

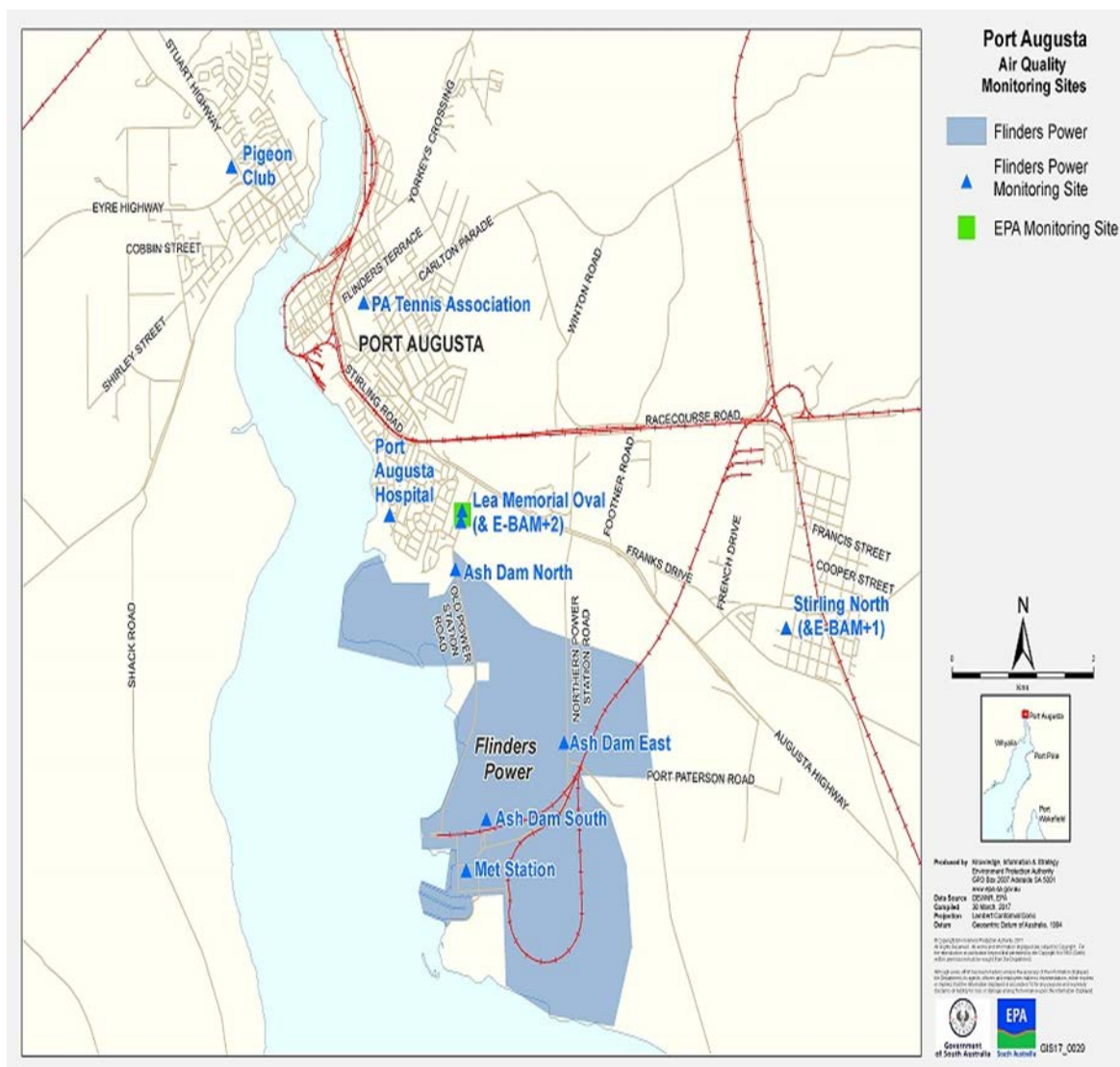
### Port Augusta air quality summary report – September 2017

Issued October 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 monthly air quality summary report is based on the data from the mobile station at Lea Memorial Oval, Port Augusta.



The EPA mobile monitoring station was installed at Lea Memorial Oval, Port Augusta on 9 March 2017. This station is equipped with continuous monitors for monitoring 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.

Total suspended particulates (TSP) is 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 10 µm are generally trapped in our noses and throats, so they do not reach to the lungs; however, they may cause nuisance and soiling of surfaces.

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>. Sources such as wind-blown dust, agricultural activities, motor vehicles and domestic activities might generate fine particles that affect the air quality from the region. Fine particles are able to enter the lungs and are known to have health effects.

**Polar plot type 1** provides a graphical method to assist in determining the sources of airborne pollutants. Polar plots use 10-minute wind direction data to plot against pollutant concentration. Where the percentage of pollutant is greater than the percentage of wind from any given direction, this indicates a higher than average amount of pollutant and a potential source in that direction.

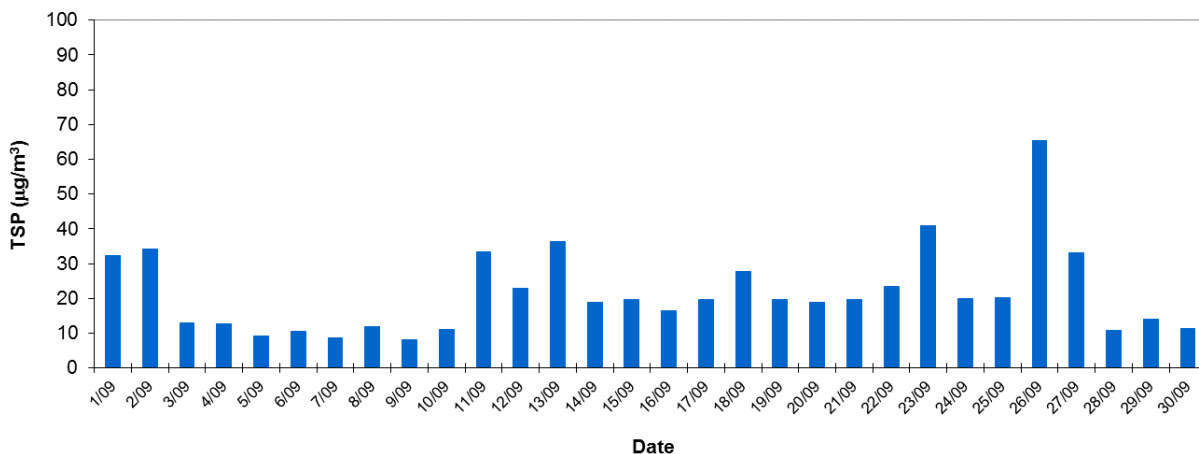
**The polar plot type 2** presents 10-minute average concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> respectively as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red areas indicate higher average concentrations, while blue areas 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 coloured area from the centre of the graph indicates how fast the wind was blowing on average, when the readings were recorded. So the centre point is “dead calm”. 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.

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](#).

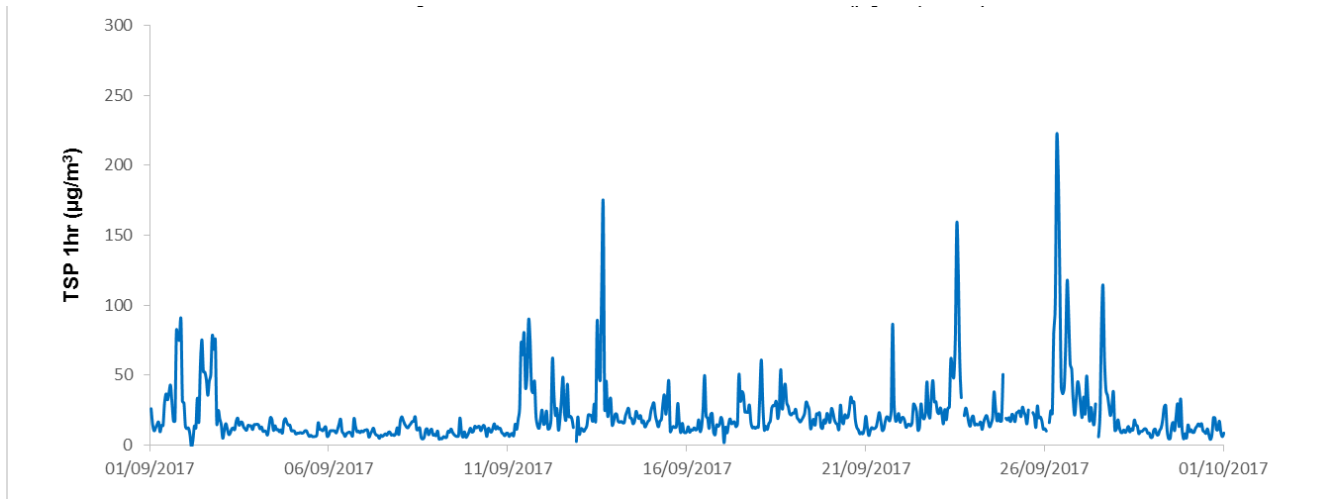
### Total suspended particulates (TSP)

TSP can provide an indication of the levels of visible nuisance dust in an area. One-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 it is largely a cause of environmental nuisance.

The graph below displays the 24-hour average (daily) TSP at Lea Memorial Oval in September 2017.



Port Augusta Lea Memorial Oval daily average TSP, September 2017

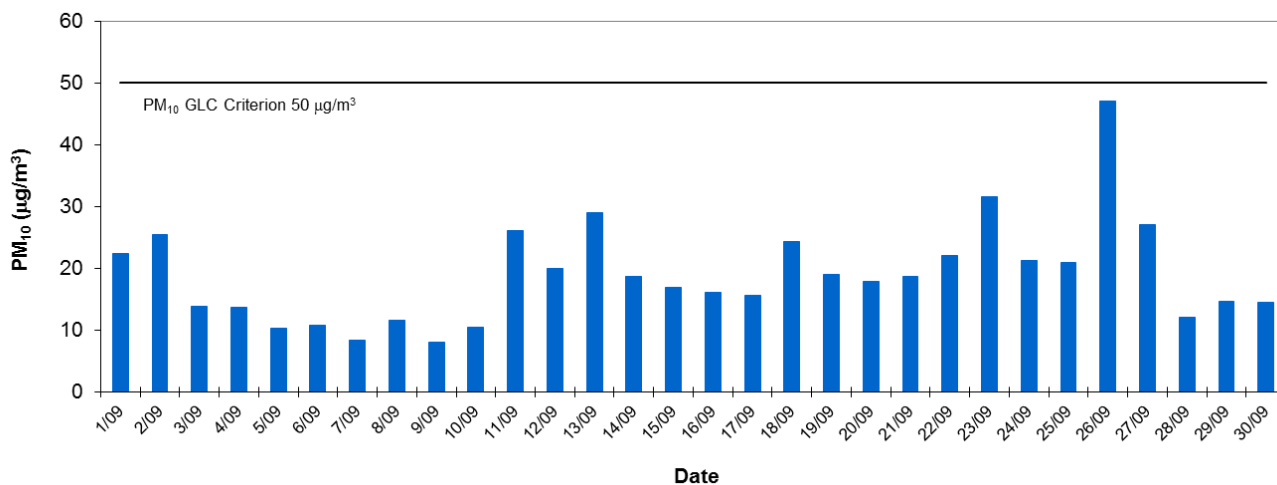


**Port Augusta Lea Memorial Oval one-hour TSP, September 2017**

There was one high TSP concentration event which was on 26 September at 8am. TSP concentrations reached to 219  $\mu\text{g}/\text{m}^3$  with wind from an east-northeast direction ( $64^\circ$ ) at a wind speed of 12 m/s (23 knots).

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

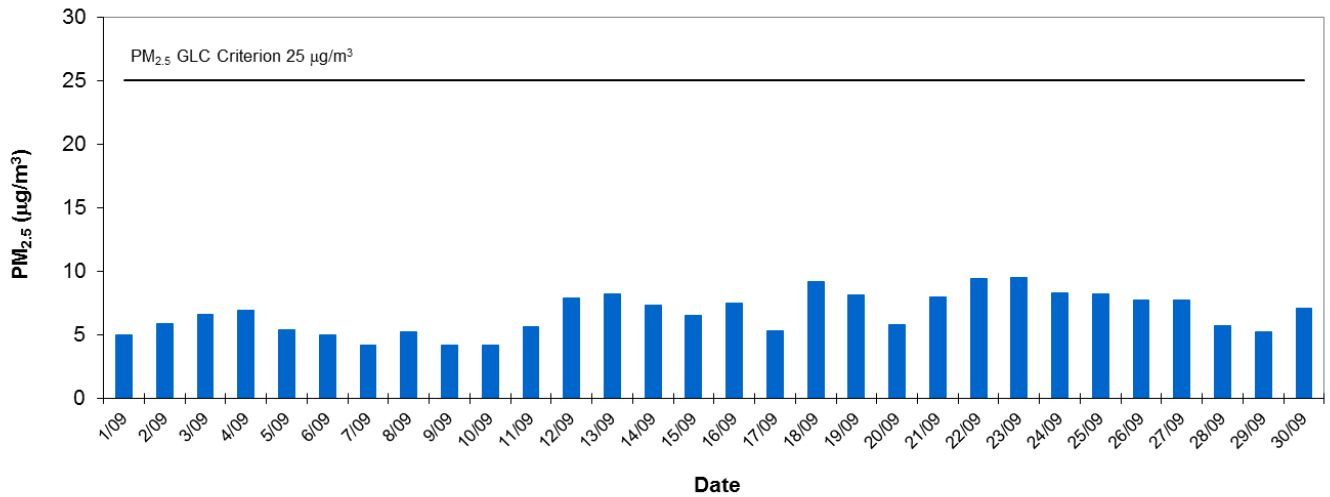
There were no exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM<sub>10</sub> (50  $\mu\text{g}/\text{m}^3$ ), at Lea Memorial Oval in September 2017.



**Port Augusta Lea Memorial Oval daily average PM<sub>10</sub>, September 2017**

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

There were no exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM<sub>2.5</sub> (25  $\mu\text{g}/\text{m}^3$ ), at Lea Memorial Oval in September 2017

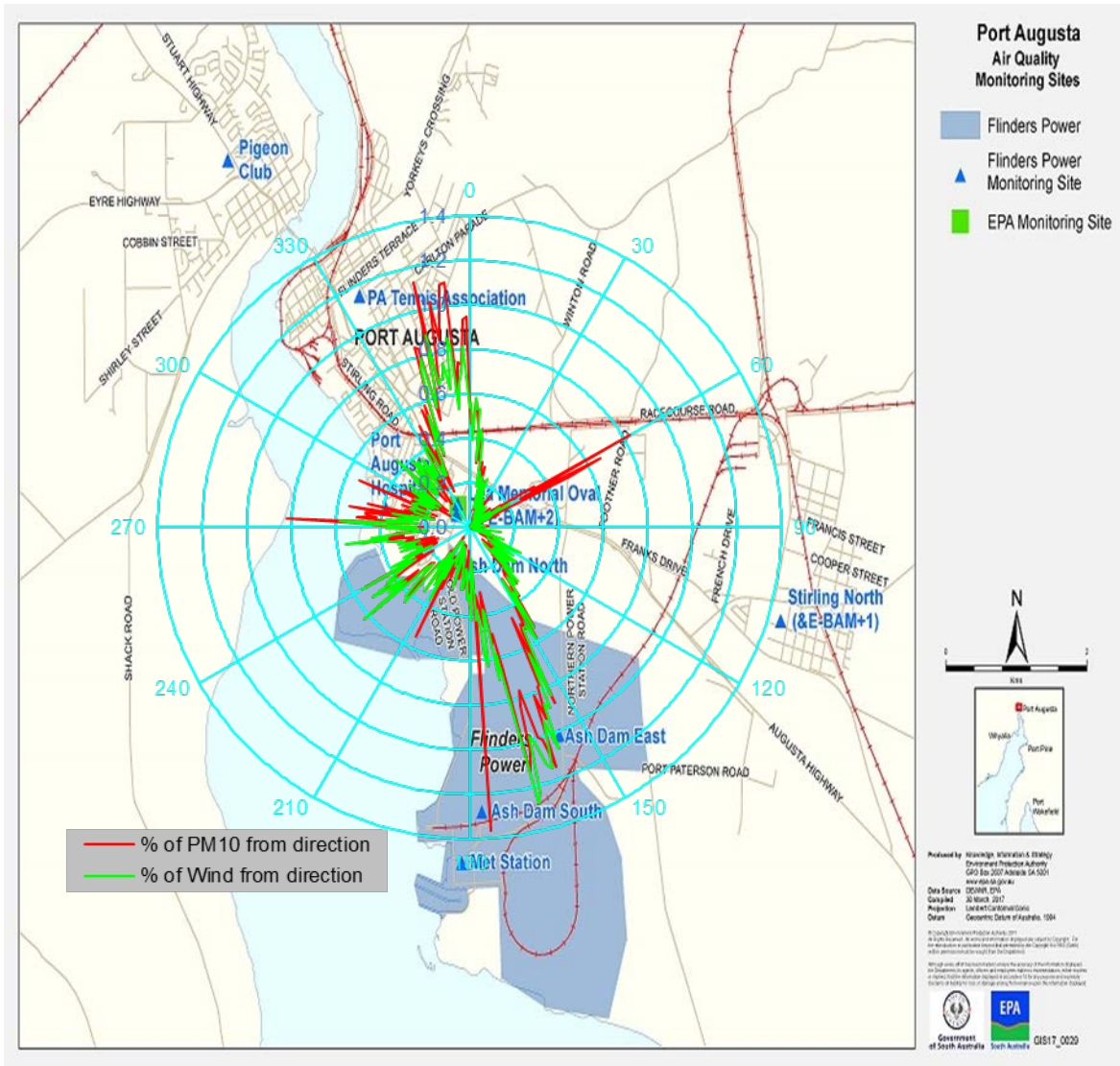


Port Augusta Lea Memorial Oval daily average PM<sub>2.5</sub>, September 2017

## Polar plots

### PM<sub>10</sub> polar plot

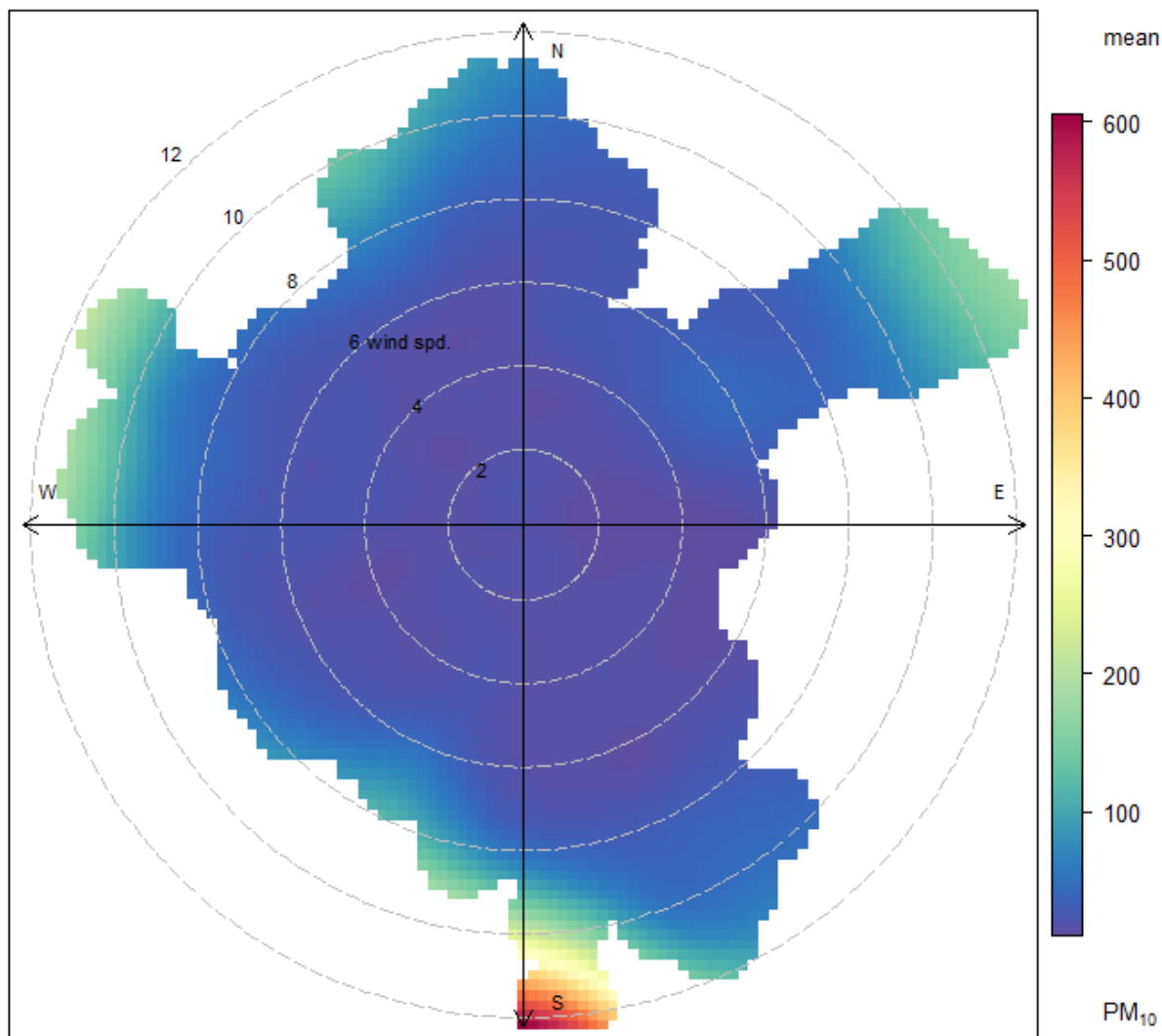
The polar plot Type 1 showed predominately that a higher percentage of PM<sub>10</sub> and wind came from the sectors of 330° to 360° (north-northwest direction) and 150° to 180° (south-southeast direction). At several times where a percentage of PM<sub>10</sub> particle was higher than a percentage of wind from north, east-northeast and south directions that indicates the sources of PM<sub>10</sub> particle were from these directions.



Polar plot Type 1

### Polar plot Type 2

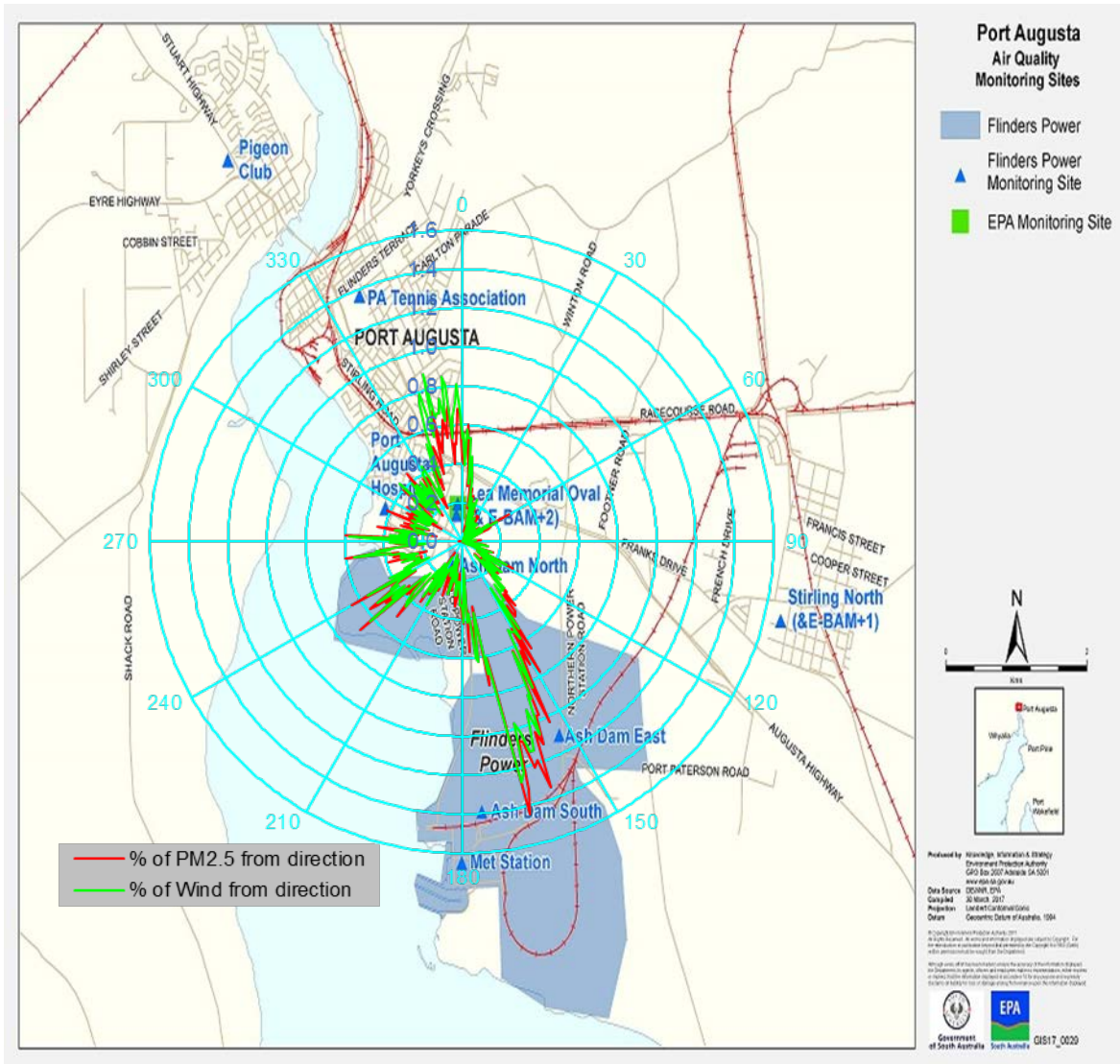
Polar plot type 2 showed that PM<sub>10</sub> particles came from all direction, however a stronger wind events (10-12 m/s) from a south direction contributed to high PM<sub>10</sub> concentrations.



**Polar plot Type 2**

**PM<sub>2.5</sub> polar plot**

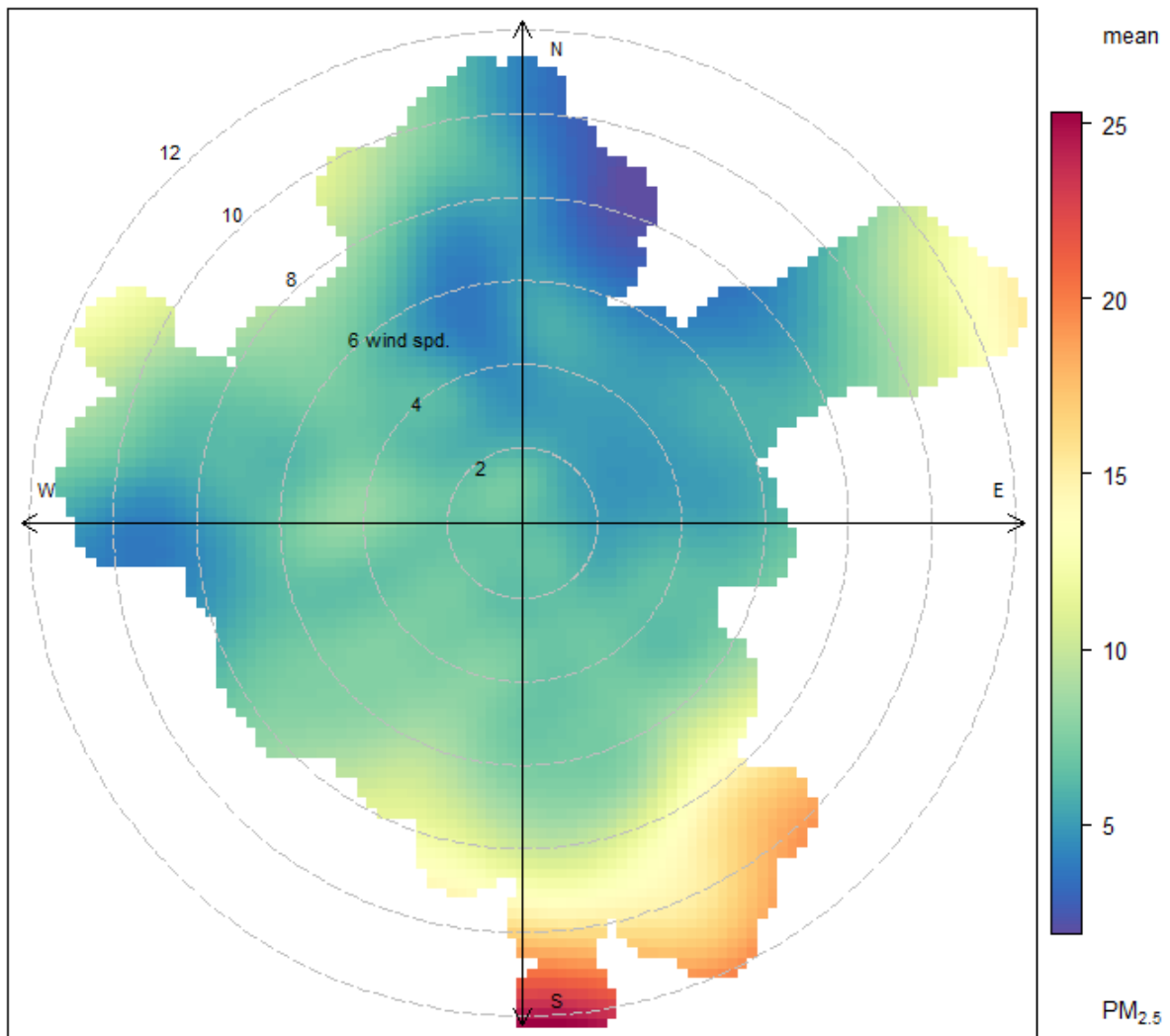
The polar plot Type 1 showed that predominant wind came from the two wind sectors of 300° to 360° (north-northwest direction) and 150° to 180°(south-southeast direction) and majority of PM<sub>2.5</sub> particles came from these directions.



Polar plot Type 1

**Polar plot Type 2**

Polar plot Type 2 showed that PM<sub>2.5</sub> particle came from all direction, however when wind speed was above 8 m/s higher concentrations were detected especially from south and southeast directions.

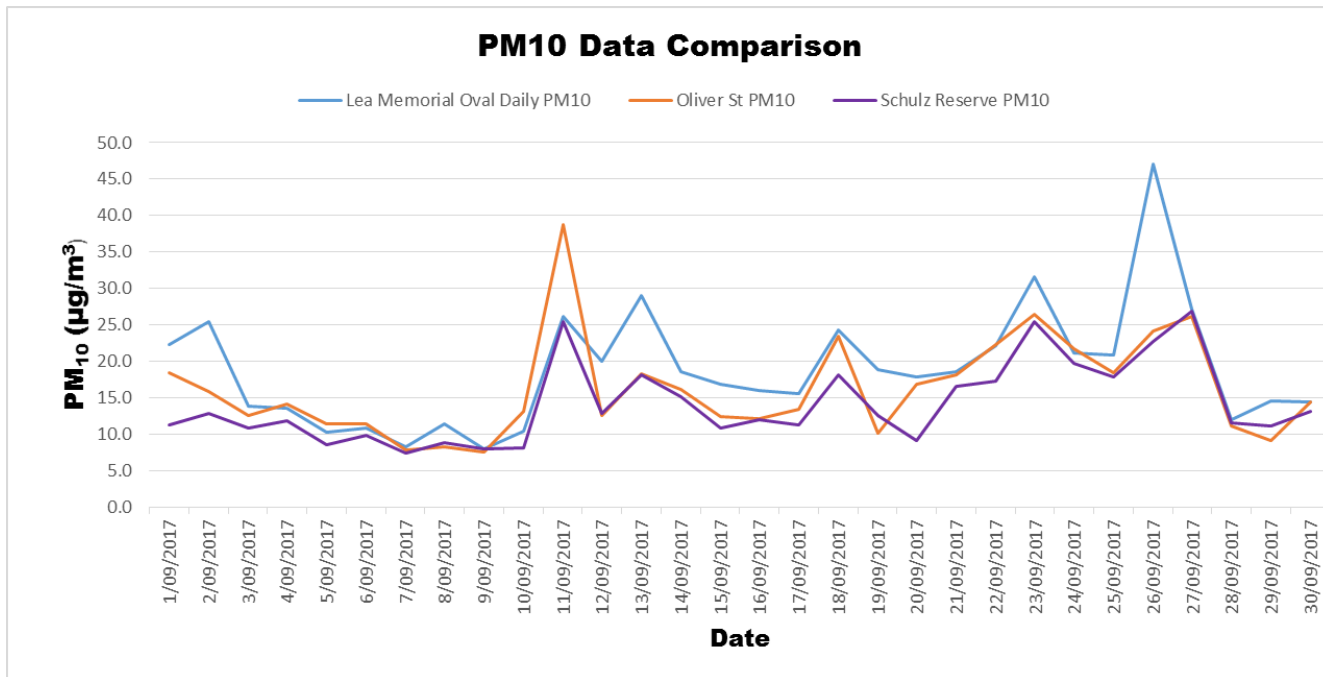


**Polar plot Type 2**

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

PM<sub>10</sub> data from Lea Memorial Oval, Oliver Street (Port Pirie) and Schulz Reserve (Whyalla) stations are presented in the following graph. PM<sub>10</sub> levels at Lea Memorial Oval station have exhibited a similar trend and concentrations to the other two stations during the monitoring period, except on 26 September due to strong winds from north/northeast directions.





## 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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 Adelaide SA 5001

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