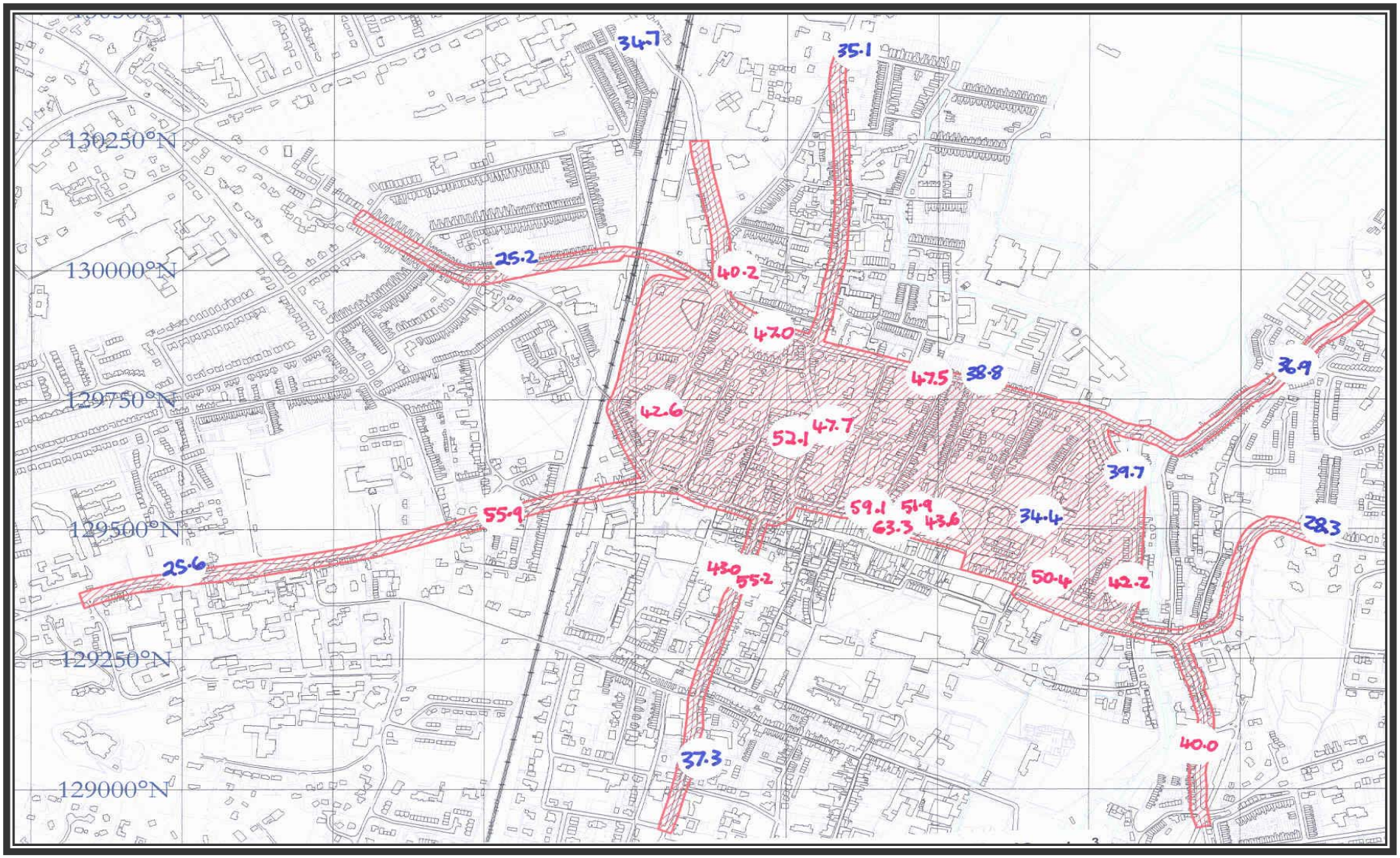
AIR QUALITY 2004

1.0 CORRECTED NITROGEN DIOXIDE DIFFUSION TUBES – TOWN CENTRE

Site	Mean Concentration in ug/m3	Tubes Missing
Site 1, 10 Eastgate St	42.2	1
Site 2, Greyfriars 1	40.8	1
Site 3, Greyfriars 2	39.0	0
Site 4, Greyfriars 3	39.2	0
Site 5, Friarsgate	34.4	0
Site 6, Middle Brook St	43.6	2
Site 7, Roadside Monitor	51.1	1
Site 8, Roadside Monitor	50.6	1
Site 9, Roadside Monitor	54.1	1
Site 10, St Georges St TC	59.1	3
Site 11, St Georges St Lad	63.3	1
Site 12, Jewry St CH	47.7	0
Site 13, Jewry St FK	52.1	0
Site 14, Southgate St DV	43.0	0
Site 15, Southgate St CH	55.2	0
Site 16, Sussex St	42.6	3
Site 17, City Road	47.0	0
Site 18, 74 Northwalls	47.5	4
Site 19, 15 Northwalls	38.8	0
Site 20, Wales St	36.9	2
Site 21, Alresford Rd	28.3	0
Site 22, Chesil St	40.0	3
Site 23, Romsey Rd HL	25.6	0
Site 24, Stockbridge Rd	25.2	1
Site 25, Andover Rd	34.7	0
Site 26, Worthy Rd 1	35.7	3
Site 27, Worthy Rd 2	34.3	3
Site 28, Worthy Rd 3	35.4	2
Site29, St Cross Rd	37.3	2
Site 30, Romsey Road	55.9	1
Site 31, Andover Rd	40.2	2
Site 32, Bus Station	50.4	6

RED = Exceeds air quality objective

RESULTS BY APPROXIMATE LOCATION
(RED = EXCEEDS AIR QUALITY OBJECTIVE = 40 µg/m3)



2.0 CORRECTED NITROGEN DIOXIDE DIFFUSION TUBES – ACROSS DISTRICT

SAMPLING PERIOD	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9
	ALL RESULTS IN PPB (BLANK SUBTRACTED)								
07/01/04 - 04/02/04	Missing	22.5	14.7	15.3	12.0	Missing	17.4	Missing	18.0
04/02/04 - 03/03/04	13.1	18.5	11.9	14.3	9.2	17.9	12.8	18.5	26.2
03/03/04 - 30/03/04	12.2	Missing	10.6	Missing	9.6	15.0	13.4	17.0	20.2
30/03/04 - 28/04/04	Missing	Missing	Missing	15.6	10.6	18.0	12.3	13.8	16.7
28/04/04 - 27/05/04	10.1	Missing	7.2	12.8	10.1	16.4	12.2	19.4	25.3
27/05/04 - 25/06/04	7.2	26.1	11.0	10.7	8.1	13.0	Missing	15.6	18.5
25/06/04 - 21/07/04	6.5	19.1	8.7	11.6	7.1	10.0	12.3	14.9	15.8
21/07/04 - 20/08/04	14.0	Missing	13.4	13.4	9.5	14.6	13.7	19.0	15.1
20/08/04 - 16/09/04	Missing	24.9	10.3	14.0	6.5	11.2	10.3	13.1	17.1
16/09/04 - 15/10/04	11.6	Missing	11.3	15.5	9.6	14.9	14.9	Missing	17.2
15/10/04 -11/11/04	14.9	25.2	14.0	16.2	27.4	15.6	Missing	17.7	18.7
11/11/04 - 08/12/04	12.8	25.9	13.7	19.4	15.2	18.2	20.0	22.0	23.5
08/12/04 - 06/01/05	22.2	30.8	21.8	24.6	20.8	24.5	26.7	25.3	26.0
YEARLY AVERAGE (PPB)	**12.5**	**24.1**	**12.4**	**15.3**	**12.0**	**15.8**	**15.1**	**17.9**	**19.9**
BIAS CORRECTED ($\mu g/m^3$)	**29.3**	**56.7**	**29.1**	**35.9**	**28.2**	**37.1**	**35.5**	**41.9**	**46.7**

SITE 1 - Gordon Road, Winchester

SITE 2 - City Road, Winchester

SITE 3 - Kingsworthy (A34)

SITE 4 - Broad St, New Alresford

SITE 5 - Denmead

SITE 6 - Wickham

SITE 7 - Whiteley

SITE 8 - Bishops Waltham

SITE 9 - Otterbourne

3.0 REAL TIME AIR QUALITY DATA - WINCHESTER TOWN CENTRE

3.1 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
	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

3.2 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

Numbers in red FAILED the annual mean objective

4.0 TECHNICAL NOTES

4.1 Diffusion Tube Data

All diffusion tubes used a mixture of 50 percent TEA in water.

The results have been adjusted by using a locally generated bias correction factor using the procedure detailed in DEFRA guidance document Technical Guidance LAQM TG(03). This was calculated by locating three diffusion tubes adjacent to the roadside real time analyser and comparing results. Due to the malfunction of the roadside analyser there was little real time data in August 04. The bias correction calculated on the remaining 11 months was **1.23,** which is very close to the previous correction factor of 1.27.

The Town Centre diffusion tubes have been located to represent nearest relevant public exposure locations i.e. domestic building facades.

The District wide diffusion tube survey is roadside based and is therefore an over representation of public exposure.

4.2 Real Time Monitoring Results

The roadside site is located 2.75 metres from the kerb on St Georges St whilst the urban background site is located 18 metres from the kerb off Friarsgate. The background site samples at a height of 2.80 metres and the roadside site at 2.65 metres.

Particle results use an unheated BAM 1024 analyser and have therefore had no gravimetric correction factor applied.

Collection efficiencies are all greater than 90 percent except for the background Particle analyser. This repeatedly malfunctioned from July 04 onwards and therefore no result for annual mean at this location has been reported.

All results have been zero and spanned corrected with zero and span readings taken every 2 weeks in accordance with DEFRA guidance.

5.0 DISCUSSION

5.1 Nitrogen dioxide – Winchester Town Centre

Air quality results show a significant improvement in peak Nitrogen dioxide levels over 2003, with no failures of the Nitrogen dioxide short term hourly mean objective. However, significant locations are still exceeding the annual average nitrogen dioxide objective. The highest levels seem to be occurring where there are higher buildings that trap the pollution.

The diffusion tubes are located on 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.

5.2 Nitrogen dioxide – Across the District

Three sites exceeded the annual average nitrogen dioxide objective; these being at Winchester (City Road), Bishops Waltham (Winchester Road) and Otterbourne (Otterbourne Road). However these are roadside exposure locations and therefore over represent public exposure. This can be demonstrated by comparing the roadside City road average of 56.7µg/m^3 with the building façade average of 47µg/m^3. Levels at Bishops Waltham and Otterborune have increased slightly over the 2003 results (40.1µg/m^3 at Bishops Waltham and 45.5µg/m^3 at Otterbourne). If these trends continue in 2005, further investigation of levels at nearest public exposures in the Bishops Waltham and Otterbourne area is recommended.

5.3 Particles – Winchester Town Centre

New guidance has now been issued on the DEFRA web site regarding comparison of particle data collected from unheated BAM's and the air quality objectives based upon a gravimetric methodology. Previously it was recommended that results from unheated BAM's are directly comparable with the gravimetric air quality objectives. Now it is recommended that a correction factor of 0.833 (i.e. divided by 1.2) is applied to all such data. Therefore we have now corrected all our data from 1997 onwards. This has a made a massive difference to the compliance with both the 24 hour and annual mean objectives. Compliance has now been achieved in every year since 1997.

However, there are new provisional objectives for 2010 that require 50µg/m^3 as a 24 hour mean not be exceeded more than 7 times a year and 20µg/m^3 as an annual mean. Compliance with these objectives is currently not being achieved at the roadside site or on one occasion (2003) at the background site.

Monitoring will therefore need to be continued to assess future compliance with this provisional objective. Funding has been provided by Hampshire County Council to install three light scattering Osiris analysers within the town centre. This will assist in providing addition data on the extent of non compliance with PM_{10} objectives in future years.

5.4 Carbon monoxide

No failures recoded. Due to the values being well below the air quality objectives it is proposed to cease monitoring background levels of Carbon monoxide in 2005. Roadside monitoring will continue as Carbon monoxide levels are a good marker for transport related pollution.