



Winchester
City Council

2010 and 2011 Air Quality Progress Report for Winchester City Council

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

June 2011

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Executive Summary

This report provides updated information further to Winchester City Council's Updating and Screening Assessments (USA) 2009. It presents all monitoring data collected within the calendar years 2009 and 2010 and assesses implications of major developments since 2009.

It has not identified any new or significantly altered road traffic, industrial, commercial or domestic sources that need to be the subject of a Detailed Assessment. This together with the most recent air quality data shows that the position detailed in the USA 2009 remains representative of the current air quality within Winchester's District.

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1 Introduction

1.1 Description of Local Authority Area

The district of Winchester lies in the county of Hampshire, in South East England. Winchester City lies in the north of the district. There are a number of small villages and towns in the district, the biggest of which are Bishop's Waltham in the south and New Alresford in the north east. The region is serviced by a number of roads including the M3 motorway connecting Winchester to both London and Southampton; the A31 which travels to the east from Winchester City and the A34 which travels to the north from Winchester City. Road traffic is the main source of air pollution in Winchester.

1.2 Purpose of Progress Report

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

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	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	Maximum daily 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

1.4 Summary of Previous Review and Assessments

Winchester City Council has carried out review and assessment reports assessing air quality in the district. These are summarised below:

- **Winchester City Council Stage 1 Review (December 1998)** concluded that a further assessment was required for carbon monoxide, nitrogen dioxide and PM₁₀.
- The resulting **Winchester City Council Stage 2/3 Review (August 2000)** concluded that carbon monoxide, nitrogen dioxide and PM₁₀ concentrations would comply with the relevant objectives across the whole district, however, further assessment of nitrogen dioxide concentrations at properties close to main roads in the town centre was requested by Defra. The report included a dispersion modelling study (AAQulRE model) of South Hampshire performed by consultants CES.
- **Winchester City Council Air Quality Review and Assessment (Additional Assessment of Nitrogen dioxide levels within Winchester Town Centre) (October 2001)** was carried out in response to Defra's comments. It concluded that a small number of properties close to busy city centre roads may have nitrogen dioxide concentrations higher than the background site and dispersion modelling should be carried out to assess these locations further. In response to this, Defra advised that an AQMA should be declared, followed by dispersion modelling.
- **Casella Stanger & Winchester City Council – Air Quality Review and Assessment - Detailed Dispersion Modelling (July 2003)** outlined detailed dispersion modelling of Winchester town centre carried out using the BREEZE dispersion model. Nitrogen dioxide concentrations were predicted to exceed the objectives. The report also assessed particulates, and concluded that the model performed poorly therefore further modelling was recommended, with a model which would take better consideration of topographical effects.
- **Winchester City Council Air Quality Review, Updating and Screening Assessment (2003)** took account of the Technical Guidance LAQM TG(03), issued by Defra in early 2003. This report concluded that additional monitoring was required for sulphur dioxide at the Alresford Station of the Watercress Steam Railway Line and that the conclusions from previous review and assessment reports remained valid. An AQMA in Winchester City Centre for annual mean nitrogen dioxide and 24-hour mean PM₁₀ was declared in November 2003.
- **Casella Stanger – Winchester City Council – Air Quality Review and Assessment – ADMS Roads update (August 2004)**. Modelling carried out in the July 2003 report was updated using ADMS roads which took better consideration of topographical effects. It was

concluded that the level of exceedences for particles was less than that for nitrogen dioxide and that any action plan aimed at achieving the nitrogen dioxide standard should ensure compliance with the 24-hour particle standard. It was recommended that additional monitoring sites measuring particulates should be considered to ensure objectives are being met.

- **Winchester City Council – Detailed Assessment of sulphur dioxide levels from the Hampshire Watercress Line (February 2005)** monitored the levels of sulphur dioxide at the Alresford railway station platform from the steam engines running on the heritage railway between Alresford and Alton. It concluded that pollution levels were in compliance with all the sulphur dioxide air quality objectives and therefore an AQMA was not required.
- **Winchester City Council – Air Quality Progress Report (2005)** concluded that air quality objectives were likely to be met across the district for all pollutants with the exception of nitrogen dioxide adjacent to the M3 in the Shawford to Otterbourne area. This issue was scheduled to be considered further in the 2006 USA.
- **Winchester City Council – Air Quality Action Plan (2006)** provided a detailed assessment of nitrogen dioxide levels within Winchester City Centre Air Quality Management Area. It identified 21 actions to reduce nitrogen dioxide concentrations as far as practicable.
- **Winchester City Council Updating and Screening Assessment 2006** concluded that exceedences of nitrogen dioxide objectives within the AQMA still existed and the boundaries did not need to be changed. Monitoring of nitrogen dioxide at Otterbourne suggested the objective was being exceeded. Concentrations of PM₁₀ met the annual and 24-hour objective at all monitoring stations, therefore the action plan would now focus solely on nitrogen dioxide, however PM₁₀ would continue to be monitored at all locations. Defra suggested consideration be given to revoking the PM₁₀ 24-hour mean AQMA if objectives were being met.
- **Winchester City Progress Report 2007** outlined the most recent monitoring results. Results in 2006 were similar to those in preceding years with concentrations on nitrogen dioxide meeting the objectives except at locations within the AQMA. Concentrations of PM₁₀ met the 24-hour and annual mean objectives at all monitoring locations. Three additional PM₁₀ monitors were implemented in Winchester city centre to better assess PM₁₀ concentrations. One of these was co-located with the existing background PM₁₀ monitor, and the remaining two were implemented at roadside locations within the AQMA boundary. Additional nitrogen dioxide monitoring was carried out in the Compton to Otterbourne area adjacent to the M3. No new relevant industrial processes or local developments were identified.
- **Winchester City Progress Report 2008** confirmed that 2007 results were similar to those in previous years, although slightly lower than those in 2006. The Compton to Otterbourne diffusion tube study was continued in 2007. Results were below the objectives at all locations except diffusion tube monitoring site 4, where there was no relevant exposure. The air quality was therefore deemed acceptable in the

Otterbourne area and the monitoring study was discontinued. Monitoring however continued at diffusion tube monitoring site 4 to assess trends in the area.

- **Winchester City Updating and Screening Assessment 2009.** Concluded that exceedences of nitrogen dioxide objectives within the AQMA still existed and the boundaries did not need to be changed. Concentrations of PM₁₀ continued to meet the annual and 24-hour objective at all monitoring stations. No new or significantly altered road traffic, industrial, commercial or domestic sources that need to be subjected to a Detailed Assessment was identified.

Map of AQMA Boundaries

See Appendix B.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Winchester City Council operate two permanent automatic monitoring stations including a roadside site located at Echo Offices, St Georges Street and an urban background site located at Godson House, Friarsgate. CO monitoring and the use of three Osiris PM₁₀ monitoring stations ceased in 2009 and no new sites have been commissioned. Details of the monitoring sites are provided in Table 2.1. Figures showing the locations of all monitoring sites are presented in Appendix B and the QC:QA performed is detailed in Appendix A. All real time instruments achieved a collection efficiency of greater than 92 percent for both 2009 and 2010.

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
Echo Offices	Roadside	448215, 129510	PM ₁₀ , NO ₂	Y	N	2.75	Y
Godson House	Urban background	448509, 129539	PM ₁₀ , NO ₂	Y	N	N/A	N

2.1.2 Non-Automatic Monitoring Sites

Winchester City Council operates 28 nitrogen dioxide diffusion tube monitoring sites within Winchester City Centre and nine additional diffusion tube monitoring sites across the district. Details are provided in Table 2.2, and Table 2.3.

Locations of the diffusion tubes are provided in Appendix B and C and the QC:QA performed is detailed in Appendix A.

There is no non-automatic monitoring of any other pollutants carried out by Winchester City Council.

Table 2.2 Details of Non- Automatic Monitoring Sites (City Centre)

Site Name	Site Type	OS Grid Ref	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Site 1, 10 Eastgate St	Urban Centre	448563, 129391	Y	Y (0.1m)	5.55	Y
Sites 2, 3, 4 Greyfriars	Urban Centre	448566, 129560	Y	Y (0.1m)	9.70	Y
Site 5, Friarsgate	Urban Centre	448426, 129523	Y	Y (4.6m - at same distance from road)	4.25	Y
Site 6, Upper Brook St	Urban Centre	448227, 129504	Y	Y (9.2m - at same distance from road)	8.00	Y
Sites 7, 8, 9 Roadside Monitor	Roadside	448213, 129504	Y	N	3.10	N/A
Site 10, St Georges St TC	Urban Centre	448106, 129541	Y	Y (0.1m)	4.05	Y
Site 11, St Georges	Urban Centre	448163, 129512	Y	N	3.60	N/A
Site 12, Jewry St CH	Urban Centre	448046, 129692	Y	Y (0.1m)	4.05	Y
Site 13, Jewry St FK	Urban Centre	448029, 129666	Y	N	2.75	N/A
Site 14, Southgate St DV	Urban Centre	447918, 129413	Y	Y (0.1m)	3.65	Y
Site 15, Southgate St CH	Urban Centre	447929, 129409	Y	Y (0.1m)	2.10	Y
Site 16, Sussex St	Urban Centre	447804, 129741	Y	Y (2.4m further away from road)	3.60	Y
Site 17, City Road	Urban Centre	447963, 129875	Y	Y (0.1m)	6.55	N
Site 18, 74 Northwalls	Urban Centre	448234, 129794	Y	Y (10.2m - at same distance from road)	1.20	Y
Site 19, 15 Northwalls	Urban Centre	448297, 129789	Y	Y (0.3m further away from road)	3.70	Y
Site 20, Wales St	Urban Centre	448842, 129820	Y	Y (0.1m)	1.70	Y
Site 21, Alresford Rd	Other (M3)	449557, 129437	N	N	NA	NA
Site 22, Chesil St	Urban Centre	448679, 129068	Y	Y (0.1m)	1.30	Y
Site 23, Romsey Rd HL	Urban Background	447003, 129425	N	N	15.40	N/A
Site 24, Stockbridge Rd	Urban Centre	447534, 130006	Y	Y (10m - at same distance from road)	5.40	Y
Site 25, Andover Rd	Urban Centre	447745, 130456	Y	Y (0.5m further from road)	6.50	Y
Sites 26, 27, 28, Worthy Rd 1	Urban Centre	448092, 130411	Y	Y (3.7m further from road)	2.20	Y
Site 29, St Cross Rd	Urban Centre	447842, 129050	Y	Y (6m further from road)	2.40	Y
Site 30, Romsey Road	Urban Centre	447495, 129511	Y	Y (0.8m further from road)	1.10	Y
Site 31, Andover Rd	Urban Centre	447898, 130065	Y	Y(0.6 m further from road)	4.20	Y
Site 32, Bus Station	Other (Bus	448427,	Y	N	NA	N/A

Site Name	Site Type	OS Grid Ref	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
	station)	129401				
Site 33, Parchment St	Urban Background	448173, 129568	Y	Y	1.15	N

Table 2.3 Details of Non- Automatic Monitoring Sites (District wide)

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Site 1 High Street, Twyford	Roadside	448062,1 24372	NO ₂	N	NA	0.9m
Site 2 Southdown Road, Otterbourne	Other (M3)	446690, 124645	NO ₂	N	NA	NA
Site 3 Pellican Court, Hursley	Roadside	442835, 125162	NO ₂	N	NA	6.2
Site 4 Church Green Close, Kings Worthy	Other (A34)	449161, 132291	NO ₂	N	NA	NA
Site 5 West St., New Alresford	Roadside	458828, 132707	NO ₂	N	NA	Centre of Road
Site 6 Hambledon Rd., Denmean	Roadside	465915, 112047	NO ₂	N	NA	1.2
Site 7 Winchester Rd, Wickham	Roadside	457305, 111730	NO ₂	N	NA	0.8
Site 8 Winchester Rd, Bishops Waltham	Roadside	455331, 117399	NO ₂	N	NA	1.0
Site 9 Whiteley Ln, Whiteley	Other (M27)	453638, 182580	NO ₂	N	NA	NA

2.2 Comparison of Monitoring Results with Air Quality Objectives

Table 2.4 – Town Centre Diffusion tube results for 2009

LOCATION	GRID REF (SU)	2009 AVERAGE BIAS CORRECTED		PERCENTAGE CHANGE FROM 2008
		UG/M3	Percentage Collection	
Site 1, 10 Eastgate St	48563 29391	42.9	100	13.6
Site 2, Greyfriars 1	48566 29560	40.3	100	7.4
Site 3, Greyfriars 2	48566 29560	40.8	100	5.2
Site 4, Greyfriars 3	48566 29560	41.1	82	9.0
Site 5, Friarsgate	48426 29523	36.7	100	16.2
Site 6, Upper Brook St	48227 29504	44.0	82	-7.2
Site 7, Roadside Monitor	48213 29504	47.0	100	3.8
Site 8, Roadside Monitor	48213 29504	47.6	100	3.4
Site 9, Roadside Monitor	48213 29504	48.1	100	4.3
Site 10, St Georges St	48106 29541	61.4	100	6.3
Site 11, St Georges St Lad	48163 29512	69.8	91	15.0
Site 12, Jewry St	48046 29692	52.3	91	16.2
Site 13, Jewry St	48029 29666	59.5	100	7.7
Site 14, Southgate St	47918 29413	46.3	100	10.1
Site 15, Southgate St	47929 29409	58.9	100	21.1
Site 16, Sussex St	47804 29741	46.3	73	5.5
Site 17, City Road	47963 29875	45.8	100	18.3
Site 18, 74 Northwalls	48234 29794	49.0	91	9.2
Site 19, 15 Northwalls	48297 29789	40.0	100	13.7
Site 20, Wales St	48842 29820	38.5	82	16.3
Site 21, Alresford Rd	49557 29437	39.7	100	3.7
Site 22, Chesil St	48679 29068	44.7	100	7.9
Site 23, Romsey Rd (Hilliers)	47003 29425	29.7	82	23.1
Site 24, Stockbridge Rd	47534 30006	28.6	100	11.5
Site 25, Andover Rd	47745 30456	36.0	73	6.7
Site 26, Worthy Rd 1	48092 30411	34.7	91	9.3
Site 27, Worthy Rd 2	48092 30411	35.9	91	10.0
Site 28, Worthy Rd 3	48092 30411	37.5	82	12.9
Site 29, St Cross Rd	47842 29050	41.8	91	5.9
Site 30, Romsey Rd	47495 29511	66.5	91	25.2
Site 31, Andover Rd	47898 30065	42.8	100	11.9
Site 32, Bus Station	48427 29401	44.8	73	7.3

RED = Exceeds air quality objective

Table 2.5 – Town Centre Diffusion tube results for 2010

LOCATION	GRID REF (SU)	2010 AVERAGE BIAS CORRECTED		PERCENTAGE CHANGE FROM 2009
		UG/M3	Percentage Collection	
Site 1, 10 Eastgate St	48563 29391	37.5	89	-12.6
Site 2, Greyfriars 1	48566 29560	36.4	100	-9.6
Site 3, Greyfriars 2	48566 29560	37.6	100	-7.7
Site 4, Greyfriars 3	48566 29560	37.9	89	-7.8
Site 5, Friarsgate	48426 29523	34.0	100	-7.3
Site 6, Upper Brook St	48227 29504	41.8	100	-5.0
Site 7, Roadside Monitor	48213 29504	47.7	100	1.6
Site 8, Roadside Monitor	48213 29504	48.2	100	1.3
Site 9, Roadside Monitor	48213 29504	45.6	100	-5.2
Site 10, St Georges St	48106 29541	60.4	100	-1.7
Site 11, St Georges St Lad	48163 29512	56.0	100	-19.7
Site 12, Jewry St	48046 29692	49.3	100	-5.8
Site 13, Jewry St	48029 29666	52.9	100	-11.1
Site 14, Southgate St	47918 29413	41.9	89	-9.7
Site 15, Southgate St	47929 29409	48.3	100	-18.0
Site 16, Sussex St	47804 29741	39.8	89	-13.9
Site 17, City Road	47963 29875	40.1	100	-12.6
Site 18, 74 Northwalls	48234 29794	46.1	100	-5.9
Site 19, 15 Northwalls	48297 29789	33.3	100	-16.8
Site 20, Wales St	48842 29820	35.6	78	-7.4
Site 21, Alresford Rd	49557 29437	35.1	100	-11.6
Site 22, Chesil St	48679 29068	44.8	89	0.4
Site 23, Romsey Rd (Hilliers)	47003 29425	26.7	89	-10.1
Site 24, Stockbridge Rd	47534 30006	28.8	100	0.5
Site 25, Andover Rd	47745 30456	32.7	78	-9.3
Site 26, Worthy Rd 1	48092 30411	34.4	100	-1.0
Site 27, Worthy Rd 2	48092 30411	34.4	100	-4.2
Site 28, Worthy Rd 3	48092 30411	32.4	100	-13.7
Site 29, St Cross Rd	47842 29050	38.4	100	-8.0
Site 30, Romsey Rd	47495 29511	61.6	100	-7.3
Site 31, Andover Rd	47898 30065	38.2	100	-10.8
Site 32, Bus Station	48427 29401	43.3	89	-3.5

RED = Exceeds air quality objective

Table 2.6 – District Wide Diffusion tube results for 2009

GRID REF'S (SU)	48062 24372	46690 24645	42835 25162	49161 32291	58828 32707	65915 12047	57305 1173	55331 17399	53638 08258
LOCATION F= Building Façade R = Roadside location	Twyford (F)	Otterbourne (R)	Hursley (F)	Kings Worthy (F)	New Alresford (R)	Denmead (R)	Wickham (R)	Bishops Waltham (R)	Whiteley (R)
%AGE COLLECTION	100	100	100	100	80	90	100	100	100
BIAS CORRECTED in ug/m3	34.9	36.9	18.9	31.3	35.2	25.8	37.6	39.8	34.6
Percentage change from 2008	4.6	2.1	9.9	-8.5	1.0	13.1	10.7	11.1	8.9

Table 2.7 – District Wide Diffusion tube results for 2010

GRID REF'S (SU)	48062 24372	46690 24645	42835 25162	49161 32291	58828 32707	65915 12047	57305 1173	55331 17399	53638 08258
LOCATION F= Building Façade R = Roadside location	Twyford (F)	Otterbourne (R)	Hursley (F)	Kings Worthy (F)	New Alresford (R)	Denmead (R)	Wickham (R)	Bishops Waltham (R)	Whiteley (R)
%AGE COLLECTION	100	100	100	100	80	100	100	100	60
BIAS CORRECTED in ug/m3	34.5	33.9	18.4	28.5	35.3	23.0	34.0	35.3	31.9*
Percentage change from 2009	-1.2	-8.0	-2.9	-9.0	0.1	-10.9	-9.6	-11.1	-7.9

* Poor
Collection
Rate – Result
adjusted.

Table 2.8 – Town Centre Real-time monitoring results, comparison with short term air quality objectives

Year	Exceedances of Air Quality Objective					
	PM ₁₀ 50ug/m ³ (24 Hr Mean)		NO ₂ 200ug/m ³ (1 Hr Mean)		CO 10mg/m ³ (8hr running mean)	
	Background	Roadside	Background	Roadside	Background	Roadside
1997	8	22	0	299	0	0
1998	5	14	0	6	0	0
1999	1	3	0	8	0	0
2000	2	18	0	15	0	0
2001	3	16	0	12	0	0
2002	2	21	0	161	0	0
2003	21	20*	0	70	0	0
2004	Not enough data	17	0	0	0	0
2005	8	13	1	6	NA	0
2006	8	15	0	0	NA	0
2007	10	15	0	0	NA	0
2008	5	9	0	0	NA	0
2009	1	3	0	3	N/A	N/A
2010	1	4	0	0	N/A	N/A
Pass = less than 35 failures/year		Pass = less than 18 failures/year		Pass = No failures of objective		
Numbers in red FAILED the short term mean air quality objectives						

Table 2.9 – Town Centre Real-time monitoring results, comparison with long term air quality objectives

Year	Compliance with Annual Mean Air Quality Objectives					
	Mean PM ₁₀ in ug/m ³ 40ug/m ³ (Annual Mean)		Mean NO ₂ in ug/m ³ 40ug/m ³ (Annual Mean)		Mean CO in mg/m ³ No annual objective	
	Background	Roadside	Background	Roadside	Background	Roadside
1997	18.4	26.5	35.30	82.7	0.7	1.3
1998	17.2	21.9	39.7	58.1	0.5	1.3
1999	17.6	21.1	31.1	60.2	0.5	1.2
2000	16.4	21.2	33.0	68.6	0.5	1.2
2001	14.8	27.3	33.4	50.8	0.3	1.2
2002	19.8	28.9	27.3	65.5	0.3	1.0
2003	25.7	31.6	41.1	55.8	0.3	1.0
2004	Not enough data	29.8	29.4	52.1	0.3	0.8
2005	21.3	28.1	26.2	53.5	NA	0.5
2006	20.0	27.0	28.0	51.0	NA	0.5
2007	19.0	25.0	27.0	51.0	NA	0.5
2008	18.0	22.0	27.0	48.0	NA	0.4
2009	18.0	21.0	26.0	48.0	NA	NA
2010	17.0	22.0	27.0	50.0	NA	NA

Numbers in red FAILED the annual mean objective

2.2.1 Nitrogen Dioxide

Winchester AQMA (real time and diffusion tubes)

Both real time sites are in compliance with the 24 hour mean objective for both 2009 and 2010, but as in previous years only the background site complies with the annual mean 40 µg/m³ objective.

The diffusion tube results show that there are still areas adjacent the main roads within the Air Quality Management Area (AQMA) that fail to meet the annual mean objective. These are still spatially concentrated within the one way system around the town centre with the highest levels generally being in St Georges Street, where the roadside real time analyser is located. In addition Romsey road, which suffers from traffic congestion at peak commuter times and has domestic facades in close proximity, remains significantly elevated.

The diffusion tubes are located on/near building facades, therefore the nearer the buildings are to the road, the higher the results. This explains variations in the results for both Southgate St and North Walls, with much higher results being recorded on the side of the street where the buildings are closer to the road.

Diffusion tube results are elevated in 2009 compared to 2008 or 2010, although these used a local bias correction of 1.13 compared to the national average of 0.9. If a national average bias correction was applied then the results would be comparable to those of 2008. The elevated results for 2009 are not present in the averages obtained from the two real time monitoring stations, which show averages comparable with 2008.

Overall the results indicate that the current boundaries of the AQMA are still appropriate and do not need changing. There appears to be a flat line trend in the results within Winchester City Centre since the publication of the Winchesters Updating and Screening Assessment of 2009.

Across Winchesters District (diffusion tubes)

In 2009 all sites were in compliance with the annual mean objective, although results were higher for all but one site compared to 2008. See comments already made regarding Winchester City Centre diffusion tube results.

Results for 2010 are again in compliance with the annual mean objective, with results generally being lower than 2009.

These sites are generally a worst case scenario being located adjacent to the main road network serving the main settlements of the district outside of Winchester. Concern had previously been expressed regarding the diffusion tube site at Otterbourne being close to the 40 µg/m³ objective, being

influenced by both local and M3 traffic. Results for 2009 and 2010 at this site continue to show compliance.

Compliance is marginal at the Bishops Waltham site for 2009 but this is considered acceptable. This is because this site is at a roadside rather than building façade location and the high local bias used in 2009 is considered to also generate a worst case result.

As none of these results exceed the 40 µg/m³ objective then it is considered that there is no evidence of the necessity for any further detailed assessment for this parameter from transport based sources.

2.2.2 PM₁₀

Results from both sites show continued compliance with both the 24 hour and annual mean objectives. A separate detailed assessment report is currently being prepared for DEFRA approval with the aim of undeclaring for this parameter within the current Winchester City Centre AQMA.

2.2.3 Summary of Compliance with AQS Objectives

Winchester City Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

However, a detailed assessment report is currently being prepared with the aim to undeclare for PM₁₀ within the current Winchester City Centre AQMA.

3 New Local Developments

3.1 Road Traffic Sources

Consideration has been given to potential alteration of the following key criteria:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations

No significant alteration to these criteria has been identified.

3.2 Other Transport Sources

Consideration has been given to potential alteration of the following key criteria:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

No significant alteration to these criteria has been identified.

3.3 Industrial Sources

Consideration has been given to potential alteration of the following key criteria:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- Industrial installations: new or significantly changed installations with no previous air quality assessment.

- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

No significant alteration to these criteria has been identified.

3.4 Commercial and Domestic Sources

Consideration has been given to potential alteration of the following key criteria:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.

There is a possibility that the North of Winchester (“Barton Farm”) MDA development discussed in previous progress reports (see progress report 2005) may utilise a CHP plant that could include a biomass element. This development is currently subject to a planning appeal decision and clearer picture may be available for inclusion in the next USA.

3.5 New Developments with Fugitive or Uncontrolled Sources

Consideration has been given to potential alteration of the following key criteria:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations etc.
- Other potential sources of fugitive particulate emissions.

No significant alteration to these criteria has been identified.

3.6 Summary

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

Winchester 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.**

The decision relating to the North of Winchester MDA is current with the Secretary of State for decision and this may have impacts if approval is granted. A clearer picture should be available for inclusion with the next USA

4 Local / Regional Air Quality Strategy

Winchester City Council does not perceive the need for a separate local air quality strategy as the only air quality issues identified are within Winchester City Centre that are adequately covered by the current Air Quality Action plan and subsequent progress reports.

5 Planning Applications

The North of Winchester (Barton Farm) MDA is currently at appeal and a decision at the time of writing this report is currently awaited from the Secretary of State.

This site was first flagged up within the 2005 Progress report and the decision and its implications should be clearer for inclusion by the time of the next Updating and Screening Assessment.

Potential air quality implications relate to the annual mean Nitrogen dioxide air quality objective from:

- Increased transport flows into the AQMA.
- Localised impact of potential biomass based CHP scheme.
- Rerouting of one of the main Northern links into Winchester (Andover Rd) altering distances to potential new receptors.

6 Air Quality Planning Policies

Current information on development of Winchester's Local Development Framework can be found at:

<http://www.winchester.gov.uk/Housing/Planning/LocalDevelopmentFramework>

7 Local Transport Plans and Strategies

Local Transport Plans are a County Council function and since the last progress report work has been performed on the following:

The Winchester Town Access Plan (TAP) – this is a set of aims and priorities which seek to improve the way people can reach facilities and services spread throughout the town. The document ties in with delivery of actions within the AQAP. Full information on this document can be found at:

<http://www3.hants.gov.uk/transport-schemes-index/taps/tap-winchester>.

Hampshire Local Transport Plan 2011 to 2031 (LTP3) – This has been adopted since the publication of the last progress report. Full information on LTP3 can be found at:

<http://www3.hants.gov.uk/transport/local-transport-plan.htm>

8 Climate Change Strategies

Full information of Winchester's Climate change strategy including our Climate Change Plan can be found at:

<http://www.winchester.gov.uk/climatechange>

In addition Winchester also provides support to the Charity Winchester Action on Climate Change (WinACC). Further information on their work can be found at:

<http://www.winacc.org.uk/about-us>

9 Implementation of Action Plans

A review of the Air Quality Action Plan was conducted mid 2010 by Air Quality Consultants Ltd, the final version of the report was delayed until the Winchester Town Access Plan (WTAP) was available in final draft format to ensure its assessment within the report. This was because the WTAP was identified as a revised delivery mechanism for several actions within the AQAP.

This review will be submitted with this report but under separate cover.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

- There are still exceedences of the annual mean Nitrogen dioxide objective within the current AQMA. The current boundary defined within the AQMA is still considered appropriate to define the extent of these continued failures.
- There is now sufficient information to undeclare on the PM₁₀ objectives within the AQMA and a detailed report is currently being reproduced for submittal to Defra for consideration.
- No new areas of exceedences for any other air quality objective have been identified.

10.2 Conclusions relating to New Local Developments

- If permission is granted for the North of Winchester Development then further work on air quality will be necessary to fully assess the impacts of this development. It is anticipated that this can be revisited during the next USA.

10.3 Other Conclusions

- The AQAP needs revisiting and an Air Quality and Transport Informal Scrutiny Group (ISG) has just been set up to investigate this specific issue. Its conclusions are anticipated to be available early 2012.

10.4 Proposed Actions

- Produce detailed review of PM₁₀ levels within AQAP with view to undeclaring for this parameter – August 2011.

11 References

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Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Winchester City Council uses tubes provided and analysed by Gradko and since 2009 we have been using 20% TEA (Triethanolamine) in water (previously used 50 % TEA in water), which are typically exposed for four to six week periods. Gradko take part in Workplace Analysis Scheme for Proficiency (WASP) and their performance for April 09 to April 10 was Good.

i) 2009

These diffusion tube results have been corrected for bias using a locally derived bias adjustment factor of **1.13**. The factor was calculated following Defra guidance by comparing results from the triplicate co-location tubes located at the roadside automatic monitoring station. These results did not compare well with the national bias adjustment factor at that time of 0.9.

The decision to use the local bias adjustment factor was based on guidance outlined in Box 3.3 of TG(09). The diffusion tubes were exposed for 11 4-5 week periods during 2009. As the national factors represent 12 monthly exposure periods, it is considered more appropriate to use the local factor. This conclusion was discussed and agreed with the DEFRA funded monitoring helpline. It was agreed with a degree of uncertainty using the local bias correction value would also ensure a higher precautionary value was applied.

Three of the sites have triplicate samples to investigate precision of the tubes. The data for 2009 shows all sites have good precision with coefficients of variation for all sampling periods and locations being less than 20 percent with an average variation of less than 10 percent (1.1, 1.2 and 3.9 for the three triplicate sites).

ii) 2010

These diffusion tube results have been corrected for bias using a locally derived bias adjustment factor of **1.03**. The factor was calculated following Defra guidance by comparing results from the triplicate co-location tubes located at the roadside automatic monitoring stations. These results compare more favourably with the national bias adjustment factor at that time of 0.92.

The decision to use the local bias adjustment factor was based on guidance outlined in Box 3.3 of TG(09). The diffusion tubes were exposed for 9 5-6 week periods during 2010. As the national factors represent 12 monthly exposure periods, it is considered more appropriate to use the local factor. This conclusion was discussed and agreed with the DEFRA funded monitoring helpline.

Three of the sites have triplicate samples to investigate precision of the tubes. The data for 2010 shows all sites have good precision with coefficients of variation for all sampling periods and locations being less than 20 percent with an average of less than 10 percent (2.2, 2.9 and 3.4 for the three triplicate sites).

PM Monitoring Adjustment

As outlined in DEFRA guidance, results from BAM monitors (unheated) have been divided by a correction factor of 1.21. All data from years previous to have also now been adjusted by this factor.

QA/QC of automatic monitoring

Nitrogen dioxide is monitored continuously by means of a chemiluminescent analyser. PM₁₀ concentrations at the Echo Offices and Godson House sites are monitoring by an unheated Met One BAM 1020 analyser. Monitoring for CO has now ceased as has the use of the Osiris light scattering PM₁₀ analysers at City Road and North Walls.

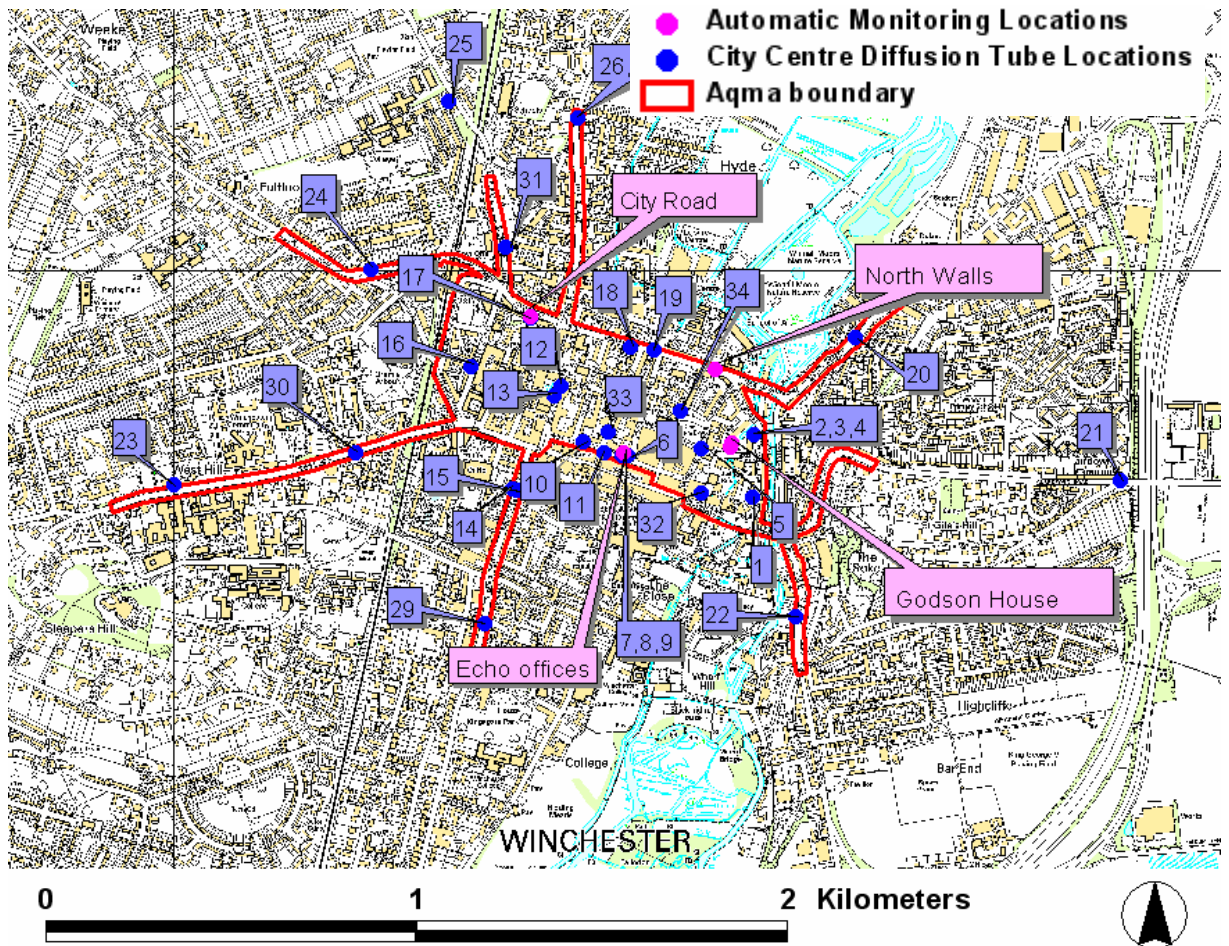
The data collected from these sites are subject to verification and ratification process that follows procedures detailed in the AEA Handbook and Defra technical guidance. This includes:

- Nightly automatic internal zero and span checks (IZS) to the gas analysers;
- Fortnightly calibration of gas analysers to traceable primary gas standards by Winchester City Council staff;
- Six monthly servicing by original equipment provider (Enviro Technology);
- Data ratification provided by an independent third party (Air Quality Consultants);
- All gasses used for calibration have been independently certified (AEA).

All real time instruments achieved a collection efficiency of greater than 92 percent for both 2009 and 2010.

Appendix B

Map showing extent of current AQMA and also location of town centre monitoring locations



Note – The City Road and North Walls Osiris PM_{10} monitoring ceased in 2008 so no new data is reported for these site.

Appendix C

Map showing location of diffusion tube monitoring across the district
(see Appendix 1 for Winchester City centre locations)

