

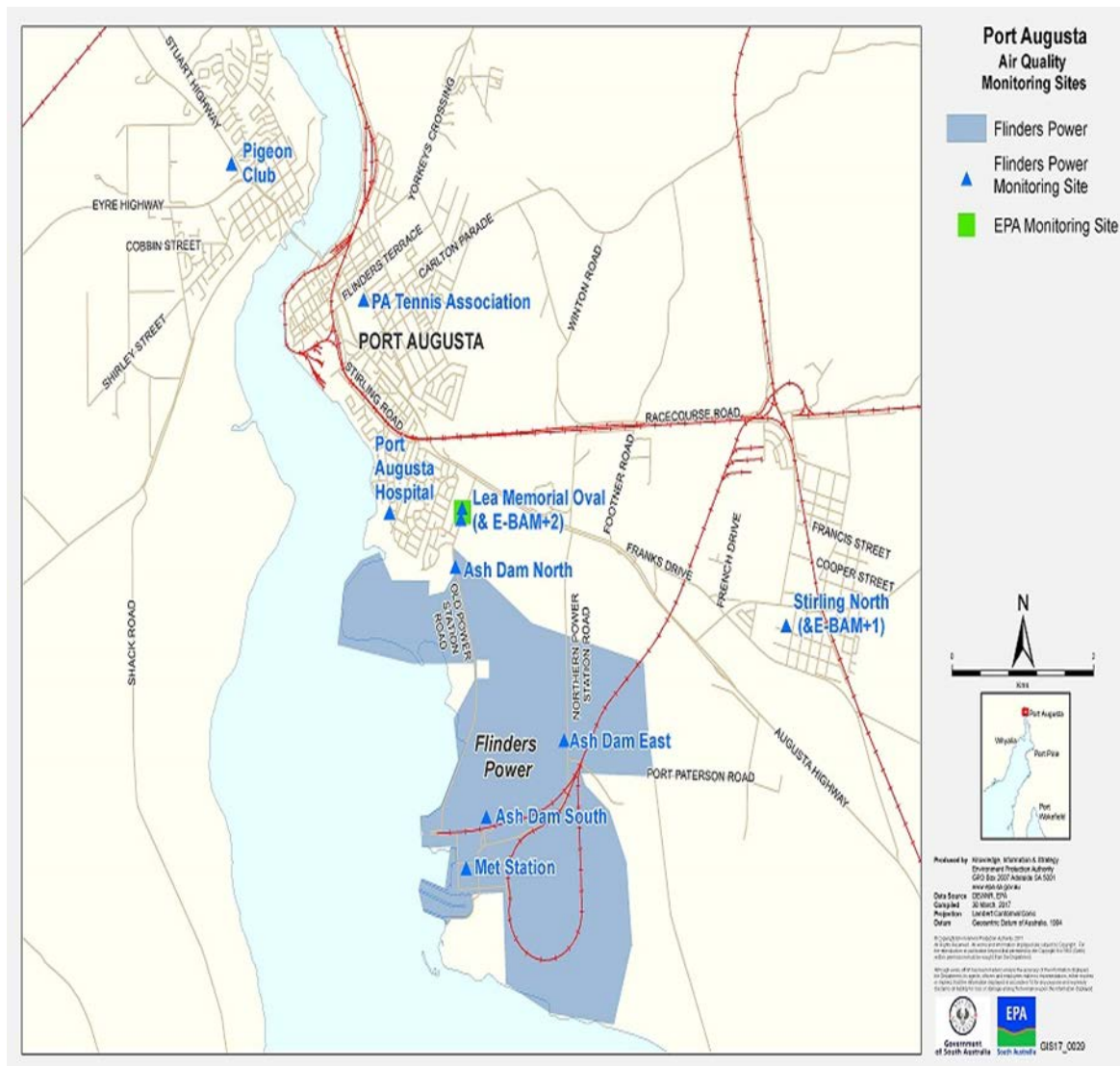
Port Augusta air quality summary report – January 2018

Issued February 2018

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 (PM₁₀ and PM_{2.5}) 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 PM₁₀ and PM_{2.5}. 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.

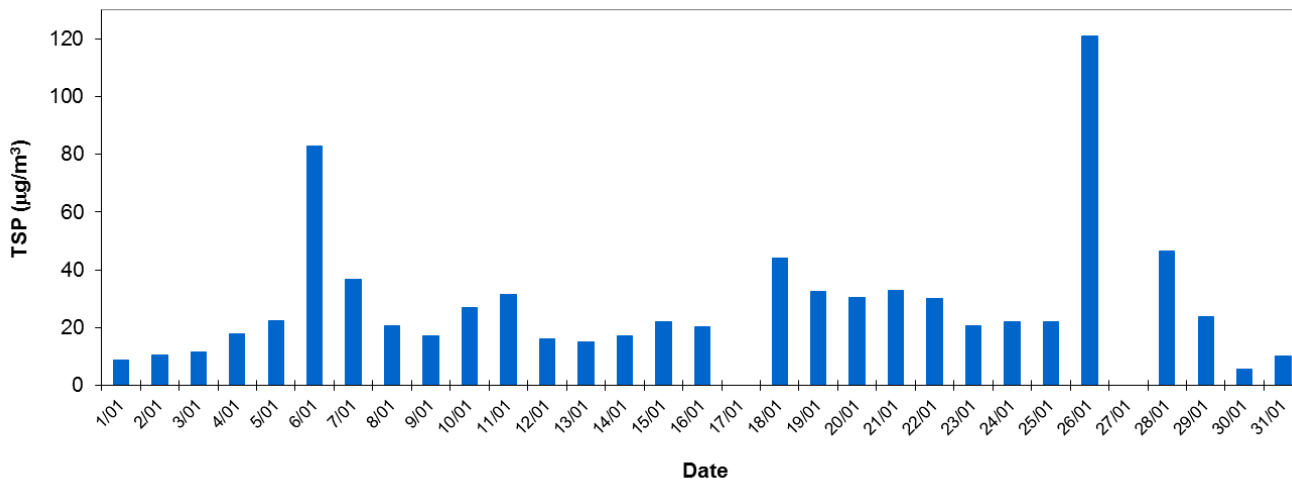
The polar plot type 2 presents 10-minute average concentrations of PM₁₀ and PM_{2.5} respectively as different colours, plotted against the direction from which the winds were blowing, centred on the monitoring station. Red areas indicate higher average concentrations, while blue areas show very low 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 PM₁₀, 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 PM₁₀ and PM_{2.5}. Further information about ambient air quality is available on the EPA [website](#).

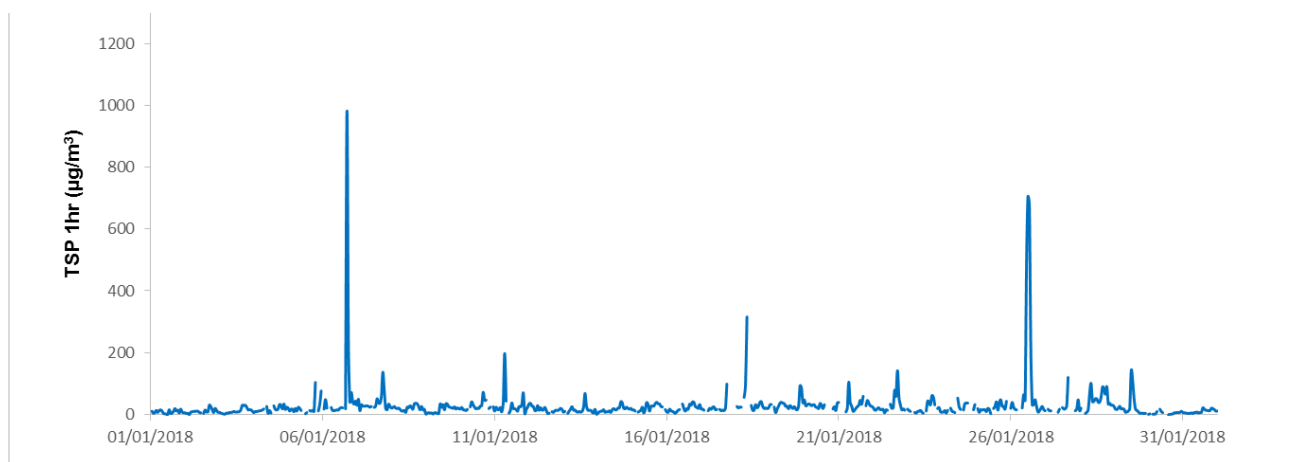
Total suspended particulates (TSP)

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 January 2018



Port Augusta Lea Memorial Oval daily average TSP, January 2018



Port Augusta Lea Memorial Oval one-hour TSP, January 2018

A table where high TSP events are listed below. Majority of High TSP concentration events were caused by windblown dust from south-southeast directions; which means these events had potential to carry dust from the former power station site and contribute to monitored dust levels.

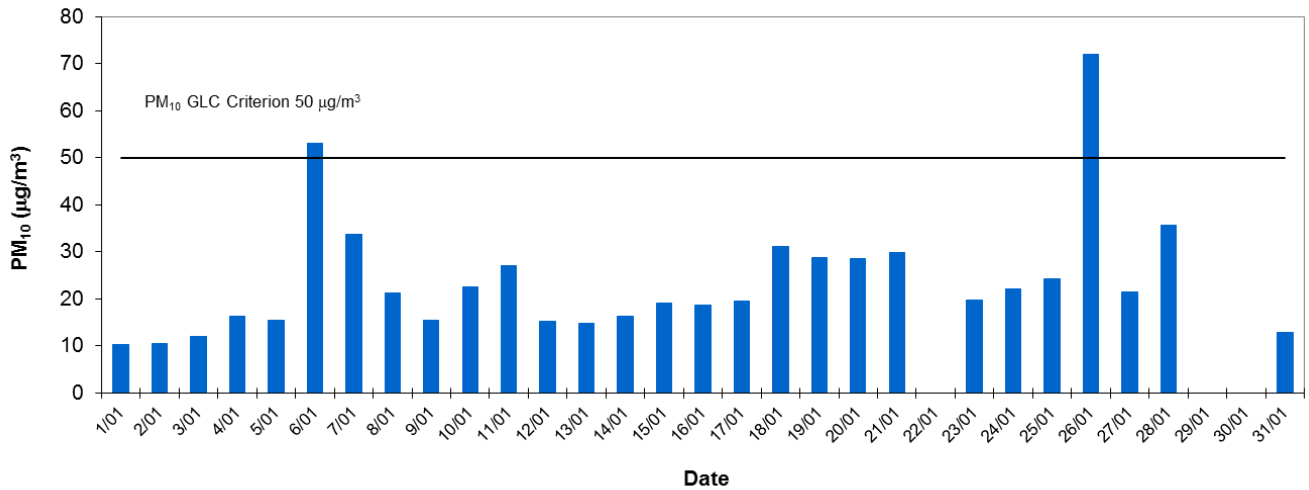
Table of high TSP concentration events

Date/Time	1 hr TSP (µg/m³)	Wind speed (m/s)	Wind speed (km/hr)	Wind direction (degree)	Wind direction
6/01/2018 17:00	980	11.4	41	146	South-southeast
6/01/2018 18:00	238	11.9	42.8	152	South-southeast
18/01/2018 8:00	315	0.7	2.5	211	Southwest
26/01/2018 11:00	486	10.4	37.4	160	South-southeast
26/01/2018 12:00	705	11.9	42.8	158	South-southeast
26/01/2018 13:00	677	10.6	38.2	161	South-southeast
26/01/2018 14:00	215	10.5	37.8	167	South-southeast

Particles (PM₁₀)

There were two exceedances of the health-based South Australian 24-hour ground level concentration criterion for PM₁₀ (50 µg/m³), at Lea Memorial Oval in January 2018.

- Both PM₁₀ exceedances on 6th and 26th January were due to windblown dust from south-southeast directions. These exceedances coincided with the high TSP events as listed in the table above.
- Data gaps on 22, 29 and 30 were due to instrument faults with suspected interferences from weather conditions.

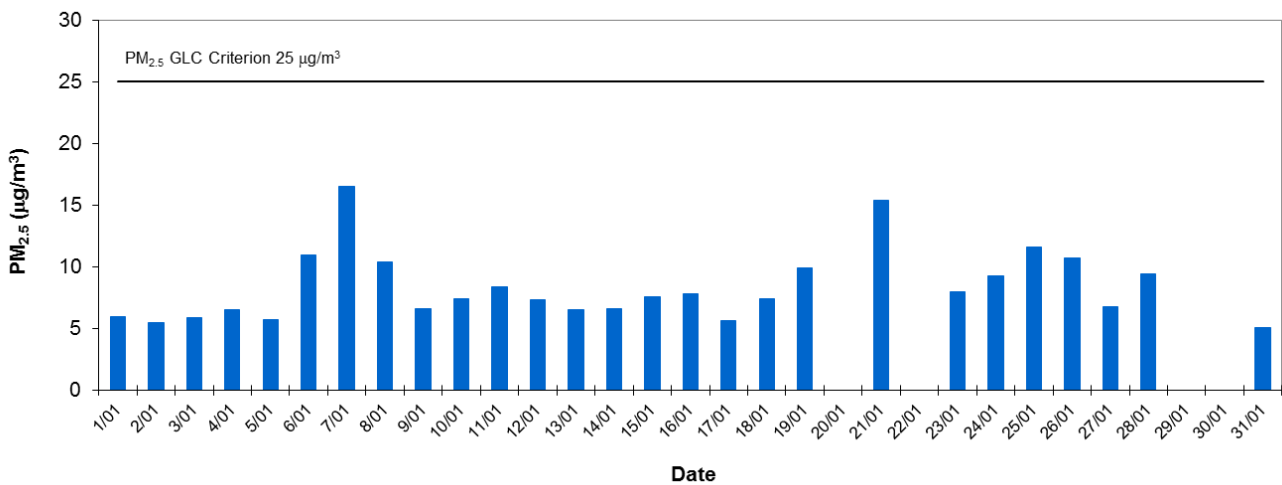


Port Augusta Lea Memorial Oval daily average PM₁₀, January 2018

Particles (PM_{2.5})

There were no exceedances of the health-based South Australian 24-hour ground level concentration criterion for PM_{2.5} (25 µg/m³), at Lea Memorial Oval in January 2018.

- Data gaps on 20, 22, 29 and 30 were due to instrument faults with suspected interferences from weather conditions

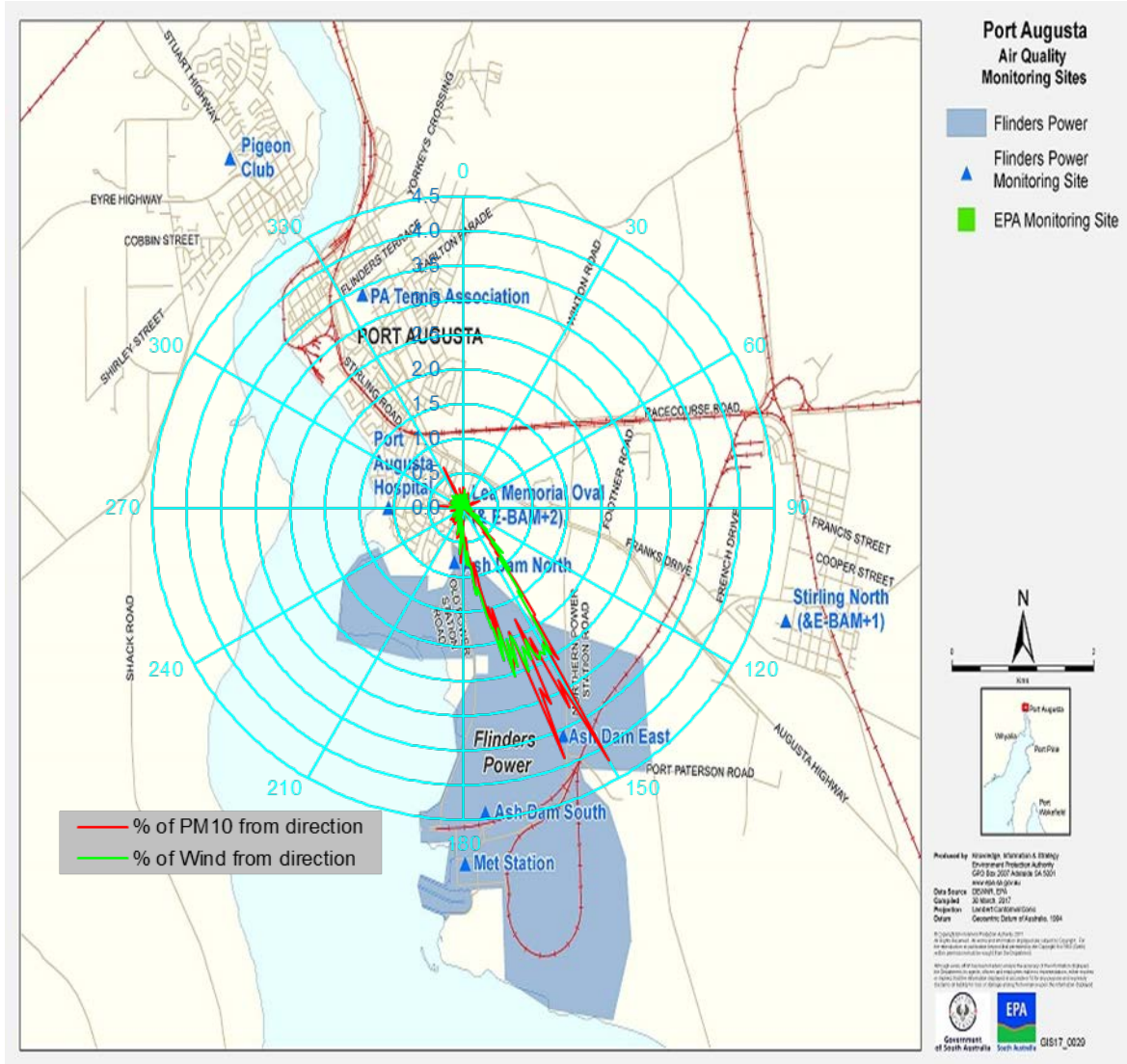


Port Augusta Lea Memorial Oval daily average PM_{2.5}, January 2018

Polar plots

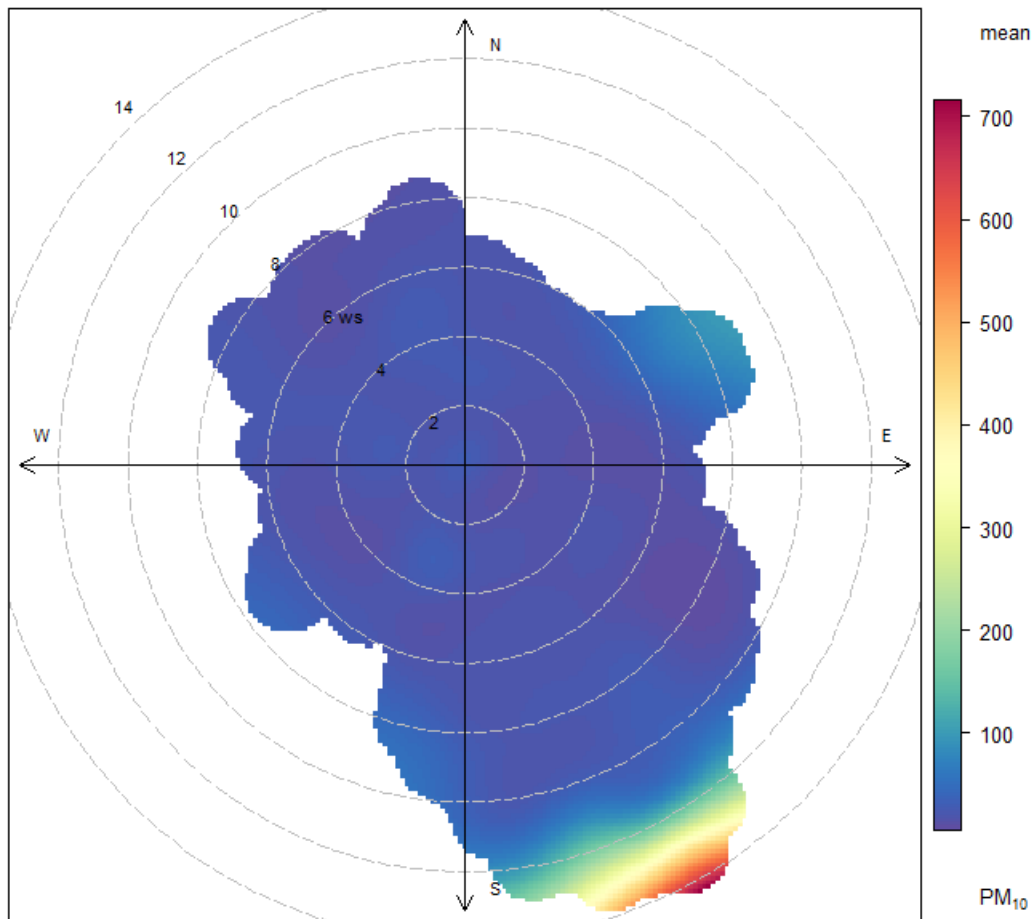
PM₁₀ polar plot

The polar plot Type 1 showed that a higher percentage of PM₁₀ and wind came from the sectors of 150° to 180° (south-southeast direction). At times where a percentage of PM₁₀ particle was higher than a percentage of wind that indicated the sources of PM₁₀ particle were from these directions.



Polar plot Type 2

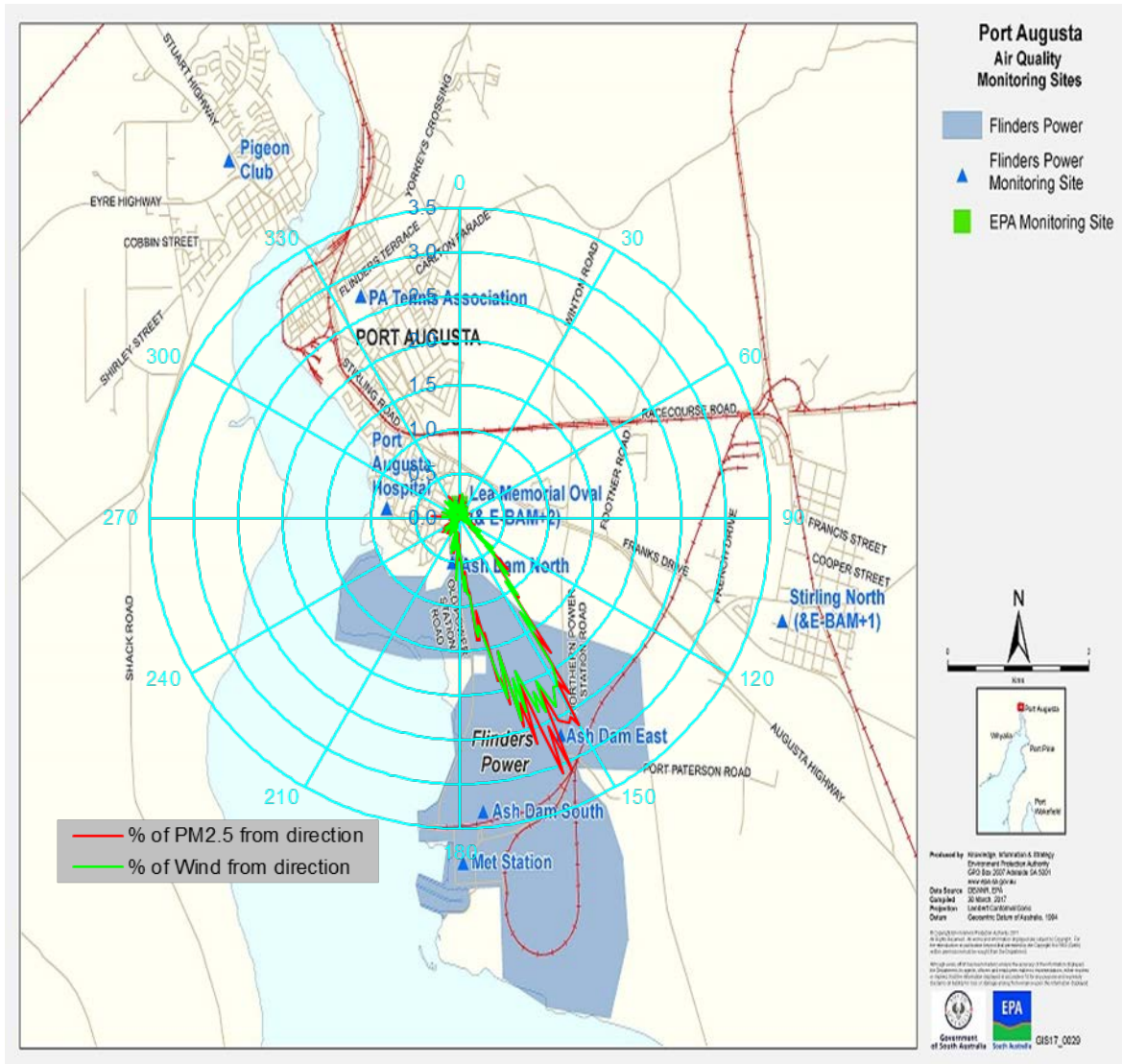
Polar plot type 2 showed that PM₁₀ particles came from all directions, however stronger wind (above 10 m/s) from south-southeast directions dominated short-term PM₁₀ concentration readings.



Polar plot Type 2

PM_{2.5} polar plot

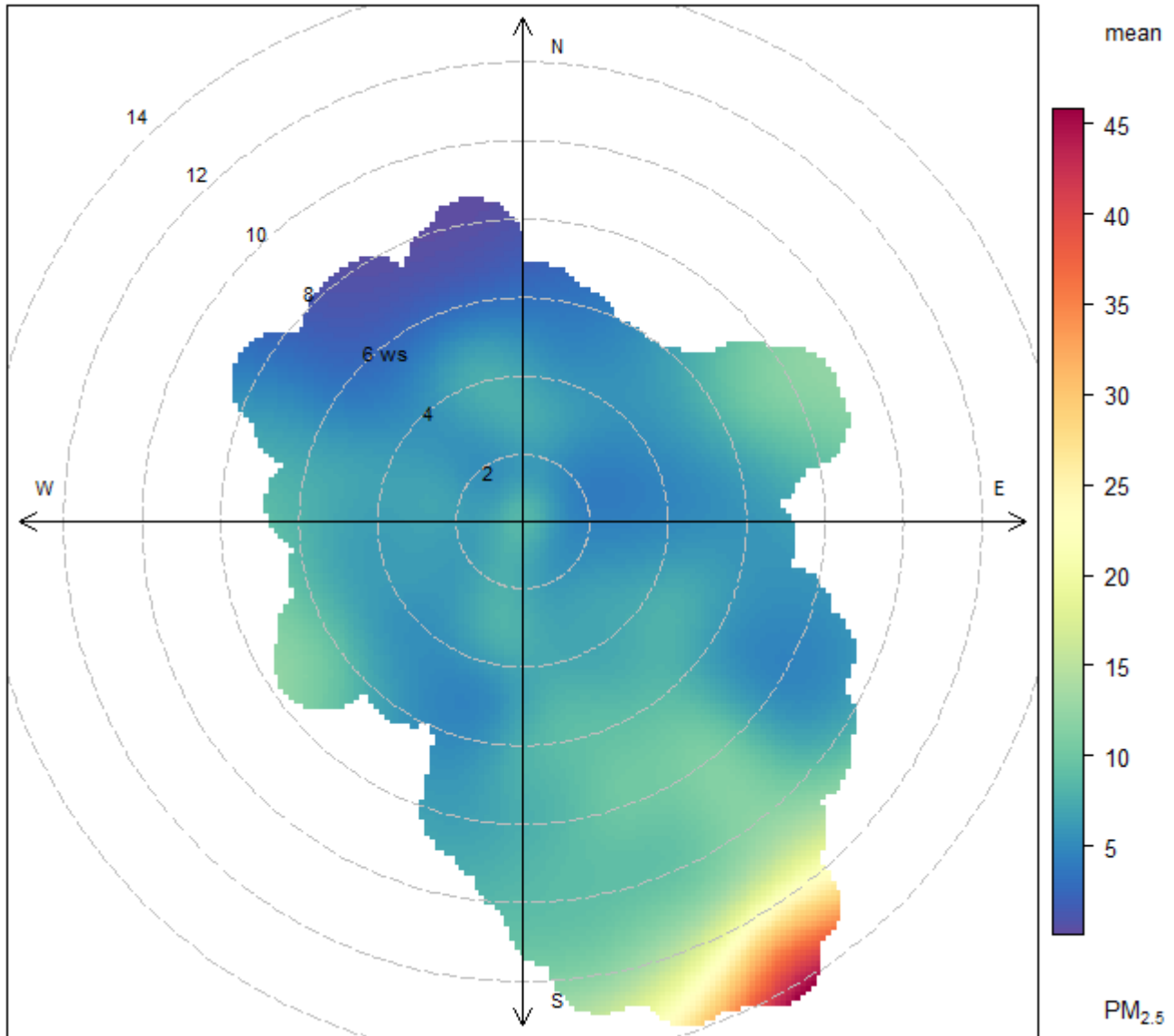
The polar plot Type 1 showed that dominant wind came from the wind sectors of 150° to 180° (south-southeast direction) and majority of PM_{2.5} particles came from those directions.



Polar plot Type 1

Polar plot Type 2

Polar plot Type 2 showed that PM_{2.5} particle came from all directions, however when wind speed was about 10 m/s higher concentrations were monitored from south-southeast directions.

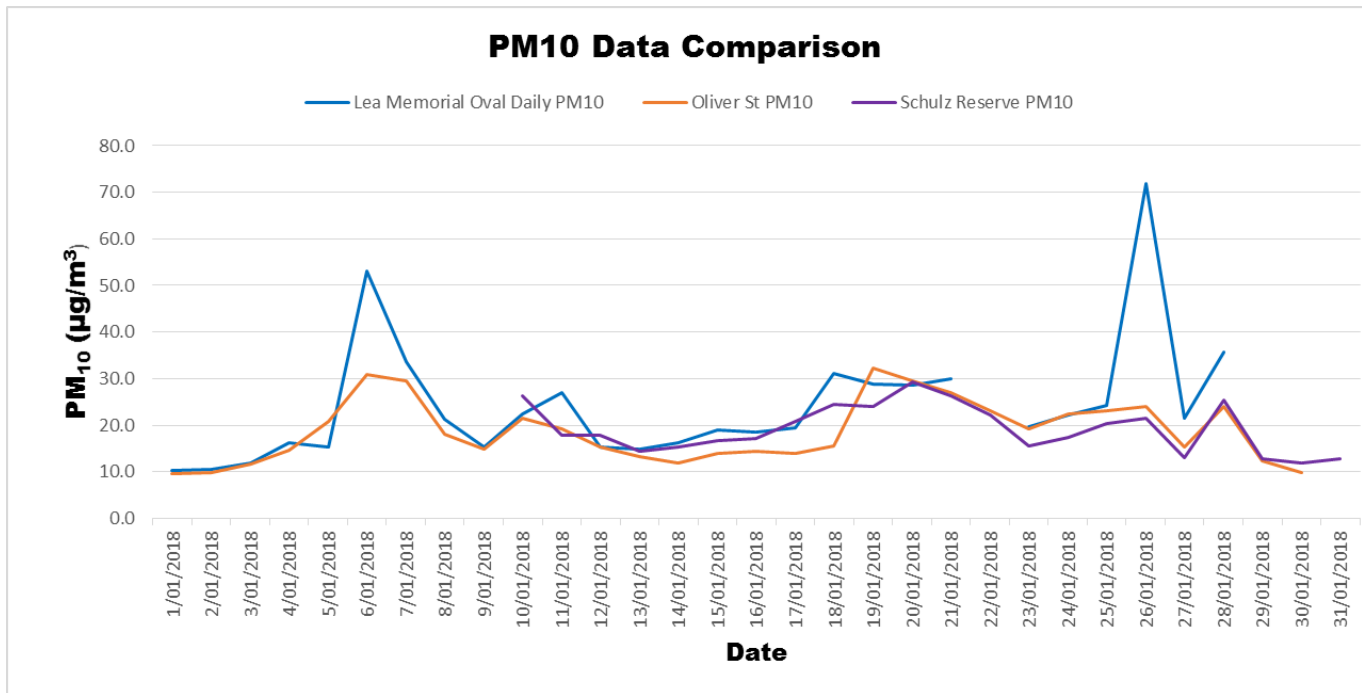


Polar plot Type 2

PM₁₀ data comparison

PM₁₀ data from Lea Memorial Oval, Oliver Street (Port Pirie) and Schulz Reserve (Whyalla) stations are presented in the following graph. PM₁₀ levels at Lea Memorial Oval station have exhibited a similar trend and concentrations to the other two stations during the monitoring period except on 6 and 26 January. As noted earlier in the report, on 6 and 26 January, strong wind from south-southeast had a potential of windblown dust from the direction of the former power station to contribute to the monitored dust levels.

Missing PM₁₀ data at Schulz Reserve from 1 to 9 January was due to power outage.



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
 Email: ServiceSAcustomerservice@sa.gov.au

General information

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 Website: www.epa.sa.gov.au
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