

86



Ambient Air Quality Data Summary Western Australia (January 1996 - March 1996)

Department of Environmental Protection
Perth, Western Australia

Technical Series 86

November 1996



Department of
Environmental Protection

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Definitions

“AQMS” means air quality monitoring station.

“Bsp” is a coefficient with units of m^{-1} indicating the back scatter of light at a reference wavelength due to the presence of particles in the air. Local visual distance (in metres) can be determined from Bsp.

“criterion” refers to a value and associated averaging time considered by the DEP to be an upper acceptable level but having no statutory basis.

“criterion basis” refers to the source of the criterion value.

“DEP” means Department of Environmental Protection.

“EPA” means Environmental Protection Authority.

“equivalent aerodynamic diameter” in relation to a particle means the diameter of spherical particle of a density of 1000 kilograms per cubic metre which exhibits the same aerodynamic behaviour as the particle referred to.

“Kalgoorlie EPP” means in relation to the *Environmental Protection (Goldfields Residential Areas) (Sulphur Dioxide) Policy 1992*, the ambient air quality limits in the *Environmental Protection (Goldfields Residential Areas) (Sulphur Dioxide) Regulations 1992*.

“KCGM” means Kalgoorlie Consolidated Gold Mines.

“KIC” means Kwinana Industries Council.

“Kwinana EPP Area C” means for the area defined as Area C in the *Environmental Protection (Kwinana) (Atmospheric Waste) Policy 1992*, the corresponding air quality standard described in the *Environmental Protection (Kwinana) (Atmospheric Waste) Regulations 1992*.

“limit” means the concentration of an atmospheric waste which shall not be exceeded and has a statutory basis.

“NHMRC” means National Health and Medical Research Council.

“ppm” means parts per million by volume.

“PM2.5” means inert particles each having an equivalent aerodynamic diameter of less than 2.5 microns.

“PM10” means inert particles each having an equivalent aerodynamic diameter of less than 10 microns.

“SOE” means State of the Environment.

“standard” means the concentration of an atmospheric waste which it is desirable not to exceed and has a statutory basis.

“TSP” means total suspended particulates.

“ $\mu g/m^3$ ” means micrograms per cubic metre, expressed at 0 degrees Celsius and 1.0 atmosphere pressure (101.325 kilopascals).

“VEPA” means Victorian Environment Protection Authority.

“WHO” means World Health Organisation.

1.0 Introduction

This report is the first of a regular series containing air monitoring data from the Department of Environmental Protection's monitoring stations, as well as data from monitoring stations funded by industry.

Figures 1 and 2 show the location of each AQMS in the Perth Metropolitan Region and Kalgoorlie respectively, for which data is presented in this report.

Table 1 lists the pollutants measured at each AQMS.

Comment and feedback regarding the content and format of this report is welcome. Please write to:

Director, Environmental Systems Divisions
Department of Environmental Protection
141 St Georges Terrace
PERTH WA 6000

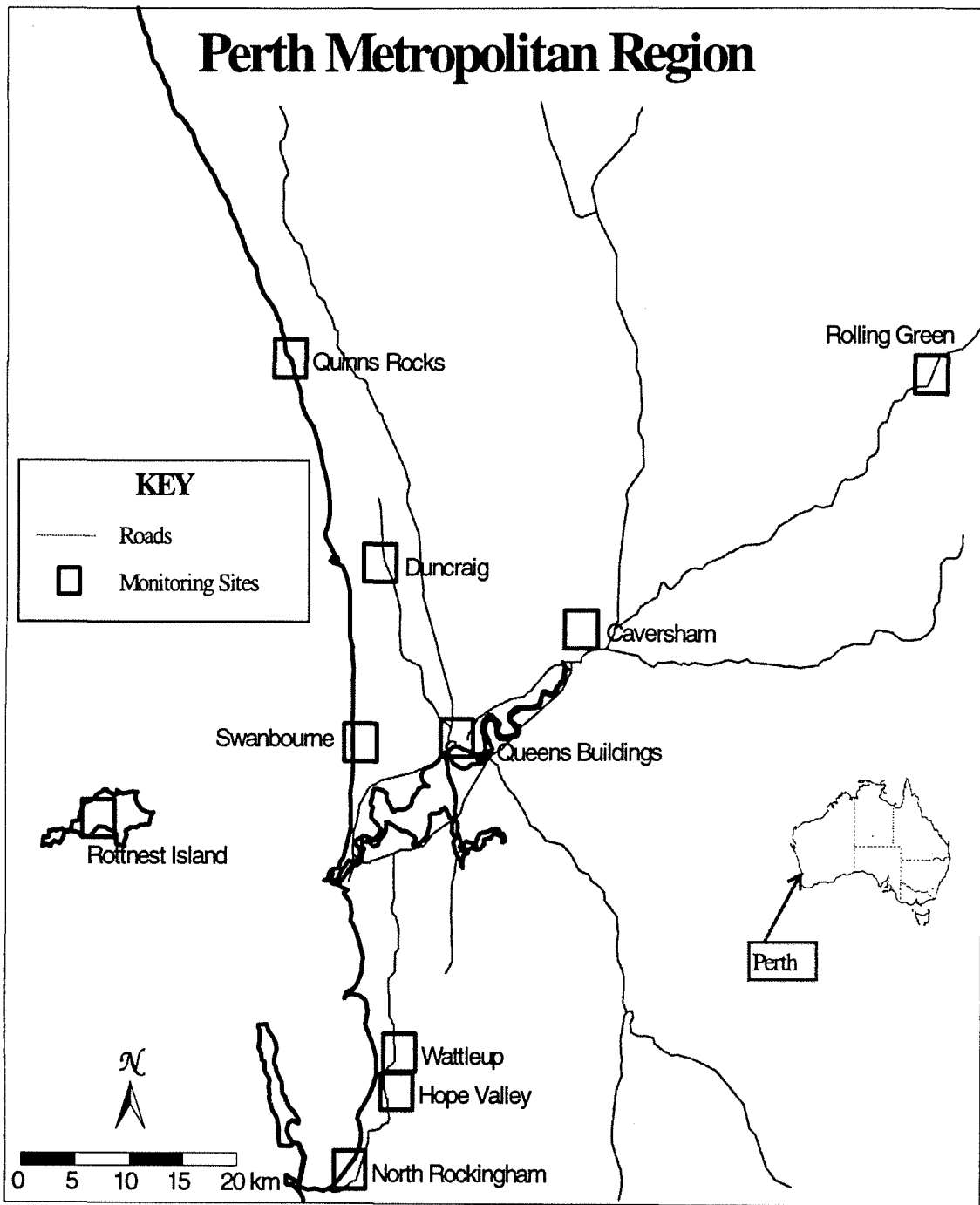


Figure 1 - Map of air quality monitoring sites in Perth.

Kalgoorlie-Boulder Region

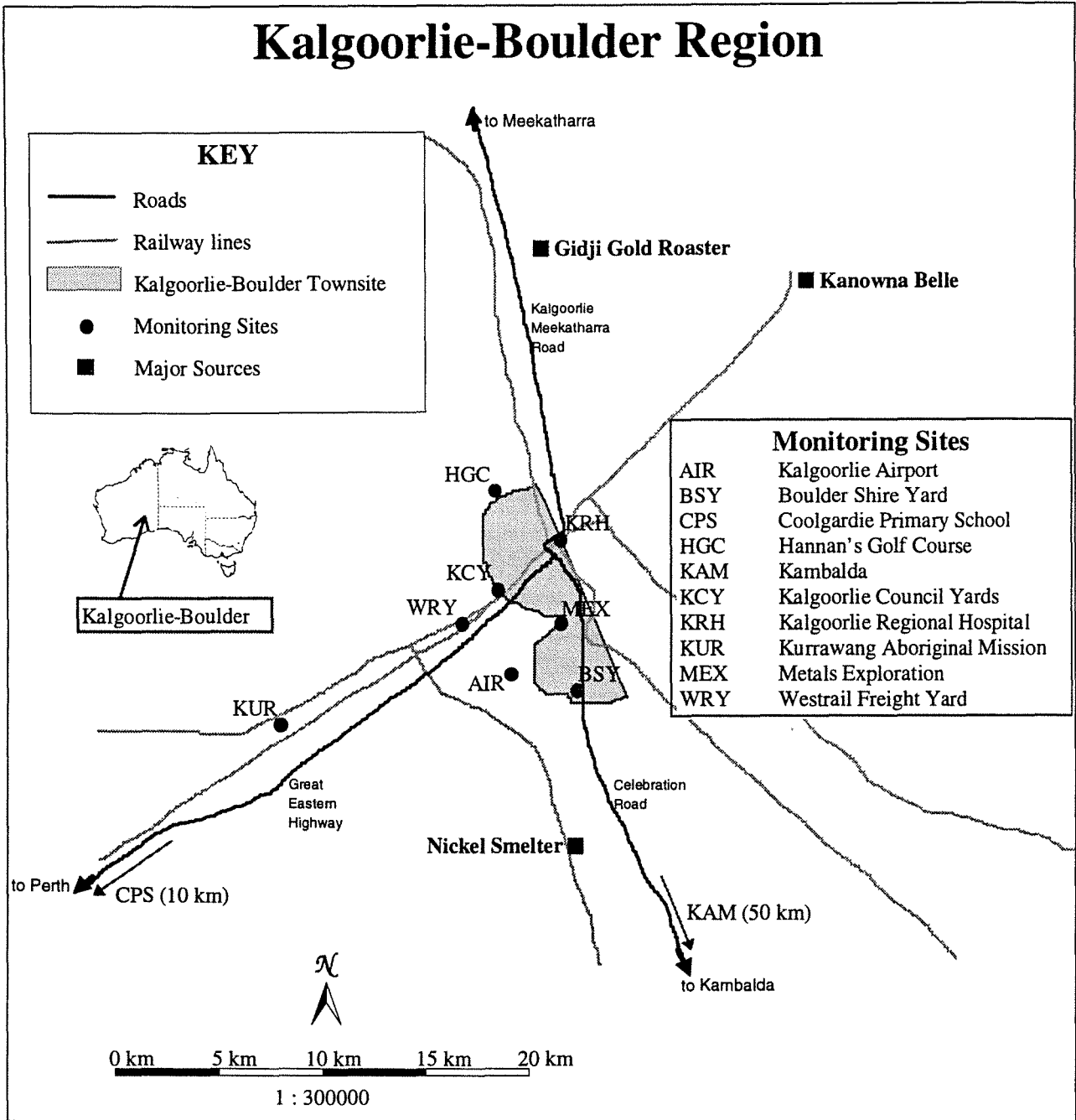


Figure 2 - Map of air quality monitoring sites in Kalgoorlie.

Table 1 - Air quality monitoring sites and pollutants covered in this report.

SITE	Site Code	Parameters Measured								
		CO	LEAD	NO _x	O ₃	PM2.5	PM10	SO ₂	TSP	VISI
Perth Metropolitan										
Abecrombie Road	AB							•		
Caversham	CA	•		•	•	•	•			•
Duncraig	DU	•		•		•	•			•
Henderson Road	HR							•		
Hope Valley	HV			•				•		•
Miguel Road	MR							•		
Queens Building	QB	•	•	•			•		•	•
Quinns Rocks	QR			•	•					•
Rockingham	RO			•	•			•		
Rolling Green	RG			•	•					
Rottnest Island	RI				•					
Swanbourne	SW			•	•		•			•
Wattleup	WT							•		
Southern Goldfield										
Boulder Shire Yard	BSY							•		
Coolgardie Primary School	CPS							•		
Hannans Golf Club	HGC							•		
Kalgoorlie Airport	AIR							•		
Kalgoorlie Council Yard	KCY							•		
Kambalda	KAM							•		
Kurrawang	KUR							•		
Kalgoorlie Regional Hospital	KRH							•		
Metals Exploration	MEX							•		
Westrail Yard	WRY							•		

Note : Symbols used are:

PARAMETER	PARAMETER DESCRIPTION
CO	carbon monoxide
NO _x	nitric oxide and nitrogen dioxide
O ₃	ozone
PM10	sub 10 micron particles
PM2.5	sub 2.5 micron particles
SO ₂	sulphur dioxide
TSP	total suspended particulates
VISI	visibility

2.0 Form of Data Presentation

2.1 Regions

Commensurate with future integration with State of the Environment (SOE) reporting model, the data has been grouped firstly for each SOE reporting region and secondly for each pollutant monitored somewhere within that region.

2.2 Criteria

The criteria used in this report are 1-hour averages except for:

- carbon monoxide where an 8-hour criterion is used and,
- mass-based measurements of particulates (TSP, PM10 and PM2.5) where a 24-hour average criterion is used.

With the exception of sulphur dioxide and total suspended particulates at Kwinana, and sulphur dioxide at Kalgoorlie, Western Australia does not have statutory values for air pollutants.

In June 1996, the National Environmental Protection Council agreed to develop a National Environmental Protection Measure (NEPM) for ambient air quality. The measure will set goals and/or mandatory standards for carbon monoxide, nitrogen dioxide, ozone, sulphur dioxide, lead and particulates. The EPA and DEP will implement the NEPM within Western Australia through an Environmental Protection Policy under the *Environmental Protection Act 1986*.

For the time being, criteria presented in this report have therefore been sourced from other organisations. They are presently considered by the DEP to be the most relevant to Western Australia pending the outcome of the NEPM.

2.3 Presentation

Data for each pollutant are in a form considered most appropriate to enable:

- (i) the state of recent air quality to be quickly assessed; and
- (ii) trends likely to lead to excessive pollutant levels, to be identified.

Therefore, the data for each pollutant are presented in two ways:

- (i) as tabulated monthly or quarterly (as appropriate for the monitoring method¹), summary statistics for the period covered by this report; and
- (ii) as a graph of the maximum 1-hour, 8-hour or 24-hour (as appropriate for the particular pollutant) averaged values each month or quarter for the three years preceding the end of the period covered by this report unless the data record does not extend to a full three years.

¹ Most of the pollutants covered in this report are measured as 10-minute averages. The measurement of particulates as TSP or PM10 however, often consists of sampling over 24 hours every sixth day. Presenting the maximum 24-hour value each month based on 5 measurements would not be helpful in identifying trends, since the monthly values would often be biased by an excessive weekday or weekend weighting. These data are therefore graphed for each quarter, in which case the 15 measurements from which the quarterly value is obtained, represent a reasonably balanced sample.

3.0 Other Data

Detailed monthly statistics of most pollutants monitored by the DEP are available through the DEP library. It is intended to also provide access to this form of data through the Internet in the near future.

The DEP's air monitoring network also collects detailed meteorological data. These and the "raw" pollutant data are stored in computer data bases and are available in a standard electronic format for various purposes including further analysis and modelling. Further information is available from:

Manager, Environmental Monitoring Branch
Environmental Systems Division
Department of Environmental Protection
141 St Georges Terrace
PERTH WA 6000

Appendix A

Carbon Monoxide

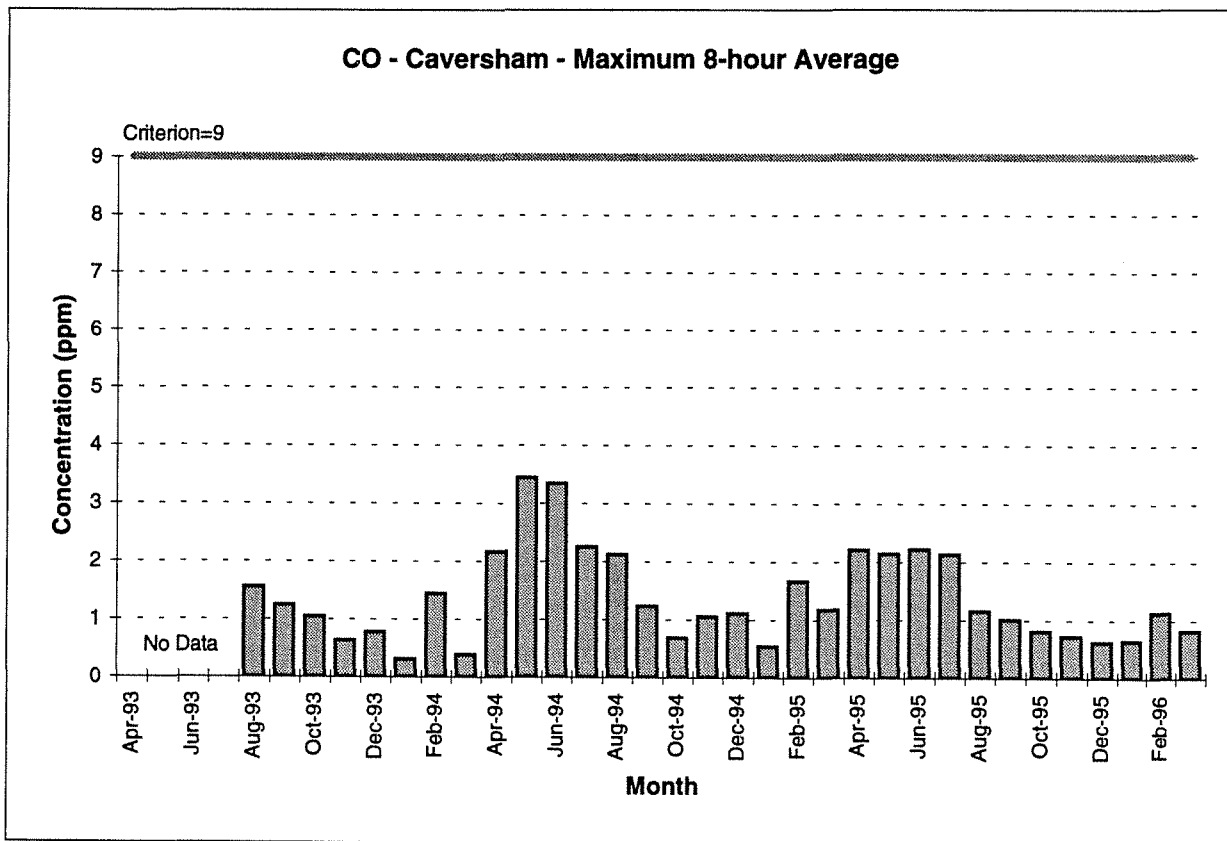
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Carbon Monoxide
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	9 ppm (8-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.5%	99.5%	99.4%
Maximum 1-hour Value (ppm)	0.91	1.85	1.32
Maximum 8-hour Value (ppm)	0.64	1.13	0.82
Number of 8-hour Values Above Criterion	0	0	0

Trend



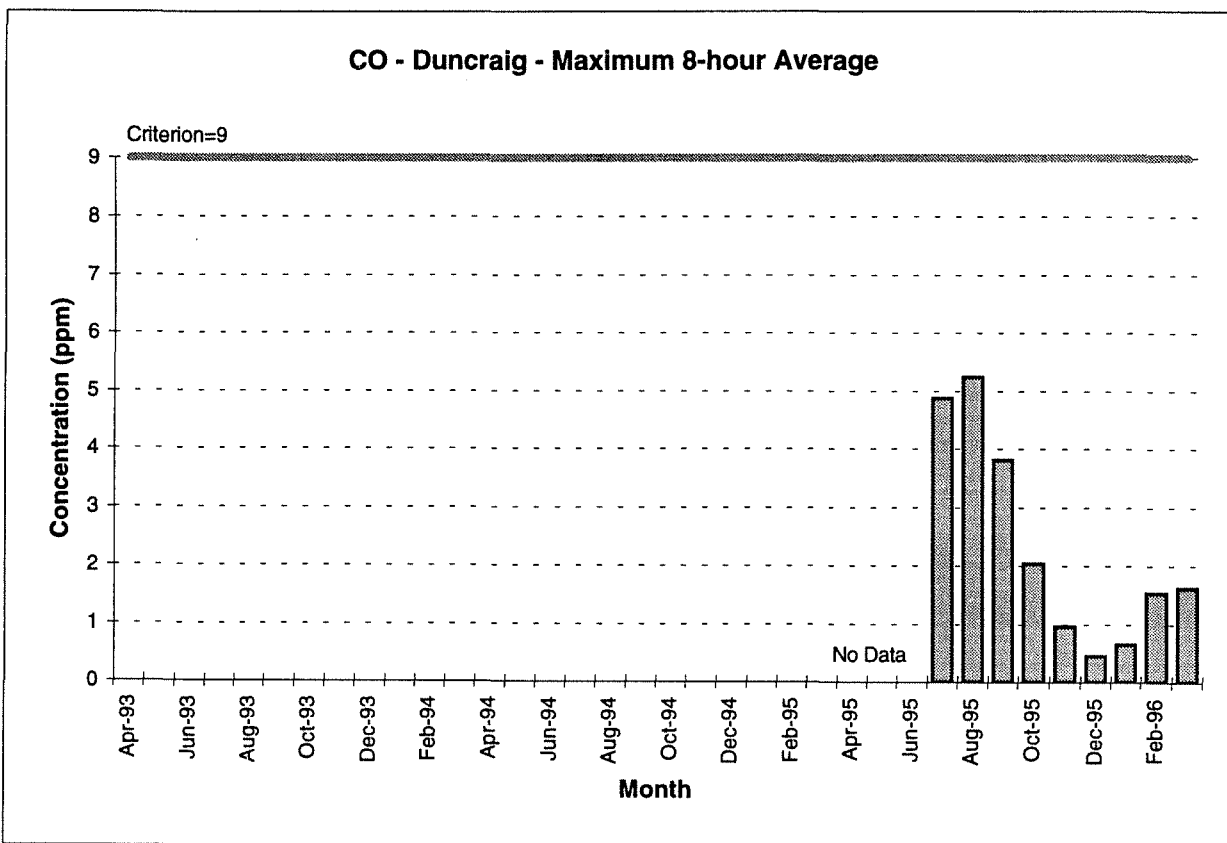
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Carbon Monoxide
AQMS Location:	Duncraig
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	9 ppm (8-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.8%	99.7%
Maximum 1-hour Value (ppm)	1.32	3.42	2.20
Maximum 8-hour Value (ppm)	0.65	1.54	1.63
Number of 8-hour Values Above Criterion	0	0	0

Trend



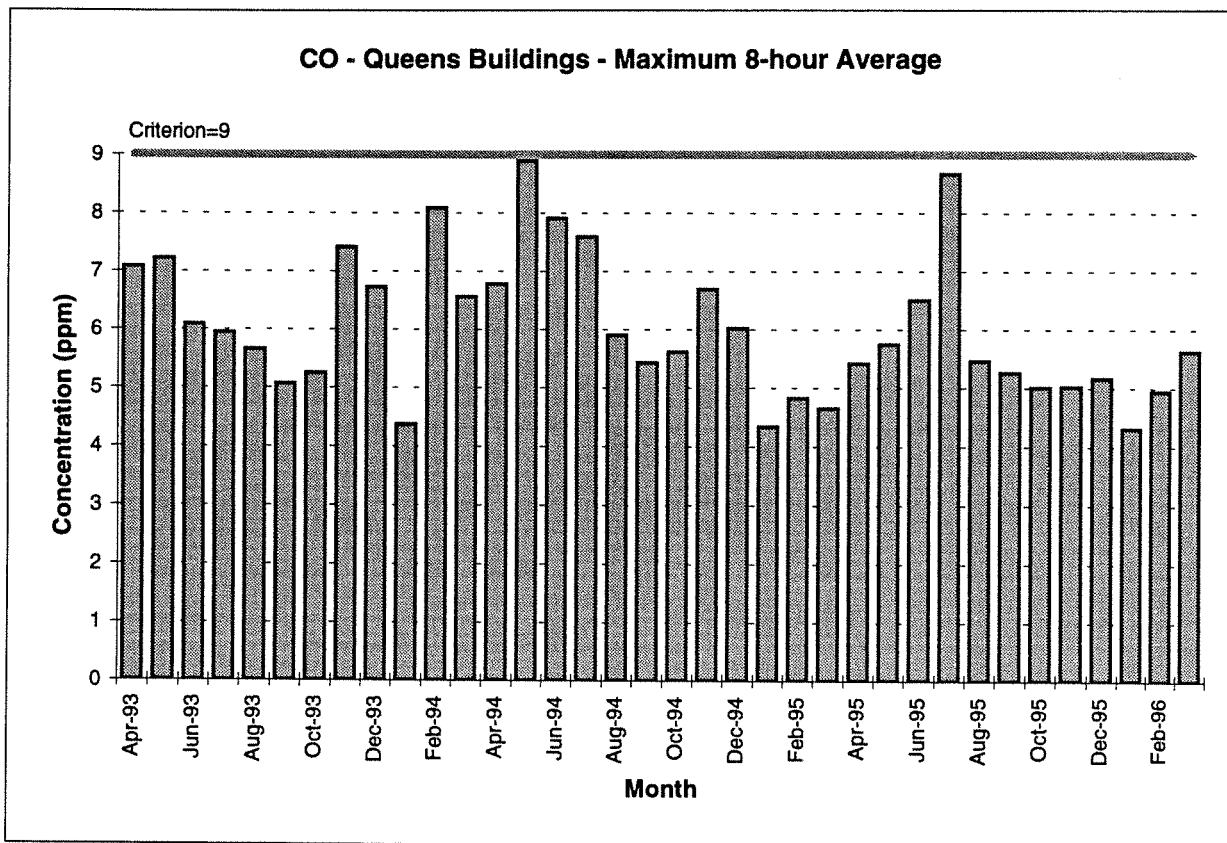
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Carbon Monoxide
AQMS Location:	Queens Buildings
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	9 ppm (8-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.4%	92.5%	99.7%
Maximum 1-hour Value (ppm)	7.50	6.77	10.58
Maximum 8-hour Value (ppm)	4.31	4.95	5.63
Number of 8-hour Values Above Criterion	0	0	0

Trend



Appendix A

Nitrogen Dioxide

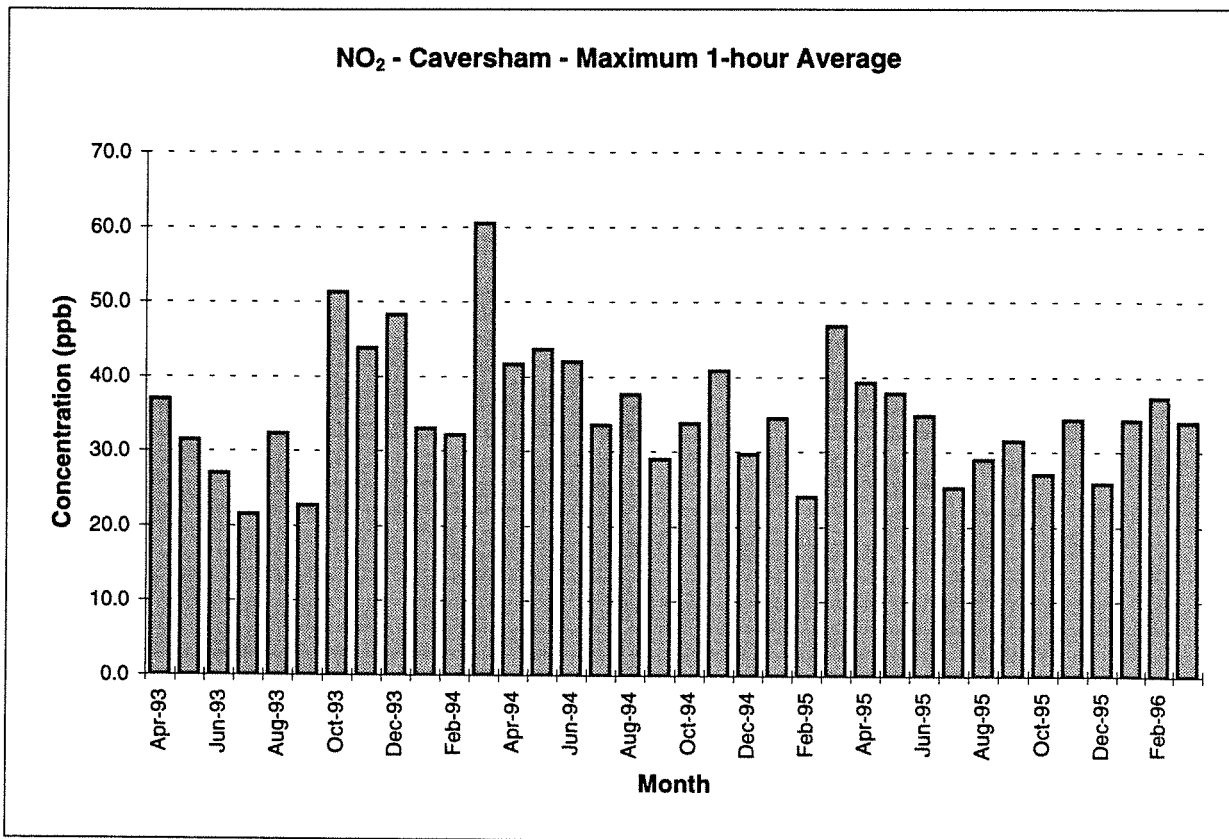
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.6%	99.7%	99.5%
Maximum 10-minute Value (ppb)	40	61	39
Maximum 1-hour Value (ppb)	34	37	34
Maximum 24-hour Value (ppb)	11	16	14
Number of 1-hour Values Above Criterion	0	0	0

Trend



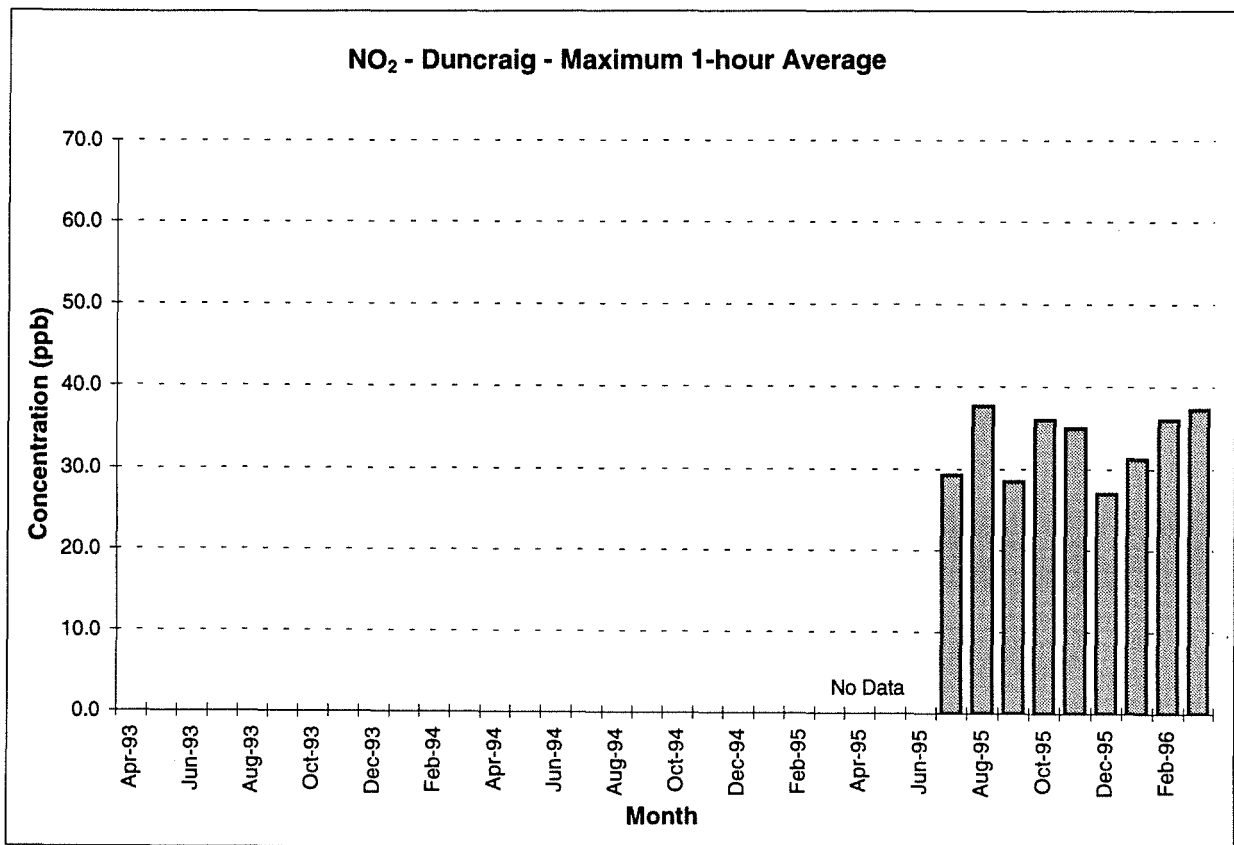
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Duncraig
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	94.2%	99.8%
Maximum 10-minute Value (ppb)	33	36	38
Maximum 1-hour Value (ppb)	31	36	37
Maximum 24-hour Value (ppb)	9	22	10
Number of 1-hour Values Above Criterion	0	0	0

Trend



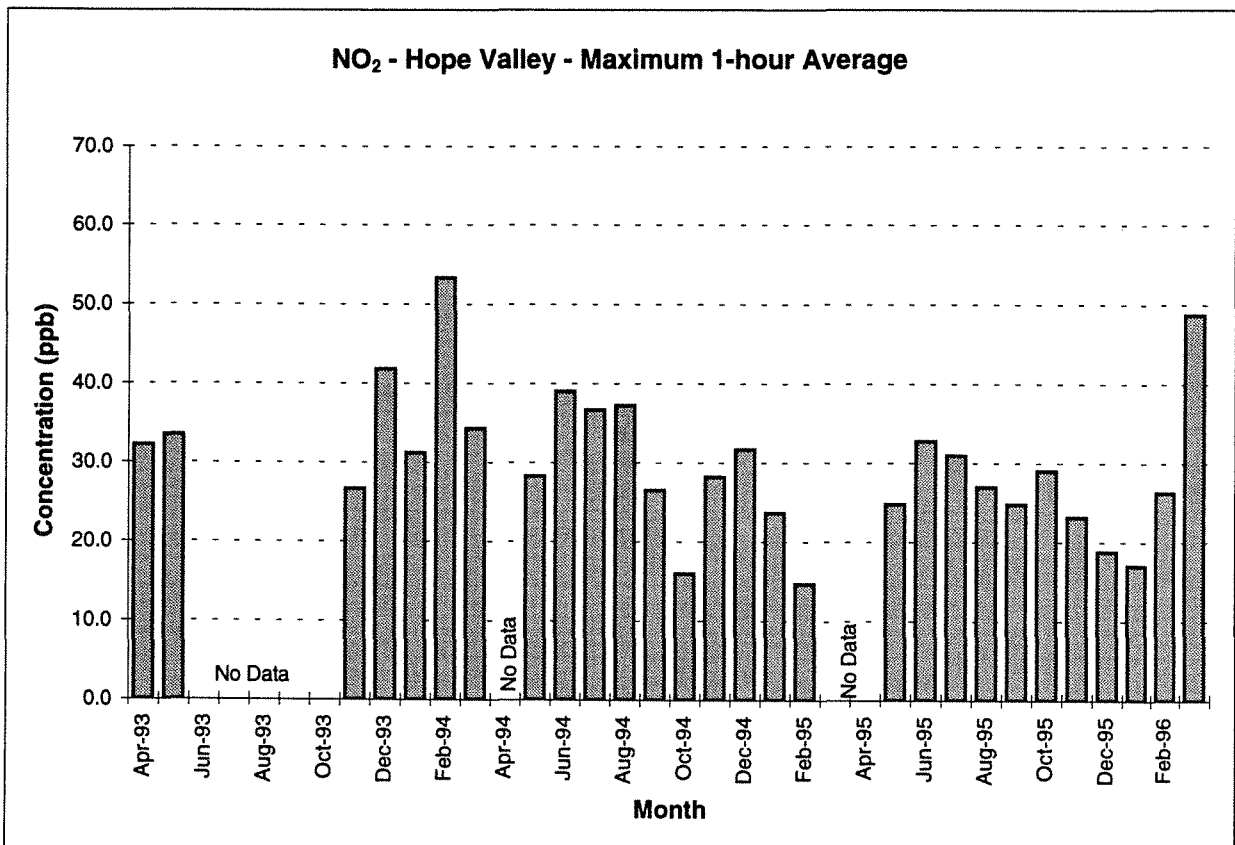
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Hope Valley
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.6%	99.6%
Maximum 10-minute Value (ppb)	21	37	60
Maximum 1-hour Value (ppb)	17	26	49
Maximum 24-hour Value (ppb)	5	8	9
Number of 1-hour Values Above Criterion	0	0	0

Trend



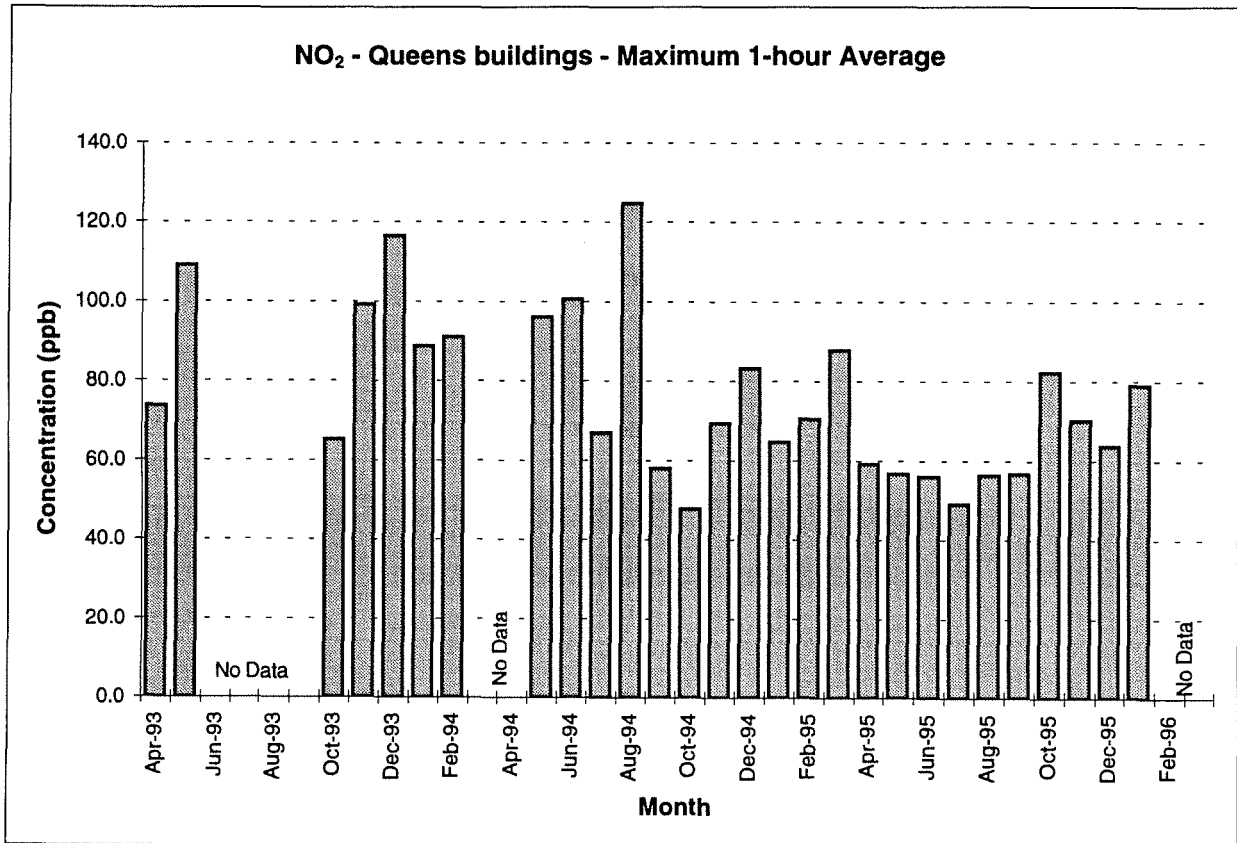
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Queens Buildings
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.7%	< 75%	< 75%
Maximum 10-minute Value (ppb)	88	n/a	n/a
Maximum 1-hour Value (ppb)	79	n/a	n/a
Maximum 24-hour Value (ppb)	31	n/a	n/a
Number of 1-hour Values Above Criterion	0	n/a	n/a

Trend



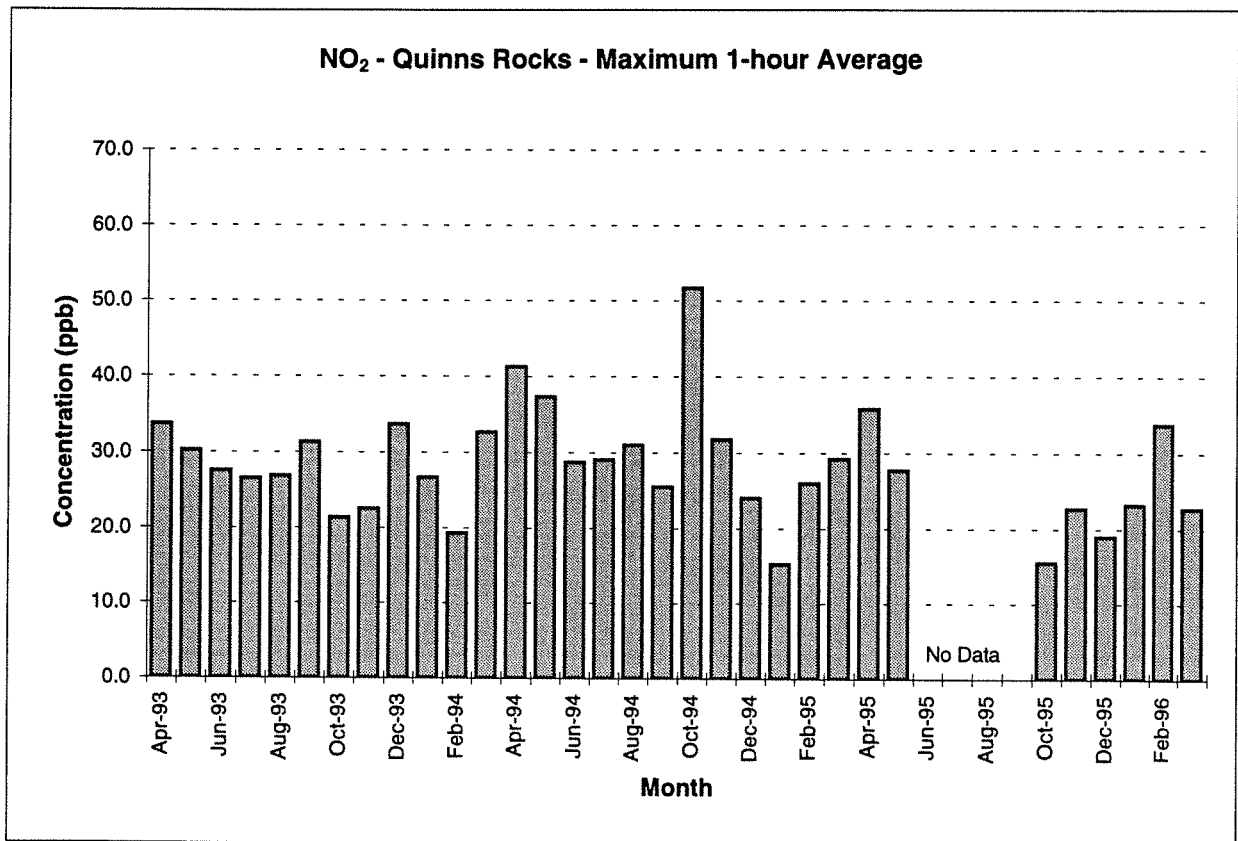
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Quinns Rocks
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.6%	99.6%	99.3%
Maximum 10-minute Value (ppb)	24	36	32
Maximum 1-hour Value (ppb)	23	34	23
Maximum 24-hour Value (ppb)	5	8	6
Number of 1-hour Values Above Criterion	0	0	0

Trend



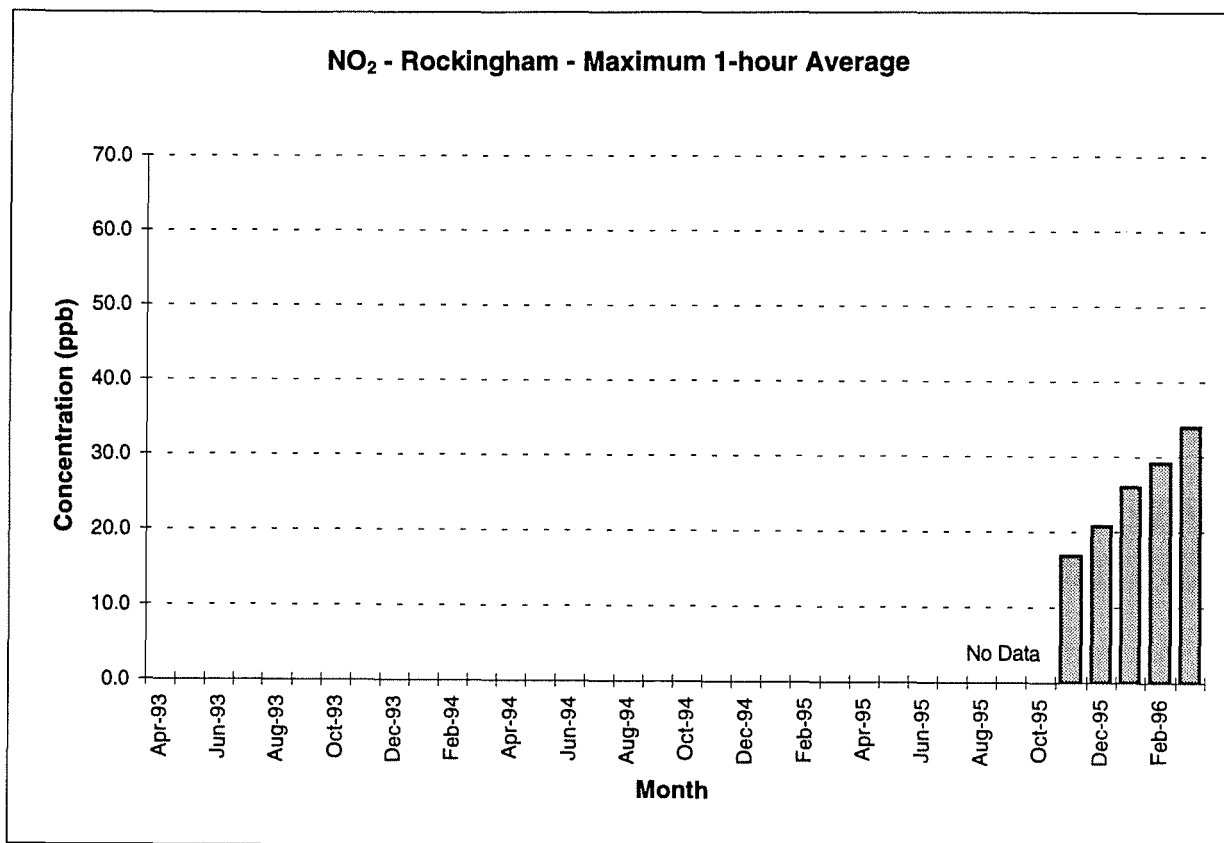
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Rockingham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.6%	99.7%
Maximum 10-minute Value (ppb)	30	34	40
Maximum 1-hour Value (ppb)	26	29	34
Maximum 24-hour Value (ppb)	8	11	10
Number of 1-hour Values Above Criterion	0	0	0

Trend



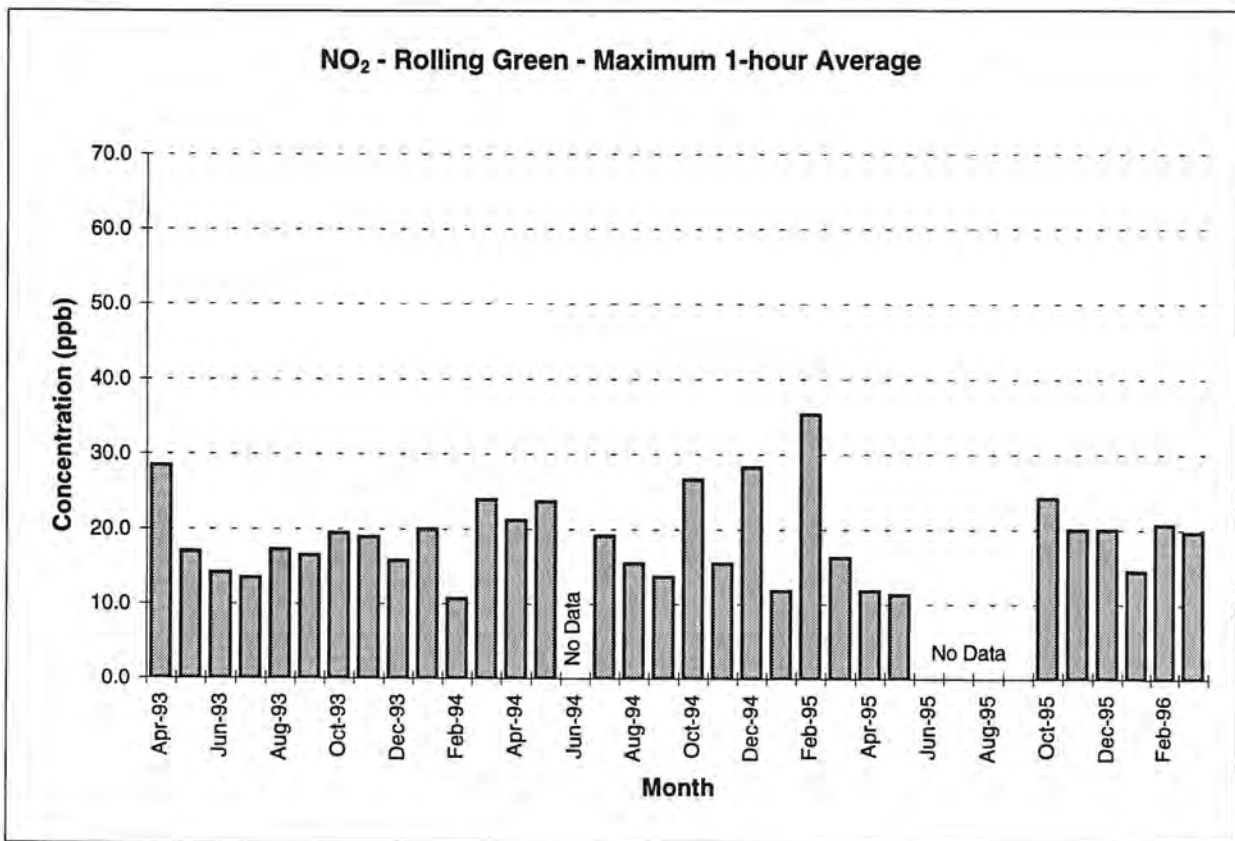
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Rolling Green
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.6%	99.7%
Maximum 10-minute Value (ppb)	17	25	22
Maximum 1-hour Value (ppb)	15	21	20
Maximum 24-hour Value (ppb)	5	4	5
Number of 1-hour Values Above Criterion	0	0	0

Trend



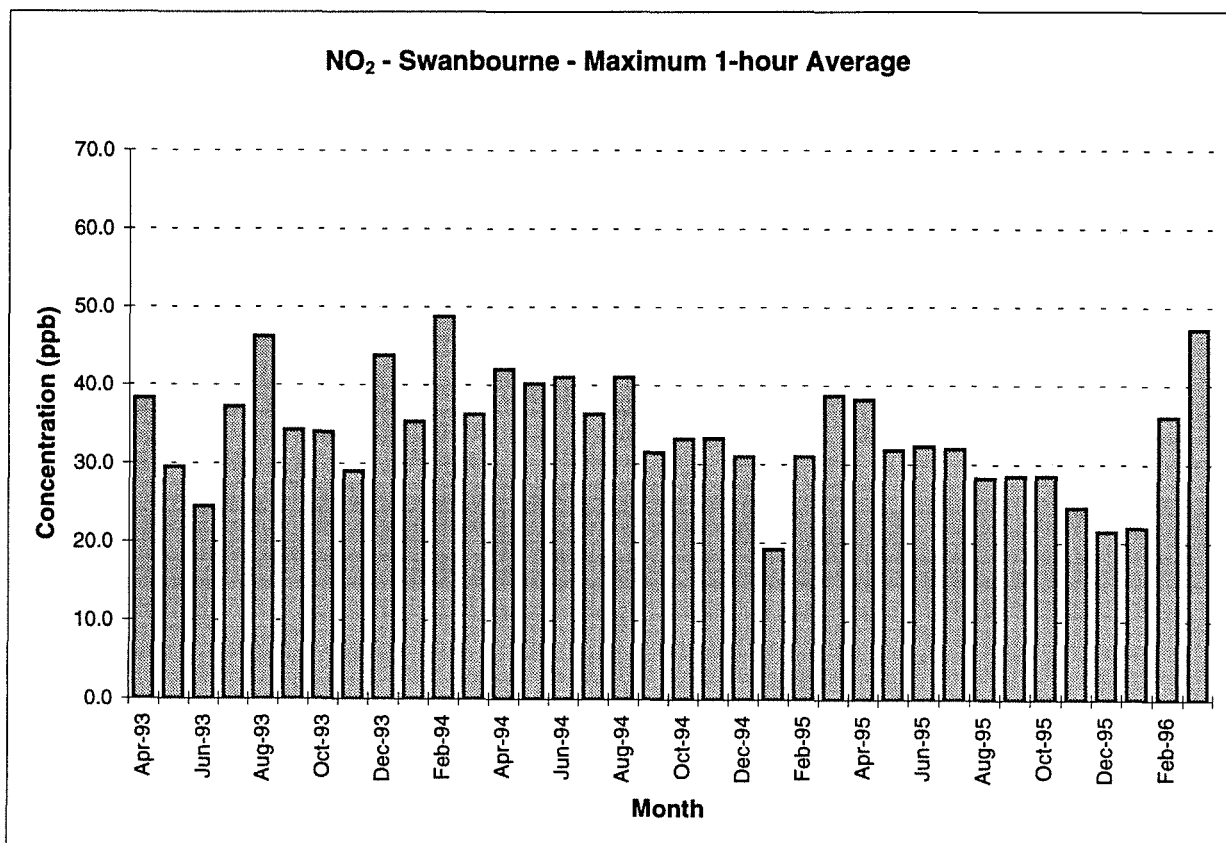
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Nitrogen Dioxide
AQMS Location:	Swanbourne
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	160 ppb (1-hour)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.8%	99.6%
Maximum 10-minute Value (ppb)	26	41	50
Maximum 1-hour Value (ppb)	22	36	47
Maximum 24-hour Value (ppb)	7	11	11
Number of 1-hour Values Above Criterion	0	0	0

Trend



Appendix A

Ozone

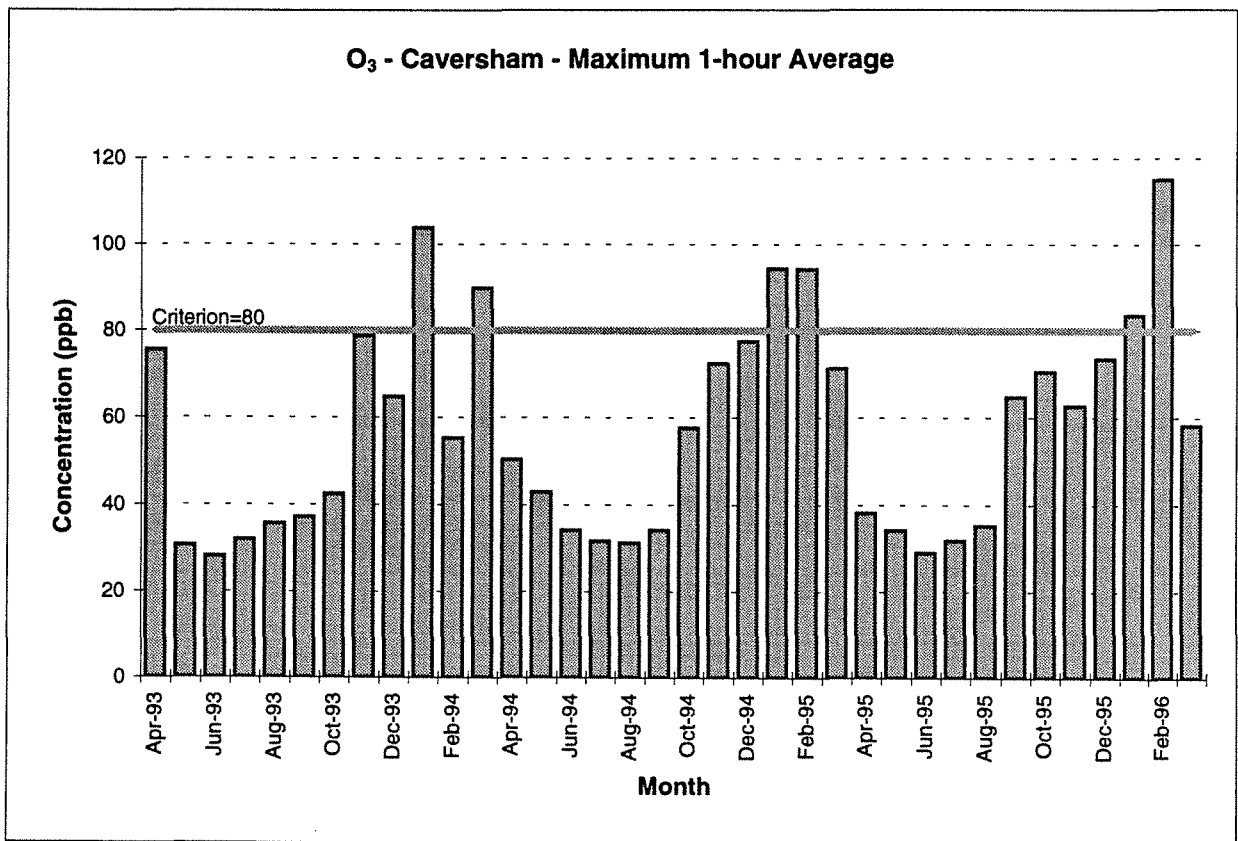
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.5%	99.5%	99.4%
Maximum 1-hour Value (ppb)	84	115	58
Maximum 4-hour Value (ppb)	73	91	52
Maximum 8-hour Value (ppb)	52	66	44
Number of 1-hour Values Above Criterion	1	10	0

Trend



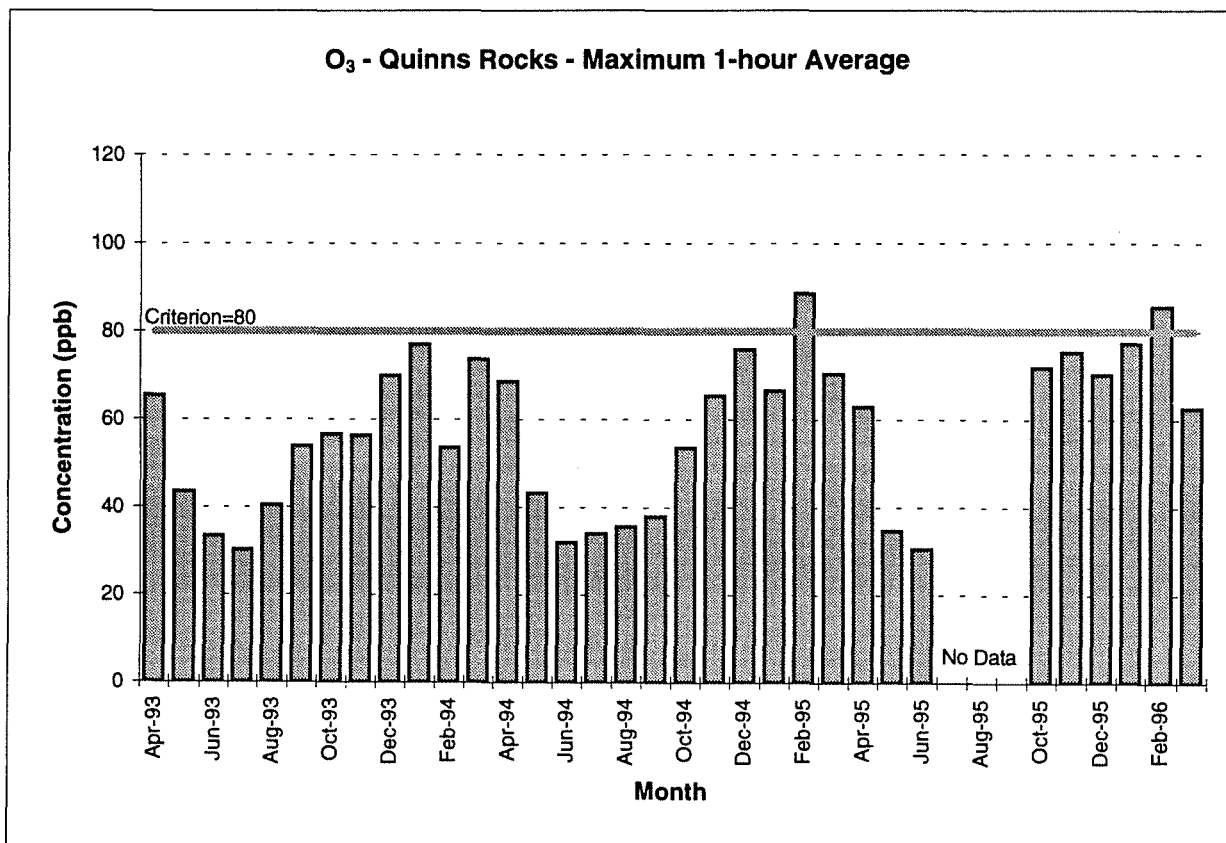
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Quinns Rocks
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.6%	99.6%	99.6%
Maximum 1-hour Value (ppb)	77	86	63
Maximum 4-hour Value (ppb)	64	75	53
Maximum 8-hour Value (ppb)	47	70	44
Number of 1-hour Values Above Criterion	0	3	0

Trend



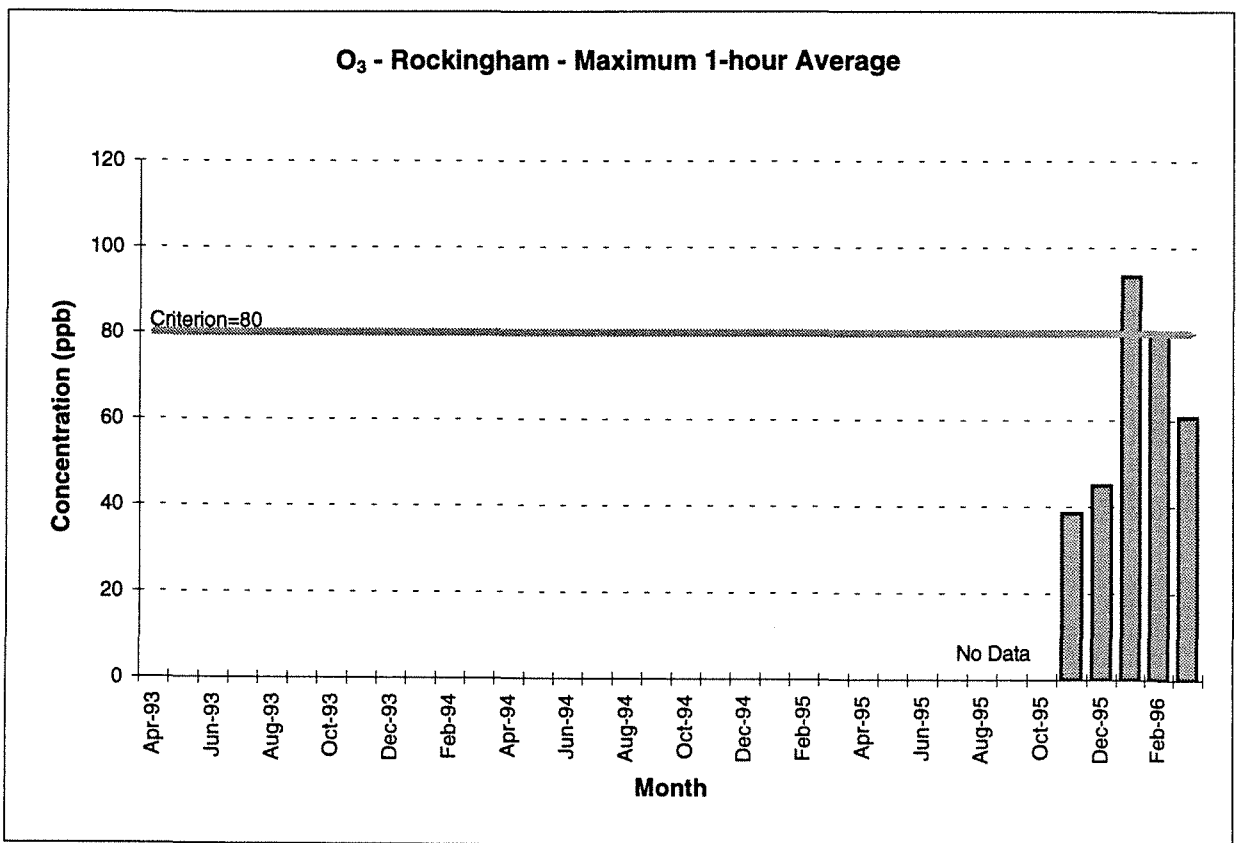
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Rockingham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.7%	99.3%	99.7%
Maximum 1-hour Value (ppb)	93	80	61
Maximum 4-hour Value (ppb)	86	73	56
Maximum 8-hour Value (ppb)	70	61	45
Number of 1-hour Values Above Criterion	3	1	0

Trend



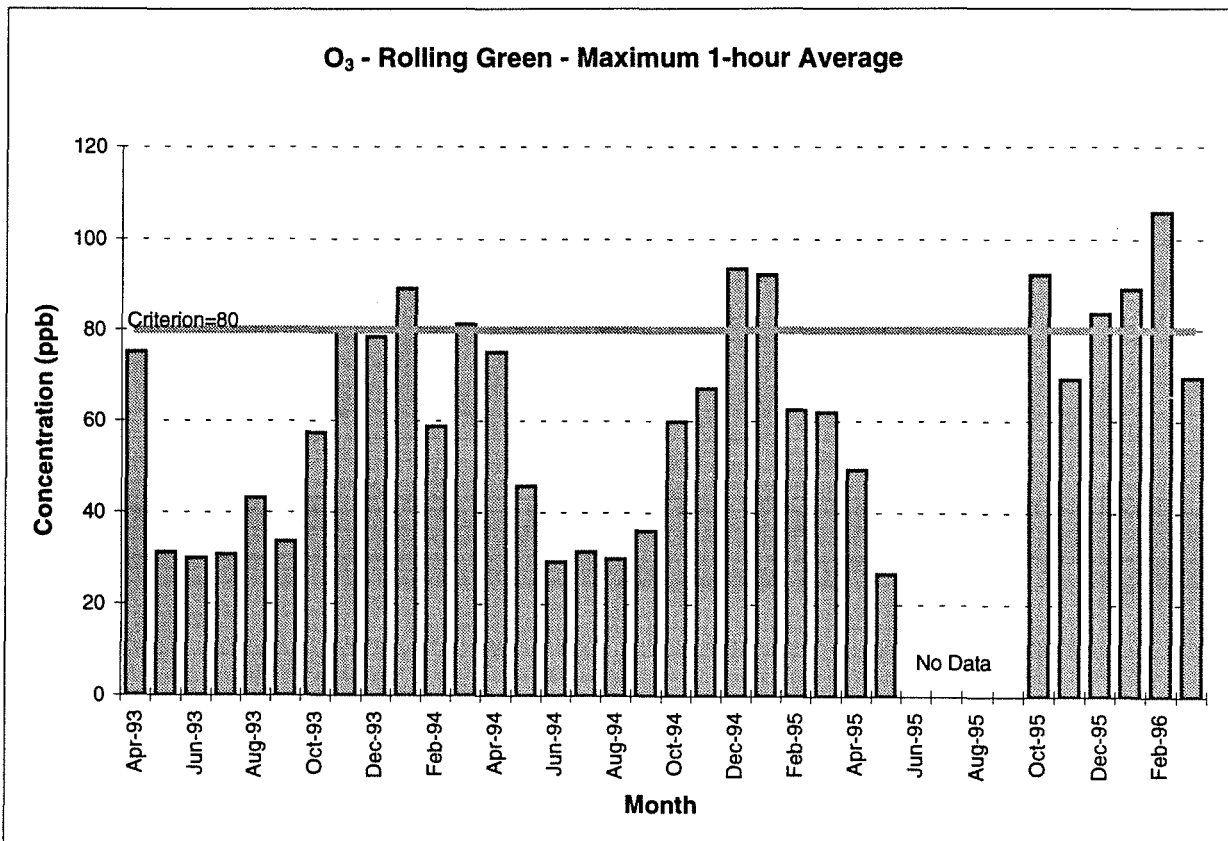
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Rolling Green
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.6%	99.4%
Maximum 1-hour Value (ppb)	89	106	70
Maximum 4-hour Value (ppb)	77	83	60
Maximum 8-hour Value (ppb)	67	63	45
Number of 1-hour Values Above Criterion	2	12	0

Trend



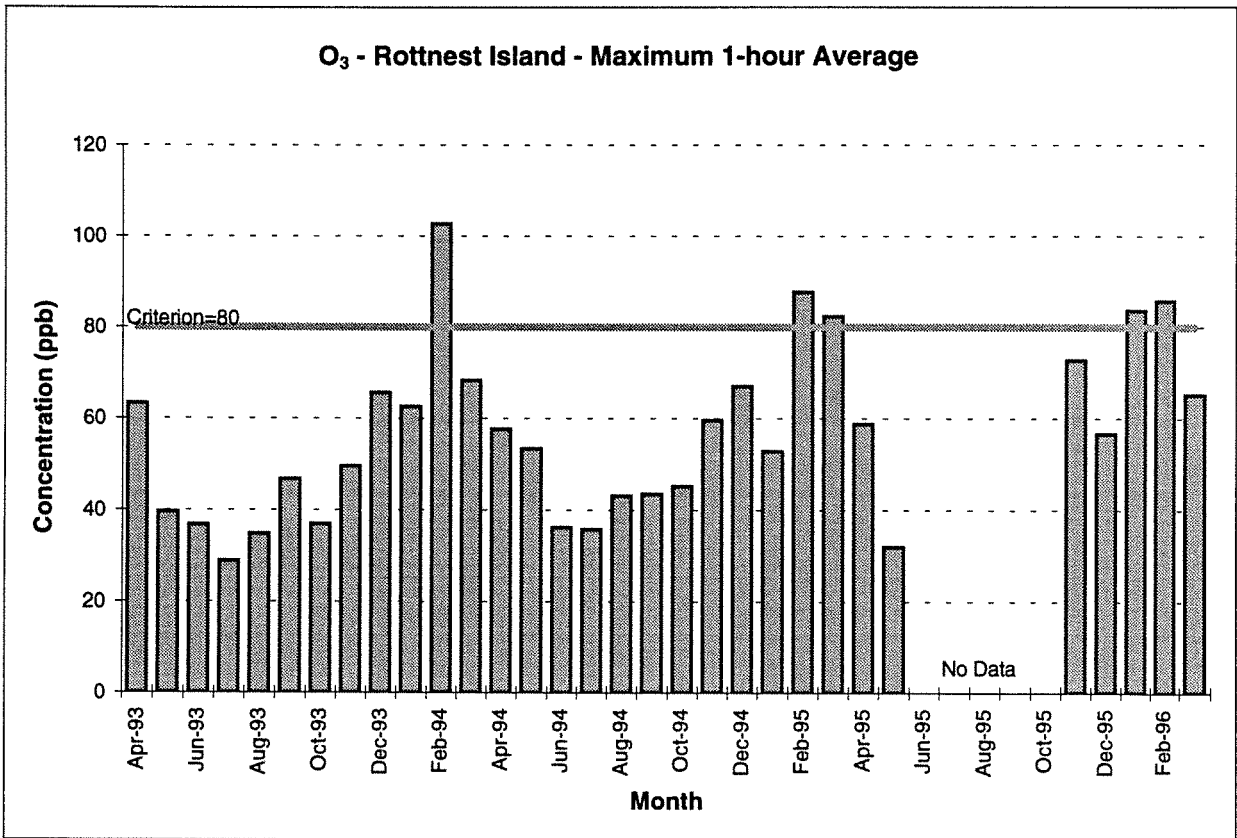
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Rottnest Island
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.1%	99.7%	98.9%
Maximum 1-hour Value (ppb)	84	86	65
Maximum 4-hour Value (ppb)	64	75	59
Maximum 8-hour Value (ppb)	50	71	46
Number of 1-hour Values Above Criterion	1	3	0

Trend



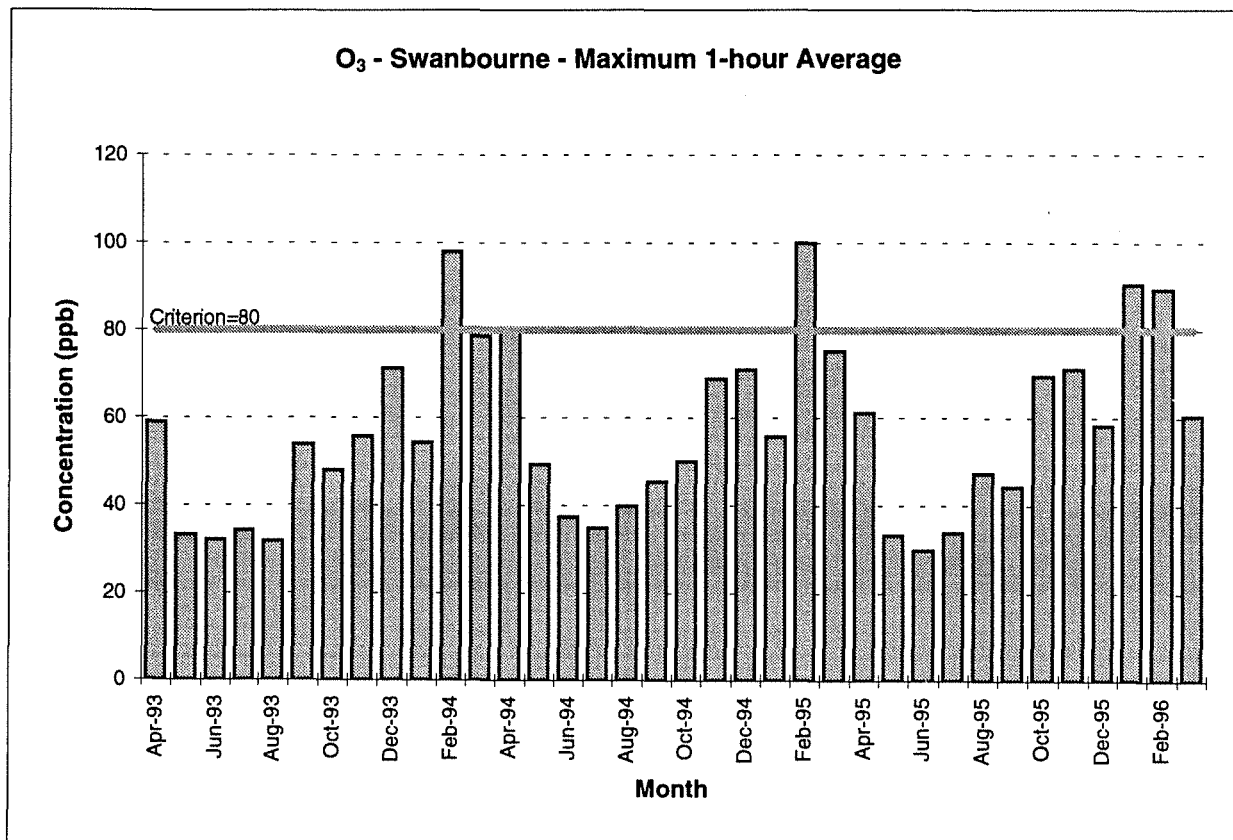
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Ozone
AQMS Location:	Swanbourne
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	80 ppb (1-hour)
Criterion Basis:	WHO

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.5%	99.7%	99.5%
Maximum 1-hour Value (ppb)	91	89	61
Maximum 4-hour Value (ppb)	66	81	47
Maximum 8-hour Value (ppb)	55	70	40
Number of 1-hour Values Above Criterion	2	3	0

Trend



Appendix A

Particulates - Lead

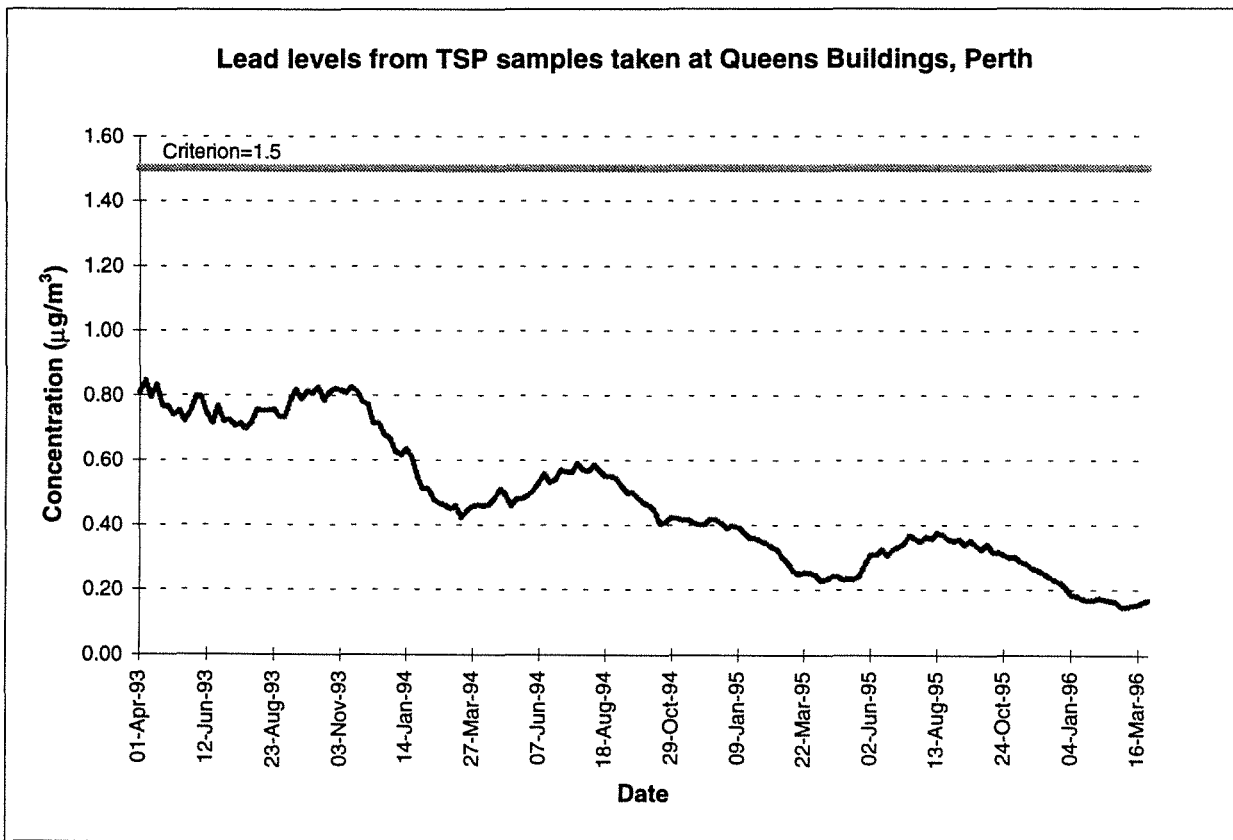
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Lead
AQMS Location:	Queens Buildings
AQMS Operated By:	DEP
Data Sampling Period:	24 hours - Every sixth day
Air Quality Criterion:	1.5 $\mu\text{g}/\text{m}^3$ (90 day running average)
Criterion Basis:	NHMRC

Results for Jan to Mar 1996

Parameter	Quarter 1 - 1996
Number of Samples	15
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	0.25
Number of 24-hour Values Above Criterion	0

Trend



Appendix A

Particulates - TSP

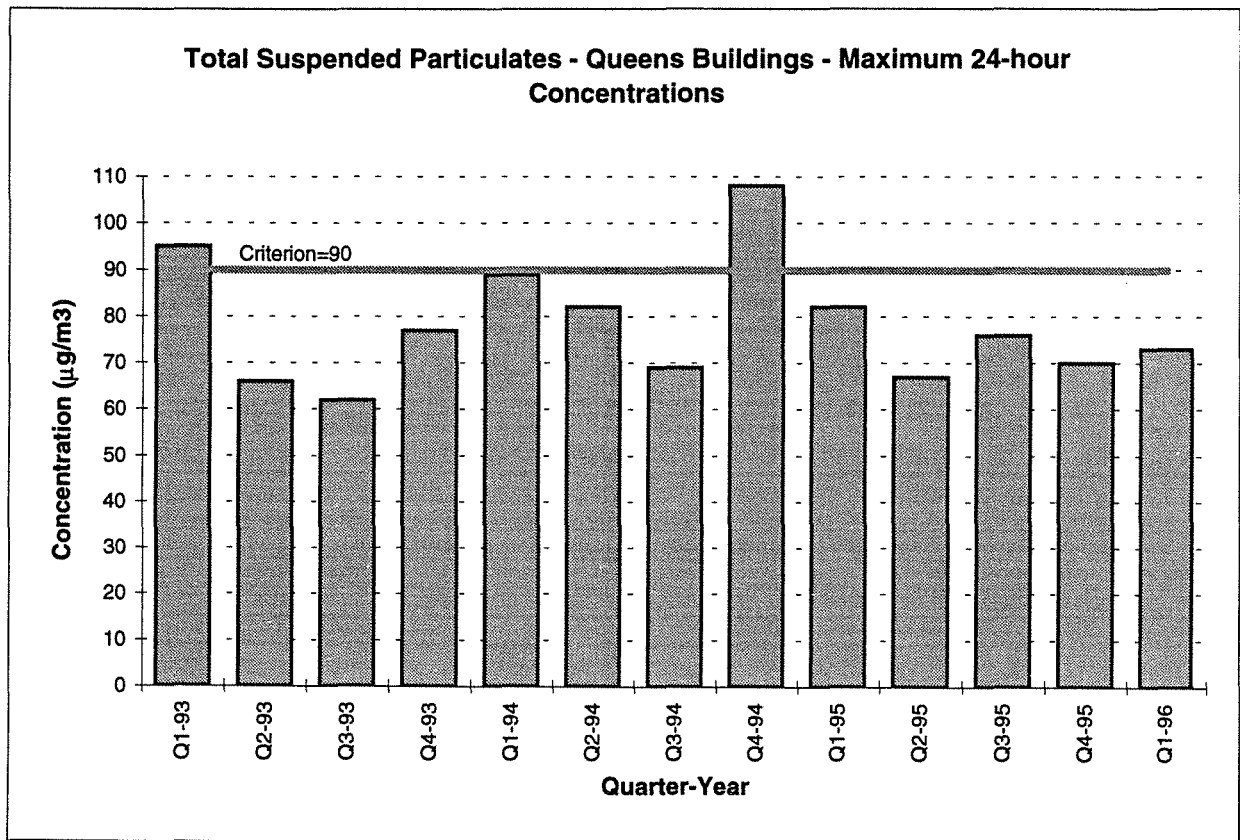
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Total Suspended Particulates
AQMS Location:	Queens Buildings
AQMS Operated By:	DEP
Data Sampling Period:	24 hours - Every sixth day
Air Quality Criterion:	90 $\mu\text{g}/\text{m}^3$ (24-hour)
Criterion Basis:	Kwinana EPP Area C

Results for Jan to Mar 1996

Parameter	Quarter 1 - 1996
Number of Samples	15
Maximum 24-hour Value (mg/m^3)	73
Number of 24-hour Values Above Criterion	0

Trend



Appendix A

Particulates - PM10

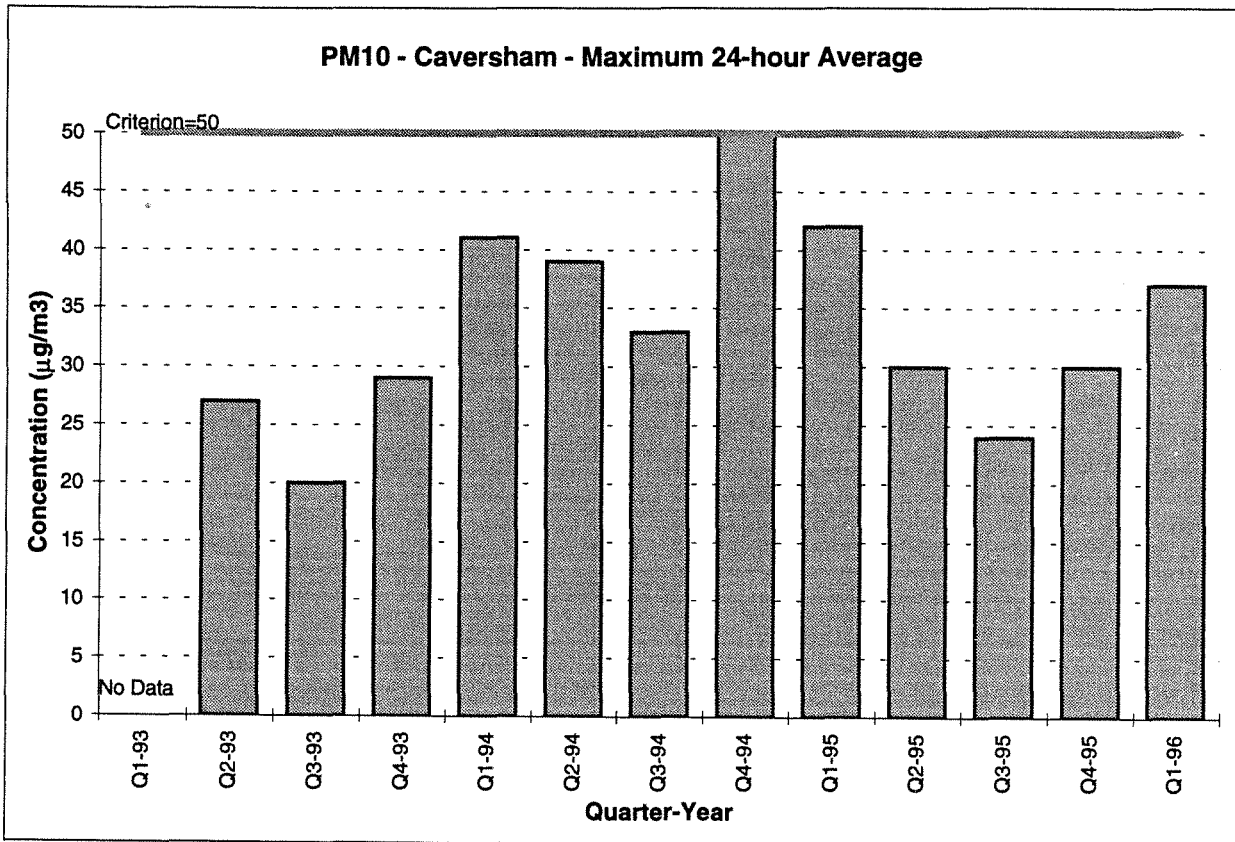
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	PM10
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	24 hour average - Every sixth day
Air Quality Criterion (provisional):	50 µg/m ³ (24-hour)
Criterion Basis:	California State

Results for Jan to Mar 1996

Parameter	Quarter 1 - 1996
Number of Samples	15
Maximum 24-hour Value (mg/m ³)	37
Number of 24-hour Values Above Criterion	0

Trend



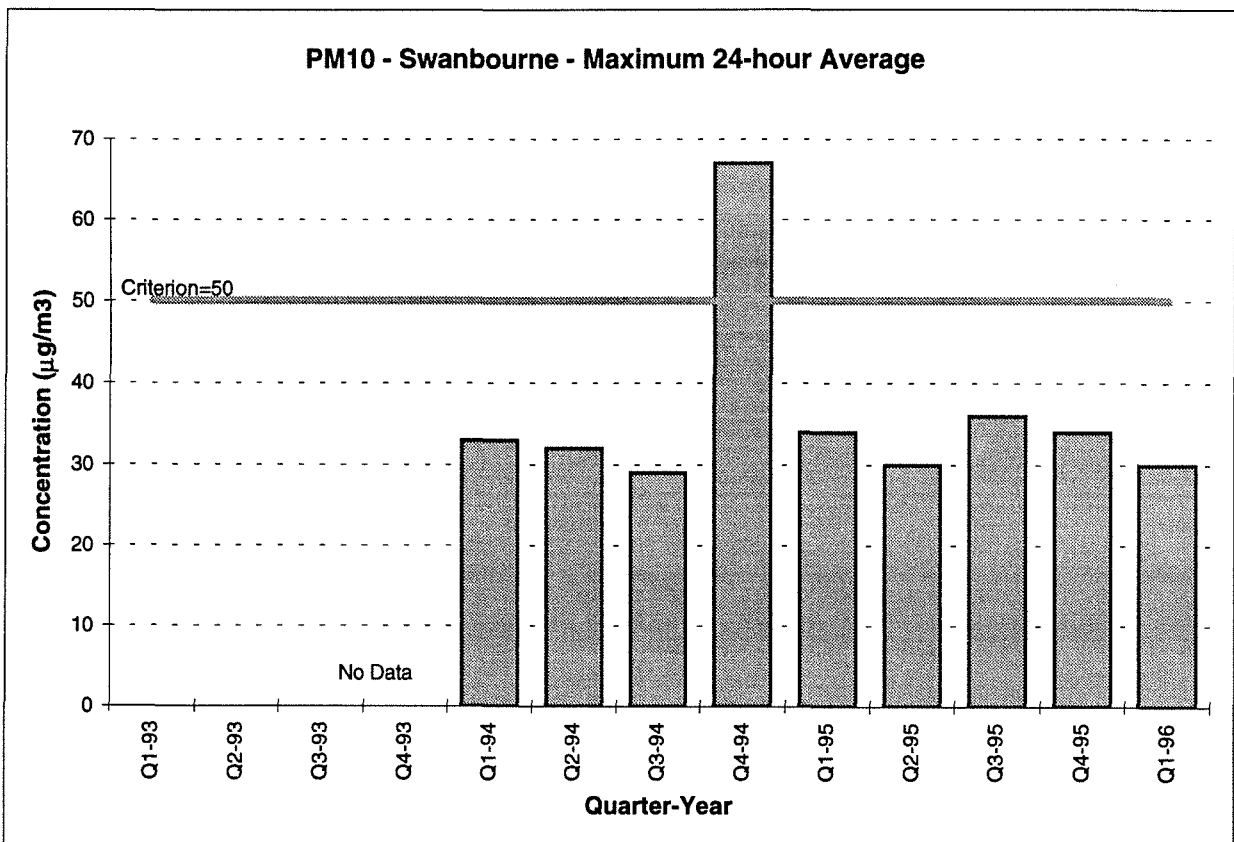
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	PM10
AQMS Location:	Swanbourne
AQMS Operated By:	DEP
Data Sampling Period:	24 hour average - Every sixth day
Air Quality Criterion (provisional):	50 µg/m³ (24-hour)
Criterion Basis:	California State

Results for Jan to Mar 1996

Parameter	Quarter 1 - 1996
Number of Samples	15
Maximum 24-hour Value (mg/m ³)	30
Number of 24-hour Values Above Criterion	0

Trend



Appendix A

Particulates - PM2.5

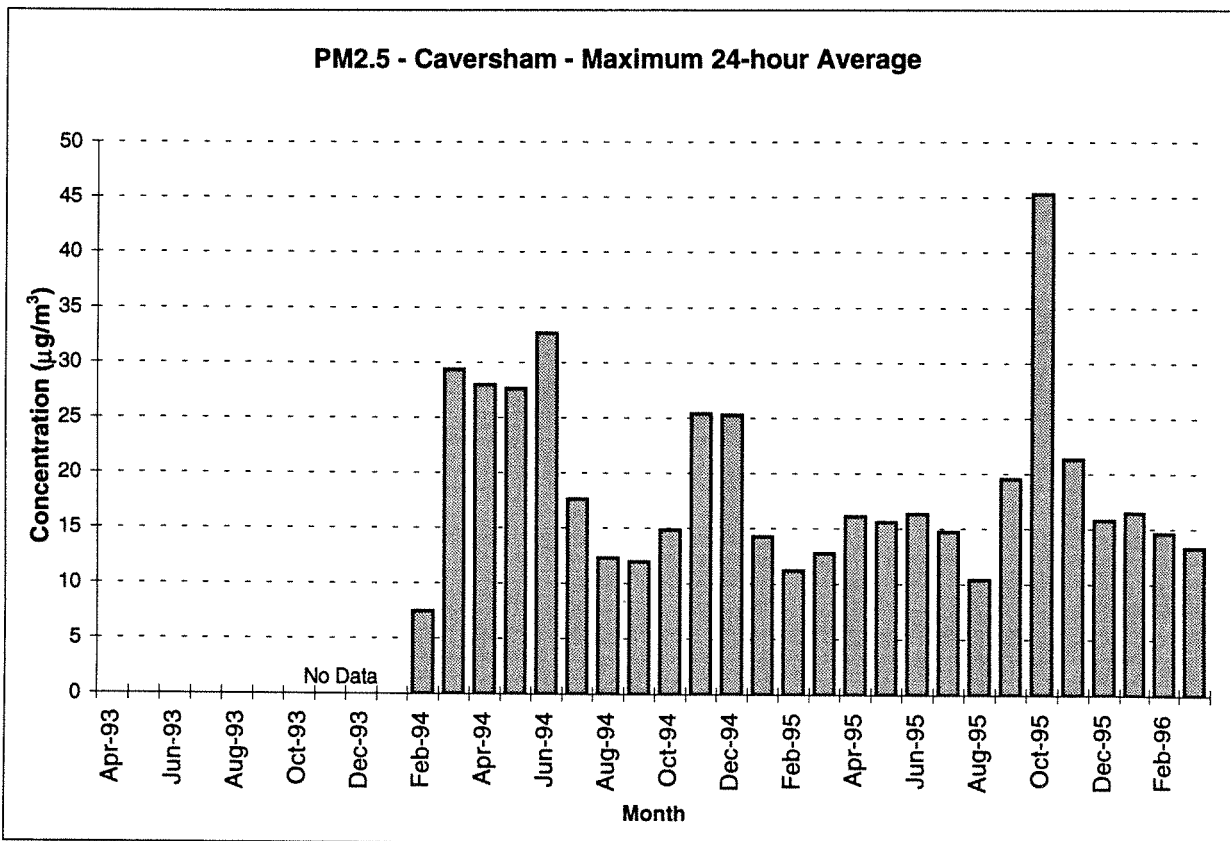
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	PM2.5
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	yet to be determined
Criterion Basis:	yet to be determined

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.9%	100.0%	99.7%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	113	148	97
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	46	76	61
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	16	15	13
Number of 24-hour Values Above Criterion	N/A	N/A	N/A

Trend



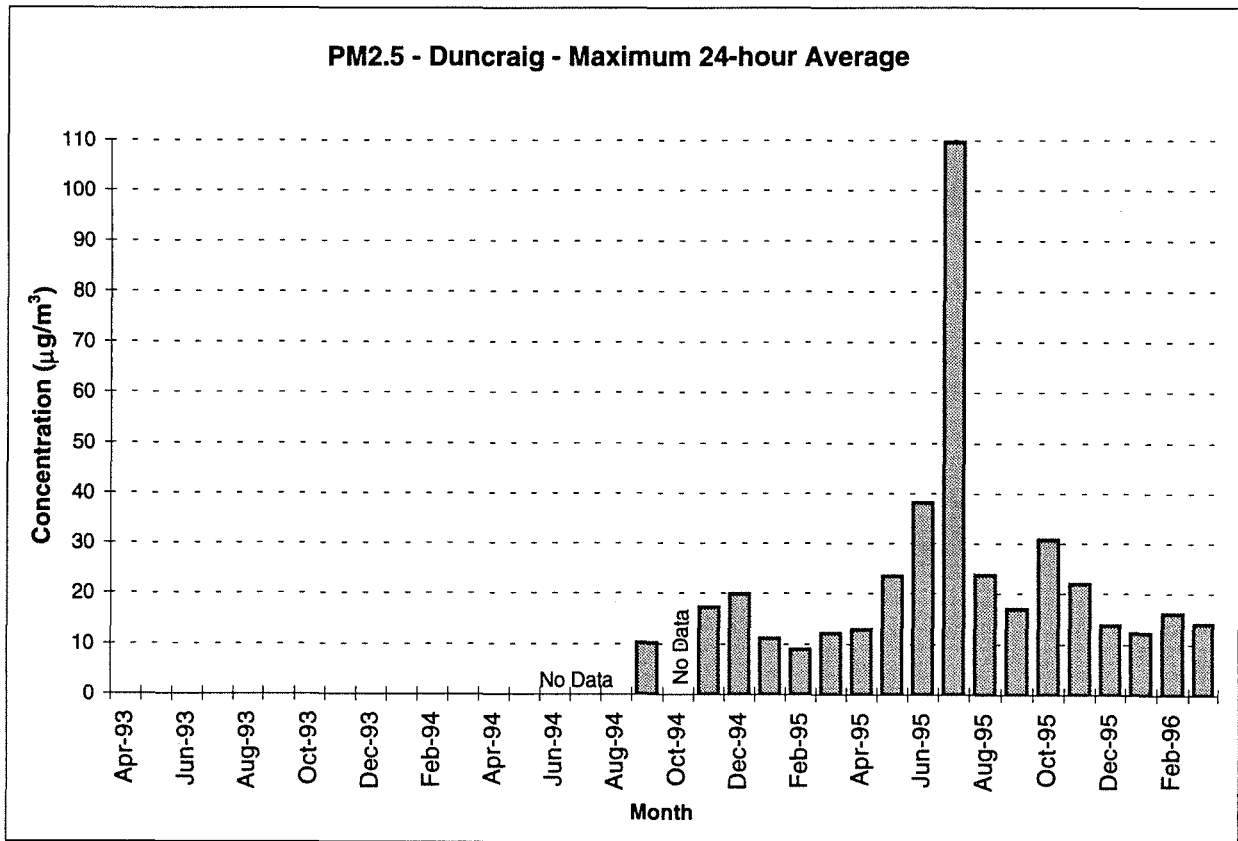
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	PM2.5
AQMS Location:	Duncraig
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	yet to be determined
Criterion Basis:	yet to be determined

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	100.0%	100.0%	99.9%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	101	155	393
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	36	63	129
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	12	16	14
Number of 24-hour Values Above Criterion	N/A	N/A	N/A

Trend



Appendix A

Sulphur Dioxide

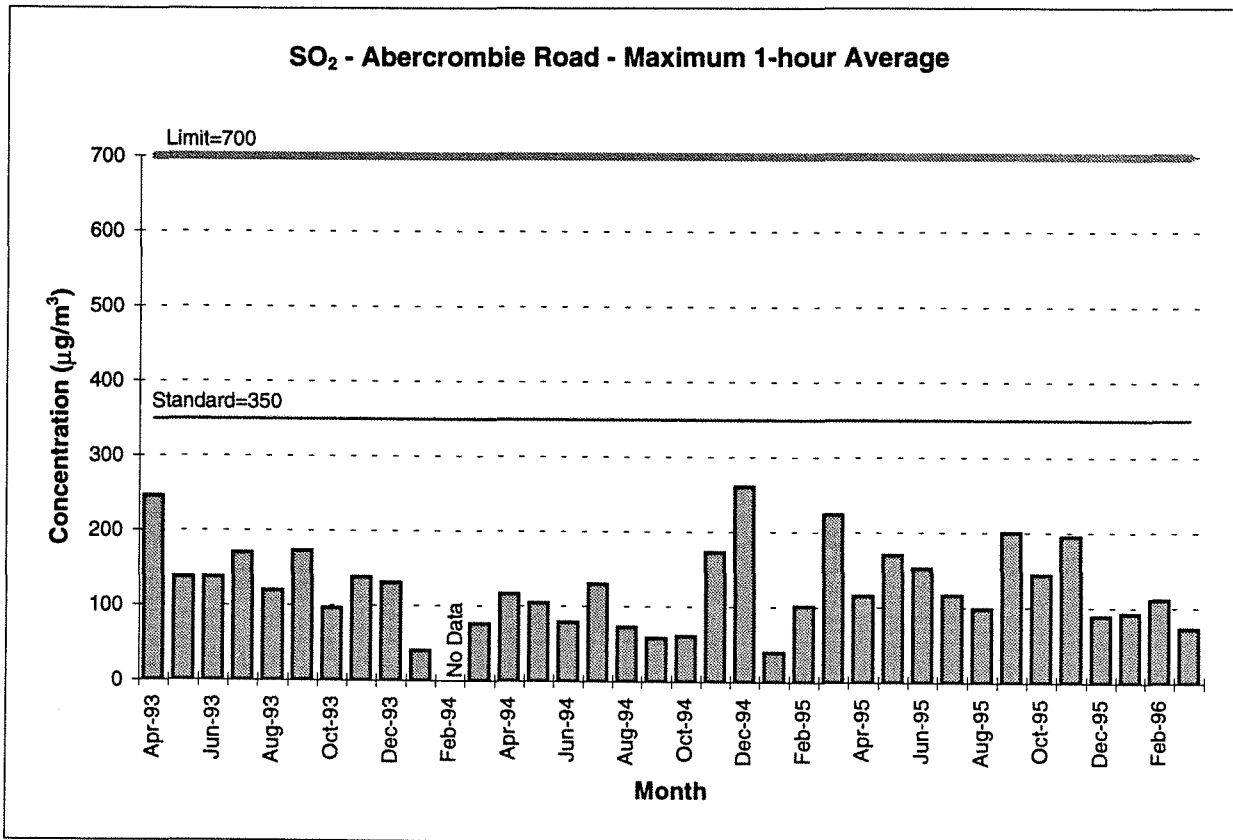
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Sulphur Dioxide
AQMS Location:	Abecrombie Road
AQMS Operated By:	Kwinana Industries Council
Data Sampling Period:	10 minute averages
Air Quality Criterion:	Standard - 350 $\mu\text{g}/\text{m}^3$ (1-hour) Limit - 700 $\mu\text{g}/\text{m}^3$ (1-hour)
Criterion Status and Basis:	Kwinana EPP Area C

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.4%	99.4%	99.5%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	154	183	103
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	92	111	73
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	19	15	9
Number of 1-hour Values Above Standard	0	0	0

Trend



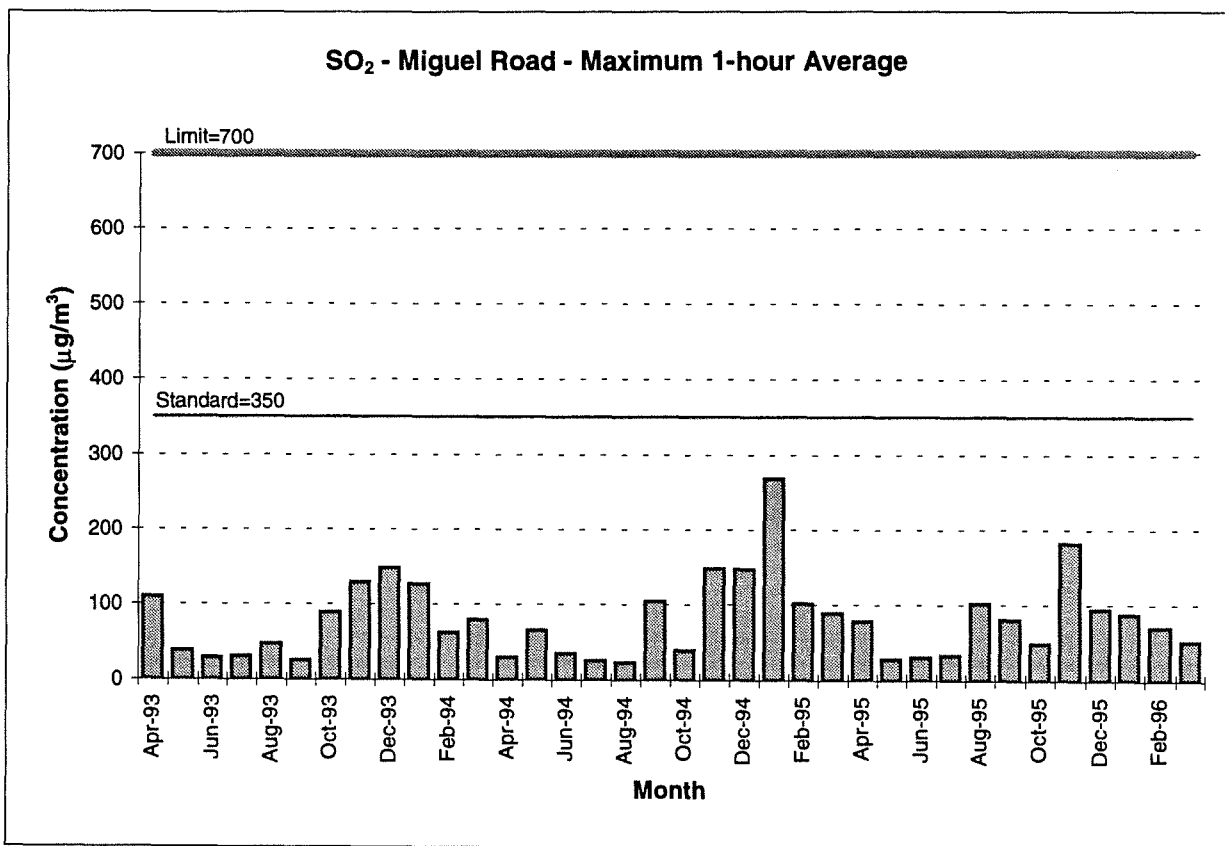
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Sulphur Dioxide
AQMS Location:	Miguel Road
AQMS Operated By:	Kwinana Industries Council
Data Sampling Period:	10 minute averages
Air Quality Criterion:	Standard - 350 $\mu\text{g}/\text{m}^3$ (1-hour) Limit - 700 $\mu\text{g}/\text{m}^3$ (1-hour)
Criterion Status and Basis:	Kwinana EPP Area C

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	98.8%	99.4%	99.4%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	103	94	66
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	87	70	51
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	11	13	6
Number of 1-hour Values Above Standard	0	0	0

Trend



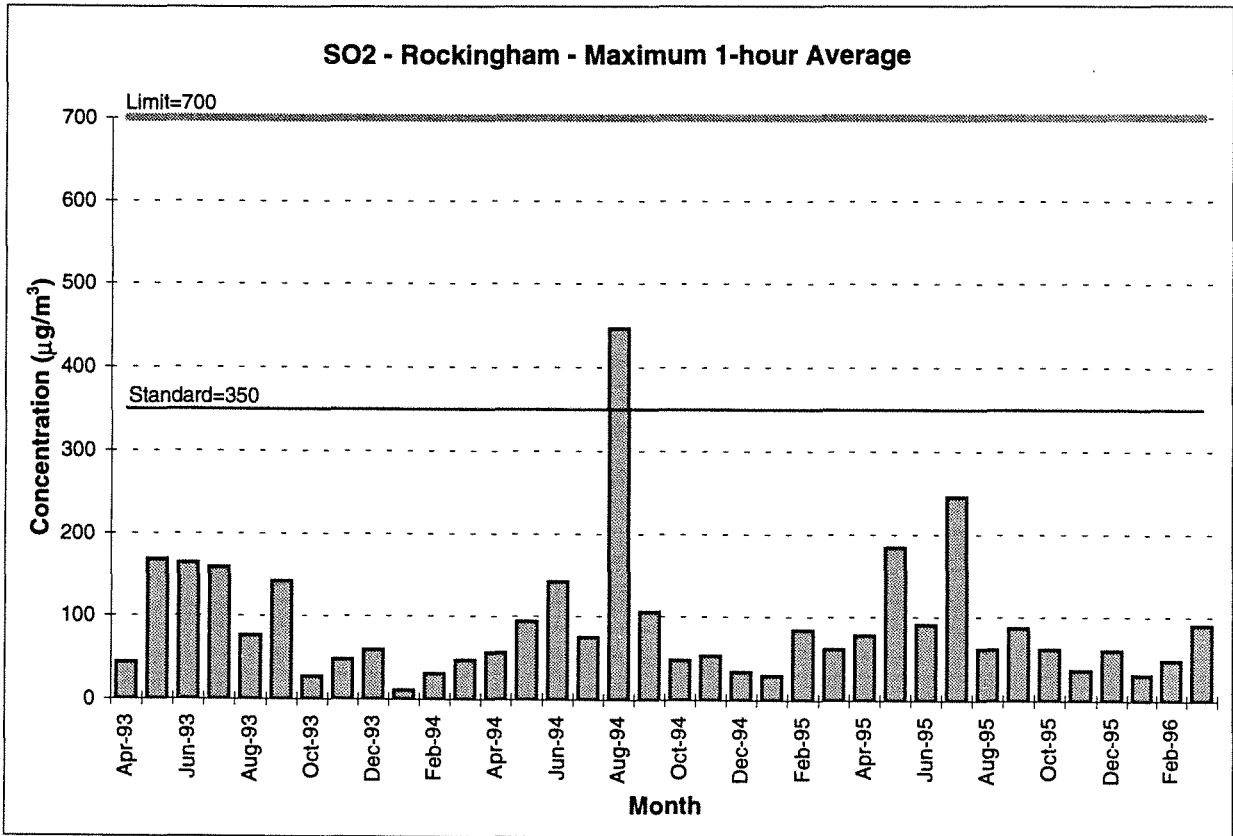
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Sulphur Dioxide
AQMS Location:	Rockingham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	Standard - 350 $\mu\text{g}/\text{m}^3$ (1-hour) Limit - 700 $\mu\text{g}/\text{m}^3$ (1-hour)
Criterion Status and Basis:	Kwinana EPP Area C

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.3%	99.6%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	54	129	126
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	31	48	90
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	5	7	12
Number of 1-hour Values Above Standard	0	0	0

Trend



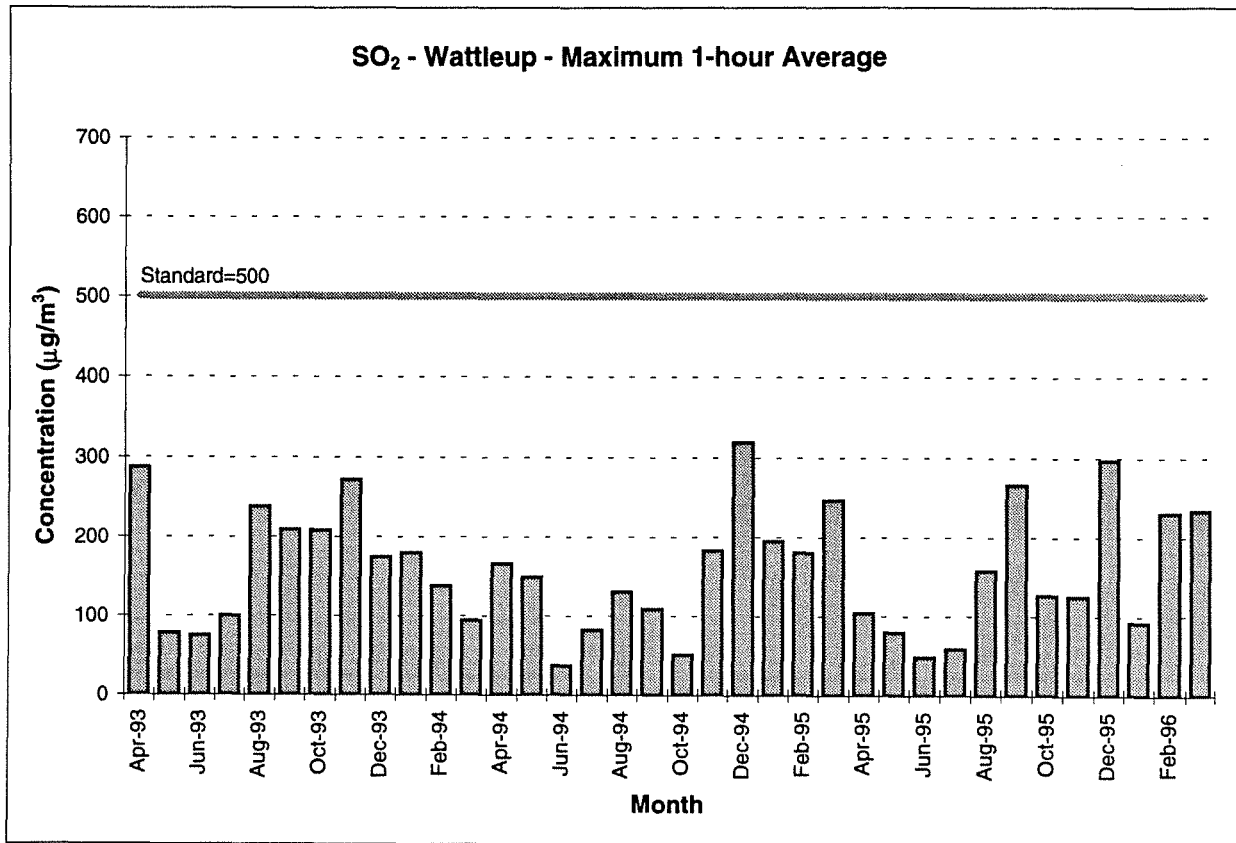
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Sulphur Dioxide
AQMS Location:	Wattleup
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	Standard - 500 $\mu\text{g}/\text{m}^3$ (1-hour) Limit - 1000 $\mu\text{g}/\text{m}^3$ (1-hour)
Criterion Status and Basis:	Kwinana EPP Area B

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.8%	99.8%	99.7%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	183	366	311
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	92	231	234
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	21	32	31
Number of 1-hour Values Above Standard	0	0	0

Trend



Appendix A

Visibility

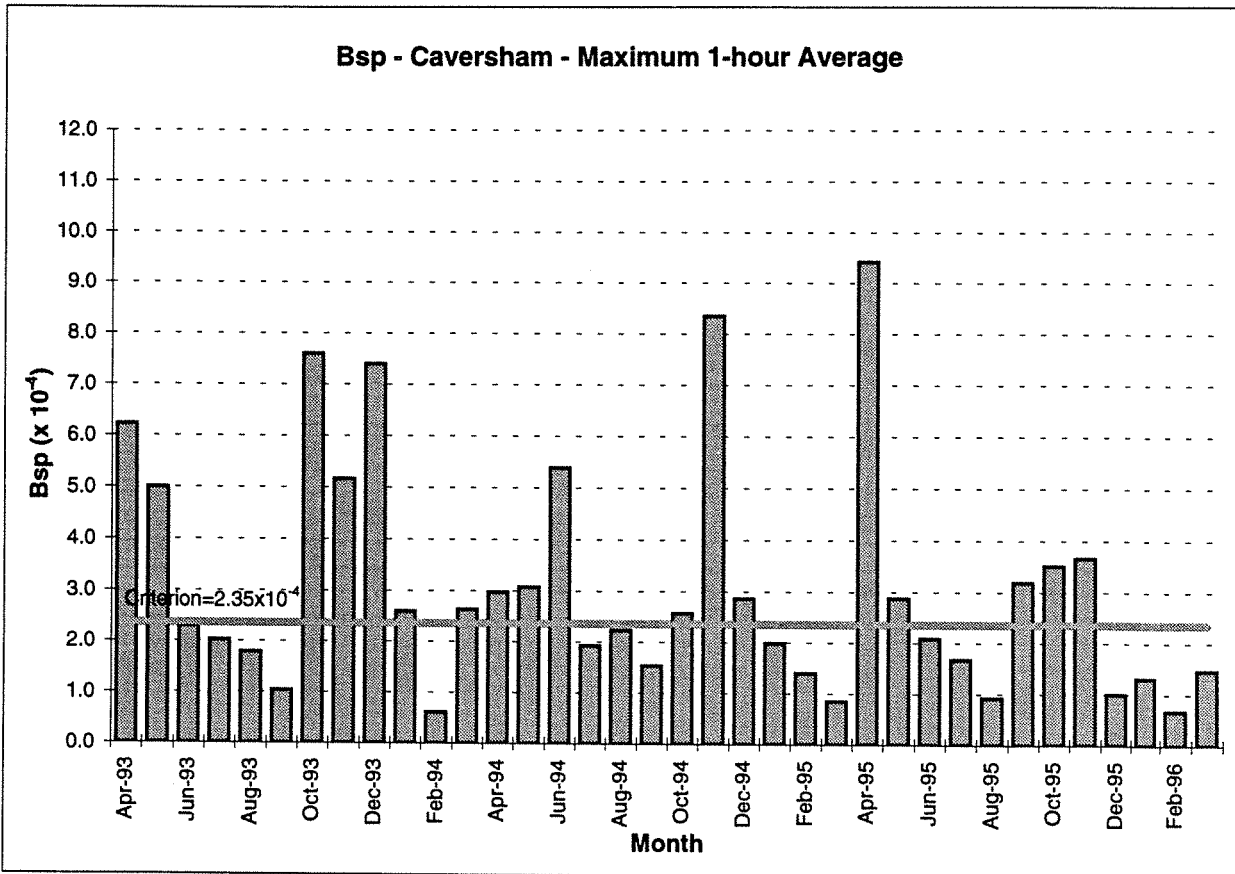
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Caversham
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	86.5%	99.8%	99.4%
Maximum 1-hour Value (Bsp)	1.31	0.68	1.47
Maximum 24-hour Value (Bsp)	0.36	0.34	0.30
Number of 1-hour Values Above Criterion	0	0	0

Trend



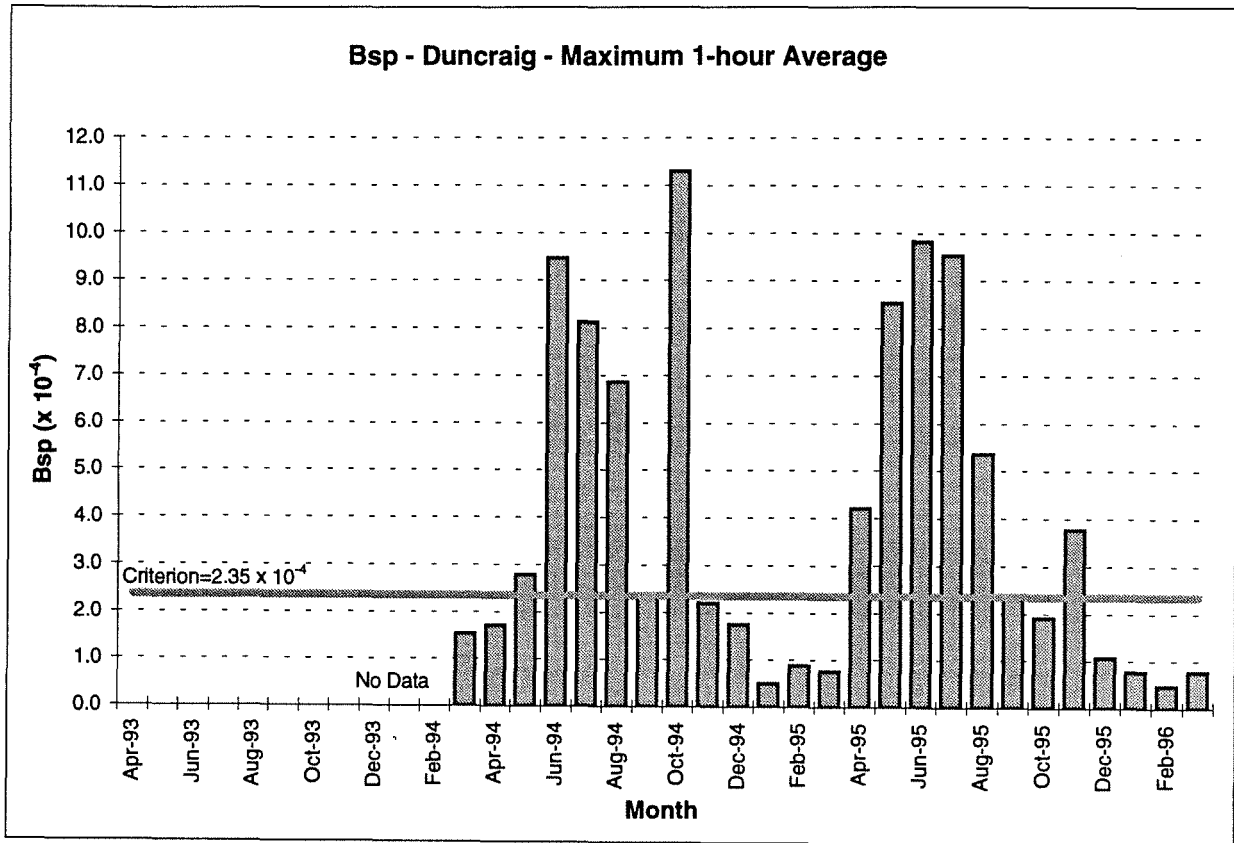
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Duncraig
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Feb-96
Data Recovery	99.8%	99.7%	99.7%
Maximum 1-hour Value (Bsp)	0.77	0.48	0.77
Maximum 24-hour Value (Bsp)	0.33	0.29	0.22
Number of 1-hour Values Above Criterion	0	0	0

Trend



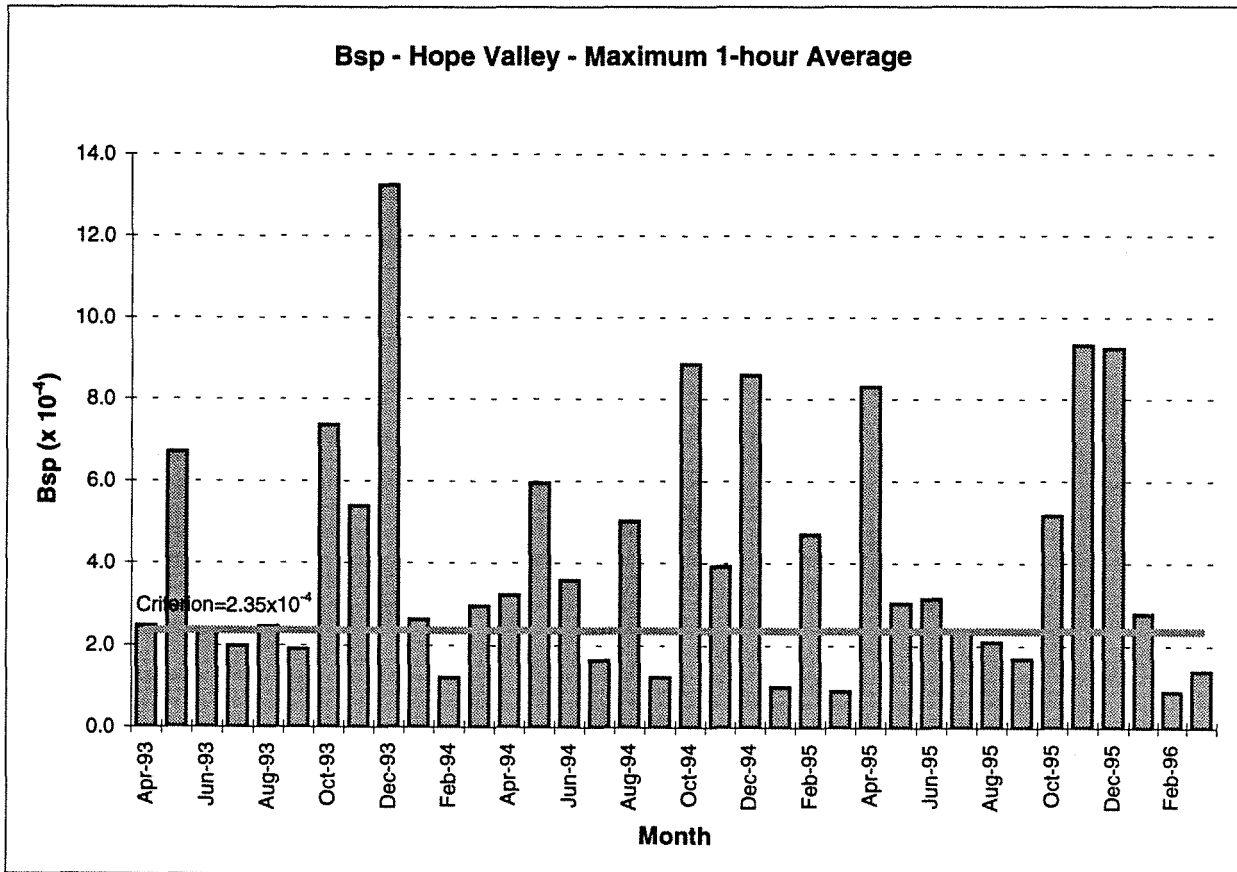
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Hope Valley
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Feb-96
Data Recovery	99.8%	99.8%	99.8%
Maximum 1-hour Value (Bsp)	2.78	0.88	1.38
Maximum 24-hour Value (Bsp)	0.57	0.37	0.40
Number of 1-hour Values Above Criterion	1	0	0

Trend



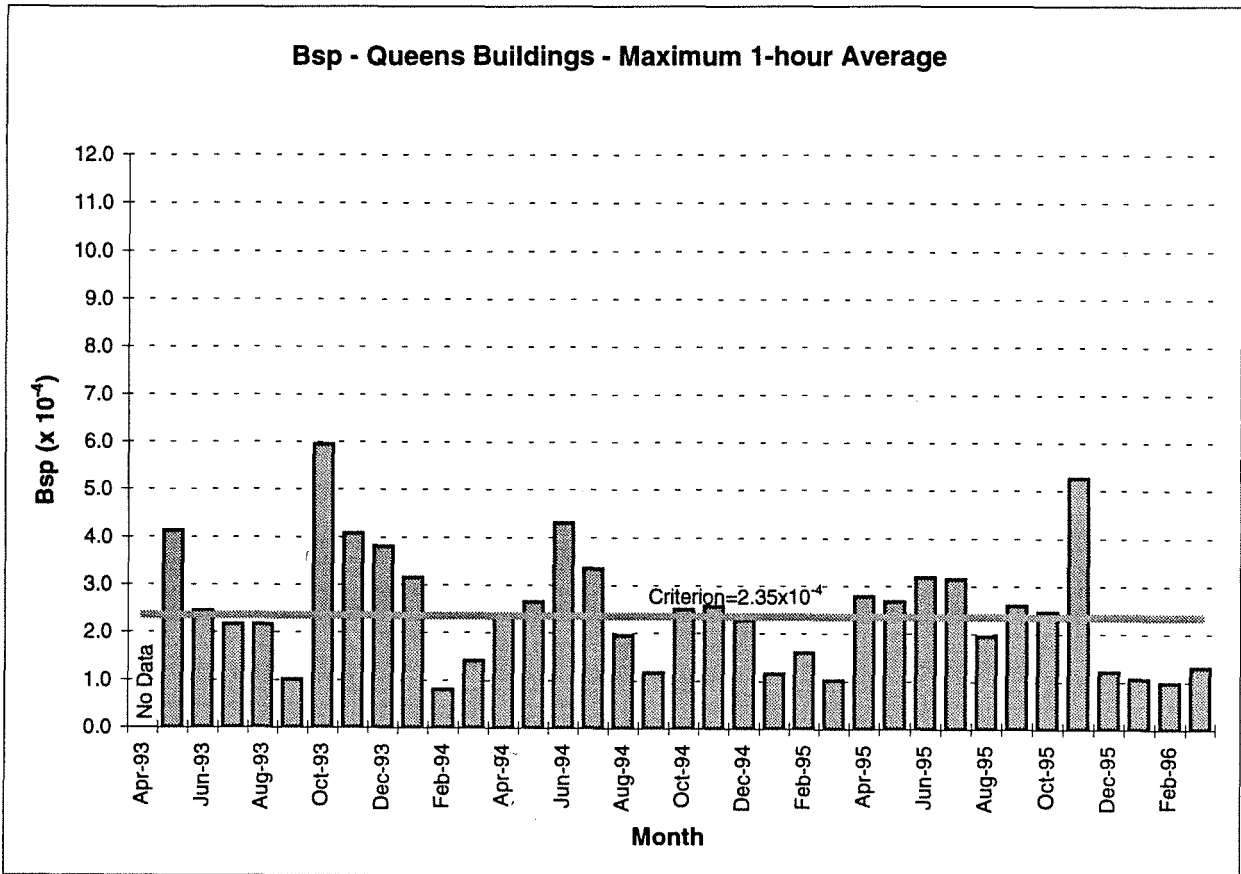
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Queens Buildings
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Feb-96
Data Recovery	82.1%	90.1%	99.8%
Maximum 1-hour Value (Bsp)	1.07	0.99	1.31
Maximum 24-hour Value (Bsp)	0.48	0.50	0.35
Number of 1-hour Values Above Criterion	0	0	0

Trend



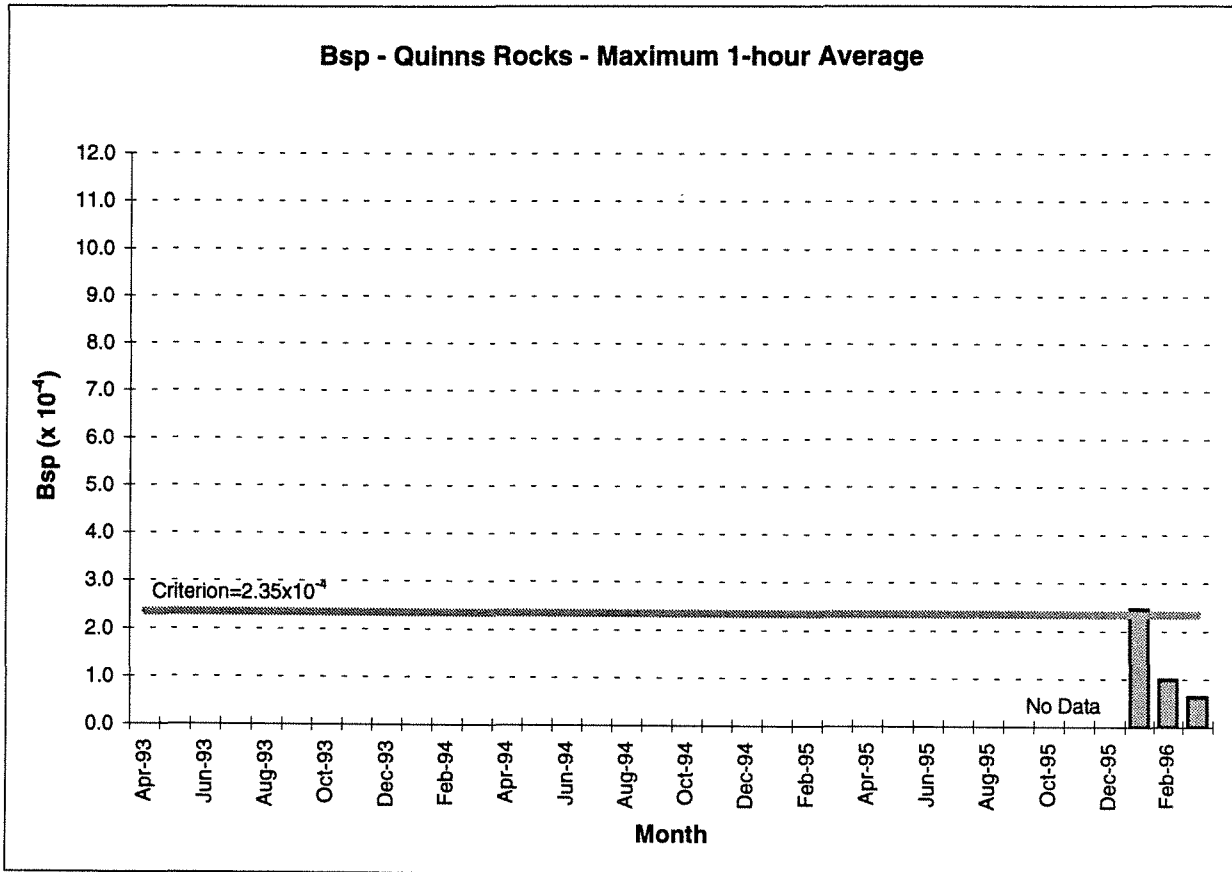
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Quinns Rocks
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Feb-96
Data Recovery	99.7%	99.8%	99.8%
Maximum 1-hour Value (Bsp)	2.47	1.00	0.63
Maximum 24-hour Value (Bsp)	0.48	0.52	0.37
Number of 1-hour Values Above Criterion	1	0	0

Trend



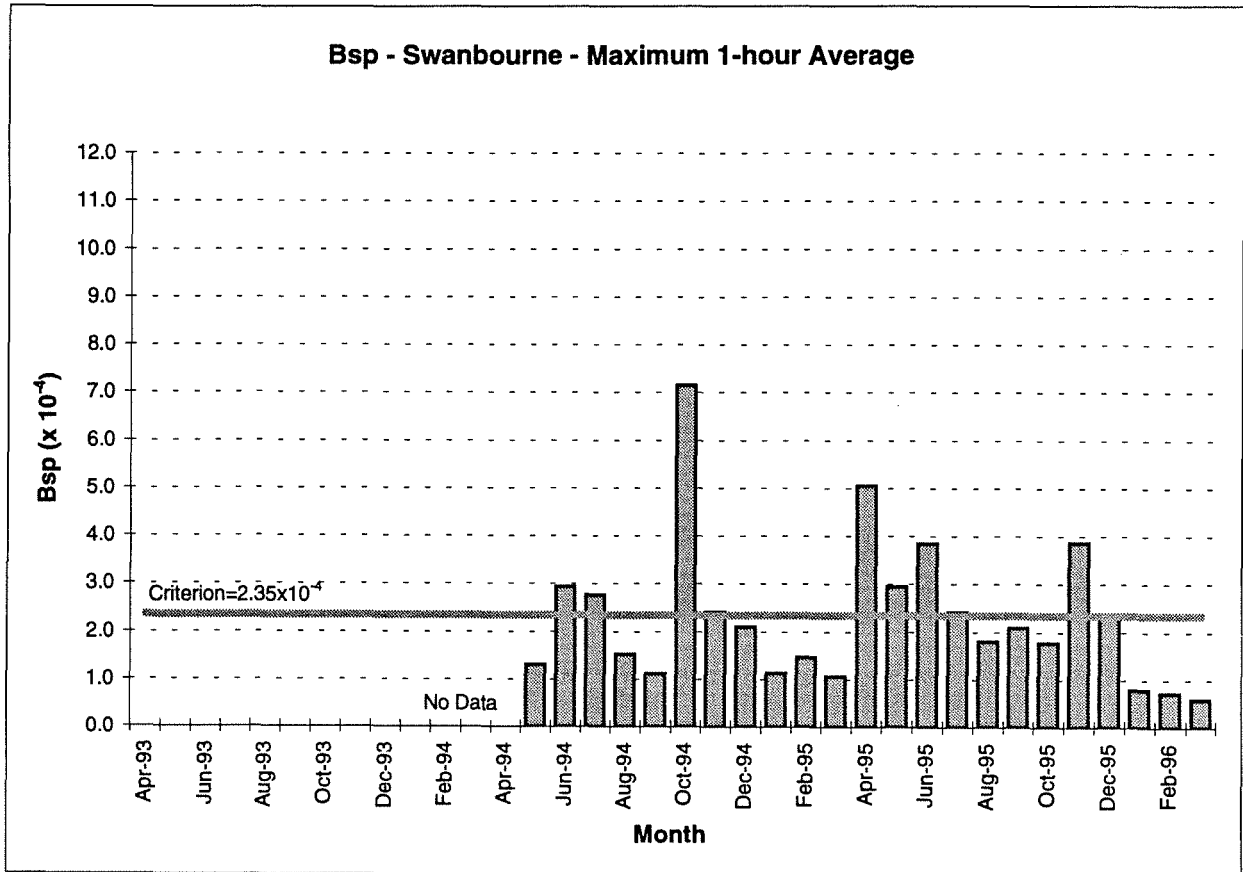
Data Measurement Details

SOE Region:	Perth Metropolitan
Pollutant:	Visibility
AQMS Location:	Swanbourne
AQMS Operated By:	DEP
Data Sampling Period:	10 minute averages
Air Quality Criterion:	2.35×10^{-4} Bsp (1-hour)
Criterion Status and Basis:	VEPA

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Feb-96
Data Recovery	99.8%	99.8%	99.8%
Maximum 1-hour Value (Bsp)	0.79	0.73	0.60
Maximum 24-hour Value (Bsp)	0.42	0.47	0.31
Number of 1-hour Values Above Criterion	0	0	0

Trend



Appendix B

Sulphur Dioxide

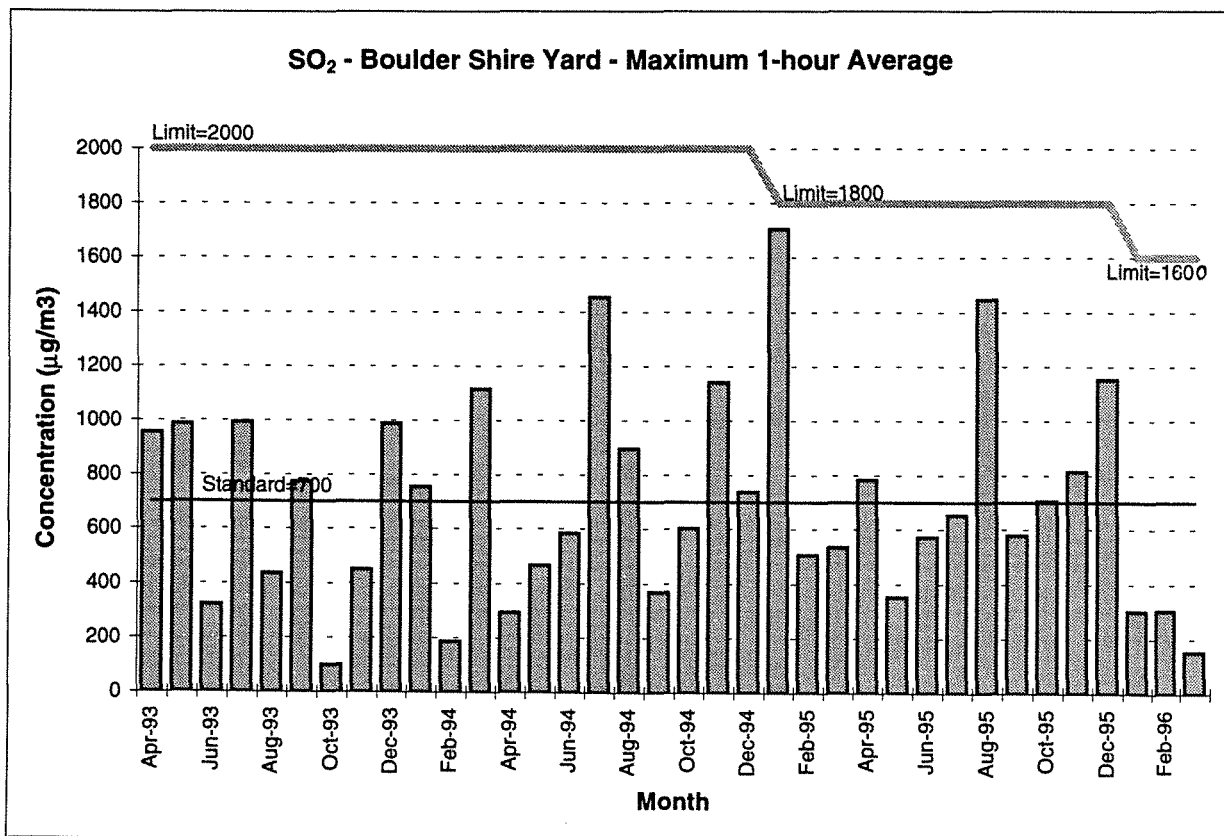
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Boulder Shire Yard
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	96.7%	93.8%	93.9%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	543	511	357
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	302	306	153
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	56	18	16
Number of 1-hour Values Above Standard	0	0	0

Trend



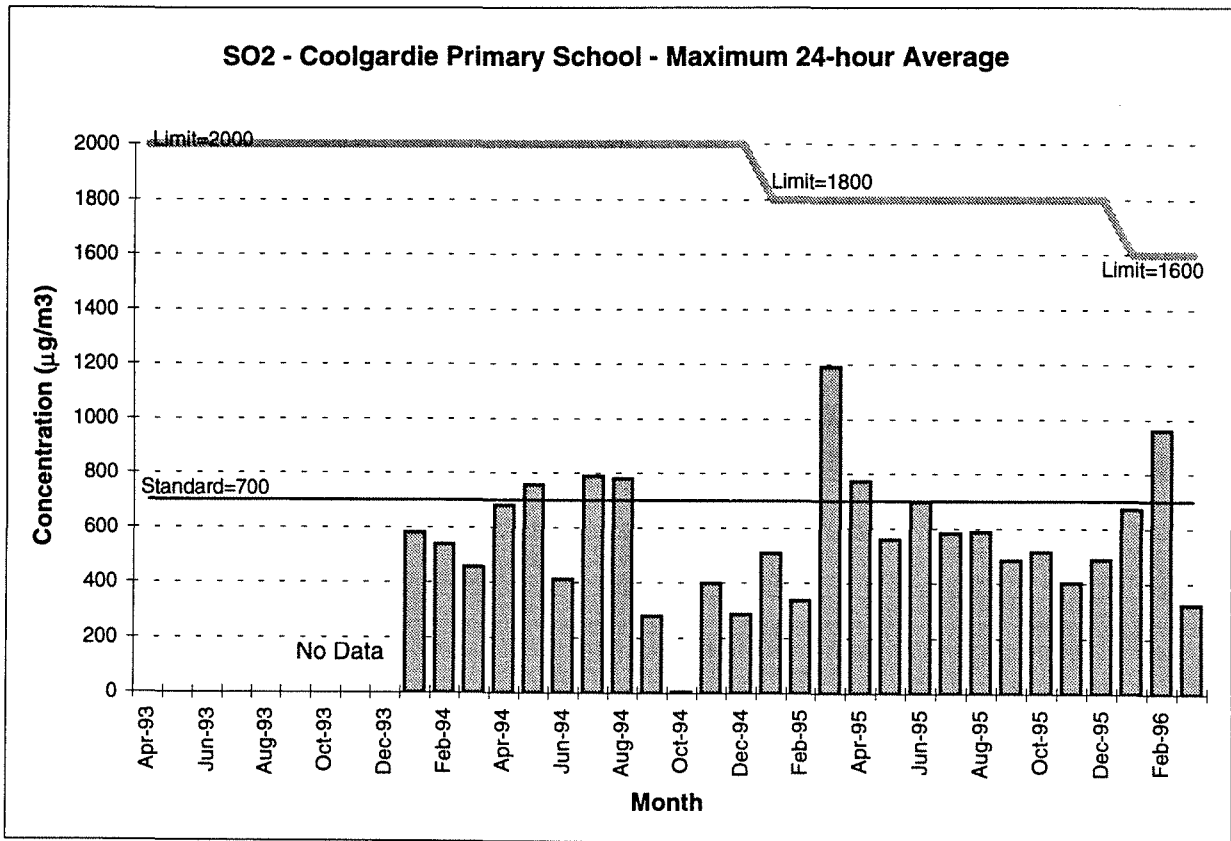
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Coolgardie Primary School
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.3%	94.5%	99.5%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	880	1536	414
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	671	960	322
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	77	116	53
Number of 1-hour Values Above Standard	0	3	0

Trend



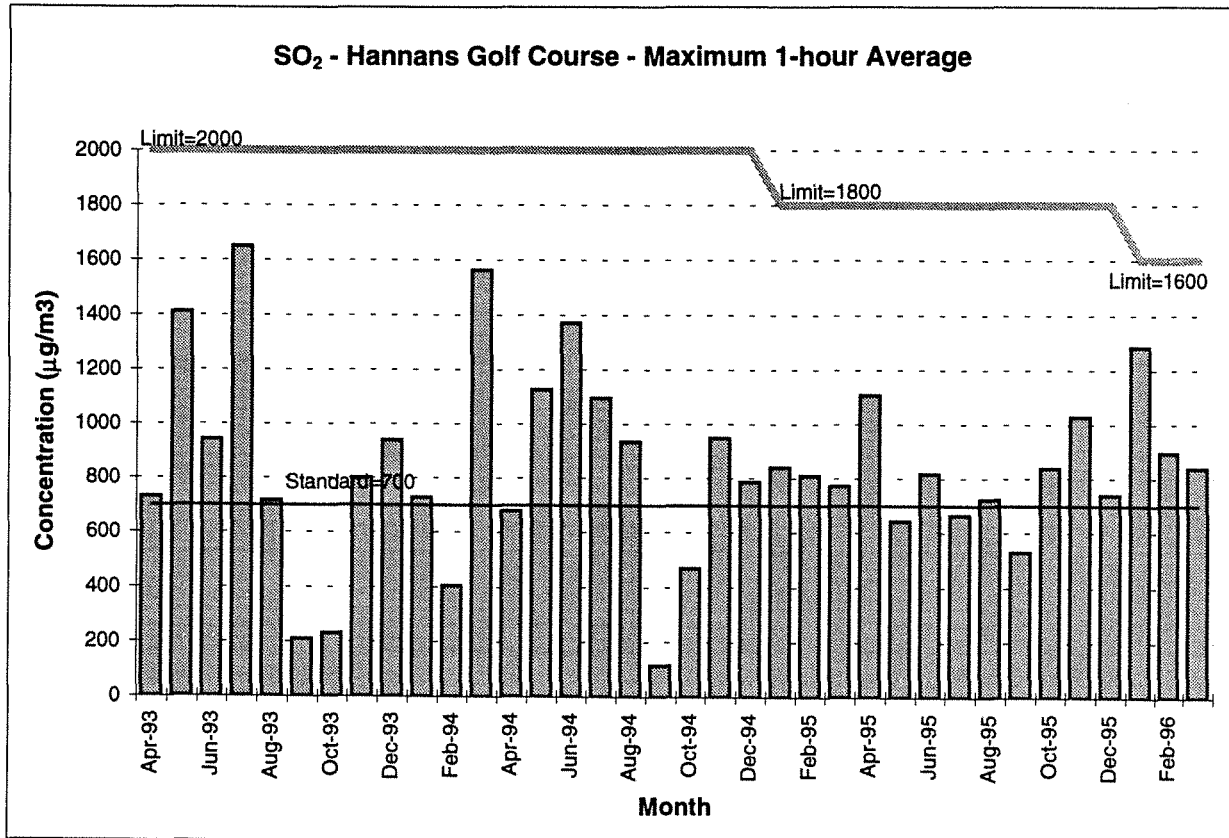
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Hannans Golf Club
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.0%	94.7%	99.4%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	1633	1751	2039
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1284	894	837
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	96	78	52
Number of 1-hour Values Above Standard	2	1	2

Trend



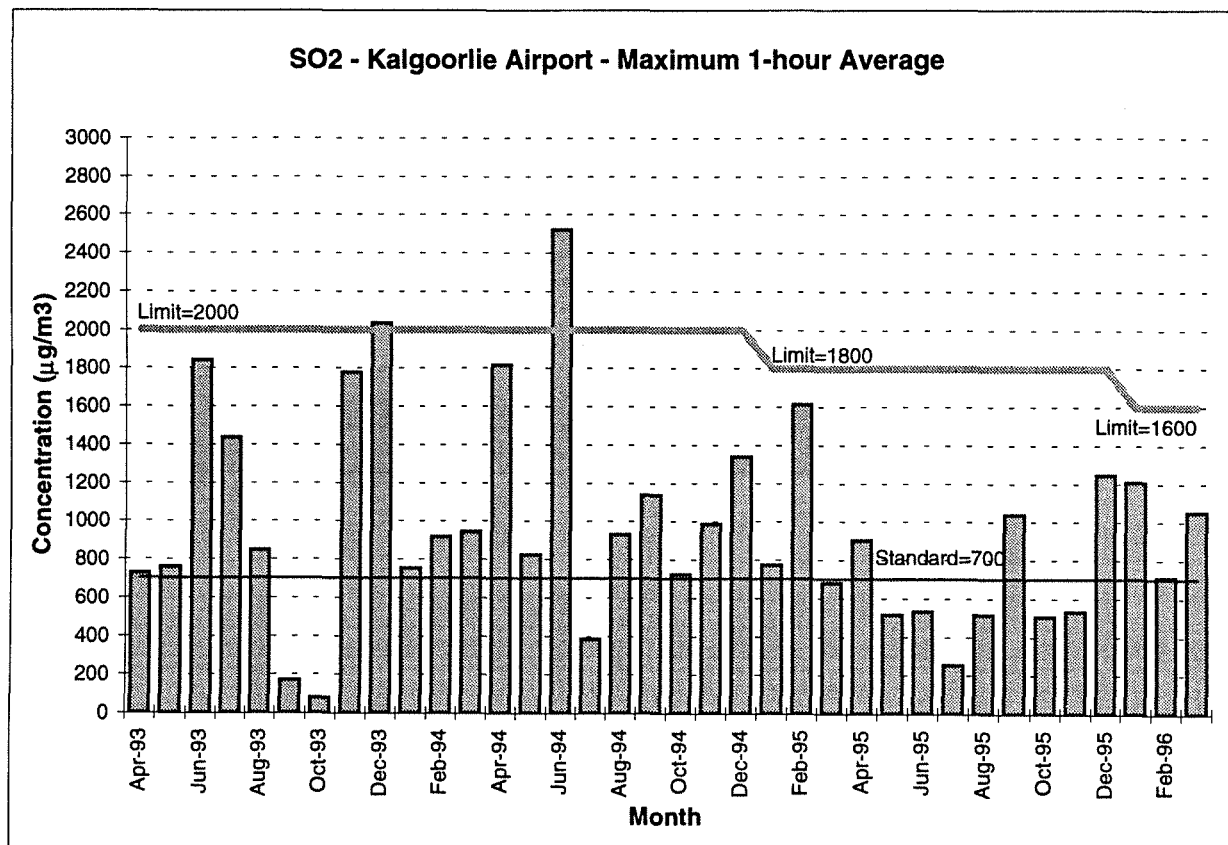
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Kalgoorlie Airport
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.6%	94.2%	99.0%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	2290	2076	1813
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1210	710	1050
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	143	90	225
Number of 1-hour Values Above Standard	4	1	4

Trend



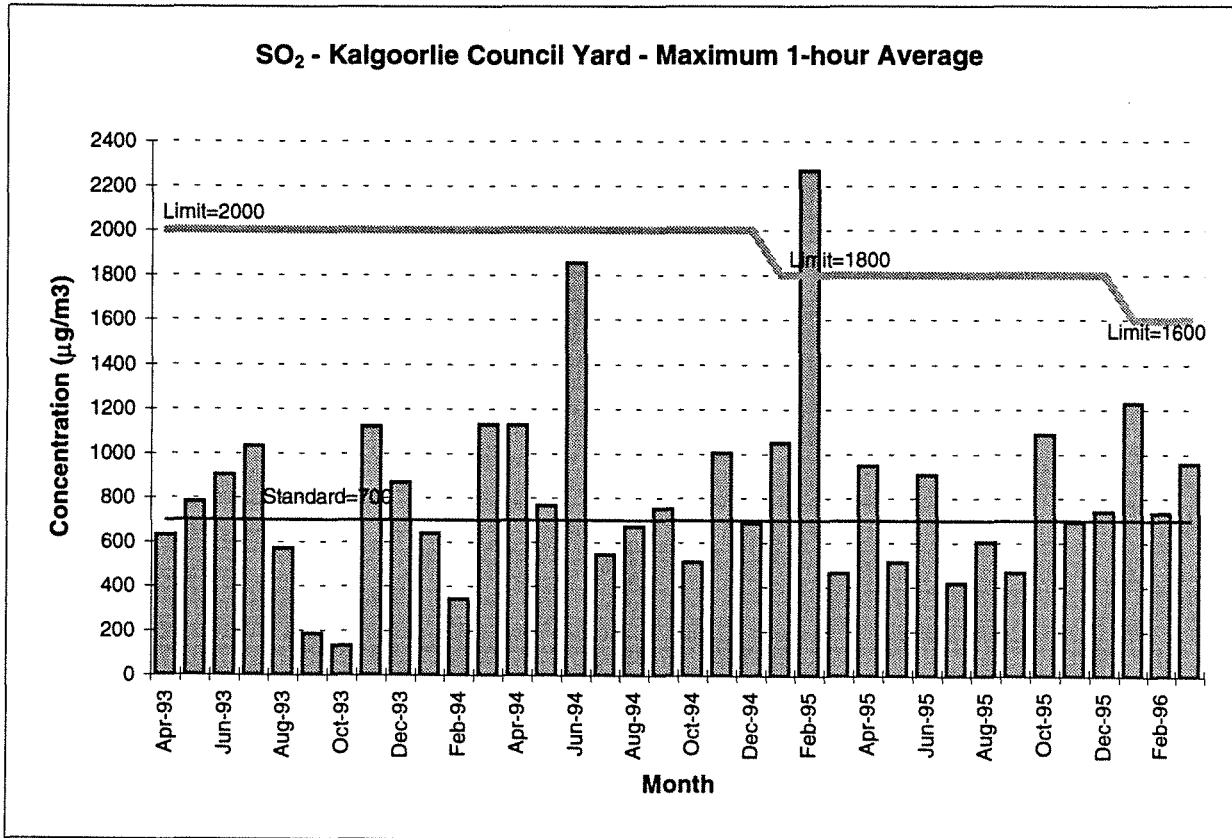
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Kalgoorlie Council Yard
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.4%	94.1%	99.0%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	1959	1219	1939
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1228	735	956
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	107	106	80
Number of 1-hour Values Above Standard	1	1	2

Trend



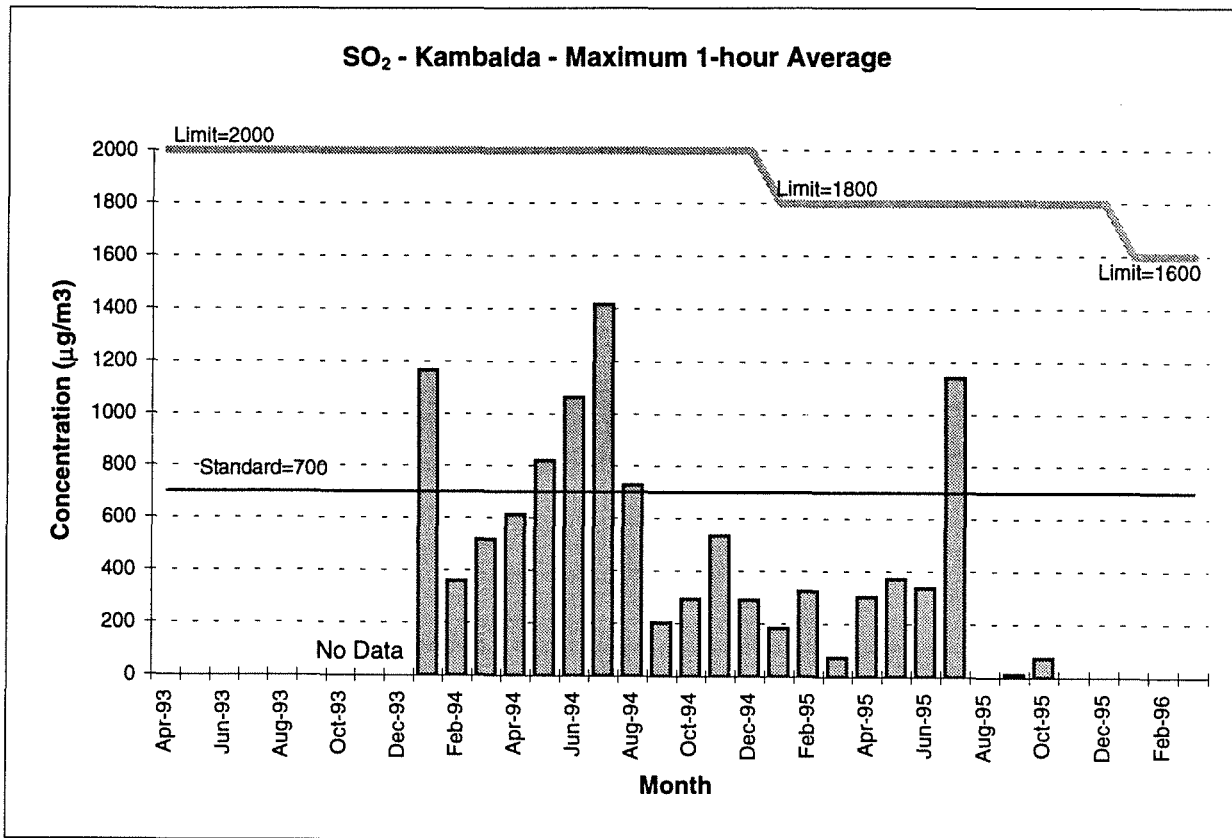
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Kambalda
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 µg/m ³ (1-hour) Limit (to 31/12/94) - 2000 µg/m ³ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 µg/m ³ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 µg/m ³ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	99.5%	91.4%	99.2%
Maximum 10-minute Value (µg/m3)	0	0	0
Maximum 1-hour Value (µg/m3)	0	0	0
Maximum 24-hour Value (µg/m3)	0	0	0
Number of 1-hour Values Above Standard	0	0	0

Trend



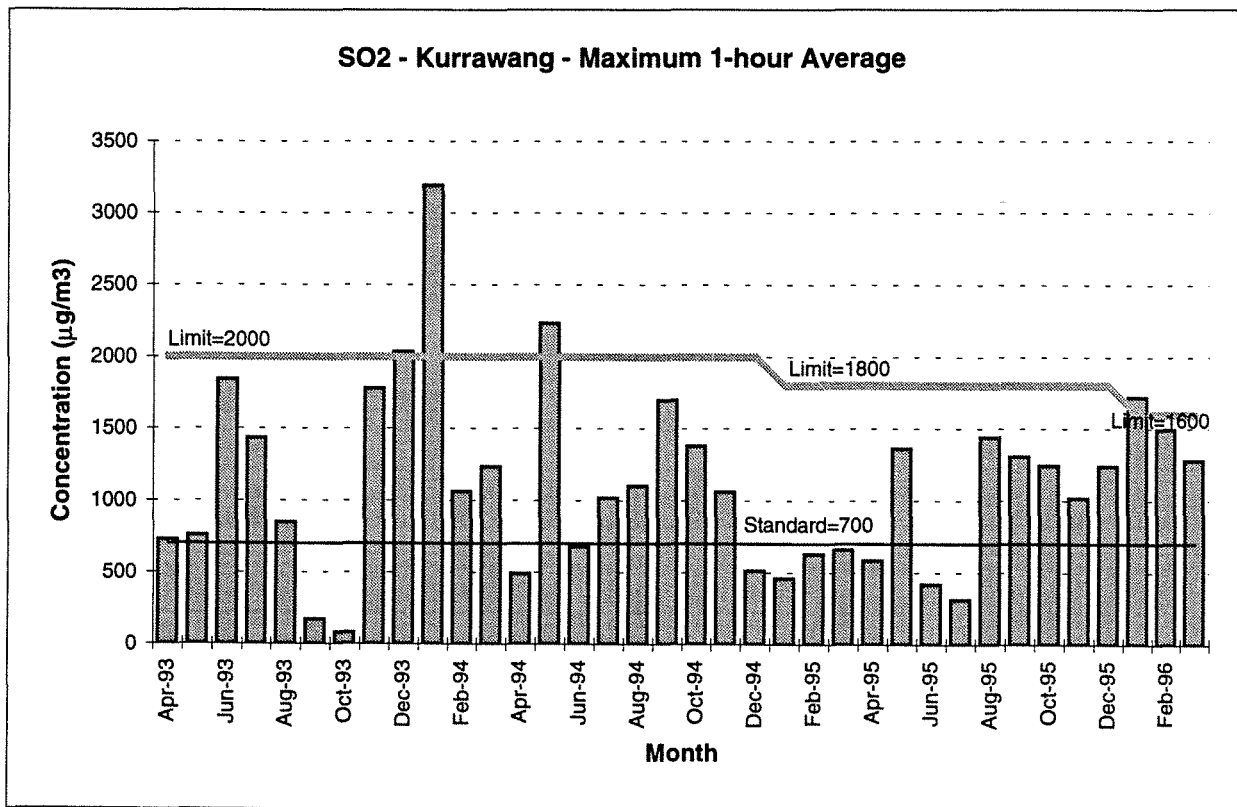
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Kurrawang
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.0%	94.2%	99.5%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	2964	2644	2910
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1723	1498	1284
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	318	146	237
Number of 1-hour Values Above Standard	9	7	5

Trend



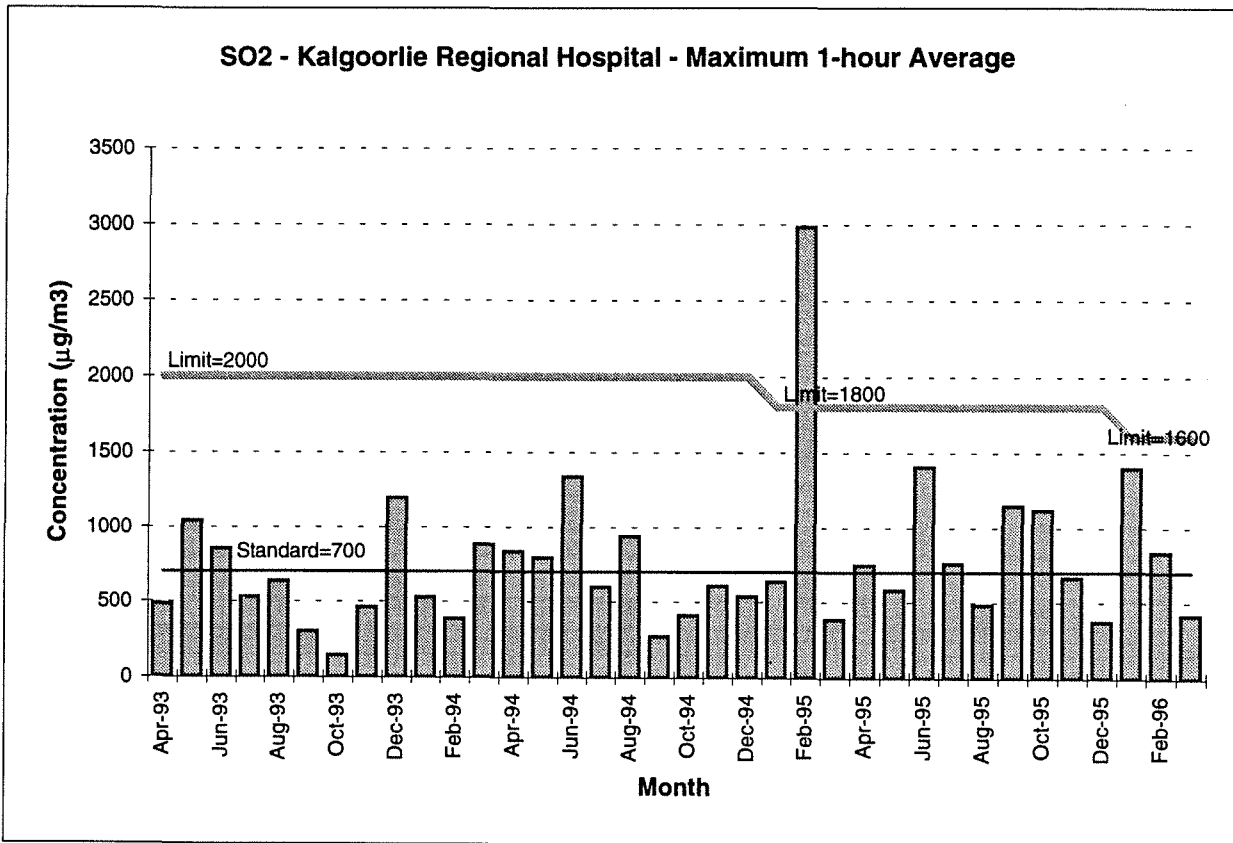
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Regional Hospital
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.3%	94.7%	99.5%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	5928	1656	1348
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1396	835	417
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	140	75	39
Number of 1-hour Values Above Standard	4	1	0

Trend



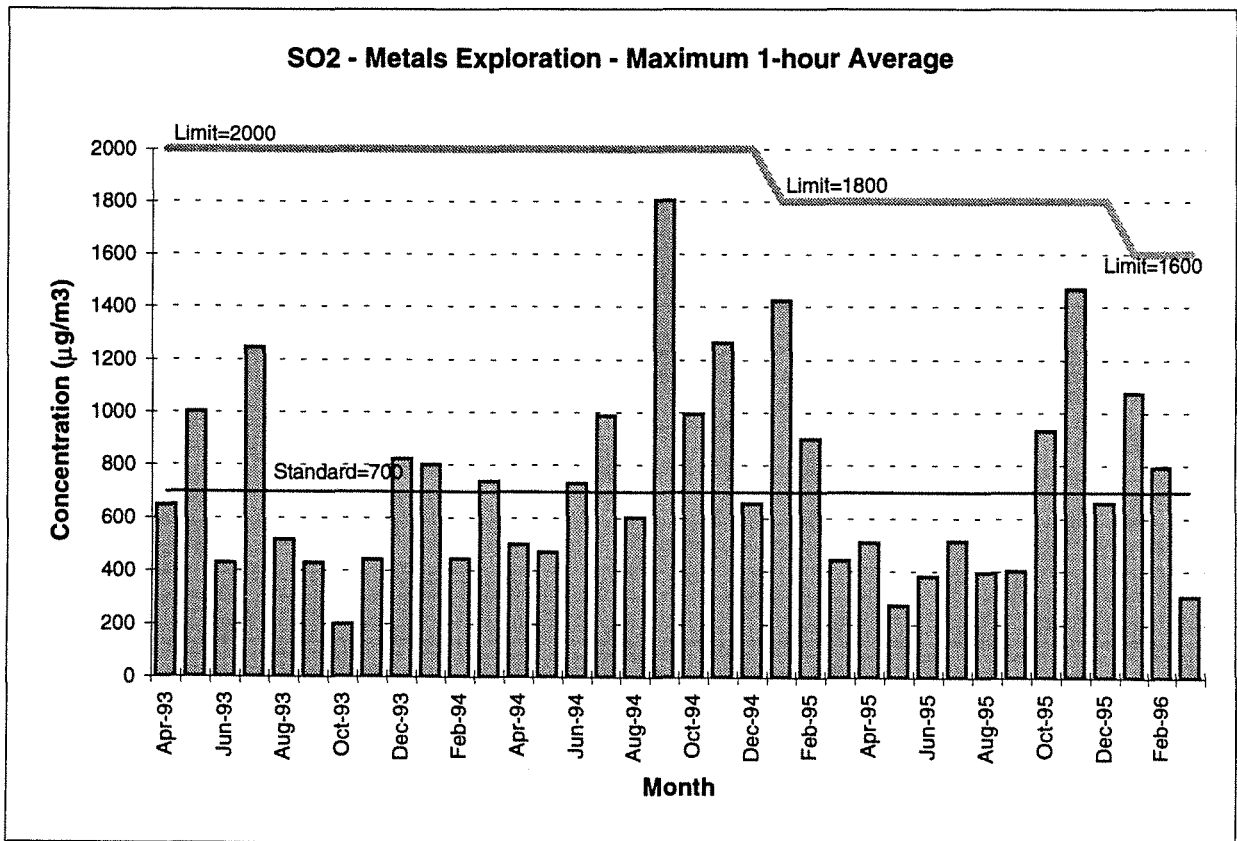
Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Metals Exploration
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	96.9%	94.8%	85.2%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	2002	1108	722
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1075	793	305
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	147	68	28
Number of 1-hour Values Above Standard	2	1	0

Trend



Data Measurement Details

SOE Region:	Kalgoorlie
Pollutant:	Sulphur Dioxide
AQMS Location:	Westrail Yard
AQMS Operated By:	KCGM
Data Sampling Period:	10 minute averages
Air Quality Criteria:	Standard - 700 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (to 31/12/94) - 2000 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/95 to 31/12/95) - 1800 $\mu\text{g}/\text{m}^3$ (1-hour) Limit (01/01/96 to 31/12/96) - 1600 $\mu\text{g}/\text{m}^3$ (1-hour)
Criteria Basis:	Kalgoorlie EPP

Results for Jan to Mar 1996

Parameter	Jan-96	Feb-96	Mar-96
Data Recovery	97.4%	94.1%	97.9%
Maximum 10-minute Value ($\mu\text{g}/\text{m}^3$)	2650	3524	2410
Maximum 1-hour Value ($\mu\text{g}/\text{m}^3$)	1639	1786	865
Maximum 24-hour Value ($\mu\text{g}/\text{m}^3$)	131	134	120
Number of 1-hour Values Above Standard	8	9	5

Trend

