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 Environmental Health Department of Cherwell District Council with the support and agreement of the following officers and departments:

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This ASR has been approved by:

The Cherwell District Council Scrutiny Committee

Oxfordshire County Council

This ASR has been signed off by a Director of Public Health.

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Executive Summary: Air Quality in Our Area

Air Quality in Cherwell

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.

Of these key pollutants only Nitrogen Dioxide (NO_2) is monitored by Cherwell District Council.

Cherwell District Council has identified two areas where air quality has not met national air quality objectives for NO_2. The locations of these four Air Quality Management Areas (AQMAs) can be found on our website at www.cherwell.gov.uk/airqualitymanagement. A full list of AQMAs across the country can be found at http://uk-air.defra.gov.uk/aqma/list. Our two AQMAs are in Banbury and in Bicester. These concentrations are largely related to road traffic emissions. Cherwell developed an Air Quality Action Plan (AQAP) in 2024 to replace the previous action plan from 2017. This can be found on our website at www.cherwell.gov.uk/airqualitymanagement.

Monitoring results across Cherwell continued the trend downwards, with all sites showing an average reduction of around 4 μg/m^3, which is a significant year on year decrease. The Bicester AQMA was once again below the DEFRA minimum safe exposure target. Monitoring results in 2024 showed background NO_2 concentrations falling significantly in comparison with the results from 2023, with a reduction of the measured district average background level from 11.0 μg/m^3 in 2023 to 9.1 μg/m^3 in 2024.

In AQMA No.1 (Hennef Way, Banbury) nitrogen dioxide levels, having remained somewhat consistent in 2022 and 2023, showed a much larger reduction in 2024. The

annual mean objective for long-term exposure is still being exceeded, but for the fourth year in a row the distance-corrected concentrations are below 60 µg/m^3, which indicates that the short-term exposure limit is not likely to be exceeded. This has been the case since 2020.

In AQMA No.4 (King End/Queens Avenue, Bicester) the annual mean nitrogen dioxide levels showed a significant reduction from 28.4 µg/m^3 in 2023 to 23.2 µg/m^3 in 2024.

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.

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.

As previously mentioned, road traffic pollution is the predominant cause of air pollution in Cherwell. There are various road infrastructure projects currently underway which seek to address this:

- Movement and place strategy
  - Transport measures to reduce air quality issues will be a key part of area transport strategies within LTCP Area Travel Plans.
  - The feasibility of a Park & Ride facility in Banbury to tackle the severe air quality issues on Hennef Way.

- o The possibility of north-facing slip roads on the M40 to ease the traffic load on junction 11 and Hennef Way.

Electric vehicle charging points continue to be installed around the district, including facilities in council-owned car parks.

The Oxfordshire Air quality website (http://oxonair.uk), launched in the final quarter of 2023 and funded by the DEFRA Air Quality Grant scheme, has facilitated more joined-up communications from the districts and county council in Oxfordshire, and continues to gain significant traffic.

Oxfordshire County Council carried out a targeted school engagement project with Banbury Harriers Academy in which on site monitoring was used to drive engagement on air quality issues with pupils and parents.

Oxfordshire County Council, in conjunction with all the districts in the Oxfordshire, are working in partnership with researchers at the University of Birmingham and Cambridge Environmental Research Consultants to develop a new 'Air Quality Lifecourse Assessment Tool' for the county. The tool will use modelled air quality data to provide estimates of health and economic impacts of air pollution at Middle Super Output Area, including contribution to new cases of asthma, coronary heart disease, stroke, lung cancer and premature mortality among those living in Oxfordshire. The tool will also be extended to assess the benefits of policies which may be introduced (including net zero policies) to understand how these can reduce NHS pressures and improve health of those living in Oxfordshire. The project is expected to be completed by the end of summer 2025.

Conclusions and Priorities

The monitoring data obtained in 2024 shows exceedances of the annual mean Nitrogen Dioxide objective in one of the two AQMAs in Cherwell district and this should therefore be retained. This exceedance is associated with road traffic emissions. The other AQMA, in Bicester, is below the annual mean objective for the fifth year running, as such, Cherwell will be looking to revoke the AQMA in 2025. The previous AQMAs in Kidlington and Banbury town centre were revoked in 2024.

The overall trend for the district has been year-on-year reductions on pollutants, and this continued in 2024.

Significant development is planned for the district, including further industrial developments around the AQMA at Hennef Way and commercial development to the south of Bicester

near the Kings End/Queens Avenue AQMA. It is therefore recommended that measures in the AQAP relating to development control are considered a priority to ensure potential further adverse impacts are adequately monitored, measured and mitigated at an early stage. Further mitigation measures are planned using money obtained from damage cost calculations associated with some of these developments.

Communication and awareness raising activities relating to air quality actions are continuing, including communications through the Oxfordshire air quality website oxonair.uk, which has allowed for a more combined approach with the other districts and county.

As the district's highways authority, Oxfordshire County Council are the main air quality partner of CDC and contribute a large portion of the actions in the AQAP for both of Cherwell's AQMAs. Cherwell also maintains open lines of communication with the local Parish Council's to identify any potential air quality concerns in the district.

Oxfordshire County Council are continuing work in their commitment to improve local air quality as a part of the County Council Air Quality Strategy which supports local councils in their statutory duties through initiatives and schemes to improve air quality.

Potential lack of central government funding to help local authorities implementing future air quality measures, especially the fact that the air quality minister decided to withhold DEFRA's Air Quality grant 2023/2024 (Around £6m in funding promised to local authorities to help tackle air pollution) is a subject of continuing concern for Cherwell.

How to get Involved

Cherwell District Council has had some success securing funds from developers through the planning process that can be used to implement further mitigation measures which will help to further reduce pollution levels at AQMAs.

If you have thoughts, comments, or suggestions on any measures within these tables, please contact us using the details at the front of this report. If you would like to learn more about air quality and how we monitor, there is information at http://oxonair.uk or www.cherwell.gov.uk/airqualitymanagement

The national clean air day website www.cleanairday.org.uk/reduce-air-pollution has advice on how to reduce air pollution. There are also free toolkits available to download for schools, workplaces, communities and healthcare organisations at www.cleanairday.org.uk/Pages/Category/free-resources

A large proportion of road vehicles are private car users running internal combustion engines that burn either petrol or diesel. In line with the Local Transport and Connectivity plan, if you can reduce car journeys by using alternatives such as walking, cycling, public transport or sharing car journeys, this will help to improve air quality. This is especially important in areas such as school or hospital drop off points, where the likelihood of exposure is higher for vulnerable people such as children, elderly or those with chronic conditions.

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1   Local Air Quality Management

This report provides an overview of air quality in Cherwell 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 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 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 Cherwell 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 Cherwell District Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Cherwell. 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

Cherwell District Council currently does not have any declared AQMAs. A local Air Quality Strategy is <in place / under development> to prevent and reduce polluting activities. This can be found on our website at www.cherwell.gov.uk/airqualitymanagement.

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
AQMA No. 1	17th January 2011	NO2 Annual Mean and 1 Hour Mean	Three residential property facades backing onto Hennef Way between roundabouts with Ermont Way and Concorde Avenue.	YES	86.4 µg/m3	54.0 µg/m3	Not compliant	Cherwell District Council Air Quality Action Plan 2024	Visit the Cherwell Air Quality Management Page
AQMA No. 4	9th October 2015	NO2 Annual Mean	The North Street / Field Street mini roundabout, through Queens Avenue to the mini roundabout on Kings End, including St Johns.	YES	46.9 µg/m3	23.2 µg/m3	5 years	Cherwell District Council Air Quality Action Plan 2024	Visit the Cherwell Air Quality Management Page

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

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

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

Defra's appraisal of last year's ASR concluded:

1. The Council have included a detailed section responding to last year's appraisal comments including where CDC have made progress. This demonstrates The Councils dedication to improving air quality.

2. The Council have also reviewed the AQAP, to ensure that any listed actions are still relevant and appropriate within the area. They have also ranked the actions by priority. This is commended.

3. The Council have included a detailed discussion on $PM_{2.5}$ measures including, measures to reduce emissions across CDC and comparison to Defra linked background emissions as well as links to the public health outcomes framework and fraction of mortality attributable to emissions of $PM_{2.5}$ comparisons to the regional fraction, and to England as a whole. This should continue in future reports.

4. The Council has several AQMA's which should be considered for revocation, AQMA 2 and AQMA 4 both achieved 4 years of compliance with the relevant AQO and should be considered for revocation. Which The Council aims to do within the next reporting year.

   AQMAs 2 and 3 were revoked in 2024 and CDC plans to revoke AQMA 4 this year.

5. The chapter "Diffusion tube annualisation" is missing. If no annualisation was required (as it was the case for 2023 data) the prescribed text from the blue box should be included in future reports.

   No annualization was required either this year or last year, the correct information was added into last year's report before publication and is also included in this year's report.

6. Chapter "Automatic monitoring sites" is missing. It is recommended to include a sentence to confirm that the Council does not undertake any automatic monitoring for clarity.

Cherwell does not have any automated monitoring sites and has commented on this in this year's report.

7. The national bias adjustment factor has been selected; it would be beneficial if the council provided details of how they calculated this by including a copy of the most recent version of the bias adjustment factor spreadsheet in future reports.

   This has been included in this year's report.

8. There is no map is provided with the monitoring locations outside any AQMAs. Maps showing the diffusion tube locations outside any AQMAs should be included in future reports.

   A full interactive map of diffusion tube locations throughout the district can be found on the Oxfordshire air quality website http://oxonair.uk

Cherwell District Council has taken forward several direct measures during the current reporting year of 2025 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2, with the type of measure and the progress Cherwell District Council have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- County-wide AQ public health impact modelling project with Birmingham University.
- The revocation of three AQMAs in Banbury, Bicester, and Kidlington.
- The OCC school engagement project with Banbury Harriers Academy
- Further promotion of local engagement through the Oxfordshire air quality website, OxonAir (http://oxonair.uk).
- The Active Oxfordshire Community Outreach Travel (COAT) programme was commissioned by OCC to support local residents in priority neighbourhoods in Banbury and Bicester to build long lasting, healthy alternatives to traditional travel.

In the coming year Cherwell District Council hopes to investigate whether smoke control areas should be declared at any locations within the district, and will use the AQLAT modelling tool to help steer this.

Cherwell District Council's priorities for the coming year are to continue to work closely with the rest of the district councils, county council, and public health to devise more joined-up ways to tackle local air quality.

Cherwell District Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Council Council, including Healthy Place Shaping and County Highways.
- Neighbouring district councils
- Public Health

The principal challenges and barriers to implementation that Cherwell District Council anticipates facing are the topography of Banbury creating challenges for residents in choosing active travel, the limited number of actions possible to improve air quality in AQMA No.1 due to its status as the entry point into the district from the M40 motorway.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Cherwell District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMA No. 1 – Hennef Way.

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
G.1	Explore the Local Plan including Low Emission Vehicle uptake measures being incorporated into new developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	2023/24	CDC	Met within existing budgets	Funded	Met withing staffing resource	Planning	NO$_2$	Incorporation of EV charging network within new development. Number of Charging Points. Number of electric vehicles on the road.	Local Plan Part 2, which was being developed in line with the OCC local plan 2050 is now defunct. A new plan will consider measures to encourage low emission vehicle take-up through development management policy.	
G.2	All major developments to include Emission statements and mitigation strategies within an appropriate air quality assessment submitted at the application stage.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	Ongoing	CDC	Met within existing budgets	Funded	Met withing staffing resource	Planning	NO$_2$	Improved mitigation strategies for new development.	Emission statements and mitigation strategies will be required in air quality assessments. To be included in development management policies as part of development of a new local planning policy.	
G.3	Damage cost calculations to be included in air quality assessments to show the financial impact of developments.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	2023/24	CDC	Met within existing budgets	Funded	Met withing staffing resource	Planning	NO$_2$	Improved mitigation strategies for new development.	Damage Cost calculations will be required in air quality assessments. To be included in development management policies as part of planning policy	
G.4	Air Quality actions to be included in the LTCP Movement and Place Strategies	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2024	OCC	Met within existing budgets	Not yet funded	£10k - £50k	Planning	NO$_2$	Number of passengers using public transport, active travel, and electric vehicles.	The LTCP Movement and Place Strategies (previously named Area Travel Plans) includes transport Actions and Objectives that could lead to air quality benefits. The council recruited a Movement and Place Strategy Team in September 2024; MAPs for the Science Vale, Bicester and Banbury have commenced with engagement with local members expected in Spring. The MAPs will deliver a clear set of Actions and Objectives for each defined area, in accordance with LTCP.	
G.5	Low emission plant, vehicle, delivery and fleet requirements to be included in sustainable	Policy Guidance and Development Control	Sustainable procurement guidance	2017	Ongoing	OCC	Met within existing budgets	Funded	£100k-500k	Implementation	NO$_2$	Composition of the council's fleet. Progress to be reviewed each year.	OCC to update as this develops.	

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
	procurement section of CDC procurement policy.													
G.6	Low emission plant, vehicle, delivery and fleet requirements to be included in procurement policy.	Policy Guidance and Development Control	Sustainable procurement guidance	2019	Ongoing	CDC	Met within existing budgets	Funded	£100k-500k	Implementation	NO$_2$	Composition of the council's fleet. Progress to be reviewed each year.	The council's first electric Ford Transit was delivered in 2025. Four more electric Transits are on order and they should all be delivered before March 2026. Around 20-25% of the council's total fleet will be electric by the end of March. This should rise to 30% of the fleet by March 2027 An external consultant report has been received to help guide our plans for decarbonisation.	
1.1	Banbury Park and Ride Bus service around M40 junction	Alternatives to private vehicle use	Bus based Park & Ride	2025-26	TBC	OCC	Met within existing budgets	Partially funded	£1 million - £10 million	Planning	NO$_2$	Passenger journeys on local bus services, traffic levels in the centre of Banbury and AQMA.	The feasibility of a Park and Ride needs to be part of a project to tackle the severe air quality issues on Hennef Way. This needs to consider sites to both the north and the south of the town. This development will require road improvements and traffics schemes to be considered through the area travel plan including north-facing slips on the M40. This will be covered in OCC's strategy work for Hennef Way in 2025/26 and within the wider Banbury Movement & Place Strategy (new title for the area travel plans).	
1.2	Lift share scheme	Alternatives to private vehicle use	Car & lift sharing schemes	2024	2026	OCC	Met within existing budgets	Not yet funded	Not yet determined	Planning	NO$_2$	Reduction in single occupancy driving in within the district.	Ongoing scheme that provides a platform, that people sign up to, to share car journeys regularly. There is one more year left on the Liftshare (now called Mobility Ways) contract, then OCC will re-tender the contract.	
1.3	North facing slips on M40	Promoting Travel Alternatives	UTC, congestion management, traffic reduction	2026	2030	OCC	Met within existing budgets	Not yet funded	>£10 million	Planning	NO$_2$	Number of vehicles passing through Hennef Way AQMA	Feasibility work has been completed. This will be picked up in the Hennef Way and Movement & Place Strategy and a way forward confirmed through these pieces of work..	
1.4	Improved public transport and active travel links to reduce north-south traffic using Hennef Way	Promoting Travel Alternatives	UTC, congestion management, traffic reduction	2024	2025	OCC	To be confirmed by OCC	Not yet funded	Not yet determined	Planning	NO$_2$	Number of vehicles travelling through Hennef Way AQMA	Delivery expected in 2025/26 for the Cherwell St Scheme. Consists of measures to improve bus journey times from the current George Street / Cherwell Street Junction, into the town centre, to the Cherwell Street / Bridge Street junction.	

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
1.5	Improved cycle routes on Overthorpe Way	Promoting Travel Alternatives	UTC, congestion management, traffic reduction	2024	2024	OCC	Met within existing budgets	Not yet funded	£1 million - £10 million	Planning	NO$_2$	Annual average concentration of NO2 in Hennef Way AQMA	Pre-feasibility report was completed in 2024, including concept designs and costings, which cost £50k of CAF funding. In April, the project will go into the bidding phase to go forward with full feasibility and design. Feasibility will take 6 months from when funding is approved.	
4.1	Bicester Park and Ride Bus service	Alternatives to private vehicle use	Bus based Park & Ride	2024	2026	OCC	Not yet funded	Not yet funded	£100k - £500k	Planning	NO$_2$	Traffic counts in Bicester. Number of bus passengers in Bicester.	"As part of the county wide OxLEVI project, Oxfordshire County Council plan to install EV chargers in Bicester Park and Ride. Additionally, the Movement and Place Strategies (MAPS) team were recruited in September 2024. They have been exploring options for Bicester which will include improvements for Bicester Park and ride. The MAPs will deliver a clear set of Actions and Objectives for each defined area, in accordance with LTCP. Some proposed measures in the MAPs for Bicester, specific to Bicester's Park & ride include: A41 bus priority to reduce journey times and improve the attractiveness of using the park & ride Changes to the park & ride access and egress to improve road safety for all users in line with Vision Zero. Enhancements to cycle parking and walking, wheeling & cycle connections Enhancement of facilities such as rest and toilet facilities, digital connectivity, links to long-distance coach services."	Annual survey shows that bus passenger numbers continue to increase. OCC is also considering an alternative fuel station when the park & ride expands. Expansion of the park and ride to include making it a mobility hub is in the planning stage.
4.2	Central corridor works in LTP	Traffic Management	Strategic highway improvements, re-prioritising road space away from cars, inc. access management, selective vehicle priority, bus priority, high vehicle occupancy lane	2024	2026	OCC	Not yet funded	Not yet funded	£100k - £500k	Planning	NO$_2$	Reduction in traffic through the centre of Bicester. Number of bus passengers.	For the Bicester central corridor OCC Full Council has just agreed £30k of s106 interest funding to be used towards an options appraisal / place shaping piece of work for this corridor. This will confirm if there are some short terms measures that could be put in place with held s106 funding.	Cycle route improved Middleton Stoney Road to centre. To be extended. Landscape improvements completed. A41 bus lane improvements proposed as part of local plan. Bicester South east link road.

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[1], 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.

The local indicators on the Public Health Outcomes website shows that in 2017 fine particulate matter in Oxfordshire was at a level of 9.8 µg/m^3, while 5.5% of mortality was associated with fine particulates in 2018, however it is important to note the comparative rurality of Cherwell in comparison to the south of Oxfordshire.

PM$_{2.5}$ is not monitored in Cherwell and the trans-boundary nature of these very fine particles limits the scope to control concentrations inside Cherwell. Concentrations can be determined using Defra PM$_{2.5}$ background maps. These, alongside developing measures to reduce PM$_{2.5}$ emissions within Cherwell will form our approach.

The current Defra background mapping resource was used to provide maximum background annual mean PM$_{2.5}$ concentrations within the Local Authority. This indicated that the level for 2023 sat at 8.61 µg/m^3. This is slightly high compared with the maximum background for the South of England, which is 7.33 µg/m^3. Higher resolution modelling has been undertaken in partnership with the other districts and Oxfordshire County Council. The modelling results show PM2.5 levels in Cherwell in 2023 to be 7.75 µg/m3. In 2035 the levels are expected to be 7.32 µg/m3 in compliance with the Environmental Targets for fine particulate matter (2023) for 2040.

Further inclusion of local air quality and PM$_{2.5}$ in Cherwell District Council Local Planning Policy can be developed and features in the Air Quality Action Plan.

Partnership working between Cherwell District Council and Oxfordshire County Council to include local air quality in the Joint Strategic Needs Assessment and the Local Transport Plan is already in place. The strengthening of these Public Health and Local Transport Authority partnerships is anticipated through the measures within the AQAP. In partnership

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

with the other districts and Oxfordshire County Council, Cherwell has acquired the Air Quality Lifecourse Assessment Tool from the University of Birmingham. The beta version of the tool use Defra Background Maps modelled concentration data from 2022. The image below shows the health cases caused by air pollution in Cherwell. The tool is being further developed, with high resolution modelling being completed to obtain more accurate health case numbers. This will help to steer further actions based on their modelled public health outcomes.

Figure 2.1 – Health burden of air pollution in Cherwell, data from the beta version of the AQLAT using modelled air pollutant concentration data from Defra Background Maps 2022
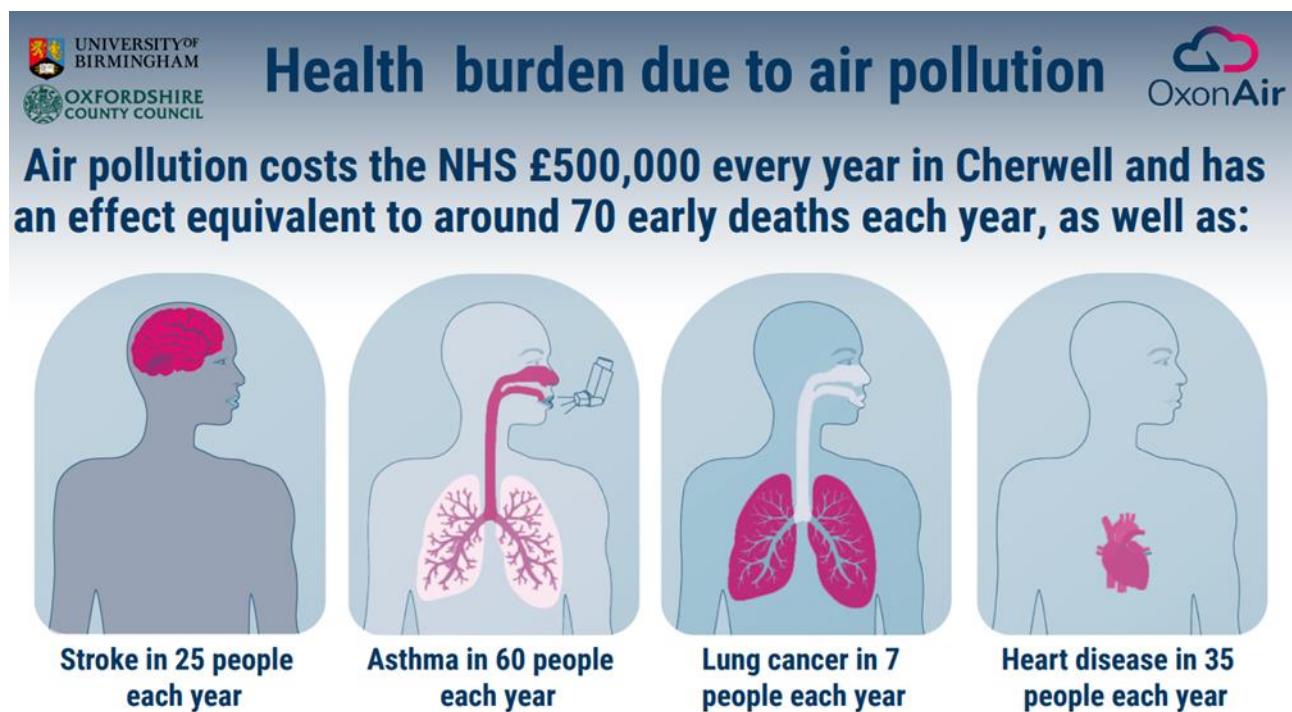
Cherwell District Council is taking the following measures to address $PM_{2.5}$:

- Planning conditions are imposed on planning consents requiring the submission and approval of construction/demolition environmental management plans (CEMPs) where the development is likely to generate dust near to an existing residential area. The CEMP includes dust and mud control such as damping down road areas, proactively planning mitigation measures in response to weather forecasts and proactively carrying out site inspections regularly to assess if further mitigation is needed in response to local conditions. In addition, the Environmental Protection team actively engage with developers in the event of complaints to ensure that the required controls are in place and taking enforcement action where necessary.

- The Council has no smoke control zones, however, when enquires are received regarding the installation of wood burners, the Environmental Protection team encourage the use of smokeless fuels or approved appliances. Cherwell will review whether any smoke control areas should be declared over the coming year.

- The Environmental Protection team actively responds to complaints about the burning of waste, and dust from construction sites, and takes steps, where necessary through enforcement, to ensure that there is an adequate level of control.

- Taxi licensing – Hackney carriages and private hire vehicles are restricted by an age policy that requires vehicles to be less than 6 years old at first licence. Thereafter vehicles over 10 years old will not be licensed unless they are in exceptional condition which is determined by inspection.

Environmental Permitting – installations such as incinerators, paint spray booths are inspected regularly to ensure that they are compliant with permit conditions that require the control and abatement of total particulate matter to the atmosphere.

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

This section sets out the monitoring undertaken within 2024 by Cherwell 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

Cherwell District Council does not have any automatic monitoring sites in the district at present.

3.1.2 Non-Automatic Monitoring Sites

Cherwell District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 33 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 on http://oxonair.uk. 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 $40\mu g/m^3$. 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.

The only locations demonstrating any exceedances of the annual mean air quality objective are the two monitoring locations within AQMA No. 1 – Hennef Way. These are both below 60 µg/m^3 indicating that exceedances of the 1-hour mean objective are less likely.

Appendix A: Monitoring Results

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)
CHER/22A/NB12S1	Banbury - Ermont Way 1	Roadside	446828	241591	NO2		11.0	2.0	No	2.5
CHER/22A/NB12S2	Banbury - Ermont Way 2	Roadside	446997	241315	NO2		12.0	2.0	No	2.5
CHER/22A/NB12S3	Banbury - Hennef Way 1	Roadside	446535	241721	NO2	AQMA No. 1	3.0	2.0	No	2.0
CHER/22A/NB12S4	Banbury - Hennef Way 2	Roadside	446330	241687	NO2	AQMA No. 1	3.0	2.5	No	2.5
CHER/22A/NB12S5	Banbury - Stroud Close 1	Roadside	446334	241676	NO2		0.0	0.0	No	2.5
CHER/22A/NB12S6	Banbury - Middleton Road	Kerbside	446250	240716	NO2		5.0	1.0	No	2.2
CHER/22A/NB12S7	Banbury - Bridge Street	Kerbside	445961	240595	NO2		1.0	1.0	No	2.0
CHER/22A/NB12S8	Banbury - Cherwell Street	Roadside	445932	240499	NO2		0.0	0.0	No	2.2
CHER/22A/NB12S9	Adderbury - The Green	Kerbside	447403	235723	NO2		1.0	1.0	No	2.0

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)
CHER/22A/NB12S10	Deddington	Kerbside	446563	231648	NO2		0.5	1.0	No	2.0
CHER/22A/NB12S11	Bloxham - Bloxham Hill	Roadside	443006	235744	NO2		2.0	2.0	No	2.2
CHER/22A/NB12S12	Bloxham - Church Street	Kerbside	442940	235593	NO2		1.0	1.0	No	2.2
CHER/22A/NB12S13	Banbury - Cranleigh Close	Urban Background	444366	239654	NO2		0.0	0.0	No	2.0
CHER/22A/NB12S14	Banbury - Oxford Road/South Bar	Kerbside	445333	240100	NO2		1.0	1.0	No	2.2
CHER/22A/NB12S15	Banbury - High Street	Kerbside	445407	240421	NO2		1.0	1.0	No	2.0
CHER/22A/NB12S16 , CHER/22A/NB12S17 , CHER/22A/NB12S18	Banbury - Horsefair/North Bar	Roadside	445351	240578	NO2		2.0	2.0	No	2.9
CHER/22A/NB12S19	Banbury - North Bar	Kerbside	445352	240774	NO2		1.5	1.0	No	2.5
CHER/22A/NB12S20	Banbury - Sinclair Avenue	Urban Background	444274	241289	NO2		0.0	0.0	No	2.0
CHER/22A/NB12S21	Ardley	Roadside	454301	227498	NO2		1.5	1.5	No	2.0
CHER/22A/NB12S22	Middleton Stoney	Roadside	453397	223516	NO2		0.0	0.0	No	2.0
CHER/22A/NB12S23	Kidlington - Bramley Close	Roadside	450322	213587	NO2		0.0	0.0	No	2.5

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)
CHER/22A/NB12S24	Kidlington - Bicester Road	Roadside	450267	213511	NO2		1.5	1.0	No	2.5
CHER/22A/NB12S25	Kidlington - Oxford Road	Roadside	449122	213947	NO2		1.5	1.0	No	2.5
CHER/22A/NB12S26	Kidlington - Benmead Road	Urban Background	449172	214325	NO2		0.0	0.0	No	2.5
CHER/22A/NB12S27, CHER/22A/NB12S28, CHER/22A/NB12S29	Bicester - Queens Avenue/Kings End	Kerbside	458028	222471	NO2	AQMA No.4	1.5	1.0	No	2.5
CHER/22A/NB12S30	Bicester - Kings End South	Roadside	458006	222404	NO2	AQMA No.4	1.5	1.5	No	2.5
CHER/22A/NB12S31	Bicester - Villiers Road	Urban Background	457619	222535	NO2		0.0	0.0	No	2.7
CHER/22A/NB12S32	Bicester - Tamarisk Gardens	Urban Background	458333	224432	NO2		0.0	0.0	No	2.5
CHER/22A/NB12S33	Bicester - Aylesbury Rd	Roadside	459100	221190	NO2		0.0	0.0	No	2.5
CHER/22A/NB12S34	Bicester - London Road	Roadside	458721	222115	NO2		0.0	0.0	No	2.5
CHER/22A/NB12S35	Bicester - St Johns	Kerbside	458310	222720	NO2	AQMA No.4	1.5	1.0	No	2.5
CHER/22A/NB12S36	Bicester - Field Street	Kerbside	458214	222836	NO2	AQMA No.4	1.5	1.0	No	2.5
CHER/22A/NB12S37	Bicester - North Street	Kerbside	458274	222935	NO2	AQMA No.4	1.5	1.0	No	2.5

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.

The monitoring site grid references on the report submitted to DEFRA in 2024 were incorrect. This was picked up after submission and corrected on the report that was published to residents by CDC but was not resubmitted through the DEFRA LAQM portal to avoid confusion. The monitoring locations on this report are accurate.

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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
CHER/22A/NB12S1	446828	241591	Roadside	91.5	83.8	23.7	24.0	24.0	23.5	20.6
CHER/22A/NB12S2	446997	241315	Roadside	91.5	91.5	24.1	24.4	25.3	27.3	20.0
CHER/22A/NB12S3	446535	241721	Roadside	83.8	83.8	**57.9**	**58.6**	**67.1**	**64.9**	**62.3**
CHER/22A/NB12S4	446330	241687	Roadside	91.5	91.5	**N/A**	**N/A**	**62.1**	**64.6**	**48.4**
CHER/22A/NB12S5	446334	241676	Roadside	91.5	91.5	20.8	21.1	21.6	21.3	17.2
CHER/22A/NB12S6	446250	240716	Kerbside	91.5	91.5	26.5	26.9	31.4	28.8	22.9
CHER/22A/NB12S7	445961	240595	Kerbside	91.5	91.5	28.2	28.5	28.3	25.8	24.6
CHER/22A/NB12S8	445932	240499	Roadside	91.5	91.5	32.4	32.8	30.5	29.9	25.0
CHER/22A/NB12S9	447403	235723	Kerbside	75.9	75.9	21.8	22.0	18.1	18.3	13.9
CHER/22A/NB12S10	446563	231648	Kerbside	75.9	75.9	25.3	25.6	26.5	28.0	10.3
CHER/22A/NB12S11	443006	235744	Roadside	83.8	83.8					21.7

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
CHER/22A/NB12S12	442940	235593	Kerbside	91.5	91.5	25.3	25.7	27.1	27.1	21.0
CHER/22A/NB12S13	444366	239654	Urban Background	91.5	91.5	8.5	8.6	9.2	9.7	6.4
CHER/22A/NB12S14	445333	240100	Kerbside	83.8	83.8	27.2	27.6	30.4	28.0	25.3
CHER/22A/NB12S15	445407	240421	Kerbside	91.5	91.5	28.2	28.6	31.8	30.8	25.7
CHER/22A/NB12S16, CHER/22A/NB12S17, CHER/22A/NB12S18	445351	240578	Roadside	91.5	91.5	30.0	30.4	33.7	31.1	27.6
CHER/22A/NB12S19	445352	240774	Kerbside	91.5	91.5	27.9	28.2	31.1	28.3	25.1
CHER/22A/NB12S20	444274	241289	Urban Background	91.5	91.5	11.0	11.2	12.1	12.0	9.2
CHER/22A/NB12S21	454301	227498	Roadside	91.5	91.5	18.3	18.5	18.0	17.9	15.5
CHER/22A/NB12S22	453397	223516	Roadside	91.5	91.5	22.2	22.4	25.2	25.0	21.4
CHER/22A/NB12S23	450322	213587	Roadside	81.9	81.9	21.3	18.6	16.6	18.1	16.5
CHER/22A/NB12S24	450267	213511	Roadside	91.5	91.5	26.6	26.6	28.1	26.7	23.0
CHER/22A/NB12S25	449122	213947	Roadside	91.5	91.5	26.0	21.6	22.5	23.0	17.2
CHER/22A/NB12S26	449172	214325	Urban Background	91.5	91.5	18.4	11.8	11.1	8.0	8.3

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
CHER/22A/NB12S27, CHER/22A/NB12S28, CHER/22A/NB12S29	458028	222471	Kerbside	91.5	91.5	27.8	28.2	28.9	29.6	26.0
CHER/22A/NB12S30	458006	222404	Roadside	91.5	91.5	34.5	34.9	32.6	32.2	27.7
CHER/22A/NB12S31	457619	222535	Urban Background	91.5	91.5	12.3	12.5	13.4	12.2	9.9
CHER/22A/NB12S32	458333	224432	Urban Background	91.5	91.5	11.6	11.8	12.1	12.9	11.0
CHER/22A/NB12S33	459100	221190	Roadside	83.8	83.8	23.0	23.3	21.0	18.3	18.3
CHER/22A/NB12S34	458721	222115	Roadside	83.8	83.8	19.6	19.8	20.8	20.5	16.3
CHER/22A/NB12S35	458310	222720	Kerbside	91.5	91.5	25.1	25.5	23.4	25.7	21.5
CHER/22A/NB12S36	458214	222836	Kerbside	83.8	83.8	25.0	25.3	26.8	25.9	21.5
CHER/22A/NB12S37	458274	222935	Kerbside	75.9	75.9	27.6	27.9	27.9	28.8	22.7

☐ **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 $\mu g/m^3$.

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 **<u>bold and underlined</u>**.

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 NO$_2$ Concentrations in AQMA No. 1
Hennef Way, Banbury
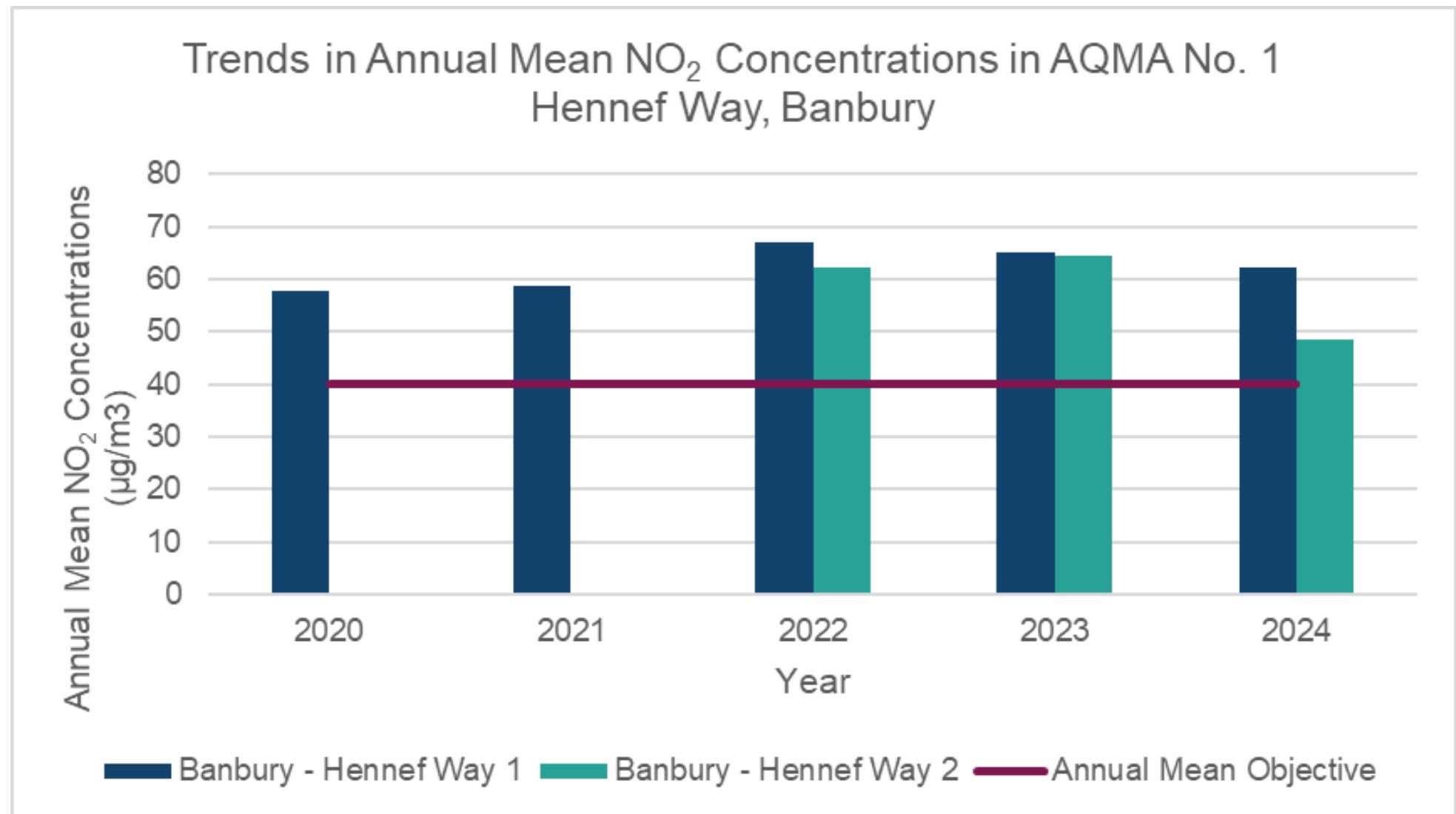
Trends in Annual Mean NO$_2$ Concentrations in AQMA No. 4
King's End/Queen's Avenue, Bicester
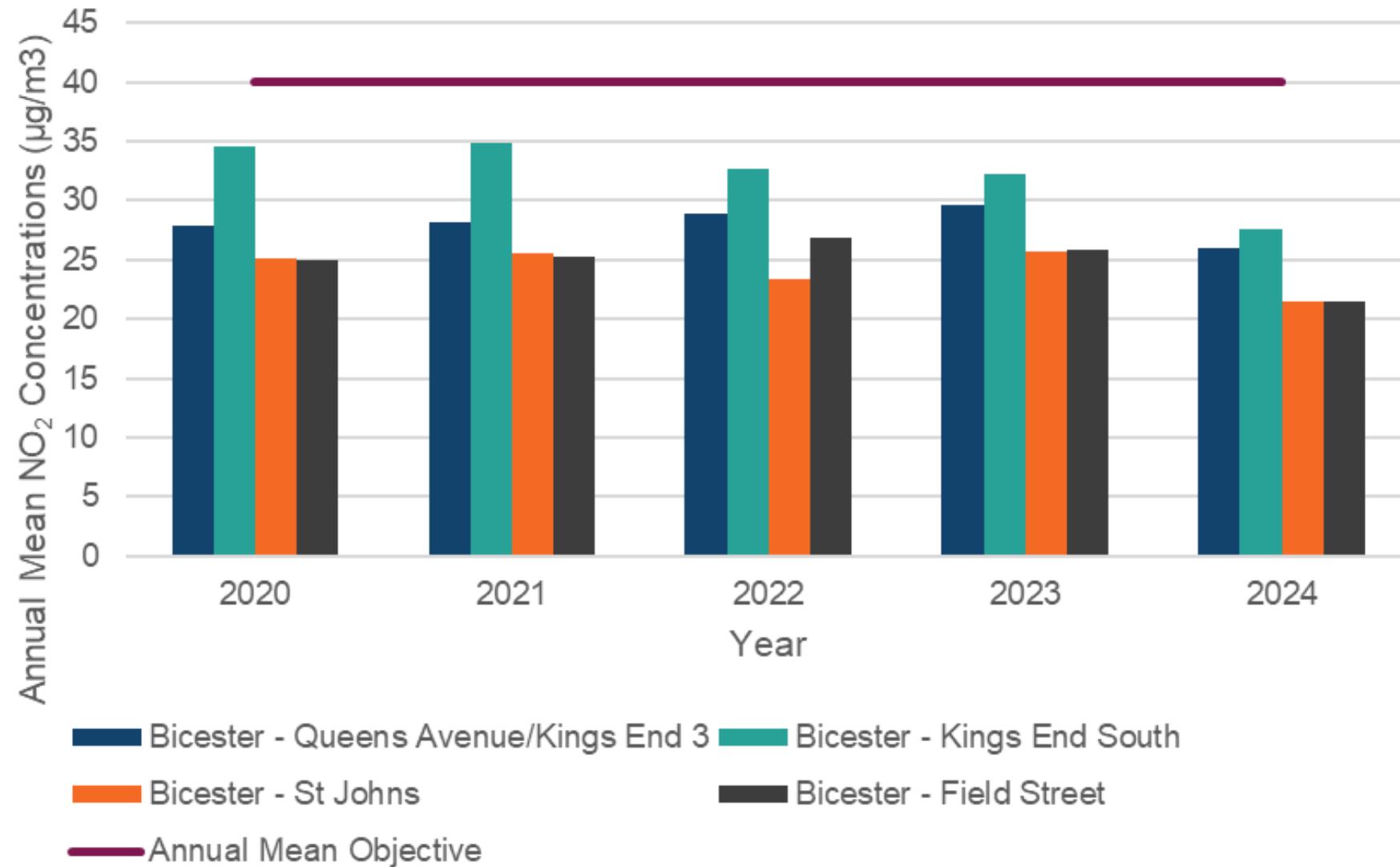
Trends in Annual Mean NO$_2$ Concentrations in Urban Background Monitoring Locations
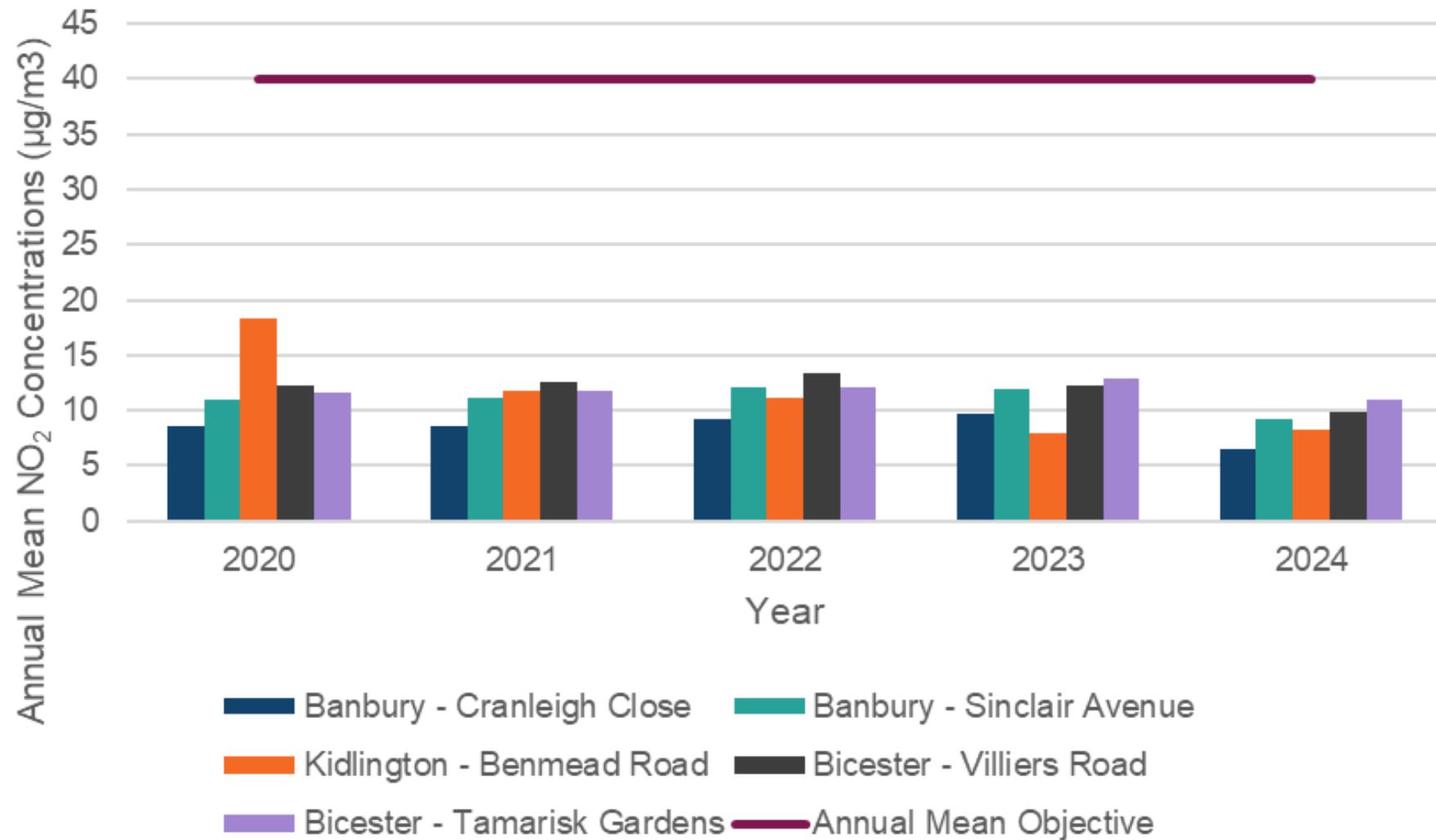
Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO₂ 2024 Diffusion Tube Results (µg/m³)

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: Bias Adjusted <(0.78)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CHER /22A/N B12S1	446828	241591	26.0	20.7	21.1	31.3	24.1	24.2	23.4	18.6	27.9	44.4		21.4	26.4	20.6		
CHER /22A/N B12S2	446997	241315	33.3	25.6	22.1	21.8	25.8	38.2	24.0	18.1	21.0	34.1	16.8	25.8	25.7	20.0		
CHER /22A/N B12S3	446535	241721	66.0	82.8	84.3	82.1	68.9	81.5	75.9	80.4	74.5	105.5		40.7	**79.9**	**62.3**	50.4	
CHER /22A/N B12S4	446330	241687	81.1	58.7	70.9	76.4	69.3	75.7	20.6	60.2	64.4	83.9	25.9	55.9	**62.1**	48.4	40.3	
CHER /22A/N B12S5	446334	241676	31.6	20.6	15.2	20.9	25.4	22.6	20.6	18.7	21.3	29.5	14.3	23.2	22.1	17.2		
CHER /22A/N B12S6	446250	240716	31.0	29.4	32.0	26.6	25.8	24.1	28.1	25.1	27.5	48.3	20.7	35.0	29.4	22.9		
CHER /22A/N B12S7	445961	240595	37.7	37.3	27.8	27.4	27.2	31.0	30.3	26.1	29.5	50.1	20.4	20.9	31.5	24.6		
CHER /22A/N B12S8	445932	240499	26.7	35.4	32.9	34.9	30.5	34.4	28.7	26.8	33.1	47.0	21.3	20.5	32.1	25.0		
CHER /22A/N B12S9	447403	235723			18.1	18.5	16.2	17.5	15.8	12.3	11.5	33.3	13.1	30.0	17.9	13.9		
CHER /22A/N B12S10	446563	231648			11.4	14.7	12.9	11.2	11.1	8.7	16.4	25.5	4.2	18.4	13.3	10.3		
CHER /22A/N B12S11	443006	235744	24.2	27.3	23.2	29.1	24.2	29.7	27.4	23.0	23.6	43.7		25.9	27.8	21.7		
CHER /22A/N B12S12	442940	235593	29.1	29.6	31.0	26.8	23.6	28.3	22.0	22.8	24.1	40.6	16.6	32.8	27.0	21.0		
CHER /22A/N B12S13	444366	239654	11.3	11.2	7.9	7.1	6.7	6.2	5.0	4.4	6.3	15.7	7.2	12.4	8.2	6.4		
CHER /22A/N	445333	240100	30.2	35.5	34.5	36.6	24.3	26.6	31.2	27.0	30.7	47.0		27.9	32.4	25.3		

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: Bias Adjusted <(0.78)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
B12S14																		
CHER /22A/N B12S15	445407	240421	39.4	28.4	35.9	34.0	24.4	26.7	32.5	25.9	28.4	52.2	32.5	30.0	32.9	25.7		
CHER /22A/N B12S16, CHER /22A/N B12S17, CHER /22A/N B12S18	445351	240578	44.8	35.1	38.7	35.8	32.5	32.6	34.1	32.2	26.1	54.1	20.0	37.9	35.4	27.6		
CHER /22A/N B12S19	445352	240774	47.4	10.0	32.4	32.6	30.4	37.4	35.0	33.4	26.5	45.6	19.8	35.4	32.2	25.1		
CHER /22A/N B12S20	444274	241289	17.2	16.1	9.2	11.6	8.7	9.5	9.1	6.2	9.9	23.0	8.0	12.6	11.8	9.2		
CHER /22A/N B12S21	454301	227498	26.5	21.3	20.4	20.6	17.6	17.5	18.0	15.4	18.0	26.3	15.3	23.6	19.8	15.5		
CHER /22A/N B12S22	453397	223516	30.0	28.0	23.6	31.2	26.1	27.0	29.9	23.5	24.4	31.3	25.9	28.4	27.5	21.4		
CHER /22A/N B12S23	450322	213587	32.2	15.8	25.0	19.0	14.4	19.7		17.4	19.2	26.6	21.0	31.4	21.1	16.5		
CHER /22A/N B12S24	450267	213511	39.5	34.0	26.5	29.5	25.3	24.8	29.8	28.4	30.0	34.9	20.4	32.3	29.5	23.0		
CHER /22A/N B12S25	449122	213947	11.7	24.5	22.8	22.5	19.4	18.7	20.9	17.9	24.4	37.1	20.0	23.3	22.1	17.2		
CHER /22A/N B12S26	449172	214325	16.6	12.6	9.9	8.1	7.3	7.5	7.4	7.1	9.4	17.8	12.4	14.8	10.6	8.3		
CHER /22A/N B12S27, CHER /22A/N	458028	222471	43.1	35.3	28.4	33.0	31.9	34.9	32.7	29.5	29.9	38.2	28.4	39.5	33.4	26.0		

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: Bias Adjusted <(0.78)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
B12S28, CHER/22A/N B12S29																		
CHER/22A/N B12S30	458006	222404	14.7	41.4	38.2	39.8	27.6	40.6	38.9	23.2	40.2	51.9	33.3	14.1	35.5	27.7		
CHER/22A/N B12S31	457619	222535	22.6	13.3	12.4	11.0	9.8	8.8	9.4	7.4	9.4	19.9	14.7	18.4	12.7	9.9		
CHER/22A/N B12S32	458333	224432	18.6	12.6	36.6	11.8	10.2	10.7	7.0	7.0	10.1	19.9	12.3	16.5	14.2	11.0		
CHER/22A/N B12S33	459100	221190	24.8	19.2	15.9	24.4	24.2	21.0	21.1	16.6	27.2	37.4		18.3	23.4	18.3		
CHER/22A/N B12S34	458721	222115	26.6	20.0	16.7		17.8	17.2	16.4	14.2	23.3	33.6	22.2	23.7	21.0	16.3		
CHER/22A/N B12S35	458310	222720	24.5	34.4	25.6	29.9	28.1	26.6	25.6	22.8	18.5	37.5	25.9	34.0	27.5	21.5		
CHER/22A/N B12S36	458214	222836		34.3	25.0	21.2	27.8	27.0	22.1	22.9	28.2	40.6	23.6	29.8	27.5	21.5		
CHER/22A/N B12S37	458274	222935			37.0	29.3	26.8	28.2	26.9	25.1	27.3	35.8	25.2	25.6	29.1	22.7		

☒ **All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.**

☒ **National bias adjustment factor used.**

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

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

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m^3 are shown in **bold**.

NO₂ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO₂ 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

QA/QC of Diffusion Tube Monitoring

Cherwell District Council's diffusion tubes are prepared and analysed by Environmental Scientifics Group (ESG), Unit 12 Moorbrook, Southmead Industrial Estate, Didcot, Oxfordshire, OX11 7HP

The tubes are prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection.

An AIR NO2 test sample, designed to test the proficiency of laboratories undertaking analysis of chemical pollutants is distributed to participants on a quarterly basis. AIR NO2 PT forms an integral part of the UK NO2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM).

Environmental Services Group (ESG) participates in the AIR NO2 PT. Through 2023 ESG Didcot/SOCOTEC scored 100% satisfactory results. A full table listing those UK laboratories undertaking LAQM activities that have participated in the AIR NO2 PT is available here: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/

For the purposes of Local Air Quality Management, tube precision is separated into two categories, "Good" or "Poor", as follows: tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have "poor" precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

The precision results for ESG Didcot / SOCOTEC, 50% TEA in Acetone were good throughout 2024, as per the DEFRA precision and accuracy spreadsheet, which can be found by clicking here: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/

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 regarding 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.

The bias adjustment factor used within this Updating and Screening Assessment was derived from the national database of co-location studies (National Physical Laboratory, 2024). The local bias adjustment factor cannot be calculated as no NO2 monitoring is co-located with automatic monitoring sites as CDC does not conduct automatic monitoring. The results from this spreadsheet provided a national bias adjustment factor of 0.78.

Table C.2.1 – National Bias Adjustment Factor Spreadsheet

Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year[5] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu g/m^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu g/m^3$)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2024	R	Cambridge City Council	11	20	15	31.0 %	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	R	Cardiff Council / Shared Regulatory Services	9	35	31	14.2 %	G	0.88
SOCOTEC Didcot	50% TEA in acetone	2024	R	Ipswich Borough Council	9	24	20	21.0 %	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2024	R	Ipswich Borough Council	11	36	26	37.9 %	G	0.73
SOCOTEC Didcot	50% TEA in acetone	2024	UB	City Of York Council	11	13	11	16.0 %	P	0.86
SOCOTEC Didcot	50% TEA in acetone	2024	R	City Of York Council	11	22	18	22.9 %	G	0.81
SOCOTEC Didcot	50% TEA in acetone	2024	R	City Of York Council	11	26	20	31.0 %	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	R	East Suffolk Council	9	26	20	32.8 %	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	KS	Marylebone Road Intercomparison	10	47	36	30.5 %	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Hull City Council	10	21	16	25.4 %	P	0.80
SOCOTEC Didcot	50% TEA in acetone	2024	R	Hull City Council	9	27	20	35.3 %	G	0.74
SOCOTEC Didcot	50% TEA in acetone	2024	R	Waverley Borough Council	10	21	18	13.7 %	G	0.88
SOCOTEC Didcot	50% TEA in acetone	2024	R	Waverley Borough Council	11	22	16	32.3 %	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	R	Wrexham County Borough Council	10	15	13	17.0 %	G	0.85
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Gravesham Borough Council	11	21	19	9.7 %	P	0.91

SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	11	35	24	43.5 %	G	0.70
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	11	26	20	32.6 %	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	11	23	17	34.0 %	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	10	31	23	33.4 %	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	11	30	23	33.7 %	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	R	Thanet Distric Council	10	19	15	24.3 %	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Wirral Council	9	14	12	19.9 %	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2024	R	Derry City And Strabane District Council	11	28	32	- 11.8 %	G	1.13
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Derry City And Strabane District Council	11	11	7	58.1 %	G	0.63
SOCOTEC Didcot	50% TEA in Acetone	2024	R	Horsham District Council	11	22	17	31.1 %	G	0.76
SOCOTEC Didcot	50% TEA in Acetone	2024	R	Leeds City Council	10	36	28	32.5 %	G	0.75
SOCOTEC Didcot	50% TEA in Acetone	2024	KS	Leeds City Council	11	29	20	42.7 %	G	0.70
SOCOTEC Didcot	50% TEA in Acetone	2024	R	Leeds City Council	11	24	18	36.4 %	G	0.73
SOCOTEC Didcot	50% TEA in Acetone	2024	UC	Leeds City Council	10	25	19	31.2 %	G	0.76
SOCOTEC Didcot	50% TEA in Acetone	2024	R	Huntingdonshire District Council	10	28	23	21.1 %	G	0.83
SOCOTEC Didcot	50% TEA in Acetone	2024	R	North East Lincolnshire Council	11	39	21	84.1 %	G	0.54
SOCOTEC Didcot	50% TEA in Acetone	2024	UB	North East Lincolnshire Council	10	12	10	20.0 %	G	0.83
SOCOTEC Didcot	50% TEA in Acetone	2024	R	North East Lincolnshire Council	11	21	18	15.7 %	G	0.86
SOCOTEC Didcot	50% TEA in acetone	2024		Overall Factor[3] (33 studies)					Use	0.78

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. None of the monitored sites in Cherwell required annualisation as they all achieved sufficient data capture to provide a representative annual mean figure.

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 regarding 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.

Cherwell District Council have applied a national> bias adjustment factor of 0.78 to the 2024 monitoring data. A summary of bias adjustment factors used by Cherwell District Council over the past five years is presented in Table C.2.

Table C.2.2 – Bias Adjustment Factor

| Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	04/25	0.78
2023	National	03/24	0.77
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77

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.

Table C.4 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
CHER/22A/NB12S3	2.0	5.0	62.3	6.6	**50.4**	Predicted concentration at Receptor above AQS objective.
CHER/22A/NB12S4	2.0	5.0	48.4	6.6	*39.5*	

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

Figure D.1 – Maps of Non-Automatic Monitoring Site
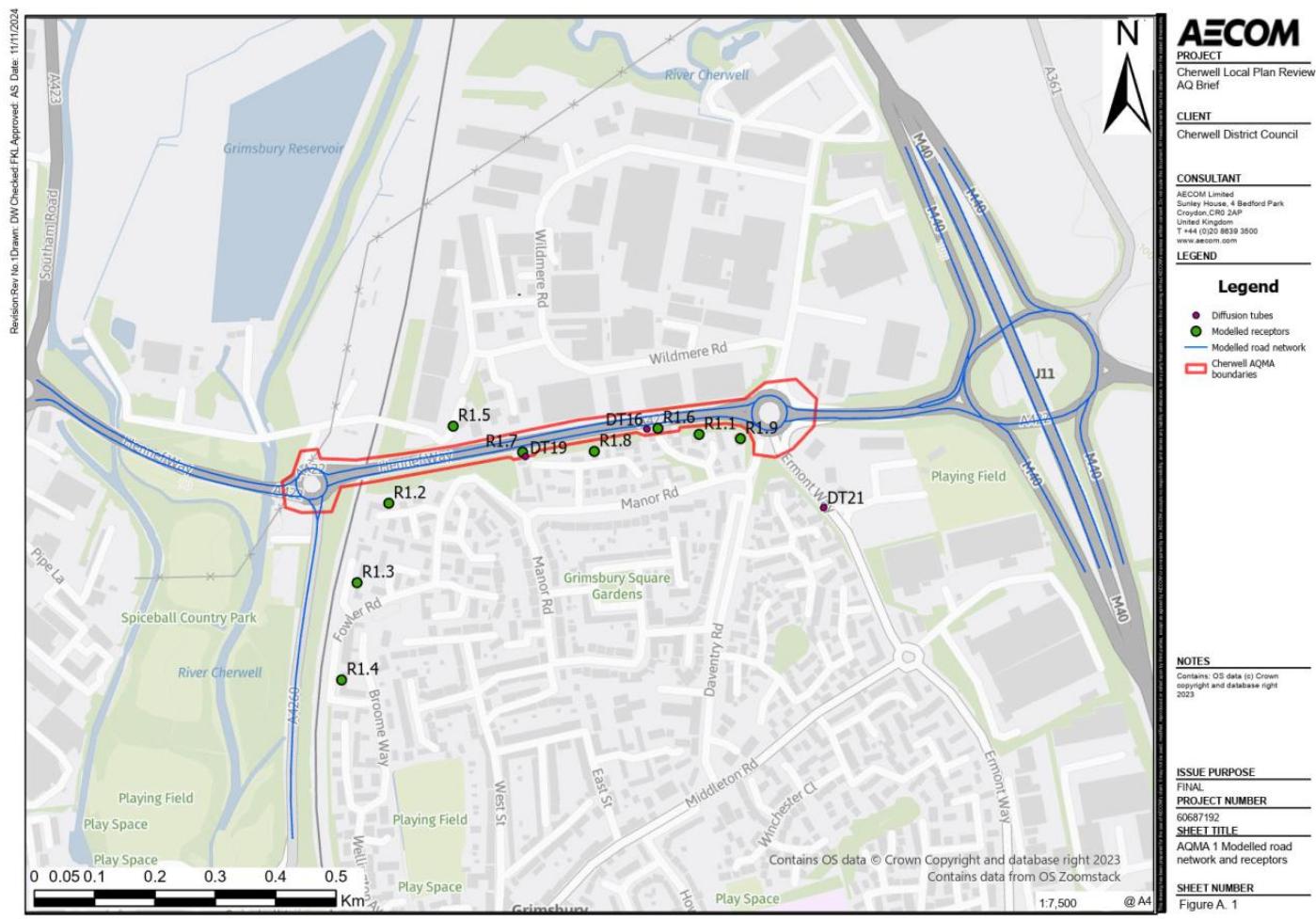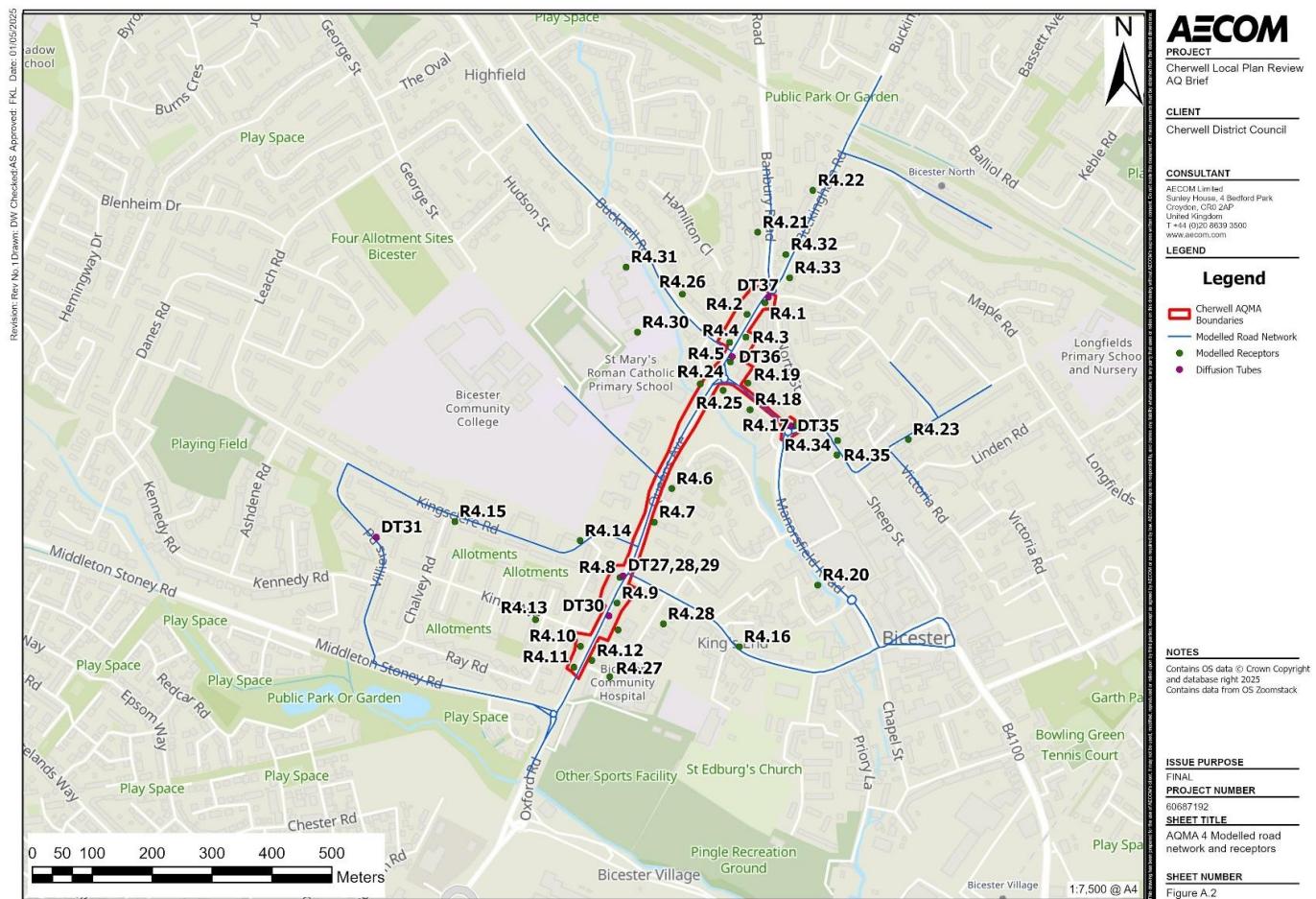
Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[2]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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

- 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.