UK Nitrogen Dioxide Network 2001

Prepared by **netcen** as part of the Air Quality Research Programme of the Department for Environment, Food and Rural Affairs, the Scottish Executive, the Welsh Assembly Government and the Department of Environment in Northern Ireland.

netcen
netcen is an operating division of AEA Technology plc

UK Nitrogen Dioxide Network 2001

Prepared by **netcen** as part of the Air Quality Research Programme of the Department for Environment, Food and Rural Affairs, the Scottish Executive, the Welsh Assembly Government and the Department of Environment in Northern Ireland.

Alison Loader
Diane Mooney
Tony Bush

March 2003

Title	UK Nitrogen Dioxide Network 2001
Customer	Department for Environment, Food and Rural Affairs, Scottish Executive, Welsh Assembly Government and the Department of Environment in Northern Ireland.
Customer reference	1/3/174
Confidentiality, copyright and reproduction	
File reference	ED 45005002
Report number	AEAT/ENV/R/1227
Report status	Issue 2

netcen
AEA Technology Environment
Culham Science Centre
ABINGDON
Oxfordshire
OX14 3ED
Telephone +44 (0)1235 463133
Facsimile +44 (0)1235 463011

	Name	Signature	Date
Author	Alison Loader Diane Mooney Tony Bush		
Reviewed by	Ken Stevenson		
Approved by	Geoff Dollard		

Executive Summary

This is the ninth annual report of the UK Nitrogen Dioxide Diffusion Tube Network, covering calendar year 2001. The network measures nitrogen dioxide (NO_2) in urban areas throughout the UK, in a collaborative effort between the Department for Environment, Food and Rural Affairs, the Scottish Executive, Welsh Assembly Government, the Department of Environment in Northern Ireland and Local/Unitary Authorities. The network has two principal aims:

- to objectively assess the spatial and temporal distribution of NO_2 concentrations in a variety of urban environments in the UK
- to highlight areas where elevated concentrations of NO_2 occur and which may justify more detailed investigation using automatic techniques.

Estimates of the overall spatial distribution of NO_2 have been made for 2001 and are consistent with those measured between 1993 - 2000. Areas of the UK with high NO_2 concentrations continue to match the geographical distribution of the major conurbations.

UK annual average NO_2 concentrations for 2001 were 39μg m^{-3} at roadside locations and 22μg m^{-3} at urban background locations. Both these values are the same as the annual averages obtained for 2000. For the second consecutive year, the average NO_2 concentration at roadside locations has been below 40 μg m^{-3}, the Air Quality Strategy limit value for annual mean NO_2 concentrations.

Observed year-to-year variations in national average NO_2 concentrations throughout the period of operation of the Network have been small, and may be affected by factors such as meteorology and variations in analytical performance. However, UK average concentrations at both site types have decreased gradually since the mid-1990s: this is consistent with automatic measurements of NO_2 undertaken as part of the Automatic Urban Network. A statistically significant downward trend in annual mean concentrations from 1993 to 2001 has been identified, in the case of both roadside and urban background sites. Further years' monitoring will identify whether or not this downward trend continues.

2001 was the third year in which no sites in the UK were found to have an annual mean concentration equal to or greater than 91μg m^{-3}. This concentration represents a revised indicator for the EC Directive limit value for NO_2 (EC 85/203), which is not fully repealed until 2005. It is estimated that 60 roadside sites, but no urban background sites, in the UK NO_2 Network may be at risk of exceeding the EC Daughter Directive objective for 2010. This estimate is based on measured concentrations during 2001, and recently revised emissions estimates and projections.

A total of 244 roadside sites, and 9 urban background sites, measured annual average NO_2 concentrations in excess of 40μg m^{-3} during 2001. This concentration is a National Air Quality objective, to be achieved by the end of 2005, and was adopted as legislation in England, Wales and Scotland by the relevant Air Quality Regulations (2000), and in Northern Ireland by the relevant Air Quality Regulations (2002). Based on current predicted emissions reductions, it is estimated that almost all urban background locations will meet the Air Quality Strategy objective by the end of 2005: however, exceedence at roadside sites in 2005 may be widespread.

Contents

1 Introduction

The UK Nitrogen Dioxide Network is operated by **netcen** on behalf of the Department for Environment, Food and Rural Affairs (Defra), the Scottish Executive, the Welsh Assembly Government and the Department of Environment in Northern Ireland. The Network was established in 1993. Its objective is to assess the spatial and temporal distribution of nitrogen dioxide (NO_2) concentrations in a variety of urban areas of the UK, ranging from the major cities to smaller towns. This is done using NO_2 diffusion tubes, low-cost passive samplers ideal for indicative monitoring.

The current Network and previous more limited surveys[1,2] have acted as screening tools for identification of areas with high NO_2 concentrations. Areas identified in this way have been prioritised for further monitoring, with more sophisticated automatic techniques.

This report for calendar year 2001 is the ninth annual report of the UK Nitrogen Dioxide Diffusion Tube Network. The report follows previous annual reports [3-10] and briefly documents the organisation and infrastructure of the network, which is more thoroughly covered in the previous reports. Concentrations measured in the UK during 2001 are presented in this report, together with national and regional statistics, and comparison with previous years' findings.

In this report, pollutant concentrations are expressed in microgrammes per cubic metre ($\mu g\ m^{-3}$). This is the unit used in the Air Quality Strategy. In reports for years prior to 1999, concentrations were expressed in part per billion by volume (ppb). To convert between these two units, the relationship is as follows:

1ppb = 1.91µg m^{-3} at 20°C and 101.3KPa

During 2001, the Network comprised a total of 1271 NO_2 diffusion tube monitoring sites, operated by 307 Local Authorities. Analysis of the diffusion tubes was carried out by 30 analytical laboratories, all of which took part in two performance testing exercises: the Health and Safety Laboratory's WASP programme for NO_2 diffusion tube analysis, and the 2001 Field Intercomparison Exercise operated by **netcen** (see Appendix A). Ratification of the network's dataset was based on the data quality procedures set out in Section 3.

The full dataset for 2001 is included with the report on this CD ROM (or, for printed copies, on the CD ROM inside the back cover - see instructions on insert). This and previous years' data are also available on Defra's Air Quality Archive on the World Wide Web, at www.airquality.co.uk.

2 Organisation of the Network

Netcen, an operating body of AEA Technology Environment, acts as the co-ordinating body for the UK NO_2 Network and provides the framework under which monitoring of NO_2 by participating Local Authorities takes place. Diffusion tubes exposed by local authorities are analysed by analytical laboratories and the results forwarded to **netcen** for central collation and processing. In providing a centrally managed system for the monitoring of NO_2 on a national scale, **netcen**'s responsibilities involve the provision of the following services and deliverables:

- A framework for monitoring and instructions to participants in the form of the site operators' Instruction Manual[11], issued to all site operators and also available on the Air Quality Archive on the World Wide Web at http://www.aeat.co.uk/netcen/airqual/reports/no2man/no2man.html
- Central collation, checking and processing of data
- Data interpretation, advice and report production
- QA/QC systems for assessment and control of laboratory performance

The information provided in the Instruction Manual to all network participants is instrumental in assuring the consistency of siting criteria and monitoring protocols for the network. As a

consequence, it has been possible to establish a national survey that is optimised for monitoring of NO_2 concentrations in urban areas. Monthly measurements are routinely performed at four locations within each local/unitary authority, in order to estimate the spatial distribution of NO_2 concentrations:

- **Roadside,** 1-5m from the kerb of a busy road (2 sampling locations).
- **Urban Background** (2 sampling locations), >50m from any busy road and typically in a residential area.

At the start of 2001, there was a significant change to the composition of the Network. Prior to 2001, the Network included a third site category, "Intermediate", comprising sites 20-30m from a busy road. However, that site category had been found over the years to provide little additional information, so it was discontinued at the end of December 2000. Where possible, the old Intermediate sites were replaced with new Roadside sites. As from 2001, most Local Authorities now operate two Roadside and two Urban Background sites, instead of one Roadside, one Intermediate and two Urban Background as previously. Thus, the composition of the Network has changed from approximately 25% Roadside, 25% Intermediate and 50% Urban Background, to its present composition of approximately 50% Roadside and 50% Urban Background sites. ("Roadside" sites were formerly known as "Kerbside". The name was changed for better consistency with the "Roadside" site category as defined for automatic monitoring sites by the Local Air Quality Management Technical Guidance LAQM.TG(03)[12].)

3 Results and Discussion

3.1 DATA QUALITY PROCEDURES

Prior to interpretation of monthly and annual averages, data quality assurance and control procedures were applied to the dataset in order to eliminate data with unsatisfactory accuracy, erroneously low measurements and data from sites with very low data capture. The following data ratification procedures have been applied:

- Data from laboratories whose performance was outside ±25% of the reference concentration in both the Health and Safety Laboratory's WASP programme for diffusion tubes *and* the UK NO_2 Network Field Intercomparison Exercise during 2001 are omitted from the network dataset. However, no laboratories failed to meet the required performance criteria in 2001.
- All data below 3.82 $\mu g\ m^{-3}$ (2 ppb) have been eliminated. Prior to 1997, a 5 ppb cut-off for the elimination of erroneously low concentration data was applied. A review of this cut-off level indicated that its application may have resulted in the elimination of reliable data from smaller, more remote towns where lower levels of NO_2 may be expected. This is because an overall increase in the accuracy of diffusion tubes has been achieved by laboratories since 1993, which has enabled the lowering of the cut-off level to 2 ppb without the inclusion of erroneous low data in ratified datasets.
- Tube changes must take place within $\pm$ 2 days of the dates specified in the exposure calendar supplied to all Local Authorities. Data are rejected if this is not the case.
- Valid annual averages have only been calculated for sites with at least six months data from any period during a calendar year. (Annual averages of NO_2 calculated from six months of data are likely to be within approximately ± 10% of the annual average for urban and suburban sites and within ± 20% for roadside sites[13]owing to the greater variability shown at these locations).

3.2 FACTORS AFFECTING DIFFUSION TUBE PERFORMANCE

NO_2 diffusion tubes are an *indicative* monitoring technique: although ideal for screening studies and for identifying areas of high concentration, they do not offer the same accuracy as the automatic chemiluminescent analyser (which is the reference method for this pollutant). Assuming correct sampling and analysis methodologies, NO_2 measurements made with Palmes type diffusion tubes are

traditionally expected to overestimate relative to chemiluminescent analyser measurements by up to around 30%[14,15,16]. However, NO_2 diffusion tubes are affected by several mechanisms which may cause them to exhibit positive bias (over-read), or negative bias (under-read) relative to the reference technique.

Over-read may be attributed to the individual and combined effect of three interfering factors;
- the shortening of the diffusive path length, by turbulence at the open end of the tube caused by wind[14,16].
- blocking of UV light by the tube material, resulting in reduced NO_2 photolysis in the tube[15]
- the interfering effects of peroxyacetyl nitrate (PAN)[16].

Some factors causing under-read are as follows:
- Increasing exposure period. It has been reported that the average of four consecutive one-week, or two consecutive two-week exposures is systematically greater than one four-week exposure[17]. This is thought to be caused by degradation of the absorbed nitrate over time.
- Insufficient extraction of nitrite from the grids. Whilst this was believed to be a widespread problem in early days of the network, successive intercomparisons indicate it has become much less common.
- The photochemical degradation of the triethanolamine-nitrite complex by light. However, this has been largely minimised, by the widespread use of opaque diffusive end caps[5].
- In the specific case of tubes prepared using a 50% v/v solution of TEA in water, it has been reported that there may be a mechanism reducing NO_2 uptake, resulting in negative bias[18]. Tubes prepared using other methods (10% or 20% v/v solution of TEA in water, 50% solution of TEA in acetone) appear not to be affected.

Extensive validation exercises have been performed on the NO_2 diffusion tube methodology[14,19], which have shown a good agreement between diffusion tubes and the chemiluminescent technique. However, these exercises have largely been confined to urban background locations and the accuracy of diffusion tube measurements of NO_2 may be expected to be site specific, owing to the interference effect of reduced NO_2 photolysis[16]. In addition, the potential impact of other sampling artefacts such as differences in laboratory preparation and analysis must be considered. The Technical Guidance LAQM.TG(03) recommends that Local Authorities making use of nitrogen dioxide diffusion tubes should carry out their own investigation of diffusion tube bias, by exposing tubes in triplicate at their own automatic site (or alternatively a suitable AUN site) for the duration of the study. If this is not possible they should seek verification from their laboratory.

3.3 DATA CAPTURE

Data capture rates by site location types and all sites returning valid monthly average concentrations are shown in Table 1 below. A total of 1271 sampler sites monitored nitrogen dioxide concentrations during 2001.

Table 1 Percentage of Sites Returning Valid Monthly Measurements from the UK NO_2 Network 2001

	Percentage Data Capture (%)												
	Jan	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***	***Annual***
All Sites	86	87	83	83	85	82	87	85	85	86	84	83	**94**
Roadside	85	86	82	84	86	81	88	85	86	86	84	84	**94**
Urban Background	87	88	84	82	84	83	87	85	85	85	83	82	**95**

Annual averages are calculated for each site with at least 6 or more months' valid data. Therefore, "Annual" data capture figures in this table are higher than those for the individual months.

Data may be lost for a number of reasons, the most common being missing or vandalised tubes, and exposure periods differing from those specified by more than two days. However, in 2001 no data were rejected as a result of the laboratory QA/QC procedures (see Appendix A).

3.4 NATIONAL AVERAGE NO_2 CONCENTRATIONS

Overall UK annual average NO_2 concentrations for 1993-2001 are shown in Table 2. UK annual concentrations during 2001 were highest at roadside locations (39μg m^{-3}), lower at urban background locations (22μg m^{-3}). This is consistent with previous years' findings, and with the expected urban pollutant distribution assuming road traffic as the major emissions source.

Table 2 National Annual Average NO_2 Concentrations from the UK NO_2 Diffusion Tube Network 1993-2001

	Annual Average NO_2 Concentration (μg m^{-3})								
	1993	***1994***	***1995***	***1996***	***1997***	***1998***	**1999**	**2000**	**2001**
Roadside	44	46	48	46	44	44	43	39	**39**
Urban Background	27	27	27	27	25	23	23	22	**22**

UK annual average concentrations during 2001 (to the nearest μgm^{-3}) were the same as those measured in 2000. However, they remain broadly similar to, but generally lower than, those measured during the 1990s. The mean for roadside sites was below 40μgm^{-3} for the second year running.

Table 3 presents the ratio of annual average NO_2 concentrations at roadside sites to annual average NO_2 concentrations at background sites. The ratio of roadside to urban background average concentrations appears to have remained consistent over the past 5 years.

Table 3 Average NO_2 Concentration Ratios by Location Type from the UK NO_2 Diffusion Tube Network 1993-2001

	1993	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***
Roadside : Urban Background	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8

3.5 SEASONAL ANALYSIS

Table 4 presents the monthly average NO_2 concentrations observed during 2001. There is a seasonal pattern, with the highest concentrations occurring in winter months for all location types. Table 4b shows the ratio of winter mean (October to March) to summer mean (April to September) for the years since 1993. Winter:summer ratios for 2001 are relatively high compared with those measured in previous years.

Table 4a Monthly Average NO_2 Concentrations from the UK NO_2 Network 2001

	NO_2 Concentrations (μg m^{-3})											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
All sites	39	36	33	27	26	23	25	25	28	31	34	37
Roadside	47	45	42	36	36	32	35	34	37	41	43	44
Urban Background	32	29	25	18	17	15	15	16	19	23	27	31

Table 4b Winter: Summer Ratios of UK Average NO_2 Concentrations 2001

	Winter:Summer Ratio								
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
All sites	1.17	1.20	1.18	1.21	1.28	1.29	1.20	1.28	1.38
Roadside	1.05	1.05	1.03	0.99	1.09	1.14	1.06	1.13	1.24
Urban Background	1.28	1.37	1.33	1.29	1.46	1.45	1.34	1.44	1.66

3.6 REGIONAL ANALYSIS

Table 5a and 5b present the regional annual average NO_2 concentration for the Government Office and Devolved Administrative Regions in the UK. Annual average NO_2 concentrations calculated for each region during 2001 ranged from 27 μg m^{-3} to 47 μg m^{-3} at roadside locations. Concentrations at urban background locations were found to range from 14 to 29 μg m^{-3}.

The year-to-year variation in regional average roadside NO_2 concentrations is presented in Table 5a. While decreases in annual average NO_2 concentrations at roadside locations were seen in the majority of the twelve regions between 2000-2001, three regions (London, the South West and Yorkshire and the Humber) showed increases. This mixture of increases and decreases is consistent with the overall annual mean for all roadside sites showing no change from 2000.

The year-to-year variation in regional average intermediate and urban background NO_2 concentrations is presented in Table 5. It should be noted that the composition of the Network has changed significantly between 2000 and 2001: while the averages for years upto and including 2000 are based on a mixture of approximately one-third intermediate sites, two-thirds urban background, the averages for 2001 are based only on urban background sites. This explains the consistent, often large, decreases seen in all twelve regions between 2000-2001.

Table 5a Summary of Regional Annual Average NO_2 Concentrations in the UK from the UK NO_2 Diffusion Tube Network 1993-2001

i. Roadside

	Annual Average (µg m^{-3})									*% Change*							
	1993	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***	***93-94***	***94-95***	***95-96***	***96-97***	***97-98***	***98-99***	***99-00***	***00-01***
North East	34	25	34	32	36	36	34	32	**31**	-29	40	-5	11	-2	0	-6	**-4**
North West & Merseyside	53	50	50	48	48	50	52	43	**43**	-5	-1	-5	1	4	11	-17	**-1**
Yorkshire & The Humber	46	53	55	50	52	48	45	43	**44**	16	4	-9	2	-6	0	-4	**2**
East Midlands	50	52	53	52	50	48	49	45	**41**	5	2	-4	-2	-4	9	-8	**-8**
West Midlands	32	38	50	50	46	46	44	43	**43**	21	30	-1	-5	-2	2	-2	**0**
Eastern	48	52	52	50	44	42	48	44	**41**	8	-1	-2	-11	-6	20	-8	**-6**
London	50	57	55	57	50	48	50	45	**47**	14	-1	2	-13	-5	11	-10	**5**
South East	40	44	46	46	42	42	45	43	**43**	9	4	-1	-5	0	13	-4	**0**
South West	42	46	40	42	42	38	37	35	**37**	6	-12	7	-3	-7	3	-5	**4**
Wales	38	38	40	38	36	36	37	32	**31**	3	3	-3	-5	-1	9	-14	**-2**
Scotland	42	42	44	36	36	38	34	32	**32**	-3	4	-14	-3	4	-6	-6	**-2**
Northern Ireland	38	40	42	40	36	36	33	29	**27**	7	3	-5	-7	-2	-3	-12	**-5**

Table 5b Summary of Regional Annual Average NO_2 Concentrations in the UK from the UK NO_2 Diffusion Tube Network 1993-2001

ii. Urban Background & Intermediate (Urban Background only from 2001)

	Annual Average (µg m^{-3})									*% Change*							
	1993	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*93-94*	*94-95*	*95-96*	*96-97*	*97-98*	*98-99*	*99-00*	*00-01*
North East	23	23	27	23	21	21	20	20	**19**	0	16	-13	-3	-4	0	0	**-4**
North West & Merseyside	36	32	31	32	32	31	30	25	**24**	-9	-5	4	-2	-6	3	-17	**-4**
Yorkshire & The Humber	32	36	36	29	34	29	27	27	**26**	12	-4	-20	17	-13	0	0	**-2**
East Midlands	34	34	29	34	32	31	29	28	**25**	2	-16	16	-7	-5	0	-3	**-9**
West Midlands	23	25	29	32	27	27	25	25	**24**	7	18	12	-16	-1	0	0	**-3**
Eastern	31	34	32	32	29	27	30	29	**25**	9	-2	-2	-10	-8	20	-3	**-14**
London	36	40	38	38	36	36	35	32	**29**	13	-3	-2	-6	-1	3	-9	**-10**
South East	27	27	29	25	25	25	26	25	**24**	3	1	-10	2	0	8	-4	**-6**
South West	23	23	23	23	25	23	20	19	**17**	1	-4	2	5	-6	-9	-5	**-10**
Wales	23	23	23	31	19	19	18	16	**15**	0	0	31	-35	-7	0	-11	**-2**
Scotland	25	23	25	21	19	17	16	16	**15**	-7	7	-12	-12	-9	0	0	**-6**
Northern Ireland	21	21	21	19	17	15	16	15	**14**	1	-4	-6	-16	-6	14	-6	**-7**

Year to year percentage changes have been calculated from annual average concentrations to 1 decimal place.
Note: the averages for 2001 are based on Urban Background sites only.

3.7 NATIONAL ANALYSIS

Figure 1 presents a map of annual average NO_2 concentrations at all roadside monitoring locations in the UK during 2001. An analysis of the frequency distribution of roadside annual averages for 1993-2001 is provided in Figure 2. These nine years' data show the following patterns.

- The proportion of roadside sites with annual mean concentrations less than or equal to 38 μg m^{-3} has increased from around 30% in the mid 1990s to 53% in 2001.
- The proportion of roadside sites with annual mean concentrations in the range 38 to 48 μg m^{-3} has remained steady at around 30% throughout the duration of the Network.
- The proportion of roadside sites with annual mean concentrations greater than 57 μg m^{-3}, has decreased from around 20% in the mid-1990's to less than 10% during 2001.
- The proportion of roadside sites with annual mean concentrations greater than 76 μg m^{-3}, has remained small but constant at around 1-2% throughout 1993 - 2000. The proportion of sites in this category fell to less than 1% for the first time in 2001.

Figure 2 shows a gradual shift of the frequency distribution of annual average roadside measurements towards lower concentrations, between the mid-1990s and 2001.

Urban background (and formerly intermediate) concentrations are more representative of urban areas throughout the UK. These data have been used to produce interpolated maps of average urban background NO_2 concentrations for the UK using a simple bilinear interpolation algorithm[20].
Figure 3 presents a 10 km by 10 km interpolated plots of the intermediate and urban background concentrations between 1993 and 2000 (background only in 2001). The same algorithm has been used for all years. It should be noted that these maps are not representative of NO_2 concentrations at roadside locations or rural areas.

The areas with higher NO_2 concentrations shown by the 2001 map (Figure 3) are generally consistent with those found between 1993-2000, and correlate well with the geographical distribution of the major conurbations within the UK. Noticeably, areas with interpolated urban background concentrations in the range above 38μg m^{-3} decreased in size between 1993-1997, before disappearing in 1998.

The changes in pollutant distribution are also reflected in the frequency distribution of annual average intermediate and urban background concentrations for 1993-2001 (Figure 4). This distribution indicates that

- The proportion of intermediate and urban background sites with annual mean concentrations less than or equal to 19 μg m^{-3}, has increased from below 20% during the mid 1990s to 36% in 2001.
- The proportion of intermediate and urban background sites with annual mean concentrations in the range 19 - 29 μg m^{-3} remained steady at 35 to 40% of sites from the early 1990's to 2000: it has risen to 47% in 2001, but this probably reflects the discontinuation of intermediate sites.
- The proportion of intermediate and urban background sites with annual mean concentrations greater than 38μg m^{-3} has decreased from around 18% in the mid-1990's to 4% during 2001.
- The proportion of intermediate and urban background sites with annual mean concentrations greater than 57μg m^{-3} has also decreased and there have been no intermediate or background sites in this highest category for the last three years.

Figure 4, like Figure 2, shows a gradual shift of the frequency distribution of annual average measurements towards lower concentrations, between the mid 1990s and 2001.

3.8 COMPARISON WITH LIMIT VALUES AND OBJECTIVES

Ambient concentrations of nitrogen dioxide are covered by EC Directives, and by the UK's own Air Quality Strategy (AQS). Prior to 2001, within Europe this pollutant was covered by the 1985 NO_2 Directive (85/203/EC)[21]. This has been superseded by a new EC Directive (the 1st Daughter Directive, 1999/30/EC [22]) which came into force on 19 July 2001. However, the 1985 NO_2 Directive remains in force until fully repealed in January 2010, so demonstration of compliance is still required. In the UK, the Air Quality Regulations (2000) for England[23], Wales[24], and Scotland[25], and the Air Quality Limit Values Regulations (Northern Ireland) 2002[26] , include standards and objectives for NO_2. These are explained in the Air Quality Strategy (January 2000)[27]. Therefore, the following air quality standards for NO_2 were applicable to the UK in 2001:

1. EC 85/203.	Limit Value, 200 μg m^{-3} (105 ppb) as the 98th percentile of hourly averages Guide Value, 135 μg m^{-3} (70.6 ppb) as the 98th percentile of hourly averages Guide Value, 50 μg m^{-3} (26 ppb) as the 50th percentile of hourly averages
2. 1st Daughter Directive 1999/30/EC	200 μg m^{-3} (105 ppb) as an hourly average, not to be exceeded more than 18 times in a calendar year, to be achieved by 1 January 2010 40 μg m^{-3} (21 ppb) as an annual average, to be achieved by 1 January 2010 30 μg m^{-3} as an annual average for *total NOx*, for protection of vegetation in rural areas only. To be achieved by 19 July 2001
3. AQS Objectives	200 μg m^{-3} (105 ppb) as an hourly average not to be exceeded more than 18 times in a calendar year, to be achieved by 31 December 2005. 40 μg m^{-3} (21 ppb) as an annual average to be achieved by 31 December 2005 30 μg m^{-3} as an annual average for *total NOx*, for protection of vegetation in rural areas only. To be achieved by 19 July 2001

In the case of the AQS Objectives and Daughter Directive, "exceedence" is defined as "greater than".

Both the UK Air Quality Regulations and the EC Daughter Directive contain air quality standards for annual mean NO_2, which can be directly compared with diffusion tube measurement data. Appendix B identifies individual monitoring locations with annual average concentrations greater than the AQS objective of 40 μg m^{-3} (to be achieved by 2005).

3.8.1 Comparison with the EC Directive 85/203 for NO_2

The limit and guide values of Directive 85/203 refer to hourly NO_2 measurements over a calendar year. Diffusion tube data cannot, therefore, be directly compared with these values. However, as explained in earlier reports a scaling factor of 2.2 has been derived for the UK[10], which can be used to scale the 98th percentile Limit Value, as defined by the Directive, to produce surrogate statistics for annual average concentrations. This approach produces an EC Directive Limit Value surrogate statistic of approximately 91μg m^{-3}. During 2001 no sites measured annual average NO_2 concentrations equal to or greater than 91 μg m^{-3}. This is the third year for which this has been the case.

3.8.2 Comparison with the EC Daughter Directive Limit Values for NO_2

The first EC Daughter Directive (1999/30/EC) has set an annual mean Limit Value for NO_2 of 40μg m^{-3}, to be achieved by 2010. Based on 2001 measurement data from the UK NO_2 Network, 244 roadside sites (39% of all roadside sites), and just 9 urban background sites (1.4% of all urban background sites) measured annual average concentrations greater than 40μg m^{-3}. (As the numbers, and proportions, of sites in both categories has changes since 2000, it is not relevant to compare the total numbers of sites exceeding 40μg m^{-3} with those in previous years). It is expected that national emissions abatement strategies will enable a large proportion of these sites to meet this limit value for 2010.

The method used to predict locations that might have difficulty achieving compliance with the EC Directive Limit Value in 2010 has been updated, in preparation for the updating of the Pollutant Specific Guidance[12] produced for Local Authorities carrying out Review and Assessment. Based on modelling exercises and emission inventory predictions, it is estimated that annual mean NO_2 concentration for 2010 will be equivalent to the 2001 concentration multiplied by a factor of 0.734 for roadside sites, and equivalent to the 2001 concentration multiplied by a factor of 0.778 at urban background sites[28]. On this basis, it is estimated that, on average, roadside sites measuring in excess of 54.5 μg m^{-3}, and urban background sites measuring in excess of 51.4 μg m^{-3} during 2001 may be at risk of exceeding the EC Daughter Directive Limit Value of 40μg m^{-3} in 2010. A total of 60 roadside sites had annual mean NO_2 concentrations greater than 54.5μg m^{-3} in 2001, and have therefore been identified as at risk of exceeding the EC Daughter Directive objective in 2010. No urban background sites had an annual mean of 51.4μg m^{-3} and therefore no Network sites of this type appear to be at risk of exceeding the EC Daughter Directive objective in 2010.

3.8.3 Comparison with the AQS Objective for Annual Average NO_2

The Air Quality Regulations 2000 for England[23], Wales[24], and Scotland[25] formally prescribe the following air quality objectives for the end of 2005, (as set out by the AQS[27]), as part of UK legislation:

- 200 μg m^{-3} (105 ppb) as an hourly average not to be exceeded more than 18 times in a calendar year, to be achieved by the end of 2005.
- 40 μg m^{-3} (21 ppb) or less, when expressed as an annual average to be achieved by the end of 2005

The Air Quality Limit Values Regulations (Northern Ireland) 2002[26] formally prescribe the same limits for Northern Ireland, but to be achieved by the later data of 1st January 2010. These regulations trigger the duties of Local Authorities to review and assess the air quality in their locality, both for the present and for the end of 2005 or 2010 as appropriate. The focus of the review and assessment for the annual average NO_2 standard should be concentrated on non-occupational, near ground level outdoor locations where a person might reasonably be expected to be exposed over the relevant averaging period of the objective. For the annual NO_2 objective this includes background and roadside locations in the vicinity of housing, schools, hospitals, etc. Sites located very close to the kerb of a road are not included in this description of a relevant location. Many of the roadside sites in this network do not strictly conform to these location criteria. Nevertheless, comparisons of annual average concentrations at all sites are included here for completeness. This practice may result in an overestimation of the number of sites exceeding the annual average NO_2 objective.

It is recognised that at most locations the annual average objective is more stringent than the hourly average objective[12]: therefore in practice most sites that meet the former will also meet the latter (possible exceptions being locations affected by emissions from nearby large stationary sources). Annual average NO_2 concentrations from the UK NO_2 Network have been compared directly with the 40μg m^{-3} AQS objective. As this value is the same as the Daughter Directive annual mean Limit Value for NO_2 of 40μg m^{-3}, please refer to section 3.8.2 above for the number of sites with concentrations greater than 40μg m^{-3} during 2001.

As in the case of the EC Daughter Directive objectives above, threshold concentrations have been estimated for 2001, above which compliance with the AQS Limit Value of 40μg m^{-3} for NO_2 is unlikely to be achieved in 2005 [28]. It is estimated that, on average, roadside sites measuring in excess of 44.8 μg m^{-3}, and urban background sites measuring in excess of 44.0 μg m^{-3} during 2001 may be at risk of exceeding the AQS objective of 40μg m^{-3} in 2005. A total of 165 roadside sites had annual mean NO_2 concentrations greater than 44.8 μg m^{-3} in 2001, and are therefore identified as at risk of exceeding the AQS objective in 2005. Two urban background sites, WALSALL 7N and ROTHERHAM 3N, had annual means greater than 44.0 μg m^{-3} and are therefore also at risk of exceeding the AQS objective in 2005.

4 Trends and Comparison With Other Studies

4.1 TRENDS IN NO_2 CONCENTRATIONS

The year-to-year variation in the overall annual average NO_2 concentrations at all location types monitored in the network is shown in Table 6 below. Throughout the operation of the Network, these year-to-year changes have typically been small. However, last year (2000) a Theil's linear regression analysis identified for the first time a significant downward trend in the annual means from 1995 to 2000, for Roadside, Intermediate and Background sites. In all three cases the downward trend was significant at the 95% confidence level. The 2001 data appear to show that annual average NO_2 concentrations have remained stable since 2000. However, Theil's linear regression analysis of the 1993 – 2001 annual means still indicates a significant downward trend at the 95% confidence level. The trends of the past nine years are illustrated in Figure 5.

Table 6 Variation in Annual Average NO_2 Concentration from the UK NO_2 Diffusion Tube Network by Location

	Annual Average NO_2 Concentration (μg m^{-3})									***%Change***							
	93	***94***	***95***	***96***	***97***	***98***	***99***	***00***	***01***	***93-94***	***94-95***	***95-96***	***96-97***	***97-98***	***98-99***	***99-00***	***00-01***
Roadside	44	46	48	46	44	44	43	39	39	4	4	-4	-4	-1	-2	-9	0
Intermed-iate	32	32	34	32	31	29	29	27	-	0	6	-6	-6	-5	0	-7	-
Urban Background	27	27	27	27	25	23	23	22	22	-7	0	0	-7	-4	0	-4	0
Intermed-iate & Urban Background	29	29	29	29	27	25	25	23	-	0	0	0	-6	-4	0	-8	-

Year to year percentage change between 1993-2000 have been calculated from annual average concentrations to 1 decimal place

Further evidence of trends in UK NO_2 concentrations is provided by an analysis of annual average data from long-term operational sites (operational 1994-2001). Table 7 presents the average percentage change in annual average NO_2 concentration at long-term sites between 1994 and 2000 for a number of concentration ranges.

Table 7 Reductions in annual average NO_2 concentration at long-term operational UK NO_2 Network sites 1994-2001

Concentration band based on 1994 measurements	***Average % change in annual average NO_2 concentrations 1994 – 2001***	***Number of sites***
>80 μg m^{-3}	-26	2
60 - 80 μg m^{-3}	-23	27
40 - 60 μg m^{-3}	-20	147
20 - 40 μg m^{-3}	-13	347
< 20 μg m^{-3}	-6	105

The discontinuation of the Intermediate site category has inevitably reduced the total number of sites in operation since 1994. Table 7 indicates that, for the small number of sites measuring very high concentrations during 1994 (> 80μg m^{-3}), concentrations were on average 26% lower during

2000. For sites measuring high concentrations (60 - 80 μg m^{-3}), concentrations were on average 23% lower during 2000 than during 1994. Sites measuring annual concentrations in the 40-60 μg m^{-3} and 20-40 μg m^{-3} ranges have also shown substantial reductions. On average, concentrations at all long-term sites (of which there are a now a total of 628) have decreased by 12% between 1994 and 2001.

Observed decreases in NO_2 concentrations to 2001 are consistent on a national scale with expected trends. Reductions in urban NO_2 concentrations have been predicted based on reduction in urban NO_x emissions resulting from the introduction, in 1992, of three-way catalyst on new cars. Year to year variations in national average NO_2 concentrations between 1993 and 2001 are still small, and may be affected by factors such as improvements in analytical performance and fluctuations in meteorology.

Overall annual average concentration data from long-term monitoring sites in the Automatic Urban Networks since 1994 continue to agree with the results of the diffusion tube network, in showing marginal decreases in average concentrations for the UK. Between 1994 and 2001, the overall average NO_2 concentrations measured at *automatic* Urban Centre and Urban Background sites were 48.8,47.9, 47.5, 45.1, 40.2, 39.6, 35.5 and 35.2 μg m^{-3} (years 1994 to 2001 respectively). Future years' monitoring will establish the overall long-term trend.

4.2 COMPARISON OF EMISSIONS ESTIMATES WITH OBSERVED NO_2 CONCENTRATIONS

Estimates of total NO_x emissions in the UK from National Atmospheric Emissions Inventory[29](NAEI) are given in Table 8 below, and show a decrease of 1064 ktonnes (37%) between 1991-2000. Note: 2001 figures are not available yet. Emissions of NO_x from the major urban sources (road transport) also show a reduction over the same period of approximately 51% for total road transport emissions, 53% for petrol derived road transport emissions and 46% for DERV derived road transport emissions. These reductions may be correlated with estimates of the overall increase in the percentage of the UK car fleet fitted with catalytic converters, over the same period. During 1993, it is estimated that 10% of the total number of kilometres travelled by all cars (petrol and diesel) in the UK were travelled by petrol cars fitted with catalytic converters. In 1999 this estimate had risen to 65%[30] .

Table 8 Estimated NO_x Emissions in the UK 1991-00[29]

	Estimated NO_x Emission (ktonnes)									
Source	***1991***	***1992***	***1993***	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***
Total (all sources)	2871	2810	2615	2515	2356	2303	2158	2072	1901	1807
Total Road Transport	1274	1224	1147	1084	997	956	881	788	716	629
Petrol (only)	804	781	722	670	622	604	551	495	438	376
Derv (only)	471	443	425	414	374	353	330	292	277	252

These data are provisional estimates supplied by the National Atmospheric Emissions Inventory[29]

Estimated total NO_x emissions have shown a considerably greater decrease than ambient NO_2 concentrations. The lack of direct correspondence between reductions in NO_x emissions and ambient NO_2 concentration may be explained by the secondary pollutant nature of NO_2; it is formed by oxidation of NO in the atmosphere. Also, at sites with high NO_x concentrations, atmospheric NO_2 concentrations are largely governed by the amount of oxidant available[1,29]. In urban areas the major atmospheric oxidant is ozone. Hence, for a given quantity of atmospheric oxidant, the percentage reduction in NO_2, as a result of a reduction in NO_x emissions, will be less than the percentage reduction in NO_x.

5 Future Initiatives

The UK NO_2 Network continues to provide information on the spatial distribution of NO_2 in a variety of urban areas throughout the UK. Additionally, as the survey's historical dataset has increased, long-term trends in NO_2 have been identified at national levels.

However, there is still a need for more information on the factors affecting performance of Palmes type diffusion tubes in the field. For this reason, in 2002 the annual Field Intercomparison was substantially expanded.

Formerly, the Intercomparison was a short-term trial of one or two months duration, intended to provide information on the uncertainties arising from both the sampling and analysis phases of diffusive sampling in the field, for quality control purposes (see description in Appendix 1). However, its short-term nature meant it could only provide a "snapshot" of performance at any one time. More information is needed about how factors such as bias and precision might vary from month to month, and also how seasonal factors might affect tube performance.

Therefore, an ongoing monthly intercomparison trial has been set up, and will be operated independently by the Health and Safety Laboratory (HSL), who are currently responsible for the WASP programme. A triplet of tubes from each participating laboratory will be exposed monthly at an urban background AUN site, and the results compared with the on-site chemiluminescent NOx analyser. Participating laboratories will be informed of their performance with respect to the reference technique (the chemiluminescent analyser) on a monthly basis. The full year's data will be compared with agreed performance criteria. However, the emphasis will be on investigating monthly and seasonal variations in performance, for a large number of laboratories, rather than purely testing performance.

6 Conclusions

The main conclusions of the survey, so far, can be summarised as follows:

1. Overall annual average concentrations for 2000 at the sampler locations monitored were as follows: Roadside 39 μg m^{-3}, Urban Background 22μg m^{-3}. These annual averages are identical to those measured last year (2000).

2. Data from the Automatic Urban Network also indicates that average urban NO_2 concentrations in 2001 were only very marginally lower than in 2000.

3. A statistically significant downward trend has been identified in the annual means from 1993 to 2001, for both site types. A comparison of data from long-term monitoring sites running between 1994 and 2001 indicates decreasing annual mean concentrations at the majority of such long-running sites.

4. The spatial distribution of urban background NO_2 concentrations has been plotted by interpolation of annual average intermediate and urban background data. The pattern remains similar to that found between 1993-9, with highest interpolated concentrations correlating well with the major urban conurbations of the UK.

5. The ratio of roadside to urban background annual average concentrations remains consistent with those found in previous years.

6. No sites in the Network were found to have an annual average NO_2 concentration greater than the revised surrogate statistic for the EC Directive (EC 85/203) Limit Value (91μg m^{-3}) during 2001.

7. 60 roadside sites (but no urban background sites) were identified as being at risk of exceeding the EC Daughter Directive objective for 2010 based on current emissions projection scenarios. This is substantially higher than the number estimated last year, but the number of Roadside sites in the Network has increased substantially, and the method of prediction has been updated.

8. A total of 167 sites, all but two of which were roadside, were identified as being at risk of exceeding the AQS objective for the end of 2005 based on current emissions projection scenarios.

7 Acknowledgements

All of the measurement data presented in this report have been collected by the participating Local Authorities, at their own expense, and supplied to **netcen** as part of the study. This contribution and co-operation from the Local Authorities is gratefully acknowledged.

The central organisation of the study, analysis of data and organisation of laboratory intercomparisons has been funded by the Department for Environment, Food and Rural Affairs, the Scottish Executive, the Welsh Assembly Government and the Department of Environment in Northern Ireland as part of the Air Quality research programme.

8 References

1. Bower, J.S. et al. A Diffusion Tube Survey of NO_2 Levels in Urban Areas of the UK. Atmospheric Environment, Vol. 25B, No. 2, pp 255-265, 1991.
2. Campbell, G.W, Stedman J. R, and Stevenson K. J. A Survey of Nitrogen Dioxide Concentrations in the United Kingdom using Diffusion Tubes, July-December 1991. Atmospheric Environment. Vol. 28, No 3, pp 477-486, 1994.
3. Stevenson, K.J. and Bush, T. UK Nitrogen Dioxide Survey Results for the First Year-1993. AEA Technology, AEA/CS/RAMP/16419031/002, 1994.
4. Stevenson, K.J. and Bush, T. UK Nitrogen Dioxide Survey 1994. AEA Technology. AEAT - 0085, ISBN 0-7958-1711-3.
5. Stevenson, K.J., Bush, T. and Mooney D. UK Nitrogen Dioxide Survey 1995. AEA Technology, AEAT - 0912, ISBN 0-7058-1703-X.
6. Bush, T, Mooney D and Stevenson, K.J. UK Nitrogen Dioxide Survey 1996. AEA Technology. AEAT - 2279, ISBN 0-7058-1760-1.
7. Bush, T, Mooney D and Stevenson, K.J. UK Nitrogen Dioxide Survey 1997. AEA Technology. AEAT - 4565, ISBN 0-7058-1774-1.
8. Bush, T, Mooney D, Stevenson, K.J. UK Nitrogen Dioxide Survey 1998. AEA Technology. AEAT - 0047, ISBN 0-7058-1791-1.
9. Bush, T, Mooney D, Loader, A. UK Nitrogen Dioxide Survey 1999. AEA Technology. AEAT/ENV/R/0365, ISBN 0-7058-1799-7.
10. Bush, T, Mooney D, Loader, A. UK Nitrogen Dioxide Survey 2000. AEA Technology. AEAT/ENV/R/0669, ISBN 0-7058-1802-0.
11. Bush, T UK Nitrogen Dioxide Network Instruction Manual, AEAT/3675 November 2000. Available via http://www.aeat.co.uk/netcen/airqual/reports/no2man/no2man.html .
12. Part IV of Environment Act 1995: Local Air Quality Management Technical Guidance LAQM.TG(03) Produced by Defra, 2003.
13. Carless, J A, Broughton G F J, and Bower, J S. Estimation of Short-Term Pollutant Statistics from Measured Long Term Average Concentrations in the United Kingdom: Warren Spring Laboratory LR 1010(AP). Available from AEA Technology.
14. Campbell G. W, Stedman J. R, and Stevenson, K.J. A Survey of Nitrogen Dioxide Concentrations in the United Kingdom Using Diffusion Tubes, July - December 1991. Atmospheric Environment Vol. 28, No. 3, pp 477-486, 1994.
15. Heal M. R, O'Donoghue M. A, and Cape J. N. Overestimation of urban nitrogen dioxide by passive diffusion tubes: a comparative exposure and model study. Atmospheric Environment 33, pp 513-524, 1999.
16. Atkins C.H.F, Sandalls J, Law D.V, Hough A.M, and Stevenson K.J. The Measurement of Nitrogen Dioxide in the Outdoor Environment Using Passive Diffusion Tube Samplers. Harwell Energy & Environment Report. No. AERE-R 12133. February 1986.
17. MR Heal, C Kirby and JN Cape, Systematic Biases in Measurement of Urban Nitrogen Dioxide using Passive Diffusion Samplers, Environ. Monitoring and Assessment **62**: 39-54, 2000.
18. C Kirby, M Fox, J Waterhouse. Reliability of nitrogen dioxide passive diffusion tubes for ambient measurement: in situ properties of the triethanolamine absorbent. J. Environ. Monit. , 2000, **2**, 307-312.
19. Bush T, Smith S , Stevenson K, Moorcroft S. Validation of Nitrogen Dioxide Diffusion Tube Methodology in the UK. Atmospheric Environment 35 (2001) 289-296.
20. Stedman J R. Revised High Resolution Maps of Background Air Pollutant Concentrations in the UK: AEA Technology1996.
    AEAT - 3133, Issue 2. March 1998.
21. The Council of the European Communities Directive on air quality standards for nitrogen dioxide, 85/203/EEC. 7 March 1985.
22. The Council of the European Union Directive relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, 1999/30/EC. 22 April 1999
23. The Air Quality (England) Regulations 2000 (Statutory Instrument 2000 No. 928), March 2000.
24. The Air Quality (Wales) Regulations 2000 (Statutory Instrument 2000 No. 1940 (W.138)), July 2000.

25. The Air Quality (Scotland) Regulations 2000 (Scottish Statutory Instrument 2000 No. 97), March 2000.
26. The Air Quality Limit Values Regulations (Northern Ireland) 2002 (Statutory Rule 2002 No. 94), March 2002.
27. The Air Quality Strategy for England , Scotland, Wales and Northern Ireland. DETR, Scottish Executive, National Assembly for Wales and the Department of Environment in Northern Ireland, January 2000. ISBN 0-10-145482-1, HMSO publication.
28. Private communication, J R Stedman, AEA Technology, August 2002
29. Private communication, J W L Goodwin, AEA Technology, August 2002.
30. Private communication K Haigh, AEA Technology, August 2002.

Figure 1 Annual Average Roadside NO_2 Concentrations in the UK from the UK NO_2 Network 2001

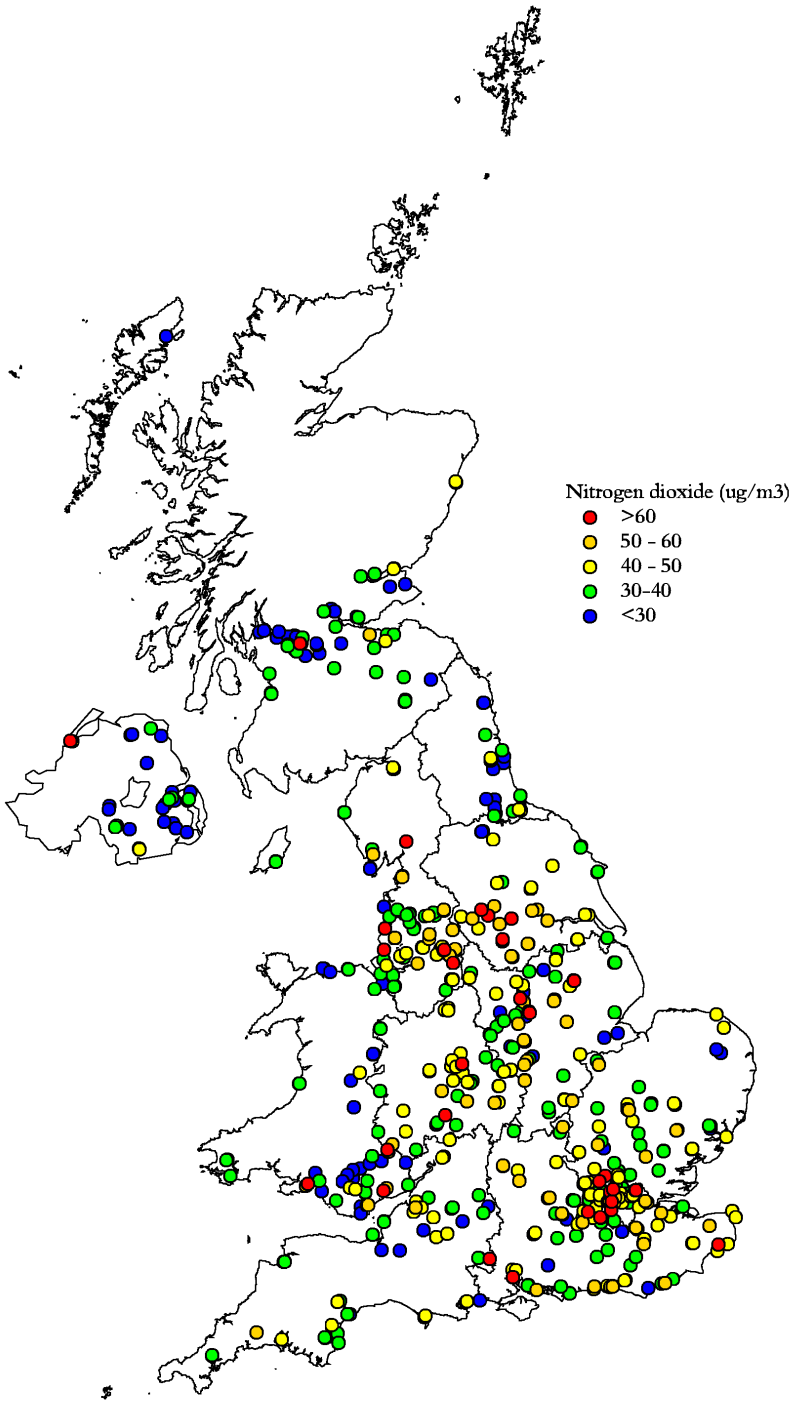


Figure 2. Frequency Distribution of Annual Mean Roadside Nitrogen Dioxide Concentration, 1993 - 2001

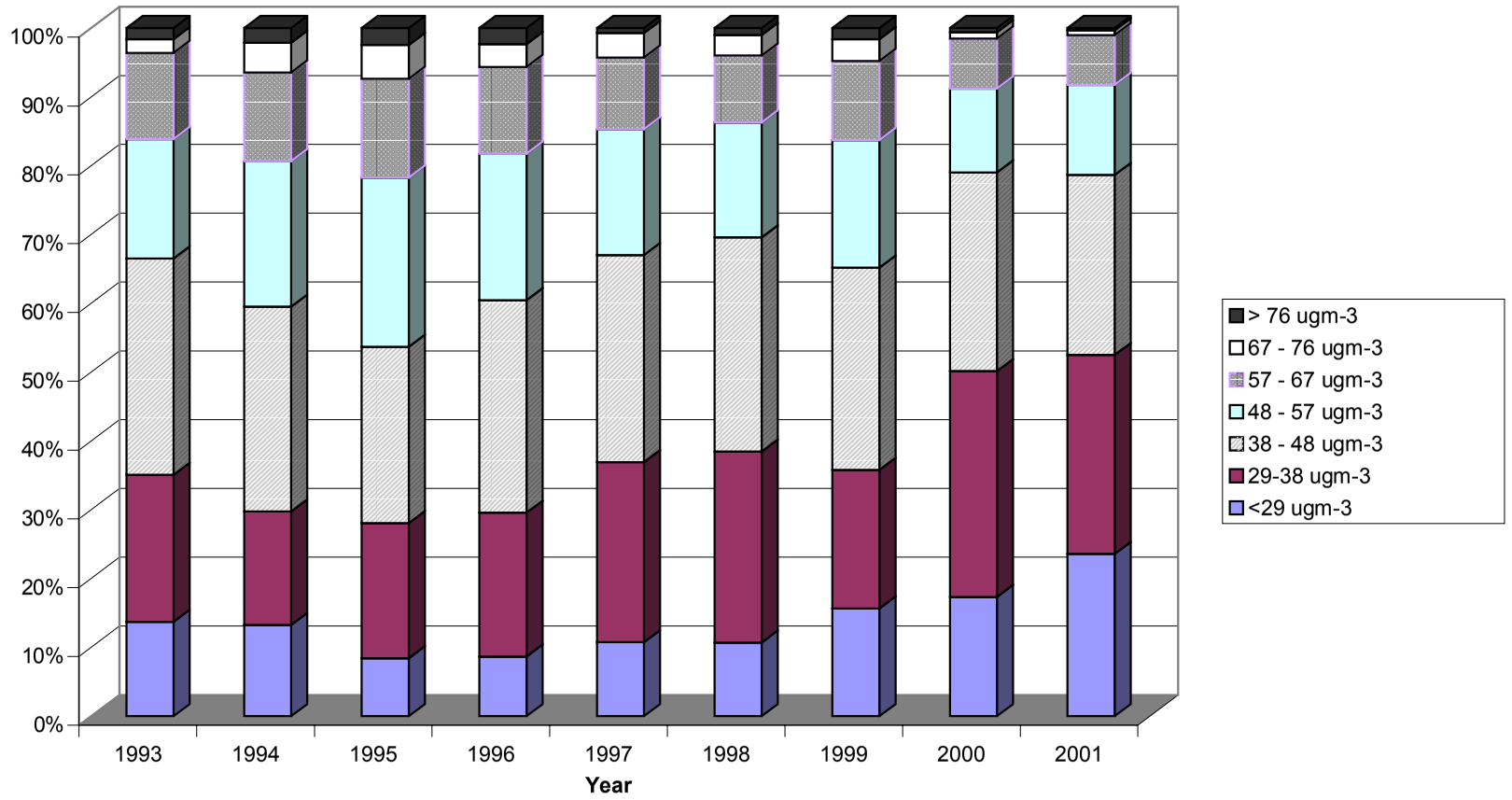


Figure 3a Interpolated plots of annual average intermediate and urban background NO_2 concentrations in the UK NO_2 Network 1993-1997.

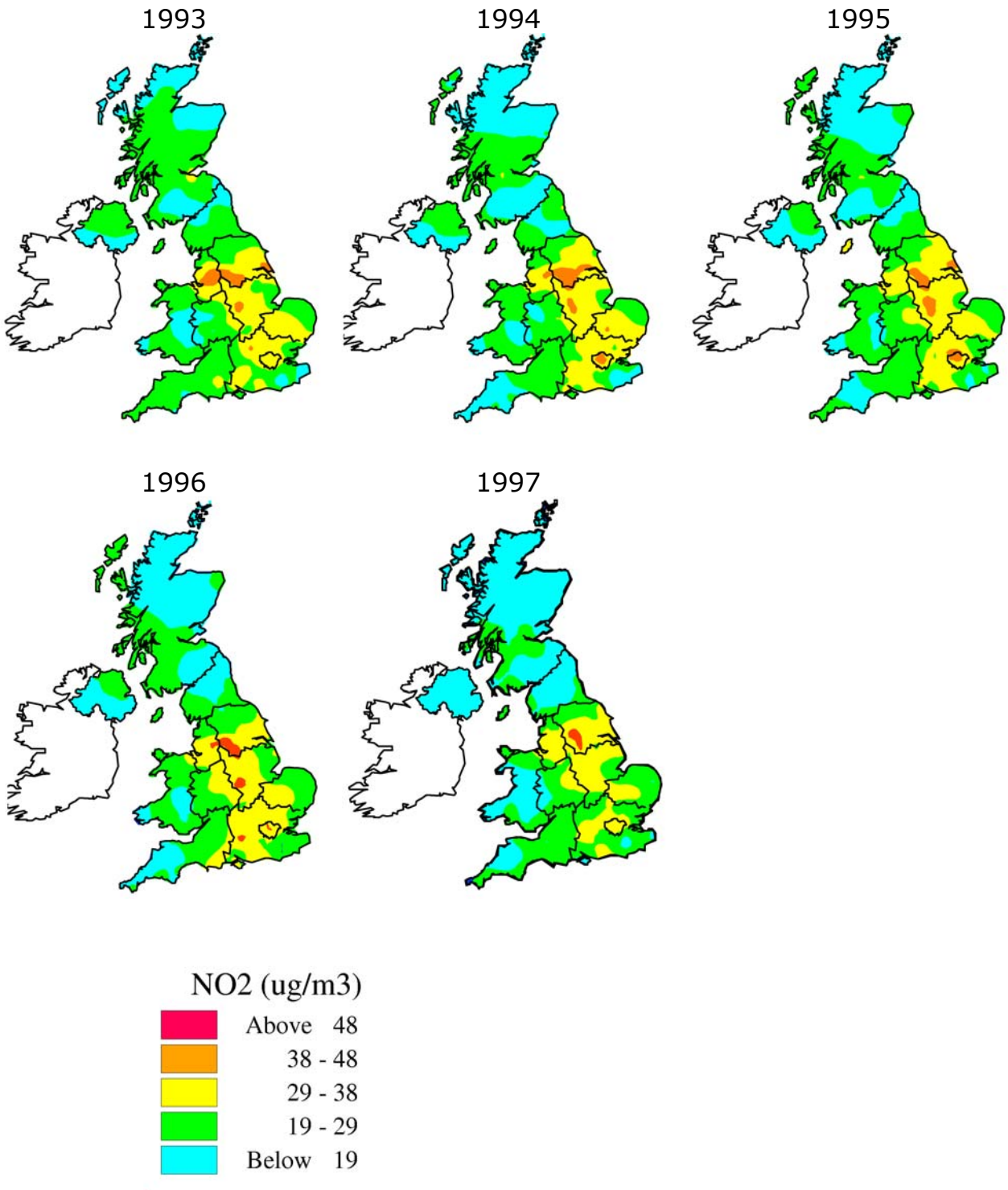


Figure 3b Interpolated plots of annual average intermediate and urban background NO_2 concentrations in the UK NO_2 Network 1998-2001.

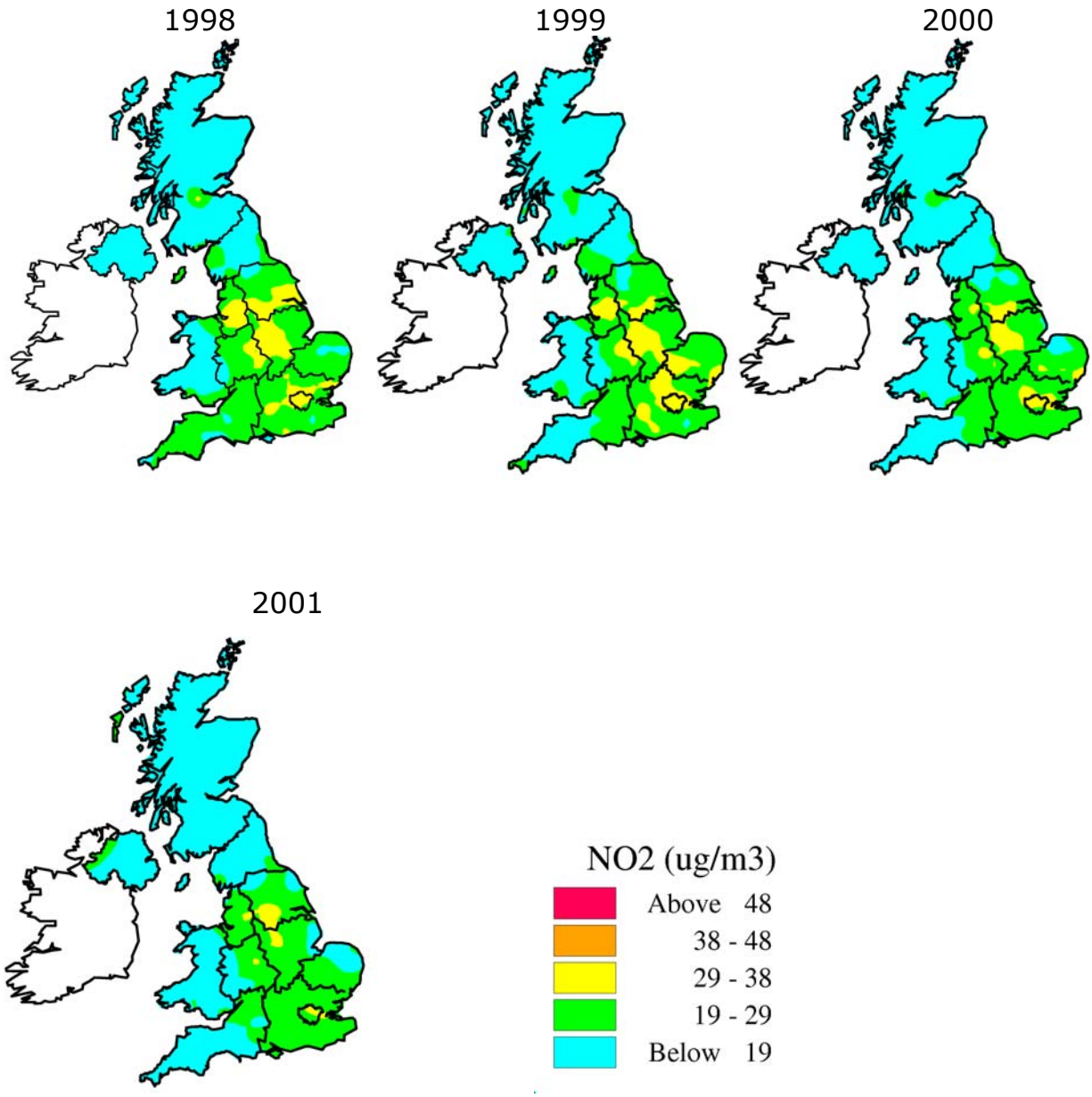


Figure 4. Frequency Distribution of Annual Mean Background Nitrogen dioxide Concentrations 1993-2001

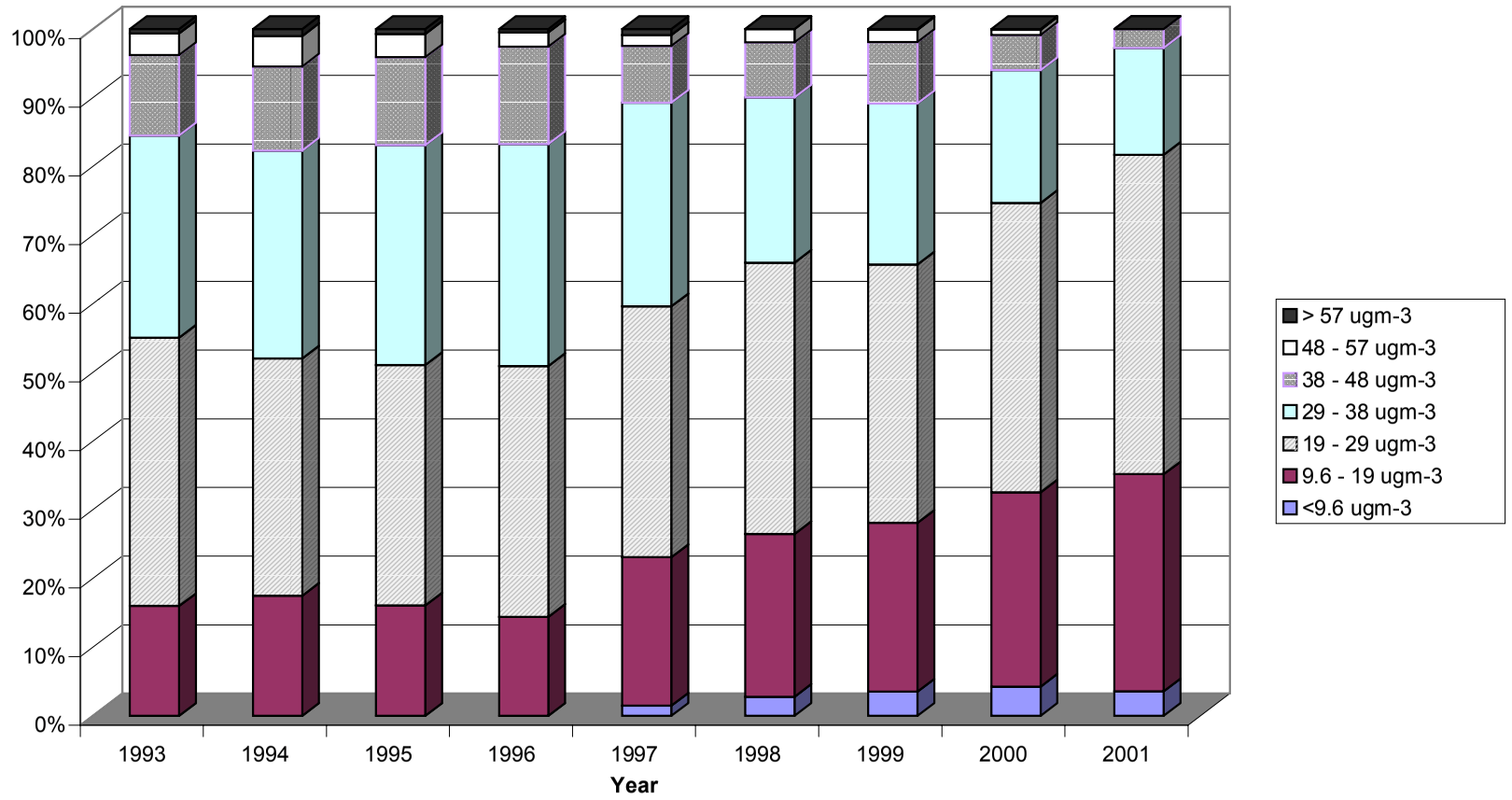
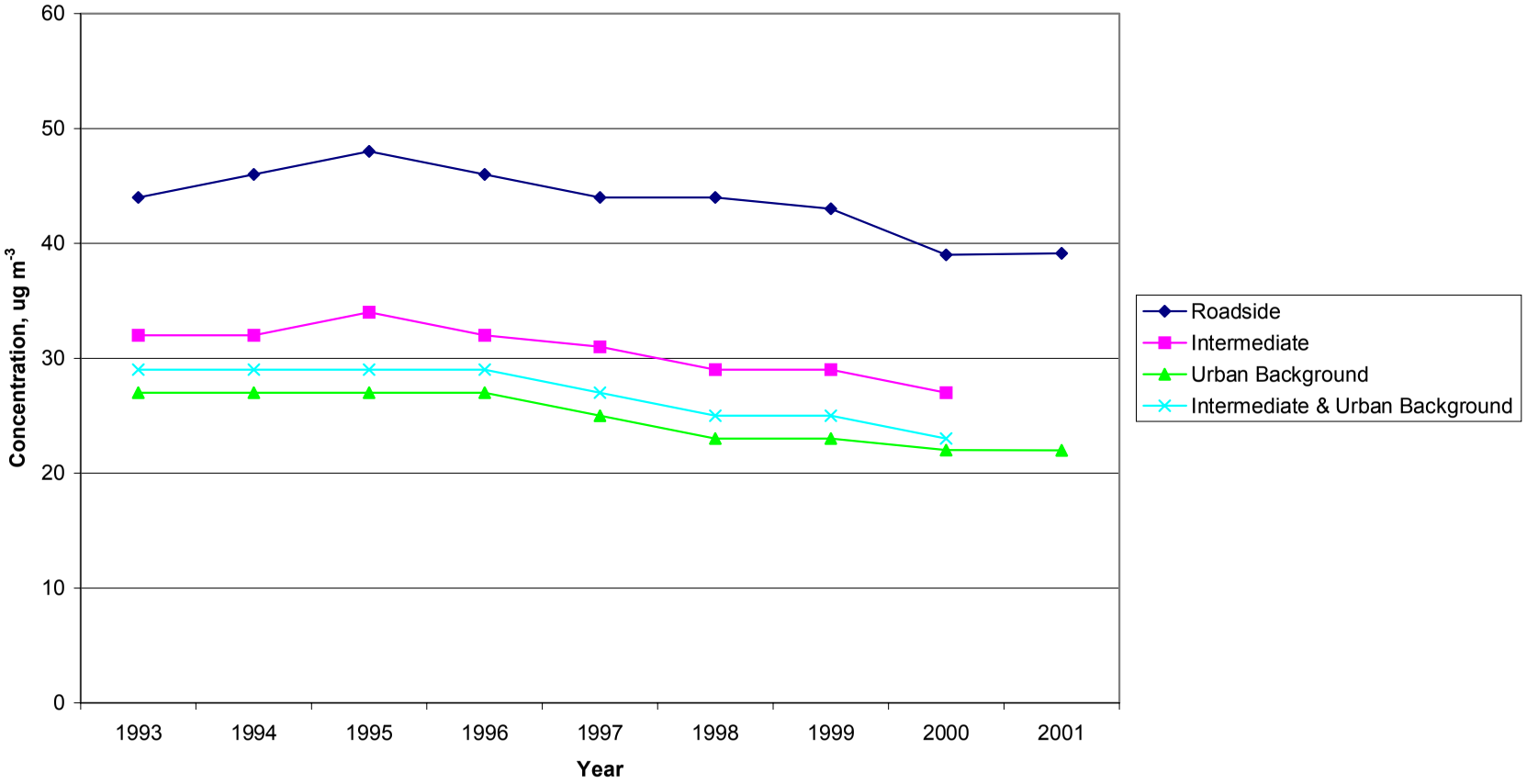


Figure 5. Trends in Annual Mean Nitrogen Dioxide Concentration as Measured by NO_2 Network, 1993 - 2001



Appendices

CONTENTS

Appendix A
Analytical Laboratory Performance Testing 2001

A1 Analytical Laboratory Performance Testing

The control and minimisation of uncertainty in the data reported by the UK NO_2 Network is an important role of the co-ordinating body. The number of laboratories performing analyses as part of the network also makes this a substantial task. Currently, there are no British or ISO standards for NO_2 diffusion tube analysis. An assessment of uncertainties and variation in analytical performance is therefore important, as variations in laboratory methodologies and performance are likely to be reflected in the final survey dataset.

There are four parts comprising the UK NO_2 Network Quality Assurance/Quality Control programme. These are as follows:

1. The Workplace Analysis Scheme for Proficiency (WASP) programme for NO_2 diffusion tube analysis. This is a performance testing scheme first introduced in 1996, and integrated into the WASP scheme in 1999. This scheme makes use of artificial analytes (doped tubes) to test the quality of laboratory analyses on a monthly basis. The scheme provides excellent tracking of analytical performance throughout the year and minimises the response time between identification and correction of analytical problems. It is operated independently by the Health and Safety Laboratory (HSL).

2. **The Annual Field Intercomparison Exercise.** This is an annual field trial, designed to complement the monthly performance testing scheme described in (1) above by providing information on the uncertainties arising from both the sampling and analysis phases of diffusive sampling in the field.

3. **QC Solution Testing Scheme** This involves the monthly analysis of a nitrite solution of known concentration by all participating laboratories. Every six months approximately 150ml of a stock nitrite solution is distributed to each laboratory. The laboratories analyse a sample of this stock solution on a monthly basis and return the result to **netcen** for checking.

4. **Routine Data Screening.** Experienced operators carefully screen the data supplied by our participating Local Authorities. Suspect values and possible errors are highlighted and checked with the site operators.

Criteria for data acceptance are set on the basis of items 1 and 2 above. Laboratories unable to demonstrate satisfactory performance in these two key quality systems are identified and the measurement data supplied by these laboratories may be excluded from the UK NO_2 Network report.

A1.1 WASP SCHEME FOR NO_2 DIFFUSION TUBES

As from May 1999, the UK NO_2 Network's Laboratory Performance Testing Scheme has been operated independently by Health and Safety Laboratory (HSL) as part of the Workplace Analysis Scheme for Proficiency (WASP). This marks the development from an informal testing scheme, run explicitly for the UK NO_2 Network, to an internationally recognised performance testing programme (WASP). Contact WASP via Marc Newsome on 0114 289 2446 or email marc.newsome@hsl.gov.uk for details.

A1.1.1 WASP Performance Criteria

The WASP scheme involves the analysis of a Quality Control (QC) analyte of known concentration by each participating analytical laboratory. Each month a solution doped diffusion tube (Doped Tube) is distributed to participants, who analyse the tube and report the results to HSL. Performance scores are assigned to the analyses, based on their deviation from the known mass of nitrite in the analyte, in terms of the standard deviation. Results are classified as follows:

Good	$\leq$ 2 Standard deviations from actual value
Warning	2-3 Standard deviations from actual value
Action	$\geq$ 3 Standard deviations from actual value

Performance test results are normally disseminated to participating laboratories by post, but in order to provide rapid response to potential problems, 'Warning' and 'Action' performances scores are faxed.

Performance for the full year 2001 have been assessed by AEA Technology according to the following criteria, which have been agreed with Defra and HSL.

1. Where a laboratory joins or leaves the WASP programme part way through the year, its data are only acceptable to the NO_2 Network for the months during which it was a participant of the WASP programme.
2. Apart from laboratories joining or leaving WASP during the year, participating laboratories will be allowed to miss no more than 2 of the 12 monthly WASP rounds.
3. If a participating laboratory *does* miss more than 2 rounds in the year, results from the preceding or following year may be taken into account.
4. The year's **single** worst result for the laboratory is discarded. This makes some limited allowance for one-off problems with analytical equipment etc.
5. Each laboratory's monthly results is then combined to give a standard uncertainty for the full year, expressed as a relative standard deviation (%RSD) using the following formula:

$$\%RSD = \left(\sqrt{\frac{\sum_{i=1}^{n} \left(\frac{x_i}{\bar{x}} - 1 \right)^2}{n}} \right) \times 100$$

- where x_i are the monthly results obtained by the laboratory, x"bar" is the assigned value and n is the number of results.

6. If the relative standard deviation is greater than $\pm$25%, the laboratory's performance for the year in the WASP scheme is deemed unsatisfactory.

The monthly performance scores for 2001 were assessed according to these criteria.

A1.1.2 WASP Programme Performance Test Results 2001

Table A1 at the end of Appendix A presents the analysis results reported by each participating analytical laboratory, for the doped diffusion tubes analysed under the WASP scheme for the year 2001. Table A2 (also at the end of Appendix A) shows the performance scores assigned to these results.

The monthly average coefficient of variation (CoV) of results from all laboratories has been calculated. An estimate of the variation in laboratory analyses can be derived by further calculating the overall average of the monthly CoVs during 2001. Estimates of analytical variability obtained between 1993-2001 are compared in Table A3 below.

Table A3 Summary of Laboratory Performance in the UK NO_2 Network Analytical Laboratory Performance Testing Scheme 1993-2001

	1993	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***
Number of Laboratories	38	43	38	38	37	38	37	31	30
Overall CoV of Doped Tube Analyses	38%	-	24%	24%	21%	23%	17%	20%	21%

NB. Doped Tube analyses were not performed during 1994.

Table A3 shows that during 2001 the overall variability of results reported by laboratories in this programme was 21%. This is consistent with previous years. Analysis of the performance scores awarded to reported analyses each month (Table A2) indicates that for the 319 doped tube analyses reported, 4% of all analyses received 'Action' scores and a further 5% received 'Warning' scores during 2001. This is slightly worse than last year, but it should be noted that the mean mass of nitrite on the doped tube in 2001 was 0.99 μg, closer to the detection limit than in 2000 when it it was 1.5 μg.

A1.2 QC SOLUTION ANALYSES

The QC Solution Testing Scheme involves the monthly analysis of a nitrite solution of known concentration by all participating laboratories. Every six months approximately 150ml of a stock nitrite solution is distributed to each laboratory. The laboratories analyse a sample of this stock solution on a monthly basis and return the result to **netcen** for checking. Performance scores are assigned to the analyses based on the principles of Shewhart control charts and z-scores[A1], for demonstrating statistical process control. Under this system an estimate of the expected coefficient of variation (CoV) has been established for the QC Solution analyses, according to the empirical formula developed by Horwitz[A2]. Hence, for a QC Solution of concentration range 1500-2000 mg/l (as nitrite) the average expected CoV is approximately 5%. Performance scores are classified as "Good", Warning" or "Action" in the same way as the WASP Doped Tube analysis.

Although the QC solution analyses are not used to assess satisfactory performance, this exercise provides the laboratories with a useful means of checking their analytical procedures. Table A4 (at the end of this Appendix) shows the results of the QC Solution Analyses for 2001, and Table A5 shows the performance scores assigned to them. Table A6 (below) compares overall variability of the results reported by laboratories for QC solution analysis, with results in previous years.

Table A6 Summary of Laboratory Performance in the UK NO_2 Network QC Solution Analysis Exercise 1993-2001

	1993	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***
Number of Laboratories	38	43	38	38	37	38	37	32	30
Overall CoV of QC Solution Analyses	9%	-	12%	5%	3%	3%	3%	3%	2%

The overall coefficient of variation obtained in 2001 was consistent with previous recent years.

A1.3 FIELD INTERCOMPARISON EXERCISE 2001

The objectives of the annual field intercomparison exercise are to estimate bias and precision, under normal field operating conditions, for all laboratories performing analysis in the UK NO_2 Network during 2001. A report of the 2001 Field Intercomparison[A3] is published on the World Wide Web at http://www.airquality.co.uk/archive/reports/cat05/intercomp_2001_report.pdf, but a brief summary is presented here.

Seven nitrogen dioxide diffusion tubes (six tubes for exposure, and one travel blank) were supplied by each of the 28 participating laboratories, for each exposure period. The two four-week exposure periods were as follows:

- Period 1 (September): 12.00 5th September - 10.00 3rd October 2001.
- Period 2 (October): 11.00 3rd October - 13.00 31st October 2001.

As in previous studies, diffusion tubes were exposed simultaneously upon purpose made exposure racks located close to the automatic chemiluminescent NO_x monitoring equipment installed at Defra's Automatic Urban Network (AUN) site, Walsall Alumwell. The chemiluminescent analyser provided a reference measurement, with which the diffusion tube results were compared. For this study, a duplicate chemiluminescent analyser was installed at Walsall Alumwell, in the same enclosure and sampling through an independent inlet. This was intended to provide a "backup" reference measurement, in the event of technical problems affecting the AUN chemiluminescent analyser. Both analysers were calibrated fortnightly throughout the study. Both performed reliably, and achieved data capture of greater than 95%.

The exposed tubes and travel blanks were returned to the supplying laboratories for analysis. Travel blanks accompanied exposure tubes to and from the test site. They were isolated in sealed sample bags, and refrigerated throughout the exposure period. The participating laboratories sent their analytical results to **netcen** for collation.

A1.3.1 Results of 2001 Field Intercomparison

Table A7 shows the performance of each laboratory, in terms of bias relative to the reference value, and precision, expressed as the standard deviation of the six individual tube results. Code

numbers are used to identify each laboratory. (Laboratory 12 supplies diffusion tubes prepared by a choice of three different methods, and all three types were tested in this intercomparison. The three types are denoted by 12a, 12b, and 12c).

The average bias in the results provided by each laboratory is shown in Figure 3 (mean of both periods). Code numbers are used to identify each laboratory. The range of bias exhibited by individual laboratories in the two tests was between +57% to -58%.

Some laboratories produced similar results in terms of bias and precision in both exposure periods. However, many did not. Typically, laboratories exhibited higher or more positive bias in the second of the two exposure periods. This may have been due to differences in meteorological conditions between the two periods, although data from a nearby meteorological monitoring station did not highlight any obvious differences. This highlights the fact that intercomparison studies such as this can only provide a "snapshot" of laboratory performance at a specific time, and must be supplemented by continuous studies such as the WASP programme. **In particular, it is not recommended that results from Network Intercomparisons such as this are routinely used to scale NO_2 diffusion tube result for Review and Assessment or other purposes. This is because the Intercomparison covers only 1 or 2 months, and the bias shown by diffusion tubes can vary greatly from month to month.**

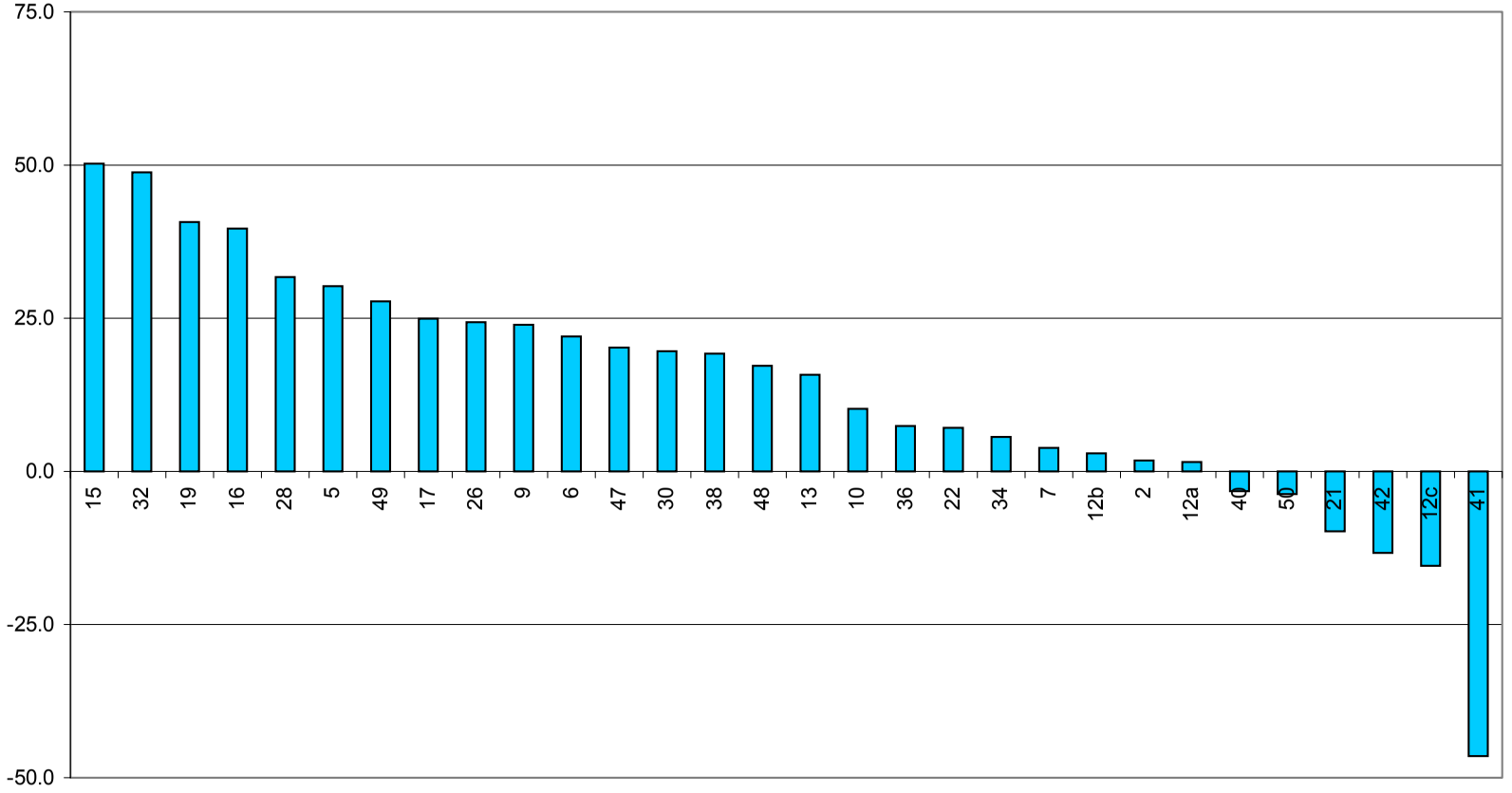
Rather, according to Technical Guidance LAQM.TG(03), any LA using diffusion tubes for Review and Assessment should carry out their own intercomparison, by exposing tubes in triplicate at their own automatic site for the duration of the study. If they do not have access to one, they should use a suitable AUN site. Failing that they should seek verification from their laboratory.

Table A7. Bias and Precision in 2001 NO_2 Network Field Intercomparison

Laboratory Code	% Bias in Period 1	Precision in Period 1	% Bias in Period 2	Precision in Period 2	Mean % Bias	Mean Precision
2	-1.4	3.12	5.0	3.72	1.8	3.42
5	16.0	2.24	44.4	2.63	30.2	2.43
6	19.3	11.95	24.8	2.92	22.0	7.44
7	-9.7	5.80	17.4	5.19	3.8	5.49
9	20.2	1.97	27.6	5.93	23.9	3.95
10	2.5	4.21	18.0	9.39	10.2	6.80
12a	-9.4	1.78	12.4	4.77	1.5	3.27
12b	-4.2	3.88	10.1	3.33	2.9	3.61
12c	-23.4	1.86	-7.5	2.19	-15.4	2.03
13	5.0	6.31	26.5	8.94	15.8	7.62
15	43.8	0.91	56.6	1.24	50.2	1.07
16	33.9	1.76	45.3	3.15	39.6	2.45
17	28.6	4.45	21.3	8.07	24.9	6.26
19	33.1	1.63	48.4	1.43	40.7	1.53
21	8.8	5.82	-28.4	4.72	-9.8	5.27
22	-7.9	0.23	22.1	4.50	7.1	2.36
26	10.7	1.82	38.0	6.69	24.3	4.26
28	18.7	6.02	44.8	1.97	31.7	3.99
30	2.0	4.51	37.2	5.76	19.6	5.13
32	46.7	2.88	51.0	2.58	48.8	2.73
34	30.5	1.60	-19.3	1.47	5.6	1.54
36	-7.7	1.60	22.6	1.47	7.4	1.54
38	14.6	3.11	23.8	5.54	19.2	4.32
40	-5.3	2.21	-1.1	2.64	-3.2	2.43
41	-58.1	3.72	-34.9	3.31	-46.5	3.52
42	-29.3	3.60	2.6	7.84	-13.3	5.72
47	11.9	4.65	28.5	1.41	20.2	3.03
48	7.6	1.66	26.9	9.84	17.2	5.75
49	25.3	2.70	30.1	3.82	27.7	3.26
50	-18.4	1.00	11.0	5.32	-3.7	3.16
Mean	6.8	3.30	20.2	4.39	13.5	3.85

Reference concentrations (chemiluminescent automatic analyser) 2001 = 39.2 μg m^{-3} in Period 1 and 38.2 μg m^{-3} in Period 2.
n.b. the bias values shown are not for use as correction factors.

Figure A.1. Average bias relative to chemiluminescent analyser for NO2 diffusion tube measurements in 2001 Field Intercomparison, mean of Period 1 (September) and Period 2 (October).



A1.4 IDENTIFICATION OF LABORATORIES WITH UNSATISFACTORY ANALYTICAL PERFORMANCE

Objectives for overall accuracy of measurement data derived from diffusive samplers are defined by the European Union Daughter Directive (1999/30/EC)[A4]. These objectives recommend that, to enable accurate comparison of long-term average Limit Value with measurement data derived from indicative monitoring (i.e. diffusion measurements), indicative measurement data should have an overall accuracy of ±25% or less. It should be noted however, that there is no recognised method available for determination of accuracy of diffusion tube samplers in accordance with the Daughter Directive. This issue is currently the subject of European Committee for Standardisation Working Group (CEN/TC 246/WG12).

In the absence of a standard method for determining the accuracy of diffusion tube measurements, the results of (i) the NO_2 Network Laboratory Performance Testing Scheme, and (ii) the Field Intercomparison Exercise have been used to determine satisfactory data quality for the network.

This approach has two main benefits:

1. Overall uniformity of data throughout the year is demonstrated by the analysis of the doped tubes from the WASP Scheme
2. The bias and precision of the samples under field conditions can be demonstrated for a short period during the monitoring year by the Field Intercomparison Exercise

The relevant performance statistics for each laboratory are presented in Tables A1 (WASP programme) and Table A7 (Field Intercomparison). As in previous years, a few laboratories passed one test but failed the other. This may arise from the fact that these tests investigate different components of uncertainty in the diffusion tube measurement system, which contribute to the overall variability in measurements. The WASP programme tests uncertainty resulting from the analytical phase throughout the year, and the Field Intercomparison provides an annual "snapshot" test of combined uncertainty arising from both analytical and sampling phases.

As in previous years, as a best practicable approach, the following criteria were established to test for satisfactory laboratory performance and therefore data quality. In order to meet the data quality objectives of the UK NO_2 Network, data from laboratories that failed *both* criteria are eliminated.

(i) WASP Programme 2001.
Laboratories must achieve a relative standard deviation (%RSD) of ± 25% on the basis of the year's performance, having discarded the single worst result. Only one of the participating laboratories did not meet this requirement during the 2001 WASP programme.

(ii) Field Intercomparison Exercise 2001.
Laboratories must perform on average to within ± 25% of the reference concentration in this Field Intercomparison. Eight laboratories exhibited an average bias greater than the target of ±25%, relative to the automatic analyser. In the worst cases the bias was around +50%, and in all but one case the bias was positive.

No laboratories demonstrated unsatisfactory performance in both the WASP programme and the field intercomparison. Therefore, according to the agreed criteria, no laboratories had their 2001 data rejected.

A1.5 OBSERVATIONS AND RECOMMENDATIONS

Results from the WASP programme (operated independently by HSL) and the 2001 Field Intercomparison Exercise indicated that the performance of the participating laboratories was generally good. No laboratories had data rejected on grounds of unsatisfactory performance.

Due to the short-term duration of the Field Intercomparison, it is <u>not</u> recommended that the results are used as routine correction factors for NO_2 diffusion tube results (for example for Review and Assessment purposes). The bias shown by diffusion tubes can vary substantially from month to month, so the bias observed in the Intercomparison may not be representative of the whole year. Rather, according to Technical Guidance LAQM.TG(03), any Local Authority using NO_2 diffusion tubes for Review and Assessment should carry out their own comparison, by exposing tubes in triplicate at their own automatic site *for the duration of the study*. If they do not have access to an automatic monitoring site, they should use a suitable AUN site. Failing that they should seek verification from their laboratory.

However, there are plans to extend the Intercomparison to operate on a monthly basis, and it is envisaged that an ongoing monthly study will enable a more reliable estimation of diffusion tube bias, and how it varies from month to month.

A2 REFERENCES

A1. Mullins, E. Introduction of Control Charts in the Analytical Laboratory. Analyst, March 1994, Vol. 119, pp369-375.

A2. Horwitz, W. Evaluation of Analytical Methods used for Regulation of Food and Drugs. Analytical Chemistry Vol. 54, No 1, January 1986.

A3. Loader A. Summary Results from the UK NO_2 Network Field Intercomparison Exercise 2001. Available via Defra's Air Quality Archive on the World Wide Web, at http://www.airquality.co.uk/archive/reports/cat05/intercomp_2001_report.pdf or from AEA Technology.

A4. The Council of the European Union Directive relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, 1999/30/EC. 22 April 1999.

Table A1: UK NO_2 Network Doped Tube Analyses 2001

	Mass of Nitrite Extracted from Doped Tube (ug)											
	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
Laboratory Name	WASP R21	WASP R22	WASP R23	WASP R24	WASP R25	WASP R26	WASP R27	WASP R28	WASP R29	WASP R30	WASP R31	WASP R32
Bristol City Council Scientific Services	1.98	0.50	1.93	0.81	0.53	1.05	0.76	1.91	0.94	0.36	1.33	0.38
Cardiff Scientific Services	2.04	0.54	2.17	0.71	0.47	1.05	0.75	2.09	0.91	0.34	1.20	0.36
Clyde Analytical Ltd	1.85	0.48	1.92	0.74	0.28	0.64	0.49	No result	1.18	0.41	1.37	0.48
Analytical Services (South Wales)	1.95	0.55	1.94	0.90	0.59	1.10	0.80	1.85	1.01	0.53	1.18	No result
Dundee City Council	2.04	0.53	2.16	0.83	0.50	1.15	0.80	1.99	1.01	0.40	0.99	No result
City of Edinburgh Council	2.00	0.50	2.14	0.88	0.46	1.02	0.87	1.73	0.95	0.36	No result	0.44
GRADKO International Ltd	1.79	0.55	2.02	0.79	0.54	1.08	0.69	1.81	0.96	0.37	1.15	0.39
Casella Analytic	2.02	0.34	1.92	0.23	0.42	0.87	No result	1.89	0.90	0.45	1.50	0.68
Rotherham Metropolitan Borough Council	1.96	0.55	1.82	0.86	0.51	1.03	0.75	2.00	1.00	0.40	1.09	0.43
Worcestershire Scientific Services	1.93	0.51	2.32	No result	0.56	1.08	0.71	2.08	1.06	0.39	0.95	0.31
Humber Authorities Scientific Services	1.81	0.40	No result	No result	No result	No result	No result	No result	No result	No result	No result	No result
Kent Scientific Services	1.92	0.46	1.93	0.91	0.42	2.82	0.68	1.97	0.91	0.37	1.06	0.27
Lambeth Scientific Services Ltd	1.78	No result	No result	0.68	0.44	No result	0.35	1.73	0.97	1.27	0.86	No result
Lancashire County Analyst	1.56	0.46	1.82	0.70	0.42	0.96	0.58	1.65	1.40	0.37	1.20	0.56
Glasgow Scientific Services	1.94	0.51	2.23	0.77	0.52	1.06	0.74	2.03	0.87	0.38	0.44	0.50
Stanger Science and Environment	1.89	No result	No result	No result	No result	No result	No result	No result	No result	No result	No result	No result
Jesmond Dene Laboratory	1.63	0.34	1.95	0.74	0.50	1.16	0.83	2.09	1.01	0.45	1.19	0.42
Somerset Scientific Services	1.95	0.44	1.98	0.85	0.50	1.01	0.64	1.86	0.94	0.42	1.11	0.45
Walsall Metropolitan Borough Council	1.85	0.48	1.97	0.85	0.50	1.03	0.70	1.59	1.01	0.37	1.14	0.42
West Yorkshire Analytical Services	1.80	0.42	2.00	0.81	0.44	0.97	0.73	1.85	0.92	0.34	1.15	No result
Wolverhampton Metropolitan Borough Council	1.97	0.57	2.30	0.27	No result	No result	No result	No result	No result	No result	No result	No result
University of Essex	1.77	0.48	1.99	0.42	0.49	0.98	0.64	No result	0.95	0.28	1.06	0.42
Milton Keynes Borough Council	1.91	0.48	2.02	1.00	0.53	1.01	0.75	1.89	0.97	0.36	1.01	0.44
Staffordshire County Council	2.04	0.52	2.09	0.77	0.49	1.04	0.77	1.74	0.93	0.33	1.02	0.35
Ruddock & Sherratt	1.25	0.33	1.70	0.53	0.43	0.80	0.54	1.44	0.66	0.34	0.70	0.22
Northampton Borough Council	1.94	0.48	1.89	0.70	0.69	1.09	0.64	1.64	0.92	0.26	1.09	0.37
Aberdeen City Council Public Analyst	1.94	0.42	2.10	0.80	0.50	1.06	0.75	1.98	0.98	0.37	1.19	0.45
STL Bridgend	1.97	0.47	2.08	0.79	0.49	1.02	0.63	1.89	0.98	0.33	0.68	0.44
Kirklees Environmental Services	2.15	1.09	1.09	0.79	0.59	1.10	0.73	2.13	0.94	0.40	0.68	0.42
City of Liverpool Public Analyst	1.70	0.37	1.93	0.72	0.45	0.95	0.63	1.94	0.95	0.61	1.09	0.46
Assigned Value	**1.84**	**0.46**	**2.03**	**0.76**	**0.48**	**1.01**	**0.69**	**1.93**	**0.95**	**0.35**	**1.09**	**0.39**

Table A2: Performance Scores Assigned to Doped Tube Analysis, 2001.

	Performance Score											
	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
Laboratory Name	WASP R21	WASP R22	WASP R23	WASP R24	WASP R25	WASP R26	WASP R27	WASP R28	WASP R29	WASP R30	WASP R31	WASP R32
Bristol City Council Scientific Services	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Cardiff Scientific Services	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Clyde Analytical Ltd	Good	Good	Good	Good	Action	Warning	Warning	no result	Good	Good	Good	Good
Analytical Services (South Wales)	Good	Good	Good	Good	Good	Good	Good	Good	Good	Action	Good	no result
Dundee City Council	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	no result
City of Edinburgh Council	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	no result	Good
GRADKO International Ltd	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Casella Analytic	Good	Good	Good	Action	Good	Good	no result	Good	Good	Warning	Warning	Action
Rotherham Metropolitan Borough Council	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Worcestershire Scientific Services	Good	Good	Good	no result	Good	Good	Good	Good	Good	Good	Good	Good
Humber Authorities Scientific Services	Good	Good	no result	no result	no result	no result	no result	no result	no result	no result	no result	no result
Kent Scientific Services	Good	Good	Good	Good	Good	Action	Good	Good	Good	Good	Good	Warning
Lambeth Scientific Services Ltd	Good	no result	no result	Good	Good	no result	Action	Good	Good	Action	Good	no result
Lancashire County Analyst	Good	Good	Good	Good	Good	Good	Good	Good	Action	Good	Good	Good
Glasgow Scientific Services	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Action	Warning
Stanger Science and Environment	Good	no result	no result	no result	no result	no result	no result	no result	no result	no result	no result	no result
Jesmond Dene Laboratory	Good	Good	Good	Good	Good	Good	Good	Good	Good	Warning	Good	Good
Somerset Scientific Services	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Walsall Metropolitan Borough Council	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
West Yorkshire Analytical Services	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	no result
Wolverhampton Metropolitan Borough Council	Good	Good	Good	Action	no result	no result	no result	no result	no result	no result	no result	no result
University of Essex	Good	Good	Good	Action	Good	Good	Good	no result	Good	Good	Good	Action
Milton Keynes Borough Council	Good	Good	Good	Warning	Good	Good	Good	Good	Good	Good	Good	Good
Staffordshire County Council	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Ruddock & Sherratt	Warning	Warning	Good	Warning	Good	Good	Good	Good	Warning	Good	Warning	Action
Northampton Borough Council	Good	Good	Good	Good	Action	Good	Good	Good	Good	Good	Good	Good
Aberdeen City Council Public Analyst	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
STL Bridgend	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Action	Good
Kirklees Environmental Services	Good	Action	Action	Good	Good	Good	Good	Good	Good	Good	Warning	Good
City of Liverpool Public Analyst	Good	Good	Good	Good	Good	Good	Good	Good	Good	Action	Good	Good

Table A4 UK NO_2 Network Laboratory Performance Testing Scheme QC Solution Analyses 2001

	Concentrations of QC Solution Reported (mg/l)											
Laboratory name	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***
Bristol City Council Scientific Services	1900	1910	1914	1945	1930	1925	1967	1902	1935	1875	1935	1926
Cardiff Scientific Services	1987	1951	1943	1927	1988	1907	1913	1957	1942	1941	1957	1938
Clyde Analytical Ltd	1937	1990	1970	1907		2020	2310	1993	2030	2000	1957	
Analytical Services (South Wales)	2010	2020	1989	1997	2007	1980	2001	1996	2002	2001		
Dundee City Council	1948	1947	1988	1928	1946	1953	1941	1949	1967	1968	1968	1959
City of Edinburgh Council	1993	1900	2010	1993	1923	1855	1858	1910		1943	1860	1953
GRADKO International Ltd	1880	1935	1919	1935	1959	1931	1944	1939	1935	1930	1943	1971
Casella Analytic	1893	1853	1893	1973		1960		1987	1960	1920	1840	1840
Harwell Scientifics Ltd	1933	1914	1930	1902	1936	1938	1902	1916	1972	1952	1893	1898
Rotherham Metropolitan Borough Council	1943	1932	1936	1931	1933	1934	1938	1931	1939	1941	1930	1926
Worcestershire Scientific Services	1810	1830	1820	1870		1960	1930	1940	1970	1990	1890	1930
Humber Authorities Scientific Services	1880	1920				1960						
Kent Scientific Services	1968	1968	1932	1928	1937	1974	1980	1979	1915	1947	1948	1939
Lambeth Scientific Services Ltd	1910	2010	1850	1930	1900	1910	1950	1910	1990	2000	1923	1960
Lancashire County Analyst	1924	1948	1922	1932	1927	1952	1952	1936	1920	1937	1933	1934
Glasgow Scientific Services	2020	1910	1912	1783	1797	1844	1932	1952	1882	1928	1963	1896
Stanger Science & Environmental	1929											
Jesmond Dene Laboratory	1923	2004	1924	1917	1998	1993	1958	1997	1972	1970	1924	1986
Walsall Metropolitan Borough Council	1875	1914	1903	1919	2042	1890	1954	1796	1912	1991	1929	1871
West Yorkshire Analytical Services	1938	1918	1919	1939	1923	1939	1927	1963		1925		
Wolverhampton Metropolitan Borough Council		1992	2006									
University of Essex	1930	1926	1945	1944	1932	1925	1929	1915	1938	1940	1904	1920
Milton Keynes Borough Council	1974	1967	1971	1965	1948	1958		1924	1919	1927	1927	1962
Staffordshire County Council	1970	1940	1989	1945	1907	1979	2012	1940	1990	1916	2000	1998
Ruddock and Sherratt	1890	1873	1980	1985	1938	1940	1930	1923	1930	1914	1931	1930
Northampton Borough Council	1941	1939	1918	1938	1884	2031	1931	2031	2000	1876	1898	1838
Aberdeen City Council Public Analyst	1955	1948	1966	1976	1936	1996	1919	1955	1949	1932	1955	1956
STL Bridgend	2024	1970	2030	2030	1992	1950	1930	1930	1900	1916	1980	2000
Kirklees Environmental Services	1960	1920	1910	1920	1950	1940	1950	1910	1920	1910	1950	1920
City of Liverpool Public Analyst	1964	1892	1989	1954	2012	1964	2025	1973	1989	2026	1948	1772
Average	1938	1936	1942	1937	1943	1947	1959	1943	1951	1945	1931	1926
Standard Deviation	48	45	48	45	49	42	81	44	36	38	36	53
Coefficient of Variation (%)	2.5	2.3	2.5	2.3	2.5	2.2	4.1	2.3	1.9	1.9	1.9	2.8

Table A5 Performance Scores Assigned to 2001 QC Solution Analyses

	Assigned Performance Scores											
Laboratory Name	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***
Bristol City Council Scientific Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Cardiff Scientific Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Clyde Analytical Ltd	Good (0)	Good (0)	Good (0)	Good (0)	No Data	Good (0)	Action (3)	Good (0)	Good (0)	Good (0)	Good (0)	No Data
Analytical Services (South Wales)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	No Data	No Data
Dundee City Council Scientific Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
City of Edinburgh Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	No Data	Good (0)	Good (0)	Good (0)
GRADKO International Ltd	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Casella Analytic Ltd	Good (0)	Good (0)	Good (0)	Good (0)	No Data	Good (0)	No Data	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Harwell Scientifics Ltd	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Rotherham Metropolitan Borough Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Worcestershire Scientific Services	Good (1)	Good (1)	Good (1)	Good (0)	No Data	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Humber Authorities Scientific Services	Good (0)	Good (0)	No Data	No Data	No Data	Good (0)	No Data	No Data	No Data	No Data	No Data	No Data
Kent Scientific Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Lambeth Scientific Services Ltd	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Lancashire County Analyst	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Glasgow Scientific Services	Good (0)	Good (0)	Good (0)	Good (1)	Good (1)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Stanger Science & Environmental	Good (0)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Jesmond Dene Laboratory	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Walsall Metropolitan Borough Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (1)	Good (0)	Good (0)	Good (1)	Good (0)	Good (0)	Good (0)	Good (0)
West Yorkshire Analytical Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	No Data	Good (0)	No Data	No Data
Wolverhampton Metropolitan Borough Council	No Data	Good (0)	Good (0)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
University of Essex	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Milton Keynes Borough Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	No Data	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Staffordshire County Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Ruddock and Sherratt	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Northampton Borough Council	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (1)
Aberdeen City Council Public Analyst	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
STL Bridgend	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
Kirklees Environmental Services	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)
City of Liverpool Public Analysts	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (0)	Good (1)

Appendix B
Regional Data 2001

B1.1 Scotland (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for Scotland are shown in Figure B1.1. Table B1.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B1.2.

Table B1.1 Roadside Sites in Scotland with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Glasgow 1N (76μgm^{-3})
Edinburgh 5N (51μgm^{-3})
Aberdeen 1N (50μgm^{-3})
Dalkeith1N (48μgm^{-3})
Dundee 7N (47μgm^{-3})

Table B1.2 Roadside Sites in Scotland

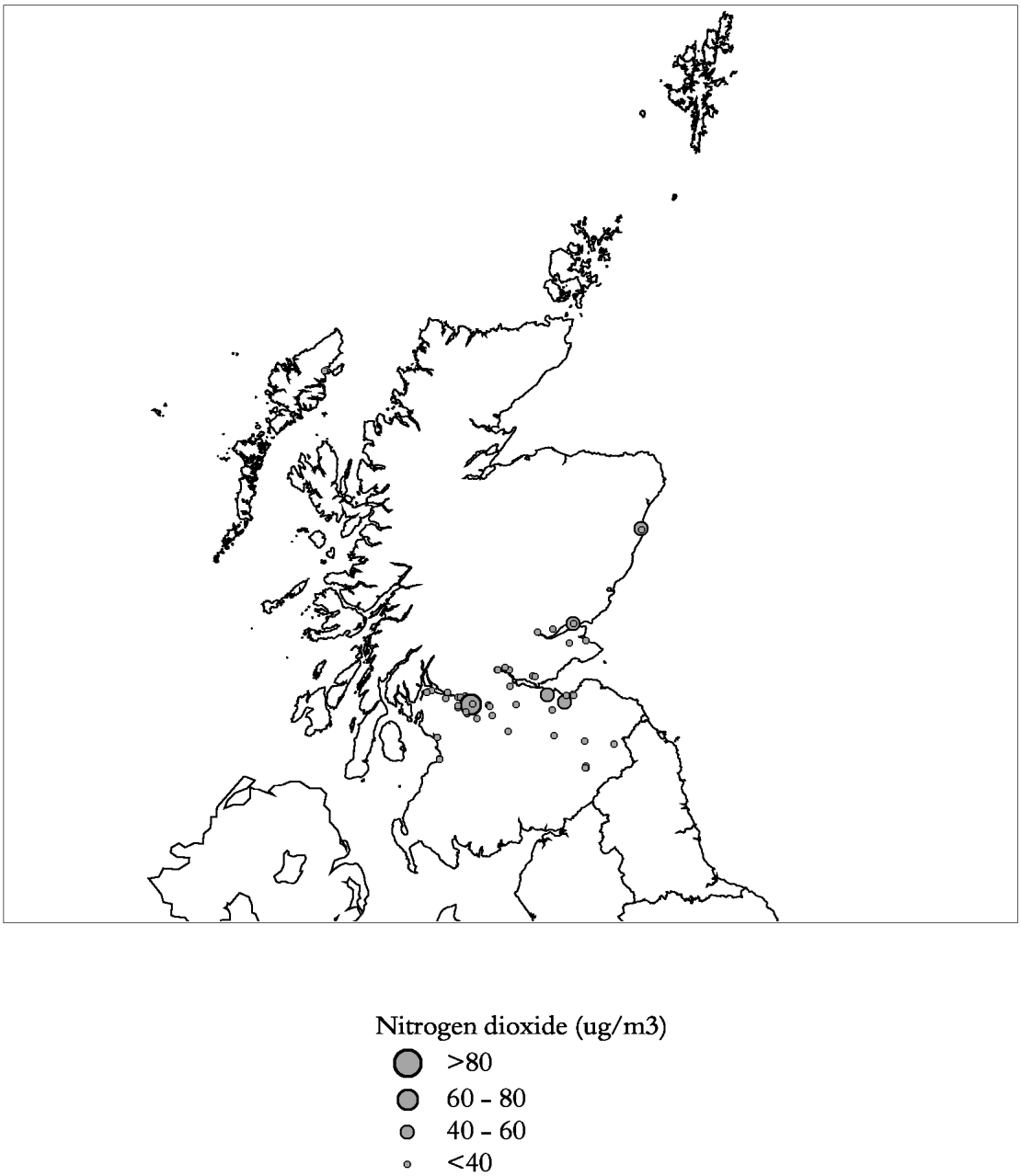
				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
ABERDEEN 1N	Aberdeen City	R	A	23	54	38	69	48	65	40	65	55	55	48	38	**23**	**69**	**50**
ABERDEEN 5N	Aberdeen City	R	A	33	29	31	31	27	33	23	27	34	38	40	44	**23**	**44**	**32**
STONEHAVEN 1N	Aberdeenshire	R	A						16	22	22					**16**	**22**	
DUNDEE 7N	City of Dundee	R	A	55	51	39	38	40	38	41	46	43	56	55	58	**38**	**58**	**47**
DUNDEE 8N	City of Dundee	R	A			32	29	27	31	38	38	36		48	60	**27**	**60**	**38**
EDINBURGH 5N	City of Edinburgh	R	A	45	59	41		66	54	24	42	43	56	84	45	**24**	**84**	**51**
EDINBURGH 7N	City of Edinburgh	R	A								48	45	54	47	49	**45**	**54**	
GLASGOW 1N	City of Glasgow	R	A			51	20	65	85		77	82	91	88	128	**20**	**128**	**76**
GLASGOW 6N	City of Glasgow	R	A			19	17	9	29		24	40	50	50	66	**9**	**66**	**34**
ALLOA 1N	Clackmannanshire	R	A				8	17	29	29	29	27	46	42		**8**	**46**	**28**
TULLIBODY 8N	Clackmannanshire	R	A				8	8	23	23	40	38	29	29		**8**	**40**	**25**
BEARSDEN 10N	East Dunbartonshire	R	A	27	32		4	20	26	24	21	28	38	42	39	**4**	**42**	**27**
BEARSDEN 1N	East Dunbartonshire	R	A	22	27			10	22	22	24	24		28	42	**10**	**42**	**25**
BISHOPBRIGGS 12N	East Dunbartonshire	R	A	34	29	5	6			33	28	35			55	**5**	**55**	**28**
BISHOPBRIGGS 6N	East Dunbartonshire	R	A	34	44	14	14	22		40	38	37	40	44	57	**14**	**57**	**35**
MUSSELBURGH 1N	East Lothian	R	A	48	51	39	34	20	31	33	33		42	48	18	**18**	**51**	**36**
TRANENT 1N	East Lothian	R	A	35	33	29	39	20	32	37	36	69	37	41	57	**20**	**69**	**39**
GIFFNOCK 3N	East Renfrewshire	R	A	20	20				34	29	29	40	45	40		**20**	**45**	**32**
THORNLIEBANK 1N	East Renfrewshire	R	A	25					22	20	15	22	33	28		**15**	**33**	**24**
FALKIRK 13N	Falkirk	R	A	44	19	31	33		23	34	17	40	27		36	**17**	**44**	**30**
CUPAR 1N	Fife	R	A	34	35	22	7	22	28	26		35	34	33	37	**7**	**37**	**29**
DUNFERMLINE 5N	Fife	R	A	38	36	26	20	21	21	23	24	27	24	33	35	**20**	**38**	**27**
DUNFERMLINE 9N	Fife	R	A	43	44	33	16	32	26	35	32	36	40		51	**16**	**51**	**35**
ST ANDREWS 1N	Fife	R	A	34	24	22	26	24	19		22	31		24	31	**19**	**34**	**26**
DINGWALL 12N	Highland	R	A						26	16	49	29	4			**4**	**49**	
DINGWALL 5N	Highland	R	A						8	10			51			**8**	**51**	
GREENOCK 5N	Inverclyde	R	A	51	37	36	13	14	24	25	30	24	30	24	46	**13**	**51**	**30**
GREENOCK 7N	Inverclyde	R	A	28	35	25	10	13			19	24		28	44	**10**	**44**	**25**
DALKEITH 1N	Midlothian	R	A	58		45	45	55	40	41	42	50	52	52		**40**	**58**	**48**
PENICUIK 3N	Midlothian	R	A	46		20	26	40	23	27	28	28	31	31		**20**	**46**	**30**
IRVINE 1N	North Ayrshire	R	A	35		12	12			41	36	47	53	57	50	**12**	**57**	**38**
IRVINE 5N	North Ayrshire	R	A	17	17	4	8	15	27	26	26	29	37	34	45	**4**	**45**	**24**
COATBRIDGE 1N	North Lanarkshire	R	A			10	6	12	27	29	36	38	33	50	38	**6**	**50**	**28**
COATBRIDGE 3N	North Lanarkshire	R	A		27	10	6	4	19	25	27	23	29	33	48	**4**	**48**	**23**
MOTHERWELL 9N	North Lanarkshire	R	A		23	4	4		13	19	17	19	23	27	48	**4**	**48**	**20**
PERTH 1N	Perth & Kinross	R	A	45	31	34	32	38	27	37	38	48	45	45	54	**27**	**54**	**40**
PERTH 7N	Perth & Kinross	R	A	36	26	29	26	39	29	34	29	41	34	39	40	**26**	**41**	**34**
PAISLEY 7N	Renfrewshire	R	A	39	40	13	17	24		76	34	38	43	53	53	**13**	**76**	**39**
PAISLEY 8N	Renfrewshire	R	A	43	46	22	13	23	36	37		43	40	46	61	**13**	**61**	**37**
GALASHIELS 1N	Scottish Borders	R	A	44	38	20	33	39	19	28	26	32	32	28	32	**19**	**44**	**31**
HAWICK 2N	Scottish Borders	R	A	21	20	44	41	36	33	34	34		39	42	37	**20**	**44**	**35**
HAWICK 4N	Scottish Borders	R	A	26	47	47	44	41	35	32	35	39	42	43	43	**26**	**47**	**40**
HAWICK 5N	Scottish Borders	R	A	46			11	8	8	6	8	10	14	13	19	**6**	**46**	**14**
HAWICK 6N	Scottish Borders	R	A	23	32	36	30	28	20	20	20	28	27	25	32	**20**	**36**	**27**
KELSO 1N	Scottish Borders	R	A	41	28	30	22	22	21	19	20	22	22	23	25	**19**	**41**	**25**
PEEBLES 5N	Scottish Borders	R	A	35	36	35	30	24	22	23			50		36	**22**	**50**	**32**
AYR 1N	South Ayrshire	R	A		26	19	13	25	28	27	28	35	35	36	40	**13**	**40**	**28**
AYR 5N	South Ayrshire	R	A		34	16	23	22		26	37	37	44	38	46	**16**	**46**	**32**
EAST KILBRIDE 1N	South Lanarkshire	R	A	20	22				17	17	17	22				**17**	**22**	**19**
HAMILTON 1N	South Lanarkshire	R	A											27	48	**27**	**48**	
LANARK 1N	South Lanarkshire	R	A	31				36	38		36	39	40			**31**	**40**	**37**
SOUTH LANARKSHIRE 1N	South Lanarkshire	R	C	29	28	5	5									**5**	**29**	
STIRLING 1N	Stirling	R	A	55	32	30	20	13		69	31	33	41	32	35	**13**	**69**	**36**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
STIRLING 7N	Stirling	R	A	58	41	20	29	20	23	39	39		36	37	37	**20**	**58**	**34**
BALLOCH 1N	West Dunbartonshire	R	A		16					11	11	13	15	14	17	**11**	**17**	**14**
CLYDEBANK 1N	West Dunbartonshire	R	A		32	11		5	25	29	29	19	22	34	51	**5**	**51**	**26**
CLYDEBANK 5N	West Dunbartonshire	R	A		23			9	15	16	11	8	25	27	48	**8**	**48**	**20**
DUMBARTON 1N	West Dunbartonshire	R	A		34	15	5	7	14	34	27	35	35	37	46	**5**	**46**	**26**
LINLITHGOW 6N	West Lothian	R	A									33	33	34	29	**29**	**34**	
WHITBURN 1N	West Lothian	R	A	13	27	21	33	26	19	21	18	19	26	27	34	**13**	**34**	**24**
STORNOWAY 1N	Comhairle Nan Eilean Siar	R	A	22			7			14	15	20	22	20	29	**7**	**29**	**19**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	35	33	25	21	25	28	29	30	34	37	38	44
	Regional Monthly Min	13	16	4	4	4	8	6	8	8	4	13	17
	Regional Monthly Max	58	59	51	69	66	85	76	77	82	91	88	128
	Regional Annual Mean	32											
	Regional Annual Min	14											
	Regional Annual Max	76											
	Number of Sites	61											
	% With Valid Data	89											

Figure B1.1 Annual Average Roadside Nitrogen Dioxide Concentrations in Scotland



B1.2 Scotland (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for Scotland are shown in Figure B1.2. The validated 2001 dataset for the region is detailed in Table B1.3. No urban background sites in Scotland exceeded the Air Quality Strategy Objective of 40μgm^{-3}.

Table B1.3 Urban Background Sites in Scotland

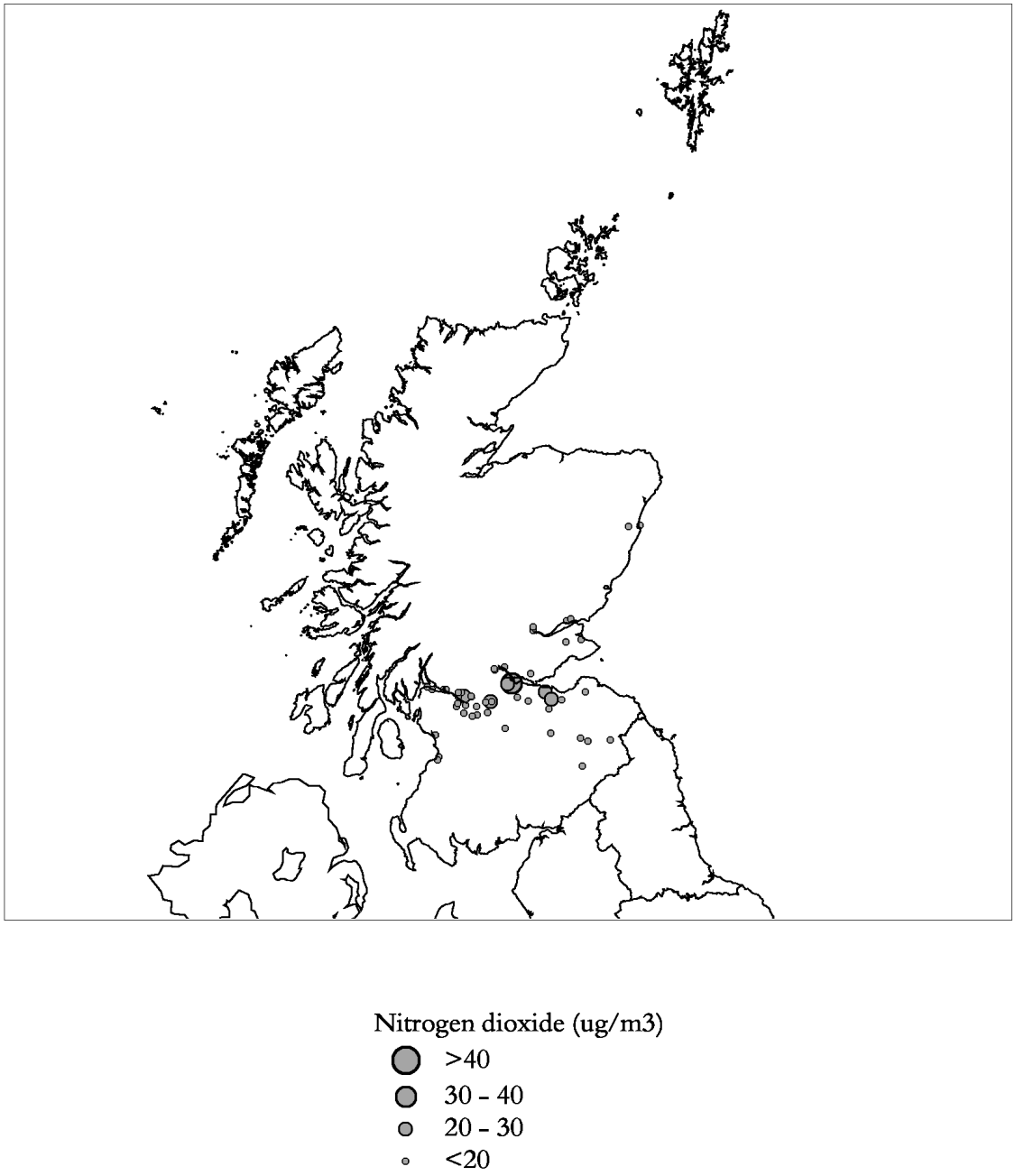
				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
ABERDEEN 3N	Aberdeen City	B	A	19	19	13	25	8	17	6	17	23	17	13	15	**6**	**25**	**16**
ABERDEEN 4N	Aberdeen City	B	A	13	15	8	12	4	10	6	12	15	10	13	8	**4**	**15**	**10**
STONEHAVEN 3N	Aberdeenshire	B	A						7		9					**7**	**9**	
DUNDEE 3N	City of Dundee	B	A	23	20	16	9	9	5	11	8	13	15	18	22	**5**	**23**	**14**
DUNDEE 5N	City of Dundee	B	A	29	26	16	8	16	9	14	14	20	19	22	33	**8**	**33**	**19**
EDINBURGH 3N	City of Edinburgh	B	A	37	9	21		22	14	21	18	22	20	19	31	**9**	**37**	**21**
EDINBURGH 4N	City of Edinburgh	B	A		21	20		20	17	18	17	18	22	21	29	**17**	**29**	**20**
GLASGOW 4N	City of Glasgow	B	A			10	6	8	15		14	25	23	27	43	**6**	**43**	**19**
GLASGOW 5N	City of Glasgow	B	A			8	6	8	12		10	19	19	19	27	**6**	**27**	**14**
ALLOA 4N	Clackmannanshire	B	A				8		10	8	15	10	15	13		**8**	**15**	**11**
ALLOA 6N	Clackmannanshire	B	A				8		10	12			19			**8**	**19**	
BEARSDEN 3N	East Dunbartonshire	B	A	21	22				11	11		18	24	23	31	**11**	**31**	**20**
BEARSDEN 4N	East Dunbartonshire	B	A	12	14						8	10	15	14	22	**8**	**22**	**14**
BISHOPBRIGGS 5N	East Dunbartonshire	B	A	18	22		7		11	12	12	16	17	20	34	**7**	**34**	**17**
BISHOPBRIGGS 8N	East Dunbartonshire	B	A	21	23	9	4	7	11	10	13	15	20	21	28	**4**	**28**	**15**
HADDINGTON 5N	East Lothian	B	A	14	23	12	14	6	8	9	11	14	12	13	28	**6**	**28**	**14**
GIFFNOCK 1N	East Renfrewshire	B	A	18							6					**6**	**18**	
NEWTON MEARNS 1N	East Renfrewshire	B	A	25					8	6		12	12	13		**6**	**25**	**13**
FALKIRK 3N	Falkirk	B	A	46	33	23		12	15		15		25		75	**12**	**75**	**30**
FALKIRK 4N	Falkirk	B	A	29	31	19	23	10	17	21	13	21	17	34	34	**10**	**34**	**22**
CUPAR 4N	Fife	B	A	23	15	6	5	6	4	7	8	12	15	15	18	**4**	**23**	**11**
DUNFERMLINE 6N	Fife	B	A	28	22	9	10	11	10	12	12	15	21	24	29	**9**	**29**	**17**
DUNFERMLINE 8N	Fife	B	A	23	24	13	8	11	10	12	8	14	17	17	27	**8**	**27**	**15**
ST ANDREWS 4N	Fife	B	A	13	10	7		5		4	6	6	10	9	12	**4**	**13**	**8**
DINGWALL 11N	Highland	B	A						4	7	8	9	5			**4**	**9**	
DINGWALL 9N	Highland	B	A							4	14	8	9			**4**	**14**	
GREENOCK 3N	Inverclyde	B	A	23	17	13	30	4	20	10	13		17		23	**4**	**30**	**17**
GREENOCK 6N	Inverclyde	B	A	21	9	23	7	10	20	13	18	6	39	30	25	**6**	**39**	**18**
DALKEITH 2N	Midlothian	B	A	28		12	12	11	13	10	17	4	20	20		**4**	**28**	**15**
PENICUIK 2N	Midlothian	B	A	13		9	4	8	5	5		8	6	6		**4**	**13**	**7**
IRVINE 3N	North Ayrshire	B	A	13	16			4	7	10	10	12	19	19	35	**4**	**35**	**15**
IRVINE 4N	North Ayrshire	B	A	16	13				9	4	6	11	15	15	33	**4**	**33**	**14**
AIRDRIE 1N	North Lanarkshire	B	A		23	10		8	15	17	21	23	31	27	44	**8**	**44**	**22**
AIRDRIE 3N	North Lanarkshire	B	A		19	4			10	13	15	17	27	25	42	**4**	**42**	**19**
MOTHERWELL 6N	North Lanarkshire	B	A		15				12	12	13	15	21	19	36	**12**	**36**	**18**
MOTHERWELL 7N	North Lanarkshire	B	A		12			6		8	10	13	13	13		**6**	**13**	**11**
PERTH 3N	Perth & Kinross	B	A	32	20	15	9	9	8	14	6	16		24	31	**6**	**32**	**17**
PERTH 6N	Perth & Kinross	B	A	25	18	13	7	8			12		16	20	25	**7**	**25**	**16**
PAISLEY 3N	Renfrewshire	B	A	23	13			5	8	7	7	11	10	13	28	**5**	**28**	**13**
PAISLEY 6N	Renfrewshire	B	A	29	16			5	11	9	8	14	18	21	38	**5**	**38**	**17**
GALASHIELS 2N	Scottish Borders	B	A	25	21	43	9	9	28	9	8	12	13	13	22	**8**	**43**	**18**
HAWICK 3N	Scottish Borders	B	A	18			12	8	5	6	10	11	11	14	16	**5**	**18**	**11**
KELSO 2N	Scottish Borders	B	A	22		15	11	10	6	6	7	9	11	11	16	**6**	**22**	**11**
MELROSE 1N	Scottish Borders	B	A	45	19	19	14	10	5	7	8	11	11	13	19	**5**	**45**	**15**
PEEBLES 6N	Scottish Borders	B	A	22	21	18	12	9	8	8		11		12	23	**8**	**23**	**14**
AYR 3N	South Ayrshire	B	A		8	4			5	4	5	7	7	10	18	**4**	**18**	**8**
AYR 4N	South Ayrshire	B	A		6	5					5	5	4	8	16	**4**	**16**	**7**
EAST KILBRIDE 3N	South Lanarkshire	B	A	11	14			4	8	7	9	11				**4**	**14**	**9**
EAST KILBRIDE 4N	South Lanarkshire	B	A	12	14				10	10	9	14				**9**	**14**	**12**
HAMILTON 6N	South Lanarkshire	B	A											12	20	**12**	**20**	
LANARK 5N	South Lanarkshire	B	A	7					6		5	8	10	11		**5**	**11**	**8**
LANARK 6N	South Lanarkshire	B	A	8					4			8	8	9		**4**	**9**	
SOUTH LANARKSHIRE 3N	South Lanarkshire	B	C	16	17											**16**	**17**	

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
SOUTH LANARKSHIRE 5N	South Lanarkshire	B	C	15	13											**13**	**15**	
STIRLING 3N	Stirling	B	A	35	28		15	8	12	23	19	17		18	24	**8**	**35**	**20**
STIRLING 6N	Stirling	B	A	31	25	11	5	6	16	16	19				22	**5**	**31**	**17**
CLYDEBANK 3N	West Dunbartonshire	B	A		17				11	13	11	13	12	20	32	**11**	**32**	**16**
CLYDEBANK 4N	West Dunbartonshire	B	A		18					13	10	14	22	19	22	**10**	**22**	**17**
DUMBARTON 7N	West Dunbartonshire	B	A		11					7	6	9	7	9	23	**6**	**23**	**10**
DUMBARTON 9N	West Dunbartonshire	B	A		14	12	7				9	14	15	15	25	**7**	**25**	**14**
BATHGATE 4N	West Lothian	B	A	10	20	17	14	10	11	12	12	15	15	10	23	**10**	**23**	**14**
LIVINGSTON 3N	West Lothian	B	A	13	26	14		18	11	10		19	18	19	23	**10**	**26**	**17**
STORNOWAY 3N	Comhairle Nan Eilean Siar	B	A	20									4			**4**	**20**	
STORNOWAY 4N	Comhairle Nan Eilean Siar	B	A	4										8	13	**4**	**13**	

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	21	18	14	11	9	11	10	11	13	16	17	27
	Regional Monthly Min	4	6	4	4	4	4	4	5	4	4	6	8
	Regional Monthly Max	46	33	43	30	22	28	23	21	25	39	34	75
	Regional Annual Mean	15											
	Regional Annual Min	7											
	Regional Annual Max	30											
	Number of Sites	64											
	% With Valid Data	83											

Figure B1.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in Scotland



B2.1 The North East (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the North East are shown in Figure B2.1. Table B2.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B2.2.

Table B2.1 Roadside Sites in the North East with High Concentrations according to the Air Quality Strategy Objectives

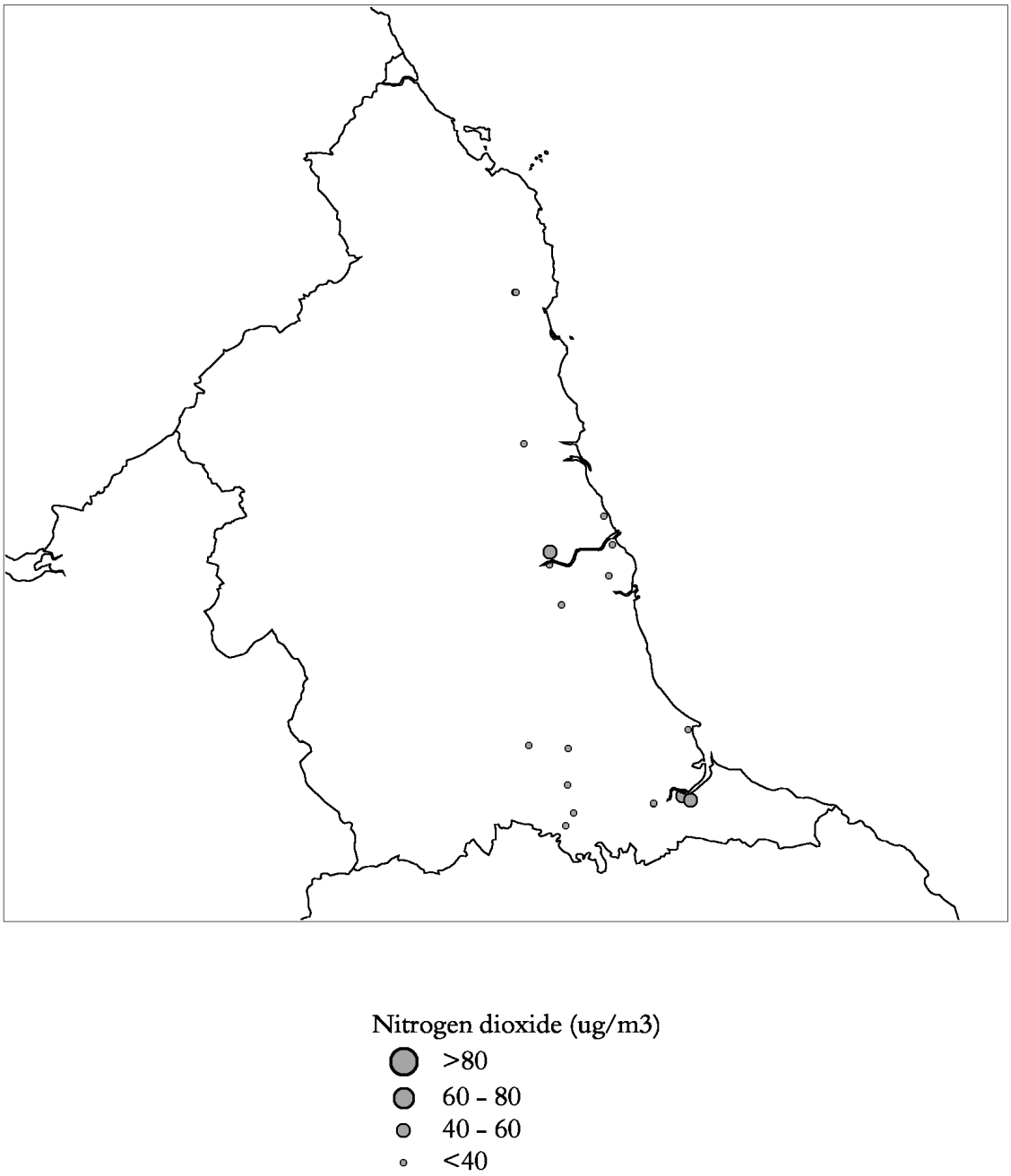
Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Middlesbrough 1N (44µgm^{-3})
Newcastle upon Tyne 9N (41µgm^{-3})

Table B2.2 Roadside Sites in the North East

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
ALNWICK 1N	Alnwick	R	A	29	10	13	13	13	14	15	17	18	22	23		**10**	**29**	**17**
ALNWICK 7N	Alnwick	R	A	31	10	20	29	23	24	24	24	22	28	33		**10**	**33**	**24**
DARLINGTON 1N	Darlington	R	A	36	42	35	39	20	25	40	35				21	**20**	**42**	**33**
DARLINGTON 7N	Darlington	R	A	22		24	20		19	20	28	20	23	31	23	**19**	**31**	**23**
GATESHEAD 5N	Gateshead	R	A	44	23	29	13	30	15	20	21	30	37	53	24	**13**	**53**	**28**
GATESHEAD 9N	Gateshead	R	A	47	23	24	22	31	24	25	24	42	43	13	44	**13**	**47**	**30**
HARTLEPOOL 1N	Hartlepool	R	A	31			33			24	22	45			58	**22**	**58**	**36**
MIDDLESBROUGH 1N	Middlesbrough	R	C	61	52	44		44	33	38	38					**33**	**61**	**44**
MIDDLESBROUGH 5N	Middlesbrough	R	C	52	46	44		44	25	34	33	36	34	46	48	**25**	**52**	**40**
NEWCASTLE UPON TYNE 10N	Newcastle Upon Tyne	R	A	34	28	24	35	26	24	30	23	43	39	31	37	**23**	**43**	**31**
NEWCASTLE UPON TYNE 9N	Newcastle Upon Tyne	R	A	33	18	22	21	59	41	33	50	49	69	44	53	**18**	**69**	**41**
WALLSEND 3N	North Tyneside	R	A			40	38		21	29	42					**21**	**42**	
WHITLEY BAY 2N	North Tyneside	R	A			50	33	25	15	31	86					**15**	**86**	**40**
SEDGEFIELD 1N	Sedgefield	R	A	37	21	22	22	21	8	12	12	22	29	30	31	**8**	**37**	**22**
SEDGEFIELD 5N	Sedgefield	R	A	41	23	20	20	11	20	22	23	32	46	21	40	**11**	**46**	**26**
EAST BOLDON 5N	South Tyneside	R	A	30	24		11	25	20	18	16	16	24	24	28	**11**	**30**	**22**
SOUTH SHIELDS 8N	South Tyneside	R	A	8	33	23	28	37	23	25	30	14	24	31	21	**8**	**37**	**25**
STOCKTON 4N	Stockton-On-Tees	R	A	46	25	33	15	59	46	57	50	30	55	35	26	**15**	**59**	**40**
STOCKTON 8N	Stockton-On-Tees	R	A	33	30	12	13	28	17		24	32	37	26	42	**12**	**42**	**27**
BISHOP AUCKLAND 1N	Wear Valley	R	A	24	36	22		19		32	29	34	42	46	13	**13**	**46**	**30**
BISHOP AUCKLAND 4N	Wear Valley	R	A	41	37	24		16		16	28	33	41	41	40	**16**	**41**	**32**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	36	28	28	24	30	23	27	31	30	37	33	34
	Regional Monthly Min	8	10	12	11	11	8	12	12	14	22	13	13
	Regional Monthly Max	61	52	50	39	59	46	57	86	49	69	53	58
	Regional Annual Mean	30											
	Regional Annual Min	17											
	Regional Annual Max	44											
	Number of Sites	21											
	% With Valid Data	95											

Figure B2.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the North East



B2.2 The North East (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the North East are shown in Figure B2.2. No urban background sites in the North East exceeded the Air Quality Strategy Objective of 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B2.3.

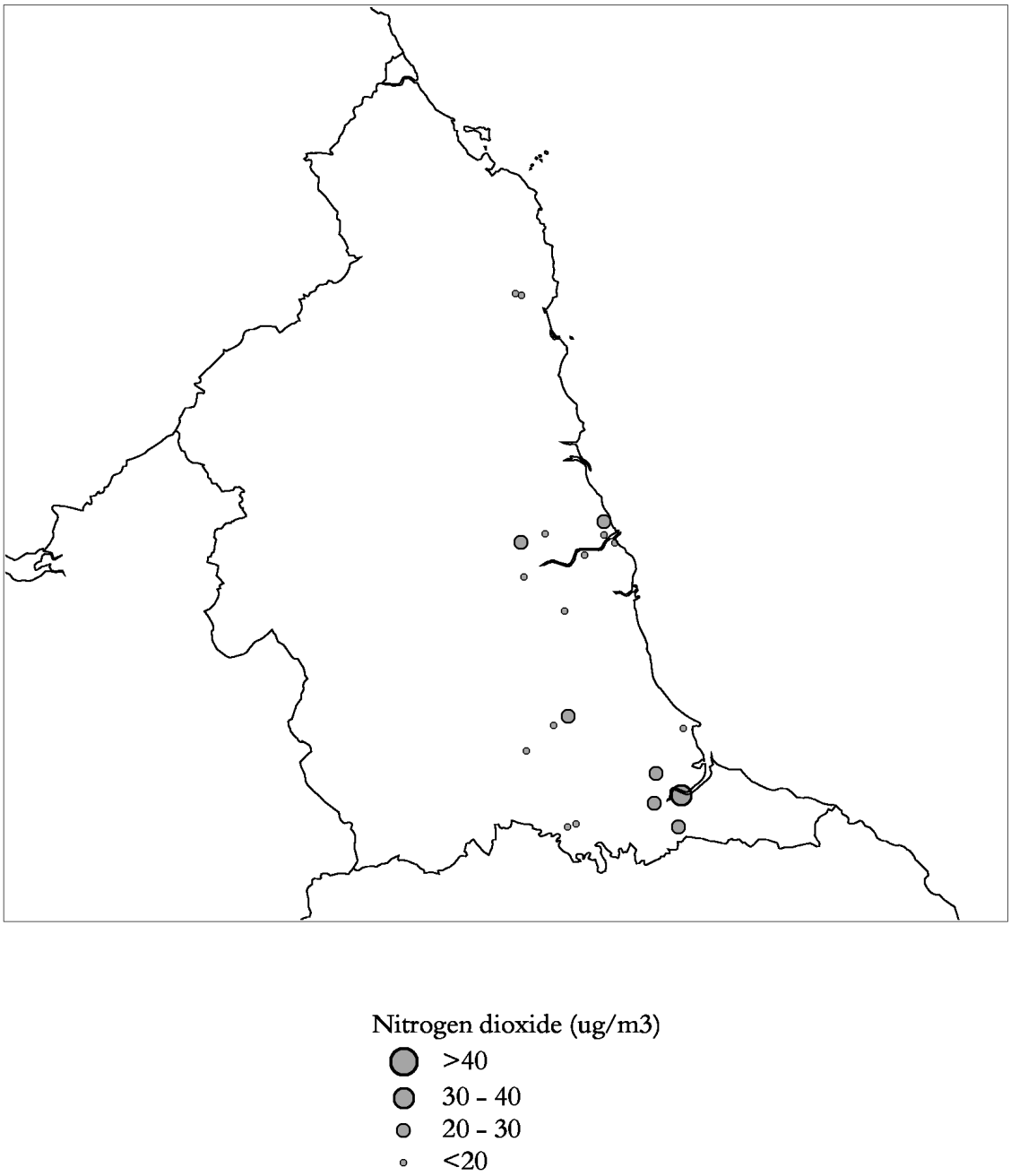
Table B2.3 Urban Background Sites in the North East

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
ALNWICK 3N	Alnwick	B	A	27	7	10	10	4	6	6	8	8	18	18		**4**	**27**	**11**
ALNWICK 4N	Alnwick	B	A	21		7		5	6	5	7	8	16	22		**5**	**22**	**11**
DARLINGTON 3N	Darlington	B	A	18	21	16	14	13	10	11	16	17	16	23	20	**10**	**23**	**16**
DARLINGTON 4N	Darlington	B	A	20	20	18		10	11	6	13	12	17	25	35	**6**	**35**	**17**
GATESHEAD 7N	Gateshead	B	A	37	12	12	14	8	11	12	13	23	27	17	50	**8**	**50**	**20**
GATESHEAD 8N	Gateshead	B	A	26	11	8	19	12	7	10	9	19	20	47	22	**7**	**47**	**18**
HARTLEPOOL 3N	Hartlepool	B	A	23			15			13	12	19			35	**12**	**35**	**19**
HARTLEPOOL 4N	Hartlepool	B	A	26			20			14		24			45	**14**	**45**	
MIDDLESBROUGH 3N	Middlesbrough	B	C	31		23		21	12	13	17	17	21	25	31	**12**	**31**	**21**
MIDDLESBROUGH 4N	Middlesbrough	B	C	52	46	36		33	17	29	29	33	33			**17**	**52**	**34**
NEWCASTLE UPON TYNE 5N	Newcastle Upon Tyne	B	A	12	24	18	13	18	14	16	16	22	33	22	37	**12**	**37**	**20**
NEWCASTLE UPON TYNE 6N	Newcastle Upon Tyne	B	A	15	37	17	17	7		8	8	16	24	13	34	**7**	**37**	**18**
NORTH SHIELDS 1N	North Tyneside	B	A			25	10	17	13	19	13					**10**	**25**	**16**
WHITLEY BAY 5N	North Tyneside	B	A			33	23	13	13	29	15					**13**	**33**	**21**
SEDGEFIELD 3N	Sedgefield	B	A	30	27	21	12	10	19	18	19	30	47	14	31	**10**	**47**	**23**
SEDGEFIELD 4N	Sedgefield	B	A	29	15	12	17	10	8		13	20	38	19	30	**8**	**38**	**19**
HEBBURN 4N	South Tyneside	B	A	23	20	16	18	11	8	16	9	14	14	18	27	**8**	**27**	**16**
SOUTH SHIELDS 7N	South Tyneside	B	A	27	31	22	16	15	7	12	14	21	23	22	30	**7**	**31**	**20**
STOCKTON 6N	Stockton-On-Tees	B	A	33	21	18	21	24	22	21	25	24	78	22	37	**18**	**78**	**29**
STOCKTON 7N	Stockton-On-Tees	B	A	21	22	18	21	12	7				25	34	27	**7**	**34**	**21**
BISHOP AUCKLAND 3N	Wear Valley	B	A	40	18	11		6		5	9	15	18	19	37	**5**	**40**	**18**
CROOK 1N	Wear Valley	B	A	40						9					34	**9**	**40**	

REGIONAL SUMMARY		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Regional Monthly Mean	27	22	18	16	13	11	14	14	19	27	22	33
	Regional Monthly Min	12	7	7	10	4	6	5	7	8	14	13	20
	Regional Monthly Max	52	46	36	23	33	22	29	29	33	78	47	50
	Regional Annual Mean	19											
	Regional Annual Min	11											
	Regional Annual Max	34											
	Number of Sites	22											
	% With Valid Data	91											

Figure B2.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the North East



B3.1 The North West and Merseyside (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the North West and Merseyside are shown in Figure B3.1. Table B3.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B3.2.

Table B3.1 Roadside Sites in the North West and Merseyside with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean	
Manchester 1N (85μgm^{-3})	Ormskirk 6N (51μgm^{-3})
Manchester 6N (69μgm^{-3})	Carlisle 5N (50μgm^{-3})
Southport 4N (66μgm^{-3})	Burnley 1N (49μgm^{-3})
Stockport 14N (65μgm^{-3})	Salford 14N (47μgm^{-3})
Crosby 1N (61μgm^{-3})	Port Sunlight 1N (47μgm^{-3})
Kendal 4N (60μgm^{-3})	Lancaster 5N (47μgm^{-3})
Stockport 18N (56μgm^{-3})	Trafford 6N (46μgm^{-3})
Ashton 3N (56μgm^{-3})	St. Helens 8N (45μgm^{-3})
Rossendale 13N (56μgm^{-3})	Macclesfield 2N (45μgm^{-3})
Bolton 1N (55μgm^{-3})	Blackburn 5N (45μgm^{-3})
Bolton 9N (54μgm^{-3})	Kendal 1N (44μgm^{-3})
Lancaster 1N (53μgm^{-3})	Macclesfield 8N (43μgm^{-3})
Warrington 1N 51(μgm^{-3})	Leigh 8N (42μgm^{-3})
Burnley 5N (51μgm^{-3})	Carlisle 1N (42μgm^{-3})
Rochdale 1N (51μgm^{-3})	Prescot 1N (41μgm^{-3})
Ormskirk 1N (51μgm^{-3})	

Table B3.2 Roadside Sites in the North West and Merseyside

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

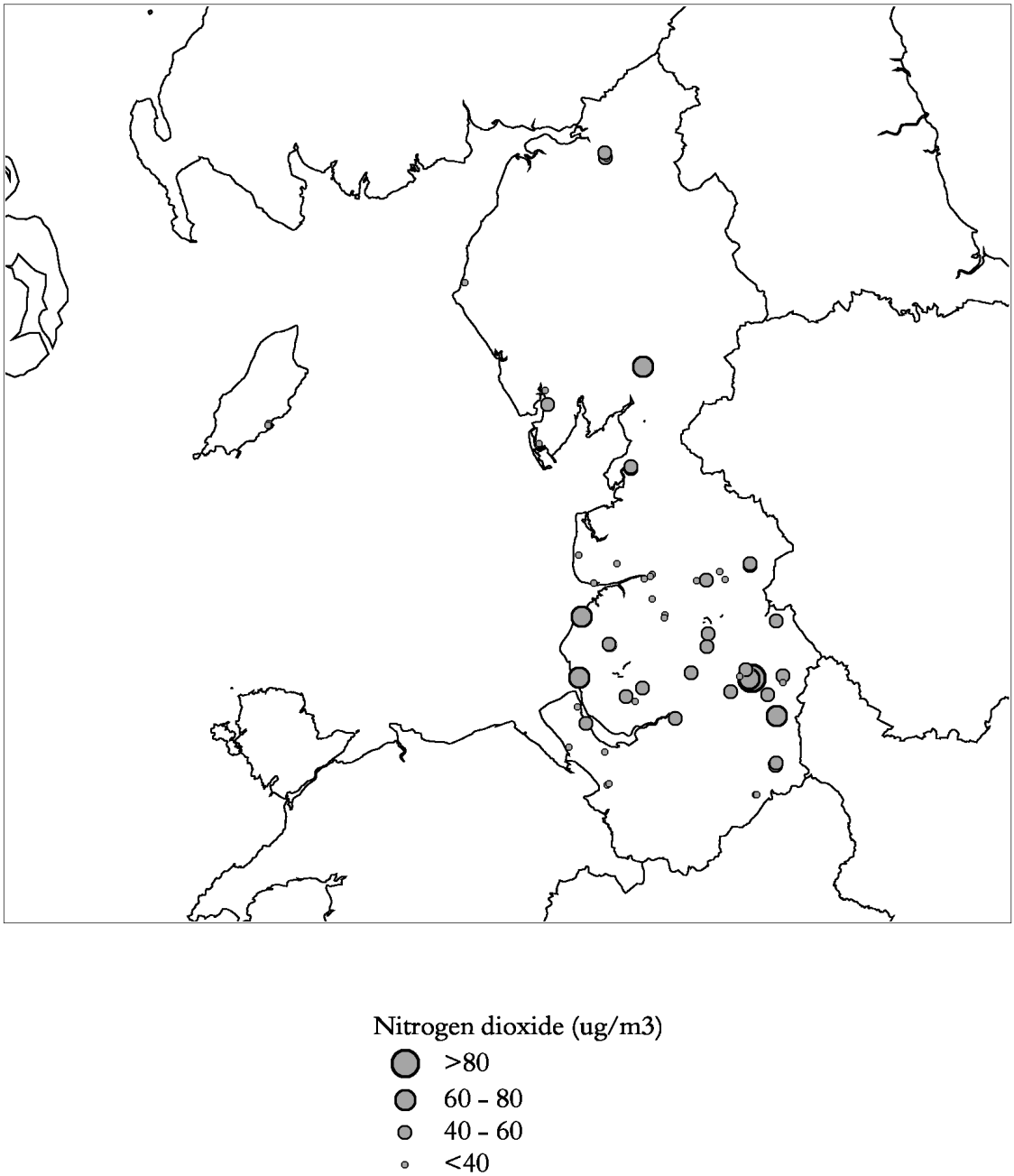
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARROW-IN-FURNESS 1N	Barrow in Furness	R	A		27	26	23	20	20	17	20	13	26	21	29	**13**	**29**	**22**
BARROW-IN-FURNESS 5N	Barrow in Furness	R	A	29	28	21	16	18	14	14	14	16	15	24	38	**14**	**38**	**21**
BLACKBURN 1N	Blackburn with Darwen	R	A	68				25	33	29	23	27	36		44	**23**	**68**	**35**
BLACKBURN 5N	Blackburn with Darwen	R	A	71	71			34	44	36	42	38	48	10	52	**10**	**71**	**45**
BLACKPOOL 1N	Blackpool	R	A	26	32	30	29	25	29	34	32	28	34	15	36	**15**	**36**	**29**
BLACKPOOL 5N	Blackpool	R	A	33	49	40	22	24	25	41	33	35	33	35	54	**22**	**54**	**35**
BOLTON 1N	Bolton	R	A	72	68	68					32	34	72	42		**32**	**72**	**55**
BOLTON 9N	Bolton	R	A	61	63						43	48	52	58		**43**	**63**	**54**
BURNLEY 1N	Burnley	R	A	56	62	47	48	47	45	44	43	41	44	53	54	**41**	**62**	**49**
BURNLEY 5N	Burnley	R	A	64	58	53	51	49	31	37	40	51	58	62	59	**31**	**64**	**51**
CARLISLE 1N	Carlisle	R	A		48	46	42		38	33		40		48	42	**33**	**48**	**42**
CARLISLE 4N	Carlisle	R	A	42	33	44	54	27	19	29	23	29	44	57	52	**19**	**57**	**38**
CARLISLE 5N	Carlisle	R	A	55	59	50	54	38	46	44	42	46	65	52	44	**38**	**65**	**50**
CHESTER 1N	Chester	R	A	47	47	51	44	27	36	19	42	27	49	49	31	**19**	**51**	**39**
CHESTER 5N	Chester	R	A				24	19	16	8	10	6	22	36	38	**6**	**38**	**20**
CHORLEY 7N	Chorley	R	A	29	25	31	24	35			19	23	23	32		**19**	**35**	**27**
CHORLEY 8N	Chorley	R	A	46	45	47	37	30	5	5				35		**5**	**47**	**31**
CONGLETON 1N	Congleton	R	A	45	43	38		34	38	37	33	32	41	40	41	**32**	**45**	**38**
CONGLETON 6N	Congleton	R	A	41	37	41		32	33	34	41	33	33	39	41	**32**	**41**	**37**
WHITEHAVEN 1N	Copeland	R	A	37	41	28	36		27	22	20	24	7	14	40	**7**	**41**	**27**
WHITEHAVEN 5N	Copeland	R	A	35	40	36	37	25	26	27			31		16	**16**	**40**	**30**
ELLESMERE PORT 2N	Ellesmere Port	R	A	49	50	29	13	16	22	28	18	29	32	38	47	**13**	**50**	**31**
ELLESMERE PORT 7N	Ellesmere Port	R	A	53	43	33	23	26	32	29	23	34	28	35	46	**23**	**53**	**34**
LYTHAM ST ANNES 1N	Fylde	R	A	50	34	40	31	33	29	27	27	25	23	38	29	**23**	**50**	**32**
ACCRINGTON 1N	Hyndburn	R	A	29	34		29	31	54	34	33	25	46	52	50	**25**	**54**	**38**
CLAYTON-LE-MOORS 5N	Hyndburn	R	A	40	50	12	36	46	29	31	38	36	46	42	73	**12**	**73**	**40**
PRESCOT 1N	Knowsley	R	A		60	38	39	27		43	28	41	42	48		**27**	**60**	**41**
LANCASTER 1N	Lancaster	R	A	60	66	54	55	48	50		44	44	43	62	51	**43**	**66**	**53**
LANCASTER 5N	Lancaster	R	A	92	93	49	36	49	37		25	30	14	32	57	**14**	**93**	**47**
MACCLESFIELD 1N	Macclesfield	R	A	36	39	31	38	45	42	51	38	23	46		41	**23**	**51**	**39**
MACCLESFIELD 2N	Macclesfield	R	A	53	42	40	51	46	48	24	62	45	39	34	52	**24**	**62**	**45**
MACCLESFIELD 8N	Macclesfield	R	A	29	26	36	41	32	45	51	59	42	43	64	45	**26**	**64**	**43**
MANCHESTER 1N	Manchester	R	A	92	87		84	73		74	92	66	87	105	89	**66**	**105**	**85**
MANCHESTER 6N	Manchester	R	A			94	65	60	62	58	62	55	71	80	80	**55**	**94**	**69**
OLDHAM 1N	Oldham	R	A						21							**21**	**21**	
OLDHAM 5N	Oldham	R	A						18							**18**	**18**	
PRESTON 1N	Preston	R	A	35	37	26	40	29	26	20	4	29	39	31	24	**4**	**40**	**28**
PRESTON 7N	Preston	R	A		37	28	27	22	34	36	28	27	40	32	39	**22**	**40**	**32**
ROCHDALE 1N	Rochdale	R	A	70	51	55	38	47	46	45	53	41	55	66	43	**38**	**70**	**51**
ROSSENDALE 13N	Rossendale	R	A	58	63	59	57	66	45		41	53	39	62	67	**39**	**67**	**56**
ROSSENDALE 14N	Rossendale	R	A	37	28	46	42	43	35		38	34		28	40	**28**	**46**	**37**
SALFORD 14N	Salford	R	A	69	67	61	61	39	41	33	37	13	52	48	46	**13**	**69**	**47**
CROSBY 1N	Sefton	R	A	83	78	75	61	50	50	37	53	57	59	66	68	**37**	**83**	**61**
SOUTHPORT 4N	Sefton	R	A			74	60	66	59	63	65	58	69	80	69	**58**	**80**	**66**
KENDAL 1N	South Lakeland	R	A	57	61	50	27	34	26	39	44	46	51	54	38	**26**	**61**	**44**
KENDAL 4N	South Lakeland	R	A							51	60	63	63	63	63	**51**	**63**	**60**
LEYLAND 1N	South Ribble	R	A	21	40	40	23	33	29	31	34	29	44	26	47	**21**	**47**	**33**
PENWORTHAM 5N	South Ribble	R	A	38	55	34	29	32	33	39	38	35	36	33	53	**29**	**55**	**38**
ST HELENS 8N	St Helens	R	A	71	90	25	50	23	27	36		31		25	75	**23**	**90**	**45**
ST HELENS 9N	St Helens	R	A	44	57	44	44	23	31	27		33	40			**23**	**57**	**38**
STOCKPORT 14N	Stockport	R	A	79	67	66	61	51	72	54	64	60	76	46	80	**46**	**80**	**65**
STOCKPORT 18N	Stockport	R	A	78	66	52		33	58	63		15	75	47	71	**15**	**78**	**56**
ASHTON 3N	Tameside	R	A	62	62	56		32	49	51		33	65	81	64	**32**	**81**	**56**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
DUKINFIELD 1N	Tameside	R	A	49	49		47	34	9	23	41	42	43		56	**9**	**56**	**39**
TRAFFORD 1N	Trafford	R	A	47	50	34	35	23	27	26	14	25	31	50	51	**14**	**51**	**34**
TRAFFORD 6N	Trafford	R	A	59	52	54	46	51	42	42	20	38	46	36	63	**20**	**63**	**46**
WARRINGTON 1N	Warrington	R	A	68	63	37	58	37	27	51	32	50	41	79	70	**27**	**79**	**51**
ORMSKIRK 1N	West Lancashire	R	A	75	65	55	46		33	35	39	40	53	50	64	**33**	**75**	**51**
ORMSKIRK 6N	West Lancashire	R	A	59	74	51	54	48	37	36	40	43	55	56	57	**36**	**74**	**51**
LEIGH 1N	Wigan	R	A		6	53	34	35				51			46	**6**	**53**	**38**
LEIGH 8N	Wigan	R	A	68	53	32	32	40				28			44	**28**	**68**	**42**
BIRKENHEAD 1N	Wirral	R	A	58	56	38	29	23		32	22	25	38	49		**22**	**58**	**37**
PORT SUNLIGHT 1N	Wirral	R	A	41	38	51	41	52		46	32	49	64	56		**32**	**64**	**47**
DOUGLAS IOM 1N	Isle of Man	R	A	33	44	13	42	21	28	30	28	30	27	39	27	**13**	**44**	**30**
DOUGLAS IOM 5N	Isle of Man	R	A	25	27	51	46	9	32	42	36	39	44	18	45	**9**	**51**	**35**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	52	51	44	41	36	35	36	36	36	44	46	51
	Regional Monthly Min	21	6	12	13	9	5	5	4	6	7	10	16
	Regional Monthly Max	92	93	94	84	73	72	74	92	66	87	105	89
	Regional Annual Mean	43											
	Regional Annual Min	20											
	Regional Annual Max	85											
	Number of Sites	65											
	% With Valid Data	97											

Figure B3.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the North West and Merseyside



B3.2 The North West and Merseyside (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the North West and Merseyside are shown in Figure B3.2. Table B3.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B3.4.

Table B3.3 Urban Background Sites in the North West and Merseyside with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Rossendale 15N (44µgm^{-3})

Table B3.4 Urban Background Sites in the North West and Merseyside

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

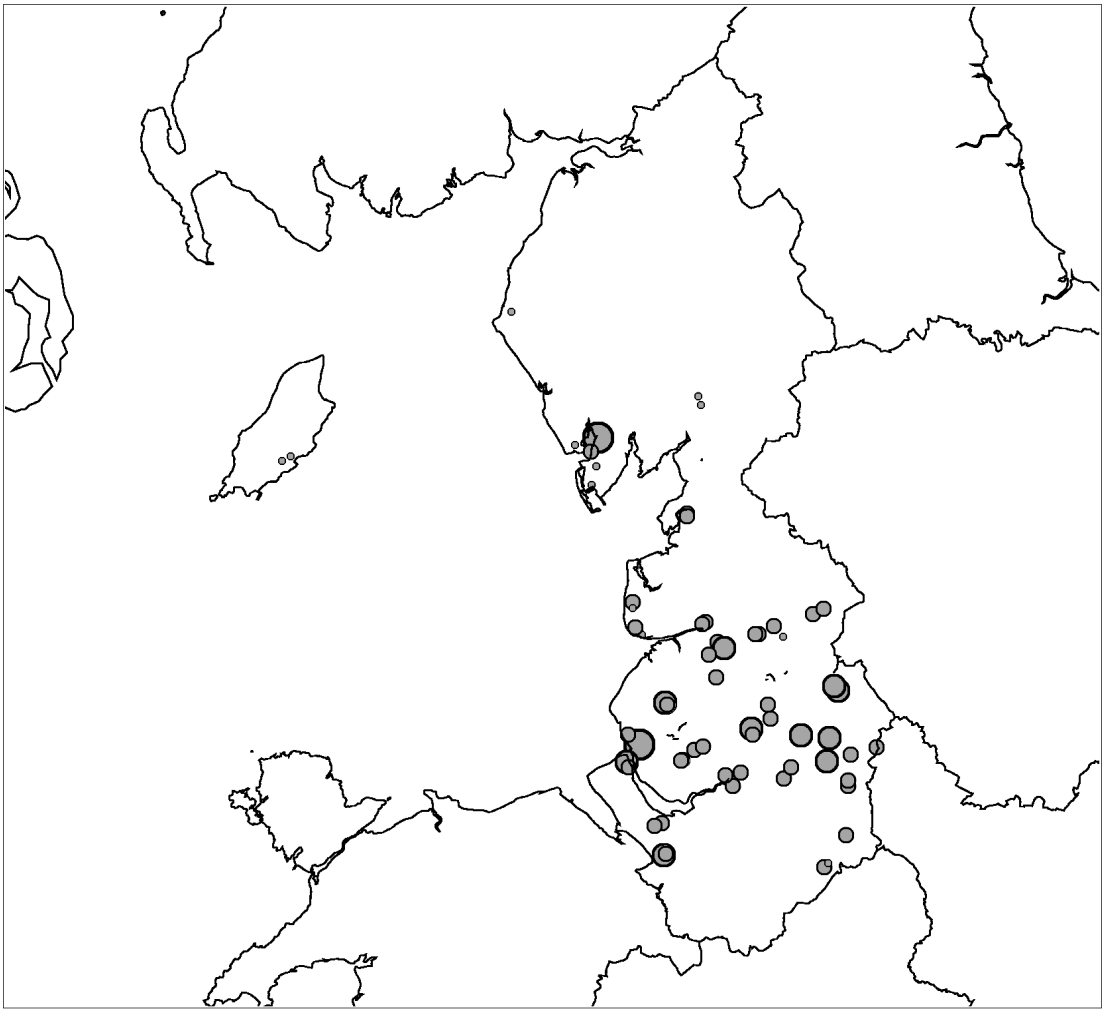
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARROW-IN-FURNESS 3N	Barrow in Furness	B	A	16	20	15	11	9	7	6	7	8		15	24	**6**	**24**	**13**
BARROW-IN-FURNESS 4N	Barrow in Furness	B	A	12	13	10		5		6	6	7	5	11	17	**5**	**17**	**9**
BLACKBURN 3N	Blackburn with Darwen	B	A	52	50			13	17	19	21	21	31	31		**13**	**52**	**28**
BLACKBURN 4N	Blackburn with Darwen	B	A	53	41			13	13	19	13	13	34	17	10	**10**	**53**	**23**
BLACKPOOL 3N	Blackpool	B	A	48	29	24	11	15	12	9	6	20	21	32		**6**	**48**	**21**
BLACKPOOL 4N	Blackpool	B	A	20	31	6	13	20	14	8	19	15	13	27	13	**6**	**31**	**17**
BOLTON 6N	Bolton	B	A	30	38	34					18	15	27	31		**15**	**38**	**28**
BOLTON 8N	Bolton	B	A	51	44	40						15	35			**15**	**51**	
BURNLEY 3N	Burnley	B	A	37	34	30	20	20	16	16	20	19	29	29	33	**16**	**37**	**25**
BURNLEY 4N	Burnley	B	A	38	36	26	20	19	13	14	16	17	30	33	35	**13**	**38**	**25**
CARLISLE 2N	Carlisle	B	C	23												**23**	**23**	
CARLISLE 3N	Carlisle	B	C	15												**15**	**15**	
CHESTER 3N	Chester	B	A	38	32	36	19		30	19		32	42	44	32	**19**	**44**	**32**
CHESTER 4N	Chester	B	A	40	36	28	26	19	17	9	22	19	26	34	37	**9**	**40**	**26**
CHORLEY 4N	Chorley	B	A	32		29	19				11	32	32	23		**11**	**32**	**26**
CHORLEY 6N	Chorley	B	A	38	25	46	29	31	18	18	28	30	30	38		**18**	**46**	**30**
CONGLETON 3N	Congleton	B	A	27		20			16	19	15		16	25	34	**15**	**34**	**21**
CONGLETON 4N	Congleton	B	A	25	21	18		11	9	12	12	14	15	20	21	**9**	**25**	**16**
WHITEHAVEN 3N	Copeland	B	A	25	22	21	13	10		10	12		16	13	19	**10**	**25**	**16**
WHITEHAVEN 4N	Copeland	B	A		25		14	8	5	5	5	6	13	10	22	**5**	**25**	**11**
ELLESMERE PORT 4N	Ellesmere Port	B	A	52	47	32	13	15	18	25	17	27	23	31	40	**13**	**52**	**28**
ELLESMERE PORT 6N	Ellesmere Port	B	A	27	22	25	14	15	9	15	16	18	17	23	42	**9**	**42**	**20**
LYTHAM ST ANNES 3N	Fylde	B	A	29	21	15	13		8		10	10	15	21	29	**8**	**29**	**17**
LYTHAM ST ANNES 4N	Fylde	B	A	19	31	17	15	17	10		10	12	25	21	59	**10**	**59**	**21**
ACCRINGTON 4N	Hyndburn	B	A	17	23	17		15	29	12	15				31	**12**	**31**	**20**
RISHTON 3N	Hyndburn	B	A	19	19		19	23	15	13	23	17	19	31	40	**13**	**40**	**22**
PRESCOT 3N	Knowsley	B	A	38	27		33		18	18	19	24	25	32		**18**	**38**	**26**
PRESCOT 4N	Knowsley	B	A	36	31		9	19	17	18	23	11	24	33		**9**	**36**	**22**
LANCASTER 2N	Lancaster	B	A	21	31	22	19	19	16		19	21	22		15	**15**	**31**	**21**
LANCASTER 4N	Lancaster	B	A	32	32	19	19	18	15		13	19		22	33	**13**	**33**	**22**
MACCLESFIELD 10N	Macclesfield	B	A	28	23	21	25	28	22	18	19	23	20	18		**18**	**28**	**22**
MANCHESTER 3N	Manchester	B	A	29	36		31	30	23	29	32	33	26	45	45	**23**	**45**	**33**
MANCHESTER 5N	Manchester	B	A	45	36	33	29	29	34	32	48	25	34	45	54	**25**	**54**	**37**
OLDHAM 3N	Oldham	B	A						18							**18**	**18**	
OLDHAM 6N	Oldham	B	A						17							**17**	**17**	
PRESTON 5N	Preston	B	A	26	28	26	18	17	13	7	14	18	23	31	24	**7**	**31**	**21**
PRESTON 6N	Preston	B	A	30	32	23	14	20	12	11	16	16	19	24	34	**11**	**34**	**21**
ROCHDALE 3N	Rochdale	B	A	38	45	51	24	24				26	40	45	36	**24**	**51**	**37**
ROCHDALE 4N	Rochdale	B	A	32	33	35	19	20	27	29	25	22	29	40	55	**19**	**55**	**31**
ROSSENDALE 15N	Rossendale	B	A	87	35	28	36	69	17	34		18	32	56	70	**17**	**87**	**44**
ROSSENDALE 16N	Rossendale	B	A		30			25	16	12	23		26	49	27	**12**	**49**	**26**
SALFORD 16N	Salford	B	A	43	33	39	35	23		20	16	26	38	26	30	**16**	**43**	**30**
SALFORD 17N	Salford	B	A	51	38	39	34	28	21	18	8		20	31	47	**8**	**51**	**31**
BOOTLE 2N	Sefton	B	A	72	61	49	32	28	20	23	22	30	46	49	50	**20**	**72**	**40**
CROSBY 3N	Sefton	B	A	60	43	41	23	22	11	14	12	17	32	33	42	**11**	**60**	**29**
KENDAL 2N	South Lakeland	B	A	34	25	23	12	9	8	10	13	14	18	23	27	**8**	**34**	**18**
KENDAL 3N	South Lakeland	B	A		27			6	6	8	9	7	16	19	16	**6**	**27**	**12**
BAMBER BRIDGE 4N	South Ribble	B	A	15	39	24	20	15	14	22	16	27	33	32	43	**14**	**43**	**25**
LEYLAND 3N	South Ribble	B	A	28	27	20	27	27	11	13	21	16	26	12	56	**11**	**56**	**24**
ST HELENS 6N	St Helens	B	A	44	40	38	27	12	13	17		12		8	55	**8**	**55**	**27**
ST HELENS 7N	St Helens	B	A	40	42	31	31	10	19	10		13	29	33	25	**10**	**42**	**26**
STOCKPORT 16N	Stockport	B	A	30	37	20	26	14	15	15	15	16	23		38	**14**	**38**	**23**
STOCKPORT 17N	Stockport	B	A	30	35	19	23	10	6	28	23	10	17	36	45	**6**	**45**	**24**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
DENTON 9N	Tameside	B	A	48	48	13	24	12	12	15	13	17	24		38	**12**	**48**	**24**
HOLLINGWORTH 5N	Tameside	B	A	36	35	24	16	9		14	16	15	23	32		**9**	**36**	**22**
TRAFFORD 4N	Trafford	B	A		33	30	32	22	16	11	12	9	17	18	30	**9**	**33**	**21**
TRAFFORD 5N	Trafford	B	A	41	44	36	28	35	24	22	13	26	17	15	49	**13**	**49**	**29**
WARRINGTON 3N	Warrington	B	A			21	32	21	20	18		21	17	19		**17**	**32**	**21**
WARRINGTON 4N	Warrington	B	A	42	38	32	21	32	20	21	20	20	27	33	42	**20**	**42**	**29**
WARRINGTON 5N	Warrington	B	A	19	31	30	22	30	18	21	16	23		29	32	**16**	**32**	**25**
ORMSKIRK 3N	West Lancashire	B	A	52	41	40	24	26	14	17	18	23	36	32	40	**14**	**52**	**30**
ORMSKIRK 5N	West Lancashire	B	A	39	33	26	17	16	11	12	12	16	24	28	35	**11**	**39**	**22**
LEIGH 4N	Wigan	B	A	39	40	32	26	21				14			57	**14**	**57**	**33**
LEIGH 6N	Wigan	B	A	47	36	31	21	24				13				**13**	**47**	**29**
LISCARD 4N	Wirral	B	A	60	41	34	16				10		36	31		**10**	**60**	**33**
WALLASEY 9N	Wirral	B	A	46	56	33	5	26		18	16	22	30	33		**5**	**56**	**29**
DOUGLAS IOM 3N	Isle of Man	B	A	30	29		12		6	8	7	7	18	13	19	**6**	**30**	**15**
DOUGLAS IOM 4N	Isle of Man	B	A	29	5		13	12	7	9	5	6	14	12	7	**5**	**29**	**11**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	36	33	28	21	20	15	16	16	18	25	28	35
	Regional Monthly Min	12	5	6	5	5	5	5	5	6	5	8	7
	Regional Monthly Max	87	61	51	36	69	34	34	48	33	46	56	70
	Regional Annual Mean	24											
	Regional Annual Min	9											
	Regional Annual Max	44											
	Number of Sites	68											
	% With Valid Data	93											

Figure B3.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the North West and Merseyside



B4.1 Yorkshire and the Humber (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for Yorkshire and the Humber are shown in Figure B4.1. Table B4.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B4.2.

Table B4.1 Roadside Sites in Yorkshire and the Humber with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean	
Castleford 1N (63μgm^{-3})	Northallerton 6N (51μgm^{-3})
Barnsley 7N (62μgm^{-3})	Rotherham 7N (50μgm^{-3})
Bradford 1N (62μgm^{-3})	York 1N (48μgm^{-3})
Birstall X 5N (61μgm^{-3})	Goole 1N (45μgm^{-3})
Selby 7N (58μgm^{-3})	Hebden Bridge 1N (45μgm^{-3})
Rotherham 5N (58μgm^{-3})	Huddersfield X 1N (45μgm^{-3})
Goole 8N (57μgm^{-3})	Hull 1N (44μgm^{-3})
Halifax 5N (57μgm^{-3})	Malton 1N (43μgm^{-3})
Doncaster 1N (56μgm^{-3})	Hull 7N (41μgm^{-3})
Wakefield 1N (55μgm^{-3})	Barnsley 1N (41μgm^{-3})
Leeds 5N (55μgm^{-3})	Northallerton 1N (41(μgm^{-3})
Doncaster 6N (53μgm^{-3})	Brigg 5N (41μgm^{-3})
Bradford 5N (53μgm^{-3})	Harrogate 1N (41μgm^{-3})

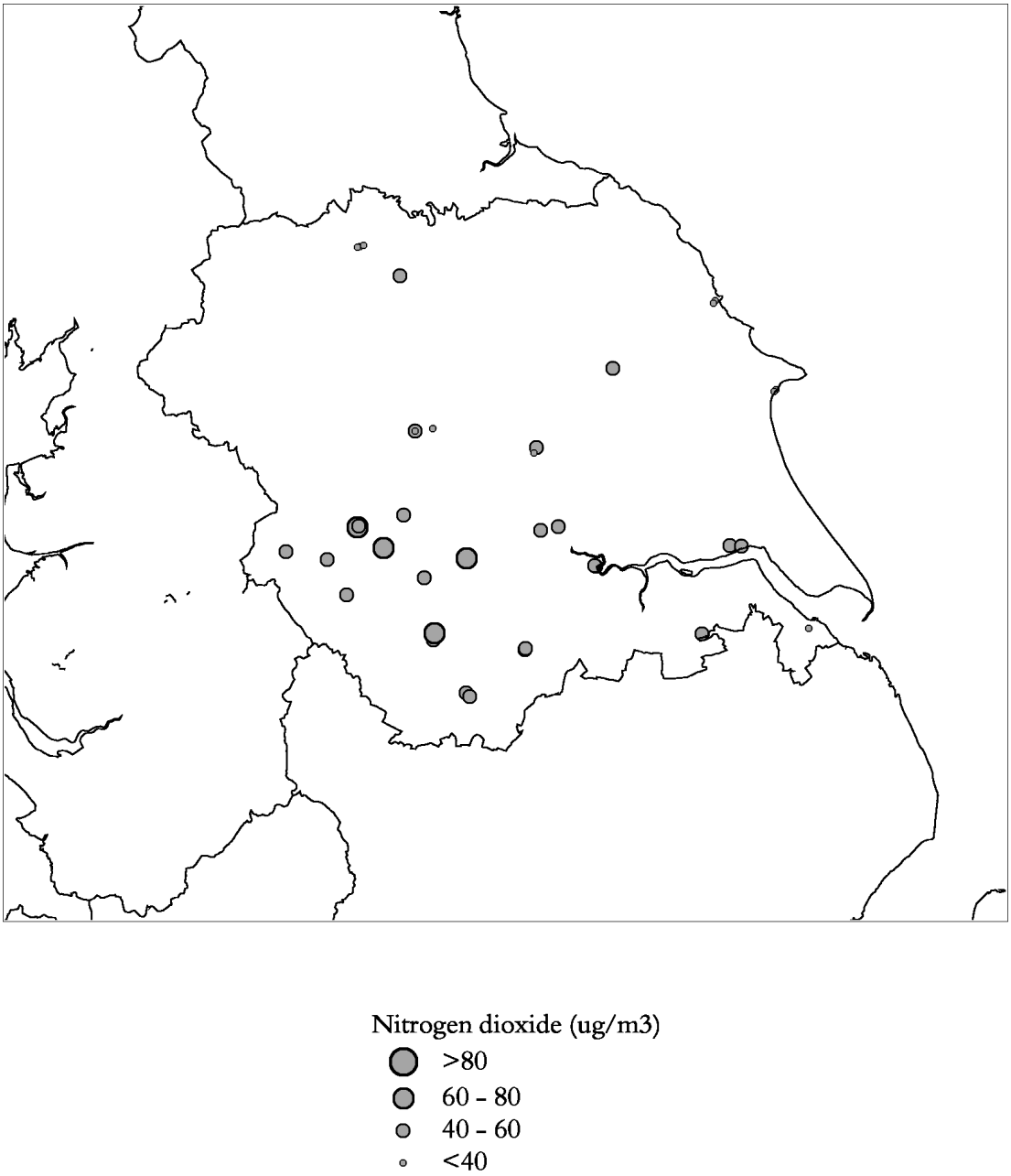
Table B4.2 Roadside Sites in Yorkshire and the Humber

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARNSLEY 1N	Barnsley	R	A	55	55	47	44	32	23	27	27	41	37	48	52	**23**	**55**	**41**
BARNSLEY 7N	Barnsley	R	A	77	74	70	69	57	33	51	43	68	58	72	73	**33**	**77**	**62**
BRADFORD 1N	Bradford	R	A	50	65	65	67	52	54	52	50	59	65	107	59	**50**	**107**	**62**
BRADFORD 5N	Bradford	R	A	63	59	57	54	46	42	27	36	59	59	82	48	**27**	**82**	**53**
HALIFAX 5N	Calderdale	R	A	59	63	65	55	65	44	50	52	50	61	69	55	**44**	**69**	**57**
HEBDEN BRIDGE 1N	Calderdale	R	A	57	38	46	48	40	36	44	36	38	52	54	50	**36**	**57**	**45**
HULL 1N	Kingston Upon Hull	R	A	51	39	30	25	42	32	53	41	48	50	64	47	**25**	**64**	**44**
HULL 7N	Kingston Upon Hull	R	C	37	49	21	45	41		44	37	30		68	41	**21**	**68**	**41**
YORK 1N	City of York Council	R	A	72	31	68	56	41	45	58	46	12	50	47		**12**	**72**	**48**
YORK 6N	City of York Council	R	A	29	25	71	24	32	29	24	21	39	17	22		**17**	**71**	**30**
DONCASTER 1N	Doncaster	R	A	79	80	77	67	73	28	55	49	50	39	36	35	**28**	**80**	**56**
DONCASTER 6N	Doncaster	R	A	63	85	68	71	60	31	47			32	37	37	**31**	**85**	**53**
BRIDLINGTON 1N	East Riding of Yorkshire	R	A	50	40	40	29	38	27	29	36	33	42	40	42	**27**	**50**	**37**
BRIDLINGTON 5N	East Riding of Yorkshire	R	A	50	50	38	27	33	27	27	33	31	42	44	40	**27**	**50**	**37**
GOOLE 1N	East Riding of Yorkshire	R	A	56	47	52	42	39	35	37	42	42	48	51	50	**35**	**56**	**45**
GOOLE 8N	East Riding of Yorkshire	R	A	50	68	56	55	47	39	47	52	55	85	72	63	**39**	**85**	**57**
NORTHALLERTON 1N	Hambleton	R	A	49	52	43	40	42	33	32	33	35	37	45	47	**32**	**52**	**41**
NORTHALLERTON 6N	Hambleton	R	A	59	60	54	50		53		34	43	50	52	57	**34**	**60**	**51**
HARROGATE 1N	Harrogate	R	A	30	44	34	45	37	34	37	29	45	52	49	51	**29**	**52**	**41**
HARROGATE 6N	Harrogate	R	A	20	26	26	26	25	23	20	20	26	27	46		**20**	**46**	**26**
KNARESBOROUGH 1N	Harrogate	R	A	17	32	31	44	44	35	29	35	40		35	27	**17**	**44**	**34**
BIRSTALL X 5N	Kirklees	R	A		6	64	63	67	54	71	37	64	81	67	96	**6**	**96**	**61**
HUDDERSFIELD X 1N	Kirklees	R	A	43	10	23	39	70	35	31	43	47	55	46	93	**10**	**93**	**45**
LEEDS 5N	Leeds	R	A	57	55	65	61	55		40	40	50	59		63	**40**	**65**	**55**
GREAT GRIMSBY 17N	NE Lincolnshire	R	A									40		50	19	**19**	**50**	
GREAT GRIMSBY 1N	NE Lincolnshire	R	A	46	38			29	38	40	21	17		50	52	**17**	**52**	**37**
BRIGG 1N	North Lincolnshire	R	A	50	40	26	30	27	19	24	21	27	27	41	37	**19**	**50**	**31**
BRIGG 5N	North Lincolnshire	R	A	44	59	45	38	38	38	37	37	30	41	48	32	**30**	**59**	**41**
RICHMOND N.YORKS 2N	Richmondshire	R	A	32	16		13	16	20	20	18	25	35	25		**13**	**35**	**22**
RICHMOND N.YORKS 7N	Richmondshire	R	A		12		14	19	16	14	14	19	24	22		**12**	**24**	**17**
RICHMOND N.YORKS 8N	Richmondshire	R	A	21	13		10	9	13	17	17	18	39	27		**9**	**39**	**18**
ROTHERHAM 5N	Rotherham	R	A	73	58	64	64		33	58	56	53	60	61	55	**33**	**73**	**58**
ROTHERHAM 7N	Rotherham	R	A	66		57	53	45		38	41	55	30	53	58	**30**	**66**	**50**
MALTON 10N	Ryedale	R	A			39		29		39			49	32	53	**29**	**53**	**40**
MALTON 1N	Ryedale	R	A	39	35	39		30		38			77	47	40	**30**	**77**	**43**
SCARBOROUGH 1N	Scarborough	R	A	42	43	38	25	15	5	23	31	31	43	9	15	**5**	**43**	**27**
SCARBOROUGH 5N	Scarborough	R	A	45	46	39	21	26	21	24	30	20	37	34	25	**20**	**46**	**31**
SELBY 7N	Selby	R	A	72	66	63	68	44	41	49	50	50		87	47	**41**	**87**	**58**
CASTLEFORD 1N	Wakefield	R	A	79	62	62	62			54	49	58	58	73	75	**49**	**79**	**63**
WAKEFIELD 1N	Wakefield	R	A	68	70	58	54			39	40	48	56	58	56	**39**	**70**	**55**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	51	46	50	44	40	32	38	36	40	48	50	50
	Regional Monthly Min	17	6	21	10	9	5	14	14	12	17	9	15
	Regional Monthly Max	79	85	77	71	73	54	71	56	68	85	107	96
	Regional Annual Mean	44											
	Regional Annual Min	17											
	Regional Annual Max	63											
	Number of Sites	40											
	% With Valid Data	98											

Figure B4.1 Annual Average Roadside Nitrogen Dioxide Concentrations in Yorkshire and the Humber



B4.2 Yorkshire and the Humber (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for Yorkshire and the Humber are shown in Figure B4.2. Table B4.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B4.4.

Table B4.3 Urban Background Sites in Yorkshire and the Humber with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Rotherham 3N (44μgm^{-3})
Wakefield 3N (44μgm^{-3})

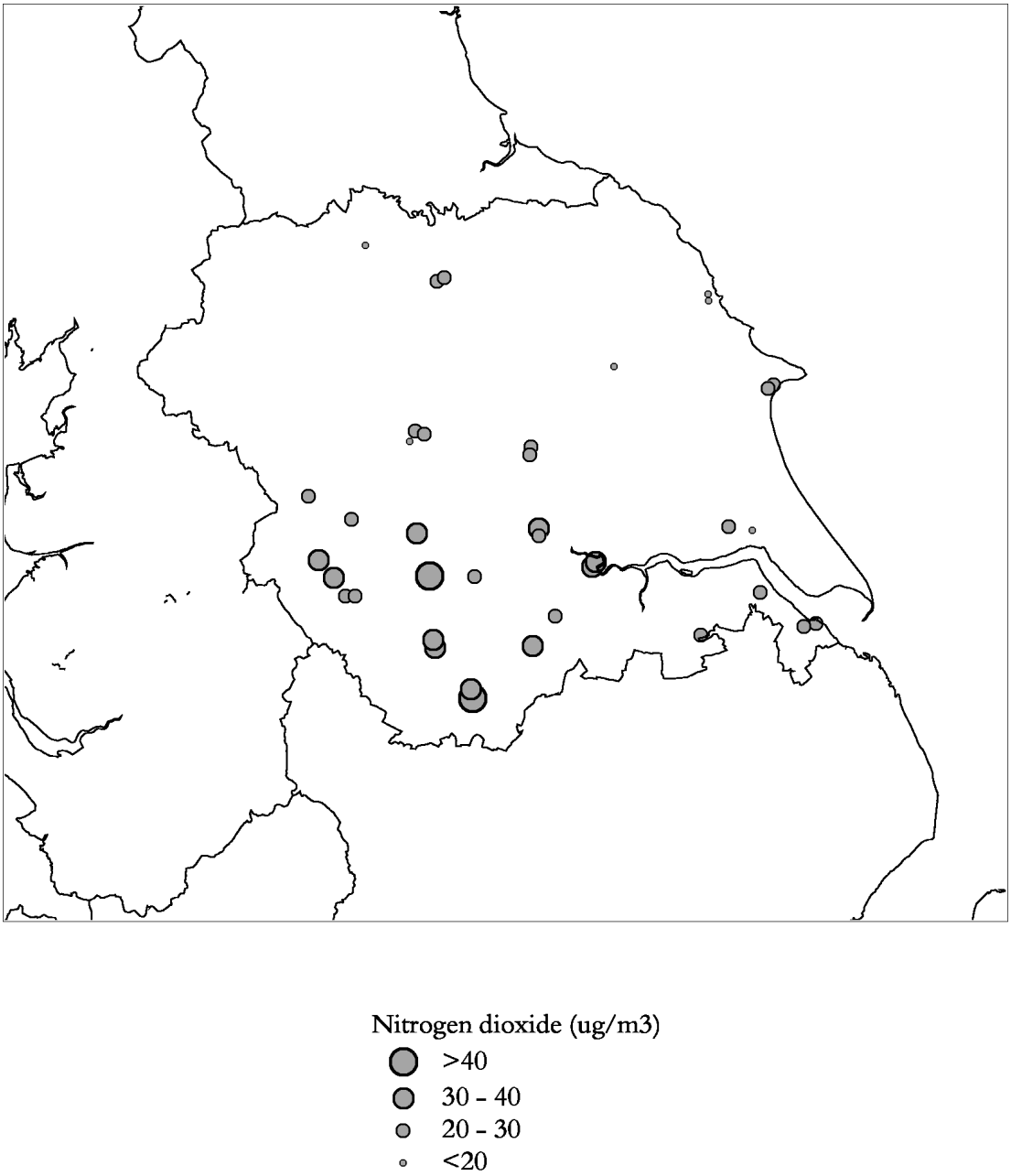
Table B4.4 Urban Background Sites in Yorkshire and the Humber

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARNSLEY 4N	Barnsley	B	A			41	31	26	21	28	30	33	36	40	47	**21**	**47**	**33**
BARNSLEY 6N	Barnsley	B	A	58	57	47	33	31	19	17	27	38	42	48	47	**17**	**58**	**39**
BRADFORD 3N	Bradford	B	A	38	29	29	21	23	17	15	21	19		48	25	**15**	**48**	**26**
BRADFORD 4N	Bradford	B	A	40	31	25	17	15	12	12	12	17	21	44	29	**12**	**44**	**23**
ELLAND 4N	Calderdale	B	A	48	44	44	27	31	19	27	29	29	40	40	40	**19**	**48**	**35**
HALIFAX 2N	Calderdale	B	A	46	38	38	29	33	23	25	25	25	34	38		**23**	**46**	**32**
HULL 5N	Kingston Upon Hull	B	A	24	25	16		12	18	12	16	12	26	34	27	**12**	**34**	**20**
HULL 6N	Kingston Upon Hull	B	A	25	24	5	11	10	11	14	18	12	34	34	22	**5**	**34**	**18**
YORK 3N	City of York Council	B	A	20	25	26	17	10	24	16	15	22	29	38		**10**	**38**	**22**
YORK 5N	City of York Council	B	A	26	22	48	12	18	21	22	12	14	31	30		**12**	**48**	**23**
DONCASTER 3N	Doncaster	B	A	52	55	41	34	26	12	23	30	32	26	27	28	**12**	**55**	**32**
DONCASTER 4N	Doncaster	B	A	41	45	33	26	21	9	21	23	23	17	19	18	**9**	**45**	**25**
BRIDLINGTON 3N	East Riding of Yorkshire	B	A	38	33	29	17	21	13	12	15	15	29	33	29	**12**	**38**	**24**
BRIDLINGTON 4N	East Riding of Yorkshire	B	A	36	31	27	17	15	13	15	17	15	33	29	27	**13**	**36**	**23**
GOOLE 5N	East Riding of Yorkshire	B	A	38	39	32	27	19	23	22	25	29	42	48	44	**19**	**48**	**32**
GOOLE 6N	East Riding of Yorkshire	B	A		48	37	25	26	16	19	23	24	40	46	44	**16**	**48**	**32**
NORTHALLERTON 4N	Hambleton	B	A	38	36	26	18	13	10	15	13	20	26	25	33	**10**	**38**	**23**
NORTHALLERTON 5N	Hambleton	B	A	34	37	24	20	17	10	14	14	18	24	30	36	**10**	**37**	**23**
HARROGATE 3N	Harrogate	B	A	18	25	27	21	17	43	14		19	28	26	21	**14**	**43**	**24**
HARROGATE 5N	Harrogate	B	A	11	10	16	17	14	25	8	23	9	19	19	26	**8**	**26**	**17**
HARROGATE 7N	Harrogate	B	A	20	35	21	24	11	20	11	19	10	28	34	29	**10**	**35**	**22**
HUDDERSFIELD X 3N	Kirklees	B	A	13	25	33	18	27	31	23	29	19	37	21	35	**13**	**37**	**26**
HUDDERSFIELD X 4N	Kirklees	B	A	25		24	28	29	23	22	7	31	25	43	28	**7**	**43**	**26**
LEEDS 3N	Leeds	B	A	42	48	40	33		27	27	33	34	42		44	**27**	**48**	**37**
GREAT GRIMSBY 3N	NE Lincolnshire	B	A	23	44		25	10	17	15	10	23		36	21	**10**	**44**	**22**
GREAT GRIMSBY 4N	NE Lincolnshire	B	A	33	34		38	13	15	33	19	15		31		**13**	**38**	**26**
BRIGG 3N	North Lincolnshire	B	A	31	29	21	18	17	18	14	18	17	20	21	24	**14**	**31**	**21**
KILLINGHOLME 4N	North Lincolnshire	B	A	36	33	25	21	22	18	18	17	16	29	32	26	**16**	**36**	**24**
RICHMOND N.YORKS 6N	Richmondshire	B	A	23	13		12	6	7	5	7	9	16	58		**5**	**58**	**15**
ROTHERHAM 3N	Rotherham	B	A		59		49	36		29	41				51	**29**	**59**	**44**
ROTHERHAM 6N	Rotherham	B	A	46	46	48	40	26	22	35	38	37	38	48	46	**22**	**48**	**39**
MALTON 8N	Ryedale	B	A		16	15		9						22	22	**9**	**22**	
MALTON 9N	Ryedale	B	A	22	21	15		7		14			13	28	30	**7**	**30**	**19**
SCARBOROUGH 4N	Scarborough	B	A	12	15	15	10	8	5	11	8	4	14	24	19	**4**	**24**	**12**
SCARBOROUGH 6N	Scarborough	B	A	20	8	16	13	4	10		8	10	6	4	31	**4**	**31**	**12**
SELBY 3N	Selby	B	A	42	46	36	20	18	19	19	23	23	38	43	34	**18**	**46**	**30**
SELBY 9N	Selby	B	A	45	43	27	30	15	17	16	25	21	35	38	32	**15**	**45**	**29**
PONTEFRACT 1N	Wakefield	B	A	41	38	29	24			16	18	21	28	30	46	**16**	**46**	**29**
WAKEFIELD 3N	Wakefield	B	A	61	50	45	38			26	34	36	45	54	50	**26**	**61**	**44**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	33	34	29	24	18	18	18	21	21	29	34	33
	Regional Monthly Min	11	8	5	10	4	5	5	7	4	6	4	18
	Regional Monthly Max	61	59	48	49	36	43	35	41	38	45	58	51
	Regional Annual Mean	26											
	Regional Annual Min	12											
	Regional Annual Max	44											
	Number of Sites	39											
	% With Valid Data	97											

Figure B4.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in Yorkshire and the Humber



B5.1 The East Midlands (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the East Midlands are shown in Figure B5.1. Table B5.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B5.2.

Table B5.1 Roadside Sites in the East Midlands with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean	
Lincoln 3N (63µgm^{-3})	Matlock 9N (48µgm^{-3})
Arnold 3N (63µgm^{-3})	Wellingborough 1N (48µgm^{-3})
Ashfield 7N (63µgm^{-3})	Bolsover 5N (46µgm^{-3})
Rushden 1N (59µgm^{-3})	Wellingborough 10N (45µgm^{-3})
Blaby 5N (59µgm^{-3})	Buxton Derbyshire 1N (45µgm^{-3})
Grantham 11N (58µgm^{-3})	Newark 5N (44µgm^{-3})
Lincoln 6N (56µgm^{-3})	North Hykeham (44µgm^{-3})
Arnold 1N (54µgm^{-3})	Gainsborough 6N (44µgm^{-3})
Newark 1N (53µgm^{-3})	Stamford 1N (43µgm^{-3})
Loughborough 1N (53µgm^{-3})	Loughbrough 7N (43µgm^{-3})
Blaby 1N (52µgm^{-3})	Bolsover 6N (43µgm^{-3})
Ashfield 8N (52µgm^{-3})	Gainsborough 7N (43µgm^{-3})
Long Eaton 1N (52µgm^{-3})	Hinckley 1N (42µgm^{-3})
Harborough 5N (51µgm^{-3})	North Hykeham 6N (41µgm^{-3})
Harborough 1N (51µgm^{-3})	Stamford 31N (41µgm^{-3})
Matlock 5N (49µgm^{-3})	

Table B5.2 Roadside Sites in the East Midlands

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

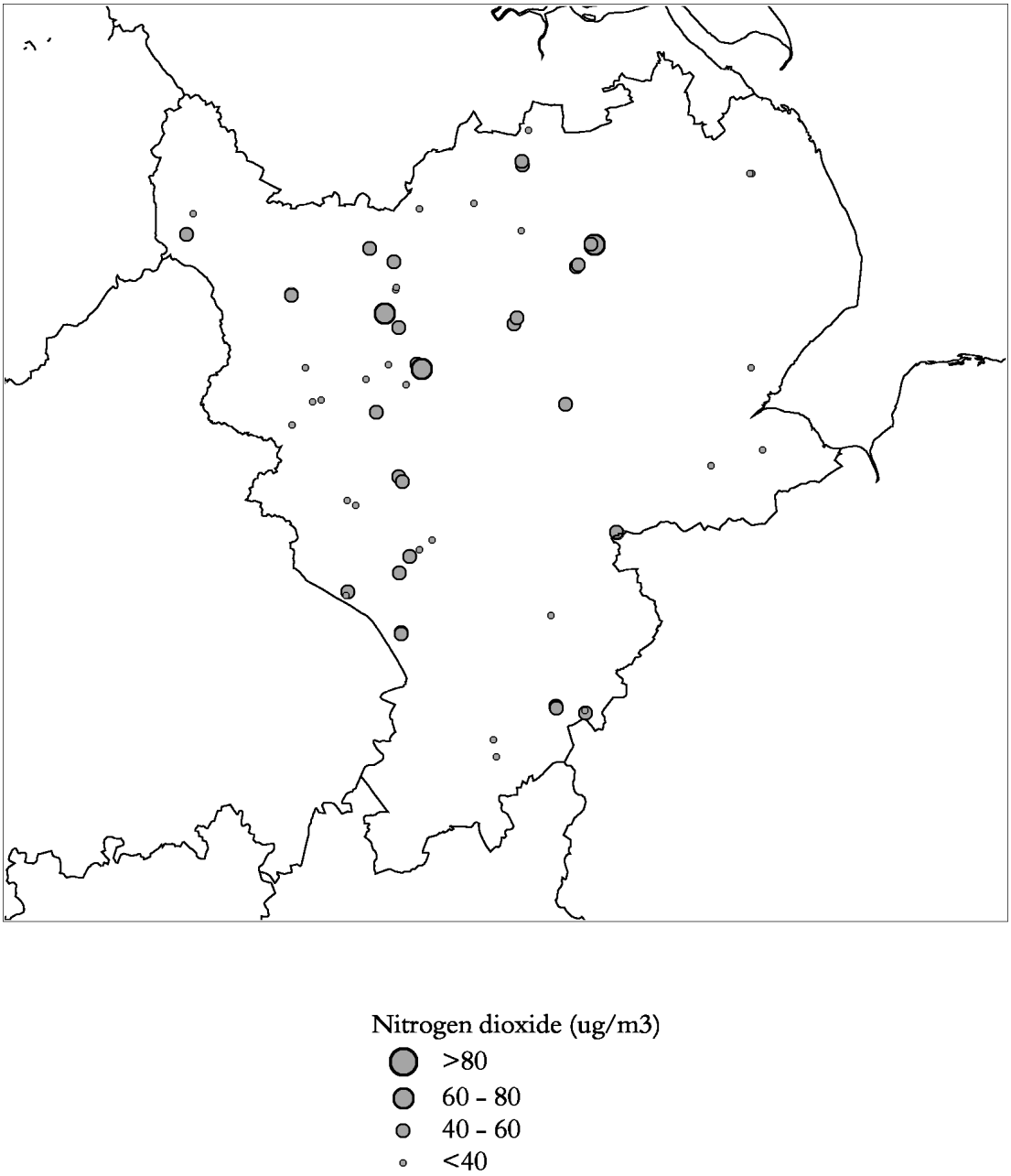
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
ASHFIELD 7N	Ashfield	R	A	75	78	60	62	55	46	46	62	53	73	78	63	**46**	**78**	**63**
ASHFIELD 8N	Ashfield	R	A	68	66	28	52	44	44	43	50	50	62	59	59	**28**	**68**	**52**
DUNHAM 1N	Bassetlaw	R	A	38		36	18	18	25	31	40	27	31	32	36	**18**	**40**	**30**
RETFORD 1N	Bassetlaw	R	A	33		27	12	21	24	23	30	33	38	39	37	**12**	**39**	**29**
WORKSOP 7N	Bassetlaw	R	A	36		25	26	24	33	26	38	42	30	49	32	**24**	**49**	**33**
BLABY 1N	Blaby	R	A	64	63	49	52	57	29	41	37	52	55	70	59	**29**	**70**	**52**
BLABY 5N	Blaby	R	A	69	71	61	65	55	38	55	50	54	53	75	58	**38**	**75**	**59**
BOLSOVER 5N	Bolsover	R	A	46	44	49		57	41	32	45	46	41	50	50	**32**	**57**	**46**
BOLSOVER 6N	Bolsover	R	A	56	51		83	29	23	26	30		42			**23**	**83**	**43**
BOSTON 1N	Boston	R	A	33	52	27		49	32	31	23	41	39	29	39	**23**	**52**	**36**
BOSTON 6N	Boston	R	A	27	34	31		26	20	18	32	28	39	31	30	**18**	**39**	**29**
BROXTOWE 1N	Broxtowe	R	A	39	34	41	27	33	32	32	34	28	34	46	25	**25**	**46**	**34**
BROXTOWE 5N	Broxtowe	R	A	34	42	35	27	27	32	25	32	32	36	39	29	**25**	**42**	**33**
LOUGHBOROUGH 1N	Charnwood	R	A	46	61	56	22	38	61	59	58	55	57	60	62	**22**	**62**	**53**
LOUGHBOROUGH 7N	Charnwood	R	A	61	47	41	29	33	41	43	41	43	40	43	48	**29**	**61**	**43**
CORBY 1N	Corby	R	A	46	41	32	18	33			38	39		38		**18**	**46**	**36**
CORBY 5N	Corby	R	A			29	20	21				28		35		**20**	**35**	
DERBY 7N	Derby City	R	A	62	60	43		25	45	20	19	4			65	**4**	**65**	**38**
DERBY 8N	Derby City	R	A	49	42	38	39	30	29	9	25	35				**9**	**49**	**33**
MATLOCK 5N	Derbyshire Dales	R	A	57	57	54	54	47	50	50	33	39	44		52	**33**	**57**	**49**
MATLOCK 9N	Derbyshire Dales	R	A	53	55	50	47	53	49	47	45	45	49		41	**41**	**55**	**48**
LOUTH 5N	East Lindsey	R	A	41	46	24	18	43	37	41	41		41			**18**	**46**	**37**
LOUTH 6N	East Lindsey	R	A	26	23	24	18	35	45	33	33		35			**18**	**45**	**30**
RUSHDEN 1N	East Northamptonshire	R	A	75		67	61	48	37	49	58	59		74	60	**37**	**75**	**59**
RUSHDEN 5N	East Northamptonshire	R	A						22	24	28		39	48	39	**22**	**48**	**33**
LONG EATON 1N	Erewash	R	A	72	71	75		35	38		43	45	46		40	**35**	**75**	**52**
LONG EATON 5N	Erewash	R	A	52	55	46		19	23	34	33	29	34		35	**19**	**55**	**36**
ARNOLD 1N	Gedling	R	A	75	57	59	52	44	37	50	46	55	54	53	61	**37**	**75**	**54**
ARNOLD 3N	Gedling	R	A	77	57	43	53	54	51	62	59	68	77	77	74	**43**	**77**	**63**
HARBOROUGH 1N	Harborough	R	A	65	52	57	50	40	48	57	42	29	57	42	71	**29**	**71**	**51**
HARBOROUGH 5N	Harborough	R	A		24	27	52	54	40	54			59		101	**24**	**101**	**51**
BUXTON DERBYSHIRE 1N	High Peak	R	A	55	61	57		35	38	33	39	43	58	10	62	**10**	**62**	**45**
DOVE HOLES 1N	High Peak	R	A	37	45	28		30	24	37	25	22	33	23	43	**22**	**45**	**32**
HINCKLEY 1N	Hinckley & Bosworth	R	A	52	29	55		31	31	40	31	46	42	48	54	**29**	**55**	**42**
HINCKLEY 7N	Hinckley & Bosworth	R	A	34	34	42				31		36		46	6	**6**	**46**	**33**
LEICESTER 1N	Leicester City	R	A		52	42	34	44	31	48		67	33	21	23	**21**	**67**	**39**
LEICESTER 6N	Leicester City	R	A		33	52	31	17	25	25	15	19	23	34	34	**15**	**52**	**28**
LINCOLN 3N	Lincoln	R	A	68	74	57	62	49	68	54	54	66	63	75	66	**49**	**75**	**63**
LINCOLN 6N	Lincoln	R	A	68	64	59	54	47	48	48	49	51	54	64	63	**47**	**68**	**56**
MANSFIELD 1N	Mansfield	R	A	31	42		28	26	22	24	17		35	20	38	**17**	**42**	**28**
MANSFIELD 5N	Mansfield	R	A	34	42		10	18	19	20	19	22	40	16	45	**10**	**45**	**26**
NEWARK 1N	Newark	R	A	69	64	52	48	32	42	41	44	50	64	76	57	**32**	**76**	**53**
NEWARK 5N	Newark	R	A	61	59	43	36	26	36	38	29	40	41	72	52	**26**	**72**	**44**
NORTH HYKEHAM 1N	North Kesteven	R	A	57	50	48	40	44	36	42	40	46	44	42	44	**36**	**57**	**44**
NORTH HYKEHAM 6N	North Kesteven	R	A	38	29	44	36	42		36			46	50	48	**29**	**50**	**41**
COALVILLE 10N	NW Leicestershire	R	A	36	39	32	30	38	28	31	34		41		23	**23**	**41**	**33**
COALVILLE 1N	NW Leicestershire	R	A	27	29	28	17	21	30	19	18		25		19	**17**	**30**	**23**
NORTHAMPTON 1N	Northampton	R	A	44	32	28	28	28	25	32	28	33	46	35	33	**25**	**46**	**33**
NORTHAMPTON 7N	Northampton	R	A	40	47	22	37		24	26	20	26	41	48	26	**20**	**48**	**32**
NOTTINGHAM 1N	Nottingham	R	A	50	44	4	33	23	27	31				21	33	**4**	**50**	**29**
SWADLINCOTE 2N	South Derbyshire	R	C	58												**58**	**58**	
SWADLINCOTE 7N	South Derbyshire	R	A		55	36	43	30	29			27	34	40	38	**27**	**55**	**37**
SWADLINCOTE 8N	South Derbyshire	R	A									35		39	58	**35**	**58**	

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
SPALDING 2N	South Holland	R	A	23	27	20	10	15	13	21	15		7		31	**7**	**31**	**18**
SPALDING 7N	South Holland	R	A	34	33	28	6		8	16	16		25	33	41	**6**	**41**	**24**
GRANTHAM 11N	South Kesteven	R	A	58	74	68	45	45	76	36	61	72	61	78	24	**24**	**78**	**58**
GRANTHAM 21N	South Kesteven	R	C				4	4								**4**	**4**	
STAMFORD 1N	South Kesteven	R	A	36	56	46	40	40	45	36	39	55	41	62	20	**20**	**62**	**43**
STAMFORD 31N	South Kesteven	R	A	40	57	44	35	35	22	35	35	53	49	66	16	**16**	**66**	**41**
WELLINGBOROUGH 10N	Wellingborough	R	A	55	52	45	42	48	31		34	41	38	52	58	**31**	**58**	**45**
WELLINGBOROUGH 1N	Wellingborough	R	A		54	50	50	33	41	52	46	47	47	54	59	**33**	**59**	**48**
GAINSBOROUGH 6N	West Lindsey	R	A	55	62	42		27		23	38	45	41	49	54	**23**	**62**	**44**
GAINSBOROUGH 7N	West Lindsey	R	A	54	54	38	34		33	35	34	37	42	55	50	**33**	**55**	**43**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	50	50	42	36	35	35	36	36	42	44	48	45
	Regional Monthly Min	23	23	4	4	4	8	9	15	4	7	10	6
	Regional Monthly Max	77	78	75	83	57	76	62	62	72	77	78	101
	Regional Annual Mean	41											
	Regional Annual Min	18											
	Regional Annual Max	63											
	Number of Sites	63											
	% With Valid Data	94											

Figure B5.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the East Midlands



B5.2 The East Midlands (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the East Midlands are shown in Figure B5.2. No urban background sites in the East Midlands exceeded the Air Quality Strategy Objective of 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B5.3.

Table B5.3 Urban Background Sites in the East Midlands

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

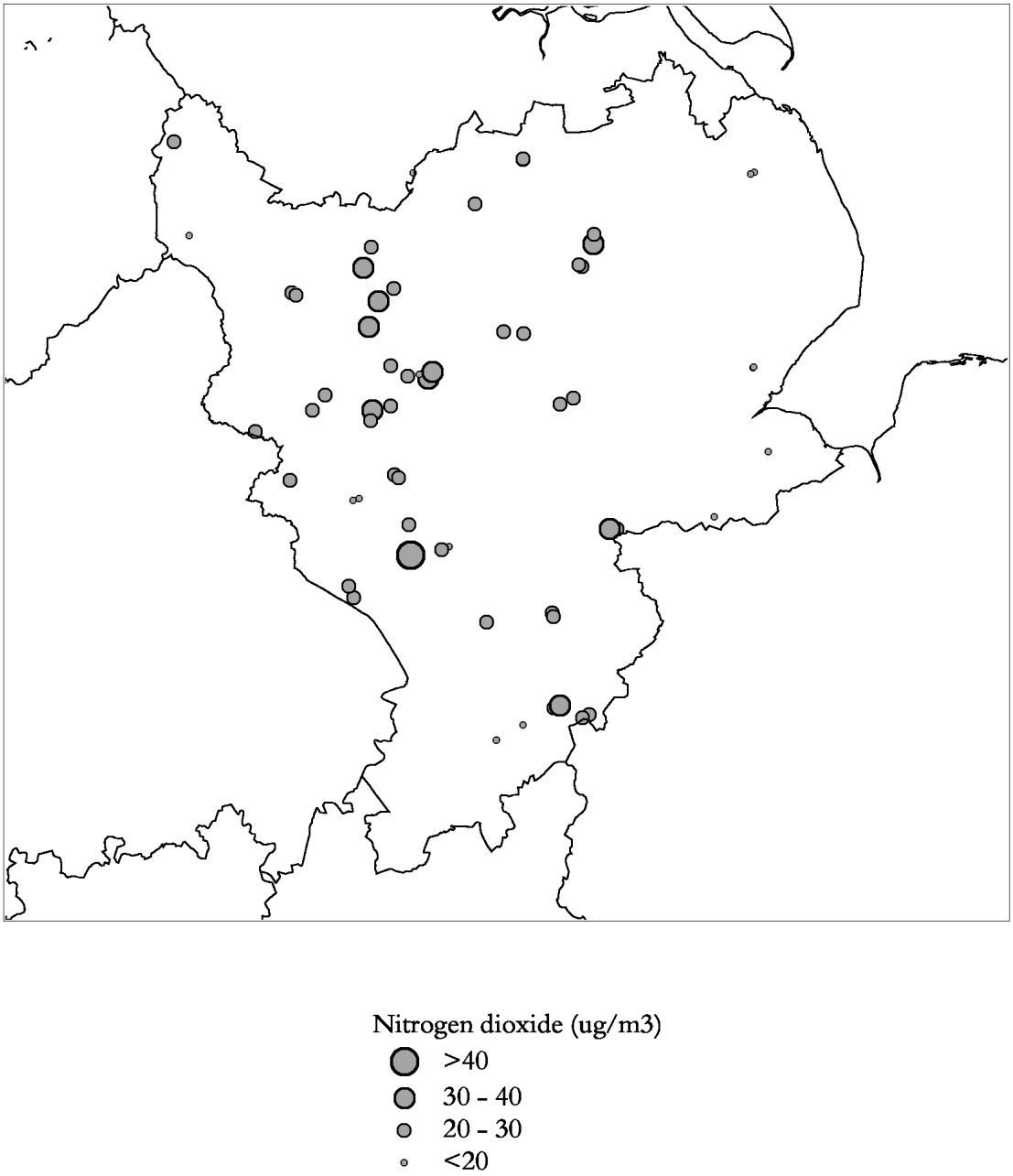
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
ASHFIELD 2N	Ashfield	B	A	58	54	43	34	32	26	24	32	31	42	46	48	**24**	**58**	**39**
ASHFIELD 4N	Ashfield	B	A	56	54	42	33	34	29	29	35	39	43	33	49	**29**	**56**	**40**
RETFORD 2N	Bassetlaw	B	A	27		27	11	9	20	18	19	26	22	34	39	**9**	**39**	**23**
BLABY 3N	Blaby	B	A	53	49	39	37	23	25	32	27	35	44	54	45	**23**	**54**	**39**
BLABY 4N	Blaby	B	A	61	46	43	31	36	20	33	35	38	39	55	47	**20**	**61**	**40**
BOLSOVER 3N	Bolsover	B	A	47	42	29	24	19	16	22	22	26	30	37	39	**16**	**47**	**29**
BOLSOVER 4N	Bolsover	B	A	46	49	38		37	14	32	29		39		39	**14**	**49**	**36**
BOSTON 3N	Boston	B	A	20	28	15			10	12		20	19		16	**10**	**28**	**18**
BOSTON 5N	Boston	B	A	22	27	13		7	9	8	9	17	12	17	19	**7**	**27**	**14**
BROXTOWE 3N	Broxtowe	B	A	36	37	26	16	15	21	20	27	27	30	44	25	**15**	**44**	**27**
BROXTOWE 6N	Broxtowe	B	A	33	37	27	24	15	19	24	32	33	36	37	19	**15**	**37**	**28**
LOUGHBOROUGH 4N	Charnwood	B	A	25	29	26	11	14	18	20	23	22	29	33	31	**11**	**33**	**23**
LOUGHBOROUGH 5N	Charnwood	B	A	28	29	24	15	12	17	16	22	26	24	37	31	**12**	**37**	**23**
CORBY 3N	Corby	B	A	34	32	23	20	13			16	22		24		**13**	**34**	**23**
CORBY 4N	Corby	B	A	32	29	20	14	23			12	24		30		**12**	**32**	**23**
DERBY 5N	Derby City	B	A	40	41	27		12	20		22	19				**12**	**41**	**26**
DERBY 6N	Derby City	B	A	41	32	34	26	24		7	15	23			56	**7**	**56**	**29**
MATLOCK 7N	Derbyshire Dales	B	A	32	30	26	16	17	14	15	15		23		27	**14**	**32**	**22**
MATLOCK 8N	Derbyshire Dales	B	A	32	33	24	17	18	15	15	16		23		31	**15**	**33**	**22**
LOUTH 3N	East Lindsey	B	A	23	21	13	8	11	12	13	13		32			**8**	**32**	**16**
LOUTH 7N	East Lindsey	B	A	23	22	14	8	15	14	12	12		24			**8**	**24**	**16**
RUSHDEN 3N	East Northamptonshire	B	A	24	41	26	23	14	16	18	19	28	29	42	39	**14**	**42**	**27**
RUSHDEN 4N	East Northamptonshire	B	A	41	40	30	20	15	9	14	16	24	26	36	42	**9**	**42**	**26**
LONG EATON 3N	Erewash	B	A	58	51	42		12		29	26	28	31		31	**12**	**58**	**34**
LONG EATON 4N	Erewash	B	A	45	49	35		28	20	20	20	25	27		27	**20**	**49**	**30**
CARLTON 3N	Gedling	B	A	56	34	35		19	20	22	25	30	35	50	52	**19**	**56**	**34**
CARLTON 4N	Gedling	B	A	45	41	27	22	17	17	36	27	27	38	42	51	**17**	**51**	**33**
HARBOROUGH 3N	Harborough	B	A	27	24	23	13	13	21	15	19	12	17	21	40	**12**	**40**	**21**
HARBOROUGH 4N	Harborough	B	A	33	20	17	17	8	13		10				38	**8**	**38**	**20**
BUXTON DERBYSHIRE 4N	High Peak	B	A	25	36	24		10	15	18	12		9	18	29	**9**	**36**	**20**
GLOSSOP 3N	High Peak	B	A	59	24	19		15	14	17	14	16	17	13	28	**13**	**59**	**22**
HINCKLEY 5N	Hinckley & Bosworth	B	A	36	38	17		12	13	17	19	25	29	34	31	**12**	**38**	**25**
HINCKLEY 6N	Hinckley & Bosworth	B	A	33	31	13		15	17		21		27	33	59	**13**	**59**	**28**
LEICESTER 3N	Leicester City	B	A		34	34	15	23	12	21	17	15	19	38		**12**	**38**	**23**
LEICESTER 5N	Leicester City	B	A		13	31	4	15	48			13			46	**4**	**48**	**24**
LINCOLN 4N	Lincoln	B	A	46	46	33	26	22	18	26	20	27	35	39	37	**18**	**46**	**31**
LINCOLN 5N	Lincoln	B	A	40	42	29	20	15	14	19	17	23	29	38	38	**14**	**42**	**27**
MANSFIELD 3N	Mansfield	B	A	26	26		16	14	16		15	21	33	20	28	**14**	**33**	**22**
MANSFIELD 4N	Mansfield	B	A	25	23		9	11	10	12	11	18	25	21	32	**9**	**32**	**18**
NEWARK 3N	Newark	B	A	32	37	28	23	18	13	17	15	25	30	44	49	**13**	**49**	**28**
NEWARK 4N	Newark	B	A	45	33	27	22	14	13	14	17	22	28	44	36	**13**	**45**	**26**
NORTH HYKEHAM 3N	North Kesteven	B	A	42	42	27	25	15	15	17		27	25	40	38	**15**	**42**	**29**
NORTH HYKEHAM 4N	North Kesteven	B	A	33	31	23	21	12	15	15	19	23	25	33	31	**12**	**33**	**23**
COALVILLE 6N	NW Leicestershire	B	A	27	30	22	14		22	8	13		28		12	**8**	**30**	**20**
COALVILLE 9N	NW Leicestershire	B	A	21	34	19	14	10	9	14	14		16		17	**9**	**34**	**17**
NORTHAMPTON 3N	Northampton	B	A	18	16	9	12	8	8	7	6	10	16	16	19	**6**	**19**	**12**
NORTHAMPTON 5N	Northampton	B	A	21	27	15	15	9	8	13	6	12	20	27	16	**6**	**27**	**16**
NOTTINGHAM 3N	Nottingham	B	A	29	38	31	31	15	21	17		25	34	31	44	**15**	**44**	**29**
NOTTINGHAM 4N	Nottingham	B	A	29	36	25	13	13	15	15		6	10	19	13	**6**	**36**	**18**
SWADLINCOTE 5N	South Derbyshire	B	A	32	32	16	26	12	17		18	15	10	23	48	**10**	**48**	**23**
SWADLINCOTE 6N	South Derbyshire	B	C	46	28	26	30	24	25							**24**	**46**	**30**
SWADLINCOTE 9N	South Derbyshire	B	A									13	16	28	28	**13**	**28**	
SPALDING 5N	South Holland	B	A	29	22	19	18	7	19	13	13		16		33	**7**	**33**	**19**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
SPALDING 6N	South Holland	B	A	31	24	21	13	4	10	9	9		21	9	27	**4**	**31**	**16**
GRANTHAM 13N	South Kesteven	B	A	39	38	27	13	13	17	17	24	32	41	54	17	**13**	**54**	**28**
GRANTHAM 14N	South Kesteven	B	A	34	37	32	11	11	20	19		32	39	44	20	**11**	**44**	**27**
STAMFORD 13N	South Kesteven	B	A		28	30	16	16	17	18		36		50	24	**16**	**50**	**26**
STAMFORD 24N	South Kesteven	B	A	39	43	41	14	14	23	24	23	44	51	55	24	**14**	**55**	**33**
WELLINGBOROUGH 3N	Wellingborough	B	A	37	34	31	22	18	14		20	24	26	33	36	**14**	**37**	**27**
WELLINGBOROUGH 4N	Wellingborough	B	A	41	45	31	27	19	17	22	24	30	26	39	44	**17**	**45**	**31**
GAINSBOROUGH 4N	West Lindsey	B	A	35	42	26	19	14	16	17	19	20		34	33	**14**	**42**	**25**
GAINSBOROUGH 5N	West Lindsey	B	A	45	42	23	20	16	15	18	17	19	21	31	34	**15**	**45**	**25**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	36	35	26	19	16	17	18	19	24	27	34	34
	Regional Monthly Min	18	13	9	4	4	8	7	6	6	9	9	12
	Regional Monthly Max	61	54	43	37	37	48	36	35	44	51	55	59
	Regional Annual Mean	25											
	Regional Annual Min	12											
	Regional Annual Max	40											
	Number of Sites	62											
	% With Valid Data	98											

Figure B5.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the East Midlands



B6.1 The West Midlands (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the West Midlands are shown in Figure B6.1. Table B6.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B6.2.

Table B6.1 Roadside Sites in the West Midlands with High Concentrations according to the Air Quality Strategy Objectives

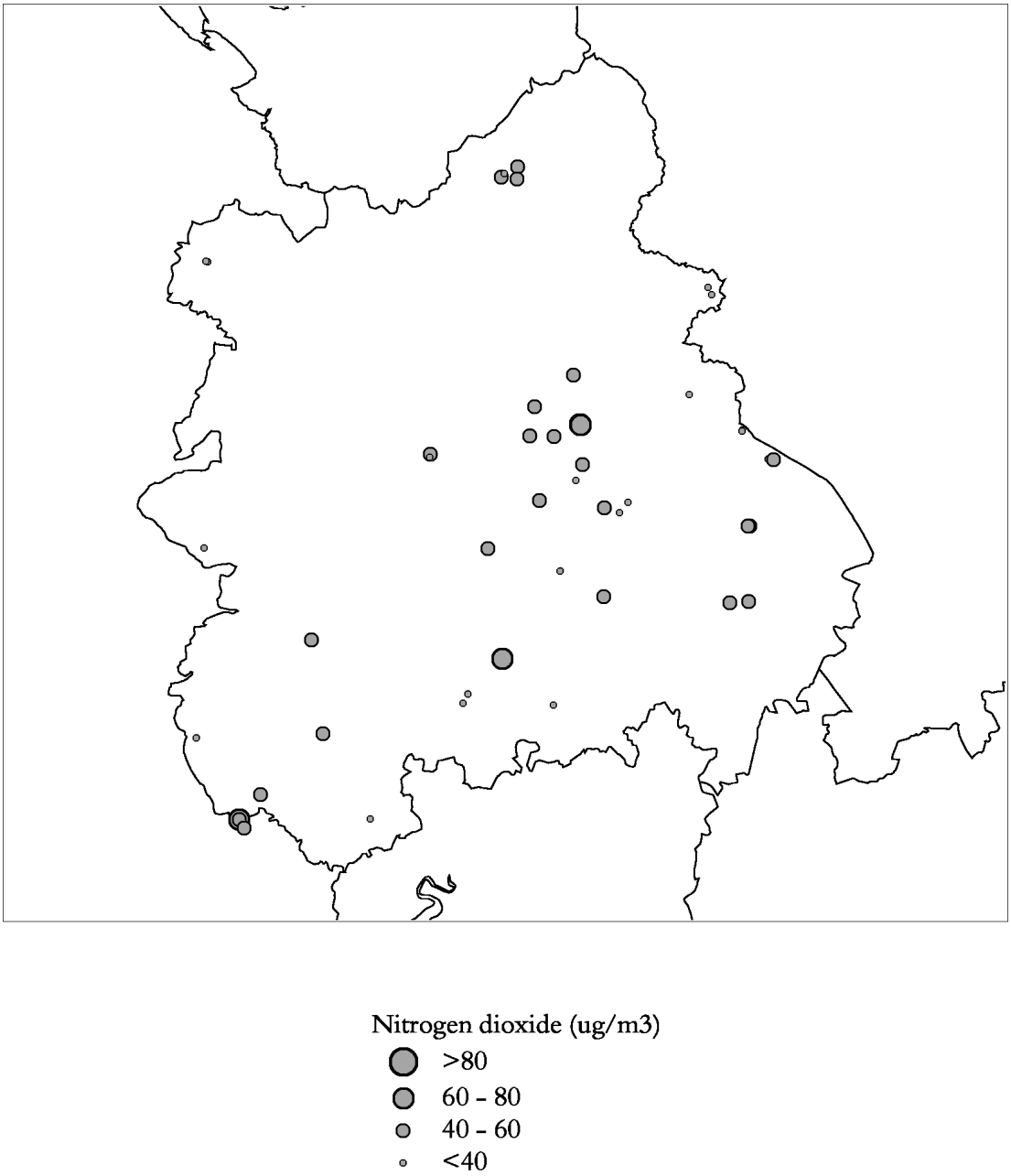
Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean	
Walsall 1N (69µgm^{-3})	Wolverhampton 10N (46µgm^{-3})
Walsall 8N (65µgm^{-3})	Stoke on Trent 6N (46µgm^{-3})
Worcester 1N (64µgm^{-3})	Newcastle under Lyme 1N (45µgm^{-3})
Hereford 7N (60µgm^{-3})	Coventry 1N (45µgm^{-3})
Leamington Spa 6N (55µgm^{-3})	Coventry 6N (44µgm^{-3})
Dudley 7N (54µgm^{-3})	Leominster 6N (43µgm^{-3})
Redditch 5N (51µgm^{-3})	Birmingham 538N (43µgm^{-3})
Kidderminster 1N (50µgm^{-3})	Stoke on Trent 1N (43µgm^{-3})
Hereford 1N (50µgm^{-3})	Nuneaton 5N (43µgm^{-3})
Bilston 1N (50µgm^{-3})	Bridgnorth 1N (42µgm^{-3})
Leamington Spa 1N (49µgm^{-3})	Codsall 9N (41µgm^{-3})
Dudley 5N (48µgm^{-3})	Leominster 5N (41µgm^{-3})
Wolverhampton 5N (48µgm^{-3})	Ross-on-Wye 6N (41µgm^{-3})
Wolverhampton 9N (47µgm^{-3})	Sandwell 8N (41µgm^{-3})

Table B6.2 Roadside Sites in the West Midlands

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
BIRMINGHAM 534N	Birmingham	R	A	35	53	41	35	33	40	41	30	42	39	53	34	**30**	**53**	**40**
BIRMINGHAM 536N	Birmingham	R	A	33	44	45	33	46	42	27	18	43	35	54	53	**18**	**54**	**39**
BIRMINGHAM 538N	Birmingham	R	A	48	53	50	30	49	37	38	34	44	47		41	**30**	**53**	**43**
BRIDGNORTH 1N	Bridgnorth	R	A	69	55	51	27	29	35	35	37	41	40	46	44	**27**	**69**	**42**
BRIDGNORTH 5N	Bridgnorth	R	A	56	43		17	26	28	23	27	35	33	30	38	**17**	**56**	**32**
BROMSGROVE 1N	Bromsgrove	R	A	35	45	53	42	59	24		26	31	40	43	32	**24**	**59**	**39**
BROMSGROVE 5N	Bromsgrove	R	A	38	44	46	33	24	33	19	30	27	38	21	19	**19**	**46**	**31**
COVENTRY 1N	Coventry	R	A	65	80	62	24	36	22	45	46	41	38	44	33	**22**	**80**	**45**
COVENTRY 6N	Coventry	R	A	71	65	67	28	34	25	43	39	48	44	41	23	**23**	**71**	**44**
DUDLEY 5N	Dudley	R	A	73	76	76	29	39	26	33	35	45	40	56	51	**26**	**76**	**48**
DUDLEY 7N	Dudley	R	A	79	76	71	40	43	41	47	46	52	45	59	44	**40**	**79**	**54**
BURTON 1N	East Staffordshire	R	A	73	44	37		29	33	34	34	39	32	33		**29**	**73**	**39**
BURTON 6N	East Staffordshire	R	A	37	49	33		25	33	38	38	36	37	35		**25**	**49**	**36**
HEREFORD 1N	Herefordshire	R	A	50	61	67	44						44	40	42	**40**	**67**	**50**
HEREFORD 7N	Herefordshire	R	A	103	57	76	90	63		44	48	52	55	38	36	**36**	**103**	**60**
LEOMINSTER 5N	Leominster	R	A	46	40			52		38	38	46	46	34	31	**31**	**52**	**41**
LEOMINSTER 6N	Leominster	R	A	52	46	46	34	55		42	50	27	59	36	29	**27**	**59**	**43**
MALVERN 1N	Malvern Hills	R	C	33	38	37	23									**23**	**38**	
MALVERN 5N	Malvern Hills	R	A	46	47	37	13	38		29	46	20	30	42	29	**13**	**47**	**34**
MALVERN 6N	Malvern Hills	R	A						35	36	20	31	27	24	27	**20**	**36**	**29**
NEWCASTLE UNDER LYME 1N	Newcastle Under Lyme	R	A	55	55	44	35		29	42	46	41			56	**29**	**56**	**45**
NEWCASTLE UNDER LYME 8N	Newcastle Under Lyme	R	A	46	33	29	27	35	29	33	31	29			37	**27**	**46**	**33**
NORTH WARWICKSHIRE 1N	North Warwickshire	R	A	58	63	51	31	20	33	31	35	33	27	42	46	**20**	**63**	**39**
NORTH WARWICKSHIRE 5N	North Warwickshire	R	A	51	44	35		26		27	26	24	24	35	36	**24**	**51**	**33**
NUNEATON 1N	Nuneaton	R	A	41	46	38	26	33	35	17	30	50	39		48	**17**	**50**	**37**
NUNEATON 5N	Nuneaton	R	A	51	55	55	41	29	35	20	29	49	45	52	49	**20**	**55**	**43**
OSWESTRY 1N	Oswestry	R	A	62	38	58	15	27	26	26	35		36	35	29	**15**	**62**	**35**
OSWESTRY 6N	Oswestry	R	A	57	37	50	16	23	24	20	28		30	31	44	**16**	**57**	**33**
REDDITCH 5N	Redditch	R	A	55	60	56	55		48	51	38	53	57	49	43	**38**	**60**	**51**
SANDWELL 5N	Sandwell	R	A		58	74	29	28		29	27	23	44	41	30	**23**	**74**	**38**
SANDWELL 8N	Sandwell	R	A	71	65	54	32	43	32	37	36	28	33	37	20	**20**	**71**	**41**
ROSS-ON-WYE 1N	South Herefordshire	R	A	31	38	59	29			29	33	40	40	33	27	**27**	**59**	**36**
ROSS-ON-WYE 6N	South Herefordshire	R	A	50	38	63				38		42	40	17		**17**	**63**	**41**
CODSALL 2N	South Staffordshire	R	A	15	47	27	21	28	28	36	38	43	32	40	42	**15**	**47**	**33**
CODSALL 9N	South Staffordshire	R	A	58	53	44	27	37	33	38	41	41	41	37	45	**27**	**58**	**41**
STAFFORD 7N	Stafford	R	A						25			24	24		39	**24**	**39**	
STOKE ON TRENT 1N	Stoke-On-Trent	R	A	58	54	37	37	36	42	36	37	36	55	41	46	**36**	**58**	**43**
STOKE ON TRENT 6N	Stoke-On-Trent	R	A	54	59	38	37	45	45	35	46	49	53	44	48	**35**	**59**	**46**
TAMWORTH 1N	Tamworth	R	A	41	42	37		24	27	35	27	30	43	31	39	**24**	**43**	**34**
WALSALL 1N	Walsall	R	A	86	71	66	66	77	56	69	58	61	63	78	81	**56**	**86**	**69**
WALSALL 8N	Walsall	R	A	85	65	64	50	70	48	63	57	64	69	72	76	**48**	**85**	**65**
LEAMINGTON SPA 1N	Warwick	R	A	63	47	50	47	32	43	45	44	48	41	67	63	**32**	**67**	**49**
LEAMINGTON SPA 6N	Warwick	R	A	64	65	57	60	48	39	56	49	49	47	58	62	**39**	**65**	**55**
BILSTON 1N	Wolverhampton	R	A	83	81		22	46	36	44	39	55	46	46	49	**22**	**83**	**50**
WOLVERHAMPTON 10N	Wolverhampton	R	A	71	64	66	30	45	43	41	39	20	46	55	37	**20**	**71**	**46**
WOLVERHAMPTON 5N	Wolverhampton	R	A	66	63	71	27	41	35	39	44	41	48	47	48	**27**	**71**	**48**
WOLVERHAMPTON 9N	Wolverhampton	R	A	64	71	64	30	41	38	28	38	40	50	51	45	**28**	**71**	**47**
WORCESTER 1N	Worcester	R	A	56	92	68	81	82	59	53	56	64	66	43	53	**43**	**92**	**64**
PERSHORE 1N	Wychavon	R	A	36	45	44	29	29	31	41	34	38		15	20	**15**	**45**	**33**
PERSHORE 5N	Wychavon	R	A						25	25	19	27			25	**19**	**27**	
KIDDERMINSTER 1N	Wyre Forest	R	A	96	84	60	37	39	36	31	39	41	52	55	31	**31**	**96**	**50**
KIDDERMINSTER 8N	Wyre Forest	R	A	58	56	49	26	27	29	28	27	31	40	44	27	**26**	**58**	**37**

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			57	55	52	35	39	35	37	37	40	42	43	40			
	Regional Monthly Min			15	33	27	13	20	22	17	18	20	24	15	19			
	Regional Monthly Max			103	92	76	90	82	59	69	58	64	69	78	81			
	Regional Annual Mean			43														
	Regional Annual Min			29														
	Regional Annual Max			69														
	Number of Sites			52														
	% With Valid Data			94														

Figure B6.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the West Midlands



B6.2 The West Midlands (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the West Midlands are shown in Figure B6.2. Table B6.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B6.4.

Table B6.3 Urban Background Sites in the West Midlands with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Walsall 7N (47µgm^{-3})
Walsall 6N (41µgm^{-3})

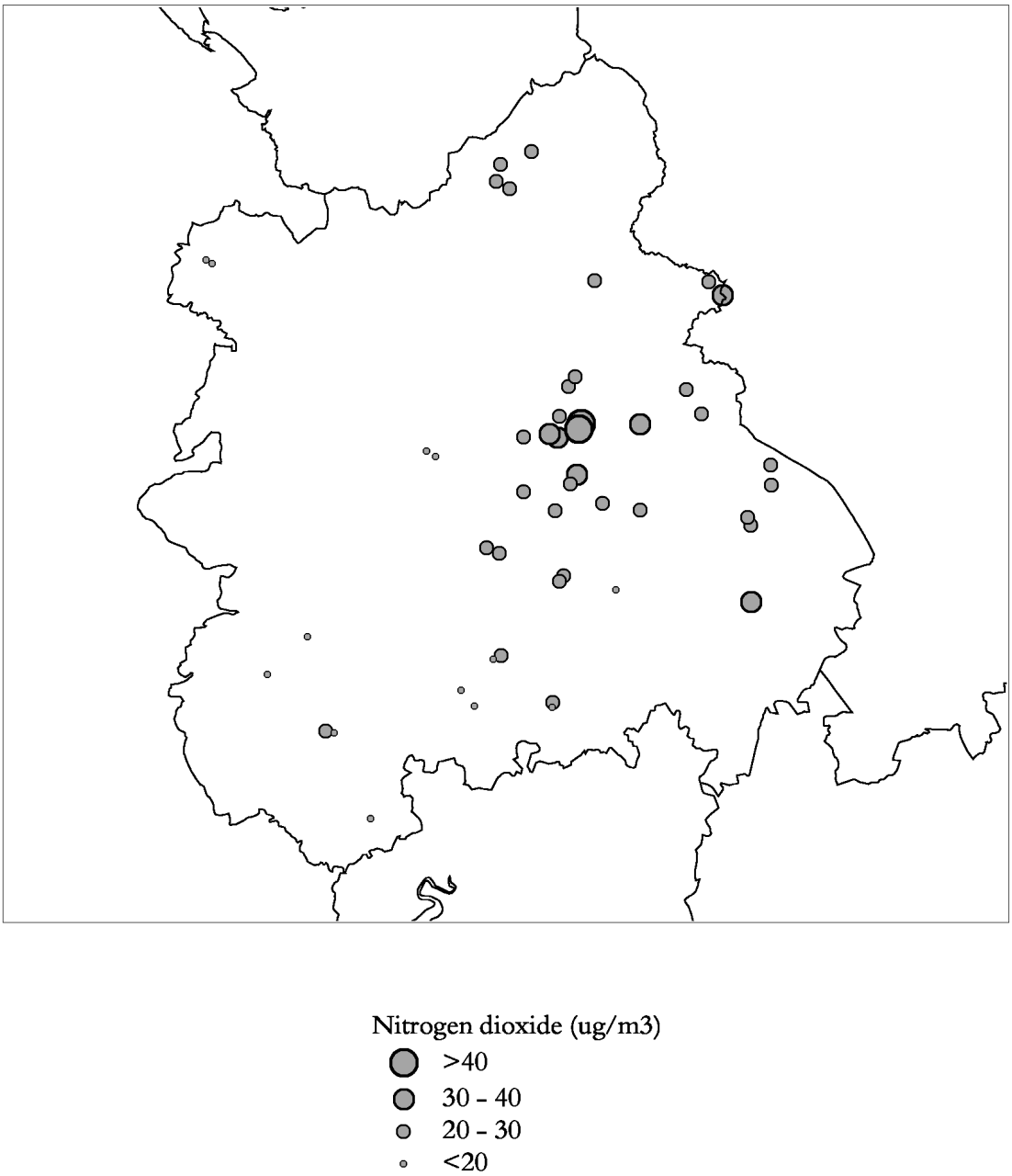
Table B6.4 Urban Background Sites in West Midlands

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BIRMINGHAM 524N	Birmingham	B	A	35	34	21	12	21	18	18	14	23	20	20	20	**12**	**35**	**22**
BIRMINGHAM 528N	Birmingham	B	A	34	29	20	23	20	17	20			17	28	29	**17**	**34**	**24**
BRIDGNORTH 3N	Bridgnorth	B	A	35	23	29	6	16	5	8	8	14	17	18	27	**5**	**35**	**17**
BRIDGNORTH 4N	Bridgnorth	B	A	31	18	28		16	7	11	13	17	21	22	24	**7**	**31**	**19**
BROMSGROVE 3N	Bromsgrove	B	A	31	38	28	27		11	50	8	20	7	17	26	**7**	**50**	**24**
BROMSGROVE 4N	Bromsgrove	B	A	24	26	28	14	25	12	15	11	21	34	24		**11**	**34**	**21**
COVENTRY 3N	Coventry	B	A			44	16	15		19	22	22	25	30	27	**15**	**44**	**24**
COVENTRY 5N	Coventry	B	A	58	46	39	15	16	10	16	24	28	27	38	36	**10**	**58**	**30**
DUDLEY 3N	Dudley	B	A	37	30	37	9	18	12	14	11	15	12	23	24	**9**	**37**	**20**
DUDLEY 6N	Dudley	B	A	48	38	40	14	17	10	16	14	17	16	27	27	**10**	**48**	**24**
BURTON 3N	East Staffordshire	B	A	44	44	36		32	35			17	22	26		**17**	**44**	**32**
BURTON 4N	East Staffordshire	B	A	29	29	24		14	14	17	17	18	21	24		**14**	**29**	**21**
HEREFORD 3N	Herefordshire	B	A	42	29	31	4	13		10	12	19	29	19	19	**4**	**42**	**21**
HEREFORD 6N	Herefordshire	B	A	33	21	15	6	10		8		10	17	10	17	**6**	**33**	**15**
LEOMINSTER 4N	Leominster	B	A	23	10					13	10	57	17	12	15	**10**	**57**	**20**
WEOBLEY 3N	Leominster	B	A	15	12	13						6		8	8	**6**	**15**	**10**
MALVERN 3N	Malvern Hills	B	A	17	25	27	11	18		14	5	6	4	11	16	**4**	**27**	**14**
MALVERN 4N	Malvern Hills	B	A	21	17	16	4	6		9	12		6		16	**4**	**21**	**12**
NEWCASTLE UNDER LYME 4N	Newcastle Under Lyme	B	A	32	35	21	19	20	14	18	24	20			35	**14**	**35**	**24**
NEWCASTLE UNDER LYME 7N	Newcastle Under Lyme	B	A	34	31	25	16	17	14	18	15	18			33	**14**	**34**	**22**
NORTH WARWICKSHIRE 3N	North Warwickshire	B	A	54	44	45	19	40	18	24	30	31	37	43	42	**18**	**54**	**36**
NORTH WARWICKSHIRE 4N	North Warwickshire	B	A	42	26	33	13	16	14	16	18	18	21	32	30	**13**	**42**	**23**
NUNEATON 3N	Nuneaton	B	A	31	33	29	16	12	12	11	12	24	29	35	29	**11**	**35**	**23**
NUNEATON 4N	Nuneaton	B	A	37	31	29	16	16	14	5	16	25	33	36	37	**5**	**37**	**25**
OSWESTRY 3N	Oswestry	B	A	34	19	22		7	5	7	7		12	15	38	**5**	**38**	**17**
OSWESTRY 5N	Oswestry	B	A	37	24	22	7	12	9	8	9		15	19	24	**7**	**37**	**17**
REDDITCH 1N	Redditch	B	A	31	27	22	16	18	12	14	11	15	13	15	25	**11**	**31**	**18**
REDDITCH 2N	Redditch	B	A	32	37	57	16	22	14	22	15	16	16	17	29	**14**	**57**	**24**
SANDWELL 3N	Sandwell	B	A	67	44	33	26	29	24	29	15	17	41	34	15	**15**	**67**	**31**
SANDWELL 7N	Sandwell	B	A	51	44	49	17	25	20	21	18	16	19	29	16	**16**	**51**	**27**
ROSS-ON-WYE 3N	South Herefordshire	B	A	25	19	21	12	17			12		12	17	17	**12**	**25**	**17**
CODSALL 6N	South Staffordshire	B	A	35	34	25	15	17	14	16	19	25	21	27	32	**14**	**35**	**23**
CODSALL 8N	South Staffordshire	B	A	33	31	24	12	25	18	21	23	26	26	33	33	**12**	**33**	**25**
STAFFORD 3N	Stafford	B	A						14			23	21		42	**14**	**42**	
STAFFORD 4N	Stafford	B	A						22			20	19		34	**19**	**34**	
STOKE ON TRENT 4N	Stoke-On-Trent	B	A	43	30	24	17	14	15	12	18	19	20	27	36	**12**	**43**	**23**
STOKE ON TRENT 5N	Stoke-On-Trent	B	A	37	41	23	15	11	14	15	16			29	35	**11**	**41**	**23**
TAMWORTH 3N	Tamworth	B	A	40	39	29		15	14	24	21	23	32	31	34	**14**	**40**	**27**
TAMWORTH 6N	Tamworth	B	A	37	35	27		17	13	21	21	23	28	27	33	**13**	**37**	**26**
WALSALL 6N	Walsall	B	A	58	54	40	40	28	30	17	30	45	46	57	45	**17**	**58**	**41**
WALSALL 7N	Walsall	B	A	59	57	42	53	32	26	33	34	56	51	63	54	**26**	**63**	**47**
LEAMINGTON SPA 4N	Warwick	B	A	41	42	28	25	19	16	18	23	25	28	44	43	**16**	**44**	**29**
LEAMINGTON SPA 5N	Warwick	B	A	45	43	31	36	19	17	18	27	29	19	48	47	**17**	**48**	**32**
BILSTON 3N	Wolverhampton	B	A	68	52	59	19	23	23	19	27	37	38	37	40	**19**	**68**	**37**
BILSTON 4N	Wolverhampton	B	A	61	50	56	15	25	24	12	23	33	28	26	41	**12**	**61**	**33**
WOLVERHAMPTON 3N	Wolverhampton	B	A	67	35	33	10		11	15	39	42	20	24	33	**10**	**67**	**30**
WOLVERHAMPTON 8N	Wolverhampton	B	A	43	50	48	13	20	18	18	22	23	31	29	33	**13**	**50**	**29**
WORCESTER 3N	Worcester	B	A	23	36	12	11	15	16	16	14	8	25	15	50	**8**	**50**	**20**
WORCESTER 4N	Worcester	B	A	28	29	15	27	11	16	10	14	7	11	11	32	**7**	**32**	**18**
PERSHORE 3N	Wychavon	B	A	36	31	25	13	13	19	19	24	25		12	21	**12**	**36**	**22**
PERSHORE 4N	Wychavon	B	A		21		4	4			4	13		7	15	**4**	**21**	**10**
KIDDERMINSTER 4N	Wyre Forest	B	A	45	28	34	12	12	11	7	13	16	20	24	32	**7**	**45**	**21**
KIDDERMINSTER 6N	Wyre Forest	B	A	44	34	33	12	11		10	12	16	18		28	**10**	**44**	**22**

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			39	33	30	16	18	16	16	17	22	23	26	30			
	Regional Monthly Min			15	10	12	4	4	5	5	4	6	4	7	8			
	Regional Monthly Max			68	57	59	53	40	35	50	39	57	51	63	54			
	Regional Annual Mean			24														
	Regional Annual Min			10														
	Regional Annual Max			47														
	Number of Sites			53														
	% With Valid Data			96														

Figure B6.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the West Midlands



B7.1 Wales (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for Wales are shown in Figure B7.1. Table B7.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B7.2.

Table B7.1 Roadside Sites in Wales with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Newport Gwent 5N (63μgm^{-3})
Swansea 1N (60μgm^{-3})
Newport Gwent 8N (59μgm^{-3})
Cardiff 1N (58μgm^{-3})
Swansea 5N (50μgm^{-3})
Pontypridd 1N (43μgm^{-3})
Porth 1N (42μgm^{-3})

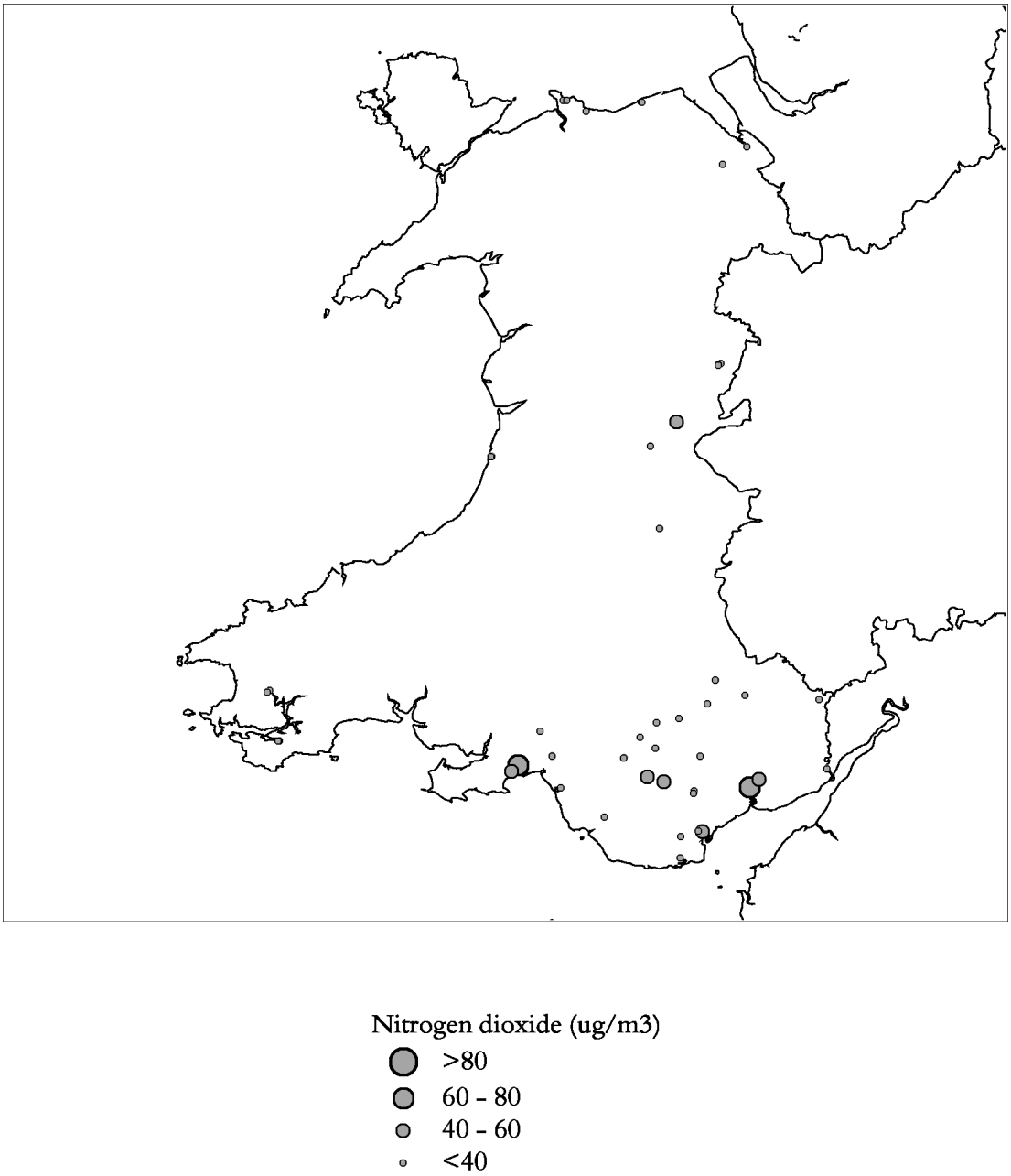
Table B7.2 Roadside Sites in Wales

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
BRYNMAWR 2N	Blaenau Gwent	R	A	29	27	25	20	21	17	17	15	16	18	15	25	**15**	**29**	**21**
BRYNMAWR 4N	Blaenau Gwent	R	A	34	29	29	23	25	22	24	20	17	24	27	30	**17**	**34**	**25**
BRIDGEND 5N	Bridgend	R	A	35	41	40		29	27	40	38	34		55	11	**11**	**55**	**35**
BLACKWOOD 1N	Caerphilly	R	A	42	42	41	40	38	33	39	36	31	35	34	43	**31**	**43**	**38**
CAERPHILLY 5N	Caerphilly	R	A	29	41	45	9	37	30	38	31	29	37	30	41	**9**	**45**	**33**
CAERPHILLY 8N	Caerphilly	R	A	34	35	23	12	21	21	30	25	30	34	31	38	**12**	**38**	**28**
RHYMNEY 1N	Caerphilly	R	A	21	26	9	16	15	11	14	12	9	20	17		**9**	**26**	**16**
CARDIFF 1N	Cardiff County	R	A	61	66	60	52	64	50	50	52	48	66	47	74	**47**	**74**	**58**
CARDIFF 5N	Cardiff County	R	A	36	54		35	36	33	38	34	35	45	26	43	**26**	**54**	**38**
ABERYSTWYTH 1N	Cardiganshire	R	A	57	46	44	27	42	33	32	33	34	39	39	51	**27**	**57**	**40**
ABERYSTWYTH 6N	Cardiganshire	R	A	38	33	30	26	26	23	24	24		24		39	**23**	**39**	**29**
COLWYN BAY 1N	Conwy	R	A	34	39	34	28	32	25	14	15	25	24	18	31	**14**	**39**	**27**
LLANDUDNO 5N	Conwy	R	A	21	21	19	12	18	8	5	12	12	13	10	20	**5**	**21**	**14**
LLANDUDNO 6N	Conwy	R	A	23	11	17	13	13	11	4	7	8	10	13	26	**4**	**26**	**13**
RHYL 1N	Denbighshire County	R	A	52	47	43	44	31	25	34	33	37	13	24	26	**13**	**52**	**34**
RHYL 6N	Denbighshire County	R	A	55	30	56	33	37	30		18	22	50	39	39	**18**	**56**	**37**
MOLD 5N	Flintshire County	R	A	46	42	42	34	28	20		22	9	26	34	41	**9**	**46**	**31**
SHOTTON CLWYD 1N	Flintshire County	R	A	32	43	21	37	27	33	19	21	32	11	34	41	**11**	**43**	**29**
MERTHYR 1N	Merthyr Tydfil	R	A		20	35	18	26	18		24				40	**18**	**40**	**26**
MERTHYR 5N	Merthyr Tydfil	R	A							25		22		34		**22**	**34**	
ABERGAVENNY 1N	Monmouthshire	R	A	39	33	20	28	20	14	23		25	28	29	37	**14**	**39**	**27**
CHEPSTOW 1N	Monmouthshire	R	A	50		16	27	34				41	40	46	42	**16**	**50**	**37**
MONMOUTH 1N	Monmouthshire	R	A	43	28	33	20	27	13	32		31	40			**13**	**43**	**30**
NEATH 1N	Neath & Port Talbot	R	A	23	30	41	28	25	29	28	25	43				**23**	**43**	**30**
PONTARDAWE 1N	Neath & Port Talbot	R	A	14	25	24	20	23	19	18		29				**14**	**29**	**21**
PORT TALBOT 1N	Neath & Port Talbot	R	A	30	34	23	18	17	9	23						**9**	**34**	**22**
NEWPORT GWENT 5N	Newport	R	A	75	75	70	57	66	48	52		49	59	71	72	**48**	**75**	**63**
NEWPORT GWENT 8N	Newport	R	A	66		66	60	55		57	42	56	59	67	62	**42**	**67**	**59**
HAVERFORDWEST 1N	Pembrokeshire	R	A	19	21	20		14	98	12	18	24	28	26	39	**12**	**98**	**29**
HAVERFORDWEST 8N	Pembrokeshire	R	A	37	41	38	38	43	20	31	48	15	43	53	40	**15**	**53**	**37**
PEMBROKE 11N	Pembrokeshire	R	A	30	37	5	33	50	20	28	37	20	42	44	49	**5**	**50**	**33**
PEMBROKE 15N	Pembrokeshire	R	A		20		11	19			14	5		23	35	**5**	**35**	**18**
CRICKHOWELL 1N	Powys	R	A	27	37	34	29					25			32	**25**	**37**	**31**
LLANDRINDOD WELLS 1N	Powys	R	A	29	25	24	19	22	16	15	15	17	25	18	15	**15**	**29**	**20**
NEWTOWN 1N	Powys	R	A	42	47	48	30	36	35	42	35	40	41	45		**30**	**48**	**40**
WELSHPOOL 1N	Powys	R	A	26	30	28	16	15	18	19	14	18	18	22		**14**	**30**	**20**
WELSHPOOL 5N	Powys	R	A	25	28	27	18	26	16	17	16	20	17	24		**16**	**28**	**21**
WELSHPOOL 6N	Powys	R	A	14	22	20	17	12	21	14	10	26	17	29		**10**	**29**	**19**
ABERDARE 3N	Rhondda Cynon Taff	R	A		31	32	26	35		20	21	19	23			**19**	**35**	**26**
MOUNTAIN ASH 1N	Rhondda Cynon Taff	R	A	37	13	32	28	18		17	19	20	36			**13**	**37**	**24**
PONTYPRIDD 1N	Rhondda Cynon Taff	R	A	63	63		32	37		39	32	42	34			**32**	**63**	**43**
PORTH 1N	Rhondda Cynon Taff	R	A	45	52	33	37	49		47	37	44	38			**33**	**52**	**42**
TALBOT GREEN 1N	Rhondda Cynon Taff	R	A	19	28	28	13	19		16	15	20	13			**13**	**28**	**19**
TREORCHY 1N	Rhondda Cynon Taff	R	A	32	28	33	5	33		30	19	27	27			**5**	**33**	**26**
SWANSEA 1N	Swansea	R	A	70	52	69	62	44	53	56	51	59	63	76	70	**44**	**76**	**60**
SWANSEA 5N	Swansea	R	A	63	61	60	52	45	37	39	36	44		63	54	**36**	**63**	**50**
BARRY 1N	Vale of Glamorgan	R	A	38	23	30	23	37	8	24	28	32	29	31	28	**8**	**38**	**28**
RHUR CROSS 1N	Vale of Glamorgan	R	A	36	33	13	20	24		19	26	25	33	22	37	**13**	**37**	**26**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			38	36	34	28	31	26	28	26	28	32	35	40			
	Regional Monthly Min			14	11	5	5	12	8	4	7	5	10	10	11			
	Regional Monthly Max			75	75	70	62	66	98	57	52	59	66	76	74			
	Regional Annual Mean			31														
	Regional Annual Min			13														
	Regional Annual Max			63														
	Number of Sites			48														
	% With Valid Data			98														

Figure B7.1 Annual Average Roadside Nitrogen Dioxide Concentrations in Wales



B7.2 Wales (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for Wales are shown in Figure B7.2. No urban background sites in Wales exceeded the Air Quality Strategy Objective of 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B7.3.

Table B7.3 Urban Background Sites in Wales

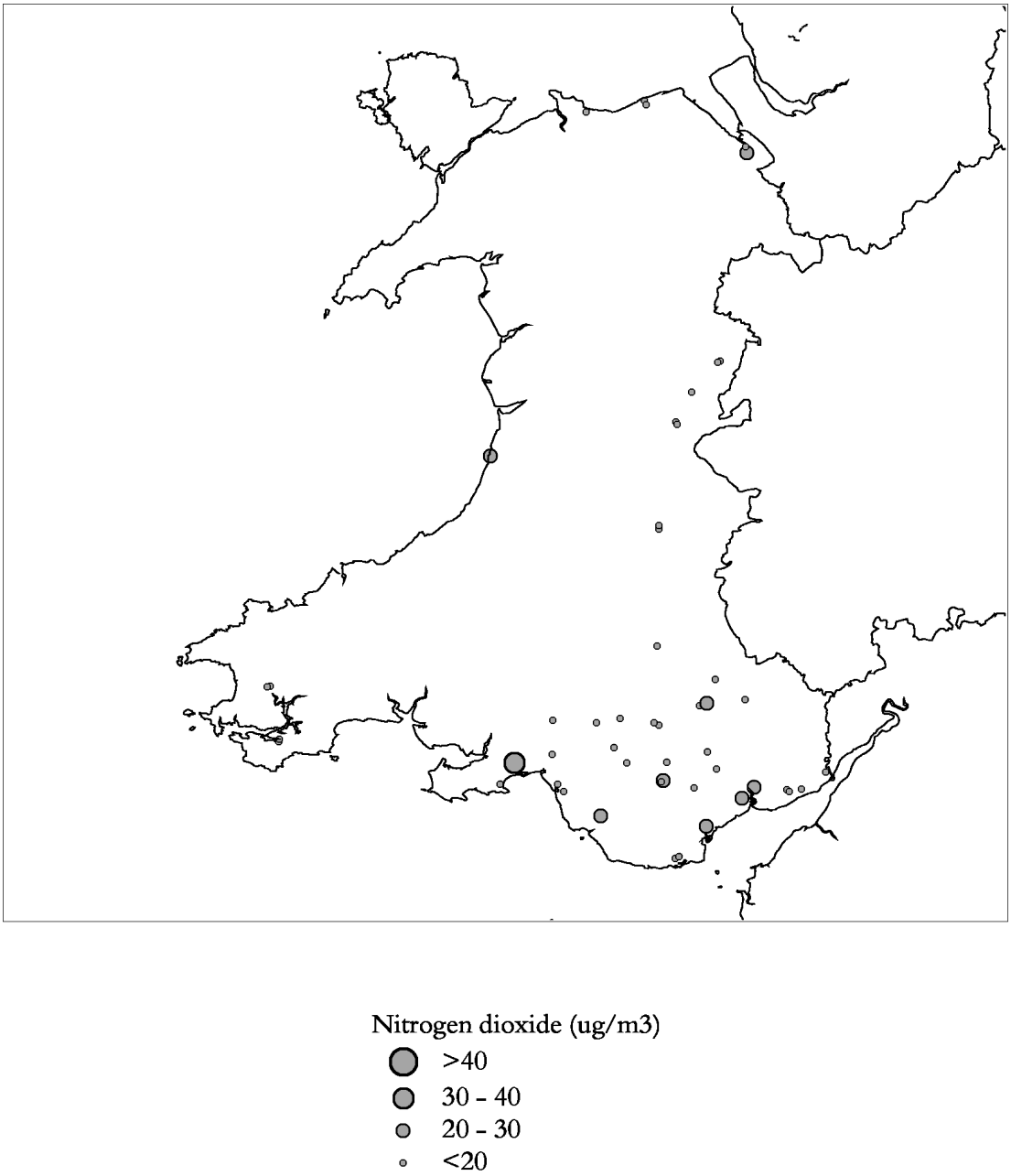
Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BEAUFORT 1N	Blaenau Gwent	B	A	29	19	20	11	10	7	9	8	11	16	18	22	**7**	**29**	**15**
BRYNMAWR 1N	Blaenau Gwent	B	A	35	27	24	18	17	12	15	12	16	20	26	29	**12**	**35**	**21**
BRIDGEND 3N	Bridgend	B	A	29	20	19		12		10	9	12		18	22	**9**	**29**	**17**
BRIDGEND 4N	Bridgend	B	A	19	20	23		14		13	7	14		30	40	**7**	**40**	**20**
BARGOED 3N	Caerphilly	B	A	21	18	17	16	12		10	8	5	23	16	24	**5**	**24**	**16**
CAERPHILLY 7N	Caerphilly	B	A		22	13	21	10	9	12	11		22	26	27	**9**	**27**	**17**
CROESPENMAEN 3N	Caerphilly	B	A	19	22	11	10	8	8	10	12	6	14		23	**6**	**23**	**13**
CWMCARN 4N	Caerphilly	B	A	17	24	10	11	9	9	10		5	12	10	18	**5**	**24**	**12**
CARDIFF 3N	Cardiff County	B	A	34	32	33	19	22	15	18	23	25	31	43	36	**15**	**43**	**28**
ABERYSTWYTH 3N	Cardiganshire	B	A	27	21	13	11	13	8	11	10		13	14	24	**8**	**27**	**15**
ABERYSTWYTH 5N	Cardiganshire	B	A	47	22	21	13	16	10	12		14	18	16	38	**10**	**47**	**21**
COLWYN BAY 4N	Conwy	B	A	25	19	17	16		6	6	11	8		9	23	**6**	**25**	**14**
RHYL 4N	Denbighshire County	B	A	34		44	15	14	9	17	11		17	11	26	**9**	**44**	**20**
RHYL 5N	Denbighshire County	B	A	32	32	24	13	12	9		12	13	16	17	23	**9**	**32**	**19**
ASTON CLWYD 2N	Flintshire County	B	A	33	32	21	20	14	16	18	18		18	12	25	**12**	**33**	**21**
SHOTTON CLWYD 4N	Flintshire County	B	A	25	29	25	12	9	7	13	10			18	31	**7**	**31**	**18**
MERTHYR 3N	Merthyr Tydfil	B	A	10	23	18	9	6	7	10	10	6	13	22	26	**6**	**26**	**13**
MERTHYR 4N	Merthyr Tydfil	B	A	22	23	17	7	9	8	6	8	9	12	22	22	**6**	**23**	**14**
ABERGAVENNY 3N	Monmouthshire	B	C	17	20	12	11	7		9	7	10	12			**7**	**20**	**12**
CHEPSTOW 2N	Monmouthshire	B	C	29	21	14	22	16	14	15	11	20	28			**11**	**29**	**19**
MAGOR 1N	Monmouthshire	B	C	24	26	8	13	21	17	18		21	24			**8**	**26**	**19**
MAGOR 2N	Monmouthshire	B	A	27	24	18		13	14	19	20	21	17	17	28	**13**	**28**	**20**
ROGIET 1N	Monmouthshire	B	C	13	13	15	19	16	6	20		6	22			**6**	**22**	**14**
NEATH 3N	Neath & Port Talbot	B	A	26	28	18	12	14	14	15	12	14				**12**	**28**	**17**
NEATH 4N	Neath & Port Talbot	B	A	21	15	15	10		8	10	8	15				**8**	**21**	**13**
PONTARDAWE 3N	Neath & Port Talbot	B	A	14	13	14	8	9	9	7	8	10				**7**	**14**	**10**
PORT TALBOT 3N	Neath & Port Talbot	B	A	20	20	17	8	7	11	16	14	17				**7**	**20**	**14**
PORT TALBOT 4N	Neath & Port Talbot	B	A	17	20	17	17		20	10	13	17				**10**	**20**	**16**
NEWPORT GWENT 4N	Newport	B	A	39	33	32	17	18	15	15	15	20	21	35	38	**15**	**39**	**25**
NEWPORT GWENT 6N	Newport	B	A	40	37	36	26	22	21	22	22	22	36	36	36	**21**	**40**	**30**
FISHGUARD 6N	Pembrokeshire	B	C	11												**11**	**11**	
HAVERFORDWEST 3N	Pembrokeshire	B	A	13	11	16	9	7	30	5	10	25	12	14	16	**5**	**30**	**14**
HAVERFORDWEST 9N	Pembrokeshire	B	A		9	8	5	5	28		5		6	11	15	**5**	**28**	**10**
PEMBROKE 13N	Pembrokeshire	B	A	16	12	9	6	6	35	4	7	16	7	13	22	**4**	**35**	**13**
PEMBROKE 14N	Pembrokeshire	B	A	11	15	8	7	6			7		8	15	31	**6**	**31**	**12**
BRECON 4N	Powys	B	A	22	15	14	7					6			18	**6**	**22**	**14**
CRICKHOWELL 3N	Powys	B	A	15	14	12	6					8			21	**6**	**21**	**13**
LLANDRINDOD WELLS 4N	Powys	B	A	17	13	14	10	13	7	9	7	9	10	10		**7**	**17**	**11**
LLANDRINDOD WELLS 7N	Powys	B	A	17	13	13		9	6	6	6	9	7	10		**6**	**17**	**10**
NEWTOWN 3N	Powys	B	A	23	19	10	8	7	8	7	6	8	9	11		**6**	**23**	**11**
NEWTOWN 4N	Powys	B	A	17	18	13	9	9	6	7	4	8	9	10		**4**	**18**	**10**
WELSHPOOL 3N	Powys	B	A	12	13	10	5	6	5	6	5		9	13		**5**	**13**	**8**
WELSHPOOL 4N	Powys	B	A	21	11	7	5		5	5	6	7	8	9		**5**	**21**	**8**
MOUNTAIN ASH 2N	Rhondda Cynon Taff	B	A	21	20	16	10			8		8	15			**8**	**21**	**14**
PENDERYN 1N	Rhondda Cynon Taff	B	A	13	9	11	4	6		7	7	5	7			**4**	**13**	**8**
PONTYPRIDD 7N	Rhondda Cynon Taff	B	A	30	25	24	19	15		16	11	16	26			**11**	**30**	**20**
PONTYPRIDD 8N	Rhondda Cynon Taff	B	A	25	17	19	9	4		7	13	12	13			**4**	**25**	**13**
TON PENTRE 3N	Rhondda Cynon Taff	B	A	21	8	15	7	9		7	4	7	4			**4**	**21**	**9**
TYNEWYDD 1N	Rhondda Cynon Taff	B	A	13	10	11	6					5	10			**5**	**13**	**9**
SWANSEA 3N	Swansea	B	A	46	40	41	21	27	19	23	22	22	32	37	45	**19**	**46**	**31**
SWANSEA 4N	Swansea	B	A	30	23	26	10	13	7	10	9		10	19	17	**7**	**30**	**16**
BARRY 6N	Vale of Glamorgan	B	A	6	19	12	9	16		9	13	11	11	12	29	**6**	**29**	**13**
BARRY 7N	Vale of Glamorgan	B	A	25	17	10	10	13	12	7	12	11	14	12	25	**7**	**25**	**14**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			23	20	17	12	12	12	11	11	12	15	18	26			
	Regional Monthly Min			6	8	7	4	4	5	4	4	5	4	9	15			
	Regional Monthly Max			47	40	44	26	27	35	23	23	25	36	43	45			
	Regional Annual Mean			15														
	Regional Annual Min			8														
	Regional Annual Max			31														
	Number of Sites			53														
	% With Valid Data			98														

Figure B7.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in Wales



B8.1 Eastern (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the Eastern region are shown in Figure B8.1. Table B8.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B8.2.

Table B8.1 Roadside Sites in the Eastern region with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean	
Borehamwood 1N (66µgm^{-3})	Bury St Edmunds 8N (47µgm^{-3})
Potters Bar 1N (60µgm^{-3})	Sawston 1N (45µgm^{-3})
Cambridge 1N (59µgm^{-3})	Dunstable 5N (45µgm^{-3})
Grays 5N (59µgm^{-3})	Histon 5N (45µgm^{-3})
Grays 1N (58µgm^{-3})	Rickmansworth 5N (45µgm^{-3})
Peterborough 1N (55µgm^{-3})	Bury St Edmunds 9N (45µgm^{-3})
Sudbury 4N (54µgm^{-3})	Watford 5N (44µgm^{-3})
Cambridge 5N (52µgm^{-3})	North Walsham 8N (44µgm^{-3})
Hitchin 8N (51µgm^{-3})	Cheshunt 5N (44µgm^{-3})
St Neots 1N (51µgm^{-3})	Felixstowe 1N (44µgm^{-3})
Colchester 9N (50µgm^{-3})	Felixstowe 6N (41µgm^{-3})
Waltham Cross 1N (49µgm^{-3})	St Albans 1N (41µgm^{-3})
Colchester 5N (49µgm^{-3})	

Table B8.2 Roadside Sites in the Eastern Region

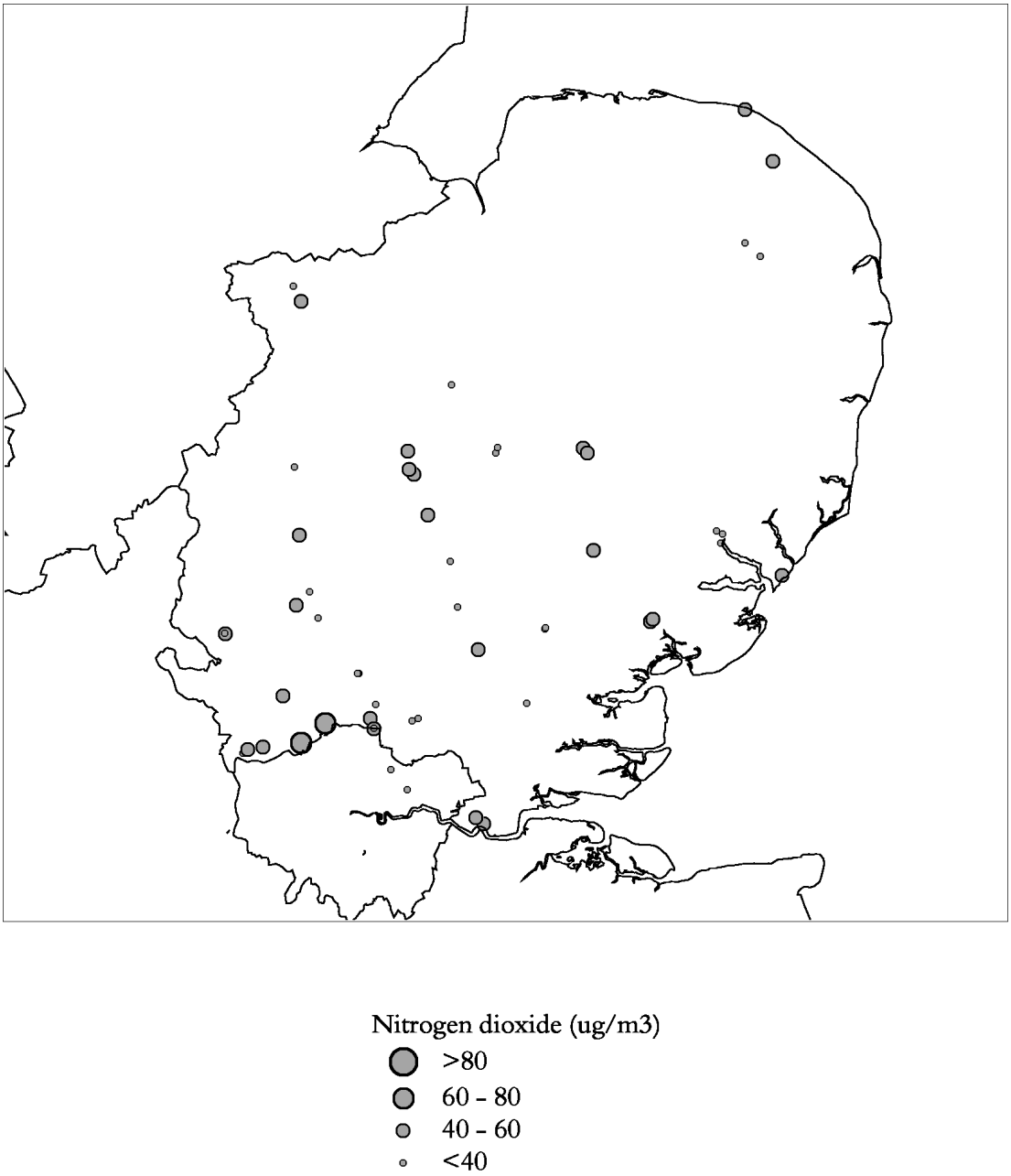
				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
SUDBURY 1N	Babergh	R	A	49	44	45	44	33	15	30		38	36	45	40	**15**	**49**	**38**
SUDBURY 4N	Babergh	R	A	61	62	51	53	44	45	47	50	54	57	67	56	**44**	**67**	**54**
BRAINTREE 1N	Braintree	R	A			49	53	25	17	19		27	22		47	**17**	**53**	**32**
BRAINTREE 5N	Braintree	R	A			34	41	21	16	8		22	24		32	**8**	**41**	**25**
BROADLAND 1N	Broadland	R	A	33	38	29	12	14	40	26	28	32	40	36	33	**12**	**40**	**30**
THORPE 1N	Broadland	R	A	22	28	20	8	14	22		10	21	11	32	29	**8**	**32**	**20**
CHESHUNT 1N	Broxbourne	R	A	40	39	40	32	38	38	41	38	28	33	42	27	**27**	**42**	**36**
CHESHUNT 5N	Broxbourne	R	A	34	50	48	83	29	29	69	28	38	56	28	30	**28**	**83**	**44**
WALTHAM CROSS 1N	Broxbourne	R	A	38	56	53	46	42	42	67	41	42	73	47	39	**38**	**73**	**49**
WALTHAM CROSS 4N	Broxbourne	R	A	18	41	36	69	44	44	63	28	8	42	33	40	**8**	**69**	**39**
WORMLEY 1N	Broxbourne	R	A	40	36	34	78	22	22		22	29	36	39	27	**22**	**78**	**35**
CAMBRIDGE 1N	Cambridge	R	A			62	63		50	54				64	61	**50**	**64**	**59**
CAMBRIDGE 5N	Cambridge	R	A	65	66	49	51		39	37				59	53	**37**	**66**	**52**
CHELMSFORD 1N	Chelmsford	R	A		33		33		61	52	38	38	19	48	31	**19**	**61**	**39**
COLCHESTER 5N	Colchester	R	A	56	37	55	60	59	39	34	28	20	76	44	74	**20**	**76**	**49**
COLCHESTER 9N	Colchester	R	A	39	27	42	56	55	60	63	49	45	39	48	71	**27**	**71**	**50**
HEMEL HEMPSTEAD 1N	Dacorum	R	A	67	72	75	32	53								**32**	**75**	
HEMEL HEMPSTEAD 8N	Dacorum	R	A	66	67	55	43	37								**37**	**67**	
ELY CAMBS 1N	East Cambridgeshire	R	A	51	49	41	34	29	26	25	24	33	37	48	40	**24**	**51**	**36**
ELY CAMBS 5N	East Cambridgeshire	R	A	60	55	42	31	25	24	28	34	37	37	48	43	**24**	**60**	**39**
HERTFORD 1N	East Hertfordshire	R	A	44	33		27	29	17	27	21	10	27	17	46	**10**	**46**	**27**
HERTFORD 5N	East Hertfordshire	R	A	52	42		42	34	19	34	44	44	33	34	33	**19**	**52**	**37**
EPPING 1N	Epping Forest	R	A	35	38	30	37		19			25	44	32	24	**19**	**44**	**31**
EPPING 5N	Epping Forest	R	A	37	36	27	18	26	22	36	23	24	38	36	19	**18**	**38**	**29**
NEWMARKET 1N	Forest Heath	R	A	33	42	59	42	36	29	34	31	31	31	52	52	**29**	**59**	**39**
NEWMARKET 7N	Forest Heath	R	A						23	36	36	15	25		59	**15**	**59**	**33**
BOREHAMWOOD 1N	Hertsmere	R	A	69	67			67	44	65	59	67	82	75	65	**44**	**82**	**66**
POTTERS BAR 1N	Hertsmere	R	A	65	55		65	52		36	48	71	57	75	78	**36**	**78**	**60**
ST NEOTS 1N	Huntingdon	R	A	63	61	55	50	45	40	46	49	46	59	54	39	**39**	**63**	**51**
ST NEOTS 5N	Huntingdon	R	A	52	47	39	37	32	21	30	30	34	38	49	39	**21**	**52**	**37**
IPSWICH 1N	Ipswich	R	A	30	41		41	30	45	36	28	41	43	41	43	**28**	**45**	**38**
IPSWICH 5N	Ipswich	R	A	31	30	32	15	25				33		31		**15**	**33**	**28**
IPSWICH 6N	Ipswich	R	A	37	39	34		48	29		29	42	44	37	37	**29**	**48**	**38**
BIGGLESWADE 1N	Mid Bedfordshire	R	A	46	48	38	33	29	34	44	31	44	33	51	50	**29**	**51**	**40**
HITCHIN 8N	North Hertfordshire	R	A		57		55	38	46	46	48	35	64	62	60	**35**	**64**	**51**
LETCHWORTH 1N	North Hertfordshire	R	A		43		41	34	35	36	34	34	51	48		**34**	**51**	**40**
CROMER 1N	North Norfolk	R	A	51	47	43	38	37	37	37	42	29		44	39	**29**	**51**	**40**
NORTH WALSHAM 8N	North Norfolk	R	A	47	50	38	41	42	40	35	35	41	41	62	56	**35**	**62**	**44**
PETERBOROUGH 1N	Peterborough	R	A	74	68	68	55	43	43	33	32	56	54	58	70	**32**	**74**	**55**
PETERBOROUGH 5N	Peterborough	R	A	56	55	45	36	33		23		39	40	8	49	**8**	**56**	**38**
ILFORD 1N	Redbridge	R	A	19	12	29	45	37	36	52	31	41	43	31	56	**12**	**56**	**36**
ILFORD 5N	Redbridge	R	A	18	8	20	31	26	50	21	53	34	43	40	27	**8**	**53**	**31**
DUNSTABLE 5N	South Bedfordshire	R	A	52	44	47	30	52	41		47	49	41	63	33	**30**	**63**	**45**
DUNSTABLE 6N	South Bedfordshire	R	A	49	41	44	38	32	28	33	35	41	39		41	**28**	**49**	**38**
HISTON 5N	South Cambridgeshire	R	A	57	57	48	46	35	40	42	41	37	52	44	40	**35**	**57**	**45**
SAWSTON 1N	South Cambridgeshire	R	A	54	53	45	40		33	41	45	36		55	51	**33**	**55**	**45**
ST ALBANS 1N	St Albans	R	A	68	43	63	17	28	40	35	40	36	46	44	32	**17**	**68**	**41**
BURY ST EDMUNDS 1N	St Edmundsbury	R	C			50	54	48								**48**	**54**	
BURY ST EDMUNDS 8N	St Edmundsbury	R	A		54	51	45	43	38	41	48	41	42	54	55	**38**	**55**	**47**
BURY ST EDMUNDS 9N	St Edmundsbury	R	A						39	39	40	46		52	54	**39**	**54**	**45**
STEVENAGE 1N	Stevenage	R	A	24	27	27	27	25		18	23			39	31	**18**	**39**	**27**
FELIXSTOWE 1N	Suffolk Coastal	R	A	55	47	43	38	33		35	35	40	51	52	50	**33**	**55**	**44**
FELIXSTOWE 6N	Suffolk Coastal	R	C	51	47	43	34	31	36	33	39	33	53	50	45	**31**	**53**	**41**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
RICKMANSWORTH 1N	Three Rivers	R	A	58	48	52	44	18	21	30	22	37	41	47	52	**18**	**58**	**39**
RICKMANSWORTH 5N	Three Rivers	R	A	58	43	51	48	30	36	34	33	43	57	55	51	**30**	**58**	**45**
GRAYS 1N	Thurrock	R	A	68	61			51	47	59	51	54	58	57	69	**47**	**69**	**58**
GRAYS 5N	Thurrock	R	A	69	64			56	51	54	49	56	56	66	65	**49**	**69**	**59**
SAFFRON WALDEN 1N	Uttlesford	R	A	32	54	34	27			21	23	28	32	32	44	**21**	**54**	**33**
WATFORD 5N	Watford	R	A						41	50	47	22	43	54	53	**22**	**54**	**44**

REGIONAL SUMMARY		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Regional Monthly Mean	48	46	44	41	36	35	39	36	37	44	47	46
	Regional Monthly Min	18	8	20	8	14	15	8	10	8	11	8	19
	Regional Monthly Max	74	72	75	83	67	61	69	59	71	82	75	78
	Regional Annual Mean	41											
	Regional Annual Min	20											
	Regional Annual Max	66											
	Number of Sites	59											
	% With Valid Data	95											

Figure B8.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the Eastern Region



B8.2 Eastern (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the Eastern region are shown in Figure B8.2. Table B8.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B8.4.

Table B8.3 Urban Background Sites in the Eastern region with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Borehamwood 3N (42µgm^{-3})

Table B8.4 Urban Background Sites in the Eastern Region

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

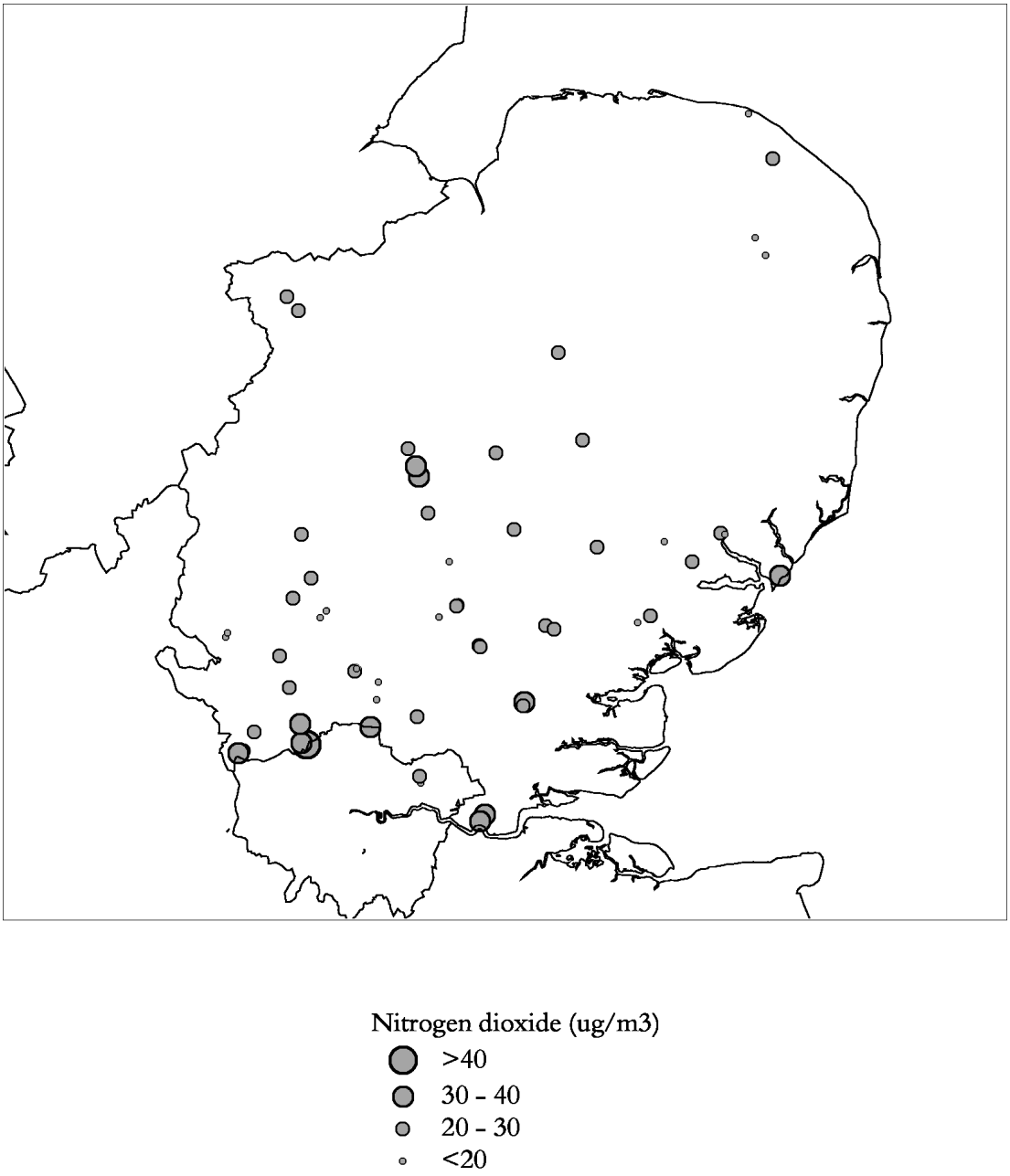
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
CAPEL ST MARY 1N	Babergh	B	A	43	37	32	20	20	14	22	19	18		36	35	**14**	**43**	**27**
HADLEIGH 1N	Babergh	B	C	35	30	23	15	11	11	10						**10**	**35**	**19**
SUDBURY 3N	Babergh	B	A	40	33	30	20	13	14	18	17	20	34	34	34	**13**	**40**	**25**
BEDFORD 8N	Bedford	B	A											8	31	**8**	**31**	
BEDFORD 9N	Bedford	B	A											14	22	**14**	**22**	
BRAINTREE 4N	Braintree	B	A			24	19	18	15	12		22	29			**12**	**29**	**20**
BRAINTREE 6N	Braintree	B	A			34	23	16	13	13		18	29		25	**13**	**34**	**22**
BROADLAND 3N	Broadland	B	A		19	12	31	7	9	7	6	13	14	18	28	**6**	**31**	**15**
BROADLAND 4N	Broadland	B	A			35	22	8	6	6	8	13	14	21	14	**6**	**35**	**15**
HODDESDON 2N	Broxbourne	B	A	18	23	21	26	10	11	28	11	14	18	23	21	**10**	**28**	**18**
HODDESDON 3N	Broxbourne	B	A	23	19	24	37	11	10	24	18	19	20	23	12	**10**	**37**	**20**
WALTHAM CROSS 3N	Broxbourne	B	A	38	32	34	55	28	28	25	32	30	34	39	30	**25**	**55**	**34**
CAMBRIDGE 3N	Cambridge	B	A	50	47	36	29		23	21				48	43	**21**	**50**	**37**
CAMBRIDGE 4N	Cambridge	B	A	52	49	37	33		23	22				45	40	**22**	**52**	**38**
CHELMSFORD 3N	Chelmsford	B	A		33		31		36	25	23	19	31	46	31	**19**	**46**	**30**
CHELMSFORD 5N	Chelmsford	B	A		31		29		13	23	17	29	34	33	21	**13**	**34**	**26**
COLCHESTER 7N	Colchester	B	A	53	32	26	16	16	17	13	15	20	14	13	35	**13**	**53**	**23**
COLCHESTER 8N	Colchester	B	A	12	11	22	4	12	18	13	15	18	23	39	33	**4**	**39**	**18**
HEMEL HEMPSTEAD 6N	Dacorum	B	A	50	45	42	29	25								**25**	**50**	
HEMEL HEMPSTEAD 7N	Dacorum	B	A	67	75	62	38	44								**38**	**75**	
ELY CAMBS 3N	East Cambridgeshire	B	A	40	36	20	17	9	13	10	17	20	27	38	32	**9**	**40**	**23**
ELY CAMBS 4N	East Cambridgeshire	B	A	41	36	26	22	14	14	12	17	21	29	30	37	**12**	**41**	**25**
HERTFORD 3N	East Hertfordshire	B	A	33	13		23	8	8	12	23	40	29	19	25	**8**	**40**	**21**
HERTFORD 4N	East Hertfordshire	B	A	38	23		12	21	13	12	23	21	12	23	19	**12**	**38**	**20**
EPPING 3N	Epping Forest	B	A	31	28	18	16	7	16	14	14	20	11	27	13	**7**	**31**	**18**
EPPING 4N	Epping Forest	B	A	34	30		23	21	16	17	17		42	28	16	**16**	**42**	**24**
BRANDON 4N	Forest Heath	B	A	15	23	31	15	13	17	8	15	38	15	27	29	**8**	**38**	**21**
NEWMARKET 3N	Forest Heath	B	A	42	21	38	19	19	19	19	15	6	19	21	42	**6**	**42**	**23**
BOREHAMWOOD 3N	Hertsmere	B	A		50		48	34	21	33	31		52	54	59	**21**	**59**	**42**
BOREHAMWOOD 4N	Hertsmere	B	A	42	46		25	23	23	23	25	31	38	40	50	**23**	**50**	**33**
ST NEOTS 3N	Huntingdon	B	A	46	42	32	22	19	16	16	20	26	34	42	42	**16**	**46**	**30**
ST NEOTS 4N	Huntingdon	B	A	46	42	34	25	16	12	17	19	26	35	39	36	**12**	**46**	**29**
IPSWICH 3N	Ipswich	B	A	31	32	24	27	14	20	16	19	27	36	24	26	**14**	**36**	**25**
IPSWICH 4N	Ipswich	B	A	20	25	18	11		12	9	12	20	23	24	18	**9**	**25**	**17**
BIGGLESWADE 3N	Mid Bedfordshire	B	A	33	36	23										**23**	**36**	
BIGGLESWADE 4N	Mid Bedfordshire	B	A	32	33	23			12	14	18		31	31	34	**12**	**34**	**25**
HITCHIN 5N	North Hertfordshire	B	A		40		26	38	14	12	20	24	33	36	45	**12**	**45**	**29**
LETCHWORTH 6N	North Hertfordshire	B	A		46		25	15	12	14	18	26	40	40	45	**12**	**46**	**28**
CROMER 6N	North Norfolk	B	A	28	26	19	14	11	11	11	11	11	22	25	22	**11**	**28**	**18**
NORTH WALSHAM 7N	North Norfolk	B	A	39	33	23	13	14	14	10	15	16	33	31	30	**10**	**39**	**23**
PETERBOROUGH 3N	Peterborough	B	A		39	35	23	19	16	18	16	24	33		38	**16**	**39**	**26**
PETERBOROUGH 4N	Peterborough	B	A	39	35	30	22	20	18	15	21	22	27	33	32	**15**	**39**	**26**
ILFORD 3N	Redbridge	B	A	5	8	11	22	17	12	10	25	28	29	41	25	**5**	**41**	**19**
ILFORD 4N	Redbridge	B	A	17	24	16	33	20	25	11	15	34	34	27	19	**11**	**34**	**23**
DUNSTABLE 3N	South Bedfordshire	B	A	24	24	19		11	21	13	13	17	19	28	29	**11**	**29**	**20**
DUNSTABLE 4N	South Bedfordshire	B	A	4	33	22	13	14	10	18	20	22	20	27	25	**4**	**33**	**19**
HISTON 3N	South Cambridgeshire	B	A	42	39	28	22	14	16	17	20	20	30	33	30	**14**	**42**	**26**
SAWSTON 2N	South Cambridgeshire	B	A	37	35	26	21	15	14	15	17	19	25	29	32	**14**	**37**	**24**
ST ALBANS 5N	St Albans	B	A	47	37	35	16	23	23	20	24	27	30	33	16	**16**	**47**	**28**
ST ALBANS 6N	St Albans	B	A	49	33	32	17	11	16	10	20	23	27	29	10	**10**	**49**	**23**
BURY ST EDMUNDS 7N	St Edmundsbury	B	A	40	35	28	20	13	17	17	11	20	27	33	34	**11**	**40**	**25**
HAVERHILL 7N	St Edmundsbury	B	A	43	36	27	21	11	12	13	18	17	29	33	35	**11**	**43**	**25**
STEVENAGE 3N	Stevenage	B	A	26	23	18	18	7		10	29	17		24	26	**7**	**29**	**20**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
STEVENAGE 4N	Stevenage	B	A		23	18	18	10		14	12			25	17	**10**	**25**	**17**
FELIXSTOWE 5N	Suffolk Coastal	B	A	44	36	37	18	19	16	19	23	20	44	39	36	**16**	**44**	**29**
FELIXSTOWE 7N	Suffolk Coastal	B	C	44	39	38	26	24	22	24	25	28		44	40	**22**	**44**	**32**
RICKMANSWORTH 3N	Three Rivers	B	A	50	43	42	25	12	11	14	18	14	34	41	47	**11**	**50**	**29**
RICKMANSWORTH 6N	Three Rivers	B	A	48	44	45	35	21	15	23	26	16	38	38	41	**15**	**48**	**32**
GRAYS 3N	Thurrock	B	A	51	43			26	29	28	31	33	38	50	49	**26**	**51**	**38**
GRAYS 4N	Thurrock	B	A	44	40			20	22	24	24	27	29	40	40	**20**	**44**	**31**
SAFFRON WALDEN 3N	Uttlesford	B	A	35	21	15	12	5	5	7	10	14	19	17	24	**5**	**35**	**15**
STANSTED 4N	Uttlesford	B	A	27	18		12	11	11	9	11	14	25	17	27	**9**	**27**	**17**
WATFORD 4N	Watford	B	A						20	18	20	17	20	32	38	**17**	**38**	**24**
WATFORD 7N	Watford	B	A						23	32		34	37	42	43	**23**	**43**	**35**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	36	33	28	23	17	16	16	18	22	28	31	31
	Regional Monthly Min	4	8	11	4	5	5	6	6	6	11	8	10
	Regional Monthly Max	67	75	62	55	44	36	33	32	40	52	54	59
	Regional Annual Mean	25											
	Regional Annual Min	15											
	Regional Annual Max	42											
	Number of Sites	64											
	% With Valid Data	92											

Figure B8.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the Eastern region



B9.1 London (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for London are shown in Figure B9.1. Table B9.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B9.2.

Table B9.1 Roadside Sites in London with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 μgm^{-3} ***Air Quality Strategy Objective*** ***NO_2 Annual Mean***	
Lambeth 5N (87μgm^{-3})	Camden 7N (48μgm^{-3})
Lambeth 1N (66μgm^{-3})	Brent 55N (47μgm^{-3})
Haringey 5N (64μgm^{-3})	Barking 1N (47μgm^{-3})
Havering 1N (63μgm^{-3})	Tower Hamlets 1N (45μgm^{-3})
Haringey 1N (63μgm^{-3})	Barking 6N (45μgm^{-3})
Hackney 1N (58μgm^{-3})	London City 38N (44μgm^{-3})
Camden 1N (54μgm^{-3})	Waltham Forest 4N (44μgm^{-3})
Westminster 1N (53μgm^{-3})	Brent 56N (42μgm^{-3})
Kensington 5N (51μgm^{-3})	Ealing 1N (41μgm^{-3})
Southwark 8N (50μgm^{-3})	Greenwich 35N (41μgm^{-3})
Havering 5N (50μgm^{-3})	Richmond upon Thames 1N (41μgm^{-3})

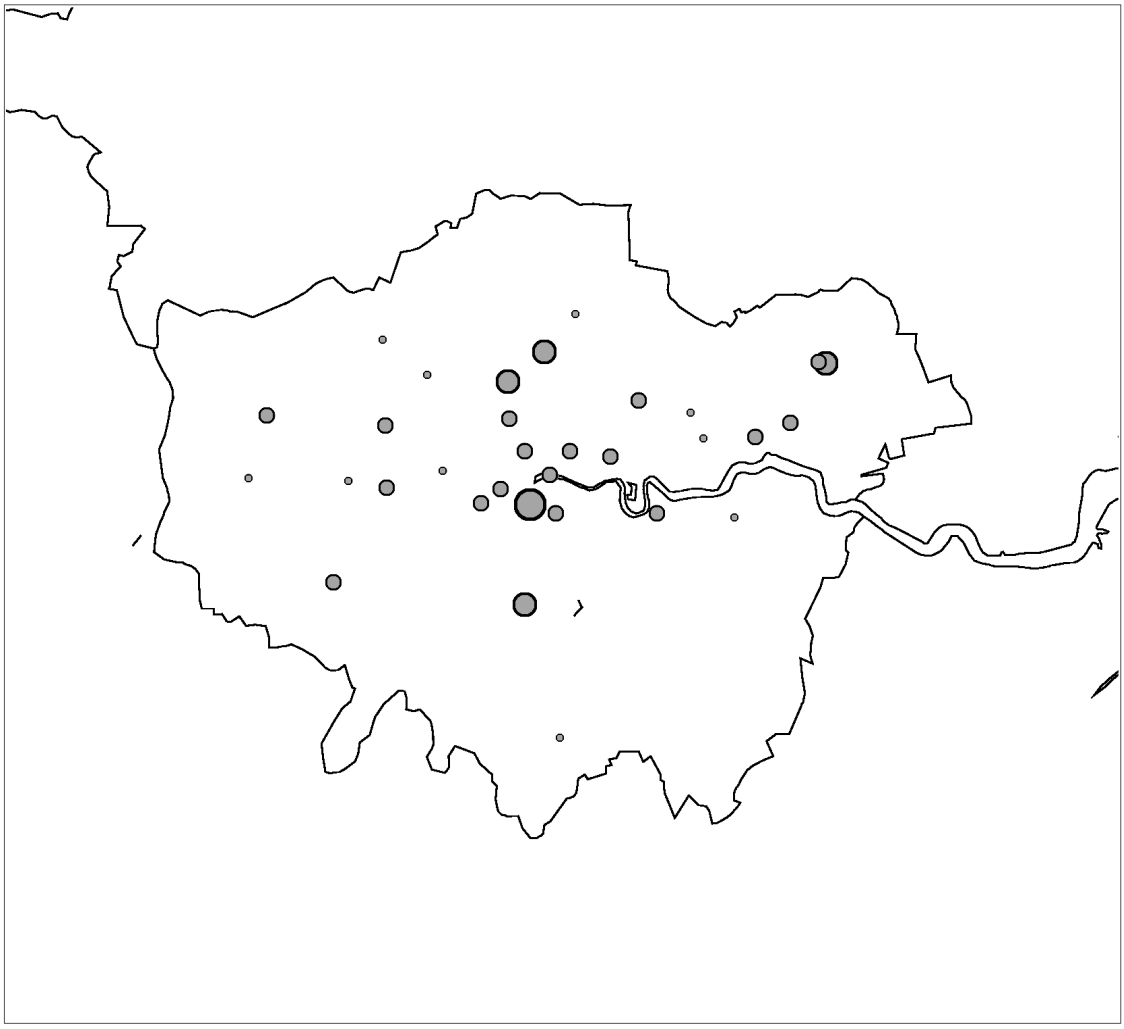
Table B9.2 Roadside Sites in London

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARKING 1N	Barking	R	A	46	23	49	58	57	37	56	37	52	71	52	19	**19**	**71**	**47**
BARKING 6N	Barking	R	A	34	39	48	62	31	41	58	43	52	59	36	36	**31**	**62**	**45**
BARNET 5N	Barnet	R	A	19	20	26	34	21	32	21	24	33	42	62	42	**19**	**62**	**31**
BARNET 8N	Barnet	R	A	29	25	37	42	38	39	41	29	38	50	23	39	**23**	**50**	**36**
BRENT 55N	Brent	R	A	53	61	20	43	39	24	30	58	69	57	58	51	**20**	**69**	**47**
BRENT 56N	Brent	R	A	46	46	27	67	27	32	35	45	44	38	48	50	**27**	**67**	**42**
CAMDEN 1N	Camden	R	A	53	47	52	48	35	74	37	78	37	76			**35**	**78**	**54**
CAMDEN 7N	Camden	R	A	52	58	46	48	61	28	30	48	49	61			**28**	**61**	**48**
LONDON CITY 38N	City of London	R	A							50	65	24	59	29	37	**24**	**65**	**44**
LONDON CITY 39N	City of London	R	A								43	61	71	32	38	**32**	**71**	
LONDON CITY 6N	City of London	R	C	49	57	42	43									**42**	**57**	
EALING 1N	Ealing	R	A	86	65	46	33	35	25	44	25	40	41	20	37	**20**	**86**	**41**
EALING 5N	Ealing	R	A	48			40	40	21	39	18	37	54	33	37	**18**	**54**	**37**
ENFIELD 1N	Enfield	R	A	55	44	40	42	36	15	46	31		36	33	34	**15**	**55**	**38**
ENFIELD 5N	Enfield	R	A	69	46	36	35	30	17	36	39	29	38	36	54	**17**	**69**	**39**
GREENWICH 34N	Greenwich	R	A	41	42	45	29	23	41	30	28	46	37	41		**23**	**46**	**37**
GREENWICH 35N	Greenwich	R	A	43	44	40	29	52	33	52	49	44	34	36		**29**	**52**	**41**
HACKNEY 1N	Hackney	R	A	34	32	52	18	113	27	102	65	71	49	76		**18**	**113**	**58**
HARINGEY 1N	Haringey	R	A	78	90	52	46	108	28	58	66	50	42	56	77	**28**	**108**	**63**
HARINGEY 5N	Haringey	R	A	95	43	64	79	127	28	47	30	75	72	43		**28**	**127**	**64**
HAVERING 1N	Havering	R	A	98	71	58	58	47	49	48	52	63		78	74	**47**	**98**	**63**
HAVERING 5N	Havering	R	A		64	54	50	35	34	37	46	48		64	65	**34**	**65**	**50**
HILLINGDON 1N	Hillingdon	R	A	50	26			31			36	30	44	17	31	**17**	**50**	**33**
HILLINGDON 6N	Hillingdon	R	A		32					20	16			7	37	**7**	**37**	
ISLINGTON 1N	Islington	R	A				26	17		69	73				55	**17**	**73**	
KENSINGTON 1N	Kensington & Chelsea	R	A	45	24	25	50	47	33	36	39	20	36	49		**20**	**50**	**37**
KENSINGTON 5N	Kensington & Chelsea	R	A	61	61	40	56	67	35	46	42	39	51	56	53	**35**	**67**	**51**
LAMBETH 1N	Lambeth	R	A	75	64	89	62	38	53		42	61	59	109	69	**38**	**109**	**66**
LAMBETH 5N	Lambeth	R	A	98	81	99	80	65	72		88	93	65	97	116	**65**	**116**	**87**
NEWHAM 1N	Newham	R	A	39	39	33	32	33	25	25	27	34	43	43	49	**25**	**49**	**35**
NEWHAM 5N	Newham	R	A	48	41	31	28	25		38		30		31	29	**25**	**48**	**34**
RICHMOND UPON THAMES 1N	Richmond Upon Thames	R	A	44	47	37	37	38	42	44	50	41	40	24	54	**24**	**54**	**41**
SOUTHWARK 5N	Southwark	R	C	52												**52**	**52**	
SOUTHWARK 8N	Southwark	R	A	55	65	41	47	36	47	52	46	42	66	46	62	**36**	**66**	**50**
SOUTHWARK 9N	Southwark	R	A											30	36	**30**	**36**	
TOWER HAMLETS 1N	Tower Hamlets	R	A	60		46	23	43	39	48	58	42	49	43		**23**	**60**	**45**
WALTHAM FOREST 4N	Waltham Forest	R	A	38	38	20	54	48	31	40	56	56	50	54	41	**20**	**56**	**44**
WESTMINSTER 1N	Westminster	R	A	41	59	63	56	59	50	59	71	49		24		**24**	**71**	**53**

REGIONAL SUMMARY		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Regional Monthly Mean	54	48	45	45	47	36	44	46	47	51	45	49
	Regional Monthly Min	19	20	20	18	17	15	20	16	20	34	7	19
	Regional Monthly Max	98	90	99	80	127	74	102	88	93	76	109	116
	Regional Annual Mean	47											
	Regional Annual Min	31											
	Regional Annual Max	87											
	Number of Sites	38											
	% With Valid Data	84											

Figure B9.1 Annual Average Roadside Nitrogen Dioxide Concentrations in London



B9.2 London (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for London are shown in Figure B9.2. Table B9.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B9.4.

Table B9.3 Urban Background Sites in London with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Lambeth 3N (42µgm^{-3})
Havering 3N (41µgm^{-3})

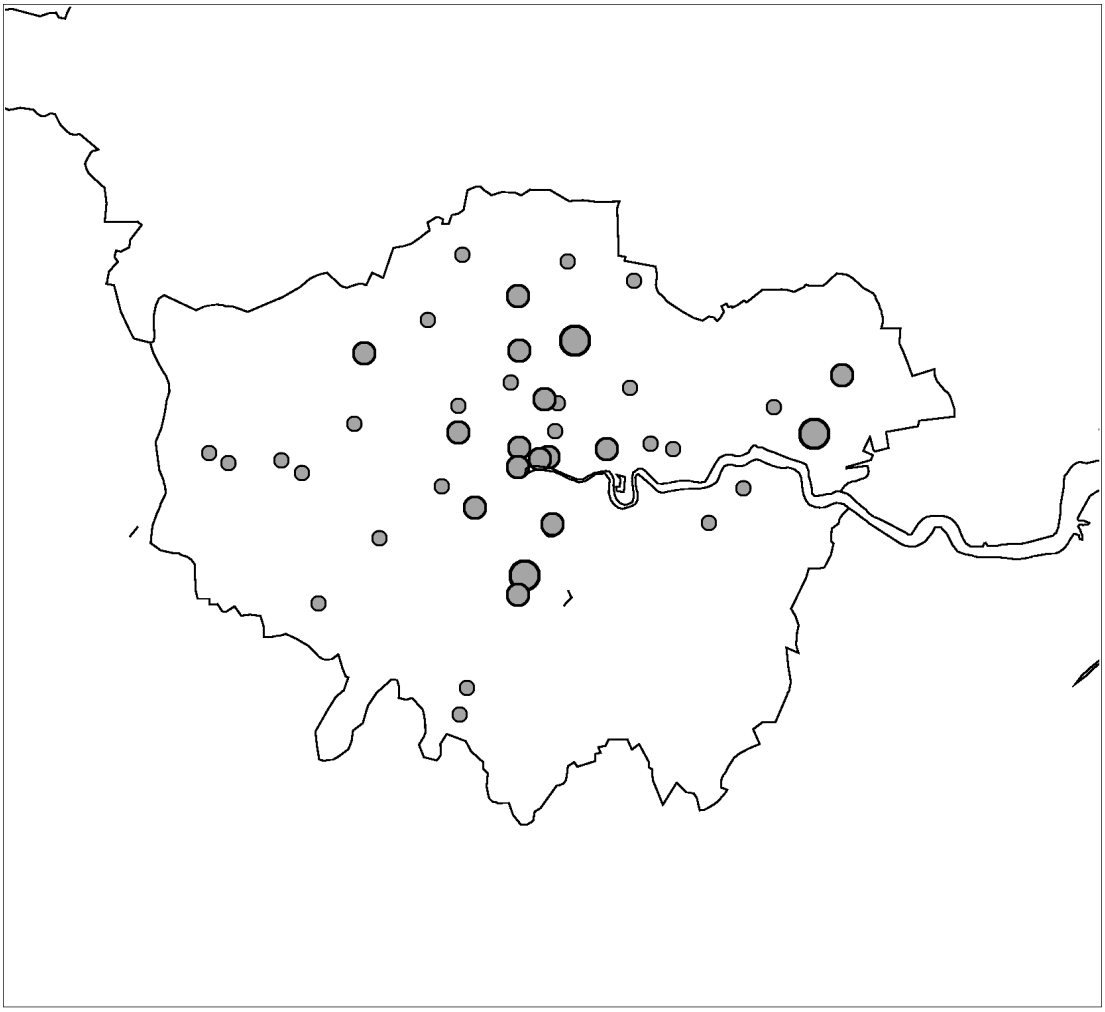
Table B9.4 Urban Background Sites in London

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BARKING 5N	Barking	B	A	34	39	32	25	12	15	10	29	25	33	37	14	**10**	**39**	**25**
BARNET 4N	Barnet	B	A	18	16	25	14	12	26	27	17	20	33	46	26	**12**	**46**	**23**
BARNET 7N	Barnet	B	A	18	38	22	24	18	15	14	24	14	30	83	34	**14**	**83**	**28**
BRENT 41N	Brent	B	A	41	34	20	21	21	9	18	15	19	45	39	35	**9**	**45**	**26**
BRENT 57N	Brent	B	A	41	46	17	40	30	20	25	23	46	45	57	46	**17**	**57**	**36**
CAMDEN 4N	Camden	B	A	40	71	41	31	16	30	22	28	23	41			**16**	**71**	**34**
CAMDEN 6N	Camden	B	A	35	32	36	33	27	18	12	13	24	37			**12**	**37**	**27**
LONDON CITY 3N	City of London	B	A	43	33	33	39	20	18		19	30	42	22	49	**18**	**49**	**32**
LONDON CITY 5N	City of London	B	A	41	31	37	50		31	24	18	34	38	25		**18**	**50**	**33**
EALING 3N	Ealing	B	A	28	44	29	16	26	10	13	30	20	26		26	**10**	**44**	**24**
EALING 4N	Ealing	B	A	47	34	15	16	16	22	19	15	22	18	14	24	**14**	**47**	**22**
ENFIELD 3N	Enfield	B	A	54	31	25	29	15	19	17	27	25	38	33	38	**15**	**54**	**29**
ENFIELD 4N	Enfield	B	A	44	29	34	29	23	17	33	36	31	44	23	33	**17**	**44**	**31**
GREENWICH 37N	Greenwich	B	A	29			22	29	15	16	15	18	21	44		**15**	**44**	**23**
GREENWICH 40N	Greenwich	B	A	26	33	25	20	12	63	14	12	24	20	45		**12**	**63**	**27**
HACKNEY 3N	Hackney	B	A	27	21	22	9	51	19	41	23	34	32			**9**	**51**	**28**
HACKNEY 4N	Hackney	B	A	28	20	25	14	44	21	35	36	38	22	35		**14**	**44**	**29**
HARINGEY 3N	Haringey	B	A	59	32	46	28	39	17	18	121	5	37	33	49	**5**	**121**	**40**
HARINGEY 4N	Haringey	B	A	54	26	55	26	41	20	30	23	38	38	14	71	**14**	**71**	**36**
HAVERING 3N	Havering	B	A	56	56	46	36	27	26	30	27	40		55	51	**26**	**56**	**41**
HAVERING 4N	Havering	B	A	44	38	35	27	24	23	25	26	29		41	37	**23**	**44**	**32**
HILLINGDON 3N	Hillingdon	B	A	30	26		13	20		15	26	33	33	16	32	**13**	**33**	**24**
HILLINGDON 7N	Hillingdon	B	A							18	20	34	34	16	17	**16**	**34**	**23**
ISLINGTON 3N	Islington	B	A				12	6		23		26		25	35	**6**	**35**	**21**
ISLINGTON 4N	Islington	B	A				15	11		35	55	48	48	15	38	**11**	**55**	**33**
KENSINGTON 3N	Kensington & Chelsea	B	A	48	37	27	33	45	27	47	18	35	50	27	37	**18**	**50**	**36**
KENSINGTON 4N	Kensington & Chelsea	B	A	37	30	21	20	29	15	17	20	21	27	20		**15**	**37**	**23**
LAMBETH 3N	Lambeth	B	A	51	42	60	49	22	21		20	29	44	76	46	**20**	**76**	**42**
LAMBETH 4N	Lambeth	B	A	48	33	52	19	26	19		16	29	25	76	54	**16**	**76**	**36**
NEWHAM 3N	Newham	B	A	30	32	25	21	16	19	24	27	22	33	32	34	**16**	**34**	**26**
NEWHAM 4N	Newham	B	A	35	23	22	23			21	25	26	14	34	30	**14**	**35**	**25**
RICHMOND UPON THAMES 3N	Richmond Upon Thames	B	A	25	32	31	21	16	16	21	21	23	28	24	38	**16**	**38**	**25**
RICHMOND UPON THAMES 4N	Richmond Upon Thames	B	A	31	34		24	11	13	14	24	31	21	12	28	**11**	**34**	**22**
SOUTHWARK 6N	Southwark	B	A	44	38	23	24	28	37	26	21	28	21	20	38	**20**	**44**	**29**
SOUTHWARK 7N	Southwark	B	A	43	36	26	31	39	18		35	27	39	19	37	**18**	**43**	**32**
SUTTON 4N	Sutton	B	A	28	21	20	17	30	13	16	19	19	18	25	26	**13**	**30**	**21**
SUTTON 7N	Sutton	B	A	23	24	10	17	15	17	17	9		17	25	46	**9**	**46**	**20**
TOWER HAMLETS 3N	Tower Hamlets	B	A	32	35	24	21	24	19	30	34	21	55	34		**19**	**55**	**30**
WALTHAM FOREST 1N	Waltham Forest	B	A	55	21	12	32	26	16	18	44	22	42	34	30	**12**	**55**	**29**
WALTHAM FOREST 6N	Waltham Forest	B	A	24	15	13	38	23	15	13	24	32	39	42	42	**13**	**42**	**27**
WESTMINSTER 3N	Westminster	B	A		41	39			26				27	27	36	**26**	**41**	**33**
WESTMINSTER 5N	Westminster	B	C	41	38	43	36	30	30	43						**30**	**43**	**37**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	38	33	30	25	24	21	23	27	27	33	34	37
	Regional Monthly Min	18	15	10	9	6	9	10	9	5	14	12	14
	Regional Monthly Max	59	71	60	50	51	63	47	121	48	55	83	71
	Regional Annual Mean	29											
	Regional Annual Min	20											
	Regional Annual Max	42											
	Number of Sites	42											
	% With Valid Data	100											

Figure B9.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in London



B10.1 The South East (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the South East are shown in Figure B10.1. Table B10.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B10.2.

Table B10.1 Roadside Sites in the South East with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} ***Air Quality Strategy Objective*** ***NO_2 Annual Mean***	
Southampton 10N (76µgm^{-3})	Eastleigh 1N (49µgm^{-3})
Southampton 5N (66µgm^{-3})	Dartford 1N (49µgm^{-3})
Staines 4N (63µgm^{-3})	Esher 1N (49µgm^{-3})
Dover 9N (62µgm^{-3})	Worthing 1N (48µgm^{-3})
Epsom 7N (61µgm^{-3})	Witney 8N (47µgm^{-3})
Abingdon 1N (59µgm^{-3})	Hove 1N (46µgm^{-3})
Bracknell 5N (58µgm^{-3})	Larkfield 1N (46µgm^{-3})
Hastings 5N (58µgm^{-3})	Dover 6N (46µgm^{-3})
Canterbury 1N (56µgm^{-3})	Abingdon 5N (46µgm^{-3})
Worthing 6N (55µgm^{-3})	Bracknell 1N (45µgm^{-3})
Witney 6N (54µgm^{-3})	Ashford 4N (45µgm^{-3})
Portsmouth 1N (54µgm^{-3})	Brighton 1N (45µgm^{-3})
Tunbridge Wells 1N (52µgm^{-3})	Woking 9N (44µgm^{-3})
Rochester 1N (52µgm^{-3})	Lewes 1N (44µgm^{-3})
Henley 1N (52µgm^{-3})	Basingstoke 1N (43 µgm^{-3})
Brighton 11N (51µgm^{-3})	Hove 5N (43 µgm^{-3})
Milton Keynes 5N (51µgm^{-3})	Ashford 7N (43 µgm^{-3})
Sevenoaks 21N (50µgm^{-3})	Folkestone 7N (43 µgm^{-3})
Woking 10N (50µgm^{-3})	Tonbridge 1N (42 µgm^{-3})
Epsom 6N (50µgm^{-3})	Basingstoke 6N (42 µgm^{-3})
Eastleigh 5N (49µgm^{-3})	Bexhill 8N (42 µgm^{-3})
Ashford Middlesex 2N (49µgm^{-3})	Ramsgate 5N (41 µgm^{-3})
Gillingham Kent 1N (49µgm^{-3})	Margate 1N (41 µgm^{-3})
Aylesbury 5N (49µgm^{-3})	

Table B10.2 Roadside Sites in the South East

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

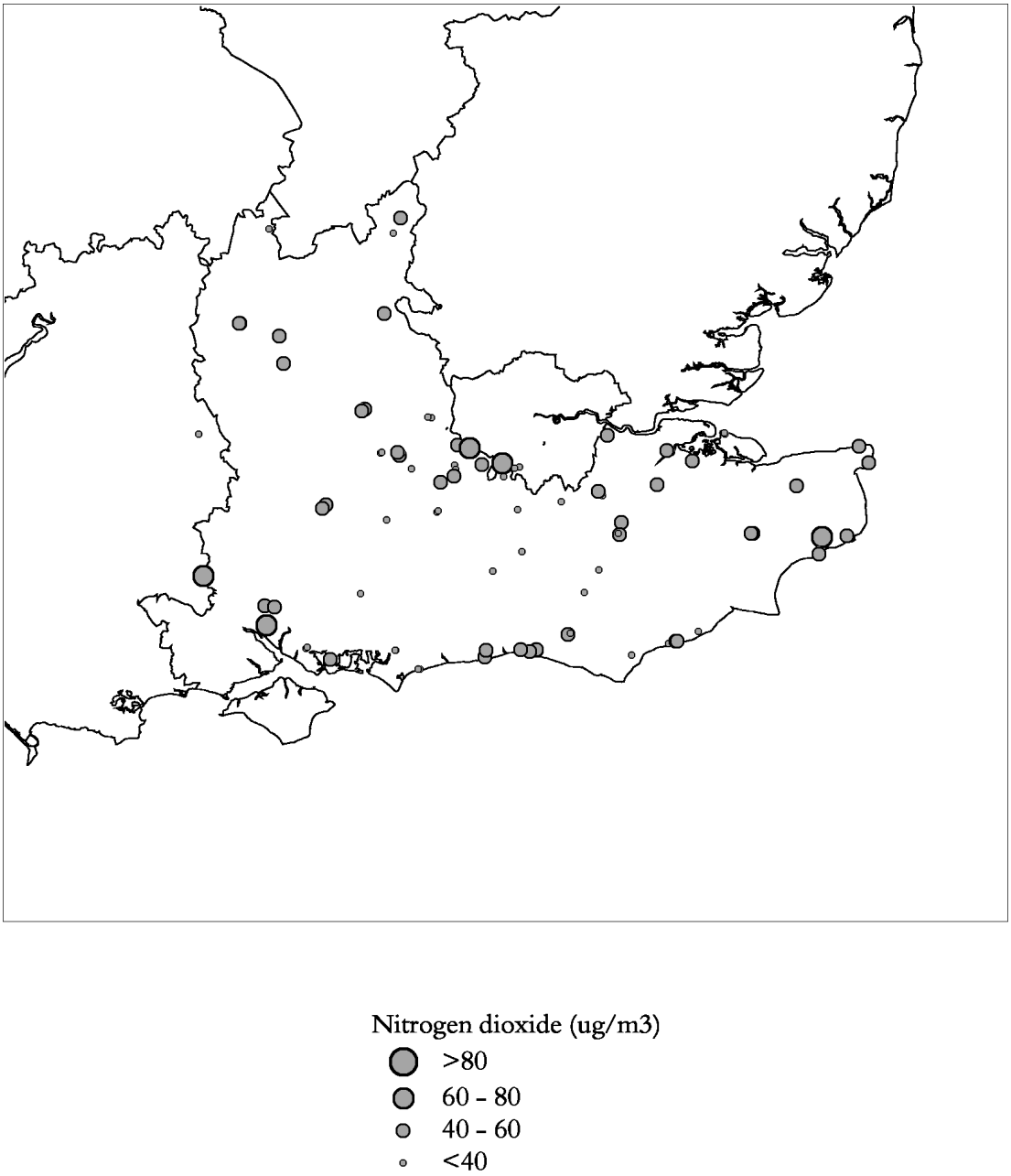
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
BOGNOR REGIS 1N	Arun	R	A	49	44	38	29	42	26			32	34	45		**26**	**49**	**38**
BOGNOR REGIS 5N	Arun	R	A	47	39	41	27	39	27				29	40		**27**	**47**	**36**
ASHFORD 4N	Ashford	R	A	54	49	53	39	34	41	41	33		47	47	55	**33**	**55**	**45**
ASHFORD 7N	Ashford	R	A	56	51	38		31	41	42		40	39	43	53	**31**	**56**	**43**
AYLESBURY 5N	Aylesbury Vale	R	A	63	61	61	74	32	28	24						**24**	**74**	**49**
BASINGSTOKE 1N	Basingstoke	R	A	55	55	48	36	28	33	43	35		42	48	54	**28**	**55**	**43**
BASINGSTOKE 6N	Basingstoke	R	A	44	44	65	39	28	29	25	30		59	45	57	**25**	**65**	**42**
BRACKNELL 1N	Bracknell	R	A	53	47	45	33	34	48	30	62	27	52	48	61	**27**	**62**	**45**
BRACKNELL 5N	Bracknell	R	A	58	59	61	56	48	75	45	74		33	74	54	**33**	**75**	**58**
BRIGHTON 11N	Brighton & Hove	R	A		47	75	68	55	38	38	45	50	47	55	41	**38**	**75**	**51**
BRIGHTON 1N	Brighton & Hove	R	A	43	53	68	51	29	28	32	38	44	46	57	49	**28**	**68**	**45**
HOVE 1N	Brighton & Hove	R	A	65	43	64	44	60		22		47		29	43	**22**	**65**	**46**
HOVE 5N	Brighton & Hove	R	A	56	47	66	43	34	51	38	41	40	31	52	22	**22**	**66**	**43**
CANTERBURY 1N	Canterbury	R	A	63	60	51	56	49	42	50		50	71	60	62	**42**	**71**	**56**
CANTERBURY 7N	Canterbury	R	A							42		38	31	53	53	**31**	**53**	
BANBURY 1N	Cherwell	R	A	57	55	58	43	38	6	7		36	49	46	33	**6**	**58**	**39**
CHICHESTER 1N	Chichester	R	A	36	44	45	51	35	24	31	24	43	39	43	37	**24**	**51**	**38**
CHICHESTER 5N	Chichester	R	A	50	50	52	48	32	26	33	32	33	27	47	37	**26**	**52**	**39**
CRAWLEY 1N	Crawley	R	A	57	46		33	33	20		20		44			**20**	**57**	**36**
DARTFORD 1N	Dartford	R	A		45	49	28	47	31	54	65	65	52			**28**	**65**	**49**
DOVER 6N	Dover	R	A	49	53	52	37	39	48	44	48	35	44	52	51	**35**	**53**	**46**
DOVER 9N	Dover	R	A	68	64			53	70	58	58	52	55	79	65	**52**	**79**	**62**
ALTON 5N	East Hampshire	R	A	43	37	39	21	17	15	16	26		25	26	15	**15**	**43**	**26**
PETERSFIELD 6N	East Hampshire	R	A			25	22	14	23	14	18		16	32	16	**14**	**32**	**20**
EASTBOURNE 1N	Eastbourne	R	A		39					13			21		37	**13**	**39**	
EASTBOURNE 6N	Eastbourne	R	A					39			13	8	12	44	31	**8**	**44**	**25**
EASTLEIGH 1N	Eastleigh	R	A	43	46	57	45	50	47	49	49		64	39	46	**39**	**64**	**49**
EASTLEIGH 5N	Eastleigh	R	A	43	49	53	51	45	53	49	41	47	55	53	53	**41**	**55**	**49**
ESHER 1N	Elmbridge	R	A	80	45	34	27	43	39	56	52	65	43	43	55	**27**	**80**	**49**
EPSOM 1N	Epsom & Ewell	R	A	55			26	64		31	12	43	54	13	52	**12**	**64**	**39**
EPSOM 6N	Epsom & Ewell	R	A	51	32		60	67		53	25	59	52			**25**	**67**	**50**
EPSOM 7N	Epsom & Ewell	R	A	91	71		32	84		74	19	77	59	50	49	**19**	**91**	**61**
FAREHAM 11N	Fareham	R	A	38	49	39	38	27	35	30					18	**18**	**49**	**34**
FAREHAM 1N	Fareham	R	A	42	41	37	21	25	35	14					31	**14**	**42**	**31**
GUILDFORD 1N	Guildford	R	C	50	38	35	37	39	30	39	46	43	47	41	15	**15**	**50**	**38**
GUILDFORD 9N	Guildford	R	A	26	31	48	31	26	25	34	27	33	33	38	40	**25**	**48**	**33**
HASTINGS 4N	Hastings	R	A	42	36	38	30	40	29	38	38	34	38	46	43	**29**	**46**	**38**
HASTINGS 5N	Hastings	R	A	62	58	57	55	20	59	62	63	56	63	71	65	**20**	**71**	**58**
HAVANT 1N	Havant	R	A								31	39			27	**27**	**39**	
HORSHAM 1N	Horsham	R	A	46		33	35	36	38	27	28	43	43	30	41	**27**	**46**	**36**
STEYNING 2N	Horsham	R	C			33	22	19							28	**19**	**33**	
LEWES 1N	Lewes	R	A	56	48	49	53	38	30		33	44	42	49	38	**30**	**56**	**44**
LEWES 5N	Lewes	R	A	46	45	42	34	34	18	29	23	26	31	41	33	**18**	**46**	**34**
MILTON KEYNES 1N	Milton Keynes	R	A	46	45	41	27	34	20	31	34	32	32	31	45	**20**	**46**	**35**
MILTON KEYNES 5N	Milton Keynes	R	A	62	52	49	53	42	49		50					**42**	**62**	**51**
PORTSMOUTH 1N	Portsmouth	R	A	77	72	77	74	37	31	34	34	39	38		77	**31**	**77**	**54**
REIGATE 1N	Reigate & Banstead	R	A					31	22	34			44	48	40	**22**	**48**	**36**
GILLINGHAM KENT 1N	Medway	R	A						51	51	31	55	31		75	**31**	**75**	**49**
ROCHESTER 1N	Medway	R	A						55	54	51	65	51		38	**38**	**65**	**52**
BEXHILL 5N	Rother	R	A	51	46	40	30	40	31	33	34	36	38	41	54	**30**	**54**	**40**
BEXHILL 8N	Rother	R	A	53	45	39	34	40	35		42		27	50	59	**27**	**59**	**42**
ADDLESTONE 1N	Runnymede	R	A	42	39	46	39	69	24	40	28	30	34	31	24	**24**	**69**	**37**
ADDLESTONE 6N	Runnymede	R	A	24	39	38	31	55	27	39	34	30	21	27	34	**21**	**55**	**33**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
SEVENOAKS 1N	Sevenoaks	R	A	50	41	35	30	30	26	32	29	40	33	51	52	**26**	**52**	**37**
SEVENOAKS 21N	Sevenoaks	R	A	60	16	60	50	60	54	49	46	50			58	**16**	**60**	**50**
FOLKESTONE 1N	Shepway	R	A	39	37	35	24	33		35	32	32	25	37	44	**24**	**44**	**34**
FOLKESTONE 7N	Shepway	R	A	55	52	31	35	32	32	45	37	42	35	58	60	**31**	**60**	**43**
SLOUGH 1N	Slough	R	A	38	44	41	30	50		19	43	16	37	46	35	**16**	**50**	**36**
SLOUGH 7N	Slough	R	A	27	44	41	25	19		38	24	21	30	48	40	**19**	**48**	**32**
HENLEY 1N	South Oxfordshire	R	A	56	43	60			52		51	37	54	60		**37**	**60**	**52**
HENLEY 9N	South Oxfordshire	R	A	37	49	58	49		29	30	45	34	41	40	33	**29**	**58**	**40**
SOUTHAMPTON 10N	Southampton	R	A		89	82	72	77	70	75	76	75	74	77	69	**69**	**89**	**76**
SOUTHAMPTON 5N	Southampton	R	A	74	79	79	52	71	64	66	59	59	73	62	58	**52**	**79**	**66**
ASHFORD MIDDLESEX 2N	Spelthorne	R	A	44	24	50	52	77	46	65	44	43	56	54	34	**24**	**77**	**49**
STAINES 4N	Spelthorne	R	A	44	55	79	49	90	48	67	53	73	60	81	53	**44**	**90**	**63**
BAGSHOT 1N	Surrey Heath	R	A	56	22	39	21			16	14	16	32	30	45	**14**	**56**	**29**
SUTTON 1N	Sutton	R	A	9	17	13	26	33	31	37	33	29	34	35	41	**9**	**41**	**28**
SUTTON 8N	Sutton	R	A	36	38	33	30	35	28	22	33		32	28	41	**22**	**41**	**32**
SHEERNESS 1N	Swale	R	A	40	39	30	27	27	31	29	26	33	30		43	**26**	**43**	**32**
SHEERNESS 5N	Swale	R	A		42	33	28	37		32	30	33	28	42	43	**28**	**43**	**35**
OXTED 1N	Tandridge	R	A	44	24	44	24	29	15	22	15	11	30	18	31	**11**	**44**	**26**
MARGATE 1N	Thanet	R	A	55	45	48	33	33	32	35	33	33	43	45	52	**32**	**55**	**41**
RAMSGATE 5N	Thanet	R	A	49	45	42	36		41	44	38	36	37	42	45	**36**	**49**	**41**
LARKFIELD 1N	Tonbridge & Malling	R	A	55	56	52	52	41	32	34	40		35	50	62	**32**	**62**	**46**
TONBRIDGE 1N	Tonbridge & Malling	R	A	50	55	44	41	41	35	31			37		47	**31**	**55**	**42**
TUNBRIDGE WELLS 1N	Tunbridge Wells	R	A	52	58	62	58	35	46	53	38	49	55	60	62	**35**	**62**	**52**
TUNBRIDGE WELLS 7N	Tunbridge Wells	R	A	44	46	40	25	15	32	45	32	36	37	39	41	**15**	**46**	**36**
ABINGDON 1N	Vale of White Horse	R	A	65	65	58	61	45	51	59	55	56	63	67	63	**45**	**67**	**59**
ABINGDON 5N	Vale of White Horse	R	A	64	57	57	43	37	34	29	35	37	43	52	61	**29**	**64**	**46**
FARNHAM 5N	Waverley	R	A		46	56	26	34		30	32	40	37	32	40	**26**	**56**	**37**
CROWBOROUGH 1N	Wealden	R	A	43	45	31		34		33		43		37	41	**31**	**45**	**38**
UCKFIELD 5N	Wealden	R	A	45	46	34	37	33		29	36	41	33	45	23	**23**	**46**	**36**
WITNEY 6N	West Oxfordshire	R	A	57	63		48	63	44	48	54	49	62	55		**44**	**63**	**54**
WITNEY 8N	West Oxfordshire	R	A	50	57	52	47	40	38	38	42	43	56	51	52	**38**	**57**	**47**
WOKING 10N	Woking	R	A	36	52	48	51	64	58	62	31	52	47	46	53	**31**	**64**	**50**
WOKING 9N	Woking	R	A	67	50	60	30	34	39	40	39	38	51	36	46	**30**	**67**	**44**
WOKINGHAM 1N	Wokingham	R	A	44	46	44	21	15	27	36	33	34	29	34	54	**15**	**54**	**35**
WOKINGHAM 52N	Wokingham	R	A	48		52	27	19	27	50	25		42	46	52	**19**	**52**	**39**
WORTHING 1N	Worthing	R	A	51	57	54	47	46	44	39	37	47	36	58	63	**36**	**63**	**48**
WORTHING 6N	Worthing	R	A	71	65	67	47	59	36	33	43	48	40	66	83	**33**	**83**	**55**

REGIONAL SUMMARY		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
	Regional Monthly Mean	51	48	48	39	41	37	39	38	41	42	46	46
	Regional Monthly Min	9	16	13	21	14	6	7	12	8	12	13	15
	Regional Monthly Max	91	89	82	74	90	75	75	76	77	74	81	83
	Regional Annual Mean	43											
	Regional Annual Min	20											
	Regional Annual Max	76											
	Number of Sites	90											
	% With Valid Data	96											

Figure B10.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the South East



B10.2 The South East (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the South East are shown in Figure B10.2. Table B10.3 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B10.4.

Table B10.3 Urban Background Sites in the South East with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Southampton 7N (44µgm^{-3})

Table B10.4 Urban Background Sites in the South East

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

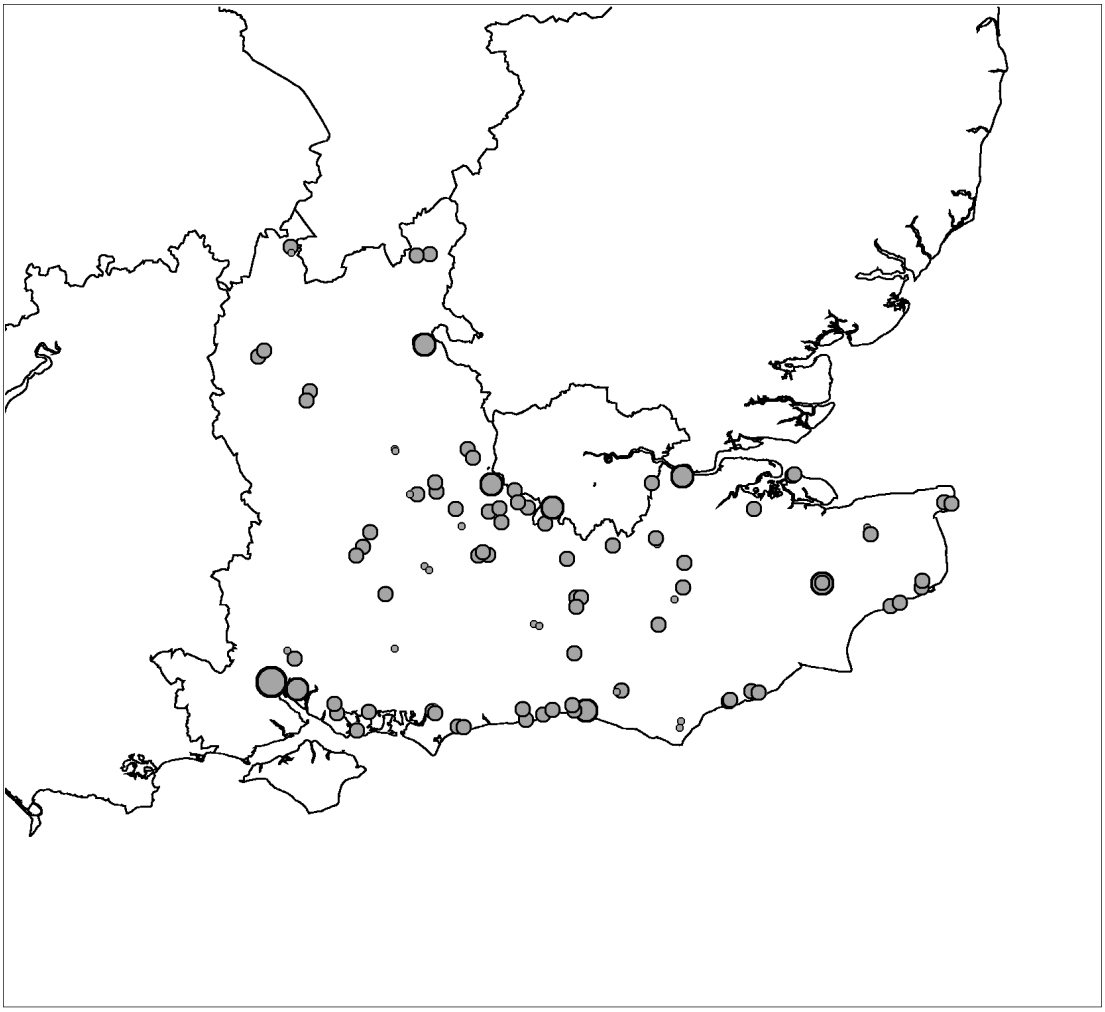
Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
LANCING 4N	Adur	B	A				24	24	20	22	21	25	25	42	50	**20**	**50**	**28**
SHOREHAM-BY-SEA 3N	Adur	B	A				23	22	19	21	24	24	26	34	42	**19**	**42**	**26**
BOGNOR REGIS 3N	Arun	B	A	13	40	29	22	22	17			22	25	37		**13**	**40**	**25**
BOGNOR REGIS 4N	Arun	B	A	40	36	28	21	26	11			20	24	35		**11**	**40**	**27**
ASHFORD 5N	Ashford	B	A	49	36	21	25	22	20	24	22		43	35	50	**20**	**50**	**31**
ASHFORD 6N	Ashford	B	A		33	28	21	21	20	23	24	27	29	29	41	**20**	**41**	**27**
AYLESBURY 7N	Aylesbury Vale	B	A	48		43	34	16	16	17						**16**	**48**	**29**
AYLESBURY 8N	Aylesbury Vale	B	A	94		39	27	13	13	9						**9**	**94**	**33**
BASINGSTOKE 3N	Basingstoke	B	A	40	40	30		8	11	16			28		28	**8**	**40**	**25**
BASINGSTOKE 4N	Basingstoke	B	A	19	19	23	20	13	19	15	18		27	27	38	**13**	**38**	**22**
BRACKNELL 3N	Bracknell	B	A	24	30	26	12	19		13	18		28	34	41	**12**	**41**	**25**
BRACKNELL 4N	Bracknell	B	A	33	29	24	15	15			41	17	30	31	33	**15**	**41**	**27**
BRIGHTON 4N	Brighton & Hove	B	A	37	33	39	26	20		15	23	21	21	29	26	**15**	**39**	**26**
BRIGHTON 9N	Brighton & Hove	B	A	38	38	51	34	27	24	25	23	22	34	37	29	**22**	**51**	**32**
HOVE 3N	Brighton & Hove	B	A		36	35	22	15	16	15	16		16	39		**15**	**39**	**23**
HOVE 4N	Brighton & Hove	B	A	29	33	37	26	23	12		16	23	16	32	23	**12**	**37**	**24**
CANTERBURY 5N	Canterbury	B	A	31	26	18	18	11	12	10		15	23	26		**10**	**31**	**19**
CANTERBURY 6N	Canterbury	B	A	32	30	25	14	12	9	12		20	35	35	36	**9**	**36**	**24**
BANBURY 6N	Cherwell	B	A	30	33	27	22	7	12	17		19	20	29		**7**	**33**	**22**
BANBURY 8N	Cherwell	B	A	29	20	24	15	12	6	12		11	16	19	27	**6**	**29**	**17**
CHICHESTER 3N	Chichester	B	A	31	34	27	17	19	15	18	21		25	35	30	**15**	**35**	**25**
CHICHESTER 4N	Chichester	B	A	36	18	26	16	16	7	12	17	20	14	27	31	**7**	**36**	**20**
CRAWLEY 3N	Crawley	B	A	32	32	34	24	16	12	12	17	29	25	40	37	**12**	**40**	**26**
CRAWLEY 4N	Crawley	B	A	37	31	27	24	18	15	16	13	26	24	35	29	**13**	**37**	**25**
CRAWLEY 5N	Crawley	B	A	34	28	26	22	16	10	11	15	15	16	34	43	**10**	**43**	**22**
DARTFORD 5N	Dartford	B	A		41	31	17	32	17	29	28	28	21	35	39	**17**	**41**	**29**
DARTFORD 7N	Dartford	B	A		40	35	24	28	24	33	28		31	39	58	**24**	**58**	**34**
DOVER 3N	Dover	B	A	30	30	29	16	16	27	25	21	17	23	34	39	**16**	**39**	**25**
DOVER 8N	Dover	B	A	31	28	29	19	19		16	20	24	18	35	34	**16**	**35**	**25**
ALTON 3N	East Hampshire	B	A	41	36	29	14	15	10	10	13		33	25	18	**10**	**41**	**22**
PETERSFIELD 3N	East Hampshire	B	A	35	33	25	10	6	6	15			20	19		**6**	**35**	**19**
EASTBOURNE 4N	Eastbourne	B	A	24	24	20	20	12		9	10	4	11	27	24	**4**	**27**	**17**
EASTBOURNE 5N	Eastbourne	B	A	24	24	22	22	14		11	15	18	12	33	20	**11**	**33**	**19**
EASTLEIGH 3N	Eastleigh	B	A	30	24	22	11	16	10	11	12	14	21	15	29	**10**	**30**	**18**
EASTLEIGH 4N	Eastleigh	B	A		31	34	25	21	20	22	24	26	37	29	39	**20**	**39**	**28**
ESHER 3N	Elmbridge	B	A	51	18	35	18	13		20	21	27	19	33	19	**13**	**51**	**25**
WALTON ON THAMES 1N	Elmbridge	B	A	54	18	28	24	22	20	22	25	24	22	25	40	**18**	**54**	**27**
EPSOM 3N	Epsom & Ewell	B	A	46	19		16	34		19	12	19	13	18	28	**12**	**46**	**22**
EPSOM 5N	Epsom & Ewell	B	A	48	31		12	33		26	33	46	20	21	35	**12**	**48**	**31**
FAREHAM 10N	Fareham	B	A	30	31	25	22	17	20	22					16	**16**	**31**	**23**
FAREHAM 7N	Fareham	B	A	29	31	25	11	14	14	12					29	**11**	**31**	**21**
GUILDFORD 3N	Guildford	B	A	43	29	14	26	23				19	20	30	33	**14**	**43**	**26**
GUILDFORD 5N	Guildford	B	C	45	17	20	10	20	30	15	12	14	22	20	50	**10**	**50**	**23**
HASTINGS 1N	Hastings	B	A	37	29	27	24	21		20	20	26	23	36	38	**20**	**38**	**27**
HASTINGS 3N	Hastings	B	A	34	27	25	18	17	14	17	15	21	21	26	34	**14**	**34**	**22**
HAVANT 3N	Havant	B	A								22	19			32	**19**	**32**	
HAVANT 4N	Havant	B	A								19	24			35	**19**	**35**	
HORSHAM 3N	Horsham	B	A	35		22	15	16	7	11		15	14	27	19	**7**	**35**	**18**
HORSHAM 4N	Horsham	B	A	27		17	13	16	8	11	10	15		30	17	**8**	**30**	**16**
LEWES 3N	Lewes	B	A	35	29	41	20	17			13		18	15	24	**13**	**41**	**24**
LEWES 4N	Lewes	B	A	28	27	22	19	8	13	11	16	11	18	19	17	**8**	**28**	**17**
MILTON KEYNES 3N	Milton Keynes	B	A	46	39		26	21	17	22	27	29	24	29	37	**17**	**46**	**29**
MILTON KEYNES 4N	Milton Keynes	B	A	36	29	24	18	17	11	15	15	19	19	21	30	**11**	**36**	**21**

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
PORTSMOUTH 3N	Portsmouth	B	A	36	33	31	20	14	12	12	12	14	12		38	**12**	**38**	**21**
PORTSMOUTH 4N	Portsmouth	B	A	40	33	31	24	12	12	12	12	12	16		39	**12**	**40**	**22**
REIGATE 3N	Reigate & Banstead	B	A					11	16	26			20	11	43	**11**	**43**	**21**
GILLINGHAM KENT 4N	Medway	B	A						19	21	22	31	22		39	**19**	**39**	**26**
ROCHESTER 3N	Medway	B	A							20	22	27	22		41	**20**	**41**	
BEXHILL 6N	Rother	B	A	39	28	20	15	12	12	14	14	16	15	31	41	**12**	**41**	**21**
BEXHILL 7N	Rother	B	A	39						17	14	21	24	25	39	**14**	**39**	**26**
ADDLESTONE 3N	Runnymede	B	A	18	22	28	13	34	19	22	10	23	18	17	21	**10**	**34**	**20**
ADDLESTONE 5N	Runnymede	B	A	38	39	25	14	30	20	25	18	27	22	11	36	**11**	**39**	**25**
SEVENOAKS 3N	Sevenoaks	B	A	34	24	21	12	14	11	8	11		13	29	31	**8**	**34**	**19**
SEVENOAKS 9N	Sevenoaks	B	A	35	31	24	18	20	15	14	14		17	15	34	**14**	**35**	**22**
FOLKESTONE 3N	Shepway	B	A	38	30	31	12	22	22	24	19	20	20	26	33	**12**	**38**	**25**
FOLKESTONE 5N	Shepway	B	A	47	31	20	17	23	26	27	22		24	33	39	**17**	**47**	**28**
SLOUGH 5N	Slough	B	A	13	27	27	21	23	12	18	25	11	28	25	35	**11**	**35**	**22**
SLOUGH 6N	Slough	B	A	29	30	33	26	19	6	23	7	13	20	39	31	**6**	**39**	**23**
HENLEY 3N	South Oxfordshire	B	A		33	29	16		12	11	14	16	13	17	22	**11**	**33**	**18**
HENLEY 7N	South Oxfordshire	B	A	32	26	22		30	8	11	16	14	5	20		**5**	**32**	**18**
SOUTHAMPTON 7N	Southampton	B	A	52	51	54	43	40	31	34	40	38	52	46	46	**31**	**54**	**44**
SOUTHAMPTON 9N	Southampton	B	A	43	49	34	24	28	20	21	25	29	27	37	49	**20**	**49**	**32**
STAINES 5N	Spelthorne	B	A	43	35	55	26	50	23	28	29	18	40	38	51	**18**	**55**	**36**
SUNBURY ON THAMES 1N	Spelthorne	B	A	50	28	38	15		24	21	16	11	21	27	30	**11**	**50**	**26**
BISLEY 1N	Surrey Heath	B	A	15	17	10	11		15	5	9	12	27	21	35	**5**	**35**	**16**
WINDLESHAM 1N	Surrey Heath	B	A	39	16	33			25	7	11	15	21	24	43	**7**	**43**	**23**
SHEERNESS 3N	Swale	B	A	33	32	23	14	20	20	21	17	24	20	34	34	**14**	**34**	**25**
SHEERNESS 4N	Swale	B	A	40	31	28	19	21	21	23	22	25	27	41	40	**19**	**41**	**28**
OXTED 3N	Tandridge	B	A	41	18	22	15	29	16	19	13	7	21	15	19	**7**	**41**	**20**
OXTED 9N	Tandridge	B	A	28	24	24	5	17	19		30	4	19	18	34	**4**	**34**	**20**
RAMSGATE 4N	Thanet	B	A	38	35	28	12	17	9	18	16	19	24	33	39	**9**	**39**	**24**
RAMSGATE 6N	Thanet	B	A	44	32	31	16	16	16	14	16	18	24	28	31	**14**	**44**	**24**
TONBRIDGE 3N	Tonbridge & Malling	B	A	40	32	23	12	11	11	11	13	21	22	32	41	**11**	**41**	**22**
WEST MALLING 3N	Tonbridge & Malling	B	A	38	34	28	23	20	12	17	18	26	19	32	41	**12**	**41**	**26**
TUNBRIDGE WELLS 4N	Tunbridge Wells	B	A	35	35	24	16	15	7	11	12	20	17	34	39	**7**	**39**	**22**
TUNBRIDGE WELLS 6N	Tunbridge Wells	B	A	27	22	20	10	13	7	10	8	16	10	21	34	**7**	**34**	**17**
ABINGDON 3N	Vale of White Horse	B	A	41	39	33	26	22	18	14	23	23	36	38		**14**	**41**	**28**
ABINGDON 4N	Vale of White Horse	B	A	38	35	27	19	17	13	19	19	22	20	30	37	**13**	**38**	**25**
FARNHAM 3N	Waverley	B	A		16	27	13	10	12	17	16	13	13	18	28	**10**	**28**	**17**
FARNHAM 4N	Waverley	B	A		18	17	4	14	20	28	18	21	19	23	27	**4**	**28**	**19**
CROWBOROUGH 6N	Wealden	B	A	35		18	16	11		11	10	21	16	34	32	**10**	**35**	**20**
UCKFIELD 4N	Wealden	B	A	45	31	28	17			13	15	19	19	19	35	**13**	**45**	**24**
WITNEY 4N	West Oxfordshire	B	A	25	31	25	17	13	12	10	17	20	24	33	37	**10**	**37**	**22**
WITNEY 7N	West Oxfordshire	B	A	27	33	27	17	15	10	13	13	18	28	34	33	**10**	**34**	**22**
WOKING 11N	Woking	B	A	30	39	39	14	17	16	12	14	17	13	23	21	**12**	**39**	**21**
WOKING 12N	Woking	B	A	46	39	44	24	22	18	25	25	28	20	17	38	**17**	**46**	**29**
WOKINGHAM 3N	Wokingham	B	A	21	36	29	12	13	13	21	17		27	23	40	**12**	**40**	**23**
WOKINGHAM 4N	Wokingham	B	A	21	36	25	13	10	8	13	13	23	10	25	34	**8**	**36**	**19**
WORTHING 4N	Worthing	B	A	47	41	34	19	20	13	15	16	21	14	36	54	**13**	**54**	**27**
WORTHING 5N	Worthing	B	A	42	38	35	21	20	12	15	19	26	25	36	55	**12**	**55**	**29**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			36	30	28	19	19	15	17	18	20	22	28	34			
	Regional Monthly Min			13	16	10	4	6	6	5	7	4	5	11	16			
	Regional Monthly Max			94	51	55	43	50	31	34	41	46	52	46	58			
	Regional Annual Mean			24														
	Regional Annual Min			16														
	Regional Annual Max			44														
	Number of Sites			100														
	% With Valid Data			97														

Figure B10.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the South East



B11.1 The South West (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for the South West are shown in Figure B11.1. Table B11.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B11.2.

Table B11.1 Roadside Sites in the South West with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} ***Air Quality Strategy Objective*** ***NO_2 Annual Mean***	
Dobwalls 1N (56µgm^{-3})	Exeter 1N (44µgm^{-3})
Bristol 1N (51µgm^{-3})	Saltash 7N (44µgm^{-3})
Poole 3N (48µgm^{-3})	Kingswood 1N (43µgm^{-3})
Bristol 5N (47µgm^{-3})	Bath 1N (43µgm^{-3})
Tewkesbury 6N (46µgm^{-3})	South Gloucestershire 1N (43µgm^{-3})
Gloucester 6N (46µgm^{-3})	Tewkesbury 5N (42µgm^{-3})
Jersey 6N (45µgm^{-3})	Westbury1N (42µgm^{-3})
Westbury 6N (45µgm^{-3})	Weymouth 8N (41µgm^{-3})
Frome 1N (45µgm^{-3})	

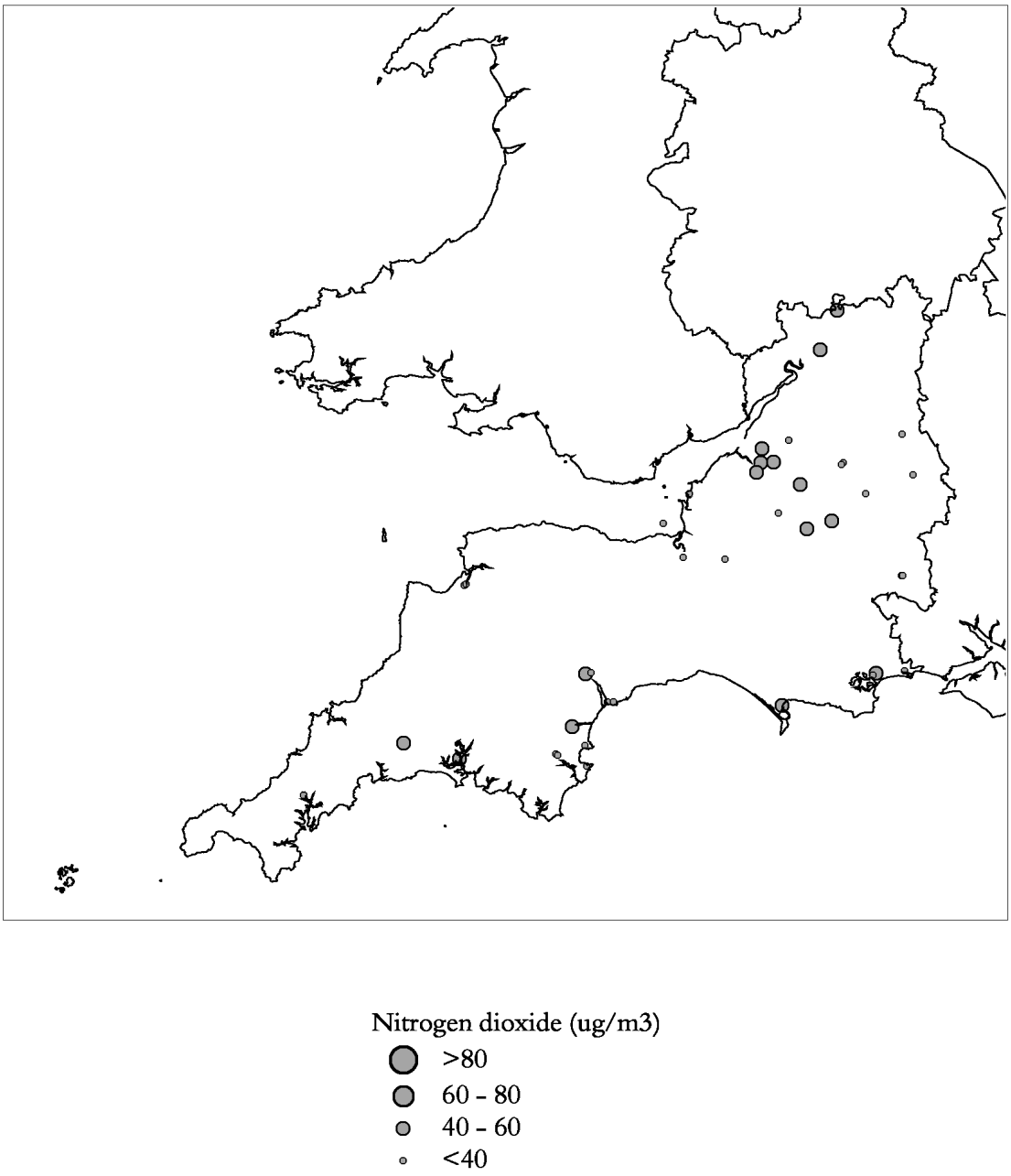
Table B11.2 Roadside Sites in the South West

				Nitrogen Dioxide Concentrations 2001 (ugm^{-3})														
Site Name	**Local Authority**	**Location**	**Status**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Min**	**Max**	**Mean**
BATH 1N	Bath & NE Somerset	R	A	47	53		56	56	27	45	41	41	25		41	**25**	**56**	**43**
MIDSOMER NORTON 5N	Bath & NE Somerset	R	A	35	31	33	29	22	13	16	20	27	28	30	24	**13**	**35**	**26**
BRISTOL 1N	Bristol	R	A	48	67		66	49	28	45		50	57	61	35	**28**	**67**	**51**
BRISTOL 5N	Bristol	R	A	63	59	43	54	53	24	36		38	50	46	47	**24**	**63**	**47**
DOBWALLS 1N	Caradon	R	A	70	51	66	48	55	54	63				42		**42**	**70**	**56**
SALTASH 7N	Caradon	R	A	50	50	49	41	37	35		32	41		47	55	**32**	**55**	**44**
TRURO 1N	Carrick	R	A	47	33	44	29	32	29	30	24	29	44	35	34	**24**	**47**	**34**
TRURO 5N	Carrick	R	A	42	28		42	24	20	20	20	21		35	34	**20**	**42**	**29**
CHRISTCHURCH 4N	Christchurch	R	A	18	26	30	18	34	29	29	30	26	32	35	21	**18**	**35**	**27**
EXMOUTH 1N	East Devon	R	A	30	34	36		45	17	31	24	29	35	36	46	**17**	**46**	**33**
EXMOUTH 5N	East Devon	R	A	24	34	24	26	17	17	25	10	27	18	37	54	**10**	**54**	**26**
EXETER 1N	Exeter	R	A	53	45	58	24	43		41	39	38	56	44	43	**24**	**58**	**44**
EXETER 5N	Exeter	R	A	36	42	39	20	23	20	27	32	32	40	43	25	**20**	**43**	**32**
GLOUCESTER 5N	Gloucester	R	A	30	43	43	38	33	24	24	27		34	39	28	**24**	**43**	**33**
GLOUCESTER 6N	Gloucester	R	A	55		68	47		24	33		41	44	65	33	**24**	**68**	**46**
DEVIZES 1N	Kennet	R	A	48	29	43		20		24	13	21	31	19	32	**13**	**48**	**28**
MARLBOROUGH 1N	Kennet	R	A	44	49	51	33	30		33	16	22	28	26	31	**16**	**51**	**33**
FROME 1N	Mendip	R	A	60	52	60	45	48	24	35	36	40	49		42	**24**	**60**	**45**
WALTON 1N	Mendip	R	A	50	32	31	21	22	19	20	20	23	28		33	**19**	**50**	**27**
WESTON-SUPER-MARE 1N	North Somerset	R	A	28	40	33		31			19	29	27	33	34	**19**	**40**	**30**
WESTON-SUPER-MARE 5N	North Somerset	R	A	30	39		15	34	19	27	30	30	20	28	41	**15**	**41**	**28**
CHIPPENHAM 5N	North Wiltshire	R	A	54			46	36	25	33	29	33	37	24	41	**24**	**54**	**36**
CHIPPENHAM 8N	North Wiltshire	R	A	39			35	29	21	30	25		36	42	26	**21**	**42**	**32**
POOLE 3N	Poole	R	A	39	36			41	44	94	35	40	53			**35**	**94**	**48**
POOLE 6N	Poole	R	A	33	38			23	27	43	42	34	40			**23**	**43**	**35**
SALISBURY 6N	Salisbury	R	A	52	37	37	50	40	21	24	34	36	22	45	46	**21**	**52**	**37**
SALISBURY 7N	Salisbury	R	A	53	46	45	43	41	23	36	31	30	37	39	16	**16**	**53**	**37**
BRIDGWATER 1N	Sedgemoor	R	A	33	37			24	17	23	20	27	24	29		**17**	**37**	**26**
BRIDGWATER 6N	Sedgemoor	R	A	34	39			32	20	26	31	38	40	38		**20**	**40**	**33**
KINGSWOOD 1N	South Gloucestershire	R	A	56	56	60	42	47	27	43	28	38	38	48	38	**27**	**60**	**43**
SOUTH GLOUCESTERSHIRE 1N	South Gloucestershire	R	A	52			41	37	22	28	36	49	40	56	64	**22**	**64**	**43**
SOUTH GLOUCESTERSHIRE 2N	South Gloucestershire	R	A	49			33	44				34	36			**33**	**49**	
YATE 1N	South Gloucestershire	R	A	50	40		38	33	19	29	31	23	19	51	42	**19**	**51**	**34**
TOTNES 6N	South Hams	R	A	46	33	39	18	32	22		24	37	29	46	46	**18**	**46**	**34**
TOTNES 9N	South Hams	R	A	38	31		25	31	20	24		33	26	37	46	**20**	**46**	**31**
SWINDON 1N	Swindon	R	A		42	29	34	35	25	24	23	29	31	36		**23**	**42**	**31**
SWINDON 6N	Swindon	R	A	34	49				22				23		29	**22**	**49**	
NEWTON ABBOT 1N	Teignbridge	R	A	43	42	40	22	24	41	22	24	37	29	41	31	**22**	**43**	**33**
NEWTON ABBOT 6N	Teignbridge	R	A	55	52	41	25	12		36	41	35	41	48	54	**12**	**55**	**40**
TEWKESBURY 5N	Tewkesbury	R	A	47	45	45	43	47	31	41	31	40	35	48	53	**31**	**53**	**42**
TEWKESBURY 6N	Tewkesbury	R	A	50	55	44	42	41	44	42	42	41	47	50	51	**41**	**55**	**46**
BRIXHAM 6N	Torbay	R	A	34	42	53	50	33		28	35		34	45	39	**28**	**53**	**39**
TORQUAY 1N	Torbay	R	A	52				41				26	28	40	33	**26**	**52**	**36**
BIDEFORD 6N	Torridge	R	A	29	23	25	20	19		21		20	20	26	32	**19**	**32**	**24**
BIDEFORD 8N	Torridge	R	A	35	32	30	24	31		28		35	28	38	43	**24**	**43**	**32**
WESTBURY 1N	West Wiltshire	R	A	53	47		48	49	34	31	42	33	37			**31**	**53**	**42**
WESTBURY 6N	West Wiltshire	R	A	62	53	42	48	50	47	40	31	18	46	51	51	**18**	**62**	**45**
WEYMOUTH 10N	Weymouth & Portland	R	A	62	66	61	32	29	25	18	26	36	37	44	31	**18**	**66**	**39**
WEYMOUTH 8N	Weymouth & Portland	R	A	72	62	59	33	45	27	31	32	39	29	43	26	**26**	**72**	**41**
JERSEY 6N	Jersey	R	A	52		43	47	42	46	48	41	48	45	49	38	**38**	**52**	**45**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			45	43	44	36	35	27	33	29	33	35	41	38			
	Regional Monthly Min			18	23	24	15	12	13	16	10	18	18	19	16			
	Regional Monthly Max			72	67	68	66	56	54	94	42	50	57	65	64			
	Regional Annual Mean			37														
	Regional Annual Min			24														
	Regional Annual Max			56														
	Number of Sites			50														
	% With Valid Data			96														

Figure B11.1 Annual Average Roadside Nitrogen Dioxide Concentrations in the South West



B11.2 The South West (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for the South West are shown in Figure B11.2. No urban background sites in the South West exceeded the Air Quality Strategy Objective of 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B11.3.

Table B11.3 Urban Background Sites in the South West

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
KEYNSHAM 3N	Bath & NE Somerset	B	A	27	27	21	20	18	8		8	17	13	23	22	**8**	**27**	**18**
MIDSOMER NORTON 4N	Bath & NE Somerset	B	A	29		21	13	14	10	10	12	15	13	14	18	**10**	**29**	**15**
BRISTOL 3N	Bristol	B	A	22	23	29	21	16	11	15		17	18	23	23	**11**	**29**	**20**
BRISTOL 4N	Bristol	B	A	20	35	35	21	24	12	17		27	20	40		**12**	**40**	**25**
CALLINGTON 4N	Caradon	B	A	20	16	13	8	10	7	9	15	9		9	20	**7**	**20**	**12**
SALTASH 3N	Caradon	B	A	27	21	17	10	13	9		9	13		20	24	**9**	**27**	**16**
TRURO 3N	Carrick	B	A	30	17	31	12	12	9	7	11	12	25	23	22	**7**	**31**	**18**
TRURO 4N	Carrick	B	A	26	19	17	14	13	10	21		12	20	24	22	**10**	**26**	**18**
CHRISTCHURCH 3N	Christchurch	B	A	9	10	6	4	7	6	6	6	6	5	12	11	**4**	**12**	**7**
CHRISTCHURCH 5N	Christchurch	B	A	7	9	7	4	10	7	7	8	8	6	11	8	**4**	**11**	**8**
EXMOUTH 3N	East Devon	B	A	25	20	21	11	10	5	7	7	10	12	22		**5**	**25**	**14**
EXMOUTH 4N	East Devon	B	A	25	23	17	10	12	7	7	8	9	15	23	19	**7**	**25**	**14**
EXETER 3N	Exeter	B	A	21	22	26	8	11	7	13	14	12	17	33	19	**7**	**33**	**17**
EXETER 4N	Exeter	B	A	31	20	25	7	14	10	15	16	12		20	16	**7**	**31**	**17**
GLOUCESTER 3N	Gloucester	B	A	36	35	27	17	19	14	12	12	17	23	26	41	**12**	**41**	**23**
GLOUCESTER 4N	Gloucester	B	A	35	38	33	19	18	16	16	17	21	29	39	33	**16**	**39**	**26**
DEVIZES 5N	Kennet	B	A	28	11	24	13	6		14		12	12	9	14	**6**	**28**	**14**
DEVIZES 7N	Kennet	B	A	32	19	34	18	23		11	8	10	17	22	20	**8**	**34**	**19**
MARLBOROUGH 2N	Kennet	B	A	30	12	25	13	10		14	7	12	15	11	15	**7**	**30**	**15**
FROME 3N	Mendip	B	A	41	31	22	17	19	9	15	14	21	18		38	**9**	**41**	**22**
STREET 4N	Mendip	B	A	34	30	19	16	14	7	9	10	16	12		29	**7**	**34**	**18**
WESTON-SUPER-MARE 3N	North Somerset	B	A	33	29	25	23	19	13	12	13		11		30	**11**	**33**	**21**
WESTON-SUPER-MARE 4N	North Somerset	B	A	27	29	23	24	19	10	11	11	13	14	18	19	**10**	**29**	**18**
CHIPPENHAM 6N	North Wiltshire	B	A	34			17	18	12	10	14	16	16	29	28	**10**	**34**	**19**
CHIPPENHAM 7N	North Wiltshire	B	A	33			27	18	11	12	16	21	13	29		**11**	**33**	**20**
POOLE 4N	Poole	B	A	18	20				11	22	15	16	18			**11**	**22**	**17**
POOLE 5N	Poole	B	A	20				13	14	8	13	11	14			**8**	**20**	**13**
SALISBURY 3N	Salisbury	B	A	32	33	33	24	17	12	14	25	20	33	25	29	**12**	**33**	**25**
SALISBURY 4N	Salisbury	B	A	36	29	29	23	24	9	18	16	15	23	31	26	**9**	**36**	**23**
BRIDGWATER 3N	Sedgemoor	B	A	18	20			11	7	7	9	11		20		**7**	**20**	**13**
BRIDGWATER 5N	Sedgemoor	B	A	26	25			10	6	9	10	14		23		**6**	**26**	**15**
FRAMPTON COTTERELL 1N	South Gloucestershire	B	A	31	26	29	20	16	12	12	12	17	21	34	34	**12**	**34**	**22**
KINGSWOOD 3N	South Gloucestershire	B	A	34	26	29			13	13	10		19	34	22	**10**	**34**	**22**
KINGSWOOD 4N	South Gloucestershire	B	A	35	38		28	23	12	12	22	24	19	35	33	**12**	**38**	**25**
YATE 3N	South Gloucestershire	B	A	26	38	29	27	16	10	11	11	18	20	23	35	**10**	**38**	**22**
TOTNES 4N	South Hams	B	A	26	19	15	5	8	7	8	8	11	10	20	28	**5**	**28**	**14**
TOTNES 5N	South Hams	B	A	24	20	14	7	9	6	7	10					**6**	**24**	**12**
SWINDON 4N	Swindon	B	A		29	26	21	20	10	14	17	16	25	34	27	**10**	**34**	**22**
SWINDON 5N	Swindon	B	A	30	36	24	19	23	12	17	16	14	17	33	29	**12**	**36**	**23**
NEWTON ABBOT 5N	Teignbridge	B	A	28	25	20	10	12	8	7	12	16	21			**7**	**28**	**16**
NEWTON ABBOT 7N	Teignbridge	B	A	20	13	16	7	9	9	9	9	8	12	18	29	**7**	**29**	**13**
TEWKESBURY 3N	Tewkesbury	B	A	37	27	24	16	18	12	15	11	19	22	28	34	**11**	**37**	**22**
TEWKESBURY 4N	Tewkesbury	B	A	31	30	22	14		7	16	13	17	22	26	34	**7**	**34**	**21**
BRIXHAM 5N	Torbay	B	A	14	24	12	9	12	7	7	8	6	11	17		**6**	**24**	**11**
TORQUAY 3N	Torbay	B	A			25			18					25		**18**	**25**	
BIDEFORD 4N	Torridge	B	A	4	14	13	7	8	6	7	6	7	9	14	24	**4**	**24**	**10**
BIDEFORD 5N	Torridge	B	A	21	12	11	4	6	4	7	5	6	7	11	21	**4**	**21**	**9**
WESTBURY 3N	West Wiltshire	B	A	24	25	17	14	20	9	13		9	8	22	22	**8**	**25**	**17**
WESTBURY 5N	West Wiltshire	B	A	26	28	23	16	21	12	9	8	17	15	22	22	**8**	**28**	**18**
WEYMOUTH 4N	Weymouth & Portland	B	A	28	22	21	6	9	6	5	6	9	9	15	18	**5**	**28**	**13**
WEYMOUTH 9N	Weymouth & Portland	B	A	31	27	11	9	5	13	10	14	15	16	30	21	**5**	**31**	**17**
JERSEY 7N	Jersey	B	A	27	24	20	15	16	11	14	10	15	16	24	21	**10**	**27**	**18**
JERSEY 8N	Jersey	B	A	18	13	9	7	11	9	8	7	7	8	13	14	**7**	**18**	**10**

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
REGIONAL SUMMARY				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**			
	Regional Monthly Mean			26	24	21	14	14	10	11	11	14	16	23	24			
	Regional Monthly Min			4	9	6	4	5	4	5	5	6	5	9	8			
	Regional Monthly Max			41	38	35	28	24	18	22	25	27	33	40	41			
	Regional Annual Mean			17														
	Regional Annual Min			7														
	Regional Annual Max			26														
	Number of Sites			53														
	% With Valid Data			98														

Figure B11.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in the South West

B12.1 Northern Ireland (Roadside Sites)

Roadside sampler locations and annual average NO_2 concentrations for Northern Ireland are shown in Figure B12.1. Table B12.1 identifies all sampler locations with annual average NO_2 concentrations greater than 40µgm^{-3}. The validated 2001 dataset for the region is detailed in Table B12.2.

Table B12.1 Roadside Sites in Northern Ireland with High Concentrations according to the Air Quality Strategy Objectives

Sites > 40 µgm^{-3} Air Quality Strategy Objective NO_2 Annual Mean
Londonderry 8N (62µgm^{-3})
Londonderry 9N (48µgm^{-3})
Newry 6N (42µgm^{-3})

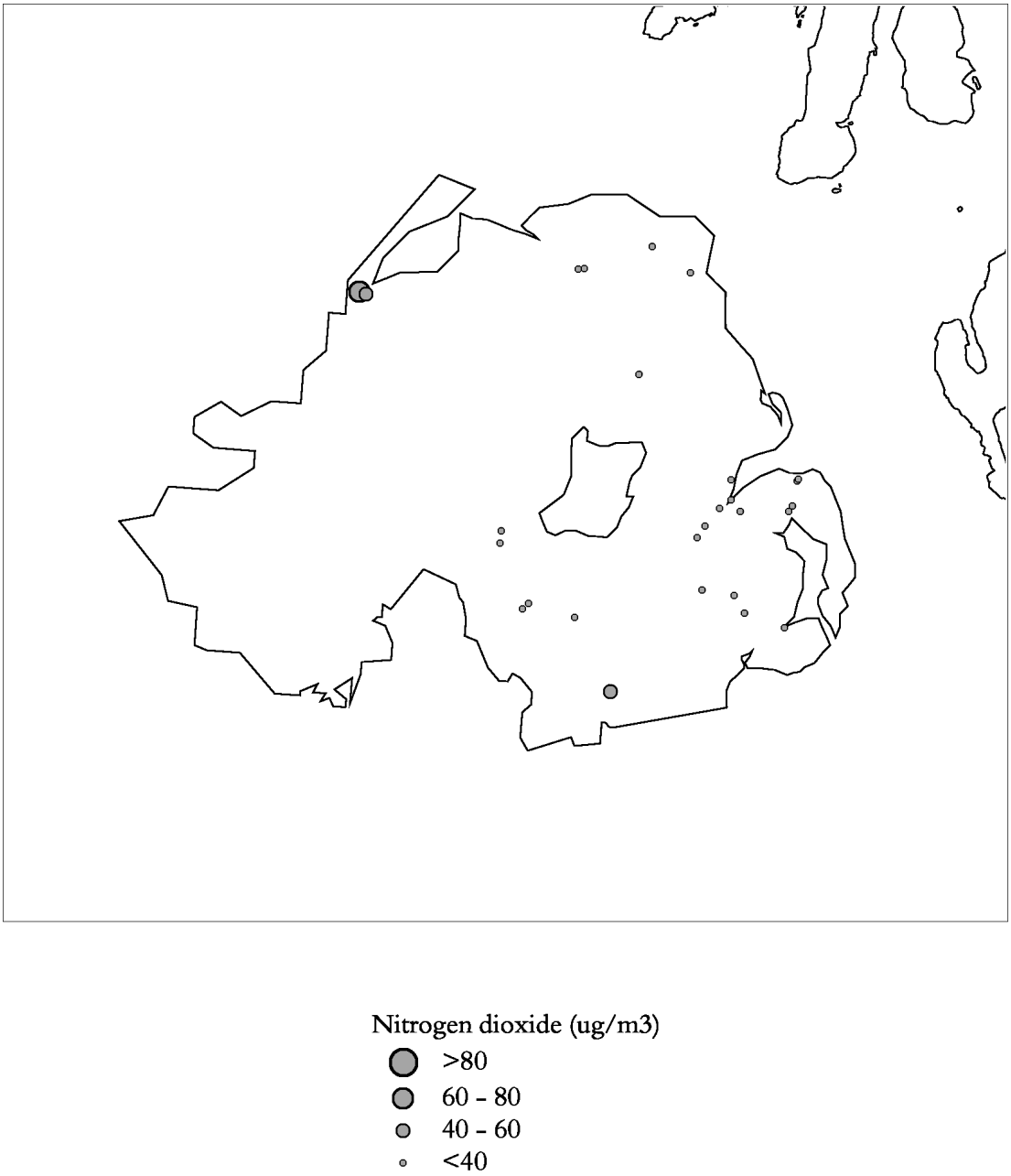
Table B12.2 Roadside Sites in Northern Ireland

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
NEWTOWNARDS 1N	Ards	R	A	45	52		30	46		19		26	24	16	16	**16**	**52**	**30**
NEWTOWNARDS 7N	Ards	R	A	41	46		25	28		15		23	28	15	14	**14**	**46**	**26**
ARMAGH 1N	Armagh	R	A	50	51	32	36	32	28	26	28		45	42	42	**26**	**51**	**37**
ARMAGH 5N	Armagh	R	A	50	43	41	40	45	35	30	34	32	36	46	44	**30**	**50**	**40**
BALLYMENA 2N	Ballymena	R	A	34	61	33	31			12	17	27	6	19	40	**6**	**61**	**28**
BALLYMENA 5N	Ballymena	R	A						10	15	17	15	29	27	33	**10**	**33**	**21**
BALLYMONEY 1N	Ballymoney	R	A	12	10	20	8		21	23	22	34	18	30	38	**8**	**38**	**21**
BALLYMONEY 5N	Ballymoney	R	A							18	13	10	5	6	15	**5**	**18**	**11**
BELFAST 1N	Belfast	R	A	44	31	54	29		19	34	33	40	44	21	50	**19**	**54**	**36**
BELFAST 5N	Belfast	R	A	54	34	42	25			27	33	46		36	34	**25**	**54**	**37**
CARRICKFERGUS 1N	Carrickfergus	R	A		30	9	9	17	16	9	17	17	14	22	20	**9**	**30**	**16**
CASTLEREAGH 1N	Castlereagh	R	A	16	17	14	9	9	15	15			16	23	25	**9**	**25**	**16**
CRAIGAVON 5N	Craigavon	R	A			18	12		19	19	12	31	16	7	23	**7**	**31**	**17**
CRAIGAVON 9N	Craigavon	R	A			38	12	30	17	28	30	34	28	12	9	**9**	**38**	**24**
BALLYNAHINCH 8N	Down	R	C	17		14	16	18	27	16	27	24	21	32	25	**14**	**32**	**22**
DOWNPATRICK 1N	Down	R	A	21	29	21	21	26	30	21	32	29	32	32	29	**21**	**32**	**27**
DUNGANNON 1N	Dungannon	R	A	10	31	10	6	27	15	31	13	17	15	21	23	**6**	**31**	**18**
DUNGANNON 5N	Dungannon	R	A	33	29	33	19	23	13	23	4	21	8	13	23	**4**	**33**	**20**
LISBURN 1N	Lisburn	R	A	26	25	16	12	20	23	13	30	26	25	35	32	**12**	**35**	**24**
LISBURN 7N	Lisburn	R	A	20	20	19	8	14	13	9	16	17	14	20	29	**8**	**29**	**17**
LONDONDERRY 8N	Derry City Council	R	A	83	69	53	64	66	50	46	48	57	65	72	73	**46**	**83**	**62**
LONDONDERRY 9N	Derry City Council	R	A	56	53	53	63	48	35	36	38		47			**35**	**63**	**48**
NEWRY 10N	Newry & Mourne	R	A	55	48	54	25		19	17	40	38	55	8	34	**8**	**55**	**36**
NEWRY 6N	Newry & Mourne	R	A	40	50	31	29	75	27	40	42	55	42	33	38	**27**	**75**	**42**
NEWTOWNABBEY 10N	Newtownabbey	R	C	42	28	24	28	43	21	26	24	27	33	25		**21**	**43**	**29**
NEWTOWNABBEY 11N	Newtownabbey	R	A												28	**28**	**28**	
NEWTOWNABBEY 12N	Newtownabbey	R	A												19	**19**	**19**	
NEWTOWNABBEY 1N	Newtownabbey	R	A	37	36	30	23	41	24	33		32	41	30	18	**18**	**41**	**31**
BANGOR NI 6N	North Down	R	A	12	13	11	14	17	15	12	17	24	15	22	24	**11**	**24**	**16**
BANGOR NI 7N	North Down	R	A	16	16	13	10	16	15	14	20	16	15	21	22	**10**	**22**	**16**
OMAGH 1N	Omagh	R	A								51					**51**	**51**	
OMAGH 7N	Omagh	R	A								22					**22**	**22**	

REGIONAL SUMMARY		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Regional Monthly Mean	35	36	28	23	32	22	22	26	29	27	25	29
	Regional Monthly Min	10	10	9	6	9	10	9	4	10	5	6	9
	Regional Monthly Max	83	69	54	64	75	50	46	51	57	65	72	73
	Regional Annual Mean	27											
	Regional Annual Min	11											
	Regional Annual Max	62											
	Number of Sites	32											
	% With Valid Data	88											

Figure B12.1 Annual Average Roadside Nitrogen Dioxide Concentrations in Northern Ireland



B12.2 Northern Ireland (Urban Background Sites)

Urban background sampler locations and annual average NO_2 concentrations for Northern Ireland are shown in Figure B12.2. No urban background sites in Northern Ireland exceeded the Air Quality Strategy Objective of 40μgm^{-3}. The validated 2001 dataset for the region is detailed in Table B12.3.

Table B12.3 Urban Background Sites in Northern Ireland

Nitrogen Dioxide Concentrations 2001 (ugm^{-3})

Site Name	Local Authority	Location	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Min	Max	Mean
NEWTOWNARDS 3N	Ards	B	A	16	17		9	10		5		9	8	6	6	**5**	**17**	**9**
NEWTOWNARDS 6N	Ards	B	A	17	22		5	10				7	9	6	7	**5**	**22**	**10**
ARMAGH 3N	Armagh	B	A	27	20	21	15	17	11	9	12	13	15	17	21	**9**	**27**	**16**
ARMAGH 4N	Armagh	B	A	31	26	24	19	20	13	12	15	17	16	23	28	**12**	**31**	**20**
BALLYMENA 1N	Ballymena	B	A		25	15	10	15	4	4	12	8	10	12	31	**4**	**31**	**13**
BALLYMENA 4N	Ballymena	B	A	19	15	19	6	12	12	15	8	6	12	15	38	**6**	**38**	**15**
BALLYMONEY 3N	Ballymoney	B	A	22	21	11	10		24	36	10	10	14	13	14	**10**	**36**	**17**
BALLYMONEY 4N	Ballymoney	B	A	20	16	12	9		13	23	8	10	11	7	17	**7**	**23**	**13**
BELFAST 3N	Belfast	B	A	29	33	50	10		15	17	27	23	31	27	33	**10**	**50**	**27**
BELFAST 4N	Belfast	B	A	38	25	29	10		13	17	15	19	21	12	31	**10**	**38**	**21**
CARRICKFERGUS 3N	Carrickfergus	B	A	7	7	7		5	6	4	9	7	8	9	12	**4**	**12**	**7**
CARRICKFERGUS 4N	Carrickfergus	B	A	16	10	7	5	8	8	7	12	7	11	10	14	**5**	**16**	**10**
CASTLEREAGH 5N	Castlereagh	B	A	11	13	9	6	6	9	9	9	12			20	**6**	**20**	**10**
CASTLEREAGH 6N	Castlereagh	B	A	11	12	9	7	7	7	7				17	17	**7**	**17**	**10**
CRAIGAVON 7N	Craigavon	B	A			18	9	20	14	11	5	22	4	7	15	**4**	**22**	**13**
CRAIGAVON 8N	Craigavon	B	A	9		8	6	8	12	17	6	21	13		17	**6**	**21**	**12**
DOWNPATRICK 3N	Down	B	A	9	11	6	4	5	6	5	6	8	4	10	13	**4**	**13**	**7**
DOWNPATRICK 4N	Down	B	A	6	7	4					6	6	5	7	10	**4**	**10**	**6**
DUNGANNON 3N	Dungannon	B	A	29	12	29	16	15	13	21	10	10	8	12	15	**8**	**29**	**16**
DUNGANNON 4N	Dungannon	B	A	21	12	21	8	15	8	23	6	19	4	10	19	**4**	**23**	**14**
LISBURN 3N	Lisburn	B	A	12	8	8	5	6	9	6	9	7	12	13	19	**5**	**19**	**10**
LISBURN 6N	Lisburn	B	A	10	8	8	5		7						18	**5**	**18**	**9**
LONDONDERRY 10N	Derry City Council	B	A	34	25	28		24	13	12	19	17	28	32	34	**12**	**34**	**24**
LONDONDERRY 11N	Derry City Council	B	A									13	16	20	26	**13**	**26**	
NEWRY 11N	Newry & Mourne	B	A	23	31			17	15	12	12	13	10	8	21	**8**	**31**	**16**
NEWRY 9N	Newry & Mourne	B	A	4	14	12	6	34	15	12	15	12	8	12	13	**4**	**34**	**13**
NEWTOWNABBEY 3N	Newtownabbey	B	C	29	22	18	12	23		10	10	8	22	13		**8**	**29**	**17**
NEWTOWNABBEY 4N	Newtownabbey	B	C	35	26	27	14		20	16	16	15	28	15		**14**	**35**	**21**
BANGOR NI 4N	North Down	B	A	11	12	7	5	9	9	6	9	8	10	13	16	**5**	**16**	**10**
BANGOR NI 8N	North Down	B	A	11	12	7				11	9	8	6	16	17	**6**	**17**	**11**
OMAGH 5N	Omagh	B	A								7					**7**	**7**	
OMAGH 6N	Omagh	B	A								10					**10**	**10**	

REGIONAL SUMMARY		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Regional Monthly Mean	19	17	16	9	14	12	12	11	12	13	13	19
	Regional Monthly Min	4	7	4	4	5	4	4	5	6	4	6	6
	Regional Monthly Max	38	33	50	19	34	24	36	27	23	31	32	38
	Regional Annual Mean	14											
	Regional Annual Min	6											
	Regional Annual Max	27											
	Number of Sites	32											
	% With Valid Data	91											

Figure B12.2 Annual Average Urban Background Nitrogen Dioxide Concentrations in Northern Ireland