



# Air Quality Monitoring in Bunbury

## Purpose

The purpose of this Fact Sheet is to provide information on air quality monitoring that is undertaken by the Department of Environment Regulation (DER) in Bunbury.

## Introduction

Air quality monitoring is undertaken by DER at a number of regional and metropolitan locations within Western Australia in accordance with the National Environment Protection (Ambient Air Quality) Measure (NEPM).

DER is responsible for the operation and maintenance of 13 air quality monitoring sites in Western Australia, including Bunbury.

Bunbury's air quality monitoring site was founded in 2000 primarily to monitor smoke from bushfires, prescribed fire hazard reduction burns and wood-fired home heaters.

### Key Points - Air Quality in Bunbury

- Air quality in Bunbury is considered good on most days, although some poor air quality events occur in any given year.
- Poor air quality events have been primarily attributed to prescribed fire hazard reduction burns or bushfires during the past few years.
- Monitoring will continue in accordance with NEPM as the national standard.

## Our Monitoring

Air quality pollutants called particle matter are monitored in Bunbury.

Particle matter is matter found in air and is measured as PM<sub>10</sub> which is matter less than 10 micrometres in diameter and PM<sub>2.5</sub> which is matter less than 2.5 micrometres in diameter. These small particles can be harmful to humans and can be attributed to industrial activities and natural sources such as bushfires fires,

prescribed fire hazard reduction burns, dust storms and pollen.

## Air Quality Particle Criteria

The NEPM provides a number of criteria for particle matter as shown through Table 1.

Table 1. Air Quality Particle Criteria

Pollutant	Averaging Period	Maximum Concentration (micrograms per cubic metre)
Particle Matter as PM <sub>10</sub>	1 day	50 µg/m <sup>3</sup>
	1 year	25 µg/m <sup>3</sup>
Particle Matter as PM <sub>2.5</sub>	1 day	25 µg/m <sup>3</sup>
	1 year	8 µg/m <sup>3</sup>

All exceedences and events are reported and identified. If the exceedence is caused by a fire or dust event, and causes the one day average particle standards to exceed normal historical fluctuations and background levels, it is referred to as an exceptional event.

## Particle Levels in Bunbury

Bunbury has occasionally exceeded the daily (24 hour) standard of 50 µg/m<sup>3</sup> for PM<sub>10</sub> since 2006 as shown through Figure 1.

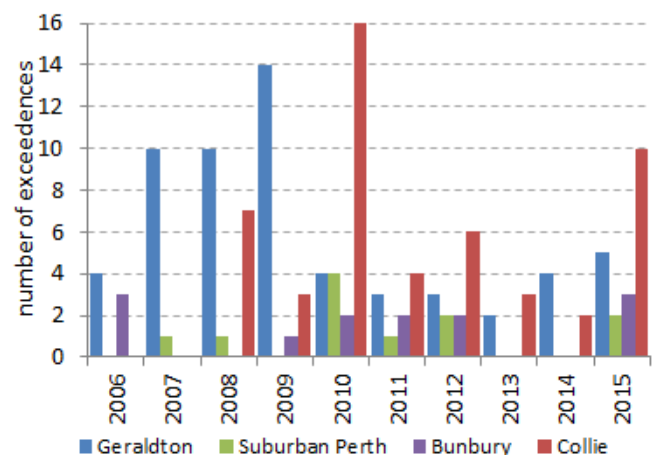
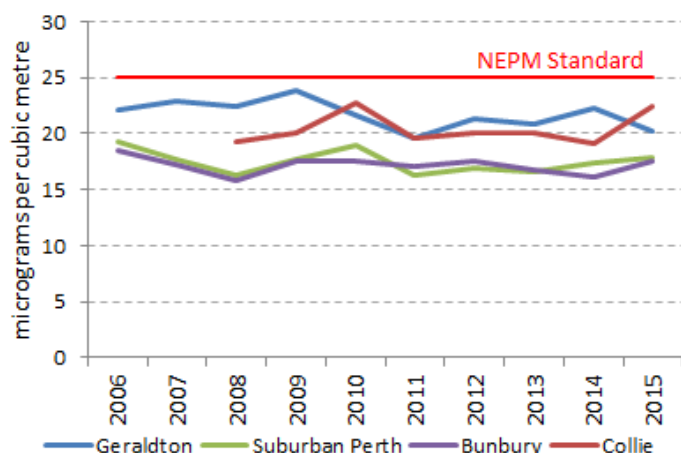


Figure 1. Number of times the NEPM 24 hour PM<sub>10</sub> standard was exceeded at a range of sites

Bunbury experienced three exceedences of the daily NEPM PM<sub>10</sub> standard in 2015. These were caused by either bushfires in Summer or Autumn or prescribed fire hazard reduction burns in Spring.

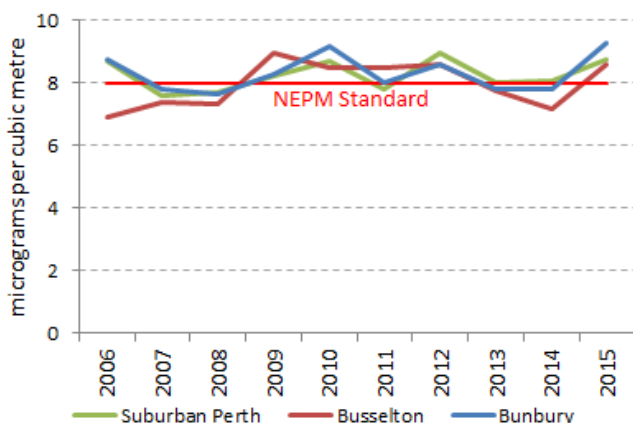
Since commencement of particle monitoring in 2000, Bunbury has not exceeded the NEPM annual standard for PM<sub>10</sub> size particles of 25 µg/m<sup>3</sup> (Figure 2). In 2015, the annual average PM<sub>10</sub> concentration in Bunbury was 17.5 µg/m<sup>3</sup>.



**Figure 2. Annual average PM<sub>10</sub> concentrations at a range of sites**

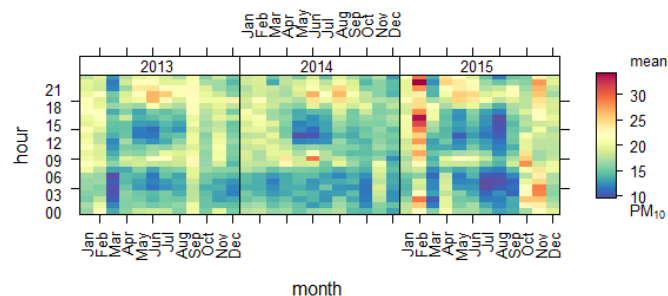
PM<sub>2.5</sub> particle monitoring has also been conducted in Bunbury since 2000. The NEPM daily standard for PM<sub>2.5</sub> size particulates of 25 µg/m<sup>3</sup> was exceeded, on average, between four and five times per year. In 2015, there were nine exceedences to the standard – all caused by either bushfires in Summer or Autumn or prescribed fire hazard reduction burns in Spring.

The annual average for PM<sub>2.5</sub> exceeded the NEPM standard 12 out of the previous 16 years.



**Figure 3. Annual average PM<sub>2.5</sub> concentrations at a range of sites**

As Figure 4 shows, over the past three years, elevated averaged particle levels at Bunbury have occurred predominantly in the evenings and mornings and during the drier Summer months. Additionally, the figure also shows there are some elevated periods overnight during the Winter period of May through to July.



**Figure 4. Average PM<sub>10</sub> concentrations at Bunbury for each hour over the last three years**

### Particles Explained

Airborne particles are commonly classified by size in terms of their equivalent aerodynamic diameter (EAD). An EAD is the diameter of a spherical particle of density 1 gram per cubic centimeter (the same density as water) which exhibits the same aerodynamic behavior as the particle in question. Particles are sampled and described on the basis of their EAD but usually simply called the particle size.

PM<sub>10</sub> particles are any substances that have an EAD less than or equal to 10 micrometres in diameter. PM<sub>2.5</sub> are any substances that have an EAD less than or equal to 2.5 micrometres in diameter. Particles in this size range make up a large portion of dust that can be drawn into the lungs. Larger particles tend to be trapped in the nose, mouth or throat<sup>1</sup>.

The important thing to note is that PM<sub>10</sub> and PM<sub>2.5</sub> is not one particular substance, but simply a classification of particle or dust size.

<sup>1</sup> [National Pollutant Inventory, Particulate matter \(PM<sub>10</sub> and PM<sub>2.5</sub>\)](#)

## More Information

For advice on the Regulations, or related matters, please contact Licensing and Approvals on 6467 5000.

This document is available in alternative formats and other languages on request.

## Related Documents

Additional publications about Air Quality are available online from [www.der.wa.gov.au/airquality](http://www.der.wa.gov.au/airquality), or can be requested by phoning 6467 5000.

## Legislation

This document is provided for guidance only. It should not be relied upon to address every aspect of the relevant legislation. Please refer to the State Law Publisher (SLP) for copies of the relevant legislation, available electronically from the SLP website at [www.slp.wa.gov.au](http://www.slp.wa.gov.au).

## Document Versions

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## Legal Advice

The information provided to you by DER in relation to this matter does not constitute legal advice. Due to the range of legal issues potentially involved in this matter, DER recommends that you obtain independent legal advice.