



2020 Air Quality Annual Status Report (ASR)

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

June 2020

Redditch Borough Council

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Executive Summary: Air Quality in Our Area

Air Quality in Redditch Borough 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 billion³.

Worcestershire Regulatory Services (WRS) have been responsible for managing (monitoring and reporting of) local air quality in the six Worcestershire District Councils since April 2011.

There are currently no Air Quality Management Areas (AQMAs) in the Redditch Borough Council area.

Monitoring results within the Redditch Borough area demonstrate that there were no exceedences of the air quality objective of $40\mu\text{g}/\text{m}^3$ in 2019. Monitoring results show there were significant decreases in NO_2 concentrations at all monitoring locations in 2019; this is consistent with trends across Worcestershire. This is likely to be have been caused in part by the significant difference in bias adjustment factors between 2018 and 2019; 0.89 in 2018 compared to 0.78 in 2019. There is no discernible upward or downward trend in concentrations over the 5 year period 2015- 2019.

No annual means greater than $60\mu\text{g}/\text{m}^3$ have been recorded indicating that it is very unlikely that there have been any exceedances of the 1-hour mean objective for NO_2 at any monitoring sites.

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

In 2013, WRS produced a countywide Air Quality Action Plan (AQAP) for Worcestershire which was adopted by Redditch Borough Council on 15th October 2013. WRS have produced two updates to the AQAP, the latest in September 2016. For details of all measures completed, in progress or planned, please refer to the 'Air Quality Action Plan Progress Report for Worcestershire April 2015-2016'. A copy of this, the previous update, and the AQAP are available to view or download at:

<http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx>

In 2014, WRS set up the Worcestershire Air Quality Steering Group and sub-groups to facilitate progressing implementation of prioritised actions identified in the AQAP. To date the Redditch Borough area does not form a specific part of the AQAP as there is no current AQMA in the area. However the general actions to improve air quality detailed in the AQAP apply across Worcestershire as a whole, including the Redditch Borough area.

Redditch Borough Council has published a strategy for ultra-low emission vehicles to help inform the development of appropriate infrastructure in the area to enable more people to use ULEVs. The document is available at:

<https://www.redditchbc.gov.uk/living/getting-around/electric-vehicles.aspx#strategy>

Conclusions and Priorities

There are currently no Air Quality Management Areas (AQMAs) in the Redditch Borough area.

Over the past five years monitoring results have remained below the objective. Monitoring results within the Redditch Borough Council area demonstrate that there were no exceedences of the air quality objective of $40\mu\text{g}/\text{m}^3$ in 2019. Monitoring results demonstrate a decrease in NO_2 concentrations at all monitoring locations in 2019; this is consistent with trends across Worcestershire. This is likely to be have been caused in part by the significant difference in bias adjustment factors between 2018 and 2019; 0.89 in 2018 compared to 0.78 in 2019.

There were no significant residential or commercial/industrial developments or highway infrastructure works within the Borough in 2019.

WRS on behalf of Redditch Borough Council will continue to monitor locations in 2020 to assess any improvements or degradation in NO₂ concentrations. The data gathered will assist in further assessment of areas of poor air quality within the Borough. Further update on monitoring and action progress will be provided in the 2021 Annual Status Report.

Local Engagement and How to get Involved

A new Air Quality Partnership led by the officers of the Director of Public Health (DoPH), and supported by WRS Land and Air Quality Team, was set up in 2019 to discuss potential actions to improve air quality across the County and determine an action plan for implementation. The group comprises officers from the County and District authorities from public health, air quality, strategic planning, sustainability, highways and transport disciplines, and also representatives from the NHS and Highways England. Further discussions and work to formalise an action plan will continue in 2020.

WRS is also a member of Central England Environmental Protection Managers Group (CEEPG) which provides a strategic overview and direction for the delivery of Environmental Protection Services across the area of Central England covered by participating authorities. CEEPG responsibilities covers all environmental health matters regarding air quality, noise, contaminated land and LAPPC/IPPC including cooperation and coordination with the Environment Agency and Public Health England.

There are a number of ways members of the public can help to improve local air quality:

- **Walk or cycle, leave you car at home:** Leaving your car at home and walking or cycling instead will benefit in three ways - increased exercise, reduced pollution exposure and will reduce individual's pollution emissions;
- **Turn off your engine when stationary or parked,** don't 'idle', particularly outside sensitive receptors such as schools, hospitals, care homes and residential properties;

- Worcestershire County Council have launched a car sharing website, **LiftShare**, to help people find others journeying to the same destinations to share journeys and costs, and reduce traffic and emissions. Visit this link for more information <https://worcestershire.liftshare.com/>;
- Contact Worcestershire County Council for help and advice on a **Travel Plan** for your business. General travel planning advice is available on Worcestershire County Council's website (including walking, cycling and bus maps and timetables);
- **Hold meetings by Conference Call** by phone or Video conference via Skype, Facetime, Zoom or other service rather than driving to meetings. This reduces fuel and other travel costs, vehicle maintenance and hire cost, increases productivity through reduction in hours lost through unnecessary travel;
- Facilitate **Flexible Working Arrangements** for non-front line staff to **work remotely from home** or nearer home facilities for one or more days a week thus removing or reducing any journey to work. This reduces congestion which has beneficial impacts for delivery times, reduced business costs and thus economic benefits. Additionally, provides social benefits through improved work life balance for employees, reduces local air quality and reduced emergency vehicle response times.
- **Switch Fleet to Low Emission Vehicles:** The government is providing £80m funding to encourage installation of Electric Vehicle (EV) charging points. Eligible businesses, charities and public sector organisations with off street parking for staff or vehicles fleets can apply for vouchers to redeem costs of electric vehicle charge-points. There is a limit of 1 voucher per applicant; however, applicants with a 'franchise' may apply for up to 20 franchisees. There is an approved charge points list and a list of authorised installers. <https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles#workplace-charging-scheme>
- If you have to drive follow fuel efficient driving advice, often known as '**Smarter Driving Tips**', to save on fuel and reduce your emissions. A number of websites promote such advice including:
<http://www.energysavingtrust.org.uk/travel/driving-advice>

<http://www.theaa.com/driving-advice/fuels-environment/drive-smart>

<http://www.dft.gov.uk/vca/fcb/smarter-driving-tips.asp>

- **Reduce air pollution from open fires and wood-burning stoves:** Advice is available from Defra on choosing the right stove, using the right fuels and maintenance enabling householders to reduce their impact on their health and air quality from open fires and wood burning stoves. Further information is available on the [Smokeless Zones](#) and [Public Advice](#) pages on WRS website.

Air pollution can affect all of us over our lifetime however certain groups will be more sensitive to the effects of air pollution. Vulnerable groups include adults and children with lung or heart conditions such as asthma, chronic bronchitis, emphysema and chronic obstructive lung disease (COPD)^{4,5}. Senior citizens are more likely to be affected by respiratory diseases and children are more likely to be affected by air pollution due to relatively higher breathing and metabolic rates as well as a developing lung and immune system.

Vulnerable individuals and groups can keep informed of:

- Current levels and forecasts of air pollution from Defra at <https://uk-air.defra.gov.uk/>.
- If you are sensitive to the effects of air pollution, it may be appropriate to limit the length of time spent in areas of local poor air quality – see advice from Defra at <https://uk-air.defra.gov.uk/air-pollution/daqi>.
- If you are on social media, sign up to the WRS Twitter feed. WRS tweet when pollution is forecast by Defra to be moderate to very high.

Further information for the general public on reducing your family's exposure to poor air quality in Worcestershire and how individuals, business and schools can assist with reducing their impact on local air quality can currently be found at <http://www.worcsregservices.gov.uk/pollution/air-quality/public-advice.aspx> .

⁴ <http://www.breathelondon.org/>

⁵ <https://www.londonair.org.uk/LondonAir/guide/MyActionsForMe.aspx>

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1 Local Air Quality Management

This report provides an overview of air quality in in Redditch Borough 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 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 in Redditch Borough 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.

Redditch Borough Council currently does not have any AQMAs. Concentrations continue to fall below the annual mean objective for nitrogen dioxide.

For reference, a map of Redditch Borough Council's monitoring locations is available in Appendix D.

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

Defra's appraisal of last year's ASR concluded the report was well structured, detailed and provides the information specified in the Guidance.

1. We note that monitoring results at the five diffusion tube sites continue to show low pollution levels at those sites, with no results above $40\mu\text{g}/\text{m}^3$ after corrections were applied.
2. It is unusual for an urban area the size of Redditch not to have some areas where congested traffic is prevalent, to see higher pollution levels than those recorded here.
3. Although the Council have increased their monitoring strategy as suggested from last years appraisal, the Council could still review its current monitoring strategy to ensure that sites close to busy traffic with relevant population exposure are being adequately reviewed and monitored where necessary.
4. However, the overall trend from 5 years monitoring at the five monitoring sites shows a distinctive downward trend between 2014-2017 before a sharp increase in 2018 for all sites. This is commented to be likely due to a change in the national bias adjustment factor from 0.77 in 2017 compared to 0.89 in 2018.
5. In future reports the Council should calculate Annualisation in line with the methodology set out in Box 7.10 in the technical guidance (LAQM TG16), where it states Continuous Background monitoring locations should be used. The Council can use data from nearby Defra run sites if they have none within their own boundary.

There have been no exceedances of the annual mean objective for nitrogen dioxide at any monitoring location across the Redditch Borough in 2019; concentrations have remained below the objective. There were significant decreases in NO_2 concentrations after corrections were applied at all monitoring locations in the Borough in 2019 in part due to the lower bias adjustment factor applied to the 2019 results when compared to 2018. Tubes OR4, OR5 and OR6 (Misty Florist, Other

Road) is a triplicate location, after corrections, when averaged the NO₂ concentration for this location is 28.56µg/m³.

There are no exposed residential receptors to poor air quality due to the layout of the town's road network and topography. Between 1996 and 2019, thirty three diffusion tubes have been deployed at various locations throughout the Borough, results showed concentrations of NO₂ consistently well below the national objective at a majority of these locations. Rationalisation, carried out over the years, has reduced the number to the current figure as the most relevant locations. There have been no significant residential or commercial/industrial developments or highway infrastructure works within the Borough in 2019 to warrant expanding the network. Redditch Borough Council will continue to review its current monitoring strategy.

No specific actions have been progressed to improve air quality in the Redditch Borough area as there is currently no declared AQMA. However the general actions to improve air quality detailed in the AQAP apply across Worcestershire as a whole, including the Redditch Borough Council area.

More detail on these measures can be found in the Air Quality Action Plan for Worcestershire at:

<http://www.worcsregservices.gov.uk/pollution/air-quality/air-quality-action-plan.aspx>

Redditch Borough Council has published a strategy for ultra-low emission vehicles to help inform the development of appropriate infrastructure in the area to enable more people to use ULEVs. The document is available at:

<https://www.redditchbc.gov.uk/living/getting-around/electric-vehicles.aspx#strategy>

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	Promote flexible working arrangements	Promoting Travel Alternatives	Encourage / Facilitate home-working	2017	WCC & RBC	WCC & RBC	Increase in uptake of personal travel planning services. Change in behaviour towards more sustainable modes of transport	<1%	Implementation on-going	On-going	
2	Installing electric vehicle charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2014 onwards	RBC & WCC	RBC & WCC	Increase in availability of EV charging points and corresponding increase in use of electric vehicles	1%	Recommendations for installation of EV Charging Points routinely recommended by WRS on relevant planning consents.	On-going	WRS technical guidance note for planning (v.5.1), produced on behalf of Worcestershire local authorities. This document does not form part of any SPD guidance produced by Redditch BC but all applications are reviewed on their behalf with regard to its requirements. http://www.worcsresgservices.gov.uk/media/4210767/WRS-technical-guidance-document-for-Planning-V51.pdf

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3	Travel Planning	Promoting Travel Alternatives	Personalised Travel Planning	2017 onwards	WCC	WCC	Increased uptake of alternative modes of transport	<1%	County Council have developed a "one-stop-shop" online travel portal	Currently operating	
4	Car Sharing	Alternatives to private vehicle use	Car & lift sharing schemes	Liftshare Scheme launched Autumn 2015	WCC	WCC	Increase in number of people car sharing	<1%	Liftshare Scheme launched in Autumn 2015	Currently operating	
5	Produce Air Quality Supplementary Planning Document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Draft completed in August 2017.	WRS & District Councils	WRS & District Councils	Formally adopted and utilised SPD at all six LPAs across County	<1%	SPD drafted by WRS officers. Draft out for consultation	On-going	
6	Encourage developers to provide sustainable transport facilities and links serving new developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Draft completed in August 2017.	WRS & District Councils	WRS & District Councils	Formally adopted and utilised a by all six LPAs across County	<1%	SPD drafted by WRS officers Draft out for consultation	On-going	
7	Air Quality Networks	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2014 onwards	RBC & WRS	RBC & WRS	Improved cross boundary working between local authorities in Worcestershire	1%	WRS are members of the Midlands Joint Advisory Council (MJAC). Provision of AQ services to Tewkesbury Borough Council & Gloucester City Council	On-going	

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8	Forge closer links with local health agencies	Other	Other	2019	WRS, District Councils & WCC	WRS, District Councils & WCC	Participation of relevant health agencies in the Worcestershire Air Quality Steering Group	<1%	Director of Public Health at Worcestershire County Council set up an air quality group in 2019 to discuss air quality issues in the County	On- going	
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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.

There are currently no automatic PM_{2.5} monitoring stations in Worcestershire. The nearest AURN PM_{2.5} monitoring station is the Birmingham Acocks Green site approximately 22 kilometres to the north east of the Redditch Borough Council area.

WRS has reviewed the DEFRA national background maps to determine projected PM_{2.5} concentrations within the Redditch Borough area for the 2019 calendar year. The average total PM_{2.5} at 54 locations (centre points of 1km x 1km grids) across Redditch Borough is 7.94µg/m³, with a minimum concentration of 7.34µg/m³ and a maximum concentration of 9.54µg/m³. This indicates that PM_{2.5} concentrations within Redditch Borough are well below the annual average EU limit value for PM_{2.5} of 25µg/m³.

A new Air Quality Partnership led by the DoPH and supported by WRS Land and Air Quality Team was set up in 2019 to discuss potential actions to improve air quality across the County and determine an action plan for implementation. The group comprises officers from the County and District authorities from public health, air quality, strategic planning, sustainability, highways and transport disciplines, and also representatives from the NHS and Highways England. The group met initially in May 2019 to discuss terms and references and in September to discuss potential actions. Further discussions and work to formalise an action plan will continue in 2020.

In light of the above no additional actions are currently planned by Redditch Borough Council in relation to the reduction of PM_{2.5} levels. However it is anticipated that any actions taken to improve NO₂ levels across the Borough will likely result in a linked improvement in PM_{2.5} levels.

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

No automatic (continuous) monitoring was undertaken within the Redditch Borough area during 2019

3.1.2 Non-Automatic Monitoring Sites

Redditch Borough Council undertook non- automatic (passive) monitoring of NO₂ at 5 sites during 2019. Table A.2 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 bias⁶, “annualisation” (where the data capture falls below 75%), and distance correction⁷. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

During 2019, Redditch Borough Council monitored annual mean nitrogen dioxide concentrations using passive diffusion tubes at five locations across the Borough.

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Note that the concentration data presented 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).

⁶ <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

⁷ Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

NO₂ Five Year Trend for Redditch Borough Council

Figure 3.1 below demonstrates the 2015 – 2019 five year trend for NO₂ concentrations for Redditch Borough Council where available.

Figure 3.1 - Long Term Trend Graph of NO₂ Concentrations in Redditch

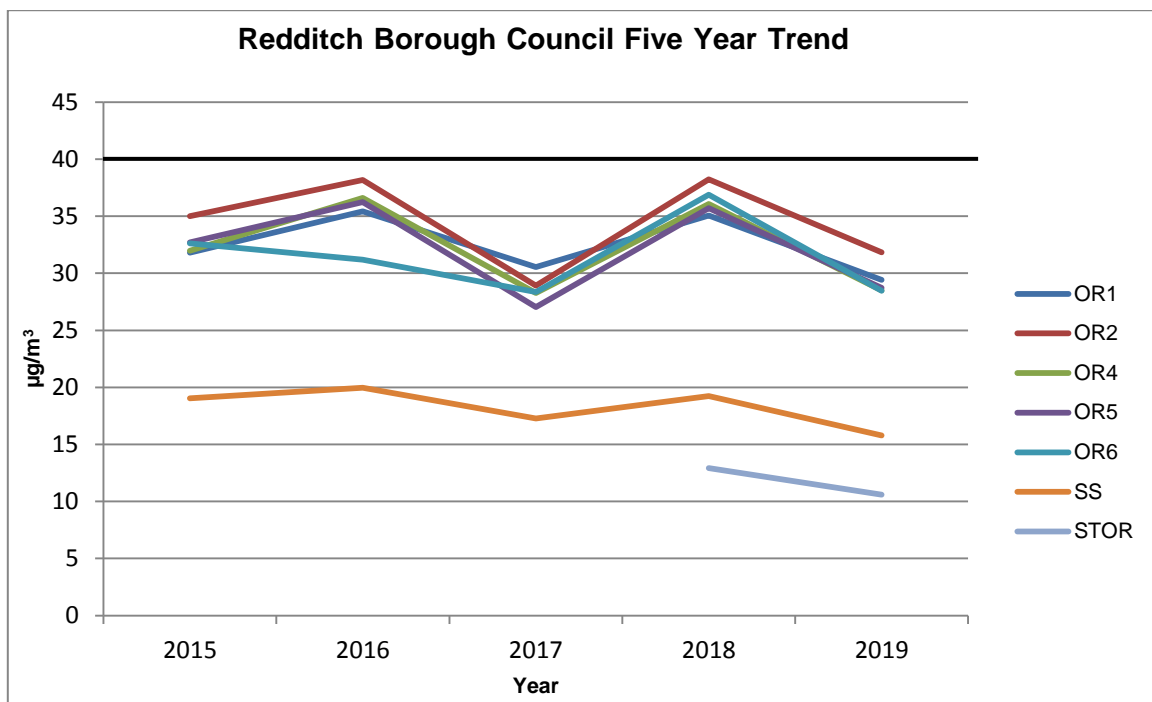


Figure 3.1 above indicates there have been no exceedences of the annual average Air Quality Objective (AQO) for NO₂ concentrations recorded in 2019. Monitoring results demonstrate a significant decrease in concentrations at all monitoring locations in 2019; this is consistent with trends across Worcestershire. This is likely to be have been caused in part by the significant difference in bias adjustment factors between 2018 and 2019; 0.89 in 2018 compared to 0.78 in 2019. The decrease between 2018 and 2019 monitoring data should not be considered as indicative of local trends.

It should be noted that diffusion tubes OR4, OR5 and OR6 is a triplicate location (Misty Florist, Other Road), when averaged and bias adjusted the NO₂ concentration for this location is 28.56µg/m³. Overall there is no discernible trend in NO₂ concentrations.

3.2.2 Particulate Matter (PM₁₀)

PM₁₀ is not monitored within Redditch Borough Council.

3.2.3 Particulate Matter (PM_{2.5})

PM_{2.5} is not monitored within Redditch Borough Council.

3.2.4 Sulphur Dioxide (SO₂)

SO₂ is not monitored within Redditch Borough Council.

Appendix A: Monitoring Results

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)
OR1	Other Road Street Lamp 2237	Roadside	404599	267542	NO ₂	No	3m	1.5m	No	2.44m
OR2(26N)	14 Other Road	Roadside	404620	267495	NO ₂	No	0m	3m	No	2.06m
OR4 (28N)	Other Road Misty Florist	Roadside	404629	267467	NO ₂	No	0m	4m	No	2.01m
OR5 (29N)	Other Road Misty Florist	Roadside	404629	267467	NO ₂	No	0m	4m	No	2.01m
OR6	Other Road Misty Florist	Roadside	404629	267467	NO ₂	No	0m	4m	No	2.01m
SS	7 Summer Street	Suburban	404376	267242	NO ₂	No	0m	2.63m	No	1.97m
STOR	Lamp-post opposite 18 Washford Lane	Urban Background	406603	265783	NO ₂	No	14.6	0.8m	No	2.2m

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 NO₂ 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
OR1	404599	267542	Roadside	Diffusion Tube		83	31.8	35.44	30.55	35.06	29.43
OR2 (26N)	404620	267495	Roadside	Diffusion Tube		100	35	38.18	28.92	38.23	31.83
OR4 (28N)	404629	267467	Roadside	Diffusion Tube		100	31.99	36.61	28.27	36.07	28.49
OR5 (29N)	404629	267467	Roadside	Diffusion Tube		100	32.72	36.23	27.03	35.72	28.72
OR6	404629	267467	Roadside	Diffusion Tube		100	32.62	31.19	28.63	36.89	28.47
SS	404376	267242	Suburban	Diffusion Tube		75	19.04	19.98	17.28	19.23	15.79
STOR	406603	265783	Urban Background	Diffusion Tube		100				12.92	10.61

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

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

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

(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.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO₂ Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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 (0.78) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
OR1	404599	267542	44.82		30.10	41.31	35.81	37	33.91	38.09	38.23	39.42		38.58	37.73	29.43	
OR2 (26N)	404620	267495	46.47	46.60	32.67	54.73	39.62	36.56	32.40	32.42	37.52	41.07	50.17	39.45	40.81	31.83	
OR4 (28N)	404629	267467	40.30	37.35	31.02	47.68	37.88	35.50	32.35	28.99	34.11	36.24	46.69	30.25	36.53	28.49	
OR5 (29N)	404629	267467	40.87	39.13	30.41	46.22	37.88	32.74	32.78	28.06	41.59	32.25	46.21	33.71	36.82	28.72	
OR6	404629	267467	40.11	39.61	31.45	48.53	37.64	34.31	33.20	28.00	34.23	35.64	45.79	29.48	36.50	28.47	
SS	404376	267242	25.08			22.92	16.48	15.68	14.11	13.23		22.79	29.08	22.78	20.24	15.79	
STOR	406603	265783	21.90	17.82	12.67	14.12	9.58	7.09	6.05	9.26	12.92	14.28	22.34	15.17	13.60	10.61	

- 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 in the final column

Notes:

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

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

(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

Sources of pollution

Redditch Borough Council has not identified any new or significant changes to sources as described in Chapter 7, section 1 of Technical Guidance LAQM.TG(16)

QA/QC Data

Factor from Local Co-location Studies (if available)

No local co-location studies for nitrogen dioxide have been undertaken in 2019.

Diffusion Tube Bias Adjustment Factors

The following UKAS accredited company provides Redditch Borough Council with nitrogen dioxide diffusion tubes and analysis:

Somerset Scientific Services,
Unit 2A,
Westpark 26
Chelston
Wellington
Somerset
TA21 9AD

01823 355906

sssmailbox@somerset.gov.uk

The 20% Triethanolamine (TEA) / De-ionised Water preparation method is used. The bias adjustment factor applied to the results in 2019 was 0.78 (Spreadsheet Version No. 03/20) which were derived from the national studies.

QA/QC of Automatic Monitoring

No Automatic Monitoring Data is available for 2019.

QA/QC of Diffusion Tube Monitoring

Under the AIR NO₂ Proficiency Testing Scheme, Somerset Scientific Services performed 100% satisfactory for the period January to November 2019. Tube precision was 'Good' throughout 2019.

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

Figure D.1 Redditch Borough Council Monitoring Locations

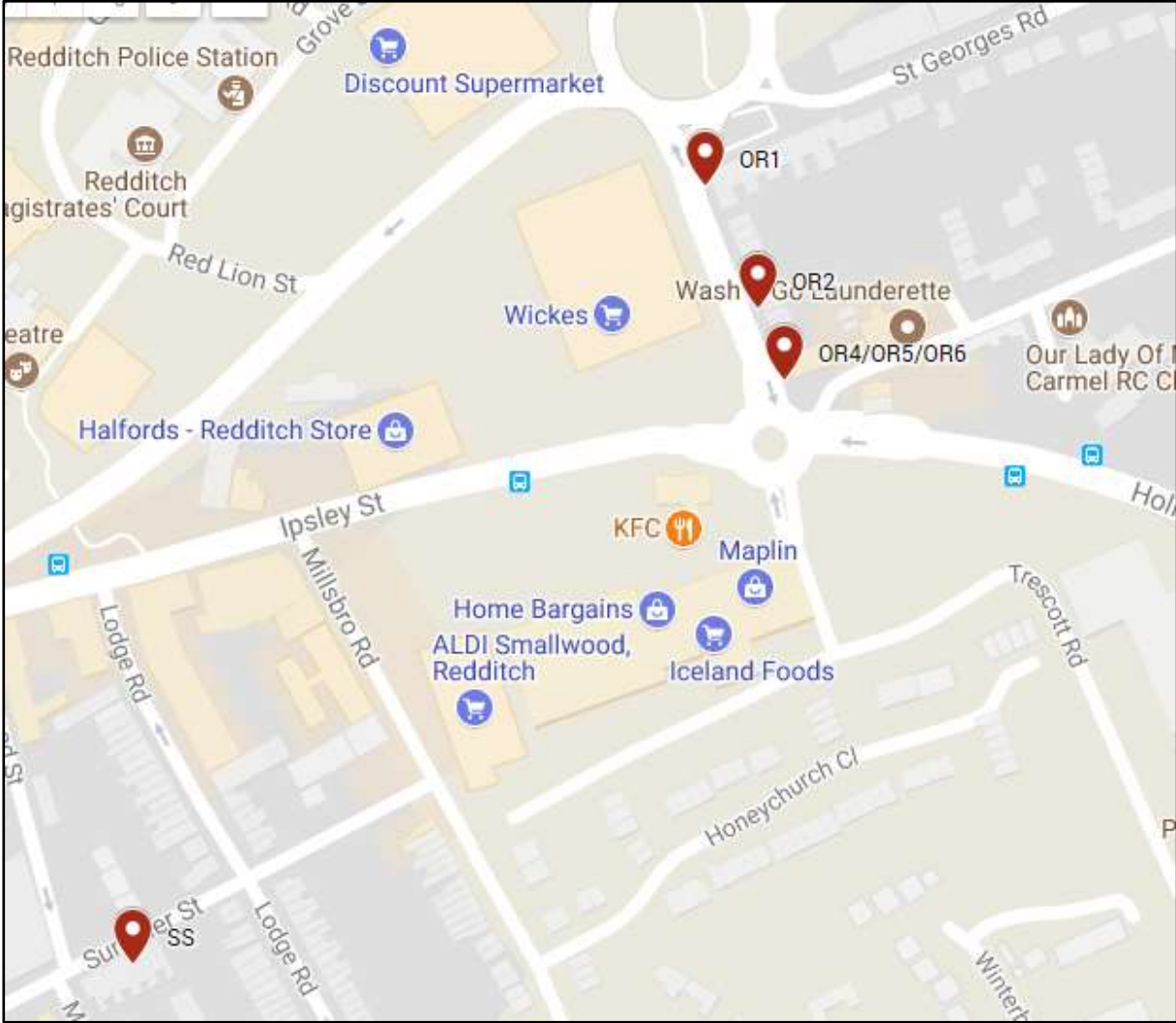


Figure D.2 STOR - Lamp-post opposite 18 Washford Lane



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁸	
	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

⁸ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
DoPH	Director of Public Health
EU	European Union
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
RBC	Redditch Borough Council
SO ₂	Sulphur Dioxide
WRS	Worcestershire Regulatory Services

References

1. DEFRA (2016) Local Air Quality Management Policy Guidance LAQM PG.(16)
2. DEFRA (2016) Local Air Quality Management Technical Guidance LAQM TG.(16)
3. DEFRA (2020) National Diffusion Tube Bias Adjustment Factor Spreadsheet v.03/20
4. DEFRA (2017) Background Mapping for Local Authorities
5. Worcestershire Regulatory Services (2013) 'Air Quality Action Plan for Worcestershire'
6. Worcestershire Regulatory Services (2015) 'Air Quality Action Plan Progress Report for Worcestershire April 2013-April 2015'
7. Worcestershire Regulatory Services (2016) 'Air Quality Action Plan Progress Report for Worcestershire April 2015 – April 2016'
8. Worcestershire Regulatory Services (2019) Air Quality Annual Status Report for Redditch Borough Council