



WEST OXFORDSHIRE  
DISTRICT COUNCIL



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# **2020 Air Quality Annual Status Report (ASR)**

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

**June 2020**

**West Oxfordshire District Council**

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## Executive Summary: Air Quality in Our Area

The monitoring reported within this 2020 Annual Status Report for West Oxfordshire District Council took place during the whole of 2019. 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 nitrogen dioxide levels that exceed the national objective of  $40 \mu\text{g}\text{m}^{-3}$ , which was set to protect health.

There were no proposed industrial developments within the District during 2019 with air pollution implications. All residential development proposals were considered with regard to their potential to increase traffic pollution in the AQMAs and other areas.

### Chipping Norton AQMA

Nitrogen dioxide ( $\text{NO}_2$ ) levels at one monitoring point in the Chipping Norton AQMA remain higher than the national objective level set to protect health, which is a concern. It is anticipated that the levels will reduce to a satisfactory level in the future as the national fleet is replaced with “cleaner, greener” vehicles, but the timeframe for this anticipated improvement is not known. In previous years, annual average levels have reached  $40 \mu\text{g}\text{m}^{-3}$  (+/- a few  $\mu\text{g}\text{m}^{-3}$ ) at the site of the 3 co-located diffusion tubes in the High Street. In 2018 the 3 co-located tubes measured less than  $31 \mu\text{g}\text{m}^{-3}$  which is indicative of satisfactory air quality, and in 2019 the average was  $25 \mu\text{g}\text{m}^{-3}$  or less. One of the Horsefair diffusion tubes is located at a point where the road narrows such that wide vehicles are unable to pass each other so giving rise to congestion. This is the only monitoring point in Chipping Norton where levels exceed the air quality objective. The annual average was just under  $42 \mu\text{g}\text{m}^{-3}$  this year, an improvement on the annual average of  $47 \mu\text{g}\text{m}^{-3}$  experienced during 2018.

The Chipping Norton Air Quality Action Plan proposed the introduction of a weight limit and re-routing of HGV traffic. Oxfordshire County Council (OCC) commissioned a feasibility study, but financial constraints within OCC budgets have caused delays. The intent remains, re-stated, within the OCC LTP4 (2011 – 2030) (Vol 1, Page 77, Para 195). An implementation schedule is still awaited. (Reference A). An additional measure is proposed within the proposed East Chipping Norton SDA (Strategic Development Area), where land for development of some 1200 homes is allocated under Policy CN1 of the West Oxfordshire Local Plan 2031. Within this is a proposed new road that would link Banbury Road to Burford Road via London Road and forms part of the proposed key infrastructure expected to be delivered as part of the SDA. Its effect would be to allow a proportion of traffic (including heavy goods vehicles (HGVs)) to avoid travelling through Chipping Norton Town Centre, thus reducing the traffic passing through the AQMA.

West Oxfordshire District Council's Climate Action website ([WODC Climate Action](#)) (Reference B) includes pages which set out how the authority addresses some mitigation measures relevant to air quality, reinforcing the WODC commitment to improving air quality.

### **Witney AQMA**

Nitrogen dioxide (NO<sub>2</sub>) levels in the Witney AQMA remain higher than the national objective level set to protect health, which is of concern. As the vehicles using the area are updated some improvement can be anticipated, but it is not known whether the pollution will reduce to a satisfactory level through this mechanism alone and the timeframe of any anticipated improvement is not known. For the last 10 years, annual average NO<sub>2</sub> in Bridge Street has remained around 40-50 µgm<sup>-3</sup>. The Draft Action Plan for the Witney AQMA assumed that the Cogges Link Road would proceed, as per the planning consent, but the Department for Transport refused a compulsory purchase order for the land needed. Oxfordshire County Council (OCC) is now reconsidering alternative options which might address traffic flow within and around Witney. OCC LTP4, (Vol 2, Sect ii, Pages 77 - 85) details the proposals (Reference C). Major road improvements to benefit the centre of Witney are dependent on the advancement of major housing schemes planned for the north and east of Witney.

## **Air Quality in West Oxfordshire**

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

The main air quality issues in the West Oxfordshire District Council area are related to vehicular density within relatively congested urban areas, thus nitrogen dioxide is the main pollutant of concern. The 2019 monitoring survey shows that most nitrogen dioxide levels have slightly decreased compared to 2018 results. The variation between the years is thought likely to be attributable to meteorological differences but may also be an effect of the changes in the national vehicle fleet.

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

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Bridge Street, Witney (Air Quality action plan pending)

Chipping Norton's action plan can be found here: [Chipping Norton Air Quality Action Plan](#)

There are no major new pollution sources in West Oxfordshire.

There is active liaison between West Oxfordshire District Council, 3 neighbouring Districts and Oxford City and this grouping has produced a useful additional resource:

<https://oxfordshire.air-quality.info/>

County Council participation has been limited by financial constraints since their initial involvement in the Action Plan for Chipping Norton and this has been reflected in subsequent Local Transport Plans (LTP).

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

## **Actions to Improve Air Quality**

Activity within West Oxfordshire has been limited to monitoring and data collection. Co-operation between adjacent Local Authority officers gave rise to a local Air Quality information resource which was the outcome of a DEFRA grant funded project initiated by South Oxfordshire District Council. This continues to provide useful information for the residents of Oxfordshire.

The City of Oxford is working upon improving air quality in their area through the introduction of a low emission zone (LEZ) to encourage the uptake of cleaner, greener vehicles. The results of their work has 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.

The County Council is advancing proposals for a new Park and Ride facility at Eynsham and seeking funding for the detailed scheme. This comprises a park and ride for 1000 cars to the north of the A40, located to the west of the A40/Cuckoo Lane junction at Eynsham with a new footway and cycle shared path located on the northern side of the A40, providing a cycle route from Witney to Oxford, plus other detailed traffic management changes.

Other actions are being promoted by the County Council which manages most of the road network in Oxfordshire. An A40 long term strategy transport package was approved by Oxfordshire County Council Cabinet in May 2016. Key measures seek to deliver:

- Further sections of 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.

## Conclusions and Priorities

Nitrogen dioxide levels in Bridge Street, Witney continue to exceed the national air quality objective. The annual average results of  $41.9 \mu\text{g m}^{-3}$  and  $44.84 \mu\text{g m}^{-3}$  can be compared with last year when the levels were  $41.8 \mu\text{g m}^{-3}$  and  $48.2 \mu\text{g m}^{-3}$  respectively.

The highest recording tube in Horsefair, Chipping Norton remains high at  $41.4 \mu\text{g m}^{-3}$  (compared to the previous year's  $47.3 \mu\text{g m}^{-3}$ ) but the levels recorded by the other tubes in Chipping Norton are typical of busy roadsides around the whole of the UK.

The majority of the results in 2019 were a few  $\mu\text{g m}^{-3}$  lower than those of 2018, which may be due to an increase in the proportion of newer, cleaner vehicles using the roads, but may also reflect the influence of favourable meteorological conditions which aid dispersion and dilution of traffic exhaust emissions.

Challenges in addressing our two air quality management areas are anticipated due to the general desire to increase the residential availability around both Witney and Chipping Norton, which will create an additional traffic burden in the areas and 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.

Due to the cost of building an alternative route and no agreement regarding advancement of proposed housing and their associated road schemes, 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, 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.

## **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 Council during 2019. 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 can be found in Table E.1 in Appendix E.

## 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 must prepare an Air Quality Action Plan (AQAP) within 12-18 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 Table 2.1. Further information related to declared AQMAs, including maps of AQMA boundaries are available online at:

[https://uk-air.defra.gov.uk/agma/local-authorities?la\\_id=309](https://uk-air.defra.gov.uk/agma/local-authorities?la_id=309)

There are 2 AQMAs in West Oxfordshire, located in the centre of Chipping Norton and Witney respectively. The location of each is illustrated below (Figures 2.1 and 2.2, with AQMA area in red):

Figure 2.1 Witney AQMA

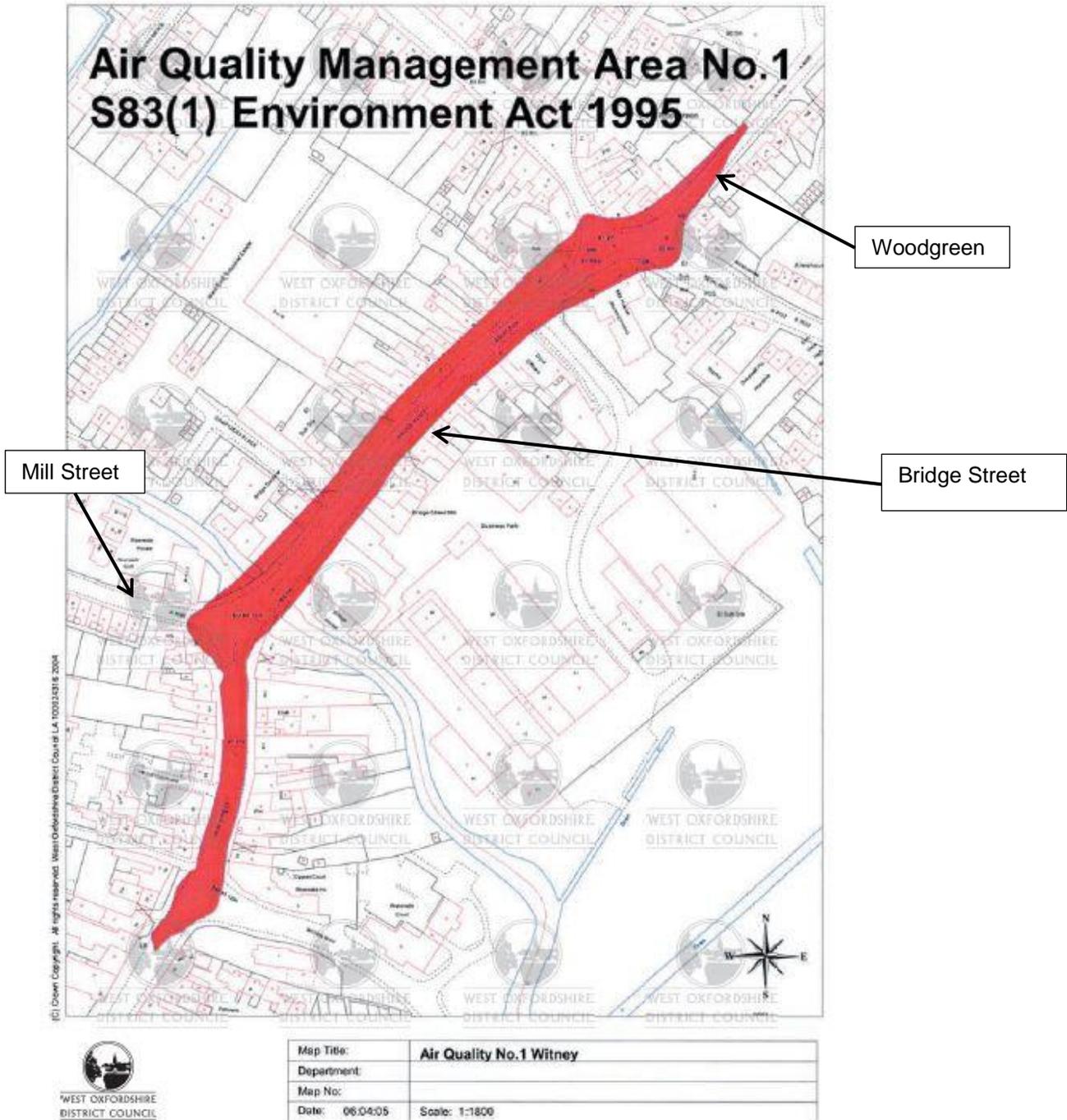
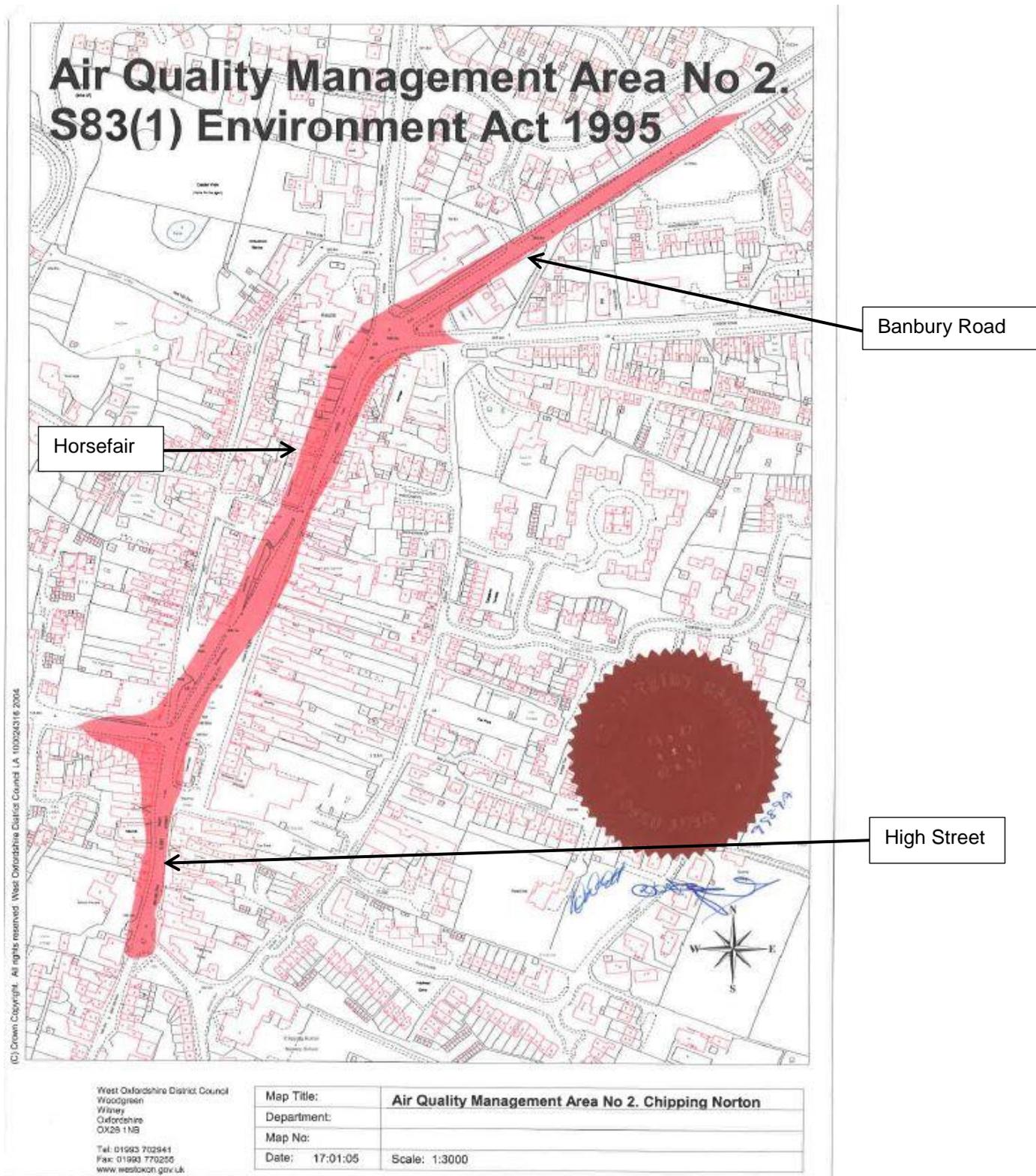


Figure 2.2 Chipping Norton AQMA



For reference, maps of West Oxfordshire District Council’s diffusion tube monitoring locations are available in Appendix D.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
WITNEY Bridge Street / High Street	Declared 01/03/2005	NO <sub>2</sub>	Witney	An area incorporating Bridge Street, Witney and the junctions with New Yatt Road, Newland, Mill Street and High Street encompassing a number of residential and commercial properties	No	2003 48 µg <sup>m</sup> <sup>-3</sup>  2004 38 µg <sup>m</sup> <sup>-3</sup>	44.8 µg <sup>m</sup> <sup>-3</sup>	Air Quality Action Plan pending <a href="http://aqma.defra.gov.uk/action-plans/WODC%20AQAP%202010.pdf">http://aqma.defra.gov.uk/action-plans/WODC%20AQAP%202010.pdf</a> (Draft action plan published 2010)
CHIPPING NORTON Horsefair / High Street	Declared 01/03/2005	NO <sub>2</sub>	Chipping Norton	An area incorporating Horse Fair, High Street, Market Place A44 and part of West Street in Chipping Norton, Oxfordshire encompassing a number of residential and commercial properties	No	2003 50 µg <sup>m</sup> <sup>-3</sup>  2004 49 µg <sup>m</sup> <sup>-3</sup>	41.4 µg <sup>m</sup> <sup>-3</sup>	<a href="http://www.westoxon.gov.uk/media/744184/Chipping-Norton-Air-Quality-Action-Plan.pdf">http://www.westoxon.gov.uk/media/744184/Chipping-Norton-Air-Quality-Action-Plan.pdf</a> (published 2008)

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

### 2.2.1 Past Year's Peer Review comments

Each year the Council's Air Quality Annual Status Report is submitted to central Government for peer review before publishing. Comments on presentation and treatment of data are considered and where appropriate incorporated into the following year's updated report. Comments arising from the 2019 report review included those shown in the table below along with the actions taken.

Comment	Action
Update AQAP	Not yet advanced. Dependent on progress of proposed strategic expansion of both Chipping Norton and Witney
Provide tube heights for each site	Included this year
Depict concentrations exceeding 40 µg/m <sup>3</sup> in bold, those exceeding 60 µg/m <sup>3</sup> in bold underlined	Included this year for those concentrations exceeding 40 µg/m <sup>3</sup> . Not applicable for those exceeding 60 µg/m <sup>3</sup>
Reference the Public Health Outcomes Framework and PM2.5 emissions.	Included this year
Incorporate annualisation as required	Included this year for 3 monitoring locations
Distance corrections	Indicated as not required this year

### 2.2.2 Progress on Measures to Improve Air Quality

#### General Measures

Details of measures in pursuit of improving local air quality are set out in **Error! Reference source not found.** 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.

Meanwhile the County Council, which is responsible for transport planning across the County, has published its “Active & Healthy Travel Strategy” as part of the Connecting Oxfordshire 2011-2031: Local Transport Plan (LTP4) which was updated and adopted in 2016. This strategy aims to contribute to reducing pressure on the road network, contribute to economic growth and the reduction of emissions, quality of life and health, and link active travel with bus and rail options by enabling sustainable door to door journeys combining cycling or walking with public transport. It will facilitate improvements to cycling routes, promotion of alternatives to car use and the benefits of exercise.

### Specific measures

Elsewhere in the District, a large new development – is planned for the Eynsham area. As well as plans for 2,200 new homes, employment space and new community facilities in the form of the Oxfordshire Cotswolds Garden Village, a new park and ride and bus lane scheme, is proposed which is intended to address congestion on the A40 road towards Oxford. It will provide a public transport alternative for travelling to Oxford with the aim of encouraging people to switch from using cars to public transport. The scheme is to be funded by £36.2m largely from the Local Growth Fund administered by the Department for Transport.

There are major housing schemes planned for the north and east of Witney. The two proposed Local Plan housing allocations: East Witney (400 homes) and North Witney (1,000 homes). These schemes are required to deliver certain supporting infrastructure, including new roads, a school and public open space. The delivery of the large scale road infrastructure improvements and the Shores Green A40 junction improvements will, once complete, allow residents in Witney alternative routes to a variety of destinations, including south and east Witney and more distant destinations reached via the A40 without passing through the centre of Witney; and in particular to

avoid using Bridge Street where traffic congestion is already highly significant. It is unclear when this development will commence.

#### Chipping Norton

Chipping Norton sits astride the crossing of the A44 and A361, with the heavily-used lorry route to and from the Evesham area passing through the town centre. This has led to the Air Quality Management Area (AQMA) being designated along the town centre roads and extending along Banbury Road.

Supplementary Planning Guidance is being produced for Chipping Norton. It refers to the proposed allocation of land for 1200 houses. The East Chipping Norton SDA (Strategic Development Area) is allocated for development under Policy CN1 of the West Oxfordshire Local Plan 2031. To help guide the future development of the site, West Oxfordshire District Council (WODC) is preparing a Supplementary Planning Document (SPD) in the form of a Development Framework. The SPD will set out the key objectives and development principles that will need to be addressed as the SDA is taken forward and will be a material consideration in the determination of any future planning applications for the site. To date it has produced a briefing document (ref) that has informed a public consultation in February 2019, the results of which were collated and summarised in June 2019. The comments received will be taken into account as the draft SPD is prepared ahead of further public consultation.

The details are within this document (link is [here](#)):

- West OXDC: East Chipping Norton Strategic Development Area (SDA) – Supplementary Planning Document (SPD) Issues Paper January 2019.

The proposed development of 1,200 homes and other uses has the potential to create a significant transport impact and this needs to be carefully considered for the development to minimise impact on the local road network.

In particular the section 2.22 states: “A further key benefit of the allocation is the provision of a new eastern link road which will connect the Banbury Road to the B4026/A361 via the London Road thus allowing a proportion of traffic (including heavy goods vehicles (HGVs)) to avoid travelling through Chipping Norton Town Centre which has existing problems in terms of air quality including a designated Air Quality Management Area (AQMA).

The road would link Banbury Road to Burford Road via London Road and forms part of the proposed key infrastructure expected to be delivered as part of the SDA. The final alignment of the eastern link road has not yet been chosen.

Figure 2.3 shows the location of the proposed SDA land under policy CN1 and in particular a suggested route that the link road might take.

Figure 2.3 Map Extract from Policy CN1 of the West Oxfordshire Local Plan

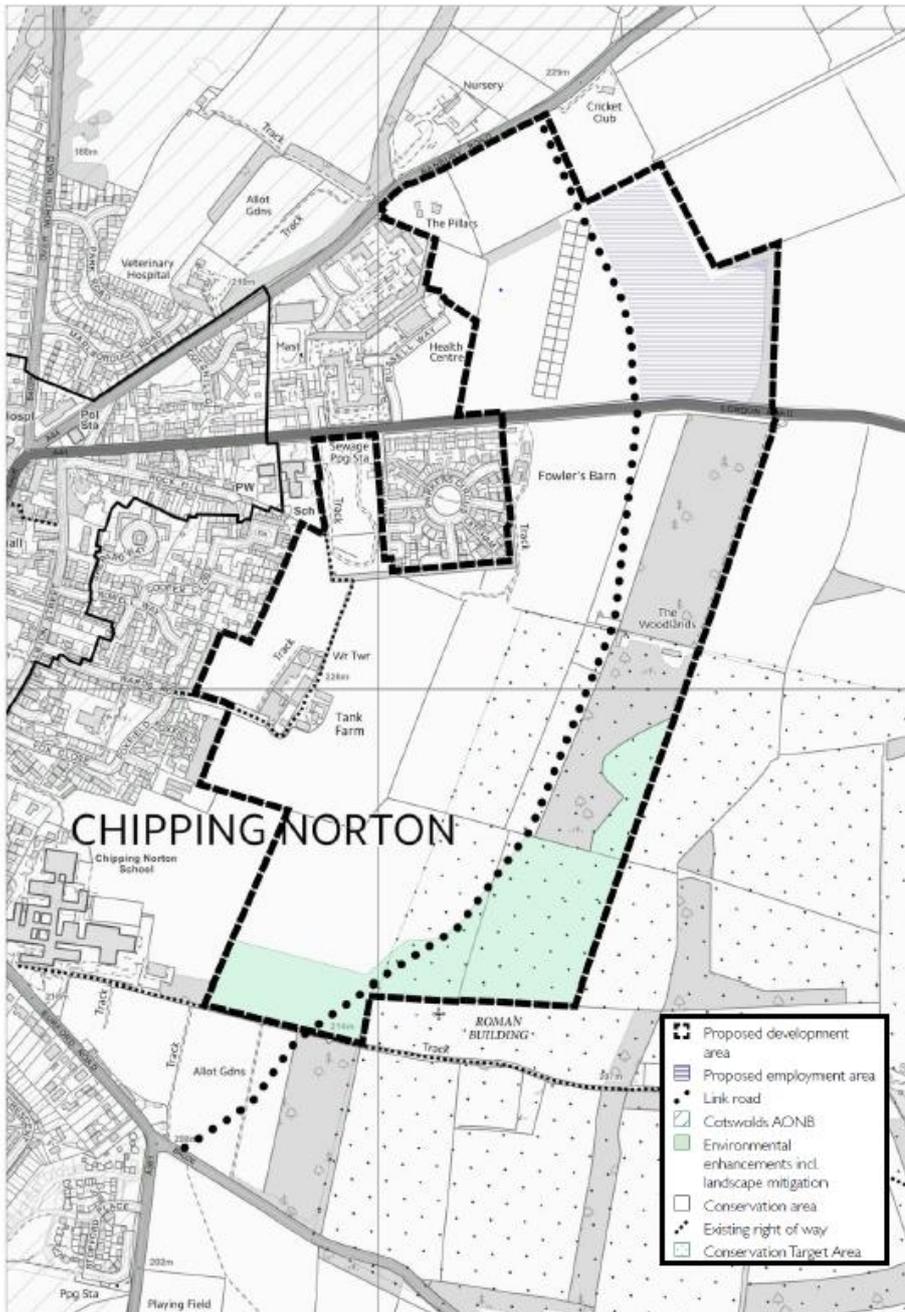


Table 2.2 – Progress on Measures to Improve Air Quality in West Oxfordshire

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Chipping Norton AQMA Action Plan (ref A)	Traffic Management	UTC, Congestion management, traffic reduction	West Oxfordshire District Council/OCC	Basic survey completed	Unknown – financial prioritisation	Reduced NO <sub>2</sub> levels recorded	Reduced traffic density	Static	Unknown	Funding
2	Witney AQMA Action Plan (See Reference C)	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	OCC	LTP4	Awaited	Reduced NO <sub>2</sub> levels recorded	Reduced traffic density	Awaited	Not known	Funding
3	Connecting Oxfordshire: Local Transport Plan 2015-2031	Policy Guidance and Development Control	Other policy	OCC	N/A	Ongoing	Air quality data information Public awareness Increasing awareness within health monitoring policy	Reduced traffic density	Transport Options Study for Chipping Norton completed by WYG in 2016	Ongoing	-
4	Oxfordshire Active & Healthy Travel Strategy	Policy Guidance and Development Control	Other policy	OCC	LTP4	Ongoing	Reducing car use and thus emissions. Increased cycle network	Reduced traffic density	Strategy published	Completed	-

## West Oxfordshire District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	New Park & Ride at A40 Cassington	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	OCC and funded largely by Local Growth Fund administered by DfT	Ongoing	Awaiting revised application for funding	Use of facility and thus reduction in journeys by car	Increased use of public transport on A40 corridor	Planning	Unknown	Funding
6	Hanborough Station improvements	Alternatives to private vehicle use	Rail based Park & Ride	West Oxfordshire District Council, the Cotswold Line Promotion Group (CLPG), and the National Station Improvement Programme	Complete	2019	New building opened	Reduced traffic density	On target – new station building opened 2019	Completed	N/a

OCC=Oxfordshire County Council

DfT=Department for Transport

## 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) (Reference D), 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

PM<sub>2.5</sub> is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator 3.015 is based.

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” (2017).

For Oxfordshire as a whole, the estimated Fraction of Mortality attributable to particulate air pollution is relatively low with the area ranked 14 out of 19 areas in the South East of England. This equates to a percentage of 5.4% compared with the regional average of 5.6%<sup>4</sup>.

For the West Oxfordshire District the estimated Fraction of Mortality attributable to particulate air pollution is relatively low with the area ranked 61 out of 67 areas in the South East of England. This equates to a percentage of 5.1% compared with the regional average of 5.6%.

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<sup>4</sup> [https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000008/ati/201/are/E07000181/iid/30101/age/230/sex/4/cid/4/page-options/car-ao-0\\_car-do-0](https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000008/ati/201/are/E07000181/iid/30101/age/230/sex/4/cid/4/page-options/car-ao-0_car-do-0)

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

### 3.1 Summary of Monitoring Undertaken

This section sets out what monitoring has taken place and how it compares with objectives.

#### 3.1.1 Non-Automatic Monitoring Sites

West Oxfordshire District Council has a number of long term diffusion tube survey sites across the district. The sites all relate to traffic emissions. There have been no new roads or major changes that have affected traffic flows.

West Oxfordshire District Council undertook non- automatic (passive) monitoring of nitrogen dioxide (NO<sub>2</sub>) at 25 sites during 2019. The survey focused upon locations where there is “relevant public exposure”, in accordance with Defra LAQM Technical Guidance Note TG(09) (Reference E). This year, two additional monitoring points were set up in Eynsham (locations NAS 40/41) from May 2019 and two in Woodstock (locations NAS13/14). Because only a partial year’s worth of data is available for the Eynsham locations, the annualisation process has been applied to the data.

Table A1 in Appendix A provides technical details of the diffusion tube monitoring 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 “annualisation” will be found within Appendix C.

### 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias<sup>5</sup>, “annualisation” (where the data capture falls below 75%), and distance correction<sup>6</sup> to the nearest receptor. Further details on adjustments are provided in Appendix C.

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<sup>5</sup> <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

<sup>6</sup> Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

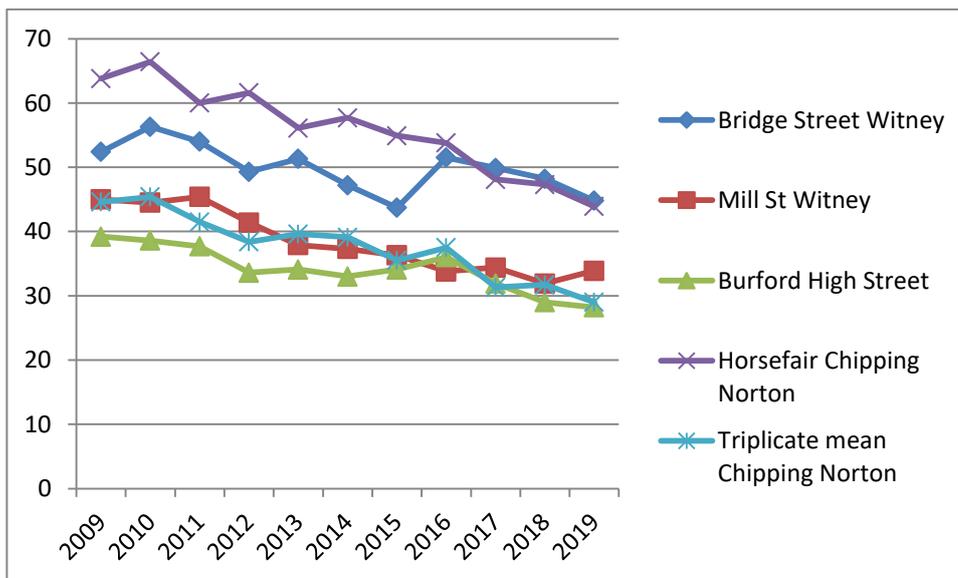
### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

Table A2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

Figure 3.1 below contains a graph showing the trends in annual mean NO<sub>2</sub> over a number of years.

Nitrogen dioxide levels have shown a gradual downward trend over the 11 years displayed. The graph shows that the levels recorded this year were similar to last year's levels with some decreases. The decreases are possibly due to a decreased number of days in the year where our sites experienced temperature inversions and foggy conditions. Air movement would thus have been facilitated, allowing vehicle exhaust emissions to be dispersed and diluted to safe levels.

**Figure 3.1** – Trends in Annual Mean NO<sub>2</sub> Concentrations - Graph showing the trends over 10 years at long term diffusion tube monitoring sites



There is 1 location within the AQMA (at 20 Bridge St Witney) where there has been a marginal increase in mean Nitrogen dioxide levels (to 41.9 from 41.8 in 2018). However over the rest of the district, including other locations within the AQMA levels have been falling, which is broadly in line with national trends.

The 2019 dataset of monthly mean nitrogen dioxide concentrations is provided in Appendix B. Note that the concentrations have been distance corrected to nearest relevant public exposure, where relevant. This is not necessary where concentrations at sites not representative of relevant exposure are not within 10% of the annual mean objective, and therefore distance correction has been applied to highest concentrations with the 2 AQMAs as per Table B1.

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Levels within our AQMAs were found to exceed the annual mean NO<sub>2</sub> objective of 40 µgm<sup>-3</sup> at (2019 data, (2018) data): Horsefair, Chipping Norton (41.4 (47.3) µgm<sup>-3</sup>), 25 Bridge Street, Witney (44.8 (48.2) µgm<sup>-3</sup>) and 20 Bridge Street, Witney (41.9 (41.8) µgm<sup>-3</sup>).

The 3 co-located tubes in High Street, Chipping Norton gave an average reading of 29.0 µgm<sup>-3</sup> (31.7 µgm<sup>-3</sup> in 2018) and the annual average concentrations measured by each of the 3 tubes were within 3 µgm<sup>-3</sup> (the range was 27.1-30.3 µgm<sup>-3</sup>).

No other sites had levels approaching the national objective and the results show that, in the main, West Oxfordshire District Council has good air quality. Outside of Witney and Chipping Norton, the highest annual average reading of 28.2 µgm<sup>-3</sup> (29.0 µgm<sup>-3</sup> in 2018) was found at Lower High Street, Burford.

**Error! Reference source not found.** in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>. Note that the concentration data presented in **Error! Reference source not found.** 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 2019 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.

## Appendix A: Monitoring Results

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
NAS1	25 Bridge Street, Witney	R	435860	210285	NO <sub>2</sub>	YES	0	1.59	NO	2.29
NAS2	10 Bridge Street, Witney	R	435821	210243	NO <sub>2</sub>	YES	0.59	2.26	NO	2.56
NAS3	20 Bridge Street, Witney	R	435849	210280	NO <sub>2</sub>	YES	0	2.15	NO	2.33
NAS4	9 Mill Street, Witney	R	435682	210195	NO <sub>2</sub>	YES	0.92	1.42	NO	2.74
NAS5	4A West End, Witney	R	435897	210324	NO <sub>2</sub>	YES	0	1.23	NO	2.30
NAS6	Woodgreen Hill, Witney	R	435940	210351	NO <sub>2</sub>	YES	0.12	3.06	NO	2.28
NAS7	Newland, Witney	R	435946	210326	NO <sub>2</sub>	YES	1.22	2.43	NO	2.31
NAS8	A40 Whitehill House Cottage	R	439304	210260	NO <sub>2</sub>	NO	14.01	2.86	NO	2.44
NAS9	A40 j/w Southleigh Turn	R	440082	210435	NO <sub>2</sub>	NO	>50	1.08	NO	2.24
NAS10	Park Street, Bladon	R	444812	214669	NO <sub>2</sub>	NO	14.0	2.54	NO	2.64
NAS11	Heath Lane, Bladon	B	445216	214389	NO <sub>2</sub>	NO	10.5	1.08	NO	2.24
NAS12	Grove Rd, Bladon	R	444904	214946	NO <sub>2</sub>	NO	8.9	1.98	NO	2.33
NAS13	3 Hensington Road, Woodstock (New from 1/1/19)	R	444732	216696	NO <sub>2</sub>	NO	0.16	1.67	NO	2.20

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
NAS14	High St, Woodstock (Chef Imperial)(new from 1/1/19)	R	444324	216868	NO <sub>2</sub>	NO	0.16	2.72	NO	2.26
NAS15	Woodstock, Rosamund Drive.	B	444199	217343	NO <sub>2</sub>	NO	6.80	1.83	NO	2.31
NAS16	Withers Way, Chipping Norton	B	431203	226866	NO <sub>2</sub>	NO	4.7	2.05	NO	2.40
NAS17	West St , Chipping Norton	R	431342	226950	NO <sub>2</sub>	<b>YES</b>	0.35	1.78	NO	2.67
NAS18 NAS19 NAS20	Co-location, Chipping Norton (Triplicate Mean)	R	431430	227216	NO <sub>2</sub>	<b>YES</b>	3.2	1.48	NO	1.8
NAS21	7 Horsefair, Chipping Norton	R	431458	227278	NO <sub>2</sub>	<b>YES</b>	0.18	4.75	NO	2.65
NAS22	Horsefair, (opp No.7) Chipping Norton	R	431458	227277	NO <sub>2</sub>	<b>YES</b>	0.42	0.97	NO	2.30
NAS23	Lower High St, Burford (Bottom nr Bridge)	R	425185	212435	NO <sub>2</sub>	NO	0.65	1.95	NO	2.29
NAS24	93 High Street, Burford (nr Barclays bank)	R	425153	212178	NO <sub>2</sub>	NO	0.41	1.78	NO	2.24
NAS25	Garner Close, Carterton	B	427412	208233	NO <sub>2</sub>	NO	8.6	1.25	NO	2.22
NAS40	Witney Road,Eynsham (New 1/5/19)	R	442753	209913	NO <sub>2</sub>	NO	6.06	1.23	NO	2.20
NAS41	Hanborough Road, Eynsham. (New 1/5/19)	R	443658	210015	NO <sub>2</sub>	NO	25.0	2.00	NO	2.29

**Notes:**

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

(2) Measurement distance from road. N/A if not applicable.

Table A2 – Annual Mean NO<sub>2</sub> Diffusion Tube Monitoring Results

Site ID	Site location	Site Type	No of valid results (total number) for 2019 <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
NAS1	25 Bridge Street	R	12 (12)	100	51.9	55.7	49.9	48.2	44.8
NAS2	10 Bridge Street	R	12 (12)	100	-	-	40.6	40.5	37.1
NAS3	20 Bridge Street	R	12 (12)	100	42.6	51.5	43.9	41.8	41.9
NAS4	Mill Street	R	12 (12)	100	35.5	33.8	34.4	31.9	33.9
NAS5	4A West End	R	12 (12)	100	-	-	33.9	35.5	33.1
NAS6	Woodgreen Hill	R	10(10)	83.3	-	-	33.9	34.4	35.5
NAS7	Newland Witney	R	12 (12)	100	-	-	35.8	34.5	34.3
NAS8	A40 Whitehill House Cottage	R	11 (11)	91.7	-	-	-	-	31.4
NAS9	A40 j/w Southleigh Turn	R	12 (12)	100	-	-	-	-	18.7
NAS10	Park Street	R	12 (12)	100	30.3	32.0	28.9	27.5	27
NAS11	Heath Lane	B	12 (12)	100	9.9	12.5	10.4	10.0	9
NAS12	Grove Road, Bladon	R	11 (11)	91.7	19.8	24.0	19.9	17.6	16.6
NAS13	3 Hensington Road, Woodstock (New from 1/1/19)	R	8(8)	66.7	-	-	-	-	22.3
NAS14	High St, Woodstock (Chef Imperial)(new from 1/1/19)	R	12 (12)	100	-	-	-	-	14.5
NAS15	Rosamund Drive, Woodstock	B	12 (12)	100	-	-	11.0	10.2	22.3
NAS16	Withers Way	B	12 (12)	100	8.9	11.0	9.0	9.0	14.5
NAS17	West Street	R	12 (12)	100	25.2	28.8	25.3	23.6	10.1

Site ID	Site Location	Site Type	No of valid results (total number) for 2018 <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2015	2016	2017	2018	2019
NAS18	CN Co location	R	12 (12)	100	36.5	<b>40.5</b>	31.0	33.2	30.4
NAS19	CN Co location	R	12 (12)	100	32.5	38.2	30.6	31.7	29.5
NAS20	CN Co location	R	12 (12)	100	32.3	33.9	32.3	30.2	27.2
NAS18,19,20	TRIPLE.MEAN	R	12 (12)	100	33.7	37.5	31.3	31.7	29.0
NAS21	7 Horsefair	R	12 (12)	100	21.9	23.8	20.5	21.7	19.8
NAS22	Horsefair (opp 7)	R	11 (11)	91.7	<b>53.6</b>	<b>53.8</b>	<b>48.1</b>	<b>47.3</b>	<b>43.9</b>
NAS23	Lower High St, Burford	R	11 (12)	91.7	33.2	36	31.9	29.0	28.2
NAS24	93 High Street , Burford	R	12 (12)	100	29.8	29.0	22.5	23.2	21
NAS25	Garner Close, Carterton	B	12 (12)	100	9.6	10.4	9.3	10.1	9.70
NAS40	Witney Road,Eynsham (New 1/5/19)	R	8(8)	100 <sup>(1)</sup>	-	-	-	-	18.3
NAS41	Hanborough Road, Eynsham. (New 1/5/19)	R	8(8)	100 <sup>(1)</sup>	-	-	-	-	16.3

**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**.

(1) Number of validated results for use in the survey (total number of results for 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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) New sites for 2019 have been included in this comparison table – including locations NAS13/14/40 and 41 – although no data is available for former years.

(5) Annualisation procedures applied to these results

R=roadside

B=background

## Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO<sub>2</sub> Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
			Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>												
NAS1 -25 Bridge Street, Witney	435860	210285	70.3	69.2	64.2	51.0	60.2	54.7	51.1	53.8	62.2	58.7	64.6	57.2	59.8	44.8	
NAS2 - 10 Bridge Street, Witney	435821	210243	58.5	60.3	43.2	63.9	46.2	42.7	42.1	36.3	48.6	51.4	60.0	40.5	49.5	37.1	35.6
NAS3 - 20 Bridge Street, Witney	435849	210280	56	69.3	55.6	60.4	48.8	51.6	52.7	48.4	51.6	54.9	62.6	57.7	55.8	41.9	
NAS4 -9 Mill Street, Witney	435682	210195	49.8	89.7	37.2	41.9	30.1	34.1	40.1	37.7	39.9	41.5	54.2	46	45.2	33.9	
NAS5 - 4A West End, Witney	435897	210324	47.8	52	39.6	50.2	39.7	35.3	45.5	33	41.5	38.9	61.6	45	44.2	33.1	
NAS6 - Woodgreen Hill, Witney	435940	210351	52.7	55.7	46.4	54.2	42.1	40.3	42.1	36.5	46	46.7	57.4	47.4	47.3	35.5	
NAS7 - Newland, Witney	435946	210326	44.5	59.7	54.5	39.1	39.6	37.5	42	41.3	46.8	48.4	45.1	49.7	45.7	34.3	
NAS8 - A40 Whitehill House Cottage	439304	210260	45.4	51.7	Missing	39.3	37.3	35.6	38	44.1	41.3	38.9	51.3	37.1	41.8	31.4	

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Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
NAS9 - A40 j/w Southleigh Turn	440082	210435	27.1	26.4	25.3	28.7	25.7	20.6	23	17.4	25.2	22.8	37.1	20.1	25.0	18.7	
NAS10 - Park Street, Bladon	444812	214669	<b>44.6</b>	<b>45.5</b>	35.3	38.6	30.8	30.2	31.8	28.3	35.4	34	<b>47</b>	30.4	36.0	27.0	
NAS11 - Heath Lane, Bladon	445216	214389	20.4	15.8	9.8	12.7	7.5	7.2	8.2	6.8	10.1	12.2	21.1	12	12.0	9.0	
NAS12 - Grove Rd, Bladon	444904	214946	31.4	Missing	22	25.5	17.2	19	18.2	13.3	21.9	23	30.3	Missing	22.2	16.6	
NAS 13 - 3 Hensington Road, Woodstock (New from 1/1/19)	444732	216696	34.1	Missing	30	24.2	Missing	Missing	28.2	24.6	Missing	28.9	40.7	26.8	29.7	22.3	
NAS14 - High St, Woodstock (Chef Imperial)(new from 1/1/19)	444324	216868	23.7	26.8	17.1	21.9	14.6	14.3	15.1	13.2	16.4	19.3	29.3	19.9	19.3	14.5	
NAS15 - Woodstock, Rosamund Drive.	444199	217343	20.5	20.2	12.7	14.1	8.3	9.2	8.5	7.9	11	12.1	22.4	14.3	13.4	10.1	
NAS16 - Withers Way, Chipping Norton	431203	226866	12.4	19.5	9.2	14	6.8	7.1	8	5.3	10	11.3	20.8	13	11.5	8.6	

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Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northin g)	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
NAS17 - West St , Chipping Norton	431342	226950	33.1	31.2	31.2	29.4	29.6	24.6	27.9	21.8	27.6	22.8	39.9	25.1	28.7	21.5	
NAS18 - Nox (18), Chipping Norton	431430	227216	<b>43.8</b>	<b>46.2</b>	30.2	57.4	37.4	38.3	36.2	29.8	38.3	38.4	<b>54</b>	35.8	<b>40.5</b>	30.4	
NAS19 - Nox (19), Chipping Norton	431430	227216	40.5	<b>43.5</b>	30.9	<b>56.4</b>	36.4	35.6	35.5	28.5	36.2	37.3	<b>55.6</b>	34.9	39.3	29.5	
NAS 20 - Nox (20), Chipping Norton	431430	227216	20	<b>44.2</b>	31.3	<b>52.3</b>	33	34.6	33	30	35.7	37.6	<b>48.6</b>	34.8	36.3	27.2	
NAS 21 - 7 Horsefair, Chipping Norton	431458	227278	28.3	25	25	39	22.7	22.9	22.4	21.8	23.2	25.3	36.2	25.2	26.4	19.8	
NAS22 - Horsefair (opp No.7), Chipping Norton	431458	227277	<b>74.6</b>	<b>64.8</b>	<b>49.6</b>	<b>45.5</b>	<b>57.2</b>	<b>51.1</b>	<b>60.8</b>	<b>58.6</b>	<b>57.6</b>	<b>56.2</b>	<b>64.5</b>	<b>62.6</b>	<b>58.6</b>	<b>43.9</b>	<b>41.4</b>
NAS23 - Lower High Street, Burford	425185	212435	35.9	<b>48.2</b>	39.4	28.9	32.2	Missin g	38.5	39	36.8	36.5	41.3	36.4	37.6	28.2	

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
NAS24 - High Street (Near Barclays Bank), Burford	425153	212178	35.2	34.3	24.7	33.6	24.4	Missing	24.5	20.6	24.4	23.3	37.3	25.3	28.0	21.0	
NAS25 - Carterton Garner Close	427412	208233	16.3	18.8	10.1	14.5	Not exposed	7.7	7.5	5.9	10.1	13.7	23	14.7	12.9	9.7	
NAS40 - Witney Road, Eynsham (New 1/5/19)	442753	209913	X	X	X	X	26.8	23.2	22.2	15.9	25.5	25.2	36	20.8	24.5	18.3	
NAS41 - Hanborough Road, Eynsham. (New 1/5/19)	443658	210015	X	X	X	X	20.9	19.6	20.7	11.1	23.9	20.8	34.9	21.4	21.7	16.3	

**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**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure, where relevant. This is not necessary where concentrations at sites not representative of relevant exposure are not within 10% of the annual mean objective.

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

## Diffusion Tube Bias Adjustment Factors

The diffusion tubes (50% TEA in acetone) were supplied and analysed by Socotec Didcot laboratories.

National bias adjustment factors have been used from Defra database, available at:

<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

(see below) The factor used is 0.75 based on 24 studies and this was applied to all diffusion tubes.

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/20				
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 2020				
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* 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.	If you have your own co-location study then see footnote*. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953								
Analysed By*	Method <small>To add a year to a location, change (M) from the year to (M)</small>	Year <small>To add a year to a site, change (M)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision*	Bias Adjustment Factor (A) (Cm/Dm)	
Socotec Didcot	50% TEA in acetone	2019	UB	Kingston upon Hull City Council	12	30	23	32.2%	G	0.76	
Socotec Didcot	50% TEA in acetone	2019	D	Kingston upon Hull City Council	11	32	26	19.1%	G	0.84	
Socotec Didcot	50% TEA in acetone	2019	R	Vale of Glamorgan	11	40	24	68.0%	G	0.60	
Socotec Didcot	50% TEA in acetone	2019	R	Watford Borough Council	12	35	30	16.8%	S	0.86	
Socotec Didcot	50% TEA in acetone	2019	R	Dumfries & Galloway Council	13	35	31	11.9%	G	0.89	
Socotec Didcot	50% TEA in acetone	2019	KS	Marylebone Road Intercomparison	12	32	65	40.5%	G	0.71	
Socotec Didcot	50% TEA in acetone	2019	UB	City of York Council	12	22	16	35.6%	G	0.74	
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	12	33	26	26.8%	G	0.79	
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	9	32	23	37.2%	G	0.73	
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	11	40	28	43.4%	G	0.70	
Socotec Didcot	50% TEA in acetone	2019	R	Ipswich Borough Council	11	34	26	34.1%	G	0.75	
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	51	39	31.7%	G	0.76	
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	33	27	23.9%	G	0.81	
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	40	31	26.7%	G	0.79	
Socotec Didcot	50% TEA in acetone	2019	R	Wrexham County Borough Council	10	20	16	22.2%	G	0.82	
Socotec Didcot	50% TEA in acetone	2019	R	City of Wolverhampton Council	12	39	27	48.4%	G	0.67	
Socotec Didcot	50% TEA in acetone	2019	R	North Herts DC	12	59	46	28.5%	G	0.78	
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	12	30	24	24.5%	G	0.80	
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	31	22	44.5%	G	0.69	
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	32	24	34.4%	G	0.74	
Socotec Didcot	50% TEA in acetone	2019	B	Medway Council	10	21	13	59.5%	P	0.63	
Socotec Didcot	50% TEA in acetone	2019	R	Medway Council	12	33	24	35.1%	G	0.74	
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	10	38	30	27.5%	G	0.78	
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	12	35	24	44.7%	G	0.69	
SOCOTEC Didcot	50% TEA in acetone	2019		<b>Overall Factor* (24 studies)</b>					<b>Use</b>	<b>0.75</b>	

### Annualisation of data

Where monitoring has been completed for less than 75% of the year, annualisation techniques can be used to estimate an annual average from a part year average. For annualisation to be completed there must be 3 months of monitoring data available.

Monitoring at 2 sites (NAS40 - Witney Road, Eynsham (New 1/5/19) and NAS41 - Hanborough Road, Eynsham. (New 1/5/19)) was carried out only part year as the monitoring locations were only set up and operational from May 2019, meaning that data

was only made available for 8 months of the year. At a third site (NAS 13 - 3 Hensington Road, Woodstock), the position was set up at the beginning of the year but capture was less than 75%.

A measured mean concentration for the respective periods of exposure is available for each location. However it will be necessary to estimate the annual mean for these 3 locations, for comparison with the annual target concentration, because there was less than 75% availability for this area.

The procedure involves the following steps:

1. Identification of two to four nearby, long-term, continuous monitoring sites, ideally those forming part of the national network. The data capture for each of these sites should ideally be at least 85%. These sites should be background (Urban Background, Suburban or Rural) sites to avoid any very local effects that may occur at Urban Centre, Roadside or Kerbside sites, and should, wherever possible lie within a radius of about 50 miles. If no background sites are available, and the site to be annualised is itself an Urban Centre, Roadside or Kerbside site, then it is permissible to annualise using roadside or kerbside sites rather than background sites.

The nearest sites that have characteristics similar to the areas requiring normalisation are located in Swindon and Oxford (St Ebbes).

2. Obtain the annual means, 'Am', for the calendar year for these sites.

3. Work out the period means, 'Pm', for the period of interest, in this case May-Dec 2019 for the two Eynsham sites NAS40 and NAS41.

4. Calculate the ratio, 'R', of the annual mean to the period mean ('Am/Pm') for each of the sites.

5. Calculate the average of these ratios, 'Ra'. This is then the annualisation factor.

6. Multiply the measured period mean concentration 'M' by this annualisation factor Ra to give the estimate of the annual mean for 2018.

For the diffusion tube location in Witney Road, Eynsham, the best estimate of the annual mean in 2019 is  $1.13 \times 24.5 \mu\text{g}/\text{m}^3 = 27.9 \mu\text{g}/\text{m}^3$ , as set out in the table below. For the Hanborough Road, Eynsham tube (NAS41), the best estimate of the annual mean in 2019 (again using the table below) is  $1.13 \times 21.7 \mu\text{g}/\text{m}^3 = 24.6 \mu\text{g}/\text{m}^3$ .

For the 3 Hensington Road, Woodstock location (NAS13), the annualisation factor is different to reflect the different exposure months, so the annual mean is  $0.85 \times 29.7 \mu\text{g}/\text{m}^3 = 25.2 \mu\text{g}/\text{m}^3$ .

**West Oxfordshire District Council**

Table C1 Annualisation Data, Witney Road and Hanborough Road, Eynsham – (units  $\mu\text{g}/\text{m}^3$ )

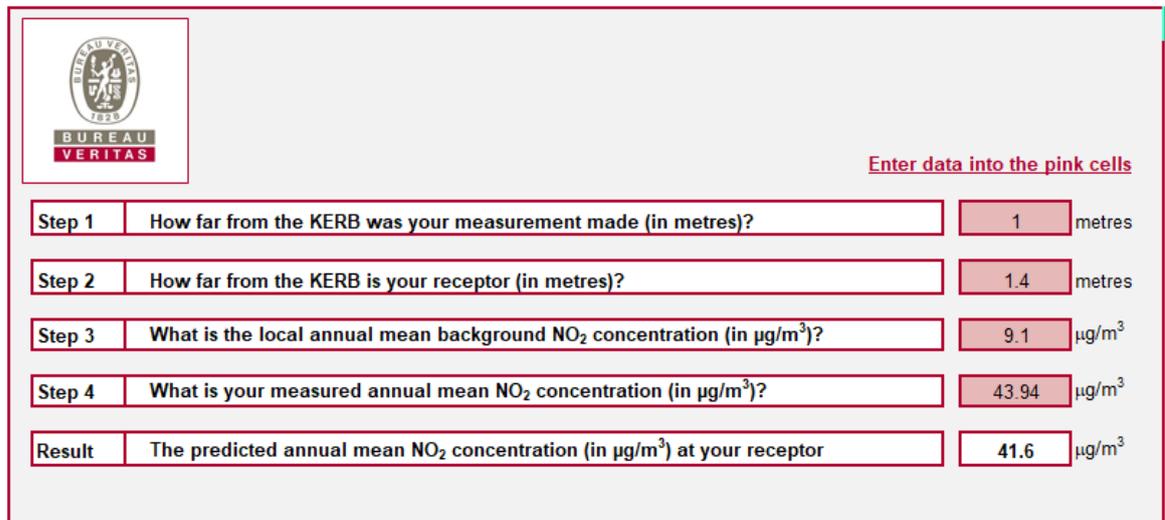
Background Site	Annual Average Am	Period Mean Pm	Ratio Am/Pm
		May-Dec 2019	
(Witney Road, Eynsham)		24.5	
(Hanborough Road, Eynsham)		21.7	
AURN St Ebbes Oxford	15.81	14.6	1.08
AURN Swindon	13.33	11.2	1.19
Annualisation Factor			1.13

**Table C2** Annualisation Data, 3 Hensington Road, Woodstock (units  $\mu\text{g}/\text{m}^3$ )

Background Site	Annual Average Am	Period Mean Pm	Ratio Am/Pm
		(less Feb/May/Jun/Nov 2019)	
3 Hensington Road		29.7	
AURN St Ebbes Oxford	15.81	17.6	0.90
AURN Swindon	13.33	16.8	0.80
Annualisation Factor			0.85

### Distance Corrections

Corrections for distance (to allow for the distance the diffusion tubes are from the roadside) have been made within this assessment, where concentrations at sites not representative of relevant exposure fall within 10% of the annual mean objective. This calculation has been applied at two locations, 10 Bridge St, Witney (NAS 2) and Horsefair in Chipping Norton (NAS22) using the DEFRA falloff with distance calculation. An example of the output from the calculation is seen below:



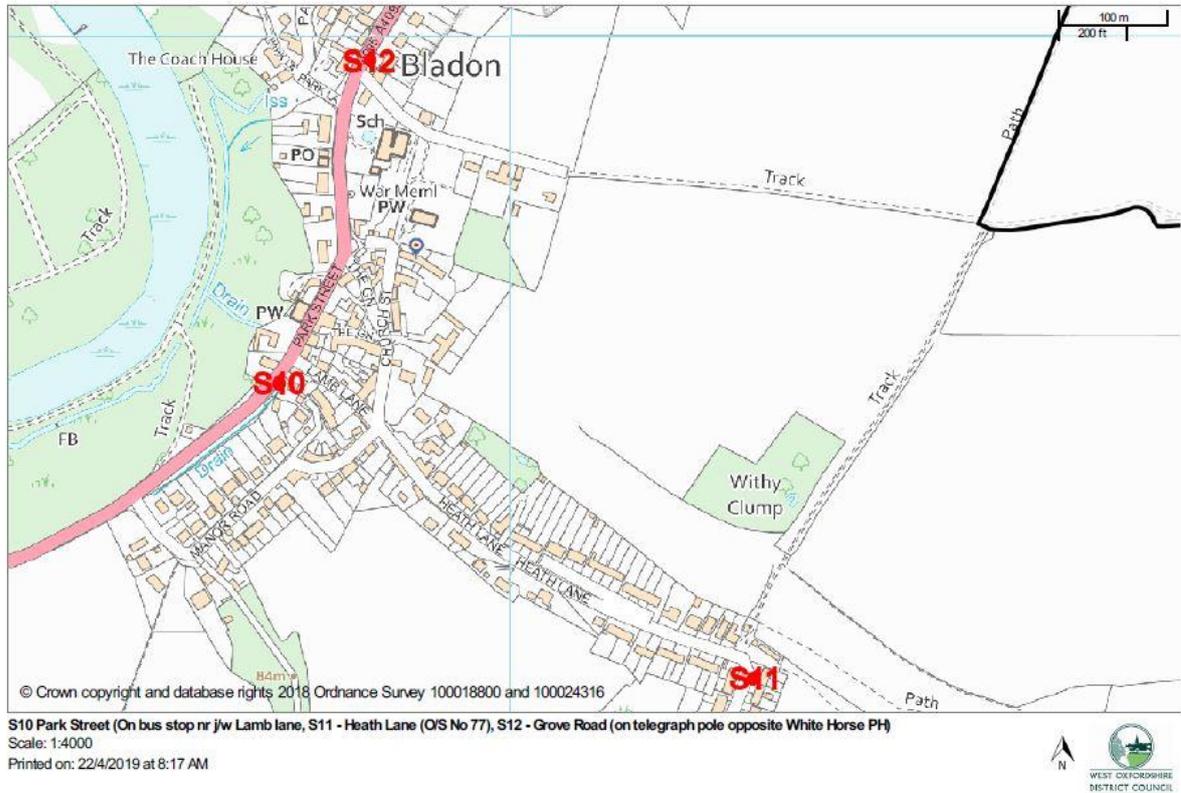
**BUREAU VERITAS**

Enter data into the pink cells

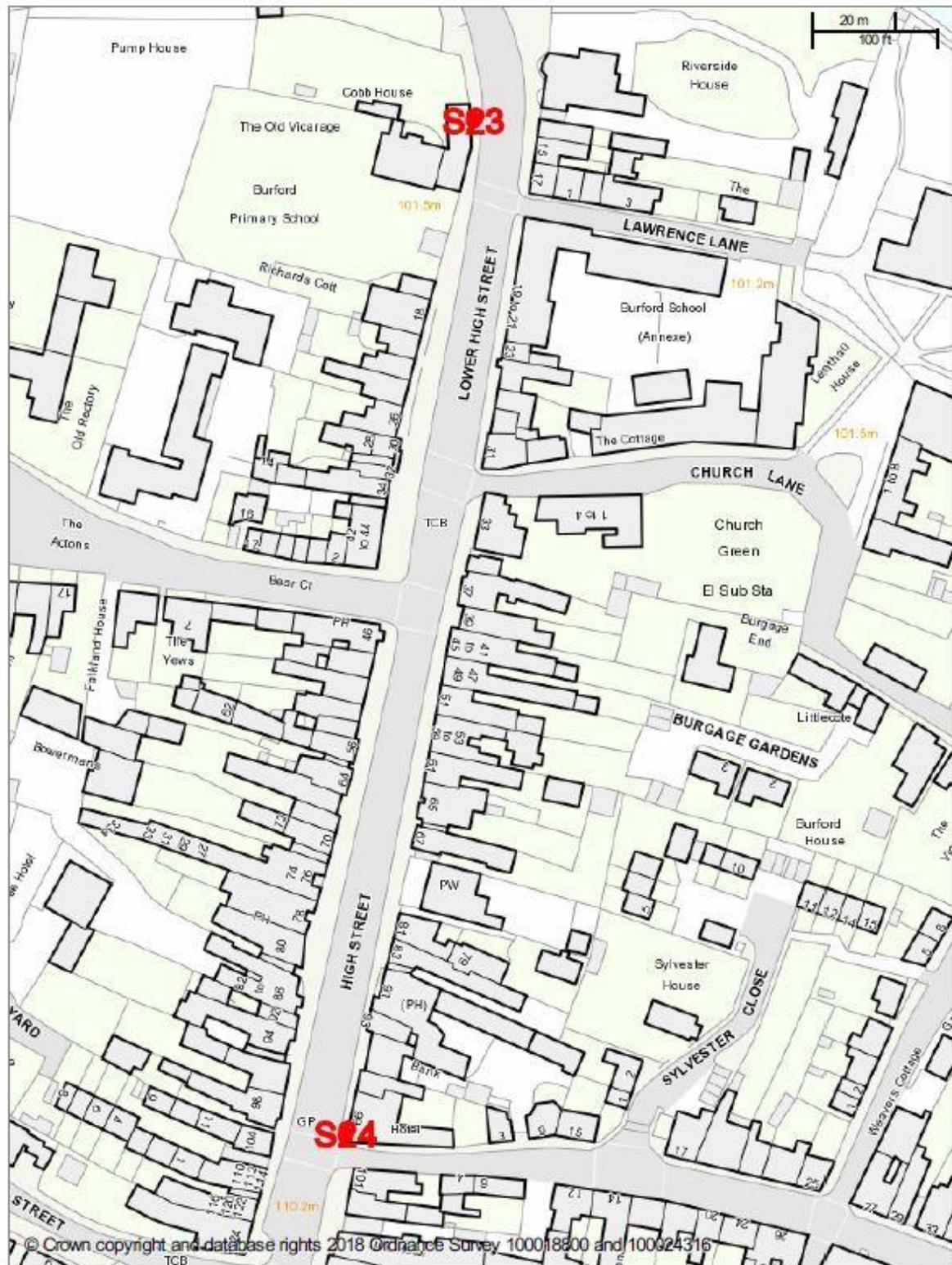
Step 1	How far from the KERB was your measurement made (in metres)?	1	metres
Step 2	How far from the KERB is your receptor (in metres)?	1.4	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	9.1	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	43.94	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	41.6	µg/m <sup>3</sup>

## Appendix D: Maps of Monitoring Locations

### D1 Bladon



## D2 Burford



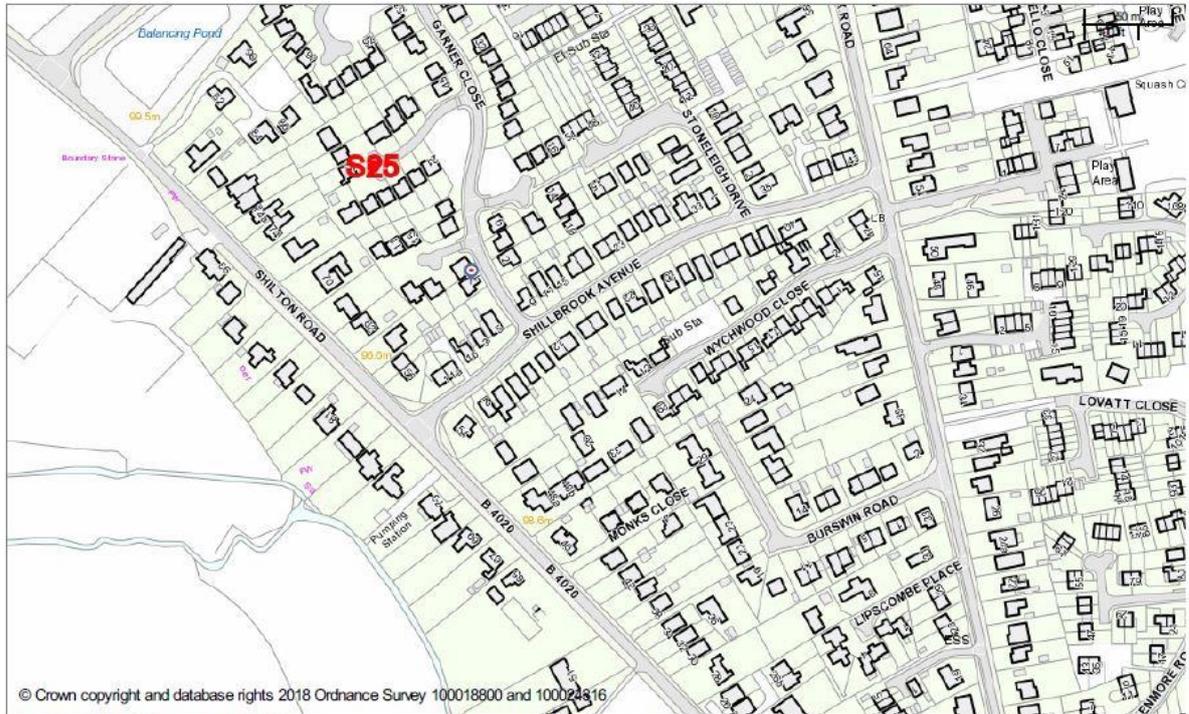
S23 - Lower High Street (On lamp post O/S No 8), S24 - High Street (On No Entry sign O/S No 99)

Scale: 1:1250

Printed on: 22/4/2019 at 9:01 AM



## D3 Carterton



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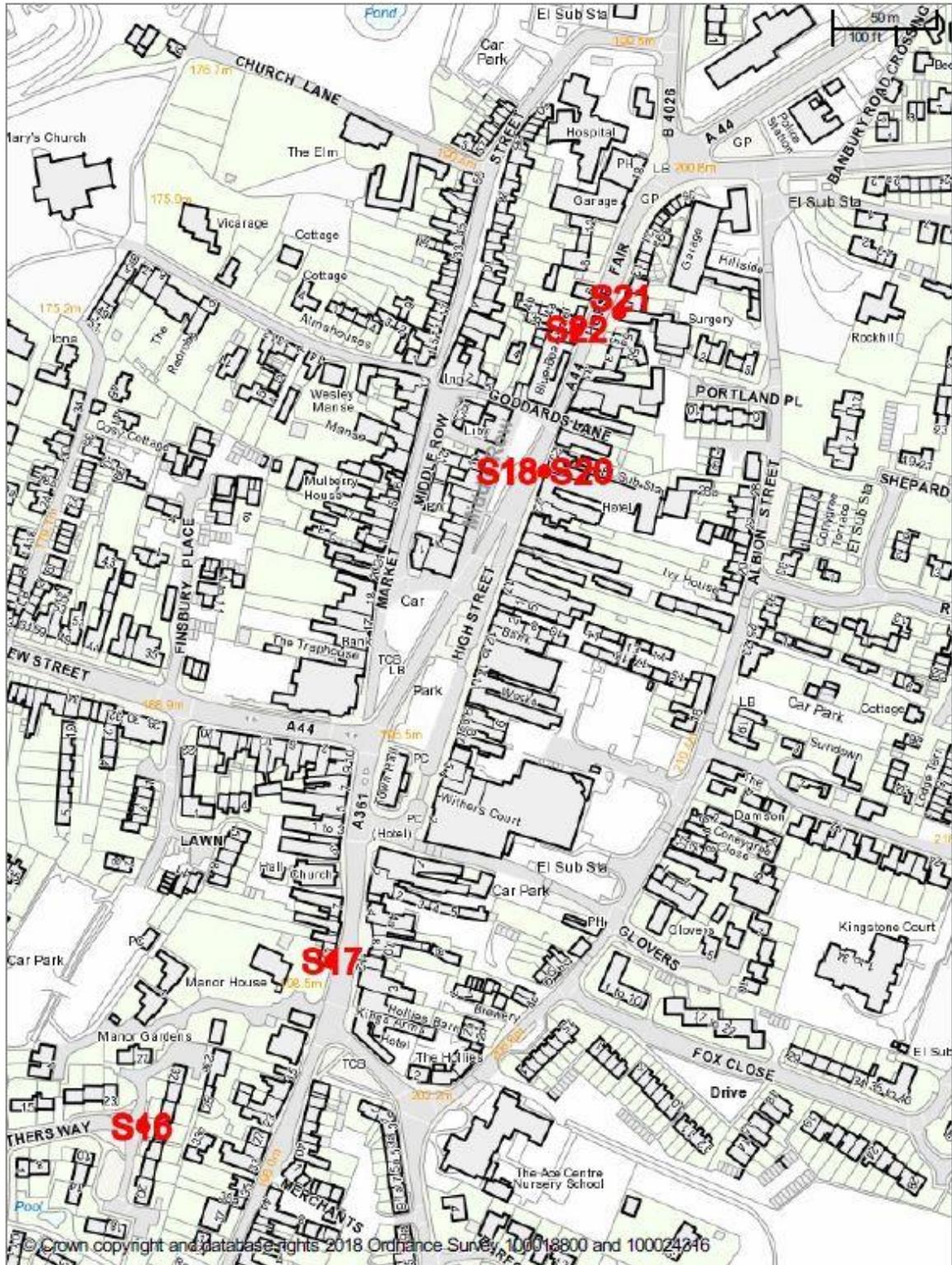
S25 - Garner Close (On lamp post OS No 33)

Scale: 1:2500

Printed on: 22/4/2019 at 9:06 AM



## D4 Chipping Norton



S16 - Withers Way (O/S 26), S17 - West Street (On Bus Stop O/S Coca), S18 - S20 High Street (Inside Analyser Machine Cage), S21 - Horsefair (On drainpipe of No 7), S22 Opposite No 7 Horsefair on R/Bout sign

Scale: 1:2500

Printed on: 22/4/2019 at 8:53 AM

# D5 Eynsham



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S40 - Witney Road, S41 - Harborough Road (On lamp post nr j/w B4449)

Scale: 1:5000

Printed on: 22/4/2019 at 9:21 AM



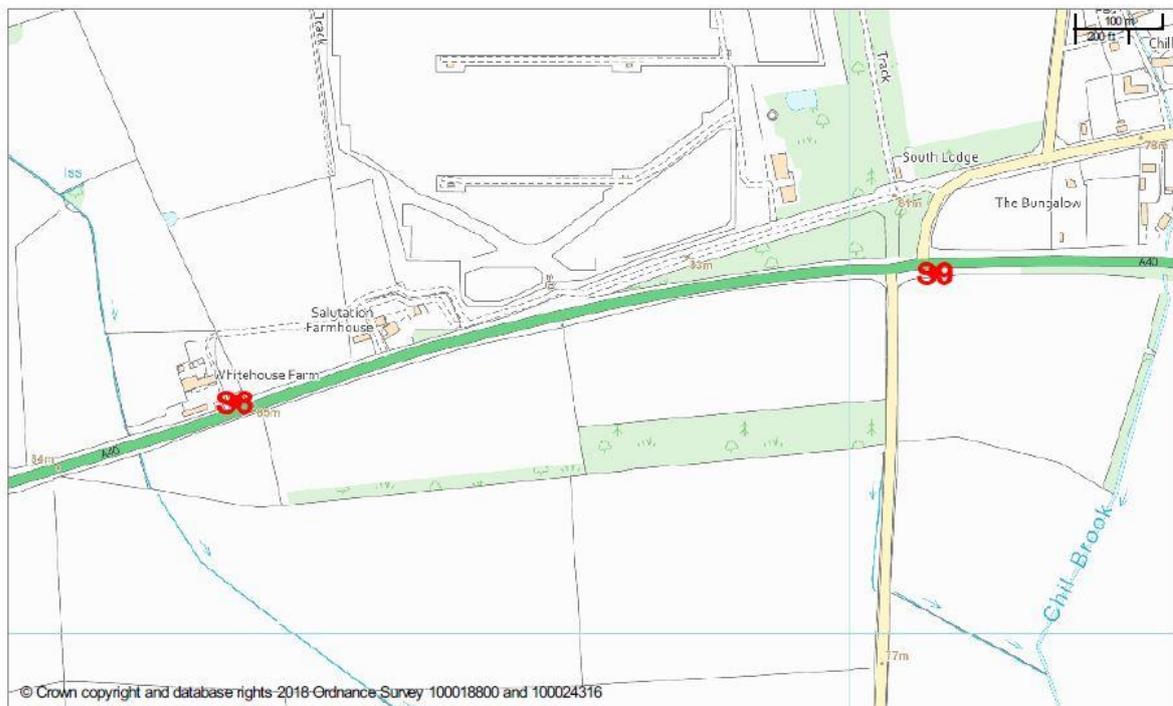
## D6 Witney (including AQMA)



© Crown copyright and database rights 2018 Ordnance Survey 100018800 and 100024316  
 S1-25 Bridge St, S2 - 10 Bridge St, S3 - 20 Bridge St, S4 - 9 Mill Street, S5 - 4A West End, S6 - Woodgreen Hill, S7 - Newland.  
 Scale: 1:1500  
 Printed on: 22/4/2019 at 7:48 AM



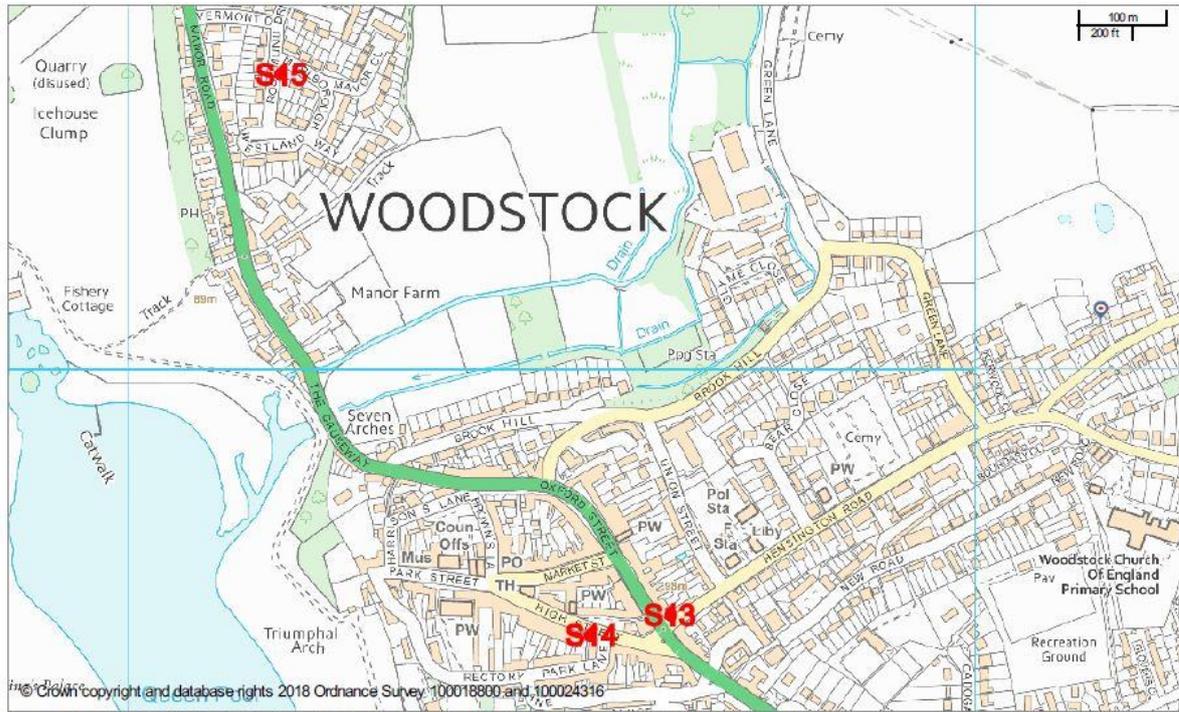
## D7 A40 East of Witney



© Crown copyright and database rights 2018 Ordnance Survey 100018800 and 100024316  
 S8 - Whitehouse Cottage A40, S9 - A40 j/w Southleigh Turn (on direction road sign)  
 Scale: 1:5000  
 Printed on: 22/4/2019 at 8:03 AM



# D7 Woodstock



S13 - Hensington Rd (OIS No 3), S14 High Street (OIS Chef Imperial on drainpipe), S15 - Rosamund Drive (On lamp post opposite No 5)  
Scale: 1:5000  
Printed on: 22/4/2019 at 8:35 AM



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

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>7</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## 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	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
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 (micrometres or microns) 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

### **A Chipping Norton AQMA:**

Connecting Oxfordshire: Local Transport Plan 2015-2031

Volume 1: Policy & Overall Strategy (Page 77, Para 195)

LTP Volume 1: policy and overall strategy

### **B WODC Climate Action for West Oxfordshire**

West Oxfordshire District Council's report dated 22 January 2020 ([Carbon Action and Climate Change Strategy Report](#)) setting out:

- a) A proposed framework and timescales for developing a Carbon Action Plan as the mechanism for delivering West Oxfordshire District Council's commitment to becoming carbon neutral by 2030; and
- b) A proposed framework and timescales for developing a Climate Change Strategy for West Oxfordshire.

### **C Witney Area Transport Strategy:**

<https://www.oxfordshire.gov.uk/cms/content/witney-area-transport-strategy>

Connecting Oxfordshire: Local Transport Plan 2015 - 2031 Volume 2 part ii:

LTP4 – Witney (Pages 77- 85)

<https://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/transportpoliciesandplans/localtransportplan/ConnectingOxfordshirevol2partiiOtherAreasRouteFreightStrategy.pdf>

### **D Defra LAQM Policy Guidance PG16 (chapter7)**

Defra LAQM Policy Guidance PG 16

<https://laqm.defra.gov.uk/documents/LAQM-PG16-April-16-v1.pdf>

### **E Defra LAQM Technical Guidance TG09**

Defra LAQM Technical Guidance TG(09).

<https://laqm.defra.gov.uk/technical-guidance/>

### **F Defra LAQM Technical Guidance TG16**

Defra LAQM Technical Guidance TG16

<https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf>