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

Information	Wychavon District Council Details
Local Authority Officer	Todd Wilkes
Department	Technical Pollution Team
Address	Wyre Forest House Finepoint Way Kidderminster DY11 7WF
Telephone	01905 822799
E-mail	enquiries@worcsregservices.gov.uk
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Local Responsibilities and Commitment

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

Worcestershire Regulatory Services

Worcestershire County Council

Wychavon District Council

Worcestershire Regulatory Services (WRS) is a shared service formed from the Environmental Health and Licensing departments of the six Worcestershire District Councils. Responsibility for 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:

Technical Pollution Team
Worcestershire Regulatory Services
Wyre Forest House
Finepoint Way
Kidderminster
Worcestershire
DY11 7WF
Telephone - 01905 822799
Email - enquiries@worcsregservices.gov.uk

Executive Summary: Air Quality in Our Area

Air Quality in Wychavon

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.

The Wychavon District area generally enjoys good air quality. Over the five-year period 2020 to 2024 there have been no monitored exceedances of the annual average air quality objective for nitrogen dioxide (NO_2) in the district. Wychavon also began monitoring PM_{10} in 2023 with the installation of a continuous monitor. Since it's installation, the site has recorded 2 exceedances of the PM_{10} 24 hour mean objective, in 2024.

Monitoring of nitrogen oxides (NOx) across the Wychavon District is generally undertaken via a network of passive (diffusion) tubes. Diffusion tubes are located in the main urban centres of Evesham, Pershore and Droitwich with additional tubes located within close proximity to strategic roads in Wychbold and Whittington. Additionally, there are continuous (automatic) monitors for NO_2 and PM_{10} in the Worcester Road, Wychbold AQMA. In 2024 five low-cost sensors were installed within the Wychavon district providing additional data on a range of parameters including measure NO_2, PM_{10}, and $PM_{2.5}$.

There is currently one Air Quality Management Area (AQMA) in the Wychavon District. This AQMA was declared for the Worcester Road, Wychbold area on 1st May 2018 due to monitored and modelled exceedances of the annual mean objective for nitrogen dioxide (NO_2).

Details of the AQMA declaration and plans of the AQMA can be found on the following pages of the WRS website: Air Quality Management Area Declarations | Worcestershire Regulatory Services (worcsregservices.gov.uk)

A full list of declared and revoked AQMAs can be viewed at: Local Authority Details - Defra, UK

Monitoring data shows an overall decrease of 7.54 µg/m^3 in average recorded annual mean NO_2 concentrations across the Wychavon District area between 2023 and 2024 (29.24 µg/m^3 in 2023 and 21.7 µg/m^3 in 2024). All individual diffusion tube monitoring locations have also shown a decrease in 2024 levels compared to 2023. The automatic monitor located on the Worcester Road, Wychbold AQMA recorded an annual average of 24.9 µg/m^3. No exceedance of the Nitrogen Dioxide Annual Mean Air Quality Objective occurred within the Worcester Road, Wychbold AQMA in 2024.

This report outlines the assessment of the results of monitoring within the AQMA in 2024 which confirms concentrations are well below the annual average objective for NO_2. Wychavon District Council will now give consideration to revocation of the Worcester Road, Wychbold AQMA in accordance with advice from Defra and Technical Guidance (LAQM.TG22).

No annual means greater than 60 µg/m^3 have been recorded indicating that it is very unlikely that there have been any exceedances of the 1-hour mean objective for NO_2 at any diffusion tube monitoring sites.

Long-term trends and observed reductions in nitrogen dioxide concentrations are discussed further in Section 3.2 of this report.

Further details regarding the automatic monitoring programme for the AQMA are discussed further in Section 2.2 of this report.

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.

The Environmental Improvement Plan[1] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant of most harmful to human health. The Air Quality Strategy[2] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[3] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel, and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Air Quality Actions Plan and Air Quality Strategy

Where an AQMA is designated, the local authority must prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in to improve local air quality and achieve compliance with the national objectives.

The timeline for the various stages and delivery of a revised countywide AQAP, and establishment of a new countywide Air Quality Strategy, were set out in the ASR 2023. However, following the introduction of new enforcement policy by Defra in June 2023, it has been necessary to amend the previously published framework to prioritise production of a standalone AQAP for each district with an existing AQMA.

[1] Defra. Environmental Improvement Plan 2023, January 2023

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

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

There is currently one AQMA in the Wychavon District: the Worcester Road, Wychbold AQMA declared in 2018 for previous exceedances of the annual average objective for NO_2.

However, there have been no further measured exceedances of the annual average objective for NO_2 within the AQMA between 2018 and 2024 (when calculating back to relevant receptors).

Factors influencing the improvement include:

- The completion of proximal and significant Major Scheme enhancement works to the M5 in 2017, resulting in reduction in impacts on local network after that time.
- Low national bias adjustment factors applied to 2017 and 2019 monitoring data.
- Significant reduction in traffic during COVID-19 pandemic impacting on 2020-2022 monitoring data.
- National vehicle fleet improvements: there has been a 4.2% drop in proportion of diesel cars and a 5.5% increase in low emission vehicles during this period.
- Upgrade of buses on local route to Euro Code 6 standards.
- Milder winters resulting in lower concentrations of nitrogen dioxide over the winter months

The Worcester Road, Wychbold AQMA is essentially a strategic road junction in a small village. The air quality issues identified by monitoring in the past are linked to transient traffic travelling through the area to and from other destinations. To have any meaningful impact on emissions, significant large-scale schemes would be required. Available options are limited, costly and resource intensive.

In light of this and the observed improvements in measured concentrations between 2018 and 2023, Wychavon District Council has not pursued specific actions to improve air quality within the AQMA to date.

Following review and discussion with Defra LAQM Team in May 2024 it was agreed to not proceed to AQAP for Wychavon district at that time. Consideration for revocation of the AQMA or proceeding to AQAP was to be undertaken following a further period of assessment including a full year’s continuous monitoring data to be reported in this ASR 2025.

As outlined above, assessment of the results of monitoring within the AQMA in 2024 confirms concentrations are well below the annual average objective for NO_2. Wychavon

District Council will now give consideration to revocation of the Worcester Road, Wychbold AQMA in accordance with advice from Defra and Technical Guidance (LAQM.TG22).

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.

From 2023, local authorities that do not have any AQMAs in their areas are required to produce an Air Quality Strategy outlining how air quality will be maintained.

It is anticipated production of an interim air quality strategy for the Wychavon District will follow completion of the revocation of the AQMA later this year.

Conclusions and Priorities

The Wychavon District area generally enjoys good air quality. Over the five-year period 2020 to 2024 there have been no exceedances of the annual mean objective for nitrogen dioxide in the district.

There is currently one Air Quality Management Area (AQMA) in Wychavon District. The Worcester Road, Wychbold AQMA was declared in 2018 due to monitored and modelled exceedances of the annual mean objective for nitrogen dioxide (NO_2).

No exceedance of the Air Quality Objective occurred within the AQMA in 2024. There have been no exceedances since 2018 (when calculating back to relevant receptors).

Monitoring data shows an overall decrease of 7.54 µg/m^3 in average recorded annual mean NO_2 concentrations across the Wychavon District area between 2023 and 2024 (29.24 µg/m^3 in 2023 and 21.7 µg/m^3 in 2024). All individual Diffusion tube monitoring locations have also shown a decrease in 2024 levels compared to 2023. The automatic monitor located on the Worcester Road, Wychbold AQMA recorded an annual average of 24.9 µg/m^3.

In 2024, the highest concentration of NO_2 recorded across Wychavon District was 30.9 µg/m^3 at EPS14 and EPS14a.

Wychavon District Council have not identified any new sources impacting air quality in 2024. A number of applications for new developments have been received; the proposals have been assessed as part of the planning process and are not expected to have a significant impact on local air quality when they are operational.

Priorities for the coming year:

- Consider revocation of the Worcester Road, Wychbold AQMA
- Begin work on an interim Air Quality Strategy for Wychavon District
- Continue monitoring of air pollutants at key locations 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
- Exploring a potential $PM_{2.5}$ source apportionment study within Worcestershire with the University of Birmingham.
- Improving air quality information and direction to WRS webpages following recommendations of Defra's Air Quality Information Systems review
- 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 Wychavon 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, community transport and travel to school).
- **Hold meetings by Conference Call** by phone or video conference via Teams, Zoom or Facetime 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:

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

  Maximise fuel economy through efficient driving - Energy Saving Trust

  How to save fuel - the ultimate guide | RAC Drive
- **Reduce air pollution from open fires and wood-burning stoves**: Advice is available from Defra on choosing the right stove, using the right fuels and maintenance enabling householders to reduce their impact on their health and air

quality from open fires and wood burning stoves. Further information is available on the Smokeless Zones and Public Advice pages on WRS website.

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

Vulnerable individuals and groups can keep informed of:

- Current levels and forecasts of air pollution from Defra at: https://uk-air.defra.gov.uk/.
- If you are sensitive to the effects of air pollution, it may be appropriate to limit the length of time spent in areas of local poor air quality – see advice from Defra at https://uk-air.defra.gov.uk/air-pollution/daqi

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) .

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

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

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Tables

1 Local Air Quality Management

This report provides an overview of air quality in Wychavon 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 Wychavon 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 Wychavon District Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Wychavon. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 Annual Mean (40 µg/m^3)

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
Worcester Road, Wychbold	1st May 2018	NO_2 Annual Mean	An area encompassing a number of properties surrounding strategic road network around J5 M5 and A38	YES	44.6 µg/m^3	No Exceedance	5 years	N/A – refer to main text	

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

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

2.2 Progress and Impact of Measures to address Air Quality in Wychavon 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. WDC has one AQMA which has been compliant with the relevant objective for five consecutive years. Since 2018 none of the monitoring locations recorded concentrations within 10% of the objective. It has been agreed WDC can wait until one full year of monitoring data from their newly installed continuous monitoring site before they consider revocation. Thus, a decision on revocation of their AQMA is expected in their 2025 ASR.
2. WDC do not have a formal AQAP for their AQMA, and thus have not been able to provide the required detail and update on progress made in 2023. Whilst it is noted the AQMA is compliant and likely to be revoked, WDC are strongly advised to progress on determining actions to target local air quality. These can inform a local Air Quality Strategy following revocation of their AQMA. Measures should be reported in a table (Table 2.2 of the template) with discussion of progress made within the reporting period. It is acknowledged the text of the report includes some discussion of progress on actions. This is expected in the 2025 ASR.
3. It is encouraging to see Wychavon working closely with neighbouring local authorities and the County Council to address air quality concerns in the region.
4. The ASR has been sent to a Direct of Public Health, but not yet signed. It is preferrable approval is given prior to publication.
5. The Public Health Outcomes Framework has been referenced, with indicator D.01 compared to national and regional values. Whilst $PM_{2.5}$ monitoring is not undertaken in WDC, the Council have estimated concentrations based on monitored PM_{10}. This is welcomed.
6. The Council should consider identifying measures which specifically address $PM_{2.5}$ concentrations.
7. WDC have expanded their monitoring network in 2023, with a new automatic monitor installed in May 2023 and additional diffusion tube sites. This is welcomed.
8. Trends have been presented with a robust comparison to air quality objective. Figures illustrating trends have been provided which are useful.

9. Based on the X, Y OS grid references and heights reported in Table A.2, WDC have two locations which have three diffusion tubes at the same height (EPS14, EPS14a, EPS14b; and WBA1, WBA2, WBA3). However, data for these sites are reported separately in the ASR and not averaged as triplicates. Any difference in NO_2 concentrations is likely a measure of precision rather than different exposure. It is strongly recommended these are reported as triplicate data. Please refer to LAQM.TG(22) or contact the LAQM Helpdesk for more information.

10. A local bias adjustment factor has been derived from a co-location study outside of WDC and has been applied to diffusion tube monitoring data. This is considered acceptable; however as per last year's appraisal, it would be beneficial to include a confirmation the same laboratory and analysis methodology is used for the co-location study compared to WDC own monitoring network.

11. Data capture was poor (i.e.. <75%) at the automatic monitor for both NO_2 and PM10, and at diffusion tube sites WBA 1, WBA 2, WBA 3 and WMD2. Annualisation adjustments have been applied appropriately at most sites. Based on the reported data in Table B.1, it can be determined an annualisation factor has been applied to monitoring data WMD2. However, WMD2 was not included in Table C.1 thus this cannot be verified.

    As concentrations are low at WMD2, is considered not commensurate to reject the ASR on this basis. However, the Council are strongly advised to annualise data at all monitoring sites with data capture between 25% and 75%, and complete Table C.1 in full.

12. The report outlines one planning application received in 2023, which is welcomed. However limited air quality information on this application is provided.

13. Example template text should be removed from the accompanying Excel document.

The above comments are acknowledged and appropriate actions have been addressed within this report.

Air Quality Actions Plan and Air Quality Strategy

The timeline for the various stages and delivery of a revised countywide AQAP, and establishment of a new countywide Air Quality Strategy, were set out in the ASR 2023. However, following the introduction of new enforcement policy by Defra in June 2023, it has been necessary to amend the previously published framework to prioritise production of a standalone AQAP for each district with an existing AQMA. There is currently one AQMA in the Wychavon District: the Worcester Road, Wychbold AQMA declared in 2018 for previous exceedances of the annual average objective for NO_2.

However, there have been no further measured exceedances of the annual average objective for NO_2 within the AQMA between 2018 and 2024 (when calculating back to relevant receptors).

Factors influencing the improvement include:

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Following review and discussion with Defra LAQM Team in May 2024, it was agreed to not proceed to AQAP for Wychavon district at that time. Consideration for revocation of the AQMA or proceeding to AQAP was to be undertaken following a further period of review and reported in this ASR 2025.

As outlined above, assessment of the results of monitoring within the AQMA in 2024 confirms concentrations are well below the annual average objective for NO_2. Wychavon District Council will now give consideration to revocation of the Worcester Road, Wychbold AQMA in accordance with advice from Defra and Technical Guidance (LAQM.TG22).

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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.

From 2023, local authorities that do not have any AQMAs in their areas are required to produce an Air Quality Strategy outlining how air quality will be maintained.

It is anticipated production of an interim air quality strategy for the Wychavon District will follow completion of the revocation of the AQMA later this year.

Wychavon District Council Projects to improve Air Quality

Wychavon have increased the use of HVO in their waste collection vehicles, where diesel had been used previously. There are currently 19 of Wychavon's largest waste collection vehicles now operating on HVO.

Droitwich Leisure Centre had also received a refurbishment, with a new extension being heated via an electric heat pump rather than gas boiler. There are also plans for similar refurbishments to Evesham and Pershore's Leisure Centres.

Worcestershire County Council Actions

Worcestershire County Council have implemented or taken forward a number of actions and plans that will benefit air quality within Wychavon District area:

- Works have begun on a new walking and cycling bridge linking **Hampton** and Evesham, this project will include the delivery of shared use paths linking to the bridge.
  Hampton pedestrian and cycling bridge | Worcestershire County Council
- A **Local Cycling and Walking Infrastructure Plan (LCWIP**) for Evesham is currently in development and due to be published in 2025.
  Local cycling and walking infrastructure plans (LCWIPs) | Worcestershire County Council
- **Pershore and Droitwich (LCWIPs)** funded by Active Travel England, to be completed in 2025
  Local cycling and walking infrastructure plans (LCWIPs) | Worcestershire County Council

- **Moving Evesham Forward**

  The Moving Evesham Forward scheme consisted of a package of incremental packages of schemes that considers all modes of transport. This approach intended to assess what schemes there were that could have been delivered in the short term. To develop medium term schemes and to build the business case for longer term investments into the scheme. Many of the schemes have been completed, with three more of the incremental schemes to be completed. As part of Moving Evesham Forward, further ideas are also being assessed.
  https://www.worcestershire.gov.uk/council-services/travel-and-highways/major-infrastructure-improvements/road-improvements/moving-evesham-forward

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[6], 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 $PM_{2.5}$ 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.

A continuous analyser (Model: BAM-1020) was installed to monitor PM10 within the Worcester Road, Wychbold AQMA in May 2023.

WRS have used PM_{10} figures from the Worcester Road, Wychbold PM_{10} monitoring station to calculate an estimation of annual $PM_{2.5}$ for 2024 for the site-specific location. The estimated annual mean figure is 9.2 µg/m^3. This was calculated using the National Factor for PM_{Coarse} (Roadside).

PM_{Coarse} Split Summary Table				
Site Type	**2021**	**2022**	**2023**	**2024**
Background	4.9	5.5	4.7	4.5
Roadside	5.7	6.4	5.9	6.0

Additionally, five low-cost sensors offering publicly accessible real time monitoring data were deployed within the Wychavon 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

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

results for 2024 are shown in the appendices and $PM_{2.5}$ averages for 2024 are summarised in table below:

Location	2024 average $PM_{2.5}$ ($\mu g/m^3$)	Installation
Apple Tree Road, Pershore	6.36	January 2024
Offenham Road, Evesham	7.19	May 2024
Swan Lane, Evesham	7.34	January 2024
The Furlong, Droitwich	6.87	January 2024
Worcester Road, Wychbold	7.46	January 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.'

WRS has also reviewed the DEFRA national background maps to determine projected $PM_{2.5}$ concentrations across Wychavon District area for the 2024 calendar year. The annual average total $PM_{2.5}$ at 657 locations (centre points of 1km x 1km grids) across Wychavon District is 6.24 $\mu g/m^3$, with a minimum concentration of 5.88 $\mu g/m^3$ and a maximum concentration of 10.13 $\mu g/m^3$.

Assessment of the available monitoring data and Defra background pollution maps outlined above indicate that $PM_{2.5}$ concentrations within the Wychavon District are generally 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: 12µg/m^3	2028
$PM_{2.5}$ annual mean concentration	Legally binding target: 10µg/m^3	2040

WRS has reviewed the fraction of mortality attributable to particulate air pollution (indicator D01) as published by Public Health England as part of the Public Health Outcomes Framework[7]. The fraction of mortality attributable to particulate emissions in Wychavon District in 2023 (the most recent year available) was 4.3%. This is below the national figure for England (5.2% in 2023) and below the figure for the West Midlands region (5.1% in 2022).

More information on the Public Health Outcomes Frameworks that examines indicators that help us understand trends in public health can be found at: Public Health Outcomes Framework - PHE

There are no smoke control areas within Wychavon District. However, WRS hold 61 records of complaints of nuisance from smoke in the Wyre Forest District in 2024, most of which relate to bonfires or burning of other waste or other enquiries. 4 records of complaints are attributable to wood burning stoves in residential developments which were either unsubstantiated, not pursued or resolved without requirement for enforcement action.

No additional actions are currently planned by Wychavon District 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 will likely result in a linked improvement in $PM_{2.5}$ levels.

[7] Public Health Outcomes Framework - OHID (phe.org.uk)

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

This section sets out the monitoring undertaken within 2024 by Wychavon 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

Wychavon District Council undertook automatic (continuous) monitoring at a single site in Wychbold during 2024. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The Interactive Air Quality Maps & Current Status | Worcestershire Regulatory Services (worcsregservices.gov.uk) page presents automatic monitoring results for Wychavon District Council, with automatic monitoring results also available through the UK-Air website .

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Wychavon District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 28 sites during 2024. Table A.2 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.3 and Table A.4 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.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Monitoring data shows an overall decrease of 7.54 µg/m^3 in average recorded annual mean NO_2 concentrations across the Wychavon District area between 2023 and 2024 (29.24 µg/m^3 in 2023 and 21.7 µg/m^3 in 2024). All individual Diffusion tube monitoring locations have also shown a decrease in 2024 levels compared to 2023. The automatic monitor located on the Worcester Road, Wychbold AQMA recorded an annual average of 24.9 µg/m^3.

In 2024, the highest concentration of NO_2 recorded across Wychavon District was 30.9 µg/m^3 at EPS14 and EPS14a.

No other diffusion tube monitoring locations have recorded concentrations within -10% of the AQS objective for annual average NO_2, in 2024. All concentrations are shown in Table B.1.

The highest concentration measured at a relevant receptor recorded in Wychavon District in 2024 is 24.4 µg/m^3 at EPS56 within the Worcester Road, Wychbold AQMA.

No annual means greater than 60 ug/m^3 have been recorded indicating that it is very unlikely that there have been any exceedances of the 1-hour mean objective for NO_2 at any diffusion tube monitoring sites.

3.2.2 Particulate Matter (PM_{10})

In May 2023 Wychavon District Council began monitoring PM_{10} with a newly installed automatic monitor. The monitor is located in the Worcester Road, Wychavon AQMA (391982, 265667).

The annual mean of PM_{10} at the Worcester Road automatic monitor was 14.8 µg/m^3 in 2023 (Annualised from 6 months data) and 15.2 µg/m^3 in 2024. There were no exceedances of the 24-hour mean in 2023 and 2 exceedance of the 24-hour mean in 2024, well below the 35 allowable exceedance limit.

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

3.2.3 Particulate Matter ($PM_{2.5}$)

There were no automatic $PM_{2.5}$ monitoring stations within Wychavon District in 2024 that are recognised by Defra for measuring against ambient air quality directives.

3.2.4 Sulphur Dioxide (SO_2)

Wychavon District Council did not undertake SO_2 monitoring in 2024.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Which AQMA? (1)	Monitoring Technique	Distance to Relevant Exposure (m) (2)	Distance to kerb of nearest road (m) (1)	Inlet Height (m)
WBA	Wychbold	Roadside	391982	265667	NO_2, PM_{10}	YES	Worcester Road, Wychbold	Chemiluminescent; Beta Ray Attenuation	2.0	1.5	1.5

Notes:

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

Table A.2 – 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)
EPS8	40 High Street Street Light 8, Pershore, WR10 1AT	Roadside	395048	245527	NO2	No	2m	0.50m	No	2.27m
EPS9	St. Andrews Road Street light 139, Pershore, WR10 1LU	Suburban	394571	245377	NO2	No	6m	2.98m	No	2.26m
LC	Lawn Cottage, Worcester Road, Wychbold, WR9 7PA	Roadside	392005	265736	NO2	Worcester Road, Wychbold	2.01m	10m	No	2.0m
EPS33	High Street Street light LP 32, Evesham, WR11 4EU	Roadside	403753	244068	NO2	No	2.5m	3.50m	No	2.30m
EPS43	Long Stay opp cinema, Port St, Evesham, WR11 3LD	Roadside	404222	243598	NO2	No	0m	1.85m	No	2.35m
EPS44	Camera Post opp 33, Port St, Evesham, WR11 3LD	Roadside	404183	243611	NO2	No	2.6m	1.18m	No	2.45m
EPS60	Corner of Rynal Street & De La Bere Close, Evesham SL2, WR11 4PW	Roadside	403914	244046	NO2	No	5.5m	1.10m	No	2.13m

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)
EPS61	1-6 The Old Dairy, Swan Lane, Evesham, WR11 4PA	Roadside	403796	244006	NO2	No	0m	1.9m	No	2m
EPS62	Bengal Dreams No 53 Façade, Evesham, WR11 4DA	Roadside	403729	243971	NO2	No	1.32m	5.38m	No	2.18m
EPS63	60 Mayflower Road, Droitwich, WR9 8PY	Roadside	390708	262863	NO2	No	0m	2.46m	No	1.93m
EPS27	Worcester Rd, Wychbold, WR9 7PA	Roadside	392031	265624	NO2	Worcester Road, Wychbold	15.5m	2.31m	No	2.13m
WychSC	Lamp post opposite 2 Rose Villas up from bus stop Worcester Road Wychbold, WR9 7PA	Roadside	392022	265702	NO2	Worcester Road, Wychbold	19.6m	1.2m	No	1.28m
EPS56	Post Office, Worcester Rd, Wychbold, WR9 7PA	Roadside	391983	265688	NO2	Worcester Road, Wychbold	0m	8.08m	No	2.13m
RD	Rose Dene, Worcester Road, Wychbold, WR9 7PA	Roadside	392019	265736	NO2	Worcester Road, Wychbold	9.91m	1.93m	No	2.22m
EPS58a	Façade 2 Rose Villas, Worcester Road, Wychbold, WR9 7PA	Roadside	392027	265770	NO2	Worcester Road, Wychbold	0m	3m	No	2.27m

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)
WMD1	Walk Mill Drive, Wychbold LP363, WR9 7PB	Roadside	392050	265790	NO2	Worcester Road, Wychbold	4.94m	2.3m	No	2.14m
WMD2	Highways England land at end of Walkmill Drive adj M5, off Worcester Road, Wychbold, WR9 7PB	Roadside	391871	265859	NO2	Worcester Road, Wychbold	13.5	21.5	No	1.82m
WychCH	Lampost outside 6 the Council House "Amesford", Worcester Road, Wychbold, WR9 7PE	Roadside	392160	265937	NO2	Worcester Road, Wychbold	7.5m	2.14m	No	2.26m
CROW1	Road sign outside 1 Crown Lane on corner of junction Worcester Road A38 and Crown Lane, Wychbold, WR9 7PT	Roadside	392257	266043	NO2	Worcester Road, Wychbold	4.3m	1.28m	No	2.34m
WychAD	Speed limit sign on junction of Mill Lane Nr. "Avondale" Worcester Road, Wychbold, WR9 7PF	Roadside	392384	266195	NO2	Worcester Road, Wychbold	n/a	1.53m	No	2.13m

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)
EPS53	Hillview Cottage, Whittington, WR5 2RL	Suburban	387595	252533	NO2	No	0m	22m	No	1.68m
BG	West View Broomhall Green, Norton roundabout, WR5 2PF	Urban Background	386297	252150	NO2	No	0m	36m	No	1.9m
EPS14a	Port Street Road Sign, Evesham, WR11 3LD	Kerbside	404128	243630	NO2	No	1.7m	0.73m	No	2.35m
EPS14b	Port Street Road Sign, Evesham, WR11 3LD	Kerbside	404128	243630	NO2	No	1.7m	0.73m	No	2.35m
WBA1	Analyser 1 Worcester Road, Wychbold, WR9 7PA	Kerbside	391982	265667	NO2	Worcester Road, Wychbold	8.2m	2m	Yes	1.5m
WBA2	Analyser 2 Worcester Road, Wychbold, WR9 7PA	Kerbside	391982	265667	NO2	Worcester Road, Wychbold	8.2m	2m	Yes	1.5m
WBA3	Analyser 3 Worcester Road, WR9 7PA	Kerbside	391982	265667	NO2	Worcester Road, Wychbold	8.2m	2m	Yes	1.5m
EPS14	Port Street Road Sign, Evesham, WR11 3LD	Kerbside	404128	243630	NO2	No	1.7m	0.73m	No	2.35m

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property). (2) N/A if not applicable.

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

Site 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
WBA	391982	265667	Roadside	99.5%	99.5%	-	-	-	27.6	24.9

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

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

☒ **Where exceedances of the NO_2 annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.**

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**.

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%).

Table A.4 – 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
EPS8	395048	245527	Roadside	100.0	100.0	16.8	18.6	20.7	19.2	16.3
EPS9	394571	245377	Suburban	75.0	75.0	8.6	8.4	9.4	9.8	9.3
LC	392005	265736	Roadside	83.0	83.0				21.5	20.9
EPS33	403753	244068	Roadside	100.0	100.0	18.6	21.0	24.7	23.9	19.6
EPS43	404222	243598	Roadside	67.9	67.9	21.1	22.6	30.2	29.0	26.5
EPS44	404183	243611	Roadside	92.5	92.5	21.2	22.3	29.2	28.5	25.6
EPS60	403914	244046	Roadside	83.0	83.0	11.5	12.4	12.3	11.7	10.2
EPS61	403796	244006	Roadside	90.6	90.6	19.1	20.0	27.2	25.3	21.5
EPS62	403729	243971	Roadside	100.0	100.0	20.0	23.6	27.3	28.6	23.5
EPS63	390708	262863	Roadside	66.0	66.0	14.8	14.6	19.4	17.8	15.8
EPS27	392031	265624	Roadside	92.5	92.5	24.7	28.4	32.7	30.4	26.7

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
WychSC	392022	265702	Roadside	100.0	100.0	23.4	27.3	27.1	28.4	23.2
EPS56	391983	265688	Roadside	100.0	100.0	27.0	27.7	31.2	29.6	24.4
RD	392019	265736	Roadside	100.0	100.0	33.2	37.1	**41.7**	24.9	21.3
EPS58a	392027	265770	Roadside	84.9	84.9	21.9	24.5	27.4	25.1	21.1
WMD1	392050	265790	Roadside	100.0	100.0		30.4	32.4	29.5	24.3
WMD2	391871	265859	Roadside	84.9	84.9	21.1	21.9	25.0	21.6	17.0
WychCH	392160	265937	Roadside	100.0	100.0	21.8	25.1	30.7	28.6	23.2
CROW1	392257	266043	Roadside	92.5	92.5	18.1	19.9	21.9	22.2	16.7
WychAD	392384	266195	Roadside	49.1	49.1	24.5	26.6	29.2	26.3	19.4
EPS53	387595	252533	Suburban	100.0	100.0	18.9	20.0	21.3	20.6	17.5
BG	386297	252150	Urban Background	100.0	100.0	17.4	20.3	20.0	18.6	16.4
EPS14a	404128	243630	Kerbside	83.0	83.0	26.2	24.5	33.8	34.2	30.9
EPS14b	404128	243630	Kerbside	90.6	90.6	26.2	24.5	33.8	34.7	30.4

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
WBA1	391982	265667	Kerbside	81.1	81.1				34.4	26.2
WBA2	391982	265667	Kerbside	75.0	75.0				34.0	26.1
WBA3	391982	265667	Kerbside	75.0	75.0				34.7	22.9
EPS14	404128	243630	Kerbside	100.0	100.0	26.2	24.5	33.8	34.2	30.9

☒ **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**.

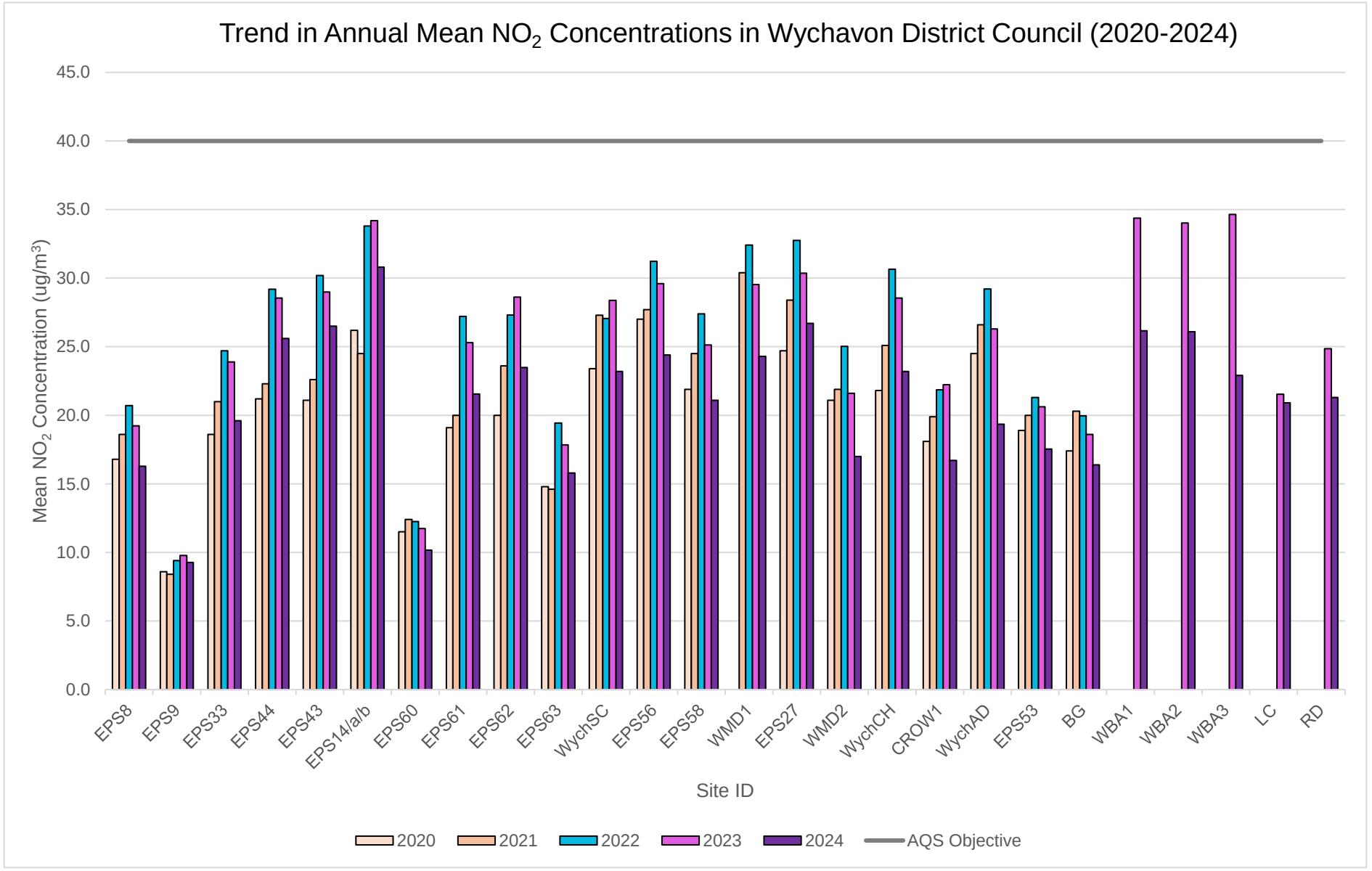
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

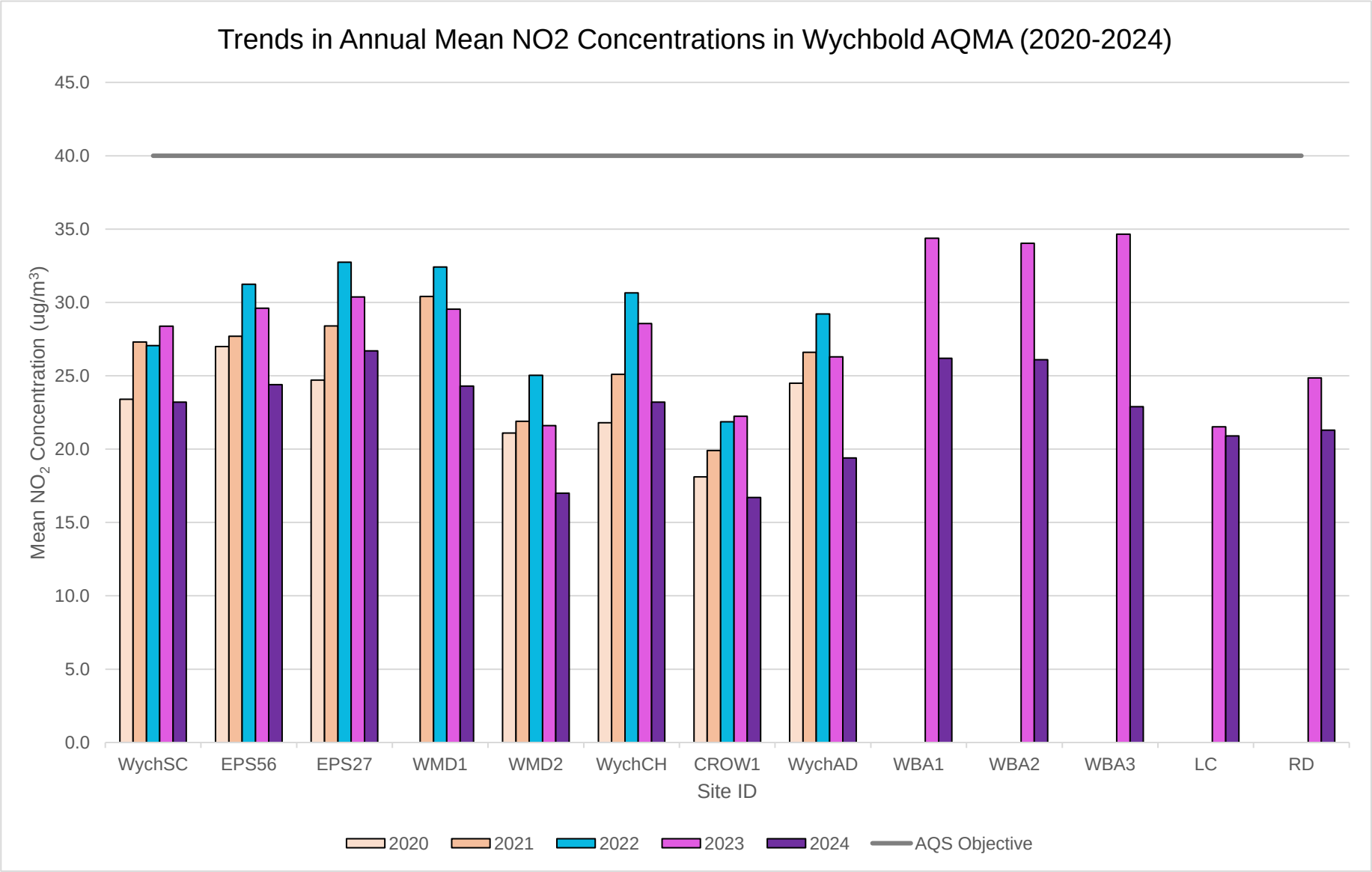
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

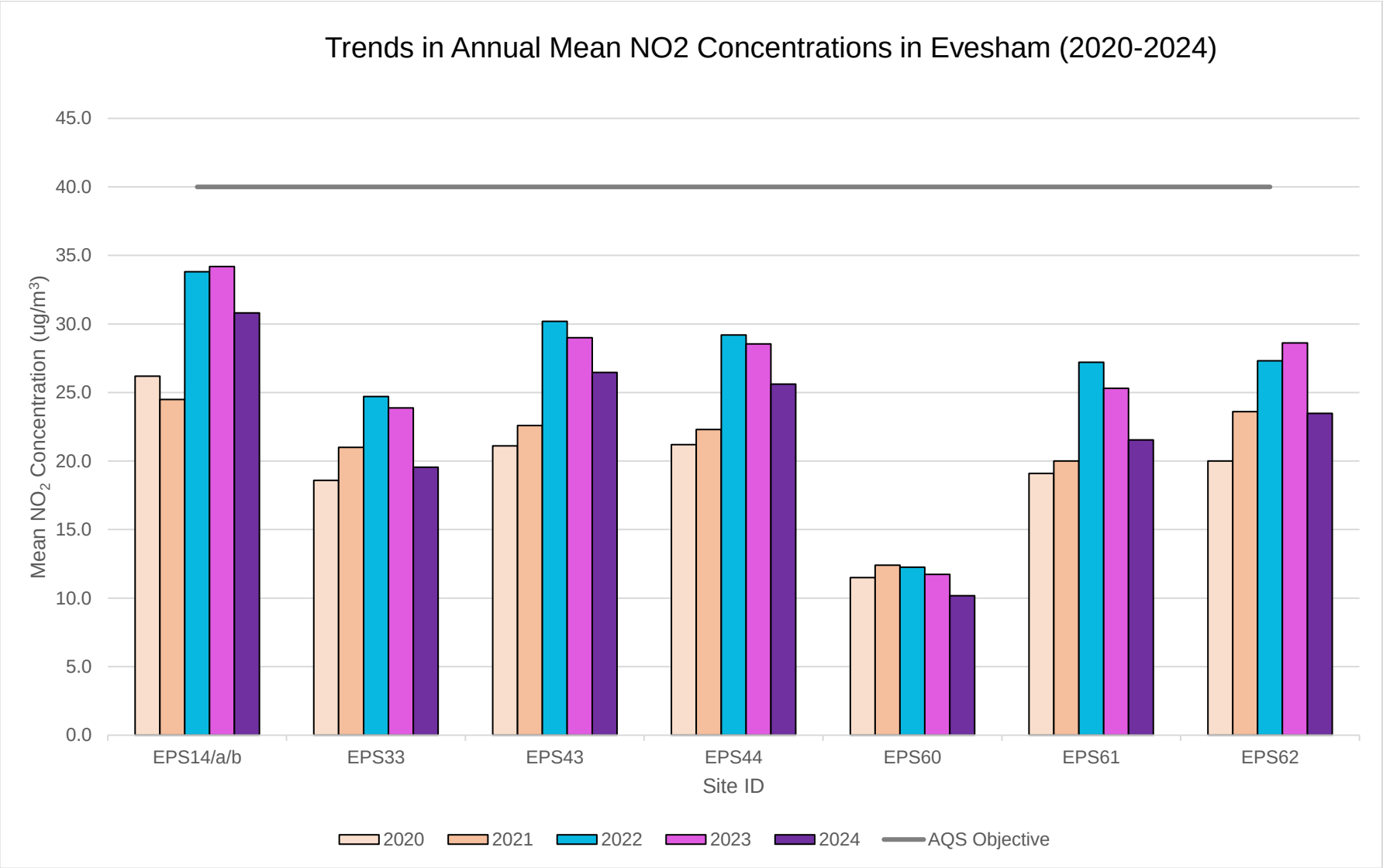
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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




Trends in Annual Mean NO2 Concentrations in Wychbold AQMA (2020-2024)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Mean NO2 Concentration (ug/m3)
WychSC
EPS56
EPS27
WMD1
WMD2
WychCH
CROW1
WychAD
WBA1
WBA2
WBA3
LC
RD
Site ID
2020
2021
2022
2023
2024
AQS Objective


Trends in Annual Mean NO2 Concentrations in Evesham (2020-2024)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Mean NO2 Concentration (ug/m3)
EPS14/a/b
EPS33
EPS43
EPS44
EPS60
EPS61
EPS62
Site ID
2020
2021
2022
2023
2024
AQS Objective

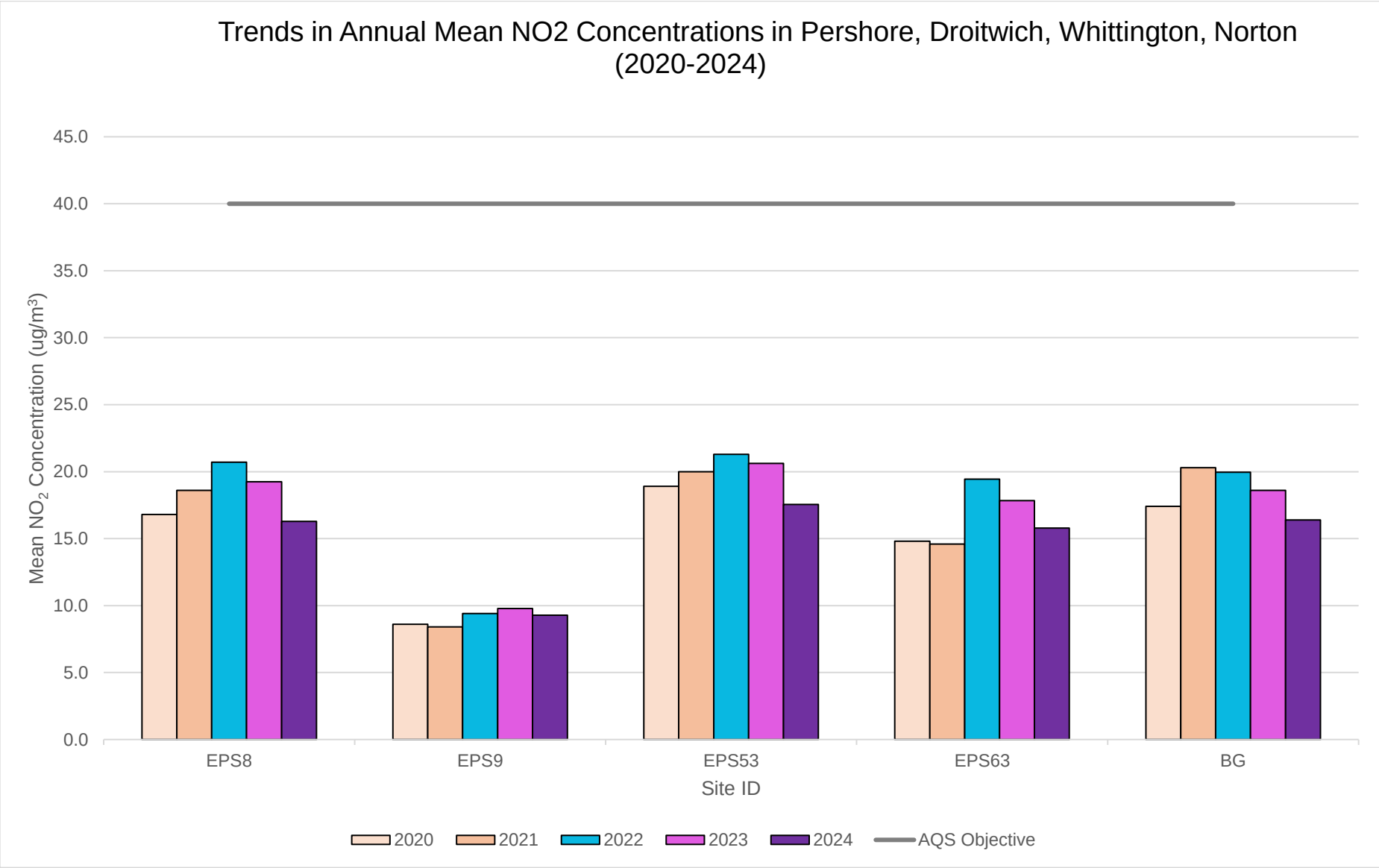

Trends in Annual Mean NO2 Concentrations in Pershore, Droitwich, Whittington, Norton (2020-2024)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Mean NO2 Concentration (ug/m3)
EPS8
EPS9
EPS53
EPS63
BG
Site ID
2020
2021
2022
2023
2024
AQS Objective

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site 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
WBA	391982	265667	Roadside	99.6	99.6	-	-	-	(0)	(0)

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site 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
WBA	391982	265667	Roadside	99.6	99.6	-	-	-	14.8	15.2

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

Notes:

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

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold**.

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.

(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%).

Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site 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
WBA	391982	265667	Roadside	99	99	-	-	-	**(0)**	**(2)**

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(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%).

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 (0.88)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
EPS8	395048	245527	28.6	10.5	18.8	17.4	14.6	14.8	15.0	16.2	20.3	19.8	25.3	21.5	18.6	16.3	-	
EPS9	394571	245377	15.0	22.2	8.4	6.9	6.1	5.1	6.2			10.6	14.8		10.6	9.3	-	
LC	392005	265736	25.7	27.7	21.6	18.1	21.2		37.5	20.2	18.9	24.2	23.2		23.8	20.9	-	
EPS33	403753	244068	27.5	25.7	23.2	20.2	23.0	15.0	18.1	16.7	20.9	27.1	28.3	21.9	22.3	19.6	-	
EPS43	404222	243598		33.9		26.2			26.8	23.1	28.6	39.0	35.3	30.1	30.4	26.5	-	
EPS44	404183	243611	32.2	30.1		26.7	26.7	24.7	26.0	26.0	28.0	35.1	35.8	29.8	29.2	25.6	-	
EPS60	403914	244046	18.3	14.2		8.5	9.0	7.5	8.5	8.6	9.8		17.1	14.4	11.6	10.2	-	
EPS61	403796	244006	28.0	31.1	24.3	22.0	21.4	20.6	23.8		22.2	24.6	27.2	25.0	24.6	21.5	-	
EPS62	403729	243971	33.6	32.8	25.7	24.0	23.8	25.4	26.2	25.2	21.8	26.1	29.4	27.4	26.8	23.5	-	
EPS63	390708	262863	21.5	18.1	18.2	13.1	15.2		15.6	14.1	19.0				16.8	15.8	-	
EPS27	392031	265624	37.2	36.5	30.2	28.0	22.6	27.7	28.4	26.9		27.6	38.1	32.1	30.5	26.7	-	
WychSC	392022	265702	34.9	33.1	29.6	24.8	22.5	18.5	22.0	22.2	21.5	26.7	34.3	26.9	26.4	23.2	-	
EPS56	391983	265688	32.1	31.4	24.6	25.9	28.1	24.2	26.6	26.6	27.3	29.0	32.3	26.2	27.8	24.4	-	
RD	392019	265736	29.2	29.1	22.5	22.0	22.2	22.4	19.7	22.6	22.4	28.0	29.0	22.3	24.3	21.3	-	
EPS58a	392027	265770	27.5	26.3	22.4	21.5	22.7			20.4	21.0	27.7	29.8	21.9	24.1	21.1	-	
WMD1	392050	265790	35.1	35.9	30.2	25.4	23.6	19.5	23.2	23.7	22.1	31.6	32.3	29.1	27.7	24.3	-	
WMD2	391871	265859	34.3	25.1	21.1	21.1	2.8		18.6	19.3	15.4	16.9		18.6	19.3	17.0	-	
WychCH	392160	265937	33.1	34.0	27.5	25.4	22.7	21.6	21.9	23.0	24.0	22.6	33.4	28.4	26.4	23.2	-	
CROW1	392257	266043		25.3	20.0	17.0	17.6	12.9	14.8	15.6	17.7	22.3	25.2	20.9	19.0	16.7	-	
WychAD	392384	266195	31.7	31.2	25.8	22.8		10.4				19.1			23.5	19.4	-	
EPS53	387595	252533	26.5	24.0	18.9	16.5	18.7	17.9	19.4	16.8	16.7	21.1	23.5	20.1	20.0	17.5	-	
BG	386297	252150	30.9	24.9	18.7	15.3	15.4	13.6	13.8	13.6	17.4	17.1	22.1	21.4	18.7	16.4	-	
EPS14a	404128	243630	39.1		37.4	31.8	31.0	33.7	34.5	30.4		37.5	39.4	37.1	35.2	30.9	-	
EPS14b	404128	243630	39.6	40.1	36.9	32.8	30.6	31.0	34.0	32.9	30.4		36.9	36.0	34.6	30.4	-	
WBA1	391982	265667	36.7	35.5	29.6	28.4	28.3	26.5	25.3		26.9		34.2	26.8	29.8	26.2	-	
WBA2	391982	265667	36.8	36.0	30.8		28.1	27.6	26.3		27.2		34.2	20.8	29.7	26.1	-	
WBA3	391982	265667	34.7	32.8	26.6		25.6	25.6	26.1		28.7		32.5	2.3	26.1	22.9	-	
EPS14	404128	243630	39.2	38.5	36.4	34.0	32.1	32.6	32.0	34.4	31.4	36.0	39.5	36.0	35.2	30.9	-	

☒ **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.**

☒ **Wychavon 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

As $PM_{2.5}$ is not monitored at Worcester Road, Wychbold estimation of annual mean $PM_{2.5}$ was calculated using PM_{coarse} National Factor using the formula below -

15.2(Annual Mean PM_{10} for GGG)– 6.0(Roadside National Factor)=9.2 $PM_{2.5}$ Annual Mean

New or Changed Sources Identified Within Wychavon During 2024

Wychavon District Council has not identified any new sources impacting air quality within the reporting year of 2022.

Applications for a number of new developments have been identified within the Wychavon 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 when they are operational.

Details of applications for significant developments received by Wychavon District Council in 2024 are as follows:

Application Number	Location	Description of development
W/23/00903/PA	Woodhall Pershore Road High Park Whittington Worcestershire WR5 2RR	Mixed- use sustainable development: circa 1,250 homes, primary school, neighbourhood hub and 27ha of employment land.
W24/01273/SCO	Tewkesbury Road Mitton GL20 5PH	500 new homes, a neighbourhood centre with ground floor space (use class E), community hall, drainage, landscaping, open space, sports pitches, and associated infrastructure

Additional Air Quality Works Undertaken by Wychavon District Council During 2024

There have been no additional Air Quality Works undertaken by Wychavon District Council during 2024.

QA/QC of Diffusion Tube Monitoring

The following UKAS accredited company provided Wychavon District Council with nitrogen dioxide diffusion tubes and analysis in 2022:

Gradko International Limited
St. Martins House
77 Wales Street
Winchester
SO23 0RH
diffusion@gradko.com

The 20% Triethanolamine (TEA) / De-ionised 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 2022 Diffusion Tube Monitoring Calendar, i.e. on or within ± 2 days of the specified date.

Diffusion Tube Annualisation

Three diffusion tube monitoring locations (EPS43, EPS63, and WychAD) recorded a data capture of less than 75% in Wychavon District in 2024. Therefore, the monitoring data has been annualised using monitoring data from four automatic monitors. In addition, any sites with a data capture below 25% do not require annualisation.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor <Site 1 Name>	Annualisation Factor <Site 2 Name>	Annualisation Factor <Site 3 Name>	Annualisation Factor <Site 4 Name>	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
EPS43	0.9956	1.0088	0.9779	0.9918	0.9935	30.4	30.2
EPS63	1.0732	1.0655	1.0840	1.0541	1.0692	16.8	18.0
WychAD	0.9292	0.9372	0.9635	0.9272	0.9393	23.5	22.1

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 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.

Wychavon District Council have applied a local bias adjustment factor of 0.88 to the 2024 monitoring data. The bias adjustment factor was generated using data from the continuous monitor in place at Worcester Road, Wychbold. A summary of bias adjustment factors used by Wychavon District Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	<->	0.88
2023	Local	<->	0.96
2022	Local	<->	0.97
2021	National	03/21	0.84
2020	National	03/20	0.78

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	9
Bias Factor A	0.88 (0.81 – 0.95)
Bias Factor B	14% (5% - 23%)
Diffusion Tube Mean (µg/m^3)	29.4
Mean CV (Precision)	5.6%
Automatic Mean (µg/m^3)	25.8
Data Capture	99%
Adjusted Tube Mean (µg/m^3)	26 (24 – 28)

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.

QA/QC of Automatic Monitoring

Data management of the automatic monitor at Worcester Road, Wychbold is undertaken by Air Quality Data Management (AQDM) on behalf of Worcestershire Regulatory Services.

Local Site Operator (LSO) duties Worcester Road, Wychbold are carried out by the Technical Pollution team at Worcestershire Regulatory Services. Calibration is carried out monthly, audit/servicing is carried out bi-annually. The annual data capture was 99%. The 2024 data has been fully ratified and is available on Air Quality in the United Kingdom (ukairquality.net).

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The PM_{10} monitor utilised within Wychavon District (BAM 1020 Smart Heated PM_{10}) requires a correction factor of dividing raw data by 1.035. This is applied to all PM_{10} data before reaching WRS.

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 NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table A.3.

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

Figure D.1 – Map of Non-Automatic Monitoring Site within Worcester Road, Wychbold AQMA

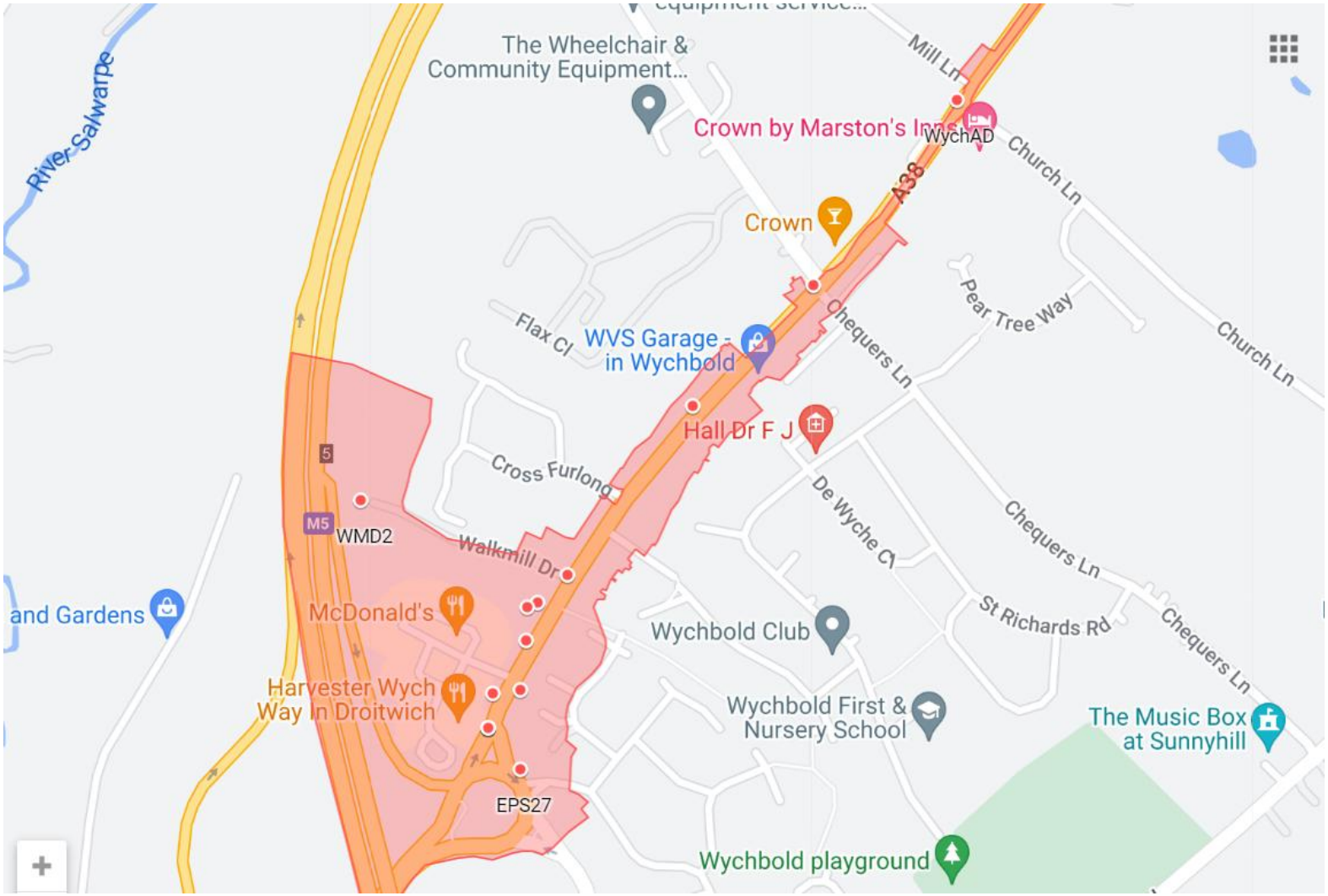


Figure D.2 – Map of Non-Automatic Monitoring Site: Worcester Road, Wychbold AQMA, southern section

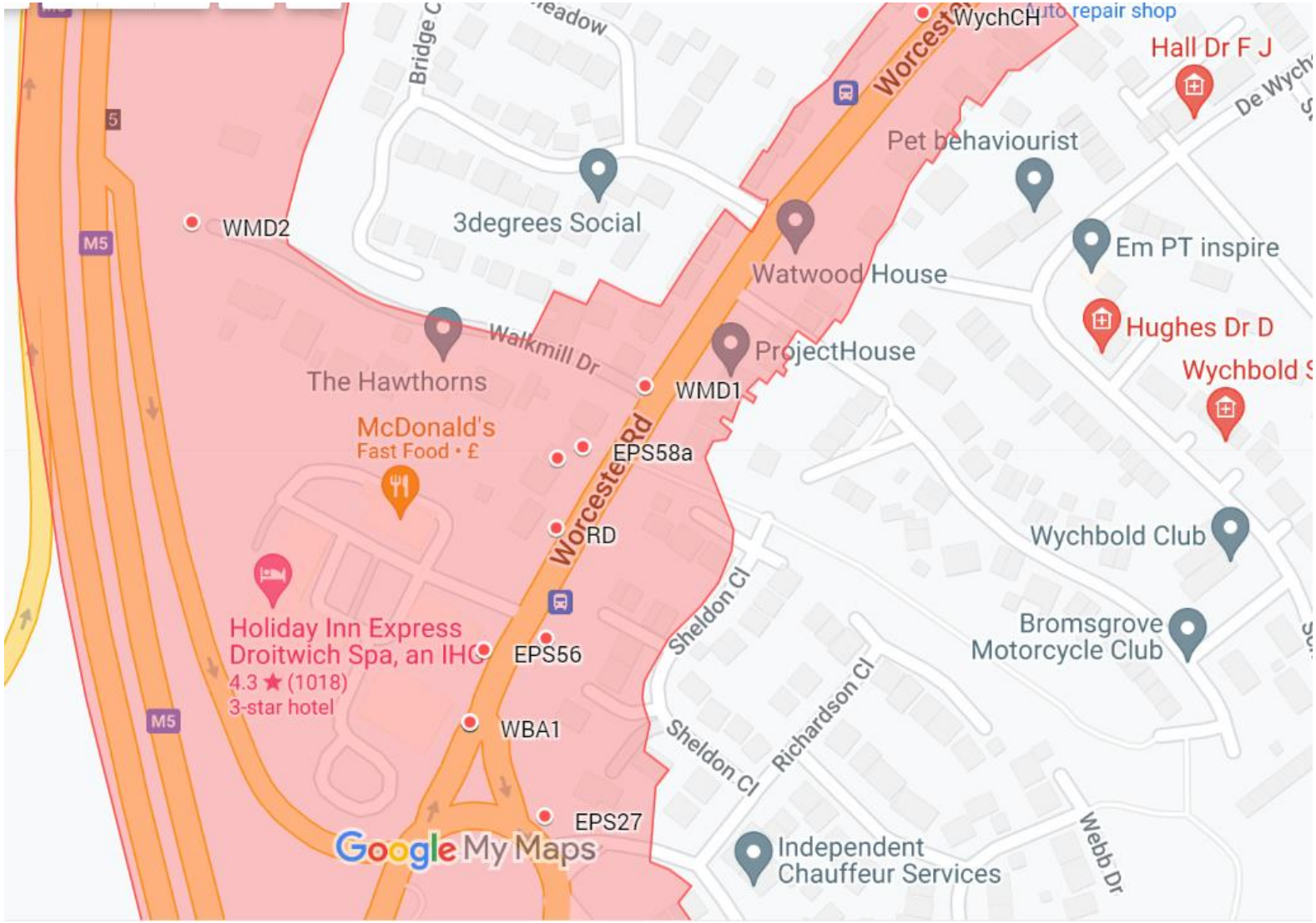


Figure D.3 – Map of Non-Automatic Monitoring Site: Pershore

Figure D.4 – Map of Non-Automatic Monitoring Site: Evesham

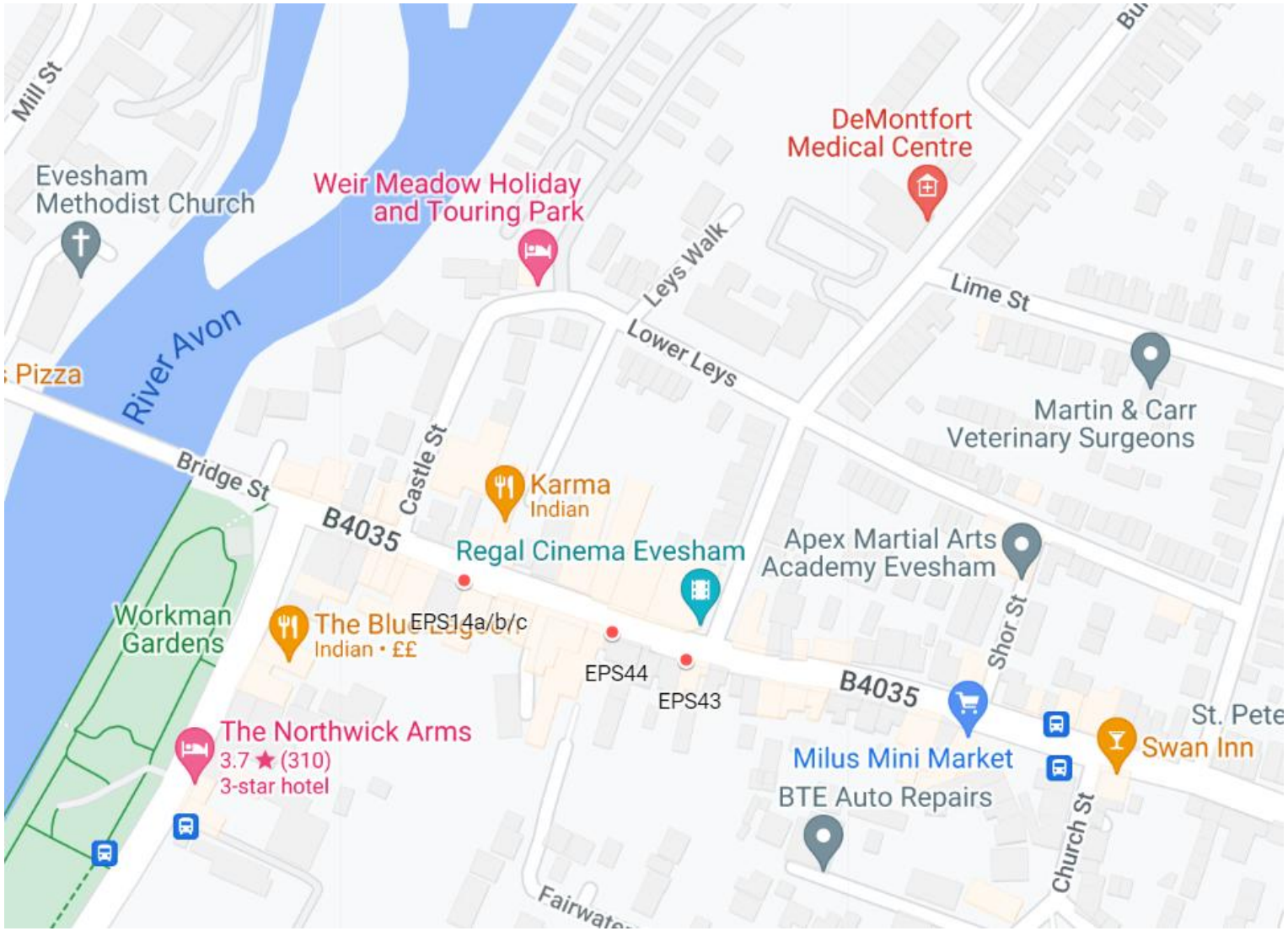


Figure D.5 – Map of Non-Automatic Monitoring Site: Evesham Part 2

Figure D.6 – Map of Non-Automatic Monitoring Site: Droitwich

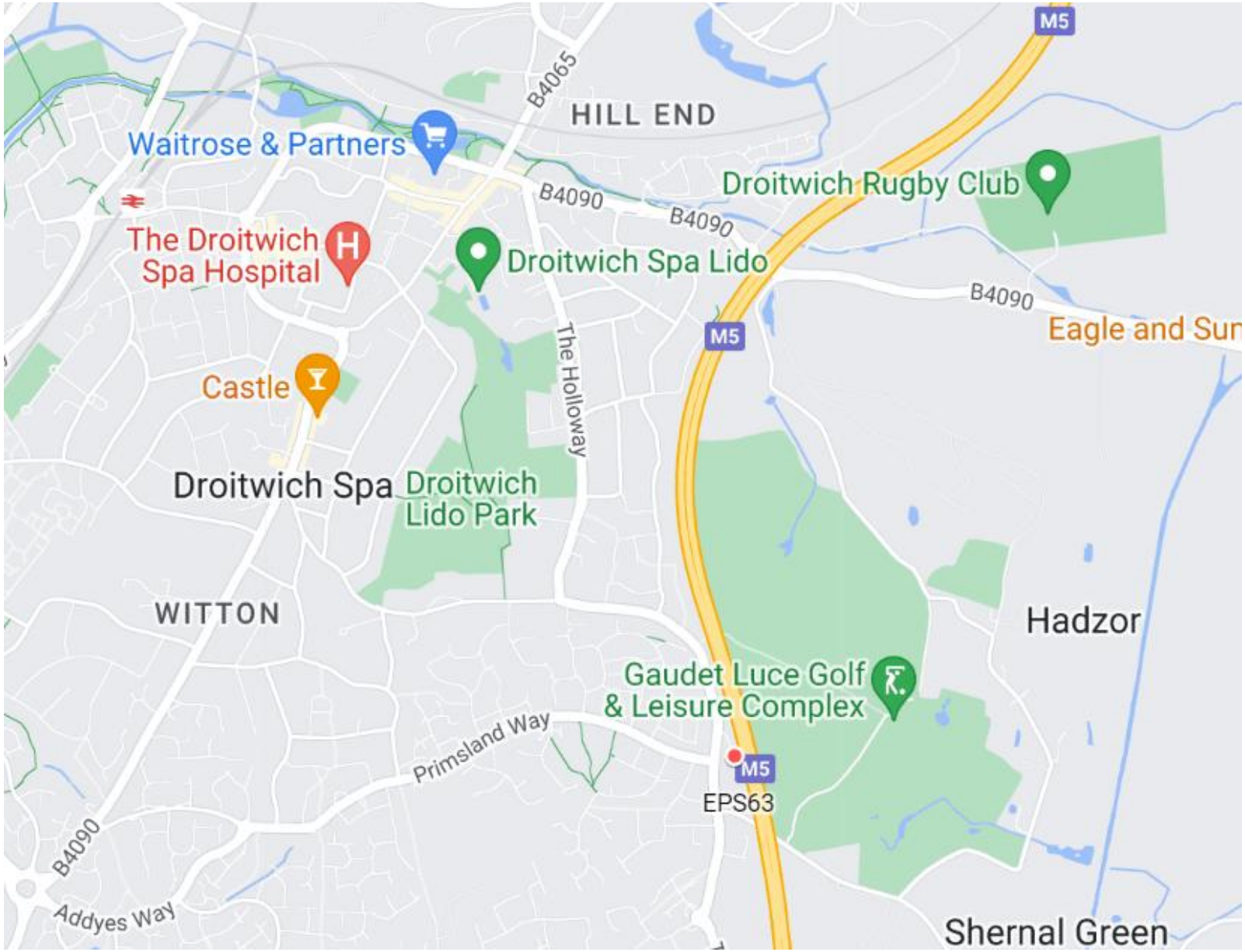


Figure D.7 – Map of Non-Automatic Monitoring Site: Whittington

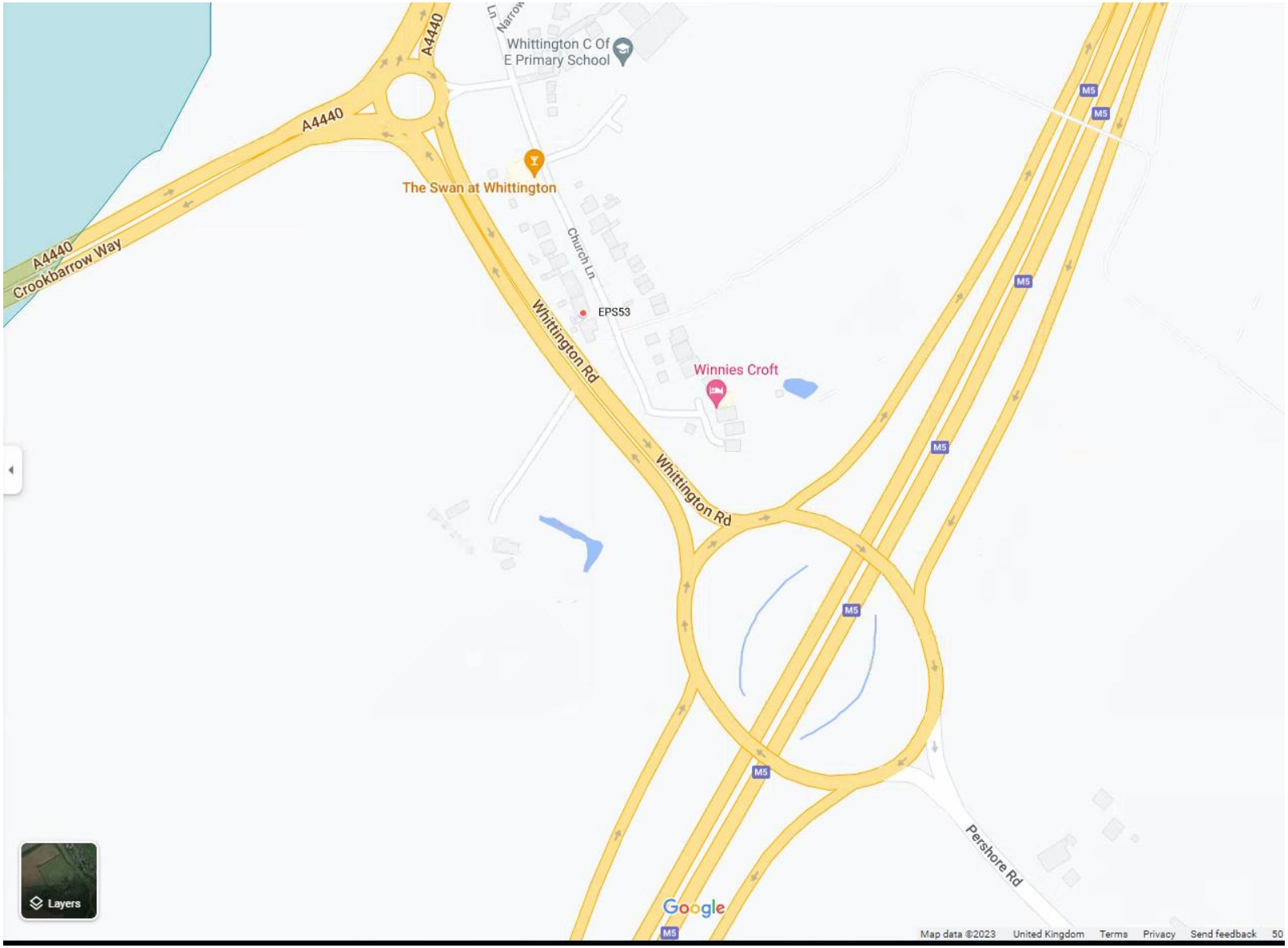
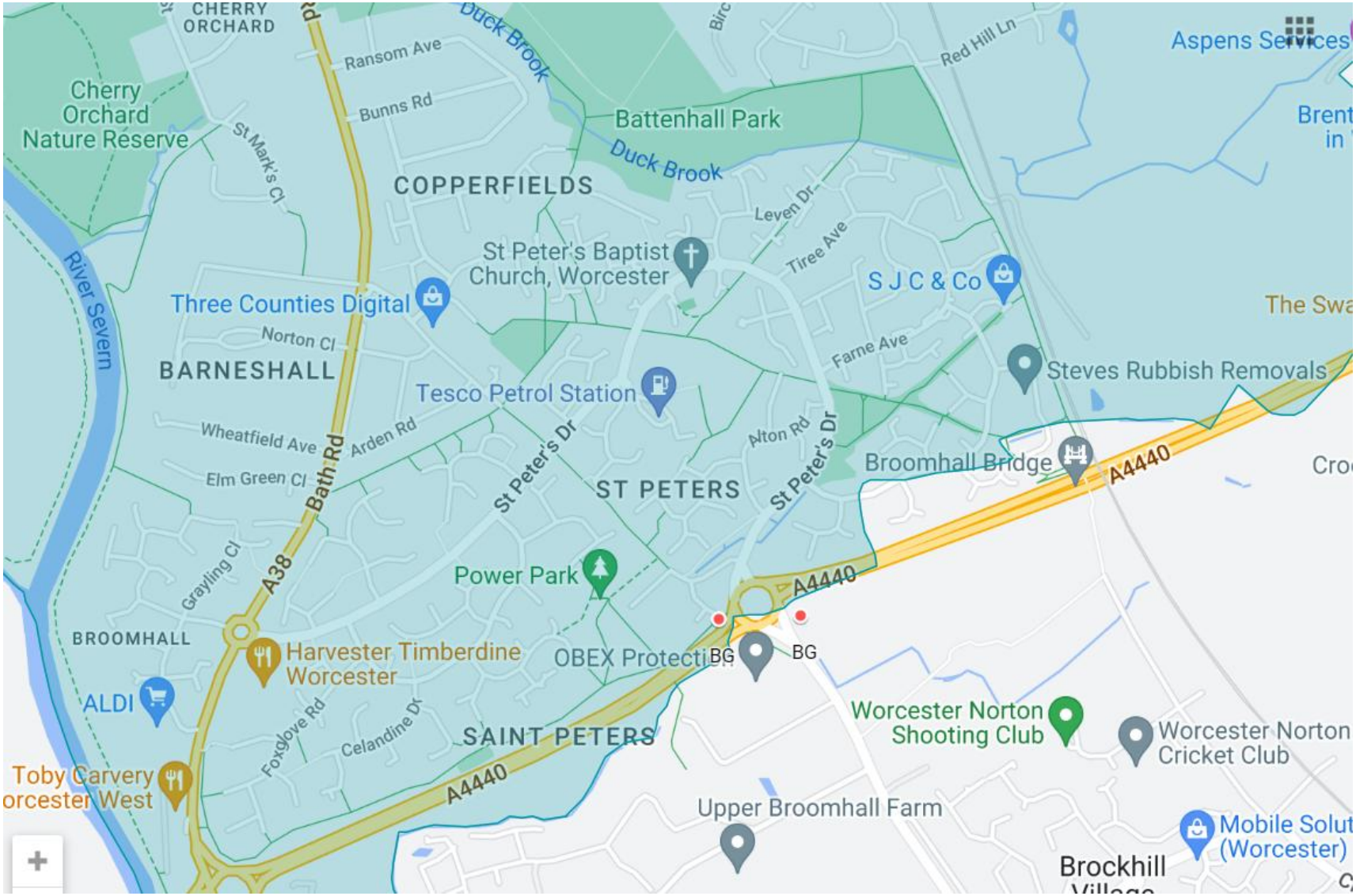


Figure D.8 – Map of Non-Automatic Monitoring Site: Norton Road



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[8]

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

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

Appendix F: Wychbold Air Quality Data Ratification

Air Quality Report

Produced by AQDM on behalf of Worcestershire
WYCHBOLD 2024
Fully ratified by AQDM to the LAQM TG22 standards using the AURN methodology

Site Environment and Description
Wychbold A28
ROADSIDE Map Photo

Statistical Summary Report
This 2024 report contains all the statistics required for the LAQM reporting.

Gravimetric PM_{10}
Smart Heated BAM instrument PM_{10} / 1.035

Daily Air Quality Index (DAQI)
The table below shows the duration within the bands of the Daily Air Quality Index (DAQI).
The DAQI was introduced by Defra in January 2012 and revised April 2013.

DAQI Pollutant	Moderate	High	Very High
Nitrogen Dioxide	0 hours	0	0
PM_{10} Particulate Matter	1 day	0	0

Gravimetric PM_{10} was Moderate on 6th Sept with a daily mean reaching 54.2 µg m^{-3}.

Air Quality Exceedances of the AQS Objectives
NO_2 - annual data capture was 99.5 %
The annual mean was 24.9 µg m^{-3} which did not exceed the 40 µg m^{-3} Objective.

The maximum hourly mean was 108.6 µg m^{-3} so there were no exceedances of the NO_2 hourly limit of 200 µg m^{-3}. There is an annual allowance of 18 hours so the Objective was not exceeded.

Gravimetric PM_{10} - annual data capture was 99.6 %
The annual mean was 14.6 µg m^{-3} which did not exceed the 40 µg m^{-3} Objective.

The maximum daily mean was 54.2 µg m^{-3} so there was 1 exceedance of the PM_{10} daily limit of 50 µg m^{-3}. There is an annual allowance of 35 days so the Objective was not exceeded.

Air Quality Report
WYCHBOLD 2024

Air Quality Statistics

Pollutant	NO_2	NO	NO_X	Grav PM_{10} [+]
Number Very High [#]	0	-	-	0
Number High [#]	0	-	-	0
Number Moderate [#]	0	-	-	1
Number Low [#]	8740	-	-	365
Maximum 15-min mean	128.3 µg m^{-3}	238.1 µg m^{-3}	475.8 µg m^{-3}	- µg m^{-3}
Maximum hourly mean	108.6 µg m^{-3}	208.1 µg m^{-3}	412.1 µg m^{-3}	159.0 µg m^{-3}
Maximum running 8-hr mean	85.1 µg m^{-3}	121.7 µg m^{-3}	240.8 µg m^{-3}	82.7 µg m^{-3}
Maximum running 24-hr mean	63.5 µg m^{-3}	99.8 µg m^{-3}	203.0 µg m^{-3}	54.7 µg m^{-3}
Maximum daily mean	63.5 µg m^{-3}	72.8 µg m^{-3}	175.2 µg m^{-3}	54.2 µg m^{-3}
Average	24.9 µg m^{-3}	15.0 µg m^{-3}	47.9 µg m^{-3}	14.6 µg m^{-3}
Data capture	99.5 %	99.5 %	99.5 %	99.6 %

[#] Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
[+] Gravimetric PM_{10} as measured by a Smart Heated BAM instrument using 0.96618 gravimetric factor
Mass units for the gases are at 20'C and 1013mb
NO_X mass units are NO_X as NO_2 µg m^{-3}

Air Quality Exceedances

Pollutant	Air Quality (England) Regulations 2000 & (Amendment) Regulations 2002	Max Conc	Number	Days	Allowed	Exceeded
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	24.9 µg m^{-3}	0	-	-	No
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	108.6 µg m^{-3}	0	0	18 hours	No
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	14.6 µg m^{-3}	0	-	-	No
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	54.2 µg m^{-3}	1	1	35 days	No

Air Quality Report

WYCHBOLD 2024

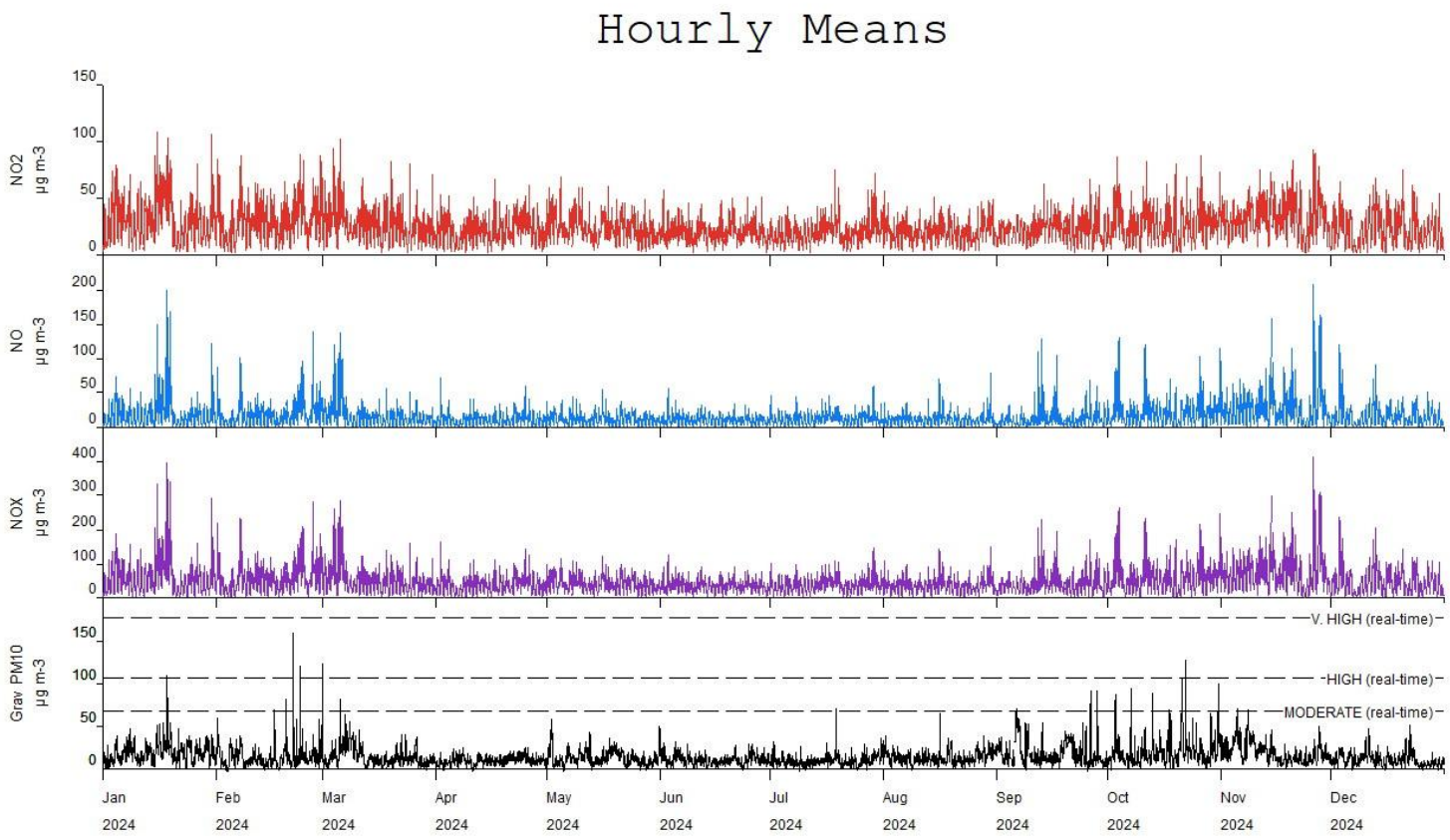
Monthly Data Captures %

Pollutant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nitrogen Dioxide	99.5	99.7	99.7	99.9	99.5	99.0	99.9	99.5	98.5	99.5	99.7	99.7
Grav PM_{10}	99.6	99.1	99.9	100.0	99.9	99.4	99.9	99.7	98.2	100.0	100.0	100.0

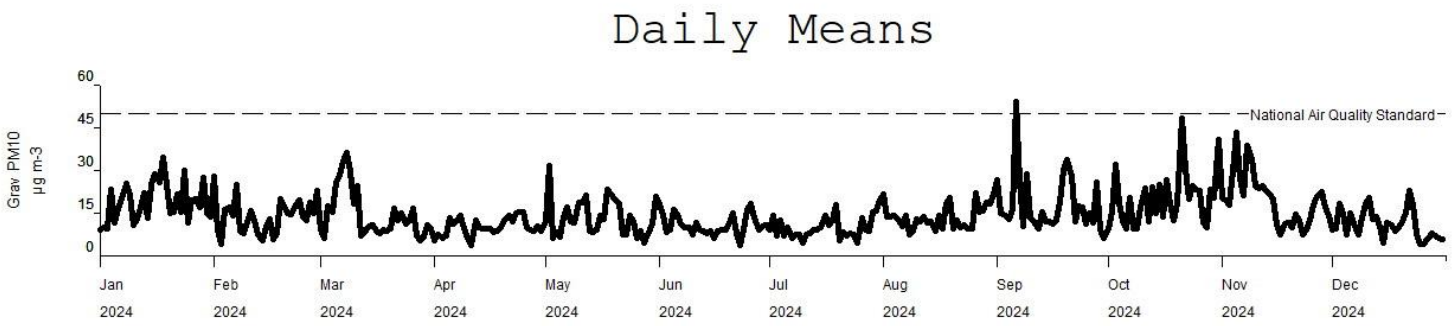
Monthly Means

Pollutant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nitrogen Dioxide µg m^{-3}	31.7	29.6	26.1	21.3	24.0	20.2	21.0	20.3	22.4	26.7	32.5	23.2
Grav PM_{10} µg m^{-3}	19.0	14.2	14.6	10.4	13.5	11.0	10.1	13.8	18.1	20.1	19.7	11.3

Air Quality Report
WYCHBOLD 2024



Air Quality Report
WYCHBOLD 2024



Air Quality Report

Wychbold during 2024

Nitrogen Dioxide threshold 40 µg m^{-3}

January 2024							February 2024							March 2024							April 2024						
1	2	3	4	5	6	7				1	2	3	4					1	2	3	1	2	3	4	5	6	7
8	9	10	11	12	13	14	5	6	7	8	9	10	11	4	5	6	7	8	9	10	8	9	10	11	12	13	14
15	16	17	18	19	20	21	12	13	14	15	16	17	18	11	12	13	14	15	16	17	15	16	17	18	19	20	21
22	23	24	25	26	27	28	19	20	21	22	23	24	25	18	19	20	21	22	23	24	22	23	24	25	26	27	28
29	30	31					26	27	28	29				25	26	27	28	29	30	31	29	30					
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

May 2024							June 2024							July 2024							August 2024						
		1	2	3	4	5						1	2	1	2	3	4	5	6	7				1	2	3	4
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31					26	27	28	29	30	31	
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

September 2024							October 2024							November 2024							December 2024						
						1		1	2	3	4	5	6					1	2	3							1
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
30																					30	31					
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

65 40 0

Nitrogen Dioxide Daily Averages Maximum was 63.5 µg m^{-3} on 18th January 2024

AQDM Air Quality Data Management

Air Quality Data Management (AQDM)
23rd January 2025

Air Quality Report

Wychbold during 2024

PM_{10} Particulate Matter threshold 50 µg m^{-3}

January 2024							February 2024							March 2024							April 2024								60
1	2	3	4	5	6	7				1	2	3	4					1	2	3	1	2	3	4	5	6	7		
8	9	10	11	12	13	14	5	6	7	8	9	10	11	4	5	6	7	8	9	10	8	9	10	11	12	13	14		
15	16	17	18	19	20	21	12	13	14	15	16	17	18	11	12	13	14	15	16	17	15	16	17	18	19	20	21		50
22	23	24	25	26	27	28	19	20	21	22	23	24	25	18	19	20	21	22	23	24	22	23	24	25	26	27	28		
29	30	31					26	27	28	29				25	26	27	28	29	30	31	29	30							
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S		0

May 2024							June 2024							July 2024							August 2024						
		1	2	3	4	5						1	2	1	2	3	4	5	6	7				1	2	3	4
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31					26	27	28	29	30	31	
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

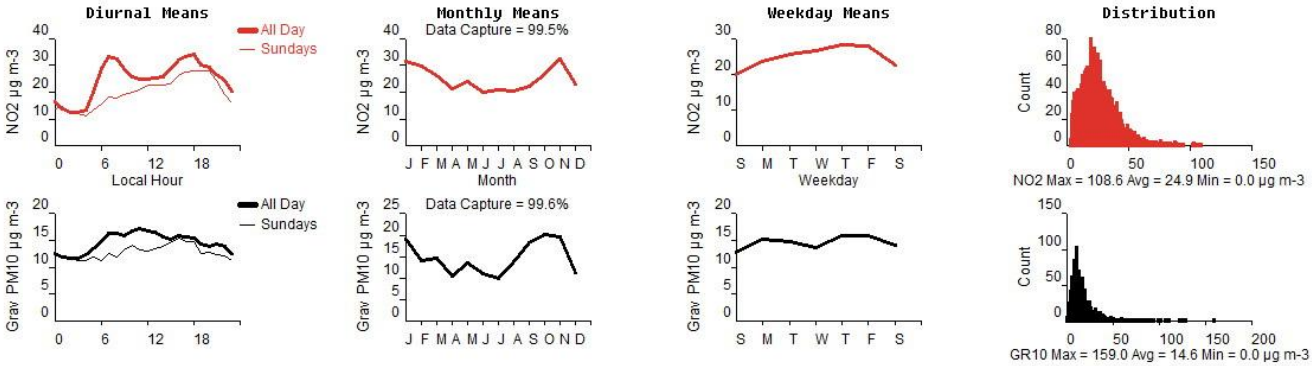
September 2024							October 2024							November 2024							December 2024						
						1		1	2	3	4	5	6					1	2	3							1
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
30																					30	31					
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

PM_{10} Particulate Matter Daily Averages Maximum was 54.2 µg m^{-3} on 6th September 2024

AQDM
Air Quality Data Management

Air Quality Data Management (AQDM)
23rd January 2025

Air Quality Report
WYCHBOLD 2024



Wychbold Air Quality Report produced by:
Geoff Broughton
Air Quality Data Management (AQDM)
Tel: 01235 559761
Geoff.Broughton@aqdm.co.uk
http://www.aqdm.co.uk
http://uk.linkedin.com/pub/geoff-broughton/22/187/87/
http://www.UKAirQuality.net

Appendix G: Low Cost Sensor Monitoring Report

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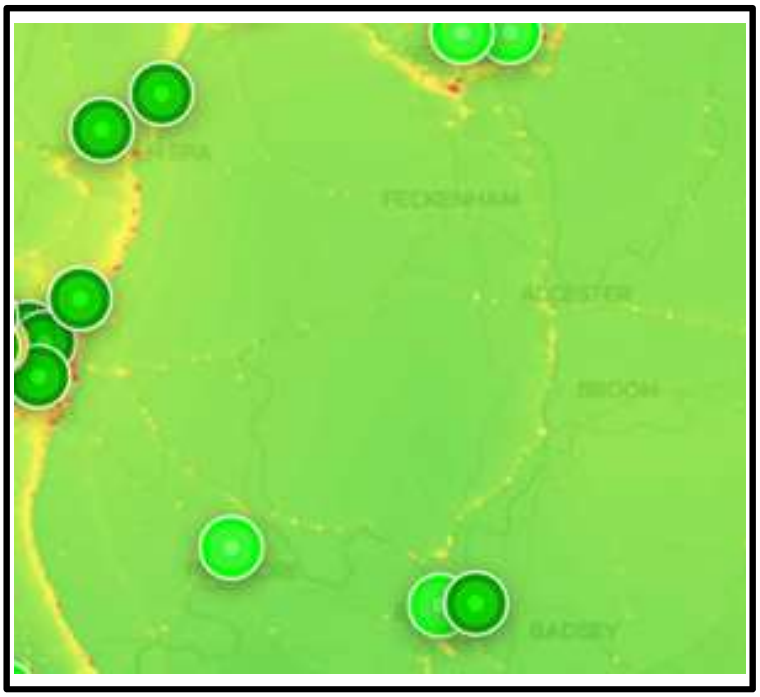
Supporting and protecting you

Low-Cost Air Quality Sensors Measurements 2024: Wychavon



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.

Apple Tree Road - Pershore

Worcestershire Regulatory Services
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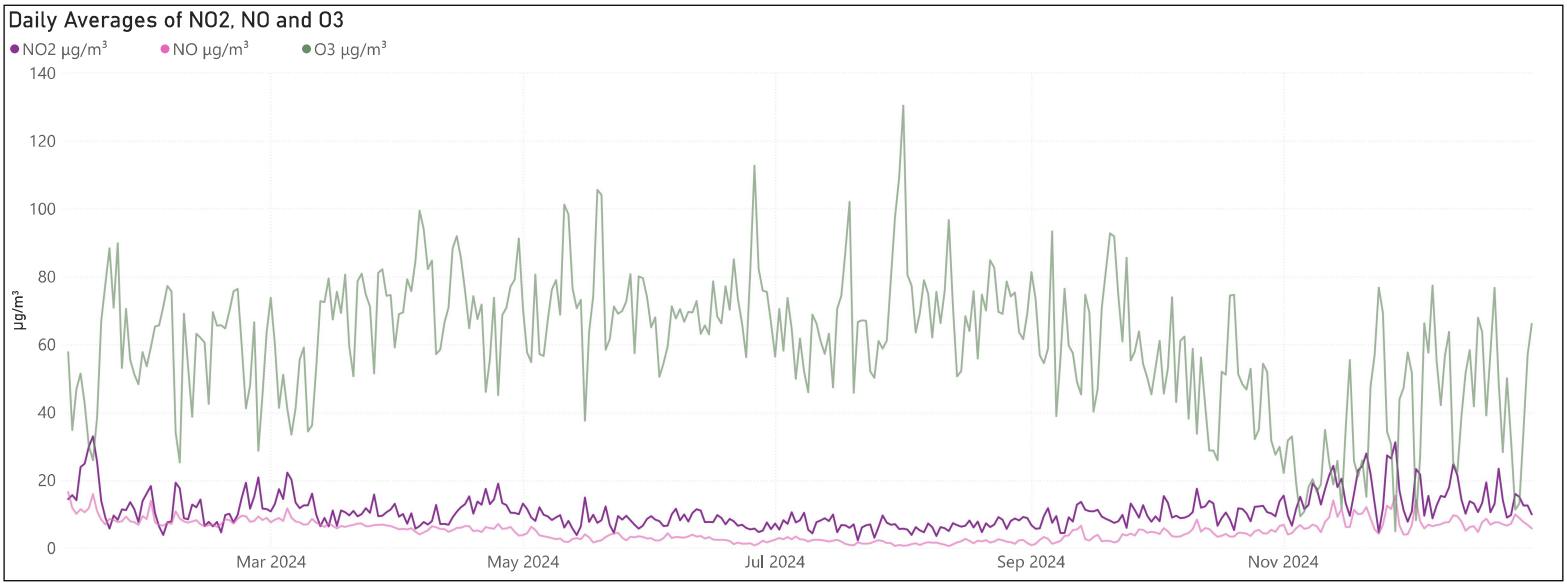

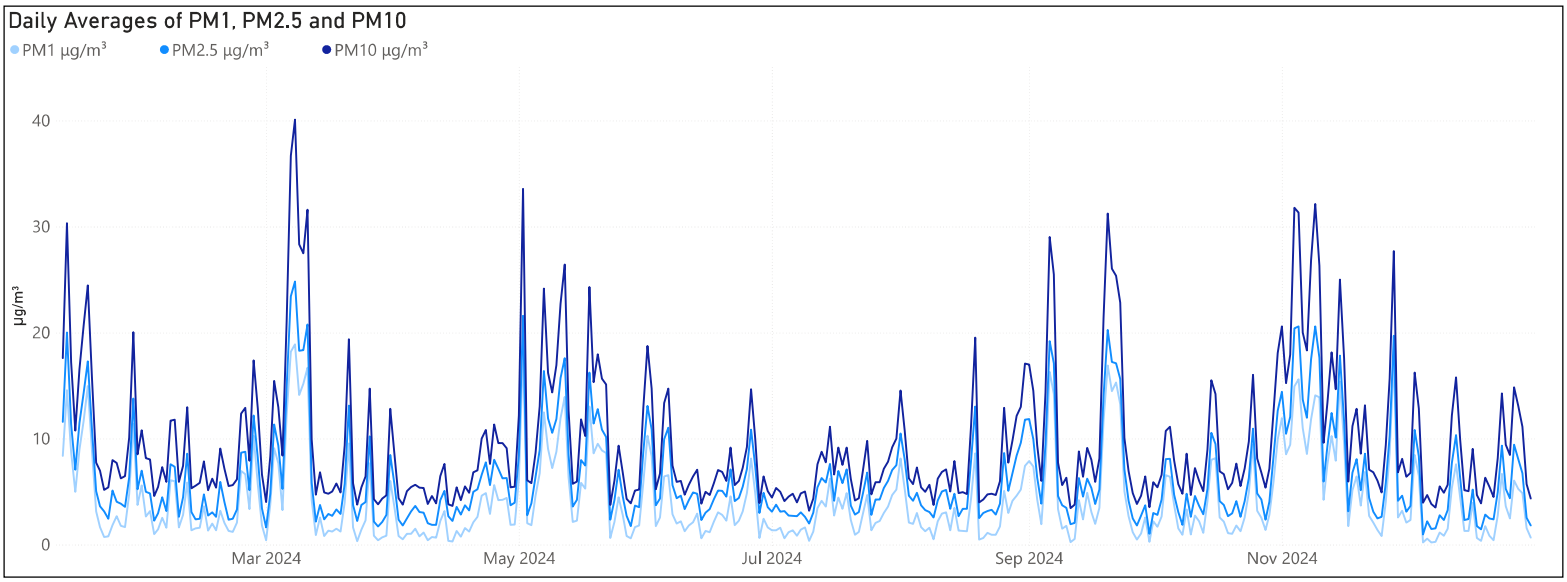

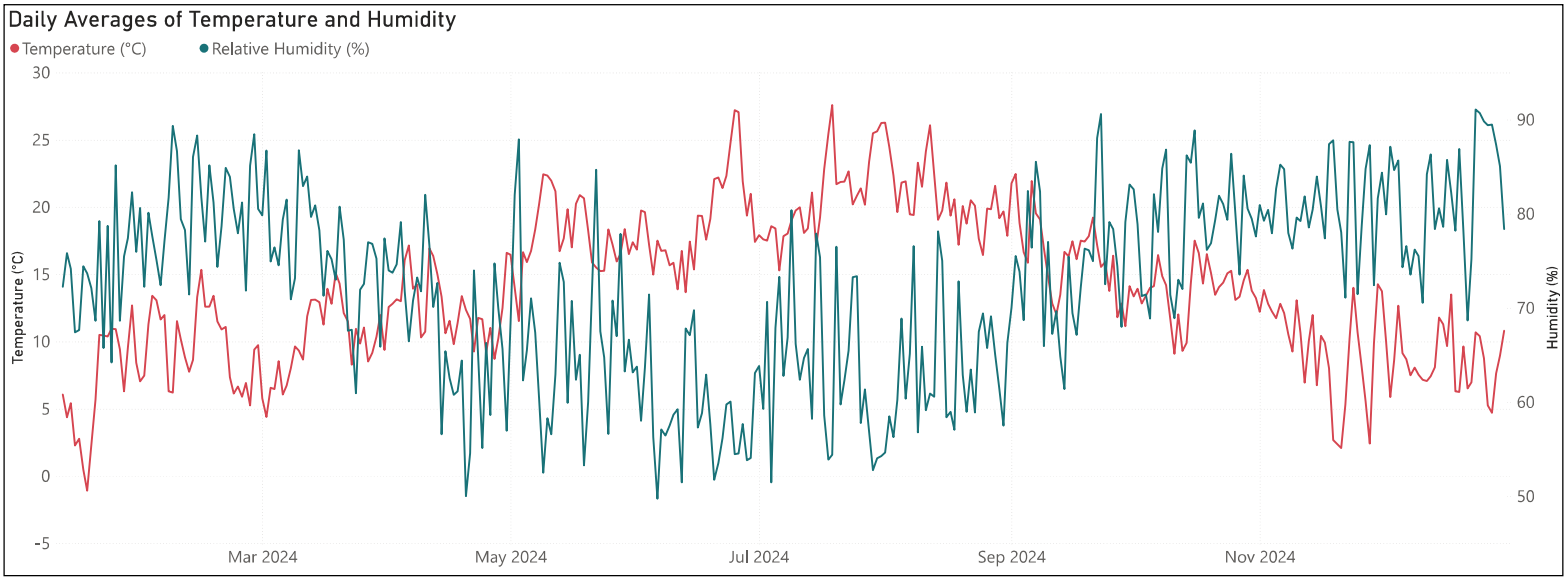

Yearly Averages

10.86 Average NO2 µg/m³	**5.26** Average NO µg/m³	**60.28** Average O3 µg/m³	**14.06** Average Temperature (°C)
4.27 Average PM1 µg/m³	**6.36** Average PM2.5 µg/m³	**9.77** Average PM10 µg/m³	**72.16** Average Relative Humidity (%)

Offenham Road - Evesham

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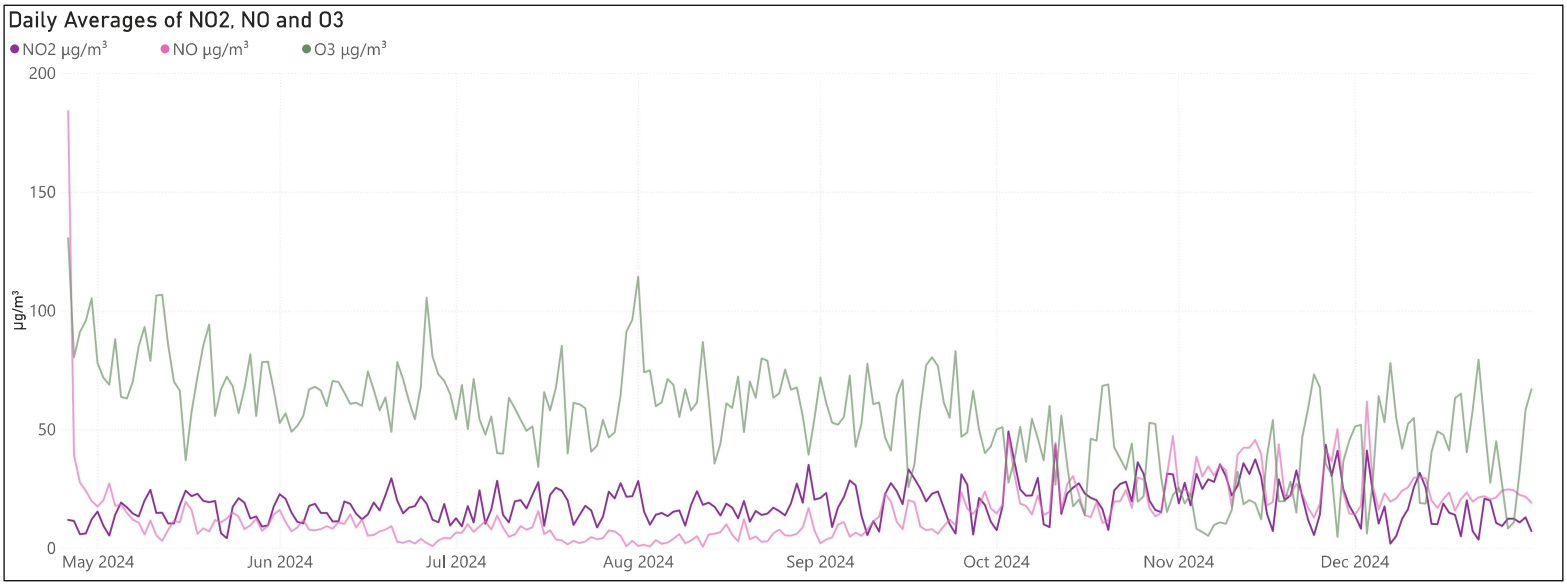
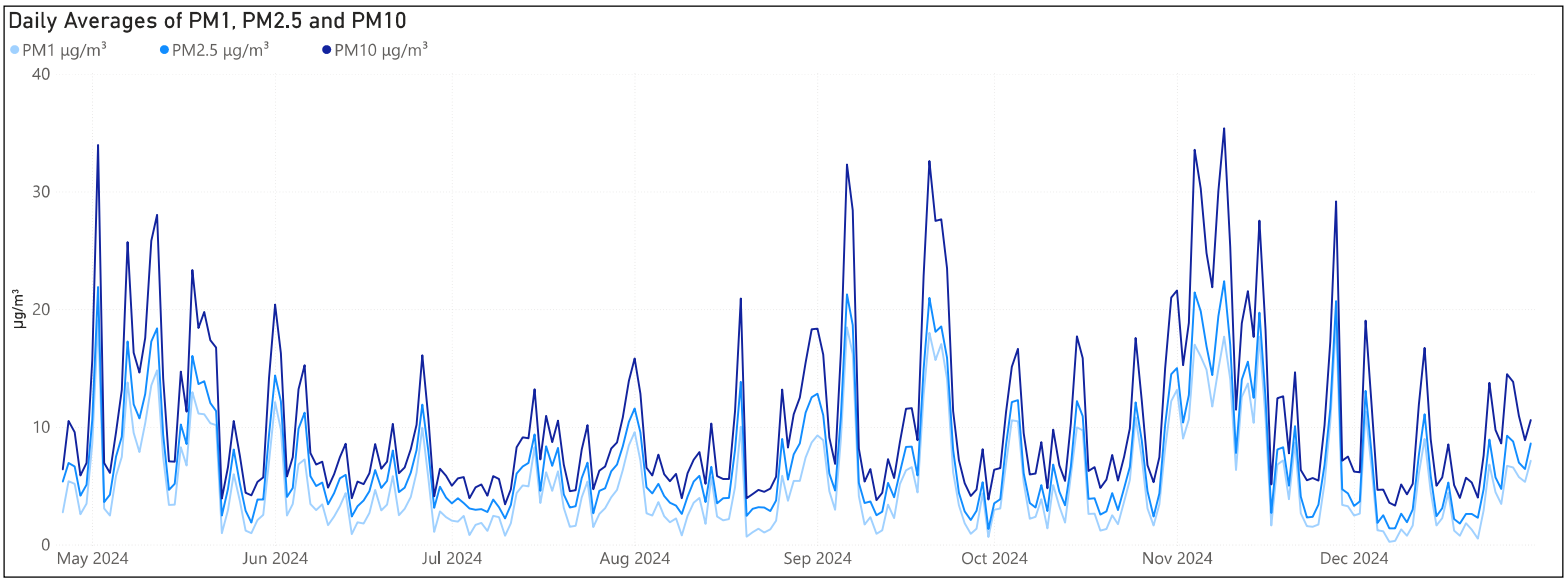
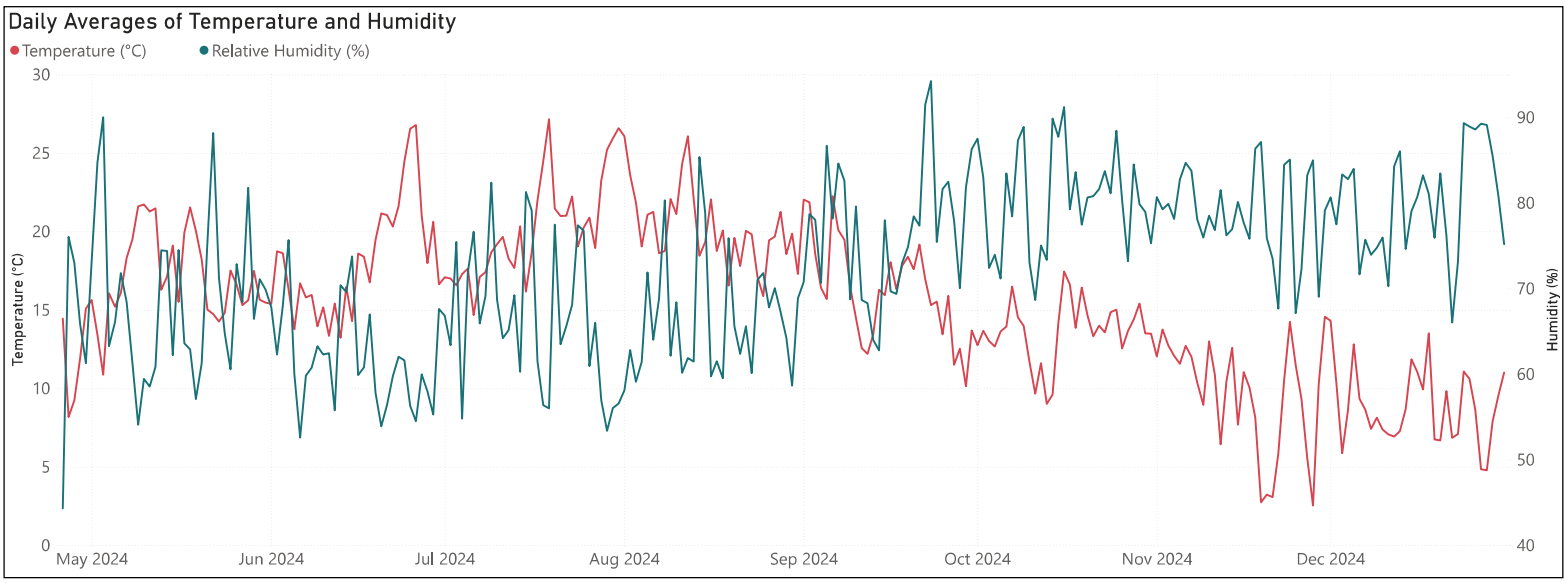




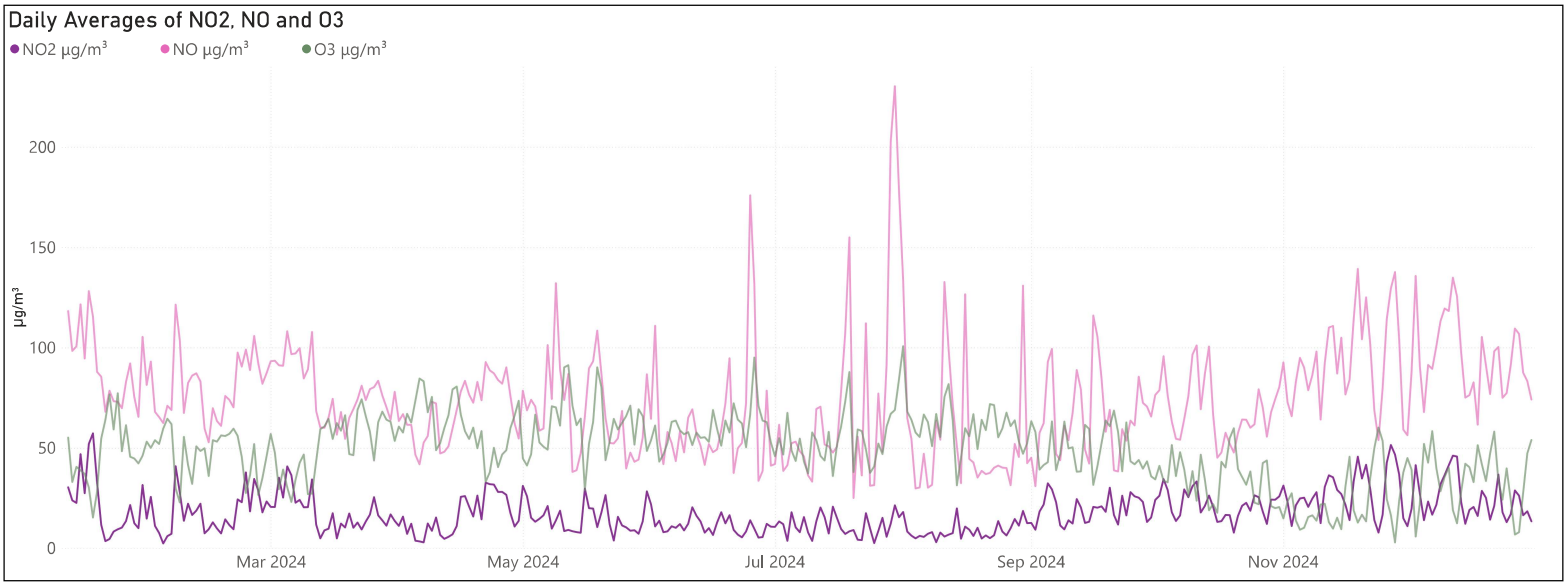


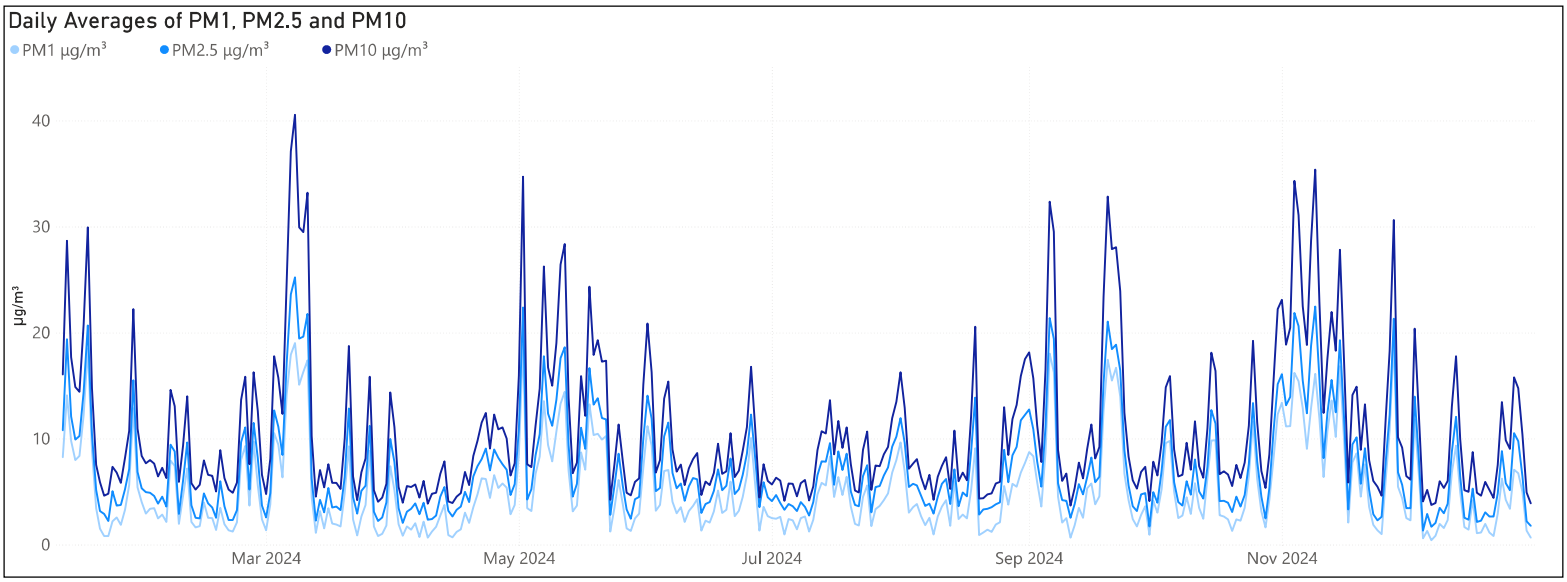
Yearly Averages

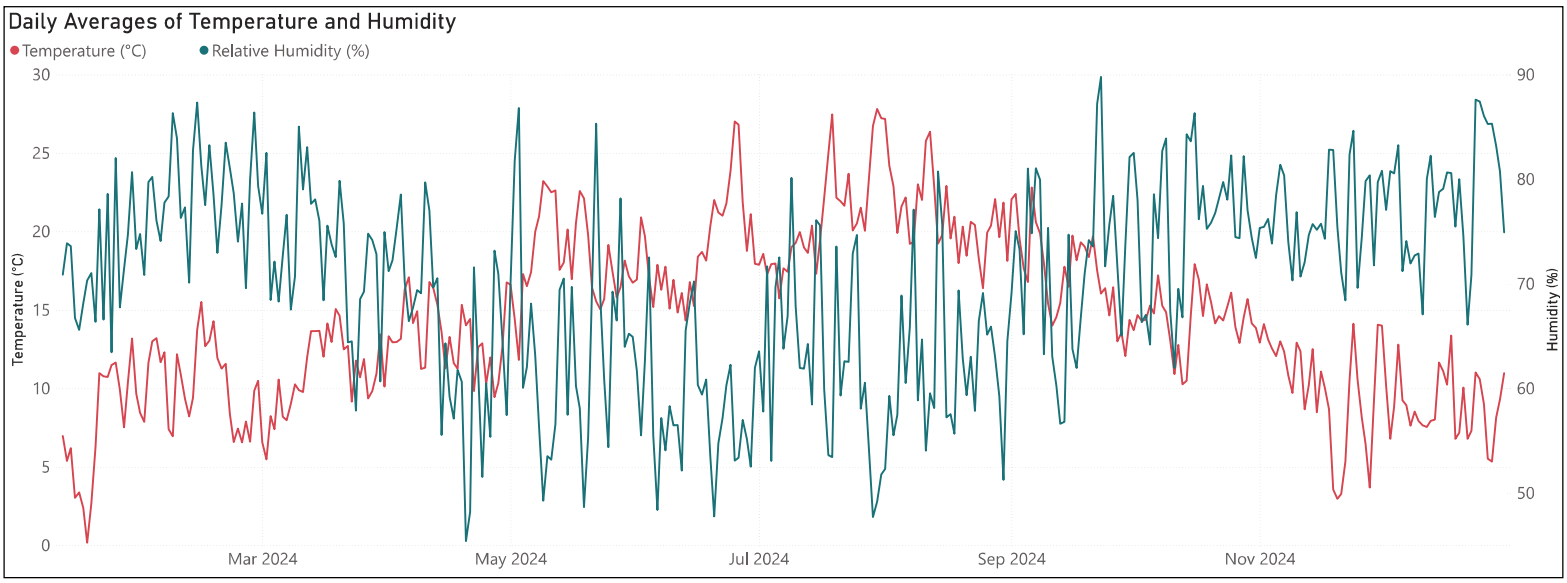
18.74 Average NO2 µg/m³	**15.42** Average NO µg/m³	**54.70** Average O3 µg/m³	**15.46** Average Temperature (°C)
5.42 Average PM1 µg/m³	**7.19** Average PM2.5 µg/m³	**10.65** Average PM10 µg/m³	**72.34** Average Relative Humidity (%)

Swan Lane - Evesham

Worcestershire Regulatory Services
Supporting and protecting you





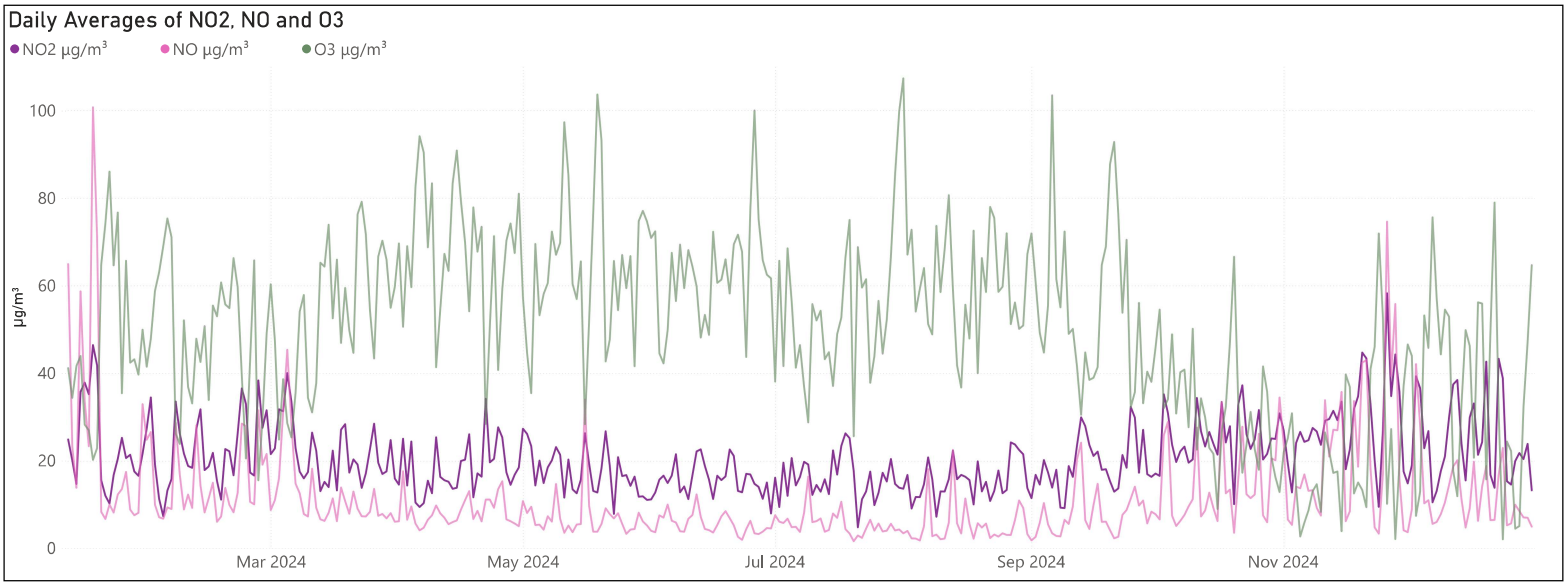


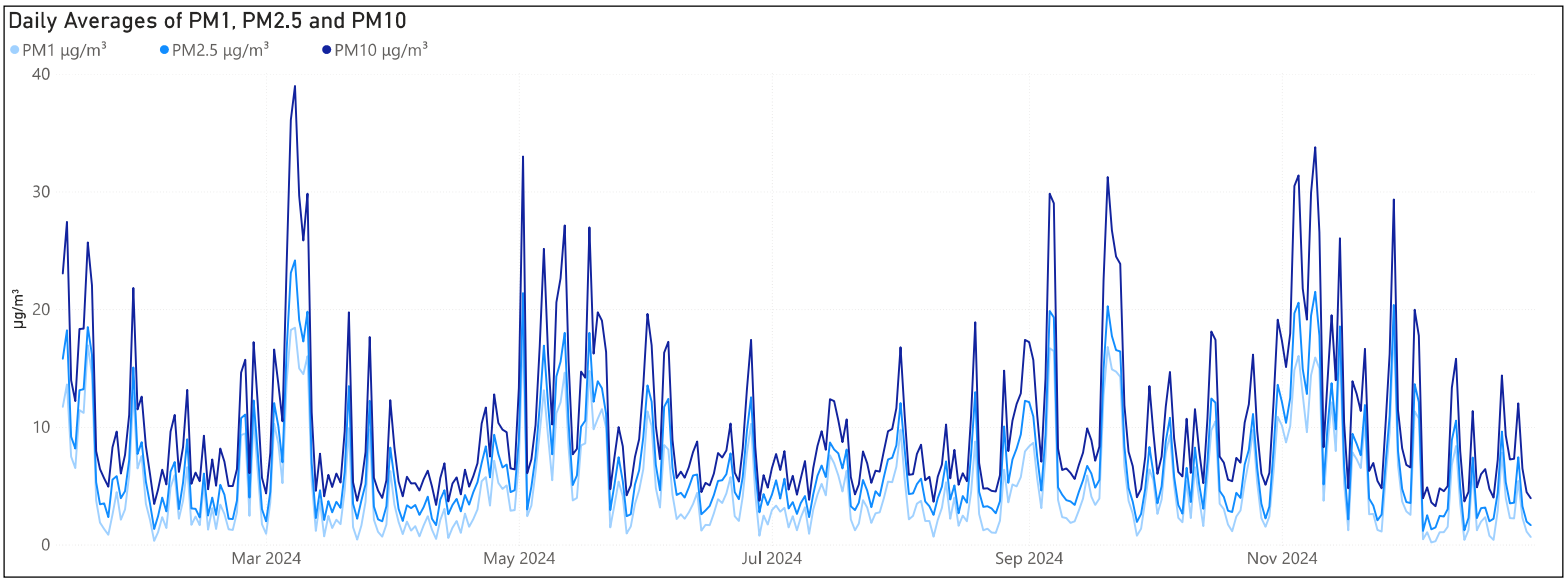
Yearly Averages

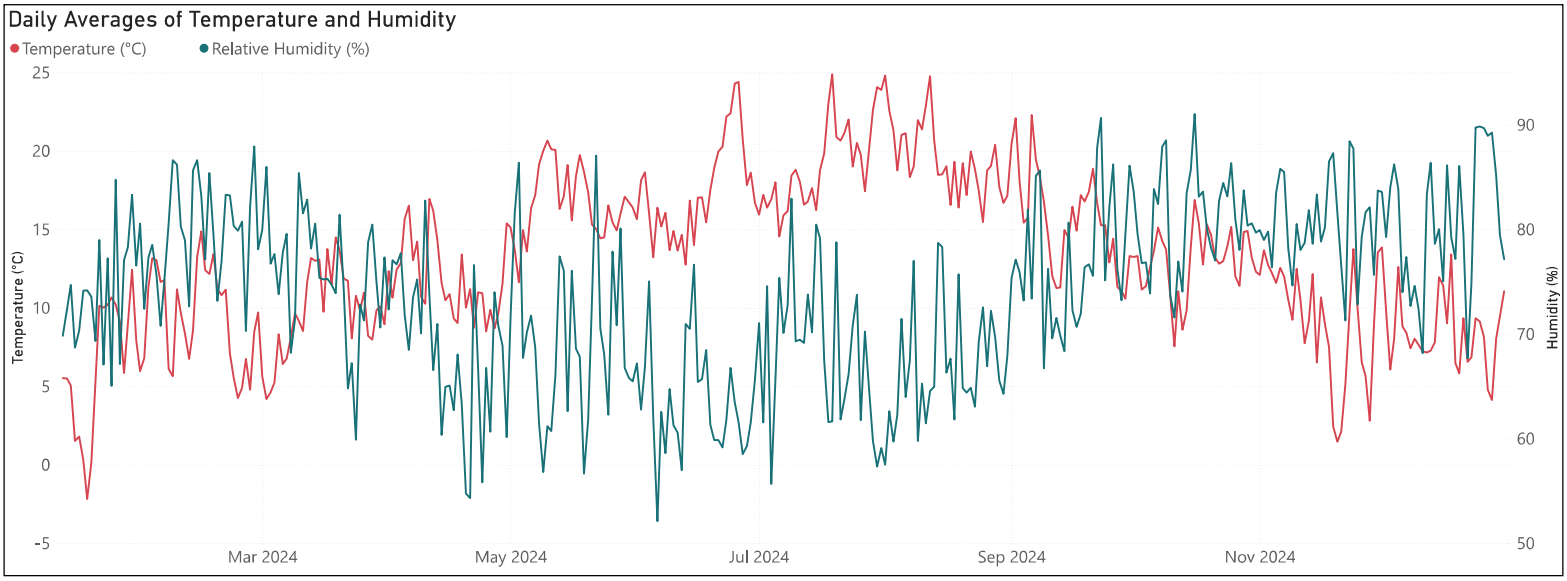
17.71 Average NO2 µg/m³	74.80 Average NO µg/m³	48.87 Average O3 µg/m³	14.57 Average Temperature (°C)
5.30 Average PM1 µg/m³	7.34 Average PM2.5 µg/m³	10.88 Average PM10 µg/m³	69.85 Average Relative Humidity (%)

The Furlong - Droitwitch

Worcestershire Regulatory Services
Supporting and protecting you





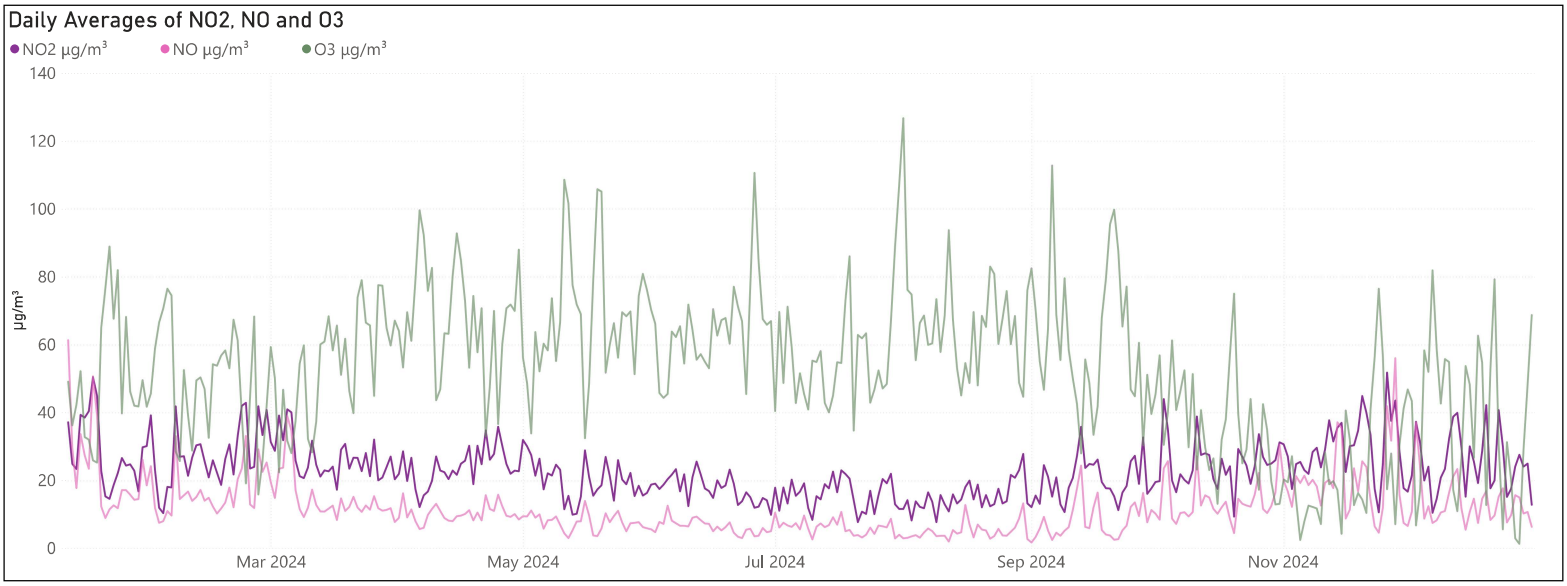


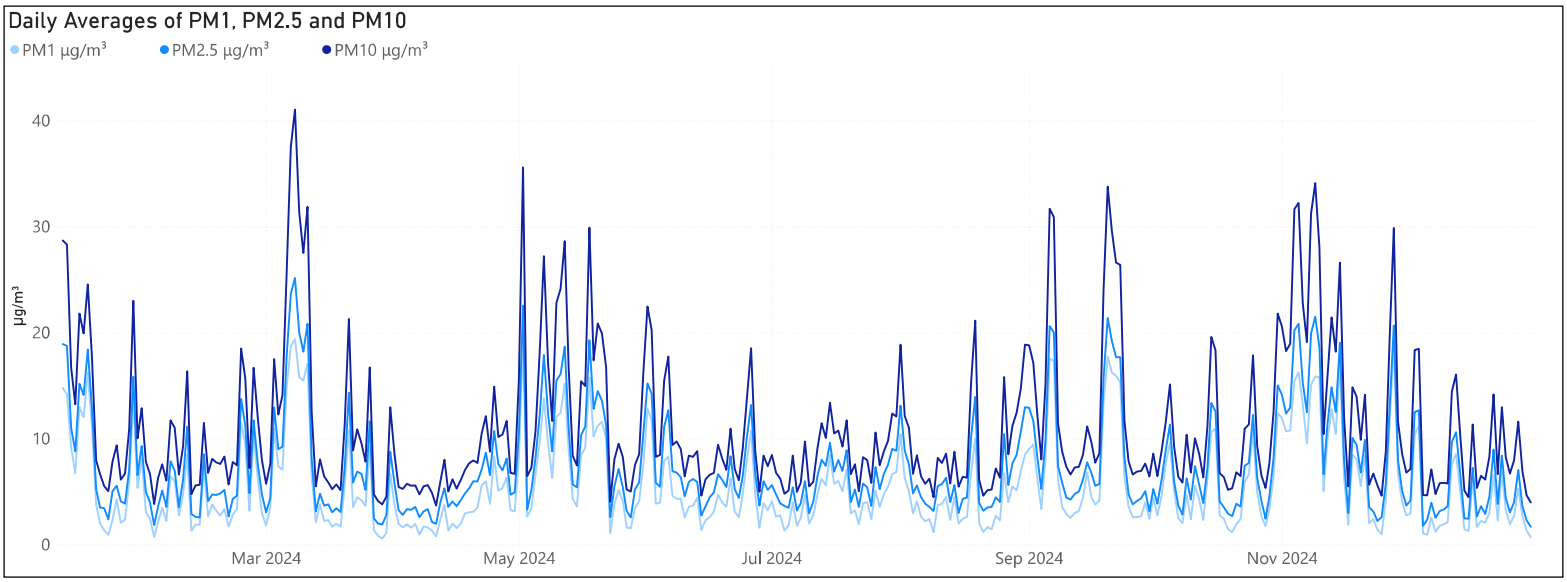
Yearly Averages

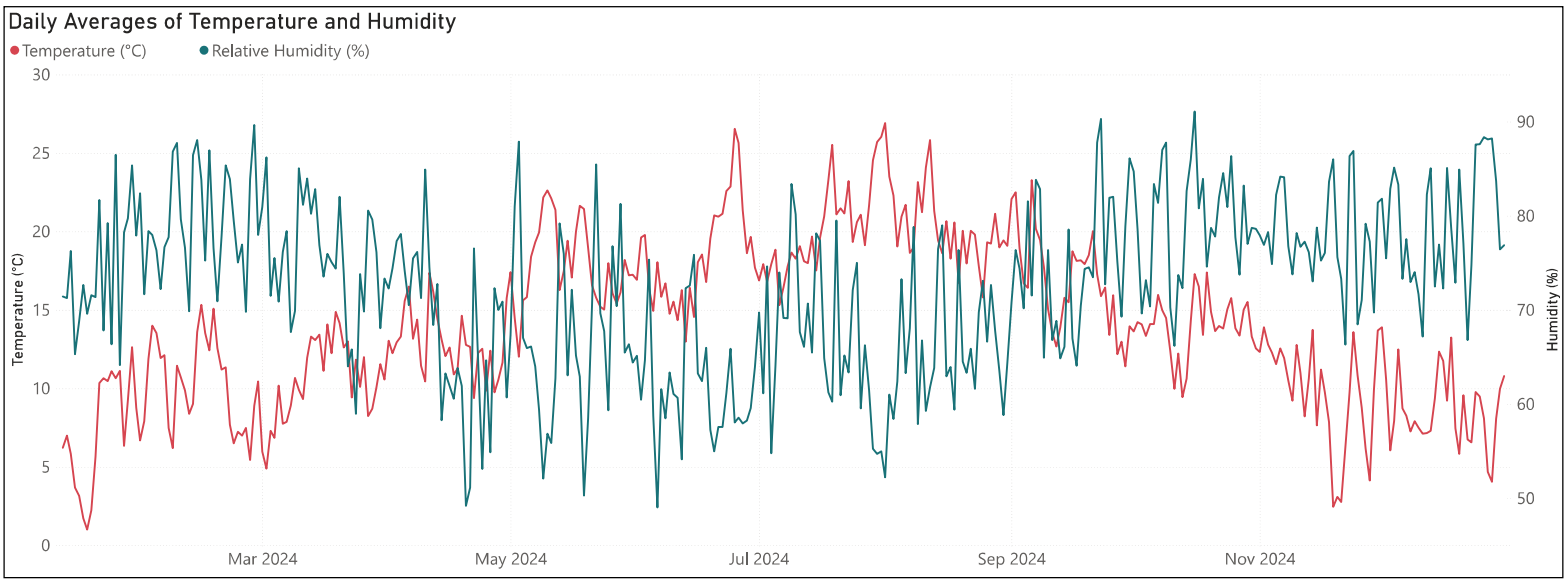
20.63 Average NO2 µg/m³	**11.35** Average NO µg/m³	**50.51** Average O3 µg/m³	**13.27** Average Temperature (°C)
5.09 Average PM1 µg/m³	**6.87** Average PM2.5 µg/m³	**10.40** Average PM10 µg/m³	**73.79** Average Relative Humidity (%)

Worcester Road - Wychbold

Worcestershire Regulatory Services
Supporting and protecting you







Yearly Averages

22.77 Average NO2 µg/m³	**11.77** Average NO µg/m³	**53.06** Average O3 µg/m³	**14.13** Average Temperature (°C)
5.58 Average PM1 µg/m³	**7.46** Average PM2.5 µg/m³	**11.27** Average PM10 µg/m³	**72.35** 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
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.
- Worcestershire Regulatory Services (2024) Air Quality Annual Status Report for Wychavon District Council.
- UK-AIR DEFRA background Mapping.