

**Northern Territory Ambient Air Quality Monitoring
Report 2015**

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

July 2016

1	Summary	3
2	Background.....	3
3	Overview of the 2015 AAQ NEPM Monitoring Network and Activities	4
3.1	Monitoring Requirements	4
3.2	Current Monitoring Stations for the Purposes of this Report	4
3.3	Determination of Exposed Population for each Performance Monitoring Station 5	5
3.4	Monitoring during the Reporting Period	7
3.5	Changes to the Approved Monitoring Plan	7
3.6	Unresolved Issues.....	7
3.7	Status of NATA Accreditation	7
3.8	Methods Other than Physical Monitoring	7
4	Assessment of Compliance with the AAQ NEPM Standards and Goals.....	8
5	Assessment of Monitoring Data Against the Standards	16
6	Analysis of Exceedances and Progress in Achieving Air NEPM Goals.....	18
7	Data analysis and trends.....	21

1 Summary

Ambient air quality monitoring in the Darwin region between 1 January and 31 December 2015 showed no exceedances of the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) standards for carbon monoxide, nitrogen dioxide, particulate matter of 10 micrometres or less (PM₁₀) and ozone at any monitoring site. Exceedances of AAQ NEPM advisory standards for daily and annual particulate matter of 2.5 micrometres or less (PM_{2.5}) occurred at the Winnellie station. Only the daily PM_{2.5} standard was exceeded at the Palmerston station.

These exceedances were linked to small scale local bush/grass fires and more distant large scale savannah fire activity. Analysis of 2015 monitoring data shows the timing of fire activity in relation to wind direction and temperature inversions appears to be a greater influence on PM_{2.5} levels in the Darwin region than the total area burnt. In 2015 as in 2014, PM_{2.5} and PM₁₀ levels were below average while total area burnt in the region was above average.

2 Background

Clause 18 of the AAQ NEPM requires jurisdictions to submit a report on their compliance with the AAQ NEPM for each calendar year. The content of the jurisdictional report is prescribed in clause 17 of the AAQ NEPM.

Consistent with the reporting period defined in the AAQ NEPM this report covers the calendar year ending on 31 December 2015. The report is based on Technical Paper No. 8 (Annual Reports) which details the format and data requirements of the Annual Report. It is a technical report to the National Environment Protection Council (NEPC) and supplements the annual summary report provided each year by each jurisdiction under the NEPC Act on the overall implementation of the AAQ NEPM.

This report is available on the NT EPA website at ntepa.nt.gov.au.

3 Overview of the 2015 AAQ NEPM Monitoring Network and Activities

3.1 Monitoring Requirements

The results of air quality monitoring in 2000-2001 were used to determine the monitoring requirements for the Northern Territory over the longer term. This monitoring identified fine particles from landscape fires affecting the Darwin region as the primary air pollutant of concern in the Northern Territory. Analysis of the 2000-2001 data against the AAQ NEPM standards indicated that nitrogen oxides, sulphur dioxide, carbon monoxide, ozone and lead aerosols were not a cause for concern in the Darwin/Palmerston region or regional population centres.

Since the initial monitoring population and industrial activity in Darwin has increased and more detailed monitoring of airborne pollutants is required. In 2010 the establishment and operation of a comprehensive air quality monitoring system for the Darwin region commenced. This was completed in July 2012 allowing for monitoring of all pollutants identified in the AAQ NEPM with the exception of lead. Monitoring for lead was not deemed necessary as there are no significant sources close to populated areas in the region.

The air quality monitoring program consists of two stations, a performance monitoring station located near Palmerston and long term trend monitoring station located at the Bureau of Meteorology (BoM) site in Winnellie. The Winnellie station has been operational since the second half of 2012 while Palmerston station has been operational since the beginning of 2011.

3.2 Current Monitoring Stations for the Purposes of this Report

The Winnellie station meets requirements as a generally representative upper bound (GRUB) station. It is located between Darwin's northern suburbs and Darwin CBD, the two most densely populated areas in the Northern Territory (Figure 1). The station consists of an air conditioned instrument shed which houses all instrumentation. A single gas sampling manifold supplies atmospheric gases for nitrogen oxides, ozone, sulphur dioxide and carbon monoxide analysis. Air for particulate sampling comes from a mast attached directly to the station roof. Meteorological data comes from BoM instruments located on the same site.

The Palmerston station has been located to provide information on airborne pollutants which may be moving from industrial activities in middle harbour to populations in the Palmerston area. This station meets all siting and instrumentation requirements for reporting under the AAQ NEPM. It is located in light bushland approximately 4km south west of Palmerston (Figure 1). The station houses the same gas and particulate sampling instruments as Winnellie and has instruments for collection of meteorological data.

Station instrumentation and siting details for both stations is at Tables 1 and 2 below.

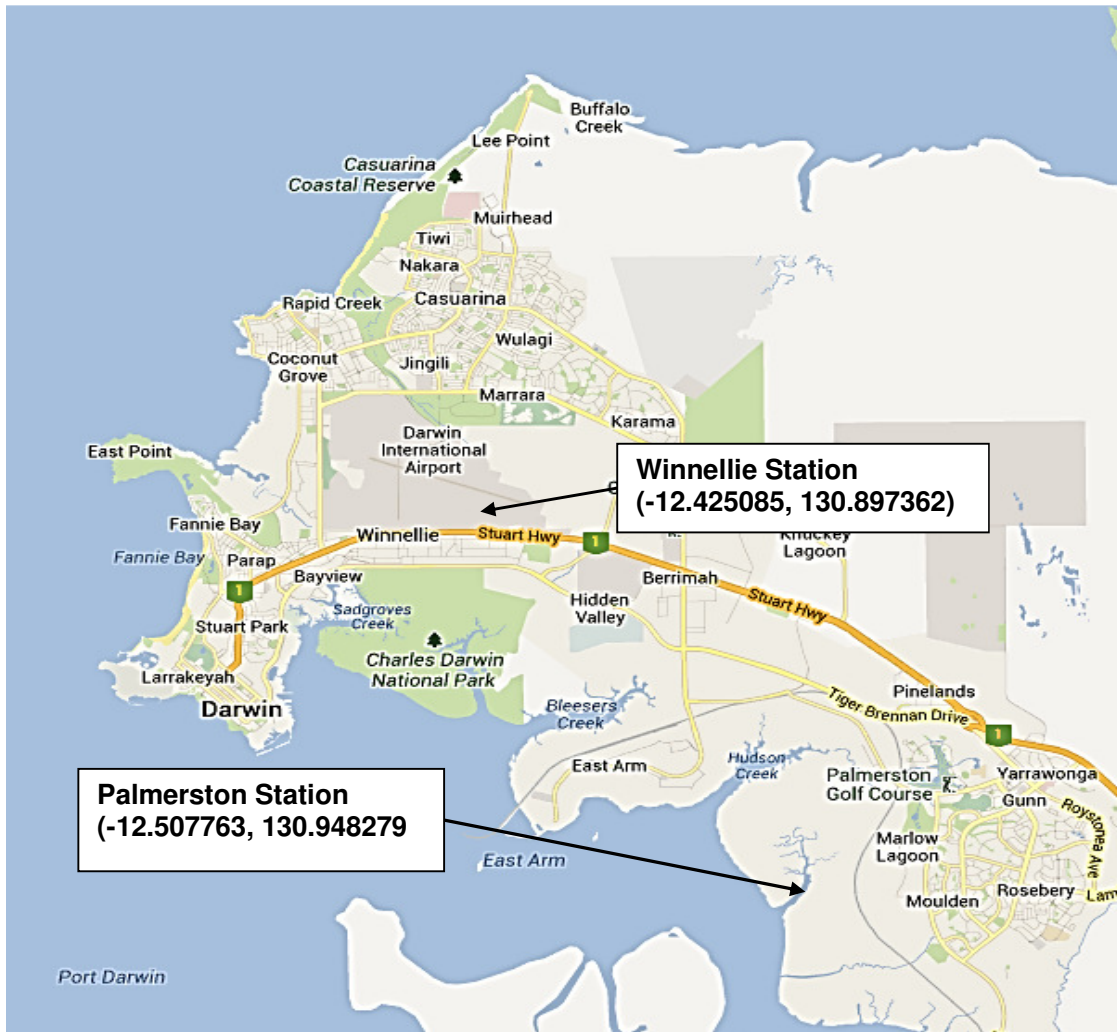


Figure 1: Palmerston and Winnellie monitoring sites.

3.3 Determination of Exposed Population for each Performance Monitoring Station

Two areas within the Northern Territory exceed the population threshold for ambient air quality monitoring of greater than 25,000. These are the Greater Darwin region (140,400) and Alice Springs (28,080).

The major air pollutant of concern for Darwin and Palmerston is particulate matter from bushfire smoke in the Dry Season (April - October). Prevailing winds during the Dry Season are South-Easterly to Easterly, causing the population of the region to be frequently exposed to particulate pollution from relatively small fires in local bushland and more distant large scale savannah fires.

Monitoring for particulates has been conducted at several sites in the Darwin / Palmerston region since 2002. From 2012 monitoring was conducted at two sites. Results from

simultaneous monitoring have shown that aside from spikes attributable to local fire events particulate levels are reasonably uniform across the region on a seasonal basis. This relationship was supported by the 2015 data. PM_{2.5}, 24 hour average levels for Palmerston were 9.28 and 8.1 for Winnellie in 2015. See Figure 1. As industrial development increases divergence in particulate and other pollutant levels may occur between sites.

No monitoring was undertaken in the Alice Springs region during the reporting period. The NT EPA intends to conduct monitoring in Alice Springs in future years.

Table 1: Summary of station instrument siting compliance with AS 2922-1987

Station	Location Category	Height above ground	Clear Sky Angle	Unrestricted airflow of 360°	20 m from trees	No boilers or incinerators nearby	Minimum distance from road or traffic
Winnellie DBE 1	Bushland	6 m	Yes	Yes	Yes	Yes	Yes
Palmerston DBE 2	Bushland	4.5 m	Yes	Yes	Yes	Yes	Yes

Table 2 – Ambient air quality station instrumentation

Parameter	Data available from	Data available to	Instrument	Sampling frequency
PM ₁₀	01/01/11 (Palmerston) 18/07/12 (Winnellie)	present	TEOM 1405D	continuous
PM _{2.5}	01/01/11 (Palmerston) 18/07/12 (Winnellie)	present	TEOM 1405D	continuous
SO ₂	01/01/11 (Palmerston) 18/07/12 (Winnellie)	present	Thermo Model 43i.	continuous
NO _x , NO, NO ₂	01/01/11 (Palmerston) 18/07/12 (Winnellie)	present	Thermo Model 42i.	continuous
O ₃	01/01/11 (Palmerston) 18/07/12 (Winnellie)	present	Thermo Model 49i.	continuous
CO	01/01/11 (Palmerston)	present	Thermo Model 48i.	Continuous

	18/07/12 (Winnellie)			
Meteorology (mast height: 10 m)				
Wind direction	01/01/12	present	RM Young, model 85000.	continuous
Wind speed	01/01/12	present	RM Young, model 85000.	continuous
Temperature	01/01/12	present	RM Young, model 41382LC	continuous
Humidity	01/01/12	present	RM Young, model 41382LC	continuous

3.4 Monitoring during the Reporting Period

Winnellie and Palmerston stations monitor the same range of pollutants. All instruments at both stations provided valid data for more than seventy five per cent of the time during the reporting period.

3.5 Changes to the Approved Monitoring Plan

No change.

3.6 Unresolved Issues

There are no unresolved issues in the reporting period.

3.7 Status of NATA Accreditation

All data collection and validation processes are validated by National Association of Testing Authorities (NATA).

3.8 Methods Other than Physical Monitoring

No other methods were used in the reporting period.

4 Assessment of Compliance with the AAQ NEPM Standards and Goals

Standards and goals for pollutants in accordance with the AAQ NEPM are shown in Table 3.

Table 3: Air NEPM Standards

Pollutant	Averaging period	Maximum (ambient) concentration	Goal
Carbon monoxide	8 hour	9.0 ppm	1 day a year
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	none
Photochemical oxidants (as ozone)	1 hour	0.10ppm	1 day a year
Sulfur dioxide	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	1 year	0.02 ppm	none
Particles as PM ₁₀	1 day	50 µg/m ³	5 days a year
Particles as PM _{2.5}	1 day	25 µg/m ³	Advisory standard
	1 year	8 µg/m ³	

The following tables summarise compliance with the standards and goals of the AAQ NEPM. Data availability (quarterly and annual), the number of days when standards were exceeded, the annual mean (where an annual standard exists) and an assessment of compliance are given for each pollutant.

Performance is assessed as not complying (i.e. 'NOT MET') if there is more than the number of exceedances specified in Schedule 2 of the AAQ NEPM.

CARBON MONOXIDE

Table 4: 2015 compliance summary for CO in the Northern Territory

AAQ NEPM Standard
9.0 ppm (8 hour average)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual		
Winnellie	98	99	100	81	95	0	Met
Palmerston	96	97	93	83	92	0	Met

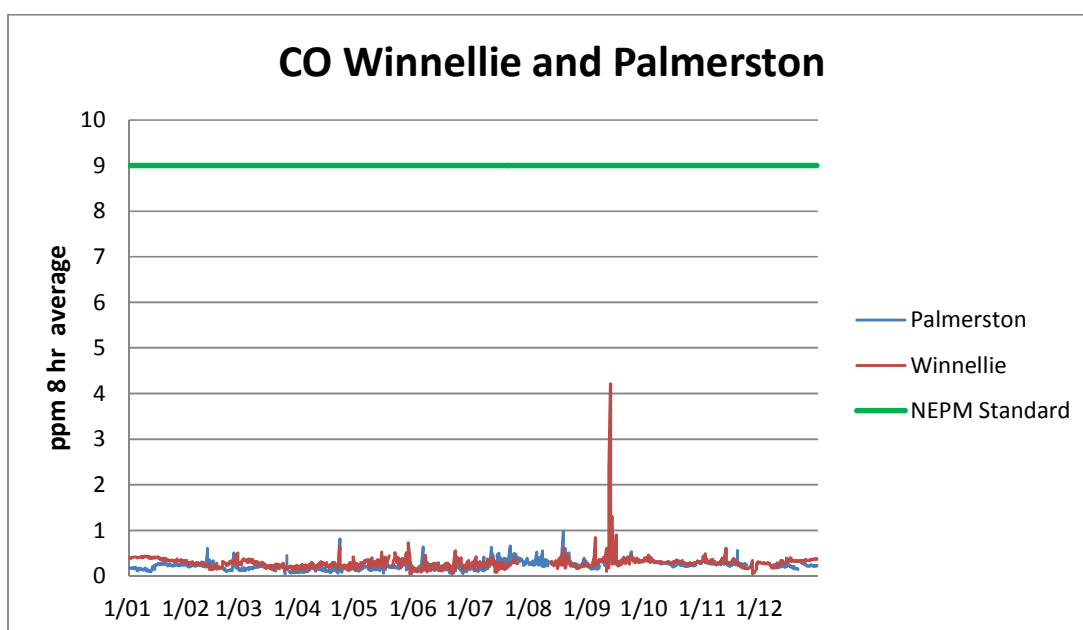


Figure 2: CO 8 hour

NITROGEN DIOXIDE

Table 5: 2015 compliance summary for NO₂ in the Northern Territory

AAQ NEPM Standard

0.12 ppm (1 hour average)

0.03 ppm (1 year average)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)	Annual mean (ppm)	Performance against the standard and goal	
	Q1	Q2	Q3	Q4	Annual			1h	1y
Winnellie	91	100	94	93	94	0	0.0025	met	met
Palmerston	84	80	92	83	84	0	0.0036	met	met

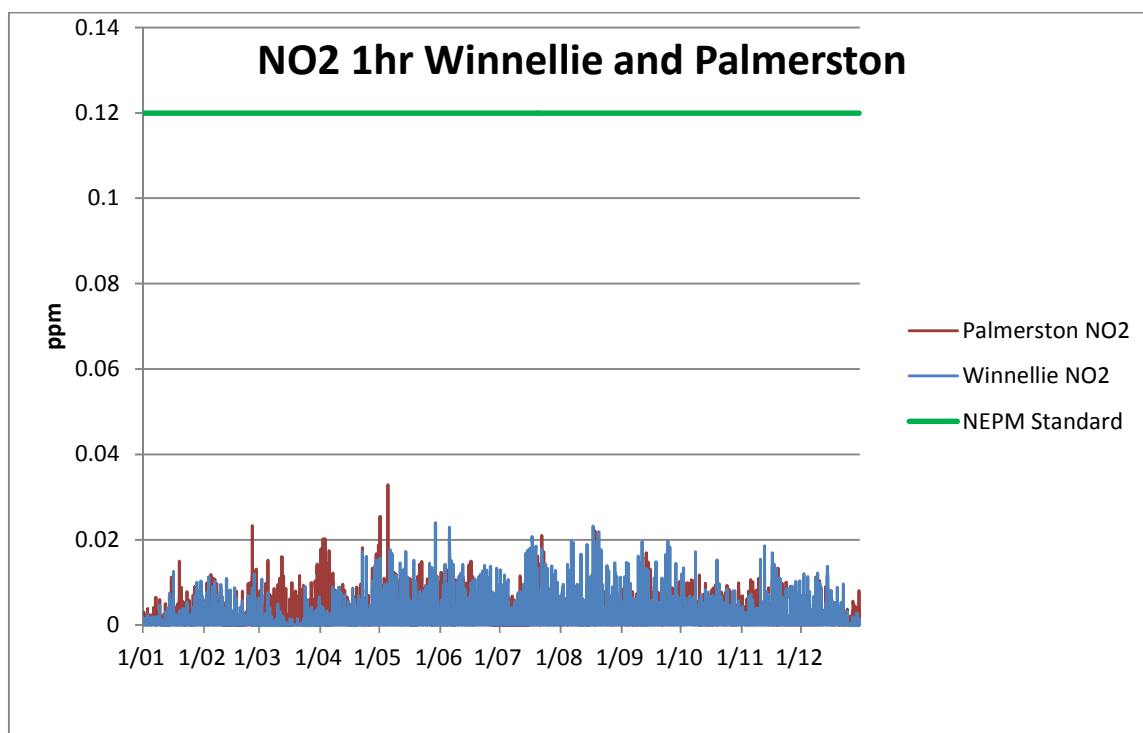


Figure 3: NO₂ 1 hour

OZONE

Table 6: 2015 compliance summary for Ozone in the Northern Territory

AAQ NEPM Standard

0.10 ppm (1 hour average)

0.08 ppm (4 hour average)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)		Performance against the standard and goal	
	Q1	Q2	Q3	Q4	Annual	1 h	4 h	1h	4h
Winnellie	92	100	94	98	96	0	0	Met	Met
Palmerston	80	98	86	92	89	0	0	Met	Met

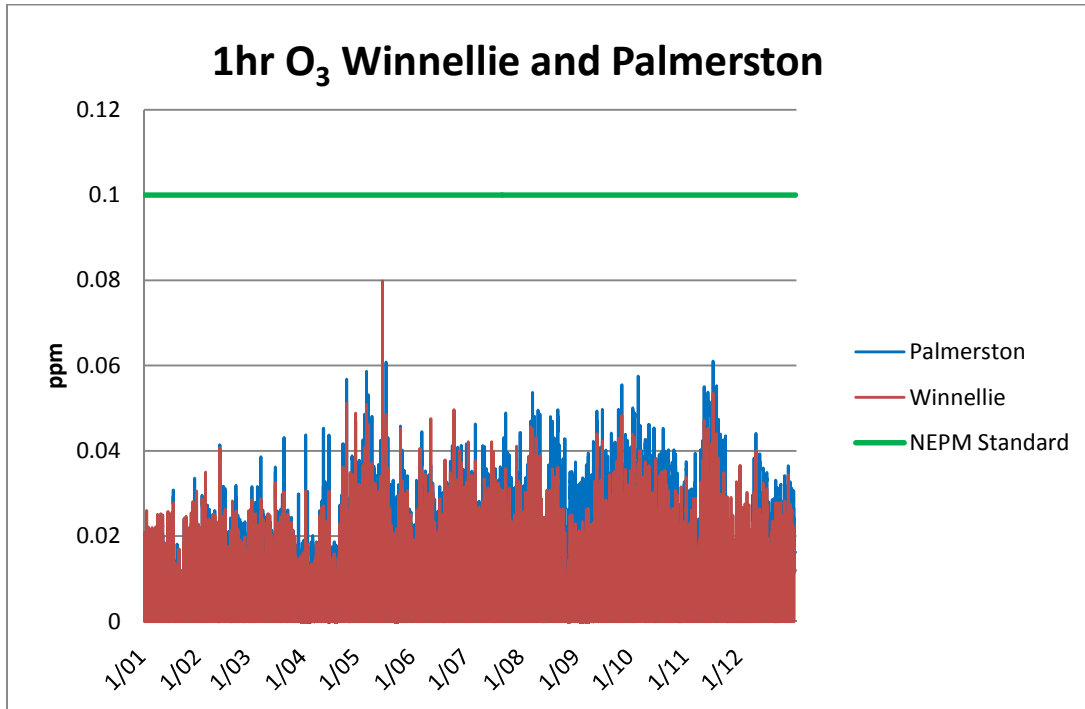


Figure 4: O₃ 1 hour

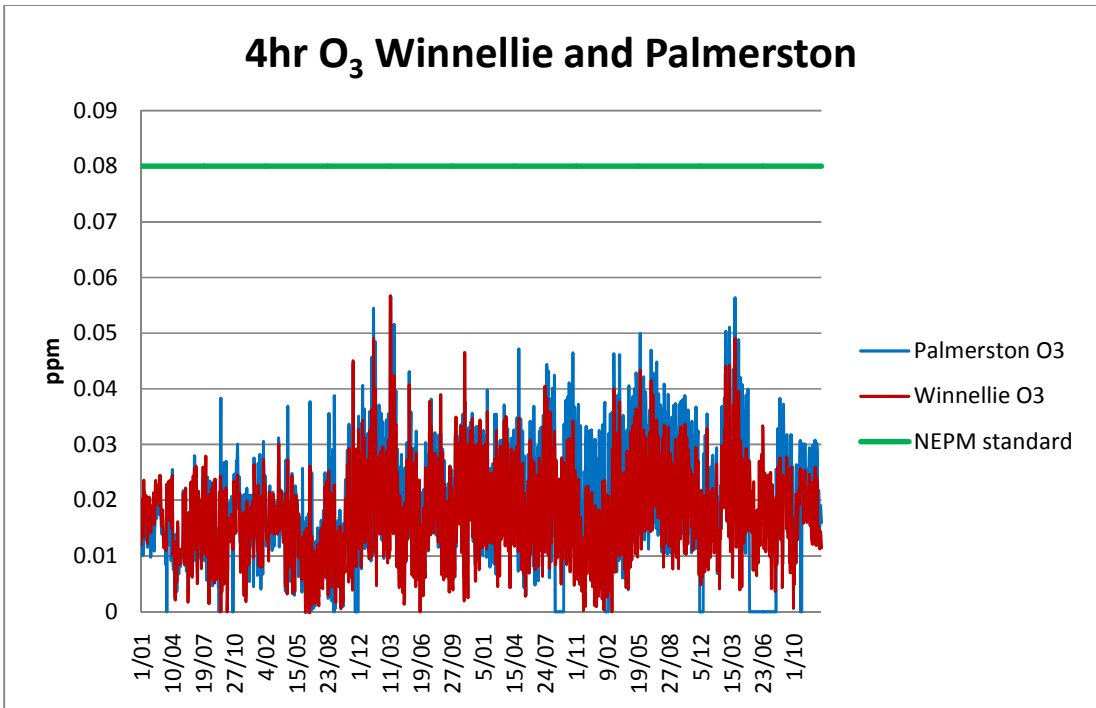


Figure 5: O₃ 4 hour

SULFUR DIOXIDE

Table 7: 2015 compliance summary for SO₂ in the Northern Territory

AAQ NEPM Standard

0.20 ppm (1 hour average)

0.08 ppm (24 hour average)

0.02 ppm (1 year average)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)		Annual mean (ppm)	Performance against the standard and goal		
	Q1	Q2	Q3	Q4	Annual	1h	24h		1h	24h	1y
Winnellie	90	98	93	96	94	0	0	0.0003	Met	Met	Met
Palmerston	84	86	80	90	85	0	0	0.0003	Met	Met	Met

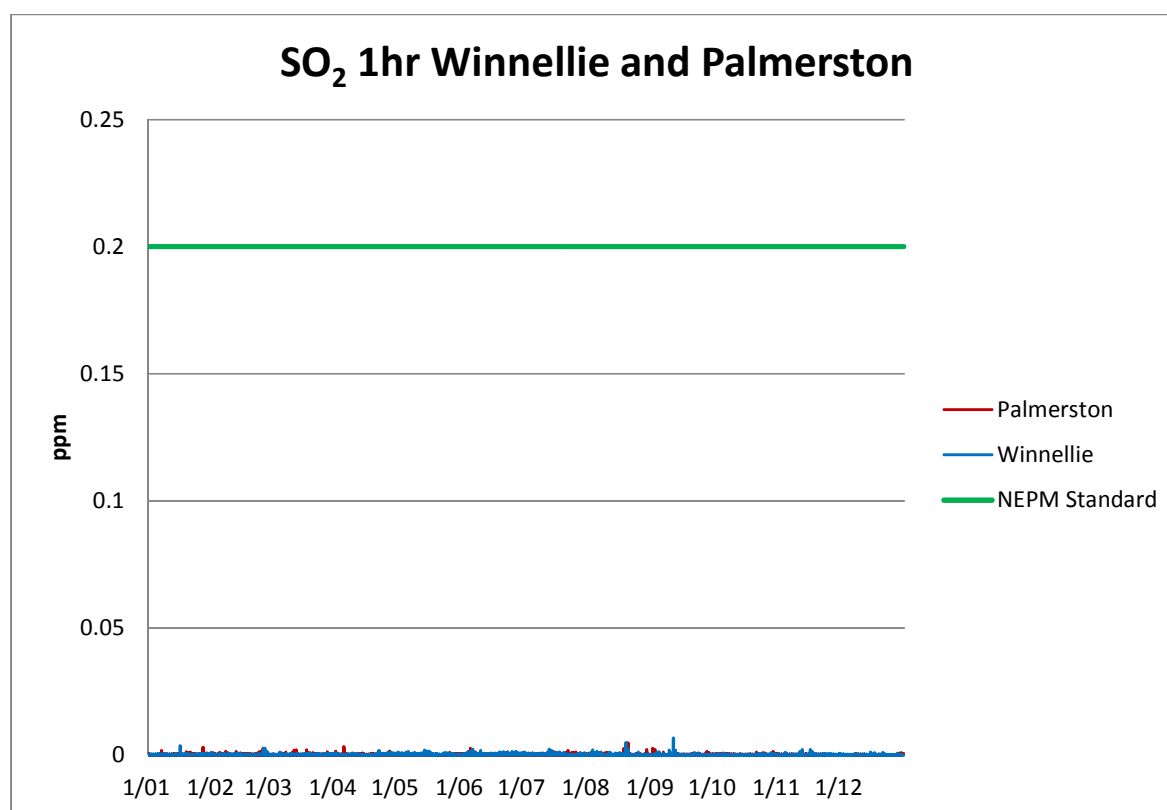


Figure 6: SO₂ 1 hour

PARTICULATES PM₁₀

Table 8: 2015 compliance summary for PM₁₀ in the Northern Territory

AAQ NEPM Standard

50 µg m⁻³ (24-hour average, 5 days/year)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual		
Winnellie	92	100	100	100	98	5	Met
Palmerston	95	98	95	88	94	3	Met

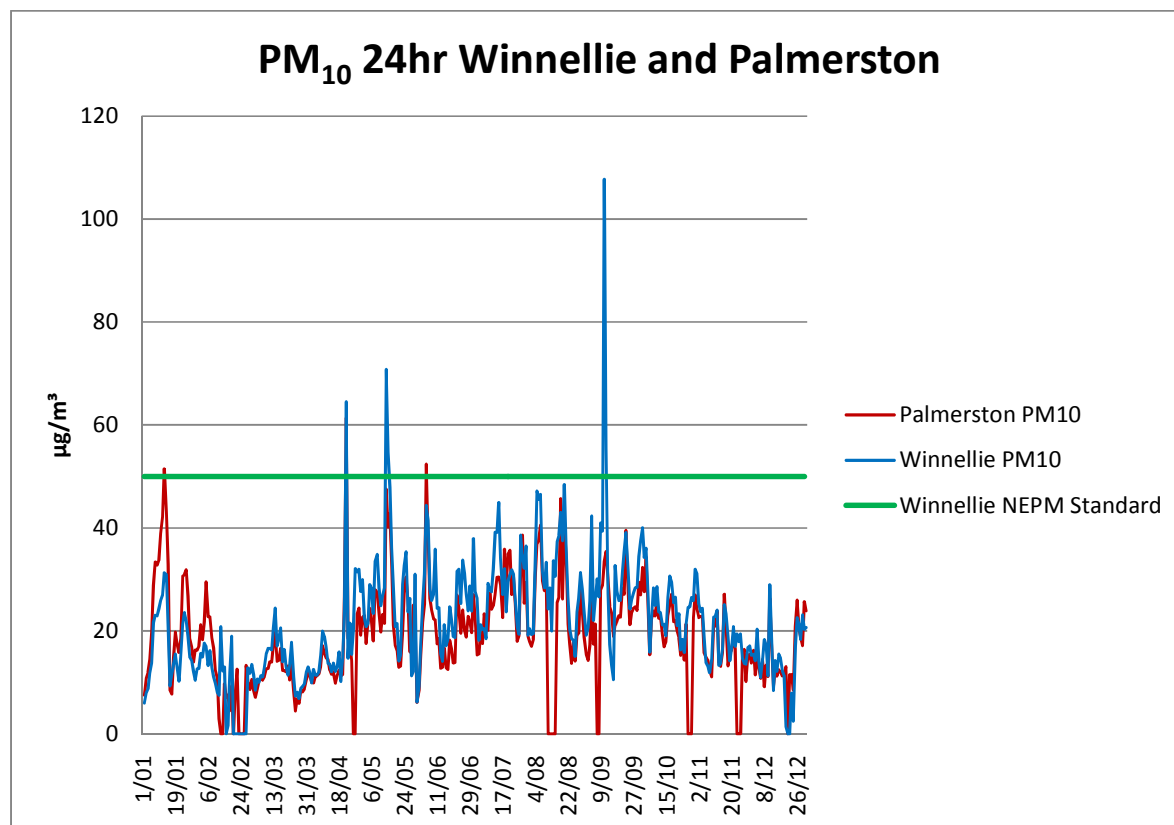


Figure 7: PM₁₀ 24 hour

PARTICULATES PM_{2.5}

Table 9: 2015 compliance summary for PM_{2.5} in the Northern Territory

AAQ NEPM Advisory Standard

25 µg/m³ (24-hour average)

8 µg/m³ (1 year average)

Region/ Performance monitoring station	Data Availability Rates (% of Days)					Number of exceedances (days)	Annual average µg/m ³ (24 hour)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual			
Winnellie	92	100	100	100	98	10	8.6	Not Met
Palmerston	95	98	95	88	94	7	7.8	Not Met

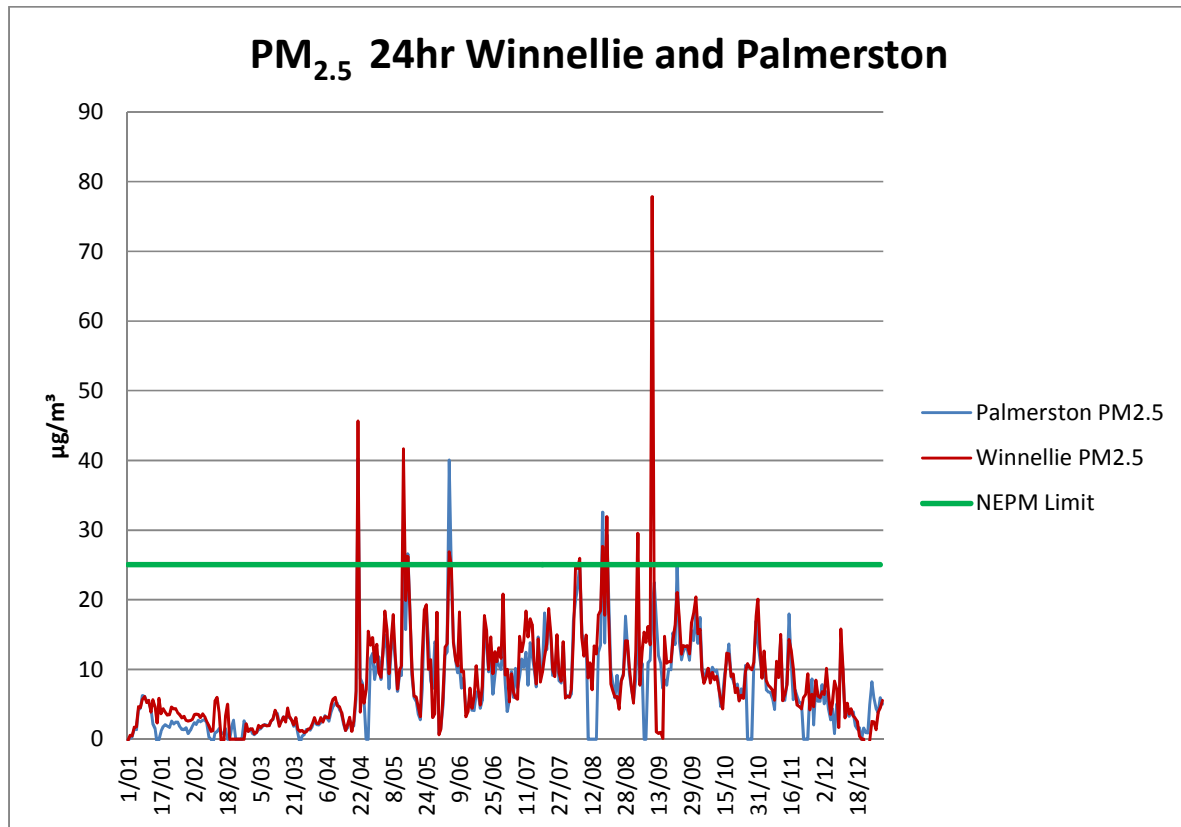


Figure 8: PM_{2.5} 24 hour

5 Assessment of Monitoring Data Against the Standards

Annual summary statistics are presented in this section. The AAQ NEPM states that the short-term standards should not be exceeded on more than one day for carbon monoxide, nitrogen dioxide, ozone and sulfur dioxide, or on more than five days per year for PM₁₀.

There were no exceedances of the compliance standards for any parameter during 2015. The 24 hour advisory standard for PM_{2.5} was exceeded at both stations and the advisory annual PM_{2.5} standard was exceeded at Winnellie. These exceedances were due to bushfire activity which the AAQ NEPM classifies as a 'natural event'. High fine particle levels are typical of the Darwin air shed during the Dry.

Figures 3-10 above show that for carbon monoxide, nitrogen dioxide, ozone and particularly sulphur dioxide levels were significantly below the Air NEPM standards.

Table 10: 2015 summary statistics for daily peak 8 hour CO in the Northern Territory

AAQ NEPM Standard

9.0 ppm (8 hour average)

Region/ Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2 nd highest (ppm)	2 nd Highest (date:hour)
Winnellie	343	4.22	12/09 0800	2.35	11/09 0800
Palmerston	335	1.08	13/09 0000	0.98	18/08 0000

Table 11: 2015 summary statistics for daily peak 1 hour NO₂ in the Northern Territory

AAQ NEPM Standard

0.12 ppm (1 hour average)

Region/ Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2 nd highest (ppm)	2 nd Highest (date:hour)
Winnellie	346	0.032	05/05 0800	0.025	01/05 2000
Palmerston	324	0.024	29/05 0700	0.023	17/08 0700

Table 12: 2015 summary statistics for daily peak 1 hour O₃ in the Northern Territory

AAQ NEPM Standard

0.10 ppm (1 hour average)

Region/ Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2 nd highest (ppm)	2 nd Highest (date:hour)
Winnellie	346	0.078	14/05 1600	0.074	14/05 1500
Palmerston	324	0.080	14/05 1500	0.074	14/05 1400

Table 13: 2015 summary statistics for daily peak 4 hour O₃ in the Northern Territory

AAQ NEPM Standard

0.08 ppm (4 hour average)

Region/ Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2 nd highest (ppm)	2 nd Highest (date:hour)
Winnellie	346	0.057	14/05 1600	0.054	14/05 2000
Palmerston	324	0.056	14/05 1600	0.055	15/11 2000

Table 14: 2015 summary statistics for 24 hour SO₂ in the Northern Territory

AAQ NEPM Standard

0.08 ppm (24 hour average)

Region/ Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date)	2 nd highest (ppm)	2 nd Highest (date)
Winnellie	357	0.0013	11/09	0.001	14/07
Palmerston	332	0.0011	05/06	0.0009	20/08

Table 15: 2015 summary statistics for 24 hour PM₁₀ in the Northern Territory

AAQ NEPM Standard

50 µg m⁻³ (24 hour average)

Region/ Performance monitoring station	Number of valid days	Highest ($\mu\text{g m}^{-3}$)	Highest (date)	6 th highest ($\mu\text{g m}^{-3}$)	6 th Highest (date)
Winnellie	357	107.7	11/09	48.4	20/08
Palmerston	343	61.4	22/04	43.2	13/01

Table 16: 2015 summary statistics for 24 hour PM_{2.5} in the Northern Territory

AAQ NEPM Advisory Standard

25 $\mu\text{g m}^{-3}$ (24 hour average)

Region/ Performance monitoring station	Number of valid days	Highest ($\mu\text{g m}^{-3}$)	Highest (date)	6 th highest ($\mu\text{g m}^{-3}$)	6 th Highest (date)
Winnellie	357	77.9	11/09	27.63	18/08
Palmerston	343	40.3	22/04	26.6	16/05

6 Analysis of Exceedances and Progress in Achieving Air NEPM Goals

Particulates generated by vegetation burning are the primary air pollutant in the Darwin region. This results in significant variation in air quality between the Dry and the Wet (December- April). In general, air quality was excellent during the Wet and poor during the Dry of 2015. Averaged daily levels of PM_{2.5} across both stations over the six months of the Dry were $11.3\mu\text{g m}^{-3}$, well above the Air NEPM annual Advisory standard of $8\mu\text{g m}^{-3}$ and significantly higher than levels in other Australian cities. Averaged daily PM_{2.5} levels during the Wet were $3.6\mu\text{g m}^{-3}$. The elevated PM_{2.5} levels during the Dry are unavoidable and people with respiratory or cardiopulmonary issues may be impacted.

The advisory standard for PM_{2.5} had multiple exceedances in 2015 (Figure 9). There were 7 exceedances of the 24 hour standard at the Palmerston station, the annual advisory limit was not exceeded. The Winnellie station had 10 exceedances of the 24 hour standard and also exceeded the annual limit.

Both stations met the AAQ NEPM standard for PM₁₀ of no more than 5 exceedances of the 24 hour standard within the year. Winnellie station recorded 5 exceedances of the PM₁₀ standard and Palmerston 3.

Tables 18- 21 show exceedances for both stations.

Table 17: 2015 PM₁₀ exceedances of NEPM reporting level at Palmerston

Date	PM ₁₀ m (µg m ⁻³)	Inferred Cause
22/04	61.35	smoke
05/06	52.35	smoke
12/01	51.47	smoke

Table 18: 2015 PM₁₀ exceedances of NEPM reporting level at Winnellie

Date	PM ₁₀ m (µg m ⁻³)	Inferred Cause
11/09	107.68	smoke (local fire)
14/05	70.78	smoke (local fire)
22/04	64.35	smoke
12/09	55.39	smoke
15/05	54.67	smoke

Table 19: 2015 PM_{2.5} exceedances of NEPM Advisory Standard at Palmerston

Date	TEOM PM _{2.5} m (µg m ⁻³)	Inferred Cause
22/04	40.27	smoke
18/08	40.03	smoke
14/05	32.56	smoke
20/08	29.72	smoke
16/05	29.32	smoke
07/08	26.55	smoke

Table 20: 2015 PM_{2.5} exceedances of NEPM Advisory Standard at Winnellie

Date	PM _{2.5} m (µg m ⁻³)	Inferred Cause
11/09	77.87	smoke (local fire)
22/04	45.65	smoke
14/05	41.65	smoke
20/08	31.92	smoke

4/09	29.5	smoke
18/08	27.63	smoke
5/06	26.86	smoke
16/05	26.22	smoke
7/08	25.92	smoke
5/08	25.06	smoke
Exceedance of NEPM Advisory Standard – Annual average PM_{2.5} 8 µg m⁻³		
2015	9.4	smoke

Smoke from burning vegetation contains PM₁₀ and the PM_{2.5}, Figures 10 and 12 show the close relationship between these parameters at both stations during the Dry Season.

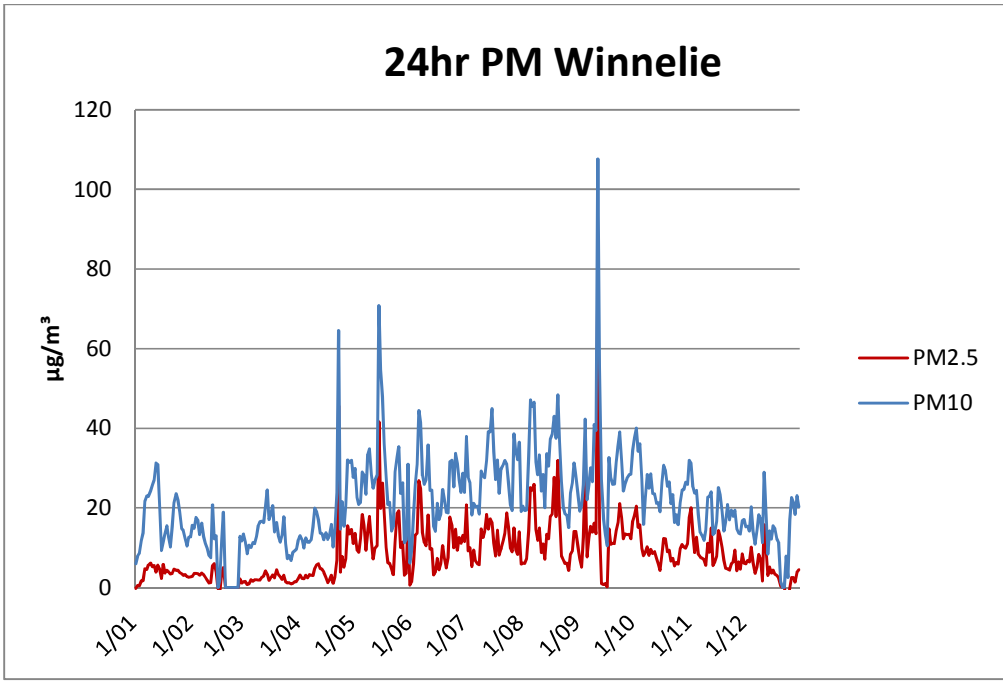


Figure 9

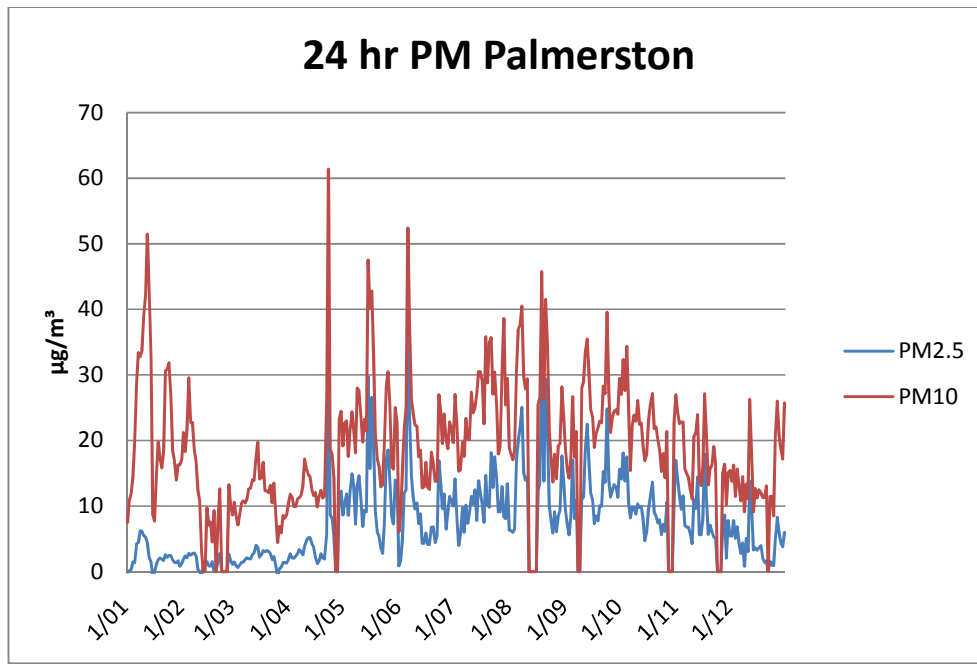


Figure 10

7 Data analysis and trends

Tables 21 to 25 below compare the number of exceedance's in the NT over a longer period of time in accordance with AAQ NEPM technical requirements. This comparison is of limited utility in providing an accurate indication of particulate trends as different sampling techniques have been used since monitoring began in 2002 (TEOM and Partisol) and instruments have not been located consistently throughout the sampling period.

Issues with historical data include:

- 2004 - data collection for this project did not commence until the second quarter.
- 2004 and 2005 - TEOM was located in Palmerston at the Charles Darwin University Palmerston campus.
- 2006 - TEOM data availability was below 75% for each quarter so Partisol data was used.
- 2009 - dust produced from local construction activity in close proximity to the station required that exceedances for a period over the dry be removed as they were not necessarily representative of air quality in the larger air shed.
- 2010 – there was significant downtime with the Partisol and also TEOM instruments.

Since the establishment of the Palmerston station in 2011 and then the Winnellie station in 2012 data quality has generally improved. During the Wet of 2013 the Palmerston TEOM was offline for a number of months resulting in inadequate data collection for NEPM reporting. As the TEOM was operational for most of the Dry, when particulates are an issue, 2013 data from Palmerston is still useful when considering longer term trends in particulates.

Table 21: Trends - PM₁₀ 2004-2015

Year	Casuarina			Palmerston			Winnellie		
	Data Availability (%)	Number of Exceedances	Max Concentration ($\mu\text{g m}^{-3}$)	Data Availability (%)	Number of Exceedances	Max Concentration ($\mu\text{g m}^{-3}$)	Data Availability (%)	Number of Exceedances	Max Concentration ($\mu\text{g m}^{-3}$)
2004	69	1	54						
2005	98	2	63						
2006	97	0	44						
2007	95	0	45						
2008	97	1	65						
2009	90	0	50						
2010	78	1	54						
2011				96	3	92			
2012				91	23	70			
2013				49	1	72	76	3	58
2014				82	2	52	86	3	73
2015				94	3	61	99	5	107

Table 22: Averaged PM₁₀ Key Metrics 2004-2015

Data Availability (%)	Number of Exceedances	Max Concentration (µg m ⁻³)
86.4	3.2	64

Table 23: Trends PM_{2.5}, 2004-2015

Year	Casuarina			Palmerston			Winnellie		
	Data Availability (%)	Number of Exceedances	Max Concentration (µg m ⁻³)	Data Availability (%)	Number of Exceedances	Max Concentration (µg m ⁻³)	Data Availability (%)	Number of Exceedances	Max Concentration (µg m ⁻³)
2004	60	5	37						
2005	98	5	58						
2006	97	5	30						
2007	-	-	-						
2008	72	2	32						
2009	87	1	26						
2010	62	2	30						
2011				96	15	77			
2012				91	23	44			
2013				49	6	56	76	5	34
2014				82	12	37	86	9	45
2015				94	7	40	99	10	78

Table 24: Averaged PM_{2.5} Key Metrics 2004-2015

Data Availability (%)	Number of Exceedances	Max Concentration (µg m ⁻³)
82	7.6	44.6

Trend data for the 2004 to 2015 period is presented in Figures 11 to 16. This data shows that there is no clear trend in PM_{2.5} or PM₁₀ in the Darwin region over the period. Population of the greater Darwin region has increased from approximately 105 000 in 2004 to 150 000 in 2015 showing a clear upward trend. The lack of a relationship between population and particulate levels further demonstrates that the majority of particulate matter in the Darwin airshed derives from natural sources.

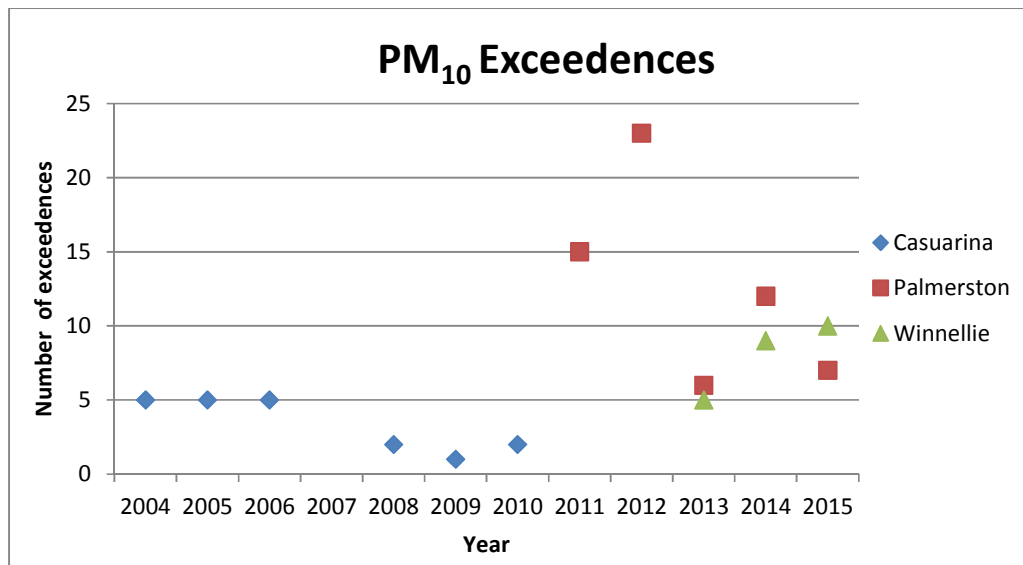


Figure 11

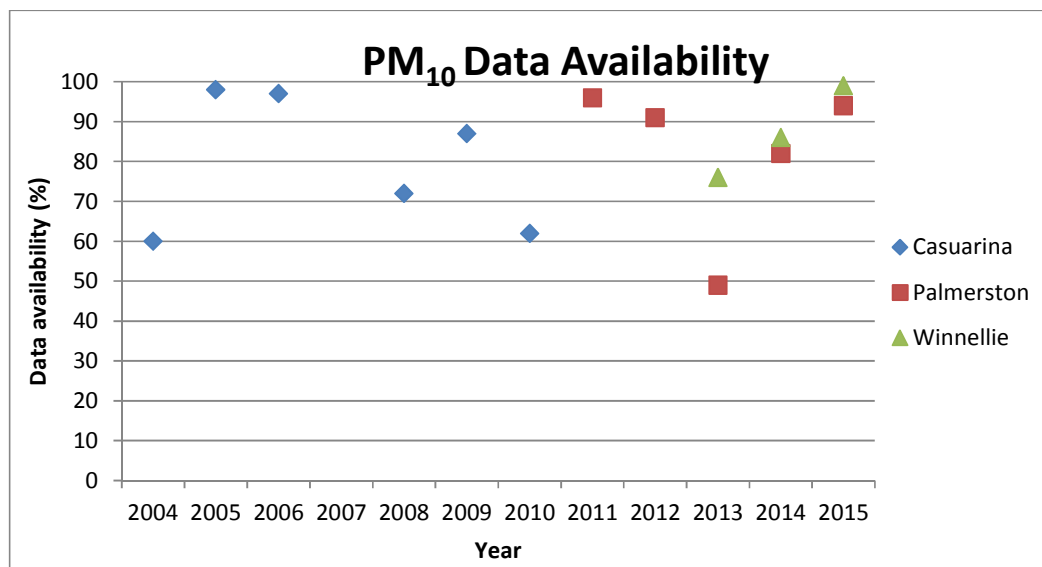


Figure 12

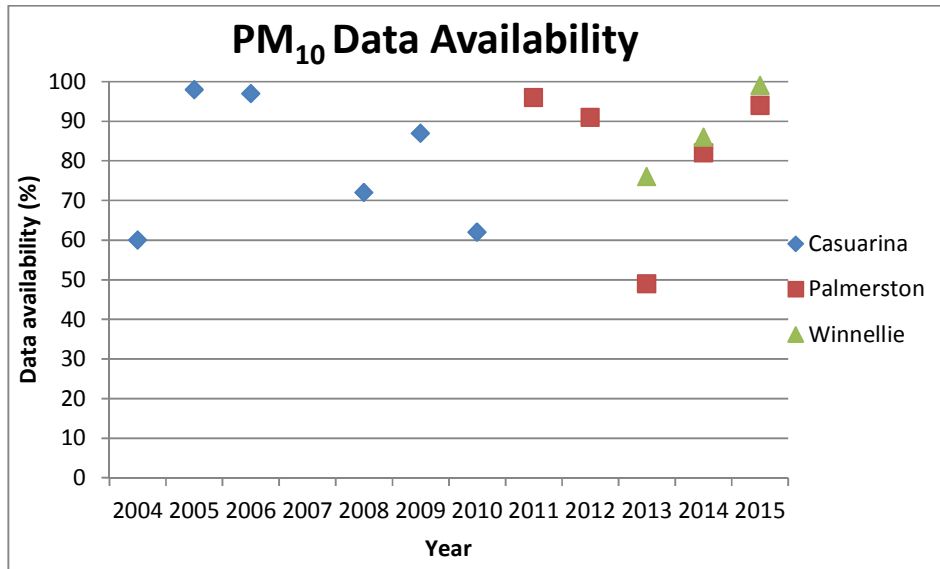


Figure 13

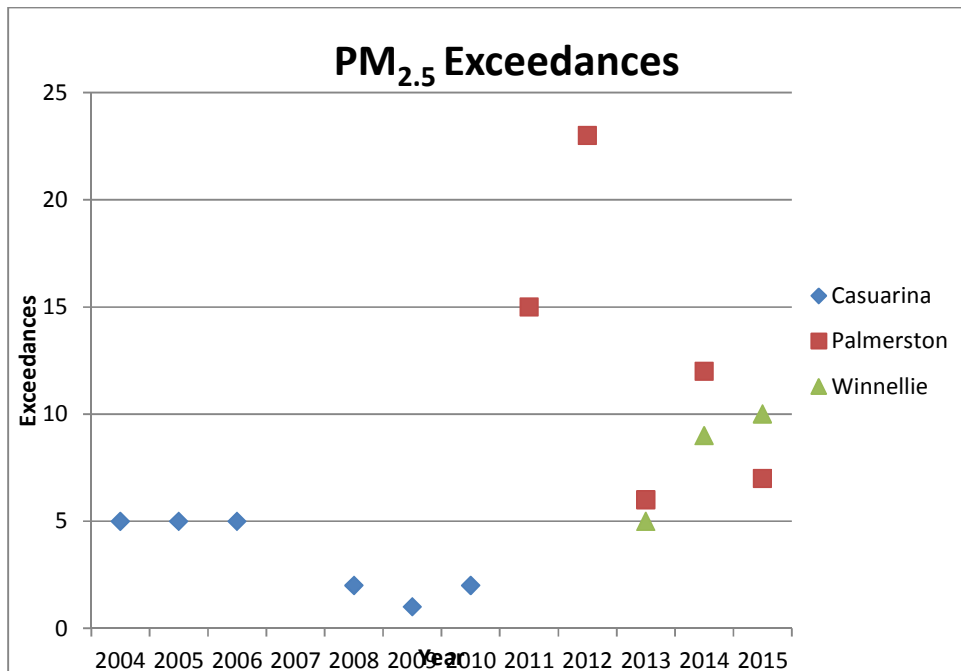


Figure 14

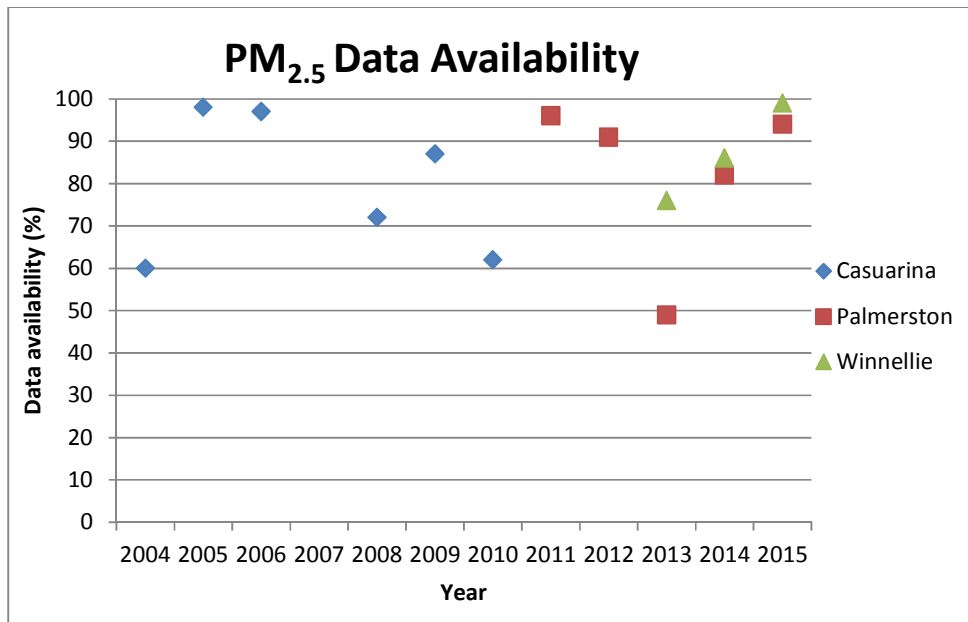


Figure 15

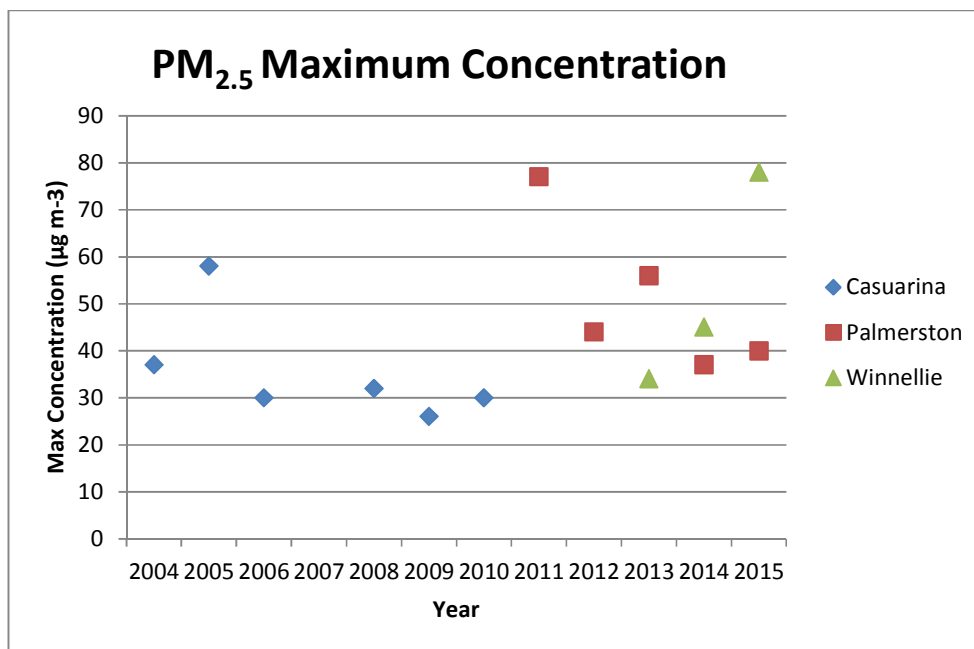


Figure 16

In the Darwin region, exceedances of the particulate standards are generally caused by smoke from burning vegetation. This connection has been made based on analysis of monitoring data, satellite imagery and observation of visible smoke on days when particulate standards have been exceeded. Analysis of fire-scar data (NAFI 2015) showing percentage area burnt by year

for the region likely to generate smoke impacting Darwin shows there is no clear long term relationship between area burnt and particulate levels at the monitoring stations.

As the total area burnt is not the key driver of particulate impacts on Darwin, other factors such as the timing of burns in relation to meteorological conditions are considered to play a significant part in total particulate impacts on population centres. Success in reducing these impacts may be possible by addressing the timing of burns in relation to predicted meteorological conditions.

Analysis of fire activity data and particulate monitoring shows that fires greater than 150 km from Darwin are rarely linked to exceedances of the Air NEPM standards. Near ground level conditions such as wind speed and temperature inversions are critical factors in determining the concentration of particulates from distant fires.

Monitoring of particles will contribute towards development of NT Government air quality policy and may provide the basis for the development of management strategies aimed at reducing the impact of particulates on urban populations in the future. Controlled burns present some opportunity for managing particulates. By timing the burn in consideration of wind direction and temperature inversion forecasts it may be possible to reduce particulate levels in population centres. There may also be scope for control of particulates from unintended fires (arson etc.) by pre-emptively burning areas identified for planned burning activity when conditions (wind direction and temperature inversion activity) were forecast to result in smoke being directed away from population centres.

Reference

NAFI (North Australian Fire Information) www.firenorth.org.au, *Fire Reports, Fire History by Year - 2008-2015, Darwin region*, Accessed July 2015