



WEST OXFORDSHIRE
DISTRICT COUNCIL



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2009 Air Quality Updating and Screening Assessment for WEST OXFORDSHIRE DISTRICT COUNCIL

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

July 2009

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Executive Summary

The monitoring reported within the 2009 Update and Screening Assessment for West Oxfordshire District Council does not indicate any additional areas of general concern with regard to air quality. However, recently targeted AQ monitoring towards the south of Bladon has indicated a trend towards exceedences of the air quality standard.

Within the District there are no industrial developments with air pollution implications and the development proposals listed 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 an Environmental 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.

OCC have commissioned Jacobs to conduct advanced feasibility work for the implementation of the lorry management measures. This should be concluded by the end of August 2009 and, including consultation with neighbouring Counties and costing of proposals, is expected to be complete by end of FY 2009 / 10.

Witney AQMA

The Draft Action Plan for the Witney AQMA has been deferred for a significant period pending the outcome of the Cogges Link Road (CLR) Planning Application by OCC and, in part, the installation of new continual monitoring equipment within the Witney AQMA to provide pre and post CLR development air quality data.

Planning Permission for CLR was granted in February 2009. On 25 April 2009, OCC were advised to accept a 'Town Green' application for the Witney Country Park as being 'duly made'. The Town Green application will most probably progress to a public consultation stage in due course.

The Draft Action Plan for the Witney AQMA will be written with the assumption that the CLR will proceed as per the Planning Approval. This is due for submission in the last quarter of 2009.

The installation of continual monitoring equipment within the Witney AQMA has been completed and the equipment is operational on the bridge in Bridge Street.

Potential AQMA - Bladon

Diffusion tube monitoring will continue and annual data processed to confirm the status of this area. An initial step however has been to relocate the diffusion tube to another site in close proximity to that currently used as there is potential contamination of data due to wood preservative treatment to the wooden telegraph pole upon which the tube is mounted.

However, anecdotal evidence appears to indicate a substantial rise in NO_x concentrations in the Thames Valley area as recorded by both continuous monitoring and diffusion tube monitoring. The possible anomaly - yet to be investigated - may resolve the question regarding a potential AQMA in Bladon. Initial thoughts regarding any future investigation which might be required could involve an additional period of monitoring after the anticipated

full implementation of the Chipping Norton AQ Action Plan due to the close proximity of the A44 to Bladon. Variations in traffic density on / from the A44 on to the A4095 may result from the Chipping Norton proposals.



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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 km² with a population of 96,000 is spread across a large number of relatively small settlements, totalling 83 parishes.

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 less than 1%. The area faces no major social problems and crime figures are amongst the lowest in the country.

1.2 Purpose of 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.

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, mg/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 Local Air Quality Management in England.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Within West Oxfordshire District Council's area, Nitrogen Dioxide is the only Air Quality Objective which is monitored. The other six objectives do not present air quality concerns within the District and therefore are not reported on within USA 2009

Some comments regarding information which has been gathered and which is thought to be relevant to questions within the following sections has been included in this return for completeness.

1.4 Summary of Previous Review and Assessments

Previously, two main areas of concern were declared within the district where national objectives for air quality would not be met. As a result of a DA, AQMAs were declared in Witney and Chipping Norton in February 2005. Since the publication of the DA in May 2004 and the USA in May 2006 monitoring has continued in the AQMAs and elsewhere in the district. Other significant developments that may have had to be taken into account in subsequent assessments have had no material effect upon the AQMAs.

The two areas (see Appendix 2 & 3) were declared on 7th February 2005. The development of the action plans began for both areas and a continuous monitoring site in Chipping Norton was established. This site has been in operation since March 2006. The original continuous monitoring site in Witney was decommissioned because the site was sold. However, another site in that area has been established (May 2009) to allow continuous monitoring and an air quality grant from Defra facilitated this.

The table of Comparison of Diffusion Tube Data for 2005, 2006, 2007 and 2008 is included here to add general values to the results indicative of air quality within the district and as related to the two AQMAs of Witney and Chipping Norton.

The short term monitoring of background levels (at 'RAF Brize Norton' and 'Alvescot Cattery') in the vicinity of RAF Brize Norton (as later referred to in 4.1 Airports) is included, in the context of the surrounding area of Carterton.

Comparison of Diffusion Tube Data for 2005, 2006, 2007 and 2008.

Location	Annual Mean (adjusted) 2005 ($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2006 ($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2007 ($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2008 ($\mu\text{g}/\text{m}^3$)	% Change for 2007 / 2008 + / -
WITNEY					
Bridge Street	53	50	50	43	-14
Mill Street	44	40	43	42	-2
Early Rd.	21	15	17	16	-6
Abbey Rd.	25	17	17	16	-6
BURFORD					
High St	36	33	27	34	+26
93 High Street	38	29	31	29	-6
Frethern Cl	15	12	15	13	-13
Orchard Rise	14	10	12	11	-8
CARTERTON					
Brize Norton Rd	24	21	23	21	-9
Upavon Way	23	20	20	21	+5
Garner Close	15	12	13	11	-15
Oakfield Road	16	13	15	14	-7
RAF Brize Norton	-	13	15	22	+47
Alvescot Cattery	-	11	12	13	-8

Location	Annual Mean (adjusted) 2005($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2006($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2007($\mu\text{g}/\text{m}^3$)	Annual Mean (adjusted) 2008($\mu\text{g}/\text{m}^3$)	% Change for 2007 / 2008 + / -
CHARLBURY					
Dyers Hill	18	16	17	17	0
Nineacres Lane	18	15	14	15	+7
Tanners Close	12	10	11	10	-9
The Green	13	10	11	11	0
CHIPPING NORTON					
Horsefair	74	62	70	59	-16
West Street	37	31	34	31	-9
Coopers Close	17	14	14	14	0
Withers Way	15	12	13	12	-8
31 High Street		44	43	43	0
5 Horsefair		27	28	26	-7
7 Horsefair		29	30	28	-7
Monitoring Stn 1		42	44	40	-9
Monitoring Stn 2		40	45	38	-16
Monitoring Stn 3		39	40	41	+3
EYNESHAM					
Acre End Street	21	16	13	18	+38
Mill Street	19	15	17	14	-18
Orchard Close	15	12	14	12	-14
Shakespeare Rd	21	15	17	15	-12
WOODSTOCK					
Oxford Street	37	30	32	31	-3
Oxford Street(2)	36	31	28	33	+18
The Ley	14	12	12	12	0
Westland Way	18	17	14	14	0
BLADON					
Grove Road	26	20	21	20	-5
Grove Road(2)	34	29	30	27	-10
Heath Lane	16	12	14	13	-7
Park Close	15	10	12	12	0
Park Street				39	0

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

AQMA No 1 - Witney

No Continuous Monitoring data was collected in the period January 2008 to December 2008

Continuous monitoring of nitrogen dioxide began in Newland, Witney in August 2001 and continued there until April 2005. The original analyser, an AP1 Chemiluminescent NO_x continuous analyser, was relocated to Chipping Norton and a similar new model has just been established (May 2009) at a new location within the Witney AQMA (the location is shown on the plan at Appendix 4). Calibration checks of the instrumentation are made every two weeks by the LA and six monthly service and calibration work is carried out by Enviro Technology plc. There are no service reports to date. All the data will be ratified and validated by AECOM Limited.

The information provided by the new continuous monitor will be analysed to review whether the boundaries of the AQMA need to be changed. Any review of the AQMA declaration boundaries will be used to provide better information for the development of the Action Plan to improve air quality in Witney.

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 has been done to carry out further assessment work in response to the declaration of AQMA No 2 (the location is shown on the plan at Appendix 5). 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 which is currently awaiting the results of further consultation and technical investigation prior to installation 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 Enviro Technology plc. All the data is ratified and validated by AECOM Limited

The data collected in the period January 2008 to December 2008 inclusive has been ratified and validated and is summarised in the table below.

Annual Mean NO₂ Concentrations

Period	Mean NO ₂ Concentration / µg/m ³	Exceedences
2008 Annual Mean	39.8	5

Note: Based on 88.5% Data Capture primarily due to equipment outage in 3rd and 4th quarter 2008

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Chipping Norton	Urban Roadside	SP 31402730	NO ₂	Y	Y (2.0m to facade)	0.5m	Y
Witney**	Urban Roadside	SP 35751020	NO ₂	Y	Y (0.5m to facade)	2.0m	Y

** Note: Installed May 2009

2.1.2 Non-Automatic Monitoring

Nitrogen dioxide monitoring by Diffusion tube.

The map at Appendix 8 details the diffusion tube monitoring locations in the district (not including the recent additional site at Bladon, Tube # 39 - 'Park Street'). 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 version 05 / 09, where a bias adjustment figure is provided for the participating laboratories for the period 2008, was 0.79. A Bias Adjustment Factor of 0.74 was calculated using the AEA Spreadsheet for Calculation of DiffusionTube Precision and Accuracy and the raw NO₂ concentrations measured by the Chipping Norton Co-Location study diffusion tubes.

Table 2.2 and Appendix 7 detail the results of the monitoring across the district adjusted for laboratory bias. It shows that 'Bridge Street' and 'Mill Street' in Witney and 'Horsefair' and '32,High Street' in Chipping Norton (plus two of three co-located diffusion tubes) 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 third co-located diffusion tube, all other sites were more than one standard deviation (SD = 4 i.e. less than 36 µg/m³) below the objective limit.

Annual Mean NO₂ / µg/m³ (2008) in Witney (Bias Adjusted)

Location	Annual Mean NO ₂ / µg/m ³		Difference %
	2007	2008	
Bridge Street	50	43	-14
Mill Street	43	42	-2

Annual Mean NO₂ / µg/m³ (2008) in Chipping Norton(Bias Adjusted)

Location	Annual Mean NO ₂ / µg/m ³		Difference %
	2007	2008	
Horsefair	70	59	-16
31 High Street	43	43	0
Co-Location 1	44	40	-9
Co-Location 3	40	41	+3
Co-Location 2	45	38	-16

Table 2.2 Details of Non- Automatic Monitoring Sites - NO₂

For full details see Appendix 7

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
As detailed	Roadside or Background as specified	Not Specified	As per tables above	Appropriate to area within 3m	Generally within 3m or on building facade	Appropriate to area

The diffusion tubes are supplied by Harwell Scientifics and analysed in accordance with Harwell Scientifics SOP HS/WI/1015, issue 14. This method meets the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO₂ 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.

The Overall Bias Adjustment factor available from the AEA spreadsheet version 05 / 09, where a bias adjustment figure is provided for the participating laboratories for the period 2008 was 0.79. A Bias Adjustment Factor of 0.74 was calculated using the AEA Spreadsheet for Calculation of DiffusionTube Precision and Accuracy (<http://www.airquality.co.uk/laqm/tools.php> - Accessed 31.05.2009) and the raw NO₂ concentrations measured by the Chipping Norton Co-Location study diffusion tubes.

The bias adjustment factor applied, in USA 2009, to the annual means is 0.74 .

In the WASP intercomparison 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

2.2 Comparison of Monitoring Results with AQ Objectives

Automatic AQ Monitoring Station – Chipping Norton

The data collected in the period January 2008 to December 2008 inclusive has been ratified and validated and is summarised in the table below.

Annual Mean NO₂ Concentrations

Period	Mean NO ₂ Concentration / $\mu\text{g}/\text{m}^3$	Exceedences
2008 Annual Mean	39.8	5 (178.6) $\mu\text{g}/\text{m}^3$

Note: Based on 88.5% Data Capture primarily due to equipment outage in 3rd and 4th quarter 2008. For details of results for each year quarter see Appendix 6.

The period of valid data is less than 90% of a full year, thus the relevant percentile alternative (the 99.8th percentile of hourly means) rather than the number of hours >200 $\mu\text{g}/\text{m}^3$ is included.

Diffusion Tube Site Monitoring

At Appendix 7 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' and '32, High Street' in Chipping Norton (plus two of three co-located diffusion tubes) 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 third co-located diffusion tube, all other sites were more than one standard deviation (SD = 4 i.e. less than 36 $\mu\text{g}/\text{m}^3$) below the objective limit.

Annual Mean NO₂ / $\mu\text{g}/\text{m}^3$ (2008) in Witney (Bias Adjusted)

Location	Annual Mean NO ₂ / $\mu\text{g}/\text{m}^3$		Difference %
	2007	2008	
Bridge Street	50	43	-14
Mill Street	43	42	-2

Annual Mean NO₂ / $\mu\text{g}/\text{m}^3$ (2008) in Chipping Norton (Bias Adjusted)

Location	Annual Mean NO ₂ / $\mu\text{g}/\text{m}^3$		Difference %
	2007	2008	
Horsefair	70	59	-16
31 High Street	43	43	0
Co-Location 1	44	40	-9
Co-Location 3	40	41	+3
Co-Location 2	45	38	-16

Within the 2008 period, additional monitoring was begun at 'Park Street', Bladon. Initial results from the monitoring data indicates that there may be an objective exceedence in this area. The monitoring site has been relocated within the immediate area of the original location (due to possible localised contamination). There is also some anecdotal evidence of 'over reading' of diffusion tube results within

the Thames Valley area. Whilst it is therefore not thought likely that the annual mean objective limit will be exceeded, it is thought necessary to continue diffusion tube monitoring at this location to monitor the trend.

The results overall therefore, do not indicate any additional areas of concern requiring a detailed assessment that have not already been identified.

2.2.1 Nitrogen Dioxide

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 adjacent to the Witney AQMA.

The Chipping Norton data includes both automatic monitoring and diffusion tube monitoring. Though the automatic monitoring returned a Mean Pollution Concentration of $39.8 \mu\text{g}/\text{m}^3$ this was based on a 88.5% data capture (due primarily to equipment malfunction in the 3rd and 4th quarters of 2008 (see Appendix 2).

This site has not recorded more than 18 1-hour means above $200 \mu\text{g}/\text{m}^3$, and (as the period of valid data is less than 90% of a full year) the 99.8th percentile of 1-hour mean concentrations is $178.6 \mu\text{g}/\text{m}^3$.

When further data from the newly established continuous monitoring station within the Witney AQMA is available, the AQMA boundary will be reassessed to include the Mill Street diffusion tube site.

The monitoring site locations are representative of relevant public exposure.

Automatic Monitoring Data

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)
AQMA 2	Chipping Norton	Y	88.5	39.8

Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>
				2008
AQMA 2	Chipping Norton	Y	88.5	5 ($178.6 \mu\text{g}/\text{m}^3$)

Diffusion Tube Monitoring Data

The full dataset (monthly mean values) is at Appendix 1.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Annual Mean NO₂ / µg/m³ (2008) in Witney (Bias Adjusted)

Location	Annual Mean NO ₂ / µg/m ³		Data Capture (%)	Difference %
	2007	2008		
Bridge Street	50	43	100	-14
Mill Street	43	42	100	-2

Annual Mean NO₂ / µg/m³ (2008) in Chipping Norton (Bias Adjusted)

Location	Annual Mean NO ₂ / µg/m ³		Data Capture (%)	Difference %
	2007	2008		
Horsefair	70	59	91.7	-16
31 High Street	43	43	100	0
Co-Location 1	44	40	100	-9
Co-Location 3	40	41	100	+3
Co-Location 2	45	38	100	-16

All of the above are located within AQMAs but note that Witney, 'Mill Street' is marginally outside the current AQMA boundary which will be re-designated following further data collection from a newly installed continuous monitor.

All other areas were within the objective limits. Furthermore, with the exception of the third co-located diffusion tube, all other sites were more than one standard deviation (SD = 4 i.e. less than 36 µg/m³) below the objective limit.

See Appendix 7 for % data capture of other Diffusion Tubes

Andrew Ward has examined the results from monitoring in the district. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Andrew Ward confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Andrew Ward confirms that there are no new/newly identified busy streets where people may spend 1 hour or more.

3.3 Roads with a High Flow of Buses and/or HGVs.

Andrew Ward confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Andrew Ward confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

The proposed Cogges Link Road in Witney will provide a significant by-pass around the Witney AQMA and should significantly reduce traffic density within the AQMA. Pre and post construction air quality data will be available from the newly installed continuous monitoring station. The design and positioning of the new road should not adversely affect air quality along its route as residential properties are located well away from the carriageway.

Andrew Ward has assessed new/newly identified roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Traffic flow data from Oxfordshire County Council, 'Oxfordshire Traffic Flows 2008' (Table B – Summary of Manual Classified Counts), was assessed and no areas of concern were identified.

Andrew Ward confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Andrew Ward confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

RAF Brize Norton is a military base involved in the transportation of freight and personnel. It is located within 1000m of residential properties and therefore the significance with regard to local air pollution has to be investigated.

Above 10 million passengers per year is considered significant which is equivalent to 1,000,000 tonnes of freight.

Since the last review and assessment (USA 2006) operations at RAF Brize Norton have decreased marginally and the table below provides the passenger and freight figures for 2008. Intervening years have been similarly low (compared with commercial civilian airports).

Passenger and Freight Movement from RAF Brize Norton.

Year 2008	Brize Norton Passengers	Brize Norton Freight Kg
Total	119,973	17,186,580

100,000 tonnes = 1 million passengers per annum (mppa)

17,186,580Kg = 17,186.580 Tonnes freight = 0.17mppa

Total passenger per year = 0.12 + 0.17 = 0.29mppa

This has decreased from 0.37mppa at the last review and assessment round (2006) and still falls substantially below the 10mppa threshold that requires a more detailed assessment. Because of the concern that VC10's in particular are more polluting than the average modern commercial aircraft, Defra were contacted previously to discuss these load factors results. They advised that these results were enough below the threshold not to warrant further investigation. They suggested however that we undertake some monitoring in the vicinity of the military base. This was reported in subsequent annual reviews. Diffusion tube monitoring was conducted over a 6 month period and the results were consistent with other background levels in the vicinity.

Andrew Ward confirms that there are no airports in the Local Authority area other than RAF Brize Norton as detailed above.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Andrew Ward confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Andrew Ward confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Andrew Ward confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

Fine Particles – PM10's

PM10's are all particles less than 10 µm (1×10^{-6} m) in size.

Dust Monitoring for Neighbourhood Nuisance

Burford Quarry, previously operated by Enstone Breendon is now operated by Smith and Sons of Blechington. Within the quarry is a Cement and Lime process permitted under Part 1 of the Environmental Protection Act 1990. As part of the planning consent, a range of dust monitoring and control measures were required. There was a period (between July 2005 and March 2006) of PM10 emission monitoring using an OSIRIS portable infra red light scattering device located near residential property. The results of this monitoring showed that the objective limit was exceeded over 4 days of the 99 days of monitoring. As a proportion this translated to a rate of 15 days exceedence of the 24-hour objective limit per year. The objective states that 35 days are permissible and therefore it was predicted that the objective would be complied with at this location.

The site operators have conduct dust monitoring around the site using a Frisbee Dust Gauge and monitoring using the OSIRIS has discontinued. The general dust monitoring carried out around the site on behalf of the company shows concentrations that fall within the recommended limit of 200mg/m²/day.

The site currently does not generate complaints of dust nuisance during the continuing operations and dust monitoring levels arising from the quarry site are within acceptable limits.

One further site, Whitehill Quarry, Burford, operated by the same company as Burford Quarry, is currently assessing dust monitoring levels (which are presently within acceptable limits) prior to applying for a Permit to operate – this is pending favourable economic factors.

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Neil Shellard has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Andrew Ward confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Andrew Ward confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Andrew Ward confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Andrew Ward confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Andrew Ward confirms that there are no biomass combustion plants in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

Andrew Ward confirms that there are no biomass combustion plants in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

Andrew Ward confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Andrew Ward confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

No additional exceedences have been identified, other than those within or adjacent to existing AQMAs.

There are no significant trends to report.

Monitoring has identified one potential exceedence at a relevant location outside of existing AQMAs. 'Park Street', Bladon, will be subject to further monitoring by diffusion tube. This location will not be subject to Detailed Assessment at this stage.

8.2 Conclusions from Assessment of Sources

The proposed Witney Cogges Link Road will not adversely affect Air Quality along its route and a significant beneficial improvement within the Witney AQMA is expected.

Located within Witney town centre there is a major combined residential and commercial development scheduled for completion in October 2009. 'Marriotts Walk' will include major retail and recreational outlets and some 140 residences.

The development occupies a site previously designated as public car parking and the 480 car parking spaces which have been built over will be replaced by 590 spaces within a multi storey car park which will also incorporate a further 30 spaces reserved for residents. An adjacent area of Woodford Way provides a further 250 spaces though this may not be a permanent facility.

This development is assessed as having no material impact on traffic flow and density within or through the AQMA.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified the need to proceed to a Detailed Assessment for any pollutant.

The Updating and Screening Assessment has identified the need for continuing (additional) monitoring at 'Park Street', Bladon and a change to the existing monitoring programme (re-location) of this site.

A change may be required to the existing Witney AQMA to modify the boundary to incorporate 'Mill Street'. This will be instigated once reliable data has been accumulated from the newly installed continuous monitoring station.

The Draft Action Plan for the Witney AQMA will be written with the assumption that the CLR will proceed as per the Planning Approval. This is due for submission in the last quarter of 2009.

Progress regarding the Action Plan for the Chipping Norton AQMA will be reviewed in the last quarter of 2009.

The next course of action will be to submit the 2010 Progress Report.

9 References

WODC Data Ratification - *'Continuous and Diffusion Tube Monitoring Report'*
June 2009 – AECOM Ltd

Oxfordshire Traffic Flows 2008 - *'Table B – Summary of Manual Classified Counts'*
Oxfordshire County Council,

Appendices

Appendix 1: QA/QC Data

Appendix 2: AQMA 1 - Witney

Appendix 3: AQMA 2 - Chipping Norton

Appendix 4: AQMA 1 - Witney - Continuous Monitor

Appendix 5: AQMA 2 - Chipping Norton - Continuous Monitor

Appendix 6: Continuous Monitor Data - Chipping Norton - 2008

Appendix 7: Diffusion Tube Survey Results Summary - 2008

Appendix 8: District Map of Diffusion Tube Locations

Appendix 1: 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 version 05 / 09, where the bias adjustment figure provided for the participating laboratories for the period 2008 is 0.79. A Bias Adjustment Factor of 0.74 was calculated using the AEA Spreadsheet for Calculation of Diffusion Tube Precision and Accuracy and the raw NO₂ concentrations measured by the CN Co Location study diffusion tubes.

Table 6: Calculation of Bias Adjustment Factor for Diffusion Tube Correction

Checking Precision and Accuracy of Triplicate Tubes

From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	January		45.8	47.1	48.1	47	1.2	2	2.9	31.8	91.7	Good	Good
2	February		66.1	67.6	66.2	67	0.8	1	2.1	56.8	92.1	Good	Good
3	March		44.2	43.7	42.7	44	0.8	2	1.9	33.8	95.1	Good	Good
4	April		56.5	51.4	57.1	55	3.1	6	7.8	41.2	92.4	Good	Good
5	May		85.7	85.3	83.0	85	1.5	2	3.6	62.9	92.6	Good	Good
6	June		47.5	38.0	44.6	43	4.9	11	12.1	30.3	91.0	Good	Good
7	July		42.9	47.3	46.2	45	2.3	5	5.7	35.5	93.2	Good	Good
8	August		39.7	39.3	38.9	40	0.3	1	0.8	25.8	91.2	Good	Good
9	September		56.4	57.6	60.3	58	2.0	3	5.0	51.6	89.5	Good	or Data Capture
10	October		48.5	44.5	46.5	47	2.0	4	5.0	35.4	89.4	Good	Good
11	November		58.1	46.4	63.1	56	8.6	15	21.3	34.8	80.9	Good	Good
12	December		63.1	51.0	63.1	59	7.0	12	17.4	44.5	71.9	Good	or Data Capture
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID:

Accuracy (with 95% confidence interval)

without periods with CV larger than 20%

Bias calculated using 10 periods of data

Bias factor A **0.74 (0.69 - 0.79)**

Bias B **36% (26% - 45%)**

Diffusion Tubes Mean: **53 µgm⁻³**

Mean CV (Precision): **5**

Automatic Mean: **39 µgm⁻³**

Data Capture for periods used: **91%**

Adjusted Tubes Mean: **39 (36 - 42) µgm⁻³**

Precision **12 out of 12 periods have a CV smaller than 20%**

Accuracy (with 95% confidence interval)

WITH ALL DATA

Bias calculated using 10 periods of data

Bias factor A **0.74 (0.69 - 0.79)**

Bias B **36% (26% - 45%)**

Diffusion Tubes Mean: **53 µgm⁻³**

Mean CV (Precision): **5**

Automatic Mean: **39 µgm⁻³**

Data Capture for periods used: **91%**

Adjusted Tubes Mean: **39 (36 - 42) µgm⁻³**

Overall survey -> Good precision Poor Overall DC

(Check average CV & DC from Accuracy calculations)

Jaume Targa
jaume.targa@aeat.co.uk
Version 03 - November 2006

Discussion of Choice of Factor to Use

Both local and national Bias Adjustment Factors were available but the Factor from Local Co-location Studies has been used because of the location within the Chipping Norton AQMA and the proximity of 4 additional diffusion tubes in the immediate area of concern.

For two annual quarters of data collection the data capture rate fell below 90%, reducing the annual data capture rate at 88.5%. Though marginally below the UK NAQS recommended capture rate of 90% this still exceeds the EU Directive for NO₂ which specifies a 75% data capture threshold for assessing compliance with limit and guidance values. The reduced capture rate was due to equipment outages and the data captured despite this was assessed to be reliable and representative.

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 is carried out by Enviro Technology plc. All the data is ratified and validated by AECOM Limited (See Appendix 6).

QA/QC of diffusion tube monitoring

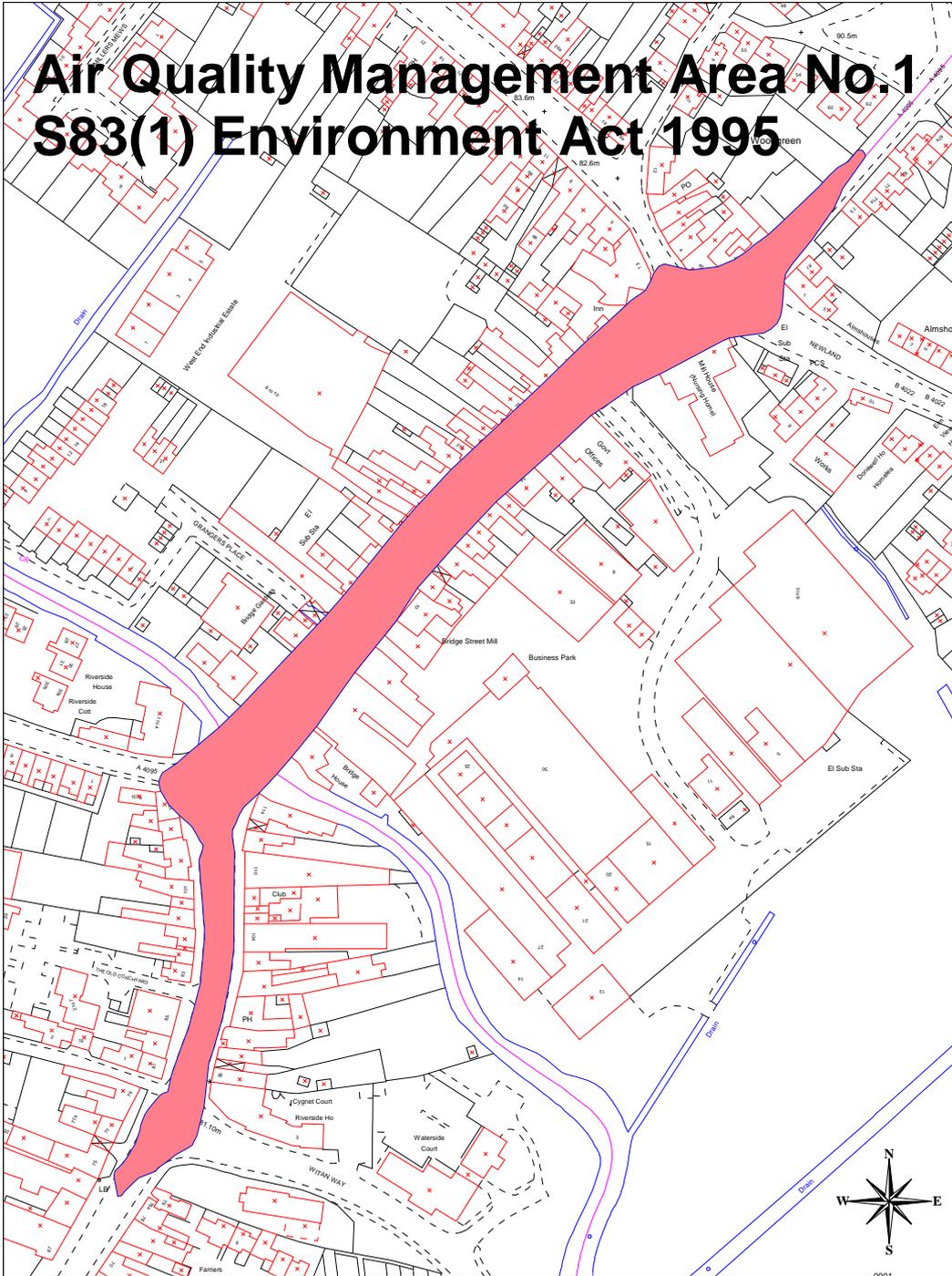
See Appendix 7 and the detailed data below for information regarding diffusion tube precision.

Table 5: Diffusion Tube Monthly Mean NO₂ Concentrations (µg/m³; bias-adjusted)

Town/village	Location	Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Mean
Witney	Bridge Street	R	48.6	61.5	40.8	19.0	73.0	38.0	38.7	33.0	47.4	42.6	50.5	17.2	42.5
	Mill Street	R	47.2	45.8	36.2	37.4	40.6	26.6	40.6	41.1	40.3	52.4	52.5	45.1	42.1
	Early Rd.	B	19.2	27.2	11.5	15.2	13.5	6.7	9.8	10.7	12.4	18.3	22.2	22.9	15.8
	Abbey Rd.	B	14.4	26.5	-	14.9	13.7	5.6	9.6	9.0	13.8	17.0	21.8	24.5	15.5
Burford	High St	R	35.1	35.1	32.8	33.8	25.5	31.9	32.4	33.7	28.0	40.4	39.4	33.7	33.5
	93 High Street	R	29.0	37.1	25.5	25.1	-	23.8	27.3	21.8	32.1	30.9	-	33.7	28.6
	Frithem Cl	B	15.4	22.6	12.3	12.4	10.4	7.7	7.0	8.1	10.6	14.8	19.5	15.7	13.0
	Orchard Rise	B	11.5	17.8	9.6	10.5	6.6	5.8	6.7	5.2	8.5	12.1	16.4	15.5	10.5
Carterton	Brize Norton Rd	R	22.5	35.5	18.8	21.5	25.7	13.2	12.4	10.2	18.1	21.6	26.6	29.7	21.3
	Upavon Way	R	22.1	30.3	17.9	17.1	-	-	15.2	13.4	-	22.2	27.1	27.4	21.4
	Gamer Close	B	14.5	23.7	10.3	12.1	9.9	5.6	5.8	6.7	7.9	13.2	16.0	11.2	11.4
	Oakfield Road	B	14.1	25.9	11.8	12.0	13.8	6.5	8.1	7.0	11.3	12.3	17.5	21.2	13.5
	RAF Brize Norton	B	16.1	27.2	-	-	-	-	-	-	-	-	-	-	21.7
Charbury	Alvescot	B	11.0	18.6	8.7	-	-	-	-	-	-	-	-	-	12.7
	Dyers Hill	R	16.9	21.5	14.4	15.8	-	-	10.4	11.2	14.5	18.9	20.8	20.9	16.5
	Nineacres Lane	R	16.1	23.8	13.0	14.3	17.5	9.6	10.4	9.8	11.0	16.1	20.9	16.1	14.9
	Tanners Close	B	10.9	17.6	9.2	8.0	10.3	4.1	5.6	5.6	8.7	11.0	16.1	17.1	10.3
	The Green	B	13.2	18.9	7.9	9.0	10.1	5.8	6.4	6.3	8.8	11.4	17.4	16.6	11.0
Chipping Norton	Horsefair	R	52.9	61.9	65.0	66.2	45.4	61.8	60.9	59.7	59.2	65.4	-	54.8	59.4
	31 High Street	R	54.4	54.7	35.1	43.7	48.8	33.2	39.6	35.6	37.5	45.7	45.1	40.2	42.8
	CN Co location	R	33.9	48.9	32.7	41.8	63.4	35.2	31.7	29.4	41.7	35.9	43.0	46.7	40.4
	CN Co location	R	34.9	50.0	32.3	38.0	63.1	28.1	35.0	29.1	42.6	32.9	34.3	37.7	38.2
	CN Co location	R	35.6	49.0	31.6	42.3	61.4	33.0	34.2	29.5	44.6	34.4	46.7	46.7	40.7
	5 Horsefair	R	24.4	34.6	20.7	28.3	35.7	22.2	22.3	20.5	22.2	28.4	31.2	26.3	26.4
	7 Horsefair	R	24.8	36.8	26.1	29.9	43.0	21.0	21.8	21.5	22.1	26.1	33.2	29.4	28.0
	West Street	R	27.2	34.3	35.4	33.1	27.7	29.3	25.6	20.4	27.3	33.9	40.6	36.9	31.0
	Coopers Close	B	16.4	23.8	-	11.8	9.8	7.5	-	8.3	10.3	14.8	-	21.8	13.8
	Withers Way	B	13.1	22.0	7.5	12.0	13.2	5.1	6.4	5.9	11.6	11.0	17.4	13.6	11.5
Eynsham	Acre End Street	R	-	23.3	14.3	16.1	20.6	-	-	8.9	16.0	17.1	-	23.4	17.5
	Mill Street	R	14.4	23.0	13.8	16.3	17.7	7.3	9.5	8.6	12.7	16.1	16.4	17.5	14.4
	Orchard Close	B	12.5	22.6	12.2	7.3	13.0	6.5	6.8	6.9	11.2	12.7	17.8	19.1	12.4
	Shakespeare Rd	B	12.9	24.4	14.3	15.3	16.5	8.2	8.4	7.3	13.9	14.9	17.5	21.9	14.6

Town/village	Location	Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Mean
Woodstock	Oxford Street	R	24.7	40.6	28.9	33.5	45.4	27.2	24.9	18.3	32.9	23.9	34.9	37.4	31.0
	Oxford Street(2)	R	29.8	39.0	28.9	34.0	33.4	26.0	31.7	26.2	30.6	33.5	40.0	37.4	32.5
	The Ley	B	12.5	20.1	10.2	11.5	11.0	5.1	7.7	7.4	6.8	9.8	17.0	18.5	11.5
	Westland Way	B	15.4	22.4	12.8	11.7	12.0	6.5	7.3	6.4	10.7	13.9	21.1	21.8	13.5
Bladon	Grove Road	R	18.8	26.5	15.4	20.7	-	13.0	17.2	10.9	19.5	22.7	27.9	27.6	20.0
	Grove Road(2)	R	30.2	36.6	27.5	25.2	26.6	18.5	22.7	19.1	21.8	29.2	38.3	26.5	26.8
	Heath Lane	B	15.2	23.0	11.4	12.7	11.5	7.0	7.4	6.4	10.3	14.3	19.7	22.6	13.4
	Park Close	B	13.1	19.5	9.5	10.1	9.5	6.0	9.1	6.3	8.7	11.3	16.1	18.2	11.5
	Park Street	R										37.9	37.1	42.6	39.2

Air Quality Management Area No.1 S83(1) Environment Act 1995



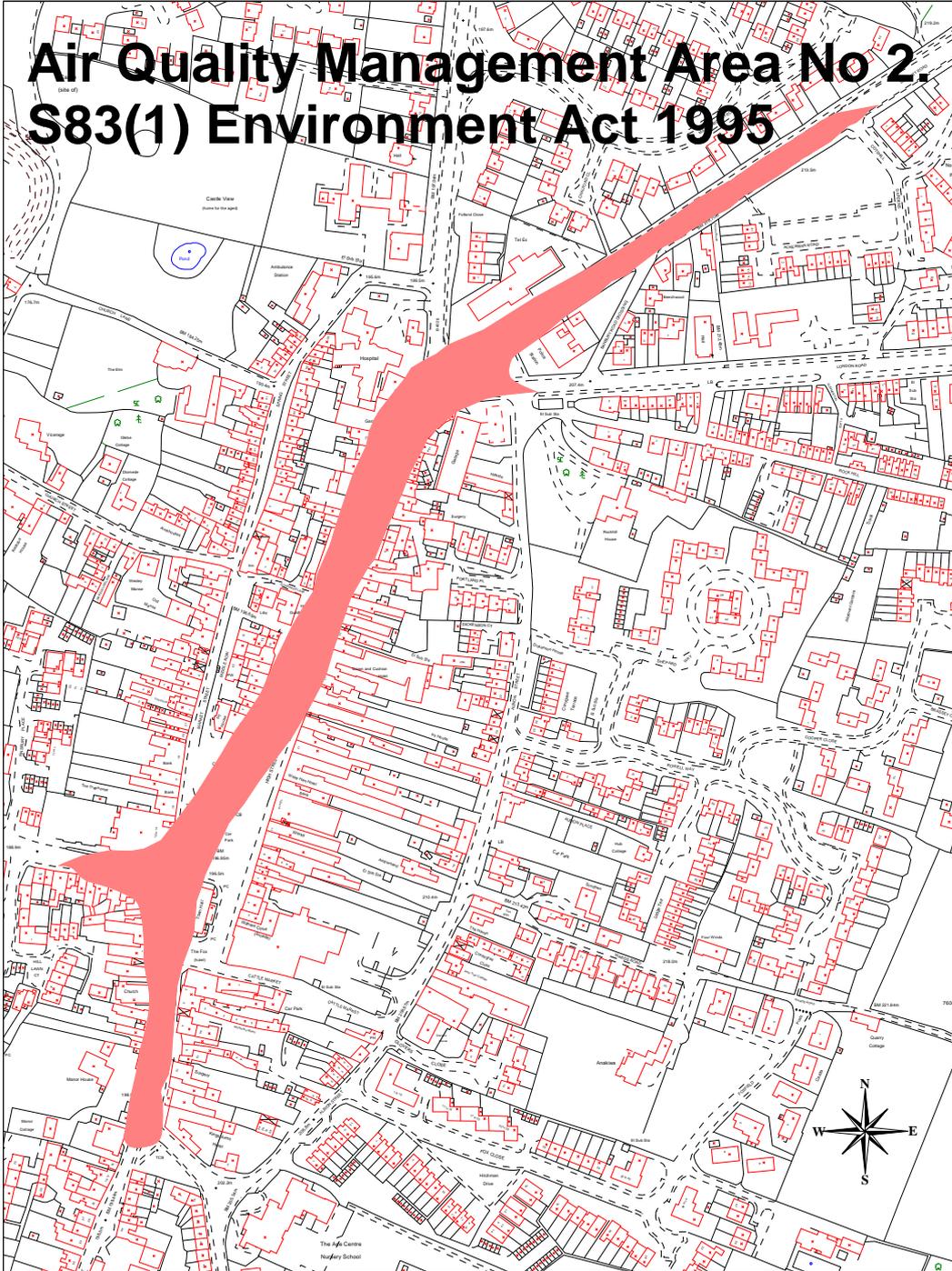
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Map Title:	Air Quality No.1 Witney
Department:	
Map No:	
Date: 25:04:05	Scale: 1:1800

Appendix 2

Air Quality Management Area No 2. S83(1) Environment Act 1995



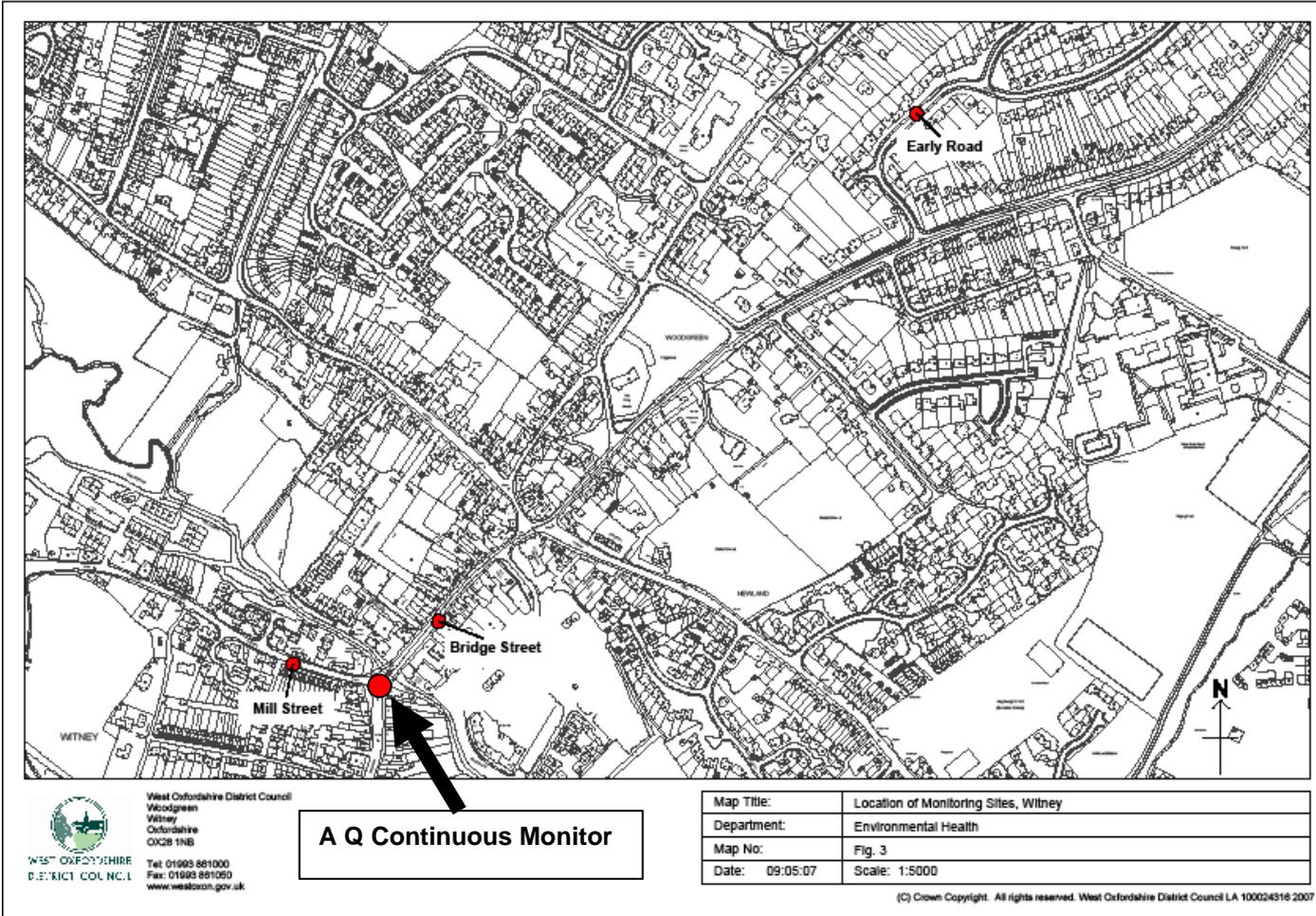
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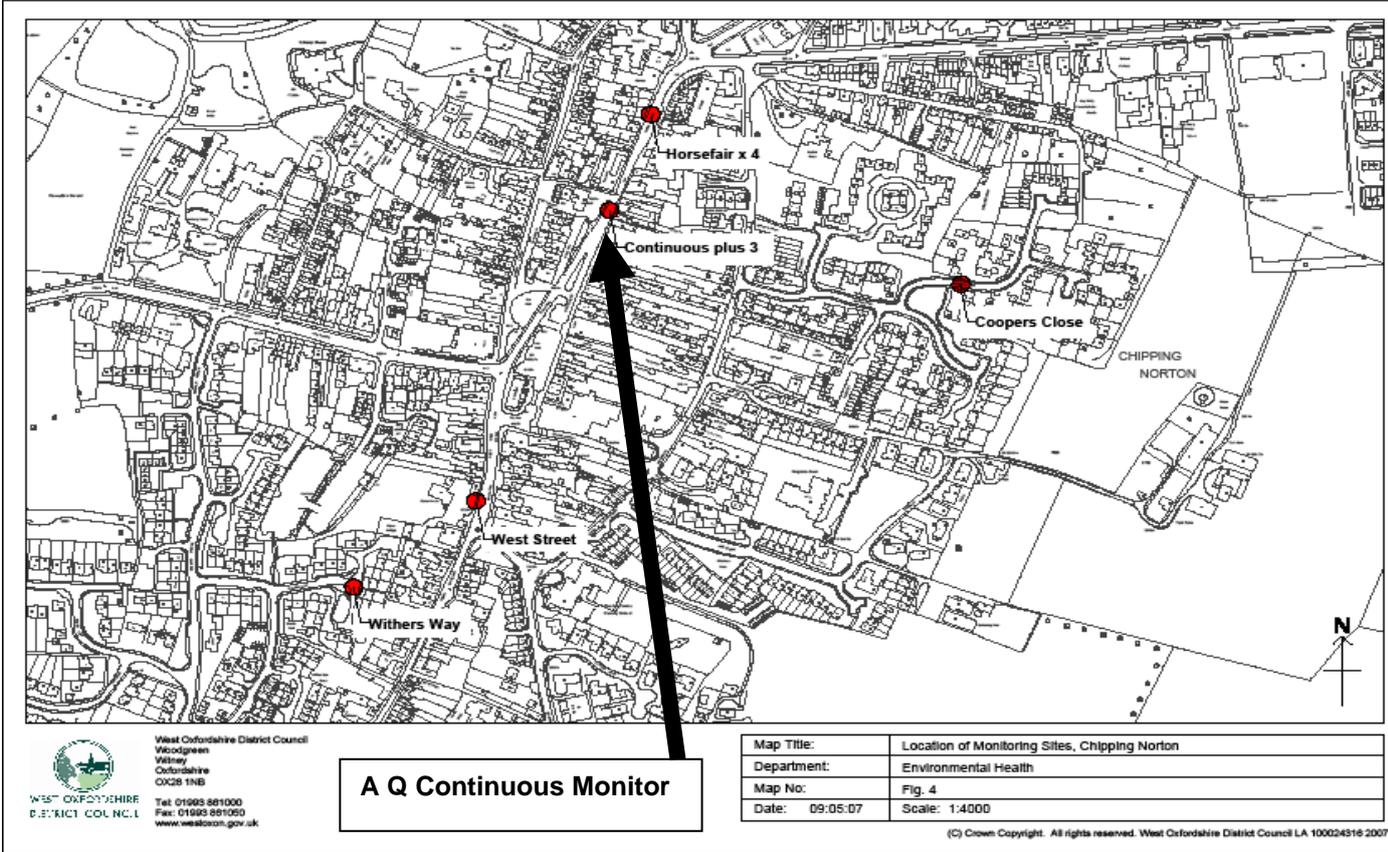
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Map Title:	Air Quality Management Area No 2. Chipping Norton
Department:	
Map No:	
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Appendix 3



Appendix 4



Appendix 5

Table 2: Summarised Continuous Monitoring Data, Chipping Norton, 2008

Period	Mean Pollutant Concentration ($\mu\text{g}/\text{m}^3$)			Data Capture (%)	No. of Hourly Exceedences
	NO ₂	NO _x	NO		
1 st Quarter 2008	40.0	92.4	34.1	93.8%	3
2 nd Quarter 2008	45.1	93.1	31.3	93.7%	0
3 rd Quarter 2008	36.0	80.4	28.9	85.1%	2
4 th Quarter 2008	37.6	86.3	31.7	81.6%	0
Annual	39.8	88.3	31.6	88.5%	5 (178.6)^A

Note: ^A Data capture for 2008 was less than 90%, therefore 99.8th percentile of hourly mean NO₂ concentrations was calculated and is presented in brackets (units $\mu\text{g}/\text{m}^3$).

Five exceedences of the 200 $\mu\text{g}/\text{m}^3$ hourly mean objective were recorded at the monitoring site during 2008. This number of exceedences is within the permitted 18 hourly exceedences stipulated in the hourly mean NO₂ objective. The maximum hourly mean concentration of 246.0 $\mu\text{g}/\text{m}^3$ occurred on 22/01/2008 at 08:00 GMT.

The dates and times of the hourly exceedences during the first quarter were:

- 22/01/2008 08:00 (246.0 $\mu\text{g}/\text{m}^3$);
- 12/02/2008 08:00 (203.2 $\mu\text{g}/\text{m}^3$); and
- 13/02/2008 09:00 (229.8 $\mu\text{g}/\text{m}^3$).

Two hourly exceedences were monitored during the third quarter of 2008:

- 19/09/2008 07:00 (238.7 $\mu\text{g}/\text{m}^3$); and
- 20/09/2008 16:00 (221.0 $\mu\text{g}/\text{m}^3$).

Data capture during 2008 (discussed further below) was less than the 90% threshold required for Local Authority Review and Assessment work. In accordance with LAQM.TG(09) the 99.8th percentile of hourly mean NO₂ concentrations was calculated for comparison with the hourly exceedences objective for NO₂. The calculated 99.8th percentile NO₂ concentration was 178.6 $\mu\text{g}/\text{m}^3$, which is less than the 200 $\mu\text{g}/\text{m}^3$ limit set out in the objective.

Time series plots of hourly mean NO_x, NO and NO₂ concentrations at Chipping Norton can be found in Appendix A.

Data capture statistics are presented in Table 2. The EU Directive for NO₂ (85/203/EEC) specifies a 75% data capture threshold for assessing compliance with limit and guidance values. If the 75% threshold is not achieved, the data are still useful, but less precise than required for formal assessment of compliance with the limit and guide values. The UK NAQS (National Air Quality Strategy) recommends a data capture rate of 90% for ratified data as a target for monitoring for Local Authority Review and Assessment work.

A data capture rate of 88.5% was achieved for the whole of 2008 at Chipping Norton. There were two notable periods of data loss:

- 9th September 2008 to 17th September 2008, which resulted in 69.5% data capture for the month of September.
- 28th November 2008 to 8th December 2008 – a routine site visit on 3rd December revealed a problem with the analyser. Examination of the raw data suggested that the malfunction occurred on 28th November and so all data between this date and the date of repair were removed.

Table 3: WODC Diffusion Tube Survey Results Summary, 2008

Town/village	Location	Type ^A	Annual Mean NO ₂ Concentration (Bias-adjusted) ^B	Data Capture (%)
Witney	Bridge Street	R	42.5	100.0
	Mill Street	R	42.1	100.0
	Early Rd.	B	15.8	100.0
	Abbey Rd.	B	15.5	91.7
Burford	High St	R	33.5	100.0
	93 High Street	R	28.6	83.3
	Frethem Cl	B	13.0	100.0
	Orchard Rise	B	10.5	100.0
Carterton	Brize Norton Rd	R	21.3	100.0
	Upavon Way	R	21.4	75.0
	Garner Close	B	11.4	100.0
	Oakfield Road	B	13.5	100.0
	RAF Brize Norton	B	21.7	16.7
	Alvescot	B	12.7	25.0
Charlbury	Dyers Hill	R	16.5	83.3
	Nineacres Lane	R	14.9	100.0
	Tanners Close	B	10.3	100.0
	The Green	B	11.0	100.0
Chipping Norton	Horsefair	R	59.4	91.7
	31 High Street	R	42.8	100.0
	CN Co location	R	40.4	100.0
	CN Co location	R	38.2	100.0
	CN Co location	R	40.7	100.0
	5 Horsefair	R	26.4	100.0
	7 Horsefair	R	28.0	100.0
	West Street	R	31.0	100.0
	Coopers Close	B	13.8	75.0
	Withers Way	B	11.5	100.0
Eynsham	Acre End Street	R	17.5	66.7
	Mill Street	R	14.4	100.0
	Orchard Close	B	12.4	100.0
	Shakespeare Rd	B	14.6	100.0
Woodstock	Oxford Street	R	31.0	100.0
	Oxford Street(2)	R	32.5	100.0
	The Lay	B	11.5	100.0
Bladon	Westland Way	B	13.5	100.0
	Grove Road	R	20.0	91.7
	Grove Road(2)	R	26.8	100.0
	Heath Lane	B	13.4	100.0
	Park Close	B	11.5	100.0
	Park Street	R (Temporary)	39.2	25.0

Notes: ^A Site type abbreviations – R = roadside; B = background.

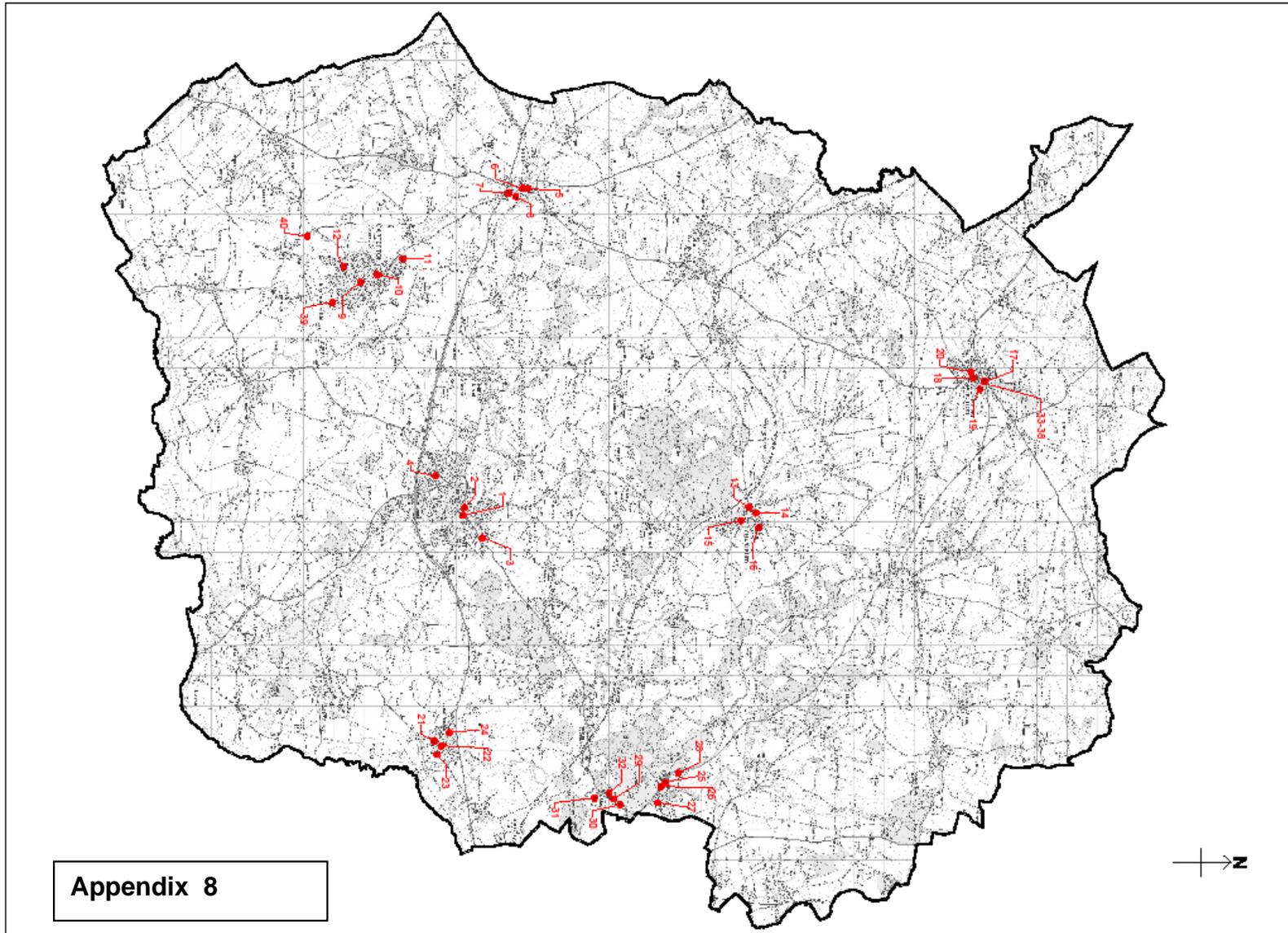
^B Bias Adjustment Factor of 0.74 was calculated using the AEA Spreadsheet for Calculation of Diffusion Tube Precision and Accuracy⁵ and the raw NO₂ concentrations measured by the CN Co Location study diffusion tubes. The completed spreadsheet and calculated bias adjustment factor is reproduced in Appendix B.

⁵ <http://www.airquality.co.uk/lagm/tools.php>. Accessed 31.05.2009.

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Appendix 8

Map Title:	Diffusion Tube Locations
Department:	Environmental Health
Map No.:	Fig. 5
Date: 09-05-07	Scale: 1:120000