

Air Monitoring Report for South Australia 2006

Compliance with the National Environment Protection (Ambient Air Quality) Measure

July 2007

**Air Monitoring Report 2006:
Produced in compliance with the National Environment Protection (Ambient Air Quality)
Measure, for the National Environment Protection Council
Level 5, 81 Flinders Street
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Section A - Monitoring Summary

Air quality in South Australia is monitored in accordance with a monitoring plan developed under the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) (NEPC, 1998). This report assesses compliance with this measure.

South Australia's monitoring results for 2006 indicated that:

- Where sufficient data were available to compare with the goals set by the AAQ NEPM (to be achieved by 2008), the goal of AAQ NEPM was met for all pollutants, except for 1 hour sulfur dioxide and PM₁₀ particles at Port Pirie and PM₁₀ particles at Netley.
- Where compliance with the standards and the 2008 goal could not be demonstrated through low data capture, it is expected that compliance would otherwise have been achieved.
- Exceedences of the PM₁₀ standard were recorded on numerous occasions throughout the state. The majority occurred on hot dry days, accompanied by Northerly winds. Bushfires occurring both within SA and interstate also contributed to the total particle levels.
- One exceedence of the ozone standard was recorded in metropolitan Adelaide at Netley. This exceedence and other elevated levels of ozone were recorded on warm sunny days, coupled with visible bushfire smoke transported from both interstate and intrastate fires.
- In Port Pirie, exceedences of the 1-hour SO₂ standard were recorded thirty three times and exceedences of the 24 hour PM₁₀ standard were recorded on thirteen occasions.
- Consistently high data capture rates were achieved in most cases, except where instrument malfunction occurred or sites were decommissioned or installed during the 2006 reporting year.
- During 2006 monitoring was concluded at:
 - The campaign site at Nicolson Avenue, Whyalla (O₃, NO₂, SO₂)
- During 2006 monitoring stations were commissioned at:
 - Tandanya as a replacement for Hindley Street, Adelaide (CO)
 - Christie Downs as a southern metropolitan site (O₃, NO₂ and PM₁₀)
- Development of monitoring stations continues in order to meet the monitoring requirements specified in the plan. The stations yet to be developed include:
 - North east Adelaide (PM₁₀ and SO₂)
 - Southern wineries (O₃, NO₂, PM₁₀, SO₂)
 - Barossa / Angaston (O₃, NO₂, PM₁₀, SO₂)
 - Riverland (O₃, NO₂, PM₁₀, SO₂)

NOTE: There has been some delay in the planned installation of the above sites. This is due to diversion of resources to meet requirements of the PM_{2.5} variation to the Ambient Air Quality NEPM and associated co-location studies at Netley, which require use of TEOM monitoring units otherwise planned for north eastern Adelaide.

Current performance monitoring stations

The AAQ NEPM requires the assessment of carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), lead (Pb) and particles less than 10 micrometres in diameter (PM₁₀) (NEPC, 1998). In 2003, the AAQ NEPM was varied to include monitoring of particles less than 2.5 micrometres in diameter (PM_{2.5}).

South Australia's AAQ NEPM air monitoring plan was approved by the NEPC in 2001. Data presented in this report have been produced in accordance with the plan (SA EPA, 2001), which details the stations where air pollutants are measured. Five regions have been identified in the monitoring plan: Adelaide, Spencer, Mount Gambier, Riverland and Barossa. Monitoring is currently being undertaken within the Adelaide and Spencer airsheds.

Performance monitoring stations (PMS) are designated as either trend or campaign stations to indicate the intended duration of monitoring. Trend stations are chosen to monitor pollutant levels over an extended period. Campaign sites are chosen as part of a screening program and may only operate for a short period if the pollutant levels do not warrant ongoing measurement. Figures 1 and 2 below show current monitoring stations and population density within the Adelaide and Spencer regions. The monitoring stations within the Adelaide region represent an exposed population of 1,037,263. Monitoring within the Spencer region represent an exposed population of 53,988 (SA EPA, 2001).

Additions to the monitoring network

The EPA moved closer to fulfilling commitments made in SA's monitoring plan by the installation of an Air NEPM station in the southern metropolitan area of Adelaide. Monitoring at this site commenced in March 2006 and includes O₃, NO₂ and PM₁₀. An additional station was installed in Grenfell Street in September 2006 to monitor CO as a replacement for the Hindley Street station which was closed in June 2005.

In May 2003 the NEPM was varied to include particles less than 2.5 micrometers in diameter (PM_{2.5}). In accordance with this variation, the SA EPA has altered its monitoring plan to include PM_{2.5} monitoring at its Netley station using the reference method on a one in three day basis. This is in addition to monitoring PM_{2.5} by Tapered Element Oscillating Microbalance (TEOM) as part of the PM_{2.5} equivalence program.

Table 1 below describes the station type, pollutants monitored, methods used and locations of stations where data were collected for the 2006 reporting year. Table 2 describes the types of populations and area of the airshed which the monitoring station represents. Table 3 describes compliance of stations with siting criteria not covered in the monitoring plan.

Table 1 Summary of South Australian current performance monitoring stations

Performance monitoring station	AAQ NEPM pollutants and method of measurement						
	CO AS3580.7. 1-1992	NO ₂ AS3580.5. 1-1993	O ₃ AS3580.6. 1-1990	SO ₂ AS3580.4. 1-1990	Pb AS2724.3- 1984 AS2800- 1985	PM ₁₀ AS3580.9. 8-2001	PM _{2.5} AS3580.9. 8-2001 DR 04060
Adelaide							
ELI01-Elizabeth Downs Heard St. Elizabeth Downs	×	×	×			×	
NOR01-Northfield Folland Avenue Folland Ave. Hampstead		×	×	×			
NET01-Netley Transport Ave. Netley		×	×			×	×
KEN01-Kensington Gardens East Tce. Kensington		×	×			×	
ADL01-Tandanya Grenfell St. Adelaide	×						
CHD01-Christie Downs Sabina Crescent Spencer		×	×			×	
PTP01-Pt Pirie, Oliver Street Oliver St. Port Pirie				×	×	×	
PTP05-Pt Pirie, Frank Green Park Senate Rd. Port Pirie					×		
WHY05-Whyalla, Civic Park Searle St. Whyalla						×	
WHY02-Whyalla, Nicolson Avenue Nicolson Ave. Whyalla		×	×	×			

Table 2 Summary of Exposure at South Australian Performance Monitoring Stations

Performance monitoring station	Region (site type / exposed population)
Adelaide	
ELI01-Elizabeth Downs Heard St. Elizabeth Downs	Trend station in a largely residential area within the Northern Adelaide airshed
NOR01-Northfield Folland Avenue Folland Ave. Hampstead	Trend station in a largely residential area within the Central Adelaide airshed
NET01-Netley Transport Ave. Netley	Trend station in a largely residential area within the Central Western Adelaide airshed
KEN01-Kensington Gardens East Tce. Kensington	Trend station in a largely residential area within the Central Eastern Adelaide airshed
ADL01-Tandanya Grenfell St. Adelaide	Trend station within the Central Business District of the Adelaide airshed
CHD01-Christie Downs Sabina Crescent	Campaign station in a largely residential area within the Southern Adelaide airshed
Spencer	
PTP01-Pt Pirie, Oliver Street Oliver St. Port Pirie	Campaign station in a largely residential area within an industrial township in the Spencer airshed
PTP05-Pt Pirie, Frank Green Park Senate Rd. Port Pirie	Trend station in a largely residential area within an industrial township in the Spencer airshed
WHY05-Whyalla, Civic Park Searle St. Whyalla	Trend station in a largely residential area within an industrial township in the Spencer airshed
WHY02-Whyalla, Nicolson Avenue Nicolson Ave. Whyalla	Trend station in a largely residential area within an industrial township in the Spencer airshed

Table 3 Compliance with AS 2922-1987 for stations not covered in the monitoring plan

Region, Site Name	Above Height Ground	Min. Distance to Support Structure	Clear Sky Angle of 120°	Unrestricted Airflow 270/360	20m From Trees	No Boiler or Incinerators Nearby	Min Distance from Road or Traffic	Comments
Adelaide								
ADL01-Tandanya, Grenfell Street Adelaide	✓	✓	✗	✗	✗	✓	✗	
CHD01-Christie Downs, Sabina Crescent Christie Downs	✓	✓	✓	✓	✓	✗	✓	
Spencer								
WHY05-Whyalla, Civic Park Searle St. Whyalla Norrie	✓	✓	✗	✗	✗	✓	✓	Plans to move site to comply with standard and replace HVS with TEOM
WHY02-Whyalla, Nicolson Avenue Nicolson Ave. Whyalla	✓	✓	✓	✓	✗	✓	✗	Adjacent to carpark

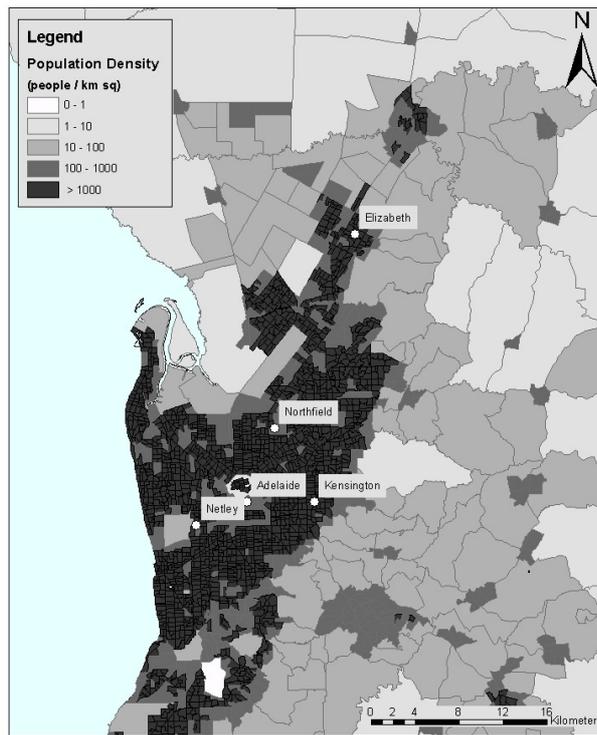


Figure 1 Adelaide region and population density with current monitoring sites. Based on the 2001 census (Australian Bureau of Statistics, 2001).

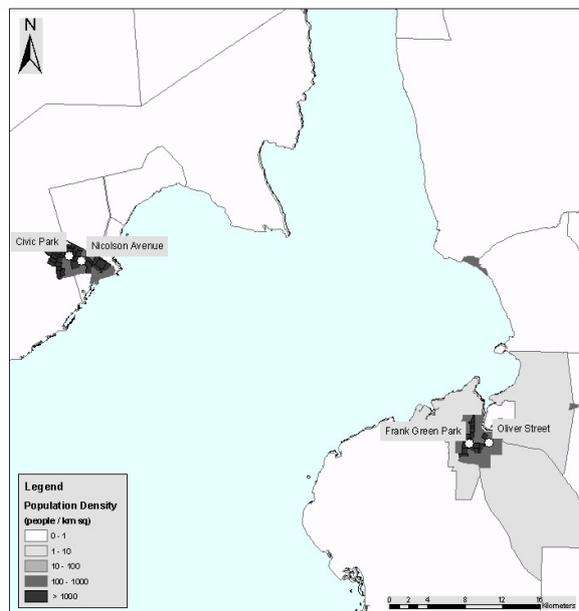


Figure 2 Spencer region and population density with current monitoring sites. Based on the 2001 census (Australian Bureau of Statistics, 2001).

Note: map does not include Port Augusta as monitoring did not occur during 2006

NATA status

The South Australian Environment Protection Authority operates all monitoring stations described in this report. The EPA obtained NATA accreditation of its monitoring network and laboratory in February of 2006 (accreditation number 15220).

Section B - Assessment of Compliance with Standards and 2008 Goal

Tables 4 to 10 provide information for compliance assessment required under the AAQ NEPM. The AAQ NEPM standards and goals are specified in Schedule 2 of the NEPM. The AAQ NEPM goal is to achieve the standards to the extent specified by 2008 (NEPC, 1998).

Performance is assessed as meeting the standards and 2008 goal if the number of exceedences of the standard is no more than the number specified in Schedule 2 of the AAQ NEPM, and data recovery was at least 75% in each quarter of the year (NEPC, 1998).

If insufficient data are collected to demonstrate that the standards and goal have or have not been met, performance is assessed as 'not demonstrated' (NEPC, 2002).

Calculations and reporting methods used, comply with requirements detailed in the NEPC Peer Review Committee, Technical Paper No 8: Annual Reports (NEPC, 2002).

PM₁₀ data reported as 'TEOM data' indicate data which has undergone an internal correction factor for US EPA equivalency and without subsequent treatment, as specified in Option 4 of PRC technical paper No 10 - Collection and reporting of TEOM PM₁₀ Data (NEPM PRC, 2001).

Carbon monoxide

Table 4 2006 compliance summary for CO in South Australia

AAQ NEPM Standard 9.0 ppm (8-hr average)

Region performance monitoring station/s	Data availability rates (% hours)					Number of exceedences (days)	Performance against the standards and goal
	Q1	Q2	Q3	Q4	Annual		
Adelaide							
*ADL01- Tandanya	0	0	6	90	24	0	ND
ELI01- Elizabeth Downs	76	92	76	99	86	0	Met

ND: Not Demonstrated as greater than 75% valid data capture was not achieved for all four quarters

*Monitoring at Tandanya Adelaide was commissioned in September 2006 as a replacement for the Hindley Street station which was closed in June 2005

Nitrogen dioxide

Table 5 2006 compliance summary for NO₂ in South Australia

AAQ NEPM Standard 0.12 ppm (1-hr average), 0.03 ppm (1-yr average)

Region performance monitoring station/s	Data availability rates (% of hours)					Number of exceedences (days)	Annual mean (ppm)	Performance against the standards and goal	
	Q1	Q2	Q3	Q4	Annual			1-hour	1-year
Adelaide									
ELI01-Elizabeth Downs	97	89	74	97	89	0	0.004	ND	ND
NOR01-Northfield Folland Avenue	83	97	96	97	93	0	0.006	Met	Met
NET01-Netley	95	89	97	97	95	0	0.009	Met	Met
KEN01-Kensington Gardens	98	94	97	97	96	0	0.005	Met	Met
CHD01-Christie Downs	9	95	85	86	69	0	0.006	ND	ND
Spencer									
*#WHY02-Whyalla Nicolson Avenue	98	69	0	0	41	0	0.002	ND	ND

* Whyalla is a regional centre, all other sites are within the Adelaide metropolitan area.

ND: Compliance with the Goal is Not Demonstrated, as greater than 75% valid data capture was not achieved for all four quarters

Campaign monitoring at Whyalla Nicolson Avenue ceased in June 2006

Ozone

Table 6 2006 compliance summary for O₃ in South Australia

AAQ NEPM Standards 0.10 ppm (1-hr average), 0.08 ppm (4-hr average)

Region performance monitoring station/s	Data availability rates (% of hours)					Number of exceedences (days)		Performance against the standards and goal	
	Q1	Q2	Q3	Q4	Annual	1-hour	4-hour	1-hour	4-hour
Adelaide									
ELI01- Elizabeth Downs	96	90	77	97	90	0	0	Met	Met
NOR01- Northfield Folland Avenue	87	97	97	97	95	0	0	Met	Met
NET01-Netley	95	89	97	97	95	1	1	Met	Met
KEN01- Kensington Gardens	97	94	97	97	96	0	0	Met	Met
CHD01- Christie Downs	9	89	84	80	66	0	0	ND	ND
Spencer									
*WHY02- Whyalla Nicolson Avenue	98	70	0	0	42	0	0	ND	ND

* Whyalla is a regional centre, all other sites are within the Adelaide metropolitan area.

ND: Compliance with the Goal is Not Demonstrated, as greater than 75% valid data capture was not achieved for all four quarters

Campaign monitoring at Whyalla Nicolson Avenue ceased in June 2006 in accordance with the SA EPA monitoring plan

Sulfur dioxide

Table 7 2006 compliance summary for SO₂ in South Australia

AAQ NEPM Standards 0.20 ppm (1-hr average), 0.08 ppm (24-hr average), 0.02 ppm (1-yr average)

Region performance monitoring station/s	Data availability rates (% of hours)					Number of exceedences (days)		Annual 1h mean (ppm)	Performance against the standards and goal		
	Q1	Q2	Q3	Q4	Annual	1-hr	24-hr		1-hr	24-hr	1-yr
Adelaide											
NOR01- Northfield Folland Avenue	87	97	97	97	94	0	0	0.000	Met	Met	Met
Spencer											
*PTP01-Pt Pirie Oliver Street	95	96	97	97	96	33	0	0.007	Not met	Met	Met
*WHY02- Whyalla Nicolson Avenue	98	69	0	0	41	0	0	0.001	ND	ND	ND

* Pt Pirie and Whyalla are regional centres, all other sites are within the Adelaide metropolitan area.

ND: Compliance with the Goal is Not Demonstrated, as greater than 75% valid data capture was not achieved for all four quarters

Campaign monitoring at Whyalla Nicolson Avenue ceased in June 2006

Particulate matter as PM₁₀

Table 8 2006 compliance summary for PM₁₀ in South AustraliaAAQ NEPM Standard 50 µg/m³ (24-hr average)

Region performance monitoring station/s	Data availability rates (% of days)				Annual	Number of exceedences (days)	Performance against the standards and goal
	Q1	Q2	Q3	Q4			
Adelaide							
ELI01-Elizabeth Downs	96	97	78	97	92	4	Met
KEN01- Kensington Gardens	98	89	100	95	95	2	Met
NET01-Netley	87	90	98	89	91	11	Not Met
CHD01-Christie Downs	9	97	95	92	73	2	ND
Spencer							
*^WHY05- Whyalla Civic Park	32	32	34	34	33	2	ND
^PTP01-Pt Pirie Oliver Street	94	98	98	95	96	13	Not Met

*Indicates monitoring by high-volume sampler (one in three days). All other sites are measured using TEOM and reported as 'TEOM data' (NEPM PRC, 2001).

^Pt Pirie and Whyalla are regional centres; all other sites are located in Adelaide.

ND: Compliance with the Goal is Not Demonstrated, as greater than 75% valid data capture was not achieved for all four quarters

Lead

Table 9 2006 compliance summary for Lead in South Australia

AAQ NEPM Standard 0.50 µg/m³ (1-yr average)

Region performance station/s	monitoring	Data availability rates (% of days)					Annual mean (µg/m ³)	Performance against the standards and goal
		Q1	Q2	Q3	Q4	Annual		
Spencer								
*PTP05-Pt Park	Pirie Frank Green	100	100	100	100	100	0.16	Met
*PTP01-Pt Street	Pirie Oliver	100	100	100	100	100	0.49	Met

*Pt Pirie is a regional centre.

Lead data is reported to ambient conditions and analyses were carried out by NATA accredited facilities at the pathology Queensland Health Scientific Services.

Particulate matter as PM_{2.5}

Table 10 2006 compliance summary for PM_{2.5} in South AustraliaAAQ NEPM Advisory Reporting Standard 25 µg/m³ (24-hr average), 8 µg/m³ (1-yr average)

Region performance monitoring station/s	Data availability rates (% of days)					Annual Mean (µg/m ³)
	Q1	Q2	Q3	Q4	Annual	
Adelaide						
^NET01-Netley	31	28	30	30	30	7
*NET01-Netley	94	91	99	100	96	8

^Indicates monitoring by one-day-in-three partisol monitoring (Maximum data availability rate is 32%)

*Indicates monitoring by Tapered Element Oscillating Microbalance (TEOM)

Section C - Analysis of Air Quality Monitoring

Progress Towards Achieving the AAQ NEPM 2008 Goal

As assessed against the National Environment Protection (Ambient Air Quality) Measure (NEPM, 1998), the following observations were made for 2006:

- For CO, the standard and goal was met at the Elizabeth station but not demonstrated at the Tandanya station
- For NO₂, the standards and goals were met at all stations but not demonstrated at Elizabeth, Christie Downs and Whyalla Nicolson Avenue
- For O₃, the standards were exceeded on one occasion at the Netley station but the goal was met. The standards and goals were met at all other stations but not demonstrated at the Christie Downs and Whyalla, Nicolson Avenue stations due to the sites commencing or being shut down.
- For SO₂ the 1h standard and goal was not met at Port Pirie, Oliver Street. All other stations met the standard and goal for SO₂ except Whyalla, Nicolson Avenue where performance was not demonstrated.
- For PM₁₀ in the Adelaide region, the standard was exceeded on two occasions at the Kensington station on four occasions at the Elizabeth station, on two occasions at the Christie Downs station and on eleven occasions at the Netley station. For the Spencer region, the standard was not met on two occasions at Whyalla, Civic Park and on thirteen occasions at Port Pirie, Oliver Street. The goal was not met at Netley and Port Pirie, Oliver Street monitoring stations, but met for all other stations for this reporting period.
- For Pb, the annual standard and goal was met at both stations at Port Pirie.
- For PM_{2.5} the advisory reporting standard was exceeded at Netley, the one station where monitoring was conducted.
- There were instances where compliance with the goal could not be demonstrated, shown as 'ND'. For example, compliance of CO Tandanya at Elizabeth monitoring stations and SO₂ at Whyalla, Nicolson Avenue was assessed as 'not demonstrated'. This was due to insufficient data recovery caused by sites being installed or decommissioned part way through the year. Some data for PM₁₀ and NO₂ was likewise classed as 'ND'. These lower data recovery rates were due to a range of causes. This included campaign stations being decommissioned part way through 2006, instrument upgrade or insufficient sampling frequency.

Circumstances which led to Exceedences

Exceedences of the PM₁₀ standard occurred on a number of occasions throughout the state. This was often associated with dry days, coupled with strong northerly winds. Bushfires occurring both within SA and interstate also contributed to the total particle levels. Table 11 below summarises dates and times of exceedences occurring during the 2006 reporting year.

One exceedence each of the 1 and 4 hour ozone standards were recorded in metropolitan Adelaide (Tables 12 and 13). These exceedences were associated with a warm day and smoke from bushfires in Victoria. Other elevated levels of ozone were also recorded on warm sunny days, coupled with visible bushfire smoke transported from both interstate and intrastate fires.

Exceedences of the SO₂ standard and goal occurred at Port Pirie. These exceedences were due to emissions from a major lead and zinc smelter located within the region, coupled with suitable meteorological conditions. Table 14 summarises dates and times of exceedences occurring during the 2006 reporting year.

Table 11 Summary of PM₁₀ exceedences during 2006 in South Australia

AAQ NEPM Standard 50 µg/m³ (24-hr average)

Date of Exceedence (dd mon)	Region / Site and Exceedence Value (ug/m3)						
	Adelaide Region				Spencer Region		
	ELI01- Elizabeth Downs	KEN01- Kensington Gardens	NET01- Netley	Inferred Cause	WHY05- Whyalla Civic Park	PTP01-Pt Pirie Oliver Street	Inferred Cause
22 Jan			86.0	Fires		66.5	Fires
23 Jan						67.9	Fires
25 Jan	60.4	68.0	85.0	Fires		57.6	Fires
26 Jan	90.4	73.2	101.4	Dust	52.1	181.8	Dust
27 Jan						51.0	Fires
02 Mar	56.1			Dust			
28 Jun					53.8		Dust
08 Aug			57.4	Dust			
16 Aug			99.2	Fires		90.1	Fires
22 Sep						53.2	Dust
04 Oct			82.7	Dust		59.3	Dust
12 Oct	50.7		99.9	Dust		74.1	Dust
20 Nov						53.3	Dust/Fires
21 Nov			60.3	Dust			
30 Nov			75.2	Fires			
08 Dec						59.6	Dust/Fires
10 Dec						58.1	Dust/Fires
21 Dec			65.6	Fires		85.4	Fires
31 Dec			56.1	Dust/Fires			

Table 12 Summary of O₃ exceedences during 2006 in South Australia

AAQ NEPM Standard 0.10 ppm (1-hr average)

Date / time of Exceedence (dd mon hh:mm)	Region / Site and Exceedence Value (ug/m3)	
	Adelaide region	
	NET01-Netley	Inferred Cause
25 Jan 14:00	0.105	Fires

Table 13 Summary of O₃ exceedences during 2006 in South Australia

AAQ NEPM Standard 0.08 ppm (4-hr average)

Date / time of Exceedence (dd mon hh:mm)	Region / Site and Exceedence Value (ug/m3)	
	Adelaide region	
	NET01-Netley	Inferred Cause
25 Jan 16:00	0.094	Fires

Table 14 Summary of SO₂ exceedences during 2006 in South Australia

AAQ NEPM Standard 0.20 ppm (1-hr average)

Date / time of Exceedence (dd mon hh:mm)	Region / Site and Exceedence Value (ug/m3)		Date / time of Exceedence (dd mon hh:mm)	Region / Site and Exceedence Value (ug/m3)	
	Spencer Region			Spencer Region	
	PTP01-Pt Pirie Oliver Street	Inferred Cause		PTP01-Pt Pirie Oliver Street	Inferred Cause
05 Jan 11:00	0.360	Industrial	25 Jun 14:00	0.262	Industrial
08 Jan 12:00	0.211	Industrial	08 Jul 14:00	0.231	Industrial
16 Jan 12:00	0.234	Industrial	10 Aug 13:00	0.206	Industrial
20 Jan 14:00	0.217	Industrial	21 Aug 16:00	0.291	Industrial
11 Feb 13:00	0.275	Industrial	29 Aug 12:00	0.248	Industrial
10 Mar 11:00	0.211	Industrial	21 Sep 10:00	0.242	Industrial
22 Mar 12:00	0.234	Industrial	30 Sep 15:00	0.447	Industrial
02 Apr 17:00	0.249	Industrial	16 Oct 16:00	0.295	Industrial
09 Apr 15:00	0.363	Industrial	30 Oct 13:00	0.219	Industrial
12 Apr 12:00	0.218	Industrial	24 Nov 13:00	0.485	Industrial
16 Apr 12:00	0.213	Industrial	29 Nov 14:00	0.241	Industrial
24 Apr 13:00	0.318	Industrial	04 Dec 09:00	0.294	Industrial
04 May 16:00	0.236	Industrial	07 Dec 10:00	0.234	Industrial
18 May 13:00	0.374	Industrial	17 Dec 10:00	0.337	Industrial
24 May 13:00	0.222	Industrial	18 Dec 11:00	0.209	Industrial
13 Jun 13:00	0.317	Industrial	28 Dec 11:00	0.278	Industrial
22 Jun 03:00	0.248	Industrial			

Analysis of extent to which standards and goals are met or not met

Annual summary statistics described in tables 15 to 22 below allow assessment of air quality against the standards and the extent of compliance with the goal. Instances where the standard or goal has been exceeded are highlighted in bold. The AAQ NEPM states that the short-term standards should not be exceeded on more than one day for CO, NO₂, O₃, SO₂ and on no more than five days per year for PM₁₀ (NEPC, 2002). The second highest daily value for the year (or the sixth for PM₁₀) indicates the extent to which the standards are or are not met.

Carbon monoxide

Table 15 2006 summary statistics for daily peak 8-hour CO in South Australia

AAQ NEPM Standard 9.0 ppm (8-hr rolling average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ADL01-Tandanya	92	2.5	10 Oct 00:00	2.1	10 Nov 00:00
ELI01-Elizabeth Downs	320	0.7	16 Jun 10:00	0.6	03 Jun 02:00

Nitrogen dioxide

Table 16 2006 summary statistics for daily peak 1-hour NO₂ in South Australia

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ELI01-Elizabeth Downs	335	0.043	22 Mar 20:00	0.031	28 Oct 21:00
NOR01-Northfield Folland Avenue	353	0.034	22 Mar 20:00	0.032	20 Nov 20:00
NET01-Netley	358	0.054	20 Jun 10:00	0.051	19 Jun 10:00
KEN01- Kensington Gardens	363	0.037	22 Mar 19:00	0.032	23 Feb 19:00
CHD01-Christie Downs	263	0.033	18 Sep 20:00	0.031	18 May 19:00
Spencer					
*WHY02-Whyalla Nicolson Avenue	156	0.023	16 May 19:00	0.022	23 May 20:00 29 May 19:00

* Whyalla is a regional centre, all other sites are within the Adelaide metropolitan area.

Ozone

Table 17 2006 summary statistics for daily peak 1-hour O₃ in South Australia

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	2 nd highest (ppm)	2 nd highest (dd mon hh:mm)
Adelaide					
ELI01-Elizabeth Downs	339	0.072	5 Mar 15:00	0.066	26 Jan 02:00
NOR01- Northfield Folland Avenue	357	0.067	05 Mar 13:00	0.063	20 Dec 15:00
NET01-Netley	358	0.105	25 Jan 14:00	0.061	08 Jan 14:00
KEN01- Kensington Gardens	363	0.090	25 Jan 15:00	0.072	26 Jan 01:00
CHD01-Christie Downs	251	0.055	20 Dec 15:00	0.054	27 Nov 15:00
Spencer					
WHY02-Whyalla Nicolson Avenue	155	0.049	25 Jan 23:00	0.047	20 Jan 13:00

Table 18 2006 summary statistics for daily peak 4-hour O₃ in South Australia

AAQ NEPM Standard 0.08 ppm (4-hr average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ELI01-Elizabeth Downs	340	0.065	26 Jan 04:00	0.059	17 Jan 15:00, 05 Mar 15:00
NOR01- Northfield Folland Avenue	357	0.058	05 Mar 15:00	0.052	20 Dec 17:00
NET01-Netley	358	0.094	25 Jan 16:00	0.055	08 Jan 15:00
KEN01- Kensington Gardens	363	0.072	25 Jan 16:00	0.062	26 Jan 02:00
CHD01-Christie Downs	250	0.049	20 Dec 17:00	0.048	24 Mar 18:00
Spencer					
WHY02-Whyalla Nicolson Avenue	156	0.043	20 Jan 15:00, 21 Jan 14:00, 25 Jan 14:00	0.042	26 Jan 14:00

Sulfur dioxide

Table 19 2006 summary statistics for daily peak 1-hour SO₂ in South Australia

AAQ NEPM Standard 0.20 ppm (1-hr average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh: mm)	2nd highest (ppm)	2nd highest (dd mon hh: mm)
Adelaide					
NOR01- Northfield Folland Avenue	357	0.020	16 May 13:00	0.007	22 Jun 11:00
Spencer					
PTP01-Pt Pirie Oliver Street	364	0.485	24 Nov 13:00	0.447	30 Sep 15:00
WHY02-Whyalla Nicolson Avenue	156	0.026	14 Mar 09:00	0.015	27 Feb 10:00, 21 Mar 13:00

Table 20 2006 summary statistics for daily peak 24-hour SO₂ in South Australia

AAQ NEPM Standard 0.08 ppm (24-hr average)

Region performance monitoring station/s	Number of valid days	Highest (ppm)	Highest (dd mon)	2nd highest (ppm)	2nd highest (dd mon)
Adelaide					
NOR01- Northfield Folland Avenue	352	0.003	16 May	0.002	09 Jul, 10 Jul, 14 Jul, 12 Nov
Spencer					
PTP01-Pt Pirie Oliver Street	357	0.053	09 Apr	0.048	24 Nov
WHY02-Whyalla Nicolson Avenue	153	0.003	14 Mar, 2 Apr,	0.002	07 Feb, 27 Feb, 02 Mar, 21 Mar, 24 Mar, 25 Apr, 26 Apr, 27 Apr, 24 May

Particulate matter as PM₁₀

Table 21 2006 summary statistics for 24-hour PM₁₀ in South AustraliaAAQ NEPM Standard 50 µg/m³ (24-hr average)

Region performance monitoring station/s	Number of valid days	Highest (µg/m ³)	Highest (dd mon)	6th highest (µg/m ³)	6th highest (dd mon)
Adelaide					
ELI01-Elizabeth Downs	335	90.4	26 Jan	45.6	31 Dec
KEN01- Kensington Gardens	348	73.2	26 Jan	38.3	31 Dec
NET01-Netley	332	101.4	26 Jan	82.7	04 Oct
CHD01-Christie Downs	268	52.2	31 Dec	42.4	04 Oct
Spencer					
*WHY05- Whyalla Civic Park	120	53.8	28 Jun	34.9	10 Jul
PTP01-Pt Pirie Oliver Street	351	181.8	26 Jan	66.5	22 Jan

* Monitoring by high-volume sampler (one in six days), otherwise monitoring is by TEOM and reported as 'TEOM data' (NEPM PRC, 2001).

Particulate matter as PM_{2.5}

Table 22 2006 summary statistics for 24-hour PM_{2.5} in South AustraliaAAQ NEPM Advisory Reporting Standard 25 µg/m³ (24-hr average)

Region performance monitoring station/s	Number of valid days	Highest (µg/m ³)	Highest (dd mon)	6th highest (µg/m ³)	6th highest (dd mon)
Adelaide					
^NET01-Netley	110	28.2	23 Jan	16.9	4 Jun
*NET01-Netley	351	61.2	25 Jan	19.5	11 Aug

^Indicates monitoring by one -day-in-three partisol monitoring

*Indicates monitoring by Tapered Element Oscillating Microbalance (TEOM).

Section D - Data Analysis

Tables 23 to 54 provide results of additional analyses of daily peak values, including percentiles of daily peak concentrations. Where available, trend data has been included. Percentile data for 2002 has been recalculated from daily maxima as required in PRC technical paper number 8 (2002).

Carbon monoxide

Table 23 Percentiles of daily peak 8-hour CO concentrations for Adelaide, ADL01 – Tandanya (2006)

AAQ NEPM Standard 9.0 ppm (8-hr average)

Region	Data availability (% of days)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
ADL01-Tandanya								
2006	24	2.5	2.4	2.2	2.0	1.6	1.3	1.0

Table 24 Percentiles of daily peak 8-hour CO concentrations for Adelaide, ELI01 – Elizabeth Downs (2002 - 2006)

AAQ NEPM Standard 9.0 ppm (8-hr average)

Region	Data availability (% of days)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
ELI01-Elizabeth Downs								
2002	84	0.8	0.7	0.6	0.4	0.3	0.2	0.1
2003	92	1.4	0.8	0.7	0.5	0.4	0.2	0.1
2004	98	0.8	0.6	0.5	0.4	0.3	0.2	0.1
2005	94	0.8	0.6	0.4	0.4	0.3	0.1	0.1
2006	86	0.7	0.5	0.4	0.3	0.2	0.1	0.0

Nitrogen dioxide

Table 25 Percentiles of daily peak 1-hour NO₂ concentrations for Adelaide, ELI01-Elizabeth Downs (2002-2006)

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
ELI01-Elizabeth Downs								
2002	94	0.040	0.034	0.033	0.029	0.026	0.022	0.014
2003	97	0.043	0.030	0.028	0.025	0.022	0.019	0.011
2004	95	0.037	0.031	0.029	0.025	0.023	0.019	0.012
2005	95	0.038	0.031	0.028	0.025	0.023	0.019	0.011
2006	89	0.043	0.030	0.029	0.026	0.023	0.017	0.011

Table 26 Percentiles of daily peak 1-hour NO₂ concentrations for NOR01-Northfield Folland Avenue (2002 - 2006)

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
NOR01-Northfield Folland Avenue								
2002	94	0.047	0.038	0.033	0.031	0.028	0.024	0.018
2003	95	0.039	0.035	0.032	0.031	0.028	0.024	0.017
2004	96	0.045	0.038	0.033	0.029	0.026	0.023	0.017
2005	94	0.039	0.035	0.033	0.030	0.028	0.024	0.018
2006	93	0.034	0.031	0.030	0.028	0.025	0.021	0.016

Table 27 Percentiles of daily peak 1-hour NO₂ concentrations for NET01-Netley (2002 - 2006)

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
NET01-Netley								
2002	84	0.050	0.042	0.037	0.035	0.032	0.028	0.023
2003	97	0.039	0.036	0.035	0.032	0.029	0.026	0.021
2004	96	0.103	0.041	0.038	0.034	0.030	0.026	0.021
2005	97	0.051	0.042	0.037	0.034	0.031	0.028	0.022
2006	95	0.054	0.037	0.036	0.033	0.030	0.027	0.021

Table 28 Percentiles of daily peak 1-hour NO₂ concentrations for KEN01-Kensington Gardens (2002 - 2006)

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
KEN01-Kensington Gardens								
2002	94	0.041	0.030	0.030	0.028	0.025	0.022	0.015
2003	97	0.040	0.034	0.031	0.026	0.024	0.021	0.014
2004	96	0.037	0.032	0.028	0.025	0.023	0.019	0.013
2005	97	0.031	0.029	0.027	0.026	0.024	0.019	0.013
2006	96	0.037	0.028	0.027	0.025	0.022	0.018	0.013

Table 29 Percentiles of daily peak 1-hour NO₂ concentrations for WHY02-Whyalla Nicolson Avenue (2004 - 2006)

AAQ NEPM Standard 0.12 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
WHY02-Whyalla Nicolson Avenue								
2004	79	0.025	0.024	0.024	0.023	0.021	0.015	0.008
2005	80	0.025	0.018	0.016	0.012	0.008	0.004	0.002
2006	41	0.023	0.022	0.021	0.020	0.019	0.011	0.005

Ozone

Table 30 Percentiles of daily peak 1-hour O₃ concentrations for ELI01-Elizabeth Downs (2002 – 2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
ELI01-Elizabeth Downs								
2002	95	0.072	0.062	0.053	0.045	0.040	0.033	0.030
2003	97	0.077	0.064	0.059	0.050	0.042	0.034	0.029
2004	96	0.088	0.065	0.055	0.046	0.041	0.033	0.029
2005	97	0.062	0.057	0.050	0.041	0.036	0.032	0.029
2006	90	0.072	0.061	0.055	0.051	0.040	0.035	0.029

Table 31 Percentiles of daily peak 1-hour O₃ concentrations for NOR01-Northfield Folland Avenue (2002 – 2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
NOR01-Northfield Folland Avenue								
2002	98	0.080	0.060	0.051	0.045	0.040	0.033	0.029
2003	97	0.068	0.060	0.054	0.047	0.042	0.033	0.028
2004	94	0.081	0.065	0.058	0.045	0.040	0.033	0.028
2005	94	0.060	0.049	0.045	0.040	0.036	0.031	0.028
2006	95	0.067	0.053	0.050	0.043	0.038	0.031	0.027

Table 32 Percentiles of daily peak 1-hour O₃ concentrations for NET01-Netley (2002 – 2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
NET01-Netley								
2002	98	0.087	0.056	0.048	0.042	0.037	0.031	0.028
2003	97	0.069	0.059	0.054	0.045	0.039	0.032	0.027
2004	98	0.067	0.056	0.049	0.044	0.037	0.032	0.028
2005	97	0.079	0.054	0.049	0.041	0.037	0.032	0.028
2006	95	0.105	0.058	0.054	0.043	0.038	0.031	0.028

Table 33 Percentiles of daily peak 1-hour O₃ concentrations for KEN01-Kensington Gardens (2002 – 2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
KEN01-Kensington Gardens								
2002	96	0.086	0.057	0.053	0.046	0.042	0.035	0.030
2003	97	0.074	0.065	0.058	0.049	0.042	0.034	0.029
2004	97	0.078	0.067	0.062	0.047	0.041	0.033	0.029
2005	98	0.061	0.053	0.051	0.044	0.039	0.034	0.031
2006	96	0.090	0.061	0.057	0.048	0.040	0.033	0.029

Table 34 Percentiles of daily peak 1-hour O₃ concentrations for CHD01-Christie Downs (2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
CHD01-Christie Downs								
2006	66	0.055	0.050	0.046	0.040	0.037	0.033	0.030

Table 35 Percentiles of daily peak 1-hour O₃ concentrations for WHY02-Whyalla Nicolson Avenue (2004 - 2006)

AAQ NEPM Standard 0.10 ppm (1-hr average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Spencer								
WHY02-Whyalla Avenue	Nicolson							
2004	85	0.051	0.044	0.040	0.037	0.035	0.031	0.028
2005	94	0.046	0.040	0.039	0.036	0.034	0.031	0.029
2006	42	0.049	0.046	0.044	0.040	0.036	0.030	0.026

Table 36 Percentiles of daily peak 4-hour rolling O₃ concentrations for ELI01-Elizabeth Downs (2002 - 2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
ELI01-Elizabeth Downs								
2002	96	0.057	0.046	0.044	0.039	0.037	0.032	0.029
2003	99	0.063	0.056	0.052	0.045	0.040	0.032	0.028
2004	98	0.079	0.056	0.051	0.042	0.037	0.032	0.027
2005	99	0.056	0.049	0.044	0.038	0.034	0.030	0.028
2006	92	0.065	0.051	0.049	0.045	0.038	0.033	0.028

Table 37 Percentiles of daily peak 4-hour rolling O₃ concentrations for NOR01-Northfield Folland Avenue (2002 - 2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
NOR01-Northfield Avenue	Folland							
2002	99	0.064	0.052	0.046	0.041	0.036	0.031	0.028
2003	100	0.061	0.053	0.047	0.044	0.038	0.031	0.027
2004	96	0.067	0.058	0.049	0.041	0.038	0.032	0.027
2005	96	0.054	0.046	0.041	0.036	0.035	0.030	0.027
2006	97	0.058	0.048	0.045	0.040	0.035	0.030	0.026

Table 38 Percentiles of daily peak 4-hour rolling O₃ concentrations for NET01-Netley (2002 – 2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
NET01-Netley								
2002	99	0.071	0.050	0.044	0.038	0.034	0.030	0.027
2003	99	0.060	0.053	0.047	0.042	0.037	0.030	0.027
2004	100	0.059	0.048	0.044	0.040	0.036	0.031	0.027
2005	99	0.072	0.048	0.044	0.038	0.034	0.030	0.027
2006	97	0.094	0.052	0.047	0.041	0.036	0.030	0.027

Table 39 Percentiles of daily peak 4-hour rolling O₃ concentrations for KEN01-Kensington Gardens (2002 – 2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
KEN01-Kensington Gardens								
2002	97	0.073	0.051	0.047	0.041	0.038	0.033	0.029
2003	99	0.071	0.054	0.051	0.045	0.040	0.032	0.028
2004	99	0.071	0.059	0.054	0.043	0.038	0.031	0.028
2005	100	0.055	0.050	0.044	0.040	0.037	0.032	0.029
2006	99	0.072	0.055	0.051	0.044	0.039	0.032	0.028

Table 40 Percentiles of daily peak 4-hour rolling O₃ concentrations for CHD01-Christie Downs (2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region Adelaide	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
CHD01-Christie Downs								
2006	66	0.049	0.047	0.042	0.038	0.035	0.032	0.029

Table 41 Percentiles of daily peak 4-hour rolling O₃ concentrations for WHY02-Whyalla Nicolson Avenue (2004 – 2006)

AAQ NEPM Standard 0.08 ppm (4-hr rolling average)

Region	Data availability rates (%)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Spencer								
WHY02-Whyalla Avenue	Nicolson							
2004	87	0.046	0.042	0.039	0.036	0.033	0.030	0.027
2005	96	0.044	0.038	0.037	0.035	0.033	0.030	0.028
2006	42	0.043	0.043	0.042	0.037	0.034	0.029	0.025

Sulfur dioxide

Table 42 Percentiles of daily peak 1-hour SO₂ concentrations for NOR01-Northfield Folland Avenue (2002 – 2006)

AAQ NEPM Standard 0.20 ppm (1-hr average)

Region	Data availability (% of hours)	Max (ppm)	99th percentile (ppm)	98th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
Adelaide								
NOR01-Northfield Avenue	Folland							
2002	15	0.027	0.024	0.020	0.013	0.010	0.005	0.003
2003	95	0.009	0.007	0.006	0.005	0.004	0.002	0.001
2004	93	0.012	0.007	0.006	0.004	0.003	0.001	0.001
2005	93	0.015	0.008	0.006	0.004	0.003	0.001	0.001
2006	94	0.020	0.005	0.004	0.003	0.002	0.002	0.001

Table 43 Percentiles of daily peak 1-hour SO₂ concentrations for PTP01-Pt Pirie Oliver Street (2003 – 2006)

AAQ NEPM Standard 0.20 ppm (1-hr average)

Region Spencer	Data availability (% of hours)	Max (ppm)	99th percentile (ppm)	98 th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
PTP01-Pt Pirie Oliver Street								
2002	51	0.656	0.400	0.302	0.257	0.186	0.095	0.028
2003	96	0.487	0.388	0.309	0.221	0.152	0.070	0.023
2004	97	0.440	0.356	0.335	0.260	0.185	0.078	0.020
2005	94	0.721	0.391	0.362	0.234	0.186	0.105	0.042
2006	96	0.485	0.361	0.311	0.240	0.191	0.092	0.018

Table 44 Percentiles of daily peak 1-hour SO₂ concentrations for WHY02-Whyalla Nicolson Avenue (2004 – 2006)

AAQ NEPM Standard 0.20 ppm (1-hr average)

Region Spencer	Data availability (% of hours)	Max (ppm)	99th percentile (ppm)	98 th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
WHY02-Whyalla Nicolson Avenue								
2004	71	0.099	0.026	0.013	0.010	0.006	0.003	0.001
2005	95	0.052	0.026	0.019	0.011	0.007	0.003	0.001
2006	41	0.026	0.015	0.013	0.009	0.006	0.003	0.001

Table 45 Percentiles of 24-hour SO₂ concentrations for NOR01-Northfield Folland Avenue (2002 – 2006)

AAQ NEPM Standard 0.08 ppm (24-hr average)

Region Adelaide	Data availability (% of days)	Max (ppm)	99th percentile (ppm)	98 th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)
NOR01-Northfield Folland Avenue								
2002	54	0.007	0.006	0.005	0.005	0.004	0.002	0.001
2003	99	0.003	0.002	0.002	0.002	0.001	0.001	0.000
2004	96	0.003	0.002	0.001	0.001	0.001	0.001	0.000
2005	96	0.004	0.002	0.002	0.001	0.000	0.000	0.000
2006	96	0.003	0.002	0.001	0.001	0.001	0.000	0.000

Table 46 Percentiles of 24-hour SO₂ concentrations for PTP01-Pt Pirie Oliver Street (2003 – 2006)

AAQ NEPM Standard 0.08 ppm (24-hr average)

Region Spencer	Data availability (% of days)	Max (ppm)	99th percentile (ppm)	98 th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)	
PTP01-Pt Pirie Oliver Street									
	2002	52	0.050	0.045	0.040	0.035	0.029	0.013	0.005
	2003	97	0.095	0.043	0.037	0.024	0.018	0.011	0.004
	2004	100	0.051	0.039	0.037	0.028	0.022	0.011	0.003
	2005	95	0.072	0.054	0.049	0.033	0.023	0.014	0.005
	2006	98	0.053	0.043	0.040	0.032	0.023	0.013	0.002

Table 47 Percentiles of 24-hour SO₂ concentrations for WHY02-Whyalla Nicolson Avenue (2004 – 2006)

AAQ NEPM Standard 0.08 ppm (24-hr average)

Region Spencer	Data availability (% of days)	Max (ppm)	99th percentile (ppm)	98 th percentile (ppm)	95th percentile (ppm)	90th percentile (ppm)	75th percentile (ppm)	50th percentile (ppm)	
WHY02-Whyalla Nicolson Avenue									
	2004	74	0.007	0.003	0.002	0.001	0.001	0.001	0.000
	2005	98	0.007	0.004	0.003	0.002	0.002	0.001	0.001
	2006	42	0.003	0.002	0.002	0.002	0.001	0.001	0.001

Particulate matter as PM₁₀

Table 48 Percentiles of daily 24-hour PM₁₀ concentrations for ELI01-Elizabeth Downs (2004 – 2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Adelaide	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98 th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)	
ELI01-Elizabeth Downs									
	2004	55	63.9	39.1	33.5	26.8	22.3	16.1	12.4
	2005	95	84.8	58.8	48.5	38.2	30.0	21.7	14.9
	2006	92	90.4	49.3	44.8	30.4	23.0	17.3	13.0

Table 49 Percentiles of daily 24-hour PM₁₀ concentrations for KEN01-Kensington Gardens (2002 – 2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Adelaide	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
KEN01-Kensington Gardens								
2002	47	103.7	34.1	27.5	24.2	22.3	18.0	14.0
2003	89	85.9	44.5	35.2	26.3	21.4	16.7	13.1
2004	94	53.7	34.0	31.4	27.5	23.2	18.2	13.0
2005	98	76.2	39.8	35.2	27.9	24.1	19.0	13.7
2006	95	73.2	41.3	36.7	26.4	22.5	17.0	12.1

Table 50 Percentiles of daily 24-hour PM₁₀ concentrations for NET01-Netley (2002 – 2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Adelaide	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
NET01-Netley								
2002	100	79.3	43.1	38.1	31.6	27.5	22.8	18.5
2003	97	119.4	54.0	46.0	33.9	29.4	22.1	17.9
2004	99	62.7	42.4	40.3	33.6	29.5	23.1	17.3
2005	90	58.7	54.5	48.1	38.3	32.3	24.3	17.9
2006	91	101.4	85.7	69.2	43.0	33.5	24.6	18.1

Table 51 Percentiles of daily 24-hour PM₁₀ concentrations for CHD01-Christie Downs (2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Adelaide	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
CHD01-Christie Downs								
2006	73	52.2	49.6	42.1	31.2	25.8	19.4	14.3

Table 52 Percentiles of daily 24-hour PM₁₀ concentrations for WHY05-Whyalla Civic Park (2002 – 2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Spencer	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
WHY05-Whyalla Civic Park								
2002 [#]	26	59.2	44.2	43.2	40.3	26.8	19.7	14.3
2003 [#]	31	47.9	42.0	38.6	31.5	25.0	17.9	12.5
2004 [#]	28	35.2	33.9	33.2	29.8	25.0	19.1	13.8
2005 [#]	27	80.6	41.1	37.9	28.9	25.7	19.2	13.6
2006 [#]	33	53.8	51.1	43.7	34.0	29.0	21.2	15.2

Monitoring by high-volume sampler (one in six days), otherwise monitoring is by TEOM and reported as TEOM data (NEPM PRC, 2001).

Table 53 Percentiles of daily 24-hour PM₁₀ concentrations for PTP01-Pt Pirie Oliver Street (2002 – 2006)AAQ NEPM Standard 50 µg/m³ (24-hr average)

Region Spencer	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
PTP01-Pt Pirie Oliver Street								
2002 [#]	16	57.0	50.4	45.1	33.4	31.3	27.8	21.2
2003	50	60.5	51.7	47.0	38.9	30.8	21.8	14.1
2004	97	135.8	51.8	43.9	35.7	28.5	22.6	15.7
2005	95	464.3	68.4	45.6	37.6	31.6	23.4	16.6
2006	96	181.8	71.0	59.3	42.9	34.6	25.1	17.4

Monitoring by high-volume sampler (one in six days), otherwise monitoring is by TEOM and reported as TEOM data (NEPM PRC, 2001).

Particulate matter as PM_{2.5}Table 54 Percentiles of daily 24-hour PM_{2.5} concentrations for NET01-Netley (2004 – 2006)AAQ NEPM Advisory Reporting Standard 25 µg/m³ (24-hr average)

Region	Data availability rates (%)	Max (µg/m ³)	99th percentile (µg/m ³)	98th percentile (µg/m ³)	95th percentile (µg/m ³)	90th percentile (µg/m ³)	75th percentile (µg/m ³)	50th percentile (µg/m ³)
Adelaide								
NET01-Netley								
^2005	14	14.1	13.7	13.2	11.1	9.9	8.0	6.1
*2005	96	17.3	16.4	15.0	13.2	11.6	9.4	7.3
^2006	30	28.2	25.4	24.8	17.9	11.5	8.5	6.2
*2006	96	61.2	20.4	19.0	14.5	12.0	9.7	7.3

^Indicates monitoring by one -day-in-three partisol monitoring (Maximum data availability rate is 32%)

*Indicates monitoring by Tapered Element Oscillating Microbalance (TEOM)

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