



COTSWOLD
DISTRICT COUNCIL

2024 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, 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Cotswold District

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. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

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})	<p>Particulate matter is everything in the air that is not a gas.</p> <p>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.</p> <p>PM₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM_{2.5} are particles under 2.5 micrometres.</p>

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

During 2023, Cotswold District Council (CDC) has continued monitoring nitrogen dioxide (NO₂) across the district using diffusion tubes. The monitoring sites are representative of relevant exposure and relate to emissions from traffic.

The monitoring reported within this 2024 Annual Status Report for CDC took place during the whole of 2023. The district's air quality remains generally very good, and the monitoring has not indicated any additional areas of concern regarding air pollution.

In 2023, our diffusion tube network monitored NO₂ levels at 16 locations: one background location; two monitoring junctions near the new Chesterton development (Cirencester); and, the remaining monitoring roadside concentrations which are near residential housing. We have long-term results at four of these locations, one within our Air Quality Management area (AQMA), two in Lechlade (former AQMA) and one in Cirencester. The remaining 12 locations are around Cirencester, Bourton-on-the-Water, Moreton in Marsh and at Stow-on-the-Wold.

Only one location was changed for 2023, NAS48 which was positioned at the junction of the A429 and East Street in Moreton in Marsh, was relocated to the A429 in Stow on the Wold, next to the Youth Club building, and re-named NAS49. The previous location had consistently shown low NO₂ concentrations since it was placed there in 2019. The new location, however, frequently experiences queueing traffic backing up from the traffic lights at the junction with Sheep Street and the B4068. Consequently, the tube was positioned at this location to ensure NO₂ concentrations were not exceeding the annual average national objective of 40µg/m³.

The monitoring results of 2023 continue the trend of decreasing NO₂ concentrations seen in 2022. 2023 was the first year all monitoring locations had an annual average concentration of NO₂ below the national objective since monitoring began (excluding 2020 and 2021). Consequently, there is increasing confidence that the concentrations of NO₂ which have been observed in 2022 and 2023 reflect the 'new norm' for this pollutant. This decline is most likely due to the uptake of low emission vehicles, improvements in engine efficiency, the popularity of working from home and virtual meetings.

The most significant reductions are in urban centres such as Lechlade, Moreton in Marsh and Stow on the Wold, as well as the AQMA at Birdlip. The greatest fall seen in Lechlade (maximum decrease of 10.7µg/m³), partly relating to the reasons described above, but also

due to the closure of Halfpenny Bridge between June and November, which stopped traffic travelling in and out of the town through Thames Street.

The Lechlade Air Quality Management Area (AQMA) has now been revoked, as this location has seen NO₂ concentrations consistently below 40µg/m³ since 2016, and below 36µg/m³ since 2018. The revocation order was submitted to Defra on 8th May 2024.

The district has one remaining AQMA focused on the Air Balloon Roundabout near Birdlip. This AQMA was declared in 2008, due to exceedance in NO₂ concentrations. The air quality issue at this location is principally related to the combination of the steep incline of the A417 as it approaches the Air Balloon Roundabout and the roundabout itself. The roundabout causes a backup of traffic along the A417, principally at peak hours, with the incline resulting in slow moving traffic, particularly HGVs, labouring along this section of the road.

The monitoring location at the Air Balloon roundabout in Birdlip has consistently shown concentrations above 40µg/m³ in previous years and, as with most other locations, concentrations of NO₂ have shown a steady decline since 2016, with a notable sharp fall at the beginning of the Covid pandemic in 2020. A slight increase to above the national objective was observed in 2022, following the lifting of all travel restrictions towards the end of 2021. However, 2023 has shown a subsequent fall with the annual average (38.7µg/m³) below the objective concentration for the first time (excluding 2020 & 2021). As well as the reasons described above, the decline in NO₂ concentrations at this location is likely to be due to the Missing Link construction work, which has seen overnight closures on approaches to the roundabout during the latter part of 2023.

CDC have not been made aware of any industrial developments with air pollution implications during 2023. Any housing or commercial development planning applications have been considered with regard to their potential to increase traffic pollution in the AQMAs and other areas. We continue to monitor around Chesterton, where a major residential development has commenced, e.g. such as junction improvements at Somerford / Wilkinson Road. The data we have been collecting around this site will help us identify any change in nitrogen dioxide levels as vehicular traffic in that area increases.

DEFRA has an internet site containing air quality information from all local authorities that have AQMAs. The page for CDC reports can be found here (please note at time of writing this site has not been updated to include the Lechlade revocation):

[Link to CDC AQMA Information](#)

Monitoring will continue around the district and will be carried out in accordance with Defra guidance LAQM TG(22). An updated air quality report will be produced in 2025.

Air Quality Partners

As the district's highway authority, Gloucester County Council (GCC), is the CDC's main air quality partner. This is predominantly due to road traffic being the main pollution source within the district. The two councils regularly work together within a planning context, regarding highways and new developments, either directly or via consultations through the planning process.

The council will also continue to support National Highways with the Missing Link project, as this is likely to deliver significant air quality benefits to the region.

CDC is also beginning to engage with town and parish councils to support them with projects which may benefit air quality, regardless of their current status.

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 Plan³ 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 Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ 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.

³ Defra. Environmental Improvement Plan 2023, January 2023

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

The construction phase of the National Highways project 'The Missing Link' began in 2023, with the demolition of the Air Balloon public house and engineering works commencing in the vicinity of the AQMA. The project will see the existing road, including the Air Balloon roundabout, between Brockworth and Cowley replaced with a dual carriage way and interchanges. The objective is to improve traffic flow and reduce congestion. Following a public consultation exercise in 2019, Highways England (now National Highways) chose a preferred route for a new 3.6 mile dual carriageway, known as Option 30. The Secretary of State for Transport gave the A417 "Missing Link" project the go-ahead on 16 November 2022. The Council will continue to encourage and support any measures proposed by National Highways to improve the situation at the Birdlip AQMA. Across the district many of our town councils are taking action to improve air quality, e.g. reducing speed limits, investigating into mobility/transport hubs, and EV charging. Various county, district and town/parish plans and strategies are also in place which include policies and objectives to reduce road traffic and improve air quality. This is detailed later in the report.

District Air Quality Group

GCC have recently re-started regular meetings of air quality officers working for the district, city, and borough councils within the county. The aim is to develop a more coordinated approach to air quality across Gloucestershire, with the support of GCC's air quality officer and Healthy Place Shaping team. As part of this initiative, GCC have set up an air quality webpage as part of the [InformGloucestershire](#) site.

Gloucestershire School Streets

Into 2023, the District Council is working with the County Council to facilitate the School Streets scheme in Cirencester. Roads within a School Streets area will only be open to pedestrians, cyclists and those with exemptions, including emergency vehicles, Blue Badge holders and residents, for a short period at the start and end of each school day. This is to encourage a safer access to school for children and improve air quality in and around school gates.

As part of this scheme, NO₂ monitoring has been set up in two of the streets around Stratton Church of England Primary School, Cirencester to assess the effect on local air quality. Further details are contained within Appendix F.

Conclusions and Priorities

To conclude, air quality continues to show a steady improvement across the district, with 12 of the 16 locations monitored showing concentrations of NO₂ below half of the national objective. This is positive news for those who live and work in the Cotswold district, particularly those with health conditions which make them more sensitive to air pollution.

Despite the continuing downward trend, even in areas where concentrations meet with the objectives there are multiple benefits of continuing to improve air quality. Such benefits include improved population health, enhancing our natural environment and tackling climate change. Consequently, the county council, district council, town/parish councils, residents and businesses continue to have a part to play in reducing emissions and improving the quality of the air we breathe. It is important that GCC Highways are kept informed of proposed developments and that developers are aware of the need for appropriate mitigation in respect of associated air pollution.

Over the coming years, we anticipate further improvements as a consequence of changes in the way we travel, how our roads are used and further improvements in car technology. CDC will continue to work with GCC to explore and develop highway improvements, and ensure future large developments include, or provide funding for, mitigation measures to minimise the impact of the consequential additional traffic.

Over the next year we will continue the diffusion tube monitoring survey, as well as continuing to seek funding for particulate monitors or sensors.

Local Engagement and How to get Involved

We can all contribute to improving air quality our district by:

- Reducing how much we use petrol/diesel vehicles;
- Where driving diesel/petrol cars is necessary, using 'eco-driving' styles, which reduces fuel usage, and consequently reduces emissions;
- Consider car sharing – encourage your workplace to co-ordinate car sharing;
- Using car clubs instead on buying a car. Even better, join an electric car club;
- Using public transport; and,
- If you are able, use alternative travel modes such as walking or cycling;

These measures not only improve air quality, but also will contribute to tackling climate change and, in the case of cycling and walking, will improve your health too!

Other ways which you can get involved include:

- Participating in consultations on plans and strategies at county (<https://haveyoursaygloucestershire.uk.engagementhq.com/>) and district level (<https://your.cotswold.gov.uk/en-GB/>);
- Joining local campaign groups;
- Communicating issues or ideas to town/parish councils, district council or county council.

More information on air quality can be found on the following web-sites:

- [Defra UK Air](#)
- [Action for Clean Air](#)
- [Inform Gloucestershire](#)

Any queries about Air Quality should be directed to the Environmental Protection team within CDC. This team can be contacted by email on: ers@cotswold.gov.uk

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection department of CDC with the support and agreement of the following officers:

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This ASR is currently awaiting sign off the Gloucestershire Director of Public Health.

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1 Local Air Quality Management

This report provides an overview of air quality in Cotswold District during 2023. 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 Cotswold District Council (CDC) 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 CDC can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Cotswold District, as well as the recently revoked Lechlade AQMA. Appendix D provides a map of the 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:

- NO₂ annual mean

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
Birdlip (Air Balloon Roundabout)	08.04.2008	NO ₂ Annual Mean	An area encompassing properties adjacent to the roundabout on a strategic trunk route	YES	55 µg/m ³	38.7 µg/m ³	1	Air Quality Action Plan 2011 - Birdlip – Air Balloon Roundabout (under review)	Cotswold District Council Air Quality Pages: https://www.cotswold.gov.uk/environment/noise-pests-pollution-and-air-quality/air-quality/
Thames Street, Lechlade	02.04.2014	NO ₂ Annual Mean	E.g. An area encompassing a number of properties at the junction of High Street and Thames Street, Lechlade.	No	41 µg/m ³	18 µg/m ³	8	Revoked May 2024	N/A

Cotswold District Council confirm the information on UK-Air regarding their AQMA is up to date.

Cotswold District Council confirm that all current AQAPs have been submitted to Defra.

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

Defra's appraisal of last year's ASR concluded '*The report is well structured, detailed, and provides the information specified in the Guidance*'. The appraisal provided the following suggested improvements to subsequent reports:

Comment	Action
The Council are strongly encouraged to review data and begin the process of revoking the Lechlade AQMA. Concentrations within this AQMA have consistently been below the objective since 2016. This provides over three years of compliant pre-pandemic, which is sufficient evidence for the revocation of the AQMA.	Cotswold District Council have now formally revoked the Lechlade AQMA
Two monitoring sites, NAS27 and NAS32 were moved at the beginning of 2022. It would be useful for the Council to highlight the reasoning for the movement of the monitoring sites.	This was included in the published 2023 report
The current AQAP for the Birdlip AQMA was published in 2011. The Council is encouraged to update this AQAP to ensure measures are appropriate for current conditions.	The council has submitted an updated AQAP detailing the infrastructure works being carried out at this location and will be discussing further revisions with Defra in the light of the current situation.

CDC has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Five measures are included within Table 2.2, with the type of measure and the progress CDC and its air quality partners, have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

From the measures in Table 2.2, Measure 1 is the most likely measure which will achieve compliance within the Birdlip AQMA. The Government's Road Investment Strategy: 2015-2020 initially identified this road section, known as the "Missing Link" as requiring measures to improve safety, ease congestion and reduce pollution at the location of the Air Balloon Roundabout.

The project began in earnest in 2023, with archaeology and ecology studies being carried out during the spring and summer months, and the construction phase commencing in the October. More information on the project can be found at <https://a417missinglink.com/>.

As detailed in last year's report, the new road will replace the Air Balloon roundabout and existing single carriageway, on the A417 between Brockworth and Cowley, providing a continuous dual carriage way link between the M4 and M5.

The air quality assessment carried out on behalf of National Highways concluded the following:

- The new section of road will alleviate congestion and air pollution currently experienced within the AQMA, and will also mitigate the effects of future increases in traffic volume, by moving the traffic away from receptors and improving traffic flow;
- Concentrations at the existing receptors will be reduced by 13ug/m³ with the new road in place, compared to if the current road layout were to remain unchanged;
- Nearby designated habitats would benefit from a 47.8% decrease in nitrogen deposition; and,
- There will be no exceedances of air quality objectives along the proposed route.

A link is available to this report, here: [Link to A417 Air Quality Assessment Report](#)

The construction works have necessitated the need to put in place overnight road closures on the approaches to the AQMA. It is likely these road closures have contributed to the annual average NO₂ concentrations falling to below the UK objective at this location for the first time since monitoring began (excluding 2020 and 2021). However, although this is good news, during this construction phase NO₂ concentrations are unlikely to be representative of 'normal operating conditions' and consequently will not contribute to the revocation of this AQMA.

CDC will continue to monitor NO₂ at this location throughout the construction phase, and into the full operational phase, to ensure construction does not adversely impact air quality and to confirm the completed project delivers the expected reductions in air pollution.

CDC anticipates that the measures stated above and in Table 2.2 will achieve compliance in Birdlip AQMA.

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	Defra AQ Grant Funding	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	A417 Trunk Road Improvements at Air Balloon Roundabout	Transport Planning and Infrastructure	Other – trunk road improvement	2014	2027	Highways England	The second Road Investment Strategy (RIS2)	No	Not funded	£250-500m	Implementation	Reduced vehicle emissions	Annual average NO ₂ to be reduced to meet AQ objective	Construction commenced 2023	Stability of global markets and funding
2	District Planning Policy - Sustainable Transport (POLICY INF3)	Promoting Travel Alternatives	Other	2018	Ongoing	Cotswold District Council	Cotswold District Council	No	Funded	none	Implementation	Reduced vehicle emissions	Annual average NO ₂ to be reduced to meet AQ objective	Implementation on-going	None, completed
3	Gloucestershire's Local Transport Plan 2020-41	Promoting Travel Alternatives	Other	2021	Ongoing	Gloucestershire County Council	Gloucestershire County Council	No	Funded	none	Implementation	Reduced vehicle emissions	Annual average NO ₂ to be reduced to meet AQ objective	Implementation on-going	None, completed
4	School Streets	Alternatives to private vehicle use	Other	2022	2022	Gloucestershire County Council	Gloucestershire County Council	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	Before and during diffusion tube measurements to show reduction in NO ₂ concentration	Measurement points in place and monitoring in progress in advance of scheme	None
5	Community Municipal Investment scheme - EV Charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2023	Cotswold District Council	Investment fund	NO	Funded		Planning	Reduced vehicle emissions	Before and during diffusion tube measurements to show reduction in NO ₂ concentration	Commencement March 2023	None
6	The Robin	Transport Planning and Infrastructure	Bus route improvements	2022	Ongoing	Gloucestershire County Council, Community Conexions & Pulhams & Sons	Gloucestershire County Council	No	Funded	Not known	Pilot Trial ongoing	Reduce number of private cars on the road, and consequently emissions	Uptake of the service	Pilot Trial ongoing, with service extended in 2024	Ongoing funding and uptake of the service

Lechlade AQMA

As of 2022, the Lechlade AQMA has been compliant with the UK objective for NO₂ (40µg/m³) for 5 years, and lower than 10% below this objective for 3 years (excluding 2020 and 2021). To revoke an AQMA the concentration of the pollutant of concern must be 10% below the relevant objective for three consecutive years. Concentrations of NO₂ within the Lechlade AQMA have now met with this criterion and, following cabinet approval on March 7th 2024, the Revocation Order was submitted to Defra on May 13th 2024. Both the report submitted to cabinet and the order are presented in Appendix F.

CDC will continue to monitor NO₂ concentrations within the former AQMA for the foreseeable future.

Cotswold District Local Plan Update

CDC is currently updating its adopted Local Plan to make it “Green to the Core”. With regards to air pollution, the proposed review includes a new climate change section, where Policy CC8: Sustainable Transport, has replaced Policy INF3, in the existing plan. This policy provides details on how the council expects developers to include sustainable transport in their plans, to ensure they are fully integrated into the development and are provided in timely fashion prior to occupation.

Robin Bus Service

The Robin bus service is an on-demand service introduced by Gloucestershire County Council (GCC) to some of the more rural areas of Gloucestershire. The service was introduced to the north Cotswold area in 2022 and has been expanded to the south Cotswolds in 2024. This means most of the residents of the district have access to this service, which is particularly essential for those who live in areas which are not adequately served by public transport. The service has proven very popular and currently has funding until 2026.

Actions Across the District

Town and parish councils across the Cotswold district are also active in taking measures to reduce air pollution. Actions carried out in 2023 are summarised below.

Cirencester

Alongside the Cotswold District Local Plan review, the council is also considering a Cirencester Town Centre Masterplan. Aspects of the masterplan which may improve air quality include:

- an improved network of walking and cycling routes that better connects the town to the surrounding area;
- the provision of a new mobility hub; and,
- a review of car parking in the town.

Cirencester benefits from being the only town in the Cotswold district to have a [Local Cycling and Walking Infrastructure Plan](#) (LCWIP). The plan proposes cycling and pedestrian infrastructure improvements to encourage active travel within the town. Five priority cycle routes have been identified. Four of the routes link the town centre to: the new Steadings development; Deer Park School, Cirencester College, and the Royal Agricultural University; Kingshill School; and, Stratton. A final priority route links the A429 at the junction with Chesterton Lane with Kingsmeadow to the east. Similarly, five priority walking routes have also been identified. Four of the of the routes connect the town centre with: The Beeches residential area and Kingshill School to the east; the new Steadings development; Deer Park School, Cirencester College, and the Royal Agricultural University; and, Watermoor Road to the south east. A fifth route connects London Road and Godsditch Street, following the edge of the abbey grounds.

Where applicable, the LCWIP identifies infrastructure improvements needed to deliver these routes.

Cirencester Town Council are currently compiling their Local Neighbourhood Plan, which underwent public consultation in early 2024. The [draft plan](#) supports the LCWIP, but has more ambitious plans for the cycle routes around the town centre. The plan also supports the mobility hub proposed in the Cirencester Town Centre Master Plan and the idea of a 20 minute neighbourhood, particularly where active travel is promoted. The plan also specifically targets air quality in Policy WBC 1, where the town council commits to the following:

- Measures that reduce traffic volume near educational establishments, particularly at peak times, will be supported.
- Developments that encourage idling traffic, such as drive-through food outlets, within the Plan area will be resisted.
- Measures that reduce vehicle movement in the town centre's historic streets will be supported, particularly Park Street, Dyer Street, Thomas Street, and the Market Place.

- Development construction traffic will be required to monitor air quality, including particulates, to ensure net neutral is achieved throughout site development, and if necessary, instigate mitigation.
- Development proposals should be operationally designed in a way that minimises any impact on public health through emissions and dust.
- Monitoring of air quality within the town should be increased through locations identified as having greater risk of deterioration and particularly near educational establishments.

CDC commissioned a [Cirencester – Kemble - Tetbury Public Transport Options Study](#) in 2023, which concluded a Very Light Railway would be poor value for money, compared with improving bus services from Cirencester to Kemble and Tetbury. This was supported by GCC, whose preferred choice was an hourly bus service from Cirencester to Tetbury via Kemble. Further assessments of the economics and feasibility of such a service have yet to be undertaken, however such a service may alleviate some of the additional traffic likely to be generated by the Steadings housing development.

Bourton on the Water

At the end of 2023, the last coach parking facility in Bourton on the Water was closed. Following the closure, the parish council and local residents have expressed concerns regarding coaches entering the village, causing significant disruption to traffic flow by parking in unsuitable locations. Bourton on the Water Parish Council are currently in the process of applying for a traffic regulation order (TRO) to control parking and traffic flow in the town and minimise congestion. They are currently conducting a public survey to determine the preferences of the residents. The implementation of an effective TRO should also have a positive impact on air quality within the village.

The parish council are also in the process of securing funds to install bike racks on the village green in the centre of the village.

Fairford

Fairford Town Council accepted the Fairford Neighbourhood Plan in May 2023. The plan supports sustainable travel and the provision of electric vehicle charging, particularly with regards to residential developments. The towns [Transport Plan](#) also supports sustainable travel, as well as public transport improvements and increased accessibility.

Progress continues on the [Fairford to Lechlade multi-use path](#). The project is supported by Fairford and Lechlade town councils, Kempsford Parish Council and The Lakes by Yoo.

The path is split into southern and northern sections, with work on the southern section commencing in late 2023. Commencement of the northern section is dependent on discussions with landowners.

Moreton in Marsh

Moreton in March Town Council are currently preparing their Neighbourhood Development Plan 2031. The plan will address the congestion currently being experienced in the town and will include policies to improve active travel infrastructure and public transport, as well as improving traffic flow through the town.

To facilitate the above, the town council have acquired a site, near to the train station, to develop into a mobility hub. The project is still in the pre-planning stage however, the intention is that the site will provide cycle storage and connections to local bus services.

Finally, the town council have appointed a traffic consultant to draw up plans to improve traffic flow. This work is ongoing in consultation with GCC Highways.

Stow on the Wold

Stow on the Wold Town Council are in the final stages of developing their Neighbourhood Development Plan. The plan was recently approved by an independent examiner and is awaiting CDC's decision whether the plan should proceed to referendum. The plan supports:

- active travel in policy SSNP14: Walking & Cycling in the Town and Parish;
- Provision of electric vehicle charging in car parks;
- Public transport (included as an overall objective); and,
- Green infrastructure.

In 2023, the town council submitted a list of items to GCC which would improve the road network but would require a Traffic Regulation Order. The list included junction improvements to increase pedestrian safety. The outcome of this submission has yet to be determined.

GCC are currently considering plans to install new electric vehicle charging points in the Square and Maugersbury Road car park. In addition, the town council will be considering installing new cycle storage facilities in the town.

Tetbury

Tetbury has an active campaign group known as [Greening Tetbury](#), who work closely with the town council, as part of their Climate Strategy Group, to improve the local

environment, including air quality. The group is currently engaged in projects to improving active travel infrastructure and public transport and encouraging residents to sponsor a tree as part of the Trees for Streets project. They are also in discussions with the town council with regard to monitoring HGVs (commencing in 2024) and installing electric vehicle chargers. The [Tetbury Neighbourhood Development Plan](#) also supports active travel within the town.

The town is also in the process of reducing the speed limit in the town to 20mph. Residents were consulted in early 2024, with the majority taking the survey being in favour of the change. The campaign group Tetbury 20's Plenty hope the new speed limit will be in place next year.

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 Strategy⁶, 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.

In addition, CDC is taking the following measures to address PM_{2.5}:

- Highlight the issues of PM_{2.5} including the impacts on health and activities which generate the particles. This will be achieved through campaigns such as responsible use of wood burners, fire pits, garden bonfires etc.
- Seek funding to install PM_{2.5} monitors within the AQMAs and other areas of the Cotswold district.

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

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

This section sets out the monitoring undertaken within 2023 by CDC and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

CDC has no automatic (continuous) monitoring sites within its area.

3.1.2 Non-Automatic Monitoring Sites

CDC undertook non-automatic (i.e. passive) monitoring of NO₂ at 16 sites during 2023. Table A.1 in Appendix A presents the details of the non-automatic sites.

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

One diffusion tube was moved at the start of 2023. NAS48, previously positioned at the junction of the A429 and East Street, Moreton in Marsh, was moved to a new location outside the Youth Club building on the A429 in Stow on the Wold. The tube reference is now NAS49. This location in Stow suffers from traffic congestion backing up from the traffic lights at the junction of the A429 / B4068 / A436.

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 (NO₂)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. 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 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 - NO₂ 2023 Diffusion Tube Results (µg/m³)

includes distance corrected values, only where relevant.

Overall NO₂ levels are somewhat lower across the district in comparison with 2022 data, with the exceptions only showing a marginal increase (max 0.4µg/m³). This continual decline in concentrations across the district provides a strong indication NO₂ concentrations are unlikely to revert to pre-pandemic levels, which is thought to be a result in the increase in the number of people working from home, coupled with improvements in engine technology and the uptake of hybrid and fully electric vehicles.

Trends

The trend of nitrogen dioxide levels, at a representative selection of sites monitored in our Birdlip AQMA since 2015, are presented in Appendix A, Figure A.1. The graph illustrates the fall in NO₂ concentration during 2023 compared with 2022. A similar trend can be seen in Figure A.2, which presents changes in NO₂ concentration at locations in other areas of the district. With the exception of the Air Balloon Roundabout, NO₂ concentrations remained below the national objective of 40µg/m³ across the district. In addition, during 2023 no annual mean was greater than 60µg/m³, which indicates that an exceedance of the 1-hour mean objective was unlikely at any of the locations.

The results from 2023 are positive and indicate a general improvement in the air quality within the Cotswold District. With the implementation of the measures described in Table 2.2, we hope to see this trend continue. CDC will continue to work with the county and town councils to implement measures to tackle air pollution in the AQMA.

3.2.2 Particulate Matter

Measurements of particulate matter were not made within the district during 2023.

Particulate matter can enter the respiratory system and have consequential health implications. Particulates which are routinely monitored in the UK are PM₁₀ and PM_{2.5}. PM₁₀ are particles that have a diameter of 10µm or less and can pass through the upper respiratory system and travel deep into the lungs. PM_{2.5} particles have a diameter of 2.5µm or less and can pass into the deepest parts of the lungs, and potentially through the lung walls into the blood stream. These particles have been strongly connected with respiratory problems such as asthma, chronic obstructive pulmonary disease and cardiovascular disease.

The Environment Act 2021 required the Secretary of State to set PM_{2.5} objectives for the UK, which were laid out in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. The targets set within the 2023 Regulations are:

- *The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of PM_{2.5} in ambient air must be equal to or less than 10 µg/m³*
- *The population exposure reduction target is that there is at least a 35% reduction in population exposure by the end of 31st December 2040, as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018.*

To monitor progress in meeting these objectives, new monitors are expected to be installed across the country to provide concentration data for fine particles in the air. These will predominantly be in urban areas.

Trends in PM_{2.5} in the UK, at urban background and roadside sites, between 2009 and 2023 have been published by DEFRA: [Link to: Particulate matter \(PM10/PM2.5\)](#). Annual average concentration of the fine particles peaked in 2011 and have since shown a steady decline. In 2023 concentrations fell to their lowest since 2019.

The data for 2023 showed temporal changes in PM_{2.5}, with concentrations peaking during the winter and spring months, although in 2023 there was also a peak in concentrations during September.

Residential combustion of wood and coal in stoves and open fires is a large contributor to emissions of particulate matter both in the UK, contributing factor towards elevated concentrations in winter months. Emissions from this source are typically located closer to urban background sites than roadside sites, which may partially explain the reduction in the gap between concentrations recorded at urban background and roadside sites throughout the winter months. The contribution of solid fuel stoves is further reflected in

the average hourly concentrations, which show the highest emissions of PM_{2.5} occurred mid to late evening.

Peaks were also recorded in April and September during 2023. These are thought to be due to elevated concentrations of nitrates transported from agricultural operations across UK and continental Europe during the spring, and the significantly warm and dry start to September.

The impact of solid fuel stoves and open fires demonstrates the importance of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, which stipulates that wet wood (that is, wood having a moisture content of more than 20%) cannot be sold in units of less than 2m³. The same legislation outlaws sale of bags of coal for domestic fireplaces. This is intended to encourage use of approved kiln-dried logs which produce much less smoke and thus particulates.

3.2.3 Public Health Outcomes Framework

Public Health England publishes various information related to public health.

The importance of the effect of air pollution on public health is reflected by the inclusion of an indicator described as “D01 - Fraction of mortality attributable to particulate air pollution”. This indicator provides an insight into the probable number of deaths which occur within the UK as a direct consequence of particulate air pollution. Data can be broken down into region, county, district, unitary authority, NHS region or integrated care board.

For Gloucestershire as a whole, the estimated Fraction of Mortality attributable to particulate air pollution (2022 data) is 5.4% of the county’s population which is a slight increase on 2021 (5.3%). In comparison, the average for the southwest region was 4.6% in 2022, which fell from 5.1% in 2021.

For the Cotswold District, the estimated fraction of mortality attributable to particulate air pollution is 5.2% (a rise of 0.2% from 2021), compared with the regional average of 4.6%.

The rise in mortality attributed to particulate matter coincides with a decrease in physical activity in adults⁷ (19 and over) across the district from 78.4% (2021) to 74.5% (2022).

⁷ Based on the number of respondents aged 19 and over, with valid responses to questions on physical activity, doing at least 150 moderate intensity equivalent (MIE) minutes physical activity per week in bouts of 10 minutes or more in the previous 28 days expressed as a percentage of the total number of respondents aged 19 and over.

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NAS26	Unicorn PH, Stow on the Wold	Roadside	419003	225693	NO ₂		6.5	1.2		2.1
NAS27	Lansdowne, Jct School Hill, Bourton-on-the-Water	Roadside	416600	220893	NO ₂		4.7	2.3		2.5
NAS28	Burford Rd Traffic lights j/w A417, Cirencester	Roadside	403020	202175	NO ₂		10.0	1.5		2.3
NAS29	Abbey Way j/w Spitalgate, Cirencester	Roadside	402305	202519	NO ₂		6.0	1.4		2.2
NAS30	London Road, Cirencester	Kerbside	402783	201946	NO ₂		5.8	2.8		2.2
NAS31	Lewis Lane, Cirencester	Roadside	402480	201772	NO ₂		2.7	1.5		2.1
NAS32	Bartonbury Lodge, Stroud Road, Cirencester	Kerbside	401102	201364	NO ₂		2.4	1.0		2.5
NAS33	Tetbury Road, Cirencester (O/S Steading Cottages)	Roadside	401064	201044	NO ₂		3.8	2.9		2.2

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)
NAS34	Spratsgate Lane nr j/w Park Way, Cirencester	Rural	402394	199581	NO ₂		0.0	2.3		2.1
NAS35	Berkeley Road j/w Somerford Road, Cirencester	Roadside	402439	200297	NO ₂		15.0	0.5		2.1
NAS36	Somerford Road, Cirencester. (on lamp post 6)	Roadside	402241	201102	NO ₂		4.6	1.7		2.4
NAS37	Thames Street, Lechlade	Kerbside	421365	199503	NO ₂	Lechlade AQMA	0.2	1.3		2.4
NAS38	4 High Street, Lechlade	Kerbside	421367	199515	NO ₂	Lechlade AQMA	0.0	1.0		2.2
NAS39	Air Balloon Roundabout, Birdlip	Kerbside	393462	216111	NO ₂	Birdlip AQMA	6.4	1.1		2.1
NAS42	A429 j/w A44 (White Horse Hotel) Moreton-in-Marsh	Roadside	420486	232419	NO ₂		2.1	1.2		2.4
NAS49	A429 Youth Club / Town Council building Stow on the Wold	Roadside	419044	225879	NO ₂		2.5	3.5		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.

Table A.2 - 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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
NAS26	419003	225693	Roadside	100	99.7	38.7	29.3	31.8	33.3	27.7
NAS27	416600	220893	Roadside	100	99.7	-	-	-	7.3	7.1
NAS28	403020	202175	Roadside	100	99.7	29.8	22.1	23.8	23.9	22.5
NAS29	402305	202519	Roadside	100	99.7	29.9	23.8	25.3	24.9	23.5
NAS30	402783	201946	Kerbside	100	99.7	23.4	17.7	18.1	17.4	17.4
NAS31	402480	201772	Roadside	100	99.7	20.6	15.7	15.8	16.5	16.1
NAS32	401102	201364	Kerbside	100	99.7	-	-	-	20.5	19.5
NAS33	401064	201044	Roadside	100	99.7	21.6	16.2	16.2	15.6	15.9
NAS34	402394	199581	Rural	100	99.7	9.3	7.4	7.0	7.1	6.4
NAS35	402439	200297	Roadside	100	99.7	9.9	7.0	7.9	8.0	7.3
NAS36	402241	201102	Roadside	91.7	90.1	14.9	11.2	10.8	10.7	10.5
NAS37	421365	199503	Kerbside	100	99.7	31.1	22.0	23.2	25.1	15.0
NAS38	421367	199515	Kerbside	100	99.7	-	22.8	29.4	28.7	18.0

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
NAS39	393462	216111	Kerbside	100	99.7	50.9	37.7	39.9	42.1	38.7
NAS42	420486	232419	Roadside	100	99.7	29.0	20.0	21.9	19.9	18.3
NAS49	419044	225879	Roadside	100	99.7	-	-	-	-	20.0

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

☒ Diffusion tube data has been bias adjusted.

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

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 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%).

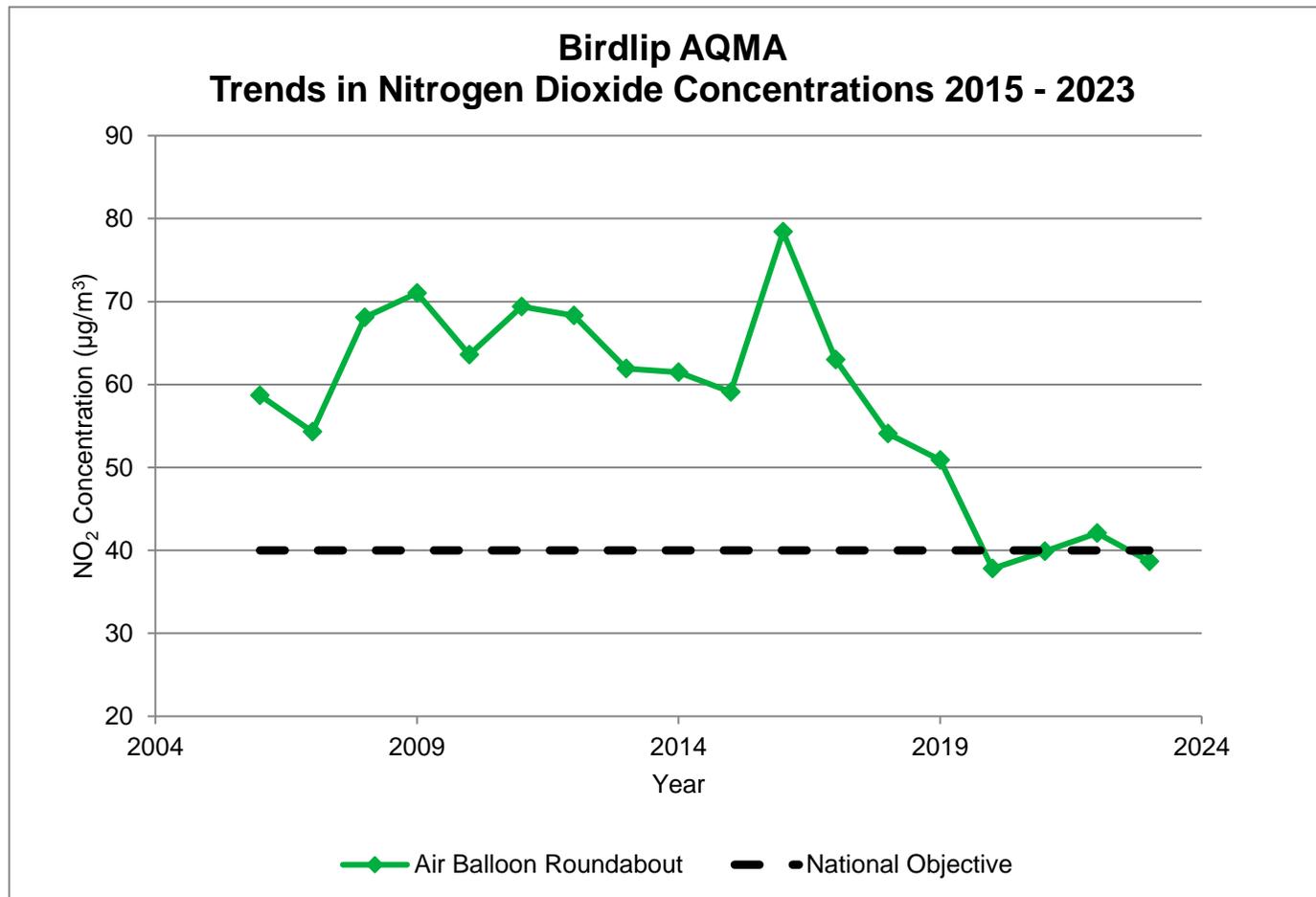


Figure A.1 - Trends in Annual Mean NO₂ Concentrations in Birdlip AQMA

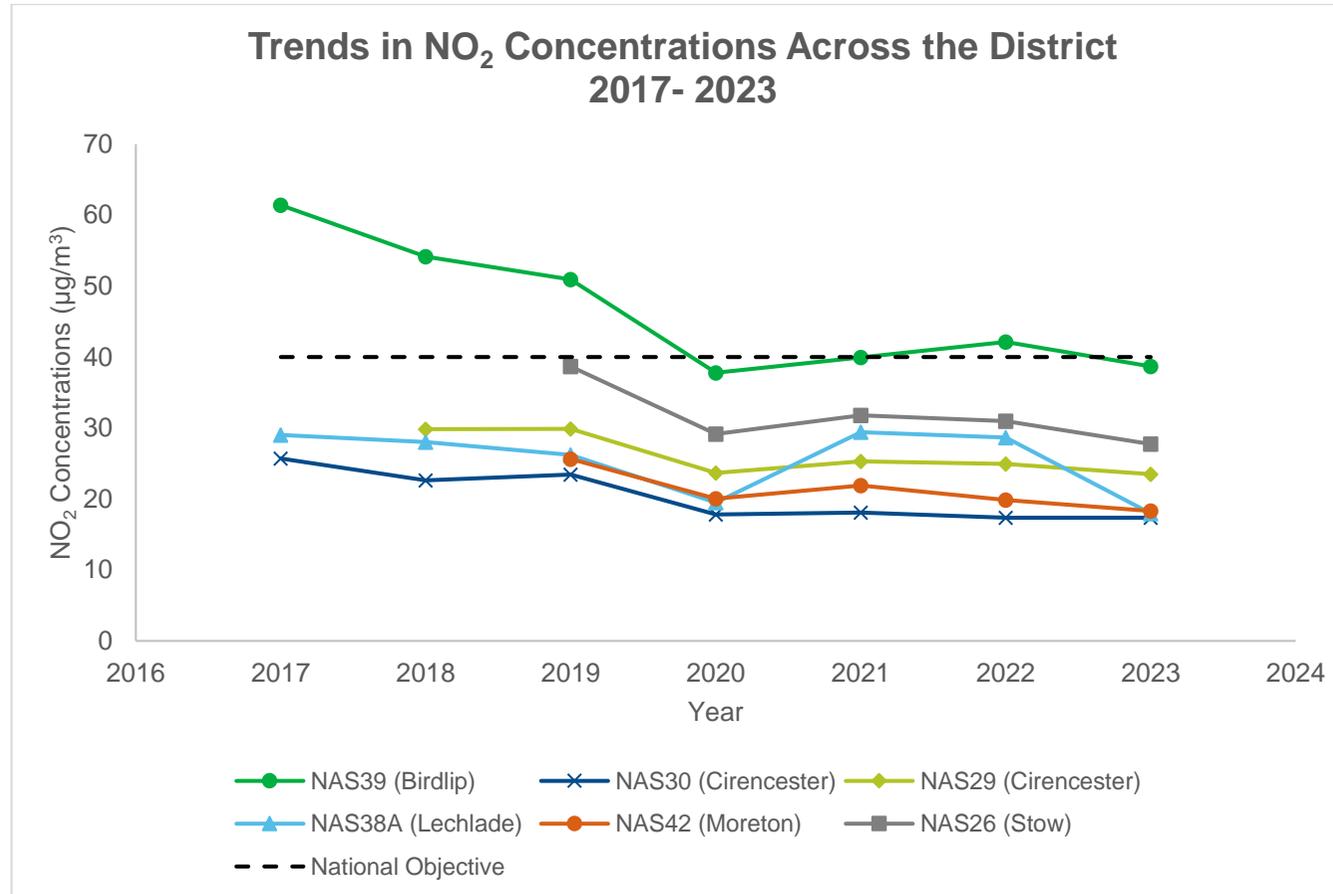


Figure A.2– Trends in Annual Mean NO₂ Concentrations Across the District

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 - NO₂ 2023 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: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS26	419003	225693	27.6	39.2	32.5	39.3	32.4	43.3	34.4	46.5	42.0	39.6	34.3	21.1	36.0	27.7	-	
NAS27	416600	220893	13.8	9.9	10.8	9.1	5.4	6.4	6.5	8.7	8.4	10.5	12.5	8.5	9.2	7.1	-	
NAS28	403020	202175	37.4	30.8	29.5	28.3	25.7	28.6	23.9	30.7	28.4	28.6	34.8	24.7	29.3	22.5	-	
NAS29	402305	202519	27.4	28.4	30.1	29.3	49.5	30.7	21.6	29.3	31.3	30.2	32.5	25.8	30.5	23.5	-	
NAS30	402783	201946	31.5	25.3	25.0	22.2	16.1	18.8	17.5	18.7	24.9	20.3	25.0	25.5	22.6	17.4	-	
NAS31	402480	201772	29.4	25.4	21.8	18.2	17.1	15.6	13.5	16.5	18.4	20.5	31.2	22.7	20.9	16.1	-	
NAS32	401102	201364	30.0	24.7	31.0	25.4	20.4	26.2	18.9	24.8	23.6	24.1	25.4	28.8	25.3	19.5	-	
NAS33	401064	201044	24.8	22.1	20.9	20.7	16.3	16.6	13.5	20.8	23.6	20.8	26.1	20.9	20.6	15.9	-	
NAS34	402394	199581	12.3	10.0	8.0	8.2	6.8	5.8	5.7	7.4	7.6	8.3	12.9	6.4	8.3	6.4	-	
NAS35	402439	200297	13.2	10.6	11.5	10.2	7.8	9.7	6.0	7.2	8.7	10.2	12.9	6.2	9.5	7.3	-	
NAS36	402241	201102	19.6	15.1	14.8	13.4	7.4	Missing	9.3	9.8	13.8	16.3	19.1	12.0	13.7	10.5	-	
NAS37	421365	199503	36.6	30.1	28.1	28.3	24.3	14.8	4.8	7.7	10.4	10.4	17.4	21.4	19.5	15.0	-	
NAS38	421367	199515	38.3	36.7	37.0	34.3	27.7	18.0	6.8	9.5	7.7	4.2	28.9	30.9	23.3	18.0	-	
NAS39	393462	216111	55.9	53.6	52.0	56.0	45.3	52.1	43.6	54.0	54.3	50.0	48.0	37.9	50.2	38.7	26.3	
NAS42	420486	232419	27.5	29.8	29.5	26.9	21.0	22.4	17.4	26.6	25.6	24.1	16.0	18.5	23.8	18.3	-	
NAS49	419044	225879	27.2	30.7	30.9	32.1	25.9	26.9	22.7	30.2	23.8	24.6	18.3	18.3	26.0	20.0	-	

☒ All erroneous data has been removed from the NO₂ 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.
- Cotswold District Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Cotswold District During 2023

CDC has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Cotswold District Council During 2023

CDC has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

CDC have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by CDC over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.77
2022	National	03/23	0.76

2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	03/20	0.75

CDC employ Socotec Didcot to carry out the analysis on the diffusion tubes distributed around the district. Diffusion tubes are prepared with 50% TEA in acetone.

A copy of the National Diffusion Tube Bias Adjustment Factor Spreadsheet is provided below.

National Diffusion Tube Bias Adjustment Factor Spreadsheet				Spreadsheet Version Number: 03/24						
Follow the steps below in the correct order to show the results of relevant co-location studies				This spreadsheet will be updated at the end of June 2024						
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods				LAQM Helpdesk Website						
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet				Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.						
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ² shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ²	If you have your own co-location study then see footnote ⁵ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953							
Analysed By ¹	Method ² <small>To see the preparation, choose (All) from the pop-up list</small>	Year ³ <small>To see the year, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2023	UB	City Of York Council	11	15	12	27.9%	G	0.78
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	11	22	17	26.8%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	9	22	17	33.7%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	10	31	25	26.1%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	19	15	25.6%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	23	19	18.4%	G	0.84
SOCOTEC Didcot	50% TEA in acetone	2023	R	Ipswich Borough Council	9	26	20	33.0%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2023	R	Ipswich Borough Council	12	36	27	34.3%	G	0.74
SOCOTEC Didcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	12	43	26	61.9%	G	0.62
SOCOTEC Didcot	50% TEA in acetone	2023	UB	North East Lincolnshire Council	10	13	10	23.1%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	11	24	21	18.0%	G	0.85
SOCOTEC Didcot	50% TEA in acetone	2023	R	Cardiff Council / Shared Regulatory Services	11	41	34	22.2%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Torfaen County Borough Council	11	12	9	43.3%	G	0.70
SOCOTEC Didcot	50% TEA in Acetone	2023	R	East Suffolk Council	12	29	21	38.9%	G	0.72
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Wrexham County Borough Council	11	17	14	25.2%	G	0.80
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	12	21	17	23.5%	G	0.81
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	10	25	17	43.5%	G	0.70
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	10	23	24	-5.4%	G	1.06
SOCOTEC Didcot	50% TEA in Acetone	2023	UL	North Lincolnshire Council	10	14	11	26.2%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	R	Bridgford Council	11	32	27	20.8%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2023	R	Cambridge City Council	12	22	18	24.8%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2023	R	Leeds City Council	10	39	29	32.3%	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2023	KS	Leeds City Council	10	30	20	48.9%	G	0.67
SOCOTEC Didcot	50% TEA in acetone	2023	R	Leeds City Council	12	25	19	30.0%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	UC	Leeds City Council	11	26	19	40.0%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2023	KS	Marleybone Road Intercomparison	11	53	38	41.4%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2023	R	Vale Of White Horse District Council	10	22	18	21.2%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Wirral Council	11	15	13	16.7%	G	0.86
				Overall Factor² (28 studies)				Use	0.77	

Other QA/QC Information

Socotec Didcot laboratories participate in the AIR NO₂ Proficiency Scheme, which assesses the analytical performance of laboratories analysing NO₂ diffusion tubes. In 2023, four rounds of proficiency testing were carried out, round 55 between January and February, round 56 between May and June, round 58 between July and August and round 59 between September and October. During each round, Socotec Didcot laboratories scored 100%, which provides confidence in the diffusion tube analysis for the district. The

full results from 2015 onwards can be found at <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/>.

DEFRA dictate the dates when the diffusion tubes are exchanged, and the local authority are expected to adhere to these dates +/- 2 days. All tubes were exchanged within the acceptable timeframe throughout 2023.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table C.2.

Distance correction has been made where appropriate using the DEFRA correction tool.

Table C.2 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

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
NAS39	1.1	7.5	38.7	7.2	26.3	

Appendix D: Maps of Monitoring Locations and AQMAs

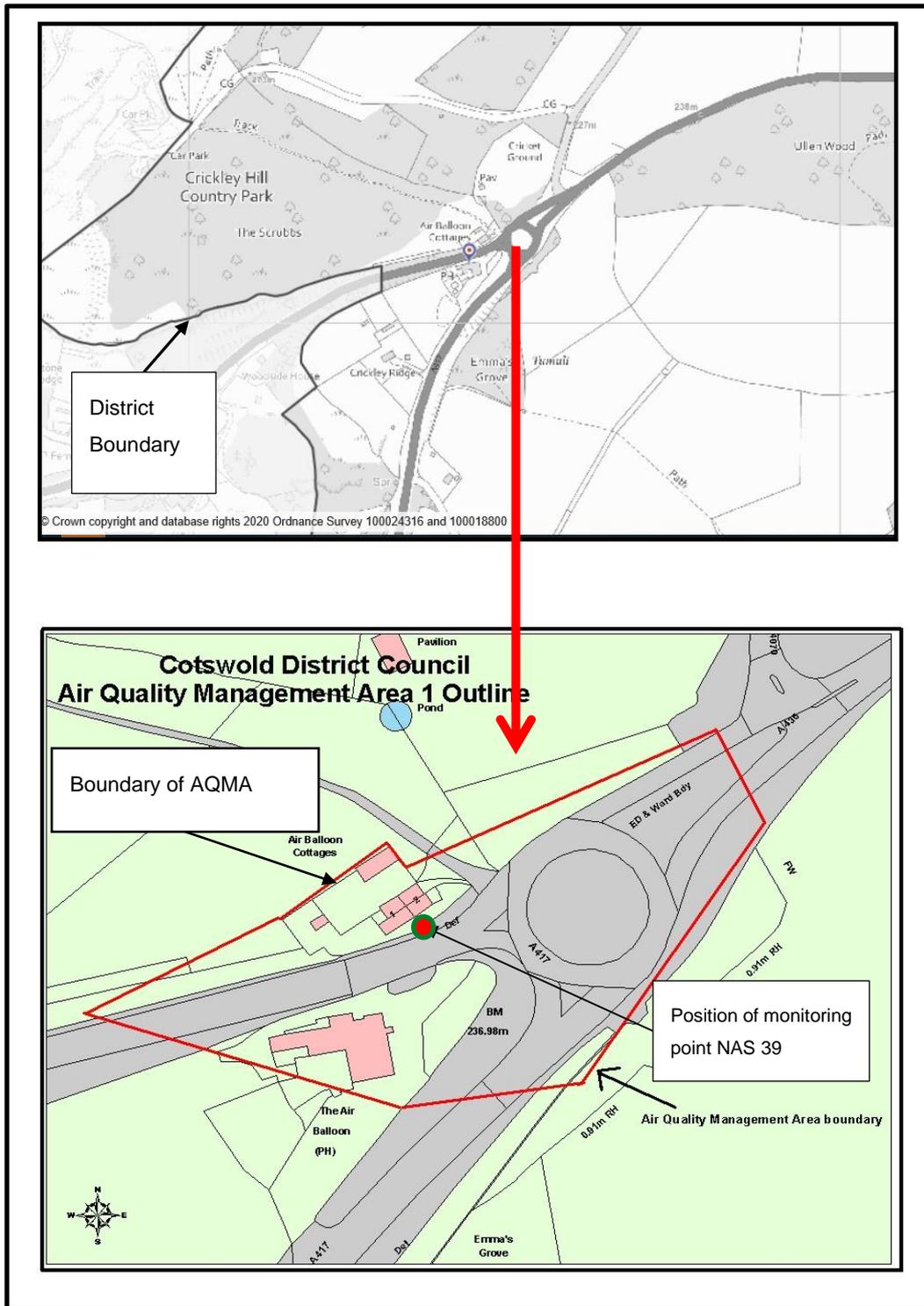


Figure D.1 – Maps of Air Balloon Roundabout AQMA - Location & Boundary

**Cotswold Distict Council
Air Quality Management (Thames Street, Lechlade 2014) Area**

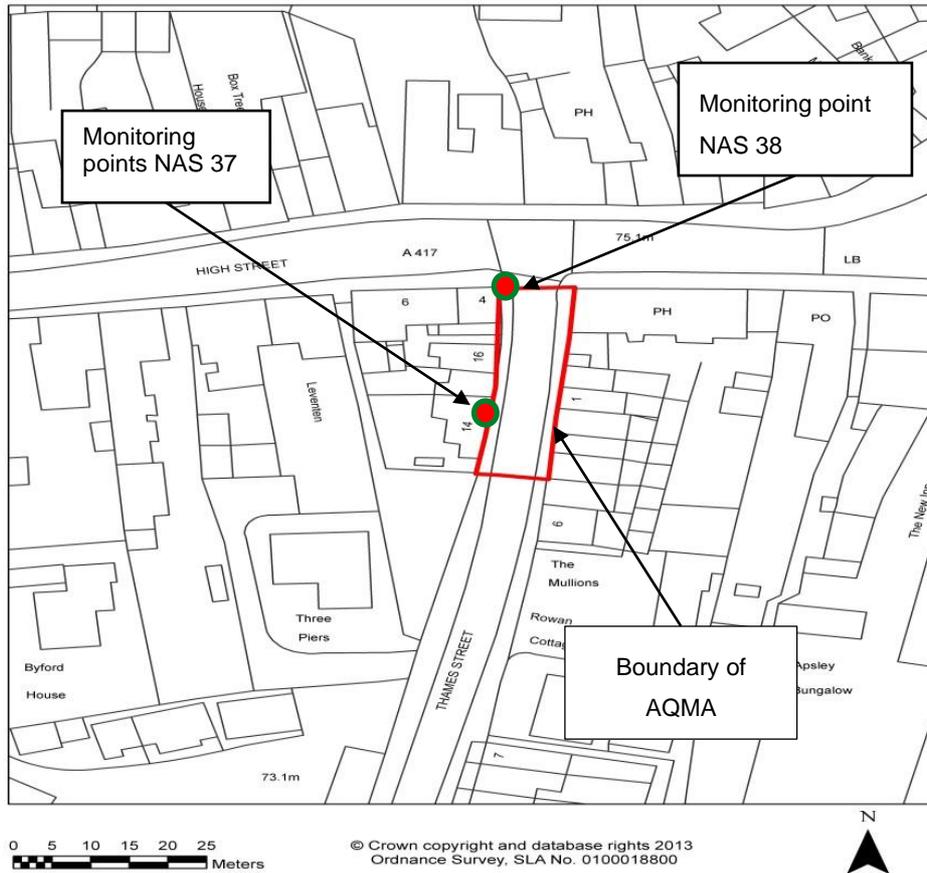


Figure D.2 – Map of Lechlade AQMA

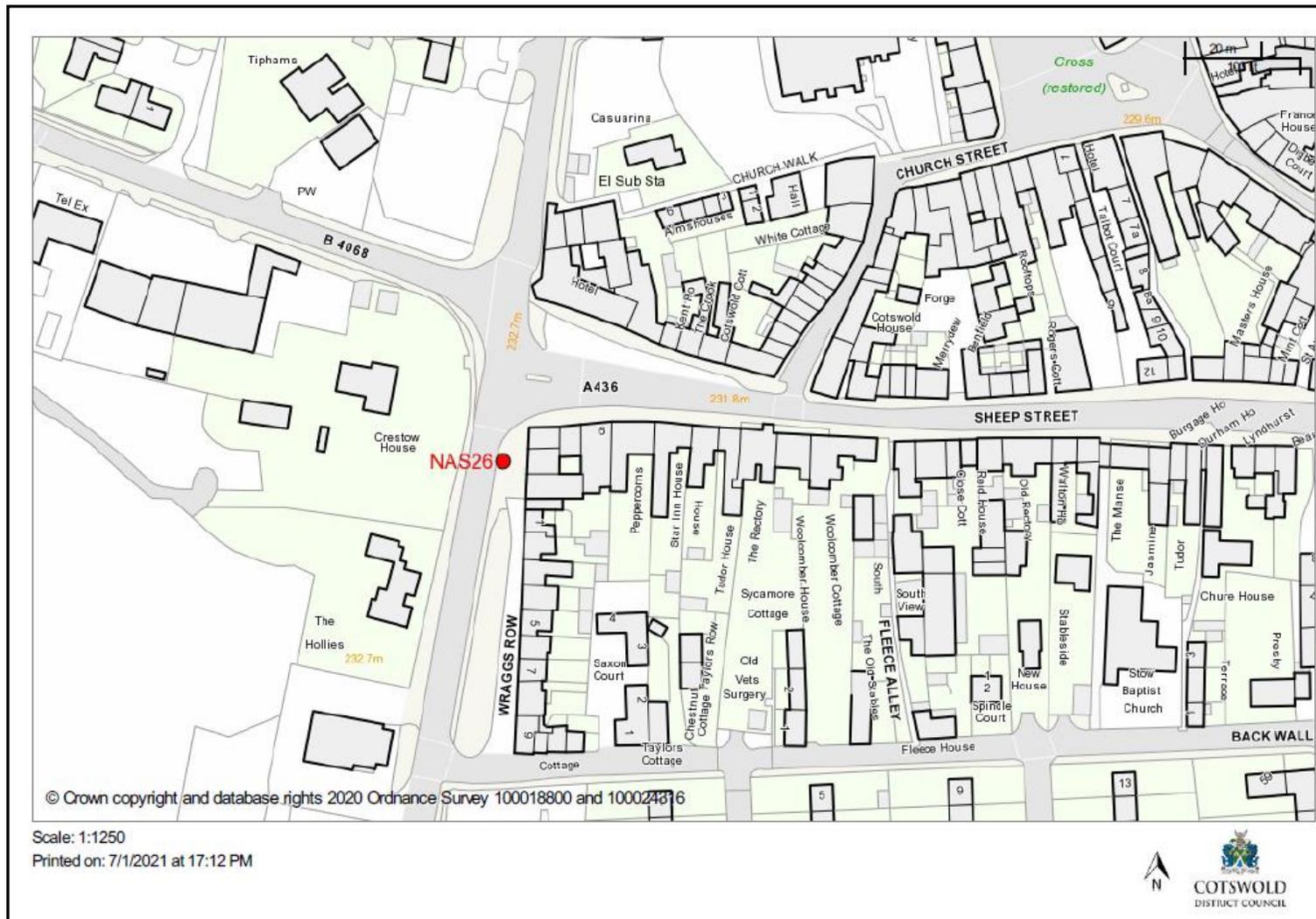


Figure D.3 – Map of Non-Automatic Monitoring Site: Stow on the Wold - NAS26



Figure D.4 – Map of Non-Automatic Monitoring Site: Stow-on-the-Wold – NAS49

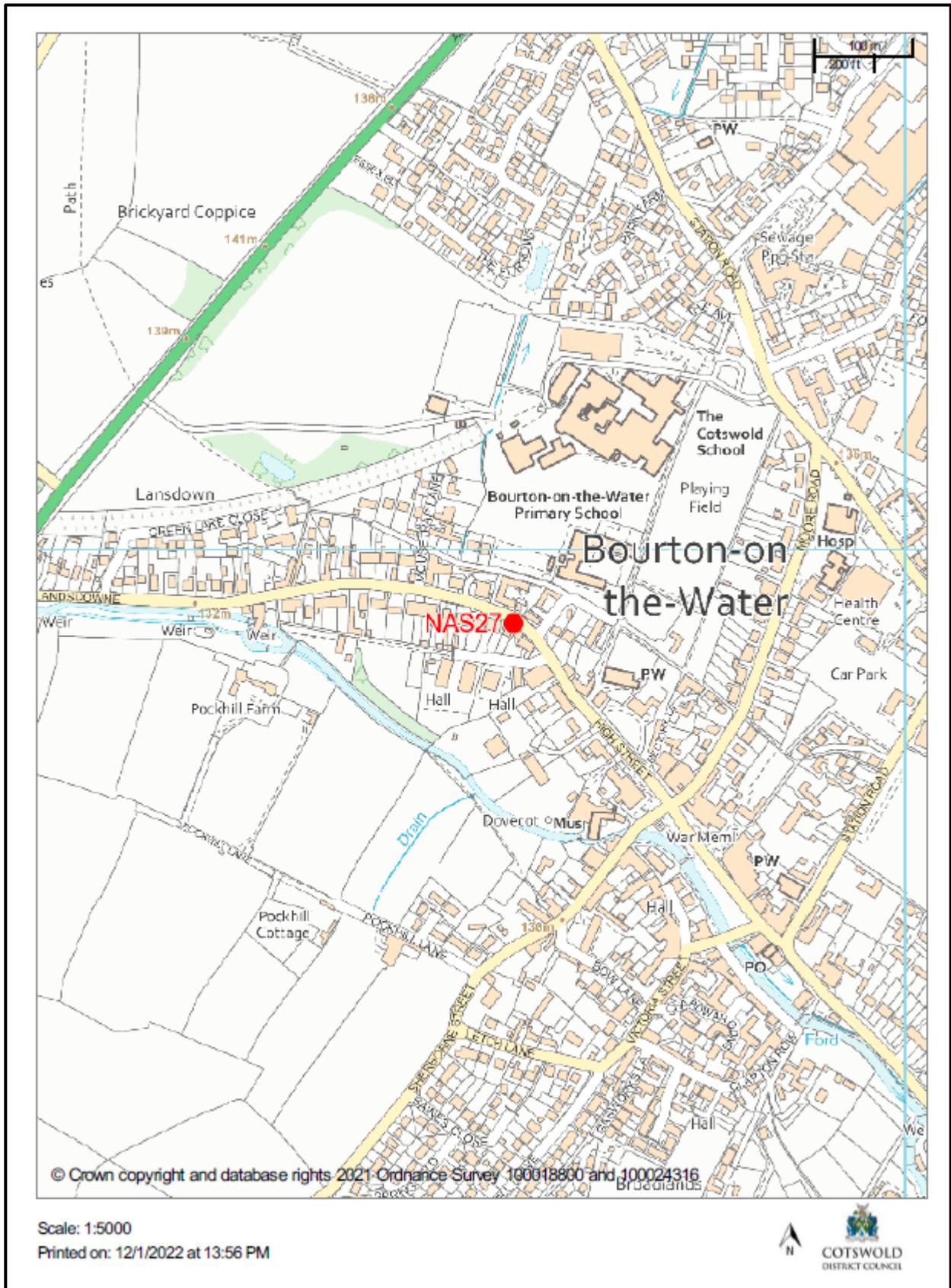
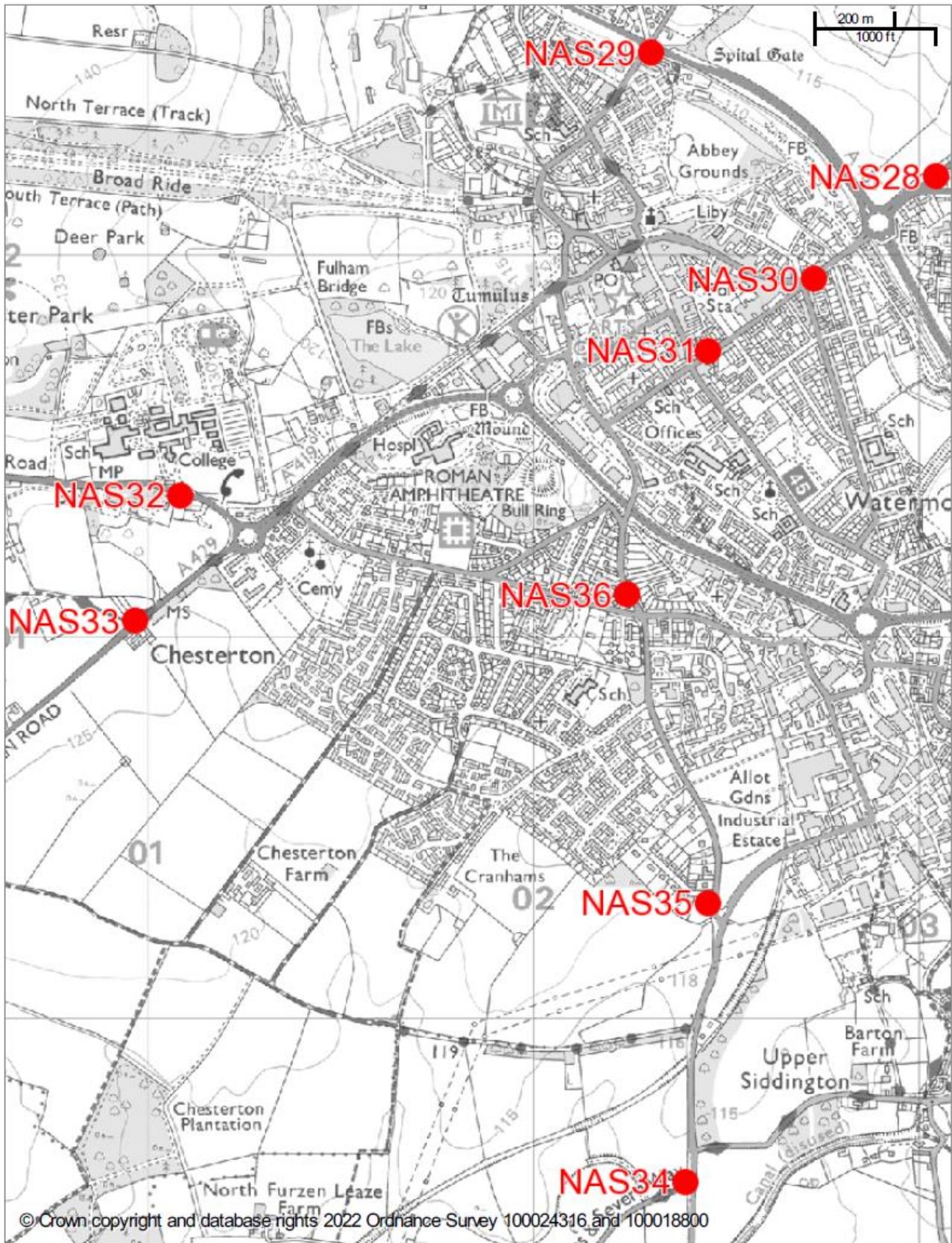


Figure D.5 – Map of Non-Automatic Monitoring Site: Bourton-on-the-Water - NAS27



Scale: 1:13000
Printed on: 15/3/2023 at 15:21 PM



Figure D.6 – Map of Non-Automatic Monitoring Site: Cirencester - NAS28 to NAS36

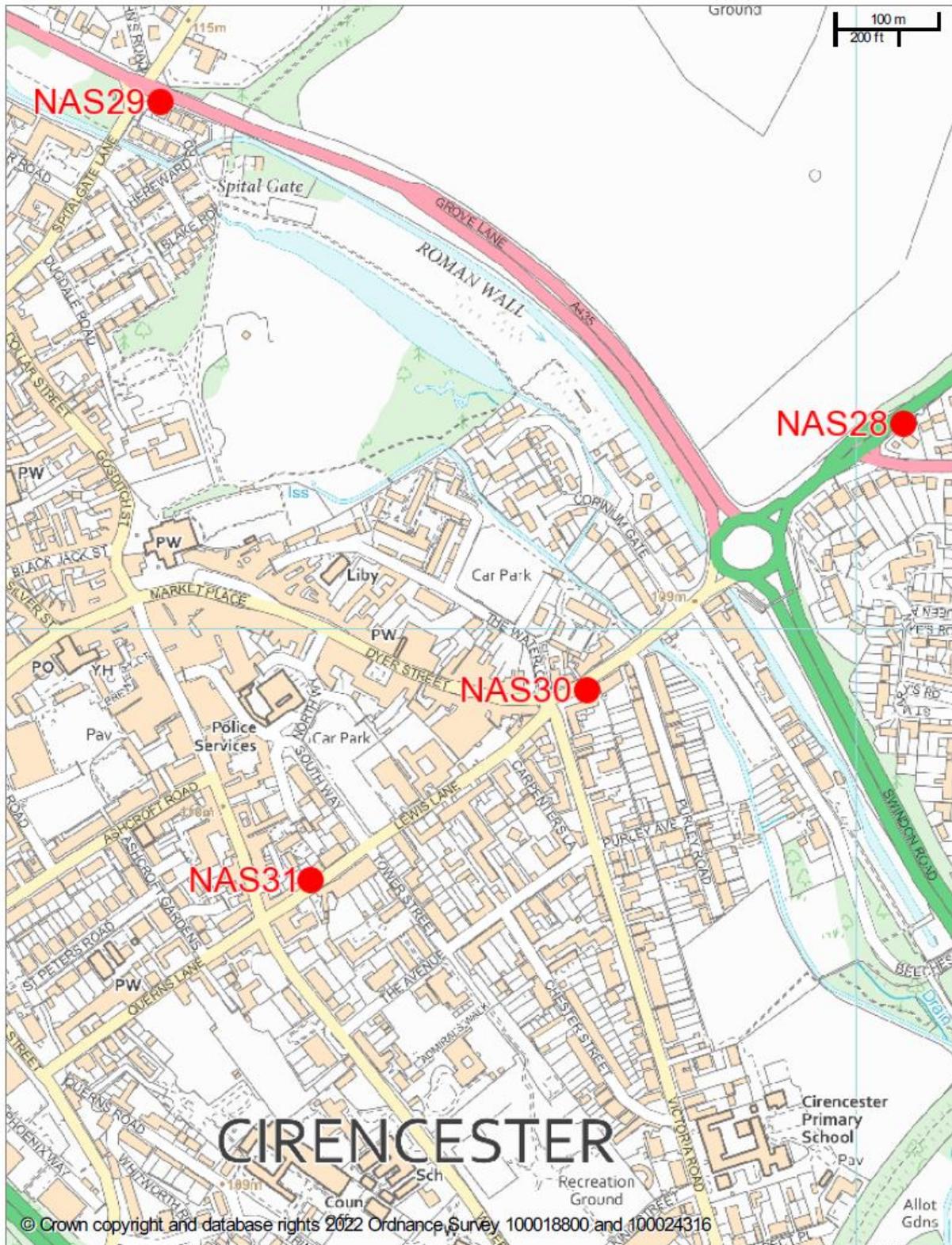


Figure D.7 – Map of Non-Automatic Monitoring Site: Cirencester - NAS28, NAS29, NAS30 and NAS31

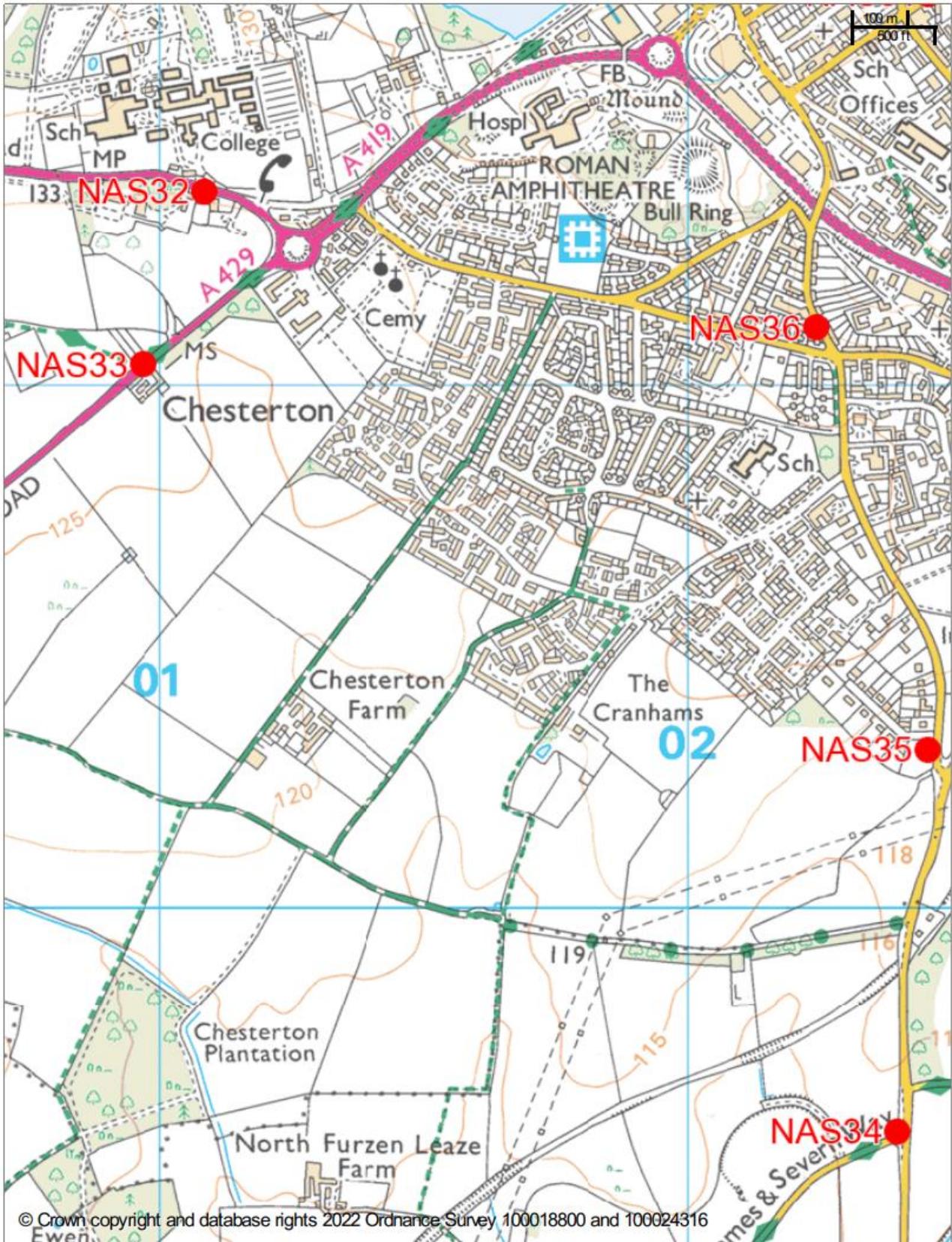


Figure D.8 – Map of Non-Automatic Monitoring Site: Cirencester – NAS32, NAS33, NAS34, NAS35 and NAS36

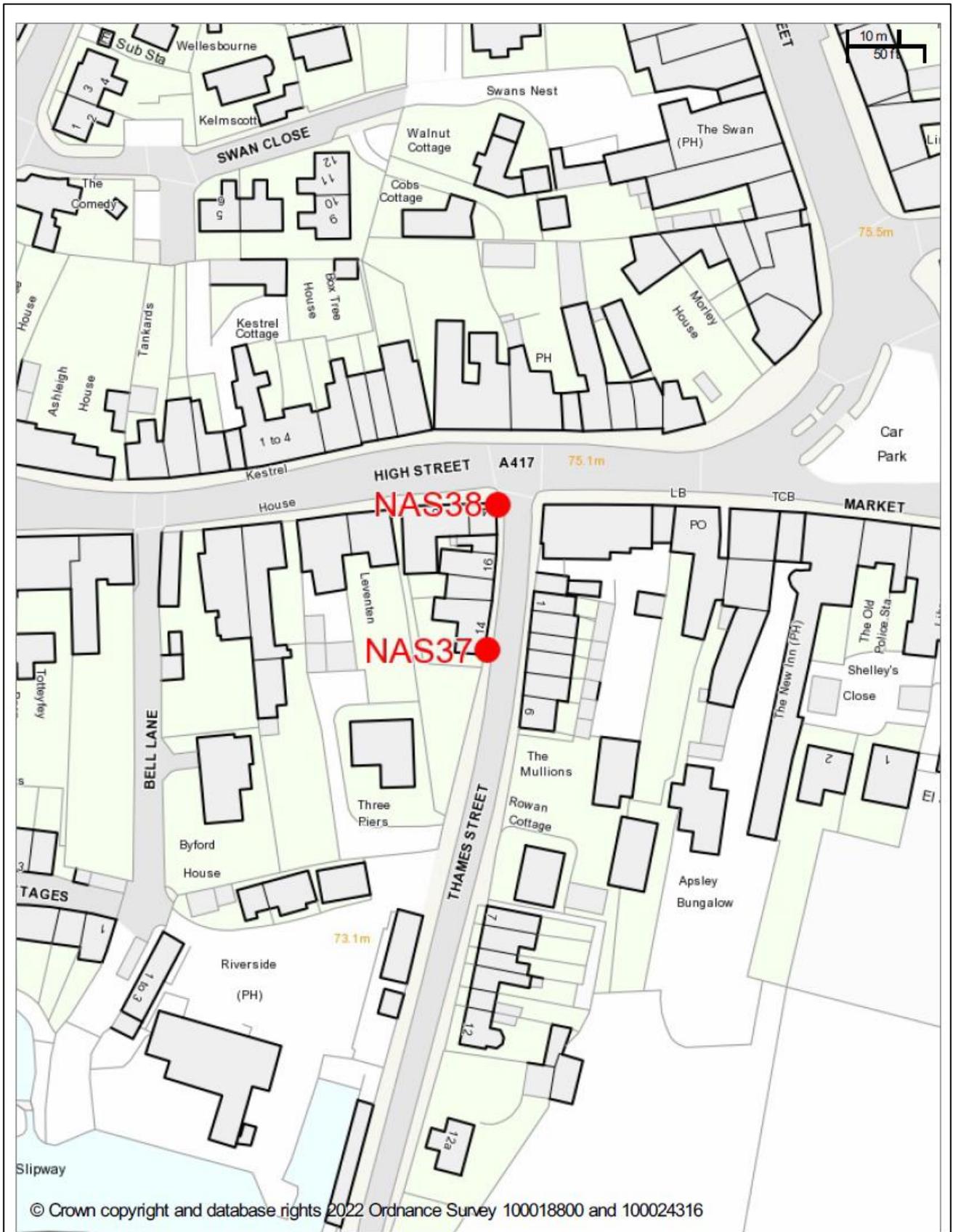


Figure D.9 – Map of Non-Automatic Monitoring Site: Lechlade – NAS37 and NAS38

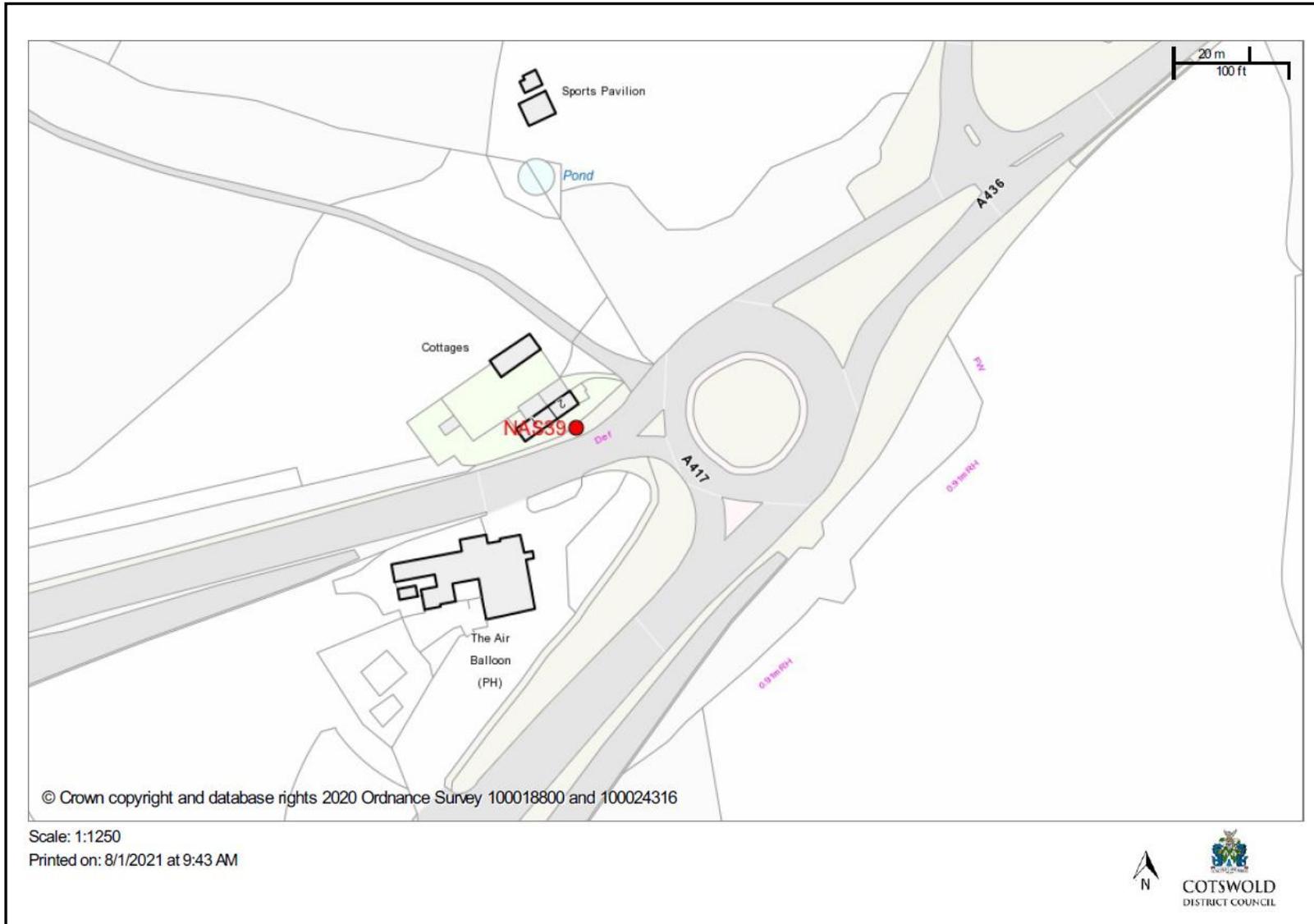
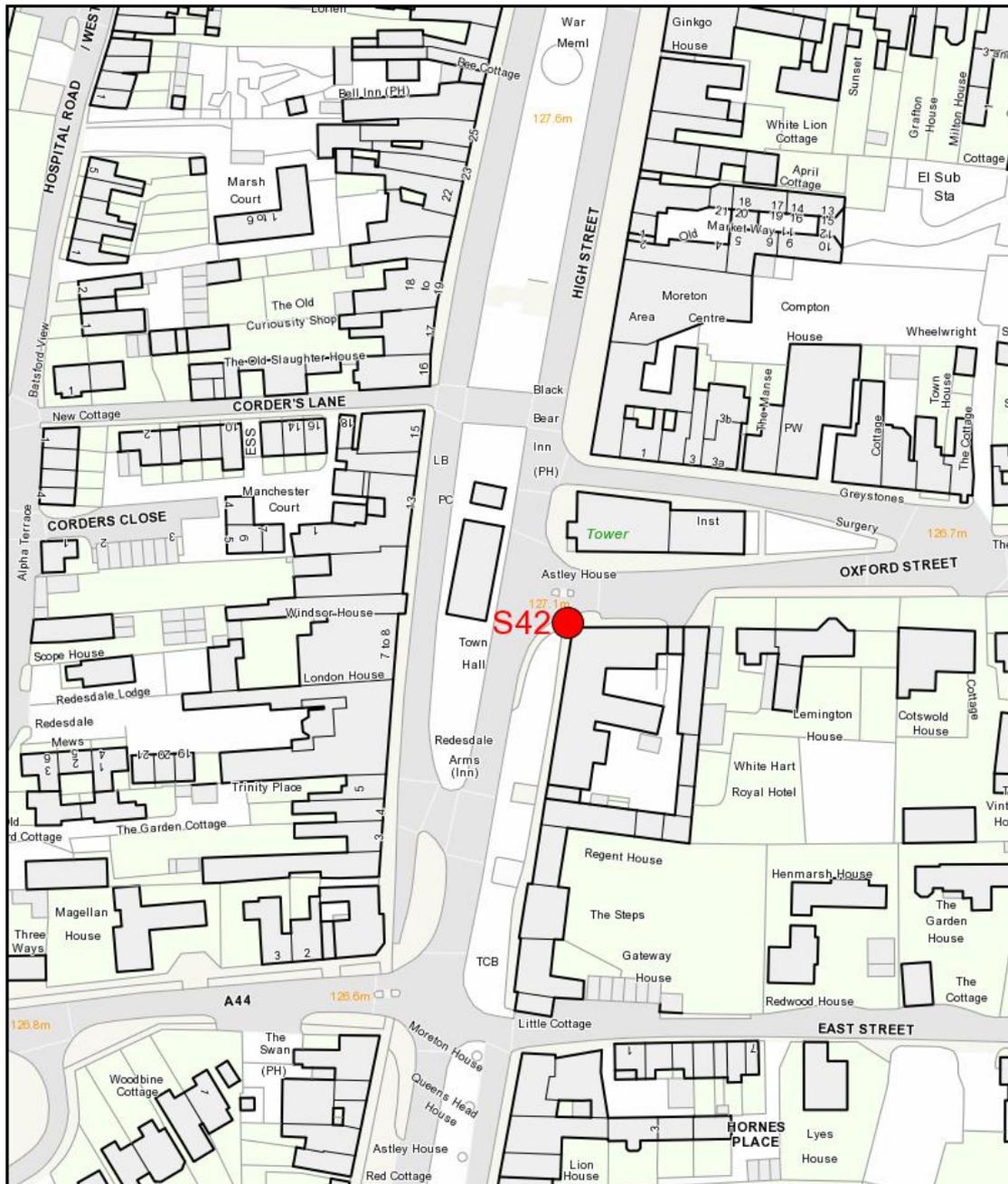


Figure D.10 – Map of Non-Automatic Monitoring Site: Air Balloon Roundabout - NAS39



**Figure D.11 – Map of Non-Automatic Monitoring Site: Moreton-in-Marsh
– NAS42**

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁸

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/m³).

Appendix F: Lechlade AQMA Revocation

Appendix G: School Streets Scheme, Cirencester

School Streets Scheme

The School Streets scheme aims to improve air quality and road safety by closing roads near certain schools to traffic during drop-off and pick-up times. This is being delivered by Gloucestershire County Council together with participating schools, with funding from the Government's Air Quality grant scheme.

School travel accounts for approximately 20% of vehicle trips on Gloucestershire's road network during peak times of the day and is a significant contributing factor to congestion and parking pressures outside of school gates.

On roads where the Schools Streets are being trialled, the streets around the school will temporarily become 'pedestrian, scooter and cycle zones' only at set times in the morning and afternoon. Vehicles are not permitted to enter the street between these times unless they have been granted an exemption.

From February 2022, two air quality monitoring stations were set up in the vicinity of Stratton Church of England Primary School, Cirencester in advance of the trial commencing in order to assess air quality (nitrogen dioxide) before the scheme commenced.

The tubes are supplied by Gloucestershire County Council and is analysed separately from the District's diffusion tubes. It will assess levels of nitrogen dioxide in the vicinity of the school at the locations shown in Figure G.1 below.



Figure G.1 - Location of School Streets Monitoring in Stratton

The results of the monitoring are summarised in Table G.1

Table G.1 - Results of Monitoring in vicinity of Stratton Church of England Primary School, Cirencester

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 0.76
GCC/22A/NA1S1	Corner of Haresfield and Vaisey, Stratton	401642	203872	7.8	8.4	8.6	7.9	5.5	6.3	5.9	7.2	8.3	8.1	1.3	7.3	6.9	5.3
GCC/22A/NA1S2	Stratton C of E Primary, Thessaly Rd, Stratton	401503	203879	13.7	6.8	7	9.6	4.7	4.4	4.3	5.2	6.0	9.6	0.9	6.4	6.6	5.0

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
CDC	Cotswold District Council
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
GCC	Gloucestershire District Council
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.