

## Sellicks Beach Air Quality Summary Report – December 2016

Issued January 2017

### Introduction

One of the EPA's environmental goals is good quality air. To support this goal the EPA conducts ambient air quality monitoring at locations around the state.

This air quality summary is based on data from the EPA's mobile monitoring station in the Blue Water Estate on Arcadia Crescent, Sellicks Beach. This station was deployed on 14 January 2016 to monitor total suspended particulates (TSP), particles (PM<sub>10</sub> and PM<sub>2.5</sub>) and meteorological conditions, as part of a short term program to evaluate local air quality. The EPA will continue to monitor until 2016–17 summer to better understand local sources.



Total suspended particulates (TSP) are a class of particles which have equivalent aerodynamic diameters less than 50 µm and includes a mixture of large and fine particles. The larger particles that have equivalent aerodynamic diameters greater than 10µm are generally trapped in our noses and throats, so they do not reach the lungs; however, they may cause nuisance and soiling of surfaces. That said, PM<sub>10</sub> particles may also be associated with visible dust, which is why PM<sub>10</sub> is often measured in conjunction with TSP.

Fine particles are often a complex mixture of materials arising from many sources, and are generally grouped into two categories, called PM<sub>10</sub> and PM<sub>2.5</sub>. Fine particles are able to enter the lungs and are known to have health effects.

Particles can originate from a variety of sources such as local activities, motor vehicles, domestic activities, or in areas such as Sellicks, they may arise from wind-blown soil materials and even sea salt.

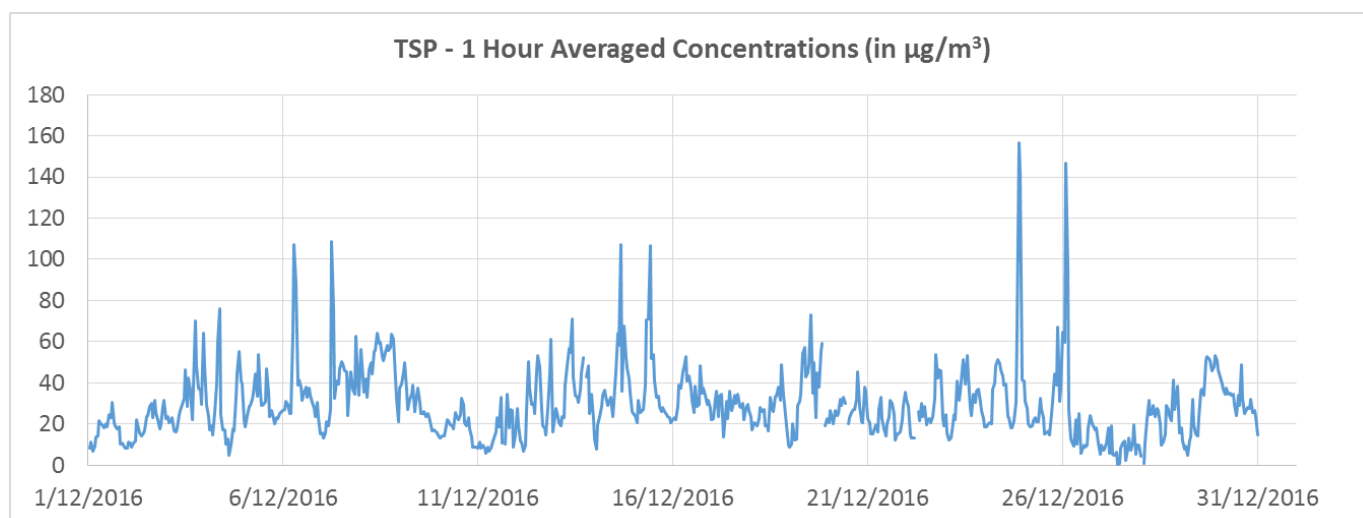
Data in this report are assessed against ground level concentration criteria for PM<sub>10</sub> and PM<sub>2.5</sub>. Further information about ambient air quality is available on the EPA [website](#).

## Total suspended particulates (TSP)

TSP can provide an indication of the levels of visible nuisance dust in an area. The 1-hour averages of TSP levels exhibit short term elevated values at times, indicating the presence of visible dust. It is important to note that there are no health-based ground level concentration criteria for TSP, as TSP is largely a cause of environmental nuisance.

Following are some of the high concentration TSP events recorded in December:

- On 24 December at 9 pm TSP concentrations reached a maximum of 157 µg/m<sup>3</sup>, coincident with winds from the south east and wind speeds of about 6.8 m/s (i.e. 24 km/hr).
- On 26 December at 2 am TSP concentrations reached a maximum of 147 µg/m<sup>3</sup> when wind was coming from a south-south easterly direction with an average wind speed of about 8.5 m/s (ie 31 km/hr).



## Polar plots

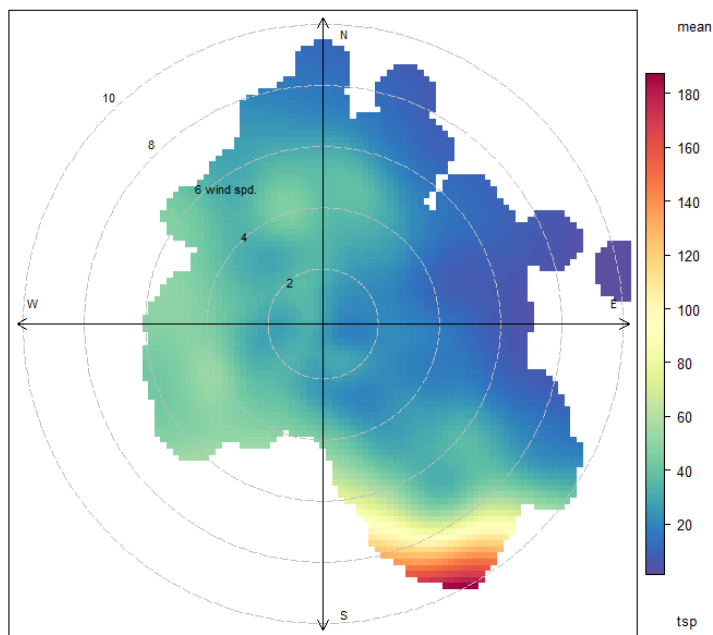
The polar plot is a graph describing how short term (10-minute) concentrations of a pollutant vary by both wind speed and direction, to illustrate where pollution may be coming from at any given time during the day, and the conditions under which particular concentrations are recorded. Where 24-hour health-based standards apply, for example, in the case of PM<sub>10</sub>, these short term averages do not provide direct information about potential health impacts on communities. This is best described in the subsequent graphs of daily averages.

The polar plots present 10-minute average concentrations of TSP and PM<sub>10</sub> respectively as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red blobs indicate higher average concentrations, while blue blobs show very low average concentrations. These colours are scaled and adjusted relative to the highest 10-minute concentration recorded during the month. The distance of the blobs from the centre of

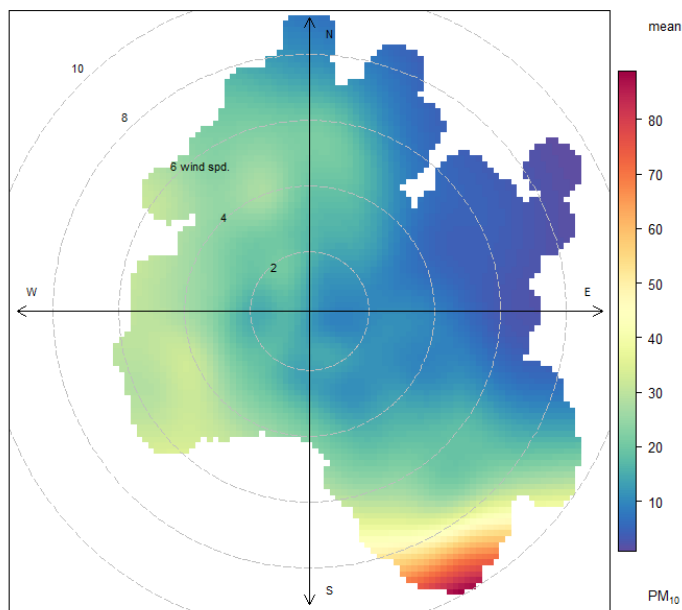
the graph indicate how fast the wind was blowing on average, when the readings were recorded. So the centre point is 'dead calm'.

Wind speed and direction are important variables which can assist in identifying different sources. For example, ground level plumes such as from road traffic or local dust tend to promote higher particle concentrations when wind speeds are low. In this report, 10-minute wind speed, direction, TSP and PM<sub>10</sub> data have been used to produce the polar plots (using available meteorological data from December 2016).

The polar plot for TSP indicates that the majority of measured TSP originated from the south-southeast, with wind speeds from 8 to 10 m/s (about 29 to 36 km/hr). The polar plot for PM<sub>10</sub> exhibits a similar trend.



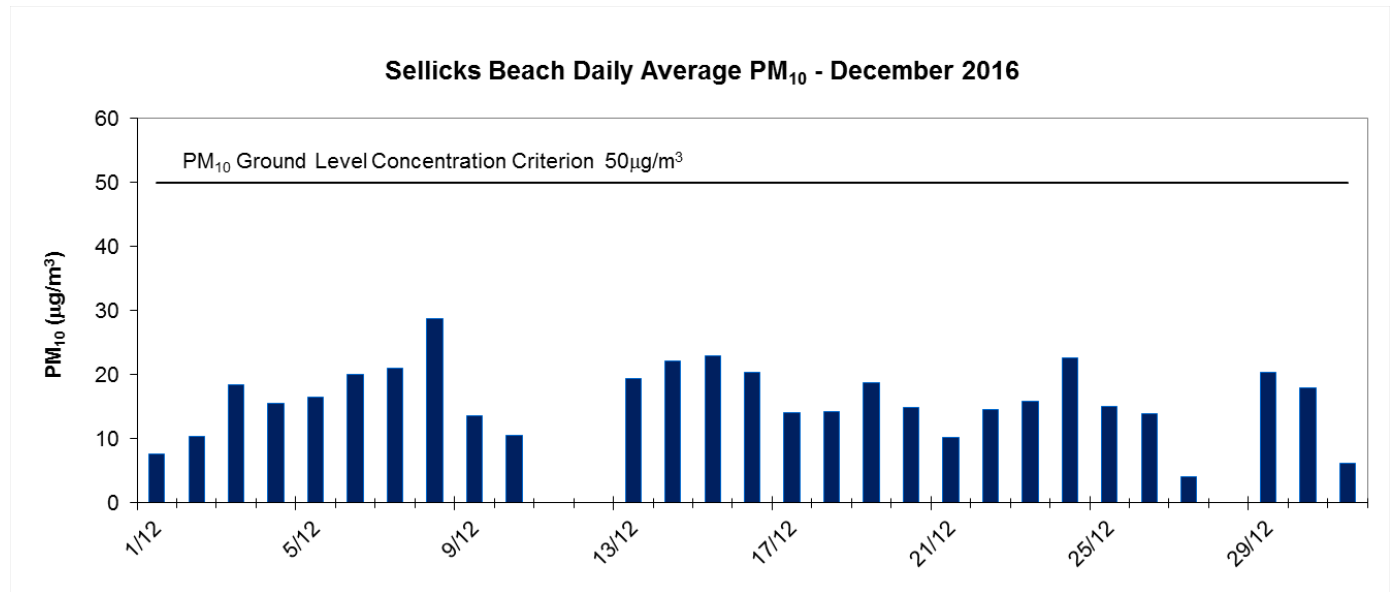
**Polar plot for TSP (10-minute averaged data in µg/m<sup>3</sup>), December 2016**



**Polar Plot for PM<sub>10</sub> (10-minute averaged data in µg/m<sup>3</sup>), December 2016**

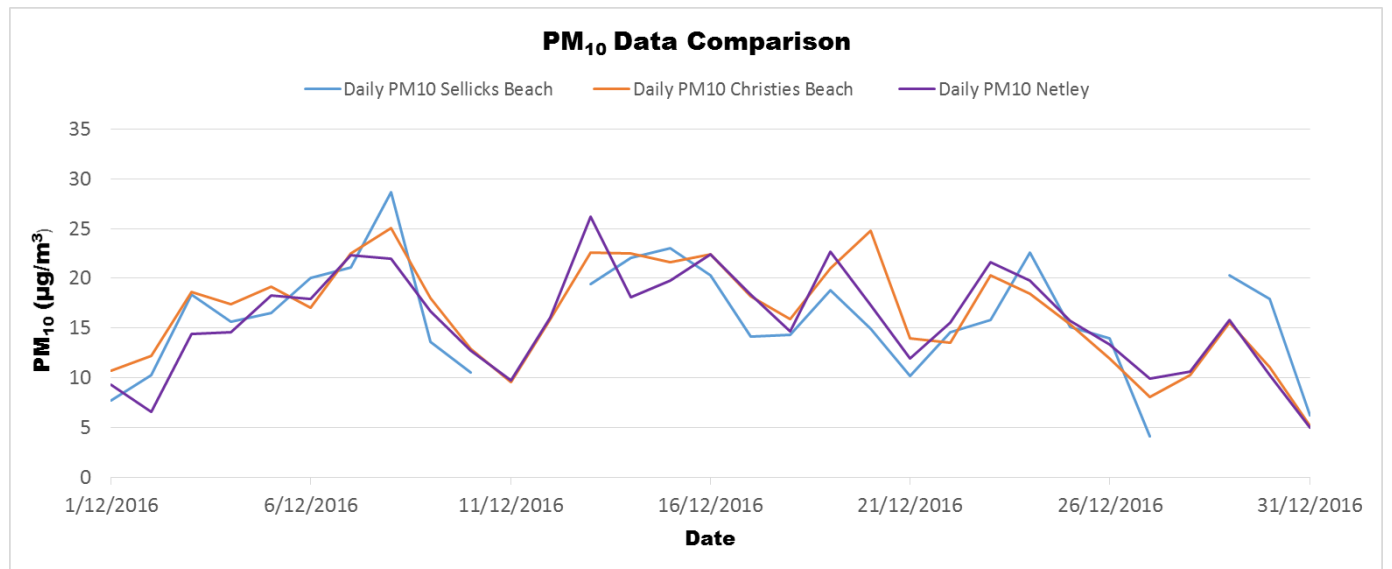
## Particles (PM<sub>10</sub>)

There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> (50 µg/m<sup>3</sup>) at Sellicks Beach in December 2016. Gaps in the data were due to technical issues with the instrument.



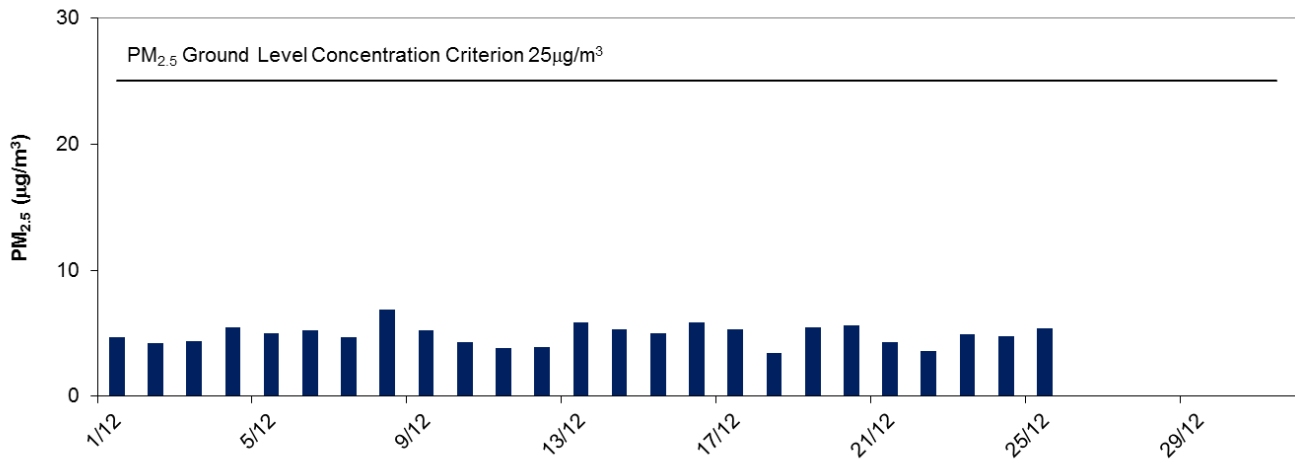
## PM<sub>10</sub> data comparison

PM<sub>10</sub> data from Sellicks Beach, Christies Beach and Netley stations are presented in the graph below. PM<sub>10</sub> levels at all three stations have exhibited a similar trend during the monitoring period, differing on a few occasions, most likely because of local sources or activities. Gaps in the data from Sellicks Beach monitoring station were due to technical issues with the instrument.



## Particles (PM<sub>2.5</sub>)

There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> (25 µg/m<sup>3</sup>) at Sellicks Beach in December 2016. Monitoring data from 26 to 31 December is unavailable due to the weather causing technical issues with the instrument.

**Sellicks Beach Daily Average PM<sub>2.5</sub> - December 2016****Further information****Legislation**

[Online legislation](#) is freely available. Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet  
 Adelaide Service SA Centre  
 108 North Terrace  
 Adelaide SA 5000

Telephone: 13 23 24  
 Facsimile: (08) 8204 1909  
 Website: <[shop.service.sa.gov.au](http://shop.service.sa.gov.au)>  
 Email: <[ServiceSAcustomerservice@sa.gov.au](mailto:ServiceSAcustomerservice@sa.gov.au)>

**General information**

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