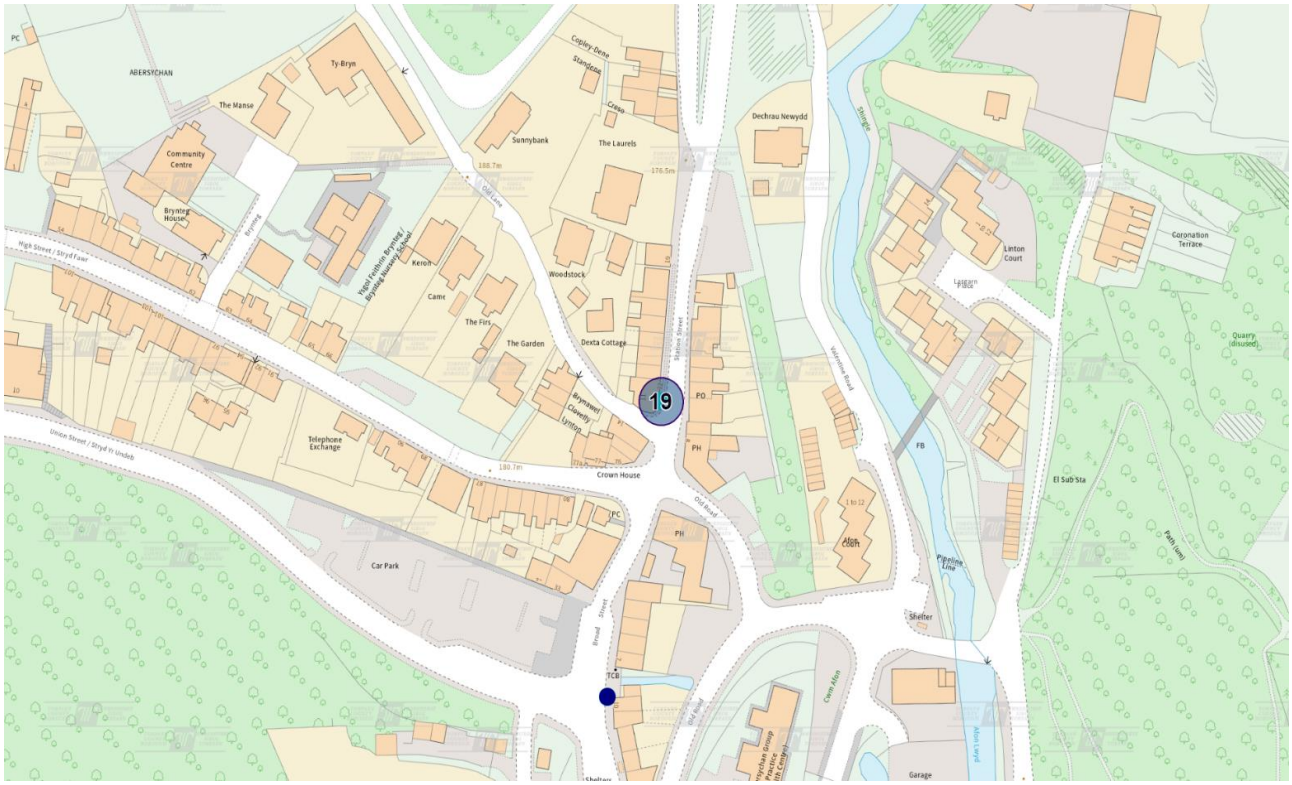


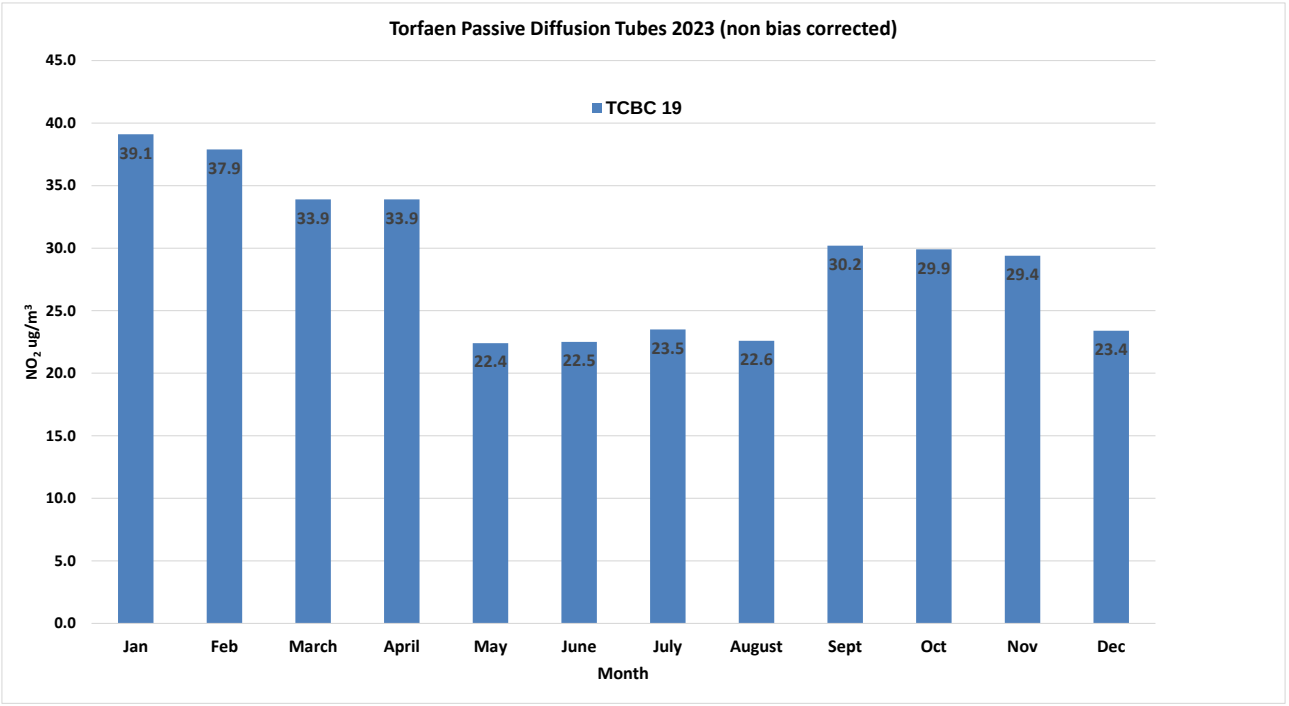
TCBC18	Rockhill Rd, Pontymoile	Roadside	X328978, Y200434



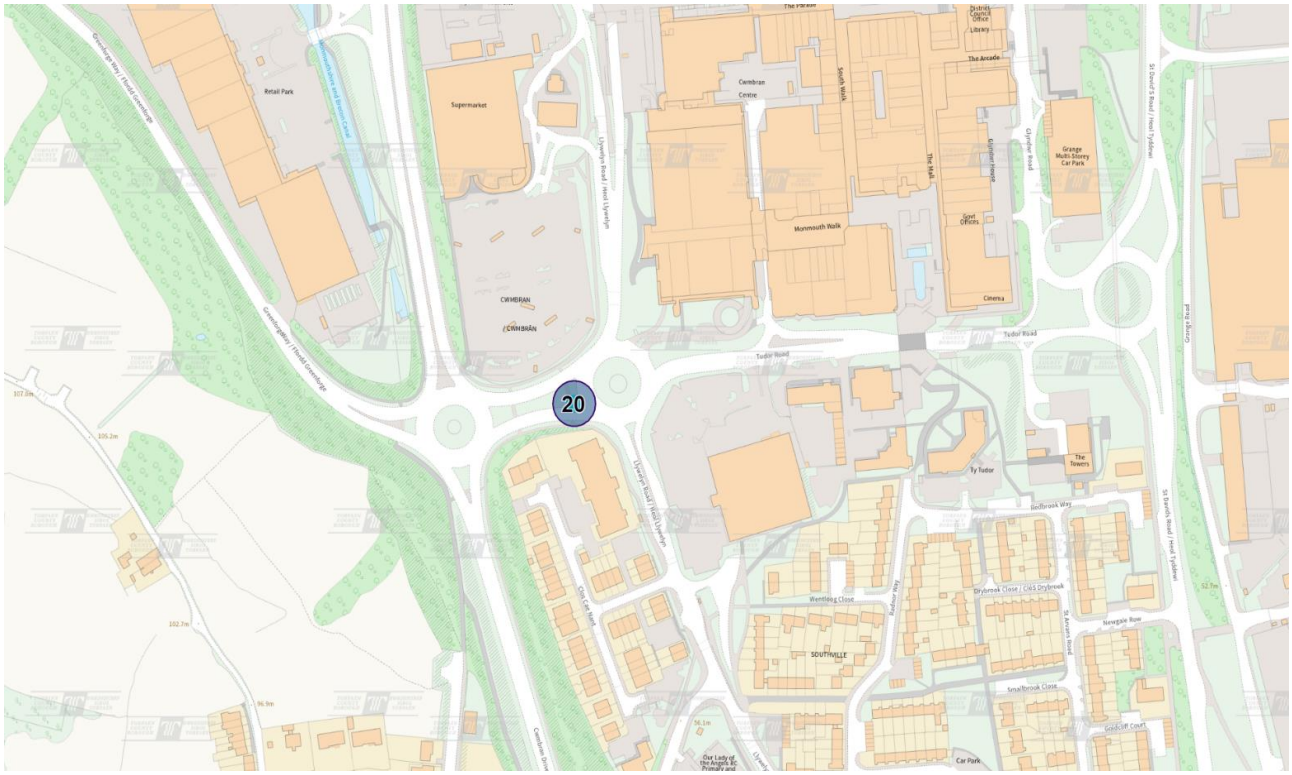


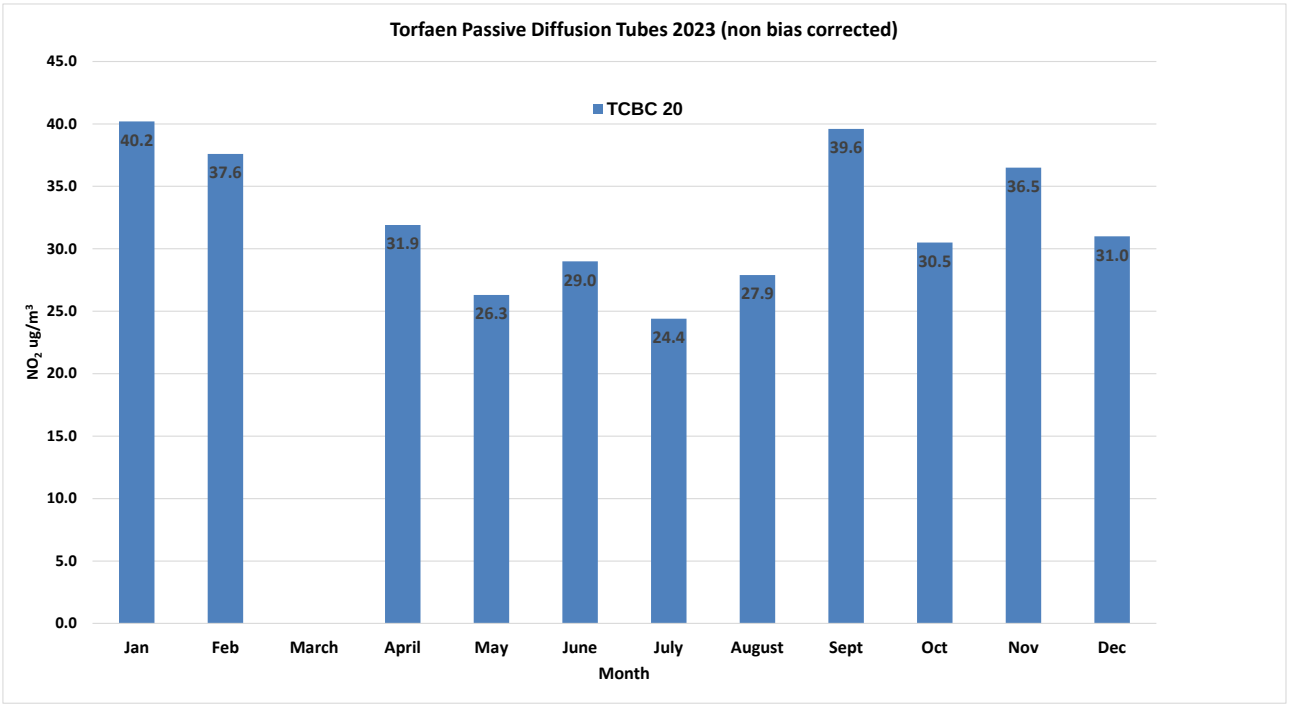
TCBC19	12 Station St, Abersychan	Roadside	X326974, Y203354



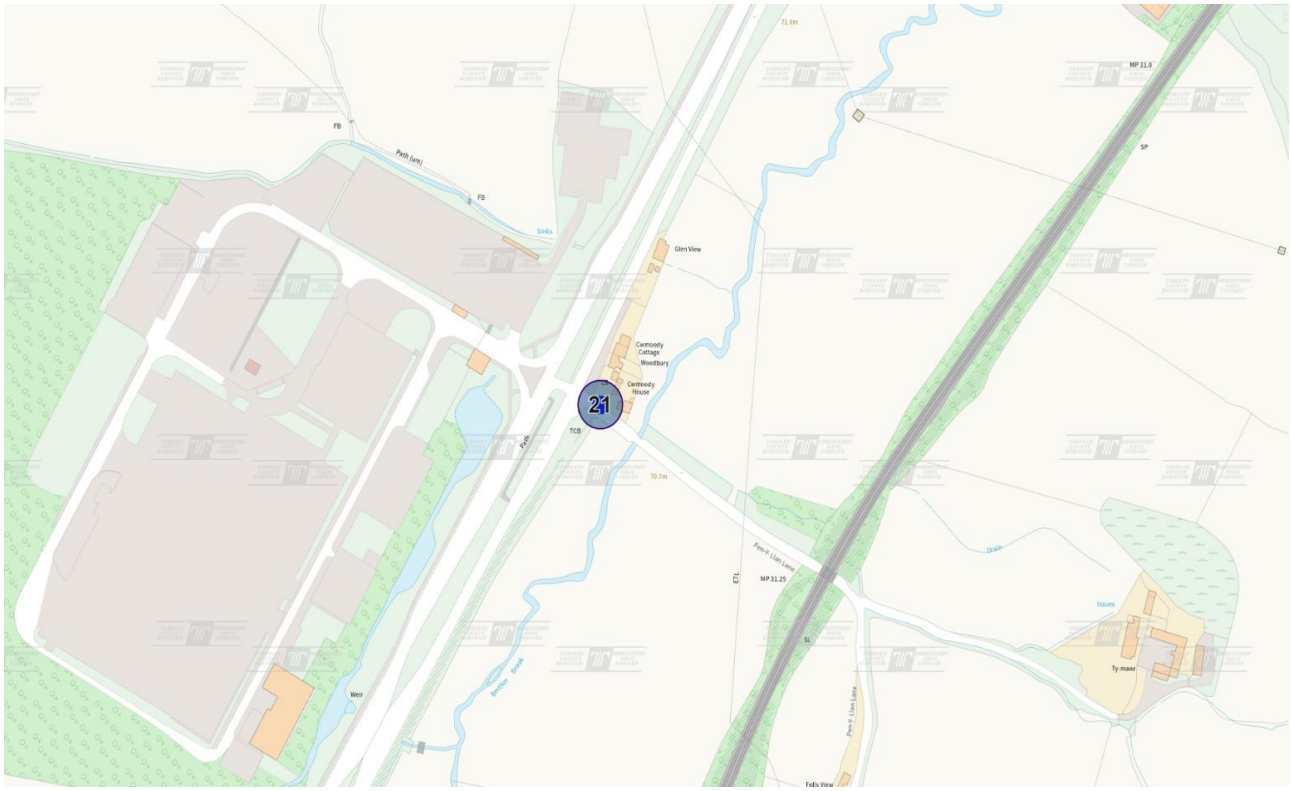


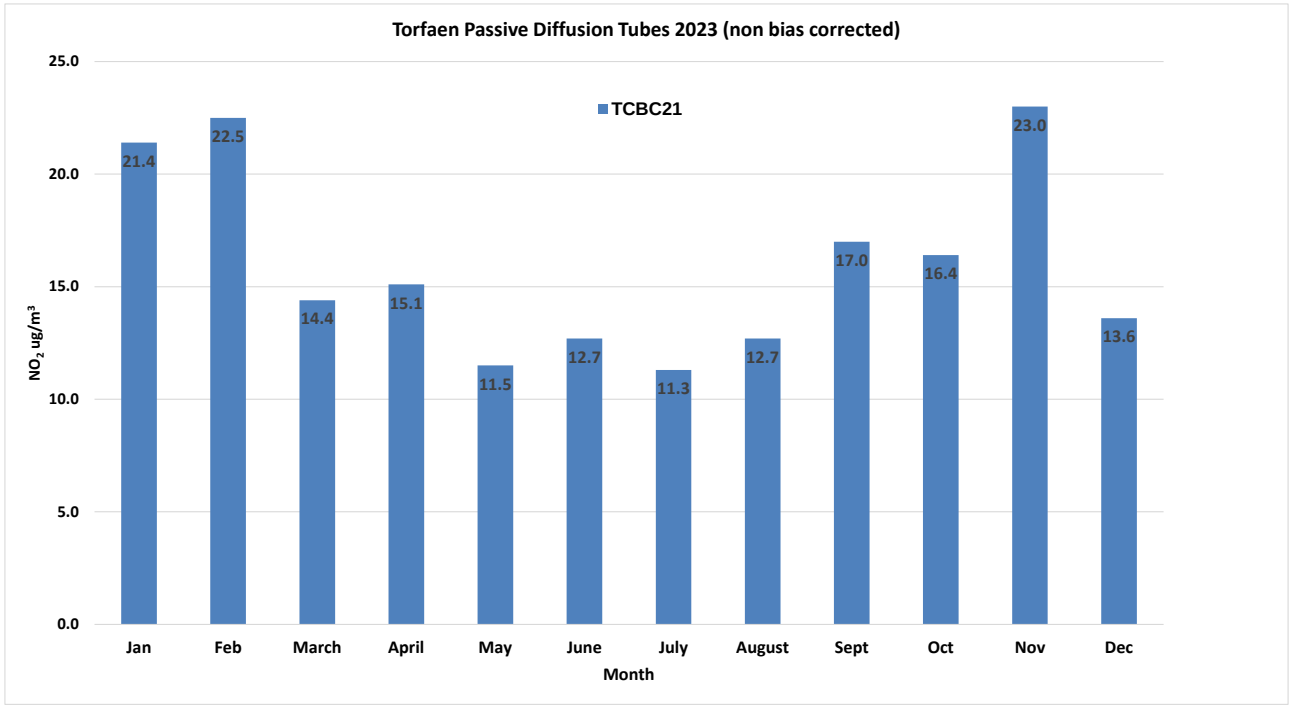
TCBC20	Cwmbran Drive, Sainsbury	Roadside	X329240, Y195210



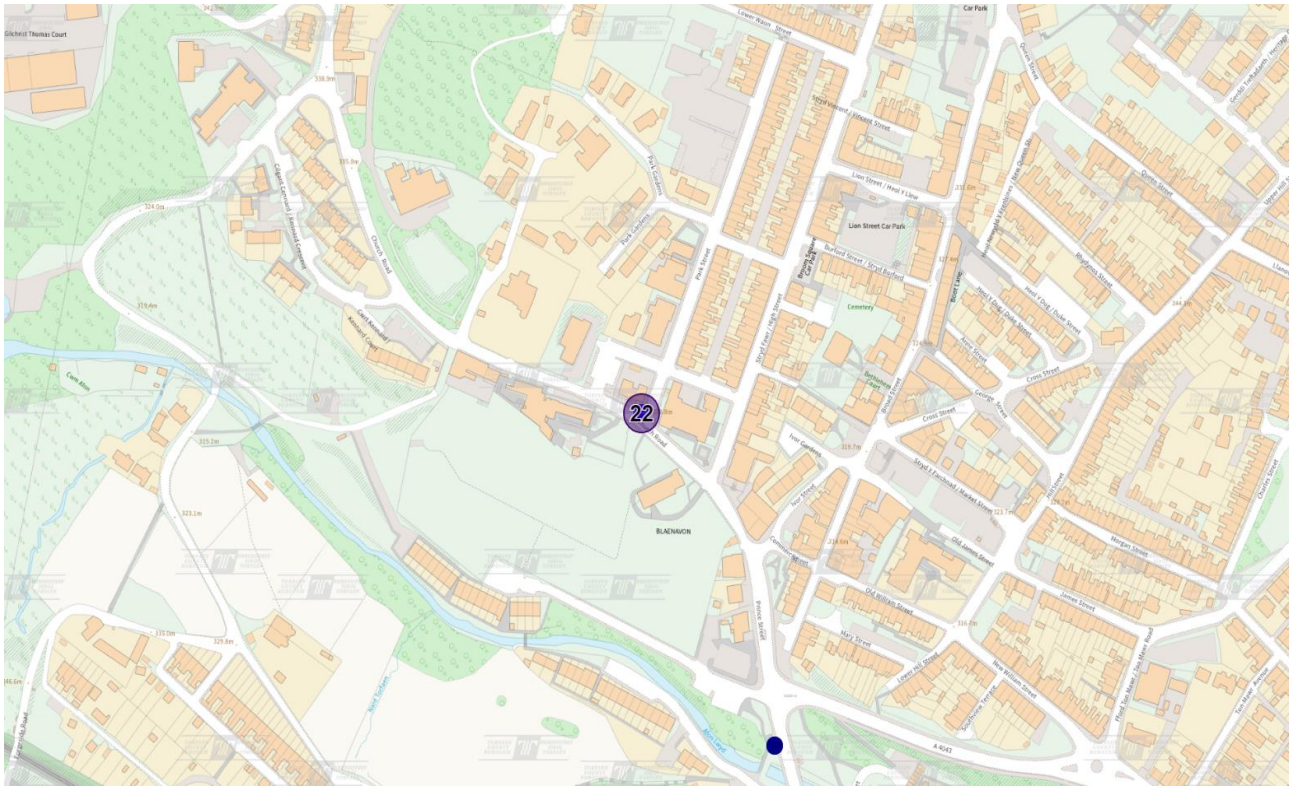


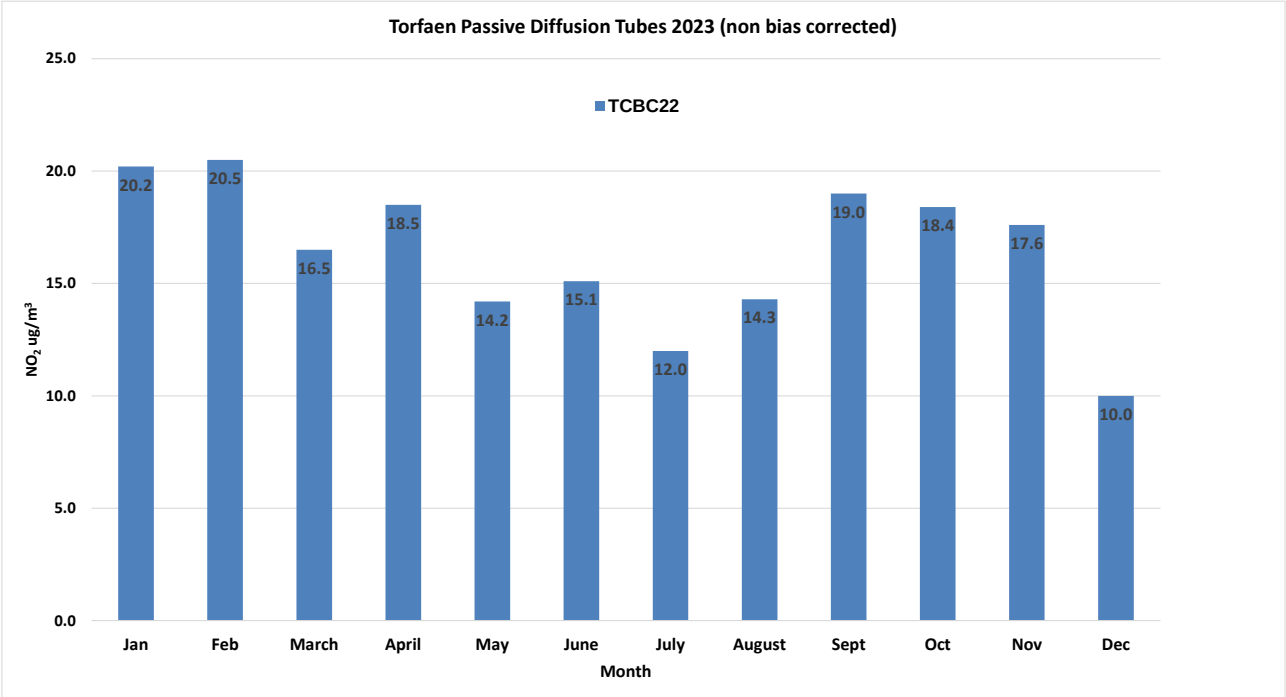
TCBC21	Pen y Llan Lane, Mamhilad	Roadside	X330801, Y201731



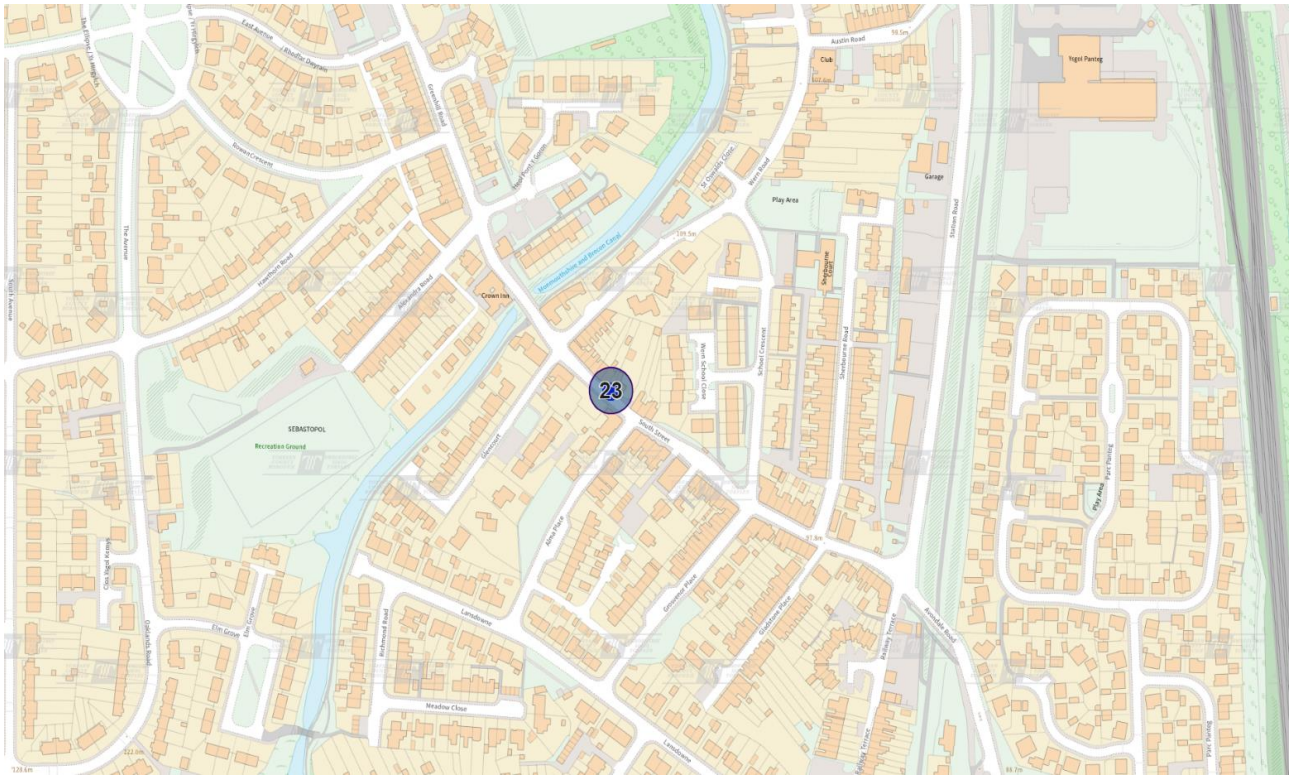


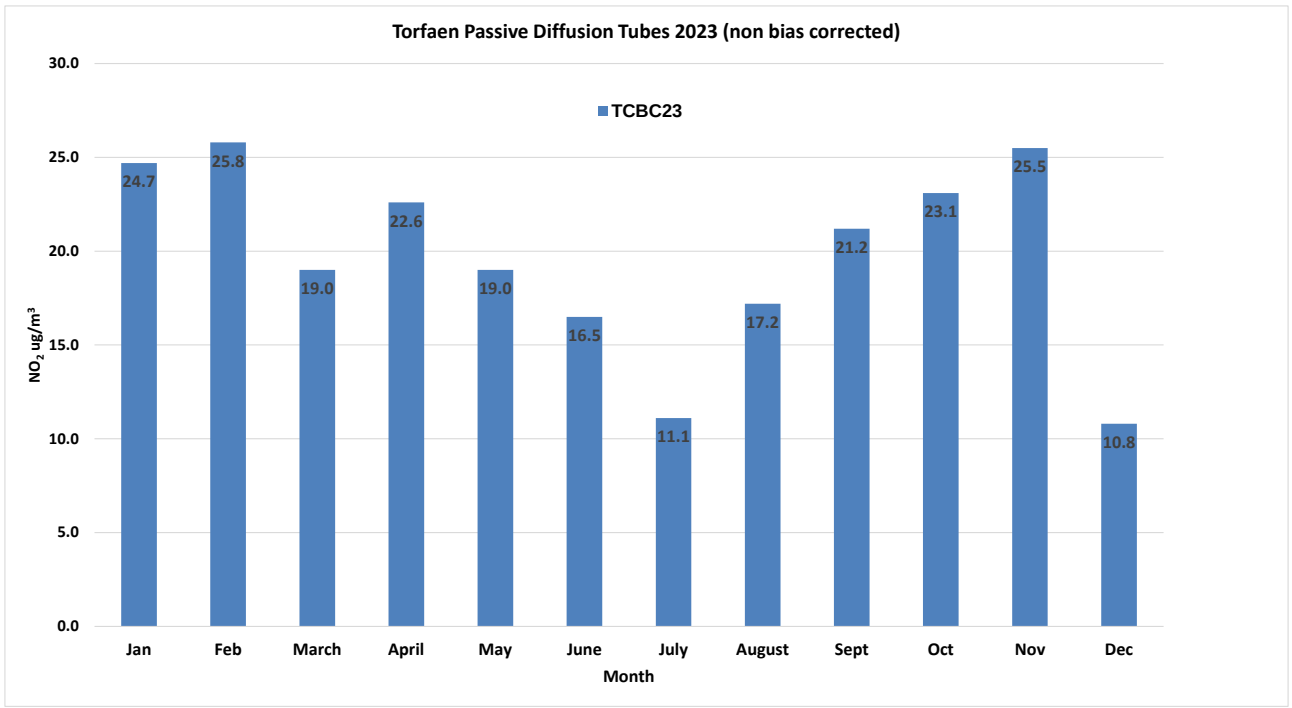
TCBC22	Church Road, Blaenavon	Roadside	X325111, Y208826



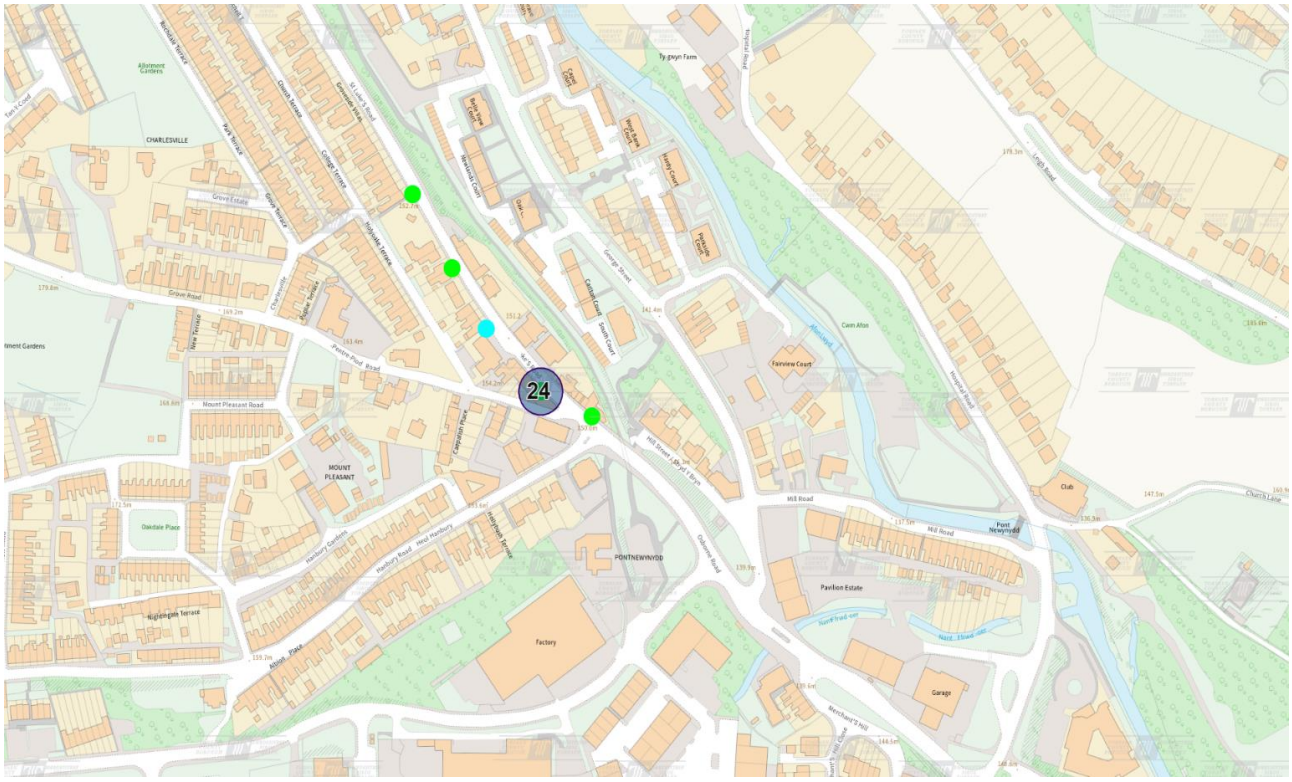


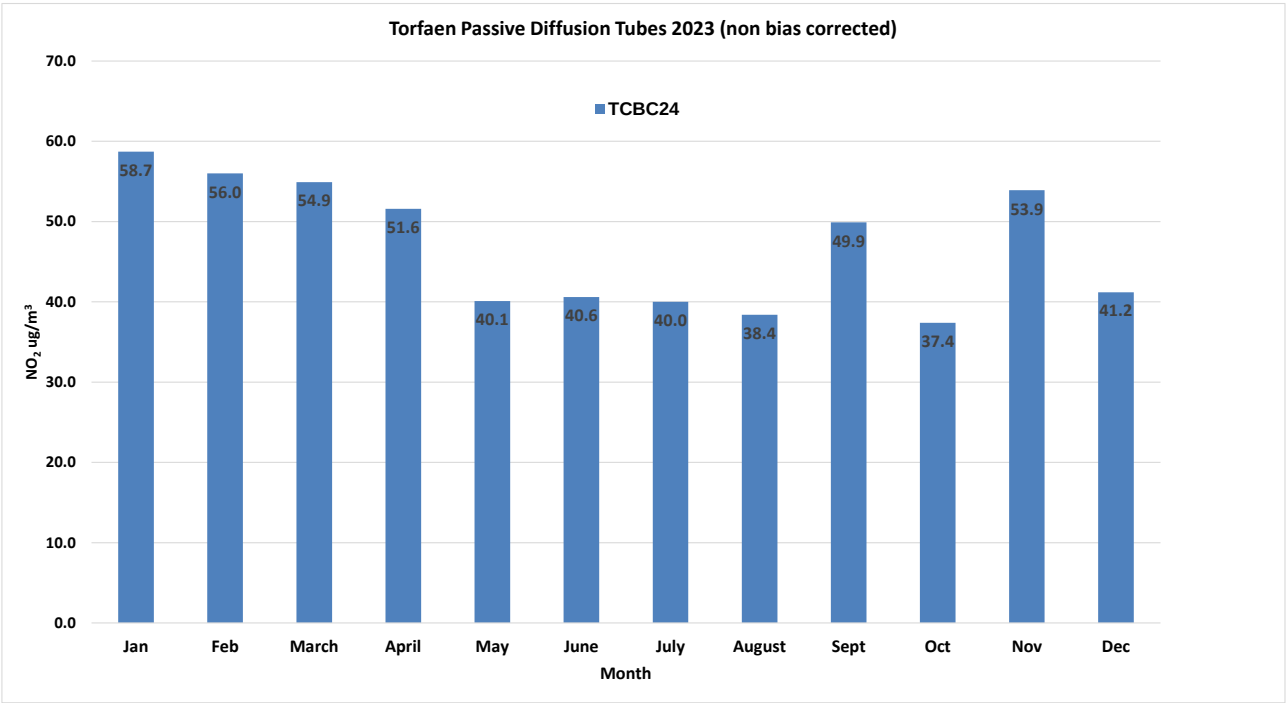
TCBC23	South Street, Sebastopol	Roadside	X329308, Y198177



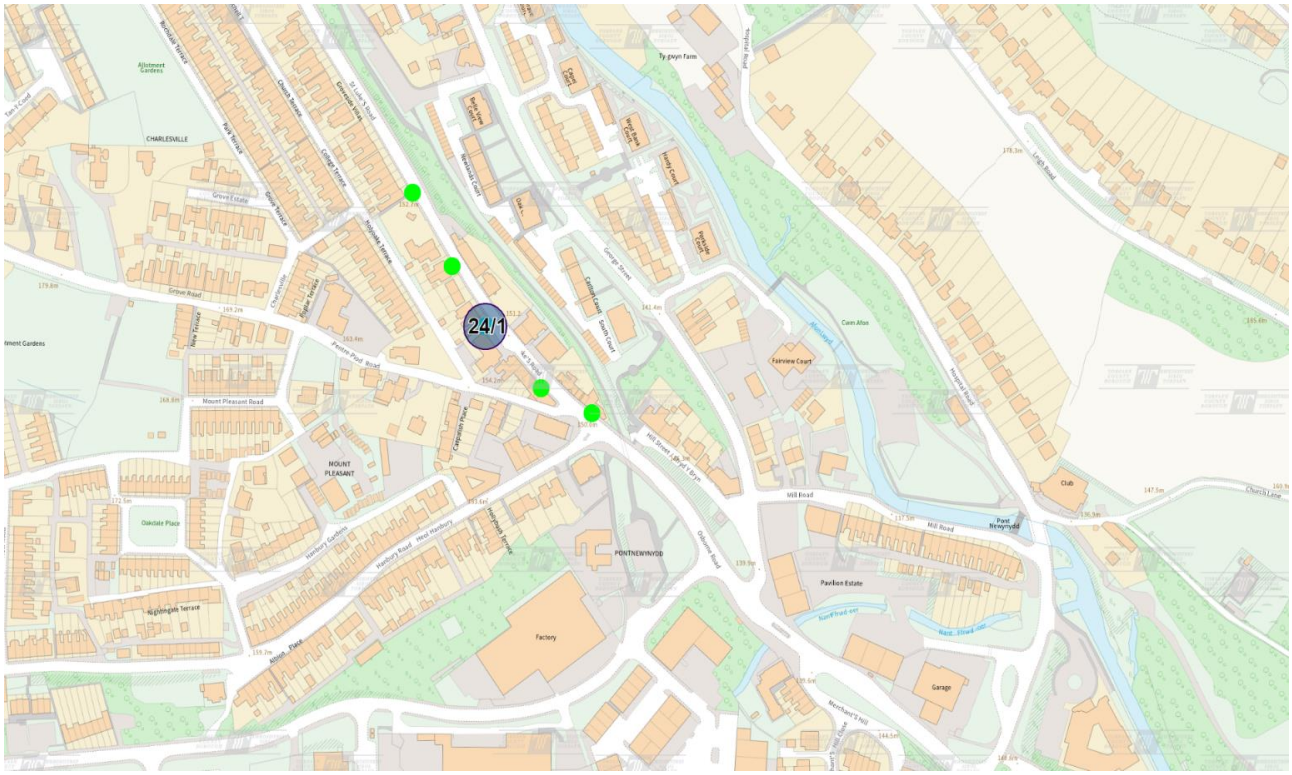


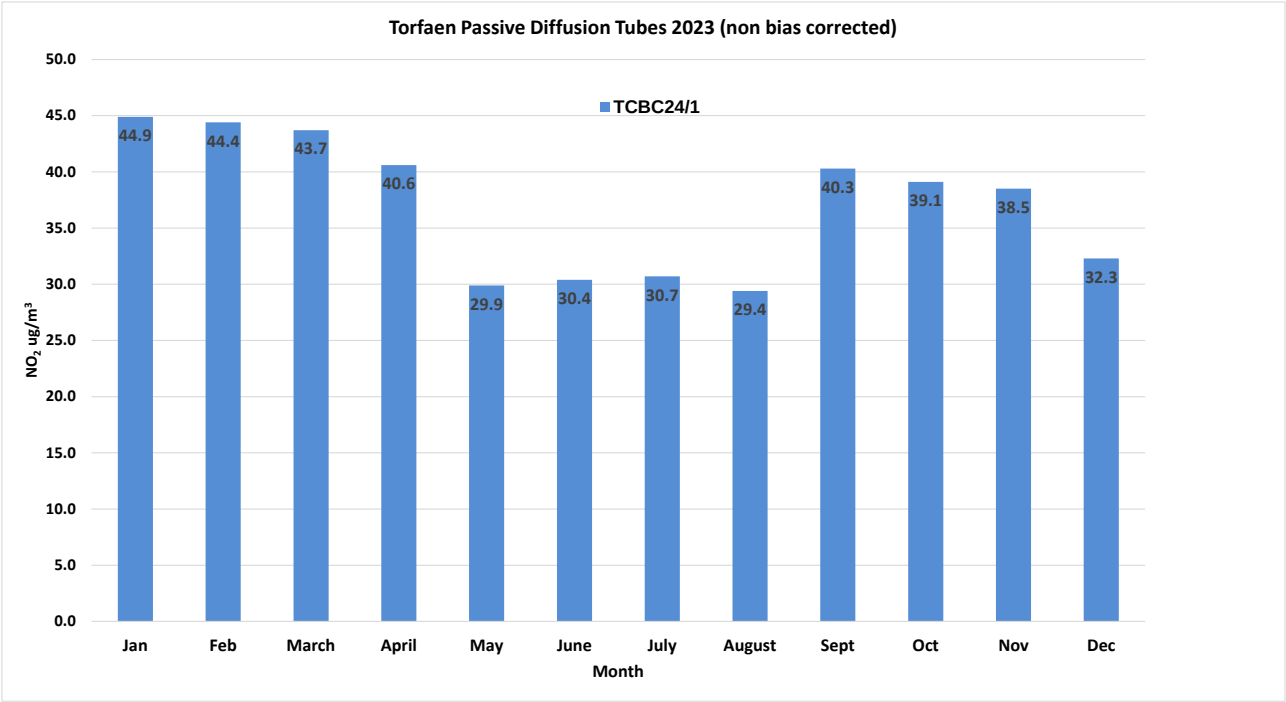
TCBC24	St Lukes Road, Pontnewynydd	Roadside	X327274, Y201928



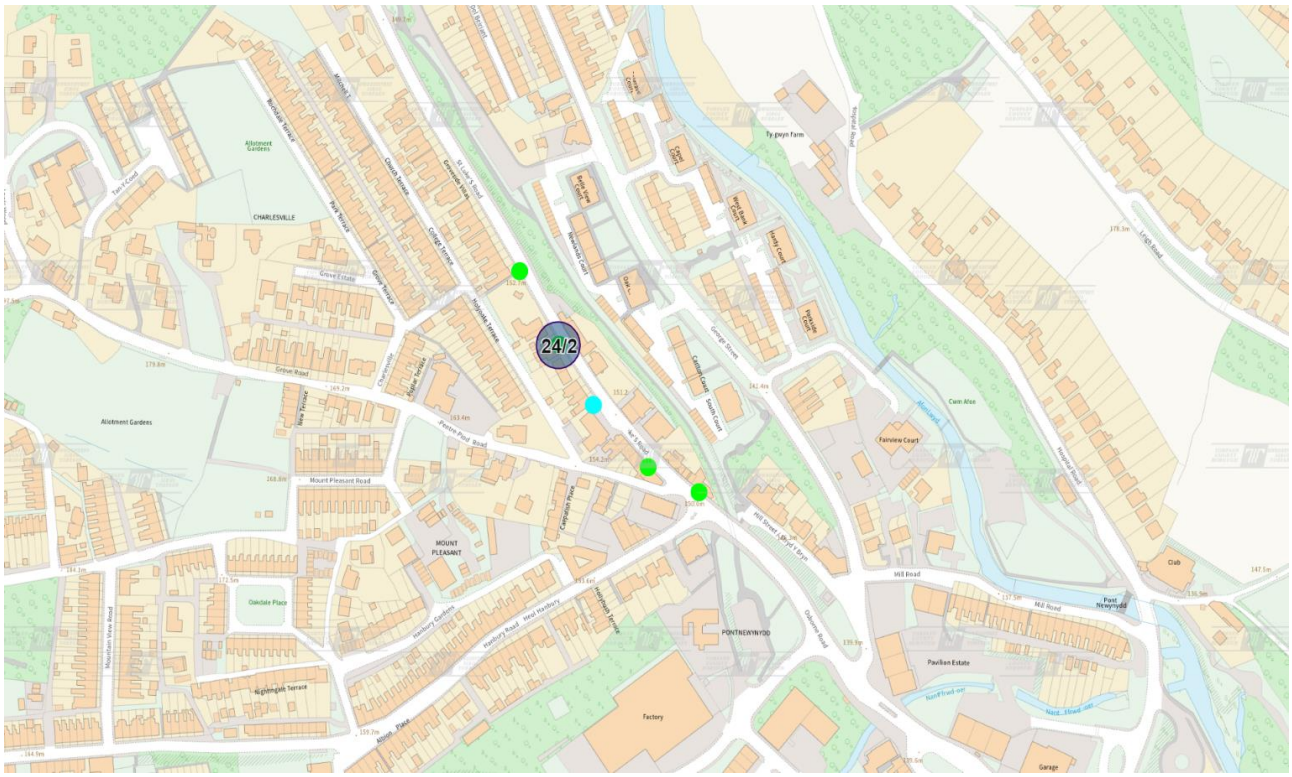


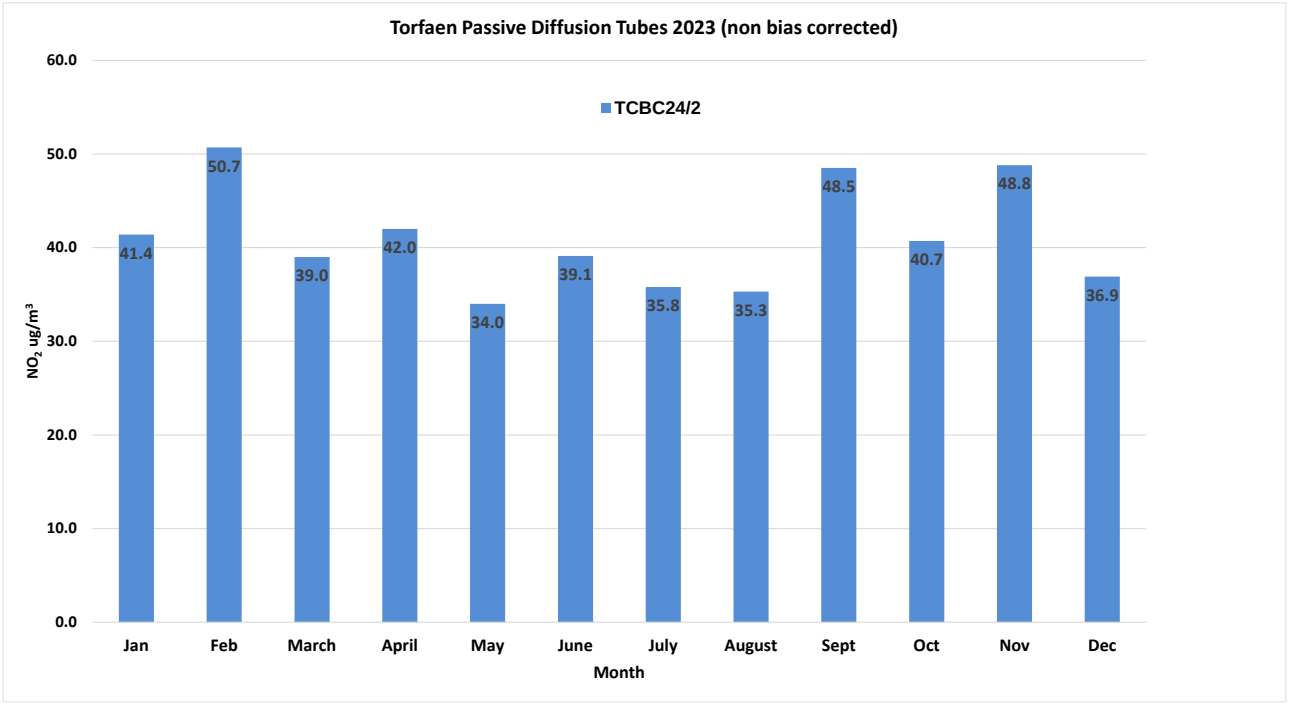
TCBC24/1	Nisa Shop Lamppost	Roadside	X327237,Y201967



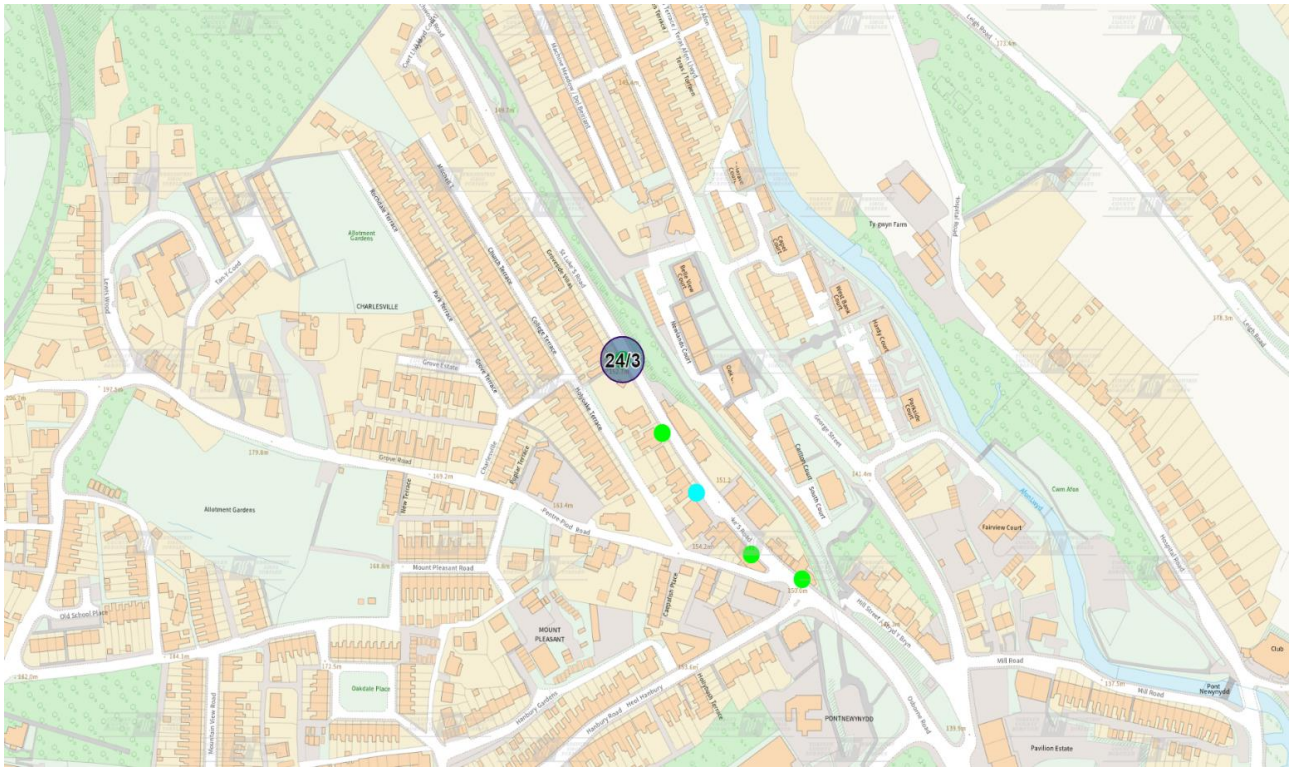


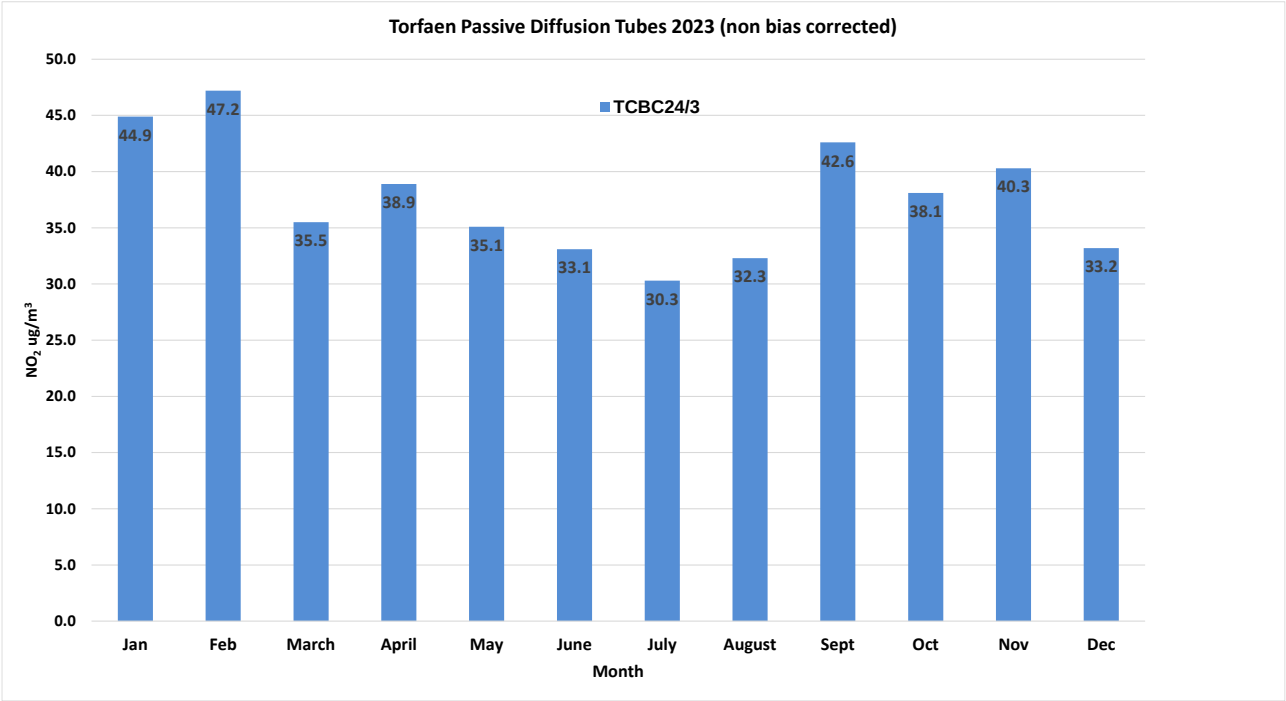
TCBC24/2	12 St Lukes Road	Roadside	X327214,Y202005



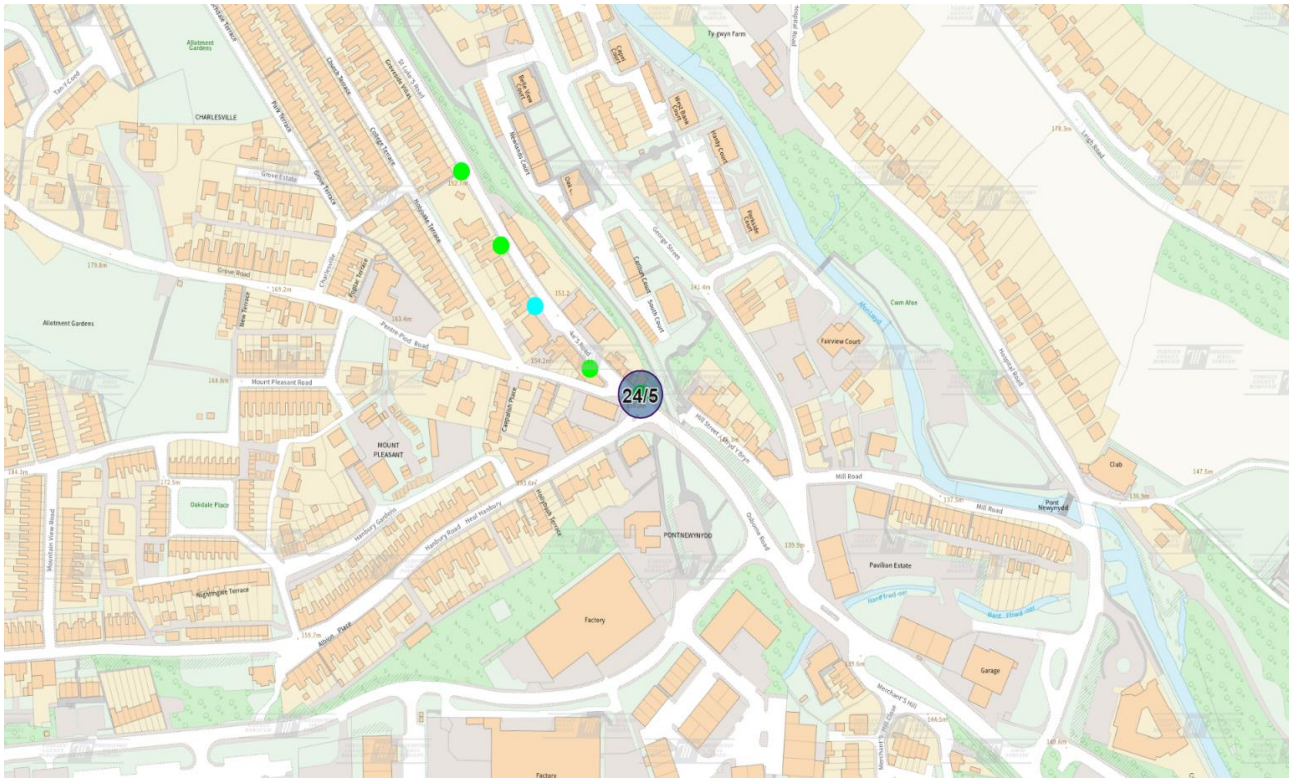


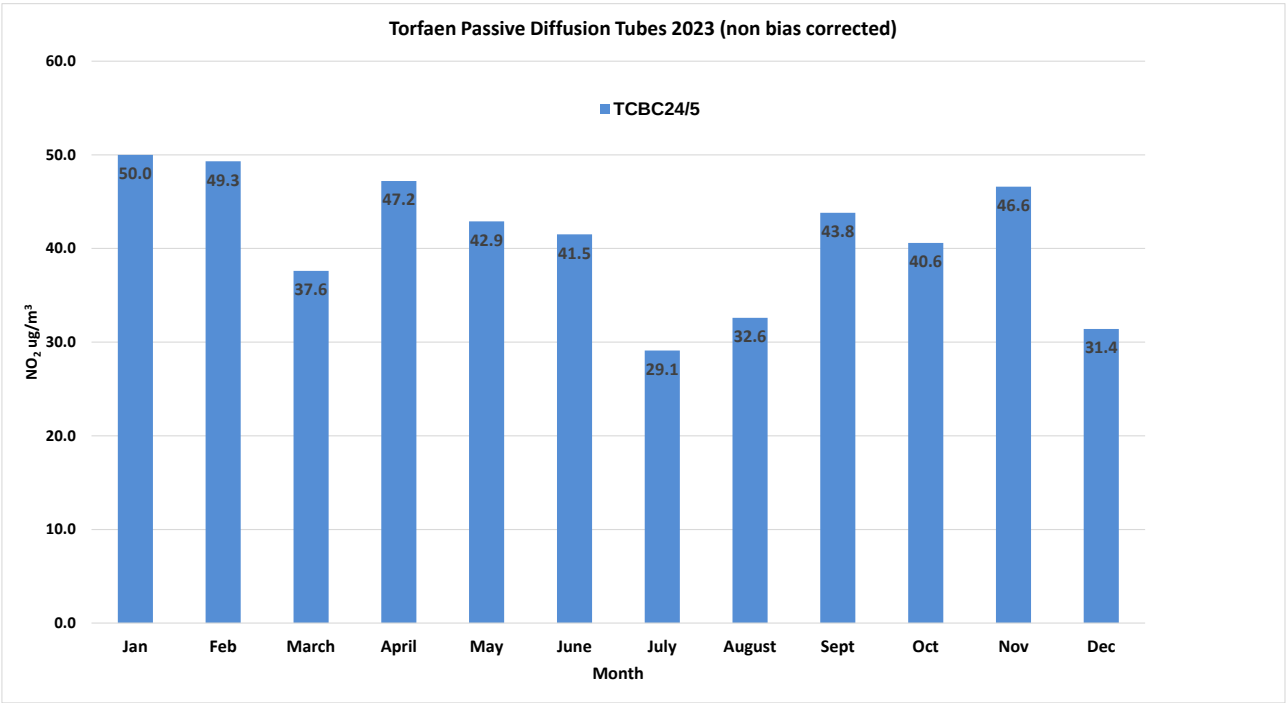
TCBC24/3	1 Groveside Villas	Roadside	X327187,Y202051



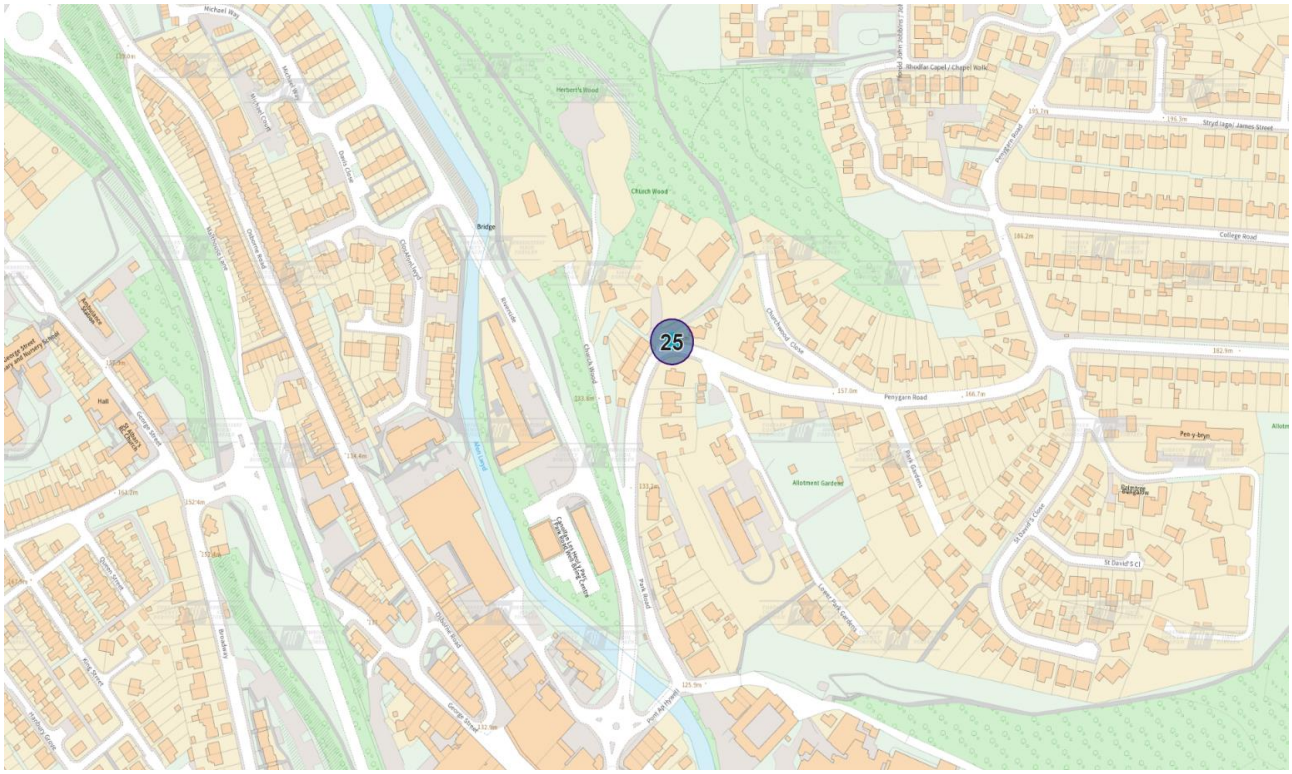


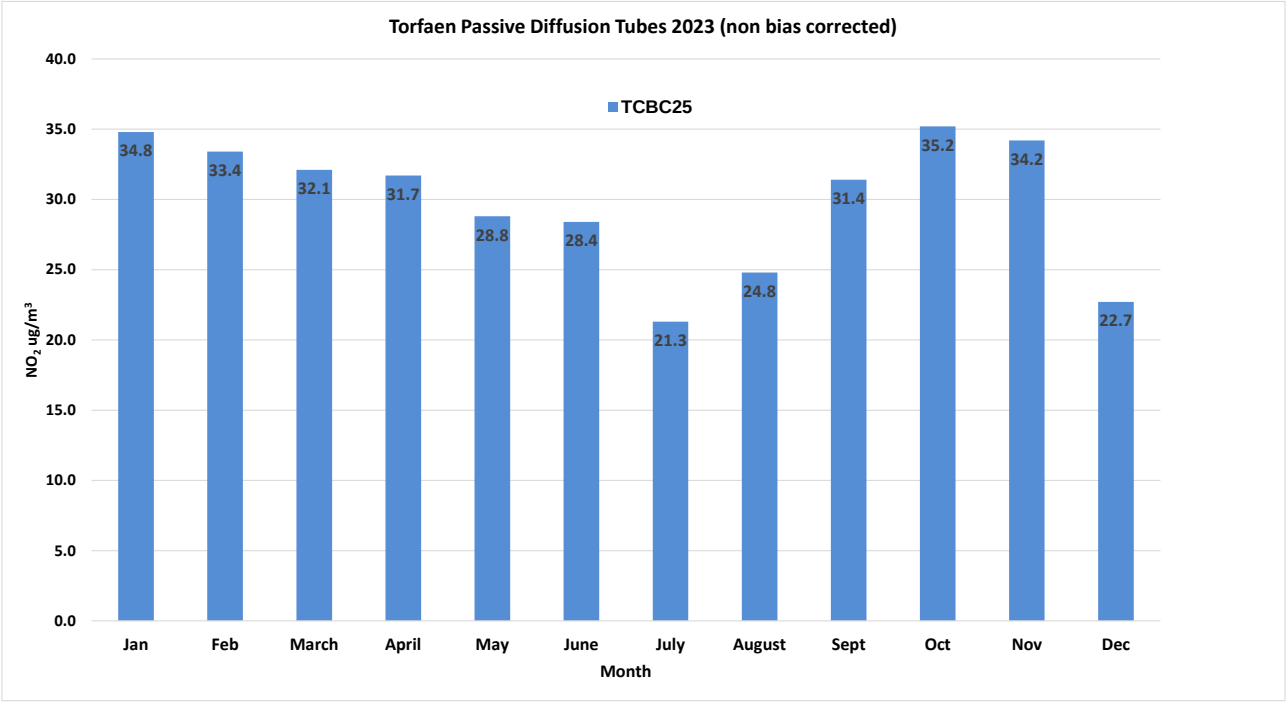
TCBC24/5	Flat 24 & Tonic Hairdressers	Roadside	X327308,Y201912



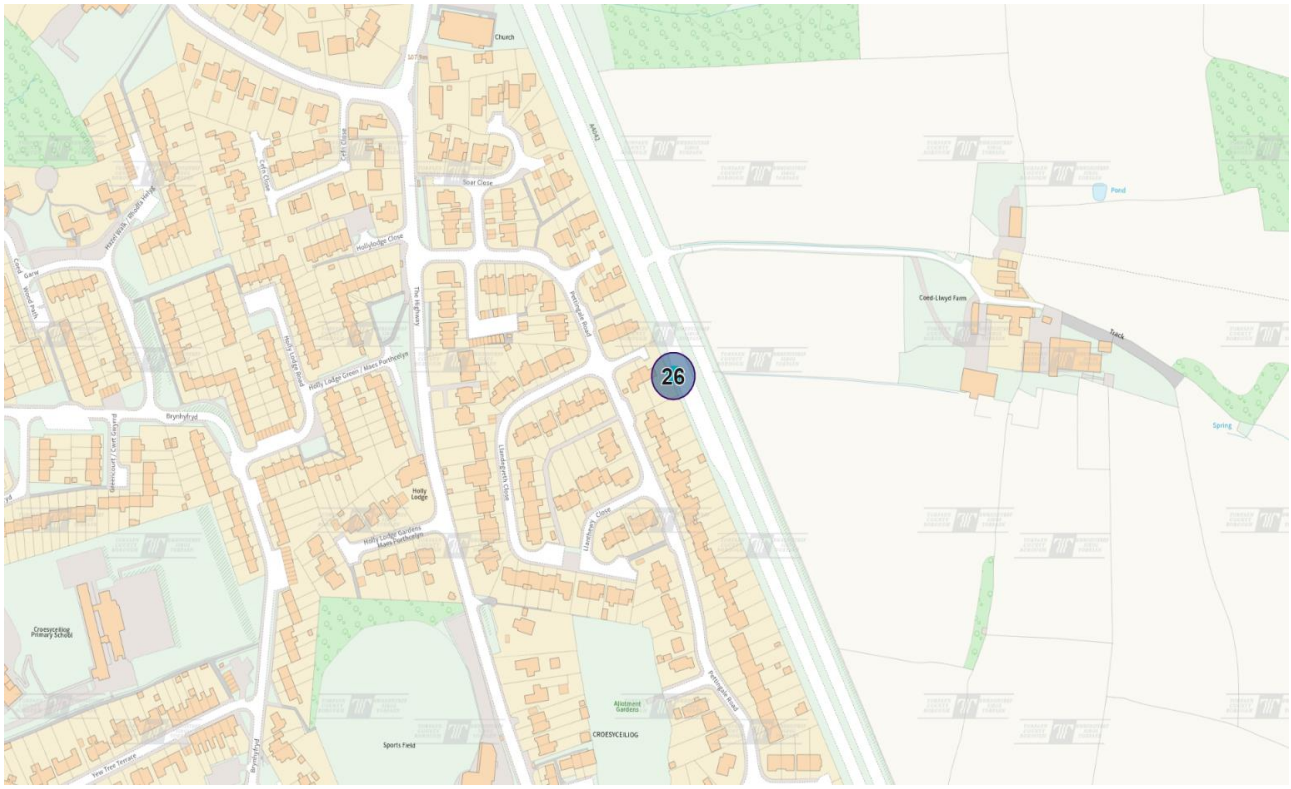


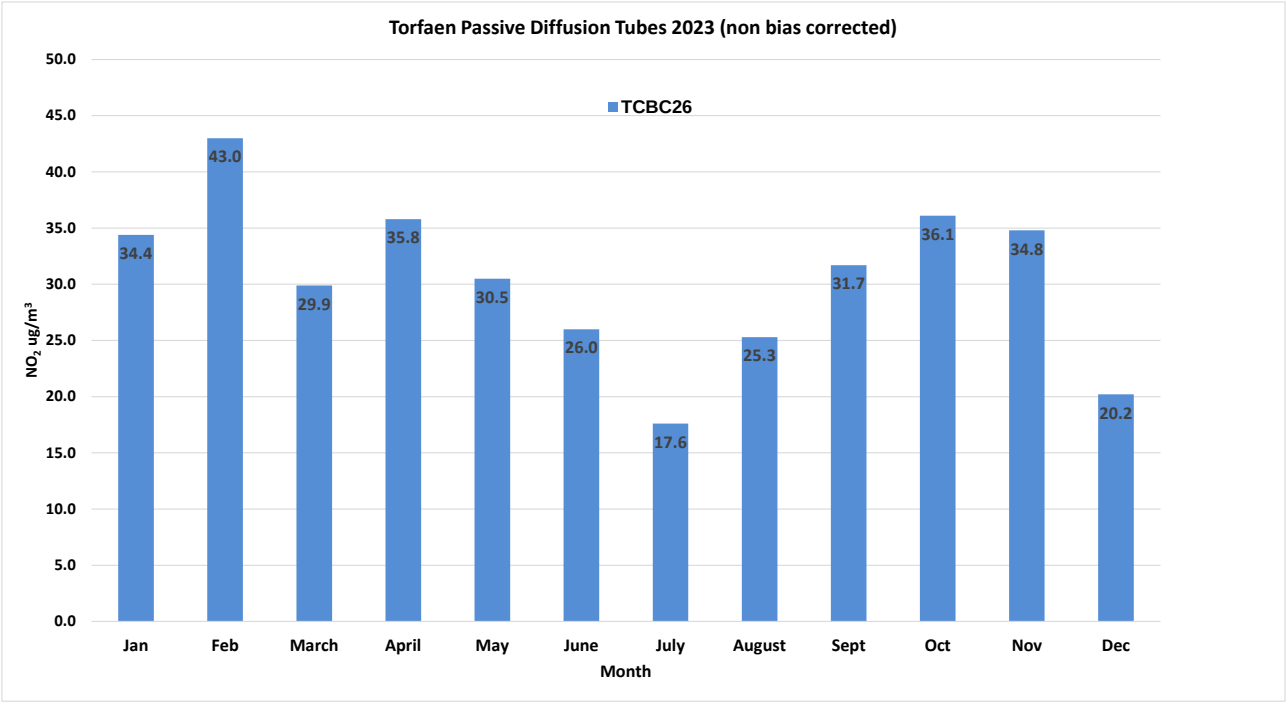
TCBC25	Penygarn Road	Roadside	X328206,Y201300



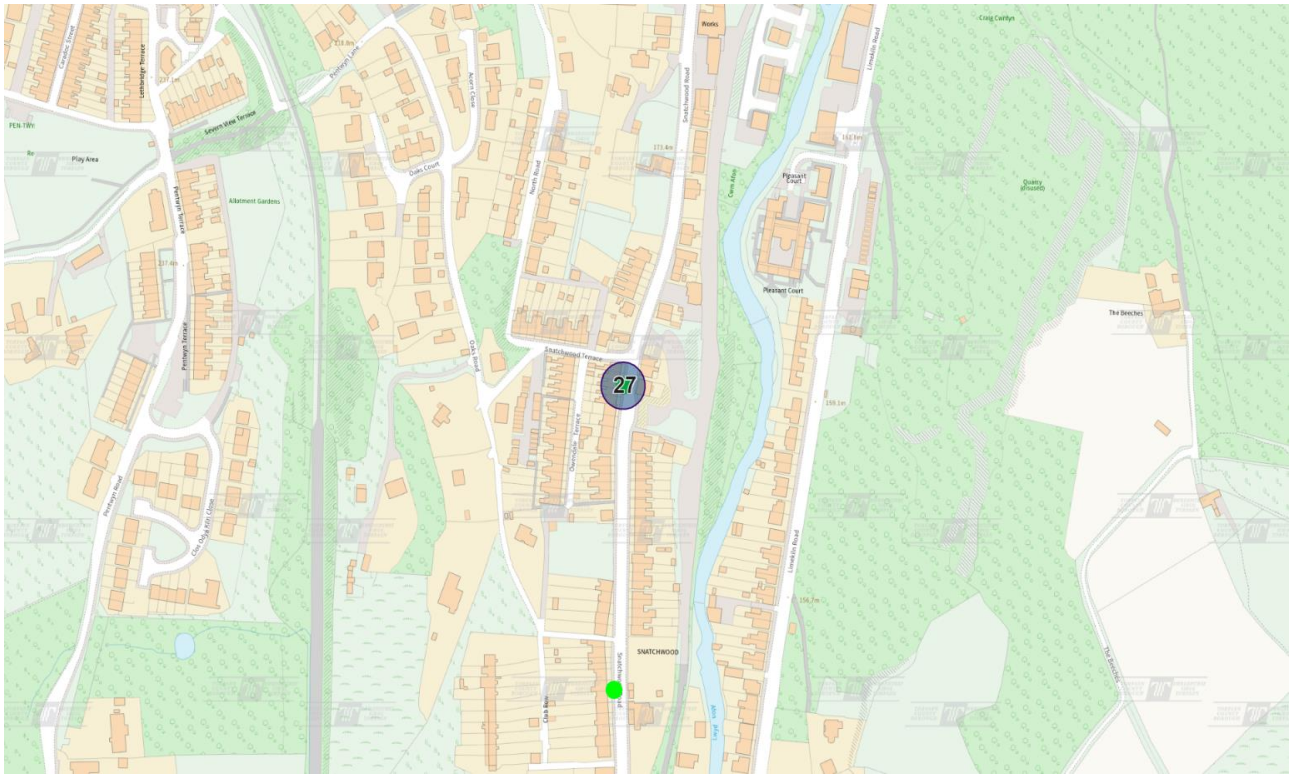


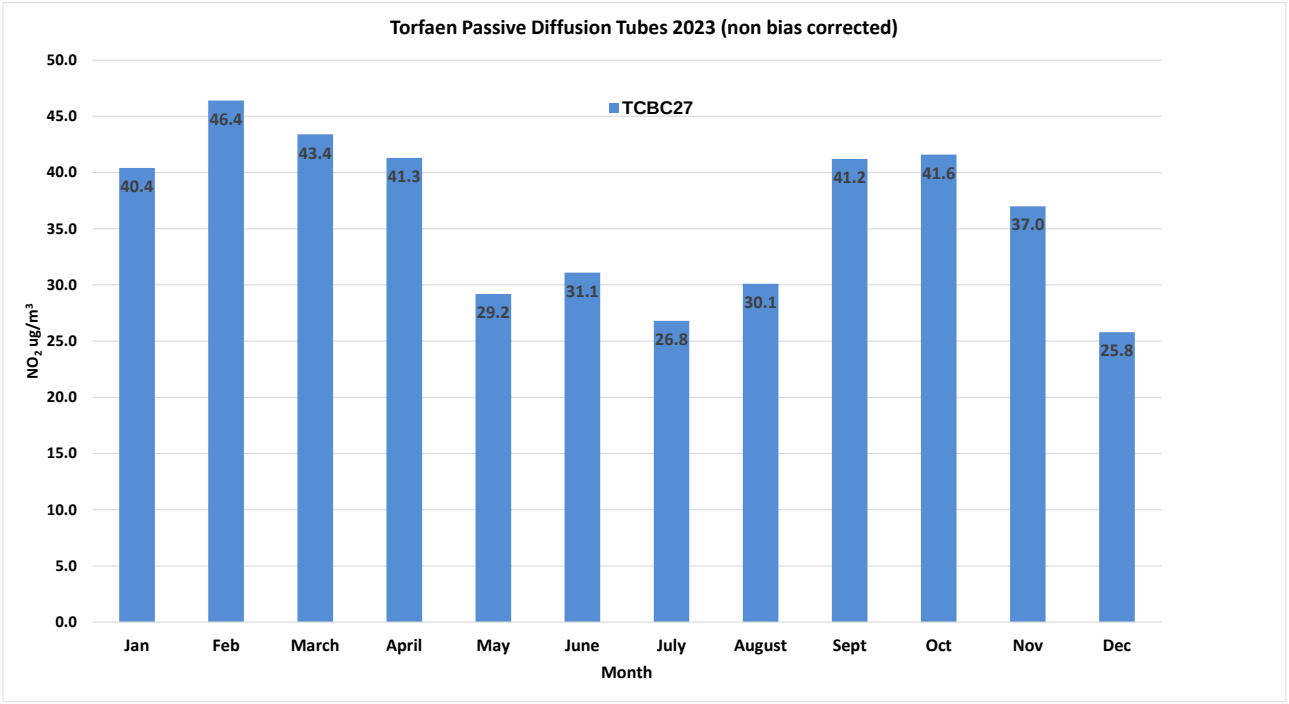
TCBC26	A4042 Croyseyceiliog By-pass	Roadside	X330743,Y196609



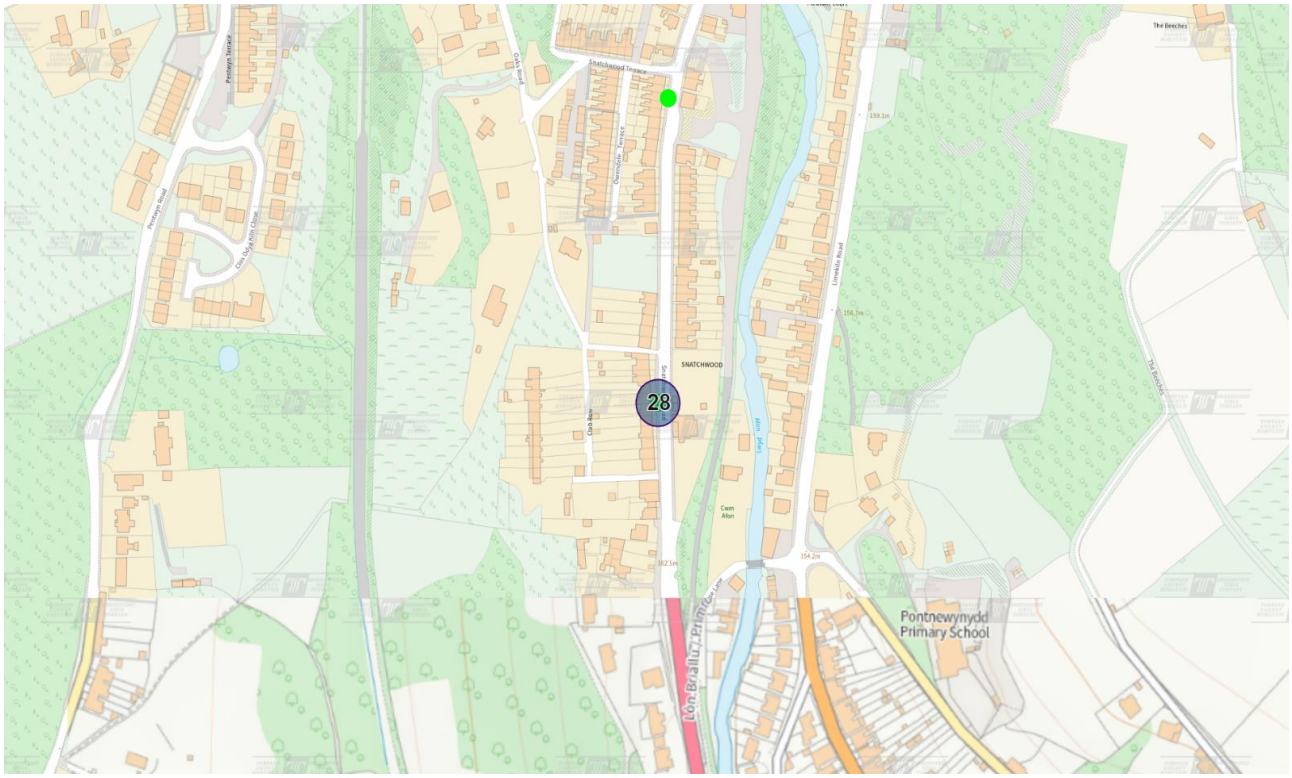


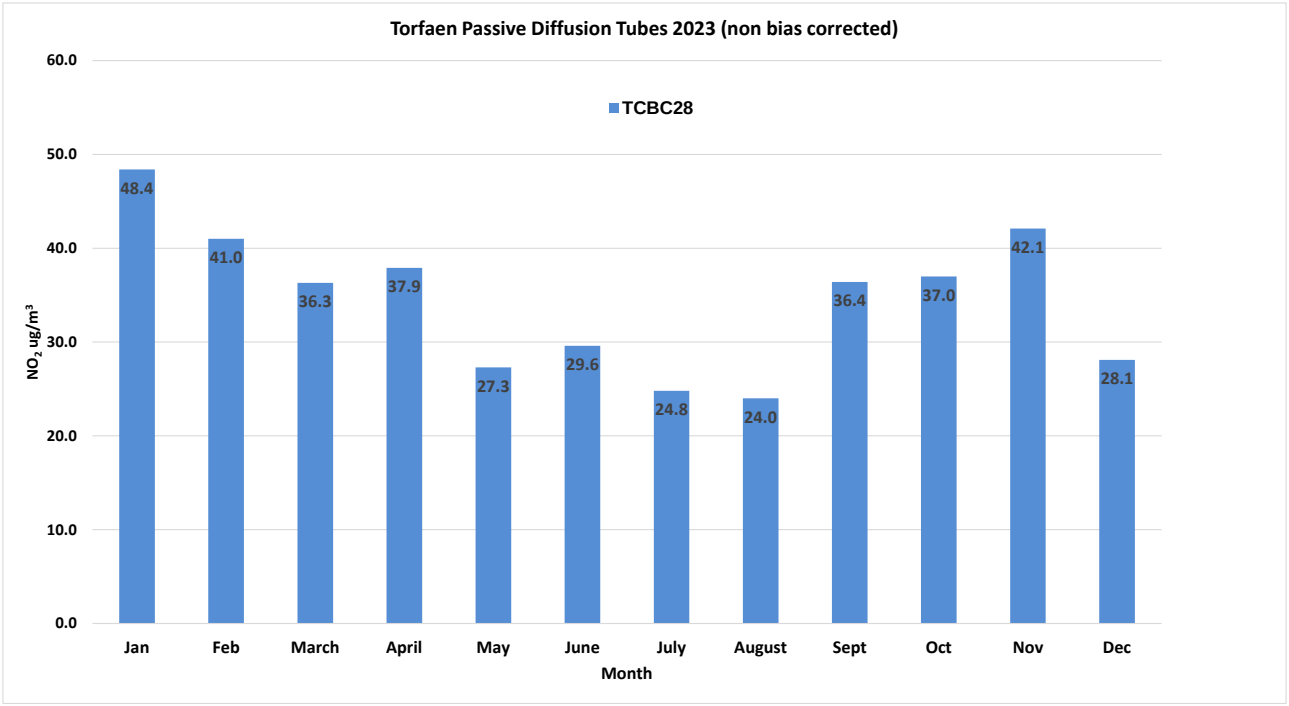
TCBC27	3 Hollyoake Terrace, Snatchwood, Road	Roadside	X326914,Y202933





TCBC28	57 Snatchwood Rd	Roadside	X326907,Y202741





Appendix E: Sensor Results

In November 2022 a Praxis/Urban, air quality sensor was installed on the same lamppost as the diffusion tube which recorded an objective exceedance of Nitrogen Dioxide levels in 2019. The sensor is considered a more accurate method of monitoring than diffusion tubes and monitors particulates as well as Nitrogen Dioxide.

Diffusion tubes have a 25% uncertainty the sensor has a 15% uncertainty. The sensor data will not be used to formally assess compliance with National objectives but will help inform decision making regarding the local air quality.

The results from all pollutants monitored by the sensor were within stipulated limits.

The sensor results for Nitrogen Dioxide showed a good correlation with diffusion tube TCBC 24, located on the same lamppost.

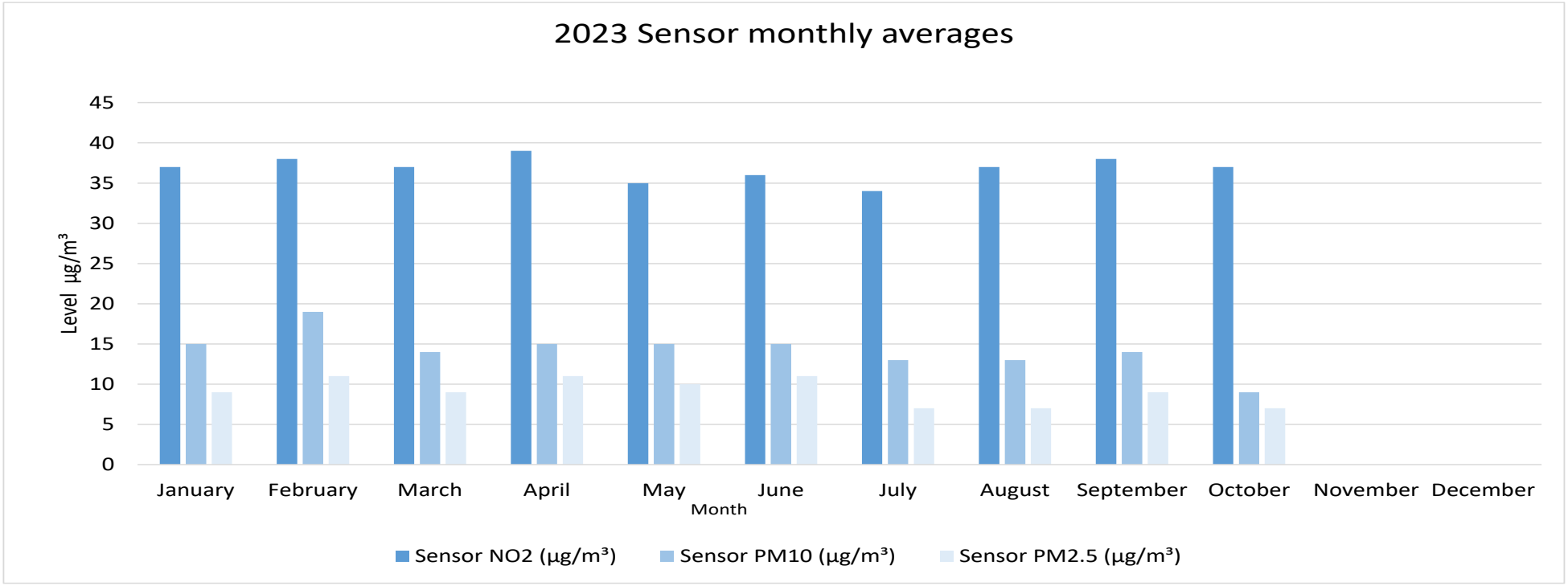
The sensor achieved 8 months of data in 2023, it was removed in early November due to a fault with the temperature and humidity detector.

Data from the sensor are ratified by Ricardo who also perform the services and co-location functions (QA/QC)

Table E.1 Sensor Results

													Averages
Sensor to tube TCBC 24 ratio	0.6	0.7	0.7	0.8	0.9	0.9	0.9	1.0	0.8	1.0			0.8
Monthly Mean													
	January	February	March	April	May	June	July	August	September	October	November	December	
Diffusion Tube 24	58.7	56	54.9	51.6	40.1	40.6	40	38.4	49.9	37.4			***46.8***
Sensor NO_2 (µg/m³)	37	38	37	39	35	36	34	37	38	37			36.8
Sensor PM_{10} (µg/m³)	15	19	14	15	15	15	13	13	14	9			14.2
Sensor $PM_{2.5}$ (µg/m³)	9	11	9	11	10	11	7	7	9	7			9.1
NB. Diffusion Tube TCBC 24 Bias corrected average			**33.2**										

Figure 2.7 Sensor Monthly Averages



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