Bromsgrove District Council
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Worcestershire Regulatory Services
Supporting and protecting you

2025 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June 2025

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Local Responsibilities and Commitment

This ASR was prepared by the Worcestershire Regulatory Services Technical Services Depart on behalf of Bromsgrove District Council with the support and agreement of the following officers and departments:

Worcestershire Regulatory Services

Bromsgrove District Council

Worcestershire County Council

Worcestershire Regulatory Services (WRS) is a shared service formed from the Environmental Health and Licensing departments of the six Worcestershire District Councils. Responsibility of managing (monitoring and reporting of) local air quality transferred from the partnership councils to WRS in April 2011.

This ASR has not been signed off by a Director of Public Health. The DoPH office has requested a copy of the ASR be forwarded for information post publication.

If you have any comments on this ASR please send them to:

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Executive Summary: Air Quality in Our Area

Air Quality in Bromsgrove District Council

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

Currently, there are three Air Quality Management Areas (AQMAs) declared within the Bromsgrove District, due to exceeding the annual objective for nitrogen dioxide (NO_2). The AQMAs are:

- Worcester Road, AQMA declared 24th October 2011
- Redditch Road, AQMA declared 17th February 2010
- Lickey End, AQMA declared 26th July 2001

In Worcester Road AQMA, the last exceedance of NO_2 was recorded in 2018 however measured concentrations have remained within 10% of the annual objective between 2018 and 2024. A new Air Quality Action Plan (AQAP) was completed at the beginning of 2025 which includes measures focussed on reducing NO_2 levels to achieve compliance with the current air quality objective for annual average ambient nitrogen dioxide. The AQMA will continue to be monitored and no changes to the AQMA are proposed at this time.

Within Redditch Road AQMA the last exceedance was recorded in 2016. Within the Lickey End AQMA the last exceedance of NO_2 at relevant exposure was recorded in 2014.

Bromsgrove District Council will give consideration to revocation of the following AQMAs in 2025:

- Redditch Road AQMA
- Lickey End AQMA

No exceedances of the annual mean objective for nitrogen dioxide have been recorded in the Bromsgrove District during the 2024 monitoring year. No exceedances of the objective were recorded in the previous year's 2020 – 2023.

It should be noted the COVID-19 pandemic significantly impacted measured air pollutant concentrations between 2020 – 2021 due to the associated lockdowns and restrictions affecting travel patterns and behaviours. However, as traffic levels across Worcestershire returned to 98% of pre pandemic levels during 2022, annual concentrations of NO_2 have also risen. It is observed that concentration trends have normalised in 2023 and 2024.

On average there has been a decrease of 2.6% across all the monitoring sites from 2023 to 2024. The largest decrease of 6.2µg/m^3 was recorded at FL2, which represents a decrease of 21.3% from 29.2µg/m^3 to 23.0µg/m^3.

The highest concentration of NO_2 recorded across the monitoring network in 2024 was 38.1µg/m^3 at location BC, Ye Olde Black Cross, Bromsgrove. This concentration is 4.9%

below the annual mean objective for NO_2. This saw a rise from 35.4µg/m^3 to 38.1µg/m^3 which represents a 7.5% increase. This monitoring site is located within the Worcester Road AQMA.

One other site within the Worcester Road AQMA recorded concentrations within 10% of the annual average air quality objective for NO_2 in 2024. WR, 14 Hanover Street, Bromsgrove measured concentrations 9.5% below the annual mean objective for NO_2. Concentrations have decreased from 36.6µg/m^3 in 2023 to 36.2µg/m^3 in 2024 which represents a 1.1% reduction.

Although no exceedances have been recorded within the AQMA for the last 5 years concentrations remain within 10% of the air quality objective. Therefore, in accordance with national guidance (LAQM.TG22), the AQMA will remain at this time, Bromsgrove District Council will continue monitoring and focus on progressing actions within the AQAP to achieve required reduction in NO_2.

Concentrations within the other two AQMAs were well below the objective in 2024. The highest concentration recorded within the Redditch Road AQMA was 27.7µg/m^3 at RR, Redditch Road, Bromsgrove. This is 30.6% below the annual objective. It has consistently been below the objective for a significant period of time with the last exceedance occurring in 2016 when two sites marginally exceeded with concentrations of 40.5 µg/m^3 at locations 18 and 19.

The highest concentrations of NO_2 recorded within the Lickey End AQMA were 34.7 µg/m^3 at diffusion tube LE4 and 34.8 µg/m^3 at diffusion tube F1 in 2024. These are 13.2% and 12.9% below the annual objective. Both of these results have increased from 2023 by 3.0% at LE4 and 4.6% at F1. However, the results have stayed below the objective since 2019 at monitoring locations, and since 2014 when calculated back to relevant exposure. The remaining 2024 results within the Lickey End AQMA were lower than those recorded in 2023.

No exceedances were recorded within the former Kidderminster Road, Hagley AQMA with the highest concentration of 23.8µg/m^3 recorded at RES4 within the former AQMA boundary area. This is 40.4% below the objective. Concentrations have been below the objective since the AQMA was revoked with the last exceedance of 40.2µg/m^3 being recorded in 2013.

The monitoring network has had several changes to the network following review. This includes four new monitoring sites added in 2024.

- RUB2, Beacon House, Callowbrook Lane, Rubery
- RUB3, Signpost opp 57 Callowbrook Lane, Rubery
- RR, Redditch Road, rear Avon Close, Bromsgrove
- 439AR, Lampost opp 439 Alcester Road, Wythall

The monitoring network also had five monitoring locations removed in 2024.

- BG1, Davenhall House
- HAG1, 79 Worcester Road, Hagley
- HAG2, 69 Worcester Road, Hagley
- HAG6, 1 SpoutSomething Cottag
- RES2, 21 Birmingham Road

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

Bromsgrove District Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality.

Air Quality Action Plan and Air Quality Strategy

Following discussions with the Defra LAQM team in May 2024 it was confirmed an AQAP is required for the Worcester Road, Bromsgrove AQMA. Bromsgrove District Council, in collaboration with air quality partner(s) Worcestershire County Council (WCC), and others, have developed an AQAP incorporating a number of improving actions to reduce NO_2 emissions within the AQMA. The BDC Air Quality Action Plan 2025 – 2030 was published in March 2025.

Development of an ambitious countywide Air Quality Strategy as reported in the last ASR, has been postponed for 2025. Progress has been delayed until local authority reorganisation, announced by government in Dec 2024, has been completed in Worcestershire. However, certain potential elements of the strategy, such as improving communication of air quality, are evolving through other work streams for example Behavioural Change interactions with local schools and communities, Clean Air Day 2025 campaign and working with LA teams around the county to ensure air quality is considered appropriately within local strategy and policy.

Real-time Air Quality Monitoring Project

In February 2023, Defra confirmed that WRS had been successful in a bid to the Air Quality Grant Scheme 2022/23 to establish an enhanced real-time air quality monitoring network across Worcestershire. The scope of the bid was to establish a real-time air quality monitoring network across the main areas of air quality concern in Worcestershire for purposes of providing enhanced monitoring data on a range of pollutants. Additionally, the proposal included informing the public and vulnerable groups of the status of air pollution in real time to encourage behaviour change.

The scheme has involved the installation of approximately 26 ‘low-cost Air Quality Monitors’ which measure NO_2, PM_{10}, and $PM_{2.5}$ across the county for a period of 3 years (with EA MCERTS standard accreditation as indicative ambient particulate matter

devices). The results of monitoring will be used to inform decision making and requirements for further action as necessary.

In 2023 the experienced sensor provider Earthsense were appointed as successful suppliers following a rigorous procurement process. The sensors, known as 'Zephyrs' are provided, operated and serviced by Earthsense who also provide data access.

Appropriate monitoring locations were determined by WRS in collaboration with Public Health, Worcestershire County Council Street Lighting team and Earthsense taking into consideration requirements of Bromsgrove District Council.

The locations have been chosen to maximise data capture within locations proximal to vulnerable communities and/or from a range of sources of air pollution including transport, solid fuel burning, industry and agriculture.

Three of the twenty-six monitors were installed in the Bromsgrove District between January and May 2024, following completion of required structural assessments. These are located on:

- Hanover Street
- Gunner Lane, Rubery
- Station Road, Hagley

Earthsense and WRS have designed a publicly accessible portal to the real time monitoring data which launched in May 2024. A summary of monitored the results from 2024 is provided in Appendix F.

Bromsgrove District Council and Redditch Borough Council Provision of Electric Vehicle Charging Infrastructure

About 120 new chargers are set to be placed at 33 locations in the area, after Redditch Borough Council teamed up with Bromsgrove District Council to agree a long-term contract with EV infrastructure provider Zest.

There are currently two new sites which are active and working these are located in Astwood Bank car park in Redditch and Aston Fields car park in Bromsgrove. More work is currently underway for approximately another 8 sites, these are expected to installed by the end of 2025.

Ultra-Low Emission Taxi Infrastructure Scheme

The ULEV taxi scheme now has seen the installation of 9 live operational chargers and work is currently ongoing to deliver an additional 4 chargers across the district. The project is for a duration of 10 years.

Worcestershire County Council Improvement Actions

Worcestershire County Council Highways Department have developed a number of major infrastructure improvement schemes within the district that are at various stages of delivery. These are briefly set out below.

A38 Bromsgrove Route Enhancement Programme (BREP) Major Scheme

The A38 Bromsgrove Route Enhancement Programme (BREP) aims to provide additional highway capacity and promote walking and cycling as an alternative, through a range of improvements along the whole corridor.

The scheme is currently in progress for delivery and has commenced to provide links between the town centre, rail station and facilities including local centres, retail and residential areas.

Phase 1 and 2 of the schemes have been completed. Phase 3 remains ongoing with a future Phase 4 being planned.

Full details of the scheme can be found on the County Council's website below:

A38 Bromsgrove Route Enhancement Programme (BREP) | Worcestershire County Council

Worcestershire Bus on Demand Scheme

Worcestershire on Demands offers an alternative transport option to fixed route public transport services. The scheme commenced in Bromsgrove and allows passengers to book on to the service from an app. Transport will collect the passenger from a designated pick-up point and will drop off at the required location. Unlike fixed route bus services, the service is flexible depending on the destinations and collection points.

The scheme commenced in Bromsgrove and has been further expanded to include the Bromsgrove rural hinterland and is now the North Worcestershire Expansion Zone which covers the majority of the district. The full map is below:

Worcestershire on Demand | Worcestershire County Council

Additionally, an hourly bus service is now in place between Bromsgrove and Queen Elizabeth hospital.

The Bromsgrove Local Cycling and Walking Infrastructure Plan (LCWIP)

Secured funding from Active Travel England development has commenced with the consultants Sustrans leading on this and is due to be completed later on in 2025.

Local cycling and walking infrastructure plans (LCWIPs) | Worcestershire County Council

Conclusions and Priorities

Currently there are three AQMAs within the Bromsgrove District area, Lickey End AQMA, Redditch Road and Worcester Road AQMA. Bromsgrove District Council will give consideration in 2025 to the revocation of the Redditch Road and Lickey End AQMAs in accordance with guidance LAQM.TG22.

Worcester Road AQMA measured concentrations within 10% of the objective in the reporting year of 2024, therefore, following technical guidance, the AQMA will remain in place at this time and will continue to be monitored with a view to revocation in the future dependant on measured concentrations and trends.

All three of the AQMAs were originally declared due to exceedances of the annual mean objective for nitrogen dioxide. The monitoring results from 2024 show there were no exceedances of the annual mean objective at any of the locations across the district. The highest concentration of NO_2 was 38.11µg/m^3 at location BC, Ye Olde Black Cross, Bromsgrove situated in the Worcester Road AQMA.

On average there has been a decrease of 2.6% across all the monitoring sites from 2023 to 2024.

Bromsgrove District Council has not identified any new significant sources impacting air quality within the reporting year of 2024. Applications for a number of new developments have been identified within the Bromsgrove District area. The proposals have been assessed as part of the planning process and are not expected to have a significant impact on local air quality should they become operational. Where air quality is a relevant concern in terms of new developments there will be proportionate mitigation measures.

Details of applications of ongoing significant developments within the Bromsgrove District area are listed in Appendix C.

Monitoring, reviewing, and assessing air quality will continue within the Bromsgrove District area at all existing and former AQMAs and other relevant areas. As previously discussed at this stage there is a view to revoke two of the existing AQMAs (Lickey End and Redditch Road AQMAs) and to potentially revoke the Worcester Road AQMA in the future dependant on the future data.

Bromsgrove District Council, in collaboration with air quality partner(s) Worcestershire County Council (WCC), Bromsgrove District Council, in collaboration with air quality partner(s) Worcestershire County Council (WCC) and others, have developed an AQAP incorporating a number of improving actions to reduce NO_2 emissions within the AQMA. The BDC Air Quality Action Plan 2025 – 2030 was published in March 2025.

Development of an ambitious countywide Air Quality Strategy as reported in the last ASR, has been postponed for 2025. Progress has been delayed until local authority reorganisation, announced by government in Dec 2024, has been completed in Worcestershire. However, certain potential elements of the strategy, such as improving communication of air quality, are evolving through other work streams for example Behavioural Change interactions with local schools and communities, Clean Air Day 2025 campaign and working with LA teams around the county to ensure air quality is considered appropriately within local strategy and policy.

A full rationalisation of all monitoring locations is programmed for Autumn 2025. Locations will be added and removed as deemed appropriate. WRS, on behalf of the Council will continue to review and comment on planning applications where air quality is a relevant concern.

As referred to in the previous section a real-time air quality monitoring network has been set up. This includes the installation and operation of 26 Zephyr Air Quality monitors' that measure NO_2, PM_{10} and $PM_{2.5}$, as well as other parameters, across the county. Three of these low-cost sensors have been deployed within the Bromsgrove District Council area in 2024. This has provided significant data in respect of PM_{10} and $PM_{2.5}$ for which monitoring across the county has been very limited previously.

Review and assessment of the first calendar years data will be conducted to help inform future projects and strategies to improve air quality across the district. Real time information will enable a better understanding of air quality in the borough to help inform decision making and requirements for further action as necessary.

Key priorities for the next year:

- Continue to monitor air pollutants at key locations across the district by use of the diffusion tube network
- Utilise the data from the new real-time low-cost sensors to inform future steps in improving air quality across the district.
- Review and assessment of first calendar year's data from low-cost sensors to inform future projects and strategies to improve air quality across the district.
- Promoting public access to the Earthsense portal of real time monitoring data on a range of air pollutants to enhance public knowledge and encourage behavioural change.
- Improving air quality information and direction to WRS webpages following recommendations of Defra's Air Quality Information Systems review.
- Exploring a potential $PM_{2.5}$ source apportionment study within Worcestershire with the University of Birmingham.
- Ensure proportionate mitigation measures are included within new developments where air quality is a relevant concern.
- Work with teams from around the county to ensure air quality is considered appropriately within local strategy and policy where appropriate.
- Maintain relationships with neighbouring authorities and institutions to stay abreast of issues and developments that could impact or benefit air quality in Bromsgrove District, and to ensure our work is recognised in the wider West Midlands community.

How to get Involved

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

- **Walk or cycle, leave your 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.
- **General travel planning advice** is available on Worcestershire County Council's website (including walking, cycling, bus maps and timetables) and Government website: community transport and travel to school).
    - Travel and Roads | Worcestershire County Council
    - Smarter choices: changing the way we travel – GOV.UK(www.gov.uk)
- **Hold meetings by Conference Call** by phone or video conference via Teams, Zoom, Facetime, 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 currently providing grants for up to 75% of Electric Vehicle (EV) charging points, up to 40 charge points:

  Workplace Charging Scheme: guidance for applicants - GOV.UK (www.gov.uk)
- 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:

- Save money and emissions through ecodriving – Energy Saving Trust
- How to drive economically – Eco-driving tips | AA (theaa.com)
- Fuel Consumption & CO2 Databases | Vehicle Certification Agency (vehiclecertification-agency.gov.uk)

- **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)[1,2]. 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

- Pollution levels can be monitored on our Earthsense portal and can provide advice on what to do when levels are high at: Worcestershire Air\ EarthSense

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 is available at Protecting Me and Others from Air Pollution | Worcestershire Regulatory Services (worcsregservices.gov.uk) .

[1] http://www.breathelondon.org/

[2] https://www.londonair.org.uk/LondonAir/guide/MyActionsForMe.aspx

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Bromsgrove District Council during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Bromsgrove District Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by Bromsgrove District Council can be found in Table 2.1. The table presents a description of the three AQMAs that are currently designated within Bromsgrove District Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean objective

Bromsgrove District Council will give consideration in 2025 to the revocation of the following AQMAs in Bromsgrove:

- Redditch Road AQMA
- Lickey End AQMA

The Worcester Road AQMA will continue to be monitored, and consideration will be made to revoke this in the future dependant on the data.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Lickey End, Bromsgrove AQMA	26th July 2001	NO_2 Annual Mean	Residential properties along four roads emanating from the Junction 1 M42	YES	45.7µg/m^3	34.8µg/m^3	9 years	N/A	
Redditch Road, Bromsgrove AQMA	17th February 2010	NO_2 Annual Mean	Long stretch of the A38 including a number of residential properties	YES	45.6µg/m^3	27.7µg/m^3	7 years	N/A	
Worcester Road, Bromsgrove AQMA	24th October 2011	NO_2 Annual Mean	Compromises mainly the B4091 Worcester Road single carriageway of the southwest of the town centre	NO	56µg/m^3	38.1µg/m^3	5 years	Bromsgrove District Council Air Quality Action Plan February 2025	BDC Air Quality Action Plan 2025 – 2030

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

☒ **Bromsgrove District Council confirm that all current AQAPs have been submitted to Defra.**

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

Defra's appraisal of last year's ASR concluded "*the report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:*

1. *The Council have put together a good quality ASR submission and should be commended for their efforts.*
2. *The Council have correctly applied QA/QC protocols for annualisation and have selected an appropriate bias adjustment factor using a local factor.*
3. *It is positive to see that BDC has begun the process to revoke two AQMAs, in line with the LAQM Technical Guidance 2022. This is accepted and the Council is encouraged to assess the revocation of the Worcester Road AQMA in 2025.*
4. *The Council have added a new diffusion tube to the network, however the justification for this decision is unclear. Further clarification would be appreciated.*
5. *It is noted that the council have installed Zephyr monitors for NO_2, PM_{10}, and $PM_{2.5}$ monitoring within the Borough which is welcomed. The Council are reminded that these monitors are indicative and cannot be used to determine compliance against the air quality objectives.*
6. *A good discussion regarding $PM_{2.5}$ has been included, particularly as both the Public Health Outcomes Framework indicator D01 and Defra modelled backgrounds have been discussed. The Council should continue to include these discussions in future reports.*
7. *The last two columns of table 2.1 have been left blank, this does not match the excel template. Additionally, there are several gaps in table 2.2. This should be clarified prior to publication.*
8. *The Council is urged to update their Air Quality Action Plan as soon as possible, as the Worcester Road AQMA is still active. It is noted that the AQAP is anticipated to be completed by 2025.*
9. *The Council have provided responses to last years appraisal comments, this is appreciated and encouraged for future ASRs.*

The above points have been noted.

In relation to point 4 this has been noted. In terms of tube PR1 this was added to the diffusion tube network last year due to the new significant development that is taking place in Perry Fields, Bromsgrove. Further clarification has been provided in section 3.2.1 in regard to the tubes that have been amended in the diffusion tube network for 2024.

In relation to point 8 the AQAP has now been published and the link for the AQAP has been provided in Table 2.1 above and table 2.2 has been revised to reflect the new AQAP published March 2025.

Bromsgrove District Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality, which are detailed below.

Air Quality Actions Plan and Air Quality Strategy

Following discussions with the Defra LAQM team in May 2024 it was confirmed an AQAP is required for the Worcester Road, Bromsgrove AQMA. A steering group was formed to progress a new AQAP comprising officers from Bromsgrove District Council, Worcestershire County Council and WRS from public health, technical pollution (air quality), strategic planning, sustainability, highways and transport disciplines, and also representation from the NHS. The Steering Group has developed an AQAP incorporating a number of improving actions to reduce NO2 emissions within the AQMA which are summarised in Table 2.2. Full details of the measures and formation of the AQAP process are provided within the BDC Air Quality Action Plan 2025 – 2030, published in March 2025.

Development of an ambitious countywide Air Quality Strategy as reported in the last ASR, has been postponed for 2025. Progress has been delayed until local authority reorganisation, announced by government in Dec 2024, has been completed in Worcestershire. However, certain potential elements of the strategy, such as improving communication of air quality, are evolving through other work streams for example Behavioural Change interactions with local schools and communities, Clean Air Day 2025 campaign and working with LA teams around the county to ensure air quality is considered appropriately within local strategy and policy.

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There are currently two new sites which are active and working these are located in Astwood Bank car park in Redditch and Aston Fields car park in Bromsgrove. More work is currently underway for approximately another 8 sites, these are expected to be installed by the end of 2025.

Technical Planning Document

WRS officers drafted the guidance document in 2017. This is a live document that is continuously updated where changes are required.

The document includes guidance on requirements for air quality assessments, standard recommendations expected for air quality mitigation measures, and advice relating to good practice for new development.

Consultants / agents are signposted to the information so that they are aware of the requirements in relation to development and submitting suitable assessments.

Worcestershire County Council Actions

Worcestershire County Council Highways Department have developed a number of major infrastructure improvement schemes within the district that are at various stages of delivery. These are briefly set out below.

A38 Bromsgrove Route Enhancement Programme (BREP) Major Scheme

The A38 Bromsgrove Route Enhancement Programme (BREP) aims to provide additional highway capacity and promote walking and cycling as an alternative, through a range of improvements along the whole corridor.

The scheme is currently in progress for delivery and has commenced to provide links between the town centre, rail station and facilities including local centres, retail and residential areas.

Phase 1 and 2 of the schemes have been completed. Phase 3 remains ongoing with a future Phase 4 being planned.

Full details of the scheme can be found on the County Council's website below:

A38 Bromsgrove Route Enhancement Programme (BREP) | Worcestershire County Council

Worcestershire Bus on Demand Scheme

Worcestershire on Demands offers an alternative transport option to fixed route public transport services. The scheme commenced in Bromsgrove and allows passengers to book on to the service from an app. Transport will collect the passenger from a designated pick-up point and will drop off at the required location. Unlike fixed route bus services, the service is flexible depending on the destinations and collection points.

The scheme commenced in Bromsgrove and has been further expanded to include the Bromsgrove rural hinterland and is now the North Worcestershire Expansion Zone which covers the majority of the district. The full map is below:

Worcestershire on Demand | Worcestershire County Council

Additionally, an hourly bus service is now in place between Bromsgrove and Queen Elizabeth hospital.

The Bromsgrove Local Cycling and Walking Infrastructure Plan (LCWIP)

Secured funding from Active Travel England development has commenced with the consultants Sustrans leading on this and is due to be completed later on in 2025.

Local cycling and walking infrastructure plans (LCWIPs) | Worcestershire County Council

Challenges and barriers

The principal challenges and barriers to implementation that Bromsgrove District Council face are numerous. Some of these challenges relate to the specific site conditions at each AQMA, as well as cost implications and difficulties associated with improving existing infrastructure.

The area of the Worcester Road AQMA, where regular exceedances of the objectives have been recorded historically, is best described as a ‘street canyon’. It comprises narrow streets with continuous buildings on either side and is a major route for traffic in and out of Bromsgrove. The street canyon restricts the dispersal of NO_2 and therefore represents a more significant issue than would be the case in a more open scenario.

Although the Kidderminster Road, Hagley AQMA has been revoked the area remains a major arterial route where congestion is still a significant issue. A significant diffusion tube network remains in place here to ensure a good coverage of monitoring. The monitoring network will also remain within the Lickey End and Redditch Road AQMAs following revocation, although this will be reviewed annually.

Securing funding for improvement schemes is a key factor. Ensuring uptake of greener methods of transport and changes in behaviour are also difficult to achieve without incentives or a lack of alternative options being in place. The current cost of electrical vehicles or hybrids means this alternative is out of the reach for many people.

Large scale residential development is also proposed within the Bromsgrove District and the wider area in future years. Consequently, solving the problem of poor air quality at problem locations within the district may be difficult. Even without further development, and increasing numbers of vehicles, the current road network is already stretched with significant congestion.

Measures stated above and in Table 2.2 – Progress on Measures to Improve Air Quality will help contribute towards compliance within the Bromsgrove District Council area and help enable the revocation of the existing AQMA Worcester Road in the future.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	EV Charging Strategy	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2025	**WCC,** BDC	LEVI capability funding	Fully funded	£50k - £100k	Implementation	**35%***	Publication of Strategy	Funding secured	Public consultation summer 2024, adoption of final strategy late 2024/early 2025
2	Public EV Charging Points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2025	WCC, **BDC**	Government sponsored Charging Infrastructure Investment Fund	Funded	£50k - £100k	Implementation	**35%***	Installation of chargepoints. Number of vehicles charging / number of new users	Installation of 5 additional public chargepoints in Bromsgrove Town due by spring 2025	Contract with supplier for 10+ years, potentially further charge points in lifetime of AQAP
3	LEVI Capacity Funding	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2029	**WCC**, BDC	£3.4m local EV Infrastructure Fun	Fully funded (subject to business case process)	£1 million - £10 million	Planning	**35%***	Number of EV chargers installed	Planning Phase	Subject to 3- stage business case process
4	Bus fleet improvements (local bus services)	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2025	2026	**Bus Operators**, WCC, WRS	Not yet identified	To be confirmed	£1 million - £10 million	Planning	9%	% of bus fleet Euro 6	Planning Phase	Funding availability, Operator Agreement
5	Countywide AQ Strategy - Behavioural Change Officer Post	Public Information	Via other mechanisms	2024	2026	**WRS**	S106	Funded	£100k - £500k	Implementation	<1.5%	Future stakeholder engagement	Post fulfilled Feb 2024. Has visited 61 primary schools across the county inc. 13 in BDC, undertaken 2 targeted surveys, worked directly with 11 schools delivering assemblies, participation in number of events and festivals, developed AQ toolkit for primary schools with UoW.	-
6	Countywide AQ Strategy - Encouraging awareness via Public Portal of real time monitoring data	Public Information	Via the Internet	2024	2027	**WRS**, Earthsense, WCC, District Councils	Defra, Districts	Fully funded	£100k - £500k	Completed	<1.5%	Number of website hits on public portal	Monitors deployed Jan 2024, Public Portal access from May 2024	-

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
7	Air Quality Improvements from New Development	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2024	2035	WCC, BDC, Developers	S106 Funding	Funded	£1 million - £10 million	Planning	<1.5%	S106 agreements completed	2 Phased developments, Phase 1 of each dev being delivered, remaining are in planning stages	Subject to planning applications being approved for later phases. Big impacts delivered in later development phases
8	Local bus service improvements funded from Bus Service Improvement Plan (BSIP) and Enhanced Partnership (EP)	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2026	2030	WCC, inc. Public Health, BDC, key stakeholders, Active Travel England	BSIP funding	To be confirmed	£1 million - £10 million	Planning	<0.3%	Bus patronage (passenger demand)	Enhanced Partnership (EP) with bus operators formalised and published March 2025	-
9	Bromsgrove Local Cycling and Walking Infrastructure Plan (Scheme Delivery)	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2025	2035	**WCC** inc. Public Health, BDC, key stakeholders, Active Travel England	Active Travel England, Developer contributions	To be confirmed	>£10 million	Planning	<1.5%	Scheme delivery monitoring (e.g. cycle counts)	Planning Phase	Funding Availability
10	Bromsgrove Local Cycling and Walking Infrastructure Plan (Development	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2024	2025	**WCC** inc. Public Heath, BDC, key stakeholders, Active Travel England	WCC, Active Travel England	Fully funded	£50k - £100k	Planning	<0.2%	LCWIP completed by March 2025	Planning Phase	-
11	Countywide AQ Strategy - Raising awareness events	Public Information	Other	2023	Ongoing	**WCC Public Health**, WRS	Not yet identified	To be confirmed	£10k - £50k	Implementation	<0.2%	Support minimum of 3 national events. Number of events attended. Number of people engaged	Clean Air Day promotion undertaken and Heart of Worcestershire College community event in 2024.	Reduced PH resource to support programme of events.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
12	Countywide AQ Strategy - Communications Plan	Policy Guidance and Development Control	Oher	2025	Ongoing	**WCC Public Health,** WRS	Not yet identified	To be confirmed	£10k - £50k	Planning	<0.2%	Production of communication plan	Significant update to AQ info on WRS website June 2025 and CAD2025 campaign to promote following AQIS review.	Countywide strategy delayed until outcome of LA reorganisation.
13	Countywide AQ Strategy - Encouraging awareness and behaviour al change interventions linked to focussed real time monitoring data	Public Information	Via other mechanisms	2024	2027	WRS, **WCC,** District Councils	Not yet identified	To be confirmed	£10k - £50k	Planning	<1.5%	Number of responses to survey, hits on website, data captured. Changed behaviour identified from repeat survey in future	Gen public baseline AQ Survey, followed by 2 targeted surveys with HoW college and local schools in 2024. Presented in Global Bike Bus Summit Apr25, developed toolkit for primary schools with UoW.	AQ Toolkit available for schools to download from WRS website
14	Eco Driving Training/ Scheme	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2025	Ongoing	**BDC**	BDC	To be confirmed	£10k - £50k	Planning	<0.2%	Number of operatives completing training	Planning Phase	-
15	Travel Choices	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2025	2030	**WCC** inc. Public Health, BDC, key stakeholders- schools, UoW	Not yet identified	To be confirmed	£50k - £100k	Planning	<1.5%	Number of walking, cycling, scooting and number of participating organisations and activities delivered	Planning Phase	Funding availability
16	A38 BREP MRN Scheme - active travel and bus infrastructure enhancements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2024	2026	**WCC**	DfT	Phase 3 Fully Funded	>£10 million	Implementation	<0.2%	Completion of works	In Delivery	-

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
17	Travel to School	Promoting Travel Alternatives	School Travel Plans	2025	2030	**WCC** inc. Public Health, BDC, Schools & Colleges	Not yet identified	To be confirmed	£100k - £500k	Planning	<1.5%	Number of walking, cycling, scooting, car, and park & stride trips; Number of participating schools and of activities delivered	Planning Phase	Funding availability
18	Bus stop infrastructure – bus shelter provision	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2025	2030	**WCC**, Bus operators	Not yet identified	To be confirmed	£500k - £1 million	Planning	<0.2%	Bus patronage (passenger demand)	Planning Phase	Funding availability
19	Demand Response Travel (DRT)	Alternatives to private vehicle use	Other	2024	2025	**WCC,** Bus Operators, BDC	WCC	To be confirmed	£1 million - £10 million	Implementation	<0.2%	Bus patronage (passenger demand)	Planning Phase	Funding availability
20	BDC Vehicle Fleet Upgrade - Refuse Collection Vehicle and other Heavy and Light Commercial Vehicle Upgrades	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2024	2029	**BDC**	BDC	Funded	£1 million - £10 million	Implementation	<0.2%	Replacement of vehicles	Rolling replacement programme	-

*Combined contribution of EV supporting measures 1 – 3

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[3], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

There were no automatic scientific reference methods for $PM_{2.5}$ monitoring stations in Worcestershire in 2024 that are recognised by Defra for measuring against ambient air quality directives. The nearest AURN $PM_{2.5}$ monitoring station, in 2024, is the Birmingham Ladywood site approximately 20km to the north of the Bromsgrove District.

WRS has reviewed the DEFRA national background maps to determine projected $PM_{2.5}$. concentrations within the Bromsgrove District for the 2024 calendar year. The average total $PM_{2.5}$ at the 218 locations (centre points 1km x 1km grids) across the Bromsgrove District is 6.57µg/m^3 with the lowest concentration of 5.97µg/m^3 and the highest concentration being 7.20µg/m^3. $PM_{2.5}$ concentrations within the Bromsgrove District are well below the annual average EU limit value for $PM_{2.5}$ of 25µg/m^3 and are below the proposed annual average limit value for $PM_{2.5}$ target of 10µg/m^3 across England by 2040.

Three low-cost sensors offering publicly accessible real time monitoring data were deployed within the Bromsgrove District Council area in 2024. The sensors, known as 'Zephyrs' provide data on a range of pollutants including PM_1, $PM_{2.5}$ and PM_{10}. Graphical results for 2024 are shown in the appendices and $PM_{2.5}$ averages for 2024 are summarised in the table below:

[3] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

Location	2024 average $PM_{2.5}$ ($\mu g/m^3$)	Installation
Hanover Street, Bromsgrove	7.96	January 2024
Gunner Lane, Rubery	6.79	January 2024
Station Road, Hagley	6.23	May 2024

These low-cost sensors have been certified as suitable for indicative monitoring for particulate matter within the UK using the Environment Agency's Indicative instrument certification scheme (MCERTS). However, the following advice from Defra is acknowledged: 'While low-cost sensors can provide useful indicative data, at present they are not approved for use in statutory legal reporting (LAQM) of data against the National air quality objectives as they are not accurate enough to meet the expanded uncertainty requirements of equivalent [scientific reference] instruments.'

The measured data from the low-cost sensor network and Defra background pollution maps indicate that $PM_{2.5}$ concentrations within the Bromsgrove District are well below the interim and legally binding targets set out in the Air Quality Strategy (England) 2023:

Pollutant and Metric	Target	Target Year
$PM_{2.5}$ annual mean concentration	Interim target: $12\mu g/m^3$	2028
$PM_{2.5}$ annual mean concentration	Legally binding target: $10\mu g/m^3$	2040

WRS has reviewed the fraction of mortality attributable to particulate air pollution published by the Department of Health & Social Care. The estimated fraction of mortality attributable to particulate air pollution in 2023 (most recent year available) was 4.7%. This is below the national figure for England (5.2% in 2023) and the Bromsgrove figure is lower than the West Midlands regional figure (5.1% for 2023).

Fingertips | Department of Health and Social Care

More information on the Public Health Outcomes Frameworks that examines indicators that help to understand the trends in public health can be found at Public Health Outcomes Framework - OHID (phe.org.uk)

There are currently no declared smoke areas in operating within the Bromsgrove District.

More information, maps, and guides on the type of fuels that can be used can be found at:

Smoke Control Areas | Worcestershire Regulatory Services (worcsregservices.gov.uk)

WRS hold 33 records of complaints of nuisance from smoke in the Bromsgrove District in 2024, most of which relate to bonfires or burning of waste or other enquires. 4 records of complaints are attributable to wood burning stoves in residential developments which were either unsubstantiated, not pursed or resolved without requirement for enforcement action.

In light of the above no additional actions are currently planned by Bromsgrove District Council in relation to the reduction of $PM_{2.5}$ levels. However, it is anticipated that any actions taken to improve NO_2 levels across the region as part of the BDC Air Quality Action Plan 2025 – 2030 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

This section sets out the monitoring undertaken within 2024 by Bromsgrove District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

No automatic (continuous) monitoring that are recognised by Defra for measuring against ambient air quality directives was undertaken within the Bromsgrove District Council area during 2024.

3.1.2 Non-Automatic Monitoring Sites

Bromsgrove District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 44 sites during 2024. Table A.1 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.1 and Table A.2 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

No exceedances of the annual mean objective for nitrogen dioxide have been recorded in the Bromsgrove District during the 2024 monitoring year. No exceedances of the objectives were recorded in the previous year's 2020 – 2023.

It should be noted the COVID-19 pandemic significantly impacted measured air pollutant concentrations between 2020 – 2021 due to the associated lockdowns and restrictions affecting travel patterns and behaviours. However, as traffic levels across Worcestershire returned to 98% of pre pandemic levels during 2022, annual concentrations of NO_2 have also risen. It is observed that concentration trends have normalised in 2023 and 2024.

On average there has been a decrease of 2.6% across all the monitoring sites from 2023 to 2024. The largest decrease of 6.2µg/m^3 was recorded at FL2, which represents a decrease of 21.3% from 29.2µg/m^3 to 23.0µg/m^3.

However, some monitoring sites have seen an increase. The largest increase was 1.7µg/m^3 which was recorded at Loc.11, (74 Worcester Road, Hagley). This saw a rise from 19.6µg/m^3 to 21µg/m^3 which represents an 8.7% increase.

The highest concentration of NO_2 recorded across the monitoring network in 2024 was 38.1µg/m^3 at location BC, Ye Olde Black Cross, Bromsgrove. This concentration is 4.9% below the annual mean objective for NO_2. This saw a rise from 35.4µg/m^3 to 38.1µg/m^3 which represents a 7.5% increase. This monitoring site is located within the Worcester Road AQMA.

One other site within the Worcester Road AQMA recorded concentrations within 10% of the annual average air quality objective for NO_2 in 2024. WR, 14 Hanover Street, Bromsgrove measured concentrations 9.5% below the annual mean objective for NO_2.

Concentrations have decreased from 36.6µg/m^3 in 2023 to 36.2µg/m^3 in 2024 which represents a 1.1% reduction.

Although no exceedances have been recorded within the AQMA for the last 5 years concentrations remain within 10% of the air quality objective. Therefore, in accordance with national guidance (LAQM.TG22), the AQMA will remain at this time, Bromsgrove District Council will continue monitoring and focus on progressing actions within the AQAP to achieve required reduction in NO_2.

Concentrations within the other two AQMAs were well below the objective in 2024. The highest concentration recorded within the Redditch Road AQMA was 27.7µg/m^3 at RR, Redditch Road, Bromsgrove. This is 30.6% below the annual objective. It has consistently been below the objective for a significant period of time with the last exceedance occurring in 2016 when two sites marginally exceeded with concentrations of 40.5 µg/m^3 at locations 18 and 19.

The highest concentrations of NO_2 within the Lickey End AQMA were 34.7 µg/m^3 at diffusion tube LE4 and 34.8 µg/m^3 at diffusion tube F1 in 2024. These are 13.2% and 12.9% below the annual objective. Both of these results have increased from 2023 by 3.0% at LE4 and 4.6% at F1. However, the results have stayed below the objective since 2019 at monitoring locations, and since 2014 when calculated back to nearest relevant exposure. The remaining 2024 results within the Lickey End AQMA were lower than those recorded in 2023.

No exceedances were recorded within the former Kidderminster Road, Hagley AQMA with the highest concentration of 23.8µg/m^3 recorded at RES4 within the former AQMA boundary area. This is 40.4% below the objective. Concentrations have been below the objective since the AQMA was revoked with the last exceedance of 40.2µg/m^3 being recorded in 2013.

Following the revocation of the AQMA new monitoring locations were established in the wider area to the south along the Worcester Road, West Hagley, which had been highlighted as a potential concern. In 2024 the highest concentration was 35.6µg/m^3 recorded at HAG5. It should be noted that HAG5 is located close to the highway approximately 7.3m from residential exposure. Therefore, concentrations are anticipated to be well below the objective in this area considering distance to relevant exposure.

The monitoring network has had several changes to the network following on from the review. This includes four new monitoring sites added in 2024.

- RUB2, Beacon House, Callowbrook Lane, Rubery
- RUB3, Signpost opp 57 Callowbrook Lane, Rubery
- RR, Redditch Road, rear Avon Close, Bromsgrove
- 439AR, Lampost opp 439 Alcester Road, Wythall

Tubes have been added in Rubery (RUB2 and RUB3) to provide additional data for the area located on the outskirts of the wider Birmingham conurbation.

An additional tube along the Redditch Road (RR) has been added to the network as it has been suggested that there has been an increased level of traffic which is potentially due to the A38 BREP work that is taking place in Bromsgrove.

An additional tube has also been added in Wythall due to the limited data on concentrations within this area.

The monitoring network also had five monitoring locations removed in 2024.

- BG1, Davenhall House
- RES2, 21 Birmingham Road
- HAG2, 69 Worcester Road, Hagley
- HAG1, 79 Worcester Road, Hagley
- HAG6, 1 SpoutSomething Cottage

The sites located in Hagley (RES2, HAG2, HAG1 and HAG6) have been removed due to the reductions in concentrations in NO2 in this area recorded over a long period time and large network of location points. There remains a sufficient tube network located in Hagley due to the former AQMA status. Therefore, these tubes are no longer required however, there are still several tubes that are located in the previous Hagley AQMA meaning there is still sufficient monitoring taking place within Hagley.

BG1 had been removed from the monitoring network due to sufficient information gathered and covered by the remaining network.

No annual means greater than 60µg/m^3 have been recorded indicating that it is extremely unlikely that there have been any exceedances of the 1-hour mean objective for NO_2 at any monitoring sites. The 60µg/m^3 is a surrogate figure to indicate exceedances of the 1-hour objective. All of the concentrations recorded across the district in 2024 are more than 40% below 60µg/m^3.

In summary there have been no exceedances of the Air Quality Objective. The last exceedance of NO_2 in Worcester Road was recorded in 2018. The last exceedance of NO_2 in Lickey End AQMA at relevant exposure was in 2014 and the last exceedance of NO_2 in Redditch Road was 2016.

3.2.2 Particulate Matter (PM_{10})

PM_{10} has not been monitored in 2024 in terms of scientific reference methods.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ has not been monitored in 2024 in terms of scientific reference methods.

3.2.4 Sulphur Dioxide (SO_2)

SO_2 has not been monitored in 2024.

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
FL1	2C Fox Lane	Roadside	395079	269797	NO2	No	0.0	7.0	No	2.1
FL2	New houses close to Road on Fox Lane	Roadside	395118	269721	NO2	No	0.0	1.6	No	2.1
RH1	8 Rockhill	Roadside	395243	269844	NO2	No	0.0	6.3	No	2.2
WR4	188 Worcester Road	Roadside	395312	269938	NO2	Yes - Worcester Road AQMA	0.0	7.5	No	2.2
WR2	159 Worcester Road	Roadside	395511	270180	NO2	Yes - Worcester Road AQMA	0.0	2.2	No	2.2
WR3	138 Worcester Road	Roadside	395501	270190	NO2	Yes - Worcester Road AQMA	0.0	4.4	No	2.5
BC	Ye Olde Black Cross	Roadside	395685	270424	NO2	Yes - Worcester Road AQMA	0.0	2.1	No	2.3
BCX	16 Worcester Road	Roadside	395807	270549	NO2	Yes - Worcester Road AQMA	0.0	2.7	No	5.3
WR	14 Hanover Street	Roadside	395702	270423	NO2	Yes - Worcester Road AQMA	0.0	6.4	No	1.4
BR	35 Birmingham Road	Roadside	396292	271210	NO2	No	0.0	3.4	No	2.2
LE7	371 Birmingham Road	Urban Background	396916	273014	NO2	Yes - Lickey End AQMA	0.0	15.9	No	2.1

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
1	3A Alcester Road	Roadside	396999	272979	NO2	Yes - Lickey End AQMA	0.0	11.7	No	1.8
LE4	Harvester, Birmingham Road, Lickey End	Roadside	396935	272949	NO2	Yes - Lickey End AQMA	11.0	1.4	No	2.1
LK1	288 Birmingham Road	Roadside	396939	272934	NO2	Yes - Lickey End AQMA	0.0	10.0	No	1.5
LK2	1 Old Birmingham Road	Roadside	396995	273129	NO2	Yes - Lickey End AQMA	0.0	5.5	No	1.5
LE5	5 Old Birmingham Road	Roadside	396999	273143	NO2	Yes - Lickey End AQMA	0.0	6.5	No	1.9
LE6	308 Birmingham Road	Urban Background	396958	273157	NO2	Yes - Lickey End AQMA	0.0	18.3	No	2.1
F1	J1 M42 Rounabout, Street Light, at junction with Old Birmingham Road	Roadside	397010	273112	NO2	Yes - Lickey End AQMA	20.0	2.3	No	2.0
TS	Smallholdings, Wildmoor Lane	Rural	396613	275085	NO2	No	0.0	51.0	No	1.8
RUB1	Library Way, off New Road	Roadside	398555	277200	NO2	No	12.0	2.0	No	1.6
RES1	26 Stourbridge Road, Hagley	Roadside	391445	281179	NO2	No	0.0	15.0	No	2.1
9	78 Kidderminster Road, Hagley	Roadside	391210	280668	NO2	No	0.0	8.3	No	2.0
KR62	62 Kidderminster Road, Hagley	Roadside	391182	280631	NO2	No	0.0	7.0	No	2.0
RES3	104 Kidderminster Road South	Roadside	389827	279590	NO2	No	0.0	14.3	No	2.0
HAG4	Lamp post opp Shell Garage Worcester Road	Roadside	389850	279588	NO2	No	0.0	5.5	No	2.0
HAG3	1 Cross Keys Mews, Worcester Road	Roadside	389909	279629	NO2	No	0.0	3.0	No	1.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
RES4	23 Worcester Road, Hagley	Roadside	390025	279765	NO2	No	0.0	14.5	No	2.1
11	74 Worcester Road, Hagley	Roadside	390295	280043	NO2	No		2.8	No	1.9
HAG5	On low sign near 4 Cross Keys Mews	Roadside	389929	279650	NO2	No	7.3	4.5	No	1.6
SBR1	Lampost o/s 61 Stourbridge Road, Bromsgrove	Roadside	396127	271516	NO2	No	4.8	2.2	No	1.9
SBR2	Lampost o/s Sainsburys Local, 189 Stourbridge Road	Roadside	395996	272063	NO2	No		3.5	No	2.0
SBR3	Lampost o/s 285 Stourbridge Road	Roadside	395825	272841	NO2	No	12.0	1.0	No	1.9
KEN	Lampost o/s 12 & 14 Kendal Close, Bromsgrove	Roadside	396683	270354	NO2	No	0.0	1.7	No	2.4
SR	2 Stoke Road, Aston Fields, Bromsgrove	Roadside	396780	269450	NO2	No	0.0	4.9	No	1.9
18	84 Redditch Road	Roadside	395180	268549	NO2	Yes - Redditch Road AQMA	0.0	1.6	No	2.0
19	93 Redditch Road	Roadside	395188	268564	NO2	Yes - Redditch Road AQMA	0.0	2.7	No	1.9
HR	52 Hanury Road, Stoke Heath	Roadside	394772	268441	NO2	Yes - Redditch Road AQMA	0.0	5.0	No	2.2
16	58 Redditch Road, Bromsgrove	Roadside	394701	268444	NO2	Yes - Redditch Road AQMA	0.0	2.3	No	2.2
255	255 Worcester Road	Roadside	394408	268417	NO2	No	0.0	12.0	No	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
PR1	1 Perry Fields Road, Bromsgrove	Suburban	395795	272309	NO2	No	0.0	0.6	No	1.5
RUB2	Beacon House, Callowbrook Lane, Rubery	Roadside	398273	277039	NO2	No	0.0	4.5	No	1.5
RUB3	Signpost opp 57 Callowbrook Lane, Rubery	Roadside	398475	277174	NO2	No	6.0	1.0	No	1.6
RR	Redditch Road, rear Avon Close	Roadside	395674	268860	NO2	Yes - Redditch Road AQMA	6.0	1.5	No	2.1
439AR	Lampost o/s 439 Alcester Road, Wythall	Roadside	407908	275162	NO2	No	4.0	2.2	No	2.0

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
FL1	395079	269797	Roadside	75.0	75.0	13.9	13.0	18.7	16.4	12.9
FL2	395118	269721	Roadside	100.0	100.0	24.8	27.2	29.7	29.2	23.0
RH1	395243	269844	Roadside	100.0	100.0	20.4	22.0	25.1	22.8	22.6
WR4	395312	269938	Roadside	100.0	100.0	19.3	21.4	23.9	23.4	23.1
WR2	395511	270180	Roadside	100.0	100.0	22.4	25.6	27.8	28.4	29.5
WR3	395501	270190	Roadside	100.0	100.0	20.0	21.5	27.4	24.7	24.0
BC	395685	270424	Roadside	100.0	100.0	27.7	31.5	37.4	35.4	38.1
BCX	395807	270549	Roadside	83.0	83.0	26.3	29.6	32.4	31.5	31.0
WR	395702	270423	Roadside	100.0	100.0	29.4	32.3	36.2	36.6	36.2
BR	396292	271210	Roadside	83.0	83.0	18.9	21.1	23.1	22.6	21.6
LE7	396916	273014	Urban Background	100.0	100.0	17.7	20.0	22.0	21.4	19.9
1	396999	272979	Roadside	100.0	100.0	15.4	22.0	22.7	17.1	16.7
LE4	396935	272949	Roadside	100.0	100.0	29.1	31.5	32.4	33.7	34.7
LK1	396939	272934	Roadside	100.0	100.0	23.7	22.3	28.8	26.7	25.9
LK2	396995	273129	Roadside	90.6	90.6	22.0	21.5	24.7	23.2	22.8
LE5	396999	273143	Roadside	100.0	100.0	20.2	21.0	23.8	23.1	22.5
LE6	396958	273157	Urban Background	100.0	100.0	17.5	23.6	26.1	21.6	21.5
F1	397010	273112	Roadside	100.0	100.0	27.8	28.5	29.4	33.3	34.8
TS	396613	275085	Rural	100.0	100.0	15.2	16.3	19.0	17.7	16.7
RUB1	398555	277200	Roadside	100.0	100.0	18.5	21.0	21.7	22.6	21.4
RES1	391445	281179	Roadside	92.5	92.5	13.9	14.2	16.5	15.0	14.1
9	391210	280668	Roadside	100.0	100.0	19.5	21.5	22.8	21.9	21.2
KR62	391182	280631	Roadside	100.0	100.0	17.8	20.0	20.7	20.2	19.2
RES3	389827	279590	Roadside	100.0	100.0	12.1	15.8	18.4	15.5	14.2
HAG4	389850	279588	Roadside	90.6	90.6	18.8	22.9	25.1	23.3	22.7
HAG3	389909	279629	Roadside	100.0	100.0	27.2	26.7	31.8	30.7	29.8
RES4	390025	279765	Roadside	92.5	92.5	20.3	22.6	23.7	23.6	23.8
11	390295	280043	Roadside	100.0	100.0	18.0	18.4	18.0	19.6	21.3
HAG5	389929	279650	Roadside	92.5	92.5	29.5	32.7	35.8	34.5	35.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
SBR1	396127	271516	Roadside	90.6	90.6	24.9	26.6	28.6	28.4	27.7
SBR2	395996	272063	Roadside	100.0	100.0	18.4	20.5	22.8	22.1	20.6
SBR3	395825	272841	Roadside	100.0	100.0	25.9	27.8	31.7	30.2	28.4
KEN	396683	270354	Roadside	100.0	100.0	15.3	16.5	17.8	17.0	15.9
SR	396780	269450	Roadside	90.6	90.6	17.2	19.0	21.7	21.0	21.2
18	395180	268549	Roadside	100.0	100.0	22.4	25.1	25.9	25.6	25.2
19	395188	268564	Roadside	100.0	100.0	23.1	25.5	26.4	25.6	25.6
HR	394772	268441	Roadside	75.0	75.0	20.4	23.5	26.4	24.3	24.5
16	394701	268444	Roadside	92.5	92.5	20.4	21.8	21.7	22.9	22.2
255	394408	268417	Roadside	75.0	75.0	15.9	17.3	19.8	17.5	18.3
PR1	395795	272309	Suburban	83.0	83.0				17.6	16.5
RUB2	398273	277039	Roadside	92.5	92.5					16.1
RUB3	398475	277174	Roadside	100.0	100.0					19.3
RR	395674	268860	Roadside	75.0	75.0					27.7
439AR	407908	275162	Roadside	81.1	81.1					22.0

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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**.

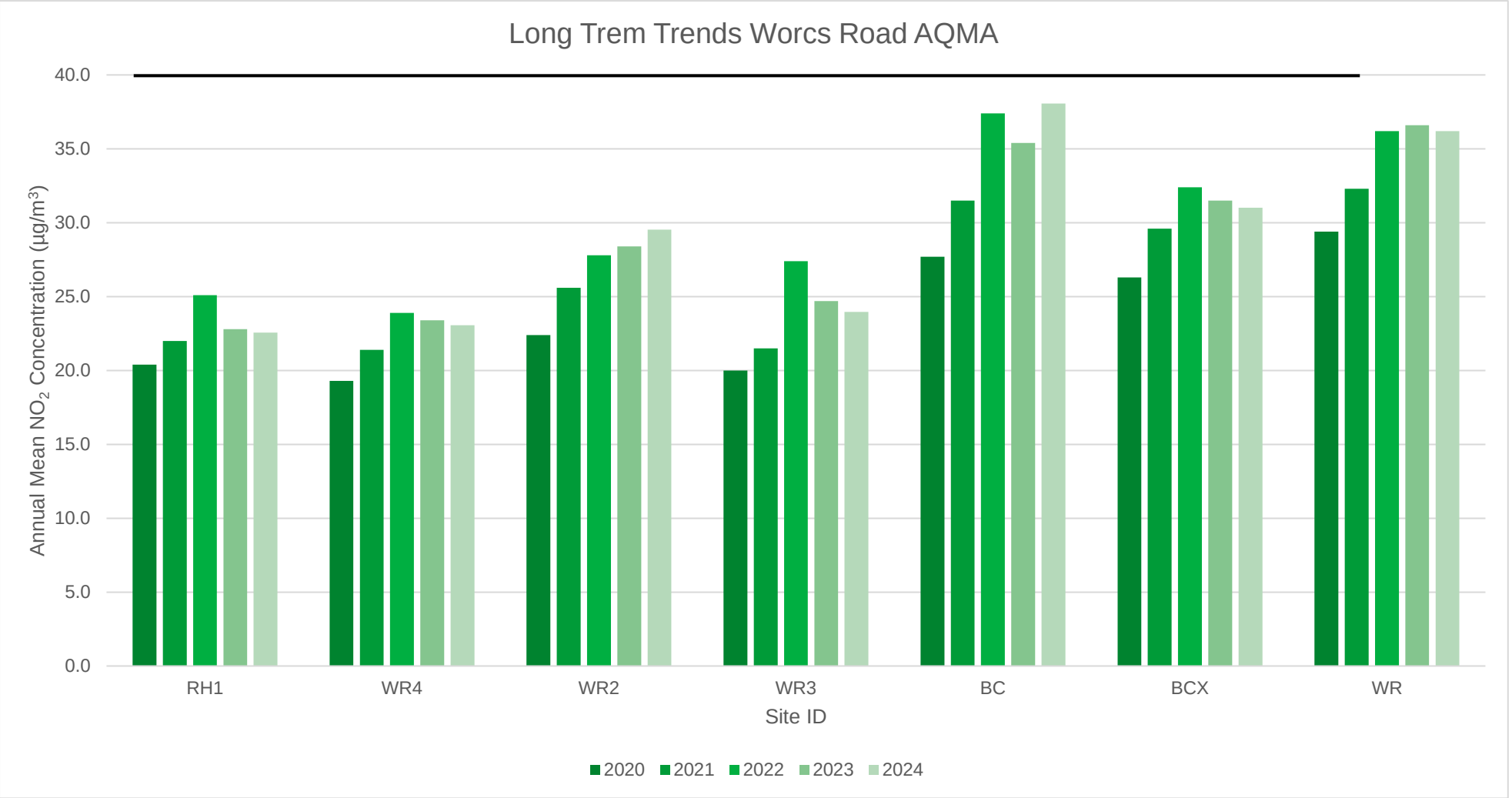
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

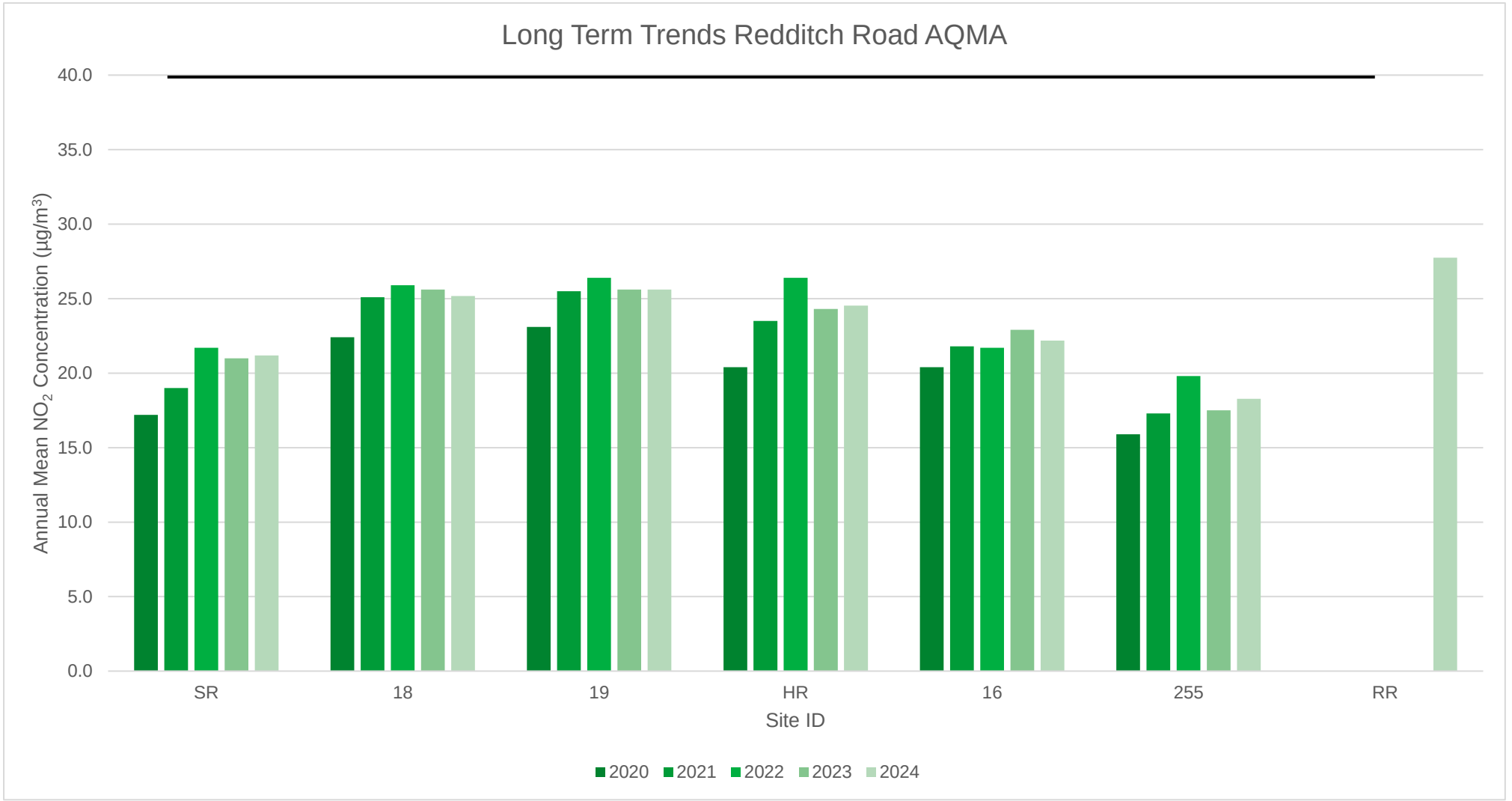
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

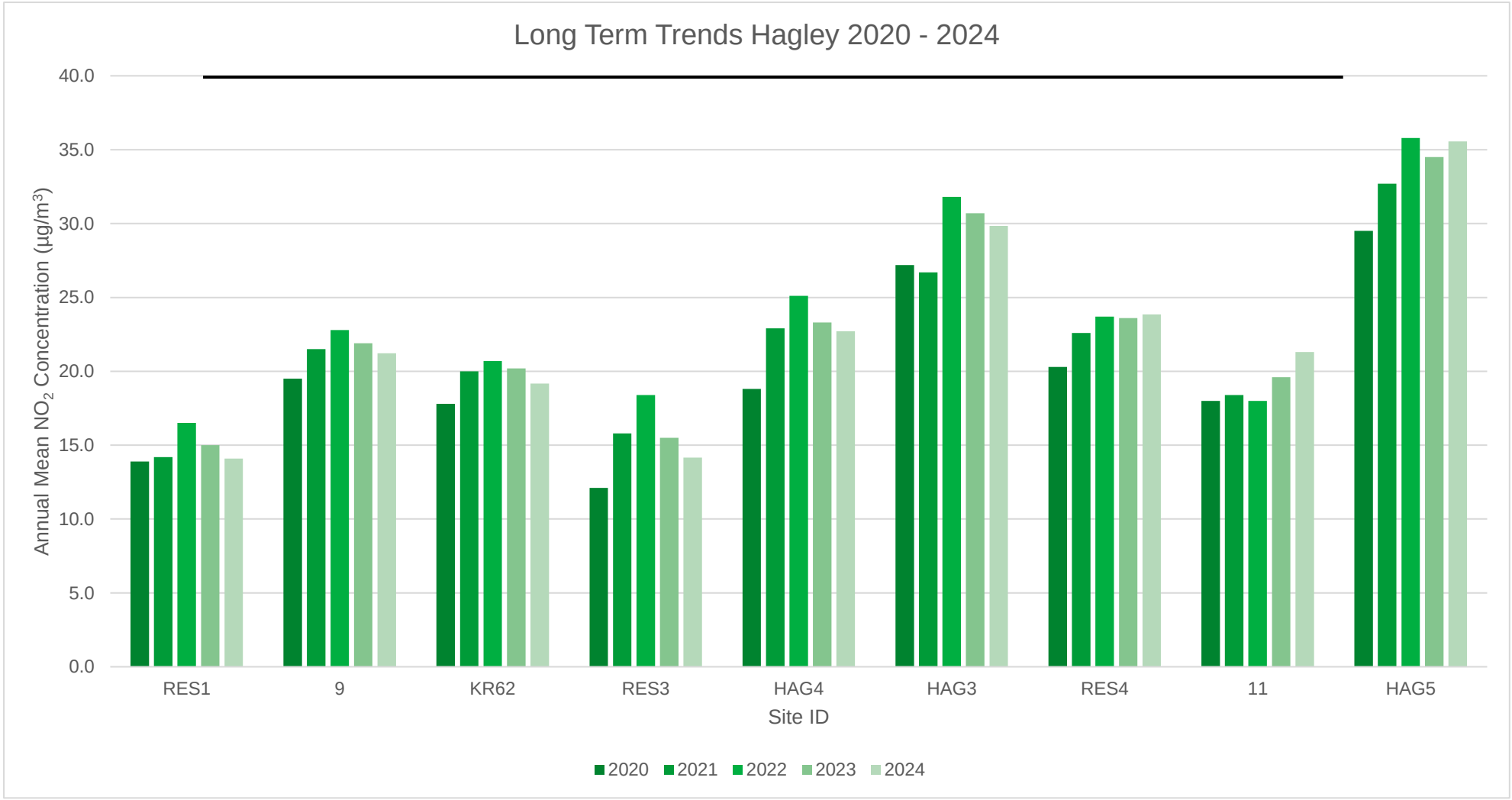
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

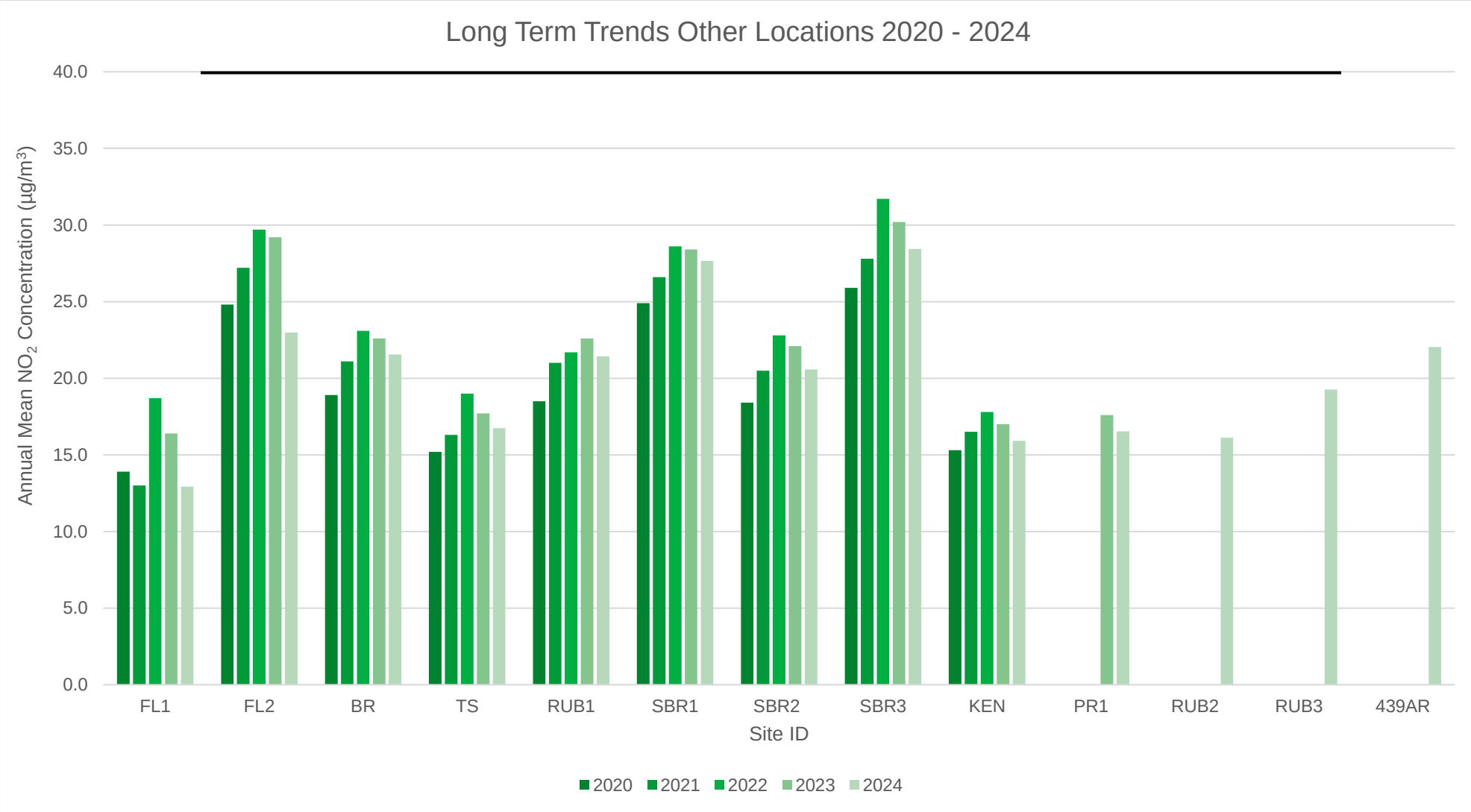
Figure A.1 – Trends in Annual Mean NO_2 Concentrations




Long Term Trends Lickey End AQMA
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Annual Mean NO2 Concentration (µg/m3)
LE7
1
LE4
LK1
LK2
LE5
LE6
F1
Site ID
2020
2021
2022
2023
2024


Long Term Trends Redditch Road AQMA
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Annual Mean NO2 Concentration (µg/m3)
SR
18
19
HR
16
255
RR
Site ID
2020
2021
2022
2023
2024


Long Term Trends Hagley 2020 - 2024
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Annual Mean NO2 Concentration (µg/m3)
RES1
9
KR62
RES3
HAG4
HAG3
RES4
11
HAG5
Site ID
2020
2021
2022
2023
2024


Long Term Trends Other Locations 2020 - 2024
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Annual Mean NO2 Concentration (µg/m3)
FL1
FL2
BR
TS
RUB1
SBR1
SBR2
SBR3
KEN
PR1
RUB2
RUB3
439AR
Site ID
2020
2021
2022
2023
2024

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.03)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
FL1	395079	269797		15.3	11.2		10.9	7.4	8.8	8.8	13.7	16.4	20.5		12.5	12.9		
FL2	395118	269721	27.7	27.6	19.6	15.9	18.8	9.7	20.2	19.3	24.2	27.3	29.6	27.7	22.3	23.0		
RH1	395243	269844	26.1	25.7	19.7	18.3	20.7	19.7	20.1	19.5	20.4	22.8	26.8	22.8	21.9	22.6		
WR4	395312	269938	26.7	26.3	23.4	20.6	21.7	17.9	19.5	18.9	20.0	22.8	28.8	22.1	22.4	23.1		
WR2	395511	270180	33.1	33.1	30.9	26.0	27.8	20.8	24.2	23.0	25.9	31.0	37.1	31.1	28.6	29.5		
WR3	395501	270190	29.0	27.0	20.1	22.9	23.1	21.7	20.2	20.3	24.0	23.7	23.2	23.8	23.2	24.0		
BC	395685	270424	45.4	41.5	37.5	36.7	34.9	39.3	37.8	24.2	31.2	34.0	41.1	39.5	36.9	38.1		
BCX	395807	270549	36.3	36.9	34.9	29.1	31.1	25.0	27.7	25.7	24.0	30.4			30.1	31.0		
WR	395702	270423	38.4	40.5	39.1	33.0	36.9	25.5	31.8	28.8	33.7	36.4	39.5	37.8	35.1	36.2		
BR	396292	271210		23.1	20.3	19.2		14.8	17.3	17.5	21.2	23.9	29.4	22.4	20.9	21.6		
LE7	396916	273014	24.1	23.2	19.4	16.8	21.7	14.4	15.5	15.8	23.0	12.2	24.2	21.0	19.3	19.9		
1	396999	272979	22.0	18.5	8.7	14.4	15.7	14.1	14.0	13.5	19.3	16.4	21.3	16.6	16.2	16.7		
LE4	396935	272949	37.7	36.7	31.2	32.4	34.2	34.1	33.7	20.8	37.6	29.7	41.7	34.5	33.7	34.7		
LK1	396939	272934	28.8	28.6	23.3	22.7	23.4	22.3	21.9	31.2	23.7	23.8	26.7	25.3	25.1	25.9		
LK2	396995	273129	25.2	26.4	22.1	20.9	20.6	20.3	16.7		19.7	22.9	26.7	21.7	22.1	22.8		
LE5	396999	273143	26.5	23.7	21.8	21.1	20.6	19.4	20.3	19.7	15.0	22.2	28.7	23.1	21.8	22.5		
LE6	396958	273157	23.5	24.6	20.5	17.8	17.3	16.8	18.5	17.2	28.3	20.8	24.9	20.5	20.9	21.5		
F1	397010	273112	33.7	38.1	37.8	31.5	36.9	31.4	34.3	32.1	19.2	36.5	39.9	34.1	33.8	34.8		
TS	396613	275085	20.9	19.8	17.2	11.9	15.3	9.0	12.3	13.3	16.7	19.2	22.7	16.6	16.2	16.7		
RUB1	398555	277200	25.0	22.4	19.3	18.0	18.3	17.4	16.3	17.2	23.2	21.0	26.6	24.7	20.8	21.4		
RES1	391445	281179	17.4	16.7	15.3	12.2	13.7	11.0	10.4	11.1	12.6	16.5		13.5	13.7	14.1		
9	391210	280668	24.5	22.6	19.5	18.1	21.7	17.5	17.9	17.2	22.6	19.7	24.3	21.6	20.6	21.2		
KR62	391182	280631	22.3	21.1	18.5	17.8	20.2	18.3	16.1	14.7	18.5	17.7	20.1	17.9	18.6	19.2		
RES3	389827	279590	17.6	17.2	14.6	10.6	13.5	9.2	9.9	10.4	11.9	16.8	18.5	14.7	13.7	14.2		
HAG4	389850	279588	25.5	25.3	20.9	20.8	23.6	19.8	16.9		23.6	23.6	27.5	14.9	22.0	22.7		
HAG3	389909	279629	32.7	32.2	28.5	29.7	32.1	30.7	16.8	27.3	32.0	25.3	30.4	29.6	28.9	29.8		
RES4	390025	279765	27.3	23.6	24.0	23.5	22.4	23.5	19.9	17.7		21.9	26.5	24.2	23.1	23.8		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (1.03)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
11	390295	280043	23.8	23.4	19.4	16.2	19.4	14.2	15.7	15.7	19.1	34.4	24.4	22.4	20.7	21.3		
HAG5	389929	279650	35.8	34.5	34.4	35.6	39.2		33.1	29.2	39.3	34.1	33.6	30.7	34.5	35.6		
SBR1	396127	271516	31.3	29.2	25.8	23.8		24.5	24.0	23.8	25.6	27.5	31.7	27.8	26.8	27.7		
SBR2	395996	272063	26.9	23.9	21.2	17.8	18.4	14.5	16.2	16.1	18.3	19.2	24.2	22.8	20.0	20.6		
SBR3	395825	272841	32.8	30.1	25.9	24.7	28.3	23.7	24.3	22.3	30.3	28.1	33.9	26.7	27.6	28.4		
KEN	396683	270354	22.6	18.0	12.3	12.9	13.6	11.0	12.1	10.5	15.9	16.2	22.4	17.9	15.4	15.9		
SR	396780	269450	27.3	21.1	16.9	19.5	19.2	17.7	14.9		22.1	17.3	27.9	22.2	20.6	21.2		
18	395180	268549	33.9	30.6	25.3	21.9	21.2	18.0	19.5	18.6	24.4	28.4	29.9	21.3	24.4	25.2		
19	395188	268564	29.0	26.9	24.3	20.5	22.2	21.4	22.1	20.3	26.3	28.5	31.0	25.7	24.8	25.6		
HR	394772	268441	31.6	24.7	20.1	21.5				18.6	23.4	23.4	28.0	22.7	23.8	24.5		
16	394701	268444	28.6	25.4	21.7	17.9	19.5		20.2	16.5	17.0	24.1	25.7	20.1	21.5	22.2		
255	394408	268417	25.1	20.2	15.2	12.8	14.5		13.2	11.8		25.9	21.1		17.7	18.3		
PR1	395795	272309	20.2		15.9	12.3	16.2	11.3		13.0	17.5	19.6	16.9	17.6	16.0	16.5		
RUB2	398273	277039	18.0	18.5		12.1	14.5	11.2	13.0	13.1	14.9	17.5	20.4	18.7	15.6	16.1		
RUB3	398475	277174	21.6	21.8	20.5	15.1	17.0	13.1	13.7	14.8	17.5	22.1	25.1	21.9	18.7	19.3		
RR	395674	268860	31.5	29.9	25.9	21.4	26.8				21.5	28.9	31.0	25.3	26.9	27.7		
439AR	407908	275162	28.5		21.5	18.3		16.1	17.6	20.8	15.8	23.1	29.5	22.6	21.4	22.0		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**.

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

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

☒ **Bromsgrove District Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

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**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Bromsgrove District Council During 2024

Bromsgrove District Council has not identified any new significant sources impacting air quality within the reporting year of 2024.

Applications for a number of new developments have been identified within the Bromsgrove District area. The proposals have been assessed as part of the planning process and are not expected to have a significant impact on local air quality should they become operational.

Bromsgrove District Council has not identified any new sources relating to air quality within the reporting year of 2024.

Details of applications of ongoing significant developments within the Bromsgrove District area are as follows:

Planning Ref	Address	Proposal
16/04179/PLAN	Land at Perryfields Road, Bromsgrove. Worcestershire	Further development with the outline planning permission for 1,300 dwellings with further units being built in 2024
16/11629/PLAN	Land at Whitford Road, Bromsgrove. Worcestershire	Further development with outline planning permission for 490 dwellings with further units being built in 2024

Additional Air Quality Works Undertaken by Bromsgrove District Council During 2024

Bromsgrove District Council has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

The following UKAS accredited company provided Bromsgrove District Council with nitrogen dioxide tubes and analysis in 2024;

Gradko International Limited

St. Martins House

77 Wales Street

Winchester

SO23 0RH

diffusion@gradko.com

The 20% Triethanolamine (TEA)/ Deionised Water preparation method is used.

Gradko International Limited participate in the AIR NO_2 Proficiency Testing Scheme (AIR-PT).

All monitoring undertaken has been completed in accordance with the 2024 Diffusion Tube Monitoring Calendar, i.e. on or within ± 2 days of the specified date.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Redditch Borough Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2

continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Bromsgrove District Council have applied a local bias adjustment factor of 1.03 to the 2024 monitoring data, this has been calculated using the 'Diffusion Tube Data Processing Tool spreadsheet'. The calculation details have also been provided in 'Table C.3 – Local Bias Adjustment Calculation'.

WRS has determined the appropriate local bias adjustment factor utilising the Diffusion Tube Data Processing Tool v5.3. The site used was the colocation study at Wyre Forest House, Kidderminster which is the head office for WRS. The installation is collocated with three diffusion tubes and is largely run and managed for the purpose of undertaking a local bias adjustment factor for the county. WRS are responsible for maintaining the monitoring network across the six-district councils within Worcestershire and therefore the handling and processing of the diffusion tubes is the same for each area.

The local bias adjustment factor has also been utilised again for this assessment as it is more conservative compared with the national bias adjustment factor (0.84, Defra published National Diffusion Tube Bias Adjustment Spreadsheet Version 04/25). This approach is consistent with previous two ASRs and undertaken, following consultation with Defra LAQM helpdesk and technical guidance.

A summary of bias adjustment factors used by Bromsgrove District Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	-	1.03
2023	Local	-	0.97
2022	Local	-	0.97
2021	National	03/22	0.84
2020	National	03/21	0.81

Table C.2 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12				
Bias Factor A	1.03 (0.97 – 1.08)				
Bias Factor B	-3% (-8% - 3%)				
Diffusion Tube Mean (µg/m^3)	11.8				
Mean CV (Precision)	2.8%				
Automatic Mean (µg/m^3)	12.1				
Data Capture	98%				
Adjusted Tube Mean (µg/m^3)	12 (11 – 13)				

Notes:

A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within Bromsgrove District Council area required distance correcting during 2024.

QA/QC of Automatic Monitoring

No automatic monitoring that complies with accepted scientific reference methods for the purposes of LAQM reporting has been undertaken in 2024.

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

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

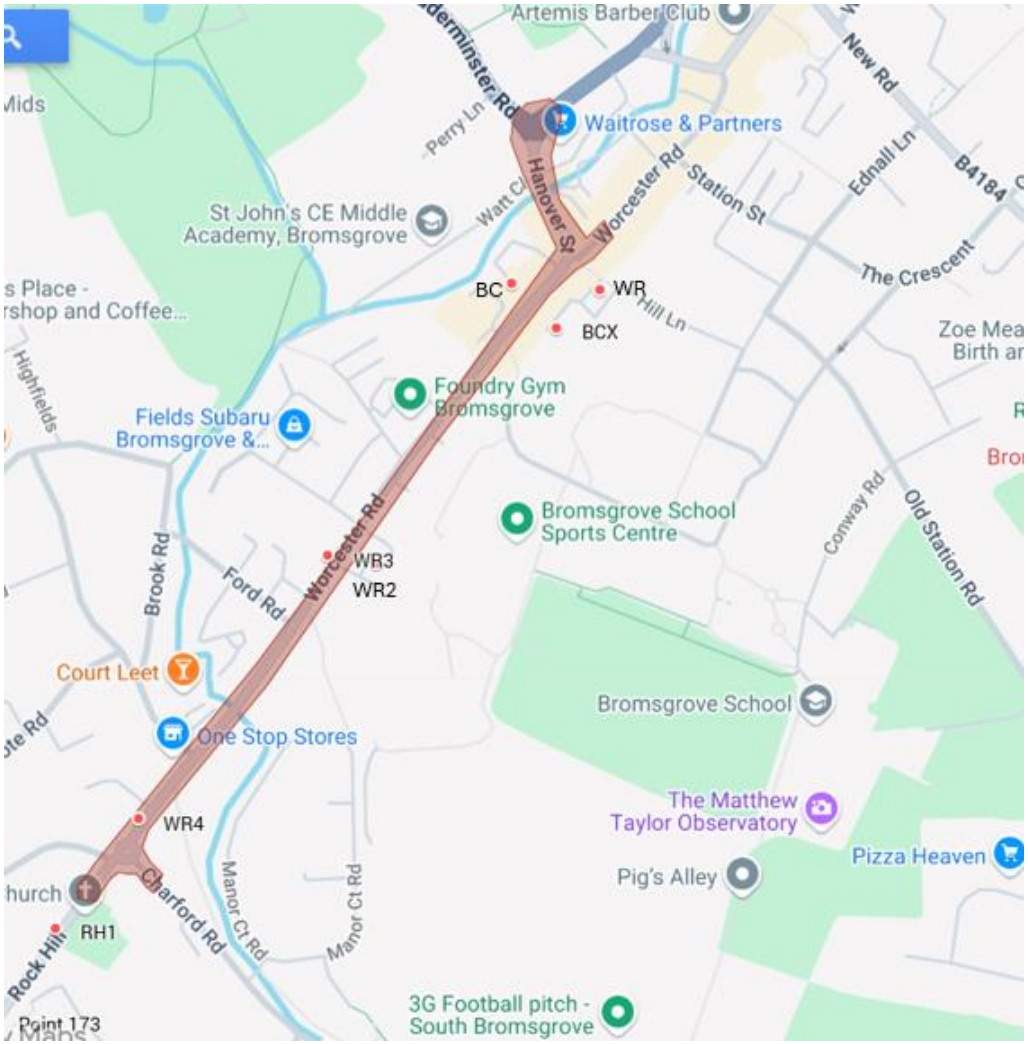


Figure D.1a: Worcester Road AQMA and monitoring locations: BC, BCX, RH1, WR2, WR,WR4, WR3

Figure D.1b: Lickey End AQMA and monitoring locations: 1, F1, LK1, LK2, LE4, LE5, LE6, LE7

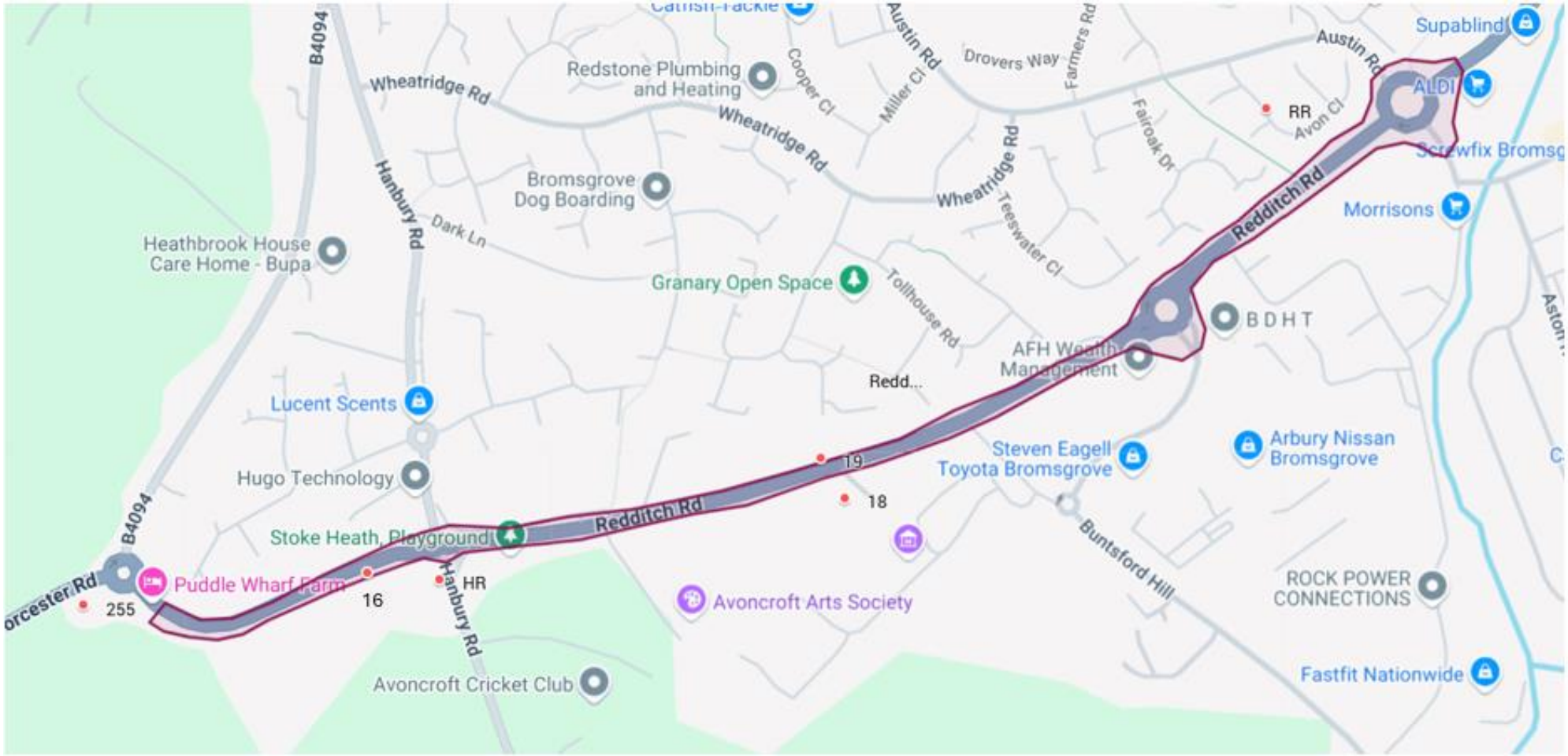


Figure D.1c: Redditch Road AQMA and monitoring locations: 16, 18, 19, 255, HR, RR

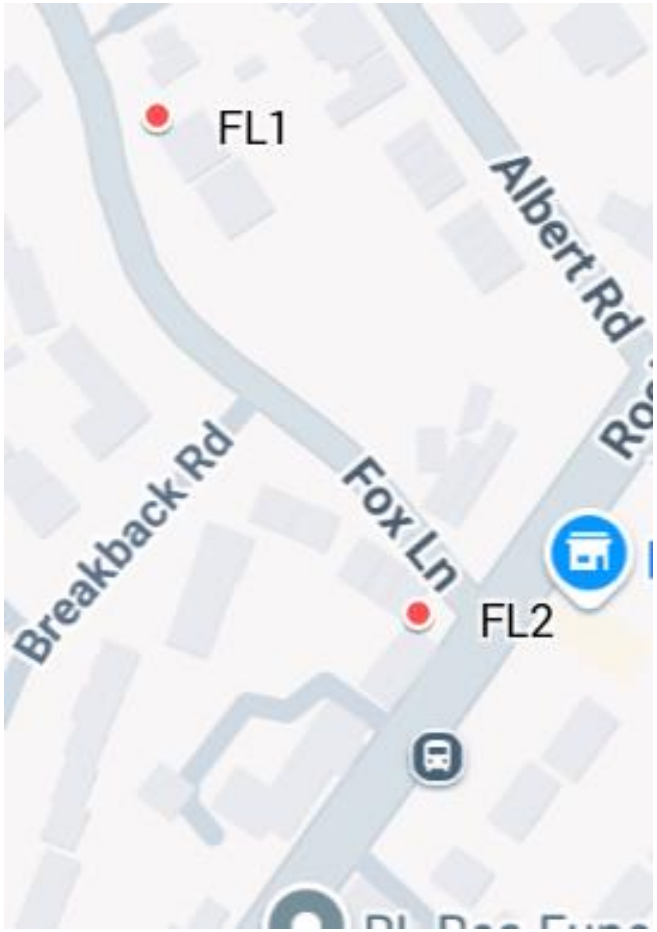


Figure D.1d: Bromsgrove monitoring locations: FL1, FL2

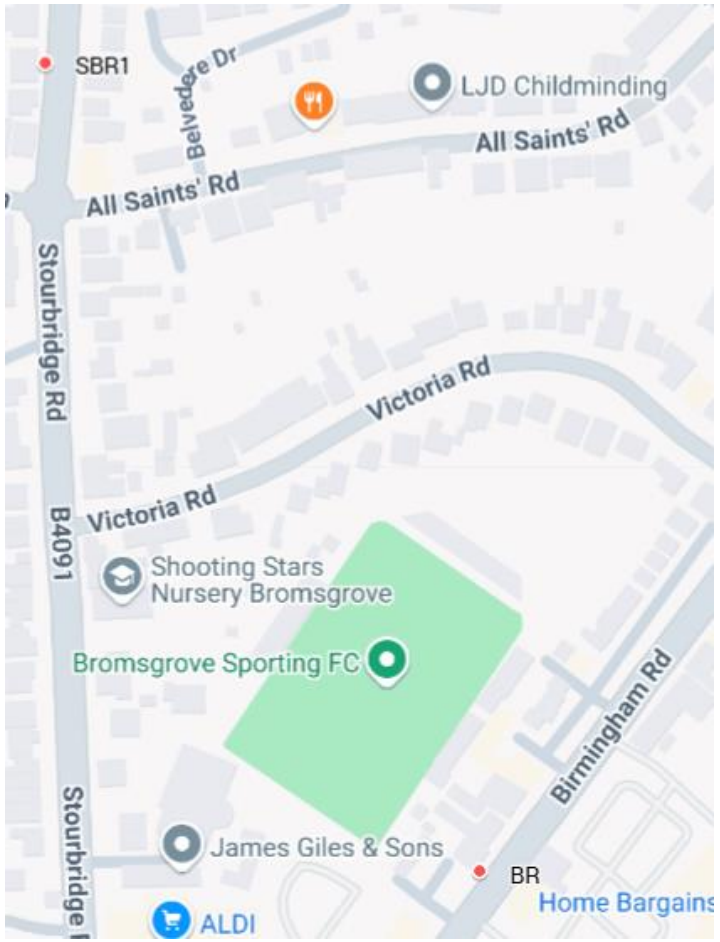


Figure D.1e: Bromsgrove monitoring locations: BR, SBR1

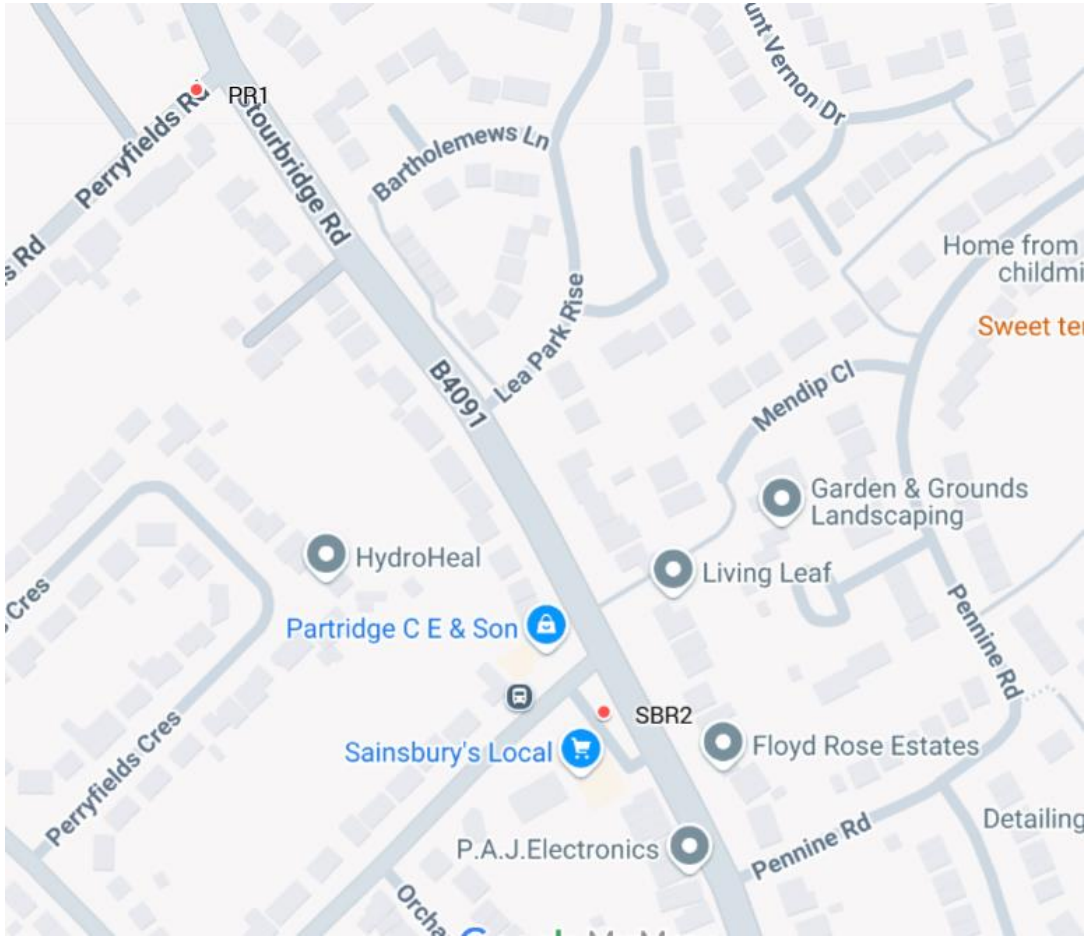


Figure D.1f: Bromsgrove monitoring locations: PR1, SBR2

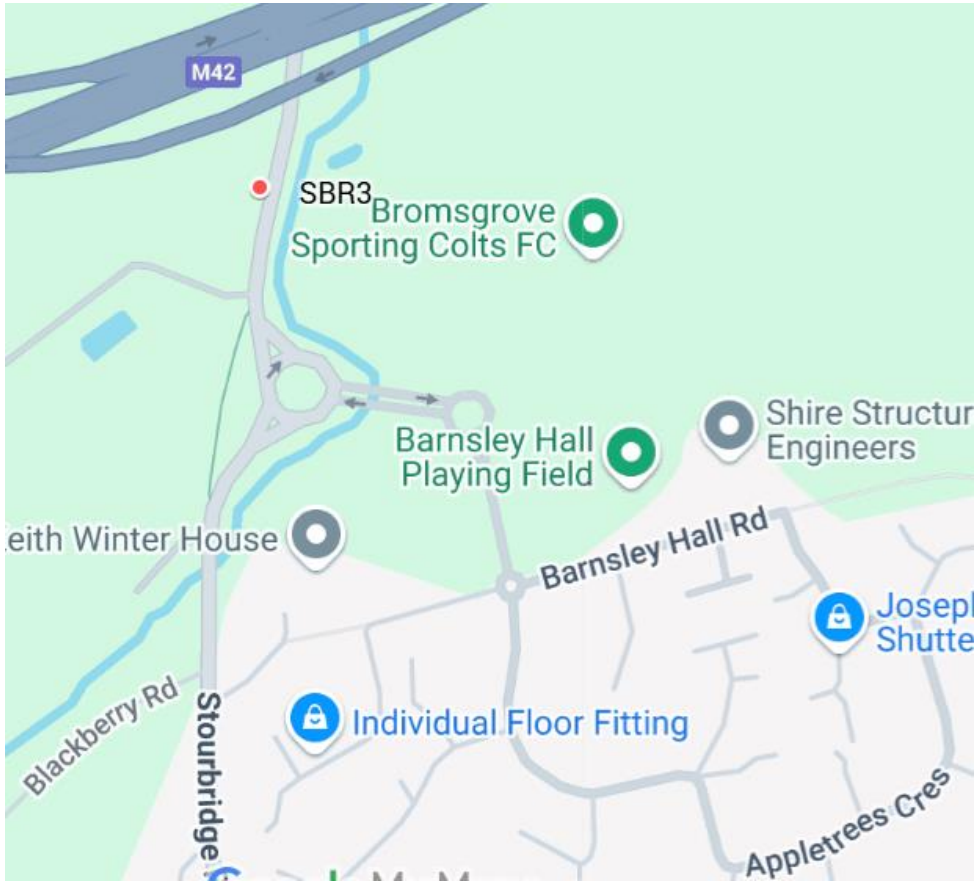


Figure D.1g: Bromsgrove monitoring locations: SBR3

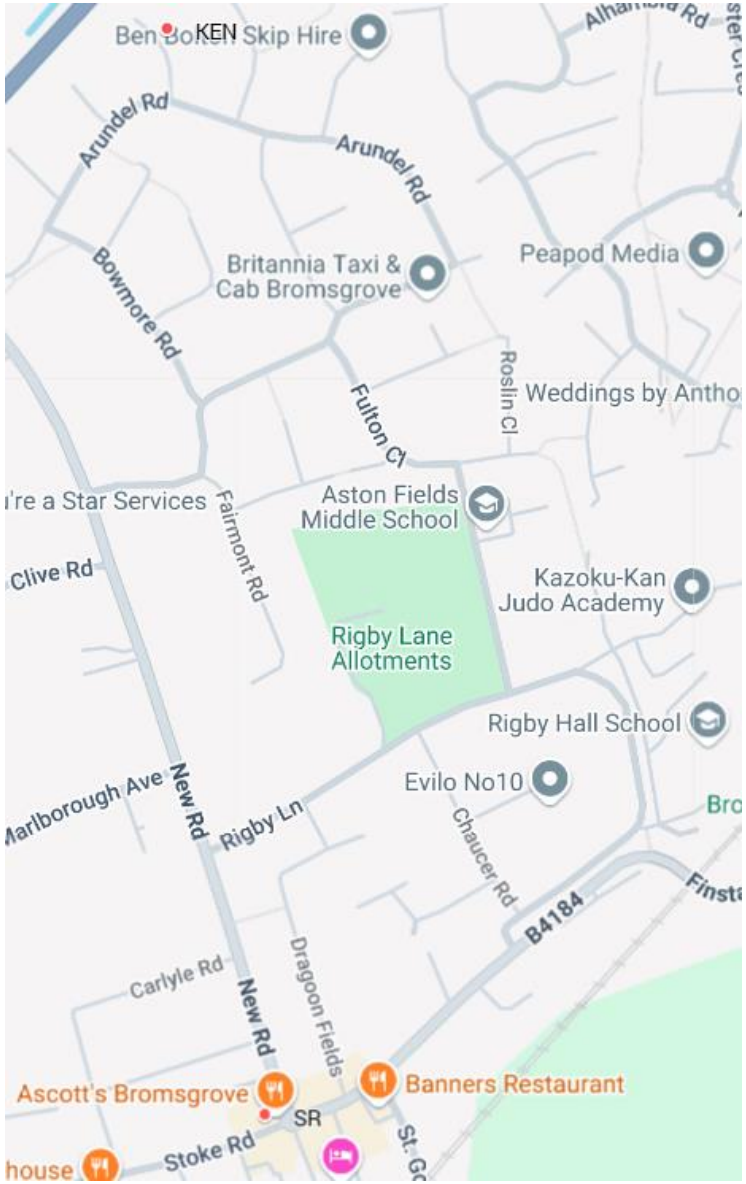


Figure D.1h: Bromsgrove monitoring locations: KEN, SR

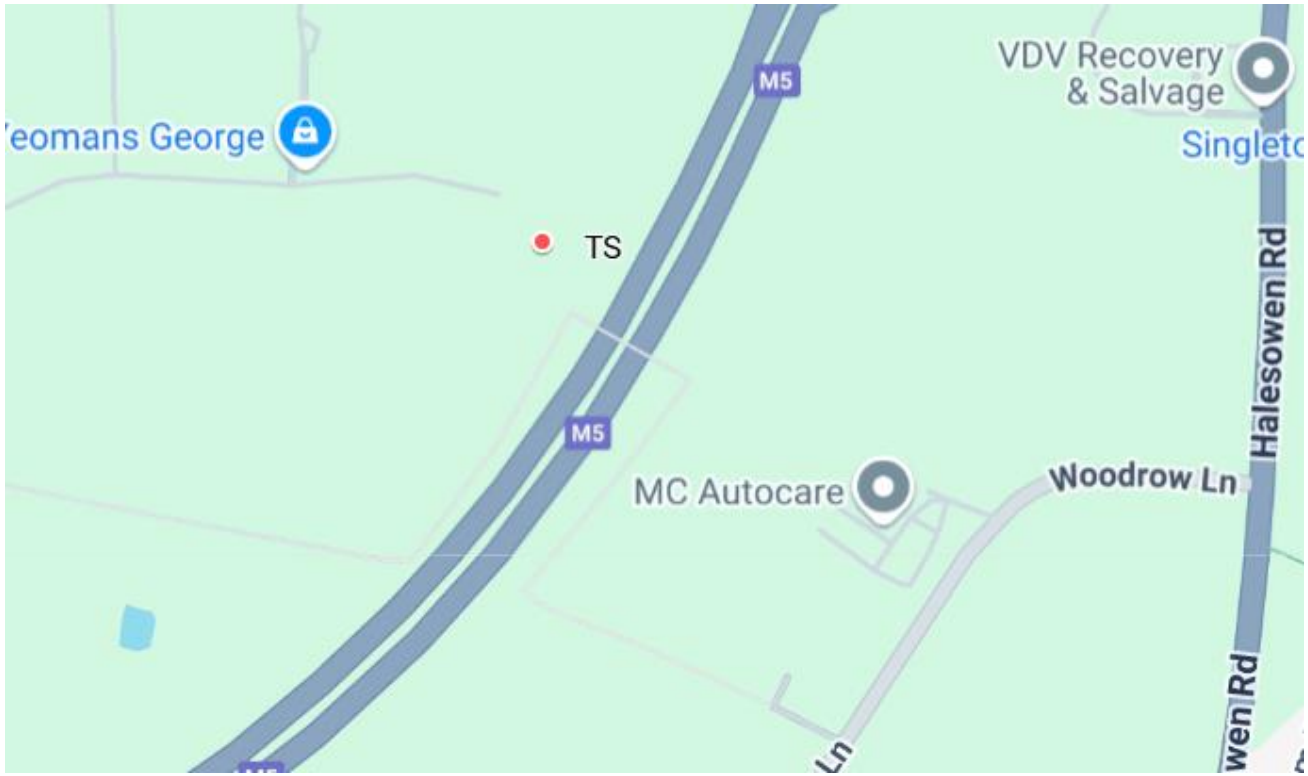


Figure D.1i: Bromsgrove monitoring location: TS

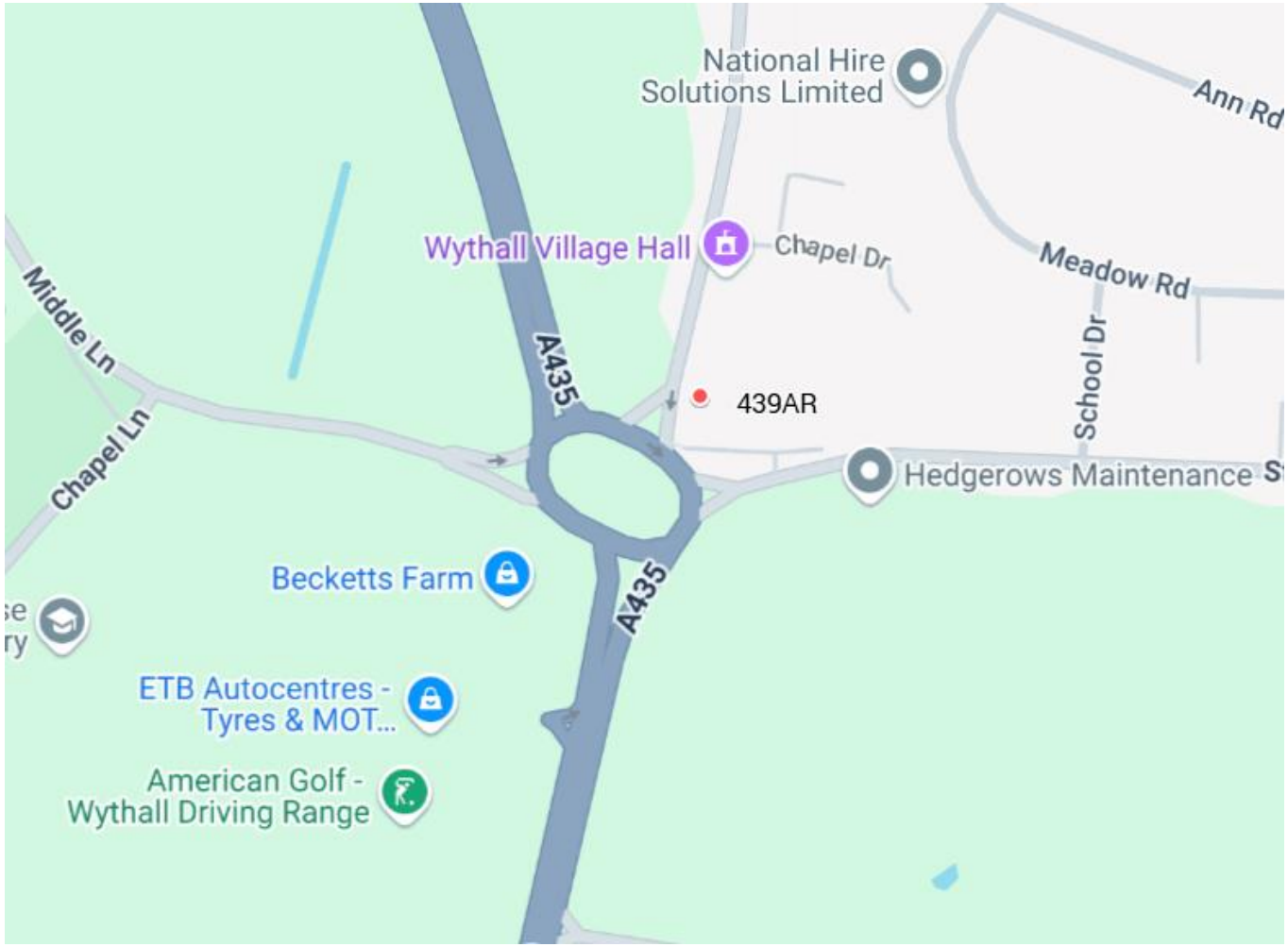


Figure D.1j: Bromsgrove monitoring location: 439AR

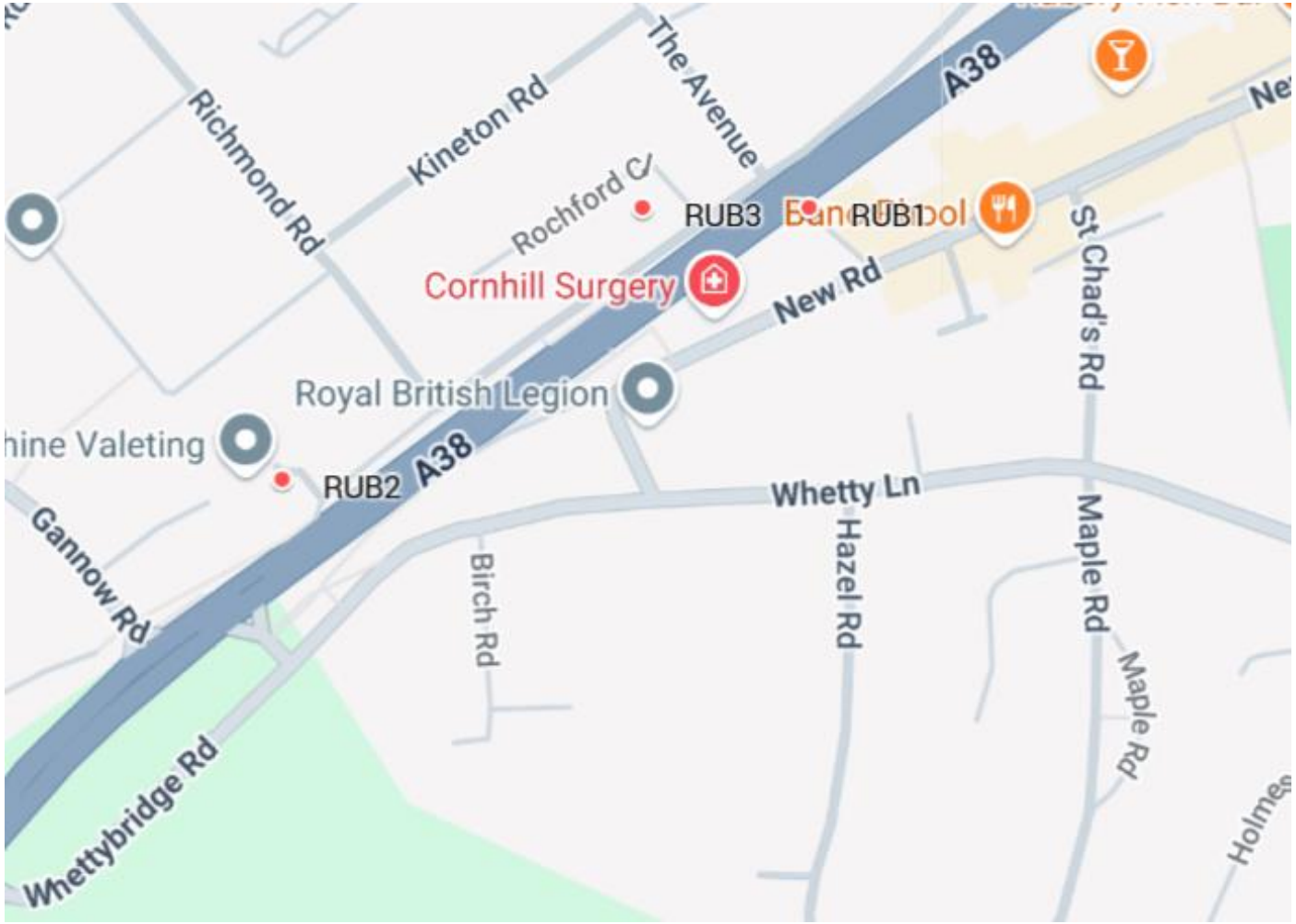


Figure D.1k: Rubery monitoring locations: RUB1, RUB2, RUB3

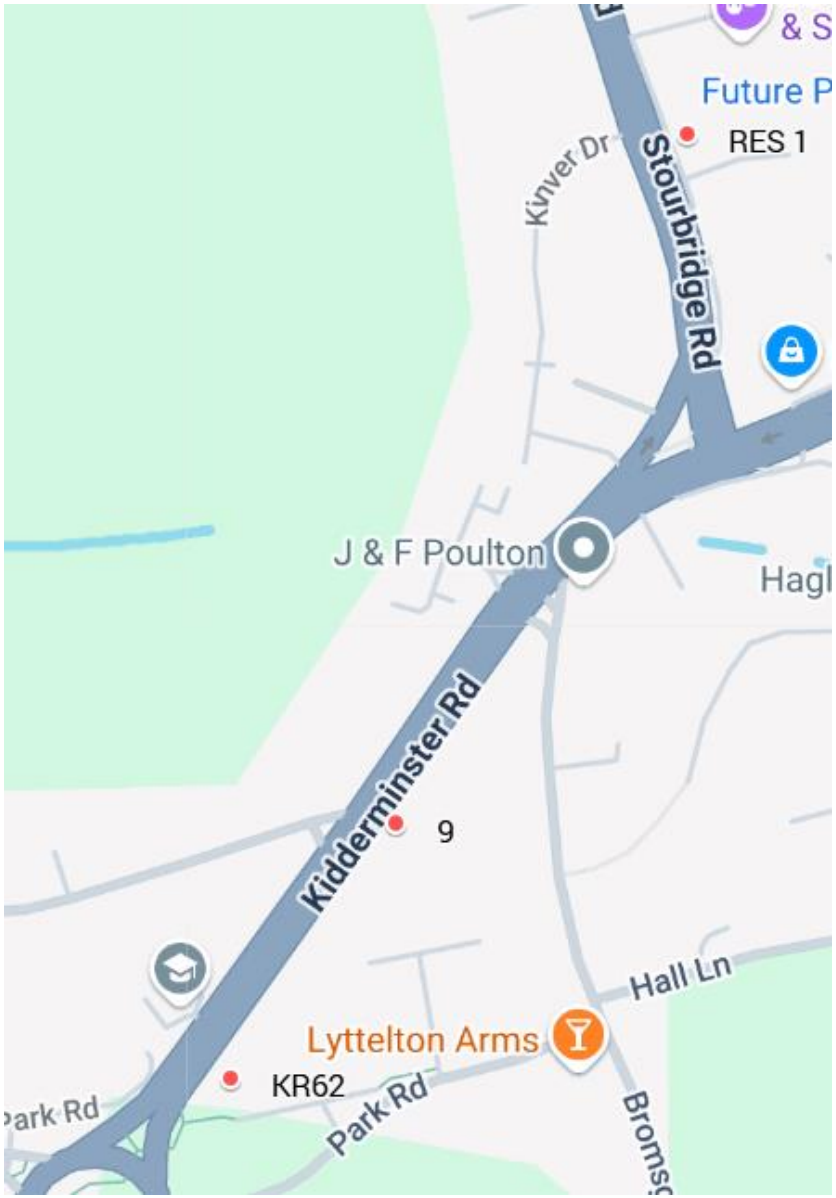


Figure D.1l: Hagley monitoring locations: 9, KR62, RES1

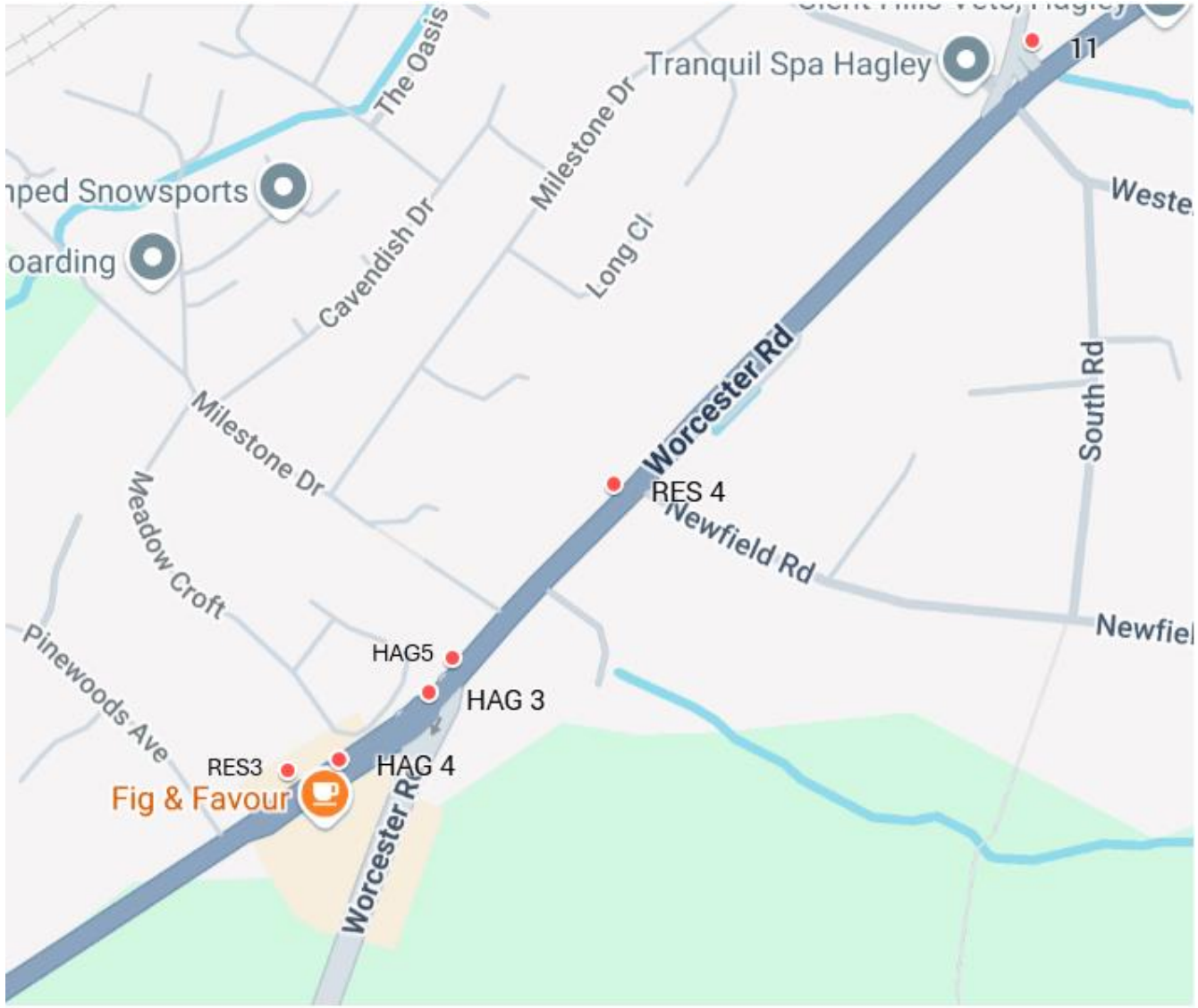


Figure D.1m: Hagley monitoring locations: 11, HAG3, HAG4, HAG5, RES3, RES4

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[4]

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

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

Appendix F: Low-Cost Air Quality Sensors Measurements 2024: Bromsgrove

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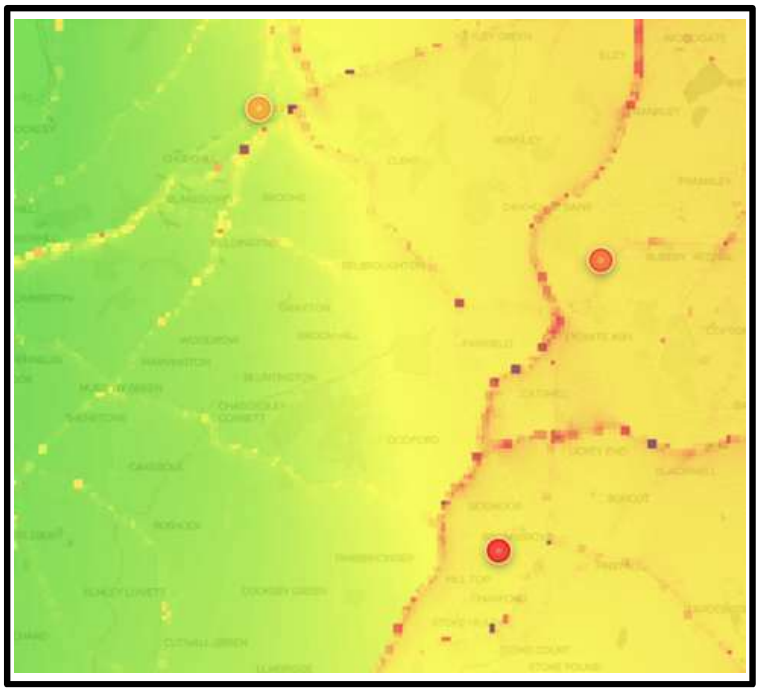
Low-Cost Air Quality Sensors Measurements 2024: Bromsgrove



Public Portal: [Worcestershire Air | EarthSense]

Project Information

Real time air quality monitoring for 3-year period funded by Defra Air Quality Grant (2022-23) and 10% match funding by each Worcestershire district council. Low-cost sensors (Zephyrs) installed and maintained by Earthsense who also provide real time data portal. Sensors were installed between January and May 2024.

General information

Zephyrs are one of the available low-cost sensors that have been certified as suitable for indicative monitoring for particulate matter within the UK using the Environment Agency's Indicative instrument certification scheme (MCERTS).

While low-cost sensors can provide useful indicative data, at present they are not approved for use in statutory legal reporting (LAQM) of data against the National air quality objectives. as they are not accurate enough to meet the expanded uncertainty requirements of equivalent [scientific reference] instruments. However, Defra recognise there is growing interest in using these sensors among local authorities and are looking into producing a new FAQ on the use of low-cost sensors to make the position clearer.

Hanover Street - Bromsgrove

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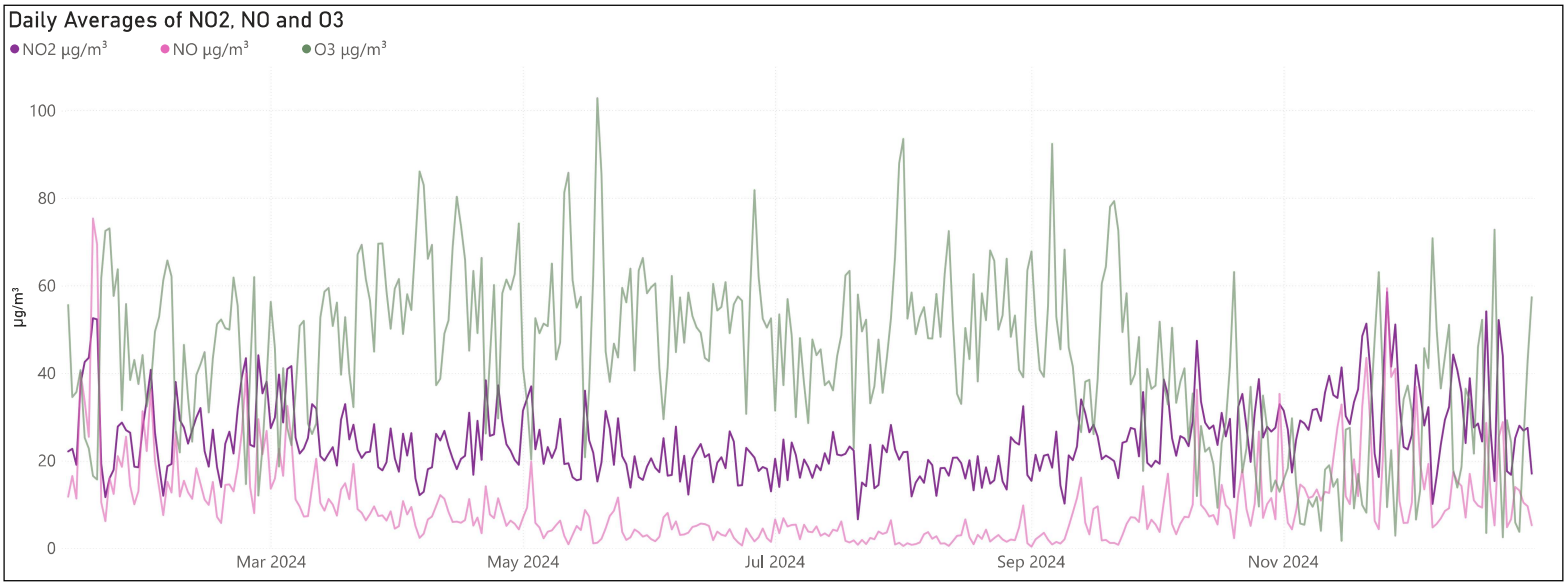

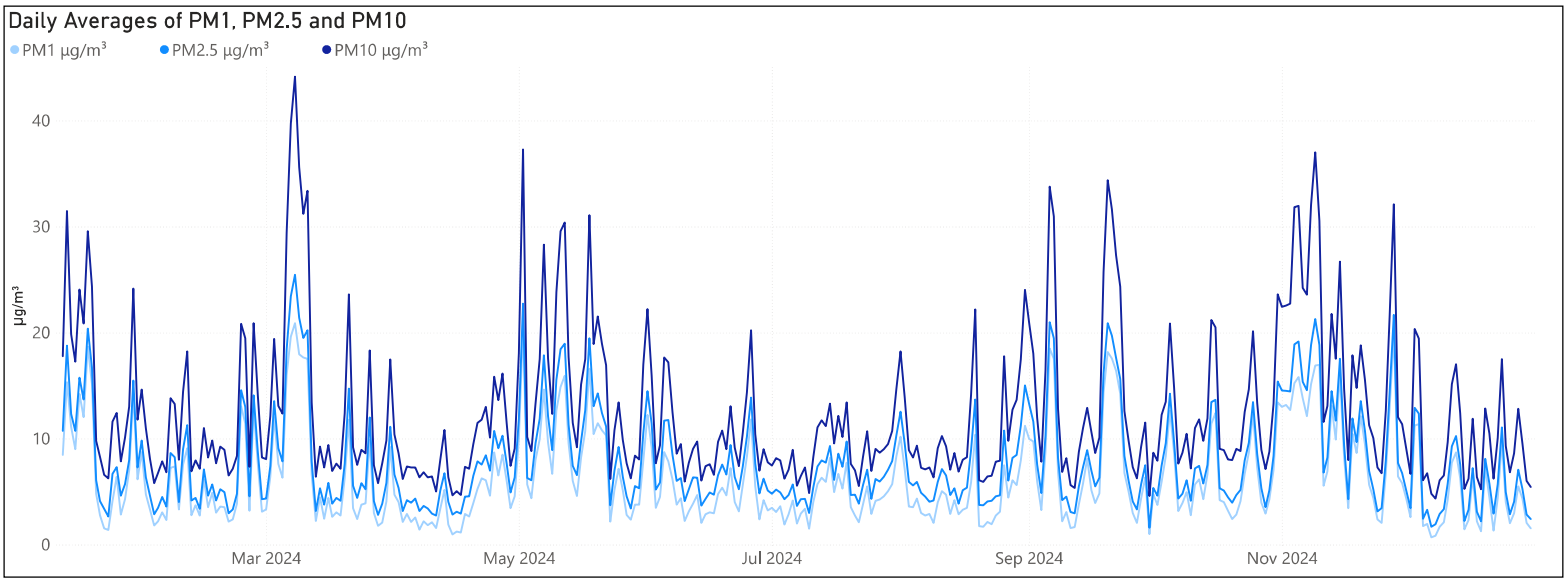

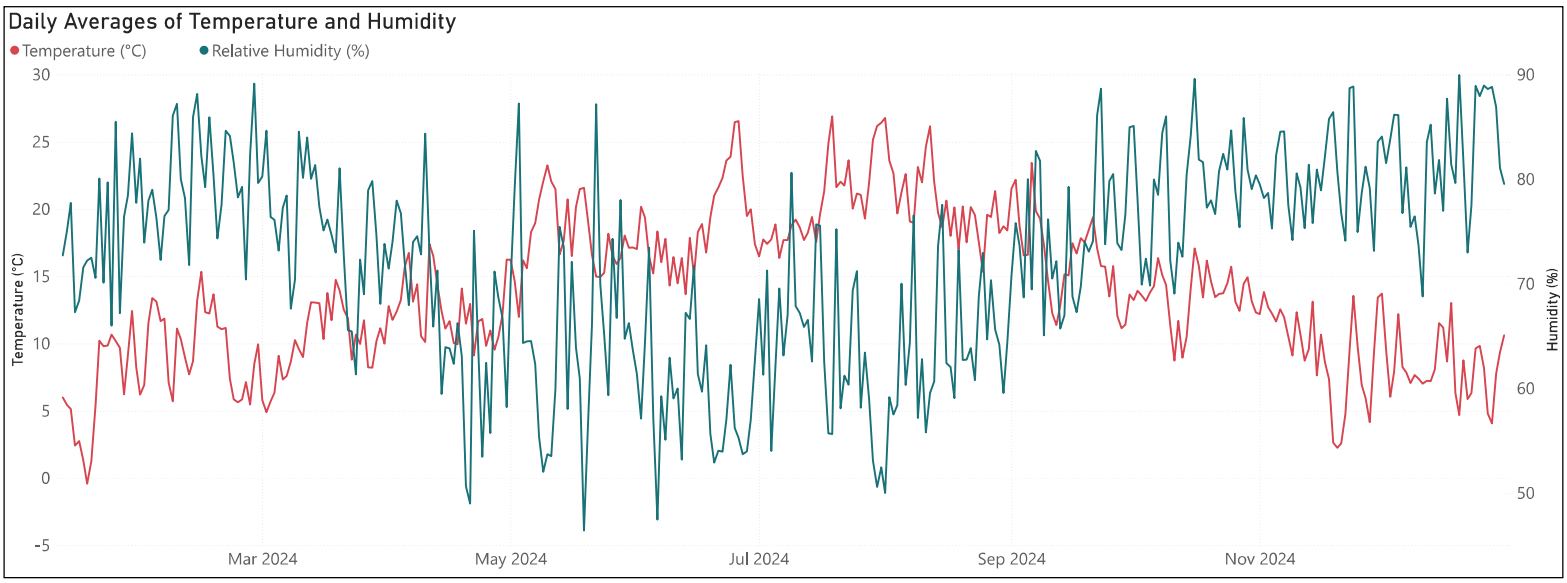

Yearly Averages

24.84 Average NO2 µg/m³	**9.84** Average NO µg/m³	**44.05** Average O3 µg/m³	**13.92** Average Temperature (°C)
6.29 Average PM1 µg/m³	**7.96** Average PM2.5 µg/m³	**12.69** Average PM10 µg/m³	**72.04** Average Relative Humidity (%)

Gunner Lane - Rubery

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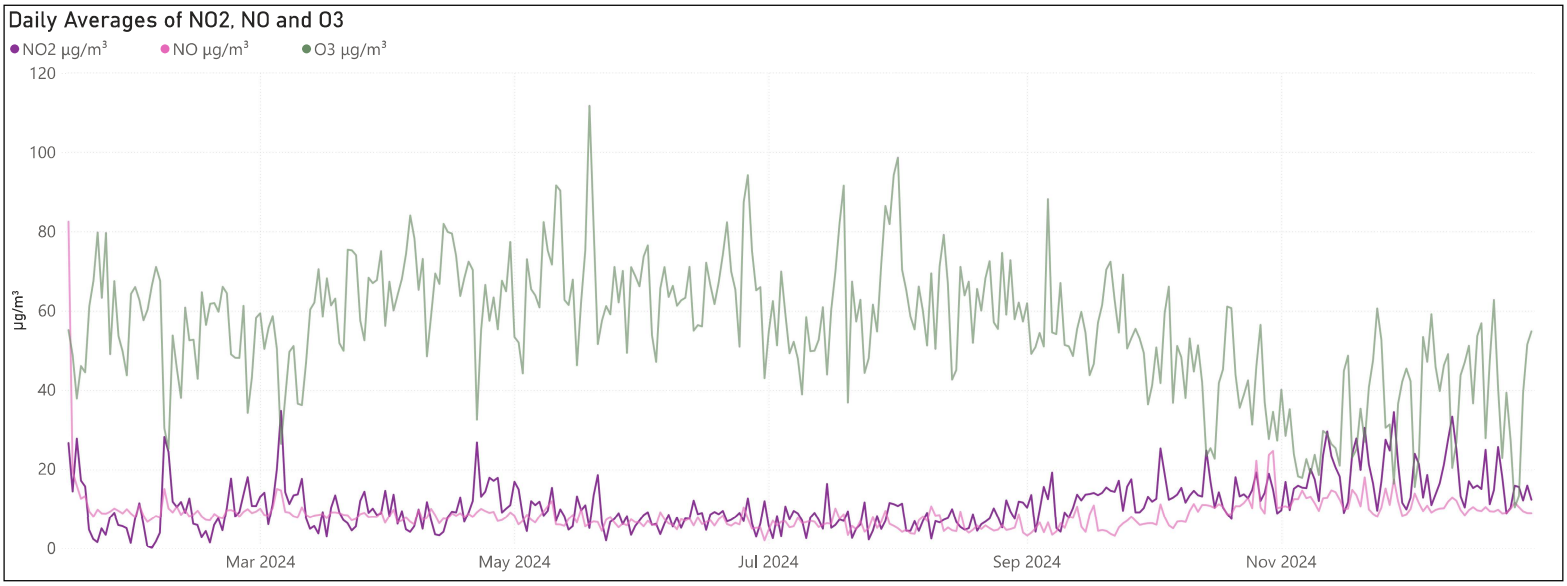

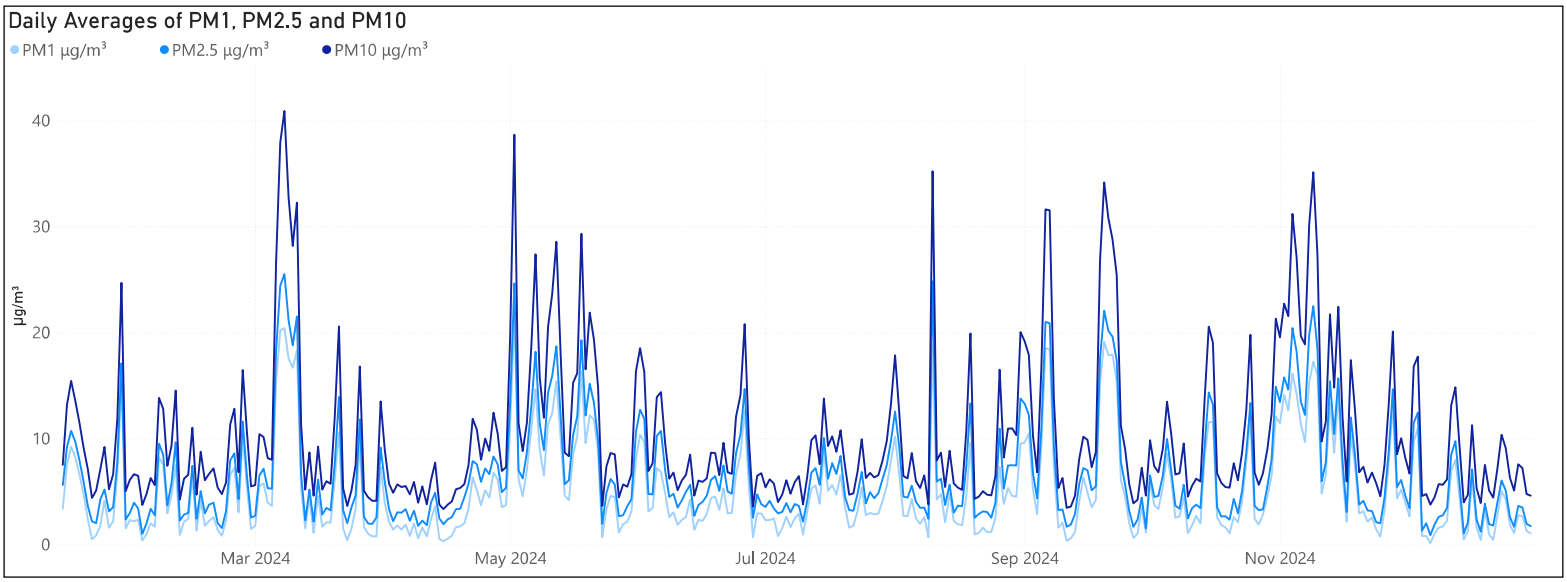

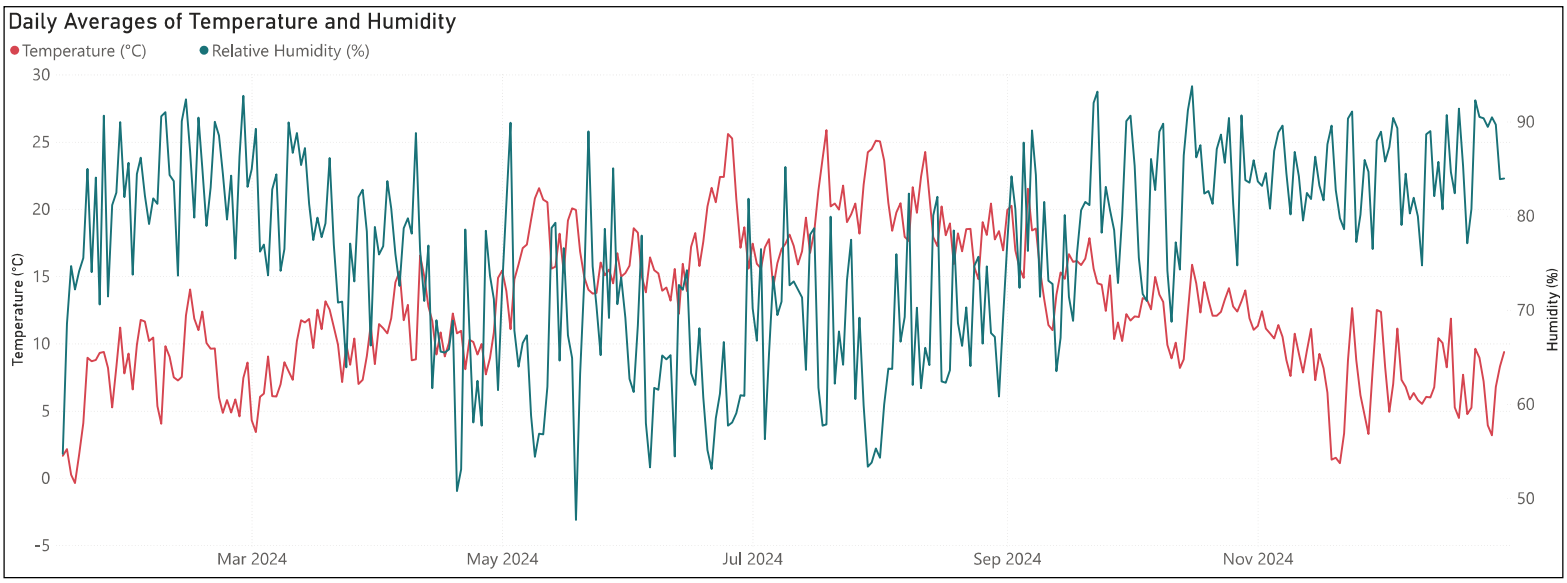

Yearly Averages

11.22	8.55	55.20	12.82
Average NO2 µg/m³	Average NO µg/m³	Average O3 µg/m³	Average Temperature (°C)
5.17	6.79	10.46	75.95
Average PM1 µg/m³	Average PM2.5 µg/m³	Average PM10 µg/m³	Average Relative Humidity (%)

Station Road - Hagley

Worcestershire Regulatory Services
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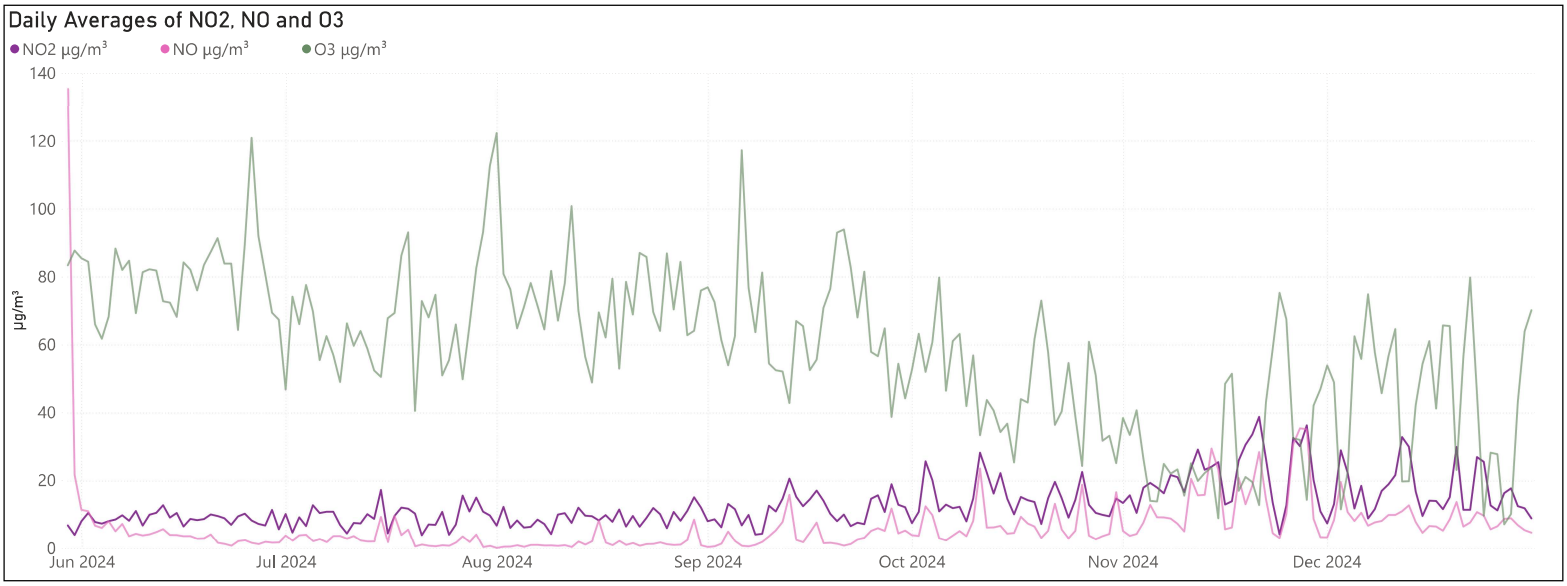

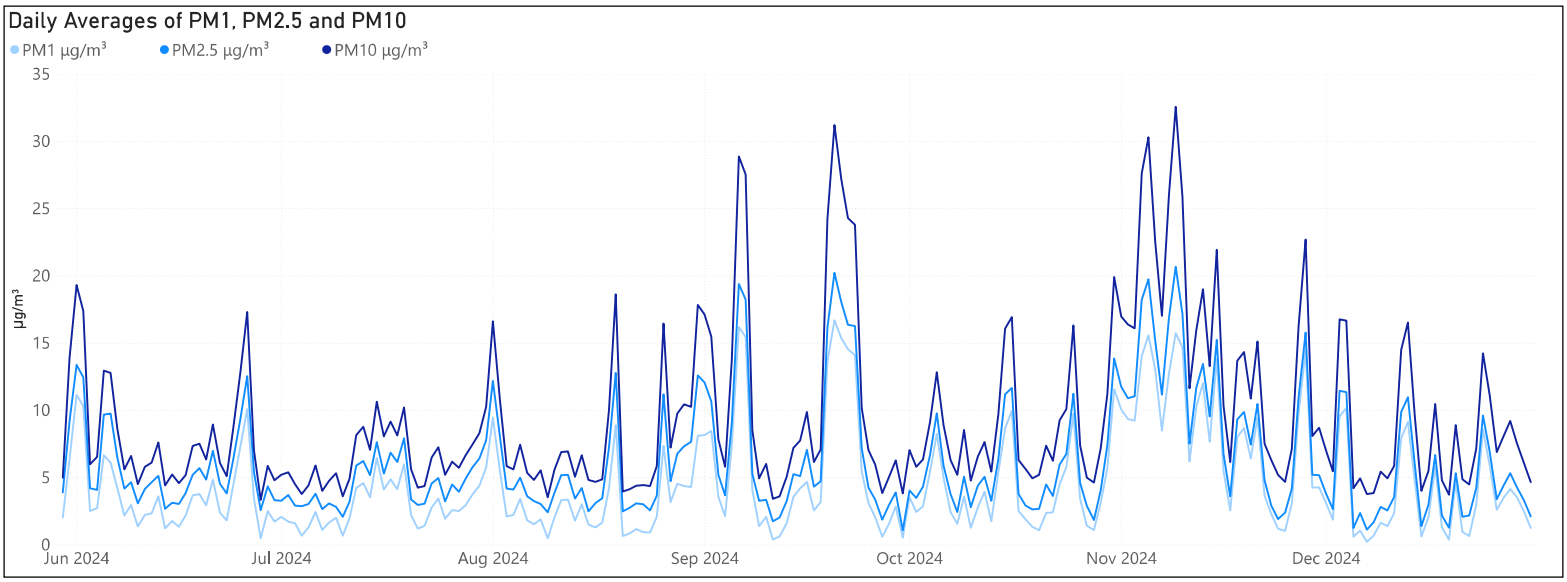

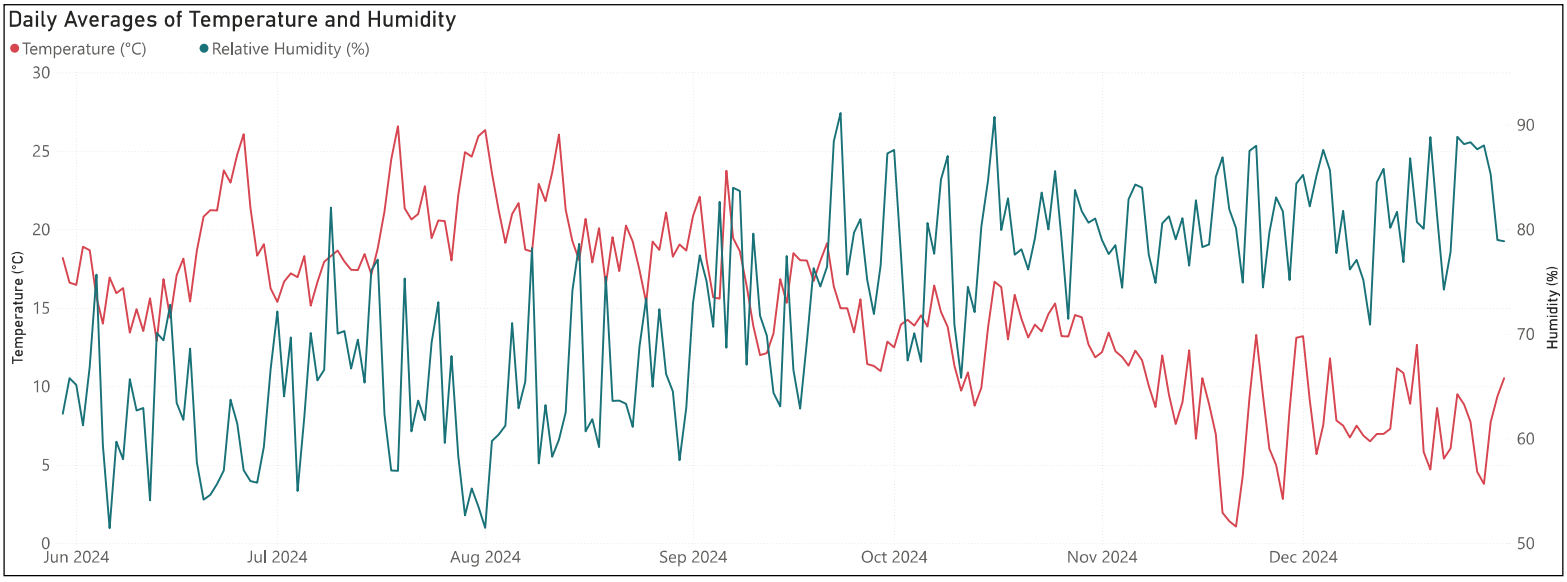

Yearly Averages

13.01 Average NO2 µg/m³	6.27 Average NO µg/m³	58.80 Average O3 µg/m³	14.92 Average Temperature (°C)
4.54 Average PM1 µg/m³	6.23 Average PM2.5 µg/m³	9.41 Average PM10 µg/m³	72.60 Average Relative Humidity (%)

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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- Worcestershire Regulatory Services (2025) Air Quality Action Plan for Bromsgrove District Council 2025 – 2030.