

Monmouthshire County Council 2020 Air Quality Progress Report In fulfillment of Part IV of the Environment Act 1995 Local Air Quality Management

September 2020

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Report Reference number	MCC/LAQM/APR/2020
Date	September 2020

Executive Summary: Air Quality in Our Area

Air Quality in Monmouthshire

This Annual Progress Report (APR) presents the results of the air quality monitoring undertaken by Monmouthshire County Council in 2019. Previous reports (2011 to 2019) are available on the Councils website - <u>http://www.monmouthshire.gov.uk/air-quality</u>.

Generally, air quality in Monmouthshire is good, however there are some hotspots of poor air quality close to busy or congested roads. As such these roads are monitored closely for nitrogen dioxide, which is one of the main pollutants from vehicle emissions.

In 2019 this monitoring was undertaken at a total of 47 locations: -

- 47 nitrogen dioxide diffusion tubes were located at 45 roadside locations (one location was a triplicate co-location study with the air quality monitoring station)
- 1 roadside Air Quality Monitoring Station (AQMS) that used automatic analysers to monitor nitrogen dioxide, and particulate matter (both PM₁₀ and PM _{2.5}) (on the pavement of the A48 in Chepstow)
- 2 ambient air quality sensors located at schools that monitored nitrogen dioxide, nitric oxides, carbon monoxide and ozone.

Monitoring was undertaken long roads in Chepstow, Pwllmeyric, Usk, Woodside, Monmouth and Abergavenny. In addition, sensors were installed at two schools located adjacent to Air Quality Management Areas (AQMA). One is just outside the Usk AQMA and one outside the Chepstow AQMA (see below).

Previously monitored locations that were discontinued when it became clear that the relevant air quality objective levels were not in danger of being exceeded include - Raglan, Caldicot, Undy and Magor.

There are two roads in Monmouthshire that have been declared Air Quality Management Areas (AQMA) due to having exceeded the nitrogen dioxide annual mean objective level in the past: -

- Bridge Street in Usk
- Hardwick Hill (A48) in Chepstow

Both AQMAs have Action Plans and Steering Groups set up to identify options for improving air quality, the Action Plans are available from the following websites

http://www.monmouthshire.gov.uk/air-quality

https://uk-air.defra.gov.uk/aqma/local-authorities?la id=403

The three analysers housed within the Chepstow Air Quality Monitoring Station (AQMS) continuously monitor nitrogen dioxide, PM₁₀ and PM_{2.5}. The station is located within the Air Quality Management Area on the pavement of Hardwick Hill. Hardwick Hill is a steep section of the A48 that runs through Chepstow.

In 2019, the AQMS did not record any exceedances of the short-term (i.e. hourly, daily) or long-term (i.e. annual) air quality objective levels of any the three pollutants.

Chepstow & Pwllmeyric Summary

In Chepstow and Pwllmeyric there was one exceedance of the nitrogen dioxide annual mean objective level recorded by a diffusion tube located on Hardwick Hill. This location has exceeded every year. Whilst it decreased in 2019 to its lowest concentration to date, it remains the highest location for nitrogen dioxide at a relevant receptor in the county.

The Chepstow diffusion tube monitoring network was extended south west of the AQMA into Pwllmeyric in October 2018 to monitor a busy section of the A48 that leads to Chepstow. Results of the three month 2018 data and 12 month 2019 data indicates that whilst the northeast carriage way into Chepstow (uphill) has high concentrations roadside/kerbside, houses are set back a fair distance and thus the distance corrected concentrations to the receptors are not excessive. The southwest carriageway out of Chepstow is downhill, and houses are set much closer to the roadside, however concentrations recorded are also considerably lower.

Usk & Woodside Summary

There were no exceedances of the nitrogen dioxide annual mean objective level in Usk & Woodside in 2019. This was the fifth continuous year with no exceedance of the nitrogen dioxide annual mean objective level within the Usk AQMA and the second continuous year with concentrations below 10% of the objective level (i.e. below 36 μ g/m³). If the town has five continuous years below 36 μ g/m³ the council will consider revoking the Air Quality Management Area.

Monmouth Summary

There were no recorded exceedances of nitrogen dioxide in Monmouth in 2019. Monmouth had one location that was close to the objective level in 2012, which prompted additional monitoring locations from 4 to the current of 14. In total there have been 21 locations monitored in Monmouth (focus on the town centre, and along the A48). Some were removed, as it became clear they would not exceed the objective level. In addition, an automatic monitoring station was installed at the pavement of Wyebridge street/A40 junction, outside the Monmouth School for six months in 2016. Since 2012 concentrations have reduced almost every year. There have been no locations within 10% of the annual objective ($36 \mu g/m^3$) level since 2013.

Abergavenny Summary

There were no recorded exceedances of nitrogen dioxide in Abergavenny in 2019. Abergavenny had one location at the objective level in 2012, which prompted additional monitoring locations from 1 to 3 in 2012, then 6 in 2013 and 8 in 2019. Since 2013 concentrations have varied, but overall reduced significantly since 2012. There were no locations within 10% of the annual objective level in 2019.

The two additional diffusion tube monitoring locations in 2019 were installed on the A40 through Abergavenny in June. They are monitoring relevant receptors on both sides of the A40 due to recent road alterations, and the opening of a new Supermarket on the road.

Monmouthshire Summary

Across Monmouthshire, almost all nitrogen dioxide diffusion tube monitored locations were lower in 2018 than any of year since monitoring began, and concentrations stayed fairly similar in 2019.

- 16 locations increased (with a range of $0.1 2.5 \,\mu\text{g/m}^3$)
- 22 locations decreased (with a range of $0.1 4.4 \,\mu\text{g/m}^3$)
- 1 location stayed the same.
- 4 locations were newly installed in 2018 and so had no previous year to compare with
- 2 locations were newly installed mid-2019.

The automatic analysers at the Chepstow AQMS however all increased in 2019.

- Nitrogen dioxide was at its highest concentration since 2012
- PM10 was at its highest concentration since 2011
- PM2.5 was at its highest concentration since 2014

Since 2018 all three analysers were changed to different models: -

- August 2018 the PM10 and PM2.5 TEOM FDMS analysers in use since 2010 were replaced with BAM (Beta Attenuation Monitors) analysers
- 7th November 2019 ML2041 NOx Analyser replaced with an API T200 NOx gas analyser

Generally, air quality in Monmouthshire has improved since 2012, when most locations were recording their highest concentrations.

There was a trend between 2007 until 2012 of increased concentrations year on year. However, from 2013, and except for 2014, concentrations started reducing or remaining stable and there now appears to be a trend of decreasing nitrogen dioxide levels. The exception to this is at the AQMS where nitrogen dioxide decreased from 2008 until 2016 but increased in 2018 and 2019. The AQMS exceeded the annual objective level in 2008 and 2011. The hourly objective level has never been exceeded.

There is also a trend of decreasing PM₁₀ and PM_{2.5} concentrations since monitoring began at the Chepstow Air Quality Monitoring Station. PM10 decreased between 2006 until 2017 but increased in 2018 and again in 2019. PM2.5 decreased between 2010 and 2012, increased in 2013, stabilised in 2014, decreased in 2015 and stabilised until 2018, but increased in 2019. The daily mean objective level has never been exceeded.

There were no new industrial installations and no new or substantially altered roads within Monmouthshire.

There were no newly identified commercial, domestic or fugitive sources of emissions.

The APR summarises progress with both the Chepstow and Usk Action Plans.

No further Detailed Assessments are required at present, although Merthyr Road in Abergavenny and parts of Monmouth will continue to be monitored closely along with the Usk and Chepstow Air Quality Management Areas.

Monmouthshire County Council has in 2018 and 2019 prioritised air quality monitoring at certain schools (Chepstow Comprehensive and Usk Primary – which are both outside the AQMA's). The sensors were installed in September/October 2018 and initial concentrations indicate that the schools are not at risk of exceeding the air quality objective levels. Monitoring for 2019 indicates that the schools are not at risk of exceedance of the nitrogen dioxide annual mean objective level.

Actions to Improve Air Quality

Actions to improve air quality in the AQMA's can be found in section 1.

Local Priorities and Challenges

Local air quality priorities are to continue to work within the two-air quality management area steering groups to attempt to reduce nitrogen dioxide emissions, and to implement air quality monitoring at four schools using air quality sensors. Challenges in improving air quality are many, but are related to the ever increasing traffic on local roads due to pressure to build new houses both within Monmouthshire and in neighbouring local authorities (specifically in Forest of Dean) and the removal of the Severn Bridge Tolls (which are thought to being additional commuter traffic into the south of the County.

How to Get Involved

Further information on air quality can be found at -

http://www.monmouthshire.gov.uk/air-quality

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1. Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

Table 1.1 is a chronological summary of previous air quality reports from 2003 until 2019. Further detail on each report can be found in the previous reports available on Monmouthshire County Council's website.

Report Name	Date	Outcome			
Updating and Screening Assessment (Round 2)	June 2003	Detailed Assessment required for nitrogen dioxide at four roadside locations. Two in Monmouth, and one each in Usk and Chepstow			
Interim Detailed Assessment (9 months monitoring)	November 2004	AQMA required for Bridge Street in Usk. Chepstow a Monmouth monitoring results were marginal and AQMA's declared			
Detailed Assessment (12 months monitoring)	February 2005	AQMA for Usk confirmed. Chepstow and Monmouth did not require an AQMA			
Progress Report	May 2005	Confirmed nitrogen dioxide exceedance in Usk. Elsewhere levels were below the objective levels for all pollutants although Hardwick Hill in Chepstow was close			
AQMA declared for Bridge Street, Usk	November 2005	The location is shown in Figure 1.1.			
Updating and Screening Assessment (Round 3)	March 2006	Exceedances of Nitrogen Dioxide level on Hardwick Hill, Chepstow. Decided to progress straight to declaration of an AQMA			
AQMA declared for Hardwick Hill, Chepstow	April 2007	The location is shown in Figure 1.2			

Table 1.2 A chronological summary of previous air quality reports

Further Assessment for Usk AQMA	April 2007	Confirmed the AQMA should be retained with no changes to the boundary					
Further Assessment for Chepstow AQMA	May 2008	One exceedance of ten monitoring locations representing 8 residential properties. Rather than cycle between increasing and decreasing boundaries it was decided to keep the original AQMA boundary					
Progress Report	November 2008	NO2 exceedances limited to the two AQMA's.					
Updating and Screening Assessment (Round 4)	May 2009	Little changed in source emissions since 2006. A detailed Assessment was not necessary. Additional monitoring undertaken in Magor/Undy along the proposed route of the M4 relief road for 12 months to give a baseline					
Usk Air Quality Action Plan	September 2009	Agreed by Welsh Assembly Government on November 2009. 14 proposed measures to improve air quality					
Chepstow Action Plan Stakeholder workshop Report	November 2009	Outcomes of two stakeholder workshops with local residents					
Progress Report	May 2010	Only the two AQMA's exceeded nitrogen dioxide objective levels. No Detailed Assessment required.					
Hardwick Hill, Chepstow Origin & Destination Study	August 2010	Undertaken to support the Action Plan process					
Progress Report	June 2011	Nitrogen dioxide is still the only pollutant that exceeds the objective level, and these exceedances are contained in the two declared AQMAs in Usk and Chepstow. It concluded that a Detailed Assessment for air quality within Monmouthshire was not necessary for any pollutant					
Chepstow Air Quality Action Plan	August 2011	Accepted by the Welsh Government in September 2011 with 29 proposed measure for improving air quality					

Updating and Screening Assessment (Round 5)	April 2012	Air quality within Monmouthshire continues to meet the relevant air quality objectives outside of the declared AQMAs however levels at Merthyr Road Abergavenny were close to the objective level. Within the AQMAs there are still exceedances of the nitrogen dioxide objective at Hardwick Hill, Chepstow and Bridge Street, Usk. A Detailed Assessment was not required; however, it was decided to increase monitoring on Merthyr Road from one to three locations. These were installed mid-2012. Further details below
Progress Report	April 2013	 Nitrogen dioxide was still the only pollutant that exceeded the objective level. The two Air Quality Management Areas still exceeded. Nitrogen Dioxide levels across the County increased sharply in 2012, which lead to Wyebridge Street in Monmouth being close to the objective level, and Merthyr Road in Abergavenny slightly exceeding the objective level. A Detailed Assessment was not undertaken, as it was decided that the results of the 2013 monitoring would be required to ensure 2012 was not an unusually high year. To support this and in preparation for a potential Detailed Assessment for Merthyr Road, an additional three diffusion tubes were to be installed on Merthyr road (to increase monitoring from one in 2011, to three in 2012, and six in 2013.
Progress Report	April 2014	Nitrogen dioxide was still the only pollutant that exceeded the objective level. The two Air Quality Management Areas still exceeded. Nitrogen dioxide levels were lower in 2013 than 2012 at all but one location and no location outside the two AQMA's exceeded the objective level. It was decided that a further 13 diffusion tubes were to be installed in Monmouth at the end of 2013 in preparation for the 2014 monitoring year. These were installed to support a more detailed assessment of nitrogen dioxide levels in the town centre and along the A40.

Monmouth Six Month Detailed Assessment	September 2014	The report provided a summary of monitoring data for the period January–July 2014 and indicated that the annual mean objective was likely to be met at all sites. However, an assessment of two Air Quality Models undertaken for developments under the planning process identified possible exceedances elsewhere in the town. It was decided to install further diffusion tubes at these locations in January 2015, and to liaise with Natural Resources Wales to install an automatic monitoring station for NO2 and PM10, PM2.5 on the pavement of Wyebridge Street.
Updating and Screening Assessment (Round 6)	April 2015	The two AQMA's continued to experience exceedances of the nitrogen dioxide annual mean at two locations in each town. Concentrations in 2014 were fairly similar to those recorded in 2013 (which had seen a decrease from 2012). There were no exceedances outside the AQMA's The full year's monitoring for Monmouth had confirmed the findings of the September 2014 six-month Detailed Assessment. The USA confirmed that further diffusion tube monitoring was being undertaken in 2015 in Monmouth, and that the NRW's MMF had also been installed in December 2014. There were no exceedances of nitrogen dioxide in Abergavenny, although two locations were close enough to warrant continued monitoring.
Progress Report 2016	April 2016	Nitrogen dioxide, PM10 and PM2.5 concentrations decreased at all locations (diffusion tube and automatic analysers). One location exceeded the nitrogen dioxide annual mean in the Chepstow AQMA, there were no other exceedances (including the Usk AQMA). This was the first year Usk did not have a location exceeding the objective level. NRW's MMF monitoring in Monmouth was also summarised. It did not identify exceedance at a relevant receptor.
Progress Report 2017	September 2017	This PR confirms that air quality within the Chepstow Air Quality Management Area (AQMA) continues to exceed the nitrogen dioxide annual mean objective level at one location, however

for the second year all six monitoring locations the Usk AQMA were below the nitrogen dioxide annual mean objective level. There were no recorded exceedances in Monmouth or Abergavenny.

Annual Progress Report 2018	September 2018	Air Quality within the Chepstow AQMA continues to exceed the nitrogen dioxide annual mean objective level at one location. Third year with no exceedance in Usk AQMA. No exceedances elsewhere. Concentrations broadly similar to 2016. Additional monitoring undertaken in Woodside south of Usk AQMA.				
Annual Progress Report 2019	September 2019	Air Quality within the Chepstow AQMA continues to exceed the nitrogen dioxide annual mean objective level at one location. Fourth year with no exceedance in Usk AQMA, and first year with concentrations under $36\mu g/m^3$ (10% of objective level). No exceedances elsewhere. Generally, concentrations in all towns were the lowest ever recorded.				

1.2 Air Quality Management Areas

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

A summary of AQMAs declared by Monmouthshire County 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 <u>http://www.monmouthshire.gov.uk/air-quality</u> and

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=403

Table 1.1 – Declared Air Quality Management Areas

AQMA	Relevant Air QualityComments on Air QObjective(s)Trend		Description	Action Plan
Bridge Street, Usk	NO ₂ annual mean	There have been improvements in air quality in the AQMA over the last 4 years. There have been no exceedances for 4 years	An area encompassing Bridge Street, from its junction with Newmarket Street up to and including the area around the junction with Castle Parade and Porthycarne Street	http://www.monmouthshire.gov.uk/app/uploads /2013/08/Usk-Action-Plan-Final-September- 2009.pdf
Hardwick Hill, Chepstow	NO ₂ annual mean	There have been improvements in air quality in the AQMA over the last 4 years. One location continues to exceed.	An area encompassing properties either side of the A48, between the roundabout with the A466 to the west and extending east just beyond the junction with the B4293 at Hardwick Terrace	http://www.monmouthshire.gov.uk/app/uploads /2013/06/Chepstow-AQAP-Final-31-August- 2011.pdf

AMQA boundary maps within Monmouthshire can be viewed at <u>https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=403</u> and are included

in Appendix C.

1.3 Implementation of Action Plans

Monmouthshire County Council has taken forward a number of measures during 2019 in pursuit of improving local air quality. 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 relating to the relevant AQMA.

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 by way of regular steering group meetings.

Key completed measures are:

- Implementation of a 20 mile an hour zone through the Usk Air Quality Management Area, enforcement of double yellow line parking, lorry watch scheme to help enforce the Road Traffic Order, as well as improved signage.
- Starting a new Strategic Vision for Usk that is scoping options for various town improvements, including traffic and air quality issues.
- Completion of a WelTAG (Welsh Transport Appraisal Guidance) stage 1 assessment for air quality based improvements in Chepstow.

Monmouthshire County Council expects the following measures to be progressed over the course of the next reporting year:

- Assessment of impacts of removing the Severn Bridge Tolls on the Chepstow AQMA.
 Funding for Stage 2 of the Chepstow WelTAG study.
- Scoping/feasibility of creating a shared space (for vehicles and pedestrians in the Usk AQMA).

Table 1.2 – Progress on Measures to Improve Air Quality

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
1.	Chepstow integrated Transport Strategy	MCC	n/a	n/a	No progress	No progress	n/a	n/a
2.	Limit HGV weight or emissions	Welsh Government	n/a	n/a	No progress as A48 still a trunk road and considered not appropriate	Considered in 2013 public consultation. Considered again in 2018 WelTAG study. Not considered feasible	n/a	n/a
3.	Amend MOVA at Tesco (Upper Street) traffic lights	Welsh Government	n/a	n/a	Completed	Completed	April 2012	Anecdotal evidence suggests less congestion on Hardwick Hill
4.	Encourage car sharing	MCC	Ongoing	None	There are a number of informal car sharing locations people use. MCC is looking in =to ways to formalise them	Transition Chepstow have taken lead in identifying places for car sharing carparks, and using an app to advertise them.	Ongoing	Depending on the uptake – and provided the car sharing removes vehicles from the AQMA.

Chepstow – Action Plan Measures

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
						One such location is Chepstow Race Course. MCC currently looking into finding a gate for the carpark so the Race Course will allow the use of its Car park for this purpose		
5.	Monitor developments in adjoining areas	MCC	Ongoing	Number of air quality assessment asked for	Good working relationship with planners. Also liaise with Forest of Dean regularly	Good working relationship with planners. Also liaise with Forest of Dean regularly	Ongoing	Could be potential emissions reductions in the long term (or at least reductions on increases).
6.	Improve Council integration on planning issues	МСС	Ongoing	Consultation between departments	Good working relationship with planners.	Good working relationship with planners.	Ongoing	Could be potential emissions reductions in the long term (or at least reductions on increases).
7.	Education of HGV operators	МСС	Ongoing	n/a	None specifically for Chepstow	None specifically for Chepstow	Ongoing	Could be potential emissions reductions with eco driving techniques.
8.	Improve cross boundary working	МСС	Ongoing	n/a	MCC Env Health sits on Forest of Dean AQ Steering Committee	Good integration with Forest of Dean	Ongoing	Could be potential emissions reductions in the long term (or at least reductions on increases).
9.	Include LDP Policy covering air quality	МСС	Complete	n/a	Policy in the LDP.	New LDP currently in progress and Air	Ongoing	In the long term could be significant if affects major developments.

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
						Quality will be a factor.		However, there is a lot of pressure on MCC to increase housing especially in the south of the County. There are contradictory pressures from Government of increasing housing and reducing vehicle emissions
10.	Redesign High Beech Roundabout	Welsh Government in partnership with MCC	n/a	Completion of roundabout improvemen ts	Discussions in relation to new development. Contributions being secured through planning process. This will be implemented as a phased program of works including Station Road junction improvement and Bulwark junction improvement	Not currently being progressed by Welsh Government due to costs. Considered again in 2018 WeITAG study but not recommended for progress	Several years after Station Road improvements to allow monitoring and improvements in car engines. Currently unlikely to be undertaken.	Localised improvements round the Roundabout. Potential improvements on the A48 assuming reduced queuing times.
11.	Target schools Traffic	MCC in partnership	Ongoing	Number of Travel Plans in place	None specifically in Chepstow	Env Health installed air quality sensor at Chepstow Comp in Summer 2018. Hopeful the data	Sensor installed. Monitoring in progress	Could potentially provide reductions in emissions at locations close to schools, or at congestion hotspots.

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
						will be used by the school as well to educate pupils, and have an impact on parent's school runs	Work with school over next 12 months to try to include the data in education	
12.	Promote Sustainable transport as part of new developments	МСС	Ongoing	n/a	General improvements as part of planning process	General improvements as part of planning process	Ongoing	Could be potential emissions reductions in the long term (or at least reductions on increases).
13.	Promote town centre developments	МСС	n/a	n/a	1 town centre development with planning permission, and 1 in the LDP	1 town centre development with planning permission still under construction, and 1 in the LDP	n/a	n/a
14.	Rail Park and Ride	MCC	n/a	n/a	On-going – Funding applied for & P&R from racecourse complete. Improvements made to the carpark to enable additional parking and room for buses	Race course require a gate/barrier before allowing it to be used. MCC looking into finding. Considered in 2018 WeITAG Stage 1 and recommended for further consideration at stage 2	n/a	Park and Ride on race course likely to cause some emissions reductions on Hardwick Hill.

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
15.	Support the climate change and sustainable energy strategy	МСС	n/a	n/a	General support, particularly for transport measures	No specific progress	Ongoing	Unlikely to be significant.
16.	Travel Plans	MCC	Ongoing	Numbers of Travel Plans in place	No specific progress in Chepstow other than Active Travel work	n/a	Ongoing	Unlikely to be significant unless resources put into Travel Planning.
17.	Вураss	Welsh Government	n/a	n/a	Not being progressed at present however considered in 2018 WeITAG stage 1 assessment, and recommended for further appraisal at Stage 2	Four potential route were considered in the 2018 WeITAG Stage 1 study. One route was recommended for further consideration at Stage 2.	Unknown at present	Likely to take a substantial amount of traffic off the A48 through Chepstow
18.	Improve bus services	MCC	Ongoing	Bus patronage	C5 service used to serve Chepstow Rail Station has been re-timed, enabling greater integration with Gloucester and Newport bound rail services.	Improved public transport integration was considered in 2018 WeITAG stage 1 assessment and recommended for further consideration at stage 2	Ongoing	Some improvements if modal shift from car to bus and train.
19.	Improve public transport integration	MCC	Ongoing	Bus and train patronage	As above	As above	Ongoing	Some emissions improvements if modal

Action Plan Measure No.	Measure	Lead authority	Implemen tation	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion	Comments relating to emissions reductions
			Thase				Date	shift from car to bus and train
20.	Origin and Destination survey	MCC	2011	Survey undertaken	Complete	Completed in 2011	Completed	Identified a significant number of HGV's were using A48 as a through route to avoid paying the Severn Bridge Toll
21.	Provide information for residents	МСС	Ongoing	n/a	Information provided on MCC website, and at meetings	MCC website updated. Steering group meetings	Ongoing	n/a
22.	Target HGVs using unsuitable satnav routes	MCC	Not progresse d	n/a	Included in 2013 public consultation however Welsh Government considered it in Detail Design stage in 2015/16 and will not progress at this time	No specific progress	n/a	n/a
23.	Improve rail services to the town	Network Rail/ MCC	Ongoing	Numbers of train passengers	From May 24 2011, 14 more Cross Country trains a day will stop at Chepstow to gauge customer demand for a more frequent service.	Improved public transport integration was considered in 2018 WeITAG stage 1 assessment and recommended for further consideration at stage 2	Ongoing	Potential emissions reductions if modal shift from car to train

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
24.	Upgrade the railway station	Network Rail/ MCC	Not progresse d	n/a	Improved parking and bus drop of space	None	n/a	n/a
25.	Improve cycling facilities	MCC	On-going	Uptake of cycle routes	Walking/cycle routes identified in Active Travel plan	A number of routes identified for improvement. A-B connecting Communities actively working on improving the Wye Wander Route	n/a	Greater uptake of cycle routes should help reduce local traffic in and around Chepstow
26.	Bus Park and Ride/ Share	MCC	On-going	Numbers of people using P&R	P&R set up from Chepstow Race Course	Considered in 2018 WelTAG Stage 1 and recommended for further consideration at stage 2	n/a	Park and Ride on race course likely to cause some emissions reductions on Hardwick Hill
27.	Distribution hub	MCC	Not progresse d	n/a	Considered unsuitable for Chepstow	Not progressed	n/a	n/a
28.	Lobby for change in toll system at Severn Bridge	MCC/ Welsh Government	On-going	n/a	Toll removal occurred in 2019	WG to undertake a before and after traffic study to determine how the toll removal has impacted	December 2018 With traffic study undertaken in 2018 (before) and same time of year in 2019 (after	The Origin and Destination study identified a significant number of HGV's using Hardwick Hill to avoid Tolls, hence Toll removal was included in the Action Plan. However, it now appears that Toll removal will remove a barrier for car use, and

Action Plan Measure No.	Measure	Lead authority	Implemen tation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
								could increase traffic.
								Chepstow is being
								marketed as a cheaper
								housing market for
								Bristol Commuters.
29.	Promote Rail Freight	MCC/ Network	Not	n/a	No specific	No specific	n/a	n/a
		Rail	progresse		progress in	progress in		
			d		Chepstow	Chepstow		

Usk Action Plan Measures

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
6.	Management of on and off-street parking consideration of delivery time strategy	MCC	complete	n/a	Police in Usk have increased enforcement of on street parking. M.C.C improved car park signage Chamber of Commerce re- established and members of Steering Group. Chamber of Commerce	M.C.C. have taken over enforcement of double yellow line parking, in bid to increase enforcement.	Complete, however ongoing work required to continually engage with police and chamber of commerce	Reducing on street parking has improved congestion at peak times.

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
					actively engaging with businesses (letters and emails and meetings) to promote non- roadside deliveries and/or off- peak deliveries			
5.	HGV Restriction along Bridge Street – to be informed by surveys and subsequent report	MCC	Complete	HGV numbers	There is a RTO in difficult for polic to its length and Caerleon RTO. A enforcement is it two Caerleon bu been allowed to without penalty there are local bu use HGV's that a such the RTO ha successful in the MCC has spent a time working wi local businesses council to replac more effective of shortened RTO w but opposed by secondly a time	n place, but ce to enforce due l proximity to the As such minimum and usinesses have b breach the RTO . In addition, ousinesses who are exempt. As as not been e past. a great deal of th the police and and town ce the RTO with a one. First a was proposed, local businesses, ban (e.g. no	Current RTO: - Signage in place Lorry Watch – ongoing All HGV's reported are contacted by MCC officers. This has resulted in a reduction in the number of HGV's using the town as a short cut.	Emissions reductions if HGVs are taken off the route through Usk. Likely to be the most beneficial measure in terms of reducing emissions and concentrations.

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
					HGV's at all in p but was again o It has now been longer pursue th implementation however the cur in place. Work has been however, to try exiting RTO mor Signage improve and CCTV signs) Watch Scheme v implemented ar consultancy, but taken over by Tr HGV's in breach recorded by loca TS, who send wa and if necessary	eak traffic times) pposed. decided to no he of new RTO's rrent one is still undertaken, to make the re effective - ed (sat nav signs , and a Lorry was nd run by a t has now been rading Standards. of the RTO are al volunteers to arning letters, of fines to the	Typically once contacted the companies do not offend again.	
3.	Encourage walking as a mode of transport	MCC	On going	n/a	company. MCC undertaken Act duties includ identification of in Usk and impro- routes.	n Active Travel ding walking routes ovements to	On going	Unlikely to be significant emissions reductions.
8.	Increase the number of public transport services to and from Usk.	MCC	Ongoing	Numbers of public transport services	Bus companies money from rou additional MCC Currently MCC p	report loss of utes and require funding. priority is to	Ongoing	Unlikely to be significant emissions reductions.

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
	include community transport				return bus servi levels	ces to previous		
9.	Contain indirect emissions from future development and from changes of land use that would generate traffic	MCC	Ongoing	Numbers of air quality assessments requested	No relevant development in Usk	n/a	Ongoing	Could be significant in the future.
15	Travel Awareness Campaigns	MCC	Ongoing but not specifically targeting Usk at the moment	n/a	None in Usk	n/a	Ongoing	Sustained travel awareness campaigns coupled with improvements to alternatives could reduce car use and therefore reduce emissions.
New	Work with school and others to produce a community and school traffic plan	MCC in partnership	Ongoing	Numbers of Travel Plans in place	A member of the Steering Group is a Governor at Usk School and is proactively engaging with the School to encourage improve parking arrangements and to encourage walking on behalf of the Group.	Air Quality monitoring undertaken at School, coupled with potential education opportunities using the monitoring data. Educating the children should help inform parents of emissions from school drop- offs and	On-going – Continuous monitoring installed at school in summer 2018, and school taking part in Eco School diffusion tube monitoring education package. Monitoring data from the sensor will be available to the school for	Could potentially provide reductions in emissions at locations close to schools, or at congestion hotspots.

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
						encourage alternative.	teaching purposes via a website	
						Anti-Idling group set up within MCC with intentions of promoting anti idling campaigns starting in 2020 and focused on School pick up and drop off times		
1.	Encourage more cycling: implement hierarchy of urban and inter-urban cycle routes	MCC	On-going	Numbers of cyclists	MCC working on Active Travel Act that will include Usk cycle and walking routes	MCC working through the stages of the Active Travel Act. Specific work to create new walking and cycling connections to Coleg Gwent and MCC County Hall, and then South towards Pontypool. – Planning	On-going	Potential reductions in emissions if modal shift from car to cycling.

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
						applications made		
2.	Support and promote facilities for cyclists at school and in town centres	MCC	On-going	Numbers of cyclists	Provision of cycle racks on Bridge Street	Part of Active Travel Act work	On-going	Potential reductions in emissions if modal shift from car to cycling.
13.	Car club scheme	MCC	n/a	n/a	n/a	Not being progressed – unlikely to be effective	n/a	n/a
New	Develop kerbside recycling collections to reduce traffic to civic amenity site	MCC	Complete	n/a	Complete	n/a	n/a	Unlikely to have a major impact on emissions. Included in original Action Plan to reduce number of household trips to Municipal Refuse Site.
14.	Flexible home working, work times etc.	MCC	Ongoing	Number of work-related trips in private single occupancy cars.	Promoted within MCC.	Much greater levels of homeworking within MCC	Ongoing	Unlikely to have a major impact on emissions. Anecdotally MCC staff seem to be travelling further since new scheme brought in.
7.	Implement new 20mph speed limits/ zones	MCC	Complete	n/a	This has now been put in place by MCC in 2018 Modelling undertaken for 20mph – however it showed increased emissions, as	A Share Space Concept is being considered by MCC and a consultant. This work has now been rolled into the	Bridges Street - Completed Shared Space On-going – early stages of	Reduction of speed alone is unlikely to have an impact, as traffic studies have shown that vehicles in Usk do not tend to exceed 20mph in the day. However, it is possible that less accelerating and braking up to and down from 30mph might reduce emissions, and a 20mph zone might discourage

Action Plan Measure No.	Measure	Lead authority	Implement ation Phase	Indicator	Progress to date	Progress in the last 12 months	Estimated Completion Date	Comments relating to emissions reductions
					it created additional queuing. Therefore, implemented without road obstacles that could increase congestion.	Strategic Vision Plan for Usk.	viability work pace- On-going – early stages of viability work	certain vehicles, who could take a faster road. 2018 was the first full year of 20mph, and emissions in Usk were recorded at an all-time low and remained low in 2019 (however this occurred Countywide) In addition, it is possible that this will be the first step in making Usk town centre a more pedestrian orientated place, rather than a vehicle through route. Options are being investigated to create a Shared Space.
New	Investigation of altering traffic flows through the town	MCC	Complete	n/a	Considered agai modelled for a r options. Each o increased conge emissions.	in in 2014 and number of ption, however, estion and	Will not be progressed as a standalone option, however, will be considered again alongside other measures as party of the Usk Strategic Masterplan	Increased emissions

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

2.1 Summary of Monitoring Undertaken in 2019

2.1.1 Automatic Monitoring Sites

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

Monmouthshire County Council undertook automatic (continuous) monitoring at one location in 2019, using three analysers.

Table 2.1 presents details of the analysers, with the location shown in Figure 2.1. The automatic analysers are located in Chepstow at the Air Quality Monitoring Station (AQMS) located on the A48 on the pavement of Hardwick Hill, which is within the Chepstow Air Quality Management Area and at a roadside location. The AQMS is situated in a location that is the closest it can technically be (based on its size and available space and power) to the location of the highest recorded concentrations in the county.

National monitoring results are available on the Welsh Air Quality Forum (WAQF) and DEFRA websites <u>http://www.welshairquality.co.uk</u> <u>http://uk-air.defra.gov.uk/</u>

The automatic monitors became part of the UK's Automatic Urban and Rural Network (AURN) in January 2008. In February 2010 the PM₁₀ monitor was upgraded to a TEOM-FDMS (Filter Dynamics Measurement System) analyser and a TEOM-FDMS PM_{2.5} analyser was introduced. TEOM-FDMS monitors are accepted as giving results equivalent to the European Gravimetric Standard Method. The analysers were Thermo Scientific rp Series. There were two 8500 FDMS units, two 1400A TEOM Sensor Units and two 1400A TEOM Control Units.

In 2018 the AURN began replacing the TEOM-FDMS analysers in the network with BAM (Beta Attenuation Monitors) analysers. The analysers in the Chepstow AQMS were replaced in August 2018, Therefore PM₁₀ and PM_{2.5} data reported for January to July 2018 is TEOM-FDMS data and August to December 2018 and all 2019 is BAM data.

The original nitrogen dioxide analyser (Monitor Labs 9841B chemiluminescence analyser) and Odessa data logger were replaced in January 2012 to the latest compliant Monitor Europe 20xx series continuous gaseous analyser (ML 2041 NOx Chemiluminescence Analyser).

On 7th November 2019, the ML2041 NOx Analyser was then replaced with an API T200 NOx gas analyser.

In 2019, Air Monitors serviced the NOx analyser and Enviro Technology serviced the PM10 and PM2.5 analysers, and all three were audited by Ricardo-AEA. Services and audits are undertaken twice a year. Monmouthshire County Council undertakes routine LSO (Local Site Operator) duties at the station including regular calibration checks, filter changes, PM head cleaning, BAM tape changes and calibration gas changes.

Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

2.1.2 Non-Automatic Monitoring Sites

Monmouthshire County Council undertook non-automatic (passive) monitoring of nitrogen dioxide at 45 locations using 47 nitrogen dioxide diffusion tubes (plus one travel blank – which is not exposed). The tubes were installed as close as possible to relevant and sensitive receptors such as schools and houses along the county's busiest road networks. Where it was not possible to install a tube at a relevant receptor (due to lack of permission, or lack of an unobstructed fixing position) the tubes were installed at the nearest lamppost to the receptor. In these situations, a distance correction calculation was used to determine the concentrations at the receptor based on the concentrations recorded by the nearest diffusion tube if the tube recorded levels near the objective level.

Three diffusion tubes were used in a triplicate co-location study next to the nitrogen dioxide inlet of the Chepstow AQMS to obtain data for the local and national Bias Adjustment Factor (BAF) study.

Since May 2010, Monmouthshire County Council has used diffusion tubes prepared and analysed by Gradko International Limited using 20% TEA in Water. The tubes are changed every month (either 28 or 35 days) and sent to Gradko for analysis.

Further details on Quality Assurance/Quality Control (QA/QC), bias adjustment and distance correction for the diffusion tubes are included in Appendix C.

Table 2.2 presents the details of the monitoring locations and maps showing their locations are provided in Figure 2.1

Table 2.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	In AQMA	OS Grid Reference		Pollutants	Monitoring Technique	Inlet	Distance from Kerb to Nearest	Distance from Kerb to Monitor
				х	Y	Womtored		neight (III)	Exposure (m)	(m)
AQMS	A48 Hardwick Hill, Chepstow	Roadside	Chepstow A48/Hardwick Hill AQMA	353125	193472 -	PM10 PM2.5	Beta Attenuation Monitoring (BAM)	25	7.5m	3
						NOx NO2	Chemiluminescence	2.5		

Map of Automatic Monitoring Site

The Chepstow AQMS location and current data can be viewed at - <u>https://airquality.gov.wales/</u>. A map is also provided in this report, along with the diffusion tube monitoring locations on Hardwick Hill, in Figure 2.1

	ID	Site Type	OS Grid Ref		Site		Relevant	Distance to receptor (m)	Distance to kerb	Worst-	Date of
Site Name			х	Y	Height (m)	In AQMA	Exposure		of nearest road (m)	case exposure	Installation/ removal
38 Larkfield Park, Chepstow	CH1	Roadside	352800	193274	1.6	Yes	Yes	0.15	10	Yes	30/09/2003
Newport Road Lamppost No. WH70, Nr Larkfield House, Newport Road (A48) Chepstow	CH2a	Roadside	352821	193307	2.45	Yes	No	5.6	1.75	Yes	08/01/2014
36 Wayside, Hardwick Hill (A48) Chepstow	СНЗ	Roadside	352970	193452	1.7	Yes	Yes	0.18	12	Yes	30/09/2003
2 Hardwick Hill (A48) Chepstow.	CH4	Roadside	353009	193444	3.1	Yes	Yes	0.59	4	Yes	31/05/2005
1 Ashfield House, Mount Pleasant (A48) Chepstow	CH5	Roadside	353141	193451	1.6	Yes	Yes	0.23	14	Yes	30/01/2006
Rainwater Pipe, Hill House, Hardwick Hill (A48) Chepstow.	CH6	Roadside	353166	193586	2.3	Yes	Yes	0.18	6	Yes	30/09/2003
Rainwater Pipe 2 Hardwick Terrace, Chepstow	CH7	Roadside	353164	193663	2.57	Yes	Yes	0.16	1.5	Yes	29/08/2006
Lamp post, Moor Street, Chepstow	CH8	Kerbside/ Urban Centre	353219	193730	2.75	No	Yes	0.5	1.65	Yes	04/07/2007
Restway Wall, Garden City Way, (A48) Chepstow	СН9	Roadside	353306	193681	1.91	No	Yes	0.18	11	Yes	30/09/2003

Table 2.2 – Details of Non-Automatic Monitoring Sites Exposed in 2019
Site Name	ID	Sito Turno	OS Gr	id Ref	Site		Relevant	Distance to receptor (m)	Distance to kerb	Worst-	Date of
Site Name	U	Site Type	х	Y	(m)		Exposure		(m)	exposure	removal
AQMS Hardwick Hill (A48) Chepstow – Collocated with a continuous Analyser	AQ1 AQ2 AQ3	Roadside	353125	193472	2.9	Yes	Yes	7.5	4	Yes	02/01/2004
Lamppost NY237 - 1 The Chestnuts, Pwllmeyric	PWLL1	Roadside	351983	192594	2.35	No	No	16	1.22	Yes	03/10/2018
Lamppost NY241 - The Cedars, Pwllmeyric	PWLL2	Roadside	351873	192489	2.35	No	Yes	1.9	1.9	Yes	03/10/2018
Lamppost NY246 - Hill House, Pwllmeyric	PWLL3	Roadside	351724	192370	2.35	No	No	6.2	1.4	Yes	03/10/2018
2 White Cottage, Pwllmeyric	PWLL4	Roadside	351666	192300	2.35	No	Yes	0.1	2.2	Yes	03/10/2018
School House, Wyebridge Street, Monmouth – new position	MM1	Roadside	351072	212821	2.7	No	Yes	0.18	3.4	Yes	30/10/2013
Flat 1, Granville Street, Monmouth – new position	MM2	Intermedi ate	351139	212894	2	No	Yes	0.24	25	Yes	30/10/2013
Lamp post adjacent 21 St. James Square, Monmouth	MM3	Kerbside	351085	212930	2.3	No	Yes	2.4	0.5	Yes	01/05/2004
12a Monnow St. on St. John St. Monmouth	MM4	Kerbside/ Urban Centre	350718	212794	2.8	No	Yes	0.13	1.3	Yes	04/07/2007 Moved 5meters south 02/04/2014

Site Name	ID		OS Gri	id Ref	Site		Relevant	Distance to receptor (m)	Distance to kerb	Worst-	Date of
Site Name	U	Site Type	х	Y	(m)		Exposure		(m)	exposure	removal
Arka, Old Dixton Road, Monmouth	MM7	Intermedi ate	351197	212980	2.3	No	Yes	0.14	23	Yes	30/10/2013
1, The Shrubbery, Old Dixton Road, Monmouth	MM9	Intermedi ate	351467	213280	2.3	No	Yes	0.24	16	Yes	30/10/2013
Fence of Boys School Playground	MM11	Roadside	351024	212652	3	No	Yes	0.5	4.8	Yes	30/10/2013
Pike House, New Dixton Road, Monmouth	MM13	Roadside	351884	21361	1.63	No	Yes	0.19	6.53	Yes	04/12/2013
6 Monnow Street (Fancy Freds), Monmouth	MM15	Roadside/ Urban Centre	350729	212811	2.3	No	Yes	0.15	1.5	Yes	02/04/2014
Lampost ME380 Adj 20A Monnow Street, Monmouth	MM16	Roadside/ Urban Centre	350695	212775	2.3	No	Ye	1.35	2.1	Yes	02/04/2014
4 Agincourt Square - The Punch House, Monmouth	MM17	Roadside/ Urban Centre	350779	212868	2.45	No	Yes	0.54	1.7	Yes	02/04/2014
Design & Technology Block Monmouth School, Monmouth	MM18	Roadside	351091	212791	2.1	No	Ye	0.18	13	Yes	29/10/2014
Lamp post, 7 Ty Mawr, Monk Street, Monmouth	MM19	Roadside	350953	213098	2.45	No	Yes	1.5	1.75	Yes	04/02/2015

Site Name	ID	Site Turne	OS Gri	id Ref	Site		Relevant	Distance to receptor (m)	Distance to kerb	Worst-	Date of
Site Name	U	Site Type	х	Y	(m)	ΙΠ ΑΟΙΝΙΑ	Exposure		(m)	exposure	removal
Lamp post ME399, 14 Victoria Place, Priory Street, Monmouth	MM21	Roadside	350910	213071	2.45	No	Yes	0.3	1.45	Yes	04/02/2015
Lamp post Merthyr Rd. (A4143), Abergavenny	AB1	Kerbside	329170	213867	2.4	No	Yes	0.35	0.85	Yes	04/07/2007
Back Clinic, 2a Bridge Cottages, Llanfoist, Merthyr Road, Abergavenny, NP7 9LL	AB2	Roadside	329202	213822	2.5	No	Yes	0.23	1.7	Yes	30/05/2012
112 Merthyr Road, Abergavenny, NP7 5DF	AB3	Roadside	329324	214080	2.5	No	Yes	0.25	1.8	Yes	30/05/2012
L/P Adj. 5 Coopers Way, Merthyr Rd, Abergavenny	AB4	Roadside	329275	213686	2.4	No	Yes	2.4	1.55	Yes	02/01/2013
1 Usk View, Merthyr Rd, Abergavenny	AB5	Roadside	329212	214075	1.9	No	Yes	0.13	5	Yes	02/01/2013
L/P No. MB991 Adj. 9 & 11 Merthyr Rd, Abergavenny	AB6	Roadside	329524	214470	2.3	No	Yes	0.5	1.3	Yes	02/01/2013
L/P No. WB259 – 14 Pen-y-fal Road, Abergavenny, NP7 5UB	AB7	Kerbside	329848	214556	2.32	No	Yes	6.1	1.55	Yes	05/06/2019
4 Northgate, Abergavenny, NP7 5TT	AB8	Roadside	329837	214547	1.76	No	Yes	0.3	3.5	Yes	05/06/2019

Site Name	ID	Sito Tuno	OS Gri	id Ref	Site		Relevant	Distance to receptor (m)	Distance to kerb	Worst-	Date of
Site Name	U	Site Type	x	Y	(m)		Exposure		(m)	exposure	removal
14A Castle Parade, Usk	USK1	Roadside	337860	201039	2.3	No	Yes	0.16	1.6	Yes	04/07/2007
Castle Court, Usk.	USK2	Roadside/ Urban Centre	337710	200936	2.45	Yes	Yes	0.16	1.35	Yes	02/08/2005
White Hart, 5 Bridge Street, Usk	USK3	Roadside/ Urban Centre	337663	200906	2.4	Yes	Yes	0.15	1.3	Yes	02/01/2004
35 Bridge Street, Usk	USK4	Roadside/ Urban Centre	337596	200849	2.5	Yes	Yes	0.15	1.3	Yes	04/11/2003
Lamp Post adjacent to No.16 Bridge Street, Usk	USK5	Roadside/ Urban Centre	337562	200824	2.4	Yes	Yes	0.54	1.2	Yes	04/02/2003
4 Usk Bridge Mews, Usk	USK6	Roadside/ Urban Centre	337473	200755	2.6	Yes	Yes	0.21	4.9	Yes	02/01/2004
13 Woodside, Usk,	WS1	Kerbside	337363	200707	2.5	No	Yes	0.15	1	Yes	03/01/2017
19 Woodside, Llanbadoc, Usk,	WS2	Roadside	337356	200736	1.8	No	Yes	0.23	2.6	Yes	03/01/2017
22 Woodside, Llanbadoc, Usk,	WS3	Roadside	337364	200749	2.5	No	Yes	0	1.5	Yes	03/01/2017

WS1, WS2, WS3 were new monitoring location installed in 2017, to monitor concentrations west of the USK AQMA on the junction of the Usk River Bridge, that regularly becomes congested.

PWLL1, PWLL2, PWLL3, PWLL4 were new monitoring locations installed in October 2018 to monitor the A48 outside of Chepstow.

AB7 and AB8 were new monitoring locations installed June 2019 to monitor relevant receptors on both sides of the A40 through Abergavenny due to recent road alterations made, and the opening of a new Supermarket on the road.

No monitoring sites were removed in 2019 the last sites removed were 2017.

Figure 2.1 Maps of Non-Automatic Monitoring Sites



Nitrogen Dioxide Monitoring Locations - Chepstow AQMA west (blue line is boundary of AQMA)



Nitrogen Dioxide & AQMS Monitoring Locations - Chepstow AQMA east (blue line is boundary of AQMA)



Nitrogen Dioxide Monitoring Locations – Pwllmeyric



Nitrogen Dioxide Monitoring Locations - Usk AQMA (blue line is boundary of AQMA)



Nitrogen Dioxide Monitoring Locations – Woodside, Usk



Nitrogen Dioxide Monitoring Locations – Monmouth, A40/Wyebridge Street



Nitrogen Dioxide Monitoring Locations – Monmouth, Monnow Street & Monk Street/Priory Street junction



Nitrogen Dioxide Monitoring Locations - Monmouth, Old Dixton Road



Nitrogen Dioxide Monitoring Locations - Abergavenny, South Merthyr Road



Nitrogen Dioxide Monitoring Locations – Abergavenny, North Merthyr Road



Nitrogen Dioxide Monitoring Locations – Abergavenny A40/Park Road

*AB6 was removed and AB9 was installed January 2020 and not reported on in this APR

2.2 2019 Air Quality Monitoring Results

Table 2.3 – Annual Mean NO₂ Monitoring Results

Cite ID	Cite True	Manufa nina Truna	Valid Data Capture for	Valid Data					NO	2 Annual I	Mean Cond	entration	(µg/m³) (3)				
Site ID	Site Type	wonitoring Type		(%) ⁽²⁾	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Annual Bia	as Adjustment Factor (c	diffusion tubes only) ⁽⁴⁾		0.84	0.85	0.84	0.88	0.89	0.94	0.95	0.91	0.91	0.92	0.87	0.92	0.93
AQMS	Roadside	Automatic Chemiluminescence	95	95	36.9	41.9	38.0	39.0	40.0	39.1	34.5	38.6	37	35	35	36	39
CH1	Roadside	Diffusion Tube	100	100	20.0	24.0	21.0	23.5	22.6	25.3	22.4	21.8	22.5	22.9	22.2	19.1	20.1
CH2a (5)	Roadside	Diffusion Tube	92	92	28.0	33.0	30.0	31.0	30.7	32.0	30.4	33.1	30.9	31.0	27.9	27.8	28.4
СНЗ	Roadside	Diffusion Tube	92	92	27.0	31.0	27.0	28.7	32.8	35.5	32.7	32.5	29.8	31.1	29.9	26.5	28.8
CH4	Roadside/	Diffusion Tube	92	92	49.0	57.0	54.0	51.5	<u>60.1</u>	<u>60.3</u>	56.0	57.7	51.4	53.2	51.1	42.5	42.3
CH5	Roadside	Diffusion Tube	100	100	29.0	32.0	30.0	30.3	30.4	33.2	28.4	26.1	25.9	26.7	26.8	23.5	26.0
CH6	Roadside	Diffusion Tube	100	100	37.0	41.0	36.0	39.2	40.7	42.6	41.7	40.0	36.8	37.6	37.1	34.3	34.7
CH7	Roadside	Diffusion Tube	100	100	29.0	32.0	30.0	31.5	30.4	33.7	30.6	28.4	26.9	27.9	25.9	25.1	25.5
CH8	Kerbside/ Urban Centre	Diffusion Tube	92	92	28.0	33.0	32.0	32.5	32.9	35.5	31.1	31.8	28.1	27.7	27.1	26.4	26.3
CH9	Roadside	Diffusion Tube	100	100	25.0	29.0	28.0	28.7	30.5	30.7	28.1	27.8	25.5	27.2	26.8	23.6	24.2
PWLL1 ⁽⁵⁾	Roadside	Diffusion Tube	100	100													25.5
PWLL2 ⁽⁵⁾	Roadside	Diffusion Tube	100	100													26.5
PWLL3 ⁽⁵⁾	Roadside	Diffusion Tube	100	100													29.9
PWLL4	Roadside	Diffusion Tube	100	100													21

Site ID	Cita Tuna	Monitoring Tune	Valid Data Capture for	Valid Data					NO2	Annual I	Mean Conc	entration	(µg/m³) (3)				
Site iD	Site Type	Monitoring Type	(1)	(%) ⁽²⁾	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Annual Bia	is Adjustment Factor (d	diffusion tubes only) ⁽⁴⁾		0.84	0.85	0.84	0.88	0.89	0.94	0.95	0.91	0.91	0.92	0.87	0.92	0.93
MM1	Roadside	Diffusion Tube	100	100	39.0	38.5	37.3	36.6	36.9	39.0	34.1	34.9	32.8	33.1	33.9	31.6	30.4
MM2	Intermediate	Diffusion Tube	100	100	31.0	31.7	30.0	31.3	31.7	30.2	29.9	30.0	26.1	26.5	26.9	25.7	23.5
MM3	Kerbside	Diffusion Tube	92	92	30.0	27.8	27.6	30.0	29.8	27.7	26.3	26.3	22.9	23.4	23.9	22.5	21.2
MM4	Kerbside/ Urban Centre	Diffusion Tube	83	83	38.0	37.1	34.6	36.1	34.9	36.7	35.7	29.8	26.0	26.4	25.2	24.1	24.8
MM7	Intermediate	Diffusion Tube	100	100								27.4	24.3	25.3	23.8	22.9	21.5
MM9	Intermediate	Diffusion Tube	92	92								24.7	21.8	23.2	21.5	20.5	18.7
MM11	Roadside	Diffusion Tube	92	92								31.6	26.4	30.2	27.0	29.0	24.6
MM13	Roadside	Diffusion Tube	100	100								35.2	32.5	32.1	35.1	32.5	30.0
MM15	Roadside/ Urban Centre	Diffusion Tube	100	100								32.9	33.1	33.7	32.3	31.8	30.7
MM16	Roadside/ Urban Centre	Diffusion Tube	67	67								24.7	30.0	30.6	27.9	26.6	26.5
MM17	Roadside/ Urban Centre	Diffusion Tube	100	100									22.6	24.5	22.7	21.6	21.6
MM18	Roadside	Diffusion Tube	100	100									26.7	28.1	28.7	25.9	24.1
MM19	Roadside	Diffusion Tube	100	100									29.3	31.2	28.2	30.0	27.6
MM21	Roadside	Diffusion Tube	100	100									32.1	34.6	32.6	32.2	29.8
AB1 ⁽⁵⁾	Kerbside	Diffusion Tube	100	100	34.0	36.5	36.0	38.6	39.4	41.4	37.5	39.3	36.1	38.4	38.0	36.9	35.4
AB2	Roadside	Diffusion Tube	100	100						43.9	36.7	39.1	34.4	35.0	32.7	33.8	31.4
AB3	Roadside	Diffusion Tube	100	100						36.8	30.0	29.0	26.1	26.8	25.4	28.5	27.5

Site ID	Cita Tuna	Monitoring Tune	Valid Data Capture for	Valid Data					NO2	Annual N	Mean Conc	entration	(µg/m³) (3)				
Site ID	Site Type	wontoring type	(1)	(%) ⁽²⁾	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Annual Bia	s Adjustment Factor (d	liffusion tubes only) ⁽⁴⁾		0.84	0.85	0.84	0.88	0.89	0.94	0.95	0.91	0.91	0.92	0.87	0.92	0.93
AB4	Roadside	Diffusion Tube	100	100							27.6	27.8	26.5	26.4	25.5	27.6	25.0
AB5	Roadside	Diffusion Tube	92	92							21.4	19.8	17.2	19.4	18.6	19.0	17.9
AB6	Roadside	Diffusion Tube	100	100							24.3	23.8	22.4	22.4	22.3	21.8	22.0
AB7	Kerbside	Diffusion Tube	50	50													22.6
AB8	Roadside	Diffusion Tube	58	58													20.1
USK1	Roadside	Diffusion Tube	100	100	33.0	32.8	31.1	34.9	32.9	33.0	33.5	34.3	30.1	30.5	31.7	27.2	28.5
USK2	Roadside/ Urban Centre	Diffusion Tube	100	100	37.0	37.2	34.4	40.9	37.0	38.3	37.2	37.3	34.1	34.4	34.7	31.3	31.4
USK3	Roadside/ Urban Centre	Diffusion Tube	100	100	40.0	38.9	35.3	40.6	39.7	41.9	40.3	37.6	32.8	35.1	36.6	32.1	33.3
USK4	Roadside/ Urban Centre	Diffusion Tube	100	100	39.0	39.0	35.4	41.7	40.7	43.5	42.0	40.4	34.1	35.2	35.1	30.4	31.3
USK5	Roadside/ Urban Centre	Diffusion Tube	100	100	49.0	45.6	41.9	45.0	39.7	44.6	43.1	40.9	38.2	37.8	35.2	30.0	30.8
USK6	Roadside/ Urban Centre	Diffusion Tube	100	100	24.0	21.6	20.9	25.6	20.7	22.6	22.2	20.6	19.2	20.8	20.8	19.6	19.3
WS1	Kerbside	Diffusion Tube	100	100											25.8	23.8	23.5
WS2	Roadside	Diffusion Tube	92	92											29.6	27.1	27.8
WS3	Roadside	Diffusion Tube	100	100											21.3	22.6	20.4

Notes: Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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

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

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

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

(4) As required by Technical Guidance, all diffusion tube annual means have been bias adjusted to the National bas adjustment factor. Further details can be found in appendix C. Un-bias adjusted monthly diffusion tube data is presented in Appendix A

(5) The monitoring locations not representative of public exposure, and therefore the results have been distance corrected as per https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html

Figure 2.2 – Trends in Annual Mean NO2 Concentrations

Automatic analyser – (AQMS) nitrogen dioxide smoothed trend line 2005-2019



Trend for Chepstow A48



Automatic analyser – (AQMS) nitrogen dioxide annual mean 2005-2019

Diffusion Tubes trends (all locations)- 2007-2019



Table 2.4 – 1-Hour Mean NO₂ Monitoring Results 2013 - 2019

Site ID	Site Tune	Monitoring Tupo	Valid Data Capture for	Valid Data			NO ₂ 1-Hou	ır Means > 200ı	ug/m ^{3 (3)}		
AQMA Roa	Site Type	wontoring type	Monitoring Period (%) ⁽¹⁾	2019 (%) ⁽²⁾	2013	2014	2015	2016	2017	2018	2019
AQMA	Roadside	Automatic Chemiluminescence	95	95	0	0	2	0	0	0	1
				200µg	g/m³ not to be e	exceeded more	than 18 times/y	ear			

Notes:

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

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

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

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

Table 2.5 – Annual Mean PM₁₀ Monitoring Results 2013-2019

		Monitoring	Valid Data	Valid Data			PM ₁₀ Annual M	ean Concentrati	ion (µg/m³) ⁽³⁾		
Site ID	Site Type	Туре	Monitoring Period (%) ⁽¹⁾	Capture 2018 (%) ⁽²⁾	2013	2014	2015	2016 2017 18 16	2018	2019	
AQMA	Roadside	Automatic BAM	95	95	19	18	17	18	16	18	20
	Ani	nual mean objecti	ve					40µg/m³			

Notes:

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

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

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

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

Figure 2.3 – Trends in Annual Mean PM₁₀ Concentrations

Automatic analyser – (AQMS) PM10 smoothed trend line 2005-2019



Trend for Chepstow A48



Automatic analyser – (AQMS) PM10 annual mean 2005-2019

Table 2.6 – 24-Hour Mean PM₁₀ Monitoring Results 2013-2019

Site ID	Site Ture	Monitoring	Valid Data Capture for	Valid Data			PM10 24-H	our Means > 5	0μg/m ^{3 (3)}		
Site id	Site Type	Туре	Monitoring Period (%) ⁽¹⁾	2019 (%) ⁽²⁾	2013	2014	2015	2016	2017	2018	2019
AQMA	Roadside	Automatic BAM	95	95	4	2	5	1	2	0	7
	24-ł	our mean objec	tive			50µg/	m ³ not to be e	xceeded more	than 35 times/	'year	

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold.**

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

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

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

Table 2.7 – PM_{2.5} Monitoring Results 2013-2019

Cite ID	Cite Turne	Monitoring	Valid Data Capture for	Valid Data		Р	M _{2.5} Annual M	ean Concentra	tion (µg/m³) ⁽³⁾		
Site iD	Site Type	Туре	Monitoring Period (%) ⁽¹⁾	2019 (%) ⁽²⁾	2013	2014	2015	2016	2017	2018 10	2019
AQMA	Roadside	Automatic BAM	97	97	14	14	10	11	10	10	13
	Annı	ual mean limit v	alue					25µg/m³			

Notes:

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

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

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

Figure 2.4 – Trends in Annual Mean PM_{2.5} Concentrations

Automatic analyser – (AQMS) PM2.5 smoothed trend line 2010-2019





Automatic analyser – (AQMS) PM2.5 annual mean 2010-2019



2.3 Comparison of 2019 Monitoring Results with Previous Years and the Air Quality Objectives

2.3.1 Nitrogen Dioxide (NO₂)

Short Term Objective Level

The nitrogen dioxide short term objective level is a one hour mean of $200\mu g/m^3$ not to be exceeded more than 18 times/year. In 2019 there was one, 1-hour period that exceeded 200 $\mu g/m^3$ (203 $\mu g/m^3$). As a such there was no breach of the objective level. The last time there was an exceedance of the 1-hour mean of 200 $\mu g/m^3$ was in 2015, when there were two 1-hour exceedances.

The World Health Organisation guideline value for short-term exposure for nitrogen dioxide is the same as the current objective levels set by the UK and EU.

Long Term Objective Level

There was one exceedance of the NO₂ annual mean objective level of 40 μ g/m³, and this was measured by diffusion tube. The exceedance occurred in the Chepstow AQMA (monitoring reference - CH4) which recorded 42.3 μ g/m³.

Whilst the automatic analyser in the AQMA on Hardwick Hill did not exceed the annual objective level it did reach 39 μ g/m³, which is the highest concentration since 2012, and a 3 μ g/m³ increase over 2018.

The World Health Organisation guideline value for long term exposure for nitrogen dioxide is the same as the current objective levels set by the UK and EU.

In 2018, nitrogen dioxide concentrations in Monmouthshire decreased, including the Chepstow and Usk Air Quality Management Areas. This built upon a decrease in 2016, which stabilised in 2017, over most previous years. Concentrations in 2018 were the lowest they had ever been at most locations.

In 2019 concentrations remained similar to 2018, locations that either increased, or decreased did so by small amounts with a few exceptions.

- 16 locations increased (with a range of $0.1 2.5 \,\mu\text{g/m}^3$)
- 22 locations decreased (with a range of $0.1 4.4 \,\mu\text{g/m}^3$)
- 1 location stayed the same.
- 4 locations were newly installed in 2018 and so had no previous year to compare with
- 2 locations were newly installed mid 2019.

There was one exceedance of the NO₂ annual mean objective level measured by diffusion tube. The exceedance occurred in the Chepstow AQMA (monitoring reference - CH4) which recorded 42.3 μ g/m³. This location decreased slightly from 2018 (42.5 μ g/m³), and is the lowest concertation recorded at the location, which has decreased from 60.3 μ g/m³ in 2012.

Usk & Woodside

For the fifth year in a row, there were no exceedances of the annual mean objective level in the Usk AQMA, and the second year below 36 μ g/m³ (10% of the objective level).

Usk concentrations generally decreased between 2012 and 2015, remained stable until 2017 and decreased in 2018 but increased slightly in 2019.

- 6 locations increased (range of 0.1-1.3)
- 3 locations decreased (0.3 2.2)

The highest location in 2019 was Usk 3 at 33.3 μ g/m³. The highest location between 2007 and 2019 was Usk 5 in 2007 at 49 μ g/m³. The lowest concentration in Usk and Woodside in 2019 was 19.3 μ g/m³ (Usk 6).

Historically the highest concentrations have been recorded in the middle of Bridge Street at locations Usk 4 and Usk 5, which suffers from a canyon effect, and had a congestion problem from vehicles parked on double yellow lines and wait times for larger vehicles to cross the bridge. However, since 2017 Usk 3 and Usk 2 have all recorded higher concentrations than USK 4 and Usk 5. These locations are near the junction with Abergavenny Road. It is thought

that the improvement in double yellow line enforcement, and the implementation of the Lorry Watch scheme has meant that congestion has improved through Bridge Street.

The three tubes in Woodside which were installed in 2017 have all below the objective level. The highest reading for all tubes was 29.6 μ g/m³ in 2017. This part of Usk is not at risk of exceeding the nitrogen dioxide objective level, however monitoring is continuing in 2020. The highest concentration in this area in 2019 was 27.8 μ g/m³.

Chepstow & Pwllmeyric

For the fifth year in a row, there was only one location that exceeded the annual mean objective level in the Chepstow AQMA. In past years, there have been three locations that were in exceedance.

The diffusion tube data indicated that concentrations decreased from 2012 until 2015 remained stable until 2017, decreased in 2018 and increased slightly in 2019. The automatic analyser showed a decrease from 2008 to 2018, with concentrations remaining somewhat stable between 2015 and 2018 of between 35 and $37\mu g/m^3$. However, there was a 1.0 $\mu g/m^3$ increase in 2018 up from 35 in 2016 and 2017 to 36 in 2018, and a further 3 $\mu g/m^3$ increase in 2019 to 39 $\mu g/m^3$, which is the highest concentration since 2012.

The one exceedance still occurring is located at CH4 (Hardwick Hill). This location has exceeded the annual mean objective level every year since 2007.

CH4 increased concentration between 2007 and 2012 to a high of 60.3 μ g/m³. However, until 2018 it steadily decreased in concentration to the low 50's between 2015 and 2017. In 2018 there was a large decrease (by 8.6 μ g/m³) to 42.5 μ g/m³, and then further decreased slightly in 2019 to 42.3 μ g/m³.

The other two locations in Chepstow that have exceeded in the past are the automatic analyser, which last exceeded in 2011 and diffusion tube CH6 (Hill House) which last exceeded in 2014. CH6 has reduced from a high of 42.6 μ g/m³ in 2012 to its lowest concentration of 34.3 μ g/m³ in 2018.

Of note in Chepstow is CH5 (Ashfield House, Mount Pleasant which is located opposite the AQMS). This location increased the most of all diffusion tubes between 2018 and 2019, by 2.5 μ g/m³ to 26 μ g/m³. Whilst significantly below the objective level, the 2.5 increase does reflect the increase seen on the other side of the road (Hardwick Hill) at the AQMS which increased by 3 μ g/m³. The difference in concentrations - (26 μ g/m³ compared to 39 μ g/m³ at the AQMS) is due to the AQMS is on the pavement roadside, whilst Ashfield House is set back 14 meters from the road and is protected by a garden wall/garage wall.

CH2a in Chepstow is a kerbside location and not representative of public exposure, therefore the results have been distance corrected as per <u>https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html</u>

In October 2018 four diffusion tubes were installed in Pwllmeyric alongside the A48, south west of the Chepstow AQMA. Three of the tubes were located on lampposts near the roadside, and adjusted back to the nearest residential properties. One tube was installed on the downpipe of a house.

Concentrations at nearest receptors were all below the objective level in 2019, with the highest recording at 29.9 μ g/m³.

The range of concentrations in Chepstow & Pwmlleyric in 2019 were 20.1 μ g/m³ (CH1) to 42.3 μ g/m³ (CH4).

Monmouth

Within Monmouth, monitoring is undertaken along the A40 and within the town centre. Concentrations over the last seven years have generally decrease and then stabilised. For example, one of the longer-term monitoring locations (MM1 – Wyebridge Street) reached its highest concentration in 2012 of 39 μ g/m³, but since reduced and stabilised at 33-34 μ g/m³ up until 2017 but decrease to 30.4 in 2019.

Of the less well established locations (installed in 2014 and 2015), the majority decreased in 2017 with the exception of MM13 (Pike House) which increased by almost 3 μ g/m³ to 35.1 μ g/m³, however decreased in 2018 to 32.5, and to 30 μ g/m³ in 2019.

Monitoring location MM11 (Fence of Monmouth School), is located next to the School Playground, and therefore installed to indicate the possibility of an exceedance of the short term (1-hour nitrogen dioxide objective level of 200 μ g/m³ not to be exceeded more than 18 times a year. Guidance from DEFRA, based on studies states that if the annual mean objective is below 60 μ g/m³, the 1-hour objective is unlikely to be exceeded, and as MM11 has consistently been in the mid 20 to low 30's since installation in 2014, MCC are confident that the 1-hour objective level is not being exceeded at this location.

In Monmouth all locations apart from MM11 (Boys School Fence) decrease between 2017 and 2018, and in 2019 all locations again decreased apart from MM4 (Monnow Street/St Johns St junction) which increased by $0.7 \ \mu g/m^3$.

The range of concentrations in Monmouth in 2019 was 18.7 μ g/m³(MM9) to 30.7 μ g/m³ (MM15).

Abergavenny

Monitoring in Abergavenny is mainly located along the A4143 (Merthyr Road), and potential issues have been identified at a pinch point between Llanfoist Bridge and Llanfoist Roundabout.

AB1 is not in an Air Quality Management Area, although due to increases recorded at the location since 2010, and as a result of an exceedance in 2012 $(41.5\mu g/m^3)$ additional monitoring locations were set up along Merthyr Road in 2012 and 2013 and have remained in place since those dates. The cause of the increase is possibly due to the additional housing, and retail development that has occurred in Llanfoist and on Merthyr Road in recent years. There could also have been some impacts in recent years with the Heads of The Wales (A465) duelling programme that has been occurring between Govilon and Brynmawr, and before that in Llanfoist.

AB1 is located on the north bound side of the road next to a bridge across the river Usk. This is the only foot and road bridge across the river to connect Llanfoist and Abergavenny. It is also next to a roundabout that provides access to a Supermarket, Llanfoist and the A465 itself, and there can be congestion at peak traffic times on the short stretch of road between the bridge and the roundabout.

On that stretch of road there is one house on the northbound side and a Kwik Fit garage, and a Public House and a row of cottages comprising seven residential properties and one business on the southbound side. There is another diffusion tube monitoring location on the southbound side of the road (AB2) that was installed in 2012.

In 2017 AB2 (which is opposite AB1) recorded its lowest concentration at $32.7\mu g/m^3$, in fact all diffusion tubes (AB2, AB3, AB4, AB5, AB6) located on Merthyr road with the exception of AB1 were lower in 2017 than any other year since installation (2012 or 2013).

In 2018 four of the six locations increased from 2017 and two decreased. This was unusual for the county as outside of Abergavenny only 3 other location increased.

However, AB1, which is the location of most concern, did decrease in 2018, from 38.0 in 2018 to 36.9 in 2018. Of the other five locations, only AB2 (opposite side of the road to AB1) recorded concentrations over $30 \ \mu g/m^3$. AB2 was 33.8 and the other four ranged between 19 and 28.5.

In 2019 all locations apart from AB6 decreased from 2018 concentrations. AB6 incerased by $0.2 \ \mu g/m^3 22.0 \ \mu g/m^3$.

AB1 decreased to 35.4 μ g/m³ which is its lowest concentration since 2007.

The range of concentrations in Abergavenny in 2019 was 17.9 μ g/m³ (AB5) to 35.4 μ g/m³ (AB1)

In June 2019 two additional monitoring locations were installed on Park Road (A40) to the north of the town centre, due to a change in road alignments through the town, and the opening of a Magor superstore on that road. The six-month average is 22.6 and 20.1 μ g/m³,

therefore its likely that these locations will not exceed an annual average, however monitoring is continuing into 2020.

In January 2020 AB6 was removed due to seven years of consistently low concentrations (range of 21.8 to 24.3 μ g/m³), and instead a location was established around the corner from it on the busier Brecon Road/A40.

2.3.2 Particulate Matter (PM₁₀)

In 2019 there were no exceedances identified of the PM_{10} short term or long-term objective levels. PM_{10} concentrations have never exceeded the short- or long-term objective levels.

Short Term Objective Level

The PM_{10} short term objective level is: - Not to exceed an average of 50 μ g/m³ in a 24 hour period more than 35 times a year.

In 2019 Chepstow exceeded 50 μ g/m³ in a 24-hour period 7 times. As such there was no breach of the 24-hour objective level in the year.

However, seven days over 50 μ g/m³ is the most recorded at Chepstow. The previous highest was five days in 2015. There were no days of exceedance in 2018, therefore 7 days in 2019, whilst low in comparison to the 35 days that can be exceeded before a breach, is an unusual increase.

Long Term Objective Level

The PM $_{10}$ long term objective level is: -An annual average of 40 $\mu g/m^{\cdot}$

There has never been an exceedance of this objective level at Chepstow AQMS.

Between 2005 and 2015 PM10 annual average concentrations steadily decreased year on year. There was a 1 μ g/m³ increase in 2016, but then a further decrease in 2017 when concentrations were at their lowest at 16 μ g/m³. However, in 2018 there was an increase to 18 μ g/m³ and then again in 2019 to 20 μ g/m³. Therefore, there appears to be some evidence of an increasing trend in concentrations.
In addition, whilst at only half the national and EU objective level, $20 \ \mu g/m^3$ is the World Health Organisation's guideline concentration for an annual mean.

2.3.3 Particulate Matter (PM_{2.5})

In 2018 there were no exceedances identified of the $PM_{2.5}$ limit value at the Air Quality Monitoring Station on Hardwick Hill, in the Chepstow Air Quality Management Area. $PM_{2.5}$ concentrations have never exceeded the EU limit Value. The highest concentration recorded was 19 µg/m³ in 2010. Concentrations reduced to 14 µg/m³ and then 12 µg/m³ and have been steady since 2015 at 10 (2015), 11 (2016) and 10 µg/m³ (2017 and 2018).

PM2.5

In 2019, there were no exceedances of the PM_{2.5} annual limit value (25 μ g/m³), however the Chepstow AQMS did exceed the World Health Organisation's guideline concentration of 10 μ g/m³. The last time Chepstow exceeded this level was 2016. As with PM10 there has been a clear decrease in PM2.5 concentrations since 2010 which were at 19 μ g/m³. Since 2015, however the decrease stopped, and concentrations remained level at 10 or 11 μ g/m³. Therefore an increase from 10 μ g/m³ in 2018 to 13 μ g/m³ in 2019 is of concern, but is not yet evidence of a trend.

2.4 Summary of Compliance with AQS Objectives as of 2019

Monmouthshire County Council has examined the results from monitoring in the County.

Concentrations within the Chepstow AQMA still exceed the objective for long-term nitrogen dioxide, despite a large decrease between 2012 and 2019, therefore this AQMA will remain.

Concentrations of nitrogen dioxide have not exceeded within the Usk AQMA for five years, however MCC does not intend to revoke the AQMA until five years of non-exceedance of 36 μ g/m³ have been achieved (to account for the stated 10% uncertainty with diffusion tube monitoring).

Most of the 2019 monitoring locations were at or close to their lowest ever recorded, and there appears to be a countywide trend of improving air quality. The exception to this is at the AQMS on Hardwick Hill, Chepstow, where concentrations of nitrogen dioxide, PM10 and PM2.5 (both long term, and shorty term) increased in 2019.

3. New Local Developments

There are no specific new local developments confirmed that have not already been identified in previous reports.

There is concern that new developments in the south of the County and in Forest of Dean will impact on the Chepstow AQMA, and surrounding area. There are several developments proposed, and the Local Development Plan is being revised.

Air Quality is a consideration in the LDP and planning applications.

There is also concern regarding the impact the removal of the Severn Bridge Tolls will have on the south of the County, with increased commuting from Chepstow to Bristol, as people who work in Bristol purchase the lower priced houses in the Chepstow area. Transport studies are being undertaken by MCC and Welsh Government to determine the likely impact.

3.1 Road Traffic Sources (& other transport)

There are no newly identified road traffic sources since the last assessment.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

There are no additional industrial, fugitive, or uncontrolled sources identified.

3.3 Planning Applications

There are no new approved planning applications that have not already been identified in previous assessments.

3.4 Other Sources

There have been no Other Sources (bonfires, firework displays, domestic wood burners) that have contributed to identified air pollution.

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

Monmouthshire County Council confirms that all the following have been considered:

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

4. Conclusions and Proposed Actions

4.1 Conclusions from New Monitoring Data

This Progress Report identified one exceedance of the nitrogen dioxide annual mean objective level in Monmouthshire. The exceedance was on Hardwick Hill, Chepstow which is one of the two declared AQMAs.

The increase on Merthyr Road in Abergavenny identified in 2017, (due to elevated countrywide nitrogen dioxide levels in January and February 2017) did not re-occur in 2018 or 2019. Therefore, an AQMA will not yet be declared, but monitoring will continue.

There were no other exceedances of nitrogen dioxide in Monmouthshire, including in the Usk AQMA. The Usk AQMA will remain in place however, until five clear years below $36 \ \mu g/m^3$ (10% uncertainty margin of error) of compliance have been achieved. Generally, nitrogen dioxide diffusion tube concentrations reduced from 2012 until 2018 and remained consistent in 2019. However nitrogen dioxide, PM₁₀ and PM_{2.5} concentrations reduced between 2011 and 2015, remained consistent until 2018, but increased in 2019.

4.2 Conclusions relating to New Local Developments

There were no additional confirmed local developments, over those identified in the 2017 Progress Report.

4.3 Other Conclusions

Air quality appears to be improving in the two Air Quality Monitoring Areas; however the two Air Quality Action Plans will continue to be progressed through regular meetings of the Air Quality Steering Groups.

4.4 **Proposed Actions**

- No changes are proposed to the two AQMAs.
- Extended monitoring will continue in Abergavenny, Monmouth, Pwllmeyric and Woodside.
- Action plan Steering Group meetings will continue to be held to attempt to achieve progress with the proposed measures and identify additional measures to improve air quality.
- A School air quality-monitoring project is being undertaken in 2018, 2019 and 2020 and will be reported on in next year's report.
- The Air Quality Progress Report will be completed in 2021.

References

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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

Glossary of Terms

Appendix A: Monthly Diffusion Tube Monitoring Results

Table A.1 – Full Monthly Diffusion Tube Results for 2019

	NO ₂ Mean Concentrations (μg/m ³)														
													Annual Mean		
Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Νον	Dec	Raw	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
CH1	34.1	25.8	23.3	16.9	15.1	17.3	16.4	17.8	17.8	22.0	28.3	24.6	21.6	20.1	20.1
CH2a	45.8	Note1	32.4	43.9	31.4	36.3	32.1	30.7	35.9	37.8	48.9	48.6	38.5	35.8	28.4
CH3	37.2	37.0	30.5	30.1	26.3	26.3	24.1	М	29.1	30.3	33.9	35.7	30.9	28.8	28.8
CH4	41.1	Note1	44.3	45.9	44.1	43.9	47.2	51.9	47.0	43.8	48.5	42.8	45.5	42.3	42.3
CH5	39.3	35.4	30.3	16.2	22.4	19.1	23.1	27.6	25.8	30.4	27.9	38.2	28.0	26.0	26.0
CH6	47.4	47.2	34.0	40.8	27.2	31.4	27.3	32.1	34.0	36.6	46.1	43.6	37.3	34.7	34.7
CH7	31.7	34.6	23.2	30.4	23.4	24.7	21.5	20.2	25.7	26.3	33.9	33.2	27.4	25.5	25.5
CH8	33.7	33.0	27.8	32.3	24.5	25.7	23.5	22.7	26.6	М	30.1	31.7	28.3	26.3	26.3
CH9	29.2	30.1	24.3	26.6	23.6	24.9	22.8	23.8	24.3	27.8	24.8	29.5	26.0	24.2	24.2
AQ1	46.5	44.4	48.0	35.2	35.2	35.0	34.9	36.7	34.5	34.7	41.6	45.2	39.3	36.6	36.6
AQ2	51.1	48.4	45.6	36.4	34.8	38.2	34.3	34.9	37.6	36.3	46.7	46.6	40.9	38.0	38.0
AQ3	46.2	45.2	42.4	33.3	33.8	34.4	31.7	33.7	37.7	40.3	31.5	42.6	37.7	35.1	35.1
PWLL1	61.5	64.3	56.2	46.8	48.8	41.9	46.4	51.5	50.1	45.3	56.5	54.6	52.0	48.3	25.5
PWLL2	39.3	42.7	33.6	38.5	29.2	28.0	29.2	28.2	30.9	29.3	36.9	24.1	32.5	30.2	26.5
PWLL3	58.3	55.8	50.4	42.0	40.7	36.9	46.0	43.5	45.2	47.1	49.4	37.9	46.1	42.9	29.9
PWLL4	29.1	25.8	20.4	27.1	20.6	21.6	17.8	16.3	21.1	22.9	27.1	21.5	22.6	21.0	21.0
	40.0	40.7	32.0	33.1	29.7	27.3	30.3	31.9	31.7	29.3	33.8	32.5	32.7	30.4	30.4
	32.5	29.9	20.5	32.9	19.2	25.1	21.7	24.0	21.8	23.2	28.5	24.3	25.3	23.5	23.5
IVIIVI3	29.2	30.3	19.5	22.7	19.9	19.8	17.7	18.8	22.2	22.7	28.3		22.8	21.2	21.2
1011014	34.4	29.3	23.3	24.0	22.5	10.2	20.5	1/1	21.0	30.3	33.8 25.9	30.4	20.0	24.8	24.8
	20.1	30.1	19.8	27.7	21.4	19.3	19.4	22.3	21.9	21.0	25.8	23.0	23.2	21.5	21.5
	24.5	23.3	17.0	42.4	25.4	24.2	25.1	21.4	19.0	10.2	22.3	19.9	20.1	10.7	18.7
	22.1	23.9	22.2	42.4	25.4	24.5	23.1	21.4	22.1	29.2	22.7	22.4	20.5	24.0	24.0
	20 E	24.1	21.0	20.9	22.0	20.9	20.0	20.0	24.0	20.1	26 F	20.5 22 E	22.5	20.7	20.7
IVIIVI15	38.5	34.8	31.8	30.8	30.6	33.5	29.9	28.7	34.0	34.0	30.5	33.5	33.1	30.7	30.7

	NO₂ Mean Concentrations (µg/m³)														
													Annual Mean		
Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
MM16	31.1	32.1	М	29.4	24.3	24.0	24.3	М	М	28.3	34.2	М	28.4	26.5	26.5
MM17	33.2	27.5	20.8	24.5	18.1	18.6	16.4	18.4	21.5	30.3	26.0	24.0	23.3	21.6	21.6
MM18	32.8	33.0	23.1	28.4	25.1	17.0	23.4	26.4	27.1	25.4	25.7	24.2	26.0	24.1	24.1
MM19	42.8	30.2	28.7	36.6	26.3	26.1	26.7	21.9	28.9	28.4	36.1	23.6	29.7	27.6	27.6
MM21	41.3	29.7	31.3	35.3	30.3	29.3	27.8	20.5	32.2	39.0	40.4	27.0	32.0	29.8	29.8
AB1	48.7	52.4	45.3	40.9	31.0	30.1	36.2	38.4	35.3	34.5	42.6	46.9	40.2	37.4	35.4
AB2	48.0	41.5	37.6	37.3	28.0	26.8	28.5	30.9	28.8	26.6	39.7	31.8	33.8	31.4	31.4
AB3	36.2	31.3	28.4	29.2	29.6	26.1	28.4	26.0	28.9	30.7	28.1	31.3	29.5	27.5	27.5
AB4	34.1	31.5	24.4	32.5	23.1	23.0	22.9	15.4	26.4	19.5	38.5	31.2	26.9	25.0	25.0
AB5	24.0	20.6	15.6	21.5	18.3	16.5	14.3	14.2	Note 3	23.2	23.7	19.5	19.2	17.9	17.9
AB6	27.7	29.2	23.7	24.7	18.6	19.5	18.1	17.0	21.9	30.5	24.8	28.1	23.6	22.0	22.0
AB7						21.2	20.8	21.1	Note 3	20.0	32.2	30.6	24.3	22.6	22.6
AB8						17.6	19.0	21.1	19.0	30.6	19.7	24.2	21.6	20.1	20.1
USK1	42.8	32.3	33.8	29.3	28.9	26.1	25.8	26.1	31.1	31.6	30.5	29.4	30.6	28.5	28.5
USK2	40.6	38.9	33.8	36.0	31.6	29.7	27.8	28.8	31.8	34.6	37.4	34.7	33.8	31.4	31.4
USK3	45.3	41.5	37.4	33.1	32.8	31.0	33.5	29.3	33.7	33.3	42.5	36.0	35.8	33.3	33.3
USK4	46.4	43.7	34.2	37.5	32.5	24.5	28.4	26.4	32.2	28.0	39.8	30.7	33.7	31.3	31.3
USK5	44.4	43.0	36.4	32.3	31.0	26.8	30.9	26.3	33.3	19.8	39.9	33.5	33.1	30.8	30.8
USK6	30.8	23.4	21.5	21.8	16.8	15.7	16.6	14.9	18.2	19.1	28.5	21.8	20.8	19.3	19.3
WS1	37.4	26.1	28.0	24.2	23.0	21.3	22.0	21.0	25.3	22.5	29.9	21.9	25.2	23.5	23.5
WS2	38.0	33.9	29.8	27.5	29.7	25.1	28.2	26.6	28.1	Note 5	31.7	29.9	29.9	27.8	27.8
WS3	31.4	22.7	20.7	27.2	20.7	17.9	18.2	15.3	20.8	19.9	26.4	21.6	21.9	20.4	20.4
IB	0.20	0.20	0.12	0.12	0.13	0.16	0.10	0.10	0.08	0.07	0.00	0.41			
Installed	09/01/19	06/02/19	06/03/19	03/04/19	01/05/19	05/06/19	03/07/19	07/08/19	04/09/19	02/10/19	06/11/19	04/12/19			
Removed	06/02/19	06/03/19	03/04/19	01/05/19	05/06/19	03/07/19	07/08/19	04/09/19	02/10/19	06/11/19	04/12/19	08/01/20			
Days	20	20	20	20	25	20	25	20	20	25	20	25			
Exposed	28	28	28	28	35	28	35	28	28	35	28	35			
Exposed	672	672	672	672	840	672	840	672	672	840	672	840			

Notes: Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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

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

(2) Distance corrected to nearest relevant public exposure.

*The concentrations used in the report for annual mean are those found in the final column (Distance Corrected to Nearest 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 5 years.

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

Air Quality Objectives

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

The table shows the objectives in units of microgrammes per cubic metre μ g/m3 (milligrammes per cubic metre, mg/m3 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	า
Wales	

Dellutent	Air Quality Objec	Date to be	
Pollutant	Concentration	Measured as	achieved by
Nitrogen	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Dioxide (NO ₂)	40μg/m ³	Annual mean	31.12.2005
Particulate	50µg/m ³ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Watter (PWI10)	18µg/m³	Annual mean	31.12.2010
Particulate Matter (PM _{2.5})	10µg/m³	Annual mean	31.12.2020
	350μg/m³, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	125μg/m³, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266µg/m³, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	Benzene 3.25μg/m ³		31.12.2010
1,3 Butadiene 2.25µg/m ³		Running annual mean	31.12.2003
Carbon 10.0mg/m ³		Running 8-Hour mean	31.12.2003
Lead	0.25µg/m ³	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

Diffusion Tube Bias Adjustment Factors

Since May 2010 Monmouthshire County Council has used diffusion tubes prepared and analysed by Gradko International Limited using 20% TEA in Water.

The Bias Adjustment Factor used in this report of 0.93 was for Gradko from the 03/20 (April 2020) spreadsheet, which used the results of 27 studies including the one undertaken by Monmouthshire County Council (see below – Local Co-location Studies).

The final Spreadsheet (09/20 from September 2020) for Gradko for the 2019 calendar year is 0.91. This was based on 31 studies including the one undertook by Monmouthshire County Council.

http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Factor from Local Co-location Studies

Monmouthshire County Council undertakes its own triplicate co-Location study to obtain a Local Bias Adjustment Factor, and that factor is shared with other authorities via the National Bias Adjustment Factor database.

A local bias adjustment factor (BAF) has been calculated for the Hardwick Hill, Chepstow automatic site based on data from 12 months. The triplicate tubes in all months showed good precision with each other (with a Coefficient of Variation below 20% in each month (CV range was 2-19.0), and 100% data capture. The calculations are shown in Table C.1

Table C.1: Local Bias Adjustment Factor			
Triplicate Diffusion Tube mean	39.3		
Automatic Monitor mean	39		
Bias Adjustment Factor	0.99		
With 95% confidence interval	0.85-1.17		

Discussion of Choice of Factor to Use

The national bias adjustment factor based on the co-location studies of 27 local authorities who submitted by March was 0.93, and 0.91 in September from 31 local authorities, whilst the local bias adjustment factor based on the Chepstow co-location study was 0.99. The March national factor was used, as it included 27 studies of good precision and was closer to the Chepstow co-location study than the September version.

Below is a comparison of using the three different BAF for the highest location diffusion tube in each town). The second highest concentration after CH4 in the county was AB1. Using the highest BAF (0.99) would not have resulted in additional breaches of the objective level and using the lowest (0.91) would not have resulted in the one exceedance at CH4 dropping below the objective level.

Location/Reference	0.91 (September National	0.93 (March National	0.99 (Chepstow Local	
Chepstow - CH4	41.4	42.3	45	
Monmouth -MM15	30.1	30.7	32.7	
Abergavenny – AB1	34.7	35.4	37.7	
Usk – USK3	32.5	33.3	35.4	

PM Monitoring Adjustment

The particulate monitoring equipment are BAM's and 2019 was the first full year of their use (they were installed October 2018) therefore do not require adjustment.

Short-Term to Long-Term Data Adjustment

All automatic monitoring had data capture of greater than 75%, therefore Annualisation (using a calculation to adjust the short-term data to long term data) is not required.

Diffusion Tube Nitrogen Dioxide Annualisation

Diffusion tube Annualisation has not been undertaken in 2019, as all locations had data capture above 75% apart from the two new tubes installed in Abergavenny (AB7 and AB8 which were installed in June), however concentrations were very low (22 and 20 μ g/m³) that a breach of the annual mean is not likely. Table C.2 is not used. The four Pwllmeyric locations were installed in October 2018 to ensure they were ready for January 2019, and are therefore not included in the overall conclusions for this 2019 APR.

Table C.2 –	Short-Term to	Long-Term	Monitoring	Data Ac	liustment
		LONG ICINI	wontoning		gastificite

Site	Site Type	Annual Mean (µg/m³)	Period Mean (µg/m³)	Ratio				
	Average							

QA/QC of Automatic Monitoring

The PM₁₀ automatic monitor and Nitrogen Dioxide analyser has been part of the Automatic Urban and Rural Network (AURN) since January 2008.

The PM_{10} analyser was upgraded to a FDMS TEOM analyser in February 2010. At the same time a $PM_{2.5}$ TEOM FDMS analyser was installed and became part of the AURN. In September 2018, the TEOM FDMS analysers were replaced with two BAM analysers (Beta Attenuation Monitors).

The nitrogen dioxide Chemiluminescence analyser was upgraded to a ML 2041 NOx Chemiluminescence Analyser in January 2012, and replaced with an API API T200 NOx gas analyser on 7th November 2019.

The nitrogen dioxide analyser is serviced by Air Monitors Ltd and the Particulate Matter analysers are serviced by Enviro Technology. Both are on a six-monthly service schedule. Automatic calibrations take place daily and a manual calibration check and filter change is carried out every 2 weeks. Ricardo-AEA undertake a 6-monthly audit of the site.

The data is collected and ratified by Ricardo-AEA Technology on behalf of the Welsh Air Quality Forum (WAQF).

QA/QC of Diffusion Tube Monitoring

Monmouthshire County Council uses Gradko for the diffusion tube supply and analysis. Gradko is assessed as part of the AIR-PT/WASP (Workplace Analysis Scheme for Proficiency) operated by the Health and Safety Laboratory (HSL) and demonstrated satisfactory performance for 75% of the results submitted between January – February 2019 and 100% of the results submitted for each of the April-May, July-August, and September-November rounds as reported at the linked website :-

https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

A travel blank tube accompanies the exposed tubes and is kept in a refrigerator during the exposure period and Gradko keep an unexposed laboratory blank. The nitrogen dioxide concentrations reported in this report are not blank subtracted, however. The travel blank concentrations for 2019 were: -

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
0.20	0.20	0.12	0.12	0.13	0.16	0.10	0.10	0.08	0.07	0.00	0.41

Precision of the co-located diffusion tubes at the Chepstow Air Quality Monitoring Station were all good, each with a coefficient variation of less than 20% (maximum was 19% for November, the second highest was 8%)

Appendix D: AQMA Boundary Maps



Figure D.1 – Usk AQMA Boundary Map



Figure D.2 – Chepstow AQMA Boundary Map

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
мсс	Monmouthshire County Council
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10μm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5 μ m or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide
WG	Welsh Government