2020 Air Quality Annual Status Report (ASR)

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

December 2020

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Executive Summary: Air Quality in Our Area

Air Quality in Shropshire 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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

Shropshire Council has two Air Quality Management Areas (AQMAs) in force; Bridgnorth Pound Street AQMA and Shrewsbury No 3 AQMA.

Bridgnorth Pound Street AQMA is still required as nitrogen dioxide (NO_2) levels exceed the annual average national objective level. 18 residential properties were found to be likely to be exposed to levels of NO_2 above the National Objective Level in previous years. This is likely to have been the same in 2020. A reduction in pollutant was found in 2019 compared to the previous year with the highest recorded annual average of NO_2 registering at 47$\mu g/m^3$, a reduction of 1.7 $\mu g/m^3$ from 2018. The AQMA is still required. Monitoring will continue in this area.

Shrewsbury No 3 AQMA, covering Shrewsbury Town Centre, is still required although there is only an exceedance of the national objective level at one monitoring location where there is relevant exposure on Castle Foregate. It is anticipated that there are only a few relevant receptors in the AQMA which are exposed to levels of nitrogen dioxide above the national objective level however the objective level is breached by a considerable amount, around 30%. The highest NO_2 level to be recorded at a residential receptor was 52 $\mu g/m^3$. This is the lowest result ever

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

recorded at this location. The previous lowest recorded result was 53.6 μg/m^3 in 2014. This is promising news and reinstates a slight downward trend previously bucked by the 2018 result for this location. Despite the welcomed reduction in pollutant the AQMA is still very much required.

Overall a slight downward trend has been noted in the AQMAs which is promising however significant further reductions are still necessary in both locations.

Shropshire Council continues to consider air quality throughout a number of services and departments with air quality found in many policies across the Council.

No significant new sources have been identified except for the potential Shrewsbury North West Relief Road (Shrewsbury NWRR) which is currently undergoing detailed design and assessment. An air quality assessment of the impact will be prepared as part of this process.

In the past Shropshire Council has worked with partners such as the Environment Agency to gather data on poultry houses. This information is now up to date and no further information has been required. Highways England have been contacted over the A49 which runs through Bayston Hill. In 2017 and 2018 the annual average national objective level for NO_2 was exceeded at this location on the Highways England road network. In 2019 no exceedance was found. As such although discussions will continue to be held no projects are underway or required at this time. As the AQMAs in force in Shropshire Council's area are both primarily a result of vehicle emissions on Council managed roads there is no reason for other partners to be significantly involved at this time.

Actions to Improve Air Quality

Over the 2019-20 calendar year the following actions were achieved which are anticipated to have a positive impact on air pollution levels both in discrete areas known to have poor air quality and at a general County wide level.

- The bid placed for a Shrewsbury North West Relief Road was successful in securing Central Government funding. The proposal is now in detailed planning stage and a planning application expected to be submitted next year. If successful once constructed this is expected to reduce through town traffic (traffic crossing the AQMA including the hot spot) and pollution. With reduced transport on the road infrastructure additional actions to provide further betterments become more viable.
- The Hackney Carriage and Private Hire Vehicle Policy updated last year has come into effect. Betterments in emissions will continue throughout the 5-year period that this policy is in effect. Further details can be found at: https://www.shropshire.gov.uk/licensing/licensing-types/taxis/introduction/
- The successful Air Quality grant bid approved by DEFRA has started. To date it has provided near real time air pollution monitors in the two AQMAs. Further work is required in 2020-21 to move this work forward to completion.
- Linear Car Park Strategy continues to promote edge of town car parking reducing travel into town centres.
- Carpool for staff offer increased from 5 Euro VI cars and one hybrid car in 2018 to 13 Euro VI vehicles including one hybrid in 2019. This resulted in the removal of 130,378 miles of staff car use in 2019 compared to 64,521 in 2018 showing a doubling in uptake. This was driven by Council policy to promote the use of pool cars over personal vehicles where it is possible. With staff cars on average expected to be significantly more polluting than the carpool cars this is likely to have reduced pollution created by staff work related. Potential to expand the intervention by including electric cars and more vehicles where demand warrants is encouraged.

Conclusions and Priorities

The AQMAs in Bridgnorth and Shrewsbury are still required with levels of air pollution significantly above the National Objective Level for nitrogen dioxide. 2019 nitrogen dioxide results have shown a reduction on 2018 results. Downward trends in both areas have been reinstated as a result.

In Bridgnorth last year's report suggested only 18 properties were likely to be exposed to levels of NO2 above national objective levels. This year's results compound this and make this statement more robust.

Bayston Hill was previously found to be an area requiring close attention with levels slightly above the national objective level for NO2. Results for 2019 show that concentrations of NO2 have fallen in this area to beneath legislative threshold levels. This specific location will continue to be monitored in future to consider if this reduction is maintained.

Priorities for the year ahead include:

- moving forwards with the DEFRA funded air quality grant project. This will provide information which will feed into future work to update Air Quality Action Plans. Grant work will provide tools for public and key stakeholders to consider air quality and visualise air pollution in map form.
- rolling out phase 2 of the car park strategy (residential car parking schemes)
- Moving forwards with Shrewsbury NWRR detailed planning
- Continue to feed air quality information into relevant workstreams to ensure that the agenda is linked to all areas which may take interventions forward to produce cleaner air including Shrewsbury Big Town Plan, Local Plan, Local Transport Plans.

Local Engagement and How to get Involved

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

Avoid driving into congested areas: it is good for your health and your wealth.

By planning your journey to avoid congested areas you can make a positive difference. Parking on the edge of town is often cheaper than parking in town centres saving you money. Walking into town from edge of town carparks keeps you active and is good for your family's health. By not driving into congested, polluted areas you reduce your family's exposure to harmful air pollutants and stop your own vehicle emissions contributing to the problem. An alternative to walking and cycling is to use a Park and Ride or a bus service to get you the final mile.

To help plan your journey find Shropshire Council car parks here.

For Park and Ride information in Shropshire click here.

Consider your commute

If you regularly drive to work you may be able to save money by adopting the steps above. You could also reduce the amount of money you spend on fuel and parking by:

- using the Park and Ride service
- cycling or walking to work. By cycling or walking into work once a week you would reduce your emissions by 20%.
- car share: this can be a very effective way of reducing numbers of vehicles on the road and saving money, the further your journey the more you stand to save. The more you share, the more you save.

Doing the school run - not the school sit

Travel to take children to school contributes to the congestion on our roads at a time of day when there are increased vehicle numbers due to people travelling to work. Where the school is within walking/cycling distance we would encourage this method of transport. Not only would this save money in fuel costs and improve air quality by reducing congestion it would also add active travel to your regular journeys helping to improve your family's health by introducing regular exercise. Getting children into the habit of walking can provide lifelong benefits to them and their families in turn.

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1 Local Air Quality Management

This report provides an overview of air quality in Shropshire Council during 2019. 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 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 Shropshire Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

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 must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Shropshire Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=442. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Shrewsbury No 3 AQMA	Declared 1/5/2003, Amended 1/3/2006	NO2 Annual Mean	Shrewsbury	An area covering the town centre of Shrewsbury mainly contained within the River Severn loop but extending out over English and Welsh bridge	NO	86 (in 2006)	µg/m3	52.2	µg/m3	Shrewsbury Air Quality Action Plan	2008	https://www.shropshire.gov.uk/media/5218/shrewsbury-aqap-2008.pdf

Bridgnorth Pound Street AQMA	Declared 1/4/2005	NO2 Annual Mean	Bridgnorth	An area encompassing several properties centred over the mini roundabout at the junction of Whitburn Street, Salop Street and Pound Street.	NO	54.1 (in 2010)	µg/m3	47	µg/m3	Bridgnorth Air Quality Action Plan	2008	https://www.shropshire.gov.uk/media/5215/bridgnorth-dc-action-plan-pdf.pdf

☒ **Shropshire Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

2.2 Progress and Impact of Measures to address Air Quality in Shropshire Council

Defra's appraisal of last year's ASR concluded that it did not accept the report. This was for the sole reason that diffusion tubes were left out for an extended period and kept in the data set rather than emitting them. It has been decided not to carry out the work required to update this now historic report due to the resource that would be required to do the necessary annualisation of results where required. The information provided by DEFRA on this point has been taken on board and in future should the same scenario arise annualisation of results will be carried out.

In additional to the point DEFRA's appraisal of last year's ASR concluded that:

1. Trends are clearly presented and discussed and a robust comparison with air quality objectives is provided. *Comment: trends will be replicated in future reports in a similar way to ensure this positive aspect is carried forward.*

2. Shropshire Council operates an extensive and comprehensive monitoring network, which is welcomed. The maps provided clearly demonstrate the network. *Comment: the monitoring network will continue and maps shall be formatted in a similar way to continue with this positive aspect.*

3. The last Action Plans were published in 2008 and now out of date. It is understood the purpose of the grant work is to engage key stakeholders but publishing new Action Plans needs to be a priority. *Comment: Shropshire Council acknowledge the action plans require updates. Grant work continues and engagement with relevant internal partners is helping to move forward actions which will allow updated action plans in future.*

4. Explicit consideration is given to PM2.5 and measures to reduce PM2.5 are discussed in detail. Reference is made to the Public Health Outcomes Framework, indicator number 3.01 in particular, and this is encouraged to continue. *Comment: Shropshire Council will continue with this aspect.*

5. It is agreed the continuous monitoring of PM2.5 could cease to save resources. Concentrations had been far below the objective for the past 3 years, and no sign of a rising trend. The decommissioning of diffusion tube sites in locations with historically low concentrations, to add additional sites within the AQMAs, is also supported. *Comment: monitors have been decommissioned and the diffusion tube network*

rationalised as appropriate. This process will be carried out each year to ensure that resources are dedicated to locations where data is required.

6. Monitoring should continue at DF474 (Bayston Hill) where an AQMA may need to be declared. Additional tubes could be added to further investigate the extent. *Comment: DF474 has been continued. No additional tubes have been installed to date however this is being considered for 2021.*

7. Close attention should continue to be paid to site DF62 (Low Town Bridgnorth) where an exceedance was recorded outside of an AQMA. It is appreciated the February result appears artificially inflated. Close attention should also be paid to DF232 (Tern Hill) as concentrations were still above the objective when distance corrected to relevant exposure. *Comment: monitoring will continue at these locations.*

8. QA/QC of monitoring data is provided. A national bias adjustment factor of 0.89 was used from v03/20. Distance correction was carried out for all sites not at relevant exposure and calculations provided. This is encouraged to continue but in future, distance correction is only necessary for sites with concentrations of 36 ug/m3 and above. *Comment: noted that there is no necessity to distance correct where results are below 36 ug/m3.*

Shropshire Council has taken forward a number of direct measures during the current reporting year of 2019-20 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Key completed measures are:

- Additions have been made to the staff carpool scheme to increase the vehicle numbers available to 13. Over the calendar year 130, 378 miles of staff car use was carried out using the Euro VI fleet doubling that of 2018. Internal policy has driven uptake by stipulating that a carpool vehicle must be used wherever possible.
- First year of the 2019-2024 Hackney Carriage and Private Hire Vehicle Policy came into force. Big gains for air pollution were not expected however the trade has taken on board changes. Future years will see increasing betterments in vehicle emissions.

- DEFRA grant funding project (Air Quality Grant Scheme 2018/19 - project 24571) has commenced. Updates will be provided in future reports.
- All planning applications and additional sites proposed to be taken forward through the current Local Plan have been considered from an air quality perspective. Information and advice have been given where necessary to ensure challenging areas for air pollution are highlighted.
- Further work on Shrewsbury Big Town Plan to bring forwards the vision which proposes a reduction in the number of vehicles passing through Shrewsbury Town Centre and the AQMA: https://shrewsburybigtownplan.org/

Shropshire Council's priorities for the coming year are:

1. To ensure that the Shrewsbury North West Relief Road project fully considers air pollution and has all the necessary information and expertise required to produce a robust assessment of the impact on the Shrewsbury No.3 AQMA
2. Progress with the DEFRA grant funding project (Air Quality Grant Scheme 2018/19 - project 24571). Currently delayed it is anticipated that the project will gain pace through 2020 to allow all objectives and aims to be completed including providing near real time information to the public and engaging with relevant stakeholders to move the air quality agenda forward.
3. Consider wider Council workstreams to establish cross over and allow the air quality agenda to be voiced more widely, supporting where appropriate and holding to account where necessary. One such workstream is the Shrewsbury Big Town Plan: https://shrewsburybigtownplan.org/ where air quality has been highlighted.
4. Continued detailed monitoring in the existing AQMAs enabling valuable data to be collected with which to aid and influence work which may impact on air quality.

The principal challenges and barriers to implementation that Shropshire Council anticipates facing are identifying specific actions to resolve air pollution in its AQMAs which align with other Council priorities. Work on moving air quality forward into other

work streams to strengthen the work the Council does and provide added value to projects is required to move forward. In addition, funding streams are increasingly hard to identify to consider any interventions due to the challenges facing Shropshire Council finances. This is not expected to improve without consideration to the Central Grant provided to Local Authorities, particularly rural authorities with an aging population demographic such as Shropshire.

Progress on the following measures has been slower than expected due to:

- Grant work to move forward action plan updates. Grant work is expected to be completed over the next reporting year leading to potential interventions to be considered and action plans updated as potential interventions are evaluated in subsequent years. There are several high-level projects being carried out across the Council which may feed into the formation of an action plan. As such carrying out an action plan in the traditional sense is not appropriate. Instead air quality will be highlighted in other projects to ensure that betterments are realised where possible.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Shropshire Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Shrewsbury No.3 AQMA and Bridgnorth Pound Street AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Hackney Carriage and Private Hire Vehicle Policy	Promoting Low Emission Transport	Taxi Licensing conditions	Apr-19	Shropshire Council	Shropshire Council	Progressive cleaner fleet in respect of tailpipe emissions	Reduced emissions from fleet as a whole/reduced vehicle average emissions	First year of new policy bringing in further betterments in tailpipe emissions	Mar-24	First year with a policy which stipulates dates of registration of vehicles being September of any given year. As such as the policy moves forwards this will ensure that new real world emission standards will be picked up rather than a policy asking for a vehicle to be Euro VI but the vehicle could be many years old and not achieve anywhere near the stated objective.
2	Shrewsbury North West Relief Road (NWRR)	Transport Planning and Infrastructure	Other	Programme Entry Offer received from DfT April 2019 on submission of OBC Dec 2017. Programme Entry confirmed May 2019 with detailed planning stage commenced.	Shropshire Council, DfT Large Local Majors Fund	Shropshire Council, DfT Large Local Majors Fund	Reduction of vehicles moving through the town centre and around the air quality hot spot (Castle Foregates by Station Hotel - DF438 monitoring location). E.g. 27% reduction on Smithfield Road, 24% reduction on Chester Street and 4% reduction on A5191 (Heathgates Roundabout to A528) in the average AM and PM peak hour, two-way traffic flows	A specified reduction in air pollution in Shrewsbury No 3 AQMA. Currently air quality assessment is being carried out ready for submission with any planning application required. This is expected in Summer 2020 and will be reported in future year reports.	Detailed planning carried out ready for planning application to be submitted in summer 2020. Discussions held with air quality consultants to discuss specific areas for detailed discussion in reports.	2024	Shropshire Council expected to bring forward a planning application in 2020. This will be asked to include an air quality assessment specifying the reduction in pollution expected in the Shrewsbury No3. AQMA. Shropshire Council's regulatory services will liaise with contractors to provide information where necessary to ensure that a robust assessment is possible of being produced.
3	Shropshire Council Pool Car Scheme	Alternatives to private vehicle use	Car Clubs	Apr-19	Shropshire Council	Shropshire Council	Increased mileage year on year in carpool vehicles	NA but general reductions in Council workers private vehicle pollutants anticipated along with potential reduction in mileage due to more thought by	Previously had 5 pool cars and added one hybrid vehicle in 2018 with 64,521 miles carried out in the fleet in 2018. Additional vehicles added in 2019 taking the number	Ongoing	In 2019 Shropshire Council made it policy for staff to use pool cars where they are available. To enforce this all mileage claims needed to show that pool cars were not available for

								staff about journeys.	of available cars to 13 with over half being hybrids. Increased usage of the fleet with 130,378 miles of use in 2019. Over 400 members of staff have signed up to the scheme.		journeys. This is helping to steer a behaviour change along with other aspects such as adopting technology to allow staff to work from home and remove the need for travel to and from office locations. A potential barrier to the progression of the scheme is the staff resource available to manage the pool car network. Consideration could be given to employing a specified member of staff to run the network should it be expanded further in future.
4	Inclusion of electric vehicle charging points in new developments	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2016/17	Shropshire Council	Shropshire Council	Planning conditions on planning application decisions which include provisions for electric vehicle charging points in new developments	NA. General betterment predicted in future as new development equip for future electric vehicle provision.	Procedures in place and ongoing through time.	Ongoing	No specific policy in place although NPPF directs consideration to this area. Consideration of specific policy going forward through the Local Plan Review. This has been suggested and put forward to planning policy.
5	Local Air Quality Grant project	Public Information	Via the Internet	Planning stage 2018. Project began in 2019	Shropshire Council and DEFRA	Shropshire Council and DEFRA	Completion of Key Milestones of the project reported back to DEFRA through grant requirements in quarterly reporting. Currently behind on some Key Milestones however moving forwards and resolving this going forward. DEFRA made aware through quarterly reports.	N/A	Currently behind on some Key Milestones however moving forwards and resolving this going forward. DEFRA made aware through quarterly reports.	Sep-20	Project overview: trial low cost monitors and benchmark their accuracy against more traditional methods (NO2 diffusion tubes). Project will generate near real time pollution maps to engage key stakeholders and provide information to the public via webpage. Added features of the project are the collection of ANPR data to use in modelling and use for source apportionment work for future AQAP

											activity. In addition, as added value Shropshire Council provided a 15-minute air quality session to group of Yr. 11 pupils in 2019. In total air quality messages reached over 700 children.
6	Car Parking Strategy	Policy Guidance and Development Control	Other policy	2018	Shropshire Council	Shropshire Council	Stage 1 - implementation of linear car parking scheme County wide including procurement and installation of new payment meters. Implementation of Stage 2 - to bring residential parking schemes into place.	NA. A general reduction through looking to stop vehicles entering most polluted and congested areas.	Stage 1 complete. Stage 2 did not progress in 2019. It is being considered for 2020	2021 followed by ongoing updates.	The strategy adopts a linear parking tariff running from the centre of towns towards the periphery with prices starting high and getting progressively lower to encourage edge of town parking. Following adoption of the strategy some detraction from the strategy has been seen through individual TROs being brought into force. The first phase is now complete however the next phase of putting residential on street parking schemes in place has stalled due to lack of staff resource to carry out the necessary work. This has the potential to undermine the strategy. To facilitate future work staff need to be made available to carry out work to get residential parking schemes in place. This will help keep edge of town residential streets safe and uncongested by reducing on street parking availability for non-residents and help encourage alternatives such as Park and Ride or parking further from town centres further

											reducing congestion particularly at peak times.

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.

Shropshire Council is taking the following measures to address $PM_{2.5}$:

- Monitoring: two PM2.5 monitors were previously found in Shrewsbury. These allowed Shropshire Council to monitor the pollutant concentrations over time and consider if there is a need for further actions. Monitoring showed that PM2.5 levels are less than 10 µg/m3 as an annual mean. Three years of continuous data concluded levels of PM2.5s were under 10 µg/m3 with results in 2017 finding levels of 7.7 µg/m3. Monitors were discontinued to save resource in January 2018. DEFRA comments on last year's ASR endorsed the removal of monitors.
- No specific measures are being taken solely to address PM2.5s. Actions are being carried out to reduce air pollutants overall and reduce traffic numbers in congested areas. These measures will assist in reducing PM2.5s. For example, measures noted in Table 2.2 that look to reduce congestion will in turn reduce brake pad and tyre ware reducing PM2.5 emissions in the area. Any initiatives that look to calm traffic are likely to have a similar impact.

In considering the need for additional actions relating to PM2.5 it is noted that the Public Health Outcomes Framework (PHOF) Indicator number 3.01 - Fraction of mortality attributable to particulate air pollution for Shropshire Council was noted to be 3.8% in 2018. This information has not been changed since last year's report was written. For more information visit: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000043/pat/6/par/E12000005/ati/102/are/E06000051

Shropshire Council's fraction of mortality attributable to particulate air pollution is the lowest in the West Midlands Region which has an average of 5.0%. The West Midlands region is slightly below the national average of 5.2%.

As the Shropshire Council PHOF indicator concerned with PM2.5 shows that mortality due to PM2.5 is significantly below the national and regional average it is not considered necessary for any specific actions to be carried out while there are other interventions taking place which will contribute to reducing anthropogenic PM2.5. These measures include traffic calming and actions to reduce congestion and improve the emissions of vehicles being used on the road network such as through use of Euro VI carpool vehicles instead of staff owned vehicle and improvement of vehicle emissions from the taxi fleet.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Shropshire Council currently undertakes no automatic (continuous) monitoring for reporting purposes. For detail of past monitoring locations please see previous annual reports available at: https://www.shropshire.gov.uk/environmental-health/environmental-protection-and-prevention/air-quality/shropshire-council-air-quality-reports/

3.1.2 Non-Automatic Monitoring Sites

Shropshire Council undertook non- automatic (passive) monitoring of NO_2 at 58 sites during 2019. Table A.2 in Appendix A shows the details of the sites. This is a reduction from 74 sites the previous year. The reduction in sites followed a review of the network with locations removed which showed clear evidence that no exceedance of the national air quality objective levels was likely and where there was no requirement for data to continue to be captured to show the impact of any significant development or interventions which may come online in the short to medium term.

No additional monitoring locations were considered necessary this year.

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[4], "annualisation" (where the data capture falls below 75%), and distance correction[5]. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. Note that the concentration data presented in Table A.3 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 2019 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.

No sites recorded an annual mean of above 60µg/m3 suggesting that there are no exceedances of the 1-hour mean objective level for nitrogen dioxide. No continuous monitors for nitrogen dioxide exist to suggest otherwise and it is concluded that there are no exceedances on the 1-hour mean objective in the Shropshire Council Area. The only location where monitoring has historically found levels above or close to this threshold is at location DF438. The result in 2019 was significantly below the objective level. Monitoring will continue in this location and consideration given to ammending the Shrewsbury No 3 AQMA to include exceedance of the hourly objective should levels of NO2 exceed 60µg/m3.

Diffusion tube results found exceedances of the nitrogen dioxide annual mean, 40µg/m3, at relevant receptors following drop off with distance calculations in the Shrewsbury town centre AQMA (DF438 in Castle Foregate) and in the Bridgnorth AQMA (DF28, DF71, DF79 and DF80). These locations will be discussed in detail below.

Last year exceedances were also found in Bridgnorth Low Town (DF62), in Bayston Hill (DF474) and in Tern Hill (DF223) however this year all three of these locations

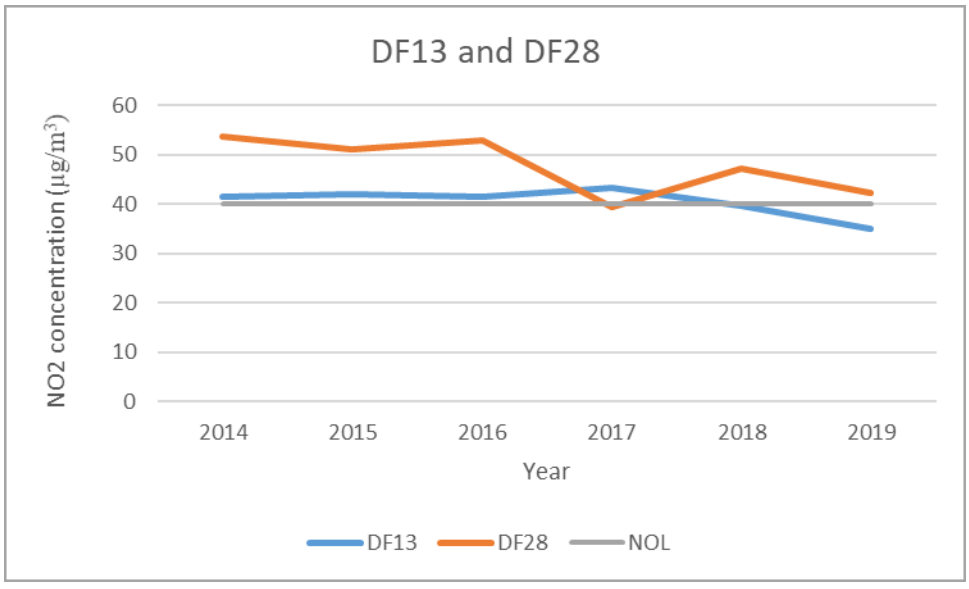
[4] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[5] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

did not exceed. They will continue to be monitored in future and have also been discussed in further detail below given recent historical data in these locations.

In addition to the monitoring locations above location DF458 recorded concentrations of nitrogen dioxide above the annual mean national objective. There is no relevant exposure at this location and as such no further consideration of this location is necessary.

DF28, DF71, DF79 and DF80: Bridgnorth AQMA.

All of these diffusion tubes are located within the existing Bridgnorth AQMA. DF28 is a long standing monitoring location which exceeds the annual mean national objective level. DF13 is also a long standing monitoring location which usually exceeds the objective level. Dispite it falling under the objective level in 2018 and 2019 it has been included for discussion for this reason. For these two monitoring locations a trend chart of the last 6 years data is presented below.



The above suggests that at DF13 a gradual downward trend may be starting to be realised following a period of minimal change. This is a welcomed observation. At DF28 the trend shows a reduction in pollutant over time. The data point for 2017 looks to have been an outlier amongst the other 5 years of data shown. This is likely due to roadworks in the town for a significant length of time in 2017 which altered traffic flows across the town. With this is mind the trend data suggests that there is an overall reduction in pollutant at this location.

It should be highlighted that DF28 is not currently the hotspot in the Bridgnorth Pound Street AQMA with DF71 recording the highest NO2 annual average in Bridgnorth in 2019. DF71 recorded a reduction in 2019 compared to 2018's reduction on 2017. As there are only 3 years of data it is not considered suitable to consider this a downward trend at this time.

Eleven new monitoring locations were added to the Bridgnorth AQMA area in 2018. The locations were chosen to provide additional data in the AQMA and consider if all of the properties within the AQMA exceed the national objective level. Out of the eleven additional monitoring locations (DF72, DF73, DF74, DF75, DF76, DF77, DF78, DF79, DF80, DF81 and DF82) only DF79 and DF81 exceeded the national objective level in 2019, the same locations as 2018.

The new monitoring locations combined with preexisting monitoring locations provide a comprehensive spread over the AQMA. The figure below shows a graphic of which road facing facades are considered to be likely to exceed the national objective level and those which are not according to the monitoring results at the above locations.

Green soild line represents aspects likely to be below the national objective level.

Solid orange line represents aspects likely to exceed the national objective level.

Overall this leaves 18 properties likely to be exposed to elevated levels of nitrogen dioxide. The properties are:

- 42 Whitburn Street
- 43 Whitburn Street
- 44 Whitburn Street
- 45 Whitburn Street
- 46 Whitburn Street (first floor only has residential potential)
- 47 Whitburn Street (first floor only is residential)
- 48 Whitburn Street
- 49 Whitburn Street (first floor only is residential)
- 50 Whitburn Street
- 1 Salop Street

- 1A Salop Streeet
- 1 Pound Street
- 2 Pound Street
- 3 Pound Street
- 4 Pound Street
- 5 Pound Street
- 6 Pound Street
- 7 Pound Street

Monitoring is required going forwards to confirm the above findings. Should the slow trend of a reduction in pollutant concentrations continue in future it is likely that further properties will be found not to exceed national objective levels. At the current rate of decline it is likely to take at least 6 years before all monitoring locations are found to record pollutant levels below the national objective level should all other factors remain the same. There is however likely that the properties closer to the junction on Pound Street may have higher pollutant concentrations than existing monitoring locations. For example it is considered likely that the properties 1-7 pound street have increasingly high NO2 concentrations as you move towards the junction (outside 1 Pound Street). As a result it may take longer in this location for levels to fall below the national objective level. Additional monitoring points in this specific location will be considered in future as required. These are likely to be outside properties 1 - 5 Pound Street where it is possible to locate them and where owner agreement is provided.

Some promising trends have been noted in this area. However, should significant additional traffic be generated by new development the betterments found and continuing trend is unlikely to continue. As such careful consideration of new development should be given to potential air quality impacts and air quality should form part of any assessment of interventions in traffic and highways in this location in future.

DF62: Low Town Bridgnorth

This monitoring location is found on the side of a building close to the junction of St Johns Street and Mill Street in Bridgnorth Lowtown. It is not within any declared AQMA. The location is found on a downspout on the side of a residential building.

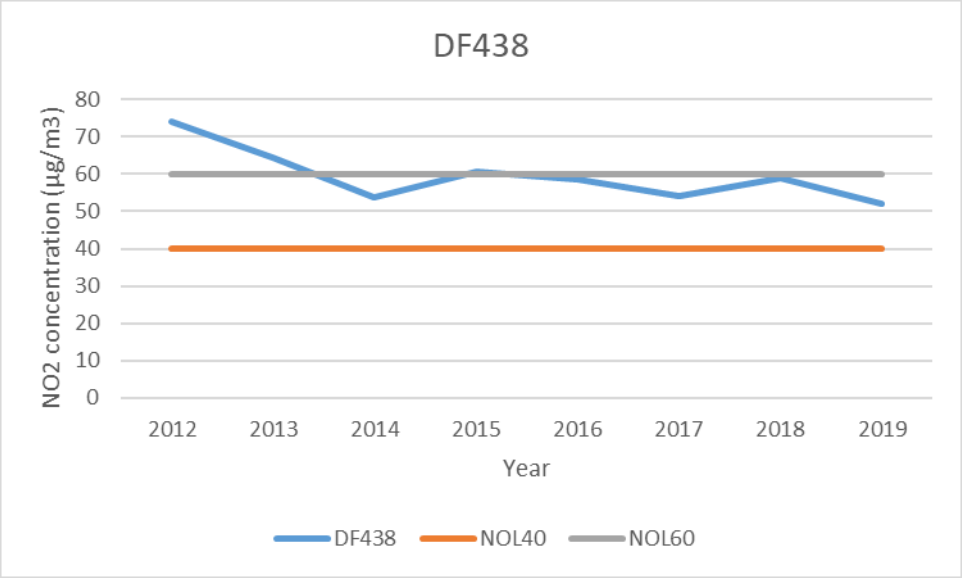
In 2018 the annual nitrogen dioxide mean concentration at the monitoring location was 40.2 µg/m3. Discussion around this is provided in last year's report. In short one result was significantly outside that normally expected. This may have skewed the annual average up above the national objective level artificially.

Unfortunately in 2019 this monitoring location was lost. This was a mistake due to miscommunication between the Council officer who reviews the monitoring network and those putting out the diffusion tubes

In order to consider the scenario at location DF62 consideration has been given to the results captured at the other monitoring locations in Bridgnorth. In all cases, as can be seen in Appendix A: Table A3, results in Bridgnorth were lower in 2019 than results collated in 2018 with the exception of DF73 where an increase of 0.1$\mu g/m^3$ was recorded. The closest monitoring location to DF62, found on a closely linked road, is DF61 which recorded a reduction of 1$\mu g/m^3$ between the 2018 and 2019 results. Given the reduction in pollutant found at monitoring locations throughout Bridgnorth with particularly note to the closest monitoring location on the same stretch of road, it is considered unlikely that their would have been an exceedance of the national objective level for nitrogen dioxide at DF62. DF62 has been reinstated for 2020. It is an important location as it is on the gateway into Bridgnorth from the busy A442 and will continue to be monitored going forward.

DF438: Shrewsbury Town Centre AQMA

DF438 continues to be the only monitoring point within the Shrewsbury No 3 AQMA where data suggests relevant receptors are likely to be exposed to nitrogen dioxide levels which exceed the national objective level. The figure below shows the annual mean trend over the past 8 years. The grey line represents the 1-hour national objective level. The red line represents the annual mean national objective level.



The 2019 monitoring result of 52.2µg/m^3 at DF438 is the lowest ever to be recorded at this location. The previous lowsest result was 53.6µg/m^3 in 2014. The 2019 result has reinstated a gradual decreasing trend over more recent years which had previously been considered to have slowed.

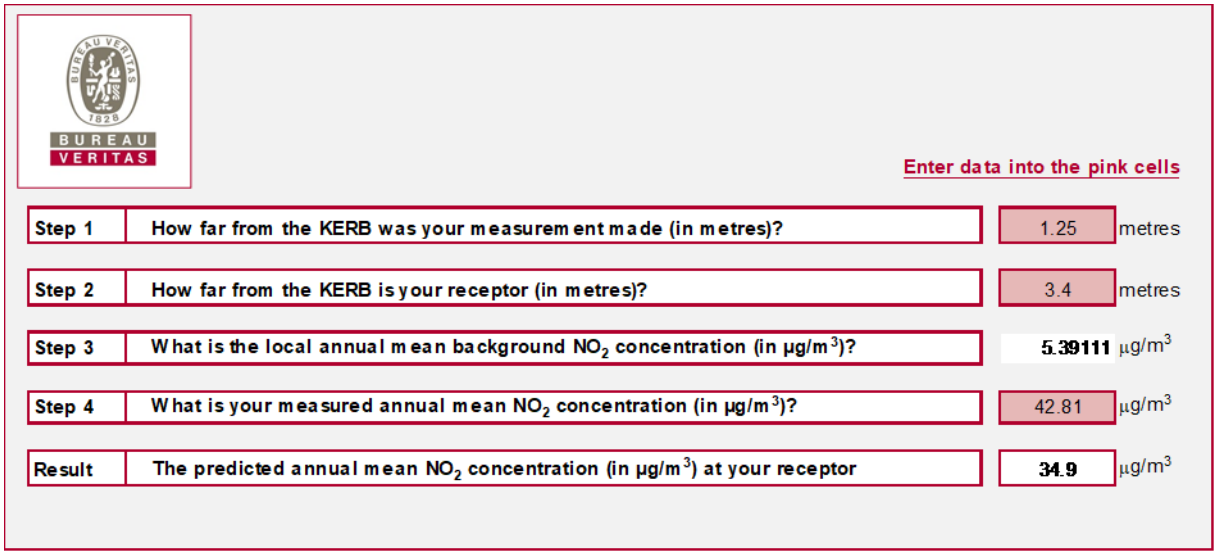
The 1-hour national objective level that was close to being exceeded in 2018 was comfortably avioided in 2019 with significant headroom. The annual average national objective level (red line) is still being exceeded. As a result the AQMA is still considered necessary. Despite the lowest annual result being achieved there is still a significant way to go in this location to achieve the annual average national objective level.

Close attention is required in this location going forward. It is the subject of many wider Shrewsbury related plans such as the Shrewsbury NWRR and the Shrewsbury Big Town Plan both of which look to reduce traffic in the town centre which will include at monitoring location DF438. Movement on these interventions will be considered in future reports.

DF232: Tern Hill

Diffusion tube data has previously recorded exceedance of the annual NO2 national objective level of 40µg/m3 at DF223. The diffusion tube is located on the roadside close to the roundabout junction where the A41 meets the A53. It is close to the one residential receptor in the area. DF232 is 1.25m from the kerb with the façade of the receptor 1.8m away from the kerb at this point. The receptor has no openings in the

brick façade facing the road and DF232. This was specified through planning condition for the barn conversion in 2012/13. The nearest exposure point is a window on the end of the property. The window is 3.4m set back from the kerb and approximately 5m further away from the roundabout junction than the monitoring location. The window is considered the most appropriate place to specify relevant exposure as the rest of the façade has no openings as specified during the planning process. A distance calculation using these measurements was carried out providing the information in Table B.1. The drop off with distance calculation was carried out using the appropriate DEFRA tool. The inputs and result can be seen below:

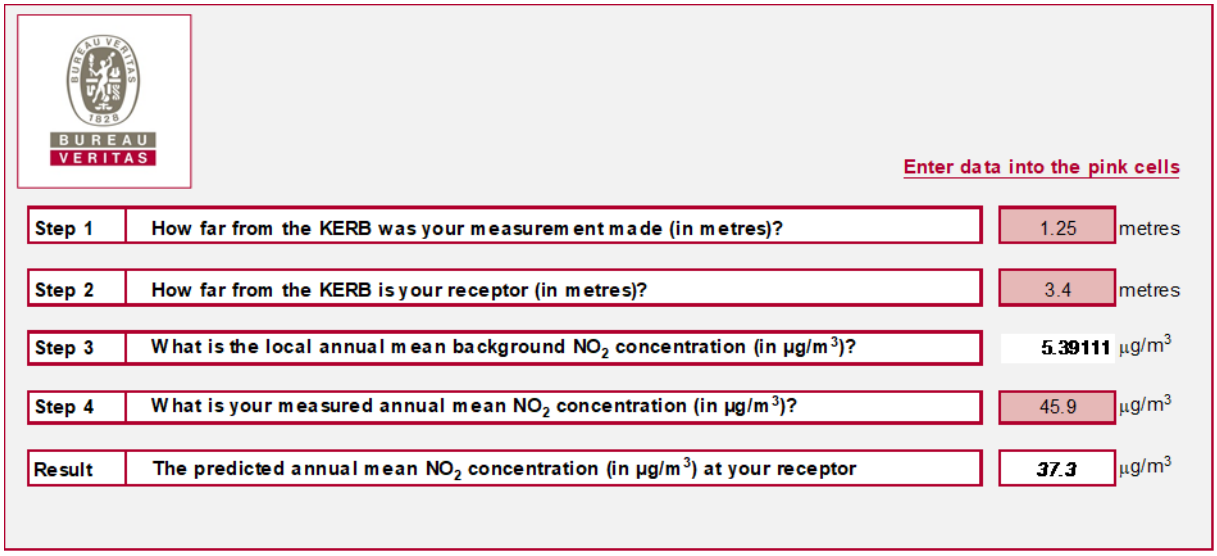


BUREAU VERITAS

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.25	metres
Step 2	How far from the KERB is your receptor (in metres)?	3.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.39111	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	42.81	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	34.9	µg/m^3

This suggests that there is no exceedance of the national objective level in this location with considerable headroom. However the results are much lower than found in previous years. When considering the monthly diffusion tube results, see Table B.1 in the appendices, May's result looks uncharacteristically low registering just 9.5µg/m^3. It is considered that this data point may be spurious and artificially reducing the annual average in the area. To ensure a robust assessment at this monitoring location May's result could be removed from the data set. This increases the annual average before bias adjustment to 49.36µg/m^3 (up from 46.04µg/m^3) and post bias adjustment provides an annual average of 45.9 µg/m^3 (up from a previously reported 42.81 µg/m^3) with 92% data capture. When a drop off with distance calculation is carried out using this modified result an expected annual average at the relevant exposure location of 37.3 µg/m^3 is found. The ammended calculation parameters can be found below.



Enter data into the pink cells

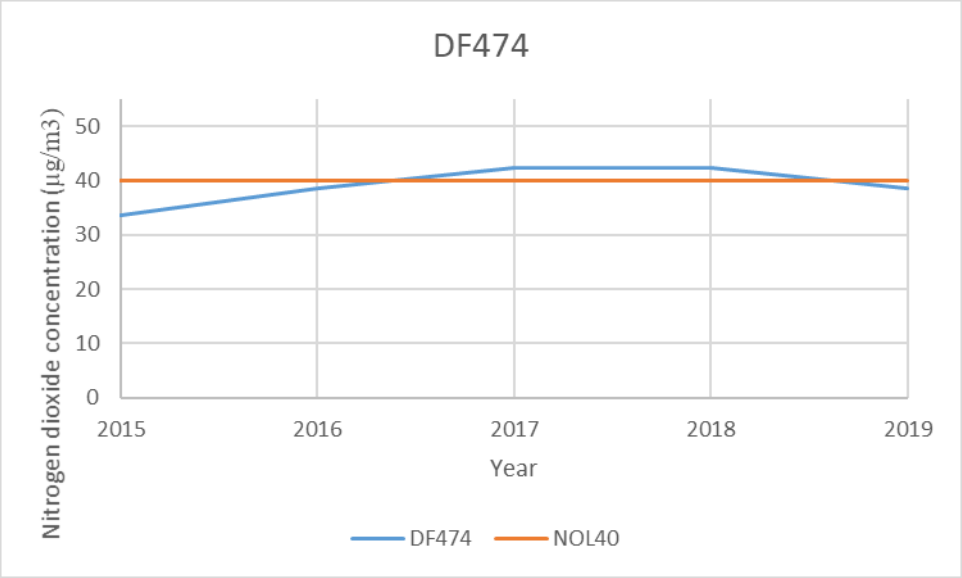
Step 1	How far from the KERB was your measurement made (in metres)?	1.25	metres
Step 2	How far from the KERB is your receptor (in metres)?	3.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.39111	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	45.9	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	37.3	µg/m^3

Given the above it is considered unlikely for any of the national objective levels to be exceeded in this location in 2019 at the relevant exposure location on the relevant receptor. There is confidence in this given that the relevant exposure point is additionally 5m further from the junction and therefore likely to have less pollution than reported above. This adds further confidence to the conclusion that no AQMA is necessary.

The reduction in pollutant level in 2019 follows works along this stretch of road which may have helped make efficiencies at the junction of the A53 and A41 leading to a reduction in pollutant in this location. Further years data will be collected to build up a trend following these works.

DF474: Bayston Hill

Over the past four years the distance corrected diffusion tube results for DF474 have been 33.6, 38.6 and 42.5 and 42.5 µg/m3. In 2019 a result of 38.6µg/m^3 was found after drop off with distance calculation, see appendices Table B.1. No other diffusion tubes in the Bayston Hill area have exceeded the national objective level. A trend graph has been provided below to present the results.



This year's result has halted what was previously an increasing trend in pollutant at this location and found levels of pollutant below the national objective levels at the nearest relevant receptor. DF474 will be monitored on an ongoing basis to consider if an AQMA is necessary and if so where its limits should extend. The start of a reduction in the overall pollution trend is promising. Additional years data will provide more information to see if the trend continues.

In conclusion exceedances were only found only in existing AQMAs. No new AQMAs are considered necessary while the existing AQMAs are still required. The data shows that in Shrewsbury at DF438 (the only location where a relevant receptor is found to have levels of pollutant above legal limits) and in Bridgnorth at DF13 the lowest recorded annual mean results to have ever been found were recorded. In addition DF28 in Bridgnorth recorded the second lowest result ever recorded. These results are promising however significant further reductions are required to achieve legal limits.

3.2.2 Particulate Matter (PM_{10})

PM10 was not monitored in the Shropshire Council area in 2019 as no exceedance was considered likely to exist given historic monitoring data available in past reports. No significant development has occurred which would necessitate additional detailed assessment.

3.2.3 Particulate Matter ($PM_{2.5}$)

In 2017 annual average levels of 7.6 µg/m^3 and 7.66 µg/m^3 were found at monitors located in Shrewsbury (see ASR 2018). This shows that concentrations are well below 10 µg/m^3, the level which the World Health Organisation deem to be unacceptable. As a result it is considered that PM2.5 levels in the County were satisfactory. Monirors were switched off in January 2018 and there are no additional data points to report. The monitoring locations remain in place for future need if required.

3.2.4 Sulphur Dioxide (SO_2)

Shropshire Council does to find it necessary to monitor SO_2 having regard to TG(16).

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

No automatic monitoring sites are currently used for the purposes of LAQM annual status reports.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
DF13	Pound Street	Urban Centre	371345	293081	NO2	YES	0.1	0.8	NO	Approx. 2m
DF20	Bryan & Knott Bridgnorth	Roadside	371580	293257	NO2	NO	NA	3.75	NO	Approx. 2m
DF27	Smithfield	Roadside	371397	293179	NO2	NO	0.1	3.3	NO	Approx. 2m
DF28	50 Whitburn Street	Roadside	371321	293131	NO2	YES	0.2	1.7	NO	Approx. 2m
DF29	Adj Rutters	Roadside	371297	293108	NO2	NO	1	3.3	NO	Approx. 2m
DF58	8 Underhill Street	Roadside	371795	292947	NO2	NO	0	1.85	NO	Approx. 2m
DF59	2A Underhill Street	Roadside	371799	293011	NO2	NO	0	1.6	NO	Approx. 2m
DF61	2 Bridge Street	Roadside	371951	292992	NO2	NO	0	2	NO	Approx. 2m
DF71	6 Pound Street, (On Pelican Crossing)	Roadside	371346	293086	NO2	YES	0.5	1.1	NO	Approx. 2m
DF72	Mini Roundabout Listley Street (lamp column)	Roadside	371375	293066	NO2	YES	4.4	1.6	NO	Approx. 2m
DF73	18 Pound Street (Downspout)	Roadside	371354	293089	NO2	YES	0.1	1.2	NO	Approx. 2m

DF74	Lamp Column 9 (Steps of new build)	Roadside	371340	293125	NO2	YES	1.9	2	NO	Approx. 2m
DF75	Lamp Column 48 (New Build)	Roadside	371345	293106	NO2	YES	1.1	3	NO	Approx. 2m
DF76	Higgs/Stanton Ralph (Opp 45 Whitburn Street)	Roadside	371366	293146	NO2	YES	0.1	1.5	NO	Approx. 2m
DF77	39/40 Whitburn Street Lamp Column	Roadside	371375	293161	NO2	YES	0.5	2.2	NO	Approx. 2m
DF78	Pedestrian Crossing outside 42 Whitburn Street	Roadside	371360	293152	NO2	YES	0.2	1.65	NO	Approx. 2m
DF79	Chill Salon Downspout between green and black door	Roadside	371346	293143	NO2	YES	0.1	1.5	NO	Approx. 2m
DF80	48 Whitburn Street Downspout	Roadside	371334	293139	NO2	YES	0.1	1.75	NO	Approx. 2m
DF81	Stretton House 3 Salop Street Downspout	Roadside	371288	293119	NO2	YES	0.1	1.2	NO	Approx. 2m
DF82	Pedestrian Crossing outside 8 Salop Street	Roadside	371264	293120	NO2	YES	2.5	0.7	NO	Approx. 2m
DF216	Wem High street	Roadside	351415	328965	NO2	NO	0.1	2.5	NO	Approx. 2m
DF217	Wem Mill Street (No. 10)	Roadside	351235	328802	NO2	NO	0.3	1.6	NO	Approx. 2m
DF220	Wem High Street (No. 70)	Roadside	351150	328891	NO2	NO	0.1	1.5	NO	Approx. 2m
DF223	Tern Hill Barn	Roadside	363640	332232	NO2	NO	2.15	1.25	NO	Approx. 2m

DF305	74 Castle Street	Roadside	328978	329879	NO2	NO	0.1	1.9	NO	Approx. 2m
DF306	A483 (1)	Roadside	328922	325981	NO2	NO	0	1.4	NO	Approx. 2m
DF314	Downspout on 10 Upper Church Street (Bookbinders)	Roadside	328866	329269	NO2	NO	0.1	1.3	NO	Approx. 2m
DF400	A49 Bayston Hill opp 3 Fishes	Roadside	348726	308959	NO2	NO	0	1.4	NO	Approx. 2m
DF403	Smithfield Road Corner of Victoria Avenue	Roadside	348891	312721	NO2	YES	0	2.4	NO	Approx. 2m
DF404	Town Walls, opp Murivance	Roadside	348889	312326	NO2	YES	0.4	1.8	NO	Approx. 2m
DF407	Dogpole (Car Entrance)	Roadside	349330	312503	NO2	YES	0.2	2.1	NO	Approx. 2m
DF413	Ravens Meadow, outside 23 Meadow Terrace	Roadside	349283	312851	NO2	YES	1.7	0.7	NO	Approx. 2m
DF417	Meole Brace, between Baileys Island & Retail Park	Roadside	348929	310108	NO2	NO	18.8	1.5	NO	Approx. 2m
DF420	Outside 25 Castle Street	Roadside	349396	312742	NO2	YES	1	3	NO	Approx. 2m
DF428A	Brittania Inn (Post office lampost)	Roadside	349445	313090	NO2	YES	0.5	2	NO	Approx. 2m
DF429	6A Severn Steps adj Lamp Post	Roadside	349237	312900	NO2	YES	0.1	1.5m	NO	Approx. 2m
DF436	The Albert Smithfield Road	Roadside	349283	312889	NO2	YES	0	2.8	NO	Approx. 2m
DF437	The Albert (duplicate)	Roadside	349283	312889	NO2	YES	0	2.8	NO	Approx. 2m

DF438	Station Hotel 4 Castle Foregate (façade)	Roadside	349400	312954	NO2	YES	0.1	1.2	NO	Approx. 2m
DF448	2 Vaughan's Cottages (downpipe)	Roadside	345769	313223	NO2	NO	0.1	2.8	NO	Approx. 2m
DF449	Dalton Drive (Lamp Post)	Roadside	346796	313509	NO2	NO	5.5	0.2	NO	Approx. 2m
DF456	Coton Hill / Berwick Road outside Royal Oak Pub	Roadside	349214	313427	NO2	NO	2.9	1.25	NO	Approx. 2m
DF458	Under Railway Bridge Over Castle Foregate	Roadside	349426	313028	NO2	YES	NA	2	NO	Approx. 2m
DF459	Post in car park outside railwat station	Roadside	349424	312936	NO2	YES	NA	18	NO	Approx. 2m
DF460	On Bellstone opposite the Junction with Claremont St	Roadside	348952	312495	NO2	YES	0.1	3	NO	Approx. 2m
DF461	Junction of Dogpole with High St/Wyle Cop	Roadside	349327	312389	NO2	YES	2	2	NO	Approx. 2m
DF462	Welshpool Road	Roadside	345203	313427	NO2	NO	NA	1.7	NO	Approx. 2m
DF468	Downpipe on Front of Number 3 Witchurch Road	Roadside	350376	314599	NO2	NO	0	7.3	NO	Approx. 2m
DF474	Lamp Column, 2 Whiterock Cottages	Roadside	348647	308771	NO2	NO	0.9	1.7	NO	Approx. 2m

DF475	Electricity Column outside Windyridge	Roadside	348646	308685	NO2	NO	4.9	1.7	NO	Approx. 2m
DF476	Chester Street on street parking bay height sensor post	Roadside	349360	312962	NO2	YES	0.3	1.4	NO	Approx. 2m
DF477	Bus opp Community Church, Chester St	Roadside	349299	313108	NO2	YES	1	2.1	NO	Approx. 2m
DF480	lamp post by takeaway near Britaninia Inn	Roadside	349466	313151	NO2	YES	0.5	2.6	NO	Approx. 2m
DF482	Royal Mail Lamp column by Traffic Lights	Roadside	349436	313064	NO2	YES	NA	1	NO	Approx. 2m
DF485	Frankwell Terrace	Roadside	348815	312854	NO2	YES	1.4	2.6	NO	Approx. 2m
DF487	English Bridge by St Julian Friars (No Entry Sign)	Roadside	349529	312328	NO2	YES	7.7	3	NO	Approx. 2m
DF501	Corner of 25 Chester Street/Cross Street	Roadside	349349	313071	NO2	YES	1.8	1.6	NO	Approx. 2m
DF502	Post outside Cambrian House	Roadside	349364	312998	NO2	YES	0.5	2.5	NO	Approx. 2m

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.3 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
DF13	371345	293081	Roadside	Diffusion Tube	100	100	**41.9**	**41.5**	**44**	**40.5**	35.6
DF20	371580	293257	Roadside	Diffusion Tube	100	100	21.3	22.9	31.8	22.7	20.8
DF27	371397	293179	Roadside	Diffusion Tube	100	100	26.5	27.8	28.2	26.0	25.8
DF28	371321	293131	Roadside	Diffusion Tube	100	100	**51.2**	**52.9**	**40.3**	**48.2**	**43.4**
DF29	371297	293108	Roadside	Diffusion Tube	100	92	29	29.7	29.4	28.9	28.5
DF58	371795	292947	Roadside	Diffusion Tube	100	100	37.4	35.8	31.7	33.1	28.5
DF59	371799	293011	Roadside	Diffusion Tube	100	100	32.1	33	34.2	29.6	28.5
DF61	371951	292992	Roadside	Diffusion Tube	100	100	31.6	30.4	32.2	28.0	27.0
DF71	371346	293086	Roadside	Diffusion Tube	100	100		-	**58.5**	**50.9**	**49.1**
DF72	371375	293066	Roadside	Diffusion Tube	100	100		-	-	30.0	28.2
DF73	371354	293089	Roadside	Diffusion Tube	100	92		-	-	34.1	34.2
DF74	371340	293125	Roadside	Diffusion Tube	100	100		-	-	30.9	29.4
DF75	371345	293106	Roadside	Diffusion Tube	100	100		-	-	30.9	27.6
DF76	371366	293146	Roadside	Diffusion Tube	100	100		-	-	33.8	31.8

DF77	371375	293161	Roadside	Diffusion Tube	100	100		-	-	**40.3**	38.7
DF78	371360	293152	Roadside	Diffusion Tube	100	100		-	-	39.9	38.5
DF79	371346	293143	Roadside	Diffusion Tube	100	100		-	-	**48.8**	**42.3**
DF80	371334	293139	Roadside	Diffusion Tube	100	100		-	-	**50.3**	**43.6**
DF81	371288	293119	Roadside	Diffusion Tube	100	100		-	-	28.8	26.7
DF82	371264	293120	Roadside	Diffusion Tube	100	100		-	-	27.4	22.7
DF216	351415	328965	Roadside	Diffusion Tube	100	100	28.9	28.5	27.7	28.0	24.4
DF217	351235	328802	Roadside	Diffusion Tube	100	92	35.7	34.4	22.4	24.8	22.3
DF220	351150	328891	Roadside	Diffusion Tube	100	100	26.2	26.2	24.9	23.9	23.3
DF223	363640	332232	Roadside	Diffusion Tube	100	100	**50.3**	**42.5**	**50.4**	**53.6**	**42.8**
DF305	328978	329879	Roadside	Diffusion Tube	100	100	27.6	27.8	28.3	29.0	27.2
DF306	328922	325981	Roadside	Diffusion Tube	100	92	32.3	34.2	31.3	28.7	27.2
DF314	328866	329269	Roadside	Diffusion Tube	100	100		-	-	38.1	33.9
DF400	348726	308959	Roadside	Diffusion Tube	100	100	27.4	32	34.0	33.2	29.3
DF403	348891	312721	Roadside	Diffusion Tube	100	100	31.7	31	29.3	30.5	30.8
DF404	348889	312326	Roadside	Diffusion Tube	100	75	16.9	18.1	15.8	16.9	18.2
DF407	349330	312503	Roadside	Diffusion Tube	100	92	27.5	27.4	24.8	24.1	23.4
DF413	349283	312851	Roadside	Diffusion Tube	100	100	31.8	31.7	28.6	29.5	26.3

DF417	348929	310108	Roadside	Diffusion Tube	100	100	25.5	31.1	24.7	27.8	26.4
DF420	349396	312742	Roadside	Diffusion Tube	100	100	29.1	29.2	28.0	27.8	26.3
DF428A	349445	313090	Roadside	Diffusion Tube	100	100		-	-	38.3	36.1
DF429	349237	312900	Roadside	Diffusion Tube	100	100	31.4	27.5	28.2	-	28.8
DF436	349283	312889	Roadside	Diffusion Tube	100	92	36.1	36.4	35.4	36.7	31.2
DF437	349283	312889	Roadside	Diffusion Tube	100	92	37.3	37.6	34.8	35.6	33.3
DF438	349400	312954	Roadside	Diffusion Tube	100	100	**60.8**	**58.5**	**54.0**	**58.8**	**53.0**
DF448	345769	313223	Roadside	Diffusion Tube	100	100	10.4	10.3	9.0	9.6	9.1
DF449	346796	313509	Roadside	Diffusion Tube	100	100	22.5	20.7	20.4	20.1	17.2
DF456	349214	313427	Roadside	Diffusion Tube	100	75	**42.2**	**41**	**40.2**	39.7	28.8
DF458	349426	313028	Roadside	Diffusion Tube	100	100	**52.4**	**53.9**	**53.6**	**55.0**	**48.6**
DF459	349424	312936	Roadside	Diffusion Tube	100	100	35.9	37.4	38.6	**42.1**	35.6
DF460	348952	312495	Roadside	Diffusion Tube	100	100	25.3	26.4	30.5	25.7	24.2
DF461	349327	312389	Roadside	Diffusion Tube	100	92	32.7	31.7	30.5	30.9	26.2
DF462	345203	313427	Roadside	Diffusion Tube	100	100	20.5	21.5	20.5	19.3	18.7
DF468	350376	314599	Roadside	Diffusion Tube	100	100	22	23	20.6	21.8	20.9
DF474	348647	308771	Roadside	Diffusion Tube	100	100	36.4	**41.5**	**46.3**	**46.4**	**42.1**
DF475	348646	308685	Roadside	Diffusion Tube	100	100	33.5	39.9	**43.8**	**53.0**	**42.1**

DF476	349360	312962	Roadside	Diffusion Tube	100	100	28.7	30.6	31.2	33.1	29.1
DF477	349349	313072	Roadside	Diffusion Tube	100	100	31	31.2	33.5	31.3	29.8
DF480	349466	313151	Roadside	Diffusion Tube	100	100	33	34.2	32.7	31.8	31.6
DF482	349436	313064	Roadside	Diffusion Tube	100	100	-	-	31.6	**45.7**	38.2
DF485	348815	312854	Roadside	Diffusion Tube	100	100	-	-	28.4	30.9	26.1
DF487	349529	312328	Roadside	Diffusion Tube	100	100	-	-	-	22.7	21.9
DF501	349349	313071	Roadside	Diffusion Tube	100	100	-	-	-	38.2	33.5
DF502	349364	312998	Roadside	Diffusion Tube	100	83	-	-	-	31.2	26.3

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75% (NB none was required due to good data capture at all sites)**

☒ **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 adjustment**

Notes:

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

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

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

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

(3) Means for diffusion tubes have been corrected for bias. 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) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

No automatic monitoring sites are currently used for the purposes of LAQM annual status reports.

Table A.5 – Annual Mean PM_{10} Monitoring Results

No monitoring sites are currently used for the purposes of LAQM annual status reports.

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

No automatic monitoring sites are currently used for the purposes of LAQM annual status reports.

Table A.7 – $PM_{2.5}$ Monitoring Results

No monitoring sites are currently used for the purposes of LAQM annual status reports.

Table A.8 – SO_2 Monitoring Results

No monitoring sites are currently used for the purposes of LAQM annual status reports.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DF13	371345	293081	46.65	39.12	24.99	39.30	40.92	38.01	40.62	37.15	22.12	40.37	44.37	46.24	38.32	35.64	35.0
DF20	371580	293257	24.05	27.84	44.37	21.79	15.46	17.07	14.72	16.19	9.41	22.65	23.74	30.53	22.32	20.76	NA
DF27	371397	293179	33.92	33.88	27.24	31.04	22.93	24.32	23.88	21.88	12.55	28.48	33.29	39.00	27.70	25.76	25.6
DF28	371321	293131	65.99	54.96	30.11	56.36	45.92	41.14	45.42	37.47	25.32	49.12	53.68	54.10	**46.63**	**43.37**	**42.4**
DF29	371297	293108	37.81	33.92	30.17	39.39	28.01	30.07	28.23	22.45		28.54	28.43	30.14	30.65	28.51	27.0
DF58	371795	292947	42.64	34.49	28.72	35.25	32.32	27.14	25.43	30.01	20.24	29.66	27.86	34.08	30.65	28.51	28.5
DF59	371799	293011	30.17	34.57	37.61	27.53	23.82	25.52	33.16	24.69	13.70	31.92	43.65	40.89	30.60	28.46	28.5
DF61	371951	292992	35.67	32.40	31.67	34.81	30.21	29.63	26.25	20.18	14.71	26.77	34.60	31.72	29.05	27.02	27.0
DF71	371346	293086	71.07	61.33	56.72	45.45	53.11	50.39	53.52	51.54	28.83	42.63	57.49	61.82	**52.83**	**49.13**	**47.0**
DF72	371375	293066	42.78	35.52	29.54	30.79	31.32	30.58	27.23	22.11	15.81	29.07	37.39	31.18	30.28	28.16	21.7
DF73	371354	293089		65.13	20.48	23.68	71.81	32.93	32.40	25.63	17.00	32.10	42.31	40.47	36.72	34.15	33.7
DF74	371340	293125	41.77	34.11	34.94	37.92	25.54	27.89	27.62	23.58	15.80	29.14	45.57	35.32	31.60	29.39	25.8
DF75	371345	293106	39.33	32.84	31.50	40.99	27.60	31.97	24.88	22.16	15.27	27.46	38.24	23.91	29.68	27.60	25.9
DF76	371366	293146	37.55	33.94	50.99	30.45	26.15	27.31	26.55	34.63	19.30	36.56	40.37	46.50	34.19	31.80	31.4

DF77	371375	293161	52.28	39.43	28.53	72.80	40.47	36.04	50.99	34.86	19.72	34.28	45.48	44.00	**41.57**	38.66	37.1
DF78	371360	293152	58.05	41.59	45.98	42.81	42.89	40.44	43.26	35.63	21.95	33.99	48.36	42.29	**41.44**	38.54	37.7
DF79	371346	293143	49.36	43.69	53.59	52.96	47.93	47.79	41.64	39.60	24.32	46.96	51.28	46.17	**45.44**	**42.26**	**41.8**
DF80	371334	293139	53.11	48.38	51.58	55.77	51.08	48.32	48.14	37.89	26.89	37.54	54.63	49.82	**46.93**	**43.64**	**43.2**
DF81	371288	293119	37.54	26.14	25.48	36.45	27.78	28.29	27.45	19.99	12.15	40.67	37.55	24.67	28.68	26.67	26.3
DF82	371264	293120	32.22	24.87	28.51	32.40	22.69	25.46	22.51	15.53	14.58	23.61	30.35	20.22	24.41	22.70	18.0
DF216	351415	328965	30.47	21.65	28.80	29.26	30.96	29.29	25.17	20.58	12.97	26.39	37.34	21.88	26.23	24.39	24.2
DF217	351235	328802	28.88	32.96	18.92	23.92	18.81	20.69	16.38	14.68	9.18	25.77		54.09	24.02	22.34	21.7
DF220	351150	328891	34.54	27.13	22.88	33.28	25.14	26.39	21.74	18.37	11.85	24.64	33.81	21.41	25.10	23.34	23.1
DF223	363640	332232	62.56	65.39	52.54	42.26	9.50	50.69	54.03	42.73	27.69	49.01	50.30	45.73	**46.04**	**42.81**	34.9
DF305	328978	329879	41.29	33.30	29.19	28.38	23.34	28.94	24.15	21.19	14.17	34.92	40.71	31.63	29.27	27.22	27.0
DF306	328922	325981	38.42	32.59	27.07	29.58	28.68	30.03	25.57	23.49	14.18	32.05	40.60		29.30	27.25	27.3
DF314	328866	329269	51.66	44.23	37.08	29.02	34.42	34.83	32.65	26.57	18.06	34.48	51.55	42.55	36.43	33.88	33.4
DF400	348726	308959	32.61	29.03	29.05	51.55	30.18	35.13	29.41	25.54	15.77	35.04	36.23	28.90	31.54	29.33	29.3
DF403	348891	312721	42.51	36.42	33.22	37.51	30.77	33.01	29.89	26.45	16.97	37.62	39.50	34.02	33.16	30.84	30.8
DF404	348889	312326	25.02			17.79	14.85	19.04	16.24		7.92	19.03	37.78	18.30	19.55	18.19	17.7
DF407	349330	312503	30.62	28.10	28.37	32.59	24.20	26.27	21.44		22.51	25.23	21.79	15.47	25.14	23.38	23.7
DF413	349283	312851	34.88	33.24	29.15	38.00	26.87	27.55	25.31	23.27	14.76	28.73	24.18	32.97	28.24	26.27	22.3
DF417	348929	310108	31.41	33.67	21.15	41.16	28.60	28.78	26.47	23.36	11.87	28.72	38.28	27.80	28.44	26.45	26.5
DF420	349396	312742	39.57	32.81	27.98	34.49	25.15	26.44	22.03	19.73	13.43	29.58	35.86	32.68	28.31	26.33	25.1
DF428A	349445	313090	44.01	53.08	32.13	55.33	35.19	38.37	32.92	31.17	22.00	38.69	33.01	50.22	38.84	36.12	34.7
DF429	349237	312900	41.30	41.86	31.59	37.23	24.91	28.51	23.06	22.86	15.38	30.29	38.67	35.80	30.95	28.79	28.5
DF436	349283	312889	44.52	37.81	35.49	44.03	35.50	33.95	31.08	23.70	17.82		29.78	34.88	33.51	31.16	31.2
DF437	349283	312889	45.46	37.41	31.42	46.05	34.26	39.33	32.20	28.03	19.90		39.68	40.32	35.82	33.32	33.3
DF438	349400	312954	68.45	59.93	62.24	66.02	61.78	67.62	58.13	44.45	26.47	51.83	61.02	55.34	**56.94**	**52.95**	**52.2**
DF448	345769	313223	15.92	12.18	7.41	11.54	6.02	6.38	5.19	6.47	4.55	11.89	18.28	12.09	9.83	9.14	9.1

DF449	346796	313509	25.92	20.74	19.17	27.69	15.01	16.34	14.63	12.87	8.44	21.11	23.07	17.28	18.52	17.23	12.2
DF456	349214	313427				33.43	33.02	32.10	31.47	26.65	18.52	31.56	36.53	35.02	30.92	28.76	23.6
DF458	349426	313028	63.90	61.72	51.74	65.15	47.90	54.42	53.91	44.04	23.47	47.35	54.45	59.13	**52.27**	**48.61**	NA
DF459	349424	312936	53.88	41.94	42.16	49.29	29.90	38.24	35.07	28.20	20.37	34.25	47.25	39.07	38.30	35.62	NA
DF460	348952	312495	35.16	32.19	22.86	21.65	20.42	18.85	18.88	19.94	12.63	23.36	31.69	54.44	26.01	24.19	24.0
DF461	349327	312389	39.59	31.74	33.61	43.60	28.44	22.71	15.78	19.77	14.70	30.11		30.06	28.19	26.22	23.5
DF462	345203	313427	29.44	23.53	21.04	20.60	16.94	15.43	16.27	16.85	8.81	22.44	29.09	21.27	20.14	18.73	NA
DF468	350376	314599	26.58	29.92	18.40	30.95	19.33	18.40	16.53	17.47	10.19	22.49	30.62	28.17	22.42	20.85	20.9
DF474	348647	308771	44.49	61.02	44.20	34.57	41.90	46.95	45.96	45.57	24.59	45.77	57.72	51.00	**45.31**	**42.14**	38.6
DF475	348646	308685	54.34	47.09	48.23	53.97	52.92	53.94	50.03	43.35	22.71	17.96	60.59	38.36	**45.29**	**42.12**	30.8
DF476	349360	312962	39.95	36.89	25.89	37.28	30.46	31.65	29.42	26.79	15.89	29.25	39.23	33.13	31.32	29.13	28.3
DF477	349349	313072	42.14	39.23	30.82	30.48	28.13	30.91	27.66	29.94	13.10	33.85	42.13	36.77	32.10	29.85	27.9
DF480	349466	313151	38.80	47.79	26.24	46.00	28.38	33.67	28.42	30.20	16.16	32.94	39.23	39.82	33.97	31.59	30.6
DF482	349436	313064	46.11	52.69	32.40	49.04	35.26	40.20	36.42	35.03	22.37	35.69	49.50	57.62	**41.03**	38.16	NA
DF485	348815	312854	37.26	28.04	27.36	37.79	31.15	28.65	25.88	19.89	14.24	23.30	35.12	27.62	28.02	26.06	24.0
DF487	349529	312328	31.55	24.60	34.30	20.39	22.70	21.32	20.50	17.48	11.62	21.13	32.44	23.96	23.50	21.85	17.7
DF501	349349	313071	33.85	46.57	31.07	48.72	34.59	37.07	32.47	25.84	19.02	36.02	44.57	42.78	36.05	33.53	29.3
DF502	349364	312998		31.82	22.55	49.46	28.07	30.34	23.34	20.49	14.31		33.05	29.86	28.33	26.35	25.6

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

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

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

Additional sources
No significant sources of pollution have been identified which have not had previous consideration. It is noted that the Shrewsbury North West Relief Road would be likely to cause significant changes to traffic flows along roads heading into and out of Shrewsbury. This potential source will be considered should it be brought forward with air quality assessment advocated at any planning application stage to a level that satisfies requirements of the LAQM regime.

Shropshire Council's authority area has a significant number of poultry units. These have previously been assessed using LAQM.TG16 screening tools with no exceedances of pollutant found to be likely. All additions to existing poultry units and new poultry installations have been given air quality consideration at planning stage. Where thresholds for assessment have been flagged up these have been requested as a material planning concern. In the last year no applications have been approved which require assessment following advice at the planning stage to keep residential properties at least 100m from any proposed installation.

Diffusion Tubes QA/QC and bias adjustment choice.
As there are no locally running NO2 continuous monitors in Shropshire the option to provide a locally derived bias adjustment for diffusion tubes is not available. Shropshire Council's diffusion tube network is spread over a wide range of settings from rural to urban locations. It was considered inappropriate to try and use data from any other individual continuous monitor to produce a bias adjustment factor. For the above reasons the national bias adjustment factor was used. No adjustment for tube chemistry has taken place.

Shropshire Council uses diffusion tubes from Gradko International Ltd. They are analysed with a 20% TEA in water method. The bias adjustment factor used was that found in the National Diffusion Tube Bias Adjustment Factor Spreadsheet v03/20 of 0.93 was used. This provided a bias adjustment factor of 0.93. It was at this time, before any further updates to the bias adjustment factor had been made through subsequent revisions, that all work on diffusion tube results was carried out. It is noted that subsequent bias adjustment factor revisions, Diffusion Tube Bias Adjustment Factors 06/20 Issue of the Spreadsheet and Diffusion Tube Bias Adjustment Factors 09/20 Issue of the Spreadsheet, found additional reductions to be made in the bias adjustment factor. 06/20 found an additional 0.01 reduction providing a result of 0.92 while 09/20 found again an addition 0.01 reduction providing a result of 0.91). These additional reductions have not been accounted for in this report due to the time required to alter all results including drop off with distance calculations. The fact that additional reductions were found provides confidence that the results reported are robust and can be viewed with confidence in the light that if they reported under the national objective levels they would have only further reduced should subsequent bias adjustment factors have been used.

The Gradko 20% TEA in water precision results for 2019 found that there was good precision on 30 out of 31 tested occasions, 97% of occasions. This is a very high proportion of good results. Given this the diffusion tubes are considered to be reasonably precise. For confirmation visit:
https://laqm.defra.gov.uk/documents/Tube_Precision_2019_version_09_20%20Final_REDUCED_FINAL.pdf
As a result, it is considered that the QA/QC element for these monitors is satisfied.

Diffusion tube fall off with distance calculation discussion.
Fall off with distance calculations have been carried out, where applicable, for every diffusion tube location with results reported in tables of this report. It is appreciated that this may not necessarily be required however it has been considered appropriate to enable residents to know what they may be exposed to at their properties rather than at monitoring points. The calculations were carried out using

the NO2 Fall-Off with Distance Calculator (Version 4.2) available on the LAQM webpages at : https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html.

The following diffusion tube location results exceeded the NO2 annual average national objective level of 40µg/m3 at the monitoring location: DF28, DF71, DF79, DF80, DF223, DF438, DF474, DF475. Additionally, DF458 exceeded the objective level however had no relevant receptor to carry out drop off with distance calculations.

The specific fall off with distance calculations for the tubes above is given below for reference. A discussion of the locations can be found in the main body of the report where the result post fall-off with distance calculation still found a potential exceedance of the National Objective Levels.

DF28: 50 Whitburn Street

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.9	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.368588	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	43.37	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	42.4	µg/m^3

DF71: 6 Pound Street

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.1	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.368588	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	49.13	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	47.0	µg/m^3

DF79: Chilli downspout

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.6	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.368588	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	42.26	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	41.8	µg/m^3

DF80: 48 Whitburn Street

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.75	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.85	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.368588	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	43.64	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	43.2	µg/m^3

DF223: Tern Hill Barn

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.25	metres
Step 2	How far from the KERB is your receptor (in metres)?	3.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.39111	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	42.81	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	34.9	µg/m^3

DF438: Station Hotel

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.2	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.3	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	9.327068	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	52.95	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	52.2	µg/m^3

DF474: Whiterock Cottages

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	2.6	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.189727	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	42.14	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	38.6	µg/m^3

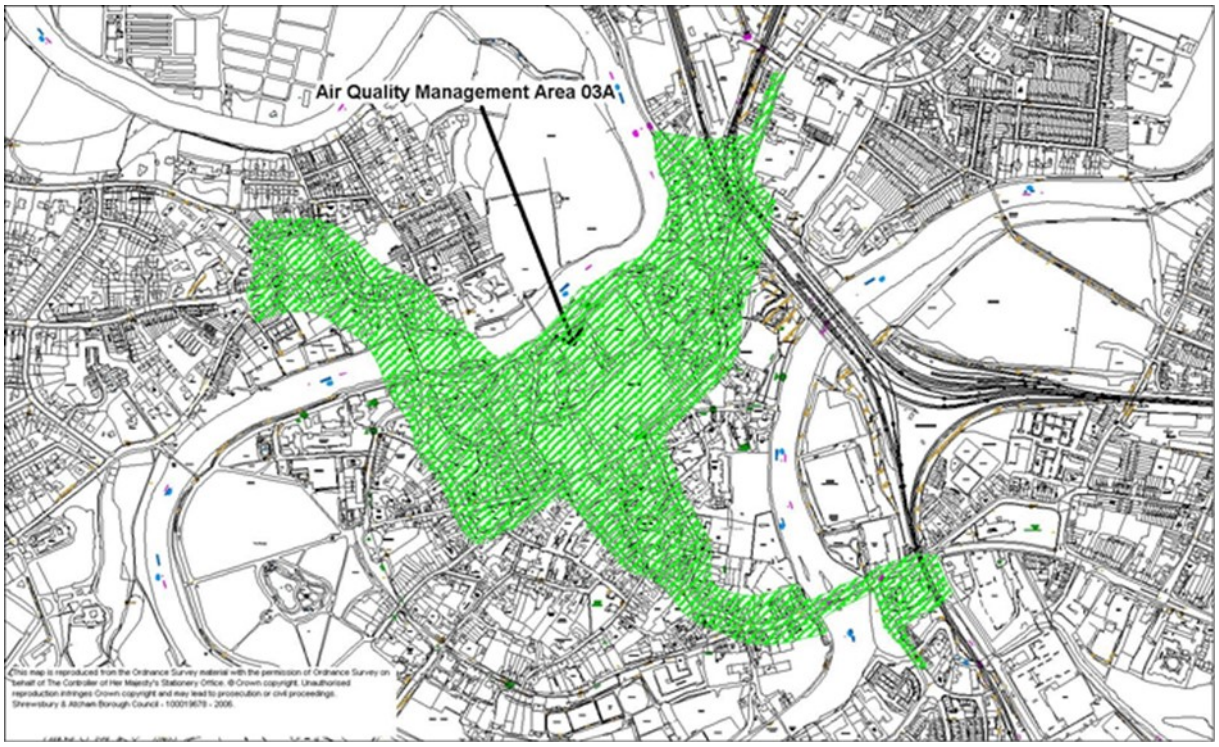
DF475: Windyridge

Enter data into the pink cells

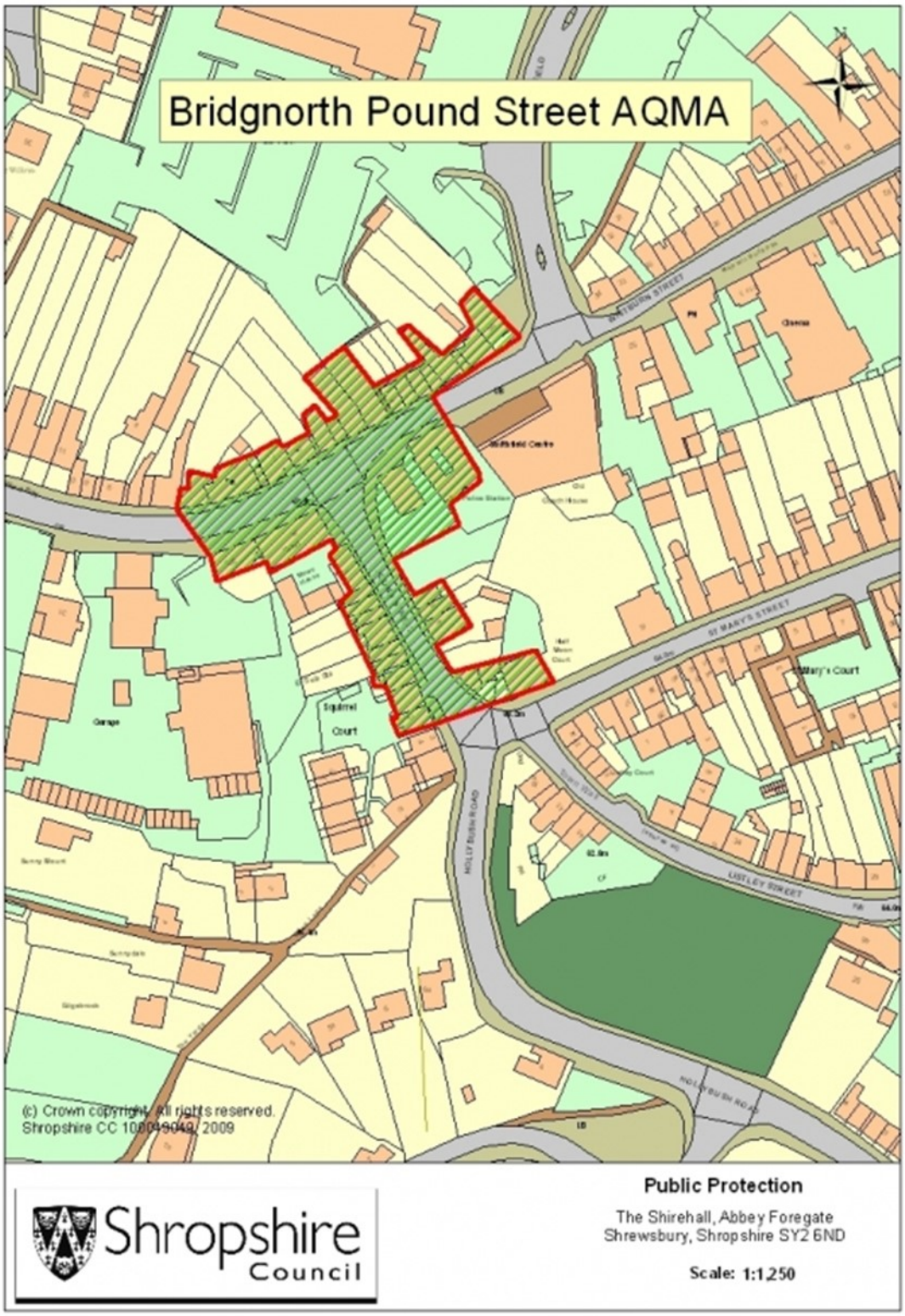
Step 1	How far from the KERB was your measurement made (in metres)?	1.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	6.6	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.189727	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	42.12	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	30.8	µg/m^3

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

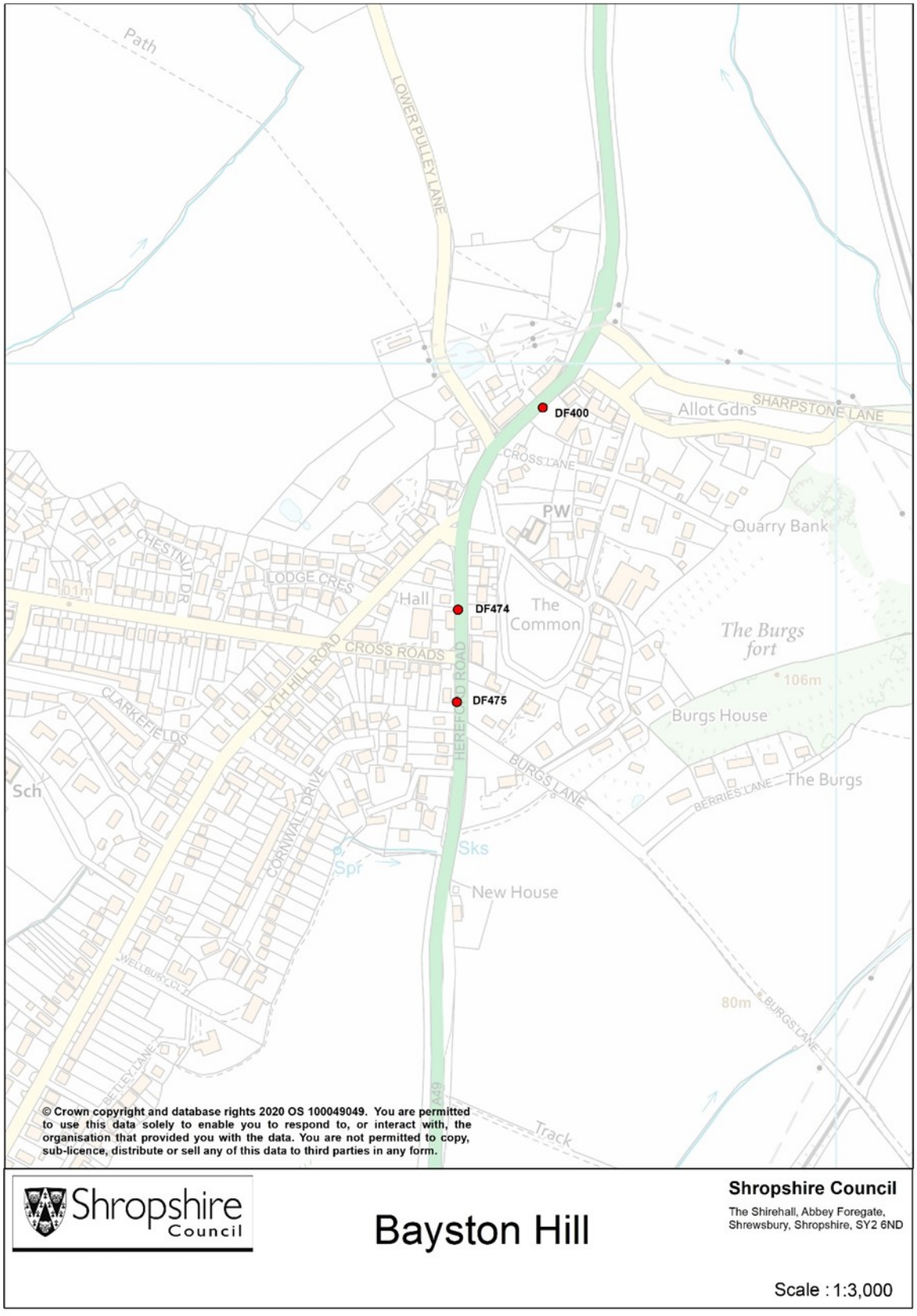
Map of Shrewsbury AQMA No 3 (nitrogen dioxide).

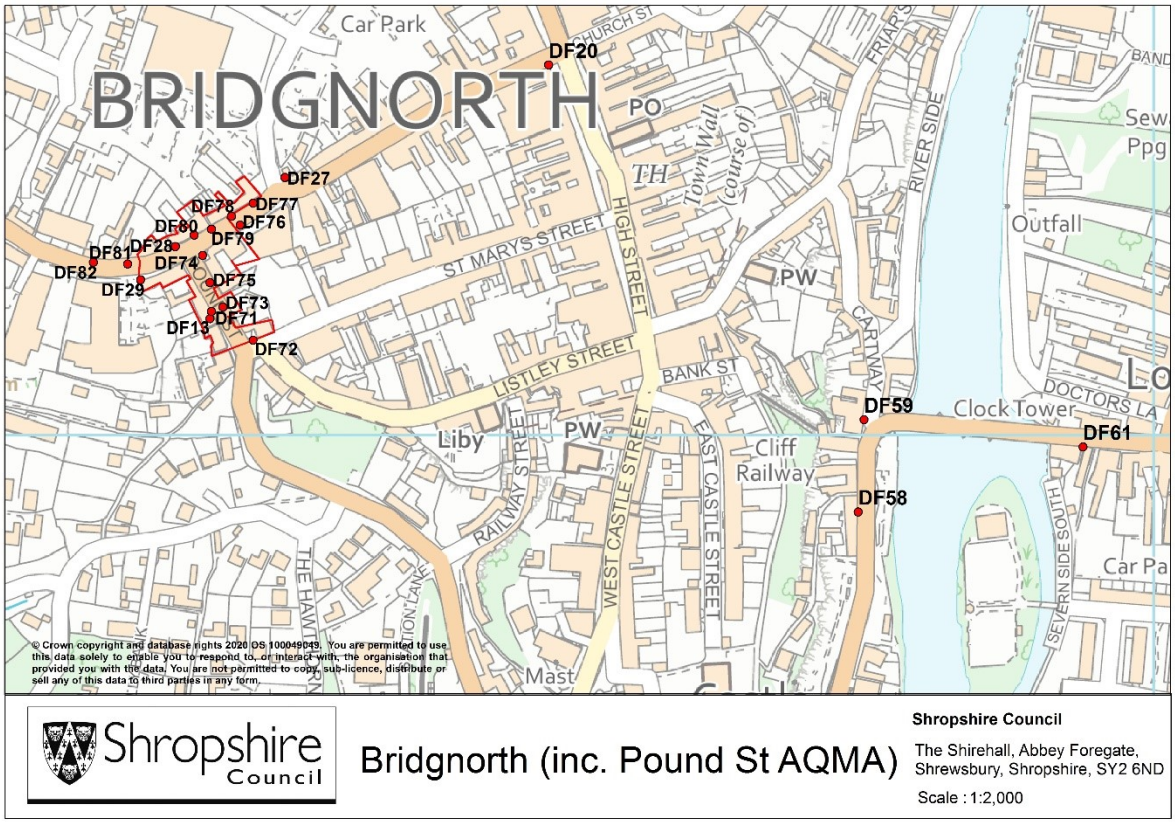


Map of Bridgnorth Pound Street AQMA



Diffusion tube location maps

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DF78
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DF73
DF71
DF13
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ST MARYS STREET
HIGH STREET
LISTLEY STREET
BANK ST
RAILWAY STREET
WEST CASTLE STREET
EAST CASTLE STREET
CARTWAY
RIVER SIDE
FRIARS
DOCTORS LA
Clock Tower
DF59
DF61
DF58
Cliff Railway
Outfall
PW
Liby
Mast
SEVERN SIDE SOUTH
THE HAWTHORNS
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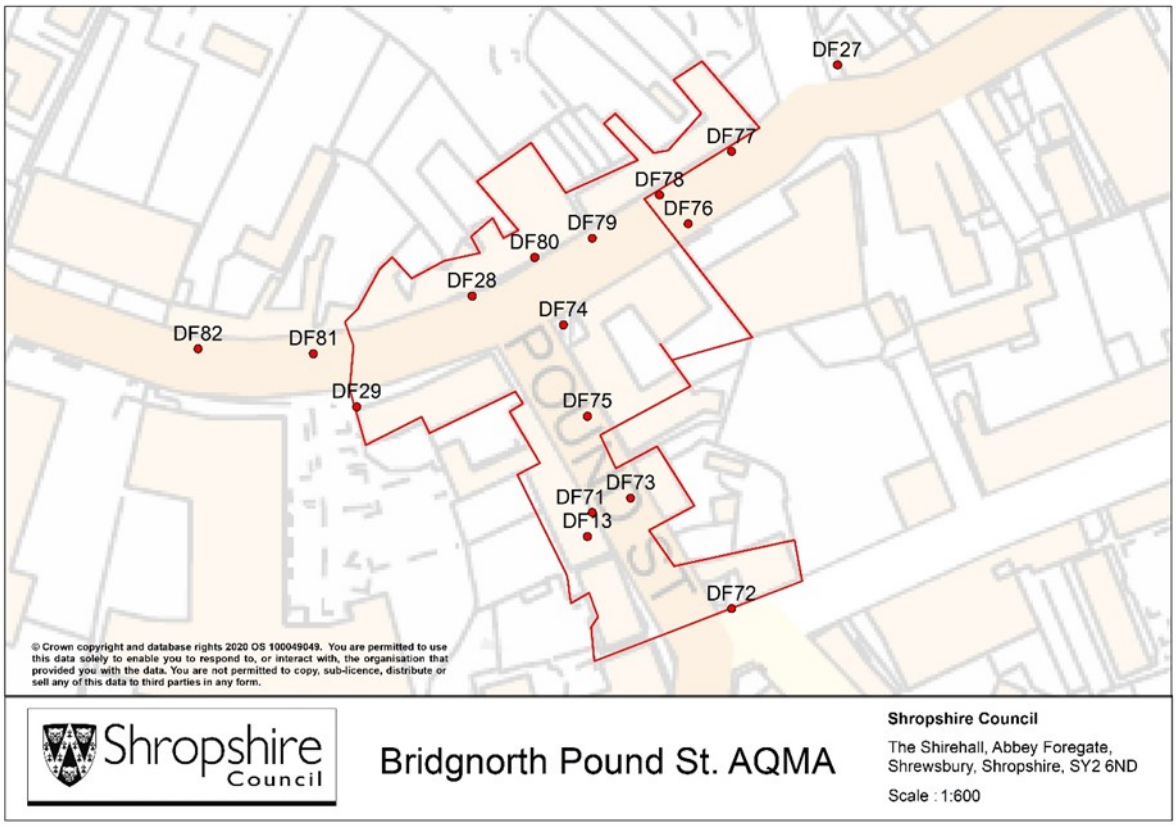
Shropshire Council
Bridgnorth (inc. Pound St AQMA)
Shropshire Council
The Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND
Scale : 1:2,000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Shropshire Council
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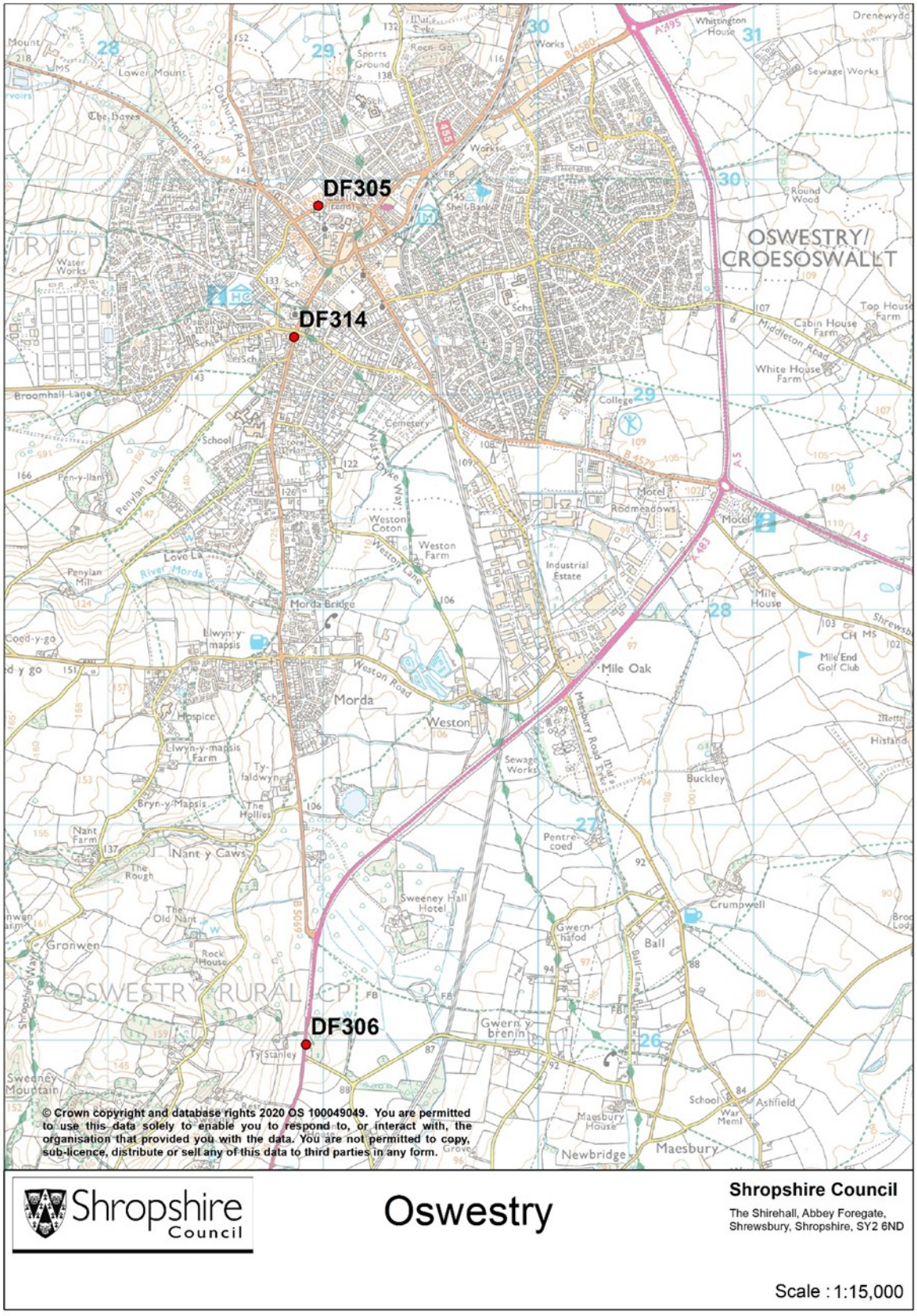
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OSWESTRY/
CROESOSWALLT
OSWESTRY RURAL CP
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Shrewsbury, Shropshire, SY2 6ND
Scale : 1:15,000
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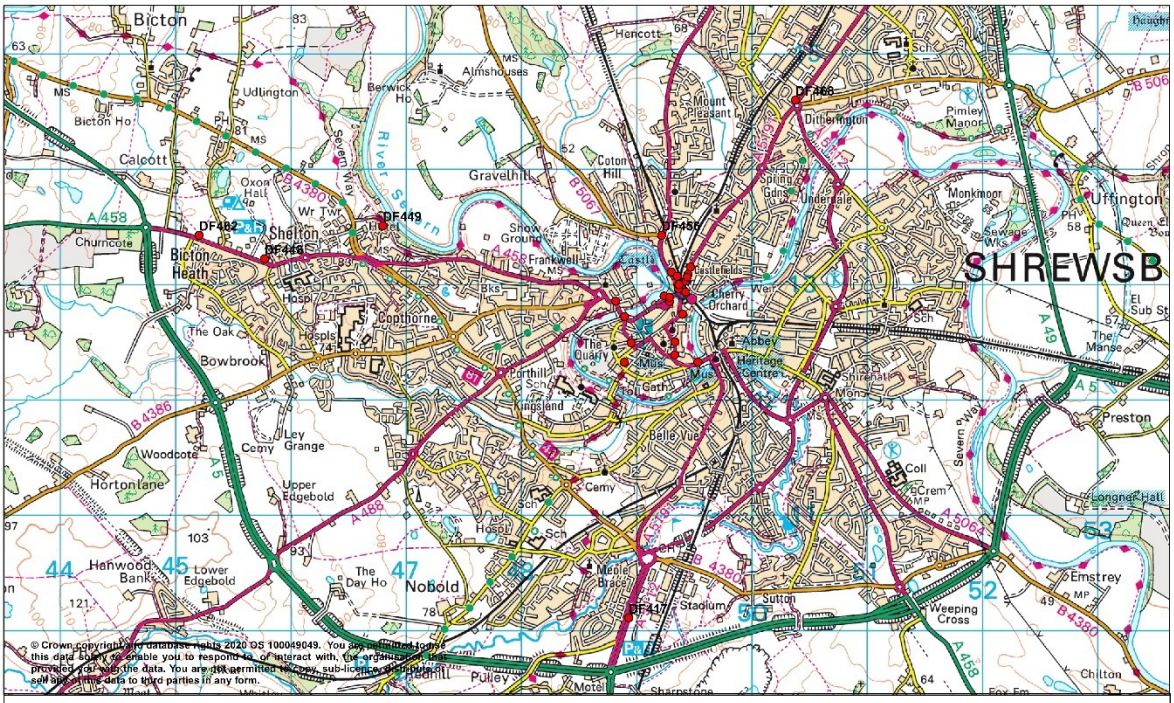

Shropshire Council

Shrewsbury

Shropshire Council
The Shirehall, Abbey Foregate,
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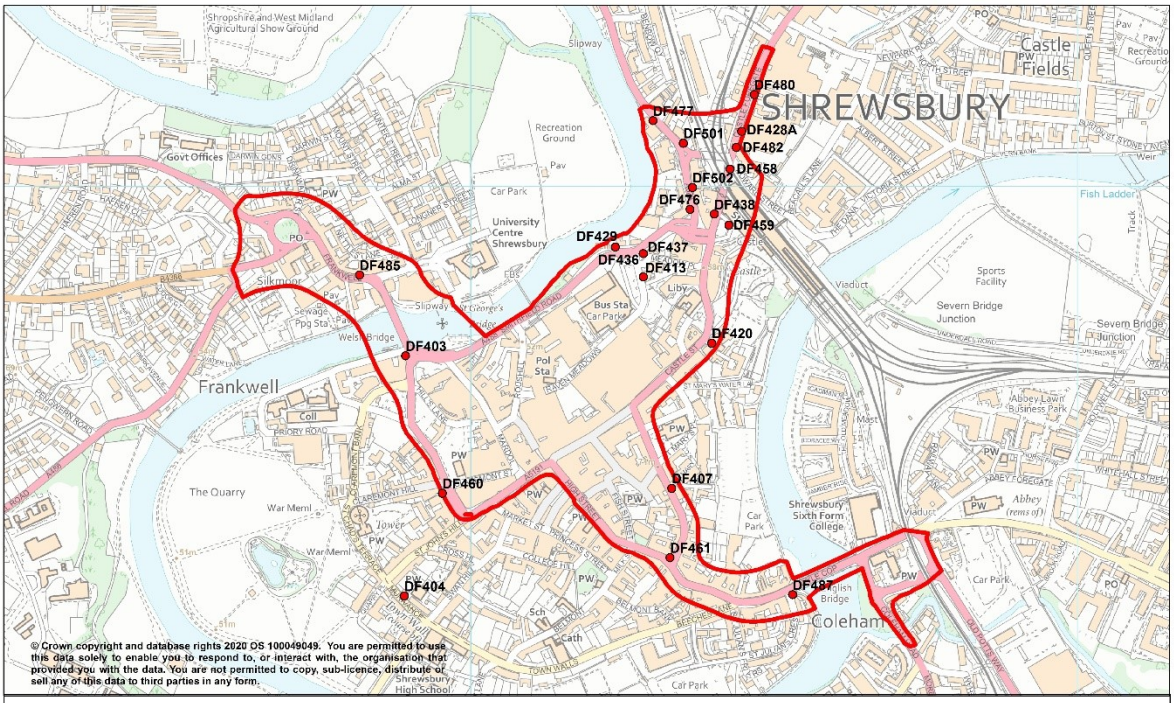
Scale : 1:25,000



Shropshire Council

Shrewsbury AQMA

Shropshire Council
The Shirehall, Abbey Foregate,
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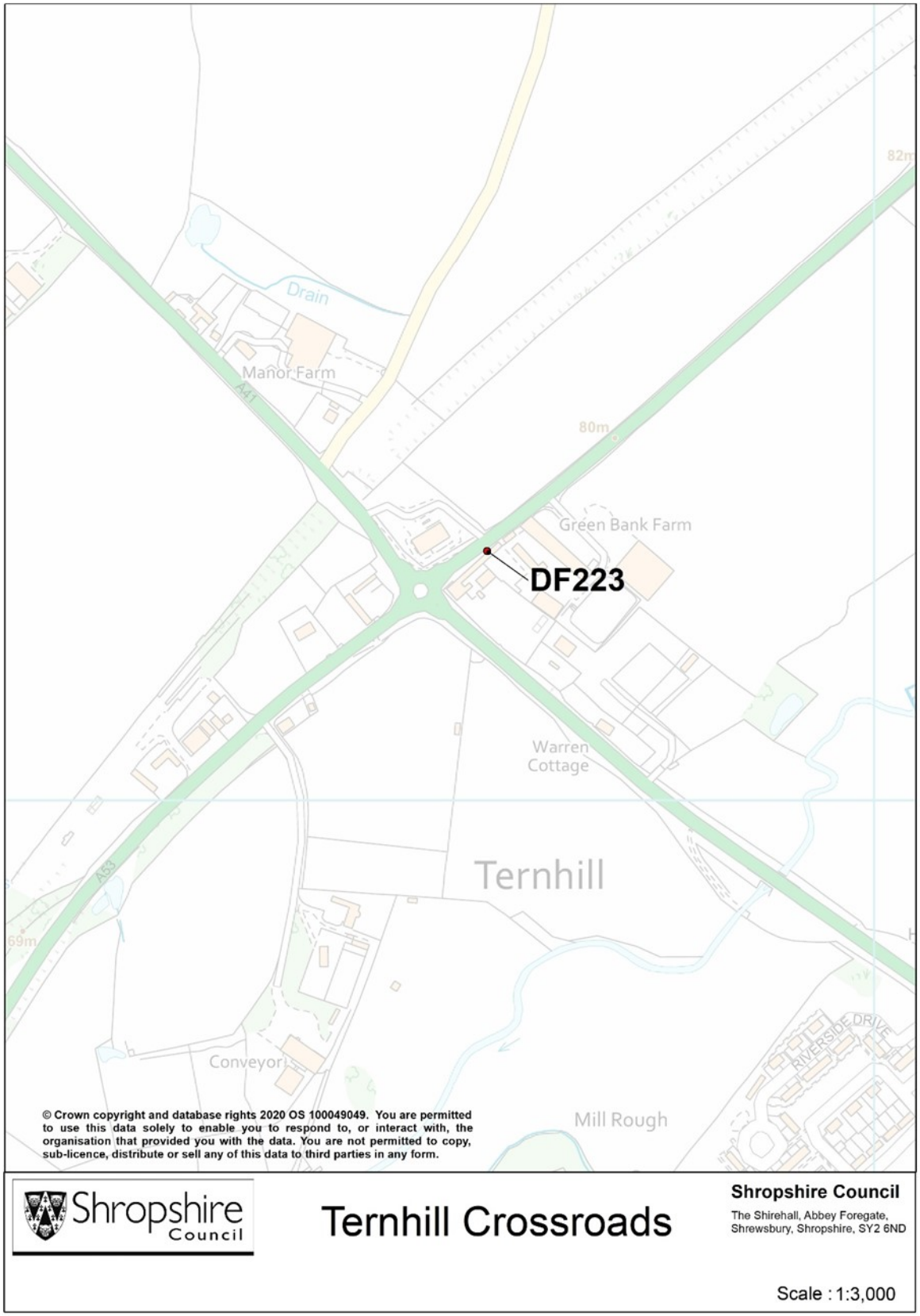
Scale : 1:4,750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Warren
Cottage
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A53
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Conveyor
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Mill Rough
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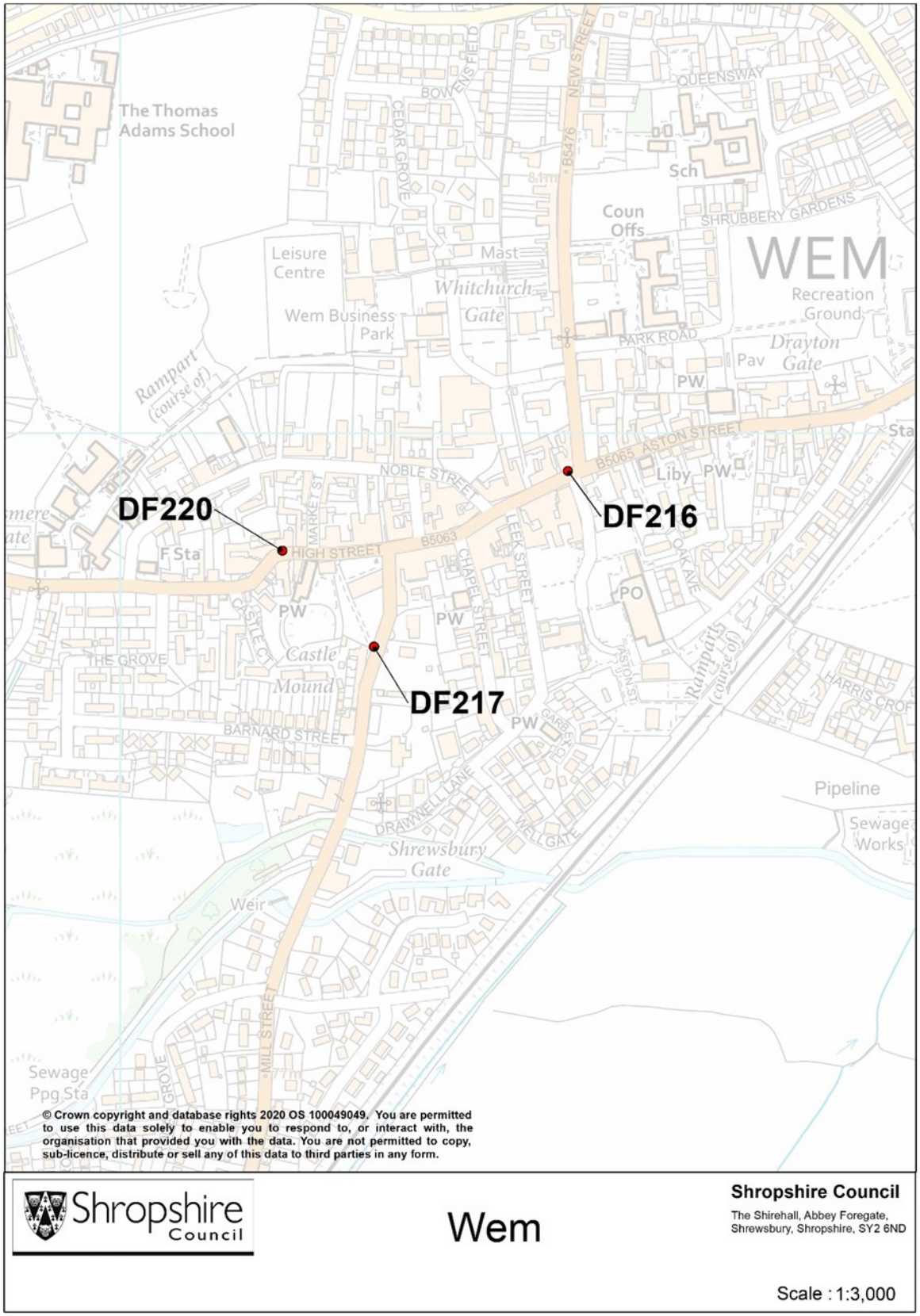
Shropshire Council
Ternhill Crossroads
Shropshire Council
The Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND
Scale : 1:3,000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Coun Offs
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Recreation Ground
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Pav
PW
Liby
PO
Castle Mound
Shrewsbury Gate
Weir
Pipeline
Sewage Works
Sewage Ppg Sta
HIGH STREET
NOBLE STREET
ASTON STREET
PARK ROAD
SHRUBBERY GARDENS
QUEENSWAY
NEW STREET
BARNARD STREET
THE GROVE
CHAPEL STREET
LEEK STREET
MILL STREET
DRAWNELL LANE
WELL GATE
B5476
B5063
B5065
Rampart (course of)
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Shropshire Council
Wem
Shropshire Council
The Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND
Scale : 1:3,000

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[6]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[6] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

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	Air quality 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 (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

Defra, 2018. Local Air Quality Management Technical Guidance (TG16). [Online].
Available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf

Accessed on: 10/12/2020