



Air Monitoring Report for South Australia 2013

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

June 2014

**Air Monitoring Report for South Australia 2013:
Compliance with the National Environment Protection (Ambient Air Quality)
Measure, June 2014**

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EXECUTIVE SUMMARY

South Australia's monitoring results for 2013 indicated that:

- The Adelaide region complied with all AAQ NEPM goals.
- The Spencer region complied with all but the 1-hour SO₂ goal.
- In 2013 the AAQ NEPM goals were met for all substances at all NEPM monitoring sites except for the 1 hour sulfur dioxide at Port Pirie (not met). The EPA also conducts monitoring at non-NEPM sites not reported in this document.
- Data capture rates above 85% per quarter and 92% per annum were achieved at all sites during the 2013 reporting year, with the exception of North Haven station, which has been operating for only 9 months and for which the data capture rates did not meet minimum requirements and compliance could not be demonstrated in the first monitoring year. Air quality in the Adelaide airshed was generally good during 2013 and the AAQ NEPM goals were met for all pollutants at all six monitoring stations in this area.
 - There were no exceedences of the CO, NO₂, O₃, SO₂ or PM_{2.5} standards at any of the metropolitan ambient air monitoring stations.
 - There were 3 exceedences of the PM₁₀ standard at North Haven and 1 exceedence for other metropolitan stations
- Air quality in the Spencer airshed was reasonably good during 2013 and the AAQ NEPM goals were met for all parameters (PM₁₀, SO₂ and Pb) at all 3 monitoring stations except the 1-hour SO₂ goal at Port Pirie.
 - There were 5 exceedences of the 24-hour PM₁₀ standard in the Spencer region 2 at Schulz Park Whyalla and 3 at Oliver St Pt Pirie.
 - In Port Pirie, exceedences of the 1-hour SO₂ standard were recorded on 43 occasions on 43 different days. However there was no exceedence of the 1-year standard for SO₂.
 - The AAQ NEPM goal for lead was met at both NEPM monitoring stations in Port Pirie.
- Pollutant levels in Adelaide were generally either remaining steady or appear to be decreasing. In the Spencer region average sulfur dioxide levels were higher than for the previous year. PM₁₀ concentrations have increased slightly at all Adelaide stations this year possibly due to the metropolitan area experiencing higher than average temperatures with less rain fall during the summer months (BoM 2013).
- Development of monitoring stations continues in order to meet the jurisdictional requirements for air monitoring. Planning is in progress for a campaign station located in the Central Business District of Adelaide.

SECTION A - MONITORING SUMMARY

Air quality in South Australia is monitored in accordance with a monitoring plan (SA EPA, 2001) developed under the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) (NEPC, 2003). This report assesses compliance with this measure.

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 effective aerodynamic diameter (PM₁₀). In 2003, the AAQ NEPM was varied to include monitoring of particles less than 2.5 micrometres effective aerodynamic diameter (PM_{2.5}) (NEPC, 2003).

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" stations, monitoring long term trends in air quality or "campaign" stations, designed to investigate the need for further monitoring. South Australia only operates long term trend stations. Figure 1 shows the current long term trend monitoring stations and population density in the Adelaide region and figure 2 shows current monitoring stations and population density in the Spencer region. The monitoring stations within the Adelaide region represent an exposed population of 1,262,940 and monitoring within the townships of Pt Pirie and Whyalla represent an exposed population of 40,028. Population data are based on collection districts from the 2011 census (ABS, 2013).

Additions to the monitoring network

The EPA has made an addition to the NEPM monitoring network in 2013 at North Haven in the North Western region of Adelaide. The station started operating in late March 2013, and so it was not possible to demonstrate performance against the NEPM standard.

Table 1 below provides a summary of each performance monitoring station that was operating during the 2013 reporting year. Station location, type, exposed population and pollutants monitored have been included. Table 2 lists the methods used for monitoring the NEPM pollutants and Table 3 describes each station's compliance with siting criteria set out in AS/NZS 3580.1.1:2007.

NATA status

The South Australian Environment Protection Authority operates all monitoring stations described in this report. Although quality systems are in place, the EPA laboratory is not accredited.

Table 1 Summary of current performance monitoring stations in South Australia

REGION	Performance monitoring station	Location category	site type	AAQ NEPM pollutants measured						
				CO	NO ₂	O ₃	SO ₂	Pb	PM ₁₀	PM _{2.5}
ADELAIDE										
	ELI01 - Elizabeth Downs	Res	G/Trend	X	X	X			X	
	NOR01 - Northfield	Res	G/Trend		X	X	X			
	NET01 - Netley	Res/LI	G/Trend		X	X			X	X
	KEN01 - Kensington Gardens	Res	G/Trend		X	X			X	
	CHD01 - Christie Downs	Res	G/Trend		X	X			X	
	NHV01 - North Haven	Res/I	G/Trend		X	X	X		X	X
SPENCER										
	PTP01 - Pt Pirie Oliver Street	Res/I	G/Trend				X	X	X	
	PTP05 - Pt Pirie Frank Green Park	Res/I	G/Trend					X		
	WHY07 - Whyalla Schulz Park	Res/I	G/Trend						X	
	Res	Residential								
	LI	Light industrial								
	I	Industrial								
	G	Generally representative upper bound								

Table 2 Methods used for monitoring the NEPM pollutants

Pollutant		Standard	Title	Method Used
Carbon monoxide	CO	AS3580.7.1 - 1992	Determination of Carbon Monoxide-Direct Reading Instrumental method	Gas filter correlation infrared
Nitrogen dioxide	NO ₂	AS3580.5.1 - 1993	Determination of Oxides of Nitrogen - Chemiluminescence Method	Chemiluminescence
Ozone	O ₃	AS3580.6.1 - 1990	Determination of Ozone- Direct Reading Instrumental Method	Ultraviolet photometry
Sulfur dioxide	SO ₂	AS3580.4.1 - 1990	Determination of Sulfur Dioxide-Direct Reading Instrumental Method	Ultraviolet fluorescence
Particles	PM ₁₀	AS3580.9.8 - 2001	Determination of Suspended Particulate Matter- PM ₁₀ Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser	TEOM
	PM _{2.5}	AS3580.9.8 - 2001	Determination of Suspended Particulate Matter- PM ₁₀ Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser [#]	TEOM
Lead	Pb	AS2724.3 - 1984	Determination of Suspended Particulate Matter- Total Suspended Particulate Matter (TSP) - High Volume Sampler (HVS) Gravimetric Method	Gravimetric
	Pb	AS2800 - 1985	Determination of particulate lead-High Volume Sampler Gravimetric Collection- Analysis is modified to use Inductively Coupled Plasma	Sampling as per standard and analysis by inductively coupled plasma optical emission spectroscopy (ICP-OES)

[#] With reference to PM_{2.5} in place of PM₁₀ and minor modifications to adapt the Standard for the purposes of PM_{2.5} monitoring as set out in *Technical Paper on Monitoring for Particles as PM_{2.5}* (NEPC, 2003)

Uncertainty of Measurement

The expanded uncertainties of measurements (U95) quoted below are at a confidence level of 95% with a coverage factor of 2. The values shown do not include any estimate of the effects associated with the sampling location.

Carbon monoxide	U95= ±0.66 ppm @ 9.0 ppm
Nitrogen oxides	U95= ±0.045 ppm @ 0.120 ppm
Ozone	U95= ±0.005 ppm @ 0.100 ppm
Sulfur dioxide	U95= ±0.011 ppm @ 0.200 ppm
Lead*	U95= ±0.09 relative uncertainty
PM10	U95= ±1.5 µg/m ³ for 1hr average
PM2.5	Using TEOM with PM10 inlet and VSCC PM2.5 cut-off

* Analysis by Queensland Health Scientific Services, NATA accreditation # 41

Table 3 Stations' siting compliance with AS 3580.1.1:2007

Region Station	Location Category	Comments	Height Above 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
Adelaide									
ELI01 - Elizabeth Downs	Res		✓	✓	✓	✓	✗	✓	✓
NOR01 - Northfield	Res		✓	✓	✓	✓	✗	✓	✓
NET01 - Netley	Res/LI	Heavy traffic	✓	✓	✓	✓	✓	✓	✓
KEN01 - Kensington Gardens	Res	30 m-high gums @ 10 m, but clear aspect—thin, high canopy	✓	✓	✗	✗	✗	✓	✓
CHD01 - Christie Downs	Res		✓	✓	✓	✓	✓	✗	✓
NHV01 - North Haven	Res/I	Light and heavy industries	✓	✓	✓	✓	✓	✓	✓
Spencer									
PTP01 - Pt Pirie Oliver Street	Res/I	Type 2	✓	✓	✓	✓	✓	✓	✓
PTP05 - Pt Pirie Frank Green Park	Res/I	Type 2	✓	✓	✓	✓	✓	✓	✓
WHY07 - Whyalla Schulz Park	Res/I	Type 2	✓	✓	✓	✓	✓	✓	✓

Res- Residential

LI- Light industrial

I- Industrial

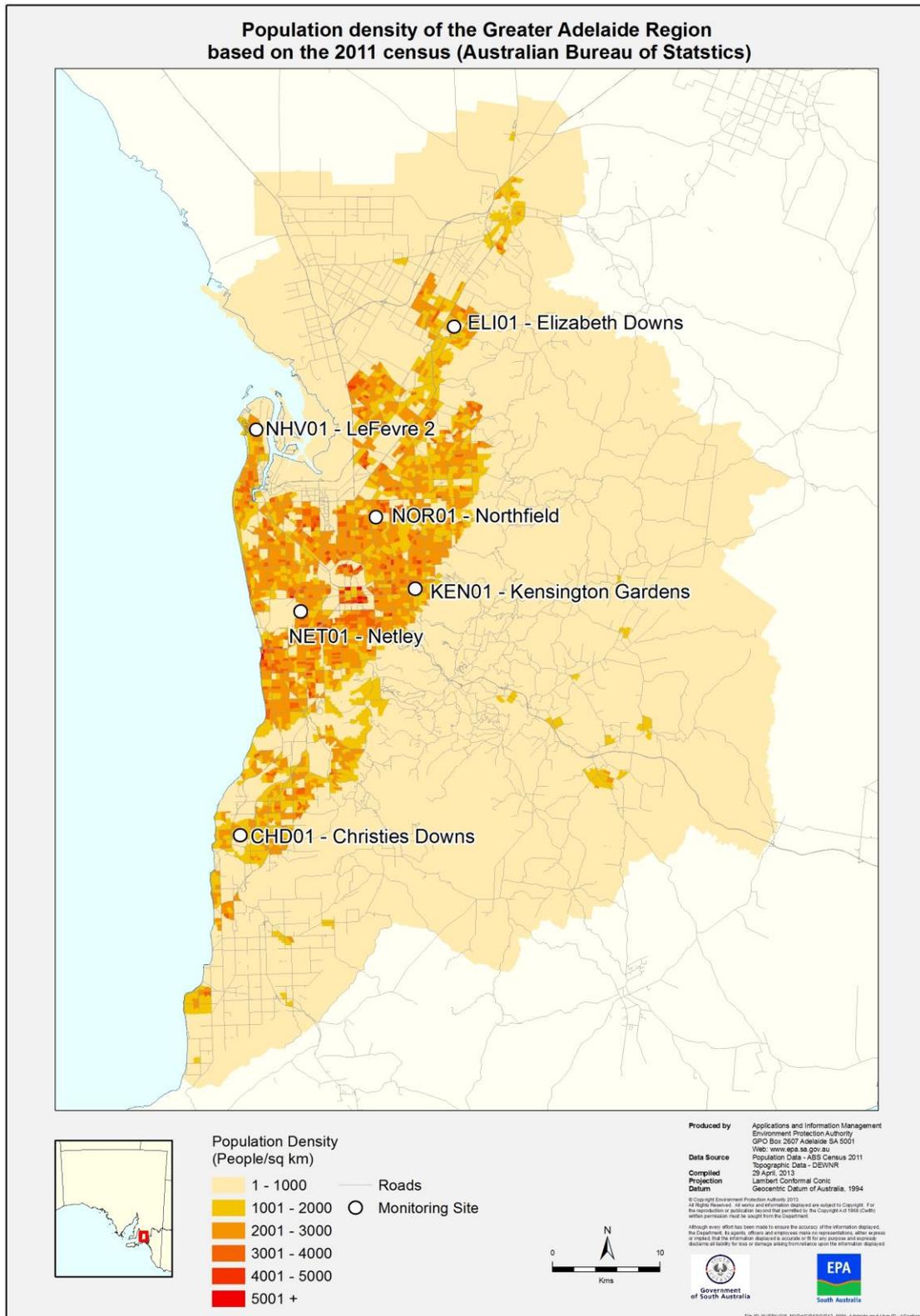


Figure 1 Population density of the Adelaide region based on the 2011 census (Australian Bureau of Statistics 2013) showing current monitoring sites.

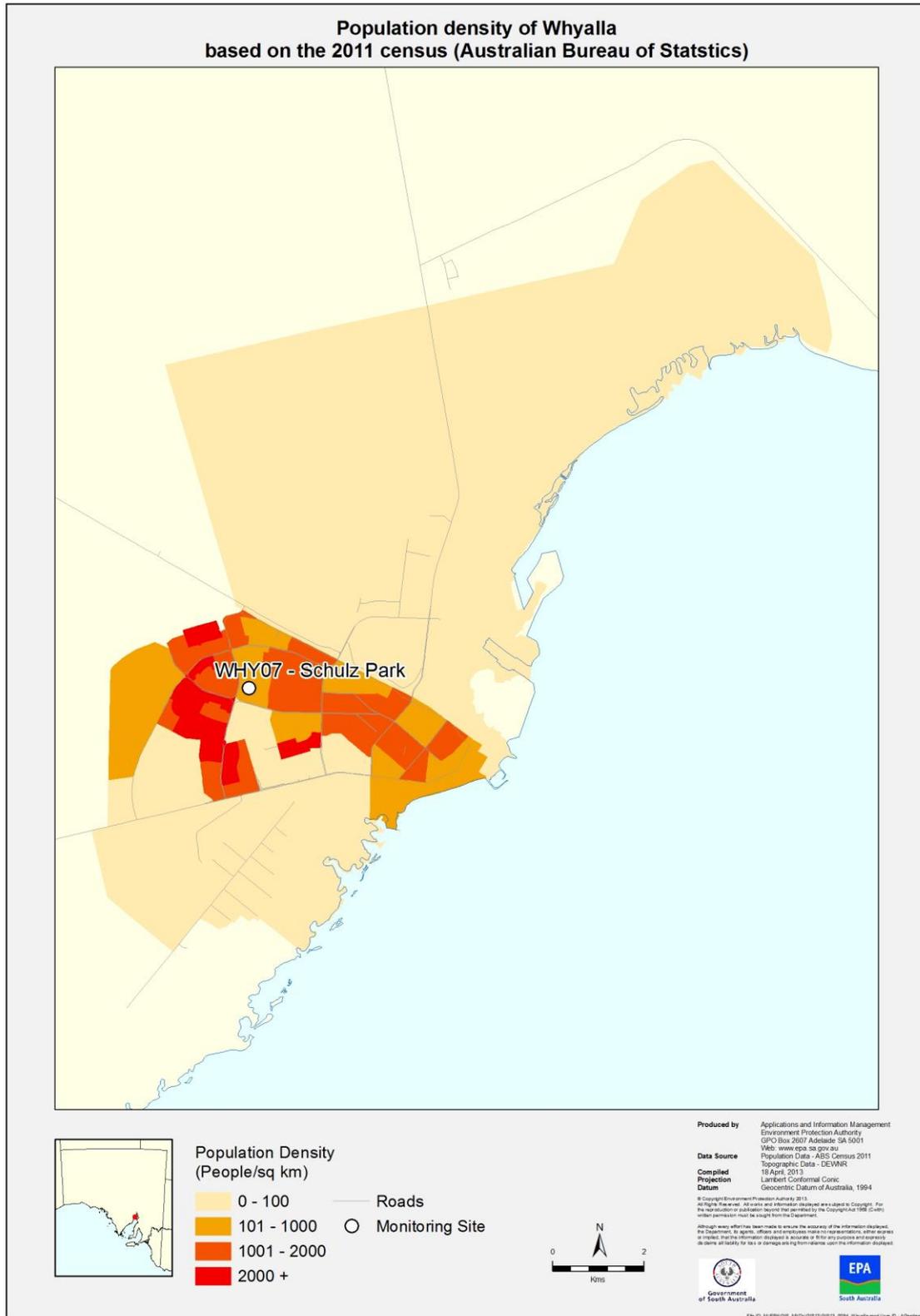


Figure 2 Population density of Whyalla in the Spencer region based on the 2011 census (Australian Bureau of Statistics 2013) showing current monitoring site.

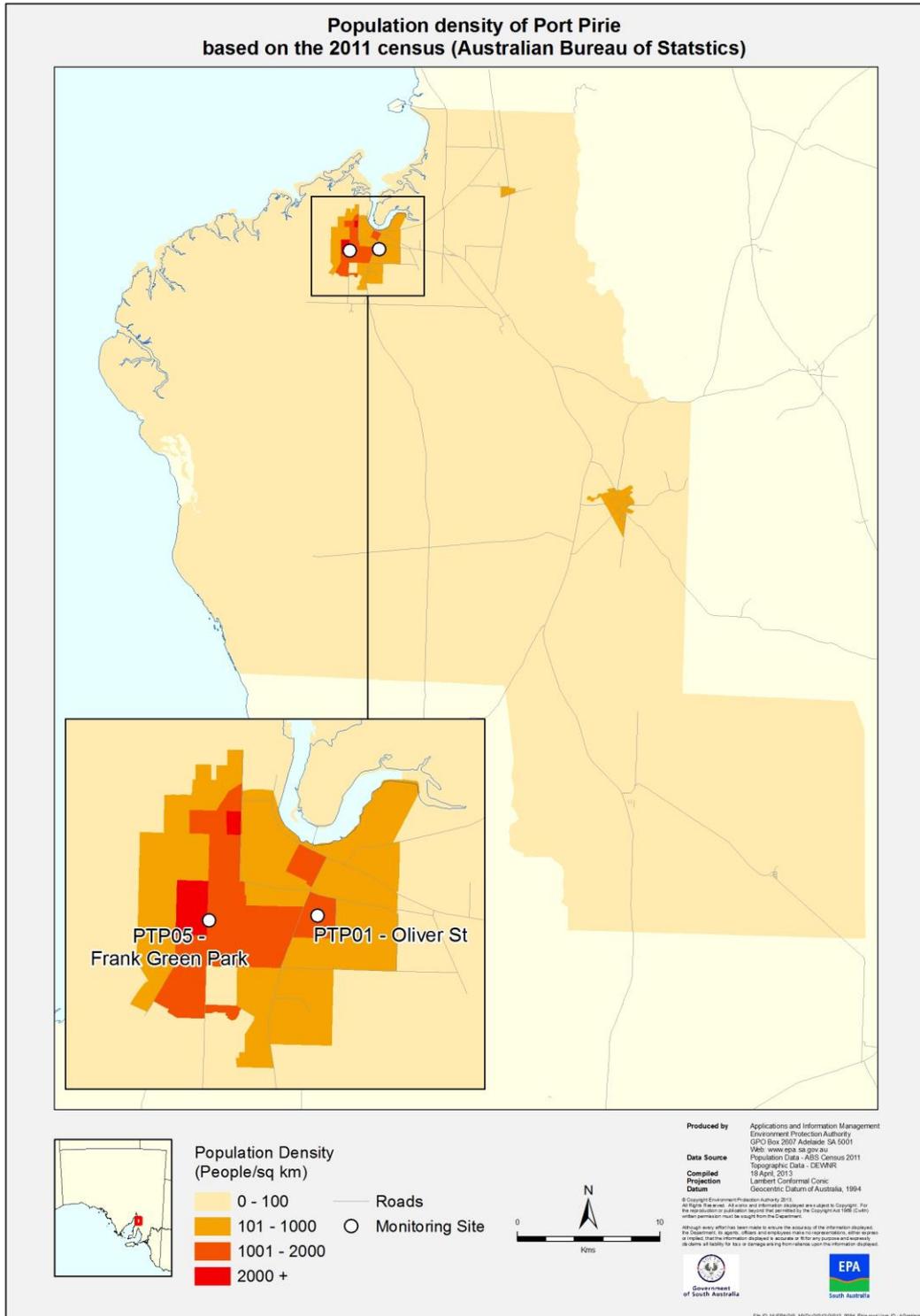


Figure 3 Population density of Pt Pirie in the Spencer region based on the 2011 census (Australian Bureau of Statistics 2013) showing current monitoring sites.

SECTION B - ASSESSMENT OF COMPLIANCE WITH STANDARDS AND 2013 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.

Performance is assessed as meeting the standards and goal if the number of exceedences of the standard are no more than the number specified in Schedule 2 of the AAQ NEPM (NEPC, 2003), and data recovery were at least 75% in each quarter of the year (NEPC PRC, 2001).

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, 2003).

Calculations and reporting methods used, comply with requirements detailed in the NEPC Peer Review Committee, Technical Paper No 8: Annual Reports (NEPC PRC, 2010).

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

Carbon monoxide

Table 4 2013 compliance summary for CO in South Australia

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		
Adelaide							
ELI01- Elizabeth Downs	100.0	100.0	96.5	99.4	99.0	0	met

AAQ NEPM Standard
9.0 ppm (8-hr average)

Nitrogen dioxide

Table 5 2013 compliance summary for NO₂ in South Australia

AAQ NEPM Standard
0.12 ppm (1-hour average)
0.03 ppm (1-year 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	88.8	97.9	94.0	97.9	94.7	0	0.003	met	met
NOR01 - Northfield	97.5	97.7	98.1	95.6	97.2	0	0.006	met	met
NET01 - Netley	97.7	96.8	96.9	97.0	97.1	0	0.007	met	met
KEN01 - Kensington Gardens	97.8	97.7	93.5	96.6	96.4	0	0.004	met	met
CHD01 - Christie Downs	97.0	94.8	98.2	86.0	94.0	0	0.004	met	met
NHV01 - North Haven	4.3	88.4	97.5	82.4	68.4	0	0.005	Not demonst rated	Not demonst rated

Ozone

Table 6 2013 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	92.2	97.9	97.8	97.9	96.5	0	0	met	met
NOR01 - Northfield	97.8	97.7	97.7	97.6	97.7	0	0	met	met
NET01 - Netley	97.6	97.0	97.8	97.7	97.5	0	0	met	met
KEN01 - Kensington Gardens	97.7	97.8	96.5	97.9	97.5	0	0	met	met
CHD01 - Christie Downs	97.5	94.2	93.4	97.6	95.7	0	0	met	met
NHV01 - North Haven	4.0	88.0	96.8	85.1	68.8	0	0	Not demonst rated	Not demonst rated

Sulfur dioxide

Table 7 2013 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 1-hour mean (ppm)	Performance against the standards and goal		
	Q1	Q2	Q3	Q4	Annual	1-hr	24-hrs		1-hr	24-hrs	1-yr
Adelaide											
NOR01 - Northfield	94.4	93.8	94.9	94.2	94.3	0	0	0.000	met	met	met

NHV01 - North Haven	4.0	88.4	95.3	84.1	68.3	0	0	0.000	Not demon- strated	Not demon- strated	Not demon- strated
Spencer											
PTP01 - Pt Pirie Oliver Street	92.9	93.5	93.3	95.7	93.8	43	0	0.010	not met	met	met

Particulate matter as PM₁₀

Table 8 2013 compliance summary for PM₁₀ in South Australia

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

Region performance monitoring station/s	Data availability rates (% of days)					Number of exceedences (days)	Performance against the standards and goal
	Q1	Q2	Q3	Q4	Annual		
Adelaide							
ELI01 - Elizabeth Downs	100.0	97.8	100.0	100.0	99.5	1	met
NET01 - Netley	100.0	97.8	100.0	100.0	99.5	1	met
KEN01 - Kensington Gardens	100.0	100.0	100.0	98.9	99.7	1	met
CHD01 - Christie Downs	100.0	96.7	96.7	100.0	98.4	1	met
NHV01 - North Haven	4.4	100.0	100.0	100.0	76.4	3	Not demonstrated
Spencer							
WHY07 - Whyalla Schulz Park	100.0	100.0	100.0	94.6	98.6	2	met
PTP01 - Pt Pirie Oliver Street	93.3	100.0	100.0	100.0	98.4	3	met

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

Lead

Table 9 2013 compliance summary for Lead in South Australia

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

Region performance monitoring station/s	Data availability rates (% of days)					Annual mean (µg/m ³)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual		
Spencer							
PTP05 - Pt Pirie Frank Green Park	100.0	93.3	100.0	100.0	98.4	0.21	met
PTP01 - Pt Pirie Oliver Street	100.0	100.0	100.0	100.0	100.0	0.45	met

Lead data is reported to ambient conditions and analyses were carried out by NATA accredited facilities at the Queensland Health Forensic and Scientific Services laboratory (NATA accreditation no. 41).

Particulate matter as PM_{2.5}

Table 10 2013 compliance summary for PM_{2.5} in South Australia

AAQ 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)					Number of days 24 hour standard exceeded	Annual Mean (µg/m ³)	Performance against the standards and goal	
								24 Hour	Annual
	Q1	Q2	Q3	Q4	Annual				
Adelaide									
NET01 Netley	100.0	97.8	100.0	100.0	99.5	0	7.2	met	met
NHV01 - North Haven	4.4	95.6	100.0	100.0	75.3	0	7.3	Not demonstrated	Not demonstrated

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

SECTION C - ANALYSIS OF AIR QUALITY MONITORING

Progress Towards Achieving the AAQ NEPM 2013 Goal

As assessed against the National Environment Protection (Ambient Air Quality) Measure (NEPC, 2003), the following observations were made for 2013:

- For CO the standard and goal were met at the Elizabeth station.
- For NO₂ the hourly and yearly standards and goals were met at all stations.
- For O₃ the 1 and 4-hour standards and goals were met at all stations.
- For SO₂ the annual standard and both the 24hr and annual goal were met at the three sites. The 1-hour standard and goal were met at Northfield and North Haven but not met at Port Pirie, Oliver Street.
- For PM₁₀ there were exceedences of the standard but not the goal at all Adelaide metropolitan stations. There were also exceedences of the standard but not the goal at the Spencer region.
- For Pb the annual standard and goal were met at Frank Green Park and Oliver Street monitoring sites.
- For PM_{2.5} at Netley and North Haven both the 24-hour and annual advisory reporting standards were met.

Circumstances which led to Exceedences

There were 5 exceedences of the PM₁₀ standard occurred in the Spencer region, 2 at Schulz Park and 3 at Oliver Street. North Haven had 1 exceedence of the PM₁₀ standard in early September followed by 1 exceedence of the PM₁₀ standard measured on the same day later that month at all the stations in the Adelaide region. There was also 1 exceedence measured on the same day at both Christie Downs and North Haven in late December. All exceedences were due to general windblown particles. Tables 11 below summarises dates and inferred causes of exceedences occurring during the 2013 reporting year.

Exceedences of the SO₂ 1hr 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. Tables 12 summarises dates and times of exceedences occurring during the 2013 reporting year.

Table 11 Summary of PM₁₀ exceedences in the Adelaide region with corresponding data from the other sites during 2013

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

Date of Exceedance (dd/mm/yyyy)	Adelaide Region					Inferred Cause
	ELI01-Elizabeth	NET01 - Netley	KEN01 - Kensington	CHD01 Christie Downs	NHV01 North Haven	
01/09/2013	42.4	36.9	27.1	37.9	51.5	Windblown dust
30/09/2013	74.9	64.5	66.4	N/A	82.2	Windblown dust
20/12/2013	37.3	35.2	33.4	53.2	58.9	Windblown dust

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

Table 12 Summary of PM₁₀ exceedences in the Spencer region with corresponding data from the other sites during 2013

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

Date of Exceedance (dd/mm/yyyy)	Spencer region		Inferred cause
	WHY07 - Schulz Park	PTP01 - Oliver St	
01/09/2013	35.3	51.0	windblown dust
15/09/2013	20.1	52.0	windblown dust
30/09/2013	123.6	91.8	windblown dust
09/10/2013	64.1	46.1	windblown dust

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

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

Annual summary statistics described in Tables 13 to 20 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 is highlighted in bold. Note that the times shown are finish times for events. 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, 2003). 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.

Table 13 Summary of SO₂ exceedences during 2013 in South Australia

AAQ NEPM Standard
0.20 ppm (1-hr average)

Note: times shown are finish times for events.

Date of Exceedence (dd/mm/yyyy)	Spencer Region		Date of Exceedence (dd/mm/yyyy)	Spencer Region	
	PT01 - Pt Pirie Oliver Street	Inferred Cause		PT01 - Pt Pirie Oliver Street	Inferred Cause
		Industrial source with suitable meteorological conditions			Industrial source with suitable meteorological conditions
03/01/2013 12:00	0.230	As above	02/09/2013 10:00	0.227	As above
04/01/2013 15:00	0.481	As above	11/09/2013 12:00	0.306	As above
15/01/2013 10:00	0.314	As above	14/09/2013 15:00	0.284	As above
21/01/2013 10:00	0.262	As above	17/09/2013 13:00	0.443	As above
24/01/2013 12:00	0.298	As above	19/09/2013 11:00	0.204	As above
05/02/2013 11:00	0.239	As above	22/09/2013 13:00	0.463	As above
06/02/2013 15:00	0.221	As above	24/09/2013 14:00	0.298	As above
16/02/2013 11:00	0.231	As above	12/10/2013 13:00	0.403	As above
17/02/2013 10:00	0.288	As above	15/10/2013 13:00	0.216	As above
18/02/2013 18:00	0.231	As above	16/10/2013 04:00	0.217	As above
06/03/2013 13:00	0.277	As above	01/11/2013 17:00	0.220	As above
23/03/2013 19:00	0.269	As above	05/11/2013 13:00	0.220	As above
25/03/2013 17:00	0.409	As above	14/11/2013 11:00	0.244	As above
06/04/2013 11:00	0.217	As above	18/11/2013 17:00	0.347	As above
12/04/2013 09:00	0.397	As above	08/12/2013 04:00	0.278	As above
16/04/2013 13:00	0.253	As above	18/12/2013 16:00	0.242	As above
26/04/2013 17:00	0.210	As above	24/12/2013 11:00	0.322	As above
25/06/2013 15:00	0.248	As above	25/12/2013 13:00	0.323	As above
16/07/2013 15:00	0.235	As above	27/12/2013 11:00	0.389	As above
24/07/2013 15:00	0.228	As above	30/12/2013 10:00	0.230	As above
09/08/2013 02:00	0.262	As above	31/12/2013 13:00	0.405	As above
01/09/2013 16:00	0.298	As above			

Carbon monoxide

The standard and goal for carbon monoxide were clearly met at Elizabeth as CO levels were well below the AAQ NEPM standard. The highest concentration recorded reached only 11% of the standard.

Table 14 2013 summary statistics for daily peak 8-hour CO in South Australia

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

Region & 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	363	1.0	06 May 20:00	0.7	07 May 1:00

Nitrogen dioxide

Nitrogen dioxide concentrations were below the AAQ NEPM standard. The highest concentrations recorded varied from 26% of the standard at Elizabeth Downs to 34% of the standard at Netley. Second highest concentrations varied from 25% of the standard at Elizabeth Downs to 32% of the standard at Netley. Accordingly the 1-hour standard and goal was met at all sites.

Table 15 2013 summary statistics for daily peak 1-hour NO₂ in South Australia

Region & Station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	AAQ NEPM Standard 0.12 ppm (1-hr average)	
				2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ELI01 - Elizabeth Downs	356	0.031	05 April 20:00	0.030	05 Sep 19:00
CHD01 - Christie Downs	355	0.040	12 Apr 19:00 02 Sep 19:00	0.033	17 Jan 06:00 07 May 19:00
KEN01 - Kensington Gardens	363	0.035	02 Sep 18:00	0.033	19 Dec 08:00
NET01 - Netley	365	0.041	08 Oct 20:00	0.038	10 Apr 09:00 08 May 19:00
NOR01 - Northfield	364	0.038	03 Sep 09:00	0.035	12 Apr 19:00
NHV01 - North Haven	260	0.037	02 Sep 20:00	0.035	05 Nov 21:00

Ozone

The highest concentration of ozone, based on 1-hour averages, was measured at Elizabeth Downs and reached 72% of the AAQ NEPM standard. The highest concentrations measured at the other stations varied from 51%-67% of the standard. The second highest concentrations ranged from 46% to 65% of the standard. Both the standard and goal were met at all stations.

Table 16 2013 summary statistics for daily peak 1-hour O₃ in South Australia

Region & Station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	AAQ NEPM Standard 0.10 ppm (1-hr average)	
				2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ELI01 - Elizabeth Downs	361	0.072	16 Jan 14:00	0.060	15 Jan 16:00
CHD01 - Christie Downs	361	0.065	16 Feb 13:00	0.057	16 Jan 16:00
KEN01 - Kensington Gardens	365	0.067	16 Jan 15:00 7 Jan 12:00	0.065	16 Feb 13:00
NET01 - Netley	365	0.062	16 Feb 13:00	0.056	16 Jan 17:00
NOR01 - Northfield	365	0.062	07 Jan 12:00	0.061	16 Jan 14:00
NHV01 - North Haven	261	0.051	11 Apr 15:00	0.046	27 Dec 15:00

The maximum daily peak 4-hour rolling ozone concentration was recorded at Elizabeth Downs and reached 82% of the standard. The lowest daily maximum was 55% of the standard and was recorded at North Haven. Second highest daily maxima ranged from 54% to 78% of the standard hence the standard and goal were met at all stations.

Sulfur dioxide

In the Adelaide region the 1-hour average sulfur dioxide concentration was well below the standard. It reached a maximum of 13% of the AAQ NEPM standard at North Haven. The second highest concentration was 9.0% of the standard. The standard and goal were easily met in the Adelaide region.

At Pirie however the highest and second highest daily peak 1-hour SO₂ concentration exceeded the standard. It reached a maximum of 241% of the AAQ NEPM standard and the second highest concentration was 232% of the standard, both of which were significant exceedences. Hence the 1-hour standard and goal were not met in the Spencer region.

Table 17 2013 summary statistics for daily peak 4-hour O₃ in South Australia

Region & Station/s	Number of valid days	Highest (ppm)	Highest (dd mon hh:mm)	AAQ NEPM Standard 0.08 ppm (4-hr average)	
				2nd highest (ppm)	2nd highest (dd mon hh:mm)
Adelaide					
ELI01 - Elizabeth Downs	361	0.066	16 Jan 16:00	0.052	21 Feb 16:00
CHD01 - Christie Downs	361	0.064	16 Feb 15:00	0.055	31 Dec 17:00
KEN01 - Kensington Gardens	365	0.064	16 Jan 16:00	0.062	07 Jan 14:00 06 Feb 15:00
NET01 - Netley	365	0.059	16 Feb 15:00	0.054	16 Jan 18:00
NOR01 - Northfield	365	0.057	16 Jan 16:00	0.055	07 Jan 14:00 16 Feb 17:00
NHV01 - North Haven	263	0.044	11 Apr 16:00	0.043	19 Dec 13:00

Table 18 2013 summary statistics for daily peak 1-hour SO₂ in South Australia

AAQ NEPM Standard 0.20 ppm (1-hr average)					
Region & 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	365	0.011	08 Sep 22:00	0.007	10 Jun 09:00
NHV01 - North Haven	263	0.026	06 Nov 19:00	0.018	01 Aug 12:00
Spencer					
PTP01 - Pt Pirie Oliver St	365	0.481	04 Jan 15:00	0.463	22 Sep 13:00

The 24-hour standard for sulfur dioxide was met at the Pt Pirie Site in the Spencer region. In the Adelaide region the maximum concentration was only 9% of the standard, in the Spencer region the maximum reached 90% of the standard. The second highest concentration in the Spencer region was 78% of the standard and 3% in Adelaide so the Goal was met at both sites.

Table 19 2013 summary statistics for daily peak 24-hour SO₂ in South Australia

Region & Station/s	Number of valid days	Highest (ppm)	Highest (dd mon)	AAQ NEPM Standard 0.08 ppm (24-hr average)	
				2nd highest (ppm)	2nd highest (dd mon)
Adelaide					
NOR01 - Northfield	364	0.007	08 Sep	0.002	26 Jul 13 Sep
NHV01 - North Haven	261	0.003	01 Aug 04 Jul	0.002	19 May 02 Aug 11 Aug 26 Aug 30 Sep 01 Nov 06 Nov 19 Dec
Spencer					
PTP01 - Pt Pirie Oliver St	362	0.072	22 Sep	0.062	04 Jan 27 Apr 25 Dec

Particulate matter as PM₁₀

There were five exceedences of the 24-hour AAQ NEPM standard in the Spencer region NEPM sites. There were four exceedences on three different days in Adelaide. The maximum concentration recorded in the Adelaide region was at North Haven which reached to 164% of the standard.

The highest concentration in the Spencer region was at Schulz Park in Pt Pirie which reached to 248% of the standard. At Oliver St the highest concentration was 184% of the standard.

The goal was met at all stations as the 6th highest concentration at each monitoring station was below the NEPM standard. 6th highest maxima in the Adelaide region ranged from 86% of the standard at North Haven to 61% of the standard at Kensington. In the Spencer region, it ranged from 86% at Oliver St to 78% at Schulz Park.

Table 20 2013 summary statistics for 24-hour PM₁₀ in South Australia

Region & Station/s	Number of valid days	Highest (µg/m ³)	Highest (dd mon)	AAQ NEPM Standard 50 µg/m ³ (24-hr average)	
				6th highest (µg/m ³)	6th highest (dd mon)
Adelaide					
ELI01 - Elizabeth Downs	363	74.9	30 Sep	35.2	20 Feb
CHD01 - Christie Downs	359	53.2	20 Dec	37.9	1 Sep
KEN01 - Kensington Gardens	364	66.4	30 Sep	30.6	20 Feb
NET01 - Netley	363	64.5	30 Sep	37.1	23 Sep
NHV01 - North Haven	279	82.2	30 Sep	42.8	23 Sep
Spencer					
PTP01 - Pt Pirie Oliver St	359	91.8	30 Sep	42.8	06 Jan
WHY07 - Whyalla Schulz Park	360	123.6	30 Sep	39.0	20 Feb 08 Jan

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

Particulate matter as PM_{2.5}

There were no exceedences of the PM_{2.5} standard in Adelaide during 2013 hence the standard was met. The highest and 6th highest concentrations were 99% and 50% of the standard respectively.

Table 21 2013 summary statistics for 24-hour PM_{2.5} in South Australia

AAQ NEPM Advisory Reporting Standard
25 µg/ m³ (24-hr average)

Region & 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	361	24.8	21 Feb	12.6	14 Feb
NHV01 - North Haven	289	22.2	30 Sep	12.3	02 Oct 28 Dec

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

SECTION D - TRENDS AND POLLUTANT DISTRIBUTIONS

Tables 21-56 provide results of additional analyses of daily peak values, including percentiles of daily peak concentrations. Where available, trend data have been included. Percentile data have been calculated from daily maxima as required in PRC technical paper number 8 (2010).

Figures 4-39 below are graphical representations of the trend data supplied in tables 21-56. The AAQ NEPM standards are shown except where the standards are too large to fit on the scale of the graph. In general:

- Carbon monoxide concentrations showed a decreasing trend over the last 9 years and concentrations were consistently well below the NEPM standard.
- Nitrogen dioxide concentrations in Adelaide showed a decreasing trend at all stations.
- 1-hour and 4-hour rolling ozone concentrations were quite variable from year to year making it difficult to determine trends. However, concentrations were currently increasing at Netley and Northfield sites.
- 1-hour daily peak sulfur dioxide concentrations have decreased from the previous year at Oliver Street Port Pirie but the number of exceedences of the standard increased. Concentrations at Northfield and North Haven were very low and well below the NEPM standards.
- The maximum 24-hour average sulfur dioxide concentrations were lower than the previous year. However, the annual mean value has slightly increased at Pt Pirie. The value at Northfield remained very low.
- 24-hour PM₁₀ concentrations in the Spencer region showed some variability over the years but, overall a decreasing trend has been observed. PM₁₀ concentrations have increased slightly at all Adelaide stations this year possibly due to the metropolitan area experiencing higher than average temperatures and lower than average rainfall through the second half of the year.
- Lead concentrations at both NEPM sites in Port Pirie are showing an increase this year.
- PM_{2.5} concentrations at Netley appear to be showing a decreasing trend.

Carbon monoxide

Table 22 Percentiles of daily peak 8-hour CO concentrations for Adelaide, ELI01 - Elizabeth Downs (2002 - 2013)

AAQ NEPM Standard
9.0 ppm (8-hr average)

Year (yyyy)	Data availability (% of days)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	83.6	0.8	0.7	0.6	0.4	0.3	0.2	0.1
2003	91.7	1.4	0.8	0.7	0.5	0.4	0.2	0.1
2004	97.7	0.8	0.6	0.5	0.4	0.3	0.2	0.1
2005	93.6	0.8	0.6	0.4	0.4	0.3	0.1	0.1
2006	85.9	0.7	0.5	0.4	0.3	0.2	0.1	0.0
2007	99.7	0.6	0.4	0.3	0.3	0.2	0.1	0.0
2008	95.7	0.5	0.4	0.3	0.3	0.2	0.1	0.0
2009	99.8	0.4	0.3	0.3	0.2	0.2	0.1	0.1
2010	97.8	0.4	0.3	0.3	0.3	0.2	0.1	0.1
2011	91.2	0.8	0.6	0.4	0.3	0.2	0.1	0.0
2012	94.8	0.6	0.4	0.3	0.2	0.2	0.1	0.0
2013	99.0	1.0	0.35	0.27	0.19	0.12	0.06	0.03

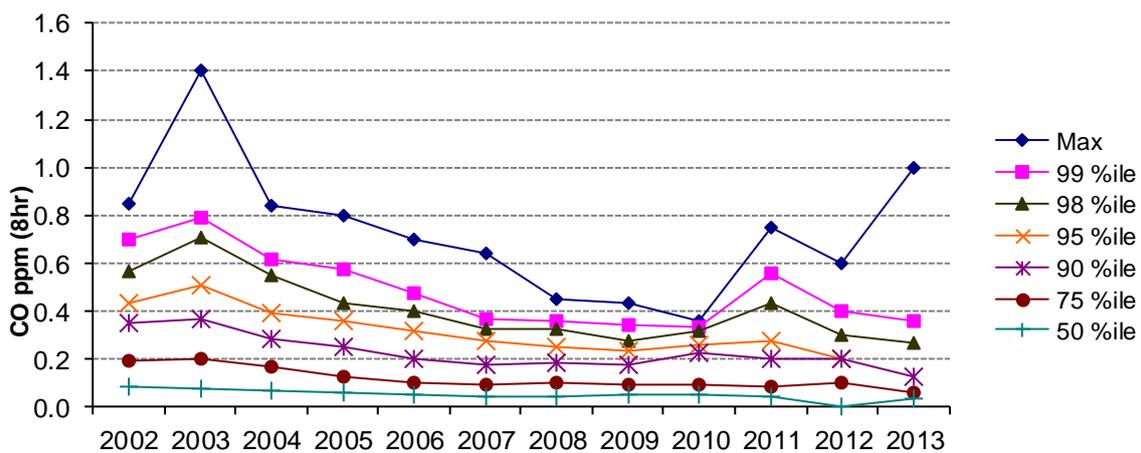


Figure 4 Percentiles of daily peak 8-hour CO concentrations for Adelaide, ELI01-Elizabeth Downs (2002-2013)

Nitrogen dioxide

Table 23 Percentiles of daily peak 1-hour NO₂ concentrations for ELI01-Elizabeth Downs (2002-2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	93.8	0.040	0.034	0.033	0.029	0.026	0.022	0.014
2003	96.7	0.043	0.030	0.028	0.025	0.022	0.019	0.011
2004	94.7	0.037	0.031	0.029	0.025	0.023	0.019	0.012
2005	94.7	0.038	0.031	0.028	0.025	0.023	0.019	0.011
2006	89.2	0.043	0.030	0.029	0.026	0.023	0.017	0.011
2007	94.5	0.039	0.026	0.025	0.023	0.021	0.017	0.011
2008	93.4	0.031	0.027	0.027	0.024	0.023	0.018	0.011
2009	97.2	0.028	0.027	0.026	0.024	0.022	0.017	0.010
2010	94.8	0.035	0.028	0.027	0.025	0.023	0.017	0.011
2011	94.6	0.031	0.027	0.026	0.023	0.020	0.016	0.011
2012	95.9	0.027	0.025	0.023	0.022	0.019	0.014	0.009
2013	94.7	0.031	0.027	0.025	0.022	0.019	0.014	0.009

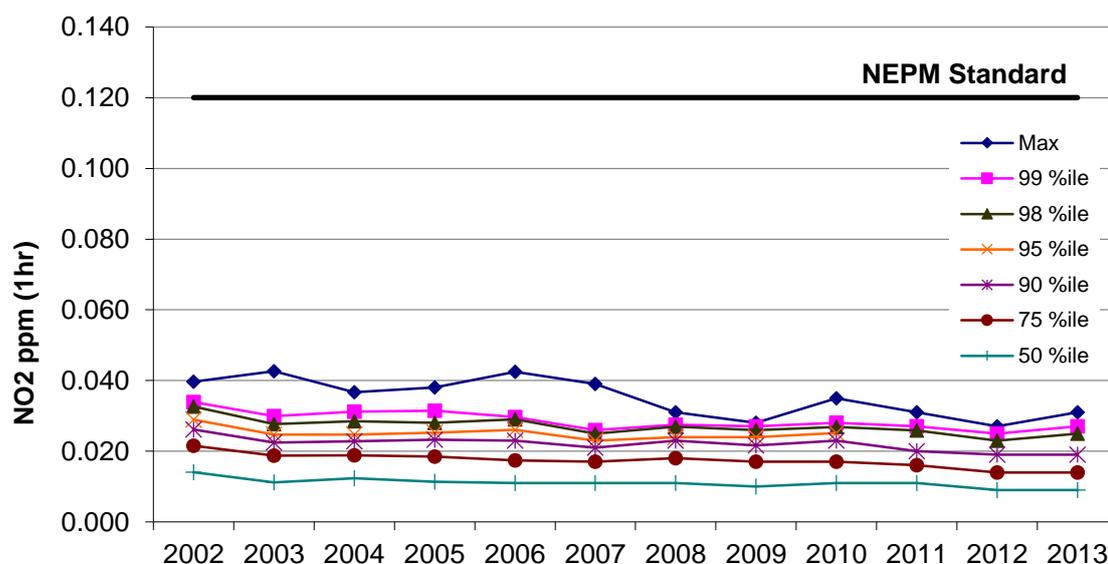


Figure 5 Percentiles of daily peak 1-hour NO₂ concentrations for ELI01 - Elizabeth Downs (2002-2013)

Table 24 Percentiles of daily peak 1-hour NO₂ concentrations for NOR01-Northfield (2002 - 2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	94.1	0.047	0.038	0.033	0.031	0.028	0.024	0.018
2003	95.1	0.039	0.035	0.032	0.031	0.028	0.024	0.017
2004	96.1	0.045	0.038	0.033	0.029	0.026	0.023	0.017
2005	94.2	0.039	0.035	0.033	0.030	0.028	0.024	0.018
2006	93.4	0.034	0.031	0.030	0.028	0.025	0.021	0.016
2007	95.6	0.037	0.034	0.032	0.029	0.027	0.023	0.017
2008	96.9	0.041	0.035	0.034	0.030	0.028	0.025	0.017
2009	96.6	0.042	0.034	0.031	0.028	0.027	0.023	0.017
2010	96.7	0.045	0.035	0.033	0.030	0.027	0.023	0.016
2011	97.3	0.047	0.033	0.032	0.029	0.027	0.023	0.015
2012	98.9	0.037	0.033	0.033	0.030	0.028	0.023	0.015
2013	97.2	0.038	0.032	0.031	0.028	0.026	0.022	0.015

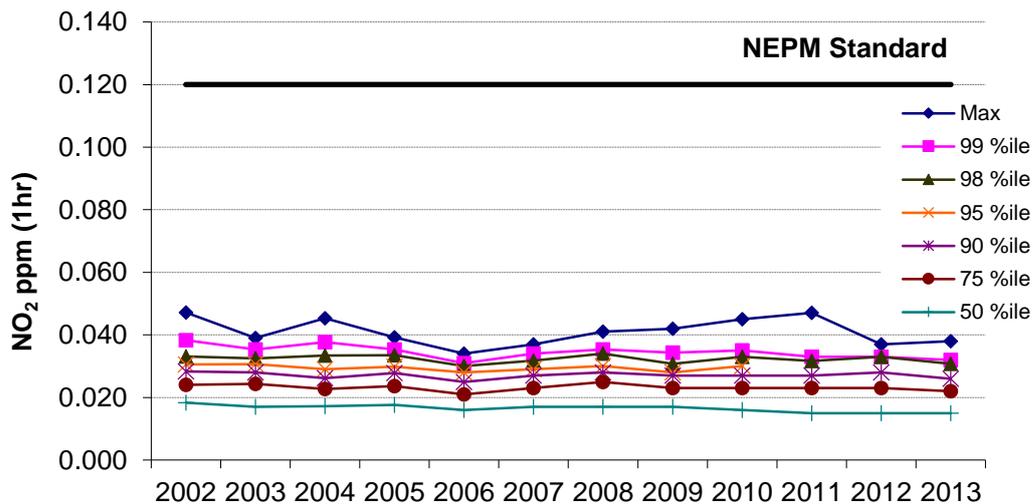


Figure 6 Percentiles of daily peak 1-hour NO₂ concentrations for NOR01-Northfield (2002-2013)

Table 25 Percentiles of daily peak 1-hour NO₂ concentrations for NET01-Netley (2002 - 2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	84.4	0.050	0.042	0.037	0.035	0.032	0.028	0.023
2003	97.2	0.039	0.036	0.035	0.032	0.029	0.026	0.021
2004	96.2	0.103	0.041	0.038	0.034	0.030	0.026	0.021
2005	97.1	0.051	0.042	0.037	0.034	0.031	0.028	0.022
2006	94.6	0.054	0.037	0.036	0.033	0.030	0.027	0.021
2007	97.4	0.040	0.038	0.036	0.032	0.030	0.028	0.023
2008	97.2	0.047	0.040	0.039	0.035	0.031	0.027	0.022
2009	97.3	0.050	0.038	0.035	0.032	0.030	0.026	0.021
2010	91.2	0.054	0.039	0.036	0.032	0.029	0.026	0.020
2011	93.8	0.056	0.040	0.037	0.032	0.029	0.025	0.019
2012	100.0	0.042	0.038	0.034	0.033	0.030	0.026	0.020
2013	97.1	0.041	0.037	0.037	0.032	0.029	0.026	0.019

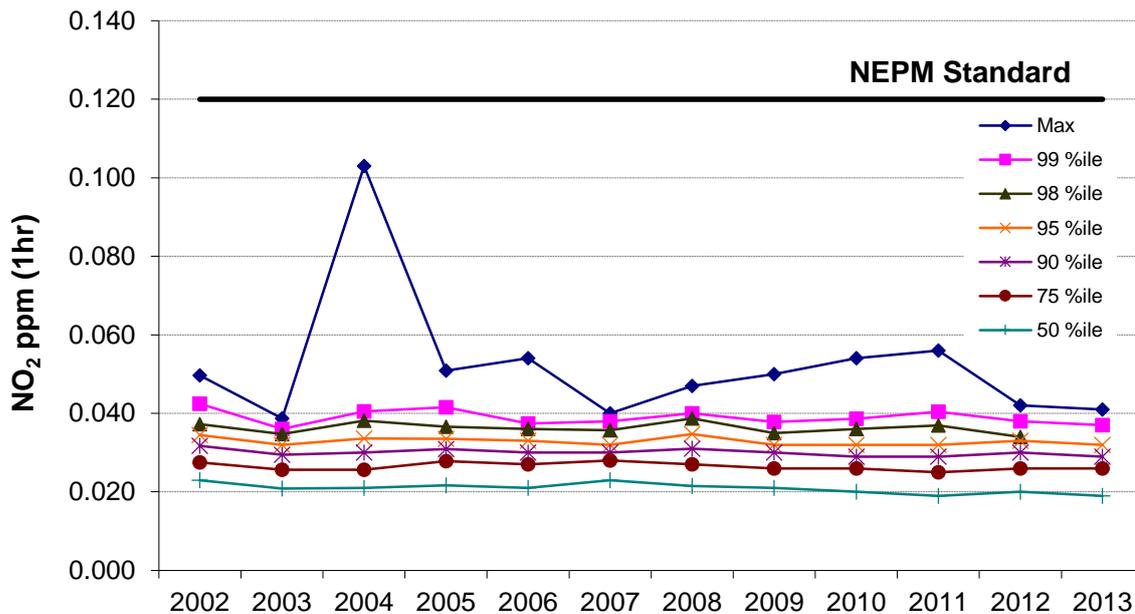


Figure 7 Percentiles of daily peak 1-hour NO₂ concentrations for NET01- Netley (2002- 2013)

Table 26 Percentiles of daily peak 1-hour NO₂ concentrations for KEN01-Kensington Gardens (2002 - 2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	94.0	0.041	0.030	0.030	0.028	0.025	0.022	0.015
2003	96.9	0.040	0.034	0.031	0.026	0.024	0.021	0.014
2004	96.2	0.037	0.032	0.028	0.025	0.023	0.019	0.013
2005	97.5	0.031	0.029	0.027	0.026	0.024	0.019	0.013
2006	96.4	0.037	0.028	0.027	0.025	0.022	0.018	0.013
2007	93.6	0.035	0.030	0.029	0.026	0.023	0.020	0.014
2008	94.6	0.032	0.028	0.027	0.025	0.023	0.019	0.012
2009	97.5	0.039	0.028	0.027	0.025	0.023	0.018	0.012
2010	97.5	0.034	0.029	0.027	0.025	0.022	0.018	0.011
2011	94.5	0.032	0.026	0.025	0.023	0.020	0.015	0.009
2012	87.0	0.031	0.027	0.026	0.023	0.021	0.016	0.010
2013	96.4	0.035	0.027	0.025	0.022	0.020	0.016	0.010

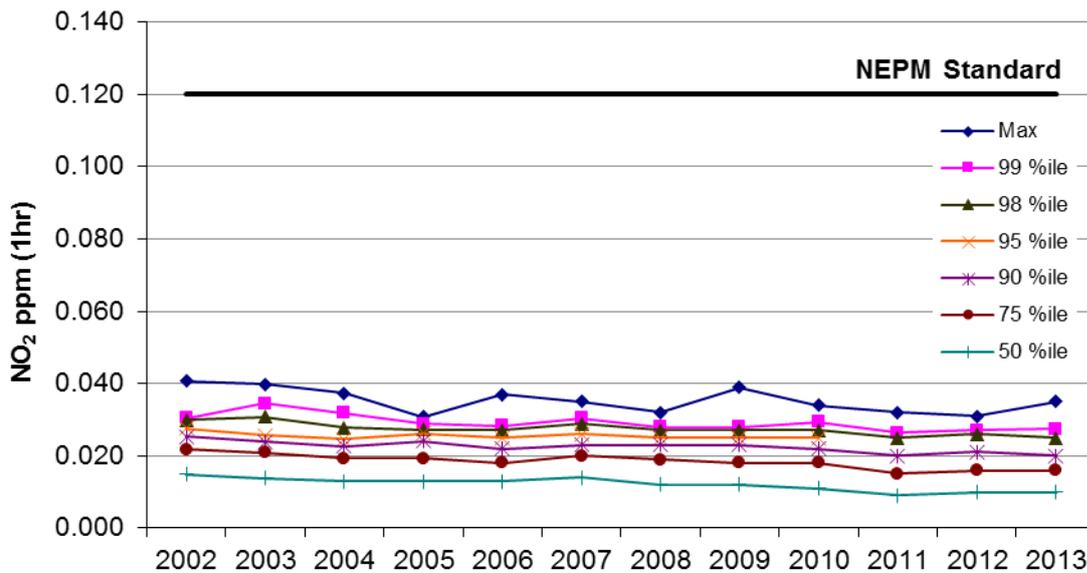


Figure 8 Percentiles of daily peak 1-hour NO₂ concentrations for KEN01- Kensington Gardens (2002-2013)

Table 27 Percentiles of daily peak 1-hour NO₂ concentrations for CHD01-Christie Downs (2006 - 2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
<i>2006</i>	<i>69.0</i>	<i>0.033</i>	<i>0.029</i>	<i>0.029</i>	<i>0.026</i>	<i>0.025</i>	<i>0.021</i>	<i>0.015</i>
2007	96.7	0.038	0.031	0.030	0.027	0.025	0.020	0.013
2008	94.7	0.036	0.033	0.031	0.028	0.026	0.021	0.013
2009	90.5	0.043	0.035	0.032	0.027	0.026	0.022	0.013
2010	91.3	0.035	0.030	0.029	0.027	0.025	0.021	0.014
2011	87.2	0.035	0.030	0.028	0.027	0.025	0.020	0.012
2012	98.4	0.034	0.032	0.031	0.028	0.025	0.020	0.011
2013	94.0	0.040	0.032	0.029	0.027	0.026	0.020	0.011

Years shown in italics indicate data availability is less than 75%

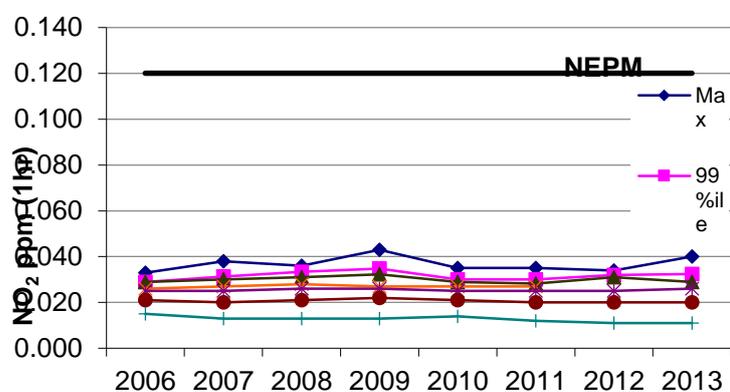


Figure 9 Percentiles of daily peak 1-hour NO₂ concentrations for CHD01- Christie Downs (2006-2013)

Table 28 Percentiles of daily peak 1-hour NO₂ concentrations for NHV01 - North Haven (2013)

AAQ NEPM Standard
0.12 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
<i>2013</i>	<i>68.4</i>	<i>0.037</i>	<i>0.032</i>	<i>0.030</i>	<i>0.028</i>	<i>0.026</i>	<i>0.020</i>	<i>0.013</i>

Years shown in italics indicate data availability is less than 75%

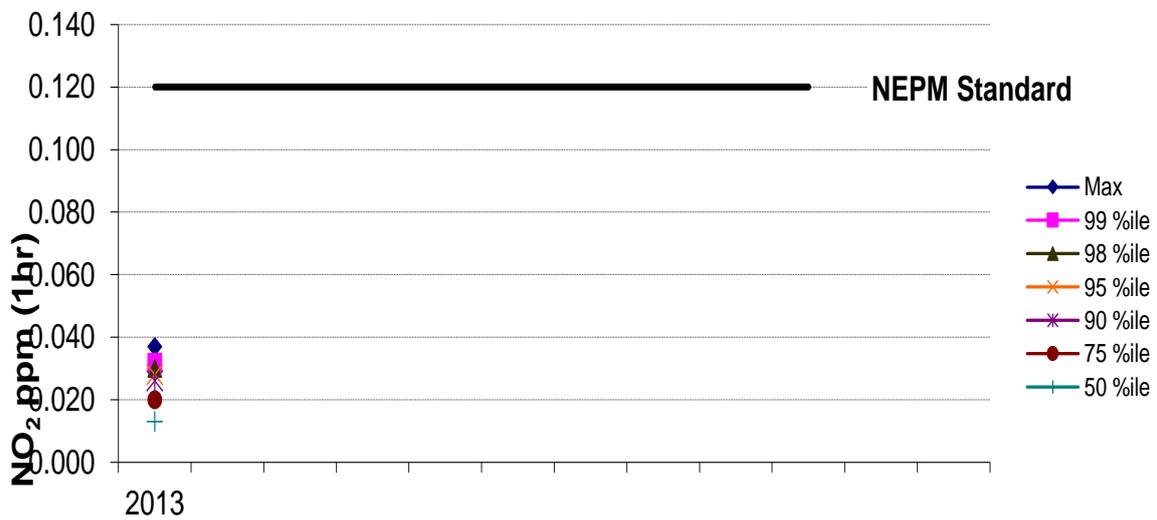


Figure 10 Percentiles of daily peak 1-hour NO₂ concentrations for NHV01 - North Haven (2013)

Ozone

Table 29 Percentiles of daily peak 1-hour O₃ concentrations for ELI01-Elizabeth Downs (2002 - 2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	95.1	0.072	0.062	0.053	0.045	0.040	0.033	0.030
2003	96.7	0.077	0.064	0.059	0.050	0.042	0.034	0.029
2004	96.1	0.088	0.065	0.055	0.046	0.041	0.033	0.029
2005	97.2	0.062	0.057	0.050	0.041	0.036	0.032	0.029
2006	89.9	0.072	0.061	0.055	0.051	0.040	0.035	0.029
2007	97.5	0.082	0.070	0.065	0.051	0.045	0.035	0.030
2008	97.4	0.097	0.059	0.055	0.042	0.039	0.033	0.030
2009	97.5	0.073	0.061	0.059	0.051	0.044	0.034	0.030
2010	97.7	0.066	0.056	0.051	0.045	0.039	0.032	0.027
2011	96.6	0.061	0.052	0.050	0.044	0.040	0.032	0.029
2012	95.4	0.059	0.056	0.051	0.043	0.037	0.031	0.028
2013	96.5	0.072	0.056	0.051	0.044	0.039	0.032	0.028

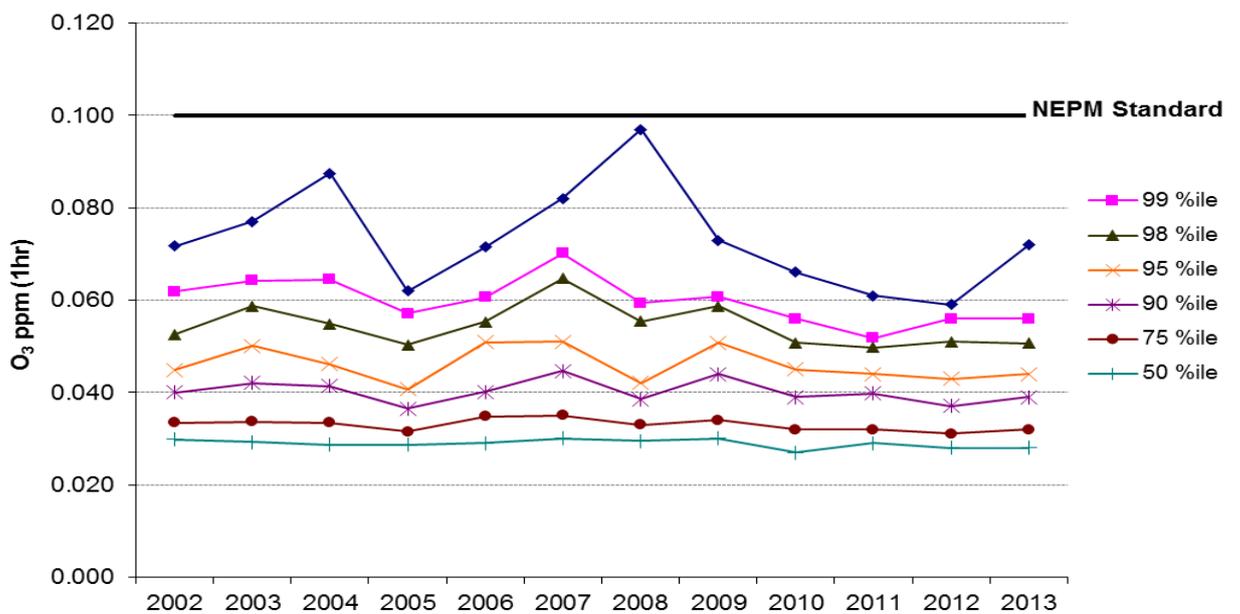


Figure 11 Percentiles of daily peak 1-hour O₃ concentrations for ELI01 - Elizabeth Downs (2002-2013)

Table 30 Percentiles of daily peak 1-hour O₃ concentrations for NOR01-Northfield (2002 - 2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	97.5	0.080	0.060	0.051	0.045	0.040	0.033	0.029
2003	97.5	0.068	0.060	0.054	0.047	0.042	0.033	0.028
2004	94.1	0.081	0.065	0.058	0.045	0.040	0.033	0.028
2005	94.4	0.060	0.049	0.045	0.040	0.036	0.031	0.028
2006	94.5	0.067	0.053	0.050	0.043	0.038	0.031	0.027
2007	97.4	0.069	0.060	0.054	0.047	0.042	0.033	0.029
2008	97.2	0.074	0.054	0.048	0.042	0.038	0.032	0.028
2009	97.0	0.081	0.059	0.056	0.047	0.042	0.032	0.027
2010	96.9	0.061	0.052	0.051	0.046	0.039	0.033	0.029
2011	97.8	0.071	0.054	0.050	0.044	0.039	0.032	0.028
2012	100.0	0.062	0.055	0.049	0.041	0.036	0.031	0.028
2013	97.7	0.062	0.056	0.052	0.044	0.037	0.031	0.027

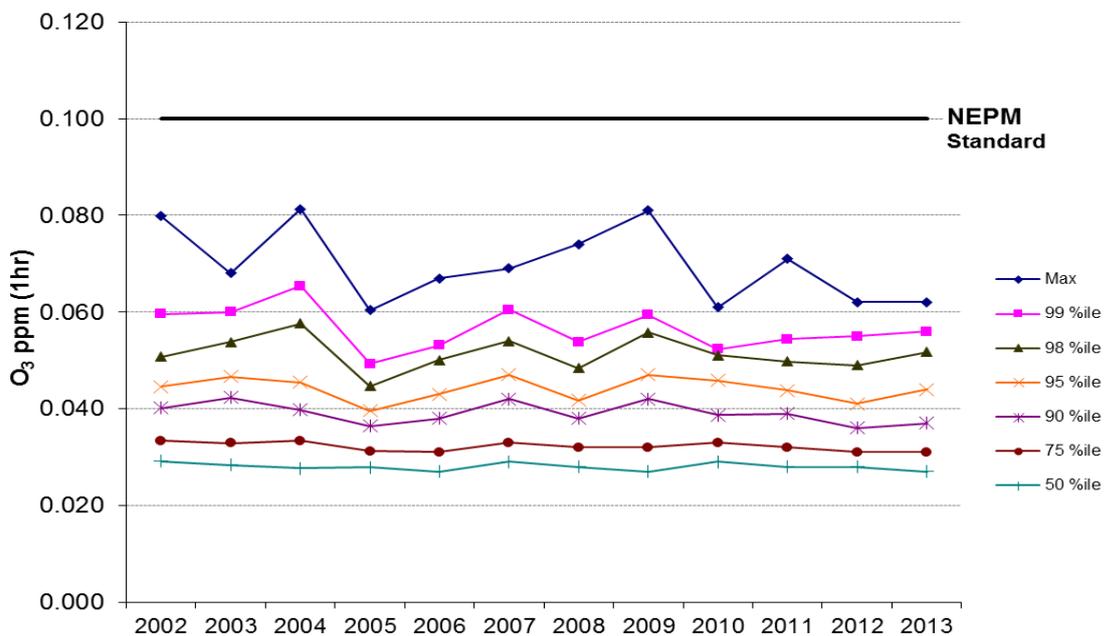


Figure 12 Percentiles of daily peak 1-hour O₃ concentrations for NOR01-Northfield (2002-2013)

Table 31 Percentiles of daily peak 1-hour O₃ concentrations for NET01-Netley (2002 - 2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	98.2	0.087	0.056	0.048	0.042	0.037	0.031	0.028
2003	97.4	0.069	0.059	0.054	0.045	0.039	0.032	0.027
2004	97.5	0.067	0.056	0.049	0.044	0.037	0.032	0.028
2005	96.8	0.079	0.054	0.049	0.041	0.037	0.032	0.028
2006	94.6	0.105	0.058	0.054	0.043	0.038	0.031	0.028
2007	97.4	0.077	0.055	0.052	0.046	0.040	0.033	0.029
2008	97.0	0.071	0.056	0.047	0.041	0.037	0.032	0.029
2009	97.4	0.070	0.062	0.056	0.048	0.041	0.032	0.028
2010	94.9	0.062	0.056	0.052	0.045	0.038	0.031	0.027
2011	94.3	0.062	0.055	0.050	0.043	0.039	0.032	0.028
2012	97.8	0.060	0.054	0.049	0.042	0.035	0.030	0.027
2013	97.5	0.062	0.049	0.048	0.044	0.037	0.031	0.027

Data shown in bold type indicates an exceedence of the NEPM standard.

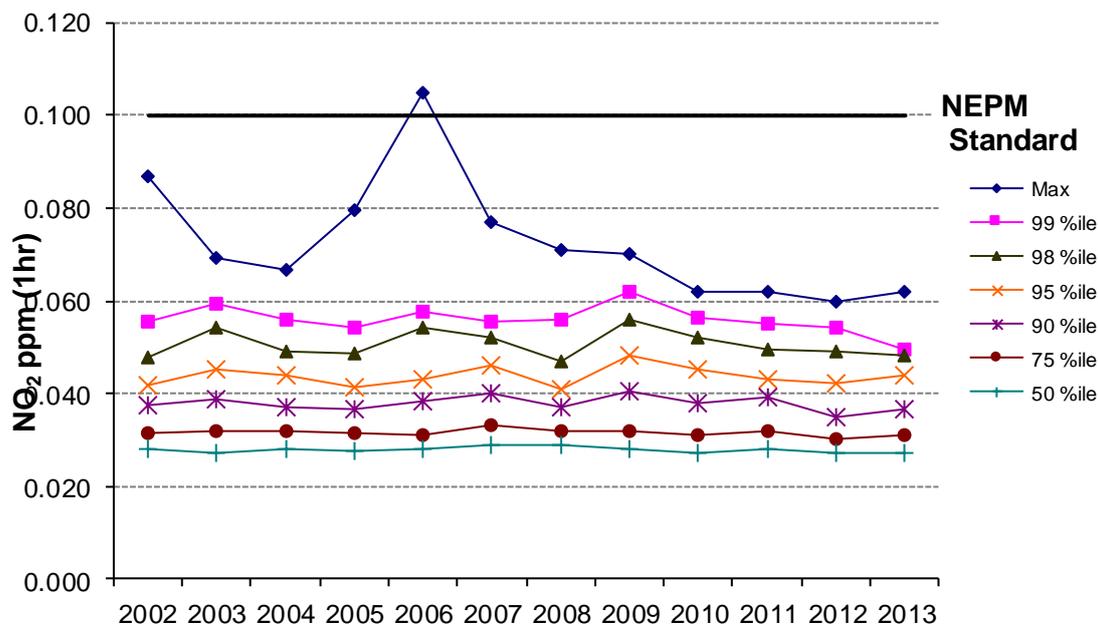


Figure 13 Percentiles of daily peak 1-hour O₃ concentrations at NET01-Netley (2002-2013)

Table 32 Percentiles of daily peak 1-hour O₃ concentrations for KEN01-Kensington Gardens (2002 - 2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	95.9	0.086	0.057	0.053	0.046	0.042	0.035	0.030
2003	96.9	0.074	0.065	0.058	0.049	0.042	0.034	0.029
2004	97.2	0.078	0.067	0.062	0.047	0.041	0.033	0.029
2005	97.6	0.061	0.053	0.051	0.044	0.039	0.034	0.031
2006	96.3	0.090	0.061	0.057	0.048	0.040	0.033	0.029
2007	95.5	0.076	0.062	0.058	0.051	0.045	0.034	0.030
2008	95.0	0.072	0.059	0.053	0.044	0.039	0.033	0.029
2009	97.5	0.082	0.060	0.058	0.047	0.040	0.032	0.027
2010	95.8	0.062	0.055	0.053	0.047	0.041	0.034	0.030
2011	97.6	0.073	0.056	0.054	0.047	0.042	0.034	0.030
2012	97.3	0.064	0.054	0.050	0.043	0.040	0.033	0.030
2013	97.5	0.067	0.062	0.056	0.049	0.041	0.033	0.029

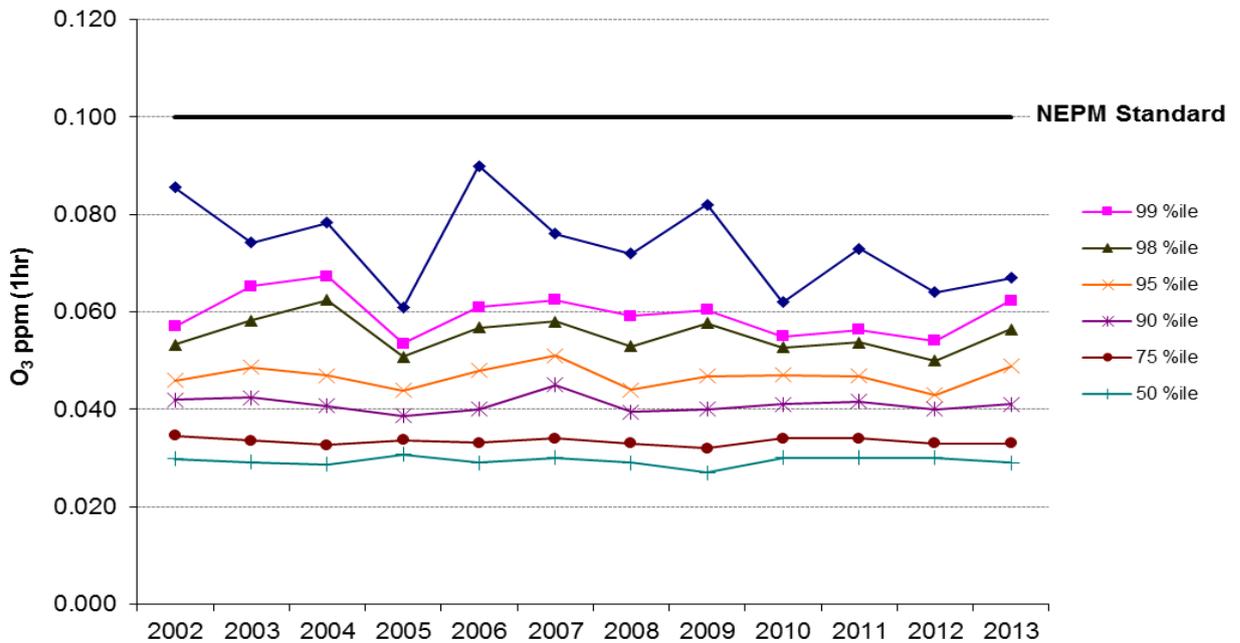


Figure 14 Percentiles of daily peak 1-hour O₃ concentrations for KEN01- Kensington Gardens (2002-2013)

Table 33 Percentiles of daily peak 1-hour O₃ concentrations for CHD01-Christie Downs (2006 - 2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50 th
<i>2006</i>	<i>65.6</i>	<i>0.055</i>	<i>0.050</i>	<i>0.046</i>	<i>0.040</i>	<i>0.037</i>	<i>0.033</i>	<i>0.030</i>
2007	96.7	0.074	0.054	0.053	0.046	0.040	0.034	0.030
2008	95.8	0.068	0.052	0.046	0.041	0.038	0.032	0.029
2009	92.9	0.066	0.055	0.050	0.043	0.037	0.031	0.027
2010	93.2	0.076	0.055	0.048	0.040	0.037	0.031	0.027
2011	89.1	0.062	0.056	0.051	0.042	0.038	0.033	0.029
2012	100.0	0.062	0.052	0.051	0.045	0.037	0.032	0.029
2013	95.7	0.065	0.055	0.052	0.047	0.038	0.033	0.028

Years shown in italics indicate data availability is less than 75%.

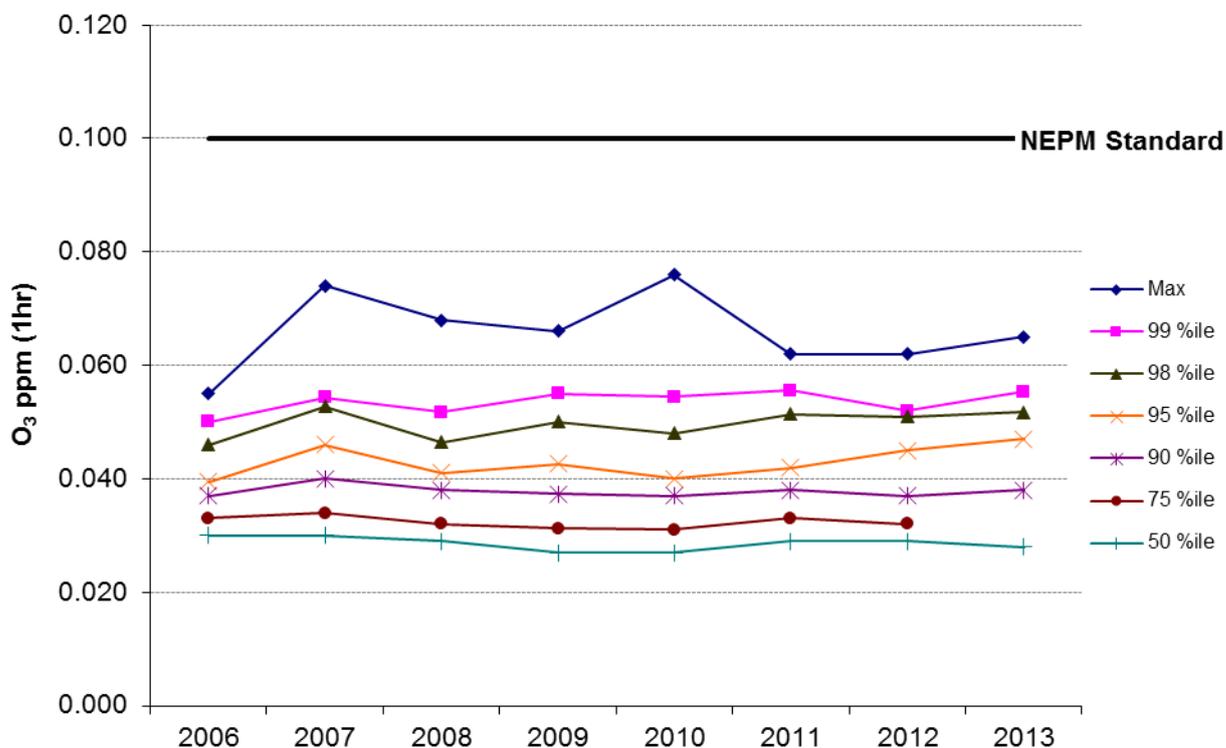


Figure 15 Percentiles of daily peak 1-hour O₃ concentrations for CHD01- Christie Downs (2006-2013)

Table 34 Percentiles of daily peak 1-hour O₃ concentrations for NHV01 - North Haven (2013)

AAQ NEPM Standard
0.10 ppm (1-hr average)

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50 th
2013	68.8	0.051	0.044	0.043	0.038	0.035	0.031	0.028

Years shown in italics indicate data availability is less than 75%.

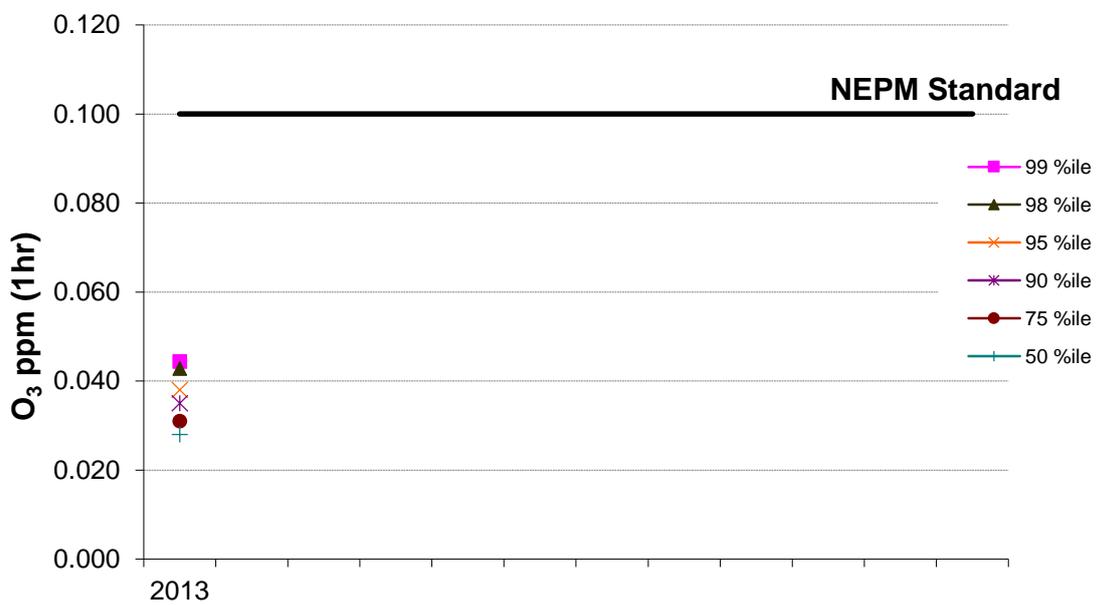


Figure 16 Percentiles of daily peak 1-hour O₃ concentrations for NHV01 - North Haven (2013)

Table 35 Percentiles of daily peak 4-hour rolling O₃ concentrations for ELI01-Elizabeth Downs (2002 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	96.3	0.057	0.046	0.044	0.039	0.037	0.032	0.029
2003	98.7	0.063	0.056	0.052	0.045	0.040	0.032	0.028
2004	98.2	0.079	0.056	0.051	0.042	0.037	0.032	0.027
2005	99.2	0.056	0.049	0.044	0.038	0.034	0.030	0.028
2006	91.7	0.065	0.051	0.049	0.045	0.038	0.033	0.028
2007	99.5	0.078	0.063	0.056	0.048	0.042	0.033	0.029
2008	99.5	0.086	0.051	0.048	0.041	0.037	0.032	0.028
2009	99.6	0.070	0.054	0.051	0.047	0.042	0.033	0.029
2010	99.7	0.059	0.050	0.048	0.041	0.037	0.030	0.026
2011	98.7	0.057	0.048	0.045	0.042	0.037	0.031	0.028
2012	95.6	0.051	0.050	0.047	0.041	0.035	0.030	0.027
2013	98.5	0.066	0.051	0.045	0.041	0.036	0.031	0.027

Data shown in bold type indicates an exceedence of the NEPM standard.

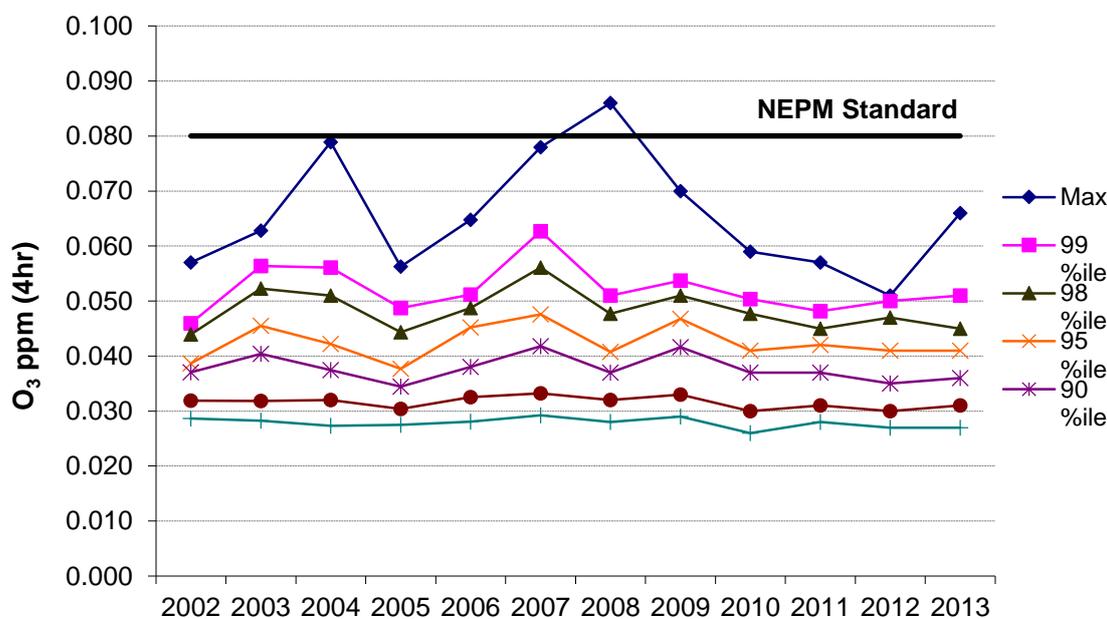


Figure 17 Percentiles of daily peak 4-hour rolling O₃ concentrations at ELI01 - Elizabeth Downs (2002-2013)

Table 36 Percentiles of daily peak 4-hour rolling O₃ concentrations for NOR01-Northfield (2002 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	98.9	0.064	0.052	0.046	0.041	0.036	0.031	0.028
2003	99.5	0.061	0.053	0.047	0.044	0.038	0.031	0.027
2004	95.9	0.067	0.058	0.049	0.041	0.038	0.032	0.027
2005	96.3	0.054	0.046	0.041	0.036	0.035	0.030	0.027
2006	96.7	0.058	0.048	0.045	0.040	0.035	0.030	0.026
2007	99.9	0.059	0.054	0.052	0.044	0.040	0.032	0.028
2008	99.6	0.068	0.049	0.045	0.039	0.035	0.031	0.027
2009	98.9	0.064	0.054	0.051	0.043	0.039	0.030	0.026
2010	98.9	0.050	0.048	0.046	0.042	0.037	0.032	0.028
2011	99.9	0.063	0.046	0.045	0.041	0.037	0.031	0.027
2012	100.0	0.058	0.050	0.045	0.040	0.034	0.030	0.027
2013	99.7	0.057	0.053	0.045	0.041	0.035	0.030	0.026

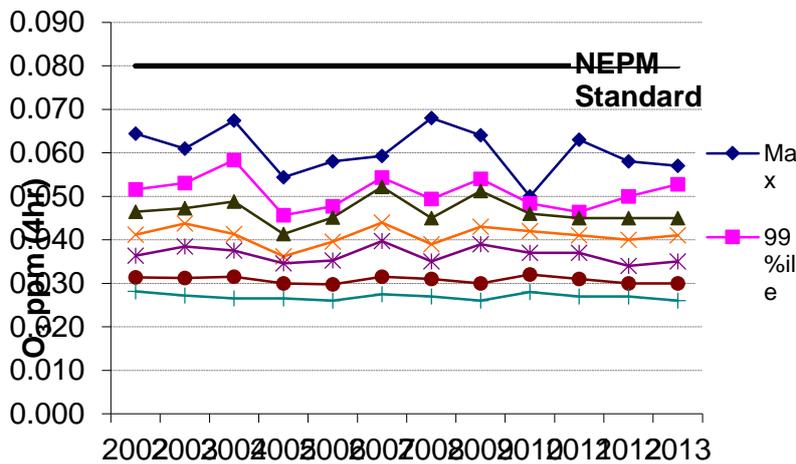


Figure 18 Percentiles of daily peak 4-hour rolling O₃ concentrations for NOR01-Northfield (2002-2013)

Table 37 Percentiles of daily peak 4-hour rolling O₃ concentrations for NET01-Netley (2002-2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	99.5	0.071	0.050	0.044	0.038	0.034	0.030	0.027
2003	99.4	0.060	0.053	0.047	0.042	0.037	0.030	0.027
2004	99.6	0.059	0.048	0.044	0.040	0.036	0.031	0.027
2005	98.8	0.072	0.048	0.044	0.038	0.034	0.030	0.027
2006	96.7	0.094	0.052	0.047	0.041	0.036	0.030	0.027
2007	99.8	0.070	0.051	0.050	0.044	0.038	0.032	0.028
2008	99.2	0.061	0.049	0.043	0.039	0.036	0.031	0.027
2009	99.3	0.062	0.053	0.048	0.042	0.038	0.031	0.027
2010	96.7	0.056	0.051	0.046	0.041	0.036	0.030	0.026
2011	96.3	0.057	0.051	0.043	0.040	0.036	0.031	0.028
2012	97.8	0.055	0.048	0.046	0.038	0.034	0.030	0.026
2013	99.6	0.059	0.047	0.045	0.041	0.035	0.030	0.026

Data shown in bold type indicates an exceedence of the NEPM standard.

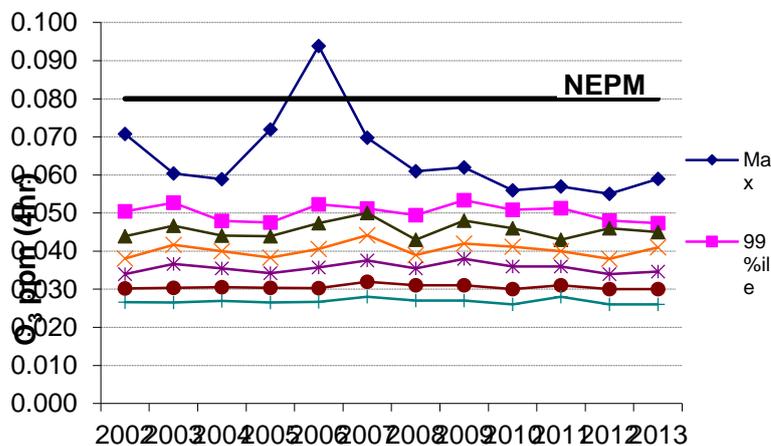


Figure 19 Percentiles of daily peak 4-hour rolling O₃ concentrations for NET01-Netley (2002-2013)

Table 38 Percentiles of daily peak 4-hour rolling O₃ concentrations for KEN01-Kensington Gardens (2002 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2002	97.2	0.073	0.051	0.047	0.041	0.038	0.033	0.029
2003	98.9	0.071	0.054	0.051	0.045	0.040	0.032	0.028
2004	99.2	0.071	0.059	0.054	0.043	0.038	0.031	0.028
2005	99.6	0.055	0.050	0.044	0.040	0.037	0.032	0.029
2006	98.7	0.072	0.055	0.051	0.044	0.039	0.032	0.028
2007	97.8	0.063	0.058	0.054	0.047	0.043	0.033	0.029
2008	97.2	0.067	0.055	0.048	0.042	0.037	0.031	0.028
2009	99.1	0.066	0.054	0.051	0.043	0.038	0.030	0.026
2010	97.9	0.057	0.051	0.049	0.044	0.039	0.033	0.029
2011	99.7	0.071	0.052	0.049	0.044	0.039	0.033	0.029
2012	97.3	0.059	0.050	0.048	0.041	0.038	0.033	0.030
2013	100.0	0.064	0.059	0.053	0.046	0.039	0.032	0.028

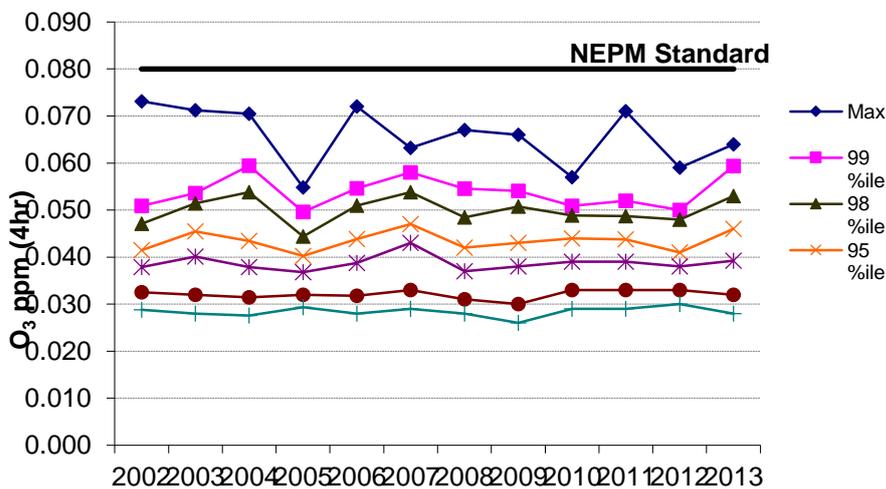


Figure 20 Percentiles of daily peak 4-hour rolling O₃ concentrations for KEN01- Kensington Gardens (2002-2013)

Table 39 Percentiles of daily peak 4-hour rolling O₃ concentrations for CHD01-Christie Downs (2006 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
<i>2006</i>	<i>65.9</i>	<i>0.049</i>	<i>0.047</i>	<i>0.042</i>	<i>0.038</i>	<i>0.035</i>	<i>0.032</i>	<i>0.029</i>
2007	98.4	0.060	0.052	0.050	0.044	0.038	0.033	0.029
2008	97.7	0.060	0.047	0.044	0.038	0.036	0.031	0.027
2009	94.9	0.056	0.051	0.046	0.040	0.036	0.030	0.026
2010	95.1	0.060	0.050	0.042	0.037	0.035	0.030	0.026
2011	90.7	0.058	0.049	0.047	0.039	0.036	0.032	0.028
2012	100.0	0.056	0.051	0.047	0.041	0.036	0.031	0.028
2013	97.7	0.064	0.049	0.048	0.045	0.037	0.031	0.027

Years shown in italics indicate data availability is less than 75%.

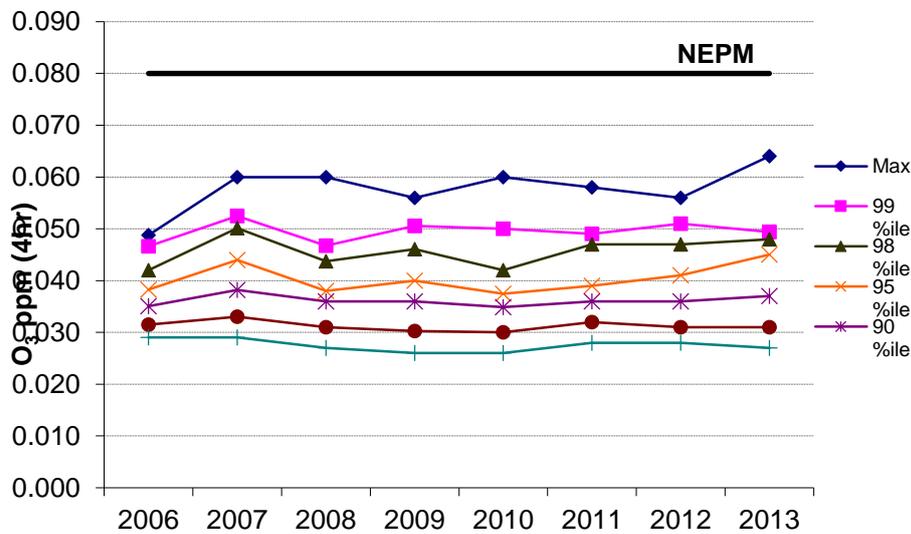


Figure 21 Percentiles of daily peak 4-hour rolling O₃ concentrations for CHD01- Christie Downs (2006-2013)

Table 40 Percentiles of daily peak 4-hour rolling O₃ concentrations for NHV01 - North Haven (2013)

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

Year (yyyy)	Data availability rates (%)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
2013	71.1	0.044	0.041	0.041	0.037	0.033	0.030	0.027

Years shown in italics indicate data availability is less than 75%.

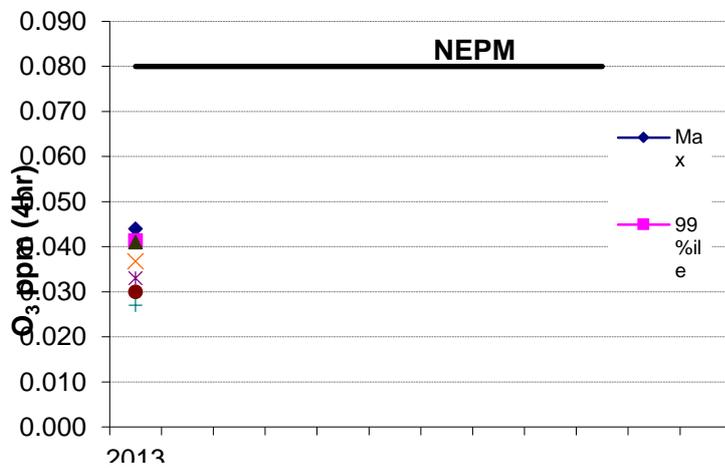


Figure 22 Percentiles of daily peak 4-hour rolling O₃ concentrations for NHV01 - North Haven (2013)

Sulfur dioxide

Table 41 Percentiles of daily peak 1-hour SO₂ concentrations for Adelaide, NOR01-Northfield (2002 - 2013)

AAQ NEPM Standard
0.20 ppm (1-hr average)

Year (yyyy)	Data availability (% of hours)	Max (ppm)	Percentiles (ppm)					
			99th	98th	95th	90th	75th	50th
<i>2002*</i>	<i>15.5</i>	<i>0.027</i>	<i>0.024</i>	<i>0.020</i>	<i>0.013</i>	<i>0.010</i>	<i>0.005</i>	<i>0.003</i>
2003	95.2	0.009	0.007	0.006	0.005	0.004	0.002	0.001
2004	92.6	0.012	0.007	0.006	0.004	0.003	0.001	0.001
2005	93.4	0.015	0.008	0.006	0.004	0.003	0.001	0.001
2006	94.4	0.020	0.005	0.004	0.003	0.002	0.002	0.001
2007	96.2	0.008	0.006	0.005	0.003	0.002	0.001	0.001
2008	97.3	0.009	0.006	0.005	0.004	0.002	0.001	0.001
2009	97.0	0.022	0.006	0.005	0.003	0.002	0.001	0.000
2010	96.9	0.013	0.005	0.004	0.003	0.002	0.001	0.001
2011	97.8	0.015	0.011	0.008	0.004	0.002	0.001	0.000
2012	97.8	0.011	0.006	0.005	0.004	0.002	0.001	0.000
2013	94.3	0.011	0.006	0.003	0.003	0.002	0.001	0.000

*Data availability is low as monitoring began during the final quarter of 2002

Years shown in italics indicate data availability is less than 75%

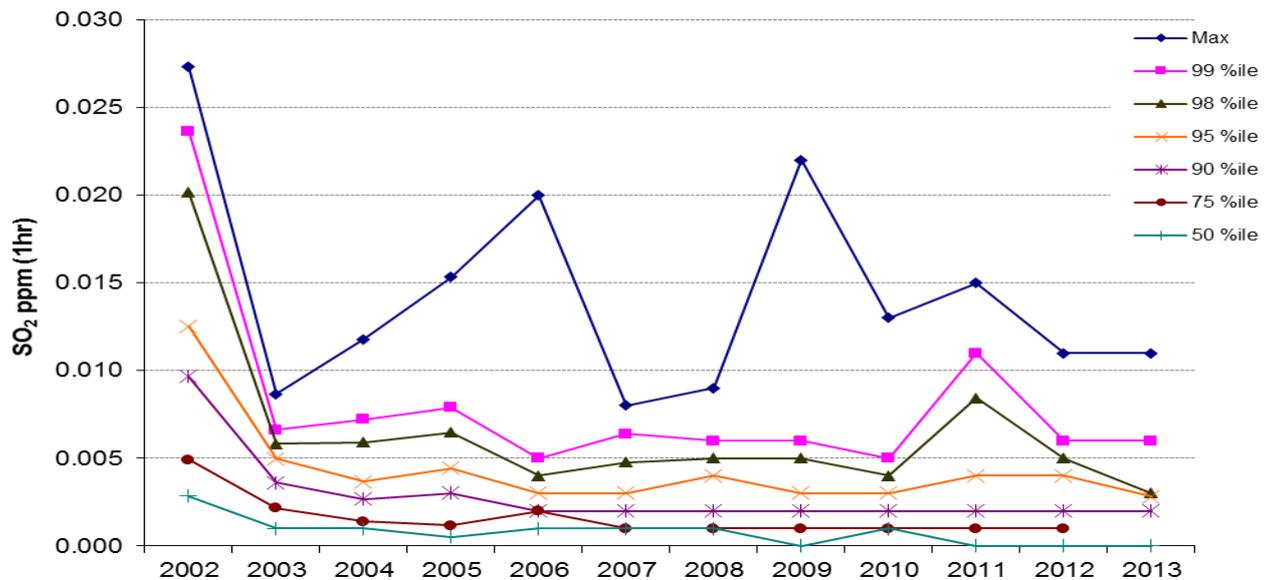


Figure 23 Percentiles of daily peak 1-hour SO₂ concentrations for NOR01-Northfield (2002-2013)

Table 42 Percentiles of daily peak 1-hour SO₂ concentrations for Adelaide, NHV01 - North Haven (2013)

AAQ NEPM Standard
0.20 ppm (1-hr average)

Year (yyyy)	Data availability (% of hours)	Max (ppm)	Percentiles (ppm)					
			99th	98 th	95th	90th	75th	50th
2013	68.3	0.026	0.013	0.011	0.008	0.005	0.003	0.001

*Data availability is low as monitoring began during the final quarter of 2002

Years shown in italics indicate data availability is less than 75%

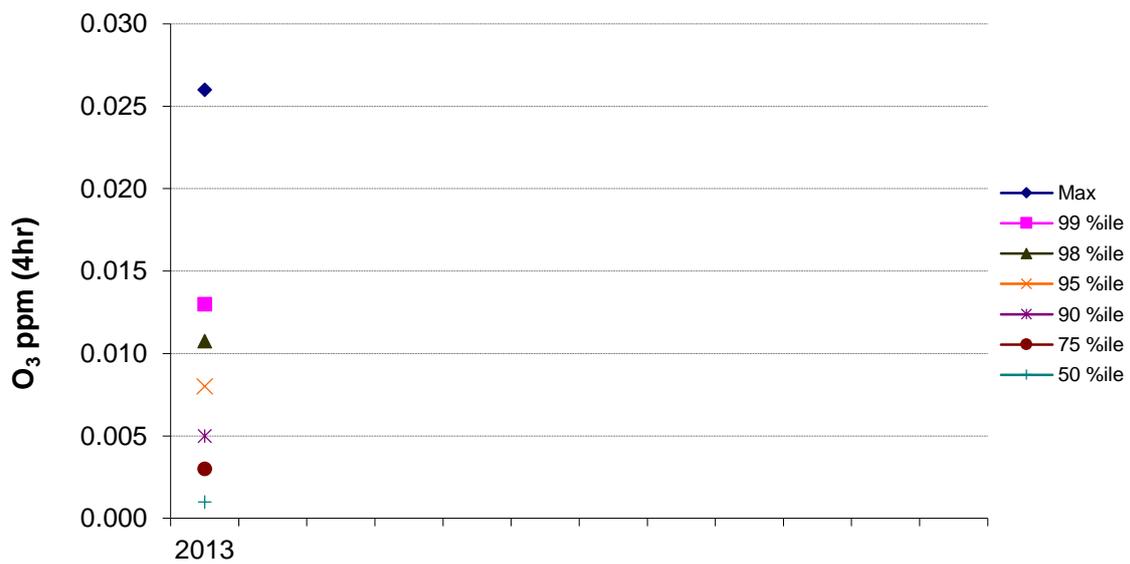


Figure 24 Percentiles of daily peak 1-hour SO₂ concentrations for NHV01 - North Haven (2013)

Table 43 Percentiles of daily peak 1-hour SO₂ concentrations for the Spencer Gulf, PTP01-
Pt Pirie Oliver Street (2002 - 2013)

AAQ NEPM Standard
0.20 ppm (1-hr average)

Year (yyyy)	Data availability (% of hours)	Max (ppm)	Percentiles (ppm)					
			99th	98 th	95th	90th	75th	50th
<i>2002</i>	<i>50.8</i>	0.656	0.400	0.302	0.257	0.186	0.095	0.028
2003	95.6	0.487	0.388	0.309	0.221	0.152	0.070	0.023
2004	97.2	0.440	0.356	0.335	0.260	0.185	0.078	0.020
2005	93.6	0.721	0.391	0.362	0.234	0.186	0.105	0.042
2006	96.3	0.485	0.361	0.311	0.240	0.191	0.092	0.018
2007	97.2	0.594	0.404	0.312	0.249	0.175	0.101	0.029
2008	97.4	0.522	0.421	0.330	0.258	0.185	0.108	0.033
2009	97.8	1.260	0.467	0.367	0.238	0.174	0.093	0.024
2010	95.5	0.761	0.414	0.347	0.270	0.191	0.097	0.024
2011	94.2	0.773	0.444	0.406	0.299	0.205	0.098	0.022
2012	100.0	1.177	0.411	0.363	0.261	0.192	0.095	0.023
2013	93.8	0.481	0.406	0.377	0.278	0.220	0.120	0.040

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in italics indicate data availability is less than 75%.

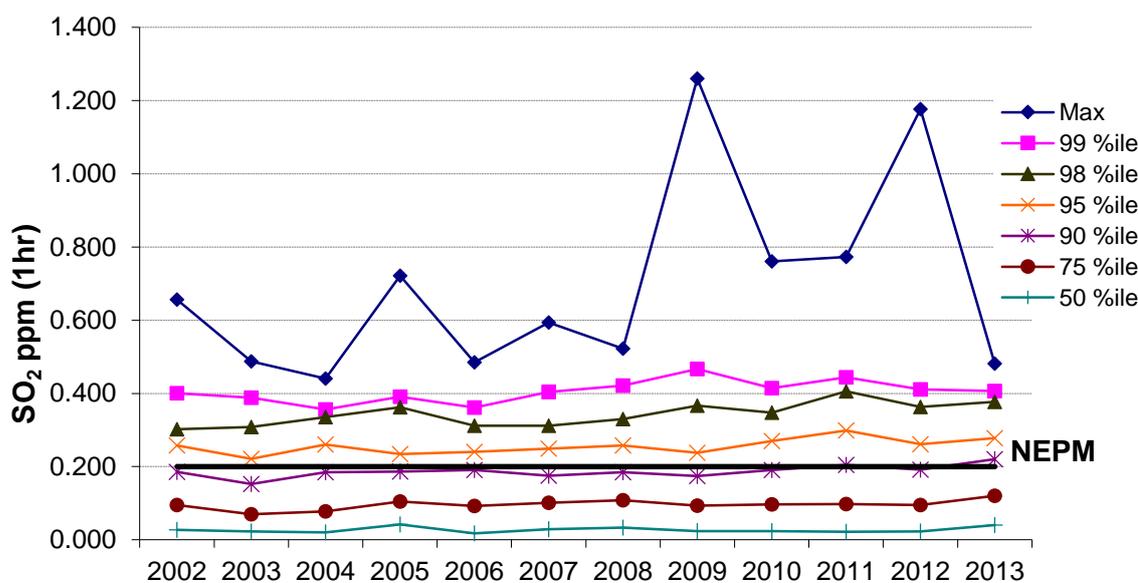


Figure 25 Percentiles of daily peak 1-hour SO₂ concentrations for the Spencer Gulf, PTP01-
Port Pirie Oliver Street (2002-2013)

Table 44 Percentiles of 24-hour SO₂ concentrations for Adelaide, NOR01-Northfield (2002 - 2013)

AAQ NEPM Standard
0.08 ppm (24-hr average)

Year (yyyy)	Data availability (% of days)	Max (ppm)	Percentiles (ppm)					
			99th	98 th	95th	90th	75th	50th
2002*	14.8	0.007	0.006	0.005	0.005	0.004	0.002	0.001
2003	99.5	0.003	0.002	0.002	0.002	0.001	0.001	0.000
2004	95.9	0.003	0.002	0.001	0.001	0.001	0.001	0.000
2005	96.4	0.004	0.002	0.002	0.001	0.000	0.000	0.000
2006	96.4	0.003	0.002	0.001	0.001	0.001	0.000	0.000
2007	98.6	0.002	0.001	0.001	0.001	0.000	0.000	0.000
2008	99.5	0.002	0.001	0.001	0.001	0.000	0.000	0.000
2009	98.9	0.002	0.001	0.001	0.001	0.000	0.000	0.000
2010	98.6	0.003	0.002	0.001	0.001	0.001	0.000	0.000
2011	100.0	0.004	0.001	0.001	0.001	0.000	0.000	0.000
2012	97.8	0.004	0.001	0.001	0.001	0.000	0.000	0.000
2013	99.7	0.007	0.001	0.001	0.001	0.000	0.000	0.000

*Data availability is low as monitoring began during the final quarter of 2002 and although data availability is less than 15% data have been included for completeness; 2002 data were included in the 1-hour average SO₂ percentiles and trend summaries.

Years shown in italics indicate data availability is less than 75%

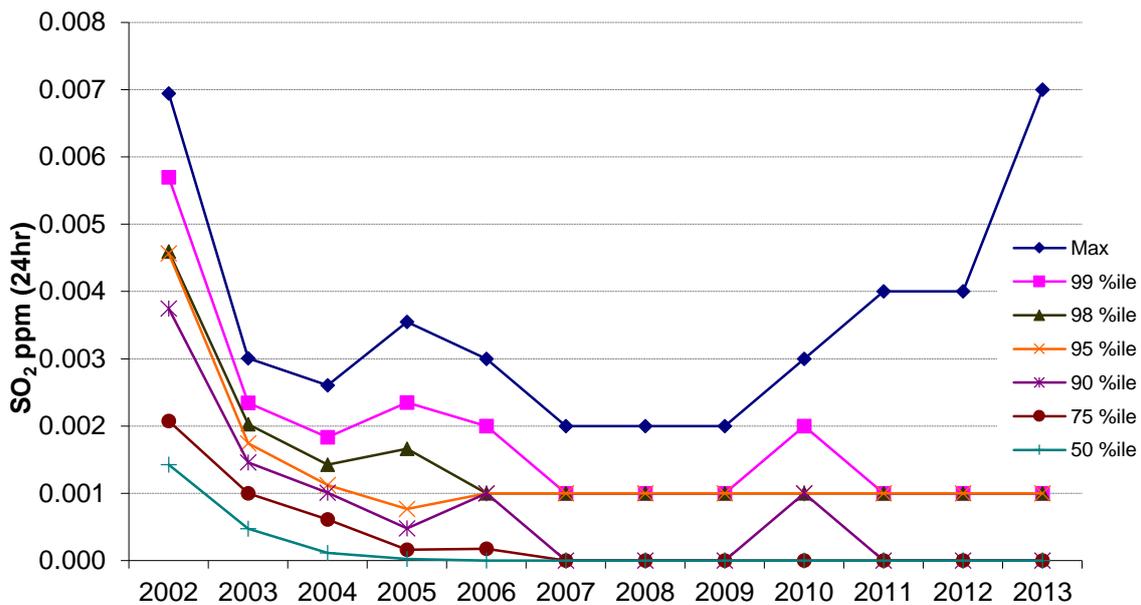


Figure 26 Percentiles of 24-hour SO₂ concentrations for Adelaide, NOR01- Northfield (2002-2013)

Table 45 Percentiles of 24-hour SO₂ concentrations for Adelaide, NHV01 - North Haven (2013)

AAQ NEPM Standard
0.08 ppm (24-hr average)

Year (yyyy)	Data availability (% of days)	Max (ppm)	Percentiles (ppm)					
			99th	98 th	95th	90th	75th	50th
2013	71.5	0.003	0.002	0.002	0.001	0.001	0.000	0.000

*Data availability is low as monitoring began during the final quarter of 2002 and although data availability is less than 15% data have been included for completeness; 2002 data were included in the 1-hour average SO₂ percentiles and trend summaries.

Years shown in italics indicate data availability is less than 75%

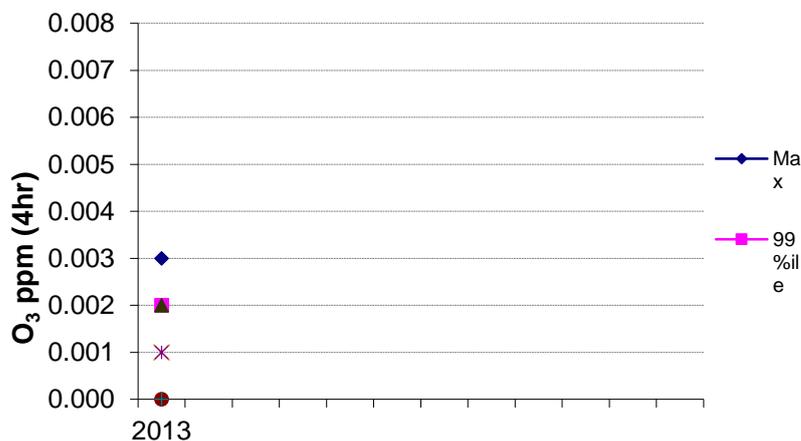


Figure 27 Percentiles of 24-hour SO₂ concentrations for Adelaide, NHV01 - North Haven (2013)

Table 46 Percentiles of 24-hour SO₂ concentrations for the Spencer Gulf, PTP01-Pt Pirie Oliver Street (2003 - 2013)

AAQ NEPM Standard
0.08 ppm (24-hr average)

Year (yyyy)	Data availability (% of days)	Max (ppm)	Percentiles (ppm)					
			99th	98 th	95th	90th	75th	50th
2002	51.5	0.050	0.045	0.040	0.035	0.029	0.013	0.005
2003	97.3	0.095	0.043	0.037	0.024	0.018	0.011	0.004
2004	99.7	0.051	0.039	0.037	0.028	0.022	0.011	0.003
2005	94.8	0.072	0.054	0.049	0.033	0.023	0.014	0.005
2006	97.8	0.053	0.043	0.040	0.032	0.023	0.013	0.002
2007	98.9	0.061	0.044	0.042	0.032	0.024	0.014	0.004
2008	99.2	0.076	0.052	0.048	0.034	0.026	0.014	0.004
2009	100.0	0.104	0.062	0.046	0.032	0.023	0.012	0.003
2010	98.6	0.046	0.039	0.037	0.028	0.022	0.010	0.003
2011	98.4	0.072	0.053	0.043	0.032	0.023	0.013	0.003
2012	100.0	0.091	0.048	0.042	0.031	0.024	0.012	0.003
2013	99.0	0.072	0.061	0.053	0.040	0.029	0.015	0.005

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in italics indicate data availability is less than 75%.

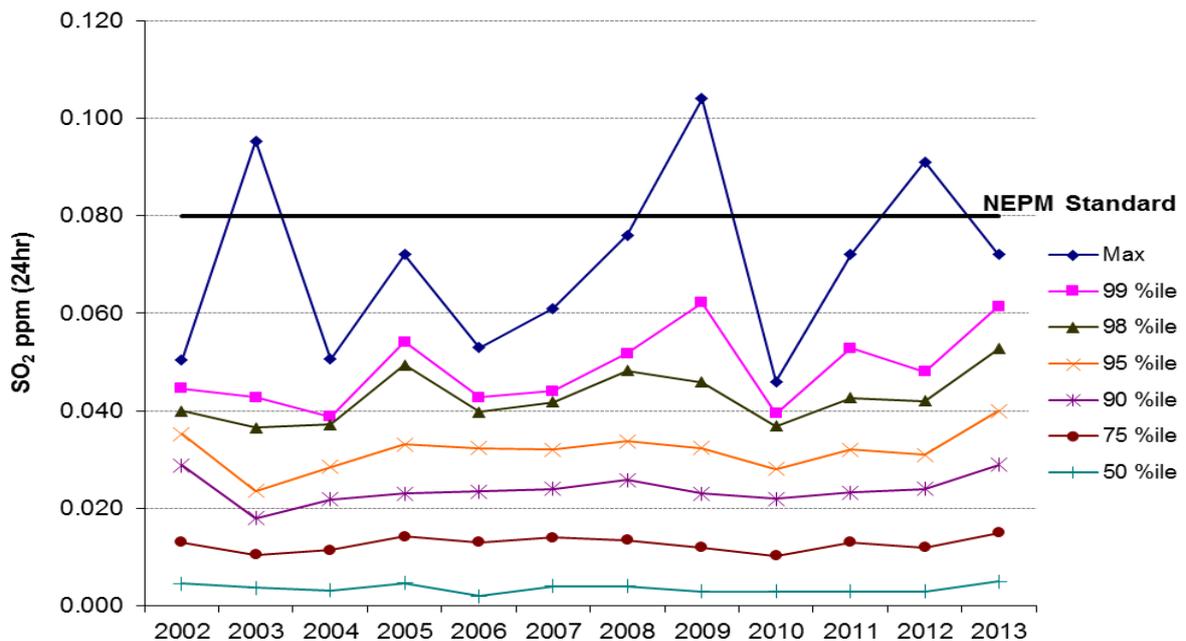


Figure 28 Percentiles of 24-hour SO₂ concentrations for the Spencer Gulf, PTP01- Port Pirie Oliver Street (2002-2013)

Particulate matter as PM₁₀

Table 47 Percentiles of daily 24-hour PM₁₀ concentrations for ELI01-Elizabeth Downs (2004 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2004	55.5	63.9	39.1	33.5	26.8	22.3	16.1	12.4
2005	95.1	84.8	58.8	48.5	38.2	30.0	21.7	14.9
2006	91.8	90.4	49.3	44.8	30.4	23.0	17.3	13.0
2007	97.0	74.9	47.2	41.9	31.9	25.9	19.5	13.5
2008	94.3	77.5	47.4	41.8	34.5	28.5	21.5	15.9
2009	97.0	197.5	61.2	53.4	46.8	34.9	24.4	15.6
2010	96.7	209.5	41.4	33.6	26.2	21.3	17.0	13.1
2011	97.0	36.5	29.1	27.1	23.4	19.8	15.8	12.8
2012	99.5	104.5	45.3	37.1	28.2	24.0	17.9	13.6
2013	99.5	74.9	37.8	34.2	27.3	22.6	17.8	12.4

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in italics indicate data availability is less than 75%.

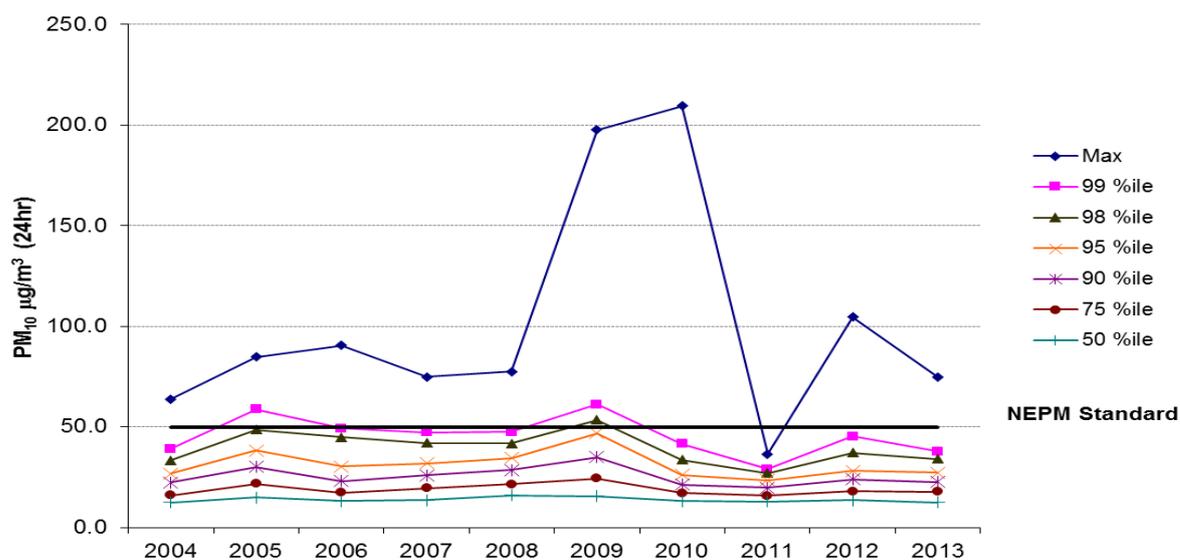


Figure 29 Percentiles of daily 24-hour PM₁₀ concentrations for ELI01 - Elizabeth Downs (2004-2013)

Table 48 Percentiles of daily 24-hour PM₁₀ concentrations for NET01-Netley (2002 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2002	100.0	79.3	43.1	38.1	31.6	27.5	22.8	18.5
2003	97.0	119.4	54.0	46.0	33.9	29.4	22.1	17.9
2004	98.6	62.7	42.4	40.3	33.6	29.5	23.1	17.3
2005	89.9	58.7	54.5	48.1	38.3	32.3	24.3	17.9
2006	91.0	101.4	85.7	69.2	43.0	33.5	24.6	18.1
2007	95.1	125.9	80.3	57.6	37.6	31.0	23.3	17.6
2008	98.6	90.3	50.5	43.8	36.7	30.9	22.9	17.4
2009	98.9	108.7	58.2	45.7	39.6	30.3	22.8	16.8
2010	95.3	93.9	46.3	37.6	29.3	25.2	20.3	16.1
2011	98.1	38.8	30.8	27.9	24.2	20.0	16.3	12.0
2012	98.6	60.5	35.6	34.1	29.5	24.2	20.0	15.4
2013	99.5	64.5	38.7	35.9	29.1	24.7	19.8	15.2

Data shown in bold type indicates an exceedence of the NEPM standard.

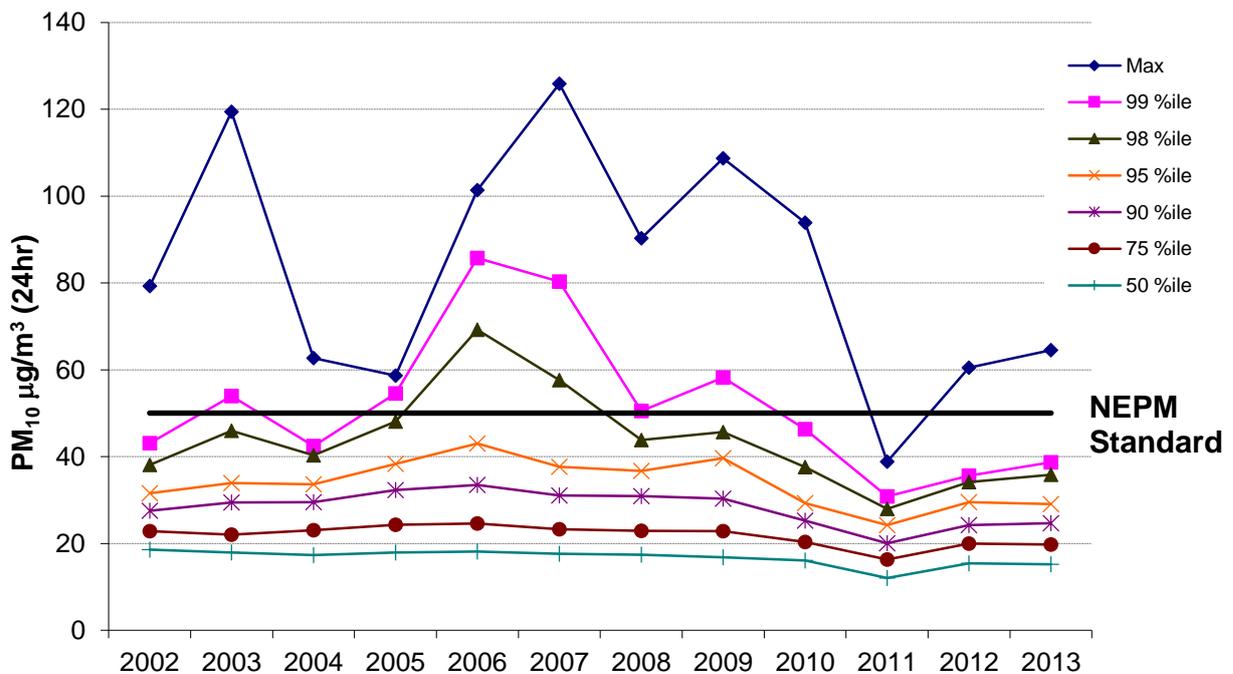


Figure 30 Percentiles of daily 24-hour PM₁₀ concentrations for NET01-Netley (2002-2013)

Table 49 Percentiles of daily 24-hour PM₁₀ concentrations for KEN01- Kensington Gardens (2002-2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2002	47	103.6	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
2007	92	51.1	43	39.4	29.3	25.2	19.0	13.0
2008	97	69.1	44.5	34.0	29.0	25.5	19.3	13.5
2009	84	68.1	41.0	38.3	32.0	27.3	19.6	12.8
2010	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-
2012	93.0	53.3	31.3	29.8	23.9	20.4	16.9	13.0
2013	99.7	66.4	33.2	29.5	25.2	21.5	16.3	12.1

Data shown in bold type indicates an exceedence of the NEPM standard.

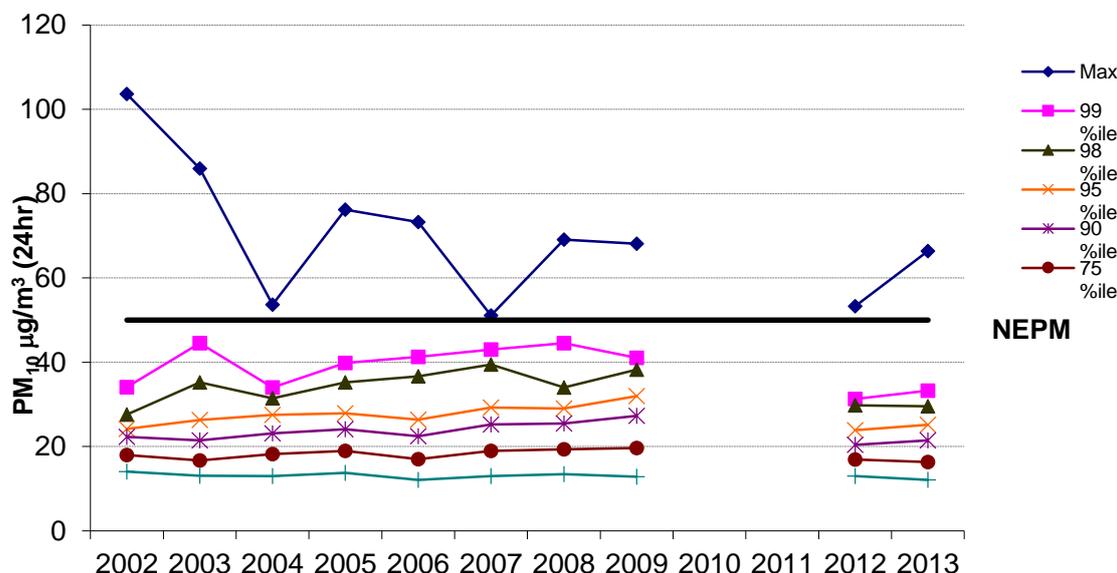


Figure 31 Percentiles of daily 24-hour PM₁₀ concentrations for KEN01- Kensington Gardens (2002-2013)

Table 50 Percentiles of daily 24-hour PM₁₀ concentrations for CHD01-Christie Downs (2006 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2006	73.4	52.2	49.6	42.1	31.2	25.8	19.4	14.3
2007	92.6	70.5	43.8	38.3	31.7	27.3	21.6	15.5
2008	95.9	89.7	40.5	34.0	30.7	26.9	20.4	15.1
2009	95.3	83.9	45.8	42.8	35.9	28.5	20.9	15.5
2010	96.4	88.7	52.8	39.6	27.3	22.7	17.7	14.0
2011	90.4	36.8	33.8	29.9	25.2	21.9	17.7	13.5
2012	99.5	46.7	41.3	39.4	29.4	26.2	20.5	16.0
2013	98.4	53.2	45.3	37.1	30.7	24.3	19.7	14.6

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in italics indicate data availability is less than 75%.

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

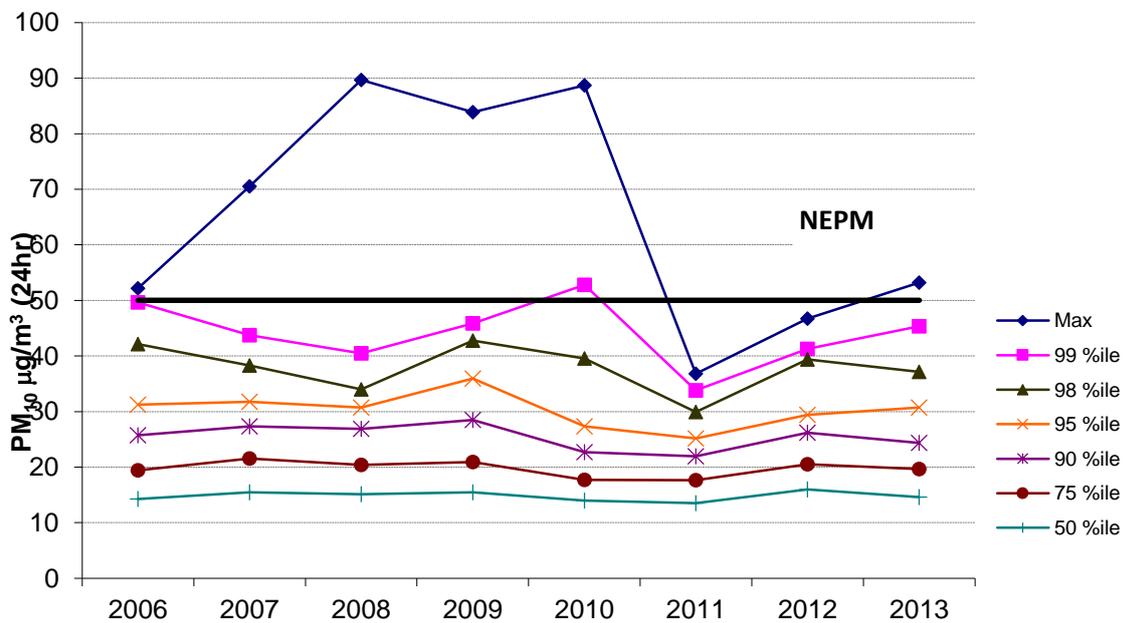


Figure 32 Percentiles of daily 24-hour PM₁₀ concentrations at CHD01- Christie Downs (2006-2013)

Table 51 Percentiles of daily 24-hour PM₁₀ concentrations for NHV01 - North Haven (2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2013	76.4	82.2	47.7	42.1	35.4	31.0	22.8	17.6

Data shown in bold type indicates an exceedence of the NEPM standard.

Years shown in italics indicate data availability is less than 75%.

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

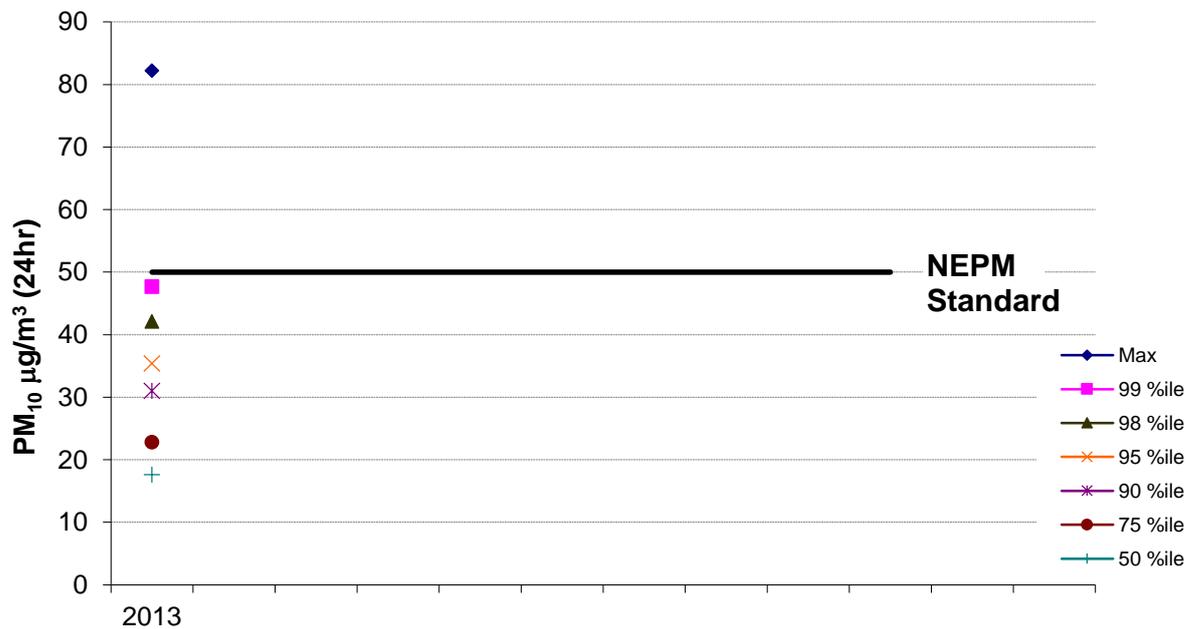


Figure 33 Percentiles of daily 24-hour PM₁₀ concentrations at NHV01 - North Haven (2013)

Table 52 Percentiles of daily 24-hour PM₁₀ concentrations for WHY07-Whyalla Schulz Park (2007 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2007	66.8	97.2	62.8	51.0	30.5	27.4	20.5	14.9
2008	97.5	96.5	57.6	45.3	36.9	32.1	23.7	15.9
2009	96.4	283.8	70.9	52.7	41.8	35.2	26.0	16.3
2010	98.6	92.3	44.8	32.3	25.5	22.5	17.2	12.5
2011	95.3	77.7	34.5	30.2	25.1	21.3	17.2	13.0
2012	92.6	45.1	39.5	34.9	30.1	25.3	20.2	14.7
2013	99.0	123.6	39.8	36.8	31.1	26.6	20.7	14.5

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in *italics* indicate data availability is less than 75%.

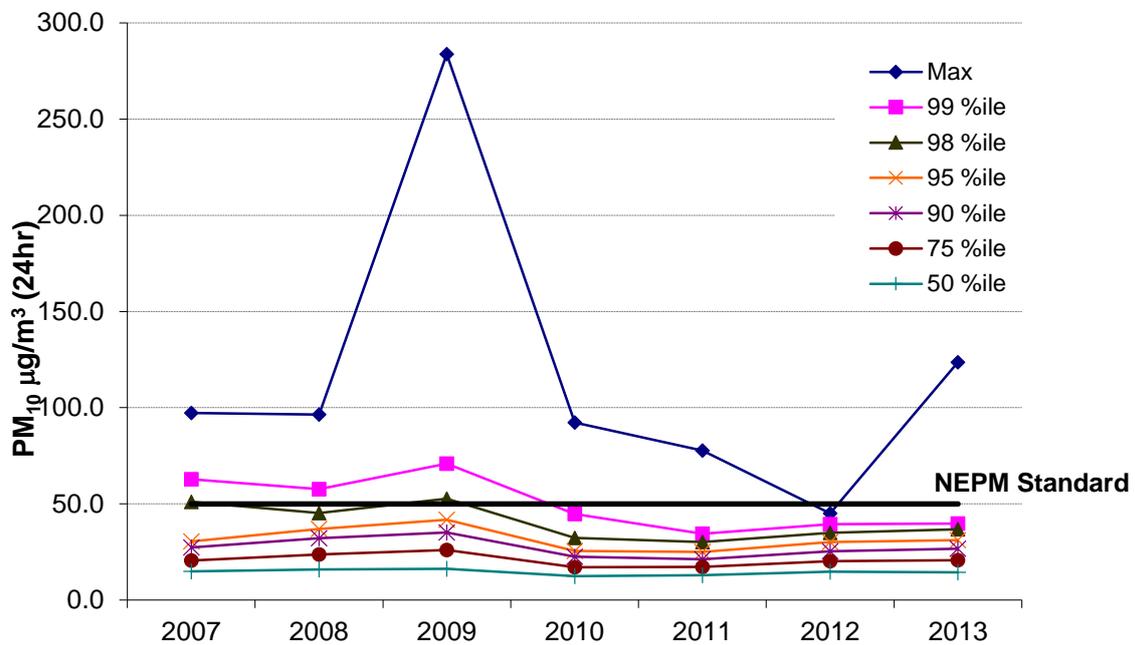


Figure 34 Percentiles and maxima of daily 24-hour PM₁₀ concentrations for WHY07- Whyalla Schulz Park (2007-2013)

Table 53 Percentiles of daily 24-hour PM₁₀ concentrations for PTP01-Pt Pirie Oliver Street (2002 - 2013)

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

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
<i>2002</i> [#]	16	57.0	50.4	45.1	33.4	31.3	27.8	21.2
<i>2003</i>	50.1	60.5	51.7	47.0	38.9	30.8	21.8	14.1
2004	97.3	135.8	51.8	43.9	35.7	28.5	22.6	15.7
2005	95.1	464.3	68.4	45.6	37.6	31.6	23.4	16.6
2006	96.2	181.8	71.0	59.3	42.9	34.6	25.1	17.4
2007	97.5	173.8	68.6	60.8	45.2	37.2	25.5	16.8
2008	97.5	235.1	83.1	64.0	48.9	39.5	25.3	15.5
2009	97.5	183.0	97.4	57.2	46.0	34.8	24.3	14.6
2010	95.9	142.9	45.4	40.6	30.6	24.9	16.8	12.3
2011	99.7	54.9	34.1	32.5	29.0	23.4	19.0	13.9
2012	100.0	46.1	40.9	38.3	33.0	28.0	21.7	15.9
2013	98.4	91.8	47.0	41.2	33.5	27.8	21.1	15.3

Data shown in bold type indicates an exceedence of the NEPM standard.
Years shown in italics indicate data availability is less than 75%.

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

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

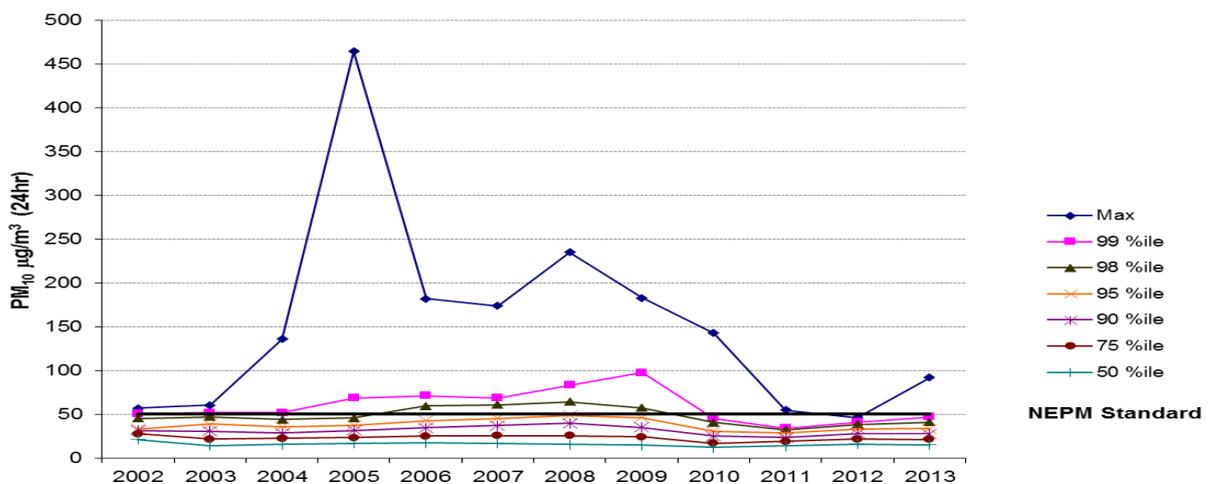


Figure 35 Percentiles and maxima of daily 24-hour PM₁₀ concentrations for PTP01- Port Pirie Oliver Street (2002-2013)

Lead

Table 54 Annual Mean Lead Concentration for PTP05-Pt Pirie Frank Green Park (2002 - 2013)

AAQ NEPM Standard 0.50 µg/m ³ (annual-hr average)		
Year (yyyy)	Data availability rate (% days)	Annual mean (µg/m ³)
<i>2002</i>	<i>60.7</i>	<i>0.26</i>
2003	93.4	0.23
2004	98.4	0.33
2005	98.4	0.30
2006	100.0	0.19
2007	98.3	0.21
2008	100.0	0.14
2009	98.4	0.19
2010	96.7	0.19
2011	100.0	0.10
2012	100.0	0.11
2013	98.4	0.21

Years shown in italics indicate data availability is less than 75%. Based on 1 day in 6 sampling frequency

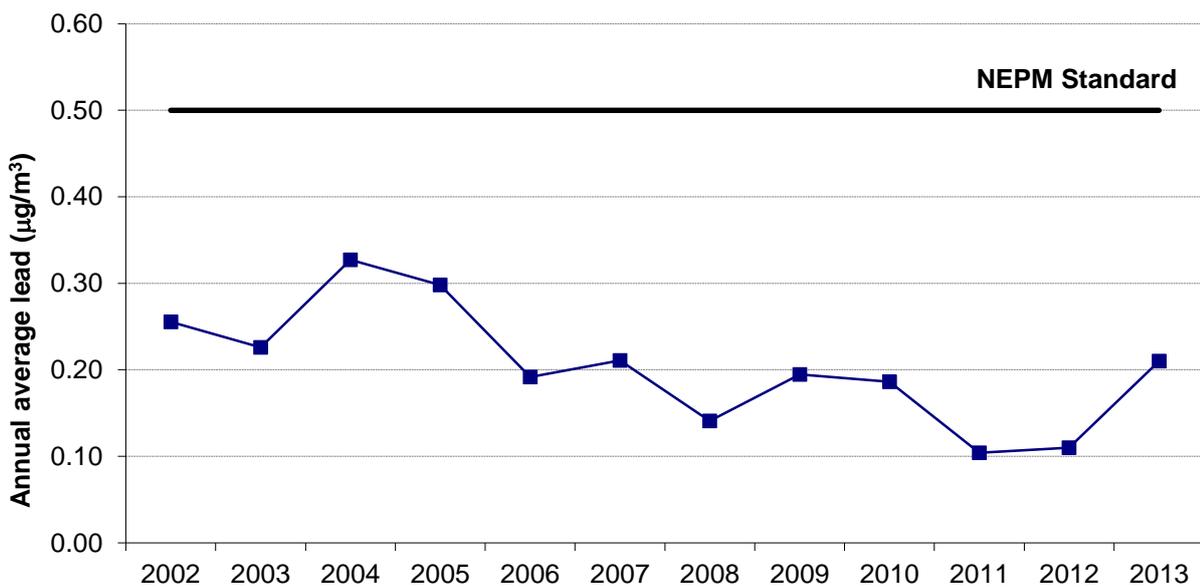


Figure 36 Annual mean lead concentration for PTP05 - Port Pirie Frank Green Park (2002-2013)

Table 55 Annual Mean Lead Concentration for PTP01-Pt Pirie Oliver Street (2002 - 2013)

AAQ NEPM Standard
0.50 µg/m³ (annual-hr average)

Year (yyyy)	Data availability rate (% days)	Annual mean (µg/m ³)
2002	59.0	0.62
2003	96.7	0.68
2004	98.4	0.68
2005	98.4	0.70
2006	100.0	0.56
2007	100.0	0.59
2008	95.1	0.41
2009	100.0	0.40
2010	98.4	0.23
2011	100.0	0.28
2012	98.4	0.34
2013	100.0	0.45

Data shown in bold type indicates an exceedence of the NEPM standard.

Years shown in italics indicate data availability is less than 75% based on a 1 day in 6 sampling frequency.

Lead data are reported to ambient conditions and analyses were carried out by NATA accredited facilities at the Queensland Health Forensic and Scientific Services laboratory (NATA accreditation no. 41).

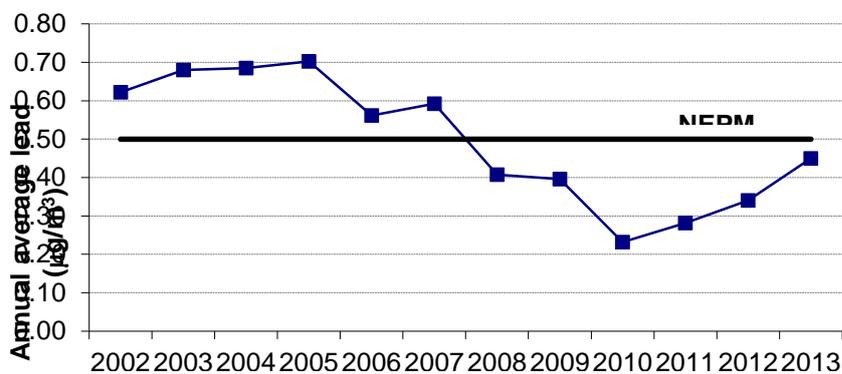


Figure 37 Annual mean lead concentration for PTP01- Port Pirie Oliver Street (2002 - 2013)

Particulate matter as PM_{2.5}

Table 56 Percentiles of daily 24-hour PM_{2.5} concentrations for NET01-Netley (2004 - 2013)

AAQ NEPM Advisory Reporting Standard
25 µg/m³ (24-hr average)

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2005	96.4	17.3	16.4	15.0	13.2	11.6	9.4	7.3
2006	96.2	61.2	20.4	19.0	14.5	12.0	9.7	7.3
2007	99.2	21.9	14.4	13.5	12.3	11.3	9.3	7.6
2008	91.8	20.2	15.7	14.5	12.5	10.9	9.2	7.2
2009	85.5	26.8	17.9	15.2	13.5	11.9	9.6	7.6
2010	98.4	20.3	14.2	13.0	11.6	10.2	8.6	7.1
2011	96.7	15.8	13.3	12.4	10.9	10.1	8.2	6.8
2012	95.4	15.2	13.2	12.3	10.9	10.1	8.6	6.9
2013	99.5	24.8	14.5	12.5	10.6	9.8	8.2	6.8

Data shown in bold type indicates an exceedence of the NEPM standard.

Monitoring by Tapered Element Oscillating Microbalance (TEOM).

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

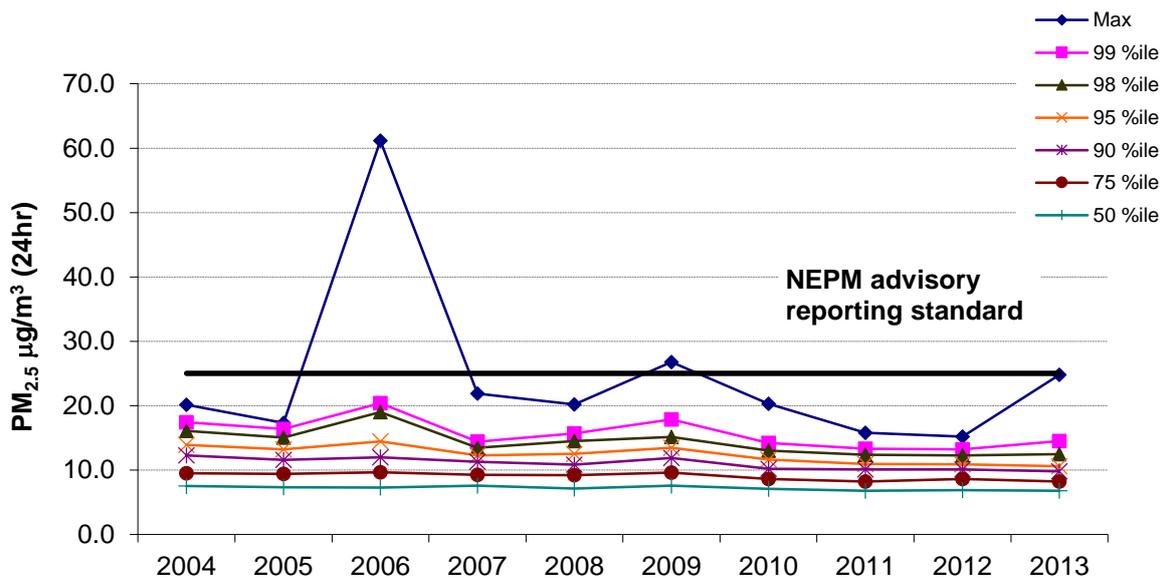


Figure 38 Percentiles of daily 24-hour PM_{2.5} concentrations for NET01-Netley (2004-2013)

Table 57 Percentiles of daily 24-hour PM_{2.5} concentrations for NHV01 - North Haven (2013)

AAQ NEPM Advisory Reporting Standard
25 µg/m³ (24-hr average)

Year (yyyy)	Data availability rates (%)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2013	75.3	22.2	13.6	12.3	11.4	10.1	8.5	6.9

Data shown in bold type indicates an exceedence of the NEPM standard.

Monitoring by Tapered Element Oscillating Microbalance (TEOM).

The SA EPA uses Section 6 Option 4 (no temperature adjustment of TEOM data) of Peer Review Committee, Technical Paper No 10 Collection and Reporting of TEOM PM₁₀ Data, May 2001 to report TEOM data. This is as volatiles are not expected to be significant.

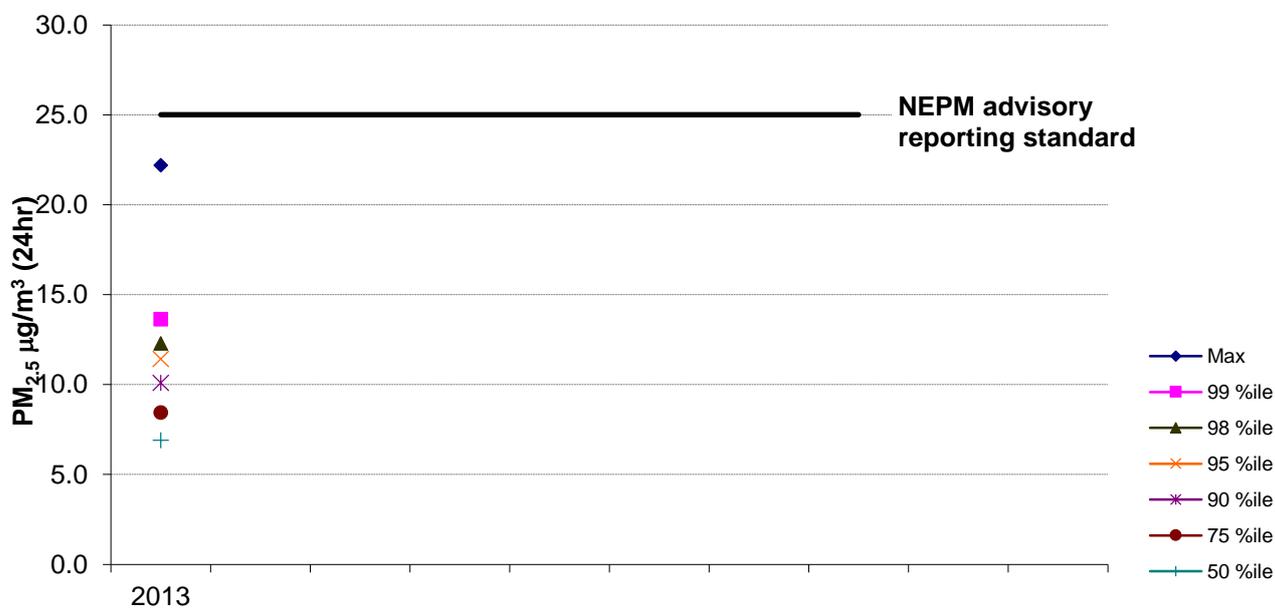


Figure 39 Percentiles of daily 24-hour PM_{2.5} concentrations for NHV01 - North Haven (2013)

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