2019 Air Quality Annual Status Report (ASR)

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

April 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 national objective level. The AQMA was previously reported as containing 37 dwellings in the 2018 ASR. Having reviewed this data it is clear it can be amended as there are a potential 39 properties if some businesses have residential on the first floors. In 2018 additional diffusion tubes were installed in the area. They showed that only 18 properties are likely to exceed the national objective level for annual nitrogen dioxide in 2018. Should this trend continue consideration could be given to variation of the extent of the AQMA.

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, nearly 50%. The 2018 result bucked what was starting to look like a downward trend in the area. The AQMA is still very much required.

[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

Actions to Improve Air Quality

Over the 2018-19 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.

- Bid placed for a Shrewsbury North West Relief Road. If successful once constructed this will reduce through town traffic (traffic crossing the AQMA including the hot spot). This in turn makes additional action more appropriate to secure addition betterments in future.
- Hackney Carriage and Private Hire Vehicle Policy updated including continued emission improvement requirements over the next 5 years.
- Air Quality grant bid submitted for DEFRA consideration. The bid was successful. Work will start in 2019 on near real time air pollution maps of the AQMAs with a public facing webpage to provide information to all further into the project.
- Linear Car Park Strategy phase 1 completed bringing consistent approach to parking charges over the County and incentivising edge of town parking.
- Car pool for staff created with 5 Euro VI cars and one hybrid car in the fleet. This removed 64,521 miles of staff car use, likely to be significantly more polluting than the car pool cars. Potential to expand the scheme further would be encouraged mandating journeys by pool car where this is possible

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. 2018 nitrogen dioxide results have bucked any previously considered downward trends in Shrewsbury while a levelling of pollutants or continued gradual downward trend seems to be the case looking at the last 5 years of data in Bridgnorth.

It has been noted that only 18 receptors in Bridgnorth are thought to be exposed to pollutant levels exceeding the National Objective Level compared to the 39 previously thought to be exposed.

Careful consideration is still required in the Bayston Hill area where one diffusion tube recorded an annual average nitrogen dioxide level which suggests the national objective level may be exceeded at one property.

Priorities for the year ahead include:

- moving forwards with DEFRA funded air quality grant project which has been awarded. 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.
- consideration of expansion of the car pool offer available to staff
- rolling out phase 2 of the car park strategy (residential car parking schemes)
- Moving forwards with Shrewsbury NWRR should funding streams become available

Local Engagement and How to get Involved

To reduce air pollution and contribute to clean air everyone living, working and visiting 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:

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 2018. 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 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 **Error! Reference source not found.** 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 Declared	Pollutant 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 Published	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	58.8	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 a number of properties centred over the mini roundabout at the junction of Whitburn Street, Salop Street and Pound Street.	NO	54.1 (in 2010)	µg/m3	49.7	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 the following. Each point has been commented on to show how comments have been taken forward.

- **the Council must update or revise the AQAP in the next reporting year as a priority.** *Comment: due to undertaking grant funded work it has not been possible to resource a review of the AQAP this year. The purpose of the grant work is to galvanise key stakeholders to ensure that necessary measures are found with buy in for their implementation*

- **the conclusions reached with respect to AQMA declaration and intended actions are acceptable, AQMA and diffusion tube mapping is comprehensive and clearly demonstrates the monitoring network and comments from the previous reporting year were addressed with explicit consideration given to PM2.5 and measures to reduce PM2.5 are discussed in detail. Comment:** *Shropshire Council is pleased to be submitting good quality reports despite resource pressures.*

- **discussion of the public health outcomes framework is in the report however, links to these should be included in future ASRs.** *Comment: this has been taken on board with links included in this report.*

- **continue to monitor in Bayston Hill in the location where the Shrewsbury No 1 AQMA used to exist.** *Comment: This has continued with results reported later in this report.*

- **data presented in Table A.3 should be as monitored (post bias and annualisation adjustment), not distance corrected values, as per template instruction box.** *Comment: criticism noted and will be rectified in this report. As such the data in Table A.3 will be different in this report to the previous report when considering 2017 data.*

- **the Council undertook detailed assessments of PM10 from the two poultry farms in 2017 and there is extensive discussion on these in Appendix C of the report. It is concluded that there were no exceedances of any PM10**

objective level and this conclusion is accepted. *Comment: no further work on this aspect has been required. Air quality assessments are required at planning application stage should thresholds requiring assessment be found. To date no additional poultry farms have required detailed assessment as thresholds have not been met.*

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

More detail on these measures can be found below. Key completed measures are:

- the Shrewsbury North West Relief Road (NWRR) business case submitted to Central Government was considered and approved for funding March 2019). This is likely to have beneficial impacts on air quality. Going forward an air quality assessment quantifying the impact will be commissioned to accompany the planning application for the road. The impact of introducing the NWRR is not only the reduction of traffic moving through the town centre of Shrewsbury and through the AQMA but also by reducing vehicle numbers allowing other initiatives to be considered that otherwise may not have had the potential. For more information visit: https://staff.shropshire.gov.uk/news/shrewsbury-north-west-relief-road/
- Review of the Hackney Carriage and Private Hire Vehicle Policy resulted in increasingly better standards of vehicle emissions from the fleet over the next 5 years to ensure that most current emissions standards are achieved. For further details visit: https://www.shropshire.gov.uk/media/12328/hcph-licensing-policy-2019-2023.pdf
- Source apportionment work is expected to be taken forward through a current grant project being undertaken by Shropshire Council.
- Review of all development sites proposed in the County for the next Local Plan ensuring that all sites were considered in air quality terms and comments made where necessary. This work will continue over next year to ensure any additional sites coming forward are considered. For more information on the

Local Plan visit: https://www.shropshire.gov.uk/planning-policy/local-planning/local-plan-partial-review-2016-2036/

- Implementation of the new Parking Strategy phase one has been completed with linear parking in place across the County. Phase two involves taking forward residential parking schemes particularly on edge of town locations. Currently there is no resource for this measure which has the potential to weaken the impact of the strategy overall which aims to move vehicles out of town centres which will have a positive impact on air quality (although not a quantitative one) and facilitate consideration to additional measures once town centre traffic is reduced.
- Car pool scheme has been set up providing cars for staff to use for work purposes. The cars are all Euro VI for emissions which on balance will ensure that travel in the pool cars will be cleaner than staff using their own vehicles. A total of 64,521 miles was completed in the fleet in 2018. The plan for next year is to increase the number of vehicles. There is scope to make it policy for pool cars to be used wherever they are available in future.

Shropshire Council expects the following measures to be completed over the course of the next reporting year:

- Information and evidence to be collated for the Shrewsbury NWRR project to allow any assessments required to be carried out to inform next steps
- The first year of the new Hackney Carriage and Private Hire Vehicle Policy to come into place and be enforced by the Licensing Team
- DEFRA grant funding project (Air Quality Grant Scheme 2018/19 - project 24571) to be started. This will provide real time air quality maps of the two AQMAs. Webpages will be made to disseminate information widely allowing people to see the areas they frequent and consider if they could reduce exposure by taking different routes, avoiding particular times of day. The project will be used to highlight areas of concern. It may allow consideration of the impact of potential interventions although this may take place in 2020.

- Review of any additional proposed development sites as part of the Local Plan process.
- Consideration to expand on the potential of the car pool scheme by introducing more vehicles, making it compulsory to use car pool vehicles where they are available.
- 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/
- Move forward with Phase 2 of the Car Park Strategy – residential parking schemes on the edge of towns.

The suite of measures above will firstly help to reduce emissions from vehicles at source and secondly look to the future to move large scale interventions forward that encompass the air quality agenda by considering reductions in motorised vehicles in town centres.

Shropshire Council's priorities for the coming year are to successfully move forward with the DEFRA grant project and support high level projects such as the Shrewsbury Big Town Plan and Shrewsbury North West Relief Road.

The principal challenges and barriers to implementation that Shropshire Council anticipates facing are funding streams for any given project and officer time available for air quality duties.

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 both the Shrewsbury and Bridgnorth centred AQMAs. However, some of the work going into wider projects and ensuring that air quality is acknowledged in wider project streams will facilitate additional measures in future once the path has been paved to allow them to move forward. For example, ensuring the Shrewsbury NWRR can be progressed will allow further measures once it is complete and the weight of traffic passing through Shrewsbury Town Centre has been reduced.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	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	Shropshire Council	Planning phase May-17 to May-18 Consultation phase June-18 to Dec-18	Apr-19	A new 5 year policy adopted promoting cleaner vehicles over the next 5 years	Reduced emissions from fleet as a whole/reduced vehicle average emission	Policy adopted by Council and will be implemented starting April 2019	Mar-24	Due to vehicle improvements through the next 5 years as a result of better regulation of new vehicle emissions (conformity factor phased in approach) it is considered suitable to encourage the fleet to adopt cleaner vehicles over a rolling programme to ensure that these real-world betterments are brought forward. This will take time to allow the trade to adapt. Unfortunately, due to national legislation allowing taxis from other areas to operate in the County this significantly waters down and expected impact. For example, a recent ANPR study found more than 50% of the taxis operating in the area are not licensed in the County and instead are licensed under a policy with no standards on emissions.
2	SITP - Public Realm and Town Centre Junction Phase	Transport Planning and Infrastructure	Other	Shropshire Council / Marches LEP	2015/16	2018		None specified. Improved flows anticipated reducing localised air pollution. Increase in walking and cycling activity accessing, and within, town centre	Implementation on-going	2020	Rework of lanes, junction priorities, resurfacing, repaving.

3	Shrewsbury North West Relief Road (NWRR)	Transport Planning and Infrastructure	Other	Shropshire Council, DfT Large Local Majors Fund	2019/20	2022/2023 with project complete 2024	tbc - pending environmental modelling update and Planning Application	Reduction in through town centre traffic, queueing and congestion. Improvements in road safety encouraging active travel modes and public transport uptake in town centre on NWRR completion	Programme Entry Offer received from DfT April 2019 on submission of OBC Dec 2017. Programme Entry to be confirmed May 2019	2023	Planning, match funding requirements, procurement and construction timeframes are acknowledged risks at this time
4	Shropshire Council Pool Car Scheme	Alternatives to private vehicle use	Car Clubs	Shropshire Council	2016	2017/18		NA but general reductions in Council workers private vehicle pollutants anticipated along with potential reduction in mileage due to more thought by staff about journeys.	Completed	2017	5 Euro VI pool cars brought in through Enterprise. In addition, one hybrid vehicle added to increase awareness of the technology and allow staff to experience them to promote low emission technology going forward. 64,521 miles of pool car use for the calendar year. Potential to add cars next year.
5	Inclusion of electric vehicle charging points in new developments	Promoting Low Emission Transport	Promoting Alternative Rfulling infrastructure to promote Low Emission Vehicles, EV recharging, Gas Recharging	Shropshire Council	2016/17	2017	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.	Planning case officers directed to include electric vehicle charging provision when considering applications.	Procedures in place and ongoing through time	No specific policy in place although NPPF directs consideration to this area. Consideration of specific policy going forward through the Local Plan Review.
6	Local Air Quality Grant project	Public Information	Via the Internet	Shropshire Council/DEFRA	2018	2029-20	Completion of Key Milestones of the project reported back to DEFRA through grant requirements	NA	Bid written and submitted November 18. Notified bid successful early 2019	Jun-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

							in quarterly reporting.				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.
7	Car Parking Strategy	Policy Guidance and Development Control	Other policy	Shropshire Council	2016	2018/19	Increased use of edge of town parking	NA. A general reduction through looking to stop vehicles entering most polluted and congested areas.	Adopted strategy implemented across the whole County including the purchase and installation of new ticket machines.	2018	The strategy adopts a linear parking tarrif 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 as a whole. 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 $PM_{2.5}$:

- The Shrewsbury Integrated Transport Package (SITP) as a whole is predicted to reduced numbers of vehicles crossing coming through the town centre in turn reducing emissions and PM2.5. Details of SITP can be found at: http://new.shropshire.gov.uk/media/4256/sitp-consultation-boards-progress.pdf
- 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. As three years of continuous data had concluded levels of PM2.5s were under 10 µg/m3 monitors have been discontinued to save resource in January 2018. No specific measures are being taken to address PM2.5s. Many actions are however being carried out to reduce air pollutants overall and reduce traffic numbers in congested areas. These measures will assist in reducing PM2.5s.
- All actions 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. 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

This represents a reduction from the 2016 figure of 4%. Shropshire Council's fraction of mortality attributable to particulate air pollution is the lowest in the West Midlands Region which has an average of 5.5%. The West Midlands region is slightly above the national average of 5.3%.

As the Shropshire Council PHOF indicator concerned with PM2.5 shows that mortality due to PM2.5 is significantly below the national level and regional level 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 such as 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 car pool 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 undertook automatic (continuous) monitoring at two sites up until 2018. In January 2018 this monitoring ceased. The monitors had previously provided continuous data for PM2.5 over the past 3 years. The results showed no significant levels of pollutant requiring specific action at the monitoring sites and no evidence of a rising trend. As such the monitors have been switched off but remain in position should future monitoring be required.

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 74 sites during 2018. This is a reduction on 2017 following a review of the network and removing locations which showed clear evidence that no exceedance of the national air quality objective levels was likely. Tubes have been removed from Bishops Castel, Ludlow, Market Drayton, Cleobury Mortimer and Pant. Following consideration of trend results it was considered safe to remove all remaining monitoring locations from these areas. As such no monitoring is found in these towns. Locations will still be held for future purposes should additional information be considered necessary. This will allow monitoring to resume in the same locations to enable results to be compared to historically collected data.

Additional locations were added in areas where additional data was considered necessary. Additions are most markedly noted in the Bridgnorth AQMA. Table A.1 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” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 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.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Error! Reference source not found. in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year. Shropshire Council does not carry out any continuous monitoring of NO_2 hence this table is empty.

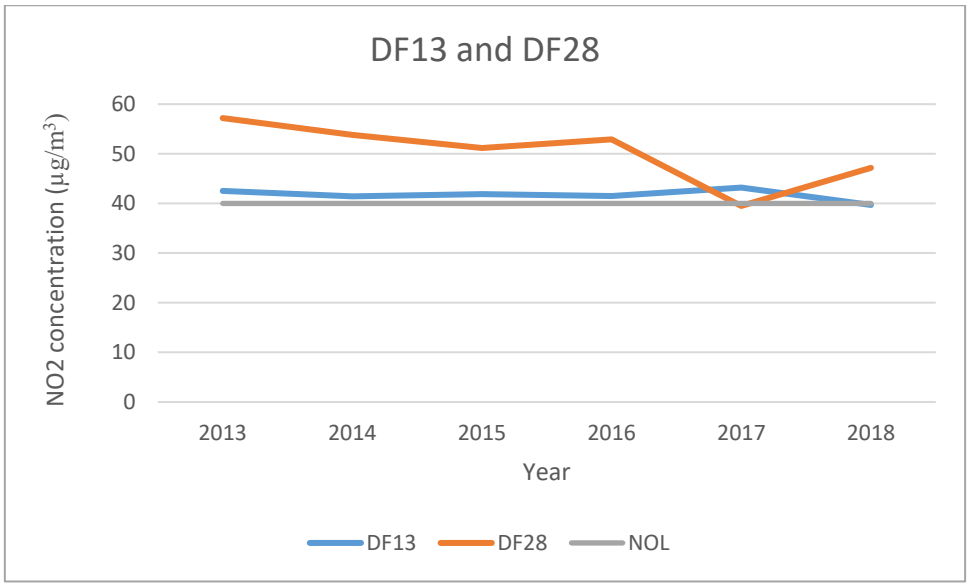
No sites recorded an annual mean of above 60µg/m^3 suggesting that there are no exceedances of the 1-hour mean objective level for nitrogen dioxide. No continuous monitors for nitrogen dioxide exist to suggest otherwise and it is concluded that there are no exceedances on the 1-hour mean objective in the Shropshire Council Area. It is noted that DF438 came close to this figure. Monitoring will continue in this location and consideration given to ammending the Shrewsbury No 3 AQMA to include exceedance of the hourly objective in future should levels of NO2 exceed 60µg/m^3.

Diffusion tube results found exceedances of the nitrogen dioxide annual mean at relevant receptors following drop off with distance calculations in the Shrewsbury town centre AQMA (DF438 in Castle Foregate), in the Bridgnorth AQMA (DF28, DF71, DF79 and DF80), in Bridgnorth Low Town (DF62) in Bayston Hill (DF474) and in Tern Hill (DF223). These locations are discussed below. In addition to the

monitoring locations above the following locations recorded concentrations of nitrogen dioxide above the annual mean national objective: DF458, DF459 and DF482. These three monitoring locations have no relevant exposure to consider and as such need no further consideration.

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 regularly exceeds the annual mean national objective level. DF13 is also a long standing monitoring location which usually exceeds the objective level. Dispite it falling just under the objective level in 2018 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 over the past 6 years the trend has remained flat with at best a slight reduction over time. At DF28 the trend shows a reduction in pollutant over time. The sharp decrease in 2017 has been countered by an increase on 2017 levels in 2018. It is suggested that the 2018 levels are likely to be a true representation with 2017 levels being reduced due to roadworks in the town. With this is mind the trend data suggests that there is an overall reduction in pollutant at this location. If the trend were to continue it is considered likely to take another 6 or more years for the national objective level to be achieved at this location.

DF71 saw a reduction in 2018 compared to the previous year. As there are no additional data points for this location no trend can yet be established.

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.

The new monitoring locations combined with preexisting monitoring locations provide a compreensive spread over the network. 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.

Previously there was no monitoring data available to suggest that any of the 39 relevant receptors (previously noted to be 37 in ASR 2018 however this did not take into consideration two potential residential properties above ground floor commercial operations) within the AQMA were not exposed to nitrogen dioxide levels that exceeded the national objective level. The new data suggests that only 18 of the 39 residential properteis is likely to be exposed to such levels.

The above provides information for the first time showing that 21 residential properties previously considered to be exposed to elevated levels of nitrogen dioxide are not likely to exceed national objective levels. 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

This is very positive news for this location. Further 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 potential however that the properties closer to the junction on Pound Street may have higher pollutant concentrations than existing monitoring locations. As a result it may take longer on this aspect for leveles to fall below the national objective level. Additional monitoring points in this specific location will be considered in future as required.

In general some very promising news about 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.

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

.

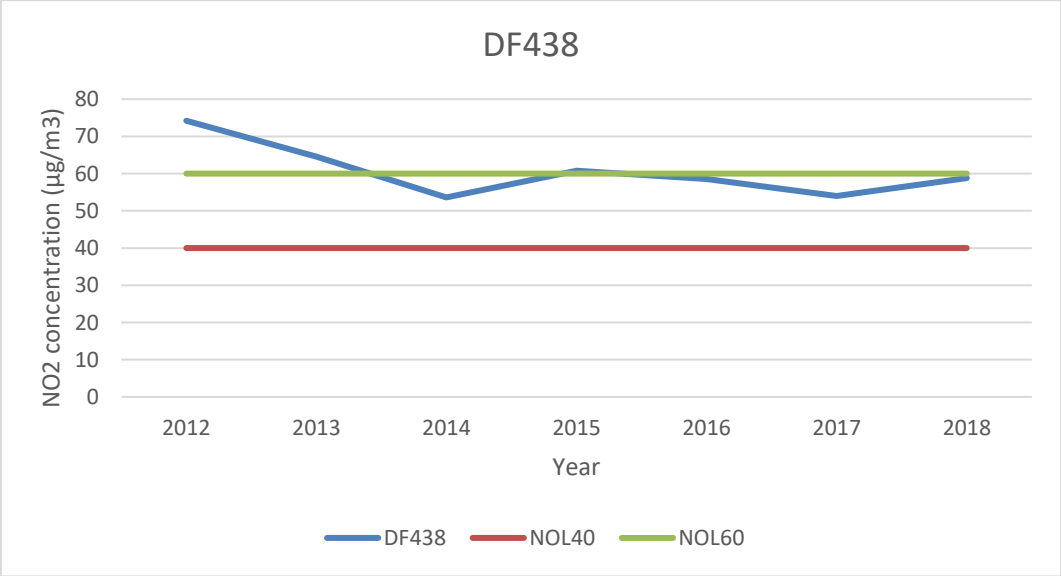
In 2018 the annual nitrogen dioxide mean concentration at the monitoring location was 40.2 µg/m^3. Looking at the annual data set for this location the span of the monthly results with the exception of February's data are within the range of 31.3 µg/m^3 (July and August) and 49.2 µg/m^3 (May). All results fell within a 20 µg/m^3 spread. February's result is 80.5 µg/m^3 and significantly outside the normal range of recorded results for this location. It is more than 30 µg/m^3 more than the next highest monthly recorded result for this location. It is considered likely that this monthly reocord may have been compromised or that some specific feature occurred which is not the norm during the February measurement. No other diffusion tubes recorded a similar elevated February result including a diffusion tube located 50m up the same street (DF63).

Considering the significant disparity in the February result consideration has been given to what concentration would have been required in February to result in the annual average not being exceeded. If the February result was 77 µg/m^3 or less the result would have fallen below the national objective level. It is considered safe to assume that the February monitoring result found at location DF62 was artificially inflated either due to a very local non normal source or a defective diffusion tube. With this in mind it is suggested that it is not likely that the national objective level was exceeded in 2018. The three previous years results show levels of below 40 µg/m^3 which add weight to this statement.

Given the discussion above it is considered that the national objective level for annual mean nitrogen dioxide at location DF62 is not likely to be exceeded. Monitoring will continue in this location to carefully monitor the situation.

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 6 years. The green line represents the 1-hour national objective level. The red line represents the annual mean national objective level.



Decreases in the trend in pollutant levels seen in 2012-14 have not continued. The addition of the 2018 result suggests that reductions in pollutant concentration may have levelled off. 2014 has the lowest annual mean nitrogen dioxide level with no improvement in the 4 subsequent years of data collected.

The 1-hour national objective level (green line in the above figure) was close to being exceeded in 2018. The annual average national objective level (red line) is still being exceeded. As a result the AQMA is still considered necessary. 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.

DF232: Tern Hill

Diffusion tube data has recorded exceedance of the annual NO_2 national objective level of 40µg/m^3 at DF223. The diffusion tube is located on the roadside close to the roundabout junction where the A41 meets the A53. The monitoring location is close to the one residential receptor in the area. The monitoring location is 1.25m from the kerb and the façade of the receptor is 1.8m away from the kerb at this point. The receptor has no openings in the brick façade facing the road and the monitoring point, 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 road 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 and 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)?	5.702808	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	53.6	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**43.5**	µg/m^3

The calculation above suggests that an annual average of 43.5 µg/m^3 is found when considering a distance of 3.4m to the relevant receptor. Last year a result of 40.2 - 41.0 µg/m^3 (depending on which bias adjustment factor is used see previous Annual Status Report) was recorded using the same methodology with 42.5 µg/m^3 being recorded in 2016.

The window mentioned above is 5m further away from the roundabout junction than the monitoring location. This suggests that in reality the concentration of nitrogen dioxide at the relevant exposure point will be less than expressed above as there will be less standing traffic here and in turn less acceleration at this point which is known to be the time when most emissions are created. In addition the window is found on the end of the property perpendicular to the road. At this point air contaminated with exhaust pollutants can mix with clener air coming in from away from the road source creating additional air movement and dispersion of pollutant in addition to increased dilution of pollutant in comparison to the area close to the monitoring point.

In conclusion it is noted that there is an exceedance of the national objective at a position 5m closer to a major junction than the nearest actual exposure. At the actual exposure point there is better air circulation potential. These factors would be expected to reduce pollutant concentration from that monitored. Although an exceedance was found this year given that last years conclusions suggested no exceedance was likely at the point of exposure and an anticipated reduction in

emissions from vehicle exhausts through cleaner tailpipe emissions due to with tightening standards it is not possible to state that there is likely to be exceedance at the relevant exposure point in future. This location will continue to be monitored moving forward and additional work carried out should it be considered necessary.

(NB at the time of writing this report the 2019 result was know and shows a reduction on the previous two years monitored results adding further confidence to this statement).

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/m^3. The other four diffusion tubes in the Bayston Hill area have not exceed the national objective level. The four year trend shows an increase in pollutant which over the past two years has levelled off. This general increase goes against the national trend and trend in Shropshire where decreases have generally been seen. This may be linked to increased HGV movements from the local quarry in previous yeards which have now themselves flattened off. This location will be monitored on an ongoing basis to consider if an AQMA is necessary and if so where its limits should extend.

(NB at the time of writing this report the 2019 result was know and shows a reduction on the previous two years monitored results).

3.2.2 Particulate Matter (PM_{10})

PM10 was not monitored in the Shropshire Council area in 2018 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 Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	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)
DF5	Kidderminster Road	Roadside	372145	292436	NO2	NO	19.8	1.9	NO	Approx. 2m
DF13	Pound Street	Kerbside	371345	293081	NO2	YES	0.1	0.8	NO	Approx. 2m
DF16	Lavington Court	Roadside	371790	292817	NO2	NO	0.95	1.95	NO	Approx. 2m
DF18	Charles Fox	Roadside	372155	292961	NO2	NO	Over 10	2	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
DF62	2 Mill Street	Roadside	372031	292993	NO2	NO	0	1	NO	Approx. 2m
DF63	Post Office St Johns	Roadside	372072	292976	NO2	NO	0	2	NO	Approx. 2m

DF65	49 Mill Street	Roadside	372026	293058	NO2	NO	0	2.1	NO	Approx. 2m
DF67	35A Hospital Street	Roadside	372166	292825	NO2	NO	1.3	1.6	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
DF211	Tilstock Roundabout	Roadside	354377	340069	NO2	NO	19.1	3	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
DF411	Dorrington, outside Horseshoes Inn	Roadside	347821	302851	NO2	NO	0	1.9	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
DF419	Abbey Foregate, next to house 51	Roadside	349983	312430	NO2	NO	3.1	2.8	NO	Approx. 2m
DF420	Outside 25 Castle Street	Roadside	349396	312742	NO2	YES	1	3	NO	Approx. 2m
DF427	82/83 Frankwell (façade)	Roadside	348669	312957	NO2	YES	0	5	NO	Approx. 2m
DF428A	Brittania Inn (Post office lampost)	Roadside	349445	313090	NO2	YES	0.5	2	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
DF447	Platform 4/5 Shrewsbury Station	Other	349511	312893	NO2	YES	NA	2m from line	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
DF453	1 Ellesmere Rd	Roadside	349306	313639	NO2	NO	5.1	1.2	NO	Approx. 2m

DF455	Whitchurch Road, 1 Newstreet Battlefield	Roadside	351523	316578	NO2	NO	3.1	3.3	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
DF463	Oteley Rd close to Football Stadium	Roadside	349765	310451	NO2	NO	NA	4	NO	Approx. 2m
DF464	Oteley Rd (Cycle/Footpath)	Roadside	351138	310402	NO2	NO	NA	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	349349	313072	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 b	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
DF503	Jarrahdale, Overton Road St Martins (Downpipe at front)	Roadside	332429	336886	NO2	NO	10	1.2	NO	Approx. 2m

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2014	2015	2016	2017	2018
DF5	Roadside	Diffusion Tube	100	92	27.5	27.9	26.8	24.7	27.0
DF13	Kerbside	Diffusion Tube	100	83	**41.4**	**41.9**	**41.5**	**44.0**	**40.5**
DF16	Roadside	Diffusion Tube	100	92	34.3	34.7	30.5	30.2	26.9
DF18	Roadside	Diffusion Tube	100	100	27.8	26.1	25.4	24.1	23.5
DF20	Roadside	Diffusion Tube	100	100	24.3	21.3	22.9	31.8	22.7
DF27	Roadside	Diffusion Tube	100	92	28.4	26.5	27.8	28.2	26.0
DF28	Roadside	Diffusion Tube	100	100	**53.8**	**51.2**	**52.9**	**40.3**	**48.2**
DF29	Roadside	Diffusion Tube	100	100	33	29	29.7	29.4	28.9
DF58	Roadside	Diffusion Tube	100	100	38	37.4	35.8	31.7	33.1
DF59	Roadside	Diffusion Tube	100	100	33.8	32.1	33	34.2	29.6
DF61	Roadside	Diffusion Tube	100	100	30.6	31.6	30.4	32.2	28.0
DF62	Roadside	Diffusion Tube	100	100	**40.6**	39.7	39.1	29.7	**40.2**
DF63	Roadside	Diffusion Tube	100	100	31.2	31.6	31.7	37.2	30.2
DF65	Roadside	Diffusion Tube	100	92	35.6	36.2	34.7	34.2	33.4

DF67	Roadside	Diffusion Tube	100	100	39.7	38.7	36.2	33.5	36.2
DF71	Roadside	Diffusion Tube	100	92				**58.5**	**50.9**
DF72	Roadside	Diffusion Tube	100	100					30.0
DF73	Roadside	Diffusion Tube	100	100					34.1
DF74	Roadside	Diffusion Tube	100	83					30.9
DF75	Roadside	Diffusion Tube	100	100					30.9
DF76	Roadside	Diffusion Tube	100	100					33.8
DF77	Roadside	Diffusion Tube	100	83					**40.3**
DF78	Roadside	Diffusion Tube	100	100					39.9
DF79	Roadside	Diffusion Tube	100	100					**48.8**
DF80	Roadside	Diffusion Tube	100	92					**50.3**
DF81	Roadside	Diffusion Tube	100	100					28.8
DF82	Roadside	Diffusion Tube	100	92					27.4
DF211	Roadside	Diffusion Tube	100	100	30.7	33	32.2	31.1	31.3
DF216	Roadside	Diffusion Tube	100	100	26.8	28.9	28.5	27.7	28.0
DF217	Roadside	Diffusion Tube	100	100	34.1	35.7	34.4	22.4	24.8
DF220	Roadside	Diffusion Tube	100	100	26.9	26.2	26.2	24.9	23.9
DF223	Roadside	Diffusion Tube	100	92	**51**	**50.3**	**42.5**	**50.4**	**53.6**

DF305	Roadside	Diffusion Tube	100	100	29.1	27.6	27.8	28.3	29.0
DF306	Roadside	Diffusion Tube	100	92	33.1	32.3	34.2	31.3	28.7
DF314	Roadside	Diffusion Tube	100	100					38.1
DF400	Roadside	Diffusion Tube	100	83	33.4	27.4	32	34.0	33.2
DF403	Roadside	Diffusion Tube	100	100	33.7	31.7	31	29.3	30.5
DF404	Roadside	Diffusion Tube	100	100	18.3	16.9	18.1	15.8	16.9
DF407	Roadside	Diffusion Tube	100	92	28	27.5	27.4	24.8	24.1
DF411	Roadside	Diffusion Tube	100	92	29.4	26.8	27.4	25.3	24.4
DF413	Roadside	Diffusion Tube	100	100	34.8	31.8	31.7	28.6	29.5
DF417	Roadside	Diffusion Tube	100	100	26.3	25.5	31.1	24.7	27.8
DF419	Roadside	Diffusion Tube	100	92	27.5	28	27.8	26.4	24.8
DF420	Roadside	Diffusion Tube	100	100	30.3	29.1	29.2	28.0	27.8
DF427	Roadside	Diffusion Tube	100	100	27.2	28	27.4	26.4	25.9
DF428A	Roadside	Diffusion Tube	100	83					38.3
DF436	Roadside	Diffusion Tube	100	100	38.5	36.1	36.4	35.4	36.7
DF437	Roadside	Diffusion Tube	100	100	38.4	37.3	37.6	34.8	35.6
DF438	Roadside	Diffusion Tube	100	100	**53.6**	**60.8**	**58.5**	**54.0**	**58.8**
DF447	Other	Diffusion Tube	100	92	34.9	35.3	34.7	35.3	36.5

DF448	Roadside	Diffusion Tube	100	100	11.1	10.4	10.3	9.0	9.6
DF449	Roadside	Diffusion Tube	100	100	20.3	22.5	20.7	20.4	20.1
DF453	Roadside	Diffusion Tube	100	100	20.3	20.8	22.6	21.4	22.5
DF455	Roadside	Diffusion Tube	100	100	21.5	20.2	21.4	19.3	19.7
DF456	Roadside	Diffusion Tube	100	100	37.9	**42.2**	**41**	**40.2**	39.7
DF458	Roadside	Diffusion Tube	100	100	**57.4**	**52.4**	**53.9**	**53.6**	**55.0**
DF459	Roadside	Diffusion Tube	100	100	34.9	35.9	37.4	38.6	**42.1**
DF460	Roadside	Diffusion Tube	100	100	27.2	25.3	26.4	30.5	25.7
DF461	Roadside	Diffusion Tube	100	100	32.2	32.7	31.7	30.5	30.9
DF462	Roadside	Diffusion Tube	100	100	21.8	20.5	21.5	20.5	19.3
DF463	Roadside	Diffusion Tube	100	83	19.7	16.1	15.2	14.2	15.2
DF464	Roadside	Diffusion Tube	100	100	20.6	18.9	17.3	17.1	16.3
DF468	Roadside	Diffusion Tube	100	100	-	22	23	20.6	21.8
DF474	Roadside	Diffusion Tube	100	75	-	36.4	**41.5**	**46.3**	**46.4**
DF475	Roadside	Diffusion Tube	100	92	-	33.5	39.9	**43.8**	**53.0**
DF476	Roadside	Diffusion Tube	100	92	-	28.7	30.6	31.2	33.1
DF477	Roadside	Diffusion Tube	100	100	-	31	31.2	33.5	31.3
DF480	Roadside	Diffusion Tube	100	100	-	33	34.2	32.7	31.8

DF482	Roadside	Diffusion Tube	100	92	-			31.6	**45.7**
DF485	Roadside	Diffusion Tube	100	100	-			28.4	30.9
DF487	Roadside	Diffusion Tube	100	83	-				22.7
DF501 b	Roadside	Diffusion Tube	100	100	-				38.2
DF502	Roadside	Diffusion Tube	100	100	-				31.2
DF503	Roadside	Diffusion Tube	100	100	-				16.4

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

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

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.

NB: data for some historical values will differ from that found in previous reports. This is due to some data points in previous year's reports having drop off with distance calculations applied to them. This is potentially misleading and was commented on by DEFRA in their feedback to the 2018 ASR. To ensure trends can be viewed any results which had previously had reduction with distance calculations carried out on them to the best of our knowledge have been replaced with the result for the monitoring location. This brings this table in line with guidance on this aspect and acknowledges DEFRAs comments made on previous reports.

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2018

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.92) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DF5	24.5	26.9	29.5	30.5	31.2	23.6	22.1	22.1	28.4		46.9	37.2	29.4	27.0	16.7
DF13	43.3	35.7	37.7	48.3	45.4	39.1	36.1	36.1		61.2	57.7		44.1	**40.5**	39.7
DF16	34.9	33.9	27.7	32.6	32.9	27.7	21.9	21.9	29.9		25.2	32.4	29.2	26.9	25.0
DF18	26.9	36.6	30.8	27.6	28.0	24.5	10.5	10.5	25.6	27.0	30.3	28.0	25.5	23.5	17.9
DF20	22.8	23.4	19.6	26.9	20.0	16.7	14.0	14.0	50.3	31.9	27.7	29.2	24.7	22.7	22.7
DF27	29.7	29.3	27.5		32.0	26.0	20.6	20.6	29.5	23.5	36.7	35.9	28.3	26.0	25.8
DF28	52.4	48.0	52.3	57.4	63.2	52.0	40.0	40.0	49.5	53.8	62.2	57.8	52.4	**48.2**	**47.2**
DF29	33.3	33.0	35.3	37.9	34.0	31.1	22.2	22.2	21.4	30.5	39.3	36.5	31.4	28.9	27.3
DF58	37.2	39.6	37.5	41.5	40.7	34.3	31.1	31.1	38.4	38.0	24.9	37.0	35.9	33.1	33.1
DF59	36.2	28.9	33.8	34.6	30.0	26.3	26.1	26.1	32.6	31.9	42.1	36.7	32.1	29.6	29.6
DF61	35.8	32.0	31.7	32.2	34.6	31.5	23.8	23.8	30.7	30.4	35.7	23.5	30.5	28.0	28.0
DF62	47.4	80.5	41.2	42.2	49.2	46.4	31.3	31.3	38.5	42.7	34.2	39.6	43.7	**40.2**	**40.2**
DF63	37.6	35.9	34.9	35.8	32.7	28.1	25.8	25.8	31.5	31.7	39.3	35.3	32.8	30.2	30.2
DF65		34.1	39.1	38.5	42.9	37.6	32.2	32.2	33.1	39.8	34.0	35.2	36.3	33.4	33.4
DF67	36.1	38.5	46.0	42.7	50.0	43.6	30.6	30.6	36.7	36.6	41.6	38.6	39.3	36.2	37.5
DF71	58.9	57.5	55.1	68.4	64.2	55.0	54.0	54.0		44.8	43.1	53.5	55.3	**50.9**	**48.7**

DF72	34.4	32.8	35.0	30.4	38.9	31.4	23.1	23.1	31.7	36.7	41.0	32.8	32.6	30.0	23.1
DF73	47.7	36.0	26.2	47.2	50.1	36.4	26.7	26.7	36.0	35.4	42.9	33.4	37.1	34.1	33.6
DF74		35.3	33.4	42.0	41.9	37.5	25.6	25.6	29.3	30.4		34.9	33.6	30.9	27.1
DF75	34.3	31.2	32.5	39.3	43.0	40.2	24.8	24.8	31.0	36.1	34.5	31.4	33.6	30.9	28.9
DF76	36.5	37.4	39.2	47.2	40.3	37.1	29.3	29.3	35.7	26.5	39.5	43.3	36.8	33.8	33.4
DF77	50.0	38.7	37.6	52.1		38.0	35.0	35.0	62.4		43.6	45.2	43.8	**40.3**	38.7
DF78	46.7	36.6	43.1	49.1	57.2	45.0	38.5	38.5	43.5	50.7	36.8	34.7	43.4	39.9	39.0
DF79	51.9	47.0	46.8	57.3	62.9	52.6	44.7	44.7	43.9	82.1	49.1	53.8	53.1	**48.8**	**48.2**
DF80	59.2	58.0	51.1	63.7	62.6	57.4	45.6	45.6	46.3	58.3		54.2	54.7	**50.3**	**49.7**
DF81	32.0	34.6	34.3	35.5	43.0	37.7	20.8	20.8	24.8	32.8	29.3	30.2	31.3	28.8	30.9
DF82	17.5	26.0	25.3	29.1		58.6	29.8	29.8	28.8	28.5	27.2	27.1	29.8	27.4	21.5
DF211	32.2	28.9	34.8	31.3	43.0	38.7	29.9	29.9	32.0	39.2	34.9	33.6	34.0	31.3	18.4
DF216	34.9	27.4	32.4	33.1	33.9	31.4	25.9	25.9	29.7	32.7	27.4	30.2	30.4	28.0	27.8
DF217	30.8	25.8	26.7	29.9	26.7	23.0	19.2	19.2	25.0	29.4	37.2	30.1	26.9	24.8	26.1
DF220	27.4	28.8	22.7	28.4	31.3	28.6	20.8	20.8	25.5	29.7	18.1	30.0	26.0	23.9	23.6
DF223	65.6	51.1	58.1	68.1		58.8	47.1	47.1	63.8	58.3	66.1	56.8	58.3	**53.6**	**43.5**
DF305	37.1	33.8	33.3	31.9	29.4	24.9	28.4	22.0	22.0	35.7	36.5	43.6	31.5	29.0	28.7
DF306	33.4	30.1	34.8	30.9		28.3	26.6	27.3	27.3	35.7	35.4	33.7	31.2	28.7	28.7
DF314	37.3	44.1	51.1	36.9	42.9	34.3	36.9	37.3	37.3	45.9	46.4	46.9	41.4	38.1	37.6
DF400			36.5	46.6	38.5	34.0	33.9	28.9	28.9	39.8	37.9	35.9	36.1	33.2	33.2
DF403	33.8	36.6	34.8	39.7	32.8	31.1	24.9	24.9	31.1	32.8	37.7	37.6	33.2	30.5	30.5
DF404	23.2	24.3	20.4	18.2	16.5	15.5	11.1	11.1	15.3	19.8	23.8	20.5	18.3	16.9	16.5
DF407	26.7	23.8	27.1		26.9	25.2	19.8	19.8	29.5	27.3	32.5	29.8	26.2	24.1	24.4
DF411	24.8	27.1	26.1	26.5	31.9	26.0	24.7	24.7	24.9		29.7	24.9	26.5	24.4	24.4
DF413	34.0	33.2	36.8	34.1	30.2	32.9	23.2	23.2	29.6	34.3	40.4	32.2	32.0	29.5	24.9
DF417	27.2	33.0	30.8	30.5	34.1	33.4	29.6	22.3	22.3	31.1	42.1	26.7	30.3	27.8	15.6
DF419	30.7	26.7	33.4	27.4	28.5	29.6	18.8	18.8	24.1	29.3		29.2	27.0	24.8	22.0

DF420	28.3	26.2	32.1	32.9	31.0	31.8	23.6	23.6	30.8	35.3	38.5	28.7	30.2	27.8	26.5
DF427	30.2	29.9	31.2	27.0	28.3	26.3	20.8	20.8	27.4	30.3	34.2	31.7	28.2	25.9	25.9
DF428A	41.9	48.3	44.8	48.7	42.9	47.9	30.3	30.3	39.6			42.0	41.7	38.3	36.7
DF436	39.6	41.3	45.8	39.8	40.9	42.3	28.0	28.0	37.8	41.7	50.7	43.4	39.9	36.7	36.7
DF437	42.8	39.5	39.5	40.1	40.5	42.0	27.4	27.4	37.6	38.3	42.3	46.5	38.7	35.6	35.6
DF438	72.3	57.7	64.7	77.9	68.3	68.1	56.1	56.1	60.4	70.8	59.6	55.4	63.9	58.8	**58.0**
DF447	43.1	37.5		44.8	38.1	41.3	32.6	32.6	42.3	40.5	45.2	38.2	39.7	36.5	36.5
DF448	24.1	25.6	25.1	22.5	23.0	23.0	18.6	15.3	15.3	21.4	23.6	24.5	21.8	20.1	13.8
DF449	15.0	14.5	11.4	8.7	7.4	6.7	6.5	7.1	7.1	10.3	16.5	14.1	10.4	9.6	9.6
DF453	29.7	27.5	26.0	26.0	20.0	20.3	18.9	18.9	22.8	25.3	28.7	28.8	24.4	22.5	17.7
DF455	24.1	24.3	22.2	23.1	21.7	17.5	15.0	15.0	21.0	21.8	27.8	24.1	21.5	19.7	17.8
DF456	51.6	38.9	51.9	43.7	42.7	45.2	36.3	36.3	36.5	45.7	43.6	44.8	43.1	39.7	31.8
DF458	59.7	52.9	69.6	66.1	64.2	71.6	49.9	49.9	56.4	56.2	68.9	52.4	59.8	**55.0**	NA
DF459	47.2	43.6	50.6	84.6	42.8	45.4	30.0	30.0	37.9	43.1	48.8	44.5	45.7	**42.1**	NA
DF460	37.0	31.9	29.2	28.1	24.6	22.2	21.8	21.8	27.0	30.1	34.3	27.5	28.0	25.7	22.5
DF461	37.7	38.6	42.4	33.2	32.9	39.8	25.7	25.7	24.4	34.3	38.5	29.6	33.6	30.9	27.3
DF462	21.5	21.6	23.0	20.0	18.1	16.2	19.0	19.9	19.9	22.8	23.5	26.4	21.0	19.3	NA
DF463			15.7	18.9	14.7	13.6	15.1	13.5	13.5	18.9	18.5	22.6	16.5	15.2	NA
DF464	21.9	23.7	20.7	13.4	13.1	12.8	14.4	14.0	14.0	18.7	20.9	24.8	17.7	16.3	NA
DF468	25.3	25.8	24.9	27.7	25.0	21.8	14.7	14.7	21.1	23.1	36.3	23.8	23.7	21.8	21.8
DF474			45.7		46.1	42.5	53.5	47.8	47.8	56.2	56.6	57.9	50.5	**46.4**	**42.5**
DF475	76.5	49.1	57.7		63.3	55.9	63.6	55.9	55.9	68.9	32.1	55.2	57.6	**53.0**	38.5
DF476	40.1	34.8	37.0	34.4	31.1	33.7	27.1	27.1		55.5	37.0	38.1	36.0	33.1	32.2
DF477	41.5	34.6	33.1	35.6	29.3	25.7	28.8	28.8	34.4	36.8	41.1	39.1	34.1	31.3	29.2
DF480	40.4	43.9	38.6	42.1	36.7	41.3	24.5	24.5	35.0	35.5	50.9	1.4	34.6	31.8	30.8
DF482	52.1	49.9	51.0	52.8	49.5	48.3	32.9	32.9		69.7	59.7	48.0	49.7	**45.7**	**NA**
DF485	36.9	35.7	37.7	36.5	33.6	41.5	24.4	24.4	30.6	34.8	35.5	31.4	33.6	28.9	26.6

DF487		26.6		25.9	27.9	26.0	18.4	18.4	21.3	25.7	30.5	25.8	24.6	23.7	19.1
DF501 b	42.7	52.1	46.3	46.7	39.8	40.4	29.5	29.5	38.4	38.9	51.6	42.8	41.6	39.4	34.2
DF502	33.0	39.5	39.1	39.2	40.4	39.2	22.3	22.3	25.6	28.6	43.9	33.9	33.9	31.2	30.2
DF503	17.0	19.1	16.1	16.0	35.9	10.5	18.5	12.2	12.2	15.4	20.7	20.4	17.8	18.8	12.7

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

☒ **Where applicable, data has been distance corrected for relevant exposure**

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.

NB: Results for some July and August readings for some diffusion tubes and for August and September on others have the same reading. These have been marked as blue in the Table above. Diffusion tubes were not being collected at the end of July or August resulting in diffusion tubes being left in situ for the duration of two months. To make the best use of the data the average result for the two month period has been used in each of the months where the diffusion tube was left out. This was considered most appropriate as the alternative would have been to lose two months of data. It is acknowledged that this may have had an impact on the overall annual result. By using the data rather than omitting it this is expected to have less impact on the overall results than omitting 2 months of data from the data set. This issue has been resolved and is not likely to occur in future following a change in procedures for diffusion tube collection although it should be highlighted that in a County of Shropshire's size it takes significant resource to maintain the diffusion tube network.

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 NO_2 continuous monitors in Shropshire the option to provide a locally derived bias adjustment for diffusion tubes is not available. As the diffusion tubes are spread over a wide range of settings it was considered inappropriate to try and use data from any other individual continuous monitor to produce a bias adjustment factor. 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. The factor used was 0.89. This was the most up to date factor when the report was written.

The Gradko 20% TEA in water precision results for 2018 found that there was good precision on 100% of occasions. For confirmation visit:
https://laqm.defra.gov.uk/assets/Tube_Precision_version_03_20_Final_FULL_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. The calculations were carried out using the NO_2 Fall-Off with Distance Calculator (Version 4.2) available on the LAQM webpages. The following diffusion tube location results exceeded the NO_2 annual average national objective level of 40µg/m^3 at the monitoring location: DF13, DF28, DF62, DF71, DF77, DF79, DF80, DF223, DF438, DF474, DF475. Additionally, DF458, DF459 and DF482 also 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 with a discussion of the locations 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. The exception is for DF62 which requires no drop off with distance calculation. As such no calculation was required.

DF13

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	0.9	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	40.5	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	39.7	µg/m^3

DF28

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)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	48.2	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**47.2**	µg/m^3

DF71

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)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	50.9	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**48.7**	µg/m^3

DF77

Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.2	metres
Step 2	How far from the KERB is your receptor (in metres)?	2.7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	40.3	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	*38.7*	µg/m^3

DF79

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)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	48.8	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**48.2**	µg/m^3

DF80

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)?	6.696162	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	50.3	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**49.7**	µg/m^3

DF223

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)?	5.702808	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	53.6	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**43.5**	µg/m^3

DF438

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)?	9.789079	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	58.8	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**58.0**	µg/m^3

DF474

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)?	5.483222	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	46.4	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	**42.5**	µg/m^3

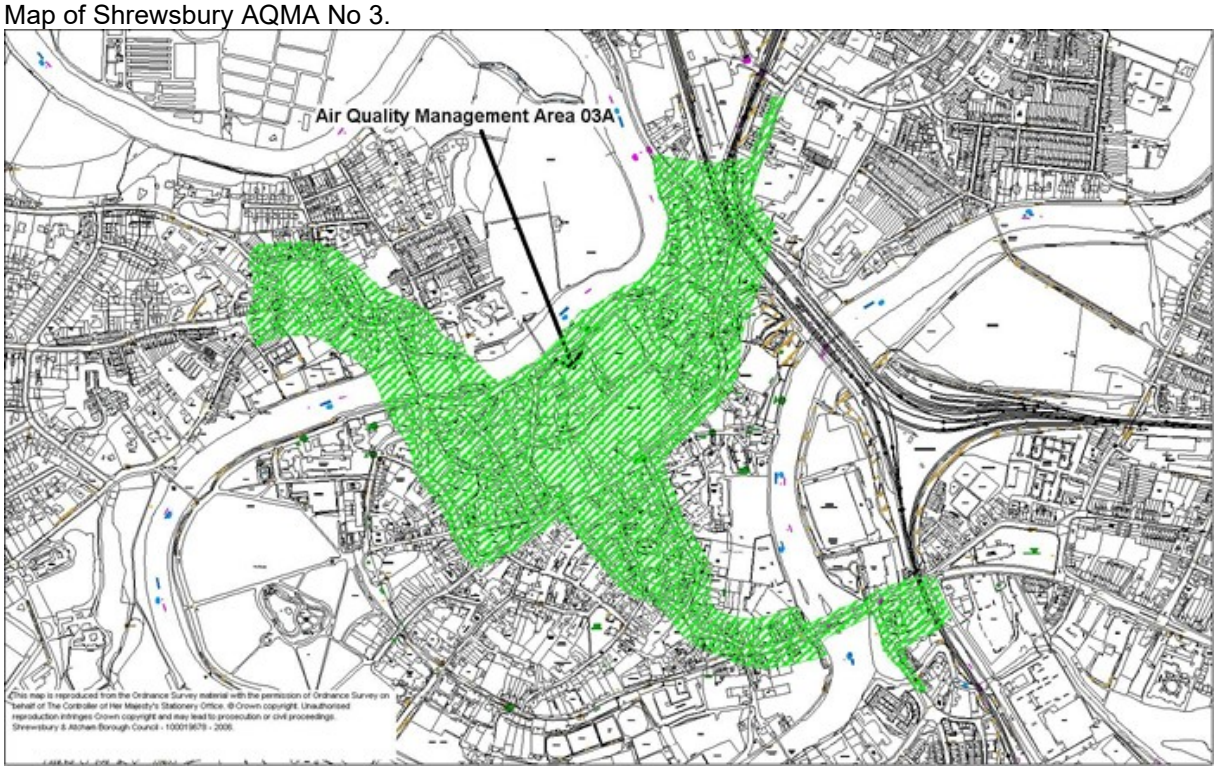
DF475

Enter data into the pink cells

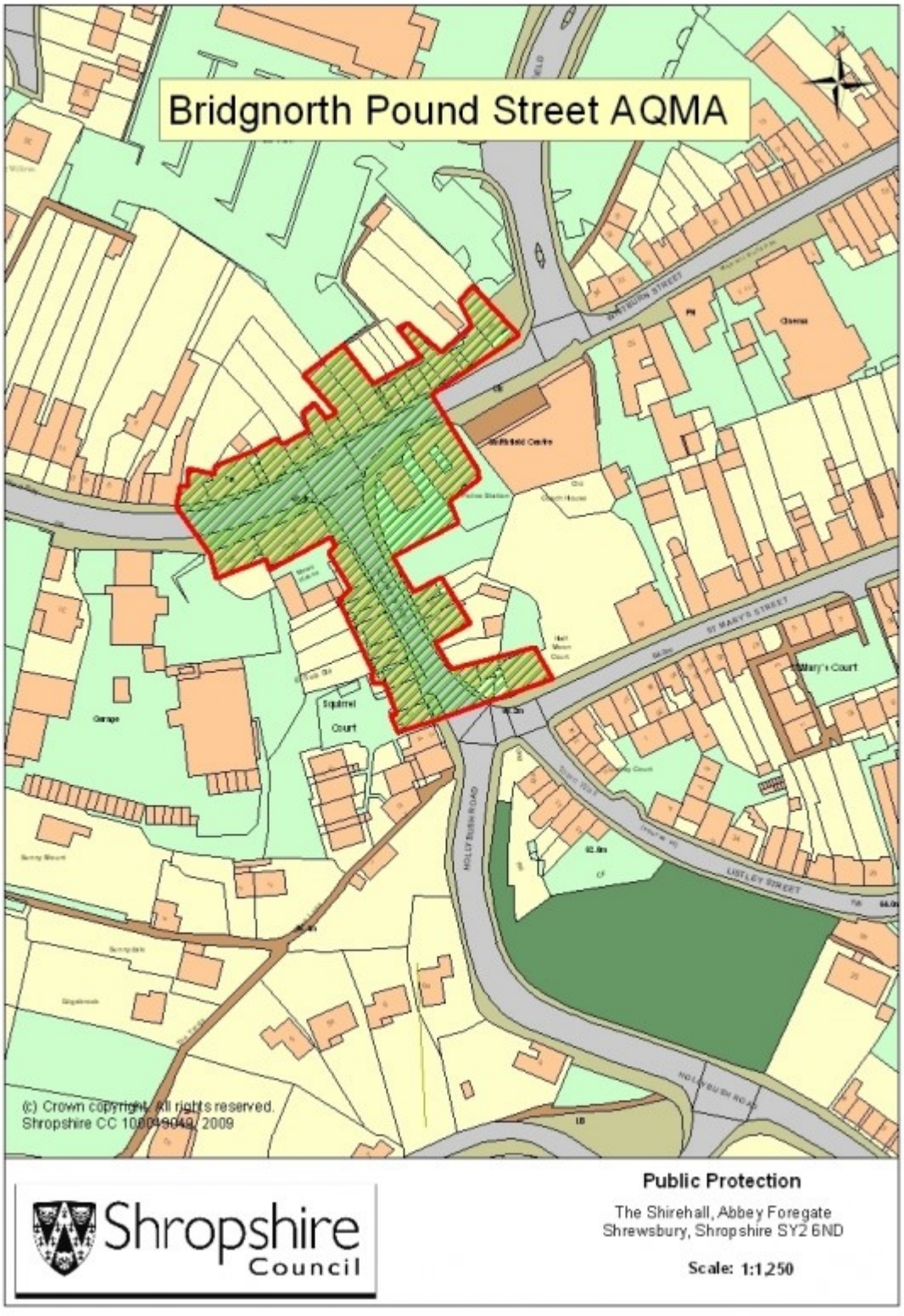
Step 1	How far from the KERB was your measurement made (in metres)?	1.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	6.6	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	5.483222	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	53	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	*38.5*	µg/m^3

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

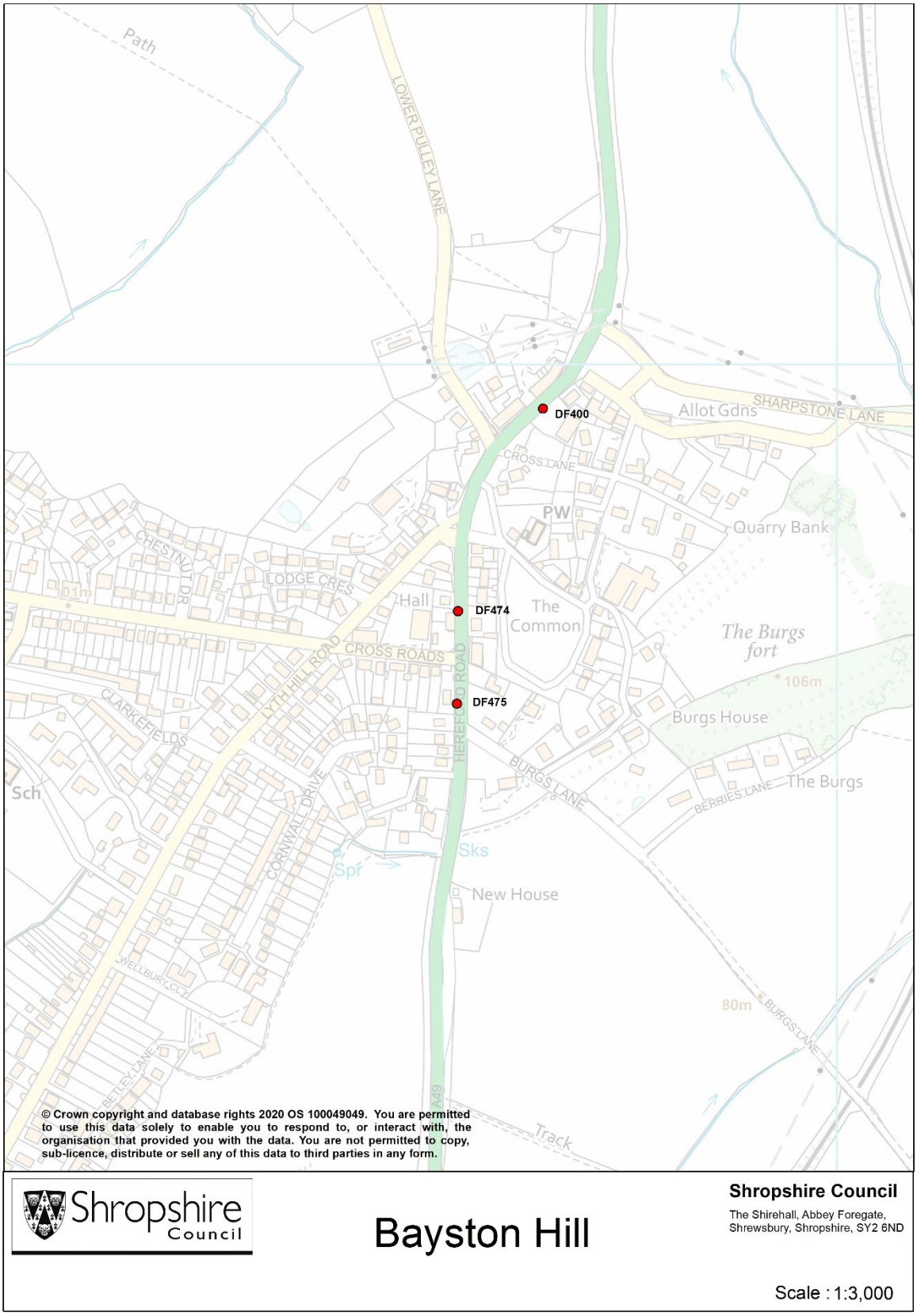
Map of Shrewsbury AQMA No 3.

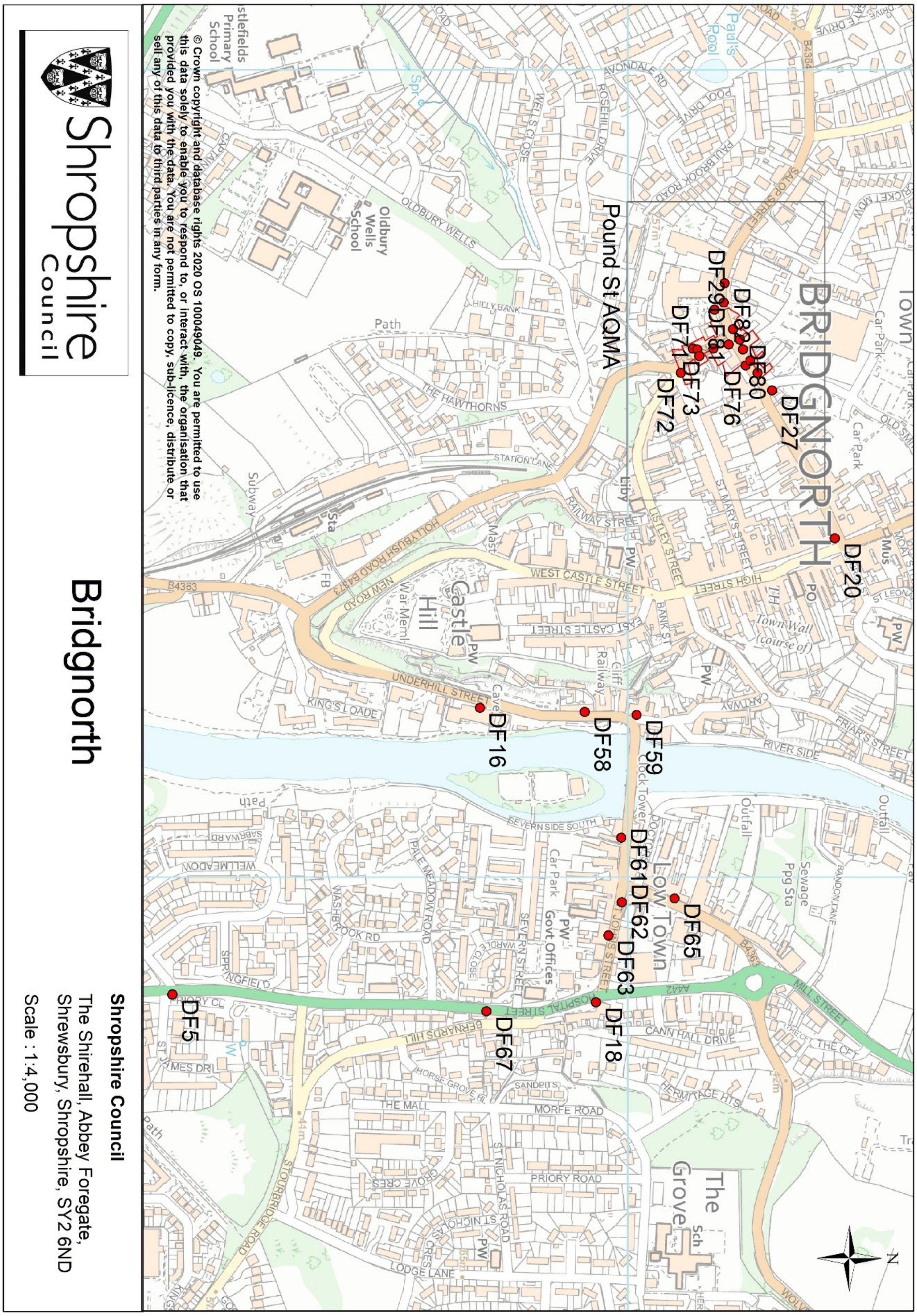


Map of Bridgnorth Pound Street AQMA.



Diffusion tube location maps:




Bridgnorth
Shropshire Council
The Shirehall, Abbey Foregate,
Shrewsbury, Shropshire, SY2 6ND
Scale : 1:4,000
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Pound St AQMA
BRIDGNORTH
Low Town
DF5
DF16
DF18
DF20
DF27
DF29
DF58
DF59
DF61
DF62
DF63
DF65
DF67
DF72
DF73
DF76
DF80
DF81
DF83
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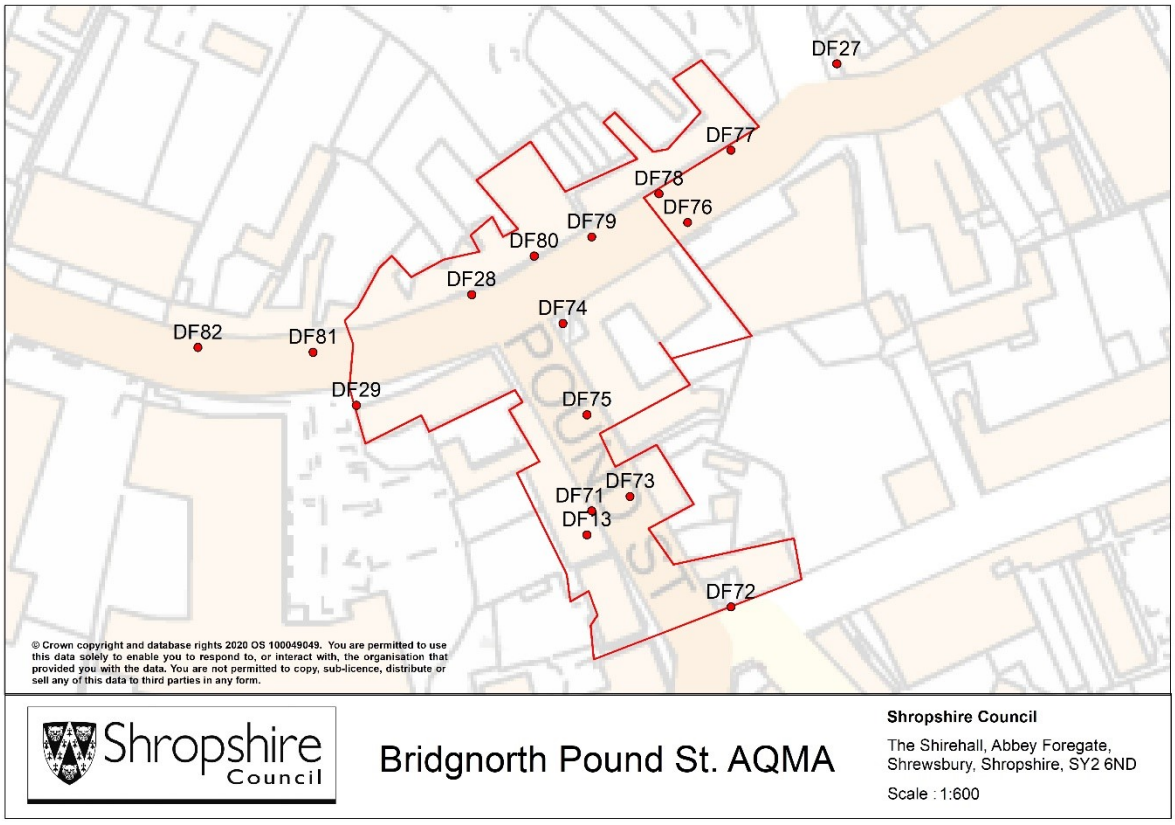
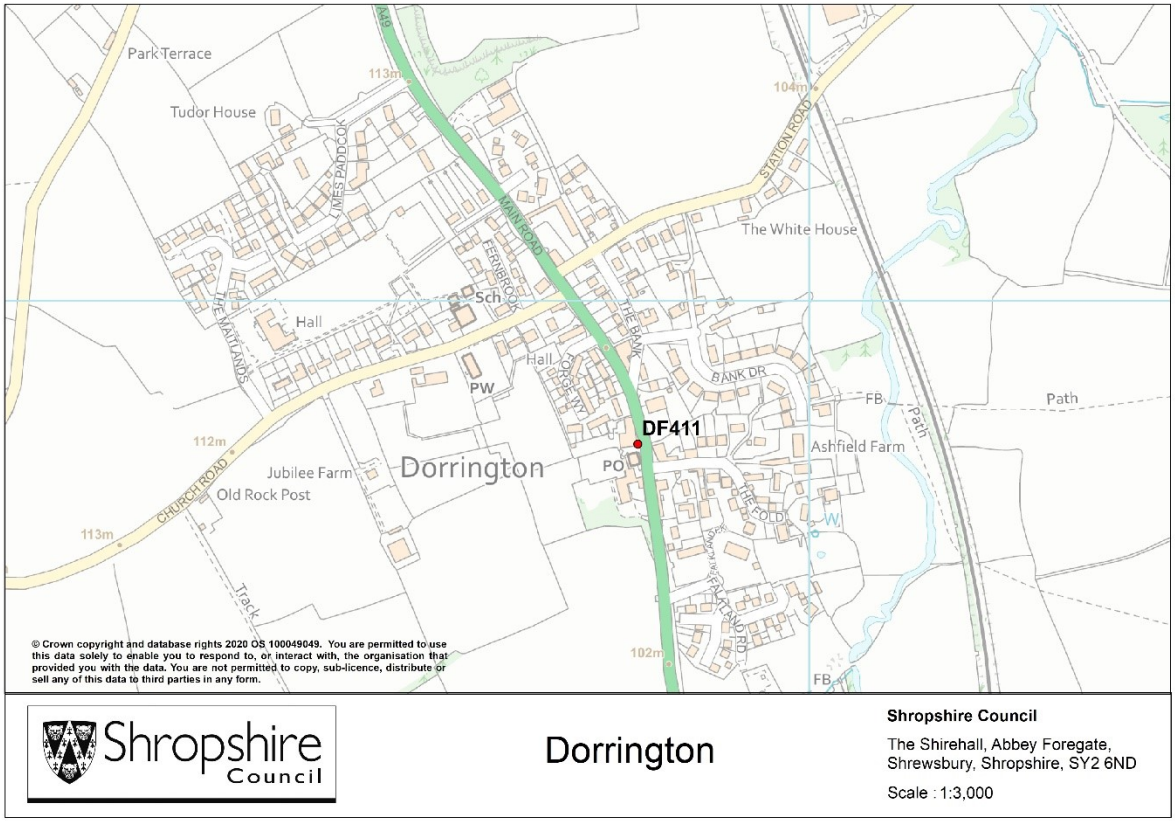
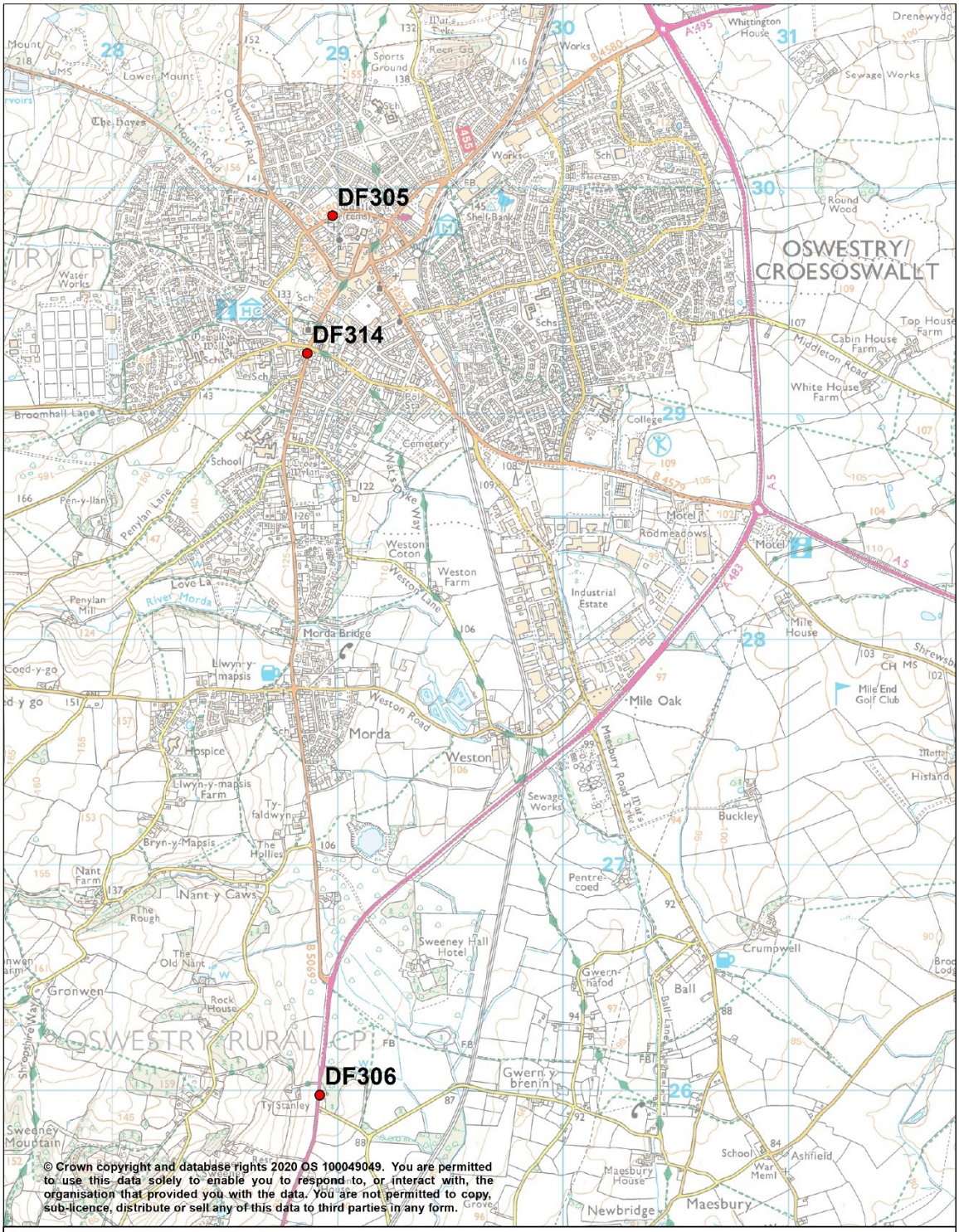


Red line represents the edge of the Pound Street AQMA.




DF305
DF314
DF306
OSWESTRY/
CROESOSWALLT
OSWESTRY RURAL CP
Oswestry
Shropshire Council
The Shirehall, Abbey Foregate,
Shrewsbury, Shropshire, SY2 6ND
Scale : 1:15,000
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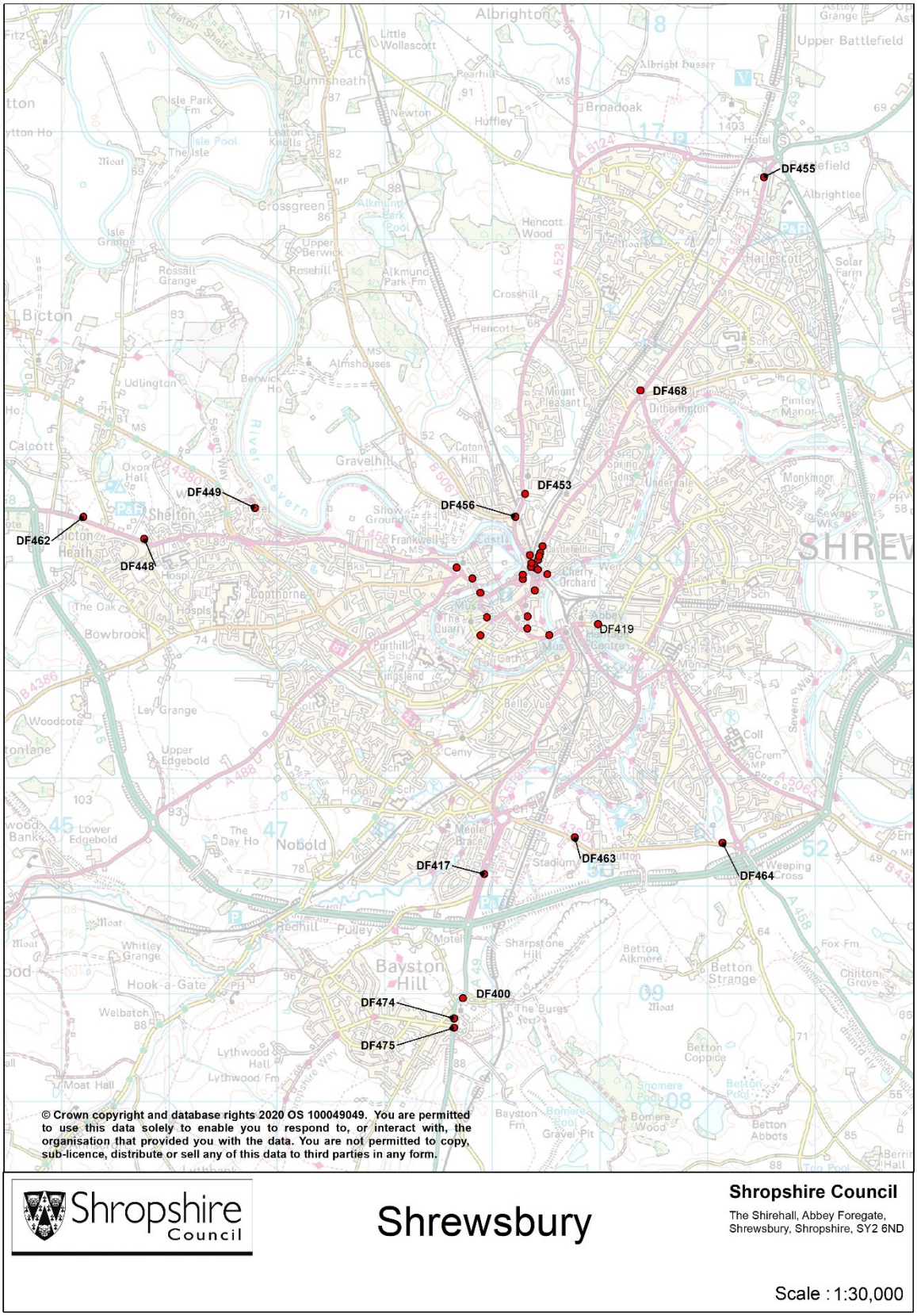
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DF468
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DF462
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DF464
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DF474
DF475
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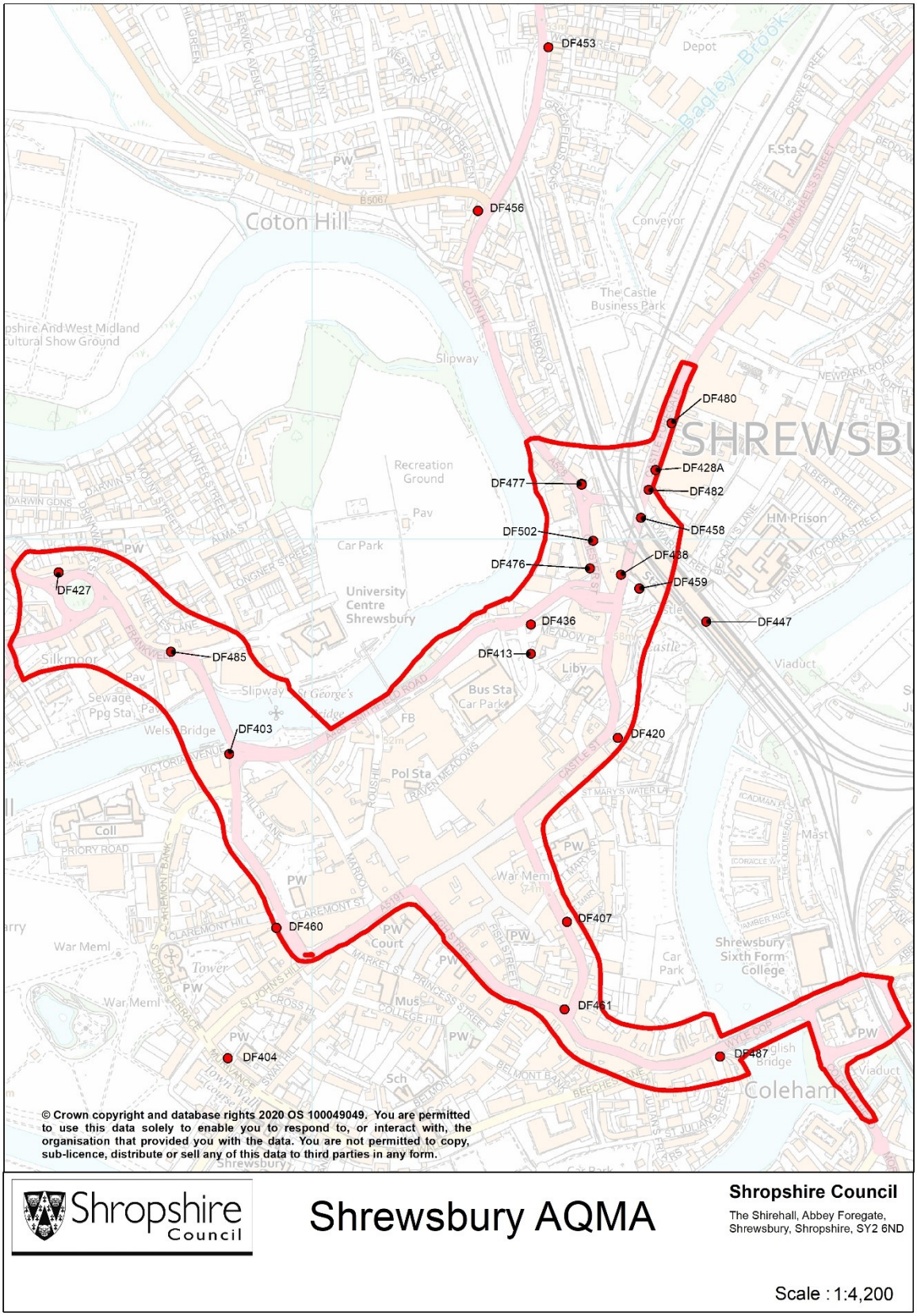
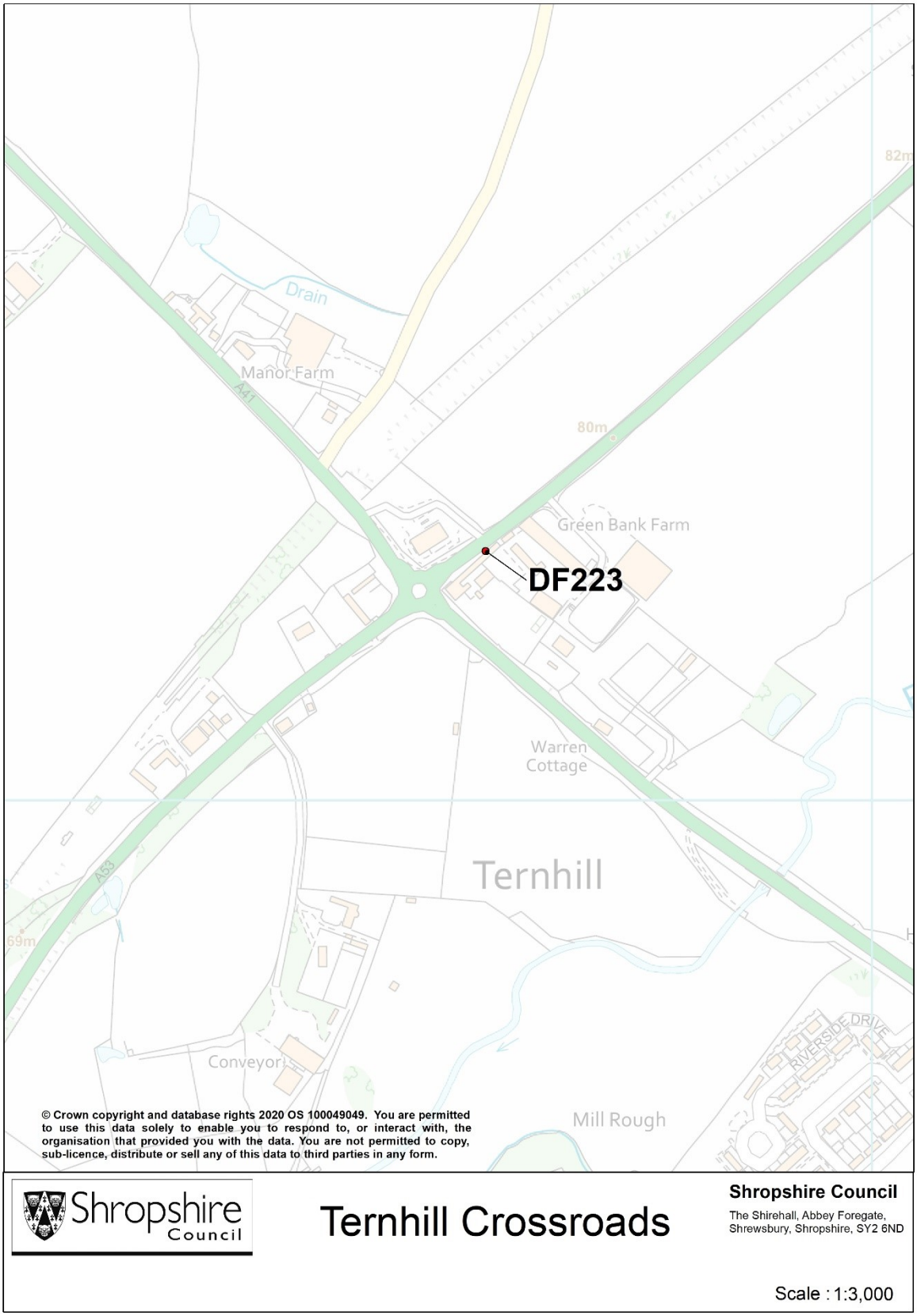
Shropshire Council
Shrewsbury
Shropshire Council
The Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND
Scale : 1:30,000



Red line represents the edge of the Shrewsbury No 3 AQMA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Manor Farm
A41
82m
80m
Green Bank Farm
DF223
Warren
Cottage
Ternhill
A53
69m
Conveyor
RIVERSIDE DRIVE
Mill Rough
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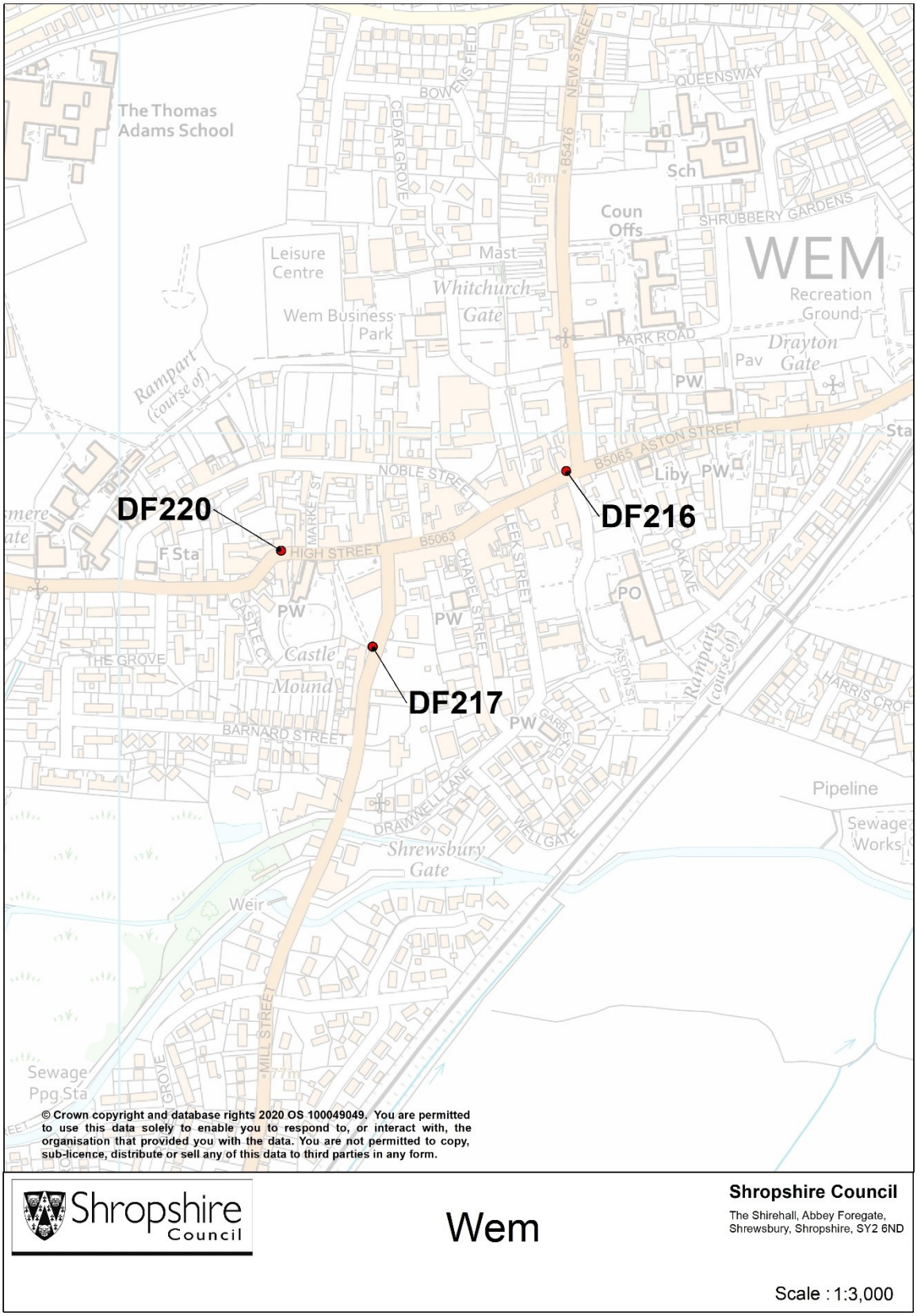
Shropshire Council
Ternhill Crossroads
Shropshire Council
The Shirehall, Abbey Foregate,
Shrewsbury, Shropshire, SY2 6ND
Scale : 1:3,000


DF220
DF216
DF217
The Thomas Adams School
Leisure Centre
Wem Business Park
Mast
Whitchurch Gate
Coun Offs
Sch
QUEENSWAY
SHRUBBERY GARDENS
WEM
Recreation Ground
Drayton Gate
PARK ROAD
Pav
PW
Liby
PO
ASTON STREET
B5065
B5476
NEW STREET
NOBLE STREET
HIGH STREET
B5063
MARKET ST
F Sta
CASTLE CT
THE GROVE
Castle Mound
CHAPEL STREET
LEEK STREET
OAK AVE
ASTON ST
Ramparts (course of)
HARRIS CRO
BARNARD STREET
GARDEN CROFT
DRAWWELL LANE
WELL GATE
Shrewsbury Gate
Pipeline
Sewage Works
Weir
MILL STREET
GROVE
Sewage Ppg Sta
Rampart (course of)
BOWENS FIELD
CEDAR GROVE
81m
77m
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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[4]	
	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

[4] The units are in micrograms 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: 05/05/2020