



WEST OXFORDSHIRE  
DISTRICT COUNCIL



# WEST OXFORDSHIRE DISTRICT COUNCIL



## 2013 Air Quality Progress Report for WEST OXFORDSHIRE DISTRICT COUNCIL

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

April 2013

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## Executive Summary

The monitoring reported within the 2013 Progress Report for West Oxfordshire District Council does not indicate any additional areas of general concern with regard to air quality.

Within the District there are no industrial developments with air pollution implications and any development proposals have been considered with regard to their potential to increase traffic pollution in the AQMAs and other areas.

### Chipping Norton AQMA

The Chipping Norton Air Quality Action Plan, as accepted by Defra, proposed the introduction of a Weight Limit for HGVs and re-routing of HGV traffic (primarily targeting the Vale of Evesham / SE England two way flow).

The proposal has the objective of reducing HGV traffic density on the A44 through Chipping Norton by routing traffic further to the West on the A40 to access the Vale of Evesham from the South. This measure would involve 'de-priming' the A44 (currently a Primary Route for HGVs) and associated modification to signage.

Oxfordshire County Council (OCC) commissioned a feasibility study for the implementation of the lorry management measures. Currently, further consultation with neighbouring Counties is necessary and financial constraints within OCC budgets have delayed plans to implement this Action Plan. A schedule for implementation is still awaited.

However, the WODC Climate Change Action Plan (Apr 2011), incorporating the Green Travel Plan (Feb 2011), addresses some of the additional air quality mitigation measures within the Air Quality Action Plan.

### Witney AQMA

The Draft Action Plan for the Witney AQMA, having been deferred for a significant period pending the outcome of the Cogges Link Road (CLR) Planning Application by OCC, was approved by WODC Cabinet in December 2010. A period of public consultation was conducted throughout February 2011.

The Draft Action Plan for the Witney AQMA was written with the assumption that the CLR would proceed as per the Planning Consent. There were further procedural stages to be concluded after which the Draft Action Plan and the results of the public consultation would be reviewed to produce an Action Plan (and which would include the latest dispersion modelling) for consideration and approval by WODC Cabinet and OCC and in due course submitted to Defra.

This latter expectation failed to materialise as, in June 2012, the Department for Transport refused a compulsory purchase order for the land Oxfordshire County Council needed to build the Cogges Link Road

Accordingly, there is currently no Draft Action Plan for the Witney AQMA pending the revision of options which might address traffic flow within and around Witney.



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# 1 Introduction

## 1.1 Description of Local Authority Area

West Oxfordshire is one of the most attractive parts of Britain, lying to the north of the River Thames, to the west of the city of Oxford and including the eastern edge of the Cotswolds, part of the District is designated an Area of Outstanding Natural Beauty.

It is a rural district covering 714 km<sup>2</sup> with a population of 110,300\* spread across a large number of relatively small settlements, totalling 83 parishes.

[ \* Updated projection for West Oxfordshire – Greater London Authority, Data Management and Analysis Group, published May 2011.]

Situated in a prime central location, there are excellent communications to most parts of the country via the A40/M40 and the A34 roads. There are railway stations at Charlbury, Hanborough and Kingham with regular services to London and Birmingham.

It has a rich architectural and historic heritage ranging from Cotswold stone cottages to the splendour of Blenheim Palace, a World Heritage site.

As can be expected from the above, tourism is buoyant and is a main contributor to the District's vibrant economy. The business sector is made up of a healthy mixture of high technology, small and medium enterprises and unemployment is (in normal times) less than 1%. The area faces no major social problems and crime figures are amongst the lowest in the country.

## 1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedences are considered likely, the local authority must then 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

### **1.3 Air Quality Objectives**

The air quality objectives applicable to LAQM in **England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre,  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

**Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
	5.00 µg/m <sup>3</sup>	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m <sup>3</sup>	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m <sup>3</sup>	Annual mean	31.12.2004
	0.25 µg/m <sup>3</sup>	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> ) (gravimetric)	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m <sup>3</sup>	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

Two AQMA declarations have been made in the District because the annual nitrogen dioxide objective in the Air Quality (England) Regulations 2000 was unlikely to be met by December 2005 and the cause of this was believed to be traffic related.

The areas are detailed in Figures 1.2 and 1.3 below and were declared on 7<sup>th</sup> February 2005 (date of order). The development of the action plans began for both areas and a continuous monitoring site established in **Chipping Norton**. This site has been in operation since March 2006.

Oxfordshire County Council outlined a number of traffic management options which needed looking at in more detail to investigate their feasibility and impact on air quality so that a cost benefit analysis could be applied to each option. The County employed consultants to appraise the traffic management options and the results were used by the District Council's air quality consultants to model and predict their impact on air quality.

With regard to Chipping Norton, the Air Quality Action Plan was accepted by Defra in early 2009.

The original continuous monitoring site in **Witney** had to be decommissioned because the site was sold. However, another site in that area was established and continuous monitoring resumed in April 2009.

The Draft Action Plan for the Witney AQMA, having been deferred for a significant period pending the outcome of the Cogges Link Road (CLR) Planning Application by OCC, was approved by WODC Cabinet in December 2010. A period of public consultation was conducted throughout February 2011. In June 2012, the Department for Transport refused a compulsory purchase order for the land Oxfordshire County Council needed to build the Cogges Link Road.

Accordingly, there is currently no Draft Action Plan for the Witney AQMA pending the revision of options which might address traffic flow within and around Witney.

Figure 1.2 Map of AQMA Boundaries – Witney

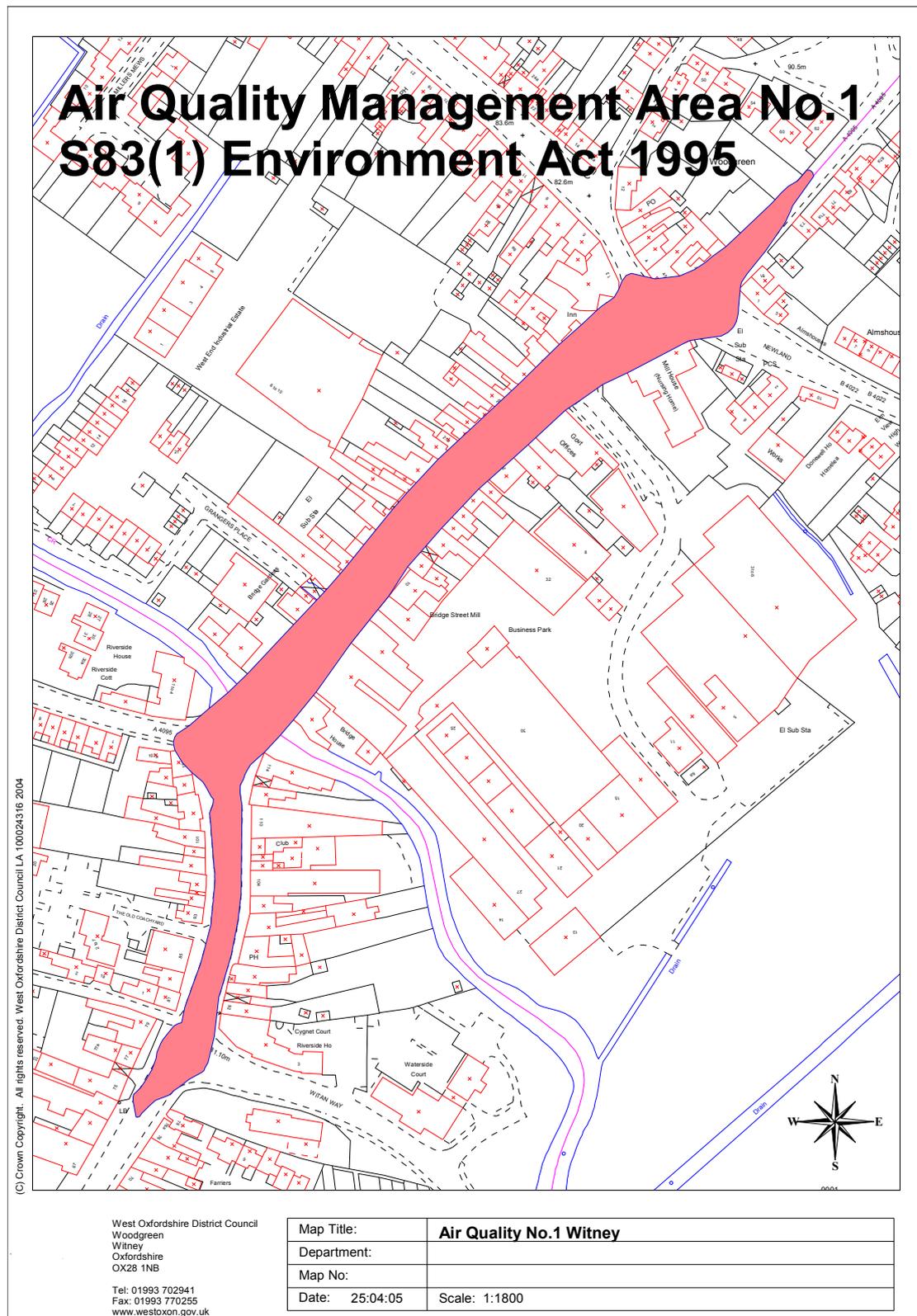
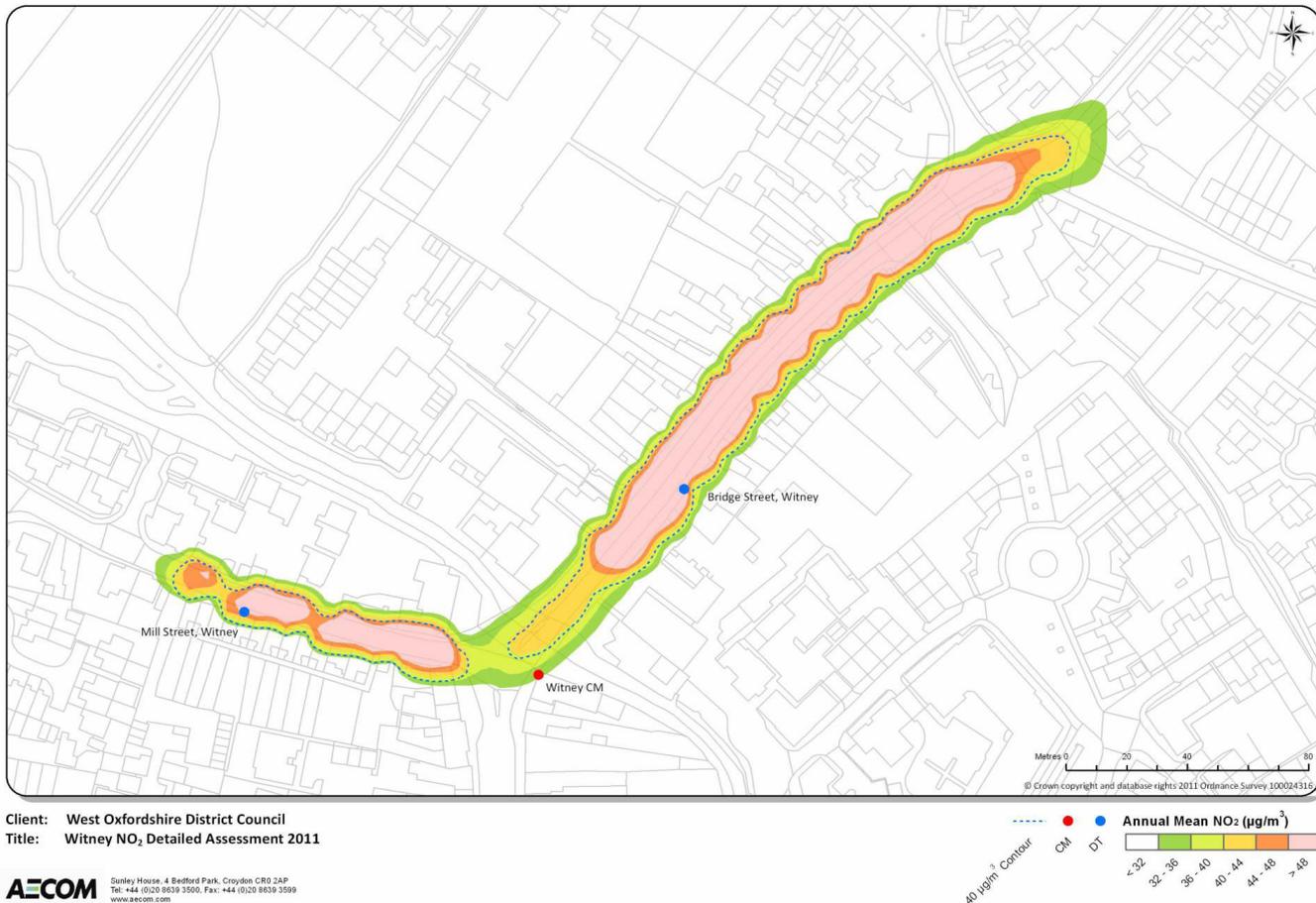


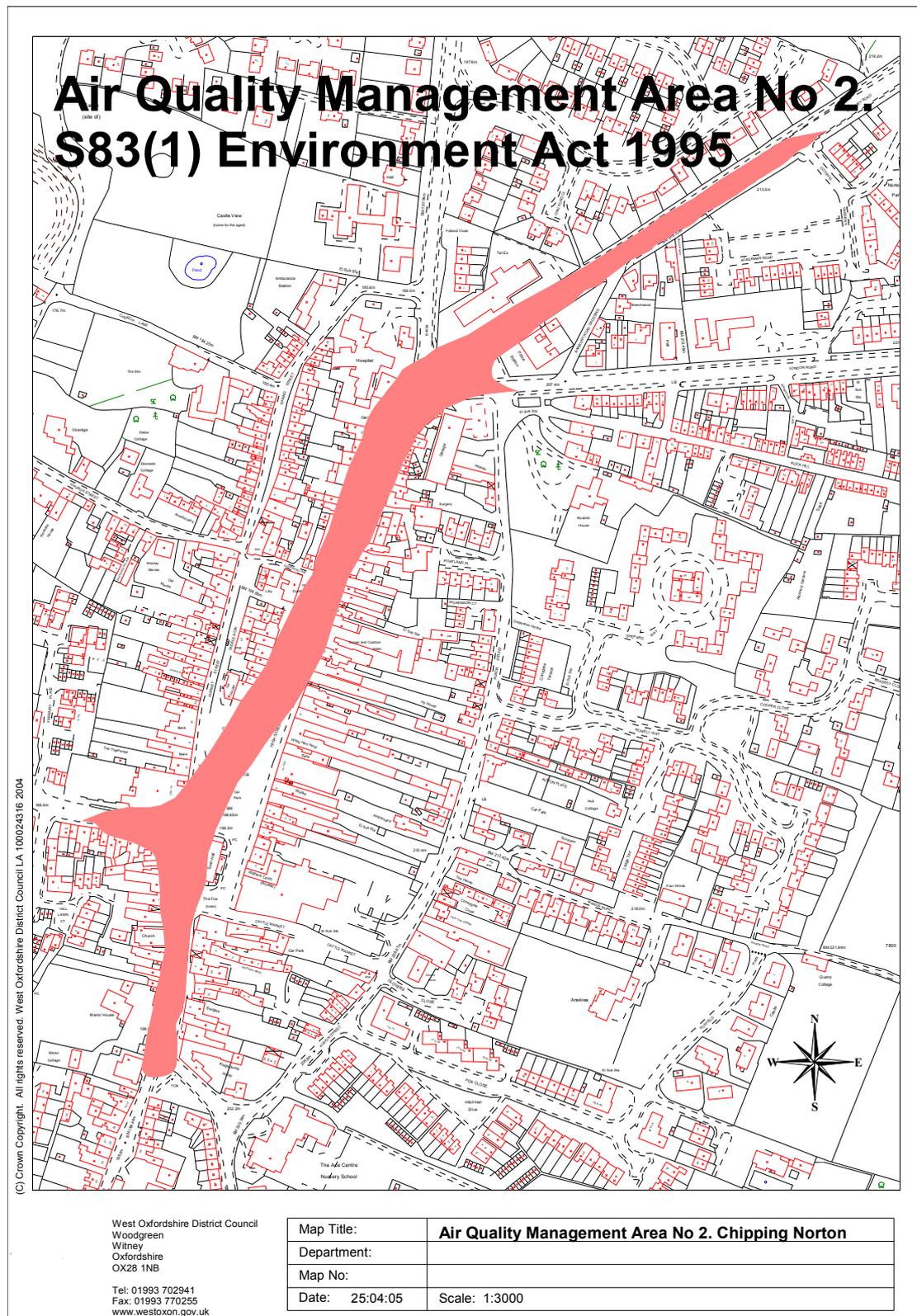
Figure 1.3 Map of AQMA Boundaries – Witney (2011 Update)



The Witney AQMA has been reassessed and the inclusion of the Mill Street diffusion tube site within its boundary has been confirmed following an update of the dispersion modelling in May 2011. Different modelling makes it difficult to reconcile the two similar but different presentations and overlaying one upon the other doesn't truly reflect the current boundary as per the later assessment. It is proposed to maintain the AQMA boundary, as originally declared, whilst noting the inclusion of the minor extension along Mill Street. [This site had always previously been considered part of the AQMA, previous mapping had placed it outside the boundary.]

[NB This commentary is an extract from the main text at 2.2.1 para 4]

Figure 1.4 Map of AQMA Boundaries – Chipping Norton



## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

##### AQMA No 1 - Witney

Continuous monitoring of nitrogen dioxide began in Newland, Witney in August 2001 and continued there until April 2005. When this site was sold, the original API, a chemiluminescent NO<sub>x</sub> continuous analyser, was relocated to Chipping Norton. A similar but newer model was established (May 2009) at a new location on Bridge Street within the Witney AQMA (the location is shown on the plan at Figure 2.1). Calibration checks of the instrumentation are made every two weeks by the LA and six monthly service and calibration work is carried out by SupportingU. All the data is ratified and validated by AECOM Limited.

Annual Mean NO<sub>2</sub> Concentrations - Witney

Period	Annual Mean NO <sub>2</sub> Concentration / $\mu\text{g}/\text{m}^3$	Hourly Exceedences
2012 Annual Mean	28.2	0

##### AQMA No 2 - Chipping Norton.

A monitoring station was established in Chipping Norton to monitor nitrogen dioxide using the chemiluminescent analyser relocated from Witney. This was done to carry out further assessment work in response to the declaration of AQMA No 2 (the location is shown on the plan at Figure 2.2). The analysis of previous results helped formulate the Chipping Norton AQMA Action Plan which was accepted by Defra

Continuing monitoring is an integral part of the plan as submitted. Financial constraints have delayed the necessary consultation and technical investigation required prior to installation and implementation of recommended mitigation measures.

Calibration checks of the instrumentation are made every two weeks by the LA and six monthly service and calibration work is carried out by SupportingU.

Service reports have been routine and the 2012 data capture rate for this analyser is much improved. All the data is ratified and validated by AECOM Limited.

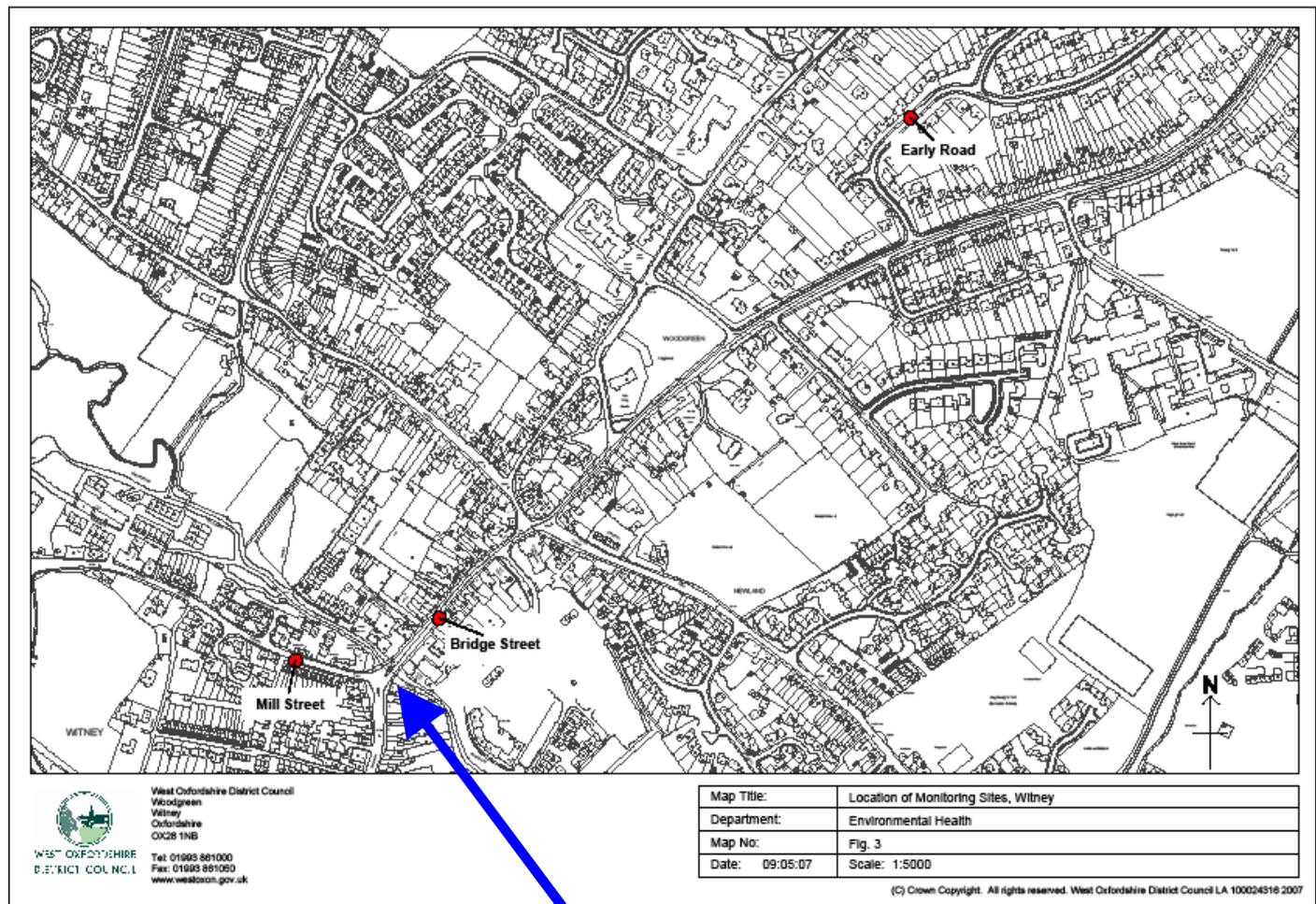
The data collected in the period January 2012 to December 2012 inclusive has been ratified and validated and is summarised in the table below.

Annual Mean NO<sub>2</sub> Concentrations - Chipping Norton

Period	Annual Mean NO <sub>2</sub> Concentration / $\mu\text{g}/\text{m}^3$	Hourly Exceedences
2012 Annual Mean	36.6	1

Figure 2.1 Map of Automatic Monitoring Site

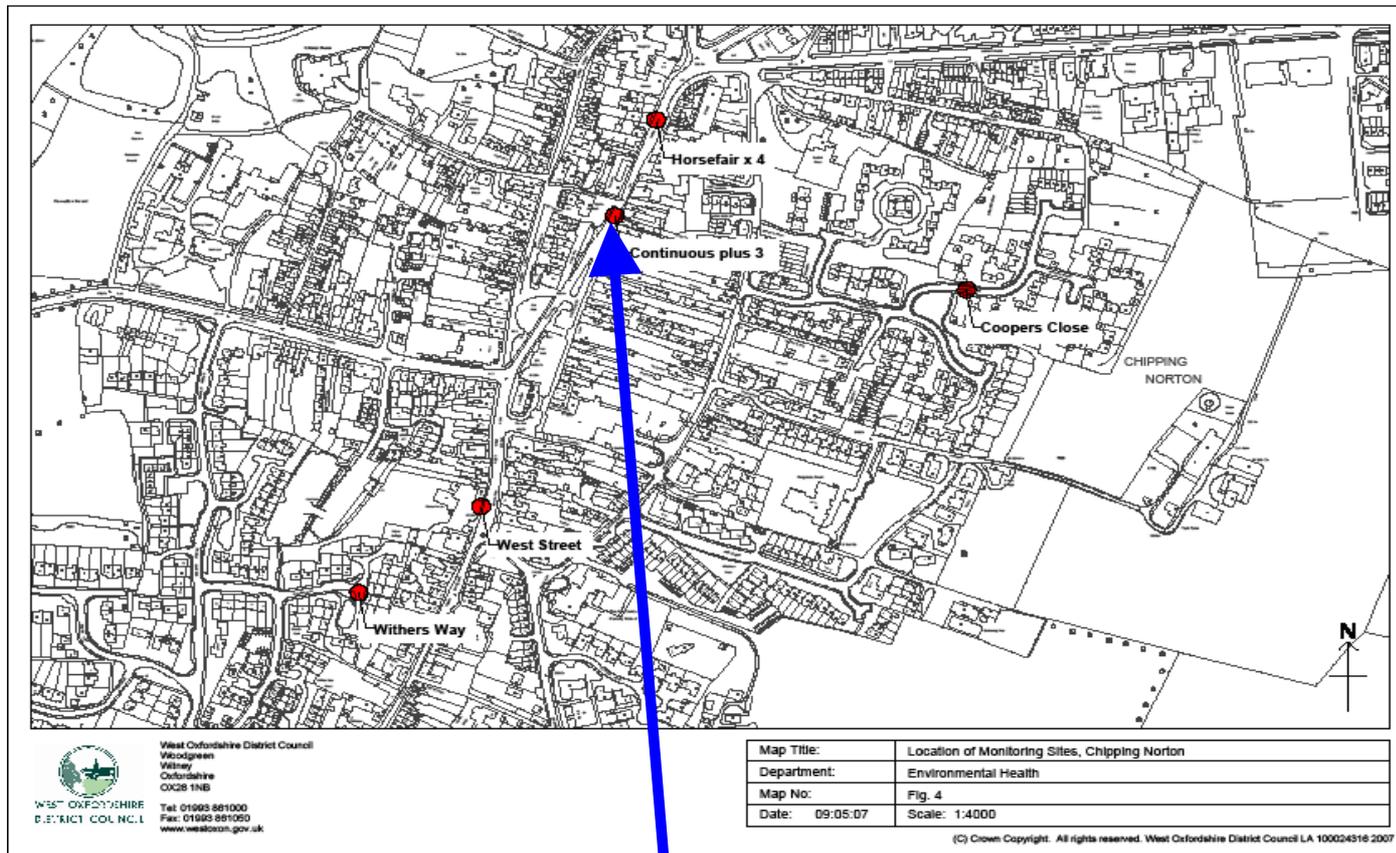
**CM1 WITNEY**



**CM1 A Q Continuous Monitor**

Figure 2.2 Map of Automatic Monitoring Site

**CM2 CHIPPING NORTON**



**CM2 A Q Continuous Monitor**

**Table 2.1a Details of Automatic Monitoring Sites**

Site ID	Site Name	Site Type	OS Grid Ref	Inlet Height (m)	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location
CM2	Chipping Norton	Urban Roadside	431404 227206	2.0	NO <sub>2</sub>	Y	Y (2.0m to facade)	0.5m	Y
CM1	Witney	Urban Roadside	435768 210177	2.0	NO <sub>2</sub>	Y	Y (0.5m to facade)	2.0m	Y

### 2.1.2 Non-Automatic Monitoring Sites

#### Nitrogen Dioxide monitoring by Diffusion Tube.

Diffusion tubes are exposed for approximately 4 weeks before being sent for analysis to Harwell Scientifics at Didcot. The Overall Bias Adjustment factor available from the AEA spreadsheet v03.13, where a bias adjustment figure is provided for the participating laboratories for the period 2012, was 0.79. Additionally, a Bias Adjustment Factor, 0.76, was calculated using the AEA Spreadsheet for Calculation of Diffusion Tube Precision and Accuracy and the raw NO<sub>2</sub> concentrations measured by the Chipping Norton Co-Location study diffusion tubes.

Table 2.4 details the results of the monitoring across the district adjusted for laboratory bias. It shows that 'Bridge Street' and 'Mill Street' in Witney and 'Horsefair' in Chipping Norton currently exceed the objective concentration and these areas lie within the Air Quality Management Areas that were declared in March 2005. All other areas were within the objective limits. Furthermore, with the exception of the mean of the three co-located diffusion tubes in Chipping Norton, all other sites (33) were more than one standard deviation (SD = 4 i.e. 36 µg/m<sup>3</sup> or less) below the objective limit.

The diffusion tubes are supplied by Environmental Scientifics Group (ESG) and analysed in accordance with ESG's SOP HS/WI/1015, issue 15. This method meets the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance.'

The tubes (from a specified batch) are prepared by spiking acetone : triethanolamine (50:50) on to the grids prior to the tubes being assembled.

In the WASP inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, ESG is currently ranked as a 'Category Good' laboratory

Ratification of the WODC data was completed by AECOM Limited in April 2013.

**Table 2.1b Details of Non-Automatic Monitoring Sites - Within AQMAs**Annual Mean NO<sub>2</sub> / µg/m<sup>3</sup> (2012) in Witney (Bias Adjusted – Local v National)

Location	Annual Mean NO <sub>2</sub> / µg/m <sup>3</sup>	
	Local (0.76)	National (0.79)
Bridge Street	<b>47.5</b>	<b>49.3</b>
Mill Street	<b>40.0</b>	<b>41.5</b>

Annual Mean NO<sub>2</sub> / µg/m<sup>3</sup> (2012) in Chipping Norton (Bias Adjusted – Local v National)

Location	Annual Mean NO <sub>2</sub> / µg/m <sup>3</sup>	
	Local (0.76)	National (0.79)
Horsefair	<b>59.3</b>	<b>61.6</b>
17 Horsefair	30.7	31.9
Co-Location Triplicate Mean	36.9	38.4
5 Horsefair	23.3	24.2
7 Horsefair	23.7	24.7
West Street	28.5	29.5

Note: All are representative of relevant exposure – those in bold exceed 40 µg/m<sup>3</sup>

Details of Non- Automatic Monitoring Sites

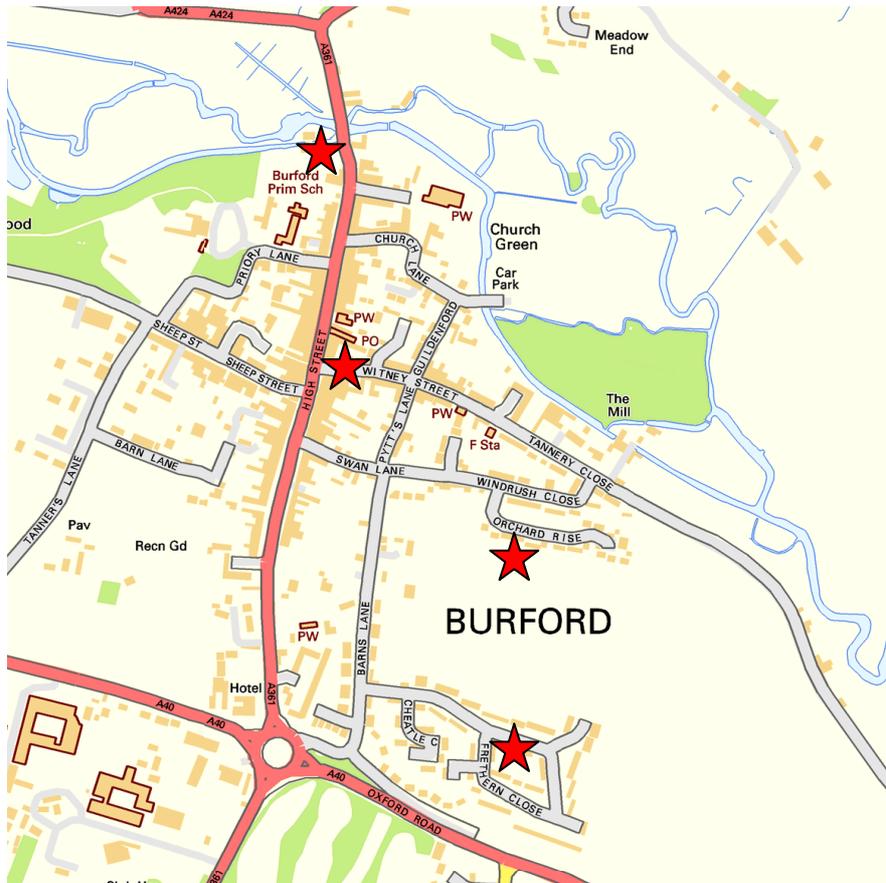
Maps of Non-Automatic Monitoring Sites

Figure 2.3



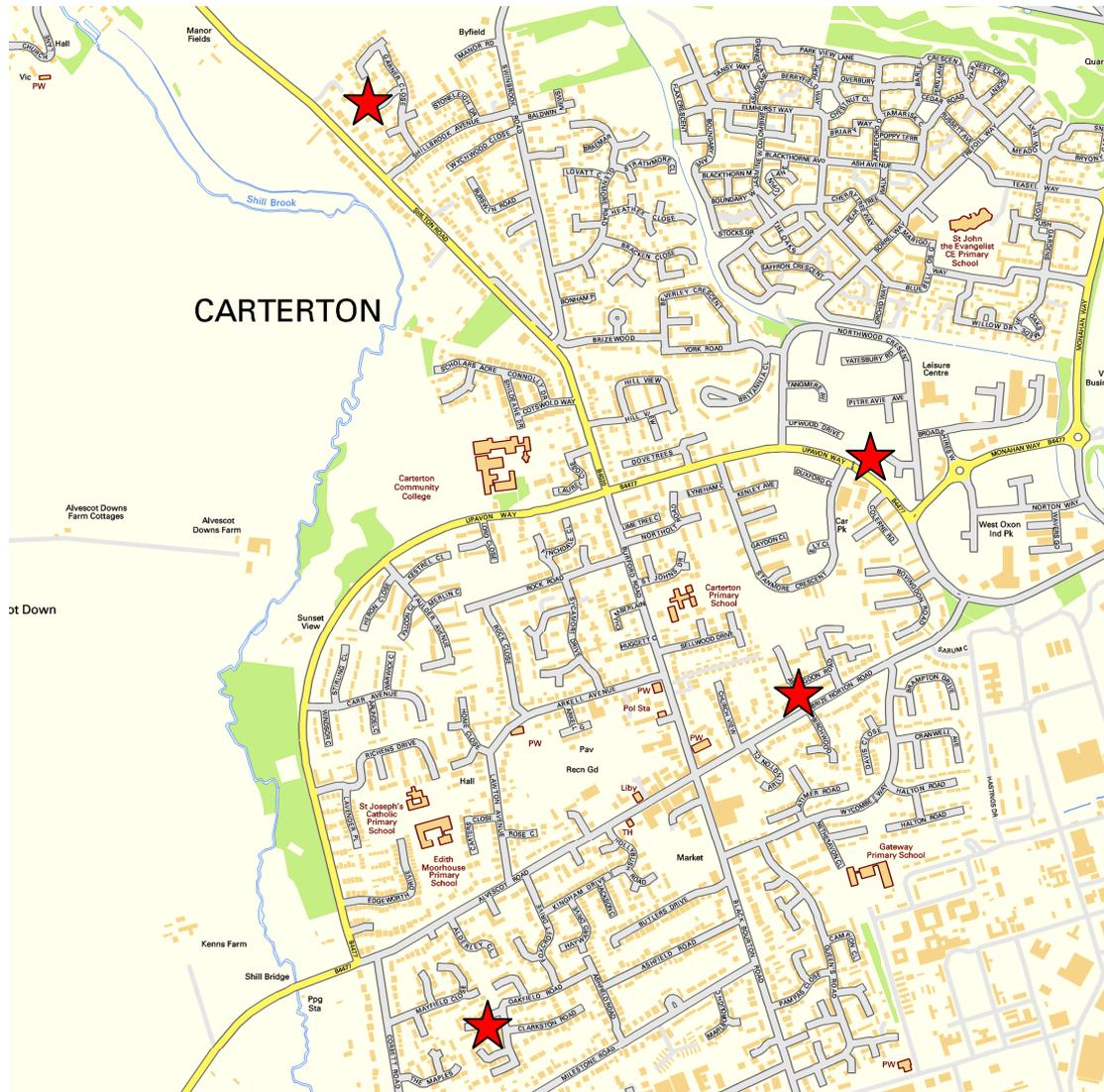
**BLADON**

Figure 2.4



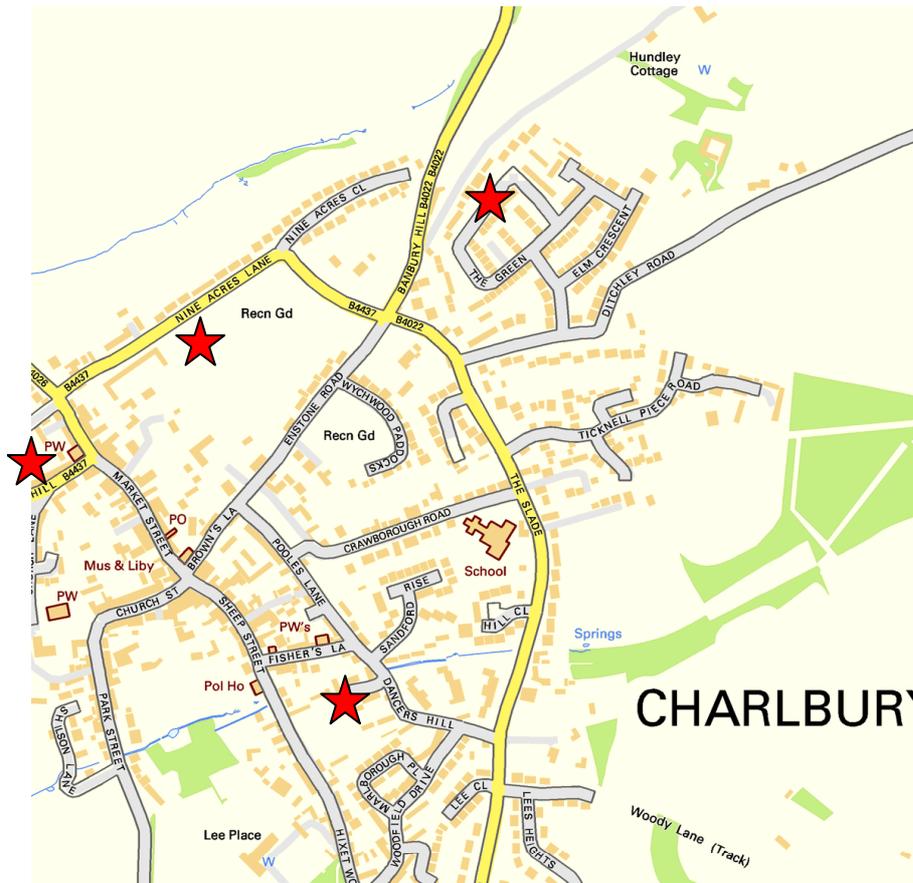
**BURFORD**

Figure 2.5



**CARTERTON**

Figure 2.6



**CHARLBURY**

Figure 2.7



**CHIPPING NORTON**



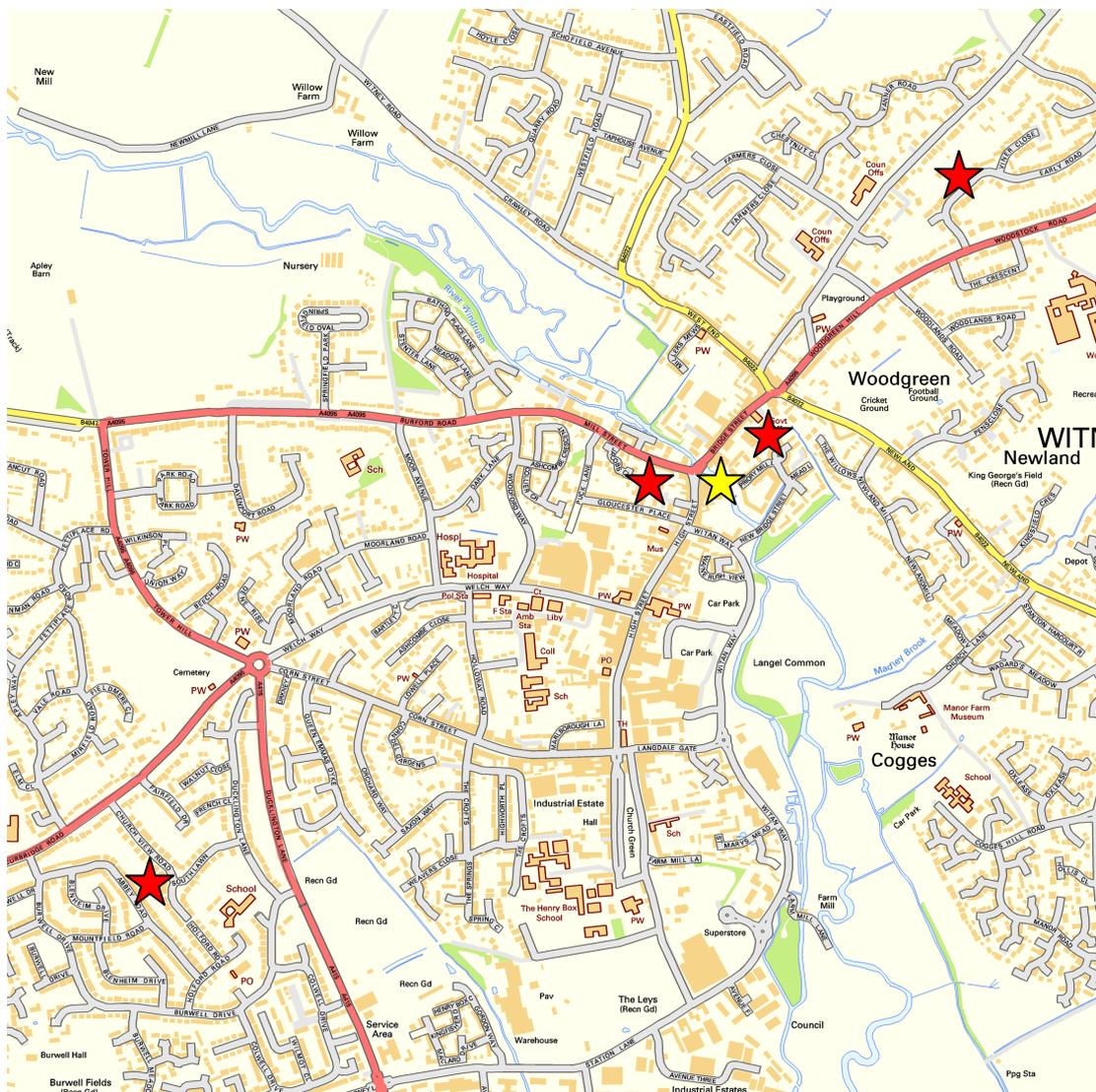
**Diffusion tubes co-located with NOx Analyser**

Figure 2.8



**EYNSHAM**

Figure 2.9



WITNEY



NOx Analyser

Figure 2.10



**WOODSTOCK**

Table 2.1c Details of Non- Automatic Monitoring Sites

Site ID DT#	Site Name	Site Type	OS Grid Reference	Site Height (m) 2.5 to 3m	Pollutants Monitored NO2	In AQMA	Is Monitoring Co-located with a Continuous Analyser	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
1	Bridge Street, Witney	R	435816 210239			Y		Y 0.5	2	Y
2	Mill Street, Witney	R	435671 210198			Y		Y 0.5	1	Y
3	Early Rd., Witney	B	436339 210806						2	
4	Abbey Rd., Witney	B	434596 209210						2	
5	High St, (N) Burford	R	425187 212431					Y 0.5	2	Y
6	93 High Street, (S) Burford	R	425156 212197					Y 2	0.5	Y
7	Frethern Cl, Burford	B	425406 211678						1	

<b>Site ID</b> <b>DT#</b>	<b>Site Name</b>	<b>Site Type</b>	<b>OS Grid Reference</b>	<b>Site Height (m)</b> <b>2.5 to 3m</b>	<b>Pollutants Monitored</b> <b>NO2</b>	<b>In AQMA</b>	<b>Is Monitoring Co-located with a Continuous Analyser</b>	<b>Relevant Exposure?</b> (Y/N with distance (m) from monitoring site to relevant exposure)	<b>Distance to Kerb of Nearest Road (m)</b> (N/A if not applicable)	<b>Does this Location Represent Worst-Case Exposure?</b>
8	Orchard Rise, Burford	B	425447 211949						1	
9	Brize Norton Rd, Carterton	R	428329 206946					Y	2	Y
10	Upavon Way, Carterton	R	428467 207442					Y	2	Y
11	Garner Close, Carterton	B	427415 208234						1	
12	Oakfield Road, Carterton	B	427687 206254						1	
13	Dyers Hill, Charlbury	R	435585 219620					Y	1	Y
14	Nineacres Lane, Charlbury	R	435654 219763					Y	1	Y

Site ID DT#	Site Name	Site Type	OS Grid Reference	Site Height (m) 2.5 to 3m	Pollutants Monitored NO2	In AQMA	Is Monitoring Co-located with a Continuous Analyser	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
15	Tanners Close, Charlbury	B	435945 219324						1	
16	The Green, Charlbury	B	436138 219973						1	
17	Horsefair, Chipping Norton	R	431425 227275			Y		Y 0.5	0.5	Y
33	17,Horsefair Chipping Norton	R	431450 227314			Y		Y 2	0.5	Y
36 37 38	Co-location, Chipping Norton (Triplicate Mean)	R	431404 227206			Y	Y	Y 2	0.5	Y
34	5 Horsefair, Chipping Norton	R	431439 227268			Y		Y 0.5	5	Y

Site ID DT#	Site Name	Site Type	OS Grid Reference	Site Height (m) 2.5 to 3m	Pollutants Monitored NO2	In AQMA	Is Monitoring Co-located with a Continuous Analyser	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
35	7 Horsefair, Chipping Norton	R	431443 227282			Y		Y 0.5	4	Y
18	West Street, Chipping Norton	R	431300 226959			Y		Y 0.5	2	Y
19	Coopers Close, Chipping Norton	B	431694 227156						1	
20	Withers Way, Chipping Norton	B	431207 226877						1	
21	Acre End Street, Eynsham	R	442950 209301					Y 2	1	Y
22	Mill Street, Eynsham	R	443309 209573					Y 1	1	Y

Site ID DT#	Site Name	Site Type	OS Grid Reference	Site Height (m) 2.5 to 3m	Pollutants Monitored NO2	In AQMA	Is Monitoring Co-located with a Continuous Analyser	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
23	Orchard Close, Eynsham	B	443632 209356						0.5	
24	Shakespeare Rd, Eynsham	B	442856 209781						1	
25	Oxford Street, (E) Woodstock	R	444592 216763					Y 2	1	Y
26	Oxford Street, (W) Woodstock	R	444526 216851					Y 1	0.5	Y
27	The Ley, Woodstock	B	445131 216615						1	
28	Westland Way, Woodstock	B	444212 217270						1	
29	Grove Road, (S) Bladon	R	444871 214983					Y 5	1	Y

Site ID DT#	Site Name	Site Type	OS Grid Reference	Site Height (m) 2.5 to 3m	Pollutants Monitored NO2	In AQMA	Is Monitoring Co-located with a Continuous Analyser	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
30	Grove Road, (N) Bladon	R	445190 215353					Y 5	1	Y
31	Heath Lane, Bladon	B	445227 214402						1	
32	Park Close, Bladon	B	444851 215094						1	
39	Park Street, Bladon	R	444791 214681					Y 0.5	1	Y

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### Automatic AQ Monitoring Station – CM2 Chipping Norton

The data collected in the period January 2012 to December 2012 inclusive has been ratified and validated and is summarised in the table below.

#### Annual Mean NO<sub>2</sub> Concentrations

Period	Annual Mean NO <sub>2</sub> Concentration / $\mu\text{g}/\text{m}^3$	Hourly Exceedences >200 $\mu\text{g}/\text{m}^3$
2012 Annual Mean	36.6	1 (208.0 $\mu\text{g}/\text{m}^3$ )

Note: Based on 94.7% data capture

### Automatic AQ Monitoring Station – CM1 Witney

The data collected in the period January 2012 to December 2012 inclusive has been ratified and validated and is summarised in the table below.

#### Annual Mean NO<sub>2</sub> Concentrations

Period	Annual Mean NO <sub>2</sub> Concentration / $\mu\text{g}/\text{m}^3$	Hourly Exceedences >200 $\mu\text{g}/\text{m}^3$
2012 Annual Mean	28.2	Nil

Note: Based on 94.2% data capture

### Diffusion Tube Site Monitoring

At Table 2.4 are details of the results of the monitoring across the district adjusted for laboratory bias. It shows that 'Bridge Street' and 'Mill Street' in Witney and 'Horsefair' in Chipping Norton currently exceed the objective concentration and these areas lie within the Air Quality Management Areas that were declared in March 2005. All other areas were within the objective limits. Furthermore, with the exception of

the mean of the three co-located diffusion tubes in Chipping Norton, all other sites (33) were more than one standard deviation (SD = 4 i.e.  $36 \mu\text{g}/\text{m}^3$  or less) below the objective limit.

Annual Mean  $\text{NO}_2 / \mu\text{g}/\text{m}^3$  (2012) in Witney (Bias Adjusted – Local v National)

Location	Annual Mean $\text{NO}_2 / \mu\text{g}/\text{m}^3$	
	Local (0.76)	National (0.79)
Bridge Street	<b>47.5</b>	<b>49.3</b>
Mill Street	<b>40.0</b>	<b>41.5</b>

Annual Mean  $\text{NO}_2 / \mu\text{g}/\text{m}^3$  (2012) in Chipping Norton (Bias Adjusted – Local v National)

Location	Annual Mean $\text{NO}_2 / \mu\text{g}/\text{m}^3$	
	Local (0.76)	National (0.79)
Horsefair	<b>59.3</b>	<b>61.6</b>
Co-Location TriPLICATE Mean	36.9	38.4

The results, overall, do not indicate any additional areas of concern requiring a detailed assessment.

### 2.2.1 Nitrogen Dioxide ( $\text{NO}_2$ )

The Chipping Norton data includes both automatic monitoring and diffusion tube monitoring. The automatic monitoring returned a Mean Pollution Concentration of  $36.6 \mu\text{g}/\text{m}^3$  this was based on a 94.7% data capture. The measured annual mean concentration is greater than  $40 \mu\text{g}/\text{m}^3$  within parts of the Chipping Norton AQMA (Horsefair) and within or at the boundary of the Witney AQMA.

The Chipping Norton AQMA (Horsefair) site has not recorded more than 18 1-hour means above  $200 \mu\text{g}/\text{m}^3$  (actual number is 1), and the 99.8<sup>th</sup> percentile of 1-hour mean concentrations is  $157.9 \mu\text{g}/\text{m}^3$ .

Data from the continuous monitoring station within the Witney AQMA achieved 94.2% capture rate. The 99.8<sup>th</sup> percentile of 1-hour mean concentrations is  $87.5 \mu\text{g}/\text{m}^3$ .

The Witney AQMA has been reassessed and the inclusion of the Mill Street diffusion tube site within its boundary has been confirmed following an update of the dispersion modelling in May 2011. Different modelling makes it difficult to reconcile the two similar but different presentations and overlaying one upon the other doesn't truly reflect the current boundary as per the later assessment. It is proposed to maintain the AQMA boundary, as originally declared, whilst noting the inclusion of

the minor extension along Mill Street. [This site had always previously been considered part of the AQMA, previous mapping had placed it outside the boundary.]

The monitoring site locations are representative of relevant public exposure.

### **Automatic Monitoring Data**

Graphs showing the full year dataset (hourly mean values) of both Automatic monitoring stations are at Appendix C.

**Table 2.2 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Annual Mean Concentration (µg/m <sup>3</sup> )				
					2008 <sup>c</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>	2011 <sup>c</sup>	2012 <sup>c</sup>
CM1	Roadside	Y		94.2	N/A	32.7*	33.0	27.9*	28.2
CM2	Roadside	Y		94.7	39.8	39.6	45.3	38.3*	36.6

In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40µg/m<sup>3</sup>

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

<sup>c</sup> Means “annualised” \*

**Table 2.3 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Number of Hourly Means > 200µg/m <sup>3</sup>				
					2008 <sup>c</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>	2011 <sup>c</sup>	2012 <sup>c</sup>
CM1	Roadside	Y		94.2	N/A	0* (105.0)	0 (105.9)	0* (100.2)	0 (87.5)
CM2	Roadside	Y		94.7	5 (178.6)	4 (174.8)	6 (172.8)	5* (182.9)	1 (157.9)

In bold, exceedence of the NO<sub>2</sub> hourly mean AQS objective (200µg/m<sup>3</sup> – not to be exceeded more than 18 times per year)

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

<sup>c</sup> If the data capture for full calendar year is less than 90%, include the 99.8<sup>th</sup> percentile of hourly means in brackets.

\*Mean was “annualised” as monitoring was not carried out for the full year - the 99.8<sup>th</sup> percentile of hourly means (in brackets) are included for comparison only.

**Diffusion Tube Monitoring Data**

A full dataset (monthly mean values) is included at Appendix B.

**Results of Nitrogen Dioxide Diffusion Tubes - Witney**

Annual Mean NO<sub>2</sub> / µg/m<sup>3</sup> (2012) in Witney (Bias Adjusted – Local v National)

Location	Annual Mean NO <sub>2</sub> / µg/m <sup>3</sup>	
	Local (0.76)	National (0.79)
Bridge Street	<b>47.5</b>	<b>43.9</b>
Mill Street	<b>40.0</b>	<b>41.5</b>

**Results of Nitrogen Dioxide Diffusion Tubes - Chipping Norton**

Annual Mean NO<sub>2</sub> / µg/m<sup>3</sup> (2012) in Chipping Norton (Bias Adjusted – Local v National)

Location	Annual Mean NO <sub>2</sub> / µg/m <sup>3</sup>	
	Local (0.76)	National (0.79)
Horsefair	<b>59.3</b>	<b>61.6</b>
Co-Location Triplicate Mean	36.9	38.4

The national bias adjustment factor applied in PR 2013 to the annual means is 0.79

All of the above are located within AQMAs.

All other areas were within the objective limits. Furthermore, with the exception of the mean of the three co-located diffusion tubes in Chipping Norton, all other sites (33) were more than one standard deviation (SD = 4 i.e. 36 µg/m<sup>3</sup> or less) below the objective limit.

See Table 2.4 for % data capture of other / all Diffusion Tubes

Table 2.4 Results of NO<sub>2</sub> Diffusion Tubes 2012

Site ID DT#	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration (µg/m <sup>3</sup> ) - Bias Adjustment factor = 0.79 <sup>b</sup>
1	Bridge Street, Witney	R	Y		100	49.3
2	Mill Street, Witney	R	Y		100	41.5
3	Early Rd., Witney	B			100	14.0
4	Abbey Rd., Witney	B			100	16.2
5	High St, (N) Burford	R			100	33.6
6	93 High Street, (S) Burford	R			92	30.9
7	Frethern Cl, Burford	B			92	12.6
8	Orchard Rise, Burford	B			100	10.3

Site ID DT#	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.79 <sup>b</sup>
9	Brize Norton Rd, Carterton	R			58	21.8 <sup>a</sup>
10	Upavon Way, Carterton	R			92	20.0
11	Garner Close, Carterton	B			92	11.5
12	Oakfield Road, Carterton	B			100	13.2
13	Dyers Hill, Charlbury	R			100	17.9
14	Nineacres Lane, Charlbury	R			100	15.7
15	Tanners Close, Charlbury	B			100	10.2
16	The Green, Charlbury	B			100	10.6

## West Oxfordshire – England

April 2013

Site ID DT#	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.79 <sup>b</sup>
17	Horsefair, Chipping Norton	R	Y		92	61.6
33	17, Horsefair Chipping Norton	R	Y		100	31.9
36 37 38	Co-location, Chipping Norton (Triplicate Mean)	R	Y	Y	100	38.4
34	5 Horsefair, Chipping Norton	R	Y		100	24.2
35	7 Horsefair, Chipping Norton	R	Y		100	24.7
18	West Street, Chipping Norton	R	Y		100	29.6
19	Coopers Close, Chipping Norton	B			92	11.5

## West Oxfordshire – England

April 2013

Site ID DT#	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.79 <sup>b</sup>
20	Withers Way, Chipping Norton	B			100	11.5
21	Acre End Street, Eynsham	R			100	16.2
22	Mill Street, Eynsham	R			92	15.3
23	Orchard Close, Eynsham	B			100	12.3
24	Shakespeare Rd, Eynsham	B			100	14.0
25	Oxford Street, (E) Woodstock	R			100	32.5
26	Oxford Street, (W) Woodstock	R			83	33.9
27	The Ley, Woodstock	B			100	11.5

Site ID DT#	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = <b>0.79</b> <sup>b</sup>
28	Westland Way, Woodstock	B			100	12.2
29	Grove Road, (S) Bladon	R			92	20.8
30	Grove Road, (N) Bladon	R			100	26.1
31	Heath Lane, Bladon	B			100	12.6
32	Park Close, Bladon	B			100	10.8
39	Park Street, Bladon	R			100	33.5

In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean AQS objective

<sup>a</sup> Means have been “annualised” as full calendar year data capture was less than 75%

Table 2.5 Results of NO<sub>2</sub> Diffusion Tubes (2008 to 2012)

[\* Bias Adjustment Factor – Local]

Site ID DT#	Name Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m <sup>3</sup> ) - Adjusted for Bias <sup>a</sup>				
				2008 (Bias Adjustment Factor = 0.74*)	2009 (Bias Adjustment Factor = 0.81)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.79)
1	Bridge Street, Witney	R	Y	42.5	52.4	56.3	54.0	49.3
2	Mill Street, Witney	R	Y	42.1	45.0	44.5	45.4	41.5
3	Early Rd., Witney	B		15.8	18.7	16.9	15.4	14.0
4	Abbey Rd., Witney	B		15.5	16.2	20.0	16.5	16.2
5	High St, (N) Burford	R		33.5	39.2	38.6	37.7	33.6
6	93 High Street, (S) Burford	R		28.6	34.8	38.6	37.5	30.9
7	Frethern Cl, Burford	B		13.0	15.8	15.5	12.0	12.6
8	Orchard Rise, Burford	B		10.5	13.4	12.5	10.5	10.3

Site ID DT#	Name Location	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
				2008 (Bias Adjustment Factor = 0.74*)	2009 (Bias Adjustment Factor = 0.81)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.79)
9	Brize Norton Rd, Carterton	R		21.3	24.2	23.7	20.9	21.8 <sup>a</sup>
10	Upavon Way, Carterton	R		21.4	26.3	24.6	21.8	20.0
11	Garner Close, Carterton	B		11.4	15.7	14.3	11.6	11.5
12	Oakfield Road, Carterton	B		13.5	15.8	15.7	13.6	13.2
13	Dyers Hill, Charlbury	R		16.5	20.6	19.8	18.5	17.9
14	Nineacres Lane, Charlbury	R		14.9	19.7	17.6	16.9	15.7
15	Tanners Close, Charlbury	B		10.3	13.0	13.1	11.2	10.2
16	The Green, Charlbury	B		11.0	13.6	12.6	10.8	10.6

Site ID DT#	Name Location	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
				2008 (Bias Adjustment Factor = 0.74*)	2009 (Bias Adjustment Factor = 0.81)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.79)
17	Horsefair, Chipping Norton	R	Y	59.4	63.8	66.4	60.0	61.6
33	17, Horsefair Chipping Norton	R	Y	0	0	0	37.5	31.9
36 37 38	Co-location, Chipping Norton (Triplicate Mean)	R	Y	39.8	44.6	45.4	41.5	38.4
34	5 Horsefair, Chipping Norton	R	Y	26.4	30.8	29.9	26.8	24.2
35	7 Horsefair, Chipping Norton	R	Y	28.0	31.3	29.3	26.7	24.7
18	West Street, Chipping Norton	R	Y	31.0	33.4	35.5	31.5	29.6
19	Coopers Close, Chipping Norton	B		13.8	12.4	14.8	12.6	11.5

Site ID DT#	Name Location	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
	2008 (Bias Adjustment Factor = 0.74*)			2009 (Bias Adjustment Factor = 0.81)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.79)	
20	Withers Way, Chipping Norton	B		11.5	13.8	14.8	11.2	11.5
21	Acre End Street, Eynsham	R		17.5	19.5	18.6	16.4	16.2
22	Mill Street, Eynsham	R		14.4	17.6	19.1	16.9	15.3
23	Orchard Close, Eynsham	B		12.4	15.2	14.7	12.4	12.3
24	Shakespeare Rd, Eynsham	B		14.6	18.0	18.4	14.6	14.0
25	Oxford Street, (E) Woodstock	R		31.0	31.4	39.0	33.9	32.5
26	Oxford Street, (W) Woodstock	R		32.5	39.3	38.6	35.4	33.9
27	The Ley, Woodstock	B		11.5	15.0	13.6	11.7	11.5

Site ID DT#	Name Location	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
	2008 (Bias Adjustment Factor = 0.74*)			2009 (Bias Adjustment Factor = 0.81)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.79)	
28	Westland Way, Woodstock	B		13.5	15.9	16.5	11.3	12.2
29	Grove Road, (S) Bladon	R		20.0	23.5	23.5	21.1	20.8
30	Grove Road, (N) Bladon	R		26.8	31.1	31.3	27.8	26.1
31	Heath Lane, Bladon	B		13.4	15.7	14.0	12.6	12.6
32	Park Close, Bladon	B		11.5	14.1	12.8	11.7	10.8
39	Park Street, Bladon	R		39.2	35.5	36.9	34.3	33.5

In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean AQS objective

<sup>a</sup> Means have been “annualised” as full calendar year data capture was less than 75%

**Summary of Compliance with AQS Objectives**

Andrew Ward has examined the results from monitoring in the district.

Concentrations within the two AQMAs still exceed the objective for NO<sub>2</sub> and the AQMAs should remain.

Concentrations outside of the AQMAs are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

### 3 New Local Developments

WODC confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

For completeness however, the following comment from the Environmental Statement, Non-Technical Summary, is included with reference to a planned 1,000 homes development in Witney

Re: 12/0084/P/OP West Witney  
(Land at Downs Road / Curbridge Road, Witney)

Land at West Witney  
Environmental Statement  
Non-Technical Summary

The ES includes an assessment of the effect of the Proposed Development on air quality during the construction and operational phases and cumulative effects with the other development schemes in the area.

The construction dust effect of the Proposed Development with mitigation measures associated with the implementation of the CEMP are expected to reduce to low risk or negligible.

Air quality effects of the Proposed Development during completed development are deemed negligible and therefore do not require mitigation measures to minimise the effect further.

Overall the cumulative effects are deemed 'negligible'.

#### 3.1 Road Traffic Sources

WODC confirms that there are no new or newly identified road traffic sources which may have an impact on air quality within the Local Authority area.

Further to the comment at 3 (above) there are proposed road modifications associated with this development regarding the A40 and Downs Road. There are no firm decisions at this stage however preliminary enquiries would suggest that there will be no significant impact on Air Quality.

#### 3.2 Other Transport Sources

WODC confirms that there are no new or newly identified other transport sources which may have an impact on air quality within the Local Authority area.

### 3.3 Industrial Sources

WODC confirms that, other than that referred to above (the development proposes to include a business area), there are no new or newly identified industrial sources which may have an impact on air quality within the Local Authority area.

### 3.4 Commercial and Domestic Sources

WODC confirms that, other than that referred to above, there are no new or newly identified commercial or domestic sources which may have an impact on air quality within the Local Authority area.

### 3.5 New Developments with Fugitive or Uncontrolled Sources

WODC confirms that, other than that referred to above, there are no new developments with fugitive or uncontrolled sources or that have an impact on air quality within the Local Authority area.

WODC confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

WODC confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

## **4 Local / Regional Air Quality Strategy**

With two AQMAs declared, an Action Plan running for one and, pending a re-appraisal of options, a second one to be re-presented in draft form after review of matters raised during a Public Consultation and Judicial Review, the District has addressed the significant sources of pollution and monitors progress within these declared areas.

## 5 Planning Applications

The previously proposed 'Cogges Link Road' in Witney, intended to provide a by-pass / relief road around the Witney AQMA, ceased to be an option. When an alternative scheme is developed, pre and post construction air quality data will be available from the continuous monitoring station sited within the AQMA. The design and positioning of any new road to be considered should not adversely affect air quality along its route.

With regard to 12/0084/P/OP West Witney (Land at Downs Road / Curbridge Road, Witney) please see comment at 3 (above).

## **6 Local Transport Plans and Strategies**

Monitoring data is available from the automatic analyser in Witney a review of which will give a better 'before' scenario of the AQMA - prior to the implementation of any proposed Action Plan. Comparisons will be able to be made with post construction data.

In 2014 there will be a PR (for 2013).

## **7 Implementation of Action Plans**

- Chipping Norton

Table 9.1 Action Plan Progress

Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
HGV Routing	Reduce unit emissions in the AQMA in conjunction with County LTP	OCC	2009 - 2010	2013 – 2014 Subject to current financial constraints	2013 – 2014 Subject to current financial constraints	Annual returns	Development and implementation Continues to be subject to financial constraints	Development and implementation subject to current financial constraints	2014 - 2015	Most positive proposal
Funding bid for regional prioritisation		OCC					Only required if Measure 1 does not deliver Results	Only required if Measure 1 does not deliver Results		
Continuously monitor emissions within AQMA	Identify and confirm reducing emissions trend	WODC	2005 - 2008	2009 - Current	2009 - Current	Annual returns	See PR 2008, USA 2009, PR 2010, 2011 USA 2012 PR 2012	See PR 2008, USA 2009, PR 2010, 2011 USA 2012 PR 2012		
Steering group		WODC		2011 -12 and onwards as required upon full implementation of Measure 1	2011 -12 and onwards as required upon full implementation of Measure 1	Annual returns				

Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
Development of Climate Change Policy		Government								
Lobby Government	Lobbying and support of Government to create policy to increase the use of cleaner vehicles and fuels	OCC has Highway Authority Network Management Duty (for the free flow of traffic etc)								

Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
Engage with local public transport operators	Reduce unit emissions in the AQMA	OCC	Engage with local public transport operators (buses and taxis) to a) promote the procurement of vehicles with cleaner engine technologies and b) to promote the use of cleaner fuels.	Continuing introduction of newer, less polluting buses	Continuing introduction of newer, less polluting buses	Annual returns				

Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
Engage with freight transport operators	Engage with freight transport operators to a) promote the procurement of vehicles with cleaner engine technologies and b) to promote the use of cleaner fuels.	OCC		Expected changes to emission standards	Expected changes to emission standards	Technological development				
'Leave your car at home' initiative	WODC and OCC to Promote use of public transport - awareness levels raised in all periodic Council publicity media	WODC	WODC Climate Change Action Plan - Apr 2011 – Green Travel Action 5.1	Continuous Produce maps and information on local public transport and publicise	Continuous Produce maps and information on local public transport and publicise		In progress	In progress		

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Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
Promote use of cycles	Promotion of the use of the cycle. Awareness levels raised in all periodic Council publicity media  Promote cycling and walking in Chipping Norton	WODC	WODC Climate Change Action Plan - Apr 2011 – Green Travel Action 3.3	Continuous  Update, print and promote Maps  Council campaign carried out in the town	Continuous  Update, print and promote Maps  Council campaign carried out in the town		In progress  Planned - Sustainable Transport Group	In progress  Planned - Sustainable Transport Group		
School Travel Plans / Green Travel Plan	Development of School Travel Plans and promotion of WODC Green Travel Plan	OCC	WODC Climate Change Action Plan - Apr 2011 – Green Travel Actions	Continuous	Continuous		WODC Green Travel Plan revised Feb 2011	WODC Green Travel Plan revised Feb 2011		
County Bus Strategy		OCC								

Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reduction
Local Transport Plans	County wide improvements to route infrastructure and traffic management	OCC								
Switch off idling engines	Acquisition of powers to require drivers to switch off their engines if they are left idling.			Education al approach favoured over enforcement	Education al approach favoured over enforcement		Advice / Action as required by Community Wardens	Advice / Action as required by Community Wardens		
Manage parking to reduce traffic congestion and improve air quality	Manage parking to reduce traffic congestion and improve air quality	WODC		New Community Wardens to enforce both on and off road parking to minimise restrictions to traffic flow.	New Community Wardens to enforce both on and off road parking to minimise restrictions to traffic flow.		Increased / high visibility patrolling within the District by Community Wardens	Increased / high visibility patrolling within the District by Community Wardens		





## **8. Conclusions and Proposed Actions**

### **8.1 Conclusions from New Monitoring Data**

No additional exceedences have been identified.

There are no significant trends to report.

### **8.2 Conclusions relating to New Local Developments**

Any proposal for a Witney traffic alleviation scheme will be expected to beneficially affect Air Quality along its route within the Witney AQMA. Future details will form the basis of a revised Action Plan.

### **8.3 Proposed Actions**

The Progress Report has not identified the need to proceed to a Detailed Assessment for any pollutant.

The new monitoring data has not identified any need for additional monitoring, or changes to the existing monitoring programme.

The next course of action is to submit the 2014 Air Quality Progress Report

## 9 References

**Witney AQMA Review** – *‘West Oxfordshire District Council Air Quality Detailed Assessment for Nitrogen Dioxide 2011’* – AECOM Ltd – November 2011

**WODC Data Ratification** - *‘Continuous and Diffusion Tube Monitoring Report’*  
April 2013 – AECOM Ltd

## Appendices

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Appendix B: Diffusion Tube Monitoring Data (monthly mean values)

Appendix C: Hourly Mean NO<sub>2</sub> Concentration: Chipping Norton and Witney

## Appendix A: QA:QC Data

### Diffusion Tube Bias Adjustment Factors and Factor from Local Co-location Studies

Diffusion tubes are exposed for approximately 4 weeks before being sent for analysis to the supplier, Harwell Scientifics at Didcot. The Overall Bias Adjustment factor available from the AEA spreadsheet v3/13, where the bias adjustment figure provided for the participating laboratories for the period 2012 is 0.79. A Bias Adjustment Factor, of 0.76, was calculated using the AEA Spreadsheet for Calculation of Diffusion Tube Precision and Accuracy and the raw NO<sub>2</sub> concentrations measured by the Chipping Norton Co-Location study diffusion tubes.

### Discussion of Choice of Factor to Use

Both local and national Bias Adjustment Factors were available. The national factor has been used because of the hitherto 'below ideal' data capture rate of the automatic analyser within the Chipping Norton AQMA and thus consistency with previous year's reporting.

The UK NAQS recommended capture rate is 90% and the EU Directive for NO<sub>2</sub> specifies a 75% data capture threshold for assessing compliance with limit and guidance values. Reliability had improved during 2010 and the data captured was assessed to be reliable and representative however for 2011 the reduced capture rate was due to equipment outages. This current year (2012) shows a marked improvement in reliability and hence data capture rate.

### QA/QC of automatic monitoring

Calibration checks of the instrumentation are made every two weeks by the LA and six monthly service and calibration work has been carried out, from November 2011 and April 2012 respectively at the Chipping Norton and Witney sites by SupportingU Ltd. All the data is ratified and validated by AECOM Limited.

### QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied by ESG and analysed in accordance with ESG SOP HS/WI/1015, issue 15. This method meets the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance.'

The tubes (from a specified batch) are prepared by spiking acetone : triethanolamine (50:50) on to the grids prior to the tubes being assembled.

In the WASP inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, Harwell Scientifics is currently ranked as a 'Category Good' laboratory

Ratification of the WODC data was completed by AECOM Limited in April 2013.

## Appendix B: Diffusion Tube Monitoring Data (monthly mean values)

Town/village	Location	Type	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Data Capture
Witney	Bridge Street	R	67.5	63.1	69.6	51.7	68.6	54.0	49.0	54.2	53.8	72.9	79.6	65.5	100
	Mill Street	R	61.5	50.2	59.2	46.2	38.8	39.7	48.5	52.7	53.0	50.0	64.5	66.6	100
	Early Rd.	B	27.0	19.8	22.5	10.9	11.1	12.1	10.8	12.2	15.5	19.8	27.1	24.1	100
	Abbey Rd.	B	31.4	29.6	25.7	17.2	12.6	13.6	11.0	15.1	16.2	20.3	25.5	28.6	100
Burford	High St	R	41.9	51.1	11.1	46.0	37.6	39.2	41.5	50.3	51.2	43.6	45.9	51.7	100
	93 High Street	R	44.1	16.1	47.0	41.3	43.4	nd	33.9	43.1	35.0	39.3	45.6	42.1	92
	Frethern Cl	B	22.8	21.6	19.1	12.4	10.4	nd	8.3	10.1	13.6	14.9	19.5	22.1	92
	Orchard Rise	B	20.1	19.7	17.2	10.5	8.3	7.7	6.2	9.1	11.1	11.9	16.0	18.9	100
Carterton	Brize Norton Rd	R	40.7	29.1	34.4	20.8	21.6	nd	nd	nd	nd	nd	38.7	38.1	58
	Upavon Way	R	36.2	27.7	34.6	nd	15.8	17.5	17.3	25.0	17.4	24.3	33.9	29.3	92
	Garner Close	B	22.3	19.7	20.0	11.6	10.1	9.0	6.6	10.2	13.0	nd	18.9	19.3	92
	Oakfield Road	B	24.6	19.9	22.6	13.2	11.7	9.9	10.3	10.6	12.7	16.6	22.4	26.7	100
Charlbury	Dyers Hill	R	29.2	29.3	27.7	21.7	19.0	15.4	17.3	17.6	20.3	20.8	27.0	26.6	100
	Nineacres Lane	R	24.2	23.3	26.2	18.6	16.9	14.2	10.4	16.1	17.3	20.2	28.2	23.5	100
	Tanners Court	B	17.9	19.2	17.8	11.3	9.6	7.2	6.5	7.2	9.9	10.3	18.6	19.3	100
	The Green	B	20.7	16.0	19.4	11.0	9.5	7.8	6.7	6.9	10.9	13.2	16.7	21.6	100
Chipping Norton	Horsefair	R	82.5	74.3	84.5	nd	65.3	66.4	68.1	75.7	86.8	74.8	93.8	85.7	92
	17 Horsefair	R	39.7	43.0	46.2	37.5	39.8	33.5	32.0	39.0	33.3	43.2	49.9	47.9	100
CN Co location	CN Co location	R	48.9	54.9	56.8	53.1	56.2	43.0	44.1	45.5	46.2	55.3	59.1	58.4	100
	CN Co location	R	48.2	43.3	50.1	46.5	57.4	41.1	39.5	54.4	46.6	53.2	51.7	47.5	100
	CN Co location	R	36.1	48.9	52.3	44.5	47.9	35.3	37.6	50.7	43.6	47.4	52.4	52.3	100
	Co-Loc Average		44.4	49.0	53.1	48.0	53.8	39.8	40.4	50.2	45.5	52.0	54.4	52.7	100
	5 Horsefair	R	31.5	38.0	36.0	31.0	31.4	23.2	22.3	27.7	28.7	31.8	33.7	32.1	100
	7 Horsefair	R	36.3	39.0	38.5	31.3	33.7	25.3	24.4	25.9	18.6	33.4	34.7	33.7	100
	West Street	R	42.4	46.7	44.2	45.0	33.5	31.2	27.1	30.4	37.7	36.3	38.3	36.9	100
	Coopers Close	B	22.5	15.6	19.7	15.0	10.5	8.4	8.5	8.9	15.8	15.8	19.7	nd	92
	Withers Way	B	20.7	20.3	19.7	12.9	11.3	8.2	6.8	8.2	10.9	15.3	19.3	21.0	100

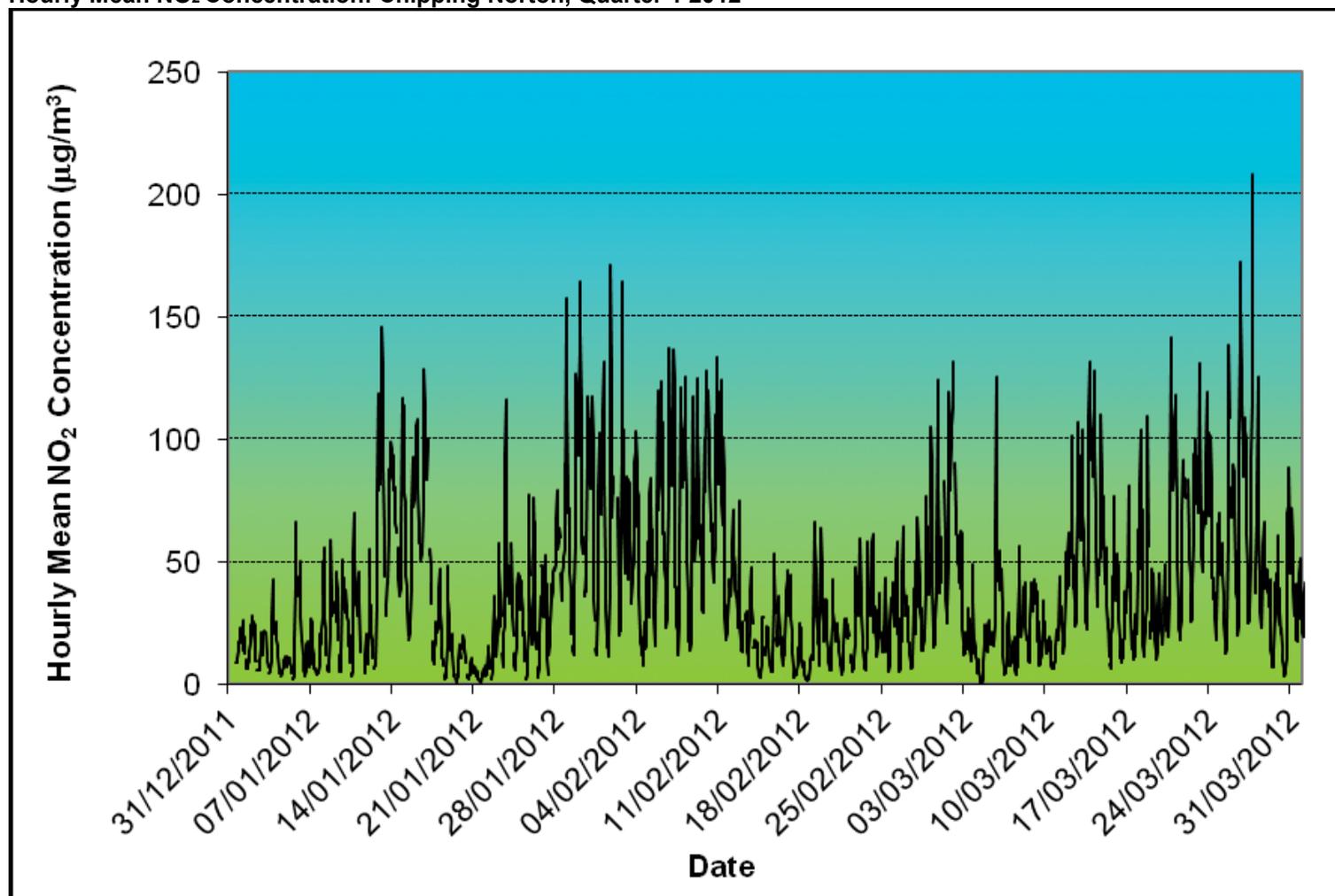
## West Oxfordshire – England

April 2013

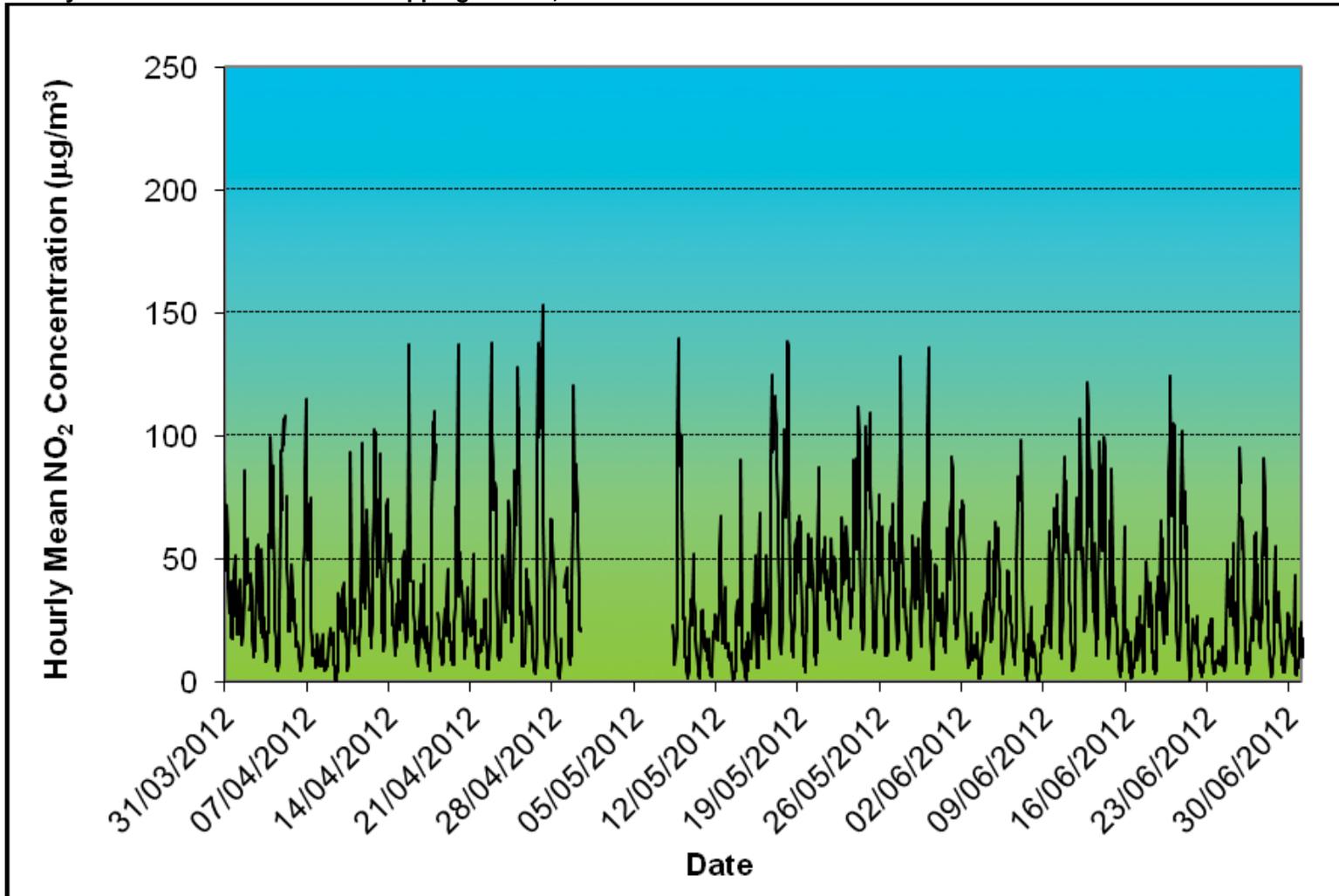
Eynsham	Acre End Street	R	30.3	28.2	27.0	19.9	15.3	12.3	12.1	17.2	16.2	21.4	25.2	21.6	100
	Mill Street	R	nd	27.0	26.7	18.3	16.6	11.8	12.2	14.5	15.0	20.6	25.8	25.0	92
	Orchard Close	B	17.1	22.6	23.1	14.1	10.1	9.5	8.2	14.4	11.7	14.4	20.8	21.4	100
	Shakespeare Rd	B	22.9	16.1	25.5	16.4	13.0	15.1	8.9	12.1	13.5	18.1	26.0	24.9	100
Woodstock	Oxford Street	R	46.8	44.9	48.3	47.1	43.2	34.3	29.9	31.9	32.6	44.6	45.4	44.2	100
	Oxford Street(2)	R	nd	44.6	52.7	38.1	nd	33.4	35.1	41.7	46.4	42.3	53.7	40.8	83
	The Ley	B	21.2	21.4	21.0	9.8	9.4	8.9	7.7	10.2	13.1	14.6	19.9	17.2	100
Bladon	Westland Way	B	17.9	24.3	21.6	14.5	8.4	8.9	8.2	9.4	12.5	15.1	23.1	20.8	100
	Grove Road	R	31.5	30.2	29.2	24.1	nd	20.6	17.7	20.7	25.5	26.8	35.3	27.7	92
	Grove Road(2)	R	39.3	39.6	36.2	32.0	25.5	20.3	24.6	25.7	47.2	32.8	42.4	30.9	100
	Heath Lane	B	24.0	22.0	21.7	13.2	9.3	8.9	7.4	9.2	12.8	14.9	21.6	26.3	100
	Park Close	B	19.1	20.1	18.0	10.0	9.4	7.9	6.8	8.4	12.2	13.4	20.4	18.6	100
	Park Street	R	46.4	49.9	44.1	40.7	36.4	34.1	36.3	37.8	43.9	42.2	51.1	45.6	100

### Appendix C: Hourly Mean NO<sub>2</sub> Concentration: Chipping Norton and Witney

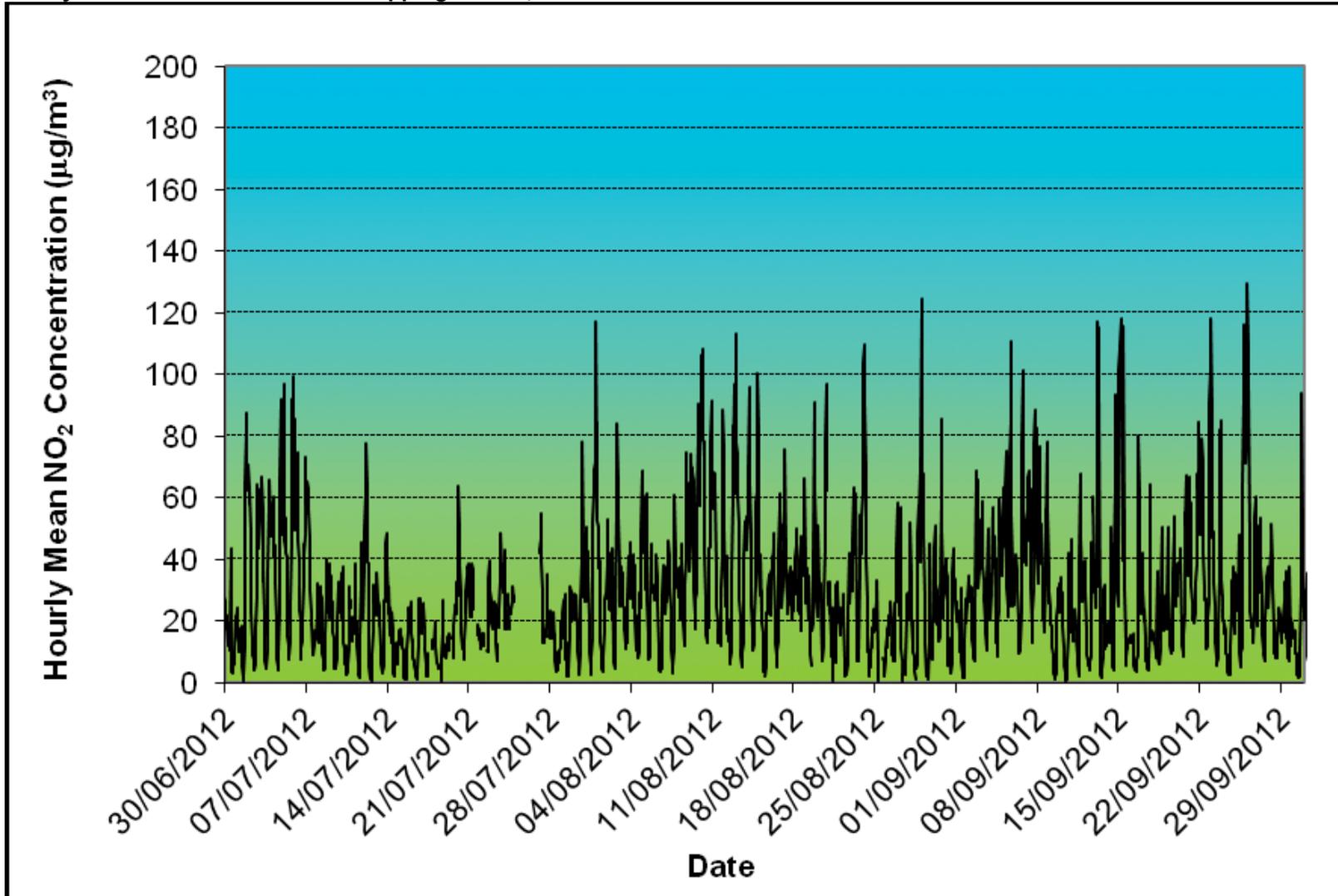
Hourly Mean NO<sub>2</sub> Concentration: Chipping Norton, Quarter 1 2012



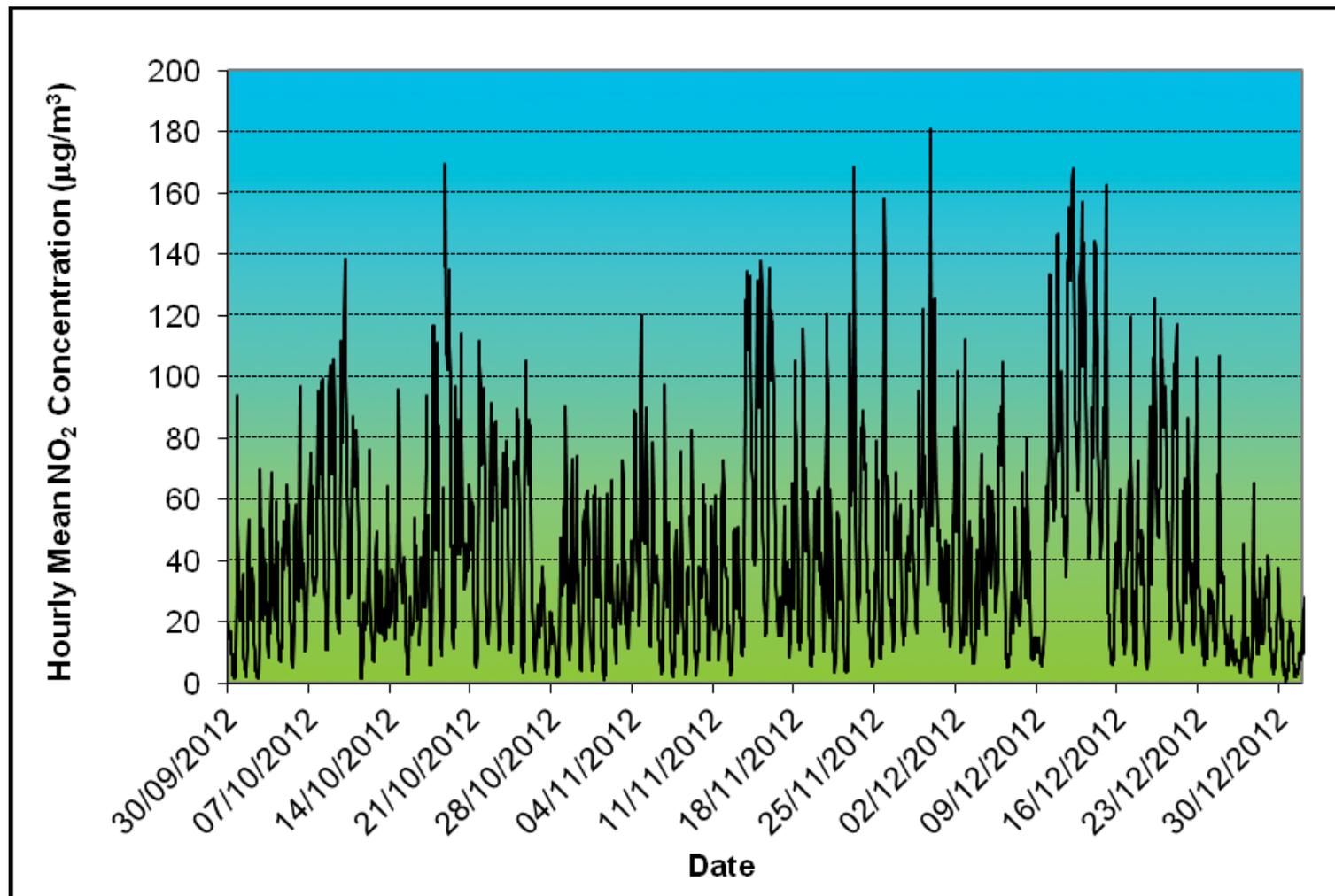
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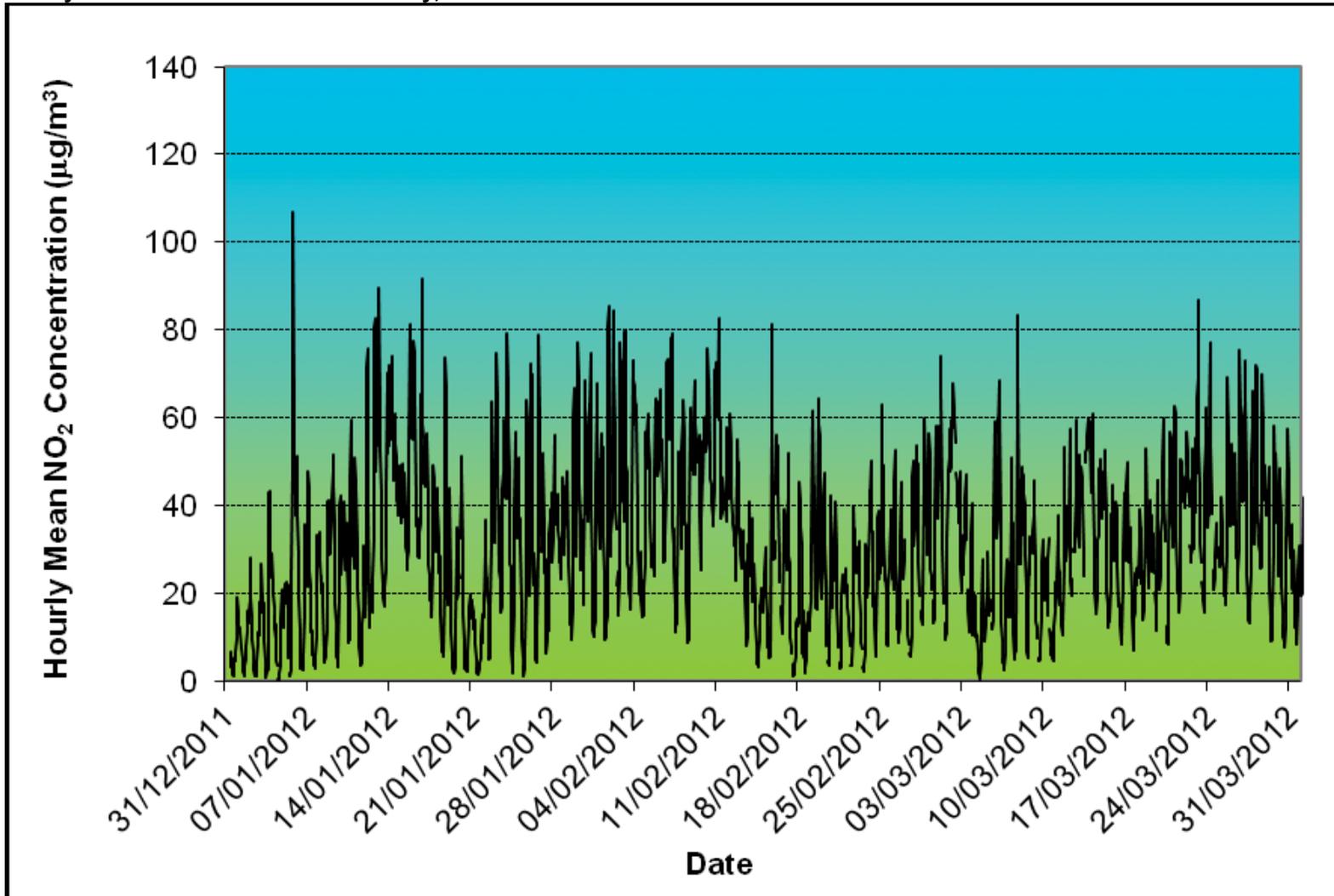
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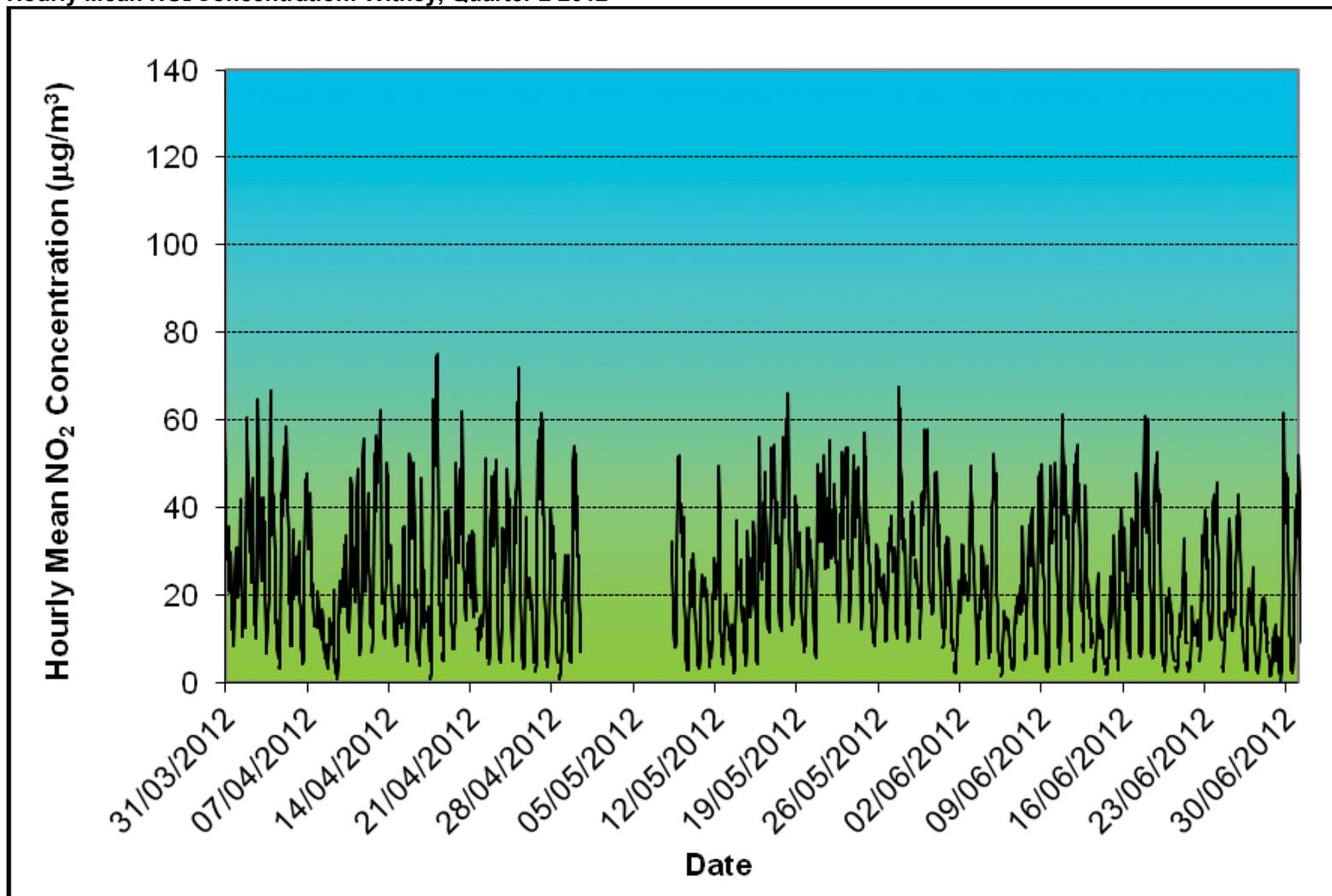
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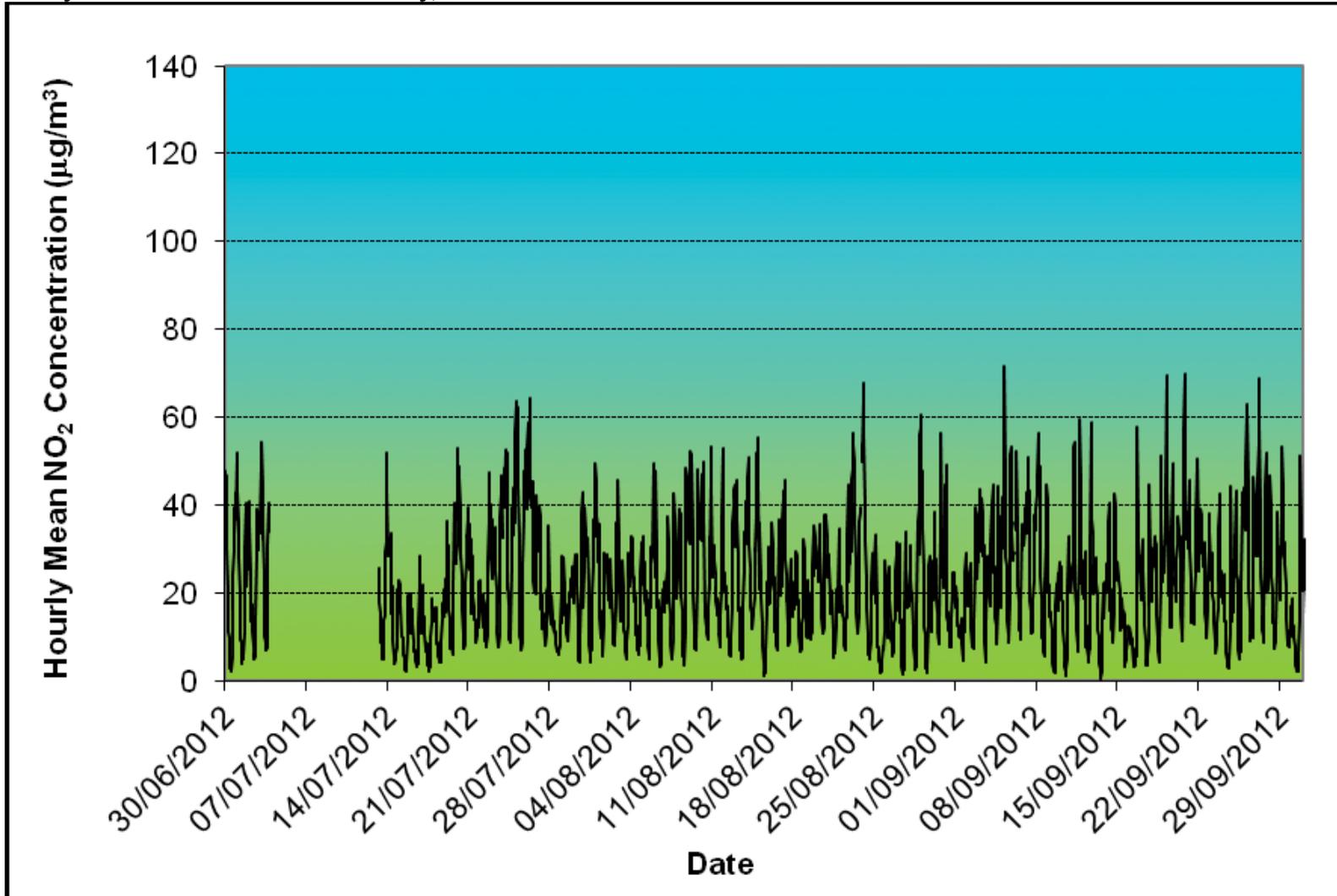
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Hourly Mean NO<sub>2</sub> Concentration: Witney, Quarter 2 2012



Hourly Mean NO<sub>2</sub> Concentration: Witney, Quarter 3 2012



Hourly Mean NO<sub>2</sub> Concentration: Witney, Quarter 4 2012

