



WEST OXFORDSHIRE  
DISTRICT COUNCIL



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# 2022 Air Quality Annual Status Report (ASR)

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

Date: July 2022

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<b>Report Reference Number</b>	ASRW 2022/1
<b>Date</b>	July 2022

## Executive Summary: Air Quality in Our Area

### Air Quality in West Oxfordshire District Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas<sup>1,2</sup>.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

The monitoring reported within this 2022 Annual Status Report for West Oxfordshire District Council took place during the whole of 2021. It does not indicate any additional areas of general concern with regard to air quality, but our two designated Air Quality Management Areas (AQMAs) continue to experience elevated nitrogen dioxide levels. However, this year annual mean concentrations did not exceed the national objective of 40 µgm-3, which was set to protect health. This is most likely due to the ongoing social restrictions placed on the UK during 2021 as a result of the coronavirus pandemic, which had the effect of reducing traffic volumes across much of the UK, particularly during the first half of the year.

Current AQMAs are located within the two largest towns within the District – Witney (Bridge Street and immediate area) and Chipping Norton (Horsefair and immediate area):

- Chipping Norton’s action plan can be found here: [Link to Chipping Norton Air Quality Action Plan](#)
- Bridge Street, Witney (air quality action plan pending)

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<sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2021

<sup>4</sup> Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

There were no proposed industrial developments with significant air pollution implications within the District during 2021.

All residential development proposals were considered with regard to their potential to increase traffic pollution in the AQMAs and other areas. Of note this year is ongoing progress with bringing forward plans for the Eynsham strategic housing development area and a Park and Ride facility on the A40 highway to the west of the town. Also progress with the East Witney strategic housing development and developments west of Witney.

During 2021, Oxfordshire County Council submitted a planning application for a series of major infrastructure projects along the A40 in West Oxfordshire, which are likely to have an impact on local air quality. The application follows public consultations in late 2018 and spring 2021.

There is active liaison between West Oxfordshire District Council, 3 neighbouring District Councils, Oxford City and Oxfordshire County Council and this grouping has produced a useful additional resource describing air quality in our areas: [Link to Oxfordshire Air Quality Website](#)

The West Oxfordshire District Council centralised national AQMA page is located [here](#).

## **Actions to Improve Air Quality**

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy<sup>5</sup> sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero<sup>6</sup> sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

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<sup>5</sup> Defra. Clean Air Strategy, 2019

<sup>6</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Activity within West Oxfordshire has been limited to monitoring and data collection and scrutiny of various large development schemes for their potential effects, beneficial or otherwise, on local air quality.

Traffic within the West Oxfordshire area is influenced by its proximity to the city of Oxford. The city of Oxford is working upon improving air quality in its area and has introduced a low emission zone (LEZ) and a zero emission zone (ZEZ) to encourage the uptake of cleaner, greener vehicles. The results of this work have the potential to reduce emissions in the outskirts and beyond if there is take up of cleaner vehicles by residents and businesses that also use them outside of Oxford. However, as public service operators upgrade their fleet, they sell their older vehicles to other operators who may use them in parts of Oxfordshire outside the LEZ, so any improvements outside the city centre may be realised relatively slowly.

Oxfordshire County Council is advancing proposals for a new Park and Ride Scheme at Eynsham, located to the west of the A40/Cuckoo Lane junction. Once complete the Park and Ride scheme will accommodate 1000 cars and also include improvements to the A40 and other roads. Improvements will include a new footway and cycle shared path located on the northern side of the A40, providing a cycle route from Witney to Oxford, as well as other detailed traffic management changes. Construction is scheduled to begin in 2022.

As well as this scheme the County Council, which manages most of the road network in Oxfordshire, is promoting other schemes. This includes an A40 long-term strategy transport package, approved by Oxfordshire County Council Cabinet in May 2016. Key measures seek to deliver improvements to the A40 corridor between Witney and Oxford, including:

- The provision of an A40 westbound bus lane to provide quicker return journeys to Eynsham park and ride and destinations served by the local bus network.
- Provision of continuous eastbound bus route over the A40 Dukes Cut canal and railway bridge on the approach to Wolvercote. Resolution of this pinch point would allow a continuous eastbound bus route from Carterton, Witney, and Eynsham Park and ride into Wolvercote roundabout, and high quality 3m wide shared cycle path separated from the general traffic lanes.
- Extending of the A40 Dual carriageway from Witney to Eynsham park and ride to increase capacity for all modes along the most heavily trafficked part of the route.
- A new shared cycle path along the B4044 from Eynsham to Botley, seeking to advance the Community Path scheme local group Bike Safe have developed.

Detailed environmental studies for the scheme are underway.

A scheme for improvement to the B4022/A40 Shores Green junction at Witney is being advanced. This would include west-facing slip roads to enable traffic from northeast Witney to travel west on the A40 toward Burford without travelling through the Bridge Street AQMA.

Further information on this and other transport projects can be found here:

[Link to Details of Major Transport Projects in Oxfordshire](#)

The DEFRA Air Quality Grant scheme has made an award to all the Oxfordshire Councils (including West Oxfordshire District Council) who have come together to develop a new public-facing air quality information website. As the application was successful, work has now begun on developing this website and will continue during 2022.

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

## Conclusions and Priorities

This year was one of reduced travel and thus traffic-derived pollution in West Oxfordshire. Nitrogen dioxide levels in Bridge Street, Witney dropped below the national air quality objective, but were higher than those measured in 2020. The annual average results of  $37.6 \mu\text{g m}^{-3}$  and  $35.12 \mu\text{g m}^{-3}$  can be compared with last year when the levels were  $36.8 \mu\text{g m}^{-3}$  and  $32.2 \mu\text{g m}^{-3}$  respectively.

Similarly reductions have been noted in Chipping Norton. The highest recording tube in Horsefair, Chipping Norton remains high at  $36 \mu\text{g m}^{-3}$  (compared to the previous year's  $35.5 \mu\text{g m}^{-3}$ ) but the levels recorded by the other tubes in Chipping Norton are typical of busy roadsides around the whole of the UK.

Concentrations of NO<sub>2</sub> have shown an increase compared to the previous year, but remain lower than 2019. This reflects the lockdown imposed during the beginning of the year, followed by the gradual lifting of pandemic restrictions as the year progressed. This provides further evidence that the elevated levels are due to volume of traffic, which may also be coupled with an increase in the proportion of newer, cleaner vehicles using the roads.

Challenges in addressing our two air quality management areas are anticipated due to the proposed and committed residential developments around both Witney and Chipping Norton. These developments will inevitably create an additional traffic burden in these areas. It is important that the Oxfordshire County Council Transport Department are kept informed of proposed developments and that developers are aware of the need for appropriate mitigation in respect of associated pollution.

The planning application made for west facing slip roads on the existing Shores Green junction on the A40 to the south east of Witney should help mitigate some of the potential increase in traffic volumes in the Witney AQMA. This infrastructure is associated with development of the East Witney Strategic Development Area, (also awaiting planning permission), but should help elevate traffic using Bridge Street to travel north east of Witney from the A40. Other local infrastructure improvements within Witney have been proposed, however there is no commitment at this time. Consequently, there is unfortunately no short-term solution envisaged to the problem of traffic congestion and associated vehicle emissions in Bridge Street Witney or at Horsefair in Chipping Norton at this time. Mitigation provided through the land planning and development process and associated with proposed local developments and highways schemes such as the new park and ride scheme for Eynsham may provide funding that can be put towards an alternative route. We will continue to work with the County Council Transport Department to explore road traffic development options as well as traffic management options.

Over the next year we will continue the diffusion tube monitoring survey.

## **Local Engagement and How to get Involved**

As the air pollution of concern in the District is related to traffic emissions, we can all do our bit to reduce emissions, by not using a car unless entirely necessary. Walking or cycling, or taking public transport or car sharing rather than driving an otherwise empty car, reduces our individual carbon footprint.

The solution to congestion-related pollution lies to a large extent in road traffic management and District authorities do not have the remit to manage this. Local interest groups can

however lobby County Councils directly to influence the content of Local Transport Plans (LTP).

Any queries about Air Quality should be directed to the Environmental Protection team within West Oxfordshire District Council. This team can be contacted by e mail on: [customer.services@westoxon.gov.uk](mailto:customer.services@westoxon.gov.uk)



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# 1 Local Air Quality Management

This report provides an overview of air quality in West Oxfordshire District during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by West Oxfordshire 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 (AQMA) 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by West Oxfordshire District Council can be found in [Error! Reference source not found.](#) The table presents a description of the two AQMAs that are currently designated within West Oxfordshire District. 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<sub>2</sub> annual mean;

Further information related to declared AQMAs, including maps of AQMA boundaries are available online at:

[Link to AQMAs Declared by West Oxfordshire District Council](#)

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 National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Witney	Declared 01/03/2005	NO <sub>2</sub> Annual Mean	An area encompassing Bridge Street and part of High Street, Witney	No	48	36.8	Witney Air Quality Action Plan (pending) 2010	Visit the AQAP for Witney AQMA at <a href="#">Link to Witney AQAP</a>
Chipping Norton	Declared 01/03/2005	NO <sub>2</sub> Annual Mean	An area of the town centre encompassing Banbury Road, Horsefair and Market Place	No	49	35.5	Chipping Norton AQP (2008)	Visit the AQAP for Chipping Norton AQMA at <a href="#">Link to Chipping Norton AQAP</a>

- West Oxfordshire District Council confirm the information on UK-Air regarding their AQMA(s) is up to date
- West Oxfordshire District Council confirm that all current AQAPs have been submitted to Defra.

## 2.2 Progress and Impact of Measures to address Air Quality in West Oxfordshire District Council

Defra's appraisal of last year's ASR concluded '*the report is well structured, detailed, and provides the information specified in the Guidance*'. However, the following improvements were recommended.

Comment	Action
It is understood that the development of both AQAPs are delayed as they are dependent on the expansion of Witney and Chipping Norton. However, it is advised that in the absence of an updated AQAP that the Council continue to include interim AQAP measures so that progress to improving air quality within the district is not stalled.	The Council continue to encourage improvements in air quality, particularly through the planning system. In addition, the Council will be appointing an Air Quality Consultant during 2022 to undertake an assessment of air quality within the two AQMAs and to compile new AQAPs for each area.
There are discrepancies between data tables with diffusion tubes NAS25, NAS40 and NAS41 are missing from Table B.1.	This was rectified in 2021 and in 2022, all tables have been checked to ensure all data is present and correct.

### 2.2.1 Measures to improve Air Quality

West Oxfordshire District Council, with its partners, has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in **Error! Reference source not found.**

Nine measures are included within **Error! Reference source not found.**, with the type of measure and the progress which has made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within **Error! Reference source not found.**

More detail on these measures can be found in their respective scheme websites and links to these have been given within the table.

In addition, West Oxfordshire District Council expects a number of other measures that will positively affect air quality to be progressed over the course of the next reporting year. These are detailed in the following sections.

## **2.2.2 Measures impacting air quality - Highways and Transport schemes**

### A40 Improvement scheme

Major highways schemes are planned for the A40 highway corridor. The improvements to the A40 will result in a new park and ride at Eynsham, an extension of the dual carriageway around Witney, new bus lanes, cycle lanes and junction improvements. Construction of the Park and Ride Scheme is expected to commence later this year, with the other schemes expected to commence in 2023. In addition, improvements to the Shores Green Junction are currently awaiting planning approval, and is expected to commence in 2023.

Public transport services in West Oxfordshire will benefit from having new dedicated bus lanes connecting Eynsham with Oxford.

The key schemes within West Oxfordshire are:

- A40 dual carriageway extension: A scheme to upgrade the A40 between east of Witney to the Eynsham park and ride site into a dual carriageway.
- Eynsham park and ride: A new 850 space park and ride in Eynsham will provide easier access to improved and more reliable bus services into Oxford.
- A40 integrated bus lanes: A 6.5km proposed eastbound and westbound bus priority corridor along the A40 between Eynsham park and ride towards Duke's Cut, with improved routes for pedestrians and cyclists.
- A40 Access to Witney: The A40 Access to Witney scheme proposes improvements to the existing B4022/ A40 junction at Shores Green.

The programme is £180m of investment in the A40 corridor and the funding for this has been secured.

### County Transport Plan

The County Council is responsible for most highways in the County. Its current Local Transport Plan, Connecting Oxfordshire, was agreed by full council in September 2015

and includes an emphasis on improving air quality and making better provision for walking and cycling.

Within the plan, the Witney Area Strategy outlines future plans such as the west-facing slip roads at Shores Green junction on the A40.

The Plan is in the early stages of being updated. The first stage is the production of a vision document, which went out to public consultation in February 2021.

#### Witney Active Travel Route

Residents of Witney were asked to offer their views on a new cycle scheme to help make the town a safer place to cycle and walk, to cut vehicle journeys and offer cleaner air. The Witney Active Travel Route has now been completed, and is delivering sustainable cycle routes across central Witney and will join-up with further future improvements to walking and cycling in western Witney. It provides a continuous east-west route across the whole town, making it easier for people to travel by bike or on foot. Further detail of the proposals will be found in Table 2.2. The scheme is intended to enable and encourage as many trips as possible by low/no carbon modes to help the air quality across Witney.

#### Park and Charge: Electric Vehicles (EV) and EV Charging

Oxfordshire is installing Electric Vehicle (EV) charging points in a range of public car parks in 2021 through the Park & Charge scheme. In the West Oxfordshire District Council area new charging stations are open in Carterton, Chipping Norton, Eynsham, Witney and Woodstock.

Details will be found here: [Link to Park and Charge Oxfordshire map](#)

#### Burford Speed limit reduction and HGV weight limit

Although enacted in late 2020 and not specifically an air quality improvement measure, speed limits on roads in and around the town of Burford have been reduced. In the centre of the town the limit is now 20mph. In some other areas of England it has been found that local reduction of limits to 20mph has slowed the progress of traffic through urban areas but it has allowed traffic to flow better because lower speeds encourages motorists to give way to emerging traffic from side roads in particular. Better flowing traffic often leads to reduction in airborne pollution. However, due to pandemic effects on traffic, as discussed elsewhere in this report, it's so far been difficult to demonstrate that there has been an effect on local air quality.



In a separate action, Oxfordshire County Council made an experimental Order preventing goods vehicles that exceed 7.5 tonnes passing through Burford town centre. The order was made on 20 July 2020 and operated for 18 months. This restriction has now been lifted. Oxfordshire County Council are now looking to develop a county-wide freight strategy, including area-wide weight restrictions and close working with neighbouring authorities.

### **2.2.3 Forthcoming measures impacting air quality - Active housing developments**

#### East Witney Strategic Development Area

Some 495 homes are planned in this area of land south east of Oxford Hill, Witney. A planning application was received during 2020 at this location and is still under consideration. Air quality modelling accompanies this application and is currently under discussion.

#### North Witney Strategic Development Area

Some 1400 homes are planned. Initial proposals for 110 homes on land west of Hailey Road have been brought forward. A Secretary of State's decision dated 30 July 2020 has directed that the proposed development of 110 homes is "EIA development" within the meaning of the Town and Country (Environmental Impact Assessment) Regulations 2017. We understand this development is moving forward, with construction expected to begin in 2026.

### **2.2.4 Forthcoming measures impacting air quality - Planned housing developments**

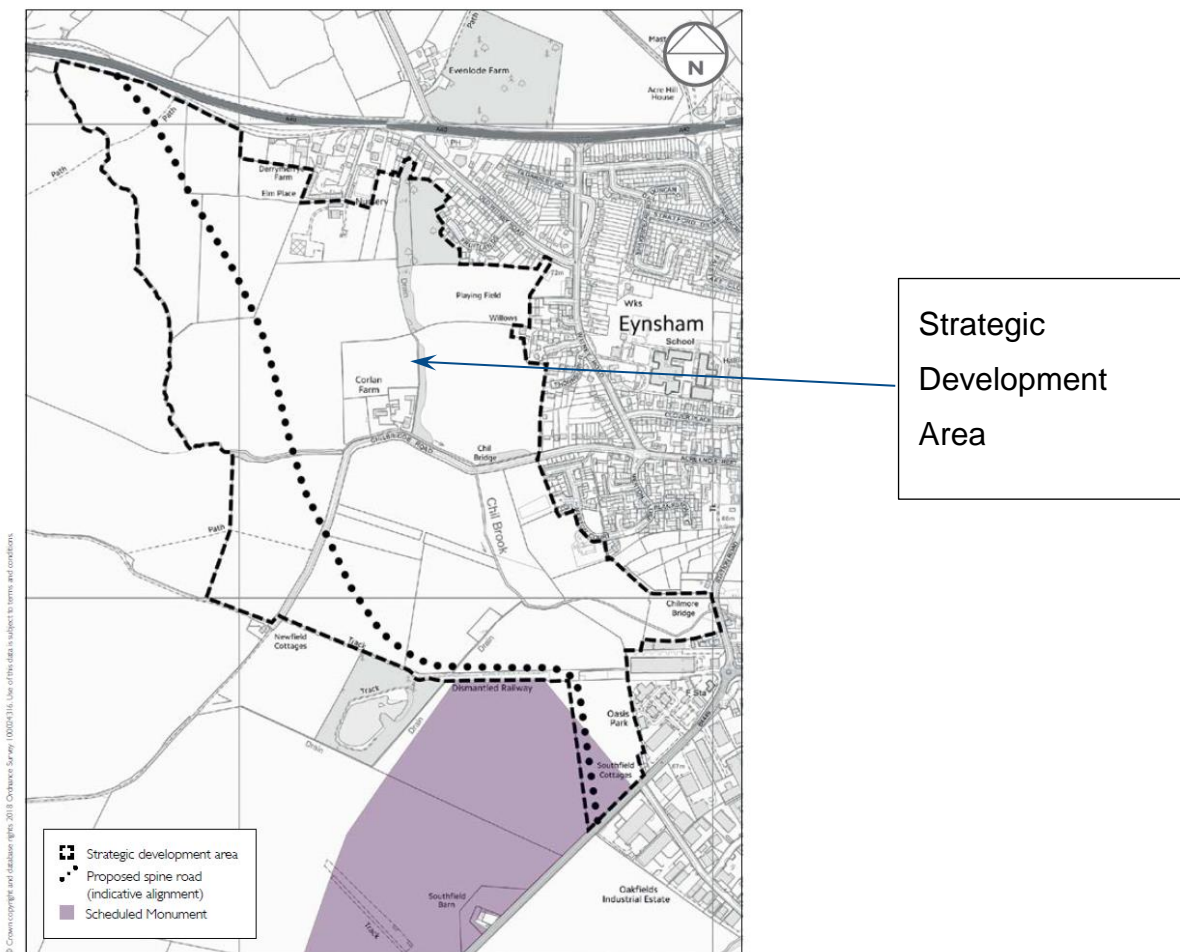
In addition to the above there are other major developments planned, which are in the process of being brought forward.

#### West Eynsham Strategic Development Area (SDA)

The West Eynsham SDA is located to the west of the existing settlement at Eynsham and will provide an urban extension of Eynsham, comprising around 1000 new homes by 2031. The location is shown in Figure 2.1. Some of these (450 homes) are to contribute to West Oxfordshire District's own housing needs whilst the balance is to meet the housing needs of Oxford City. The proposal forms District planning policy EW2. An additional point is the provision of a new western spine road funded by and provided as an integral part of the proposed development and to link the A40 and B4449 highways.

A draft masterplan for the first phase of the development has been published for consultation. A link is here: [West Eynsham proposed phase-one](#). In addition, planning permission is currently pending for a 70 unit development on this site.

**Figure 2.1 Location of West Eynsham SDA (from District Plan)**



**Eynsham Garden Village (Salt Cross)**

A key element of the West Oxfordshire Local Plan 2031 is the establishment of a new garden village to the north of the A40 near Eynsham. During February 2021, the Council formally submitted a new Area Action Plan (which establishes a vision for Salt Cross and will be used alongside the Local Plan and Eynsham Neighbourhood Plan to determine future development proposals) to the Planning Inspectorate for independent examination.

**East Chipping Norton Strategic Development Area**

The **East Chipping Norton** SDA is allocated for **development** under Policy CN1 of the West Oxfordshire Local Plan 2031. This comprises land east of Chipping Norton and comprises around 1200 homes.

No air quality information has been made available to this authority in 2020 in connection with these developments.

### 2.2.5 Council's Priorities

West Oxfordshire District Council's priorities for the coming year are to continue to measure air quality via its diffusion tube network across the District.

It will work with the A40 scheme partners to deliver the above schemes and in relation to air quality assist the project team as they monitor air quality to inform the planning application and for post-assessment of the scheme once constructed. Air quality will be reviewed as part of the Environmental Impact Assessment and submitted with the scheme's planning application.

#### Challenges

The principal challenges and barriers to implementation that West Oxfordshire District Council anticipates facing are financial constraints within Oxfordshire County Council that are hampering progress with re-consideration of traffic management options and the development of implementation plans, as well as the anticipated increase in the amount of traffic in the AQMAs in the future, due to proposed residential developments, which could potentially cause an increase in the pollution levels.

West Oxfordshire District Council anticipates that the action plan measures, combined with the improvement of the national fleet as it is replaced by newer low emissions vehicles, will achieve compliance with the national objective for nitrogen dioxide in Chipping Norton, Horsefair, but the timeframe for this is unknown.

Whilst the improvement of the national fleet as it is replaced by newer low emissions vehicles will help to contribute towards compliance in the Witney AQMA, West Oxfordshire District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of this AQMA.

Funding has been secured by the Council to appoint an air quality consultant to review the current AQAPs for Witney and Chipping Norton. We expect to appoint a suitable

consultant early in the second half of 2022, with the view of producing draft action plans by 2023.

West Oxfordshire District Council anticipates that the measures stated above and in **Error! Reference source not found.** will help achieve compliance in Witney AQMA by reducing vehicle journeys into and through the centre of Witney by providing alternatives for travel.

Whilst the measures stated above and in **Error! Reference source not found.** will help to contribute towards compliance, West Oxfordshire District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the AQMAs in both Chipping Norton and Witney.

Table 2.2 - Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	Connecting Oxfordshire: Local Transport Plan 2015-2031	Policy Guidance and Development Control	Other policy	2015	2016	Oxfordshire County Council	Oxfordshire County Council	No	Fully funded	Not known	Implemented	Reduced traffic density	Public awareness Increasing awareness within health monitoring policy	Published <a href="#">Link to Oxfordshire Transport Policy &amp; Strategy LTP4</a>	None to date
2	Oxfordshire Active & Healthy Travel Strategy	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2016	2016	Oxfordshire County Council and LA	Oxfordshire County Council	No	Fully funded	Not known	Implemented	Reduced traffic density	Reducing car use and thus emissions. Increased cycle network	Published <a href="#">Link to Oxfordshire Healthy Travel Strategy</a>	None to date
3	Witney Active Travel Scheme	Transport Planning and Infrastructure	Cycle network	2020	Estimated 2021	Oxfordshire County Council and Oxfordshire Local Enterprise Partnership	Government Active Travel Fund, Oxfordshire Local Enterprise Partnership, S106 funding	No	Fully funded	Not known	Planning	Reduced vehicle emissions	Increased cycling	Consultation completed, response published <a href="#">Link to Witney Active Travel Scheme</a>	None to date
4	New Park & Ride at A40 Cassington	Alternatives to private vehicle use	Bus based Park & Ride	2019 (planning application submitted)	Estimated 2024	Oxfordshire County Council and its partners	Department for Transport retained Local Growth Fund Housing Growth Deal Oxfordshire Local Enterprise Partnership S106 contributions	No	Fully funded	>£10m	Planning	New bus routes and journeys	Usage of facility	Consultation completed, awaiting detailed design <a href="#">Link to Park &amp; Ride Scheme</a>	None to date
5	A40 Highway improvement (ext of dual carriage way Witney-Eynsham Park & Ride and bus lane to Oxford)	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2016	Estimated 2024	Oxfordshire County Council and its partners	Department for Transport retained Local Growth Fund (LGF) Homes England Housing Infrastructure Fund (HIF) Oxfordshire Local Enterprise Partnership The Housing Growth Deal (HGD) various S106 developer contributions	No	Fully funded	>£10m	Planning	Reduced traffic density	Reduction in local concs NO <sub>2</sub>	Consultation stage <a href="#">Link to A40 highway improvement scheme</a>	None to date
6	Oxfordshire Park & Charge - Electric vehicle charging points scheme	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	Completed 2021	The Office for Zero Emission Vehicles and Innovate UK, and delivered by Oxfordshire County Council, SSE Enterprise, Zeta Specialist Lighting, Urban Integrated [ui!]uk, EZ Charge and University of Oxford	The Office for Zero Emission Vehicles and Innovate UK	No	Fully funded	£1m - £10m	Implementation	Increase in low emission vehicles	Uptake by EV users	Installation complete <a href="#">Link to Park and Charge Oxfordshire</a>	None to date

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
7	Improvements at B4022/A40 Shores Green junction in Witney.	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2022 (planning application submitted)	Estimated 2024	Oxfordshire County Council and its partners	Housing and Growth Deal (HGD) funds and Section 106 developer contributions.	No	Fully funded	> £10 million	Planning	Reduced traffic density	Reduction in local concs NO <sub>2</sub>	Ongoing	None to date
8	Oxfordshire Air Quality Information Website	Public Information	Via the Internet	2020	2021	Oxfordshire County Council and all District LAs	DEFRA AQ Grant and LAs	Yes	Fully funded	£100-500k	Implementation	Information on local air quality to impact lifestyle choice	"Hits" on website	Ongoing	Officer time constraints
9	Burford speed restriction	Traffic Management	Other policy	2020	2020	Oxfordshire County Council	Oxfordshire County Council	No	Fully funded	Not known	Implemented	Reduced vehicle emissions	Reduction in local concs NO <sub>2</sub>	Completed	N/a

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

### 2.3.1 General Approach

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Other than the potential source from vehicles, no other significant source of PM<sub>2.5</sub> has been identified within the District. Therefore the control at this stage is aligned with the measures designed to achieve a reduction in vehicular emissions.

Partnership working by the Oxfordshire Air Quality group has included liaison with Oxfordshire County transport and health committees to raise the profile of Air Quality.

### 2.3.2 Public Health Outcomes Framework

Public Health England publishes various information related to public health, in particular in relation to particulate matter.

The importance of the effect of air pollution on public health is reflected by the inclusion of an indicator of mortality associated with air pollution in the Public Health Outcomes Framework. This is a series of “indicators” prepared by Central Government as a measure of public health in various categories and across the regions of the UK. One category of data is “D01 - Fraction of mortality attributable to particulate air pollution” (2020<sup>7</sup>).

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<sup>7</sup> Footnote Source: Background annual average PM<sub>2.5</sub> concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra’s Automatic Urban and Rural Network (<http://uk-air.defra.gov.uk/interactive-map>.) Data on primary emissions from different sources and a combination of measurement data for secondary inorganic aerosol and models for sources not included in the emission inventory (including re-suspension of dusts) are used to estimate the anthropogenic (human-made) component of these concentrations. By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM<sub>2.5</sub> concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality

For Oxfordshire as a whole, the estimated Fraction of Mortality attributable to particulate air pollution is ranked relatively well, being 15 out of 19 areas in the South East of England. This equates to a percentage of 5.8% compared with the regional average of 6.0%.

For the West Oxfordshire District, the estimated Fraction of Mortality attributable to particulate air pollution is relatively low with the area ranked 56 out of 67 areas in the South East of England. This equates to a percentage of 5.5% compared with the regional average of 6.0%.

[Public Health England Public Health Profiles data](#)

In 2021 the estimated annual mean concentrations of PM<sub>2.5</sub> were 6.34µg m<sup>-3</sup> (2021) for the West Oxfordshire District compared with the 2021 Southern England estimated regional average of 6.75µg m<sup>-3</sup> PM<sub>2.5</sub> (source: UK AIR Background Mapping data for local authorities – 2018 background mapping).

[Link to Background Mapping data for local authorities - 2018](#)

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Directive (2008/50/EC). Concentrations of anthropogenic, rather than total, PM<sub>2.5</sub> are used as the basis for this indicator, as burden estimates based on total PM<sub>2.5</sub> might give a misleading impression of the scale of the potential influence of policy interventions (COMEAP, 2012).



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

This section sets out the monitoring undertaken within 2022 by West Oxfordshire District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

West Oxfordshire District Council has no automatic (continuous) monitoring sites within its area.

#### 3.1.2 Non-Automatic Monitoring Sites

West Oxfordshire District Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 26 sites during 2022. **Error! Reference source not found.** 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.

The survey focused upon locations where there is “relevant public exposure”, in accordance with Defra LAQM Technical Guidance Note TG(16) (Reference E). This year, changes were made to some of the locations of monitoring.

One of the 2020 monitoring locations was discontinued (location NAS8 Whitehill House Cottage, A40 Witney) and a new location (NAS44) was set up at the outskirts of Witney, effective from January 2021. This was set up outside 83 Oxford Hill, Witney on the B4022 highway and is intended to air quality in the vicinity in advance of the proposed development of the East Witney Strategic Development area to the west of Oxford Hill.

In May 2021 the disused continuous monitoring unit in Horsefair, Chipping Norton, was removed and thus the passive tubes that had been attached to it were moved to an

adjoining signpost. Although the location is very similar this is treated as a new location, from the position of assessing the results, and adjustments to the data have been made to allow for the missing parts of the year for each location.

As well as monitoring carried out by the Council, air quality monitoring for NO<sub>2</sub> was carried out by third parties locally for specific purposes. The outcomes of this monitoring, where reported to the Council, is set out in Appendix F.

## 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<sub>2</sub>)

**Error! Reference source not found.**2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in **Error! Reference source not found.** includes distance corrected values, only where relevant.

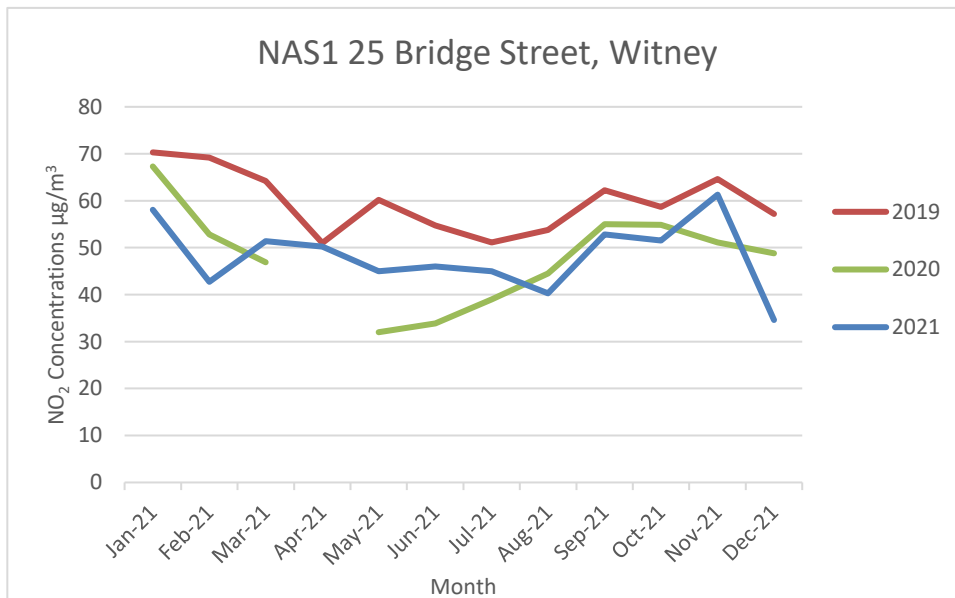
Due to the relocation of the triplicate samples part way through the year, annualisation was required for the samples from the original location and those from the new location, to provide an estimated annual exposure.

Table A.1 in Appendix A compares the ratified and adjusted, non-automatic, monitored NO<sub>2</sub> annual mean concentrations for the past 5 years (where available), for comparison with the air quality objective of 40µg/m<sup>3</sup>. 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 2021 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

Overall NO<sub>2</sub> levels are somewhat lower across the District in comparison with pre pandemic years. However, they were in general higher than 2020, reflecting the easing of lockdown measures during this period. The results from 2020 and 2021 are not necessarily representative of pollution levels that might have been experienced around the District had traffic levels been “typical” of other years, due to the restrictions on travel. Figures 3.1 and 3.2 illustrate the effect on local (raw, unadjusted) NO<sub>2</sub> concentrations in both of the District’s AQMAs as the pandemic took hold, and compare concentrations between 2019, 2020 and 2021.

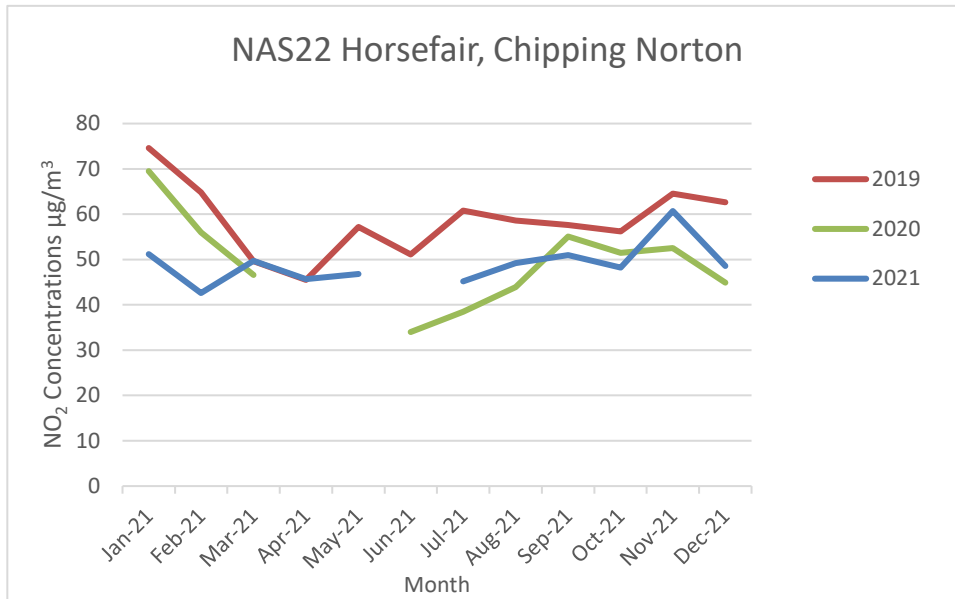
**Figure 3.1 25 Bridge St, Witney Relative NO<sub>2</sub> concentrations 2019, 2020 and 2021.**



NB data unavailable for April 2020

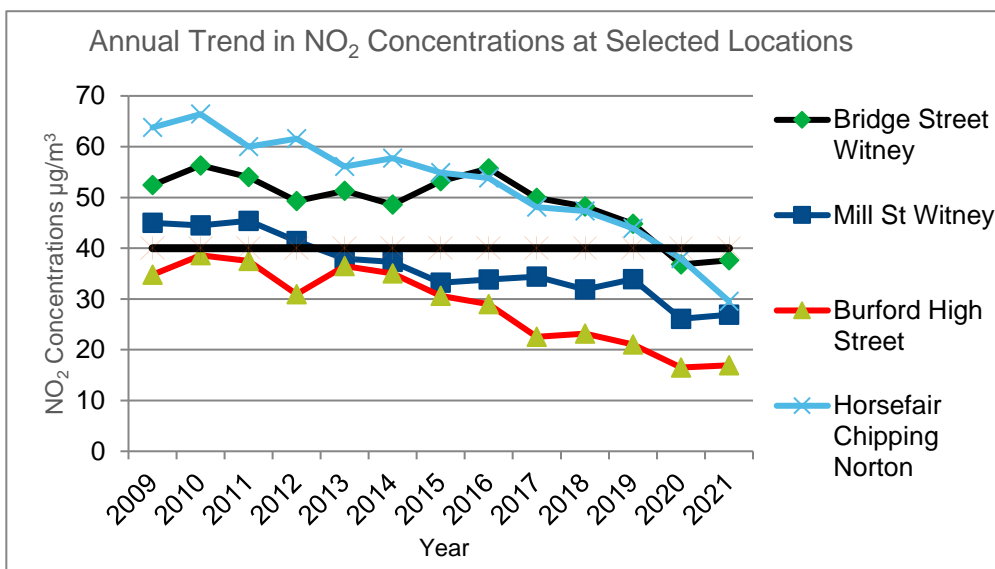
**Figure 3.2 Horsefair, opposite 7 High St, Chipping Norton Relative NO<sub>2</sub> concentrations 2019, 2020 and 2021.**

NB data unavailable for April & May 2020 and June 2021



The trends in the adjusted annual means since 2009 are presented in Figure 3.3 for four key locations. It can be seen, even prior to the pandemic on 2020, that there was a general downward trend in NO<sub>2</sub> concentrations at the locations shown.

**Figure 3.3 Trend in NO<sub>2</sub> Concentrations at selected locations**



Corrected for bias but not distance corrected.

The black horizontal line represents the national objective level for NO<sub>2</sub>

There is no reason at this stage to assume these depressed pandemic concentrations will continue in 2022 and beyond. Although there is much national debate about how travelling and commuting patterns will change post-pandemic, there are indications from this data that as social and economic mobility increase, there is a corresponding increase in traffic and consequently NO<sub>2</sub> levels. As both 2020 and 2021 NO<sub>2</sub> concentrations are not representative of 'normal' traffic volumes, and as the objective was exceeded in 2019 for both AQMA's, it is to be expected that both the District's AQMAs will be maintained for the foreseeable future.

It is also noted that during 2021 no monthly means greater than 60µg/m<sup>3</sup> were measured, which indicates that an exceedance of the 1-hour mean objective is unlikely at any sites for those months.

### 3.2.2 Particulate Matter

Measurements of particulate matter were not made within the District.

The UK Government has produced a selection of statistics on annual emissions to air in the UK for the period 1970 to 2019. Whilst there has been a long-term decrease in the emissions of all of the air pollutants covered, burning of other solid fuels for domestic heating and industry has increased in recent years and this is having an adverse effect on the release of particulate matter. Decreases in emissions of particulates from many sources have been partially offset by increases in emissions from residential burning (domestic solid fuel heating; emissions of PM<sub>2.5</sub> from this source increased by 28 per cent between 2009 and 2019). In fact domestic combustion using wood as a fuel accounted for 38 per cent of primary emissions of PM<sub>2.5</sub> in 2019. This reflects the increasing popularity of solid fuel appliances in the home such as wood-burning stoves. Emissions of particulates from domestic burning is cumulatively now greater than that from road transport.

As a reflection of these concerns, new legislation has come into effect in England, controlling the sale of wood and coal for domestic heating. Under the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, wet wood (that is, wood having a moisture content of more than 20%) cannot be sold in units of less than 2m<sup>3</sup>. 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.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NAS1	25 Bridge Street, Witney	Roadside	435860	210285	NO <sub>2</sub>	Witney AQMA	0.0	1.6	No	2.3
NAS2	10 Bridge Street, Witney	Roadside	435821	210243	NO <sub>2</sub>	Witney AQMA	0.6	2.3	No	2.6
NAS3	20 Bridge Street, Witney	Roadside	435849	210280	NO <sub>2</sub>	Witney AQMA	0.0	2.2	No	2.3
NAS4	9 Mill Street, Witney	Roadside	435682	210195	NO <sub>2</sub>		0.9	1.4	No	2.7
NAS5	4A West End, Witney	Roadside	435897	210324	NO <sub>2</sub>	Witney AQMA	0.0	1.2	No	2.3
NAS6	Woodgreen Hill, Witney	Roadside	435940	210351	NO <sub>2</sub>	Witney AQMA	0.1	3.1	No	2.3
NAS7	Newland, Witney	Roadside	435946	210326	NO <sub>2</sub>	Witney AQMA	1.2	2.4	No	2.3
NAS9	A40 j/w Southleigh Turn	Roadside	440082	210435	NO <sub>2</sub>		>50	1.1	No	2.2
NAS10	Park Street, Bladon	Roadside	444812	214669	NO <sub>2</sub>		14.0	2.5	No	2.6
NAS11	Heath Lane, Bladon	Rural	445216	214389	NO <sub>2</sub>		10.5	1.1	No	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NAS12	Grove Rd, Bladon	Roadside	444904	214946	NO <sub>2</sub>		8.9	2.0	No	2.3
NAS13	3 Hensington Road, Woodstock	Urban Background	444732	216696	NO <sub>2</sub>		0.2	0.3	No	2.2
NAS14	High St, Woodstock (Chef Imperial)	Roadside	444324	216868	NO <sub>2</sub>		0.2	2.7	No	2.3
NAS15	Woodstock, Rosamund Drive.	Urban Background	444199	217343	NO <sub>2</sub>		6.8	1.8	No	2.3
NAS16	Withers Way, Chipping Norton	Urban Background	431203	226866	NO <sub>2</sub>		4.7	2.1	No	2.4
NAS17	West St , Chipping Norton	Roadside	431342	226950	NO <sub>2</sub>		0.4	1.8	No	2.7
NAS18, NAS19, NAS20	Nox Monitor Chipping Norton	Roadside	431430	227216	NO <sub>2</sub>	Chipping Norton AQMA	3.2	1.5	No	1.8
NAS21	7 Horsefair, Chipping Norton	Roadside	431458	227278	NO <sub>2</sub>	Chipping Norton AQMA	0.2	4.8	No	2.7
NAS22	Horsefair (opp No.7), Chipping Norton	Roadside	431458	227277	NO <sub>2</sub>	Chipping Norton AQMA	0.4	1.0	No	2.3
NAS23	Lower High Street, Burford	Roadside	425185	212435	NO <sub>2</sub>		0.7	2.0	No	2.3
NAS24	High Street (Near Barclays Bank), Burford	Roadside	425153	212178	NO <sub>2</sub>		0.4	1.8	No	2.2
NAS25	Carterton Garner Close	Urban Background	427412	208233	NO <sub>2</sub>		8.6	1.3	No	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NAS40	Witney Road, Eynsham	Roadside	442753	209913	NO <sub>2</sub>		6.1	1.2	No	2.2
NAS41	Hanborough Road, Eynsham	Roadside	443658	210015	NO <sub>2</sub>		25.0	2.0	No	2.3
NAS44	83 Oxford Hill, Witney	Roadside	436759	209830	NO <sub>2</sub>		6.7	1.7	No	2.3
NAS45, NAS46, NAS47	23 High St Chipping Norton	Roadside	431389	227197	NO <sub>2</sub>	Chipping Norton AQMA	5.2	2.4	No	2.3

**Notes:**

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

(2) N/A if not applicable.



**Table A.2 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NAS1	435860	210285	Roadside	100	100.0	<b>49.9</b>	<b>48.2</b>	<b>44.8</b>	36.8	37.6
NAS2	435821	210243	Roadside	100	100.0	<b>40.6</b>	<b>40.5</b>	37.1	27.5	31.8
NAS3	435849	210280	Roadside	100	100.0	<b>43.9</b>	<b>41.8</b>	<b>41.9</b>	32.2	35.1
NAS4	435682	210195	Roadside	100	100.0	34.4	31.9	33.9	26.2	26.9
NAS5	435897	210324	Roadside	92.3	92.3	33.9	35.5	33.1	25.9	28.4
NAS6	435940	210351	Roadside	100	100.0	33.9	34.4	35.5	26.6	29.9
NAS7	435946	210326	Roadside	100	100.0	35.8	34.5	34.3	27.0	28.0
NAS9	440082	210435	Roadside	84.6	84.6	-	-	18.7	14.9	17.0
NAS10	444812	214669	Roadside	90.4	90.4	28.9	27.5	27.0	19.7	21.2
NAS11	445216	214389	Rural	84.6	84.6	10.4	10.0	9.0	7.5	6.4
NAS12	444904	214946	Roadside	100	100.0	19.9	17.6	16.6	12.3	13.2
NAS13	444732	216696	Urban Background	90.4	90.4	-	-	22.3	19.2	16.0
NAS14	444324	216868	Roadside	100	100.0	-	-	14.5	10.4	10.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NAS15	444199	217343	Urban Background	92.3	92.3	11.0	10.2	10.1	9.1	7.0
NAS16	431203	226866	Urban Background	100	100.0	9.0	9.0	8.6	7.0	6.7
NAS17	431342	226950	Roadside	92.3	92.3	25.3	23.6	21.5	17.7	18.9
NAS18, NAS19, NAS20	431430	227216	Roadside	100	32.7	31.3	31.7	29.0	22.1	19.8
NAS21	431458	227278	Roadside	100	100.0	20.5	21.7	19.8	16.4	16.5
NAS22	431458	227277	Roadside	92.3	92.3	<b>48.1</b>	<b>47.3</b>	<b>43.9</b>	37.8	38.2
NAS23	425185	212435	Roadside	90.4	90.4	31.9	29.0	28.2	21.3	21.4
NAS24	425153	212178	Roadside	92.3	92.3	22.5	23.2	21.0	16.5	16.9
NAS25	427412	208233	Urban Background	100	100.0	9.3	10.1	9.7	7.6	7.0
NAS40	442753	209913	Roadside	90.4	90.4	-	-	18.3	14.6	16.3
NAS41	443658	210015	Roadside	100	100.0	-	-	16.3	14.1	14.4
NAS44	436759	209830	Roadside	82.7	82.7					18.1
NAS45, NAS46, NAS47	431389	227197	Roadside	100	67.3					24.7

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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 NO<sub>2</sub> annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

NO<sub>2</sub> annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> 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.TG16 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%).

## Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO<sub>2</sub> 2021 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northin g)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS1	435860	210285	58.1	42.7	51.4	50.2	45.0	46.0	45.0	40.3	52.8	51.5	61.3	34.6	48.2	37.6	-	
NAS2	435821	210243	47.3	50.2	37.3	40.1	34.8	31.3	39.7	32.9	48.7	41.3	39.1	47.1	40.8	31.8	-	
NAS3	435849	210280	51.3	48.9	44.7	43.9	48.1	38.1	36.1	36.6	48.1	46.5	45.0	52.5	45.0	35.1	-	
NAS4	435682	210195	35.6	36.7	30.9	19.8	35.6	28.8	34.6	26.3	40.7	41.1	40.3	43.4	34.5	26.9	-	
NAS5	435897	210324	42.1	Missin g	36.5	32.3	35.3	29.7	34.0	31.1	41.6	36.9	40.9	40.2	36.4	28.4	-	
NAS6	435940	210351	39.6	41.6	36.8	35.0	39.6	34.9	37.9	31.1	42.8	36.7	41.3	42.0	38.3	29.9	-	
NAS7	435946	210326	40.6	33.6	39.2	29.0	35.1	30.5	28.9	32.2	35.8	40.7	42.0	43.2	35.9	28.0	-	
NAS9	440082	210435	26.0	Outlier (3.3)	Missin g	17.5	18.2	17.2	22.2	19.6	28.0	17.8	28.6	22.5	21.8	17.0	-	
NAS10	444812	214669	33.7	30.7	27.6	Missin g	27.5	23.0	16.1	21.4	30.1	28.9	31.7	28.6	27.2	21.2	-	
NAS11	445216	214389	Missin g	9.0	Missin g	7.4	6.2	6.6	4.9	5.6	8.9	10.0	12.9	10.3	8.2	6.4	-	
NAS12	444904	214946	22.0	21.2	14.8	14.8	14.6	16.4	12.1	12.0	17.1	17.3	20.3	20.6	16.9	13.2	-	
NAS13	444732	216696	24.1	19.1	20.9	17.6	17.2	18.2	17.0	15.1	23.9	22.9	29.0	Missin g	20.5	16.0	-	
NAS14	444324	216868	17.1	17.4	13.6	12.5	9.8	8.9	11.4	9.6	15.5	14.4	16.7	17.1	13.7	10.7	-	
NAS15	444199	217343	7.1	13.2	Missin g	6.9	7.4	5.3	5.4	6.2	9.4	10.2	13.7	13.6	8.9	7.0	-	
NAS16	431203	226866	11.7	14.8	8.1	7.5	6.3	4.9	6.2	6.3	7.6	7.9	11.6	10.9	8.7	6.7	-	
NAS17	431342	226950	27.7	21.0	25.7	28.1	22.0	Missin g	25.3	20.4	24.4	19.3	29.9	23.4	24.3	18.9	-	
NAS18	431430	227216	28.2	37.1	26.3	38.9	Reloc ated	-	-	-	-	-	-	-	-	-	-	Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only
NAS19	431430	227216	27.6	37.5	24.7	37.9	Reloc ated	-	-	-	-	-	-	-	-	-	-	Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only

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 (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS20	431430	227216	30.0	34.9	28.2	30.9	Relocated	-	-	-	-	-	-	-	31.9	19.8	-	Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only
NAS21	431458	227278	22.4	18.7	22.6	25.7	21.6	11.7	19.1	20.5	23.5	20.7	22.9	23.9	21.1	16.5	-	
NAS22	431458	227277	<b>51.2</b>	<b>42.6</b>	<b>49.7</b>	<b>45.7</b>	<b>46.8</b>	Missing	<b>45.2</b>	<b>49.2</b>	<b>51.0</b>	<b>48.2</b>	<b>60.7</b>	<b>48.6</b>	49.0	38.2	36.0	
NAS23	425185	212435	29.2	21.2	28.0	Outlier (4.3)	25.3	21.9	28.4	26.0	28.1	29.2	34.8	29.7	27.4	21.4	-	
NAS24	425153	212178	22.5	23.4	Missing	21.5	20.5	20.3	20.2	20.6	23.5	18.5	23.9	23.9	21.7	16.9	-	
NAS25	427412	208233	12.9	11.1	10.7	7.9	6.3	5.4	4.5	4.6	8.6	9.4	13.0	14.0	9.0	7.0	-	
NAS40	442753	209913	22.3	22.3	21.2	20.4	17.9	20.2	18.2	16.9	23.4	Missing	25.0	21.4	20.8	16.3	-	
NAS41	443658	210015	22.2	19.3	20.5	13.9	17.4	17.8	15.9	15.5	24.4	16.8	21.4	17.0	18.5	14.4	-	
NAS44	436759	209830	26.9	23.5	18.0	22.8	20.0	19.2	Missing	Outlier (>LoD)	27.4	23.2	28.1	22.4	23.2	18.1	-	
NAS45	431389	227197	N/A	N/A	N/A	N/A	30.5	24.8	28.1	26.3	36.1	25.1	25.3	25.2	-	-	-	Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only
NAS46	431389	227197	N/A	N/A	N/A	N/A	33.7	28.0	28.3	28.0	34.5	28.9	26.8	21.6	-	-	-	Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only
NAS47	431389	227197	N/A	N/A	N/A	N/A	29.9	23.9	26.6	25.6	37.5	23.7	26.1	29.2	28.1	24.7	-	Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only

- All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- West Oxfordshire District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 West Oxfordshire During 2021**

West Oxfordshire District Council has not identified any new sources relating to air quality within the reporting year of 2021.

### **Additional Air Quality Works Undertaken by West Oxfordshire District Council During 2022**

West Oxfordshire District Council has not completed any additional works within the reporting year of 2021.

## **QA/QC of Diffusion Tube Monitoring**

### **Diffusion Tube Annualisation**

Annualisation was undertaken using the Diffusion Tube Data Processing Tool. This was applied to a triplicate sample location which was relocated at the beginning of May. The samples affected were, NAS18, NAS19, NAS20, NAS45, NAS46 and NAS47.

All other diffusion tube monitoring locations recorded data capture of >75% and therefore annualisation was not required.

### **Diffusion Tube Bias Adjustment Factors**

The diffusion tube data presented within the 2022 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.TG16 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<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

The diffusion tubes (50% TEA in water) were supplied and analysed by Socotec - Didcot. The tubes at all locations have a monthly exposure period. West Oxfordshire District Council does not have a triplicate co-location study within its area. Consequently, a bias adjustment factor of 0.78, based upon 23 studies, was obtained via the national bias spreadsheet, and this was applied to all diffusion tubes. This spreadsheet is available at [National Bias Adjustment Factors](#) and an image of the presented below:

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 06/22			
Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies							This spreadsheet will be updated at the end of September 2022			
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 <sup>2</sup> 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 <sup>2</sup>		If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953				
Analysed By <sup>1</sup>	Method	Year <sup>2</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>3</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2021	R	Bridgend Borough County Council / Shared Regu	12	36	25	42.9%	G	0.70
Socotec Didcot	50% TEA in acetone	2021	UB	Derry City and Strabane District Council	12	11	9	28.4%	G	0.78
Socotec Didcot	50% TEA in acetone	2021	R	Derry City and Strabane District Council	12	30	30	2.4%	G	0.98
Socotec Didcot	50% TEA in acetone	2021	R	East Suffolk Council	11	30	25	22.3%	P	0.82
Socotec Didcot	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	10	56	42	32.9%	P	0.75
Socotec Didcot	50% TEA in acetone	2021	R	North East Lincolnshire Council	10	27	29	-7.6%	G	1.08
Socotec Didcot	50% TEA in acetone	2021	R	North East Lincolnshire Council	9	45	33	34.5%	P	0.74
Socotec Didcot	50% TEA in acetone	2021	R	Leeds City Council	13	40	29	35.5%	G	0.74
Socotec Didcot	50% TEA in acetone	2021	KS	Leeds City Council	12	34	25	37.9%	G	0.73
Socotec Didcot	50% TEA in acetone	2021	R	Leeds City Council	9	43	31	40.8%	G	0.71
Socotec Didcot	50% TEA in acetone	2021	UC	Leeds City Council	12	31	23	37.4%	G	0.73
Socotec Didcot	50% TEA in acetone	2021	R	Cambridge City Council	12	32	21	48.5%	G	0.67
Socotec Didcot	50% TEA in acetone	2021	UB	Torfaen County Borough Council	9	12	9	35.0%	G	0.74
<b>Overall Factor<sup>2</sup> (25 studies)</b>								<b>Use</b>	<b>0.78</b>	

A summary of bias adjustment factors used by West Oxfordshire District Council over the past five years is presented in [Error! Reference source not found.](#)

**Table C.1– Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	03/20	0.75
2018	National	03/19	0.76
2017	National	03/18	0.79

**NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with

distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in **Error! Reference source not found.**

Fall off with distance calculation was applied to one location, NAS22. This was calculated using the Diffusion Tube Data Processing Tool and is presented in **Error! Reference source not found.**



Table C.2 – Annualisation Summary (concentrations presented in  $\mu\text{g}/\text{m}^3$ )

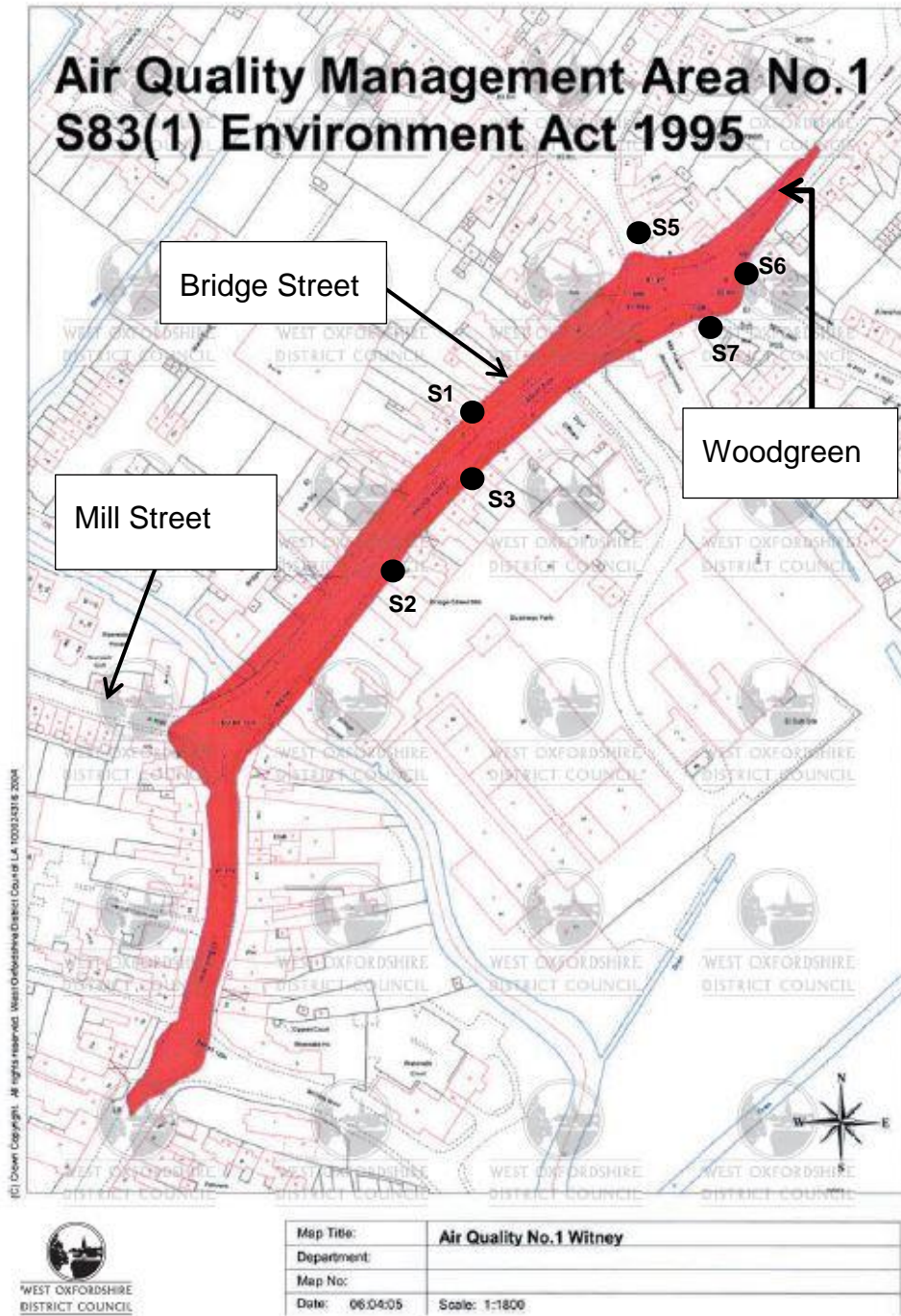
Site ID	Annualisation Factor Swindon Walcot	Annualisation Factor Oxford St Ebbes	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
NAS18	0.7467	0.8504			0.7985	-	-	<i>Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only</i>
NAS19	0.7467	0.8504			0.7985	-	-	<i>Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only</i>
NAS20	0.7467	0.8504			0.7985	31.9	25.4	<i>Triplicate Site with NAS18, NAS19 and NAS20 - Annual data provided for NAS20 only</i>
NAS45	1.1680	1.0878			1.1279	-	-	<i>Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only</i>
NAS46	1.1680	1.0878			1.1279	-	-	<i>Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only</i>
NAS47	1.1680	1.0878			1.1279	28.1	31.7	<i>Triplicate Site with NAS45, NAS46 and NAS47 - Annual data provided for NAS47 only</i>

**Table C.3 – NO<sub>2</sub> Fall off With Distance Calculations (concentrations presented in µg/m<sup>3</sup>)**

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
NAS22	1.0	1.4	38.2	7.0	36.0	<i>Predicted concentration at Receptor within 10% the AQS objective.</i>

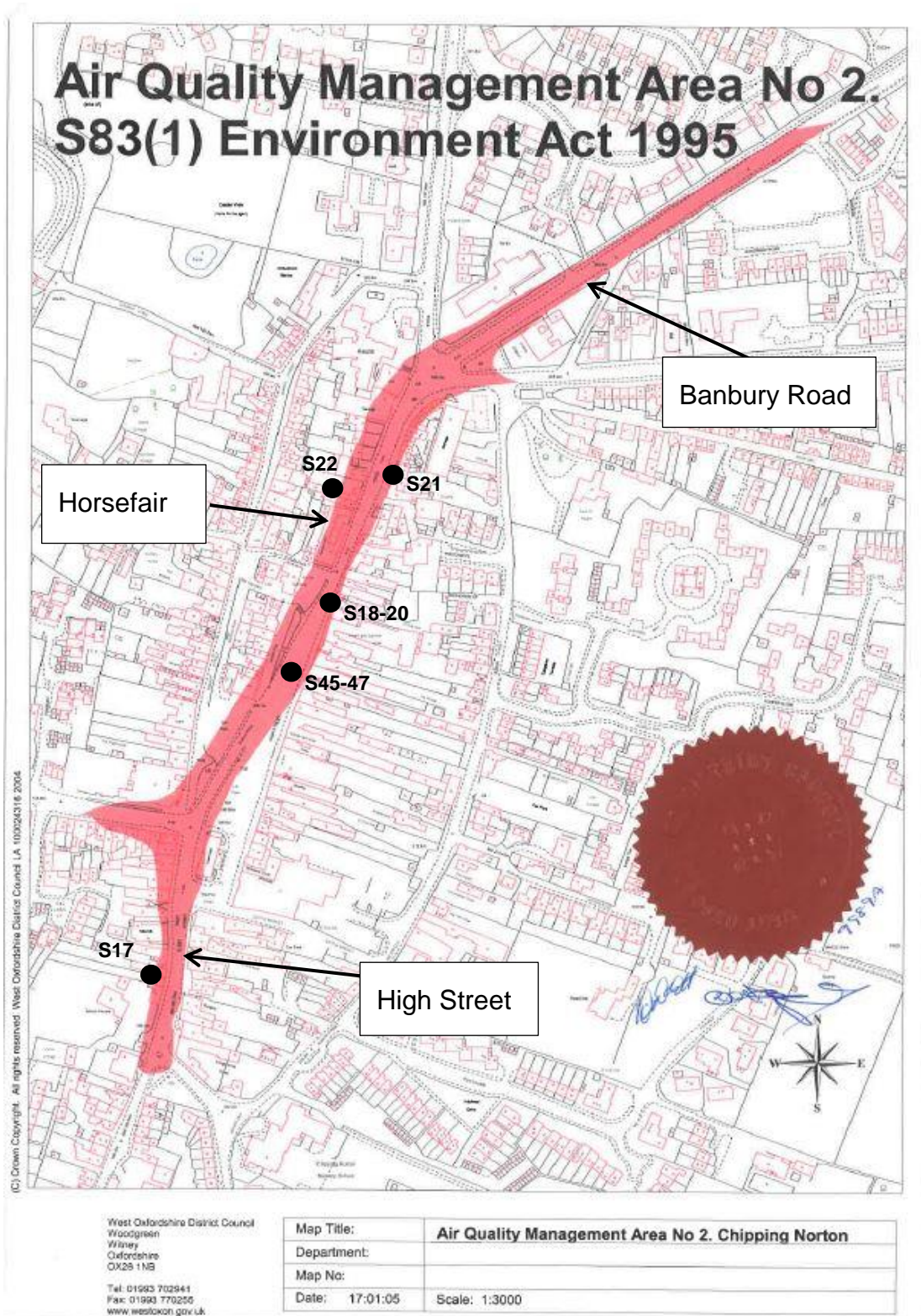
## **Appendix D: Map(s) of Monitoring Locations and AQMAs**

**Figure D.1– Map of Witney AQMA with Diffusion Tube Monitoring Locations**



Area within AQMA

**Figure D.2 Map of Chipping Norton AQMA with diffusion tube monitoring locations**



Area within AQMA

Figure D.3 Bladon Monitoring Locations

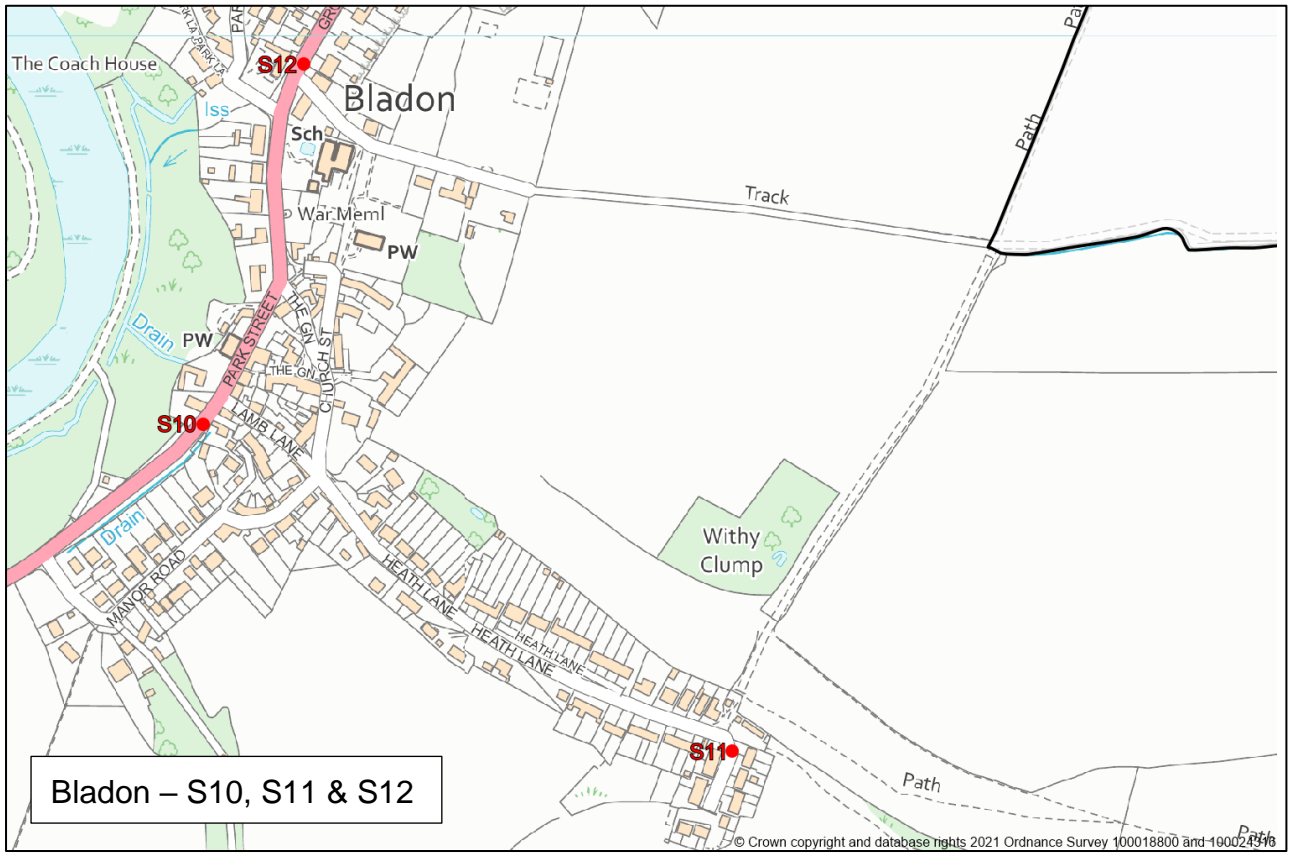


Figure D.4 Burford Monitoring Locations

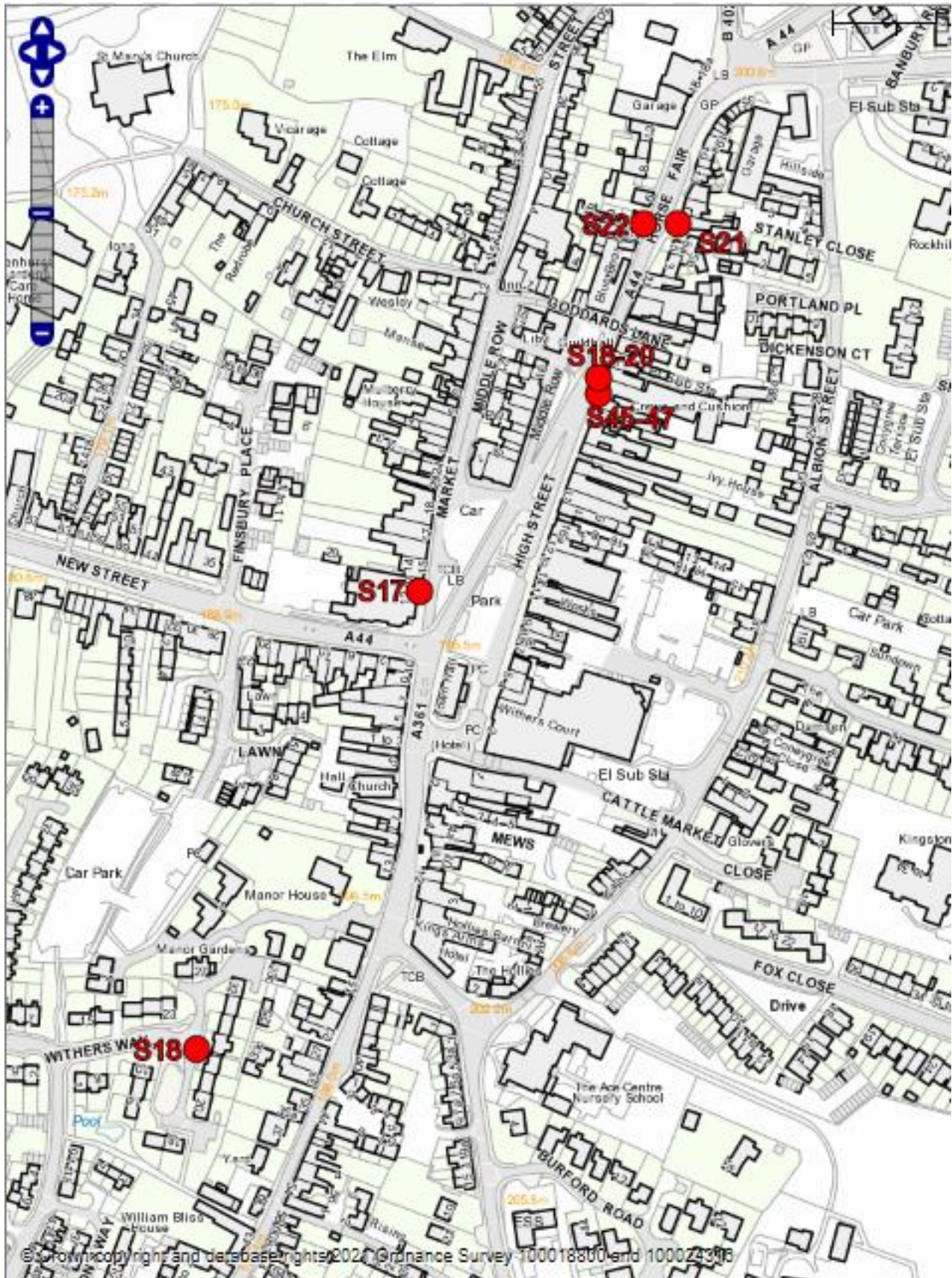


Figure D.5 Carterton Monitoring Locations





Figure D.6 Chipping Norton Monitoring Locations

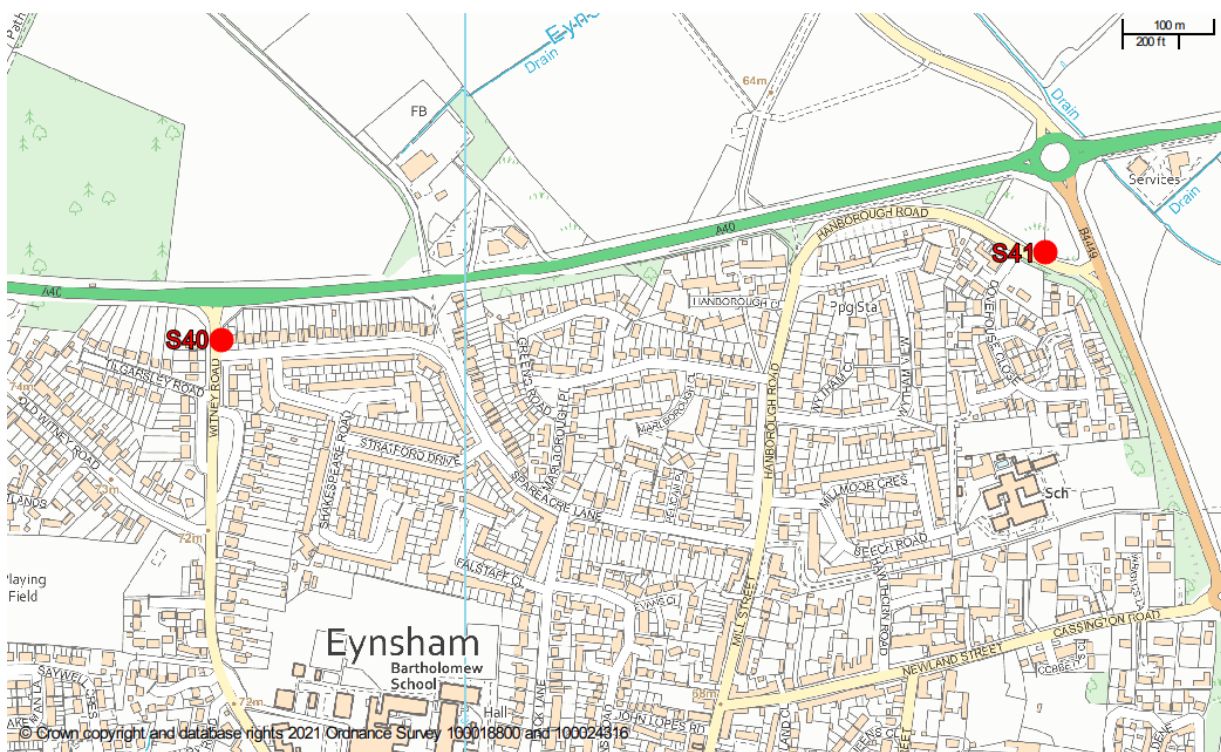


Scale: 1:2500

Printed on: 7/9/2022 at 14:06 PM



Figure D.7 Eynsham Monitoring Locations



Scale: 1:5000  
Printed on: 7/9/2022 at 11:46 AM



Figure D.8 Witney Monitoring Locations (including AQMA)



Scale: 1:1250  
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Figure D.9 A40 East of Witney Monitoring Location

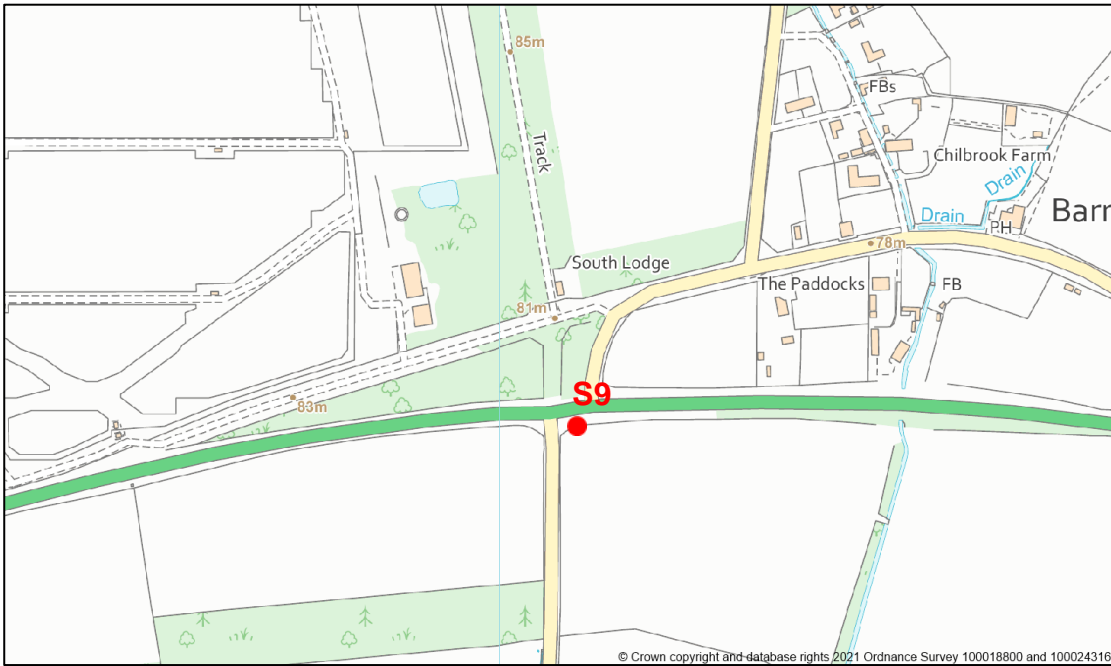


Figure D.10 East of Witney Monitoring Location (near Proposed SDA)

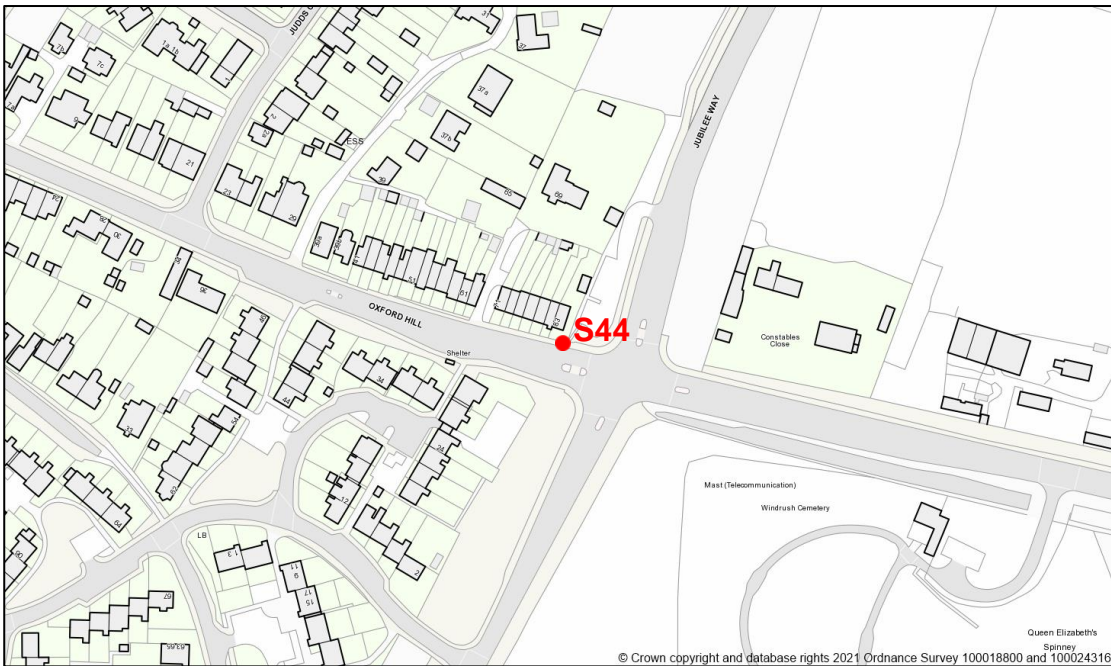
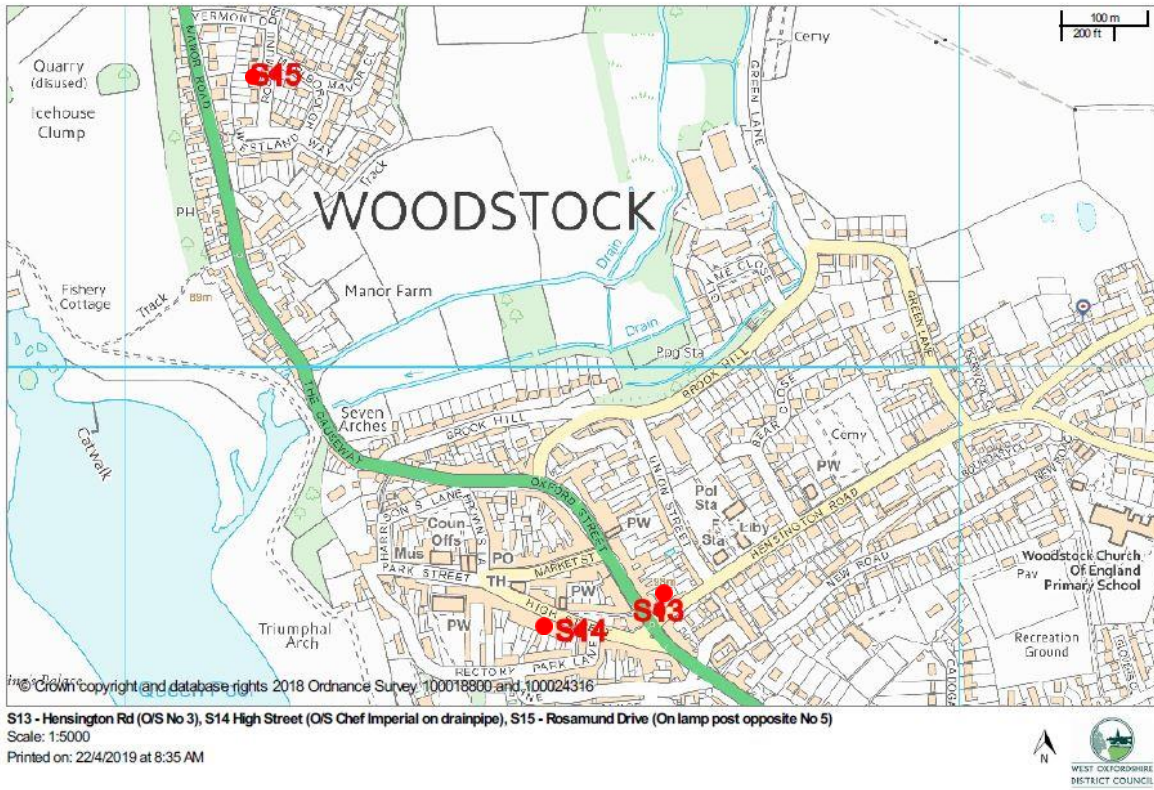


Figure D.11 Woodstock Monitoring Locations



## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England<sup>8</sup>

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

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<sup>8</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Appendix F Additional Monitoring Data

### Additional information provided by third parties in relation to District air quality

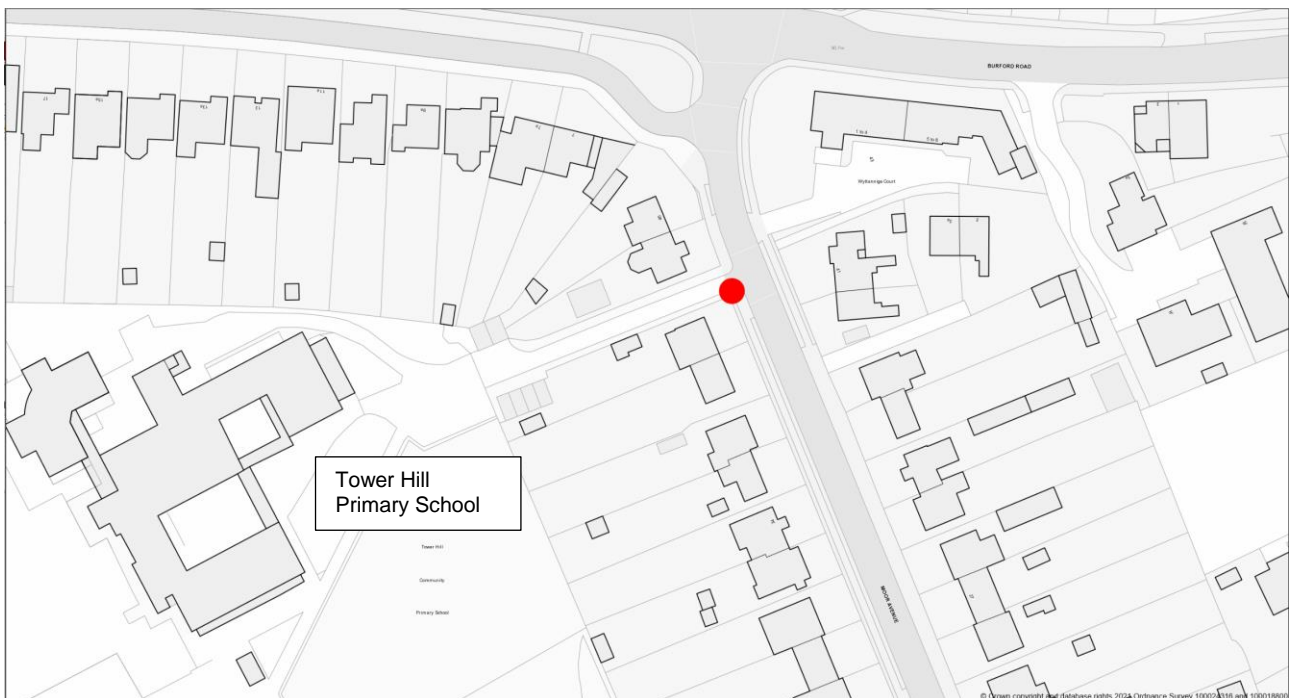
#### F1 School Streets Scheme

The Schools 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 Oxfordshire County Council together with participating schools, in partnership with walking and cycling charity Sustrans.

From May 2021 a trial commenced at Tower Hill Primary School in Witney. On roads where the Schools Streets are being trialled, orange and white cones or barriers are placed along the road in order to temporarily stop cars from going through, to give parents and children confidence to cycle or walk to school.

In connection with this, the District Council has set up a diffusion tube monitoring point outside of Tower Hill Primary School. The tube is supplied by Oxfordshire County Council and is analysed separately from the District's diffusion tubes, by South Yorkshire Air Quality Samplers. It will assess levels of nitrogen dioxide in the vicinity of the school.

Tower Hill Tube location:



● Monitoring tube location, at school entrance

The unadjusted results of the monitoring undertaken in 2021 are presented below:

<b>Tube No</b>	<b>Date On</b>	<b>Time On</b>	<b>Date Off</b>	<b>Time Off</b>	<b>Exposure</b>	<b>Nitrogen Dioxide</b>
	m/d/yy	hh:mm	m/d/yy	hh:mm	hrs	ug/m3
<b>18</b>	06/05/21	10:05	02/06/21	10:06	648.0	<b>9</b>
<b>18</b>	02/06/21	10:06	01/07/21	10:37	696.5	<b>9</b>
<b>18</b>	01/07/21	10:37	04/08/21	11:08	816.5	<b>7</b>
<b>18</b>	04/08/21	11:08	03/09/21	09:49	718.7	<b>5</b>
<b>18</b>	03/09/21	09:49	29/09/21	16:00	630.2	<b>9</b>
<b>18</b>	29/09/21	16:00	05/11/21	11:04	883.1	<b>12</b>
<b>18</b>	05/11/21	11:04	03/12/21	09:17	670.2	<b>17</b>

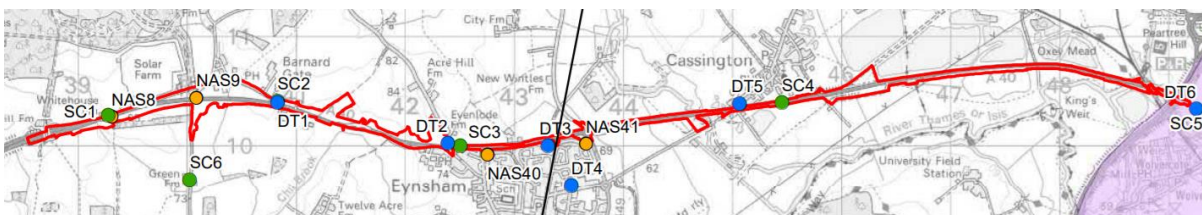
## **F2 Air Quality Monitoring in connection with the A40 improvements**

In connection with the proposed dualling of the A40 between Witney and Eynsham, some scheme-specific monitoring was carried out by consultant AECOM in 2021 to provide supplementary information to inform the environmental impact air quality assessment and provide an indication of the current baseline conditions. Some 6 diffusion tube sites were set up with annual mean concentrations as follows:

Site ID	Grid Reference (X, Y)	Location	Type	NO2 Annual Mean Concentration 2020 ( $\mu\text{g}/\text{m}^3$ )
SC1	437534, 209534	Whitehouse Farm	Roadside Site	37.4
SC2	436609, 209277	Barnard Gate Farm	Roadside Site	24.3
SC3	436834, 209967	The Evenlode Pub	Roadside Site	37.8
SC4	436994, 209043	A40 Cassington	Roadside Site	20.9
SC5	436367, 208719	BP Petrol Station	Roadside Site	35.5
SC6	437679, 209054	Barnard Gate Country Lane	Background Site	7.8

NB SC5 is located within the Oxford City administrative area.

Figure Location of AECOM's diffusion tubes SC1-6





## 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
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.