Merthyr Tydfil County Borough Council

2021 Air Quality Progress Report

In fulfillment of Part IV of the Environment Act 1995

Local Air Quality Management

Date (September, 2021)

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Executive Summary: Air Quality in Our Area

Ansawdd yr Aer yng Nghyngor Bwrdeistref Sirol Merthyr Tudful

Daw prif ffynhonnell llygredd aer ym Merthyr Tudful o draffig ffordd. Yn hynny o beth mae CBSMT yn bryderus ynghylch NO_2. Mae rhwydwaith o diwbiau tryledia yn gweithredu ledled yr ardal. Dros yr 8 mlynedd ddiwethaf, pegynnodd NO_2 ledled yr ardal yn 2013 ac y mae wedi gostwng ers hynny. Mae'r gostyngiad hwn wedi cydwastadu yn y blynyddoedd diweddar. Yn ystod 2019, roedd pob safle ym Merthyr Tudful wedi cyflawni crynodiadau NO_2 o fewn y nod ansawdd aer cymedrig blynyddol.

Er bod yr holl safleoedd bellach yn is na'r nod ansawdd aer hyd at 2019, roedd un safle yn parhau o fewn 10% o'r nod ansawdd aer cymedrig blynyddol. Mae data ar gyfer 2020 yn dangos gostyngiad pellach ledled y fwrdeistref heb unrhyw safleoedd o fewn 10% o'r nod ansawdd aer cymedrig blynyddol. Ers 2017, mae Ardal Monitro Ansawdd Aer (AQMA) wedi ei osod ar hyd Heol Twynyrodyn. Mae rhagor o

Air Quality in Merthyr Tydfil County Borough

The main source of air pollution within Merthyr Tydfil is from road traffic. As such MTCBC is concerned about NO_2. A network of diffusion tubes operates throughout the district. In the past 8 years NO_2 peaked throughout the district in 2013 and has declined since. This decline has levelled out in recent years. During 2019 all sites within Merthyr Tydfil had achieved NO_2 concentrations within the annual mean air quality objective.

Although all sites are now below the air quality objective up to 2019, one site was still within 10% of the annual mean air quality objective. Data for 2020 has seen a further reduction across the borough with no sites being within 10% of the annual mean air quality objective. Since 2017 there has been an AQMA in place along Twynyrodyn Road. More information is available at http://uk-air.defra.gov.uk/aqma/local-authorities?la_id=402 and www.merthyr.gov.uk. Following public consultation and Council approval, the

wybodaeth ar gael yma https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=402 a www.merthyr.gov.uk. Yn dilyn ymgynghoriad cyhoeddus a chymeradwyaeth oddi wrth y Cyngor, mae LlC wedi cymeradwyo cynllun gweithredu i wrthdroi llif traffig ar hyd Stryd Fawr a Stryd yr Eglwys Pontmorlais fel y gweithredu cyntaf i fynd i'r afael â chrynodiadau NO_2 o fewn yr AQMA.

Ar 28 Mai cafodd llif traffig ei wrthdroi ar hyd Stryd Fawr a Stryd yr Eglwys Pontmorlais. Darparodd hyn lwybrau amgen i ffwrdd o Tesco ac ardal Canol y Dref yn hytrach na Heol Twynyrodyn. Ymddengys fel petai'r gormodedd o draffig wedi symud i ffwrdd oddi wrth yr AQMA a bod llai o giwiau yn datblygu ar Heol Twynyrodyn.

Mae CBSMT hefyd yn ystyried yr effaith ar ansawdd aer a ddaw oddi wrth ddatblygiadau newydd, a ble y bo'n angenrheidiol, caiff amodau cynllunio eu defnyddio i liniaru unrhyw effeithiau negyddol. Mae'r Cynllun Trafnidiaeth Lleol yn cefnogi teithio llesol a'r defnydd o drafnidiaeth gyhoeddus i leihau'r ddibyniaeth ar geir.

WG approved the action plan to reverse traffic flow along Pontmorlais High Street and Church Street as an initial action to address concentrations of NO_2 within the AQMA.

On 28th May 2019 traffic flow was reversed along Pontmorlais High Street and Church Street. This provided alternative routes away from Tesco and the Town Centre area other than Twynyrodyn Road. Traffic build-up appears to have shifted away from the AQMA with fewer queues developing on Twynyrodyn Road.

MTCBC also considers the impact on air quality of new developments, and where necessary, planning conditions are used to mitigate any negative effects. The Local Transport Plan supports active travel and use of public transport to reduce reliance on cars.

Gweithredu i Wella Ansawdd Aer

O ran AQMA Heol Twynyrodyn, yn 2018, cynhaliwyd ymgynghoriad cyhoeddus am 12 wythnos. Ymgynghorwyd y cyhoedd ar 3 opsiwn i leihau'r defnydd o draffig ar Heol Twynyrodyn. Mynegodd y rhan fwyaf o ymatebwyr (94%) eu bod yn ffafrio'r opsiwn o wrthdroi llif y traffig ar hyd Stryd Fawr a Stryd yr Eglwys Pontmorlais. Cymeradwyodd y Cyngor gynllun gweithredu i'r perwyl hwn ac fe'i cyflwynwyd i Lywodraeth Cymru, a wnaeth wedyn ei gymeradwyo.

Ym mis Tachwedd 2018, gwnaeth adrannau Priffyrdd a Pheirianneg gyflwyno Gorchmynion Rheoleiddio Traffig. Ar 28 Mai 2019, cafodd llif traffig ei wrthdroi yn unol â'r cynllun gweithredu a gymeradwywyd. Mae cyfrif traffig ar gael sy'n meintioli'r arsylwadau a wnaed gan Swyddogion Iechyd Cyhoeddus, sef bod yna lai o dagfa traffig yn AQMA Heol Twynyrodyn. Dangosodd arolwg traffig a gyflawnwyd cyn ac ar ôl gwrthdroi'r llif ar hyd Stryd Fawr Pontmorlais, fod yna leihad o ran cyfaint traffig sy'n teithio ar hyd Heol Twynyrodyn sef cyfartaledd o 428 cerbyd ar ddydd Gwener pan fo

Actions to Improve Air Quality

With regard to the Twynyrodyn Road AQMA, in 2018 a 12 week public consultation took place. The public were consulted on 3 options to reduce traffic use of Twynyrodyn Road. Most respondents (94%) expressed a preference for the option of reversing traffic flow along Pontmorlais High Street and Church Street. The Council approved an action plan to this effect being submitted to Welsh Government, who subsequently approved it.

In Nov 2018 the Highways and Engineering departments issued Traffic Regulation Orders. On 28th May 2019 traffic flow was reversed in accordance with the approved action plan. Traffic counts are available which quantified observations made by Environmental Health Officers that there was less traffic build-up in the Twynyrodyn Road AQMA. The traffic survey carried out prior to and after the reversal of flow along Pontmorlais High Street, showed a reduction in the volume of traffic travelling along Twynyrodyn Road AQMA by an average of 428 vehicles on a Friday when traffic volumes were at their highest. Some traffic build-up around Avenue De Clichy and Pontmorlais

cyfaint traffig ar ei uchaf. Arsylwyd ar beth tagfa traffig o gwmpas Avenue De Clichy a Stryd Fawr Pontmorlais yn ystod oriau brig sydd hefyd wedi cael ei dystio gan yr arolwg traffig, gyda chynnydd cyfartalog o symudiadau cerbyd o 677 ar ddiwrnod wythnos ar hyd Avenue De Clichy. Ni chaiff ei ystyried yn debygol y bydd hyn yn peri risg iechyd cyhoeddus gan fod eiddo preswyl wedi eu gosod yn ôl o'r ffordd ac nid oes unrhyw ardaloedd ar ei hyd ble y mae pobl yn debygol o dreulio 1 awr+. Ar ochr Orllewinol Avenue de Clichy mae Afon Taf, felly nid oes unrhyw geunentydd stryd posibl. Awgrymodd yr arsylwadau cynnar, fod gwrthdroi'r traffig wedi gwneud gwelliannau i'r ansawdd aer o fewn yr AQMA ac mae hyn wedi parhau ers hynny.

High Street was observed during peak times which has also been evidenced by the traffic survey, with an average weekday increase of 677 vehicle movements along the Avenue De Clichy. This is not considered likely to pose a public health risk as residential properties are set back from the road and there are no areas along it where people are likely to spend 1 hour+. On the West side of Avenue de Clichy is the River Taff, so there are no possible street canyons. The early observations suggested the traffic reversal made improvements in air quality within the AQMA and this has continued to be the case since.

Blaenoriaethau a Heriau Lleol

Y flaenoriaeth yn 2019 oedd monitro effeithiolrwydd y cynllun gweithredu a weithredwyd. I'r perwyl hwnnw, cafodd tiwbiau tryledlad ychwanegol eu gosod ar hyd llwybr gwrthdroi traffig a'r strydoedd amgylchynol. Cafodd y monitor ECC hefyd ei adleoli i Stryd Fawr Pontmorlais ble y mae'n parhau. Ers ei osod, nid yw'n ymddangos fel petai'r gwrthdroi wedi

Local Priorities and Challenges

The priority for 2019 was to monitor the effectiveness of the implemented action plan. To that end, additional diffusion tubes were installed along the traffic reversal route and surrounding streets. The ECC monitor was also relocated to Pontmorlais High Street where it remains. Since its implementation, the reversal doesn't appear to have significantly increased

cynyddu crynodiadau NO_2 yn sylweddol ar hyd Stryd Fawr Pontmorlais nac unrhyw lwybr dargyfeiriad arall.

Roedd crynodiadau NO_2 ar gyfer 2020 yn dilyn gweithredu cyfnod clo cenedlaethol yn sgil pandemig coronafeirws yn sylweddol is yn sgil gostyngiad mewn symudiad cerbydau a oedd yn gysylltiedig â hynny. Yn hynny o beth, nid yw'r rhan fwyaf o'r data ar gyfer 2020 yn wir gynrychioliad ar gyfer yr ardal yn ystod amgylchiadau arferol. Yn hynny o beth, y flaenoriaeth ar gyfer 2020 oedd cynnal monitro'r rhwydwaith a rhoi'r gorau i'r diddymiad a fwriadwyd i'r AQMA yn 2021.

Os yw'r gwrthdroi traffig yn parhau i fod yn llwyddiannus yn gwella ansawdd aer ar Heol Twynyrodyn drwy gydol 2021, yn dilyn llacio cyfyngiadau'r cyfnod clo, bydd hyn yn galluogi'r AQMA i gael ei ddiddymu erbyn un ai 2022 neu 2023. Os yw'n aflwyddiannus, caiff gwaith ychwanegol ei ystyried mewn cynlluniau gweithredu wedi eu diweddaru.

Cafodd monitro hefyd ei estyn i gynnwys tiwbiau tryledia ychwanegol mewn ardaloedd a ddynodwyd gan Arolwg Sŵn a Seinwedd Llywodraeth Cymru, ble y

concentrations of NO_2 along Pontmorlais High Street or any other diversion route.

NO_2 concentrations for 2020 following implementation of the national lockdown due to the coronavirus pandemic were significantly lower due to the associated decrease in vehicle movement. As such, the majority of the data for 2020 is not a true representation for the area during usual circumstances. As such, the priority for 2020 was to maintain monitoring of the network and delay the intended revocation of the AQMA in 2021.

If the traffic reversal continues to be successful in improving air quality on Twynyrodyn Road through 2021 following easing of lockdown measures, this will enable the AQMA to be revoked by either 2022 or 2023. If unsuccessful, additional works will be considered in updated action plans.

Monitoring was also extended to include additional diffusion tubes in areas identified by the Welsh Government Noise & Soundscape Survey, where heavy traffic may also affect air quality.

Additionally in 2018 some individual months of diffusion tube data from 6/7 Ladysmith Place indicated if

gallai traffig trwm effeithio ar ansawdd aer hefyd.

Yn ychwanegol yn 2018, gwnaeth peth data tiwb tryledia misoedd unigol o 6/7 Faes Ladysmith ddynodi, y gallai crynodiad blynyddol cyfartalog o NO_2, pe na fyddai'n derbyn sylw, fod wedi mynd yn uwch na 36µg/m³, o fewn 10% o'r nod ansawdd aer blynyddol cyfartalog. Dangosodd arsylwadau dagfeydd a achoswyd gan fynediad / allanfa maes parcio y tu cefn i Ysgol Gynradd Gymunedol Troedyrhiw, wedi ei gyfuno â cheir wedi eu parcio ar hyd Heol Caerdydd. Er mwyn pennu effaith y maes parcio, ym mis Rhagfyr 2018 ac yn gynnar ym mis Ionawr 2019, cafwyd mynediad dros dro iddo ar hyd system un ffordd yn unig. Roedd y canlyniad ar gyfer cyfnod 11 a chyfnod 12 yn 48µg/m³ ill dau, ond dangosodd safleoedd eraill ledled yr ardal gynnydd amlwg yng nghyfnod 12, gan ddynodi fod y system un ffordd yn effeithiol wrth wella ansawdd aer. Gallai hyn fod drwy wella llif traffig neu drwy fod pobl ddim eisiau defnyddio'r maes parcio. Ar ôl addasu'r duedd, y cyfartaledd blynyddol oedd 34.6µg/m³, sy'n is na'r lefel sy'n peri pryder. Yn ystod 2019, roedd y crynodiad o NO_2 ar gyfer 6/7 Maes Ladysmith, wedi gostwng

unaddressed the annual mean concentration of NO_2 could have exceeded 36µg/m³, within 10% of the annual mean air quality objective. Observations showed bottle necks caused by car access/egress from a car park to the rear of Troedyrhiw Community Primary School, combined with parked cars along Cardiff Road. To determine the impact of the car park, in December 2018 and early January 2019 it was only temporarily accessible via a one way system. Results for period 11 & period 12 were both 48µg/m³, whereas other sites throughout the district showed a noticeable increase in period 12, indicating the one way system was effective at improving air quality. This may be by improving traffic flow or by putting people off using the car park. After bias adjustment the annual mean was 34.6µg/m³, below the level for concern. During 2019 the concentration of NO_2 for 6/7 Ladysmith Place had decreased slightly to 33µg/m³ and an additional tube for further assessment of Cardiff Road, placed at 37 Brookfield Terrace was well below the AQS objective at 27.8µg/m³. Data for 2020 show that NO_2 concentrations for 6/7 Ladysmith Place decreased to 25.6µg/m³. A reduction in concentrations is the case for all sites within the network and due

ychydig i 33µg/m³ ac roedd tiwb ychwanegol ar gyfer asesu pellach yn Heol Caerdydd, a osodwyd yn 37 Teras Brookfield, dipyn yn is na nod yr Arolwg Ansawdd Aer (AQS) sef 27.8µg/m³. Dengys data ar gyfer 2020 fod crynodiadau NO_2 ar gyfer 6/7 Maes Ladysmith wedi disgyn i 25.6µg/m³. Lleihad mewn crynodiadau yw'r achos ym mhob safle o fewn y rhwydwaith ac yn sgil y canlyniadau annodweddiadol ar gyfer y flwyddyn yn sgil y pandemig, mae monitro parhaus yn angenrheidiol i bennu a yw'n ofynnol i'r safle hwn gael sylw ffocysedig yn y dyfodol.

Cwblhawyd adeiladu gorsaf fysiau newydd Stryd yr Alarch yn ystod Mai 2021 a dechreuodd weithredu yn ystod Mehefin 2021. Yn hynny o beth, cafodd y rhwydwaith presennol ei ehangu i gynnwys 4 pwynt monitro newydd yng nghyffiniau'r orsaf newydd. Pe byddai unrhyw ormodiant yn yr ardal hon, yna byddai gwaith ychwanegol yn cael ei ystyried mewn cynlluniau gweithredu wedi eu diweddaru.

Sut i Gymryd Rhan

Mae gwybodaeth bellach am lygredd aer gan gynnwys mynediad at adroddiadau ansawdd aer blaenorol ar gael oddi wrth www.merthyr.gov.uk.

to the atypical results for the year attributable to the pandemic, continued monitoring is necessary to determine whether this site requires focussed attention in future.

The newly constructed bus interchange on Swan Street was completed during May 2021 and came into operation during June 2021. As such, the existing network has been expanded to include 4 new monitoring points around the vicinity of the new interchange. Should there be any exceedances in this area, additional works will be considered in updated actions plans.

How to Get Involved

Further information on air pollution including access to previous air quality reports is available from www.merthyr.gov.uk. Specific

Gellir ymateb i gwestiynau penodol drwy e-bostio PublicHealth@merthyr.gov.uk neu drwy ffonio 01685 725000.

questions can be addressed by emailing PublicHealth@merthyr.gov.uk or by telephoning 01685 725000.

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1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

Merthyr Tydfil County Borough Council has previously undertaken the following review and assessment reports as required by Local Air Quality Management:

Report Title	Date	Outcomes
First stage review and assessment	1998	Negligible risk of AQS objective for benzene, 1,3-butadiene, CO and lead being exceeded in the area. Possible risk of objectives for PM_{10}, SO_2 and NO_2 being exceeded.
Second stage review and assessment	2000	Negligible risk of AQS objectives for PM_{10}, SO_2 and NO_2 being exceeded in area. Unnecessary to proceed further with review and assessment process or declare AQMAs.
Updating and screening assessment and progress reports	2003-2005	AQS objectives for 7 pollutants likely to be met at all locations with relevant public exposure. Unnecessary to carry out detailed assessment or declare any AQMAs. Progress reports 2004 & 2005 found no significant changes in air quality and no developments that might affect air quality within the borough.
Updating and screening assessment and progress reports	2006-2008	AQS objectives for the 7 pollutants detailed in regulations likely to be met at all locations with relevant public exposure. Unnecessary to carry out a detailed risk assessment or declare any AQMAs.

		Progress report 2007 found NO_2 levels had increased but within AQS objective of 40µg/m³ at all locations. Level at 55 Twynyrodyn Road was within 10% of the limit and monitoring network expanded in this area. Progress report 2008 found levels increased and at 55 Twynyrodyn Road, a marginal exceedance identified. Considered necessary to proceed to detailed assessment.
Detailed assessment	2009	Reviewed data for monitoring sites on Twynyrodyn Road and modelled NO_2 levels for length of the road. Recommended siting of additional diffusion tubes at various points on road and declaring AQMA.
Updating and screening assessment and progress reports	2009-2011	NO_2 reduced, AQS objectives met at all locations with relevant public exposure. 2010 progress report determined based on reduction no longer necessary to carry out further detailed assessment or declare AQMA. Detailed assessments necessary for 2 new permitted processes and 1 substantially changed installation. Progress report 2011 found NO_2 levels had increased throughout the borough, with marked exceedance at 55 Twynyrodyn Road. Considered necessary to increase number of monitoring sites on Twynyrodyn Road prior to declaring AQMA in relation to this site.

Detailed assessment	2011	Reviewed emissions data from Prince Charles Hospital combustion plant. Concluded emissions will not result in any exceedances of objectives unless on-site emergency generators used for extended periods.
Updating and screening assessment and progress reports	2012-2014	No new developments or proposed developments that could be considered to adversely affect air quality. 1 exceedance of NO_2 at 55 Twynyrodyn Road. Progress report 2013 found action to reduce NO_2 levels at 55 Twynyrodyn Road, has reduced it to below AQS objective. Additional monitoring found further location on same road link where NO_2 levels exceeded AQs objective. Progress report 2014 identified new bus station development proposed may adversely affect NO_2. Environmental Health department liaised with Regeneration Group to ensure air quality considered in planning process. NO_2 levels on Twynyrodyn Road had increased to exceed AQS objective. Unclear if temporary and related to ongoing changes to traffic flow. Further monitoring proposed. Detailed assessment and declaration of AQMA on Twynyrodyn Road necessary.
Detailed assessment	2015	Elevated NO_2 on Twynyrodyn Road associated with traffic. Wind speed and direction, and 2 storey terraced housing without front gardens resulted in NO_2 accumulating around 55 Twynyrodyn Road.

		Predominantly associated with uphill traffic during early evening. Considered necessary to declare AQMA from Western End of Twynyrodyn Road to 147 Gilfach Cynon. MTCBC declared AQMA on 30th Jan 2017.
Updating and screening assessment and progress reports	2015-2017	Proposed bus station could adversely affect air quality. Modelling indicates likely to comply with AQS objectives, to be monitored with diffusion tubes prior to bus station opening as modelling based on limited data. NO_2 exceedances were contained within AQMA on Twynyrodyn Road. Action plan under development for public consultation, on options to improve traffic flow and reduce traffic numbers. Additional monitoring in Swansea Road in anticipation of Trago Mills opening, attracting additional traffic to Swansea Road area.
Annual report	2018	NO_2 exceedances were contained within AQMA on Twynyrodyn Road. Action plan to reverse traffic flow along Pontmorlais High Street and Church Street approved by Welsh Government following public consultation and Council approval. Impact of Trago Mills on Swansea Rd has not resulted in annual mean within 10% of AQS objectives. Monitoring network reviewed and as of Jan 2019 network will be extended to include traffic reversal

		area, Troedyrhiw and areas identified in Welsh Government Noise and Soundscape survey.
Annual report	2019	Action plan implemented to reverse traffic flow along Pontmorlais High Street and Church Street on 28th May 2019. Additional monitoring locations added to the network used to assess any changes in vehicle routes around the town centre and along Pontmorlais High Street and the impact it might have on air quality. A decrease in levels of NO_2 on Swansea Road around the Trago Mills site has been observed. All sites within the AQMA are now below the annual air quality objective however one site remains within 10% of the AQS objective.
Annual report	2020	Continued monitoring of network to assess effectiveness of the traffic reversal and changes around the town centre and along Pontmorlais High Street. Proposal to revoke the AQMA in 2021 if levels were shown to have continued to remain outside 10% of the AQS objective.

NO_2 continued to exceed the AQS objective in 2017 along Twynyrodyn Road (stretch near 55 Twynyrodyn Road within AQMA). This was in line with results in previous years.

MTCBC currently has one AQMA, Twynyrodyn Road. Following a detailed assessment in 2015 it was declared in Jan 2017. It was declared due to elevated NO_2 concentrations caused by road traffic. A draft action plan identified 3 possible changes to traffic flow anticipated to improve traffic flow around the town centre and consequently reduce NO_2 in the AQMA. A 12 week public consultation was carried out from 16th March 2018 to 8th June 2018. The majority (94%) of consultation responses were in favour or reversing the traffic flow along Pontmorlais High Street and Church Street. Following the public

consultation, on 27th June 2018 the Council approved the action plan for reversing traffic flow along Pontmorlais High Street for submission to Welsh Government. Welsh Government approved the action plan on 17th July 2018. The Highways and engineering departments issued the relevant traffic management orders and following these on 28th May 2019 reversed the traffic flow along Pontmorlais High Street & Church Street.

During some months in 2018 there was an elevated NO_2 concentration at Ladysmith Place, Troedyrhiw. This required further investigation. Observations found traffic was building up at the junction of Phyllis Street & Cardiff Road, where cars were accessing and egressing a small car park to the rear of Troedyrhiw Community School. As a semi-rural area a large proportion of children attending the school travel by car. To determine the effect of the car park, in December 2018 a one way system was implemented for 4 weeks, continuing into early January 2019. Most sites across the district had higher NO_2 concentrations in period 12 than period 11, but at 6/7 Ladysmith Place the concentration remained the same. This indicates either lower traffic numbers or better traffic flow had counteracted the normal cold weather deterioration in air quality. As the annual mean NO_2 concentration was below 36µg/m³ (more than 10% below the objective) in 2018 no further action was planned at that time. Monitoring has been extended during 2019 further along Cardiff Road, Troedyrhiw to monitor if the section of road is likely to breach the AQS objective. Both 6/7 Ladysmith Place & 37 Brookfield Terrace were below the AQS and outside 10% of the figure at 33.2µg/m³ and 27.8µg/m³ respectively.

Data for 2020, which was atypical for 75% of the year show that 6/7 Ladysmith Place and 37 Brookfield Terrace measured annual mean concentrations of 25.6µg/m³ and 20.9µg/m³ respectively, a notable decrease from 2019 data. Comparison of periods 1, 2 and 3 of 2019 and 2020, where data for that period of 2020 was more typical, when averaged show a reduction of NO_2 concentrations at both sites. The unadjusted average for 6/7 Ladysmith Place was 50.8µg/m³ in 2019 and 42.3µg/m³ in 2020. Similarly, the unadjusted average for 37 Brookfield Terrace was 44.7µg/m³ in 2019 and 32.8µg/m³ in 2020. Although the UK was not subject to a mandatory lockdown for periods 1, 2 and 3, it is possible that there was a voluntary reduction in travel for all purposes as media coverage and public fear increased over the beginning of the year, which could have contributed toward the reduction in NO_2 concentrations. Due to this unknown, in conjunction with the remaining data for 2020, which saw notable reductions in NO_2 concentrations from April onwards, it is not possible to consider revoking the AQMA during 2021 as previously intended.

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. AQMAs are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

A summary of the AQMA declared by Merthyr Tydfil County Borough Council can be found in Table 1.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/details?aqma_ref=2008 and maps are available in Appendix D.

We propose to revoke the Twynyrodyn Road AQMA in either 2022 or 2023 if all sites remain within and more than 10% below the AQS objectives further to easing of lockdown measures (see monitoring section).

Table 1.1 – Declared Air Quality Management Areas

AQMA	Relevant Air Quality Objective(s)	Comments on Air Quality Trend	District		Description
AQMA Twynyrodyn Road	NO_2 annual mean concentration	Data post Period 6 of 2019 shows an improvement in air quality in the AQMA since the reversal of the traffic on Pontmorlais High Street was implemented on May 28th 2019.	Merthyr Tydfil County Borough		An area encompassing a number of properties from Tesco Roundabout to Gilfach Cynon

AQMA boundary maps within Merthyr Tydfil County Borough can be viewed at https://laqm.defra.gov.uk/images/aqma_maps/1476_Merthyr%20Tydfil%20AQMA.jpg and are included in Appendix D.

1.3 Implementation of Action Plans

Merthyr Tydfil County Borough Council has taken forward a number of measures during 2017-2020 in pursuit of improving local air quality. This is summarised in Figure 1.1. Details of all measures completed, in progress or planned are set out in Table 1.2. More detail on these measures can be found in the Air Quality Action Plan at www.merthyr.gov.uk relating to any designated AQMAs.

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

Key measures completed in 2018 are: following public consultation and Council approval, the action plan was submitted to and approved by Welsh Government. Traffic management orders were published in November 2018 and following this on 28th May 2019 the traffic flow was reversed along Pontmorlais High Street and Church Street.

Merthyr Tydfil County Borough Council has used the following measures to monitor the impact of the reversal of the traffic flow.

Diffusion tube monitoring was extended to include the traffic reversal area and some surrounding streets where it is possible that people could take alternative routes. This began in January 2019; therefore it was anticipated that in 2020, the 12 months data would be available for bias adjustment and review, particularly monitoring periods 6-12.

As the data for 2020 is atypical, it has not been possible to make a fair comparison as predicted in the previous Annual Progress Report, therefore continued monitoring post-lockdown is necessary to obtain additional data which more typically represents NO_2 concentrations in the area and for a longer period. Prior to the 2020 lockdown, clear evidence had emerged of fewer traffic queues on Twynyrodyn Road and some queues developing along Avenue de Clichy and Pontmorlais High Street indicating the reversal has been successful in reducing traffic through the AQMA post period 6. Despite the atypical data of 2020, it is hoped that the annual mean NO_2 concentrations along Twynyrodyn Road will further decrease from pre-lockdown levels. If annual mean NO_2 concentrations within the AQMA are less than 36µg/m³ this will enable the AQMA to be revoked in 2022/2023.

Figure 1.1 – Timeline of events for the Twynyrodyn Road AQMA

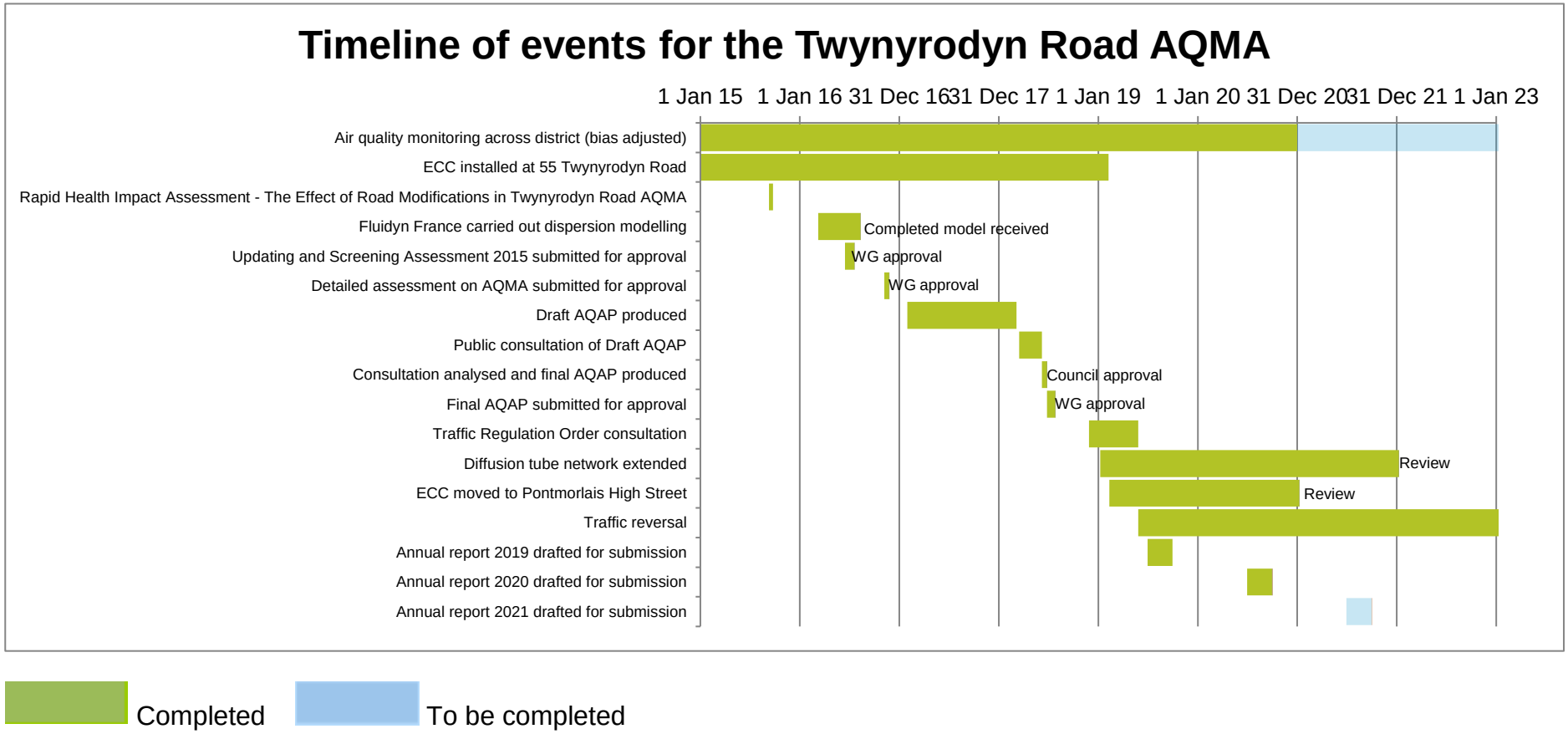


Table 1.2 – Progress on Measures to Improve Air Quality

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1	Reduce emissions in the AQMA by providing safer pedestrian routes to and from the town centre, reducing vehicle numbers	Reduce emissions in the AQMA by providing safer pedestrian routes to and from the town centre, reducing vehicle numbers	MTCBC	2020	2021-2022	Reduction in NO_2 at monitoring sites along Twynyrodyn Road and reduced traffic counts along Twynyrodyn Road	Maintain concentrations more than 10% below AQS	Traffic data modelling carried out which shows pedestrian crossing should not increase NO_2 concentrations within the AQMA	Ongoing	2021-2022	Traffic counts carried out once the new crossing is in place will indicate that people feel safer to access the town centre on foot from the southern end of town therefore reducing vehicle numbers around the AQMA

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
2	Reversal of 1-way traffic on both Pontmorlais High Street and Church Street (AQAP 2018)	Reduce emissions in the AQMA by providing alternative routes from the town centre)	MTCBC	2017-2018	2019-2020	Reduction in NO_2 at monitoring sites along Twynyrodyn Road, and reduced traffic counts along Twynyrodyn Road	Reduction of 10µg/m^3 at monitoring sites 14 and 21.	There has been a reduction in levels of NO_2 within the AQMA with all sites now below the AQS objective of 40µg/m^3	A reduction in NO_2 concentration has been observed within the AQMA post Period 6	2020	The implementation of the action plan seems to have reduced NO_2 within the AQMA post Period 6 however more data will be required to determine if this decrease continues though 2020.

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
3	Increase of environmental charges through permit systems	Environmental Permits charges set by Welsh Government and subject to annual review are according to risk, encouraging businesses to comply with permit conditions to operate at lowest applicable risk for process in question	MTCBC			Proportion of businesses in lowest risk category for their type of operation	0% No permitted processes operate within the AQMA	80% (12 out of 15 active permitted processes) were within lowest risk category for their type of operation in 2018/2019	Newly permitted businesses are being given support to reduce their risk to the lowest possible for each site and process	2020	Following inspections businesses are guided on how to achieve full permit compliance
4	Saturday shuttle bus provision	Reduce journeys to and from the town centre by providing an alternative (free during a 6-week trial)	MTCBC	2018	2018	Number of people getting on and off the shuttle bus at the Red house and College stops	<1% Extremely hard if not impossible to prove.	Use of the shuttle bus was low and it ceased to operate on 25th December 2018.	The trial was completed and it was found to be unviable	2018	The aim was to bring people to the Town Centre from the outlying retail areas to generate income. The lack of use meant operating the bus was not economically viable

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
5	Cycle to work scheme	Salary sacrifice scheme towards purchase of bicycle	Cycle Solutions	2010	Ongoing	Number of people joining scheme	<1% Extremely hard if not impossible to prove.	Scheme attracts a handful of people every year. To date 160 people have joined the scheme	Unknown	Ongoing	The aim is for MTCBC works to cycle to work. Although many live in Merthyr Tydfil only a few live within or travel through the AQMA and as such effects will be marginal. There is no way of checking of those who have accessed the scheme whether and how often they cycle to work.

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
6	Walking to school initiatives	Encouraging primary school students to walk to school	MTCBC	2010	Ongoing	Number of students walking to school	<1% Extremely hard if not impossible to prove.	Not monitored	Not monitored	Ongoing	Schools including Twynyrodyn Community Primary school are able to take part in schemes to encourage walking to school including addressing road safety, walking buses, etc. This includes a Walk to School week and Kerbcraft Child Pedestrian Training. It is unclear how effective they are at changing parental choice to drive or walk in the long run. There are plans to obtain baseline data on how students travel to school in future.

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
7	Scoot to school	Training to primary school children to travel to school by scooter	Sustrans	2010	Ongoing	Number of students scooting to school	<1% Extremely hard if not impossible to prove	Not monitored	Not monitored	Ongoing	It is unclear whether being a fun activity means it causes short term rather than long term changes
8	National Standards Cycling Scheme	Training year 6 students on cycling safety	Sustrans	Pre 2010	Ongoing	Number of people signing up to schemes	<1% Extremely hard if not impossible to prove.	Consistently high uptake up to national lockdown	Not monitored – school closures	Ongoing	By delivery to all 22 primary schools it aims to encourage students starting secondary school to cycle to school. Although many take the course the number who then start secondary school by cycling and those who maintain it throughout their time at secondary school is not known

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2020

2.1.1 Automatic Monitoring Sites

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

Merthyr Tydfil County Borough Council undertook automatic (continuous) monitoring of NO_2 at 1 site during 2020 however, the equipment developed a fault but was operational for 79% of the year. Additionally, PM_{10} and $PM_{2.5}$ are monitored by Merthyr (South Wales) Ltd as a planning condition for the Ffos-y-Fran land reclamation scheme, an opencast reclamation scheme. They operate the TEOM at Twynyrodyn Community Primary School. Table 2.1 presents the details of the sites. National monitoring results are available at: https://uk-air.defra.gov.uk/data/data-availability

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

2.1.2 Non-Automating Monitoring Sites

Merthyr Tydfil County Borough Council undertook non- automatic (passive) monitoring of NO_2 at 31 sites during 2020. Table 2.2 presents the details of the sites.

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

Table 2.1 – Details of Automatic Monitoring Sites

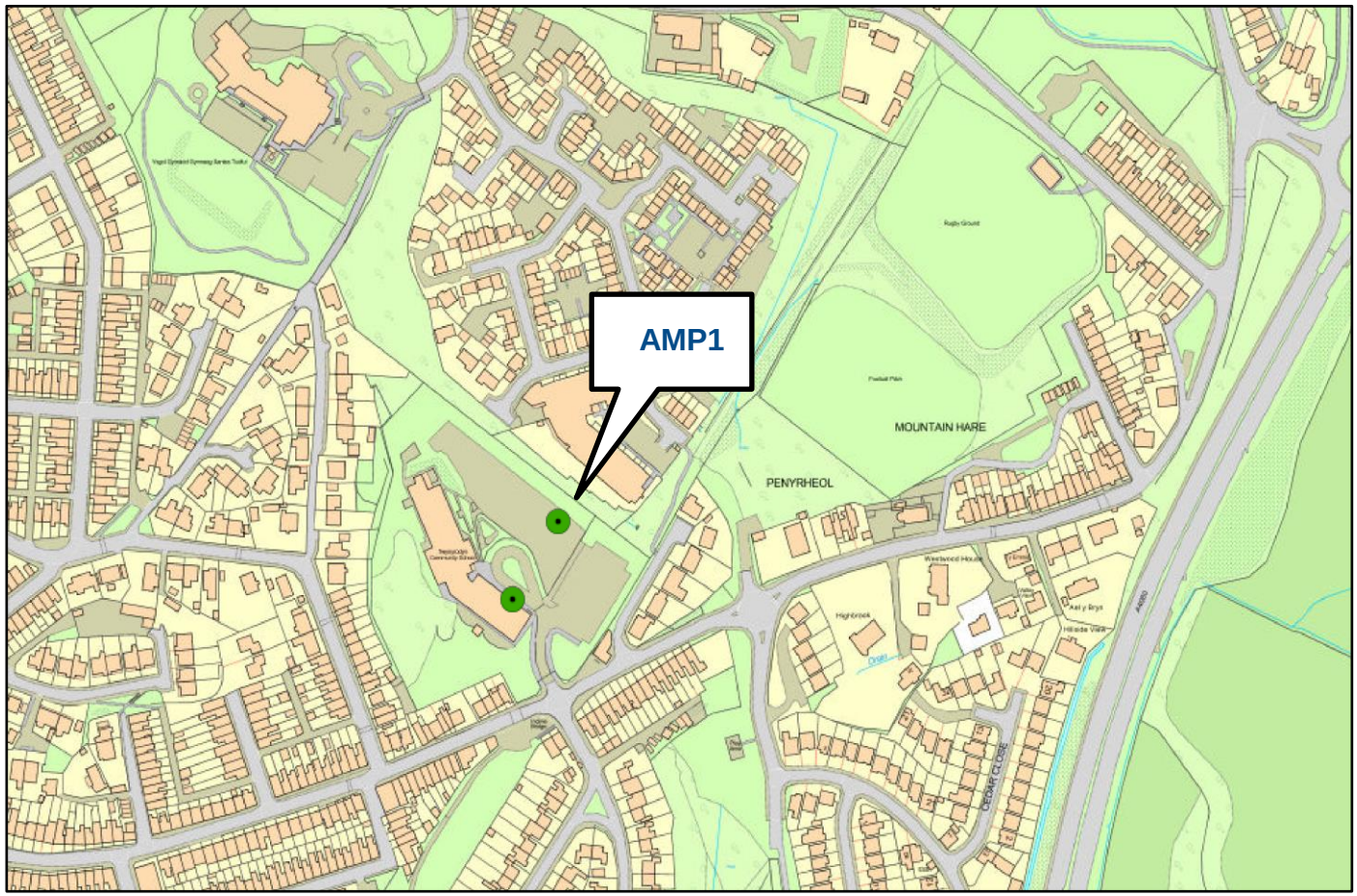
Site ID	Site Name	Site Type	Associated with (Named) AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) (1)	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
APM1	Twynyrodyn School	Suburban		305821	206008	PM_{10} $PM_{2.5}$	TEOM	2.43	0	0	N/A
ECC	98 Pontmorlais	Kerbside		304987	206411	NO_2	ECC	3	0	0	2.9

Notes:

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

Figure 2.1 – Maps of Automatic Monitoring Sites

APM1 LOCATION



ECC LOCATION

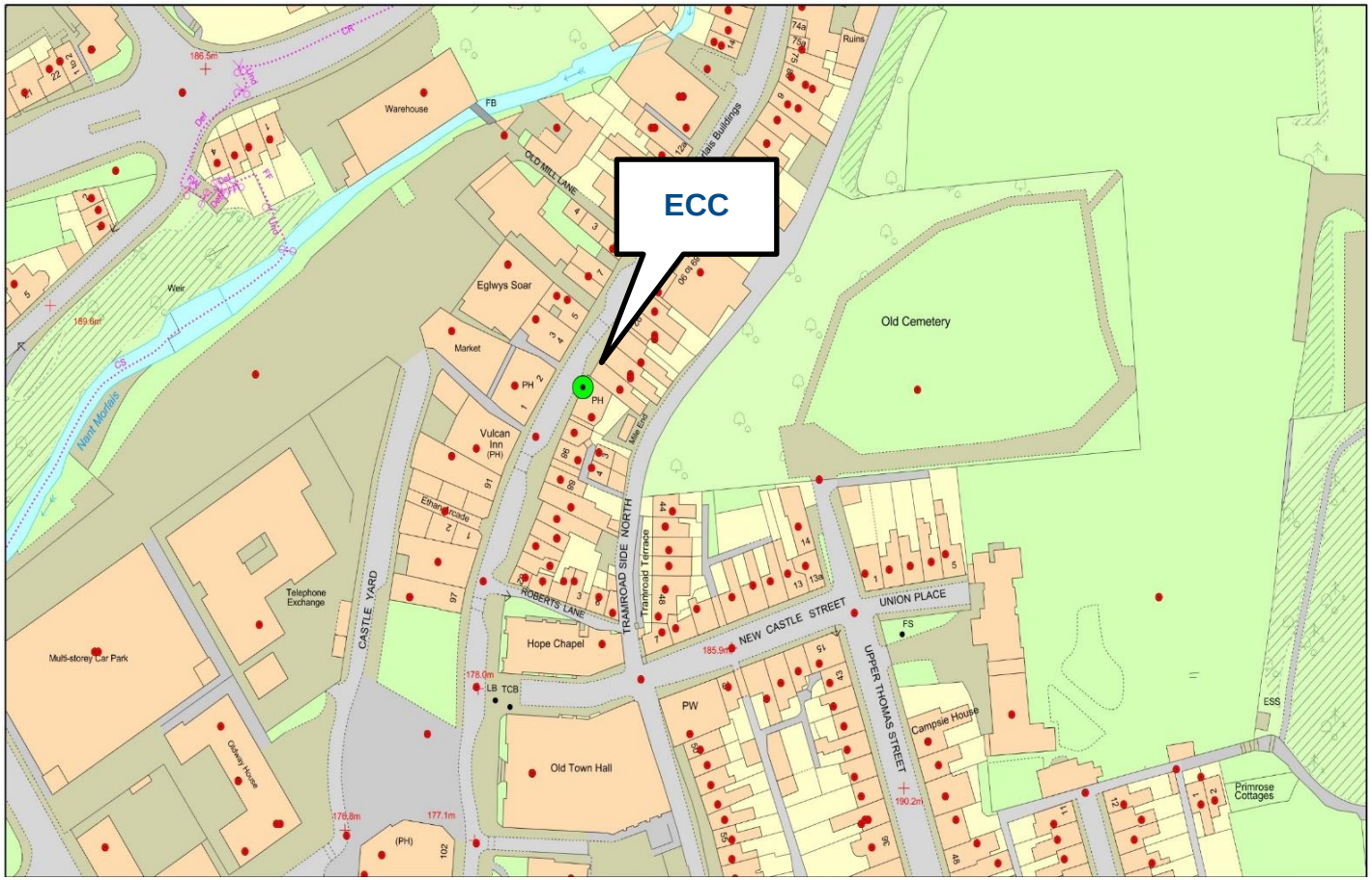


Table 2.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with Named AMQA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) (1)	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
				X	Y					
1	Imperial Hotel	Roadside		305042	206524	2.3	N	0	3.4	3.4
2	Civic Centre	Urban Background		304743	206261	1.9	N	0	43.3	43.3
3	Twynyrodyn Community Primary School	Suburban		305832	205941	2.1	N	0	52.8	52.8
4	15 Lower High Street	Urban Centre		305001	205763	2.5	N	0	3.6	3.6
5	1 Alma Street	Roadside		305140	205910	2.3	N	0	1.1	1.1

Site ID	Site Name	Site Type	Associated with Named AMQA?	OS Grid Reference		Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) (1)	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
				X	Y					
6	11 Mardy Terrace, Plymouth Street	Roadside		305426	205144	2.3	N	0	5.1	5.1
7	36 Brynteg, Treharris	Roadside		309640	197033	2.1	N	0	1.6	1.6
8	Victoria Street Taxi Rank	Urban Centre		304866	206137	2.3	N	0	3.4	3.4
9	Six Bells Estate	Suburban		303525	206388	1.9	N	0	6.3	6.3
10	11 Park Place, Penydarren Road	Roadside		305180	206744	2.3	N	0	1.6	1.6

11	11 Alexandra Terrace lamp-post	Roadside	Twynyrodyn Road AQMA	305382	205872	3.0	N	1.7	3.0	1.3
12	Dowlais Upper	Roadside		307171	207915	2.4	N	0	1.6	1.6
13	110 High Street	Urban Centre		304947	206261	2.5	N	0	3.2	3.2

14	55 Twynyrodyn Road	Roadside	Twynyrodyn AQMA	305410	205410	2.5	N	0	2.3	2.3
15	Quakers Yard	Suburban		309573	196518	2.0	N	0	3.4	3.4
16	Erw Las	Suburban		303360	206822	2.2	N	0	37.0	37.0
17	119 High Street Corner	Urban Centre		304942	206204	3.0	N	0	1.0	1.0
18	91 Twynyrodyn Road	Roadside	Twynyrodyn AQMA	305217	205880	2.4	N	0	2.3	2.3

19	40 William Street	Roadside	Twynyrodyn Road AQMA	305316	2058723	2.1	N	0	5.3	5.3
20	17 Court Terrace	Roadside	Twynyrodyn AQMA	305149	205906	2.3	N	0	1.5	1.5
21	51 Twynyrodyn Road	Roadside	Twynyrodyn AQMA	305394	205871	2.3	N	0	1.5	1.5
22	15 Arfryn Terrace	Roadside	Twynyrodyn AQMA	305147	205906	2.3	N	0	4.9	4.9
23	98 Pontmorlais	Urban Centre		304987	206411	2.7	Y	0	2.9	2.9
24	64 Gilfach Cynon	Roadside	Twynyrodyn Road AQMA	305415	205863	2.1	N	1.0	3.7	2.7
25	37 Brookfield Terrace	Roadside		307034	202698	2.3	N	0	1.1	1.1
26	6 Windsor Terrace	Suburban		305296	205895	2.3	N	0	2.9	2.9

27	4 Somerset Place, Union Street	Suburban		305182	206138	2.6	N	0	6	6

28	48 Darren View	Suburban		305579	206811	2.1	N	0	1.4	1.4
29	6/7 Ladysmith Place	Roadside		307112	202547	2.6	N	0	3.4	3.4
30	Bron-Gelli, Swansea Road	Roadside		303570	206676	2.1	N	0	8.4	8.4
31	Caedraw Flat Downpipe	Roadside		304782	205886	2.1	N	0	5.7	5.7

Notes:

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

Notes:

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

Figure 2.2 – Map of Non-Automatic Monitoring Sites across County Borough

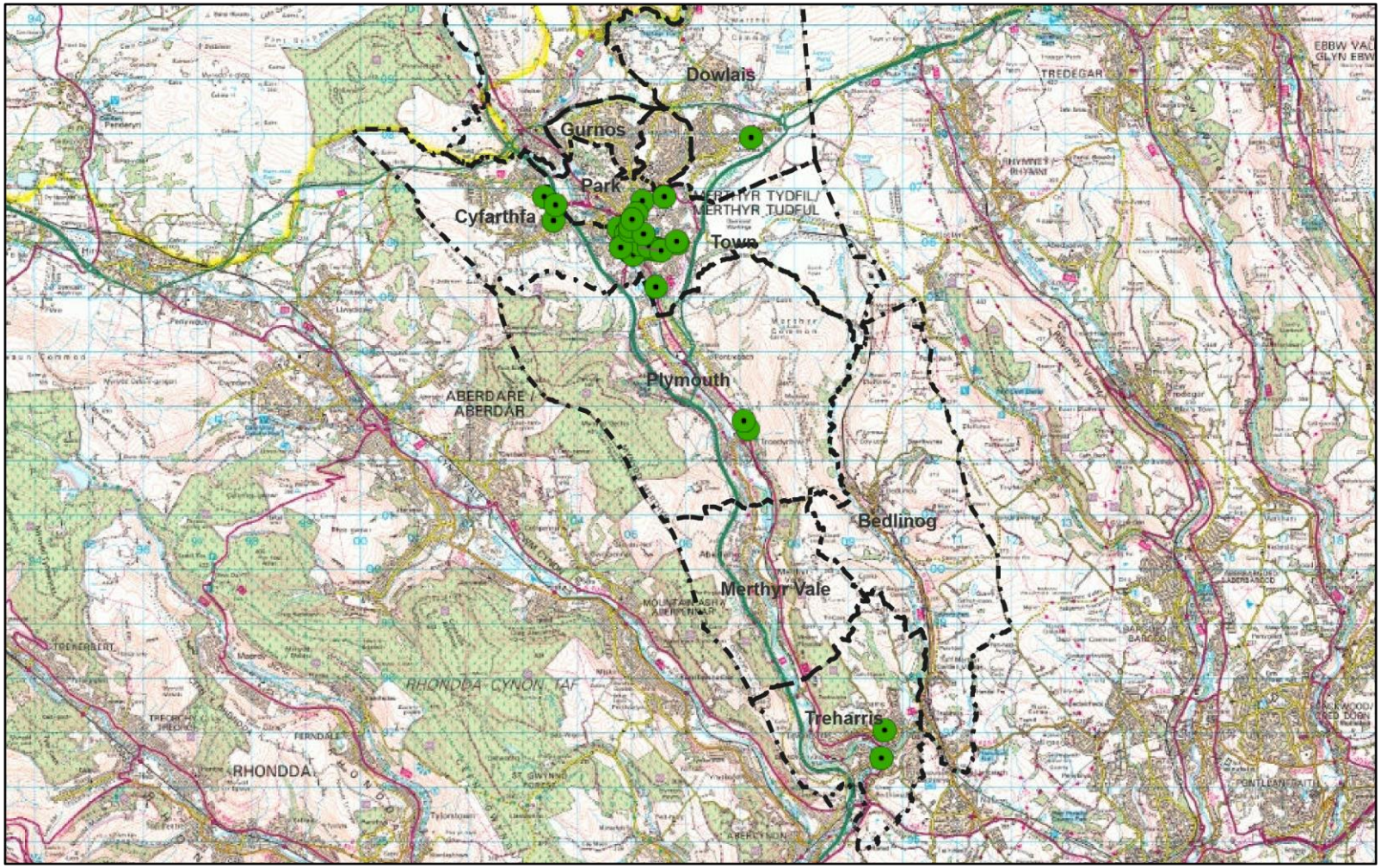
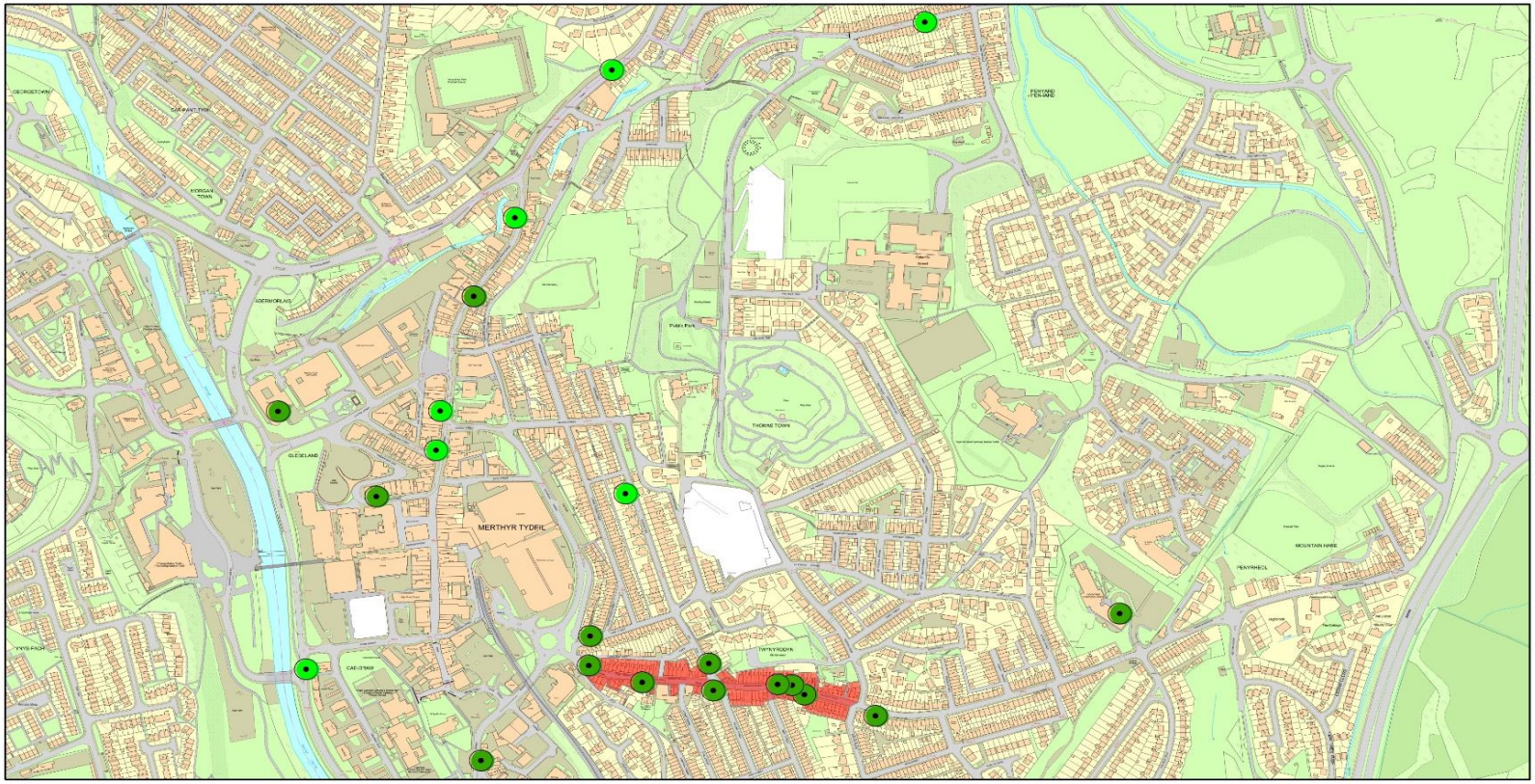


Figure 2.3 – Map of Non-Automatic Monitoring Sites across Town Ward



N	**GRADDFA / SCALE:** 1:6,853	© Hawlfraint y Goron a hawliau cronfa ddata 2020 Arolwg Ordnans 100025302 "Ni chaniateir i chwi gopio, tan-drwyddedu, dosbarthu neu werthu y data yma i unrhyw drydydd barti mewn unrhyw ffurf" © Crown copyright and database rights 2020 Ordnance Survey 100025302 "You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form."
	DYDDIAD / DATE: 11/08/2020	
	ADRAN / DEPARTMENT: Environmental Health	
	ARLUNIWYD GAN / DRAWN BY: AR	
TEITL / TITLE: Bryn Caerau Bungalow - Private Water Supply		Cyngor Bwrdeistref Sirol MERTHYR TUDFUL / MERTHYR TYDFIL County Borough Council

Figure 2.4 – Map of Non-Automatic Monitoring Sites across Twynyrodyn

2.2 2020 Air Quality Monitoring Results

Table 2.3 – Annual Mean NO_2 Monitoring Results ($\mu g/m^3$)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
ECC	Roadside / Urban Centre	Automatic	79	79	39.7	**41.1**	39.9	20.8	17.7
1	Roadside	Diffusion Tube	92	92	21.2	21.3	20.8	23.1	21.4
2	Urban Background	Diffusion Tube	100	100	18.1	17.9	15.2	16.6	11.7
3	Suburban	Diffusion Tube	100	100	13.0	11.4	10.7	11.1	8.4
4	Urban Centre	Diffusion Tube	100	100	25.3	26.9	29.3	24.9	19.1
5	Roadside	Diffusion Tube	100	100	19.8	18.5	18.1	22.3	13.8
6	Roadside	Diffusion Tube	83	83	17.0	15.9	17.3	25.3	18.8
7	Roadside	Diffusion Tube	100	100				17.9	13
8	Urban Centre	Diffusion Tube	100	100	22.9	22.2	20.4	18.8	15.1
9	Suburban	Diffusion Tube	100	100	10.6	10.2	10.0	10.6	7.4
10	Roadside	Diffusion Tube	83	83				30.7	26.1
11	Roadside	Diffusion Tube	83	83	**40.9**	**40.5**	**40.3**	35	24.6
12	Roadside	Diffusion Tube	100	100	26.4	23.4	23.3	22	17.6
13	Urban Centre	Diffusion Tube	100	100				21.7	19.4
14	Roadside	Diffusion Tube	100	100	**43.2**	**40.7**	39.6	33.2	24.7

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
15	Suburban	Diffusion Tube	100	100	12.8	12.8	12.2	11.5	9.5
16	Suburban	Diffusion Tube	100	100	12.6	12.9	12.1	11.6	8.8
17	Urban Centre	Diffusion Tube	100	100				18.9	14.8
18	Roadside	Diffusion Tube	100	100	25.9	26.2	26.3	24.1	18.9
19	Roadside	Diffusion Tube	100	100	21.5	21.9	20.3	19.1	14.8
20	Roadside	Diffusion Tube	100	100	31.1	28.6	29.4	25.9	20.2
21	Roadside	Diffusion Tube	100	100	**48.5**	**46.2**	**47.0**	38.2	25.7
22	Roadside	Diffusion Tube	92	92	31.5	31.8	29.2	26	18.5
23	Urban Centre	Diffusion Tube	100	100				18.3	14.5
24	Roadside	Diffusion Tube	75	75	24.5	25.2	23.7	23.8	17.4
25	Roadside	Diffusion Tube	100	100				27.8	20.9
26	Suburban	Diffusion Tube	100	100		16.6	17.7	16.8	12.6
27	Suburban	Diffusion Tube	100	100				13.1	10.7
28	Suburban	Diffusion Tube	100	100				16.2	12.2
29	Roadside	Diffusion Tube	100	100		33.0	34.6	33.2	25.6
30	Roadside	Diffusion Tube	100	100		17.0	20.0	17.8	14.4
31	Roadside	Diffusion Tube	75	75				22.1	13.8

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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure 2.5 – Trends in Annual Mean NO_2 Concentrations

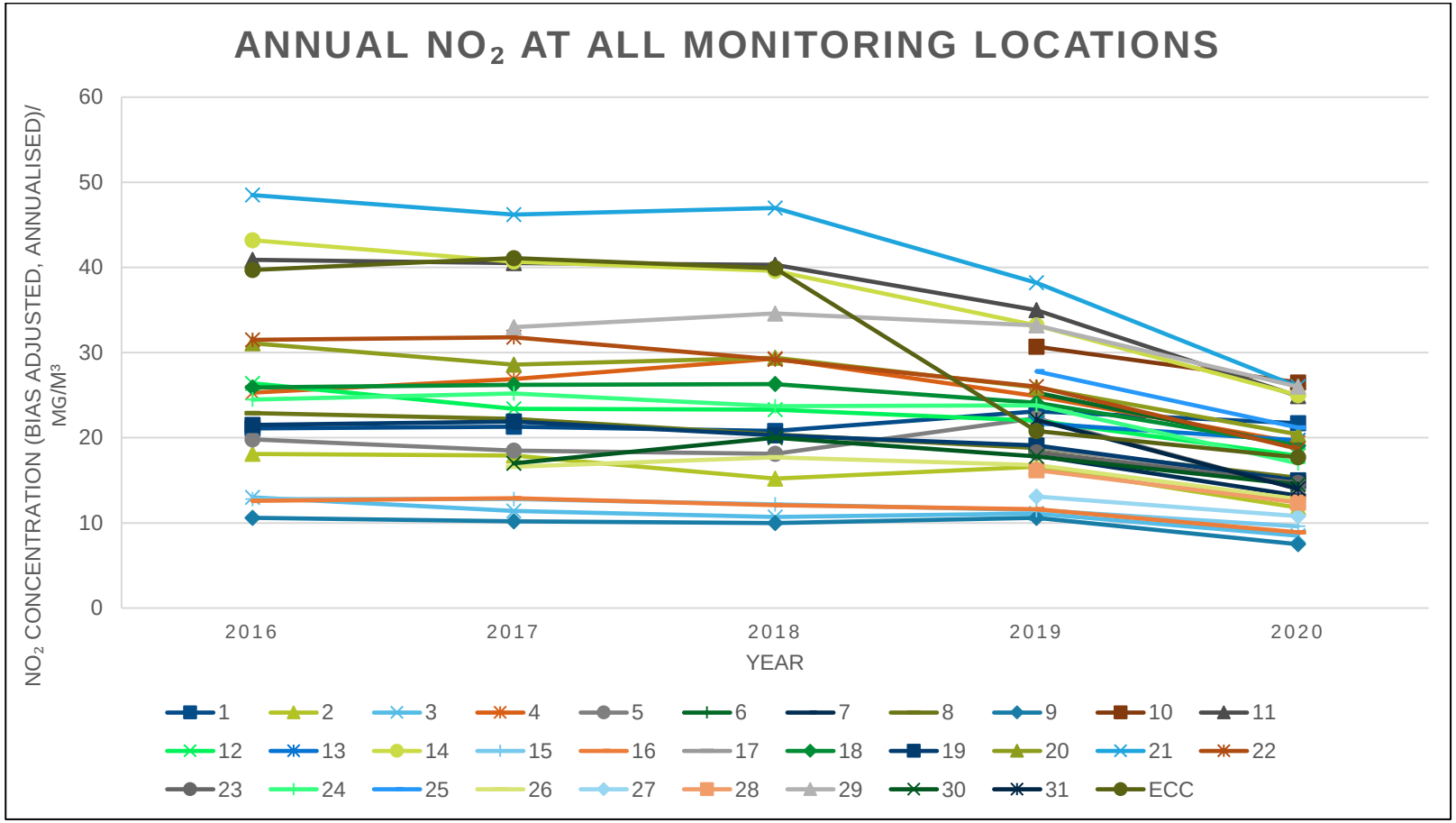


Figure 2.6 – Trends in Annual Mean NO_2 Concentrations – monitoring locations outside the Twynyrodyn area

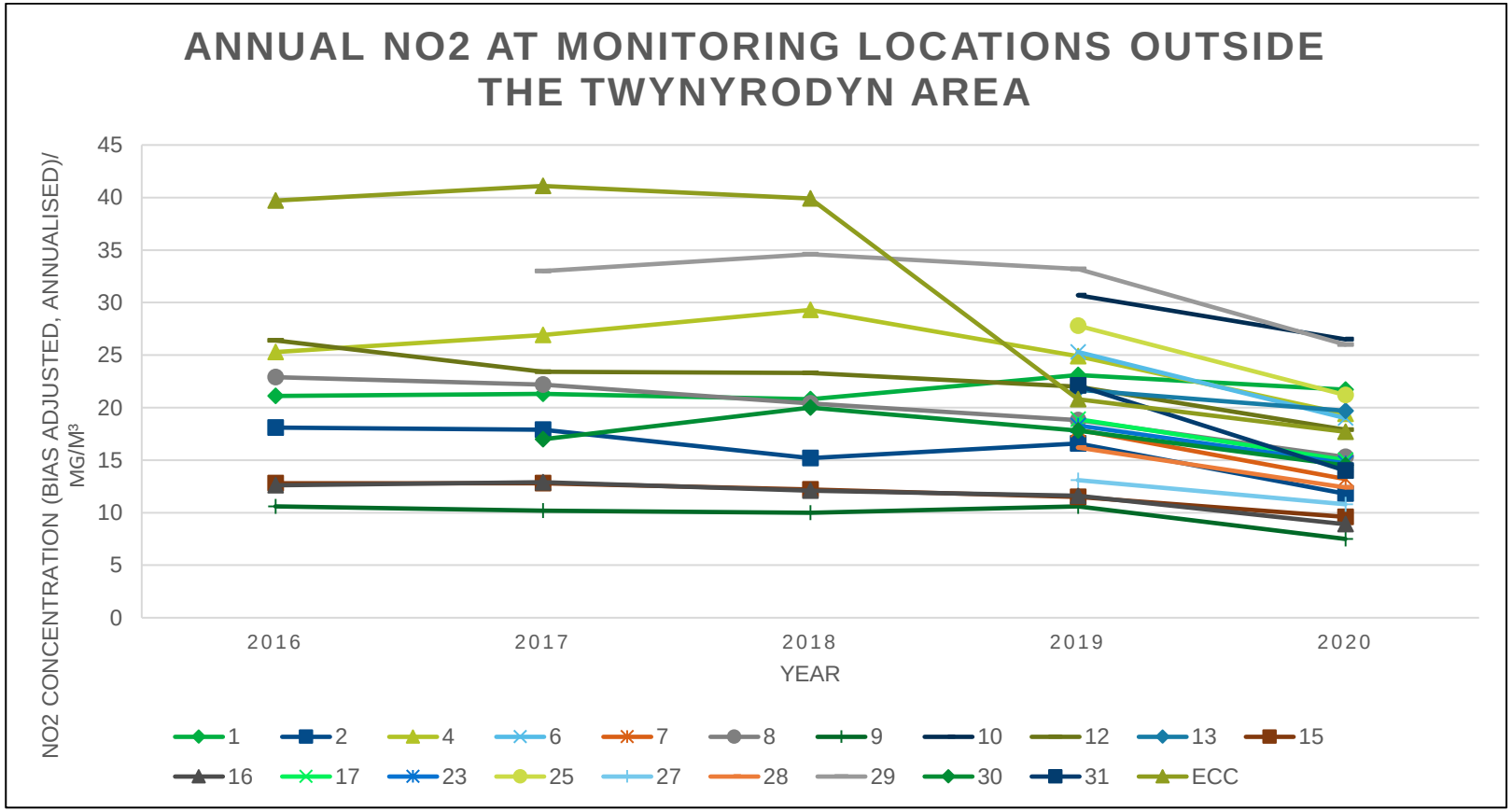


Figure 2.7 – Trends in Annual Mean NO_2 Concentrations – monitoring locations within the Twynyrodyn area

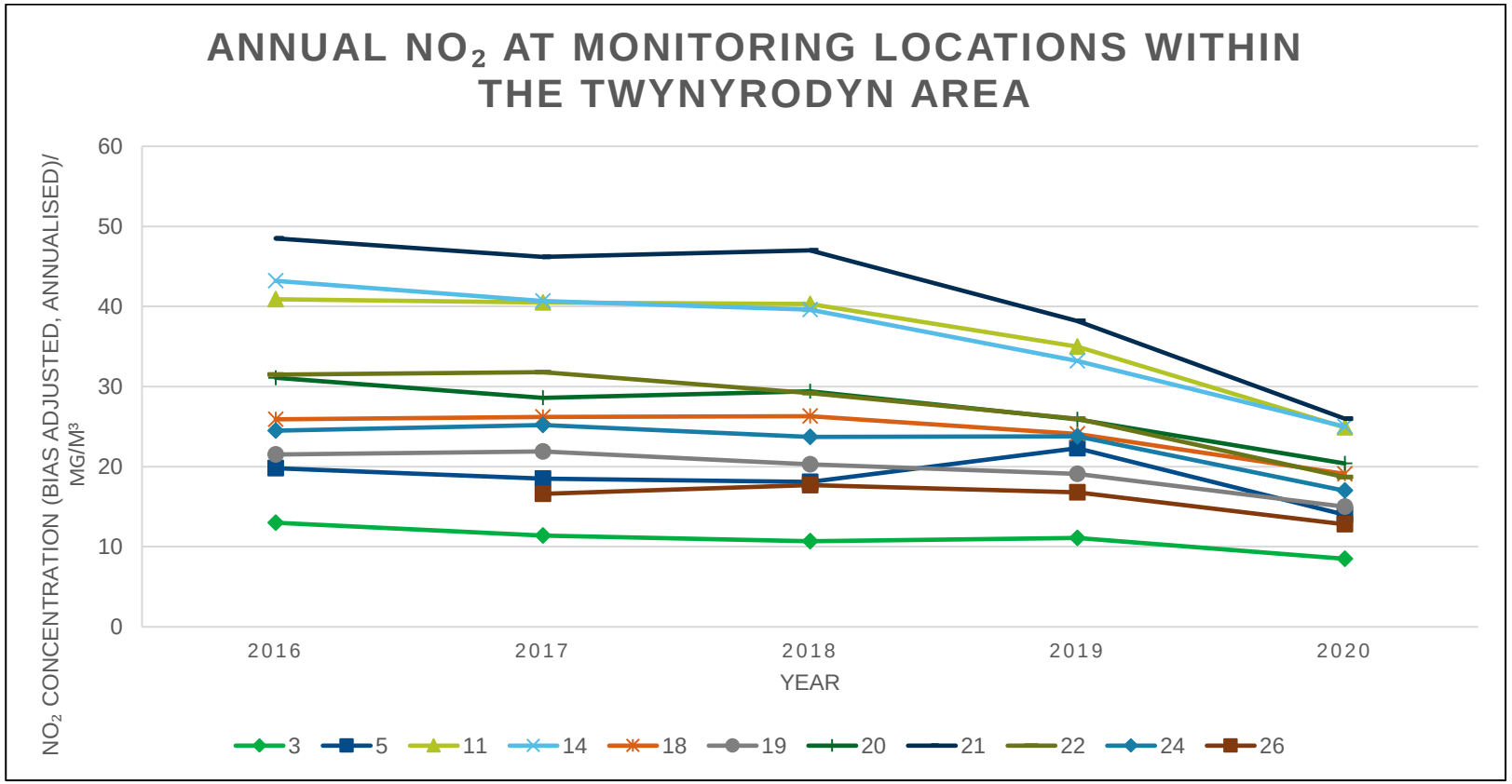


Figure 2.8 – Trends in Annual Mean NO_2 Concentrations – monitoring locations on Twynyrodyn Road

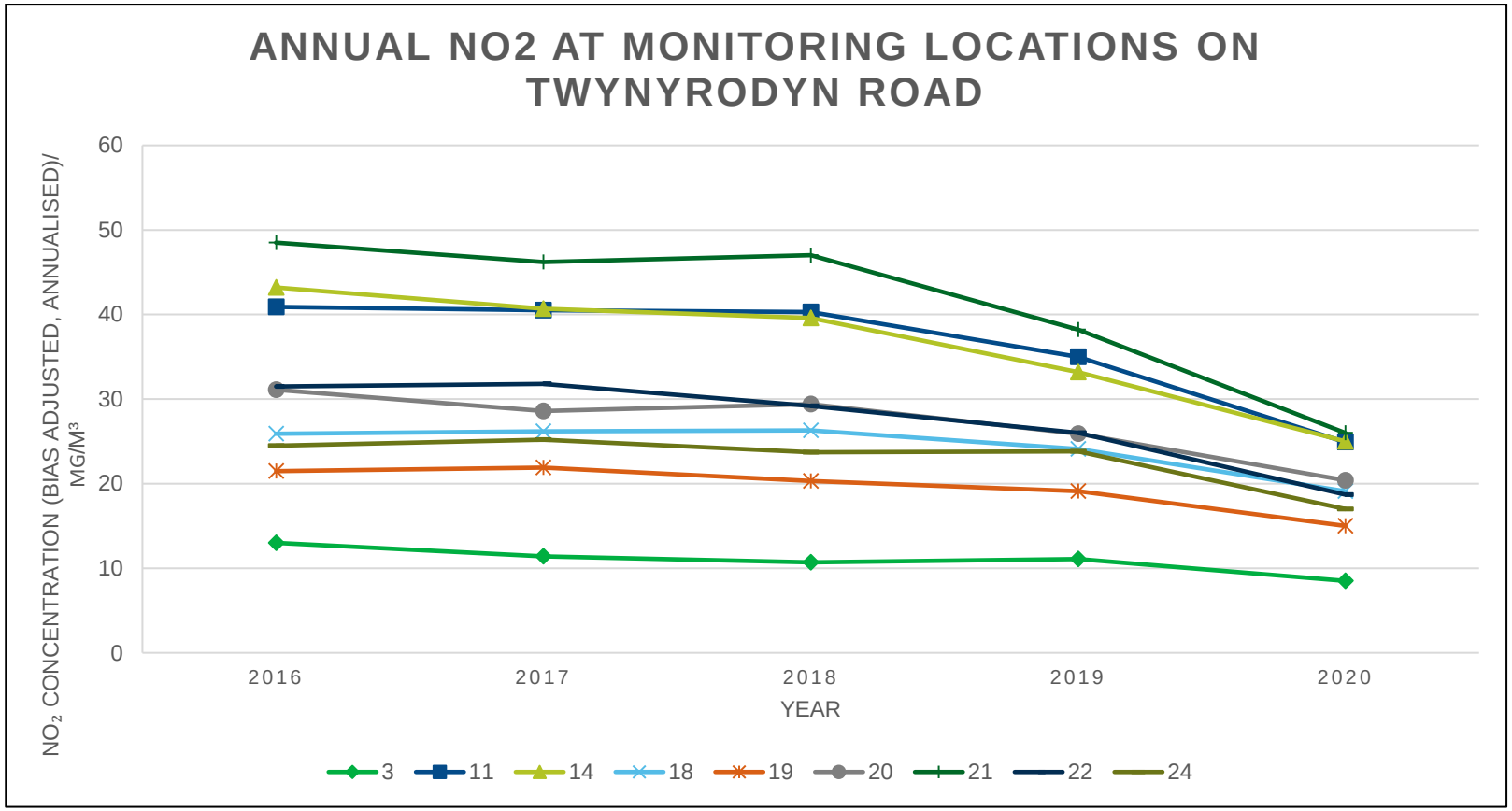


Figure 2.9 – Trends in Annual Mean NO_2 Concentrations – monitoring locations within the AQMA

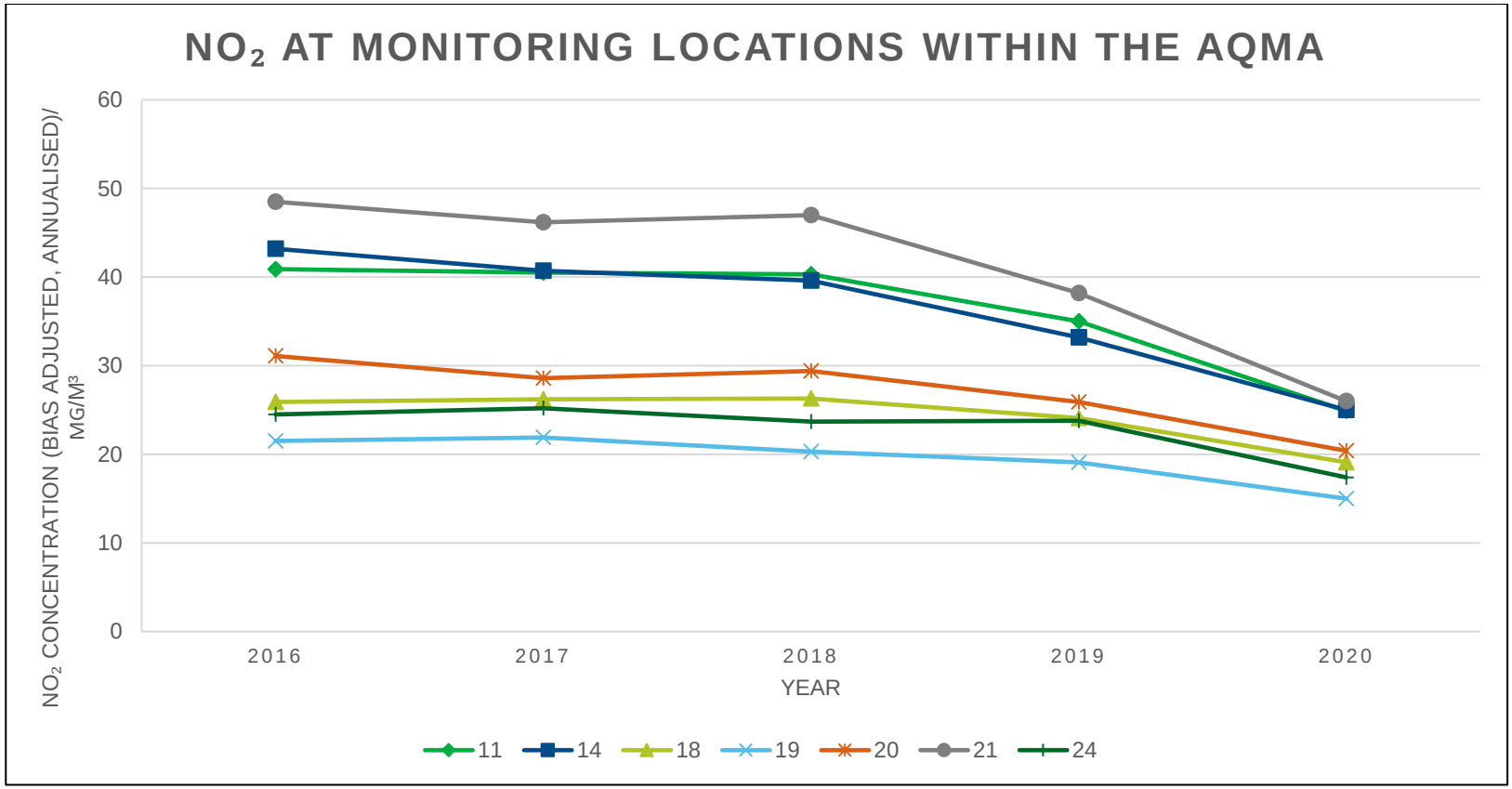


Figure 2.10 – Trends in Annual Mean NO_2 Concentrations – monitoring locations on streets surrounding the AQMA

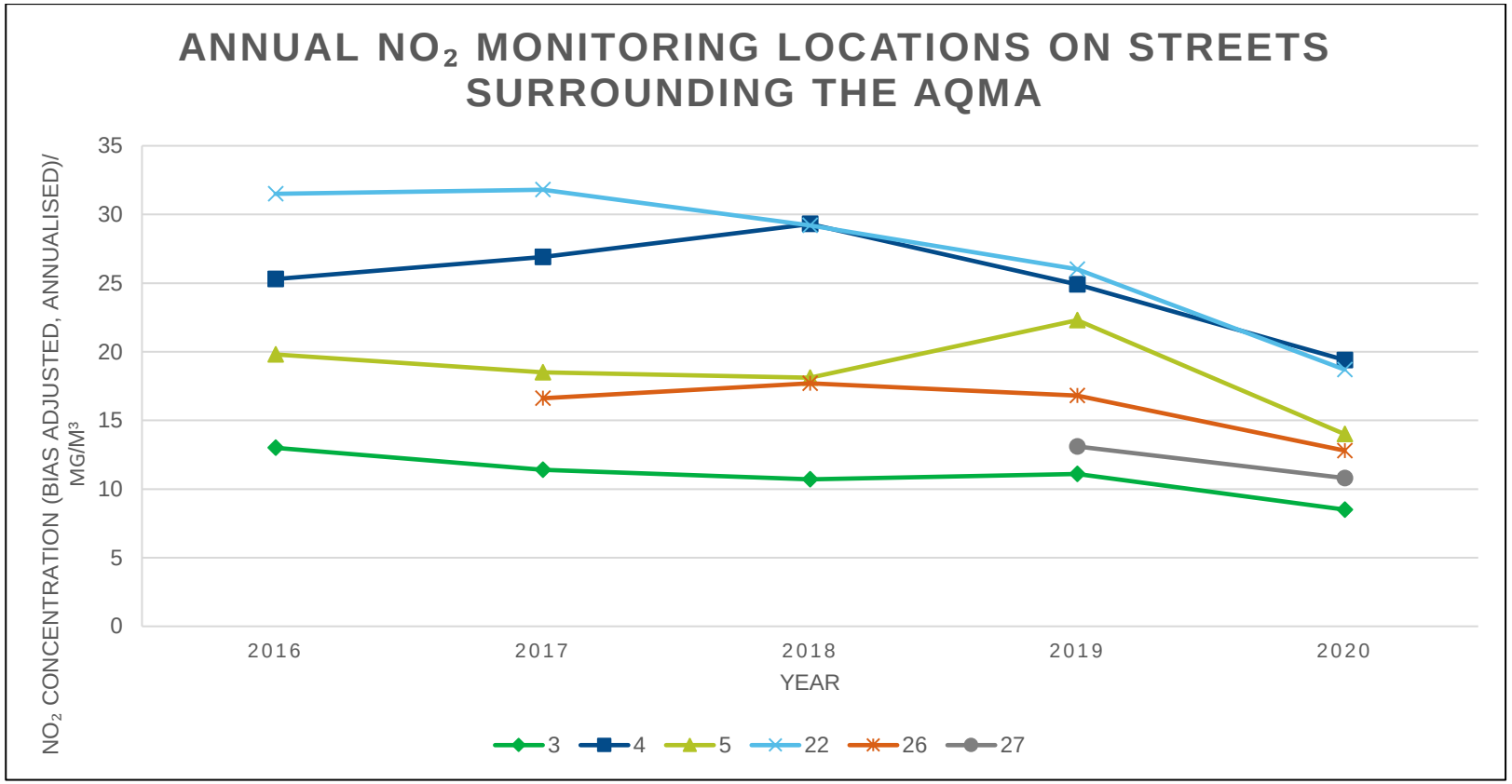


Figure 2.11 – Trends in Annual Mean NO_2 Concentrations – collocated monitoring location and ECC at Pontmorlais High Street

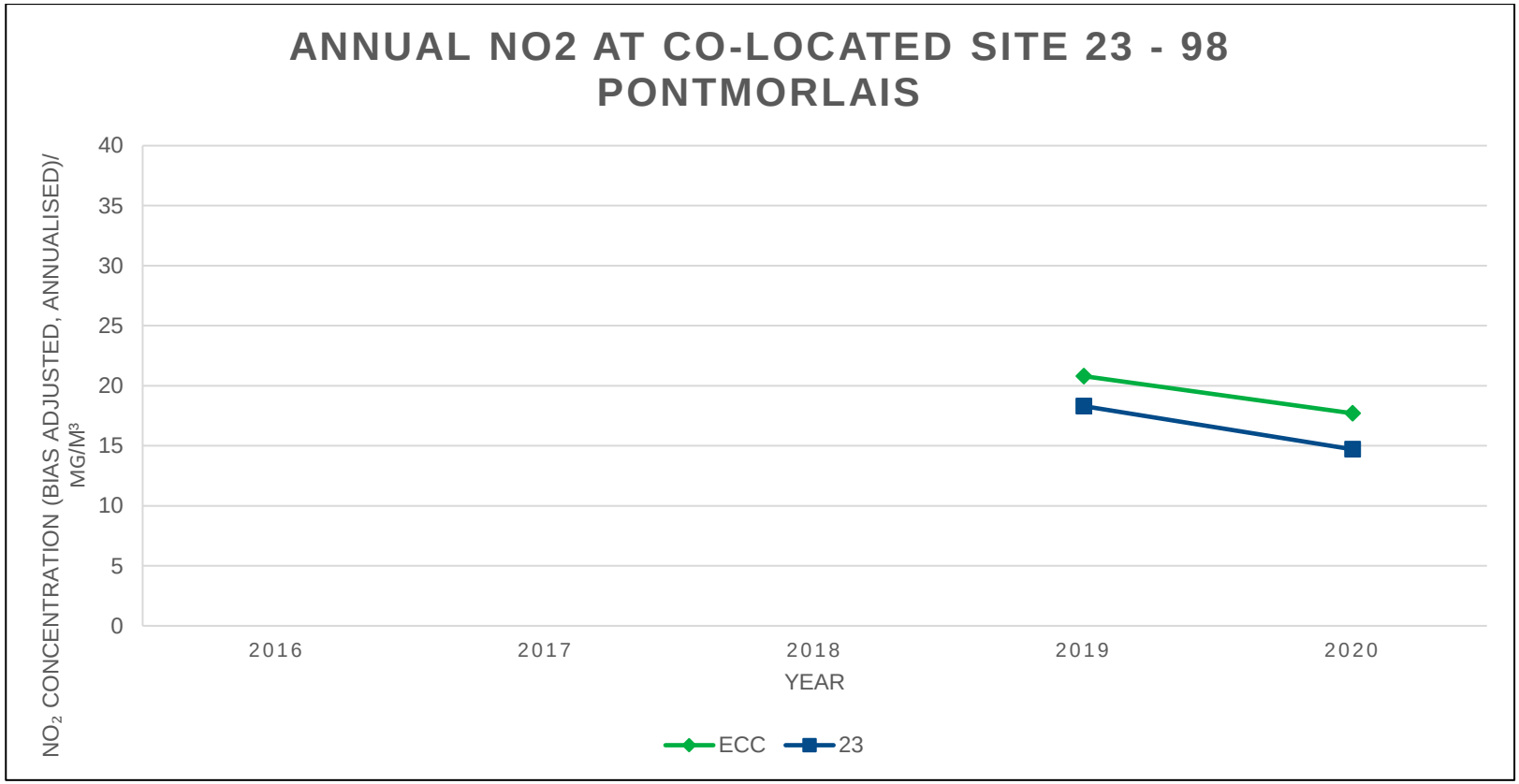


Table 2.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
ECC	Roadside	Automatic	79	79	0	**1(154.5)**	**1(153.7)**	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**.

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

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

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

Table 2.5 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
TEOM	Suburban	97	97	8.41	11.32	8.7	8.8	9.4

Notes:

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

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure 2.12 – Trends in Annual Mean PM_{10} Concentrations

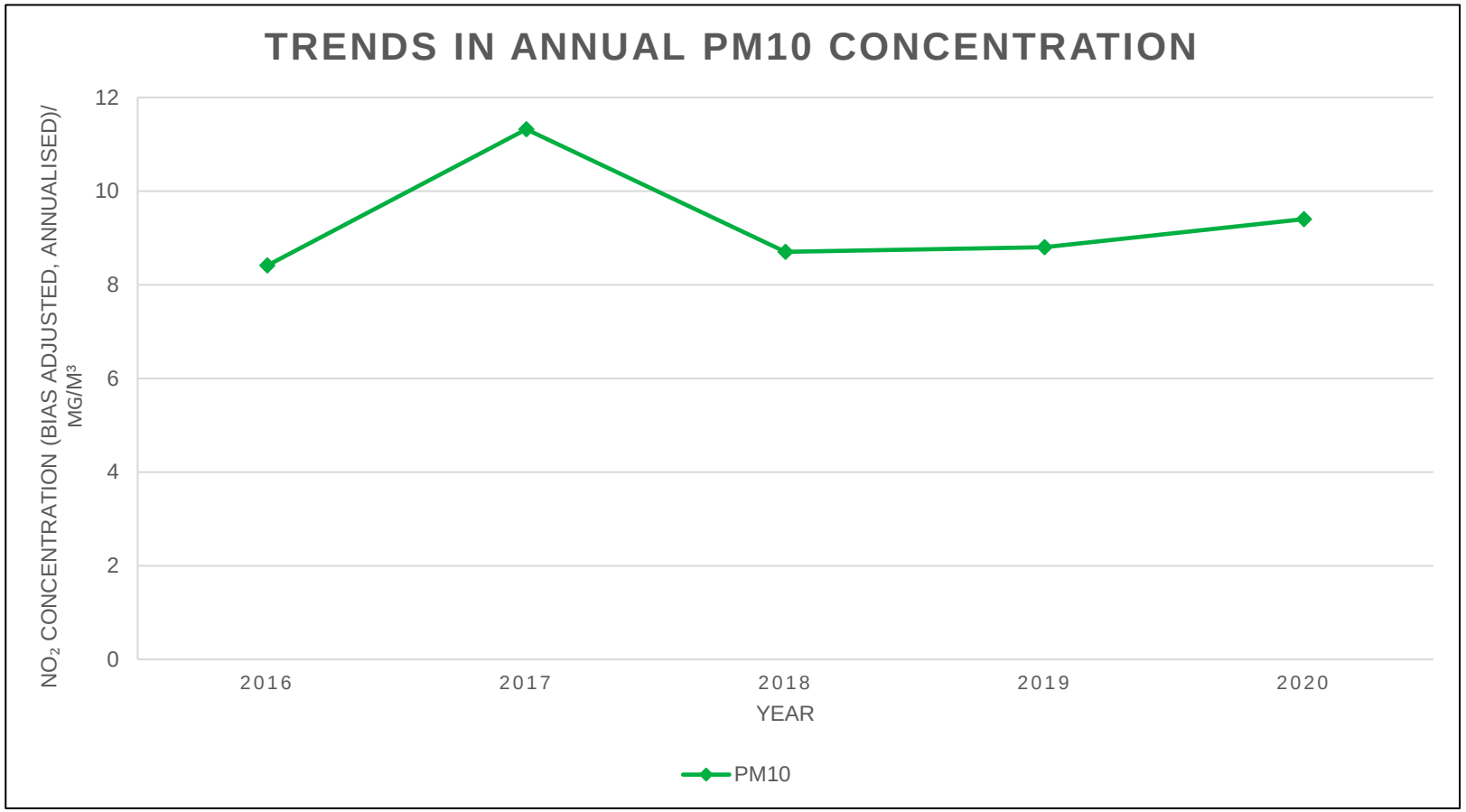


Table 2.6 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
TEOM	Suburban	97	97	0	0	0	0	0

Notes:

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

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

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

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

Table 2.7 – $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
TEOM	Suburban	97	97	3.78	4.47	4.5	4.42	3.8

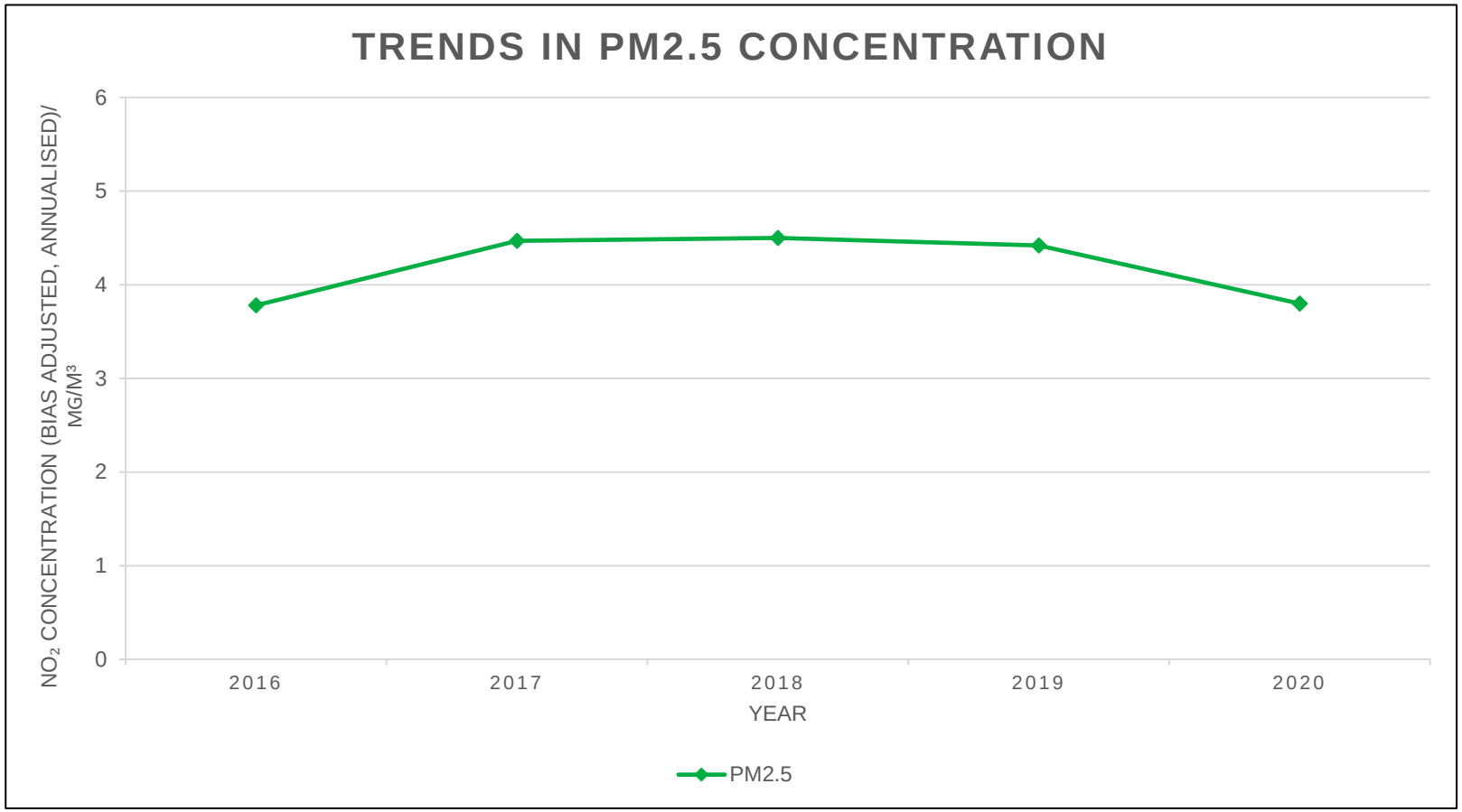
Notes:

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure 2.13 – Trends in Annual Mean $PM_{2.5}$ Concentrations



2.3 Comparison of 2020 Monitoring Results with Previous Years and the Air Quality Objectives

Generally, NO_2 concentrations have remained relatively stable over the previous 5 years, with decreases in the last 2 as shown in Figure 2.5. The changes implemented from the action plan have shown a general decrease in NO_2 levels in the Twynyrodyn area with early indications from periods 6-12 of 2019 and periods 1-3 of 2020 (post-traffic reversal and pre-pandemic) showing a good likelihood that levels would continue to reduce or at least remain stable and outside 10% of the AQS objective. Had 2020 been a typical year and had the predicted reductions materialised, there would have been robust evidence to support revocation of the AQMA. All sites for 2020, as shown in Figure 2.5 and 2.6 (all sites inside and outside the Twynyrodyn AQMA) are well below the 40µg/m³ AQS objective however as previously stated, the overall results do not sufficiently represent a typical year of data. Notwithstanding this, due to the prior indications that reductions in NO_2 would be sufficient to enable revocation of the AQMA, MTCBC is hopeful that the AQMA can be revoked in 2022 or 2023.

Although the data is atypical, sites with the higher range of concentrations of NO_2 within the dataset will be closely monitored throughout 2021 to assess how they compare to post-period 6 data for 2019, being the most recent comparable monitoring period. Although MTCBC is hopeful that concentrations will remain outside 10% of the AQS objective, diversions through the town associated with the dualling of the A465 are a potential concern. The highest concentration during 2020 of NO_2, 26.1µg/m³ occurred at 11 Park Place, Penydarren Road - site 10, as shown in Table 2.3, still well within the AQS.

The effectiveness of the ECC monitor remains a concern however, it was operational for 79% of 2020, a marked increase in data capture from 2019 and as such, it has not been necessary to annualise the data (see Appendix C). Previously, the monitor has been known to over or under-read compared to bias adjusted diffusion tubes. Figure 2.11 shows the ECC has over-read compared to the co-located diffusion tube at site 23, 98 Pontmorlais High Street however, the correlation appears good.

It should be noted that the ECC is not an established technology and is not a recognised and standardised approach to measuring annual NO_2 levels, unlike a chemiluminescent monitor. It was chosen as a monitor as it is small enough to be attached to street furniture and by giving real time results, it can be used to see trends such as diurnal patterns and

monitoring changes in patterns such as following road diversions including the reversal implemented under the action plan. There is no plan at present to re-locate the ECC monitor to monitor possible alternative routes to the diversions associated with the dualling works to the A465 as the levels of NO_2 currently are not a cause for concern although this will be continually reviewed as the works progress. The intention is that the ECC will remain at its existing location at 98 Pontmorlais High Street in order to obtain an extended co-located data set with the diffusion tubes located in that area. This is particularly important due to the nature of Pontmorlais High Street, which is a narrow street of retail units at ground floor level with a number of residential units at first and second floor level. Although a significant elevation in NO_2 levels has not been observed since the change in traffic flow direction and it is not anticipated to exceed the AQS objective, the presence of tall buildings in conjunction with the narrow street means there may be a canyon effect. Once a sufficient amount of monitoring data is available for this area, the real world performance of the Fluidyn France modelling carried out in 2016 can be scrutinised.

2.3.1 Nitrogen Dioxide (NO_2)

Monitoring at the majority of the sites was for the full calendar year. A small number of tubes went missing however, no site suffered a loss necessitating annualisation of data.

The ECC monitor performed notably better than the previous year, capturing data for 79% of the calendar year. As such, it has not been necessary to annualise the data by comparing to nearby chemiluminescent monitors to calculate an annual mean. It is however, anticipated that this calculation will be necessary for the following year data set as the monitor at the time of writing, remains offline and will not meet the threshold of 75% annual data capture for 2021. It is important to note that there were no exceedances of the short term 200µg/m³ limit within the data captured for 2020. Due to the extended periods where the ECC monitor has not provided continuous monitoring of NO_2, the diffusion tube network is a more reliable method for long term monitoring and will continue to be the main approach taken by MTCBC.

All diffusion tube sites are within the annual mean AQS objective for NO_2 of 40µg/m³ and currently, none of the sites are within 10% of the limit. As mentioned previously, the data for 2020 is atypical and a decrease attributable to the pandemic and associated lockdown was expected. The strategy going forward is to maintain the monitoring network and to pay particular attention to sites where diversions associated with the dualling of the A465

are located, in addition to gathering a complete data set for Pontmorlais High Street, post-traffic flow reversal in 2019.

2.3.2 Particulate Matter (PM_{10})

PM_{10} and $PM_{2.5}$ are monitored by Merthyr (South Wales) Ltd as a planning condition for the Ffos-y-Fran land reclamation scheme, an opencast reclamation scheme. They operate the TEOM at Twynyrodyn Community Primary School. PM_{10} was reducing, but in 2017 increased, with 2018 and 2019 reducing in line with previous years. There has been a marginal increase through 2020, but not to the extent of 2017 and it remains significantly below the 40µg/m³ limit at the background site. There were no exceedances of the daily mean of 50µg/m³. PM_{10} may be higher and more prone to variation within the AQMA as it is also caused by traffic. This means any improvements achieved by the action plan will also benefit public health by reducing PM_{10}. Since the traffic reversal, which reversed traffic flow on Church Street and Pontmorlais Street, data for 2019 (post-period 6) showed a reduction in NO_2 at sites along Twynyrodyn Road. It was also reported anecdotally early on following the reversal, that there appeared to be fewer cars on Twynyrodyn Road, which correlates with the data captured following its implementation. Although the purpose of the traffic reversal was primarily to reduce levels of NO_2 within the AQMA, a reduction of traffic in the area is likely to also reduce levels of PM_{10}.

2.3.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ was reducing, but in 2017 it had increased, following the same pattern as PM_{10}. It remained at a similar level in 2018 and 2019, but had decreased slightly. In 2020 $PM_{2.5}$ reduced further and therefore remains significantly below the 25µg/m³ objective. It comprises about half the PM_{10} measured on site. $PM_{2.5}$ may be higher within the AQMA as it is also produced by traffic. This means any improvements achieved by the action plan will also benefit public health by reducing $PM_{2.5}$. Long-term exposure to $PM_{2.5}$ increases the age specific mortality risk from cardiovascular causes and high concentrations can also exacerbate lung and heart conditions. As previously stated, the traffic reversal along Church Street and Pontmorlais High Street was primarily to reduce levels of NO_2 within the AQMA, but a reduction of traffic on Twynyrodyn Road is also likely to reduce levels of $PM_{2.5}$, thus improving the health of those living in the locality.

2.4 Summary of Compliance with AQS Objectives as of 2020

MTCBC has examined the results from monitoring in the Borough. Concentrations are all below the AQS objectives however, more monitoring is required to ensure the levels of NO_2 remain below the objectives and do not increase to fall within 10% of the AQS objective to consider revoking the AQMA.

3 New Local Developments

At this time there have been no new developments that have required an air quality assessment since the previous Air Quality Progress Report. The Environmental Health Department is aware of planned developments through consultation on the planning process and the Local Development Plan. Presently, MTCBC is embarking on a 15-year plan which covers residential accommodation, public transport and active travel in and around the town centre.

3.1 Road Traffic Sources (and Other Transport)

Twynyrodyn Road

As identified in previous reports and the Detailed Assessment in 2015, Twynyrodyn Road is a narrow, busy street with residential properties close to the kerb and remains the location of an AQMA. Air quality monitoring following implementation of the traffic reversal in 2019 to reduce traffic flow along Twynyrodyn Road has continued since the last Annual Progress Report. The aim of MTCBC was to revoke the AQMA in 2021 once a whole year of data was available, assuming that data demonstrated a sufficient reduction in NO_2 levels however, due to the Coronavirus pandemic and the reduction in traffic volume generally, NO_2 concentrations for the 2020 data are atypical for 78% of the year. As such, the AQMA will remain in place and the existing network will continue to be monitored. MTCBC currently estimates that the AQMA may be revoked in either 2022 or 2023 depending on any further effects of the pandemic on traffic movement and the data yet to be collected should it demonstrate levels >10% below the AQS objective and that no exceedances are anticipated.

NO_2 monitoring stations on Pontmorlais High Street and many of the NO_2 monitoring stations on Twynyrodyn Road were retained to determine whether the reversal has had the predicted effect. Additionally, 5 tubes were relocated from the network to provide additional monitoring on Union Street, Darren View, High Street, Pontmorlais High Street and Penydarren Road. The first 2 tubes are to monitor for changes caused by people taking back routes to avoid the traffic reversal and the remaining 3 are to monitor the reversal route for any potential breaches of the NO_2 annual mean air quality standard (40µg/m³). Pontmorlais High Street has a number of tall buildings and is a relatively narrow road (11.3m between buildings on opposite sides of the road) and there is the

potential for a canyon effect. Modelling indicated this would not result in a breach of the NO_2 annual mean air quality standard however, it will be important to check the model for real-world performance. To that end, in addition to the diffusion tubes introduced in January 2019, in February 2019 the ECC was also moved to Pontmorlais High Street to allow real time monitoring of the effect on air quality on Pontmorlais High Street. Should there be any indications the air quality standard is likely to be breached the reversal would have to be reviewed however, this has not been demonstrated since the reversal came into effect. The figures below, 3.1 and 3.2 provide an indication of the difference in the period mean before the reversal of traffic along Pontmorlais High Street and the period mean following its implementation. The data demonstrates that the action plan has decreased levels of NO_2 within the AQMA and hasn't significantly increased the level of NO_2 along Pontmorlais High Street or other diversion routes.

Pontmorlais High Street and Avenue de Clichy

The reversed traffic flow has been operational along Pontmorlais High Street for some time, with the aim of diverting traffic away from Twynyrodyn Road. Due to the potential for canyon effects on Pontmorlais High Street, additional monitoring continues to be carried out. Anecdotal evidence indicated the reversal has diverted traffic away from Twynyrodyn Road, with MTCBC staff observing fewer traffic queues on Twynyrodyn Road and new queues on Avenue de Clichy during their daily commutes and some congestion at the roundabout at the north end of Pontmorlais High Street. These observations were supported by decreasing levels of NO_2 within the AQMA post period 6 of 2019 (Figure 3.1). A build-up of traffic on Avenue de Clichy is unlikely to be of public health concern as the West side of the street is bounded by the River Taff, making canyon effects unlikely. On the East side there are a small number of residential flats set back from the road by at least 6.5m, which is a sufficient distance that any deterioration in air quality will remain well below the air quality standard. To provide reassurance that modelling is correct, a diffusion tube was installed at Caedraw Flats, just off the Avenue de Clichy in August 2019. Between August 2019 and the end of March 2020, when the national lockdown commenced, the 7 months of data collected during that period showed a mean NO_2 concentration of 20.7µg/m³.

As previously stated, Pontmorlais High Street may be subject to canyon effects. Modelling predicted that an increase in traffic would not result in a breach of the air quality standard. The installation of new diffusion tubes along with the ECC have confirmed this has not been the case thus far. The comparison between pre-period 6 2019 and post period 6

2019 demonstrates that most sites have observed minimal change following the implementation of the reversal of flow along Pontmorlais High Street (Figure 3.2).

Merthyr Tydfil Bus Interchange Development

During the monitoring period, the new bus interchange remained under construction and became operational during June 2021. Previous reports detail concerns of the Environmental Health Department regarding road traffic data used in modelling to predict any breaches of the AQS objectives, although the monitored as well as modelled data did not indicate concerning predicted levels. It has been 6 years since the pre-planning and modelling was carried out in support of the proposed development. Since that time, whilst the new interchange is now operational with a diesel powered fleet, it is the intention of Stagecoach to eventually switch to an electric fleet although no target date is yet set. It was agreed that 4 additional diffusion tubes would be installed around the vicinity of the new bus station prior to and during its operation to monitor NO_2 concentrations which can be assessed against the modelled data. Data for the bus interchange is not included in this report as it does not fall within the monitoring period which is the focus of this report, it will feature in the 2022 Air Quality Progress Report. Should there be any indication that AQS standards may be breached, this will be considered in any future action plan.

Cardiff Road, Troedyrhiw

Previous reports have highlighted potential concern regarding elevated concentrations of NO_2 at 6/7 Ladysmith Place associated with cars accessing and egressing Troedyrhiw Community Primary School. Although previous data showed the annual mean concentration was outside of 10% of the AQS, further monitoring of this location post-pandemic is required to determine whether this may be an area where action needs to be considered in any future action plan.

Roads with significantly changed traffic flows

A465 Heads of the Valleys and Surrounding Roads

There is an ongoing project to convert sections of the A465 Heads of the Valleys Road to dual carriageway. Works commenced on the project in May 2021 and are anticipated to be completed around mid-2025. The works will result in slowed traffic on the A465 and the use of diversions through the Dowlais and Twynyrodyn areas through town, to re-join the A465 from the A470. Traffic will be increased on the A470 where diversions will join at Rhyd-y-car and by Cyfarthfa Retail Park to re-join the A465 at Cefn Coed. It is likely, during such diversions, NO_2 will increase along the diversionary routes. As this will be

temporary, MTCBC are not considering any actions to reduce NO_2 in the affected areas for the time being. Different diversions are predicted to last up to 6 months. This policy of no action will be reviewed if diversions and consequent deterioration in air quality are more significant or of longer duration than expected.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

There are no other industrial sources identified since the previous Progress Report.

3.3 Other Sources

Bonfires occur occasionally, both around the 5th November and in domestic gardens. As these occur on an isolated rather than continuous basis they are not considered likely to significantly affect air quality. Some properties have installed domestic wood burners. This is on a scattered and random basis throughout the borough. Due to the scattered nature it is not considered to have significantly affected air quality. It is however important to note that proposed legislative changes detailed in the Welsh Government's White Paper on a Clean Air (Wales) Bill may see a reduction in any contribution to higher levels of pollutants as a result of solid fuel burning, if implemented.

MTCBC has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area:

- New Merthyr Tydfil Bus Interchange (now operational)
- A465 Heads of the Valleys (commenced May 2021 – as above)
- Redevelopment of St Tydfil's Hospital site

Therefore, MTCBC will need to further consider the implications to local air quality arising from the development by way of continued monitoring.

4 Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

MTCBC have an informal strategy of addressing air quality. A network of diffusion tubes and real time monitoring is used to assess air quality and to produce the required annual reports. Changes to the traffic network are regularly considered including whether these necessitate a change to the air quality monitoring network. MTCBC have taken steps to improve air quality by carrying out the traffic reversal on Pontmorlais High Street and Church Street as identified in the AQMA action plan.

The Environmental Health Department previously considered drawing up a written local air quality strategy to formalise the current approach. Although this not yet complete, the strategy will be finalised pending the outcome of the Clean Air Plan for Wales which proposes a new Clean Air Act for Wales. Once produced, it will be made available to the public on the MTCBC website.

4.2 Air Quality Planning Policies

The Local Development Plan 2016-2031 was adopted in January 2020. Environmental Health provided comments on candidate sites, including their potential to impact air quality. Development includes a small increase in industrial and commercial sites and a significant increase in residential sites, in particular a substantial housing development on the former Hoover site. The size of the site means that although increased residential use will affect air quality, it offers sustainable travel options being large enough to accommodate a Metro and/or Park and Ride facility. The size of modern properties in conjunction with the requirements for roadways and parking, mean canyon effects are unlikely therefore offering residents a degree of protection. As it is likely to be developed in phases by a large-scale single developer, this will allow mitigation measures to be considered during the planning process.

Also identified was the conversion of former offices to residential flats, within the town centre. Depending on the location, this may necessitate an expansion of the air quality monitoring network however, as the town centre is substantially pedestrianised or otherwise restricted, the air quality impact is not considered to be a major factor. Consideration has also been given to a pre-application for a housing development on the

old St Tydfil's Hospital site. The Air Quality report submitted as part of the planning application for the development predicts a largely negligible effect on air quality for both the construction phase and operational phase.

The Environmental Health Department has considered the Special Planning Guidance produced by various councils and is considering producing a SPG to require mitigation measures to offset some of the deterioration in air quality caused by increased residential use, particularly the introduction of domestic vehicles to an area. This will be explored further when a local air quality strategy is formalised. It should be noted however, that the increasing usage of electric vehicles is like to have a gradually positive effect on emissions. The extent of this will depend on available infrastructure for charging as well as economic ability.

4.3 Local Transport Plans and Strategies

MTCBC's local transport plan is a part of the South East Valleys Local Transport Plan, with 4 other councils. These areas make up the capital city region in that they are within commuting distance of Cardiff.

The plan focusses on economic growth by improving commuting to Cardiff and Newport, and transport to encourage economic growth in other areas, social inclusion through providing transport to disadvantaged areas and improving environmental quality through safer, healthier and sustainable travel.

The plan considers various other related documents including the Wales Transport Strategy 2021 and the Active Travel (Wales) Act 2013. It incorporates the Cardiff Capital Region Metro, a plan to link various modes of transport to improve connectivity between Cardiff and the South East Valleys.

The aim is to offer other modes of transport than driving such as active travel (walking and cycling), regional rail and buses as well as highway improvements to ease congestion and assist in freight transport. Aims include integrating active travel and public transport to offer multi-modal alternatives to the car.

To carry out the aims of the LTP, MTCBC is expected to seek funding through sources including the private sector and Welsh Government funds. Under the LTP, MTCBC has developed the new bus interchange, now operational and will be providing, in conjunction with Transport For Wales a railway Park and Ride scheme serving Pentrebach station, improve pedestrian and cycle access to Merthyr College and Cyfarthfa Retail Park and

improve the Taff Trail for active travel. Additionally, the LTP covers the dualling of the A465 Heads of the Valleys Road to improve West-East routes between the South East Wales Valleys, which is now in the construction phase.

4.4 Active Travel Plans and Strategies

Active travel aims to improve access for walking, including the use of mobility scooters and cycling. It addresses routes to schools, workplaces, shops and services such as healthcare and leisure. It does not address walking or cycling for recreational purposes. MTCBC has improved various walking and cycling routes. Within the next 5 years, new routes will be developed and in 5 or more years, routes will be developed or improved subject to feasibility studies.

Expansion of active travel routes such as additional cycle tracks, maintenance of existing routes and improved infrastructure in favour of active travel aims to further improve car-less travel by way of improved connectivity with the new multi-modal, integrated transport network for the heads of the valleys and capital region. Part of this network is the new bus interchange which is located close to the proposed metro station. Works are scheduled to commence on the Merthyr Tydfil section of the rail line early 2022.

The River Walk crossing is being upgraded to improve pedestrian access links between the college and the town. A new zebra crossing will be also be installed at Lower High Street. The aim is that this will offer a safer pedestrian route into the town from the south end and therefore encourage more people to walk.

It is aimed at encouraging healthier lifestyles and reducing the negative impacts of traffic on neighbourhoods and communities. The aim of improving the active travel routes is to encourage people to swap from car journeys to active travel methods. By reducing the number of journeys made by car, in particular short journeys, where car engines have little time to warm up and perform efficiently, air quality should improve.

4.5 Local Authorities Well-being Objectives

Air pollution is considered in the well-being objectives, specifically in relation to the Twynyrodyn AQMA. There are 4 key areas of well-being: Best start to life; working life; environmental well-being; and living well. Implementation of the action plan to address the Twynyrodyn Road AQMA is a key performance indicator in environmental well-being and a

specific project for working life. This is in addition to how air quality and congestion affects people's perception of the area and can slow journeys to work.

The key performance indicator set is that air quality along Twynyrodyn Road, should remain >10% below the AQS objective for NO_2. The Environmental Health Department reports on progress towards this performance indicator at scrutiny meetings. Since the traffic reversal on 28th May 2019 and despite anomalous data for much of 2020 there are positive indications that this indicator will be achieved however, this is noted with caution due to the aforementioned anomalous data of 2020.

4.6 Green Infrastructure Plans and Strategies

MTCBC does not currently have a Green Infrastructure Strategy. Green infrastructure has however, been considered in the Local Development Plan and may need formalising into a strategy in the near future.

4.7 Climate Change Strategies

The well-being objectives include the need to limit climate change. Low carbon usage contributes towards the objectives of a prosperous Wales and a resilient Wales. The well-being objectives for MTCBC include, under 'environmental well-being', the key performance indicator of carbon management of local authority buildings and fleet. Carbon dioxide emissions from local authority buildings reduced from 2016/2017 to 2018/2019 and there are targets to reduce emissions further. This is in order to comply with Welsh Government's plan for the Welsh Public Sector to be carbon neutral by 2030. Current work includes feasibility studies for solar farms within the county borough. Additionally, the Clean Air Bill for Wales proposes to lower AQS objectives for key pollutants.

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

Data for 2019 following implementation of the traffic flow reversal (post-period 6) showed a decrease in levels of NO_2 within the AQMA. All sites but one within the AQMA were >10% below the AQS objective, with the monitoring location at 51 Twynyrodyn Road being the only site which although was below the AQS objective, remained within 10% of it. This may be attributable to periods 1-6 providing data for pre-traffic flow reversal, which were similar to years 2016, 2017 and 2018 where the AQS objective was exceeded each year respectively. As such, it is anticipated that once a whole year of typical data is obtained, the limit for 51 Twynyrodyn Road will fall to >10% below the AQS objective over the next year. Annual levels of NO_2 within the AQMA for all other monitoring locations fell well below the AQS objective during 2020. The reduction was expected due to the pandemic as mentioned previously however, due to the reduction during the second half of 2019, it is expected to remain below the AQS objective going forward. Further impacts of the pandemic are yet to be realised in the data and some potential benefits are anticipated in terms of changes to ways of working and increased home-working, resulting in fewer car journeys. On this basis, the AQMA will remain in place and monitoring will continue to obtain sufficient data from which future decisions regarding the AQMA can be made.

Previous reports have highlighted congestion and year on year exceedances of the NO_2 AQS objective from 2016 to 2018 at 6/7 Ladysmith Place, although it did not exceed the AQS objective in 2019. Indications from the data following implementation of a temporary one way system in 2019 suggested the improved traffic flow had reduced the level of NO_2. Similarly, there were no exceedances outside of the AQMA although due to higher levels of NO_2 previously recorded at 6/7 Ladysmith Place resulting from bottlenecks associated with dropping off and picking up at Troedyrhiw Community Primary School, actions may be considered if levels increase to within 10% of the AQS objective.

5.2 Conclusions relating to New Local Developments

The development of most concern in terms of air quality is the commencement of the dualling of the A465 and its associated diversions. The works are scheduled for

completion in 2025, with a number of diversions in place for the duration, some of which may be in place for a number of months. Areas likely to be affected are Dowlais, Twynyrodyn, Town Centre with congestion expected at Cyfarthfa Retail Park and Park/Trago Mills roundabout.

The impact on air quality may be unavoidable as the scheme has been assessed as necessary for the long-term well-being of Wales and will ultimately benefit the Merthyr Tydfil County Borough. As any negative effect will be temporary, it is not considered necessary to take action at this time. This will be reviewed if any diversions remain in prolonged use, the data indicates exceptionally high levels of NO_2 or if the public raise health concerns that warrant investigation.

5.3 Other Conclusions

As discussed earlier in this report, further monitoring is needed to assess the longer-term effectiveness of the implemented measures in accordance with the Action Plan in relation to the existing AQMA. MTCBC aims to obtain sufficient data in this respect before considering revoking the AQMA. Once revocation of the AQMA is feasible, consultation will be carried out to ensure there is minimal possibility that a further AQMA would need to be declared again in the Twynyrodyn area.

In the long term, the focus of the Local Transport Plan on providing alternatives to using cars should improve air quality. Similarly, improvements to the existing vehicle fleet as older vehicles are replaced and additionally, the increase in use of electric vehicles should also improve air quality.

The Environmental Health Department will continue to monitor air quality and will look to produce an air quality strategy and are considering special planning guidance around air quality.

5.4 Proposed Actions

The following actions are proposed to address air quality:

- No new AQMAs will be declared in 2021.
- The existing AQMA will not be revoked at this time because although the annual mean NO_2 concentration within the AQMA for 2019 was below the AQS objective, it remained within 10% of the objective at 51 Twynyrodyn Road. Whilst data for 2020

saw further reductions at all locations, including all locations within the AQMA, there are insufficient data at present from which to evidence longer-term trends, to consider revocation.

- Monthly monitoring data to date from 6/7 Ladysmith Place indicates that although bottle necks exist, the NO_2 concentrations at the site remain within the AQS objective. The additional monitoring location at 37 Brookfield Terrace has to date not shown any concerning concentrations, but will remain in place for the foreseeable.
- Four new diffusion tubes have been installed around the vicinity of the new bus interchange and will remain in place for at least 3 years. Should concentrations of NO_2 reach concerning levels, action may be considered in any future action plan.
- NO_2 concentrations at monitoring locations near diversions associated with the dualling of the A465 will be closely monitored as the scheme progresses and the Environmental Health Department will be meeting regularly with the Future Valleys Construction, the main contractor overseeing the scheme.
- Work will commence on a local Air Quality Strategy.

References

Title	Author	Date
Prince Charles Hospital, Merthyr Tydfil Detailed Assessment of Air Quality	AEA for MTCBC	2011
Particulate Measurement at Twynyrodyn Primary School site – 2020 data	Merthyr (Ffos-y-Fran) Ltd	2020
Detailed Assessment of Air Quality at Twynyrodyn Road, Merthyr Tydfil	AQC for MTCBC	2009
South East Valleys Local Transport Plan	Blaenau Gwent CBC; Caerphilly CBC; Merthyr Tydfil CBC; Rhondda Cynon Taff CBC; and Torfaen CBC	2015
Local Air Quality Management – Technical Guidance LAQM (TG16)	DEFRA	2021
National Diffusion Tube Bias Adjustment Factor Spreadsheet (06/21)	DEFRA	2021
PM_{10} Volatile Correction Model	King's College London	2012
LAQM Helpdesk March 2021: Summary of laboratory performance in AIR NO_2 proficiency testing scheme January 2019 – March 2021	LAQM	2021
First Stage Review and Assessment	MTCBC	1998
Second Stage Review and Assessment	MTCBC	2000
Progress Report	MTCBC	2004

Updating and Screening Assessment	MTCBC	2004
Progress Report	MTCBC	2005
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Progress Report	MTCBC	2007
Progress Report	MTCBC	2008
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Progress Report	MTCBC	2010
Progress Report	MTCBC	2011
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Progress Report	MTCBC	2013
Progress Report	MTCBC	2014
Detailed Assessment of Air Quality at Twynyrodyn Road, Merthyr Tydfil	MTCBC	2015
Updating and Screening Assessment	MTCBC	2015
Progress Report	MTCBC	2016
Progress Report	MTCBC	2017
Annual Progress Report	MTCBC	2018
Annual Progress Report	MTCBC	2019
Annual Progress Report	MTCBC	2020
First Replacement Local Development Plan 2016-2031	MTCBC	2018
Focus on the Future: Wellbeing in our Community 2017-2022	MTCBC	2018

Wellbeing of Future Generations (Wales) Act 2015	Welsh Government	2015
Metro: Rolling out our Metro	Welsh Government	
A New Wales Transport Strategy: 2021	Welsh Government	2021

Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

Appendix D: AQMA Boundary Maps

Appendix E: Impact of COVID-19 upon LAQM

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

Table A.1 – Full Monthly Diffusion Tube Results for 2020 (µg/m^3)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
1	**40.9**	31.1	28	21.9	19.9	22	18.2	28.2	31.5	29.3	39.1		28.2	21.4	21.4
2	22.7	18	16.8	10.3	8.3	9.5	8.1	13.9	14.8	16.7	23.5	21.6	15.4	11.7	11.7
3	19.1	12.2	19	2.4	6.8	6.6	5.4	9	10.9	10.7	16.3	14.2	11.1	8.4	8.4
4	38.6	24.5	25.2	23	18.9	19.6	14.2	23.6	23.1	25.3	32.8	33.4	25.2	19.1	19.1
5	29.4	20.5	19.3	14	7.4	13.2	11.5	16.9	19.3	19.4	28.1	19.5	18.2	13.8	13.8
6	**42.8**		20		14.8	18.4	15.5	20.2	24.9	25.5	33	32.1	24.7	18.8	18.8
7	29.7	16.9	16.8	13.9	10.1	12	9.7	13.8	19	17.7	25	20.7	17.1	13.0	13.0
8	27.7	20	22.3	10.2	14.2	14.3	12.9	16.1	22.2	22.9	26.2	29.3	19.9	15.1	15.1
9	17.4	10.5	9.6	6.8	6	6.6	3.8	7.9	7.9	9.7	14.9	15.7	9.7	7.4	7.4
10	52.6	37.1	27.7	23.1		31.4	19	32.6	36.2	35.5	**48.8**		34.4	26.1	26.1
11	39.1	35.1	33.9	22.6	24.4	27.4	24.4	33.3	39.1	34.1	**40.1**	34.5	32.3	24.6	24.6
12	35.6	20.4	25.9	20.8	21.5	26.2	15.1	23.8	26.7	23.9	11.1	27.3	23.2	17.6	17.6
13	39.2	28.3	25.6	14.2	17.8	20	18.9	24.3	28.8	25.6	35.1	29	25.6	19.4	19.4
14	**45.8**	33.5	31.9	27.4	25.7	29.3	21.6	25.9	38	32.6	**44.4**	34.2	32.5	24.7	24.7
15	20.2	11.7	12.3	8.5	11.9	7.2	7.5	8.9	12.1	12.9	18.6	18.2	12.5	9.5	9.5
16	18.9	10.5	11.2	8.7	7.5	8.6	6.5	10.4	11.7	11.9	18	14.8	11.6	8.8	8.8
17	30.5	21.4	20.5	14	11.9	12.3	10.8	17.2	21.3	20.3	27.6	25.6	19.5	14.8	14.8
18	34.5	29.9	26.5	17.6	17.7	20.3	16.9	22.4	26	25.1	32.2	29.2	24.9	18.9	18.9
19	31.4	24.2	18.2	11.5	10.9	14.2	13.7	15.7	20.6	21.7	26.5	25.5	19.5	14.8	14.8
20	38.2	25.2	21.5	28.1	21.5	21.5	15.9	25.4	26.8	29.5	36.1	28.6	26.5	20.2	20.2
21	**47.9**	33.3	32.5	15.2	25.5	27.9	24.9	36.1	**41.2**	34.4	**45.8**	**41**	33.8	25.7	25.7
22		28.7	24.9	22.6	17.7	22.6	13.8	23.1	26.2	25.3	35.9	26.3	24.3	18.5	18.5
23	29.9	18.2	19	14.6	14.4	12.4	9.9	16.2	19.9	19.8	27.9	26.4	19.1	14.5	14.5
24	34.1	21.1	21.2	18.8				17	20.7	20.5	29.7	23.4	22.9	17.4	17.4
25	**43.8**	27	27.6	20.6	18.3	21	17.6	23.8	29	28.2	37.8	35.8	27.5	20.9	20.9
26	26	18.9	16.6	11.9	10.3	12	8.7	13.6	16.8	17.6	24.7	23.3	16.6	12.6	12.6
27	22.2	15.1	13.7	11.2	7.6	8.5	7.8	14.8	12.9	14.4	21.4	18.8	14.0	10.7	10.7

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
28	26.4	17.3	16.5	10.4	10.2	11.3	8.2	13	18	16.6	25.4	19.3	16.1	12.2	12.2
29	**54.5**	**40.1**	32.5	20.1	22.4	27.2	25.9	29.8	35.9	39.7	**43.6**	32.9	33.7	25.6	25.6
30	30.8	16.9	18.6	13.9	13	15	10.3	19	18.3	19.2	27.3	24.4	18.9	14.4	14.4
31		19.6		15.7	12.4	13.1	8.7		18.6	20.4	30.6	24.6	18.2	13.8	13.8

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 the nearest relevant public exposure

Appendix B: A Summary of Local Air Quality Management

Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995 and associated government guidance. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas and to determine whether or not the air quality objectives are being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans should then be reviewed and updated where necessary at least every five years.

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

Air Quality Objectives

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), and are shown in Table B.1.

The table shows the objectives in units of 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

QA/QC of Diffusion Tube Monitoring

Diffusion tubes were manufactured and analysed by Socotec. The absorbant is analysed for NO2 concentration using 50% TEA in acetone. Diffusion tubes were kept and used in accordance with the manufacturer's instructions, and were left out for a minimum of 4 weeks.

Precision is the ability of a measurement to be consistently reproduced. Diffusion tubes are defined as having good precision when the coefficient of variation between triplicate tubes is <20% for eight periods out of 12, and <10% overall. In 2020 good precision was found in 24 out of 24 co-location studies. As such the precision for the diffusion tubes used in Merthyr Tydfil County Borough in 2020 is likely to be good.

Socotec UK are UKAS accredited and participate in the AIR PT NO2 proficiency testing, an independent scheme supported by the Health and Safety Laboratory (HSL). It uses artificially spiked Palmes type diffusion tubes on a quarterly basis to determine a laboratory's analytical performance. Tubes are doped with a known amount of nitrate to determine accuracy, with at least two of the tubes being duplicates, to determine laboratory performance. A different mass of nitrate is used each quarter and reflect the typical analytical range encountered in NO2 monitoring in the UK. From this a performance score (z-score) is generated based on deviation between the known concentration and the value measured by the laboratory. Laboratories with 19 out of 20 (95%), from 5 rounds of testing, z-scores of ≤ ± 2 provide satisfactory performance. For the quarters from January – February 2020 to January – March 2021, Socotec for 100% of testing achieved z-scores within this range although 2 of the testing rounds during this period were cancelled due to the panedemic. This is above 95%, the threshold for a laboratory to be considered satisfactory, and as such the results are regarded as satisfactory.

Diffusion tubes were installed according to the annually published Tube Monitoring Calendar available at https://laqm.defra.gov.uk/assets/2020laqmcalendar1.pdf with the exception of periods 10 and 12, which were installed +1 days beyond the due date. Tubes may be installed up to 2 days before or after the due date and as such, this does not cause an issue with the dataset. Within this section provide details relating to the following

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Merthyr Tydfil County Borough recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

Diffusion tubes may systematically under or over-read NO_2 concentrations compared to a chemiluminescent analyser. This is known as bias and can be adjusted for using a suitable bias adjustment factor. Applying a bias adjustment factor improves the accuracy of the data. Merthyr Tydfil County Borough Council does not undertake any co-location studies and as such, applies a National bias adjustment factor.

The national bias adjustment factor of 0.76 has been applied to the 2020 monitoring data and was obtained from National Diffusion Tube Bias Adjustment Factor Spreadsheet: Spreadsheet Version Number: 06/21. This is the most up to date version of the spreadsheet at the time of writing and can be seen at: https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html. A summary of bias adjustment factors used by Merthyr Tydfil County Borough Council over the past five years is presented in Table C.1.

A National Bias Adjustment Factor has been used for the following reasons:

- There are currently no co-location studies undertaken in accordance with best practice in Merthyr Tydfil County Borough.
- The sites listed in the Bias Adjustment Factor spreadsheet are in generally comparable locations and;
- The diffusion tube mean concentrations measured at significant Merthyr sites are within the range of results obtained from the specified national co-location sites.

Although there are general similarities between the sites, there are also some significant differences. The derived bias adjustment factor is therefore used with a degree of caution.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	06/21	**0.76**
2019	National	06/20	0.75

2018	National	06/19	0.76
2017	National	06/18	0.77
2016	National	06/17	0.78

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Merthyr Tydfil County Borough required distance correction during 2020.

QA/QC of Automatic Monitoring

The ECC is manufactured by ACOEM UK (previously known as Air Monitors UK). The model is the AQMesh Pod. It was first produced in 2013 and has been subject to regular upgrades to improve performance.

The ECC is tested and calibrated by the manufacturer however, it was not calibrated during 2020 due to the pandemic. In laboratory conditions accuracy is +5ppb. It is designed with a sensor life and battery life of 2 years. After 2 years the battery and sensor should be replaced. It has also been discovered recently that the sensors can fail in cold, damp conditions and this should be checked for to enable fast replacement and to minimise data loss.

Colocation studies have been carried out against reference methods such as the chemiluminescent monitor. The correlations are variable, with v4.2 in 3 trials giving correlation of 0.70, 0.81 and 0.89. This shows the device should be used for indications of variations in NO_2, rather than as an accurate NO_2 concentration.

Once installed on site there is a short period of stabilisation as the ECC adjusts to environmental conditions. During the 2-year lifespan of the sensors and battery no further calibration is required. Performance may be affected after 2 years.

When re-installed in 2016 the device was co-located with 2 diffusion tubes and could be checked for significant differences. It was generally within 10% of diffusion tubes, with a tendency to under-read. Looking at the pattern between 2014 and 2018 with Tube 14 – 55 Twynyrodyn Road only it has fluctuated between over-reading by +14% and under-reading by -17%. In 2019 the ECC has over-read by around +14%. During 2020 the ECC, which was re-located to 98 Pontmorlais High Street on 11th February 2019, was operational for 79% of the year from periods 1 to 9 with fluctuations of over-reading by +6% to under-

reading by -4%. On the basis of it not being the recognised continuous monitoring technique and its periods of prolonged downtime it is regarded as an indicator of temporal fluctuations. MTCBC will therefore continue to use bias adjusted diffusion tubes as the key mechanism for establishing the annual mean NO_2 concentration.

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

Equivalence testing has shown that the TEOM can under-read possible losses of volatile material from the TEOM filter.

Data can be corrected for the loss of volatiles by applying the King's College London Volatile Correction Model – a spreadsheet for Correction. The VCM takes FDMS purge measurements from the two nearest FDMS equipped TEOM analysers and an average of all the other FDMS purge measurements within 130km. The two nearest sites are Port Talbot AURN at Margam Fire Station and Newport AURN. More information on the VCM can be found at http://www.volatile-correction-model.info/Default.aspx. Data from the TEOM was provided in hourly readings and has been calculated to provide daily means. This data has then been inputted into the Correction Tool to obtain the data presented in Tables 2.6 and 2.7 and Figures 2.12 and 2.13.

At the time of writing, data from the FDMS purge measurements used had been ratified and the PM_{10} and $PM_{2.5}$ data should be considered reliable.

Automatic Monitoring Annualisation

The ECC automatic monitor located at 98 Pontmorlais High Street recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Merthyr Tydfil County Borough required distance correction during 2020.

Appendix D: AQMA Boundary Maps

Figure D.1 –

N	**GRADDFA / SCALE:** 1:2,086
	DYDDIAD / DATE: 11/08/2020
	ADRAN / DEPARTMENT: Environmental Health
	ARLUNIWYD GAN / DRAWN BY: AR
TEITL / TITLE: Bryn Caerau Bungalow - Private Water Supply	

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MERTHYR TUDFUL
MERTHYR TYDFIL
County Borough Council

https://airquality.gov.wales/laqm/air-quality-management-areas

Appendix E: Impact of COVID-19 upon LAQM

The COVID-19 pandemic has impacted air quality at local, regional and national scales and presented challenges to Local Authorities in undertaking statutory LAQM duties. This section outlines the impact of COVID 19 on air quality in Merthyr Tydfil County Borough during 2020. Further detail on air quality impacts at the national scale can be viewed through the Reports & Seminars section of airquality.gov.wales.

Impacts of COVID-19 on Air Quality within Merthyr Tydfil County Borough

There was no negative impact on the operation of the passive diffusion tube monitoring network throughout 2020, with all tube changes and submission for analysis being carried out in accordance with the prescribed calendar. The co-located automatic monitoring site at 98 Pontmorlais High Street, whilst operational for >75% of the year has since been offline, with sensor replacement and calibration delayed. Similarly, calibration of the TEOM monitor at Twynyrodyn Community School was delayed for a number of months.

The unusual reduction in NO_2 concentrations across the Borough has meant that the data collected for 2020 is not a fair representation of typical NO_2 concentrations, particularly for areas affected by the traffic reversal. As such, despite the early indications that the reversal has been successful, the data collected does not sufficiently evidence this, with the consequence that revocation of the AQMA must be delayed. Additionally, no new traffic counts have been carried out.

Reductions of NO_2 concentrations were experienced at all tube monitoring locations across the Borough from April onwards including within the Twynyrodyn AQMA, with the annual mean concentration at all locations being >10% below the AQS objective at all monitoring locations. This demonstrates that it is possible to provide an evidence base in relation to the annual mean being achievable.

Opportunities Presented by COVID-19 upon LAQM within Merthyr Tydfil County Borough

MTCBC was able to obtain funding from Welsh Government via the Covid-19 Sustainable Transport Fund to enable improvements for social distancing and pedestrian enhancements. Some of this funding is being used to create a new zebra crossing at Lower High Street to encourage safer and increased pedestrian access to the town centre from the southern end of the town. This should, in conjunction with the improved integrated public transport network, reduce the number of car journeys into the town.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Merthyr Tydfil County Borough

No challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 within Merthyr Tydfil County Borough.

Table E.1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Glossary of Terms

Abbreviation	Description
AQ	Air quality
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
AQS	Air quality standard
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
CO	Carbon monoxide
DA	Detailed assessment
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
ECC	Electrochemical cell
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
Mg/m^3	Milligrams of the pollutant per cubic metre of air
$\mu g/m^3$	Micrograms of the pollutant per cubic metre of air
MTCBC	Merthyr Tydfil County Borough Council
NO	Nitric oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
O_3	Ozone

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
SPG	Special planning guidance
SO_2	Sulphur Dioxide
TEOM	Tapered element oscillating microbalance
TRO	Traffic Regulation Order
USA	Updating and Screening Assessment
WAQF	Welsh Air Quality Forum