



2021 Air Quality Annual Status Report (ASR)

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

Date: June, 2021

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Executive Summary: Air Quality in Our Area

Air Quality in Telford and Wrekin Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

Air quality in the borough of Telford and Wrekin is overall very good however there are locations where pollutants build close to the kerbside of busy roads. The main pollutant of concern in the borough is nitrogen dioxide (NO₂) which is mainly linked to road traffic emissions.

The borough of Telford and Wrekin is a predominantly rural area on the north-eastern edge of Shropshire. The borough has a population of 166,641 (2011 census, Office for National Statistics) covering 29,000 hectares with its major settlement being Telford, which incorporated the existing towns of Dawley, Madeley, Oakengates and Wellington upon its construction as a 'new town'.

The M54 traverses the borough across the main central urban area, and the majority of the main roads within the borough are also focussed in this area, including the A41, the A518, the A5, A442, A4169, and the A4640. There is a main railway line crossing the centre of the borough, as well as an unused rail freight terminal.

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Air quality appraisal: damage cost guidance, July 2020

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

In 2020, there were 11 Part A2 permitted processes and 53 part B permitted processes (including petrol filling stations, dry cleaners and mobile plant) within the borough, which are regulated for emissions to the environment by Telford and Wrekin Council. There are more permitted sites that are regulated by the Environment Agency.

Monitoring undertaken for 2020 shows that air quality within the borough is below the national objective levels set out in law. Historically there has been a hotspot for higher pollutant levels for nitrogen dioxide at the Mill Bank in Wellington, near to the Watling Street Junction and again at Coach Central, the bus station in Telford Town centre. Neither of these sites are considered to expose the public to long term exposure of pollutants such as a school or a person's home would. During 2020 there has been a decrease in levels of pollutants at both of these areas this is attributable to the travel restrictions imposed by the Coronavirus restrictions in place throughout 2020.

Telford and Wrekin do not have any AQMAs but there is an Air Quality Strategy, which ensures that air quality is given due consideration and demonstrates the Council's commitment to air quality review and management.

Many methods employed to improve air quality are council wide initiatives and cross over a number of teams including Public Protection, Public Health, Transport and Highways.

Actions to Improve Air Quality

Telford and Wrekin Council is committed to ensuring that the air quality within our borough remains wholesome, as previous monitoring has indicated.

Additional monitoring and Traffic Management Measures

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of

⁵ Defra. Clean Air Strategy, 2019

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

In 2017, the Council introduced additional diffusion tubes at four locations that represent relevant exposure in close proximity to Coach Central near the town centre where NO₂ concentrations were identified as some of the highest in the borough.

After liaising with DEFRA, we understood that the individual diffusion tube located at Coach Central in 2016 monitoring did not represent relevant exposure based the NAQO. These additional four monitoring locations were Withywood Drive, Lawnswood, Deercote (top) and Deercote (bottom). Further monitoring in these locations show that relevant exposure is well below the NAQO NO₂ Annual Mean Concentration of 40 µg/m³ (Appendix E). As a result, it was decided that the four diffusion tubes in this area should be removed in 2020 with no further review or measures deemed necessary at these locations. This has allowed for resources to be focused at priority locations.

In 2016, a further five diffusion tubes were introduced on each of the roads that intersect the B5061 Junction by Watling Street, Wellington. This was to support the pre-existing monitoring location which was introduced in 2016. These locations were Mill Bank, Holyhead Road, Watling Street, Dawley Road and Watling Street/ Regent Street Junction. This decision was made as NO₂ concentrations in 2017 raised concern. The Council has obtained further data from these monitoring locations which identified Mill Bank and Watling Street/ Regent Street Junction, two of the roads that intersect this junction, as having the highest NO₂ levels within the borough. Although the NAQO was not exceeded, this has prompted the Council to take further action.

The actions taken so far at the B5061 Junction have included Intelligent Traffic Management through the introduction of intelligent signalling and also anti-idling signage. The introduction of the intelligent signalling aims to improve traffic flow at the junction by allowing the traffic lights to prioritise the roads at the intersection with the most traffic. This is to facilitate regular traffic flow and reduce the amount of time vehicles spend in this location. The aim of the anti-idling signage is to encourage motorists to turn off their engines whilst stationary at the junction in a bid to reduce preventable emissions. It is envisaged this will change motorist's behaviour.

These measures have been in place for 3 years and monitoring results from these locations are still fluctuating annually; as a result it does not provide strong evidence of improvements in NO₂ concentrations at this location as a direct result of such measures.

The Council will continue to monitor at these locations to understand if the measures introduced are having any long-term impact. It has been difficult to assess the impact of these measures over the past 12 months due to the travel restrictions imposed by the Coronavirus regulations meaning that there has been less use of vehicles and thus lower levels of pollutants.

Schemes and funding

The Council have taken measures to encourage the use and make more accessible public transport as an alternative to private vehicle use. The Council have worked with owners of Telford Shopping Centre and secured Local Enterprise Partnership Growth Deal funding which has been used to fund a new bus station at Telford Shopping Centre which is now complete.

The Council also have a Cycling and Walking Strategy which was implemented in September 2017. The strategy was introduced in recognition of Telford's walking and cycling infrastructure to encourage residents and those who work in the borough to utilise this infrastructure while promoting the health benefits of cycling and walking. It is intended to support the vision of the overarching Local Transport Plan for 2011-2026. The strategy can be accessed via

http://www.telford.gov.uk/downloads/file/7995/cycling_and_walking_strategy

The implementation of the updated action plan of the Cycling and Walking strategy will complement the delivery of the borough's Local Transport Plan for 2011-2026; furthermore by encouraging more people to take regular exercise will contribute to people in Telford and Wrekin enjoying healthier, happier and longer lives.

Cabinet adopted the Ultra-low vehicle emission strategy in August 2018 which sets out how the Council will support and encourage growth in the ULEV market. The strategy's action plan will guide priorities and funding to those measures that are considered to be the most effective methods to encourage and support ULEVs.

Conclusions and Priorities

Monitoring data from 2020 has shown overall that air quality in relation to NO₂ concentrations is fairly stable. NO₂ concentrations are not completely stable and do fluctuate slightly year to year due to many influencing factors i.e. weather conditions and road use, another factor this year has been the impact of the coronavirus travel restrictions, this has seen the concentrations of NO₂ decrease somewhat on previous years monitoring.

Although this year there has been no exceedances of the National Air Quality Objectives, the Council is we are making progress in identifying areas of poorer air quality within the borough through air quality review. The Council's main priorities for the coming year are to continue diffusion tube monitoring for NO₂. The Council will continue to take a pragmatic approach in addressing any further locations identified to have poorer air quality and where necessary liaise with DEFRA. The main aims for the coming year are;

- Continue with parking enforcement across the borough with the intention that parked vehicles do not disrupt traffic flow and cause congestion.
- Continued inspection and maintenance review of the borough cycling and walking routes to identify immediate and longer term improvements as part of the £2.6m Travel Telford Sustainable Transport Fund;
- Continued consideration and engagement with external stakeholders to improving our electric vehicle charging network across the borough; and
- Complete a review of our air quality strategy to include a local emissions strategy, a review of our current LAQM monitoring and a review of planning policy to ensure that Air Quality is appropriately considered during development.

The Council will continue to review air quality at existing locations where pollutant levels are being, or are likely to be exceeded for example at Mill Bank in Wellington.

Local Engagement and How to get involved

To reduce air pollution and contribution to clean air everyone living, working and visit the area has the ability to contribute. Every individual and business can promote clean air and help make a difference by considering the following actions:

- Consider using walking, cycling or using public transport for trips including to school, when moving around the borough
- Utilise walking and cycling route maps (available here https://www.telford.gov.uk/downloads/file/1743/walking_and_cycling_map_of_telford_and_wrekin)
- Consider car sharing where possible
- Consider electric/low emission/hybrid vehicle as an option for your next car purchase.

- When travelling by vehicle, try to utilise less busy and congested routes.
- Switch engine off and don't leave it running when your car is waiting stationary.
- Maintain your vehicle by having it serviced regularly and ensure an optimum tyre pressure

For further information please see the information on Telford and Wrekin's website:

http://www.telford.gov.uk/info/20150/pollution/104/air_quality

https://www.telford.gov.uk/info/20465/walking/3621/cycling_and_walking_strategy

Or contact us by phone on 01952 381818

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1 Local Air Quality Management

This report provides an overview of air quality in the Borough of Telford and Wrekin during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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 likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by the Borough of Telford and Wrekin to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

The Borough of Telford and Wrekin currently does not have any AQMAs but there is a network of diffusion tubes used to monitor the air quality in the Borough. For reference, a map of the Borough of Telford and Wrekin's monitoring locations is available in Appendix D.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Telford and Wrekin Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

Telford and Wrekin Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in the Borough of Telford and Wrekin

Defra's appraisal of last year's ASR concluded the following:

1. The Council have addressed comments from the previous appraisal and have provided a good discussion of NO₂ trends within their administrative area. It is recommended that the Council continue to do this in future reports.
2. Some figures within the ASR could be improved. For example the screenshot of the bias adjustment factor and the map of monitoring locations is quite blurry/pixelated and is quite difficult to read. It would be beneficial if the Council were to update these images with a much clearer version.
3. It is clearly stated at the start of the ASR that the Council do not have an AQMA. However, in the monitoring locations map an AQMA boundary line has been included in the map legend. It is recommended that the Council remove this from their map as it is misleading and suggests that there is an AQMA when there is not.
4. The Council are praised for continuing to implement measures within their administrative area to improve air quality. This is a sign of good practice. Furthermore, the Council have provided updates on the progress of these measures in Table 2.2. This is commended and the Council are encouraged to continue to provide updates on their measures.

All of the above have been included in this year's report.

Telford and Wrekin Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 11 measures are included within Table 2.2, with the type of measure and the progress Telford and Wrekin Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans:

- Telford and Wrekin Ultra-Low Emission Vehicle Strategy 2018 which sets out how the Council will support and encourage growth in the ULEV market. The Action Plan

will guide priorities and funding to those measures that are considered to be the most effective methods to encourage and support ULEVs.

- Telford and Wrekin Local Plan which is the overarching planning policy document for the Borough and forms the basis for decision making process in relation to all planning applications looking forward to 2031, or such a time as it, or elements of it are superseded, whichever comes first.
- Telford and Wrekin Local Transport Plan which covers all forms of travel including car and motorcycle based travel, public transport, walking and cycling.
- Telford and Wrekin Transport Growth Strategy which sets out the transport infrastructure and investment that is required to accommodate future housing, business and population growth within Telford & Wrekin ensuring that Telford retains its competitiveness to attract inward investment, create jobs and improve quality of life for residents and visitors.

Telford and Wrekin Council expects the following measures to be completed over the course of the next reporting year:

- Continued development of UTC, which is a LA funded initiative to improve traffic flow rates and reduce congestion.
- Continued inspection and maintenance review of the borough cycling and walking routes to identify immediate and longer term improvements as part of the £2.6m Travel Telford Sustainable Transport Fund.
- Ensure air quality comments continue to be provided to the development team of the Local Plan to help prioritise potential development sites and highlight methods to ensure future developments do not negatively impact the local air quality.
- Continued consideration and engagement with external stakeholders to improving our electric vehicle charging network across the borough.
- Complete a review of our air quality strategy to include a local emissions strategy, a review of our current LAQM monitoring and a review of planning policy to ensure that Air Quality is appropriately considered during development.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Telford & Wrekin Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance, particularly at

hotspot locations and continue to improve air quality across the Borough of Telford and Wrekin as a while

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Ironbridge Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	2012	2012	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£50k - £100K	Completed	Unknown	No. of people using the service	Implemented	The ironbridge park and ride scheme aims to lower the amount of vehicles entering the Ironbridge Gorge. Unfortunately due to the COVID-19 pandemic the site of the park and ride was utilised as a testing station and therefore the park and ride did not operate in 2020.
2	Watling Street Signal Upgrade	Traffic Management	UTC, Congestion management, traffic reduction	2018	2018	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£10k - £50K	Completed	Unknown	National Objective Level for NO2 not exceeded at location	Implemented	There are no planned changes to this scheme currently
3	Watling Street Anti-idling signage	Traffic Management	Anti-idling enforcement	2018	2018	Telford and Wrekin Council	Local Authority Funding	NO	Funded	< £10k	Completed	Unknown	National Objective Level for NO2 not exceeded at location	Implemented	N/A
4	Improvements to Telford Central Train Station	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2019	2019	Telford and Wrekin Council	Externally funded	NO	Funded		Completed	Unknown	No. of people using the service	Implemented	The number of people using this service dropped in 2020, this can be attributed to the COVID-19 pandemic which saw restrictions on travel and an increase in numbers of people working from home. It will be interesting to see if this has an affect on numbers of passengers in 2021 as some companies continue to use more home working thus decreasing the need for travel.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Education and promotion around cycling	Promoting Travel Alternatives	Promotion of cycling	2019	2021	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£10K - £50K	Implementation	Unknown	Increased number of people cycling within the borough	Ongoing	This is now a standard work stream that will continue
6	Borough wide Advisory speed limit at schools (20 mph)	Traffic Management	Reduction of speed limits, 20mph zones	2019	2019	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£500K - £1 million	Completed	Unknown	National Objective Level for NO2 not exceeded at location	Implemented	Reduced road accidents at these locations and no evidence to demonstrate that Nat. Objective level for NO2 is exceeded at these locations
7	UTC is being further developed	Traffic Management	UTC, Congestion management, traffic reduction	2018	2021	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£100k - £500K	Implementation	Unknown	Improved traffic flows and reduced congestion	Ongoing	There is a UTC system in place currently but is being considered for expansion. This is now a standard work stream that will continue to be implemented.
8	Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2019	2020	Telford and Wrekin Council	Local Authority, Police and Crime and Town and Parish Council Funding	NO	Funded	£100K - £500K	Completed	Unknown	Improved traffic flows and reduced congestion	Ongoing	This has now been extended across the borough.
9	Real time bus service information	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2019	2020	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£100K - £500K	Completed	Unknown	Increased number of people using buses	Ongoing	This has been extended across the borough via the use of electronic advertising boards at bus stops.
10	Driver efficiency for fleet staff members	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2016	2016	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£10k - £50k	Completed	Unknown	Reduced fuel consumption	Ongoing	Training is updated and refreshed every 4 years.
11	Replacement of 5 feet vehicles with Electric Vehicles	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2020	2021	Telford and Wrekin Council	Local Authority Funding	NO	Funded	£100K - £500K	Completed	12,908t CO ₂ PA	Reduced fuel consumption	Completed	This has now been completed, Telford and Wrekin will continue to look for other opportunities where this may be possible

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Telford and Wrekin Council is taking the following measures to address PM_{2.5}:

- All actions noted in Table 2.2 that look to reduce congestion will in turn reduce brake pad and tyre wear reducing some anthropogenic (human-made) PM_{2.5} emissions in the area associated with vehicle use. Any initiatives that look to allow steady traffic flow are likely to have a similar impact.

PM_{2.5} emissions are regulated across the Borough through various legislative framework. This includes the LAPPC and LA-IPPC regimes under the provision of the Environmental Permitting (England and Wales) Regulations 2016 and smoke control areas brought in under the Clean Air Act 1993. More information relating the locations of Telford and Wrekin Council Smoke Control Areas are found here:

https://www.telford.gov.uk/info/20358/pollution/1038/smoke_control_zones/2

In considering the need for additional actions relating to PM_{2.5} it is noted that the Public Health Outcomes Framework Indicator number 3.01 – Fraction of mortality attributable to particulate air pollution for the borough of Telford and Wrekin was noted to be 4.6% in 2019 (2020 data is not available currently). This is the third lowest for the whole of the West Midlands region which has an average of 5.3% for 2019. The two authorities, both with lower values of 4.1% in Shropshire Council and 4.2% in Staffordshire Moorlands. The West Midlands figure is slightly higher than England's average of 5.1%. As the PHOF indicator for PM_{2.5} shows the mortality due to human-made PM_{2.5}, the fraction is significantly below the national and regional levels and as such it is not considered necessary for any specific actions to be carried out while there are other non-specific interventions taking place which will contribute to reducing anthropogenic PM_{2.5}.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2020 by Telford and Wrekin Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

The Borough of Telford and Wrekin does not have any automatic monitoring sites operated by Telford and Wrekin Council.

3.1.2 Non-Automatic Monitoring Sites

Telford and Wrekin Council undertook non- automatic (passive) monitoring of NO₂ at 21 sites during 2020. **Error! Reference source not found.** in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 33%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Error! Reference source not found. and Table A.2 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the

air quality objective of $40\mu\text{g}/\text{m}^3$. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

There were no exceedances of the air quality objectives in 2020 at any monitoring location.

Particulate Matter (PM₁₀)

Telford and Wrekin Council do not currently monitor for this pollutant. There is no evidence that PM₁₀ annual mean concentrations for the past 5 years is likely to exceed the air quality objective of 40µg/m³.

3.2.2 Particulate Matter (PM_{2.5})

Telford and Wrekin Council do not currently monitor for this pollutant.

3.2.3 Sulphur Dioxide (SO₂)

Telford and Wrekin Council do not currently monitor for this pollutant. There are no concerns that air quality objectives for SO₂ are likely to be exceeded.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
1	Uxacona Way, Oakengates	Roadside	369706	311063	NO ₂	No	25.0	0.0	No	2.5
2	New Road	Kerbside	370013	31266	NO ₂	No	13.2	0.1	No	2.4
3	Behind Bluebell Lane	Kerbside	374214	318134	NO ₂	No	8.0	10.0	No	2.5
4	Barrack Lane	Roadside	373202	316555	NO ₂	No	5.1	2.1	No	2.3
5	Horton Road	Kerbside	368742	312775	NO ₂	No	4.2	0.4	No	2.6
6	Apley Avenue	Roadside	365095	312402	NO ₂	No	41.4	2.5	No	2.4
7	Haybridge Rd	Roadside	366626	311627	NO ₂	No	10.0	0.0	No	2.5
8	Watling Street Outside Swan	Roadside	365918	311056	NO ₂	No	5.4	2.3	No	2.5
9	Mill Bank	Roadside	365911	311061	NO ₂	No	2.8	1.2	No	2.4
10	Watling Street	Roadside	366092	311083	NO ₂	No	4.4	3.9	No	2.3
11	Holyhead Road	Roadside	365895	311024	NO ₂	No	20.0	1.6	No	2.4
12	Dawley Road	Roadside	365939	311013	NO ₂	No	7.8	1.6	No	2.4
13	Watling Street/Regent Street Junction	Roadside	366092	311083	NO ₂	No	4.4	3.9	No	2.4
14	Madeley Road Ironbridge	Roadside	386727	310040	NO ₂	No	5.4	2.3	No	2.4
15	Mossey Green Way	Kerbside	367560	308854	NO ₂	No	11.2	1.0	No	2.5
16	Newdale/Lawley Junction	Roadside	367513	303444	NO ₂	No	10.0	0.0	No	2.6
17	Coach Central	Urban Centre	369893	308650	NO ₂	No	239.0	1.3	No	2.7
18	Dudmaston	Kerbside	370990	308497	NO ₂	No	7.1	0.5	No	2.5
19	Castle Farm Way	Roadside	372232	309922	NO ₂	No	20.0	0.0	No	2.3
20	Snedshill Way/Hollyhead Road Junction	Roadside	370415	309918	NO ₂	No	20.0	6.5	No	2.3
21	Shifnal Road	Roadside	371117	309458	NO ₂	No	33.0	1.5	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2020 (%)	NO ₂ Annual Mean Concentration (µg/m ³)				
						2016	2017	2018	2019	2020
1	369706	311063	Roadside	83.33	84.6	-	-	-	-	23.2
2	370013	31266	Kerbside	75	76.9	17.9	16.0	17.5	13.9	11.5
3	374214	318134	Kerbside	83.33	84.6	-	-	-	-	8.4
4	373202	316555	Roadside	83.33	84.6	24.6	17.2	18.2	17.0	12.3
5	368742	312775	Kerbside	83.33	84.6	16.7	15.6	17.4	16.2	13.0
6	365095	312402	Roadside	83.33	84.6	24.2	23.9	25.4	24.2	18.6
7	366626	311627	Roadside	83.33	84.6	-	-	-	-	24.3
8	365918	311056	Roadside	83.33	84.6	34.6	32.5	33.9	31.2	24.6
9	365911	311061	Roadside	83.33	84.6	-	38.2	42.2	40.0	28.4
10	366092	311083	Roadside	83.33	84.6	-	23.5	25.8	25.6	18.1
11	365895	311024	Roadside	75	76.9	-	18.6	20.5	20.0	16.2
12	365939	311013	Roadside	75	76.9	-	21.6	23.9	22.4	17.2
13	366092	311083	Roadside	83.33	84.6	-	32.1	33.9	32.2	23.9
14	386727	310040	Roadside	83.33	84.6	30.1	38.2	28.5	27.5	19.9
15	367560	308854	Kerbside	83.33	84.6	17.2	32.0	19.7	15.7	11.9
16	367513	303444	Roadside	83.33	84.6	-	-	-	-	15.7
17	369893	308650	Urban Centre	83.33	84.6	36.4	27.0	37.0	36.5	25.8
18	370990	308497	Kerbside	83.33	84.6	18.3	16.8	18.3	18.3	13.0
19	372232	309922	Roadside	75	76.9	-	-	-	-	13.5

20	370415	309918	Roadside	75	75.0	-	-	-	-	17.3
21	371117	309458	Roadside	75	75.0	25.5	18.6	24.0	24.9	17.7

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.

Diffusion tube data has been bias adjusted.

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

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

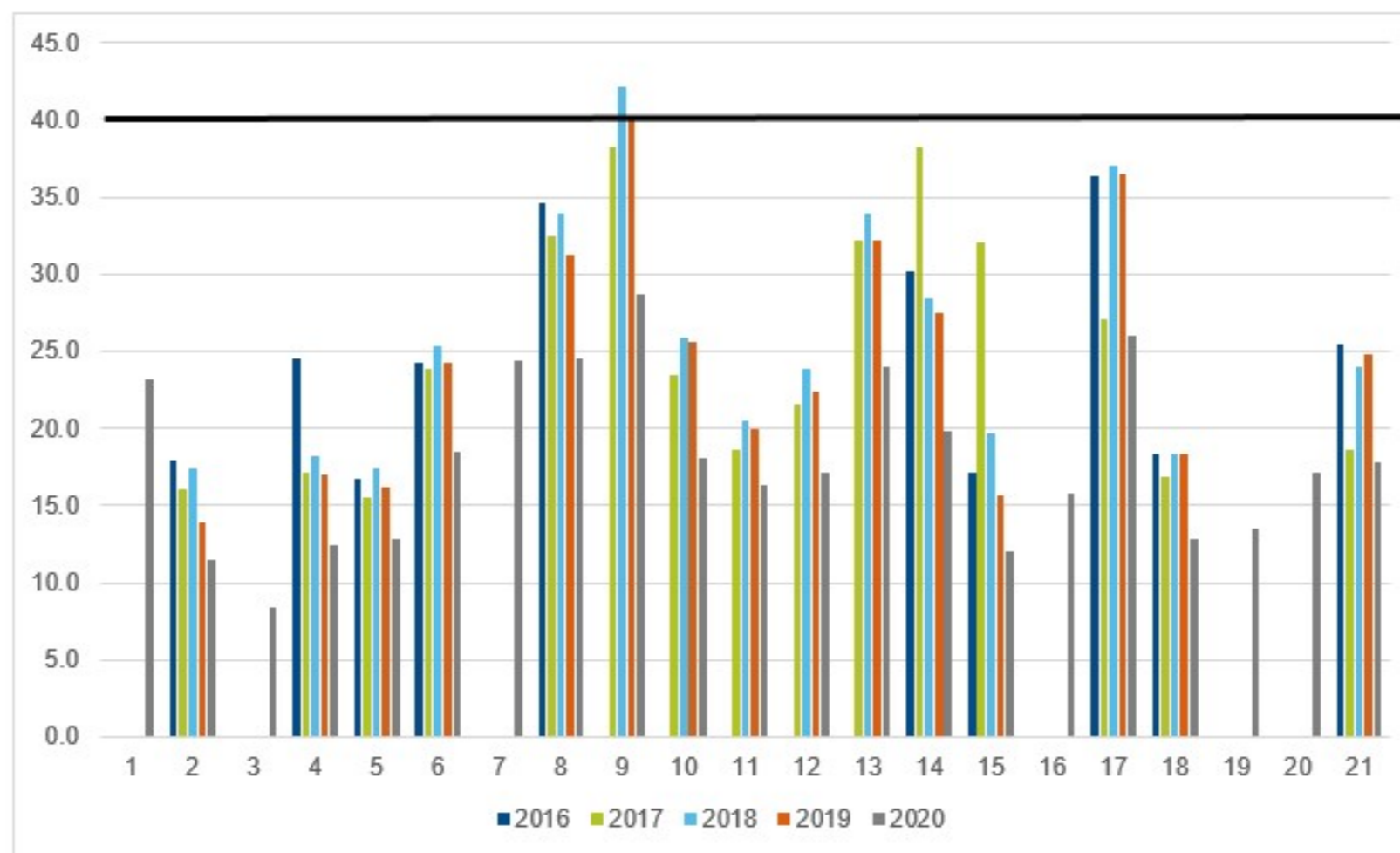
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO₂ Concentrations



———— National Objective Level for NO₂

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations (µg/m ³)												Time Weighted Annual Mean (µg/m ³)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.81)	Distance Corrected to Nearest Exposure
1	369706	311063	35.3	30.0			19.2	27.6	19.2	29.5	30.5	28.2	28.2	38.7	28.7	23.2	-
2	370013	31266	16.8	14.4			11.2	13.2	9.1	12.3		15.3	15.3	20.2	14.2	11.5	-
3	374214	318134	13.0	9.6			8.2	9.6	5.3	9.7	10.5	10.2	10.2	16.8	10.4	8.4	-
4	373202	316555	21.6	16.7			10.4	11.8	12.6	12.0	16.0	16.7	16.7	18.5	15.2	12.3	-
5	368742	312775	21.1	17.5			10.1	10.6	9.7	23.8	14.3	15.0	15.0	21.5	16.0	13.0	-
6	365095	312402	28.1	21.9			16.5	24.4	13.3	28.1	25.2	20.1	20.1	30.9	22.9	18.6	-
7	366626	311627	39.5	28.7			20.4	29.1	22.5	29.7	33.3	29.7	29.7	38.1	30.0	24.3	-
8	365918	311056	36.4	28.6			19.8	29.1	22.7	37.3	33.8	29.8	29.8	35.7	30.3	24.6	-
9	365911	311061	49.3	38.0			24.3	36.9	28.9	17.0	40.7	35.9	35.9	47.9	35.1	28.4	-
10	366092	311083	28.1	23.6			15.8	21.5	16.0	21.0	24.4	22.0	22.0	29.0	22.3	18.1	-
11	365895	311024	21.2	18.5			13.5		28.4	17.0	20.3	18.4	18.4	26.2	20.1	16.2	-
12	365939	311013	26.2	18.9			16.5		16.5	21.0	22.9	21.1	21.1	26.9	21.2	17.2	-
13	366092	311083	37.7	32.4			16.5	31.1	20.2	29.5	33.8	28.6	28.6	37.8	29.5	23.9	-
14	386727	310040	31.8	25.1			18.5	15.8	16.5	23.5	26.4	25.4	25.4	35.7	24.5	19.9	-
15	367560	308854	16.4	11.2			10.7	22.7	8.9	12.9	15.6	15.0	15.0	19.2	14.7	11.9	-

16	367513	303444	26.2	20.9			10.5	17.5	19.3	20.4	22.7	17.4	17.4	23.5	19.4	15.7	-
17	369893	308650	45.3	39.7			18.3	26.3	23.3	29.7	34.6	33.2	33.2	36.9	31.8	25.8	-
18	370990	308497	16.4	13.8			13.8	16.4	8.7	16.1	17.9	17.2	17.2	21.4	16.0	13.0	-
19	372232	309922	21.1	14.3			10.8		9.1	14.6	16.8	18.8	18.8	25.3	16.7	13.5	-
20	370415	309918	27.3	22.2				10.6	14.2	18.7	21.4	22.1	22.1	31.7	21.4	17.3	-
21	371117	309458	33.0	30.1			12.1	15.7	15.3	19.6	23.3	24.7	24.7		21.8	17.7	-

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- Telford and Wrekin Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

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

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Bias Adjustment

Distance Correction Calculation

Distance correction has not been carried out for data captured in 2020, this is due to the fact that all levels measured are under the National Objective Level for NO₂.

New or Changed Sources Identified Within Telford and Wrekin During 2020

Telford and Wrekin Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Telford and Wrekin Council During 2020

Telford and Wrekin Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

Details in relation to the aspects of non-automatic (i.e. passive) monitoring using diffusion tubes are as follows:

- Supplier – Gradko
- Preparation method - 20% TEA in water;
- Monitoring has been completed in adherence with the 2020 Diffusion Tube Monitoring Calendar, however no monitoring was carried out in March and April 2020 due to the outbreak of the coronavirus pandemic and restrictions placed on travel.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Telford & Wrekin Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Telford & Wrekin Council have applied a national bias adjustment factor of 0.81 to the 2020 monitoring data. A summary of bias adjustment factors used by Telford & Wrekin Council over the past five years is presented in Table C.1.

Telford and Wrekin Council do not have any co-location studies, neither are triplicated diffusion tube locations utilised. Therefore, the nationally derived factor is used for bias adjustment for Gradko 20%TEA in Water method in 2020. 18 studies have been used to determine the bias adjustment factor of 0.81.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.81
2019	National	06/20	0.92
2018	National	06/19	0.92
2017	National	06/18	0.87
2016	National	06/18	0.92

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO₂ monitoring locations within Telford & Wrekin Council required distance correction during 2020.

Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Site



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO ₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data⁸ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)⁹ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

⁸ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m³ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. PM_{2.5} concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5µg/m³ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within Telford & Wrekin Council

There has been a reduction in the levels of NO₂ across the borough of Telford and Wrekin, however levels of NO₂ do fluctuate and the reduction in most cases is so small that we cannot rule out this natural fluctuation. At some locations i.e. Mill Bank there have been more notable decreases in NO₂ which can be assumed is due to a reduction in road traffic however we do not have any traffic count data at these locations to evidence this.

Opportunities Presented by COVID-19 upon LAQM within Telford & Wrekin Council

No LAQM related opportunities have arisen as a consequence of COVID-19 within Telford and Wrekin Council.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Telford and Wrekin

The only challenge faced by the Telford and Wrekin Council in relation to COVID-19 and LAQM has been the impact the pandemic had on our workforce, some team members were been asked to contribute to the COVID-19 response within the wider remit of public protection meaning that there was less resource available for LAQM, this lead to a delay in the submission of our 2019 ASR.

Table F 1 – Impact Matrix

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority 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
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.