



WEST OXFORDSHIRE
DISTRICT COUNCIL



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2019 Air Quality Annual Status Report (ASR) for WEST OXFORDSHIRE DISTRICT COUNCIL

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

June 2019

West Oxfordshire District Council

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Executive Summary: Air Quality in Our Area

The monitoring reported within this 2019 Annual Status Report for West Oxfordshire District Council took place during 2018. It does not indicate any additional areas of general concern with regard to air quality, but our two designated air quality management areas (AQMA) 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 2018 with air pollution implications. All residential development proposals were considered with regard to their potential to increase traffic pollution in the AQMA and other areas.

Chipping Norton AQMA

Nitrogen dioxide (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 2017 and 2018 the 3 co-located tubes measured less than $32 \mu\text{g}\text{m}^{-3}$ which is indicative of satisfactory air quality. 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 over $47 \mu\text{g}\text{m}^{-3}$ this year.

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). The [WODC Low Carbon and Environmental Plan](#), 2013, (Reference B)), addresses some of the additional air quality mitigation measures within the Air Quality Action Plan, reinforcing the WODC commitment to improving air quality.

Witney AQMA

Nitrogen dioxide (NO_2) levels in the Witney AQMA remain higher than the national objective level set to protect health, which is a 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 9 years, annual average NO₂ in Bridge Street has remained around 50 µgm⁻³ (+/- a few µgm⁻³). 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) are 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).

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^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

The main air quality issues in the West Oxfordshire District area are related to vehicular density within relatively congested urban areas, thus nitrogen dioxide is the main pollutant of concern. The 2018 monitoring survey shows some nitrogen dioxide levels slightly decreased compared to 2017 results. The variation between the years is thought likely to be attributable to meteorological differences.

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

Bridge Street, Witney (Air Quality action plan pending)

<http://www.westoxon.gov.uk/media/744184/Chipping-Norton-Air-Quality-Action-Plan.pdf>

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/>

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

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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).

Our centralised national AQMA page is [located here](#):

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=309

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 realized relatively slowly.

Conclusions and Priorities

Nitrogen dioxide levels in Bridge Street, Witney continue to exceed the national air quality objective. The annual average results of $41.8 \mu\text{g m}^{-3}$ and $48.2 \mu\text{g m}^{-3}$ are lower than last year when the levels were $43.9 \mu\text{g m}^{-3}$ and $49.9 \mu\text{g m}^{-3}$ respectively.

The highest recording tube in Horsefair, Chipping Norton remains high at $47.3 \mu\text{g m}^{-3}$ (compared to last year's $48.1 \mu\text{g m}^{-3}$) 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 were a few $\mu\text{g m}^{-3}$ lower than those of 2017, 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

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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 compulsory purchase of the necessary land, there is unfortunately no short term solution envisaged to the problem of traffic congestion and associated vehicle emissions in Bridge Street Witney at this time. Mitigation, provided through the Land Planning and Development process, associated with proposed local developments 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

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1 Local Air Quality Management

This report provides an overview of air quality in West Oxfordshire District Council during 2018. 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

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

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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 ₂	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 µgm ⁻³ 2004 38 µgm ⁻³	48.2 µgm ⁻³	Air Quality Action Plan pending http://aqma.defra.gov.uk/action-plans/WODC%20AQAP%202010.pdf (Draft action plan published 2010)
CHIPPING NORTON Horsefair / High Street	Declared 01/03/2005	NO ₂	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 µgm ⁻³ 2004 49 µgm ⁻³	47.3 µgm ⁻³	http://www.westoxon.gov.uk/media/744184/Chipping-Norton-Air-Quality-Action-Plan.pdf (published 2008)

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

Details of measures in pursuit of improving local air quality are set out in Table 2.2. 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.

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Table 2.2 – Progress on Measures to Improve Air Quality

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	Witney AQMA Action Plan	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	OCC	LTP4	Awaited	Reduced NO ₂ levels recorded	Reduced traffic density	Awaited	Not known	See Reference C
2	Local AQ assoc	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop area wide strategies to reduce emissions and improve air quality	OAQ	N/A	N/A	Air quality data information Public awareness Increasing awareness within health monitoring policy	In service	Complete	View at: https://oxfordshire.air-quality.info/	Local AQ assoc
3	Chipping Norton AQMA Action Plan	Traffic Management	Congestion management , traffic reduction	OCC	Basic survey completed	Unknown – financial prioritisation	Reduced NO ₂ levels recorded	Reduced traffic density	Static	Unknown	See Reference A

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

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_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} 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_{2.5} 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.

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 (NO₂) at 21 sites during 2018. The survey focused upon locations where there is “relevant public exposure”, in accordance with Defra LAQM Technical Guidance Note TG(09) (Reference E).

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” are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias and “annualisation”. As there were at least 9 months data for each monitoring site, annualisation was not required. Details on the bias adjustment are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Figure A1 in Appendix A contains a graph showing the trends in annual mean NO₂.

Nitrogen dioxide levels have shown a gradual downward trend over the 9 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.

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The 2018 dataset of monthly mean nitrogen dioxide concentrations is provided in Appendix B.

Levels within our AQMAs were found to exceed the annual mean NO₂ objective of 40 µg^m⁻³ at Horsefair, Chipping Norton (47.3 µg^m⁻³), 25 Bridge Street, Witney (48.2 µg^m⁻³) and Bridge Street, Witney (41.8 µg^m⁻³).

The 3 co-located tubes in High Street, Chipping Norton gave an average reading of 31.7 µg^m⁻³ and the annual average concentrations measured by each of the 3 tubes were within 3 µg^m⁻³ (the range was 30.2 – 33.2 µg^m⁻³).

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 29.0 µg^m⁻³ was found at Lower High Street, Burford.

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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
NAS1	25 Bridge Street, Witney	R	435860	210285	NO ₂	YES	0	1	NO	2.5 – 3.0
NAS2	10 Bridge St Witney	R	435821	210243	NO ₂	YES	0	1.5	NO	2.5 – 3.0
NAS3	20 Bridge St, Witney	R	435849	210280	NO ₂	YES	0.5	2	NO	2.5 – 3.0
NAS4	9 Mill Street, Witney	R	435682	210195	NO ₂	YES	0.5	1	NO	2.5 – 3.0
NAS5	4A West End, Witney	R	435897	210324	NO ₂	YES	0	1	NO	2.5 – 3.0
NAS6	Woodgreen Hill, Witney	R	435940	210351	NO ₂	YES	2	2	NO	2.5 – 3.0
NAS7	Newland ,Witney	R	435946	210326	NO ₂	YES	0.5	1	NO	2.5 – 3.0
NAS10	Park Street, Bladon	R	444812	214669	NO ₂	NO	10	1	NO	2.5 – 3.0
NAS11	Heath Lane, Bladon	B	445216	214389	NO ₂	NO	10	1	NO	2.5 – 3.0
NAS12	Grove Road, Bladon	R	444904	214946	NO ₂	NO	11	1	NO	2.5 – 3.0
NAS13	Oxford Street, (E) bus stop Woodstock	R	444732	216696	NO ₂	NO	2	1	NO	2.5 – 3.0
NAS14	Oxford Street, (W) bottom Woodstock	R	444324	216868	NO ₂	NO	8	0.5	NO	2.5 – 3.0
NAS15	Rosamund Drive Woodstock	B	444199	217343	NO ₂	NO	10	1	NO	2.5 – 3.0

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NAS16	Withers Way Chipping Norton	B	431203	226866	NO ₂	NO	10	1	NO	2.5 – 3.0
NAS17	West Street, Chipping Norton	R	431342	226950	NO ₂	YES	0.5	2	NO	2.5 – 3.0
NAS18 NAS19 NAS20	Co-location, Chipping Norton (Triplicate Mean)	R	431430	227216	NO ₂	YES	2	0.5	NO	2.0
NAS21	7 Horsefair, Chipping Norton	R	431458	227278	NO ₂	YES	0	4	NO	2.5 – 3.0
NAS22	Horsefair, (opp No.7) Chipping Norton	R	431458	227277	NO ₂	YES	0.5	0.5	NO	2.5 – 3.0
NAS23	Lower High St, Burford (Bottom nr Bridge)	R	425185	212435	NO ₂	NO	0.5	2	NO	2.5 – 3.0
NAS24	93 High Street, Burford (nr Barclays bank)	R	425153	212178	NO ₂	NO	2	0.5	NO	2.5 – 3.0
NAS25	Garner Close, Carterton	B	427412	208233	NO ₂	NO	2	1	NO	2.5 – 3.0

Notes:

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

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Table A.2 – Annual Mean NO₂ Diffusion Tube Monitoring Results

Site ID	Site location	Site Type	No of valid results (total number) for 2018 ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
NAS3	20 Bridge Street	R	12 (12)	100	47.2	43.7	51.5	43.9	41.8
NAS4	Mill Street	R	12 (12)	100	37.3	36.3	33.8	34.4	31.9
NAS2	10 Bridge Street	R	12 (12)	100	-	-	-	40.6	40.5
NAS1	25 Bridge Street	R	12 (12)	100		53.2	55.7	49.9	48.2
NAS5	4A West End	R	12 (12)	100				33.9	35.5
NAS6	Woodgreen Hill	R	10(10)	83.3				33.9	34.4
NAS7	Newland Witney	R	12 (12)	100				35.8	34.5
NAS23	Lower High St, Burford	R	11 (12)	91.7	33.0	34.1	36	31.9	29.0
NAS24	93 High Street , Burford	R	12 (12)	100	35.0	30.6	29.0	22.5	23.2
NAS25	Garner Close, Carterton	B	12 (12)	100	10.1	9.8	10.4	9.3	10.1
NAS22	Horsefair (opp 7)	R	11 (11)	91.7	57.7	54.9	53.8	48.1	47.3
NAS18	CN Co location	R	12 (12)	100			40.5	31.0	33.2
NAS19	CN Co location	R	12 (12)	100			38.2	30.6	31.7
NAS20	CN Co location	R	12 (12)	100			33.9	32.3	30.2
NAS18,19,20	TRIPLE.MEAN			100	39.1	35.5	37.5	31.3	31.7
NAS21	7 Horsefair	R	12 (12)	100	24.0	22.5	23.8	20.5	21.7
NAS17	West Street	R	12 (12)	100	27.0	25.9	28.8	25.3	23.6
NAS16	Withers Way	B	12 (12)	100	10.2	9.1	11.0	9.0	9.0

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Site ID	Site Location	Site Type	No of valid results (total number) for 2018 ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
NAS13	Oxford Street	R	12 (12)	100	30.2	27.5	32.1	24.2	28.4
NAS14	Oxford Street(2)	R	12 (12)	100	29.6	26.0	23.1	26.4	22.7
NAS15	Rosamund Drive, Woodstock	B	12 (12)	100				11.0	10.2
NAS12	Grove Road, Bladon	R	11 (11)	91.7	20.7	20.3	24.0	19.9	17.6
NAS11	Heath Lane	B	12 (12)	100	10.4	10.1	12.5	10.4	10.0
NAS10	Park Street	R	12 (12)	100	31.8	31.1	32.0	28.9	27.5

Notes:

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

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

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

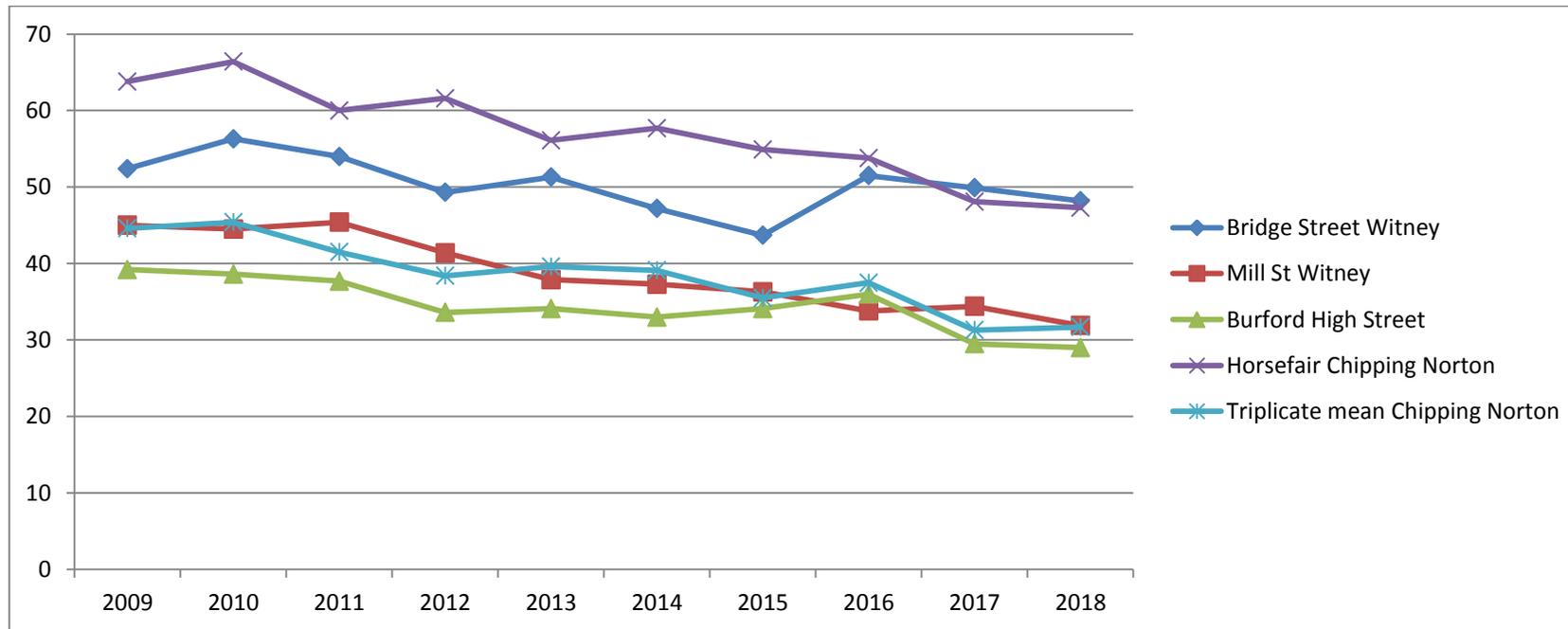
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(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.

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Figure A.2 – Trends in Annual Mean NO₂ Concentrations

Graph showing the trends over 10 years at long term diffusion tube monitoring sites



The data points in Figure A.2 are the bias adjusted average levels of NO₂ at the sites which have high levels, expressed in µg/m³.

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Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
NAS1 -25 Bridge Street, Witney	66.2	64.8	65	66.8	65.8	55	70.8	58.7	61.1	67.8	57.2	62	63.43	48.2	
NAS2 - 10 Bridge Street, Witney	51.4	56.2	65.6	56.8	53.3	52.2	54.8	40.5	41.3	50.7	59.6	57.4	53.32	40.5	
NAS3 - 20 Bridge Street, Witney	34.5	63	58	63.3	50.6	50.3	56.8	47.6	48.1	53.4	71.2	63.5	55.03	41.8	
NAS4 -9 Mill Street, Witney	47.3	39.9	42.4	44.5	38.1	27.1	42	36.5	38.3	41.6	55.6	49.9	41.93	31.9	
NAS5 - 4A West End, Witney	50.2	54.1	40,8	48.1	45.4	39.5	43.7	34.3	38.6	49	61.8	49.7	46.76	35.5	
NAS6 - Woodgreen Hill, Witney	35.3	42.7	Missing	53.2	47.4	47	50.3	Not changed	19.1	45.3	57.4	54.9	45.26	34.4	
NAS7 - Newland, Witney	54	44.3	53.2	48.1	37.6	31	42.1	41.6	46.9	38.7	53.5	54.1	45.43	34.5	
NAS10 - Park Street, Bladon	36.2	36.7	42	41.2	37	29.6	38	27.9	32.6	35.1	37	41	36.19	27.5	
NAS11 - Heath Lane, Bladon	18.5	14.6	16.3	13.5	8.9	7.4	8.2	8.7	10.1	12.5	19.7	19	13.12	10	

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NAS12 - Grove Rd, Bladon	Missing	26.1	22.3	27.9	22	20.7	20.4	17.3	19.5	21.6	27.6	28.7	23.10	17.6	
NAS13 - Woodstock Oxford St (Top on Bus stop)	36.9	43.9	40.6	37	43.2	45	35.1	27	27.9	37.2	35.9	38.2	37.33	28.4	
NAS14 - Woodstock, Oxford St, (bottom on lamp post)	32.8	30	39.2	30	25.5	25.8	30.1	24.5	26.9	26.2	35.9	31	29.83	22.7	
NAS15 - Woodstock, Rosamund Drive.	17.4	14.5	19.4	12.5	8.8	8	8.8	9	10.6	12.6	21.2	18	13.40	10.2	
NAS16 - Withers Way, Chipping Norton	15.7	13.1	15.8	11.7	8.1	8.2	7.1	6.6	8.5	13	19.2	14.6	11.80	9.0	
NAS17 - West St , Chipping Norton	35.7	36	34.1	29.4	28.6	25.1	32.1	27.2	27.7	34.1	30.6	32.6	31.10	23.6	
NAS18 - Nox (18), Chipping Norton	42.9	42.7	58.2	47.6	47.5	44.8	42.9	50.9	30.4	42.4	45.3	29.2	43.73	33.2	
NAS19 - Nox (19), Chipping Norton	34.2	45.1	50	39.4	48.8	42.5	42	31.9	32.8	41.8	54.5	37.4	41.70	31.7	
NAS 20 - Nox (20), Chipping Norton	35.2	36.7	50.2	45.4	44.1	40.7	39.8	29.6	32.6	37.7	46.8	38.5	39.78	30.2	
TRIPLICATE MEAN													Trip mean =	31.7	
NAS 21 - 7 Horsefair, Chipping Norton	29.9	33.1	30.6	29.3	30.1	28.7	23.6	20.2	23.6	28.4	35.9	29.6	28.58	21.7	
NAS22 - Horsefair (opp No.7), Chipping Norton	Missing	54.1	66	64.6	60.6	52.2	73.8	65.6	62.3	58.7	57.5	68.6	62.18	47.3	
NAS23 - Lower High Street, Burford	Missing	33.3	41.4	38.6	38.3	31.8	48.9	40	40.2	33.7	36.2	37.9	38.21	29.0	

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NAS24 - High Street (Near Barclays Bank),Burford	32.8	30.3	32.2	30.6	31.9	30.3	30.6	23.2	25.7	32.8	36.5	28.9	30.48	23.2	
NAS25 - Carterton Garner Close	16.7	15	17.1	12.3	8.7	6.9	8.1	7.7	9.4	12.3	27.3	17.3	13.23	10.1	

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

R* Rejected from data set as a faulty outlier, being outside of 3 standard deviations from the mean

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

Annualisation

As at least 9 months data was collected at all sites, annualisation was not required.

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 0.76 based on 21 studies and this was applied to all diffusion tubes.

National Diffusion Tube Bias Adjustment Factor Spreadsheet (Spreadsheet Version Number: 03/19)

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 2019.

Data only apply to tubes exposed monthly and are not suitable for comparing individual short-term monitoring periods. Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet. 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. Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List.
Step 2: Select a Preparation Method from the Drop-Down List.
Step 3: Select a List from the Drop-Down List.
Step 4: 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.

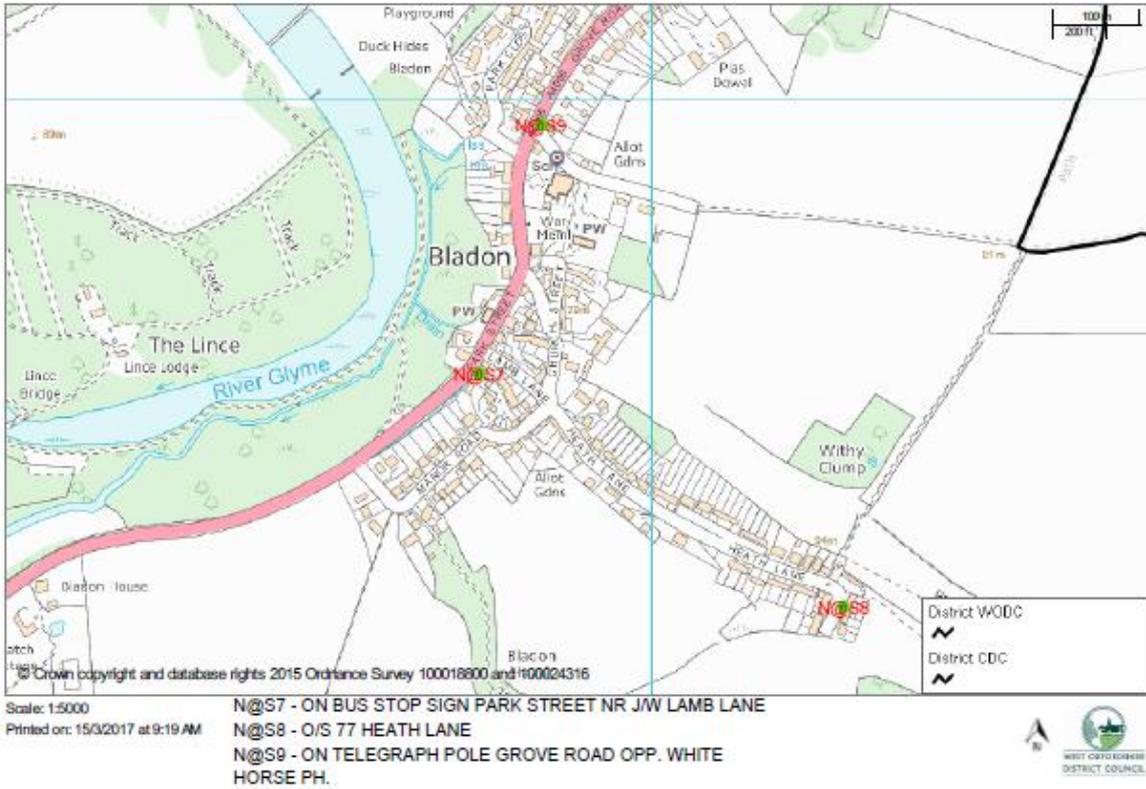
If a laboratory is not shown, we have no data for this laboratory. If a preparation method is not shown, we have no data for this method at this laboratory. If a year is not shown, we have no data. If you have your own co-location study then see footnote 1. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953.

Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (0m) (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	2018	R	Horsham District Council	11	33	23	42.2%	G	0.70
SOCOTEC Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	33	29	17.2%	G	0.85
SOCOTEC Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	30	26	16.1%	G	0.86
SOCOTEC Didcot	50% TEA in acetone	2018	UB	Slough Borough Council	10	38	31	25.6%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2018	SU	Slough Borough Council	11	32	22	48.7%	G	0.68
SOCOTEC Didcot	50% TEA in acetone	2018	R	Slough Borough Council	11	35	32	22.5%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2018	R	Vale of Glamorgan	12	39	25	57.8%	G	0.63
SOCOTEC Didcot	50% TEA in acetone	2018	KS	Marleybone Road Intercomparison	9	95	87	3.1%	G	0.92
Overall Factor* (21 studies)									Use	0.76

Footnote 1: For cases where the Bureau Veritas Laboratory is used for the analysis of 50% TEA in acetone, the following adjustment factors should be used: Casella CRE/Bureau Veritas Lab/Eurofirst/Use Environmental Scientific Groups.

Appendix D: Maps of Monitoring Locations

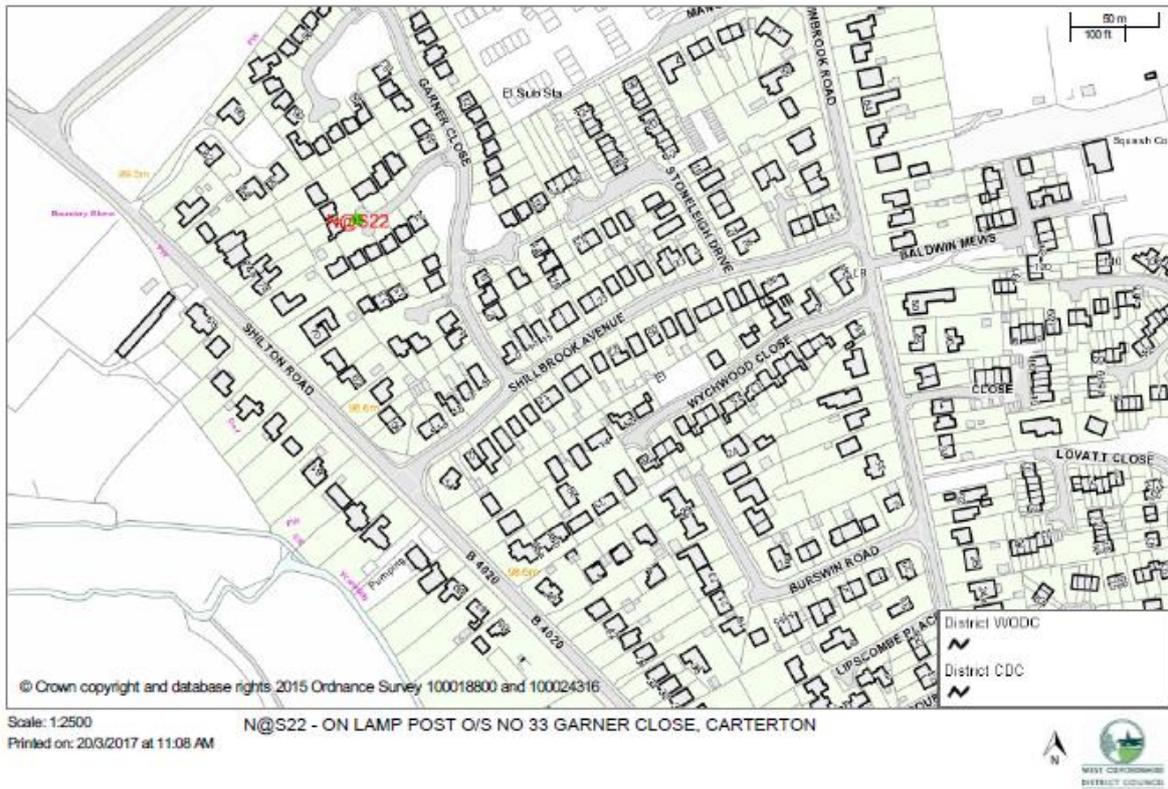
D1 Bladon



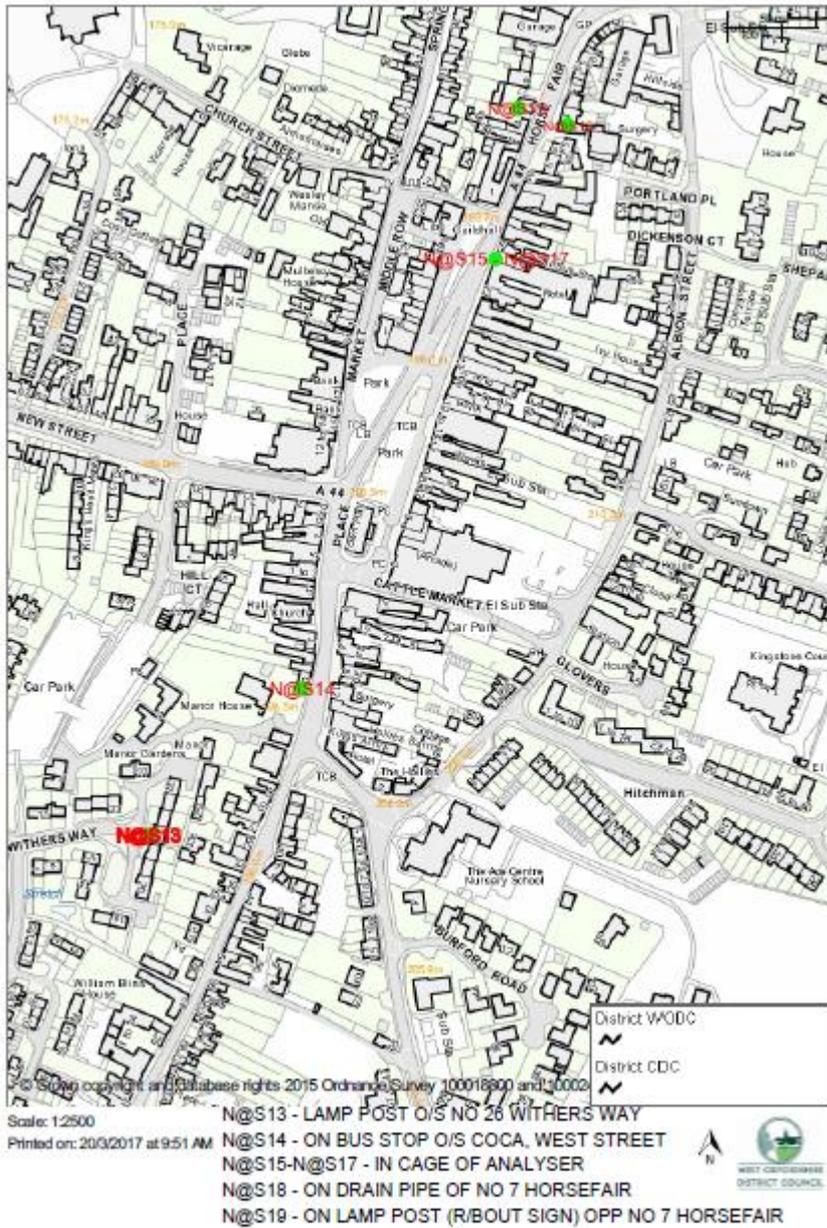
D2 Burford



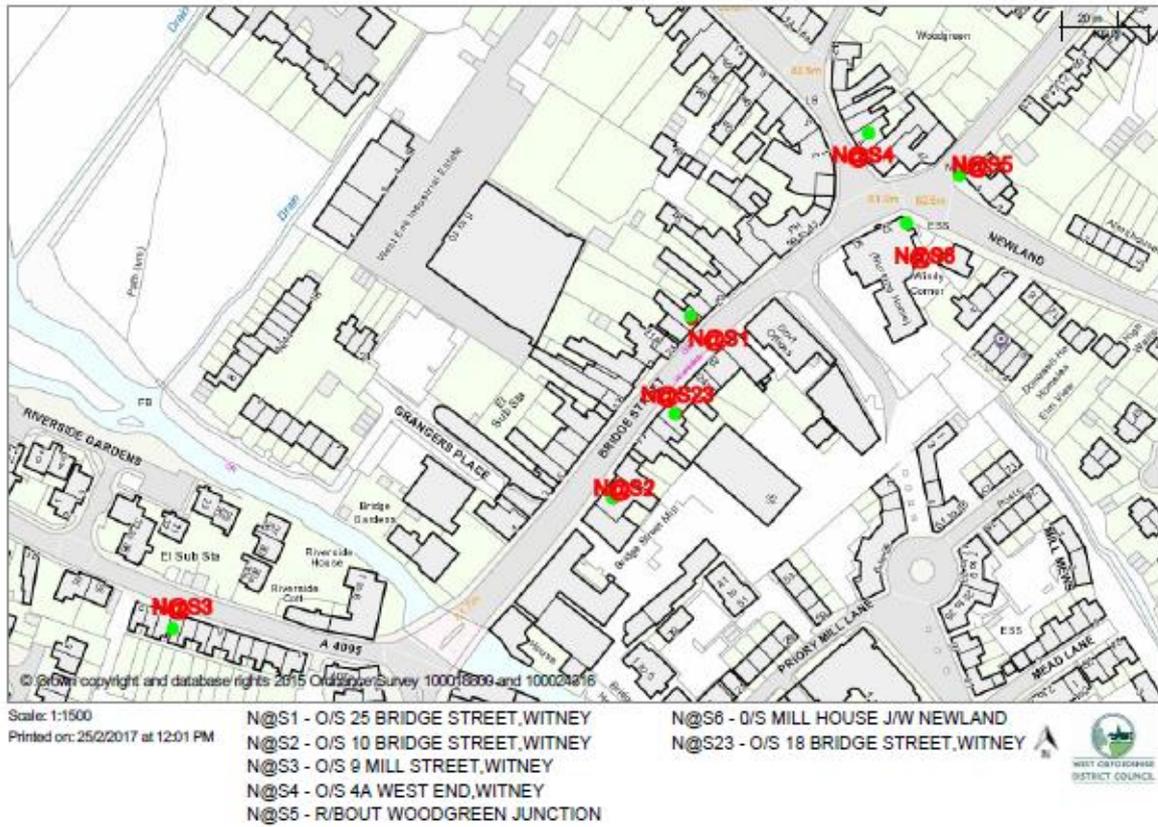
D3 Carterton



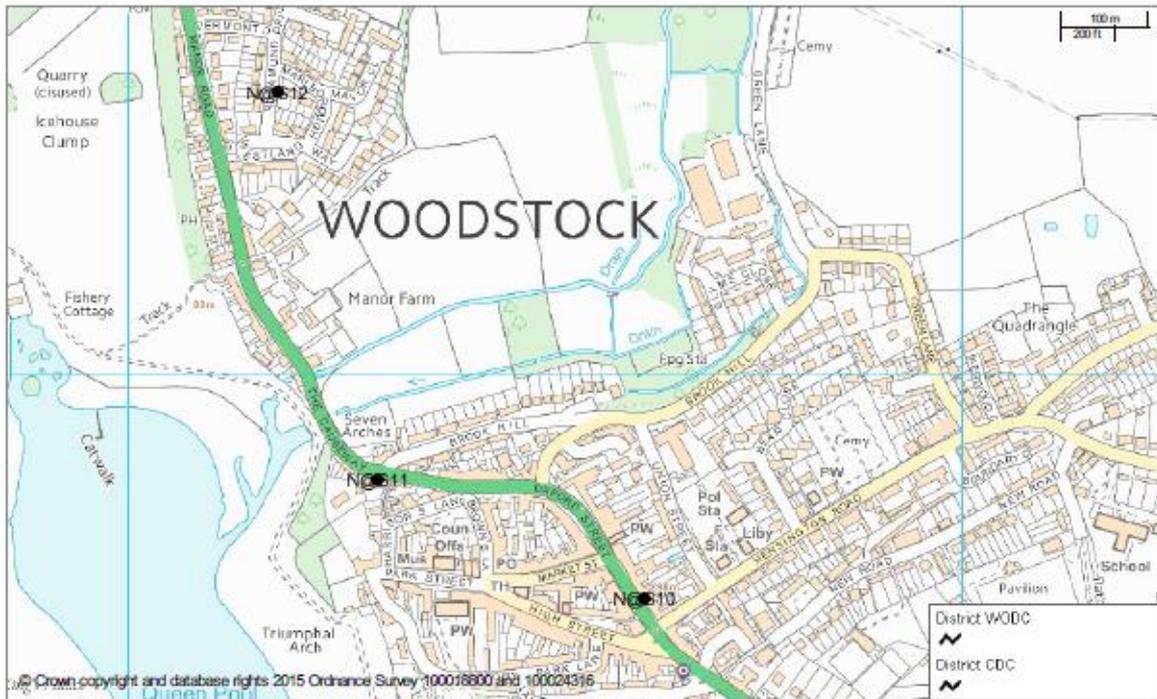
D4 Chipping Norton



D5 Witney



D6 Woodstock



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Scale: 1:5000
Printed on: 20/3/2017 at 9:16 AM
N@S10 - ON BUS STOP SIGN O/S NO 22 OXFORD STREET, WOODSTOCK
N@S11 - ON LAMP POST 82, O/S NO 85 OXFORD STREET, WOODSTOCK
N@S12 - ON LAMP POST OPP NO 5 ROSAMUND DRIVE, WOODSTOCK



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AF	Annualisation factor – a calculated adjustment factor used when there is less than 9 months data collected at a nitrogen dioxide diffusion tube monitoring site. Its application enables comparison of the site average result with the annual average national objective of 40 $\mu\text{g m}^{-3}$
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
EU	European Union
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10 μm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5 μm or less
QA/QC	Quality Assurance and Quality Control

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 Low Carbon and Environmental Plan

[West Oxfordshire District Council Low Carbon and Environmental Plan December 2013](https://www.westoxon.gov.uk/media/731615/WODC-Low-Carbon-and-Environmental-Plan.pdf) <https://www.westoxon.gov.uk/media/731615/WODC-Low-Carbon-and-Environmental-Plan.pdf>

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)

<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/)

<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)

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