



LOCAL AIR QUALITY MANAGEMENT PROGRESS REPORT 2005

Part IV of the Environment Act 1995

Prepared by:

**Arun District Council
with assistance from the
Sussex Air Quality Steering Group**

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SUMMARY

Local Authorities in the UK have the statutory duty to review and assess air quality on a regular basis. Following an Updating and Screening Assessment (USA) of local air quality in Arun in 2003, a Progress Report was produced in 2004 that identified there were no areas or pollutants of concern in the District at that time.

This Progress Report details the latest progress made towards implementing local air quality management within the District, and maintaining pollutant concentrations below the national air quality objectives. It utilises new monitoring results (available since the 2004 Progress Report) to provide a check on air quality within Arun District before the next Updating and Screening Assessment in 2006.

It is concluded that none of national air quality objectives are likely to be exceeded in 2005 or future years within Arun District.

1.0 Introduction

Under the Environment Act 1995, local authorities are required to Review and Assess (R&A) air quality on a regular basis (*EA 1995*). A *review* of air quality means a consideration of the levels of pollutants in the air for which objectives are prescribed in Regulations (*AQRE 2000*), and estimations of likely future levels. An ‘assessment’ of air quality is the consideration of whether estimated levels for the relevant future period are likely to exceed the levels set in the objectives.

The first review and assessment round was completed in May 2000. The main conclusion was that the national air quality objectives were not likely to be exceeded at any locations in the District.

This first round of R&A constitutes a benchmark against which Arun District Council can measure future progress in making improvements to the local air quality.

In 2003, an Updating and Screening Assessment (USA) was undertaken to account for changes to air quality objectives, monitoring data and pollutant sources since the Review and Assessment. The USA did not identify any changes to local air quality which would lead to a risk of any of the air quality objectives being exceeded.

Guidance issued by the Department for Environment, Food and Rural Affairs (DEFRA) requires Local Authorities who found no exceedences of the air quality objectives in the last Updating and Screening Assessment (USA) to produce Progress Reports (PR) of local air quality by the end of April 2004 and 2005 (*DEFRA 2003*). Arun District Council’s 2004 Progress Report concluded that there were no areas or pollutants of concern in the District at that time.

This Progress Report is intended to identify those aspects that may have changed since 2004. It concentrates on the progress in implementing local air quality management and achieving or maintaining concentrations below the air quality objectives. These aims are met by assessing updated monitoring data and the impacts of new local developments that could affect air quality.

A summary will be provided of all available monitoring data, indicating monitored pollutants at specific locations within the District. The monitored data will be presented in a suitable format for comparison with the relevant air quality objectives.

2.0 National Air Quality Objectives

The air quality objectives set out in the Air Quality Regulations provide the statutory basis for the system of Local Air Quality Management (LAQM). For each objective, local authorities have to consider present and likely future air quality, and assess whether the objectives are likely to be achieved in time.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.5 μgm^{-3}	Running annual mean	31.12.2003
	5 μgm^{-3}	Annual mean	31.12.2010
1,3 Butadiene	2.25 μgm^{-3}	Running annual mean	31.12.2003
Carbon monoxide	10.0 μgm^{-3}	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 μgm^{-3}	Annual mean	31.12.2004
	0.25 μgm^{-3}	Annual mean	31.12.2008
Nitrogen dioxide	200 μgm^{-3} not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 μgm^{-3}	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 μgm^{-3} not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40 μgm^{-3}	Annual mean	31.12.2004
Sulphur dioxide	350 μgm^{-3} not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125 μgm^{-3} not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266 μgm^{-3} not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

3.0 Information About The Arun District

Arun District is a mixed urban / rural area covering 85 square miles, and has a population of over 140,000. Littlehampton and Bognor Regis are the main urban centres and the principal administrative and commercial centres within the district.

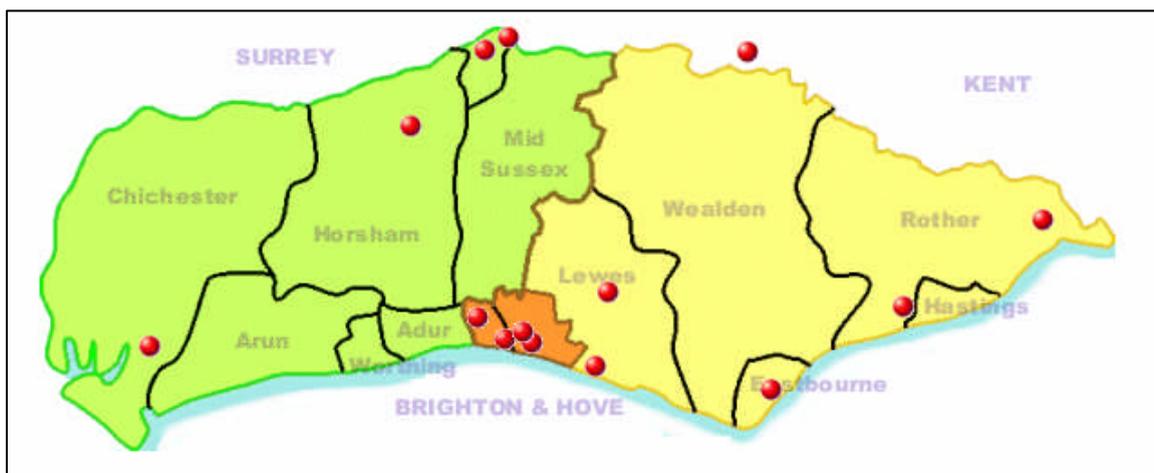
Arun District is well served by transport links to London, Gatwick Airport, the M25, the coast and Europe. A network of subsidiary routes connects the villages and small centres of population.

A large proportion of the district is composed of countryside with a varied landscape of woodland, downland, river valleys and meadows being represented. Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, and Sites of Nature Conservation Importance overlap the area. Agriculture remains a major user of land within the District. Map 1, Appendix I shows the District boundaries and major urban and rural centres.

4.0 New Monitoring Results

The District is integrated in the Sussex wide air quality network, which is co-ordinated by the Sussex Air Quality Steering Group (SAQSG). Data from the automatic analysers are managed, quality assured and ratified by Kings College London Environmental Research Group (ERG). Data is collected by telemetry and validated against local site operators calibration results, in addition ERG ratify the data sets after 6 monthly services and provide SAQSG members with fully QA/QC ratified data set.

The co-ordinated approach provides ratified data sets across Sussex to all participants which enables data to be shared and enables authorities to have greater access to data in a cost effective way. The present SAQSG network (March 2005) is presented in Map 1.



Map 1: SAQSG automatic monitoring network sites (March 2005).

The District does not currently operate any Air Quality Monitoring Stations (AQMS).

4.1 Updated Data for Carbon Monoxide

Available monitoring data (obtained with automatic infrared analysers) suggest that the carbon monoxide objective is unlikely to be exceeded at any location in Sussex. Arun District Council does not undertake carbon monoxide monitoring.

4.1.1 Data

The closest automatic monitoring site to the District/Borough is at the junction of Marlborough Pl. and Church St. in Hove (Grid Ref. E 531300 N104300). The monitoring for 2002 –2004 indicated no exceedence of the $10\mu\text{g}\text{m}^{-3}$ objective.

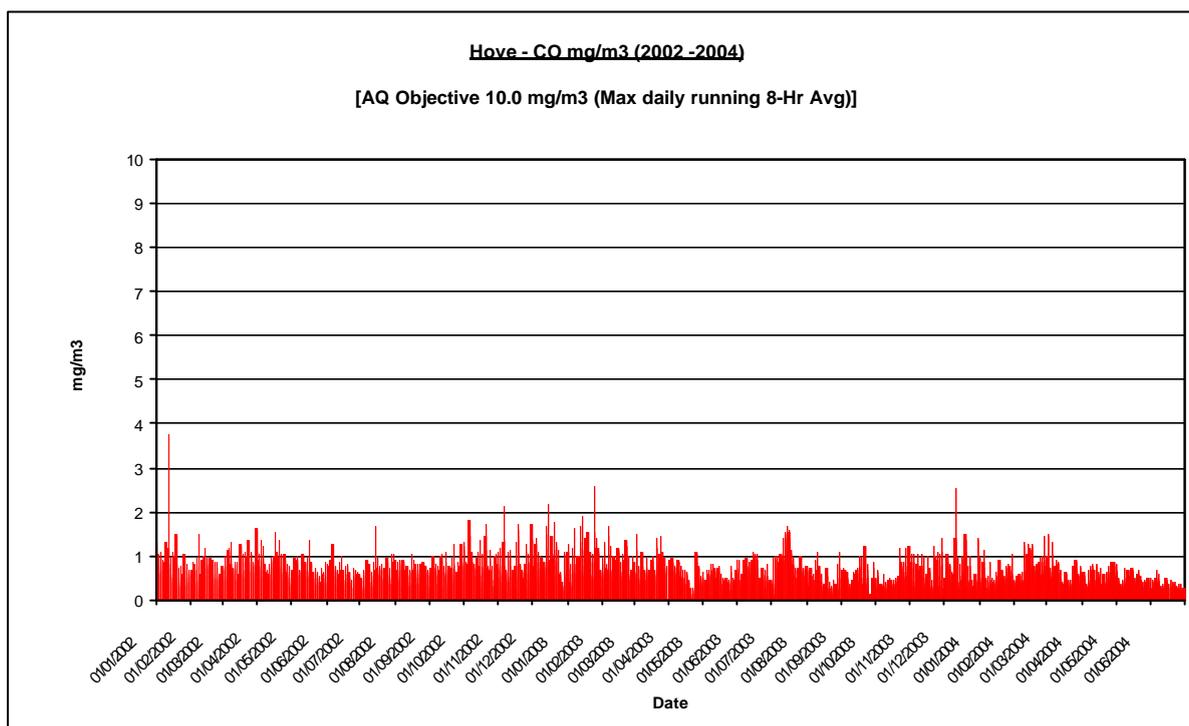


Figure 1: Hove AURN 2002-2004 carbon monoxide (CO) results

4.1.2 Conclusion

It is unlikely that the air quality objective for carbon monoxide will be exceeded in 2005 or future years.

4.2 Updated Data for Benzene

Benzene is monitored at a number of sites in Sussex, both at the roadside and in background locations, using diffusion or pumped tubes. However, Arun District Council does not undertake benzene monitoring.

The nearest national network sites where automatic monitoring (using diffusion or pumped tubes) for benzene is undertaken are: Hove (roadside), Portsmouth (urban background) and Southampton (urban centre). There were no recorded exceedences of the maximum running annual mean for benzene at any of the above sites in 2004.

The assessment carried out by DEFRA for the 2010 objective for benzene suggests there may be a few locations close to busy roads, in areas with high background concentrations, that may be at risk of exceeding the objective. No such locations were identified in the District during the Updating and Screening Assessment of May 2003.

4.2.1 Data

Figure 2 represents the diffusion and pumped monitoring results from 2002 to 2004 for the Hove (roadside) site.

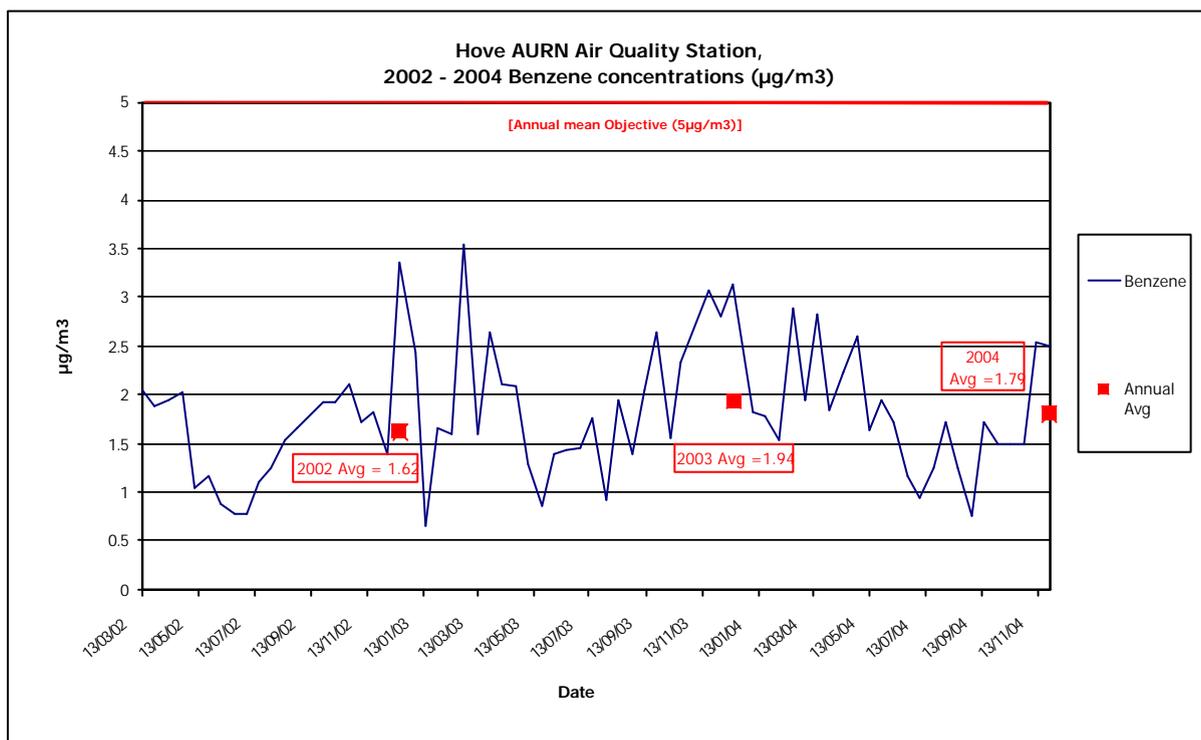


Figure 2: Hove AURN 2002-2004 Benzene results

4.2.2 Conclusion

It is unlikely that the air quality objective for benzene will be exceeded in 2005 or 2010.

4.3 Updated Data for 1,3-Butadiene

Concentrations of 1,3-butadiene are measured at a limited number of UK national network sites. No local monitoring of 1,3-butadiene is currently being undertaken by any of the local authorities in Sussex.

The nearest national network site where automatic monitoring for 1,3-butadiene is undertaken is Southampton (urban centre). There were no recorded exceedences of the maximum running annual mean concentration ($2.25\mu\text{g}\text{m}^{-3}$) for 1,3-butadiene for the period between 1999 and 2000 at the above site.

No industrial sources handling, storing or emitting 1,3-butadiene were identified during the first round of review and assessment as likely to give rise to exceedences of the running annual mean objective. However, a permit for a new foundry is currently being processed by the Council (as described later in this report).

4.3.1 Conclusion

It is unlikely that the air quality objective for 1,3-Butadiene will be exceeded in 2005 or future years.

4.4 Updated Data for Lead

There is currently no local monitoring of lead in any of the local authorities in Sussex. No industrial sources were identified during the first round of review and assessment as likely to give rise to exceedences of the annual mean objective for lead. New sources introduced into the District or existing sources with substantially increased emissions have not been identified.

4.4.1 Conclusion

It is unlikely that the air quality objective for Lead will be exceeded in 2005 or 2008.

4.5 Updated Data for Nitrogen Dioxide

Nitrogen dioxide (NO₂) is the pollutant for which there is the most local monitoring. This is because of the availability of cheap and relatively simple monitoring equipment in the form of NO₂ diffusion tubes. Arun District Council operates thirteen diffusive sampling sites (8 roadside, 5 urban background). The distribution of diffusion tubes are detailed in Appendix II. Four of the thirteen sites are also included in the national NO₂ diffusion survey.

The NO₂ diffusion tubes are supplied and analysed by South Yorkshire (including former Rotherham Metropolitan Borough Council) laboratory. The NO₂ tube preparation method used is 50% triethanolamine (TEA) in Acetone, and the tubes are exposed over a monthly period. Details of the QA/QC and analysis methods for the NO₂ diffusion tube data are given in Appendix III.

4.5.1 Bias Correction

In accordance with section 6.25 and Box 6.2 (A) of technical guidance document LAQM.TG (03), diffusion tube monitoring data must be appropriately corrected to account for any laboratory bias. Information published by Air Quality Consultants Ltd (on behalf of DEFRA) at <http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls> provides bias correction factors for collocation studies involving specific laboratories. The following overall bias adjustment factors have been provided for Rotherham MBC (Rotherham MBC/South Yorkshire in 2003) laboratory:

<i>Year</i>	<i>Bias Adjustment Factor</i>
2000	0.85
2001	0.87
2002	0.90
2003	0.90
2004	0.82

Arun District Council does not undertake any collocation studies and therefore the annual average monitoring data for each NO₂ tube has been corrected using the laboratory bias adjustment factors provided. For 2004, the bias adjustment factor was calculated from only one study. It is advised that “*Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution*” (UWE).

4.5.2 Monitoring Data

Year of Data	Background Sites				
	Thatchway Close	Westlands	King St	Priory Rd	Mornington Crescent
2000	18	18	22	19	18
2001	21	20	22	20	23
2002	17	23	22	17	20
2003	19	21	22	19	18
2004	16	18	18	16	18

Table 1: Annual mean NO₂ concentrations at background sites (using bias corrected data (µg m⁻³))

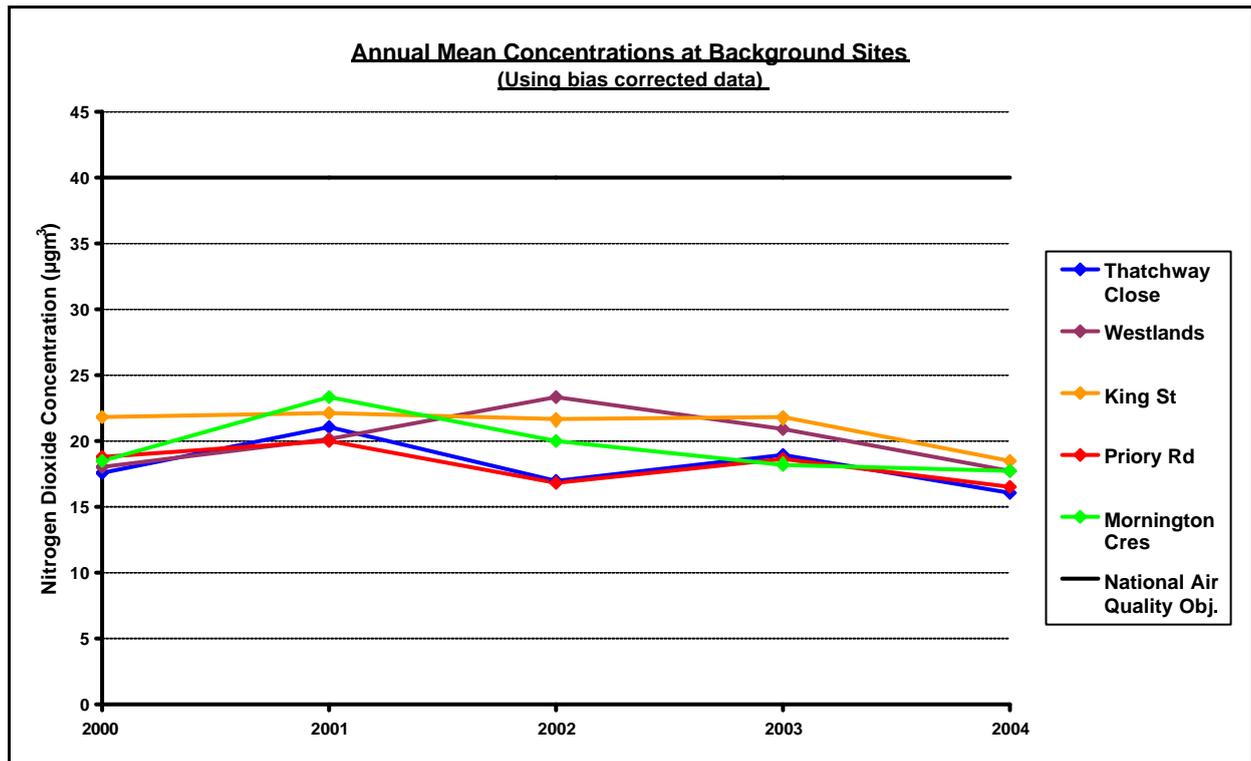


Figure 3: Annual mean NO₂ concentrations at background sites (using bias corrected data)

Year of Data	Roadside Sites						
	Felpham Way	Worthing Rd	The Causeway(1)	Canada Grove	Bognor High St	Terminus Rd	Arundel High St
2000	Not sampled	Not sampled	Not sampled	30	32	25	26
2001	38	34	43	30	33	28	25
2002	36	29	40	24	30	25	23
2003	39	33	45	30	32	26	25
2004	35	29	37	26	29	23	22

Table 2: Annual mean NO₂ concentrations at roadside sites (using bias corrected data (µg^m⁻³))

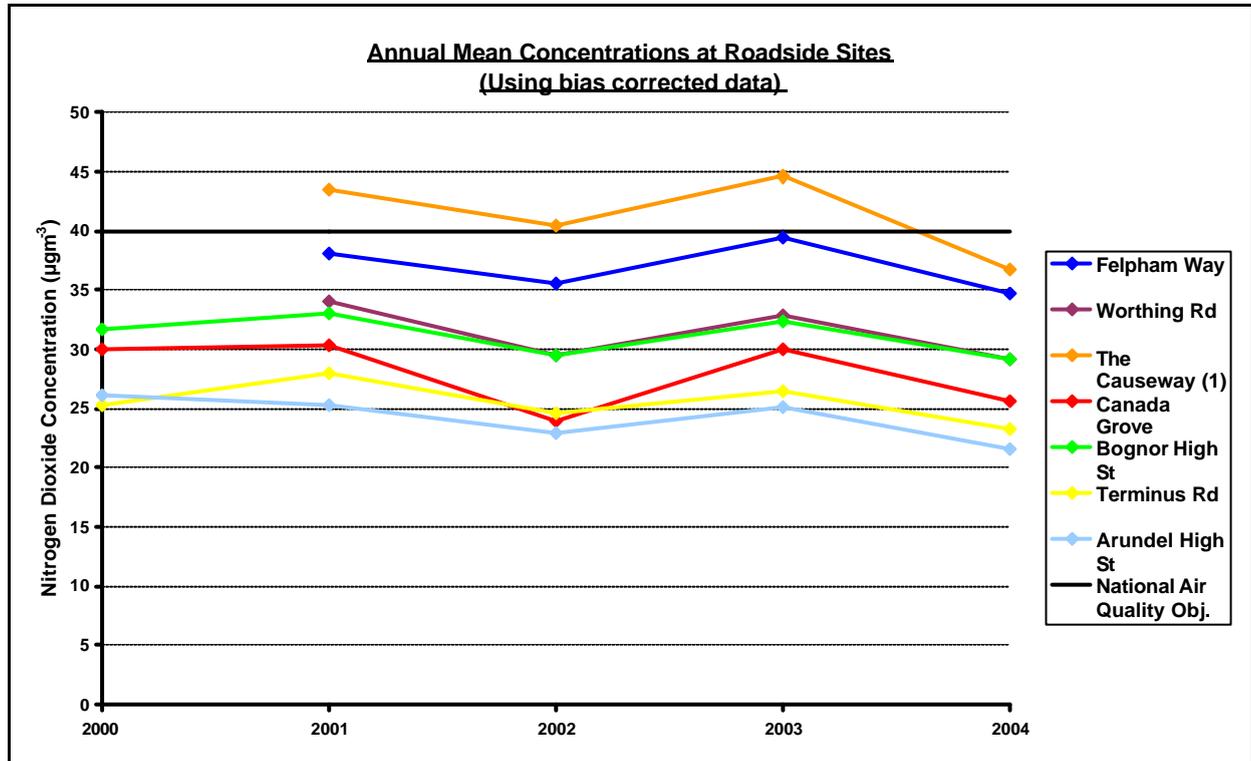


Figure 4: Annual mean NO₂ concentrations at roadside sites (using bias corrected data)

4.5.3 Estimated Future NO₂ Concentrations

Following the procedure as set out in Boxes 6.2 and 6.7 of technical guidance document LAQM.TG(03), the bias corrected monitoring data has been adjusted to provide an estimate for the annual mean NO₂ concentration in 2005 and 2010.

<i>Projected Year</i>	Background Sites				
	<i>Thatchway Close</i>	<i>Westlands</i>	<i>King St</i>	<i>Priory Rd</i>	<i>Mornington Crescent</i>
2005	16	17	18	16	17
2010	13	15	16	14	15

Table 3: Annual mean NO₂ concentrations at background sites, estimated for 2005 and 2010 (using bias corrected data (μgm^{-3}))

The results for background NO₂ concentrations in 2005 and 2010 are estimated to be well below the annual mean objective of $40\mu\text{gm}^{-3}$.

<i>Projected Year</i>	Roadside Sites						
	<i>Felpham Way</i>	<i>Worthing Rd</i>	<i>The Causeway(1)</i>	<i>Canada Grove</i>	<i>Bognor High St</i>	<i>Terminus Rd</i>	<i>Arundel High St</i>
2005	34	28	36	25	28	23	21
2010	28	23	29	21	23	19	17

Table 6. Annual Mean NO₂ Concentrations at Roadside Sites, Estimated for 2005 and 2010 (using corrected data (μgm^{-3}))

The results for roadside NO₂ concentrations in 2005 and 2010 are estimated to be below the annual mean objective of $40\mu\text{gm}^{-3}$.

4.5.4 Addition Diffusion Tube at The Causeway, Arundel

After submission of Arun's Progress Report in 2004, the following comments were received from DEFRA: "It is suggested that the diffusion tube situated at the Causeway is moved to the façade of the closest building (if practicable) or an extra site included in order that the Council satisfies itself that there is no likely exceedence of the annual mean nitrogen dioxide objective at this location."

It was not possible to move the original diffusion tube to the façade of the closest . However, an extra tube was included at The Causeway from September 2004 onwards. The average concentration for "The Causeway(2)" (calculated from the three months' available data), following bias adjustment, is **44.3mgm^{-3}** .

Box 2.1 of the Progress Report Guidance LAQM.PRG(03) advises that "where data are available for less than 9 months, then they should be adjusted to provide an estimate of the annual mean using the procedure set out in LAQM.TG(03)".

In accordance with LAQM.TG(03) the annual mean (Am) and period mean (Pm) of the four nearest background sites were used to calculate an adjustment factor (Ra):

<i>Long Term Site</i>	<i>Annual Mean (Am) 2004</i>	<i>Period Mean (Pm) Aug-Dec 2004</i>	<i>Ratio (R)</i>
Thatchway Close	16.07	19.13	0.840
Westlands	17.77	19.41	0.915
King Street	18.49	22.14	0.835
Priory Road	16.48	18.86	0.874
			Average (Ra) = 0.866

Table 7: Generation of adjustment factor for estimation of annual mean nitrogen dioxide concentrations from short-term monitoring data

The adjusted annual mean for “The Causeway(2)” is therefore:

$$44.3 \text{ (M)} \times 0.866 \text{ (Ra)} = \mathbf{38.4 \text{ mgm}^{-3}}$$

This provides estimated future concentrations at “The Causeway(2)” of:

$$\mathbf{37 \text{ mgm}^{-3} \text{ for 2005}}$$

$$\mathbf{31 \text{ mgm}^{-3} \text{ for 2010}}$$

Clearly, the annual mean concentration at “The Causeway(2)” site in 2004 is very close to the objective level of $40 \mu\text{g}^{-3}$. However, section 1.20 LAQM.TG(03) states that: “*it is considered appropriate to measure at the **building façade** to represent relevant exposure...(and) it is considered reasonable to select the façade of residential properties closest to the road as a representative location to assess exposure for pollutants with an annual mean objective*”.

Furthermore, advice given in the Frequently Asked Questions section of the Air Quality Review and Assessment Website (UWE) suggests that concentrations will be slightly lower at the building façade.

Given that the distance from the façade of the nearest residential properties (1-8 Causeway Villas) to the tube located at “The Causeway(2)”, Arundel, is 8 metres it can be assumed that concentrations at this position would be even further below the objective level.

This section of road was identified as significant using the DMRB model during the Review and Assessment (2000) and was subjected to a Stage 3 assessment using the BREEZE ROADS model (*Arun*²). It was also assessed using the updated version of DMRB (1.01) during the 2003 Updating and Screening Assessment (*Arun*³).

On both occasions, the results suggested that the NO₂ objective for 2005 and 2010 would not be exceeded. In view of this, together with the result obtained from assessing the monitoring data above, it has been decided not to proceed to a detailed assessment.

In order to get a more detailed picture of conditions at this site, arrangements are currently being made to install a more accurate continuous NO₂ analyser at The Causeway in August 2005, for a fixed term period.

4.5.6 Conclusion

It is unlikely that the air quality objective for Nitrogen Dioxide will be exceeded in 2005 or 2010.

4.6 Updated Data for Sulphur Dioxide

Automatic sulphur dioxide monitoring is undertaken at two permanent stations in Sussex located in Hove (roadside) and Lullington Heath (rural). The obtained data do not indicate any exceedence of the national objectives.

Large boiler plant ($>5 \text{ MW}_{\text{thermal}}$) can give rise to high short-term concentrations, with the risk that the 15-minute objective may be exceeded. Following investigation during the first round of Review and Assessment, no boiler plant $>5 \text{ MW}_{\text{thermal}}$ that burn coal or fuel oil were identified.

There are no significant shipping or railway locomotive emissions in the District.

4.6.1 Conclusion

It is unlikely that the air quality objective for Sulphur Dioxide will be exceeded in 2005.

4.7 Updated Data for Particulate Matter (PM₁₀)

Arun District Council does not carry out any monitoring for PM₁₀.

The nearest national network sites where automatic monitoring for PM₁₀ is undertaken are: Portsmouth (urban background) and Southampton (urban centre). Between 1999-2001 (2001 data only for Portsmouth) the number of exceedence of the 24-hour PM₁₀ objective was well below the allowed number (35) of exceedence.

The nearest monitoring site to the Arun District is in Chichester. Chichester District Council operates an automatic (TEOM) monitor, permanently located on A27 Ring Road, Chichester (Grid Ref. E485887, N103802), giving hourly readings of PM₁₀ concentration. The obtained data have been used to estimate gravimetric concentrations, which were then ratified. The annual average for the year 2004 was 28µgm⁻³, well below the annual mean national objective of 40µgm⁻³. The number of exceedences of the 24-hour PM₁₀ objective for the same year was 4, thus below the allowed number of exceedences (35).

4.7.1 Conclusion

It is unlikely that the air quality objective for PM₁₀ will be exceeded in 2004 or future years.

4.8 Updated Data for Other Pollutants

The District does not currently monitor for any other pollutants. Ozone concentrations in the District were measured at Burpham (rural location) between 1995 and 1999. Monitoring data from this period can be found at <http://www.arun.gov.uk/airquality>.

Previous monitoring data in Arun confirmed that ozone levels in the district are comparable to those measured at Lullington Heath, the Government's automatic rural ozone monitoring site near Eastbourne.

The District will be taking part in a Sussex wide ozone monitoring project this year.

5.0 New Local Developments

5.1 New Developments

The District has had no new major developments that may have an impact on local air quality.

A future development is planned for the west of the District to include approximately 1500 new houses north of Bognor Regis and Felpham and a relief road around Bognor Regis.

An Environmental Impact Assessment carried out as part of the planning application for this development looked at potential effects on local air quality. It was concluded that *“...in the years 2007, 2010, and 2011 with the development in place, no exceedences of the Air Quality Strategy objectives will occur at existing potentially sensitive receivers. The impact of the proposed development on baseline air pollutant concentrations at existing and proposed properties is considered to be minor moderate at worst.”*

5.2 Industrial Sources

Industrial sources are currently controlled under the Environmental Protection Act 1990 and the Pollution Prevention and Control Act 2000, and are classified into either Part A (large industries such as power stations and chemical works) or Part B/A2 processes (such as crematoria, petrol stations, quarries, etc.) for guidance and control.

A permit application for an Aluminium Foundry, which falls under Part B of the Local Air Pollution Prevention and Control (LAPPC) regulations, is currently being processed by the Council. The Process Guidance Notes relevant to this type of industry (*DEFRA 2004¹ & DEFRA 2004²*) describe the main potential releases to air. Those relating specifically to this site include; particulate matter, ammonia and VOC including formaldehyde and phenols.

A preliminary enquiry has also been made to the Council relating to a proposal to develop a site to produce crude oil. Such sites are prescribed in Schedule 1 of the Pollution Prevention & Control Regulations 2000 as a Part A1 activity requiring a permit from the Environment Agency. A planning application for this site is yet to be received.

6.0 Local Air Quality Strategy

The Sussex Air Quality Strategy (Draft Sept. 2003) – Framework for Action, has been formulated as a framework document from which members of the Sussex Air Quality Steering Group (SAQSG) can integrate into their own Local Air Quality Strategy.

From the SAQSG Air Quality Strategy (Sept 2003):

“The National Air Quality Strategy recognises that every local authority can make a contribution to continued improvements in air quality by the development of their own strategies. By developing and implementing local air quality strategies an integrated approach to air quality can be obtained.

By providing an air quality template, each authority can adopt it and modify it according to their authority circumstances and role. Much of the template will be common to many authorities in Sussex. However, vital to ensuring a consistent approach is maintained in the aim and purpose of every authority’s strategy, all agencies participating in Sussex Air Quality Steering Group has agreed to the Guiding Principle and Aims of improving air quality in Sussex.”

Arun District Council intends to produce its own Local Air Quality Strategy based on the above framework in the near future.

7.0 Planning and Policies

The Arun District Local Plan 2003 (Arun¹) forms a statement of Arun District Council's planning policies, which will be used as a basis for decision making on planning applications. The Plan covers the period from 1996 to 2011 and it's key aim is to apply the principles of sustainable development in assessing development proposals, striking the balance between the need for development and the protection of scarce resources. The Plan also serves to translate the land use elements of the Council's Community Strategy, "Our Kind of Place", into policies and proposals.

There are a number of general policies within the Local Plan that may affect local air quality.

- **POLICY GEN4 Location and Travel Demand**

When considering proposals for new development, consideration will be given to the effect the proposals will have on demand for transport. Planning permission will be granted for new development, provided that:-

- (i) it is located so as to minimise the demand for travel;
- (ii) it does not materially add to existing road congestion and air pollution; and
- (iii) appropriate provision is made for safe and convenient access by public transport, cyclists and pedestrians.

Before granting planning permission, the Local Planning Authority will need to be satisfied that any identified potential travel problems arising from a proposal will be resolved.

- **POLICY GEN14 Public Transport**

The Council will support the provision of comprehensive public transport services throughout the District, and encourage improvements to be made to services wherever possible. Where appropriate, new development will be required to make provision for public transport facilities.

Where new development can only take place with improvements to public transport services, or such improvements would be likely to influence desirable travel patterns, the Local Planning Authority will seek contributions towards the cost of improvements.

- **POLICY GEN34 Air Pollution**

Development that contributes to air pollution through dust, smell, fumes, smoke, heat, radiation, gases, steam or other forms of pollution will not be permitted unless the Council decides that the health, safety and amenity of users of the site or surrounding land is not put at risk and the quality of the environment would not be damaged or put at risk.

8.0 Local Transport Plans and Strategies

West Sussex County Council (WSCC) is the Highways Authority for West Sussex and is responsible for all roads, other than trunk roads. WSCC published its first Local Transport Plan (LTP) in 2000 for the period from April 2001 to 2006, and is currently in the process of producing a new ten year LTP covering the period 2006 to 2016 (WSCC 2000).

LTP2 is the second cycle of the Local Transport Plans which transport authorities must submit to government on strategic transport planning issues related to their area. LTP2 is a 5 year plan. Guidance documents are provided by government and outline priorities, one of which is Air Quality, especially in relation to AQMA's.

The West Sussex LTP has 6 key objectives:

1. Widening travel choice
2. Improving road and personal safety
3. Enhancing the local economy
4. Enhancing and protecting the environment
5. Integrating transport and land use planning
6. Improving accessibility

Importantly, protecting the environment includes reducing the growth in unsustainable travel and improving air quality. The LTP is designed to integrate transport planning with land use planning, health and social needs, which includes air quality. It also explains how air quality considerations are taken account of in the wider plan and in the assessment of individual transport schemes.

LTP's are being delivered by a series of strategies covering different aspects of transport as well as Rural and Urban Transport Plans.

Each LTP contains a section discussing Air Quality. In the West Sussex LTP, the "Air Quality and Climate Change" includes the following key targets:

- Meeting National Air Quality Targets across West Sussex and implementing the WSCC county wide local air quality strategy during the life of the LTP
- Supplying district and borough councils with all necessary information for on-going air quality review and assessment
- Providing "cut engine cut pollution" signs at up to 7 railway crossings per year
- Promoting use of dual fuel vehicles by County Council fleet and encouragement of petrol companies to provide LPG gas pumps at garages.
- Providing air quality information via the County Council's website. The Annual Progress Report 2001/2002 (Year 1 review of the LTP) and supplementary document Strategy Development and Delivery 2001/2002 acknowledges that a Sussex-wide non-statutory pan-Sussex Air Quality Strategy Framework is being developed by the SAQSG.

Glossary

APEG	Airborne Particles Expert Group
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural (air quality monitoring) Network
CO	Carbon monoxide
COMEAP	Committee on the Medical Effects of Air Pollutants
DA	Detailed Assessment
DEFRA	Department for Environment Food and Rural Affairs
ESCC	East Sussex County Council
HDV	Heavy Duty Vehicles
LAQM	Local Air Quality Management
mgm ⁻³	Milligrams of the pollutant per cubic meter of air
µgm ⁻³	Micrograms of the pollutant per cubic meter of air
ppb	Parts per billion
ppm	Parts per million
NAEI	National Atmospheric Emissions Inventory
NAQS	National Air Quality Strategy
NO	Nitrogen monoxide
NO ₂	Nitrogen dioxide
PM ₁₀	Particles with diameter less than 10µm
PRG	Progress Report Guidance (LAQM.PRG(03))
QA/QC	Quality Assurance / Quality Control
R&A	Review and Assessment
SAQSG	Sussex Air Quality Steering Group
SO ₂	Sulphur dioxide
TEOM	Tapered Element Oscillating Microbalance
USA	Updating and Screening Assessment
UWE	University of the West of England
WSCC	West Sussex County Council

References

AQRE 2000 - Air Quality Regulations for England (2000; Amendment Regulations 2002)

*Arun*¹ - Arun District Local Plan, Arun District Council (2003)

*Arun*² - Stage 3 assessment using the BREEZE ROADS model, Arun District Council (2000)
Available at: http://www.arun.gov.uk/assets/pdf/air_quality_stages_2_3.pdf

*Arun*³ - 2003 Updating and Screening Assessment, Arun District Council (2003)
Available at:
http://www.arun.gov.uk/assets/pdf/Environmental%20Health/usa_final_report.pdf

DEFRA 2003 - The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

*DEFRA 2004*¹ – Process Guidance Note 2/4 (04) Secretary of State’s Guidance for Iron, Steel and Non-Ferrous Metal Foundry Processes

*DEFRA 2004*² - Process Guidance Note 2/6a (04) Secretary of State’s Guidance for Processes Melting and Producing Aluminium and its Alloys

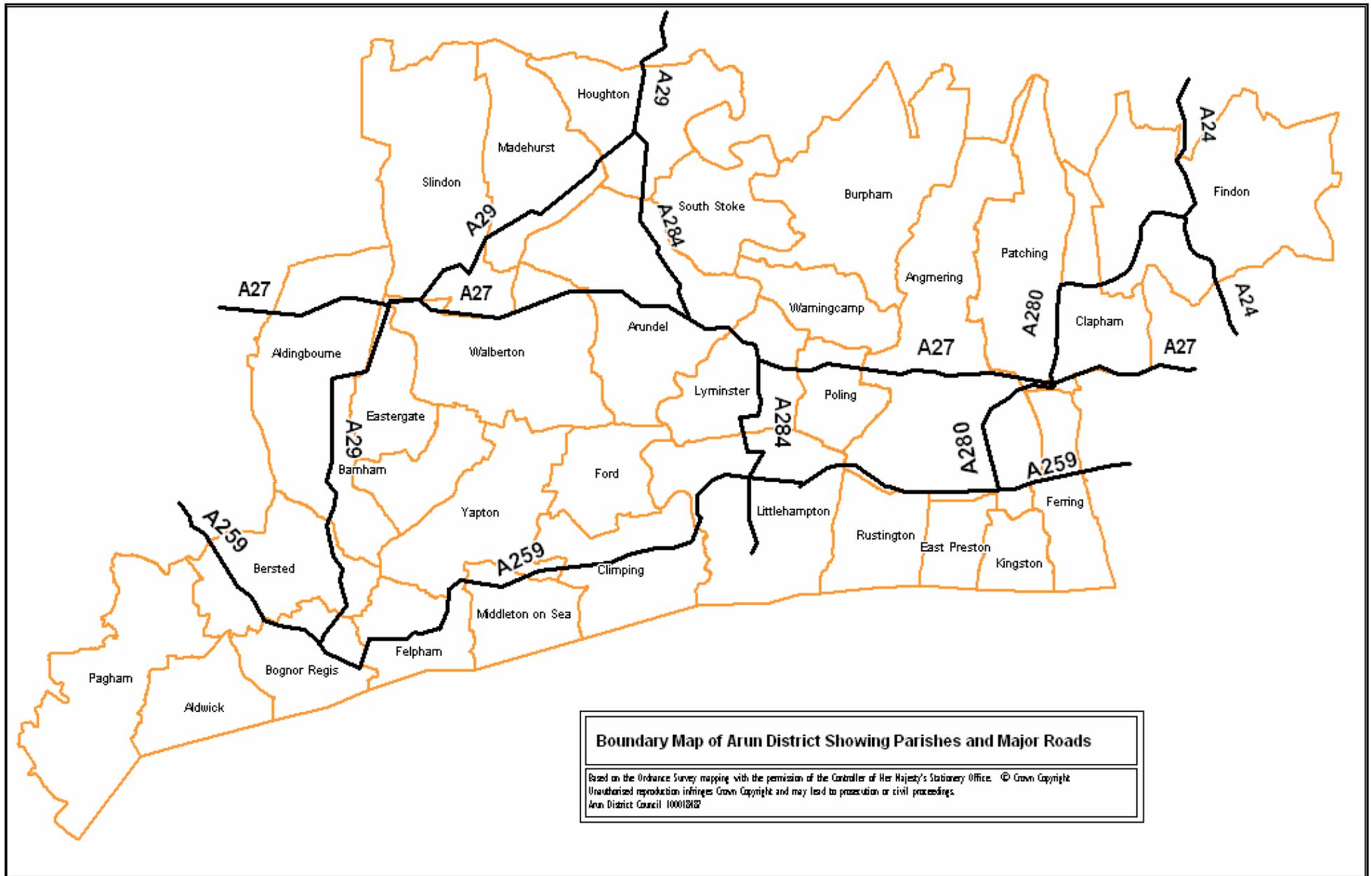
LAQM.PRG(03) Local Air Quality Management Progress Report Guidance

LAQM.TG(03) Local Air Quality Management Technical Guidance

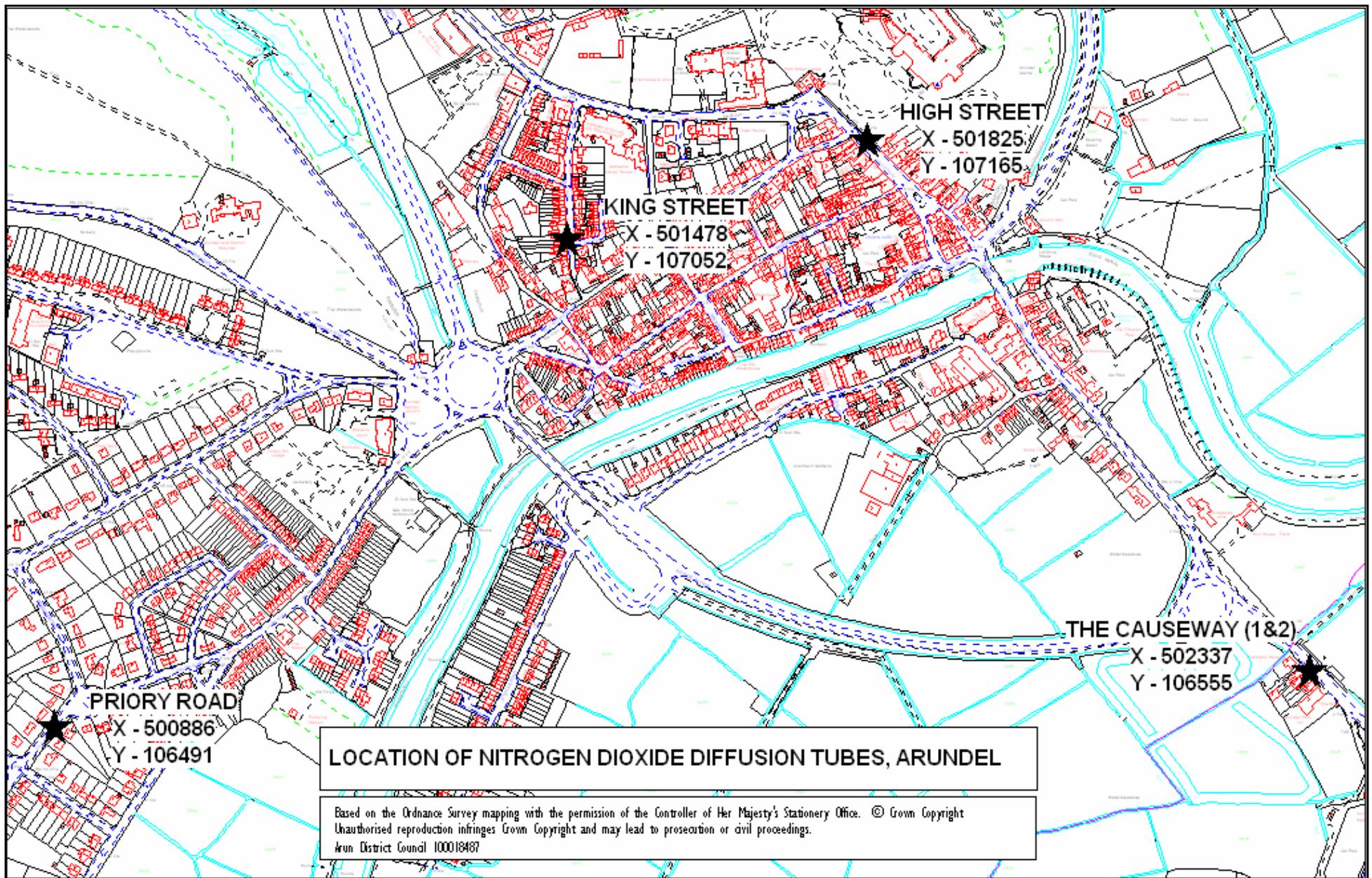
UWE - University of West England, Air Quality Review and Assessment Website
Available at: <http://www.uwe.ac.uk/aqm/review/>

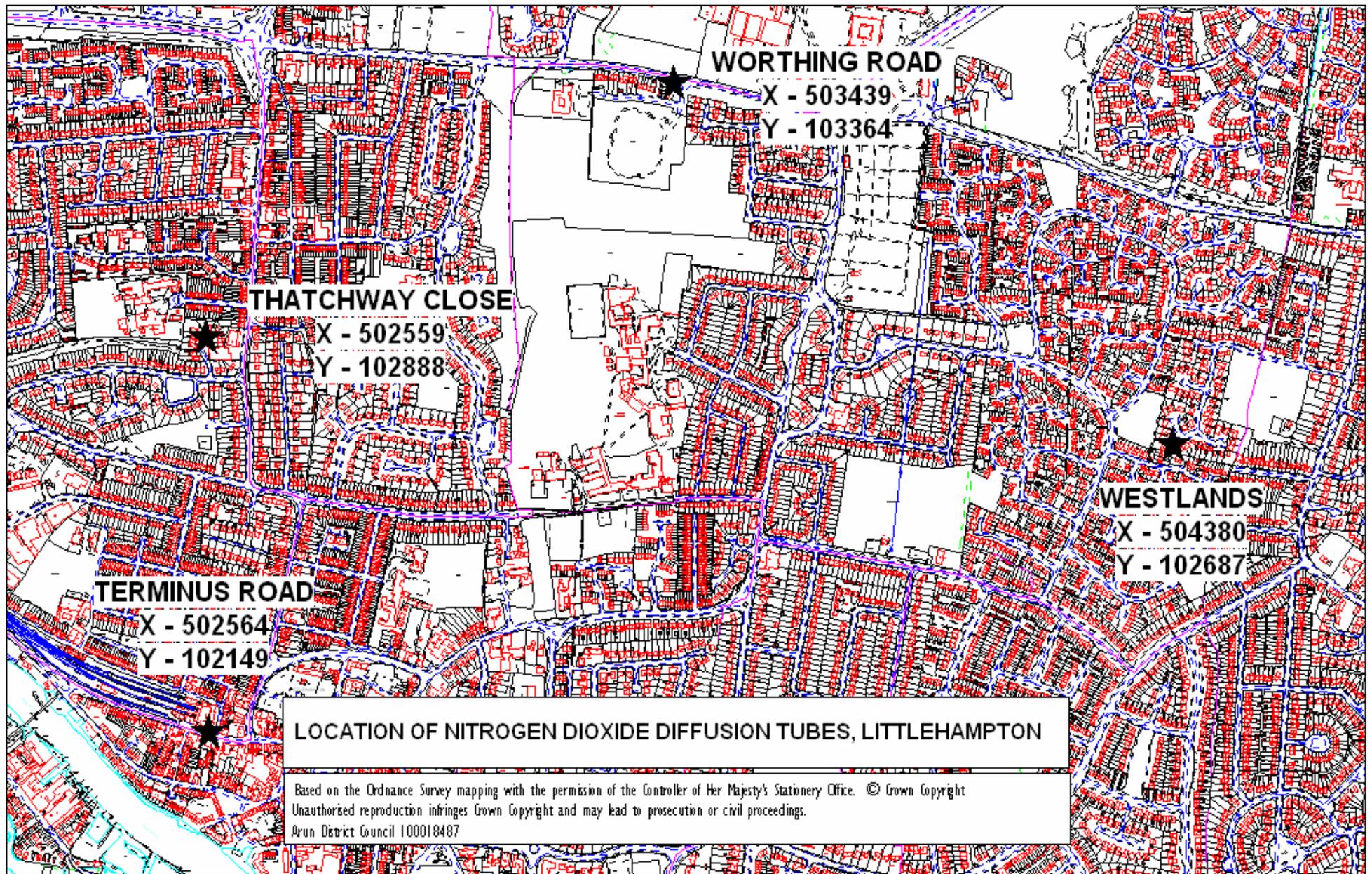
WSCC 2000 - West Sussex Local Transport Plan

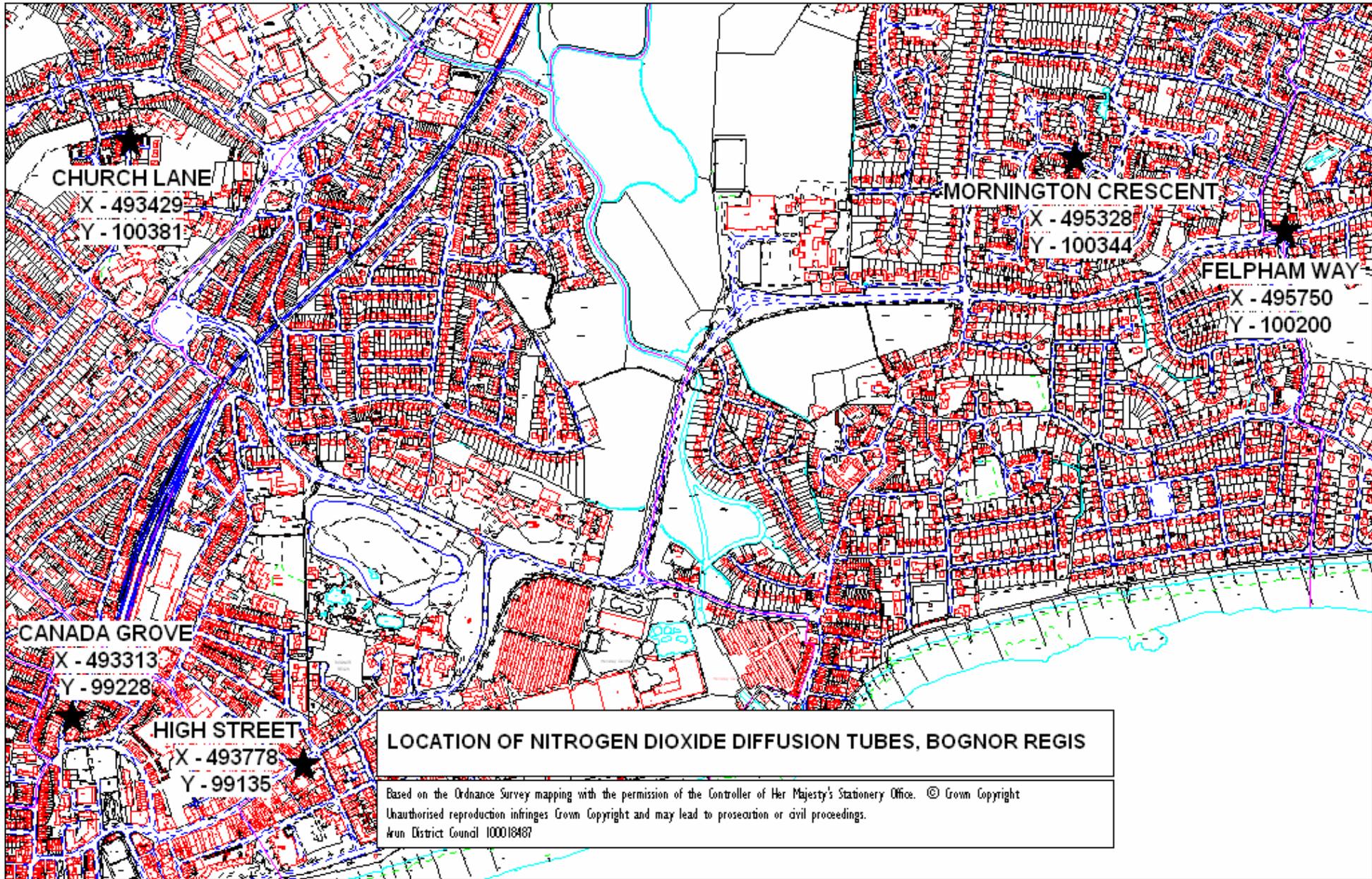
Appendix I: District Boundary Map



Appendix II: NO₂ Diffusion Tube Monitoring Locations







CHURCH LANE
X - 493429
Y - 100381

MORNINGTON CRESCENT
X - 495328
Y - 100344

FELPHAM WAY
X - 495750
Y - 100200

CANADA GROVE
X - 493313
Y - 99228

HIGH STREET
X - 493778
Y - 99135

LOCATION OF NITROGEN DIOXIDE DIFFUSION TUBES, BOGNOR REGIS
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Arun District Council 100018487

Appendix III: Monitoring Data – QA/QC and ratification

The NO₂ diffusion tube analysis was carried out at South Yorkshire (including Rotherham Metropolitan Borough Council) laboratory. The NO₂ tube preparation method used is 50% triethanolamine (TEA) in acetone. Data from the NO₂ diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location data-base as produced by University of West of England (UWE) on behalf of DEFRA, available at: <http://www.uwe.ac.uk/aqm/review/no2dtbiasdatabase.xls>.