

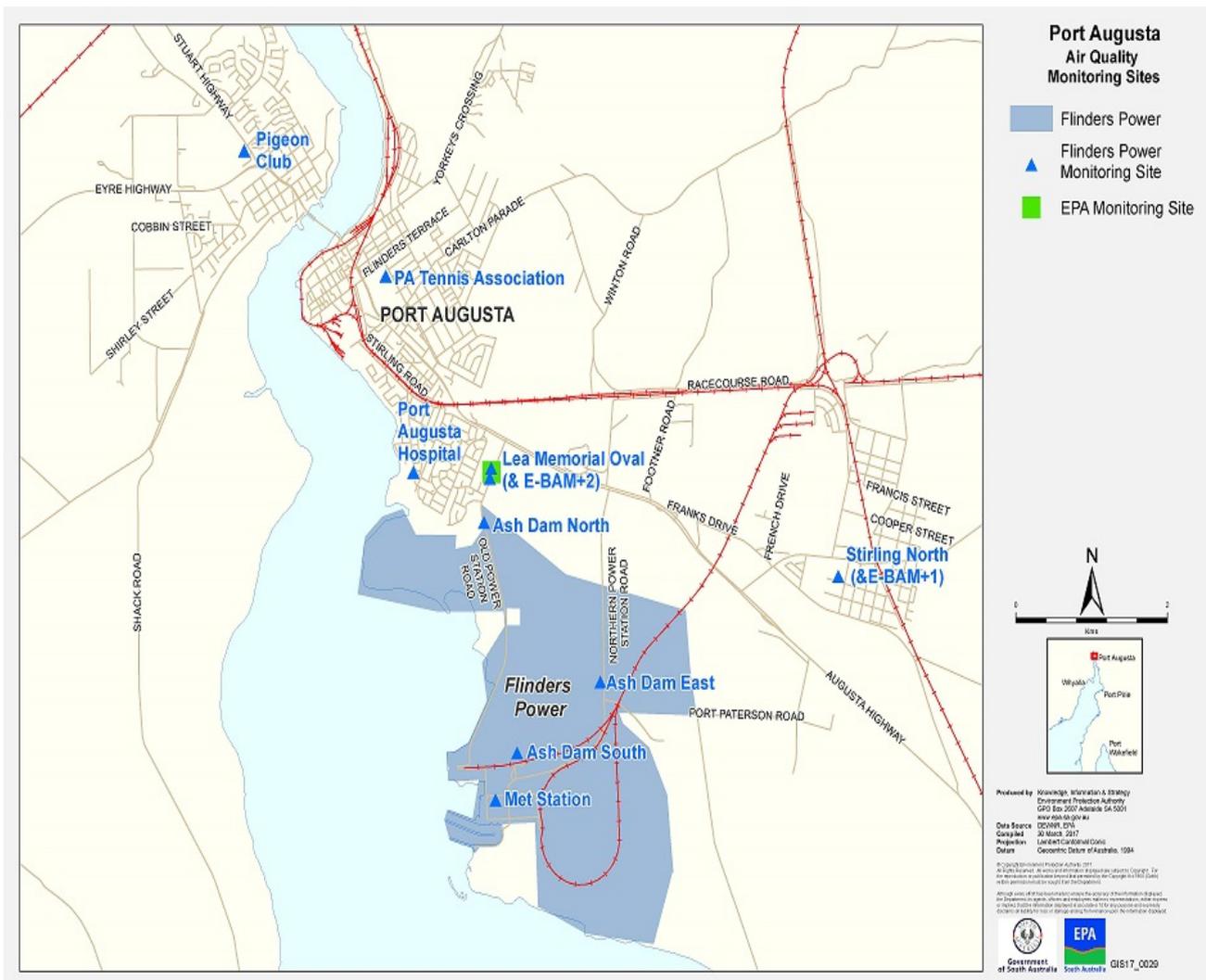
Port Augusta air quality summary report – March 2017

Issued June 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’s mobile monitoring station was installed at Lea Memorial Oval, Port Augusta on 9 March 2017. This station is equipped to continuously monitor 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. Monitoring of PM₁₀ and PM_{2.5} particles provides information to assess against health-based criteria.

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.

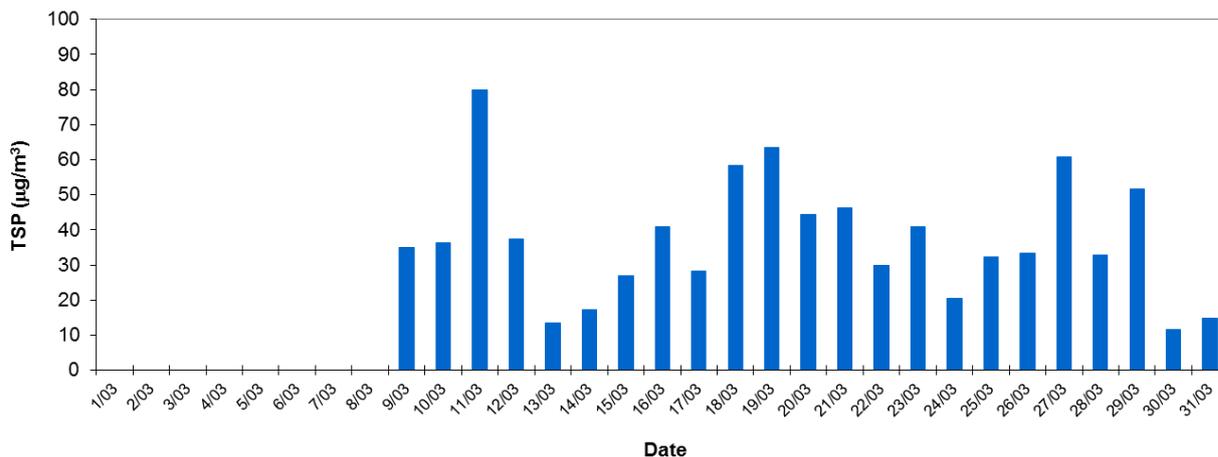
Polar plots provide a graphical method to assist in determining the sources of airborne pollutants. Polar plots use 10-minute wind direction data to plot against pollutant concentration. Where the percentage of pollutant is greater than the percentage of wind from any given direction, this indicates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

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](#).

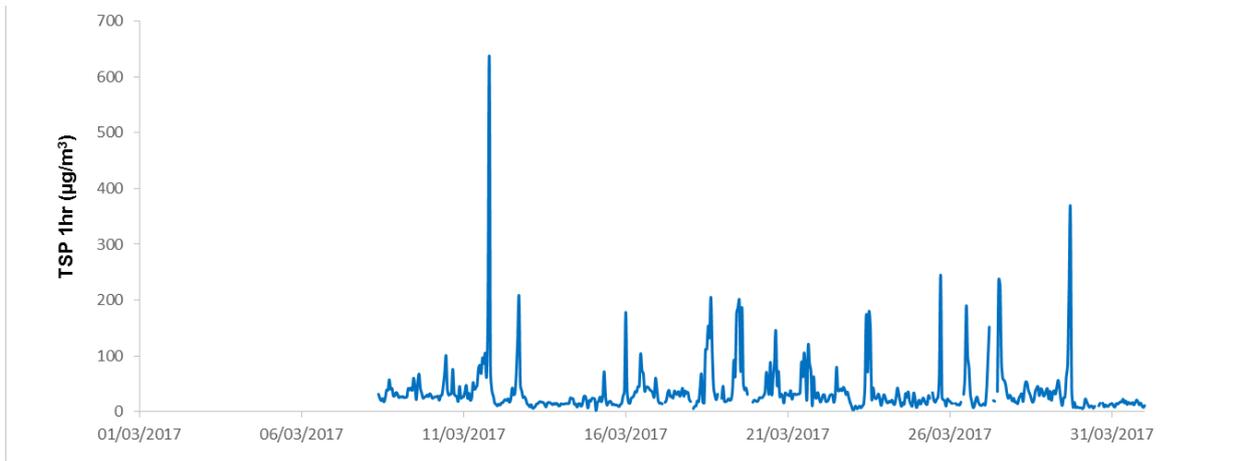
Total suspended particulates (TSP)

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 March 2017. Sampling commenced on 9 March 2017.



Port Augusta Lea Memorial Oval daily average TSP, March 2017



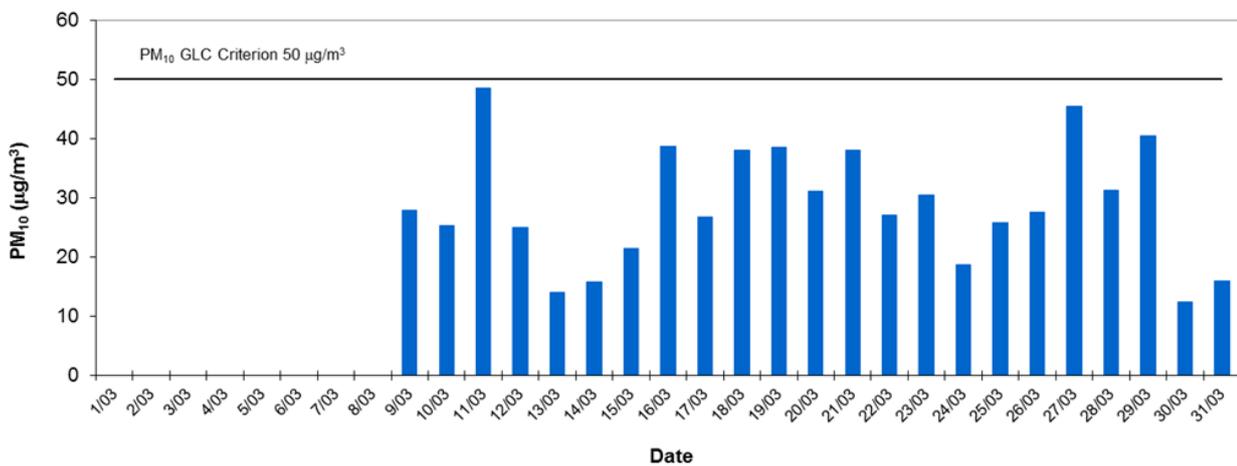
Port Augusta Lea Memorial Oval 1-hour TSP, March 2017

The following are some of the high 1-hour average concentration TSP events recorded in March 2017:

- On 11 March at 7 pm concentrations reached a maximum of 637 $\mu\text{g}/\text{m}^3$, coincident with winds from a south-southeast direction (160°) at an average wind speed of 9 m/s (ie 32 km/hr, 17.5 knots).
- On 25 March at 5 pm concentrations reached a maximum of 365 $\mu\text{g}/\text{m}^3$, with winds from a south direction (170°) at an average wind speed of 9 m/s (i.e. 32 km/hr, 17.5 knots).
- On 29 March at 5 pm concentrations reached a maximum of 245 $\mu\text{g}/\text{m}^3$, coincident with winds from a south-southeast direction (160°) at an average wind speed of 9 m/s (ie 32 km/hr, 17.5 knots)

Particles (PM₁₀)

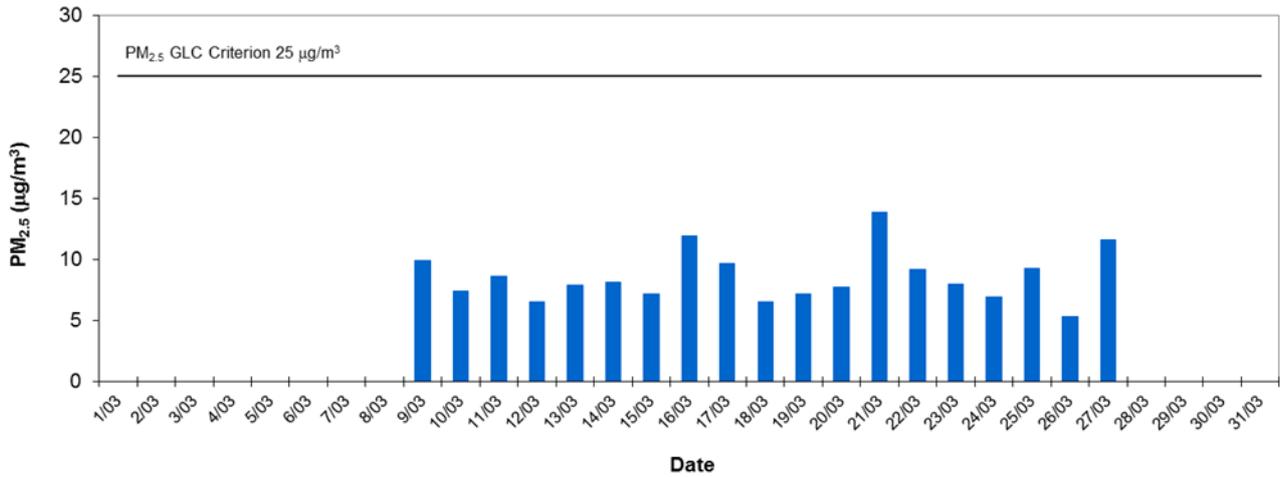
There were no exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM₁₀ (50 $\mu\text{g}/\text{m}^3$) at Lea Memorial Oval in March 2017, after sampling commenced on 9 March.



Port Augusta Lea Memorial Oval daily average PM₁₀, March 2017

Particles (PM_{2.5})

There were no exceedences of the health-based South Australian 24-hour ground level concentration criterion for PM_{2.5} (25 µg/m³) at Lea Memorial Oval during the monitored period in March 2017. Gaps in the data after 27 March were due to technical issues with the instrument.

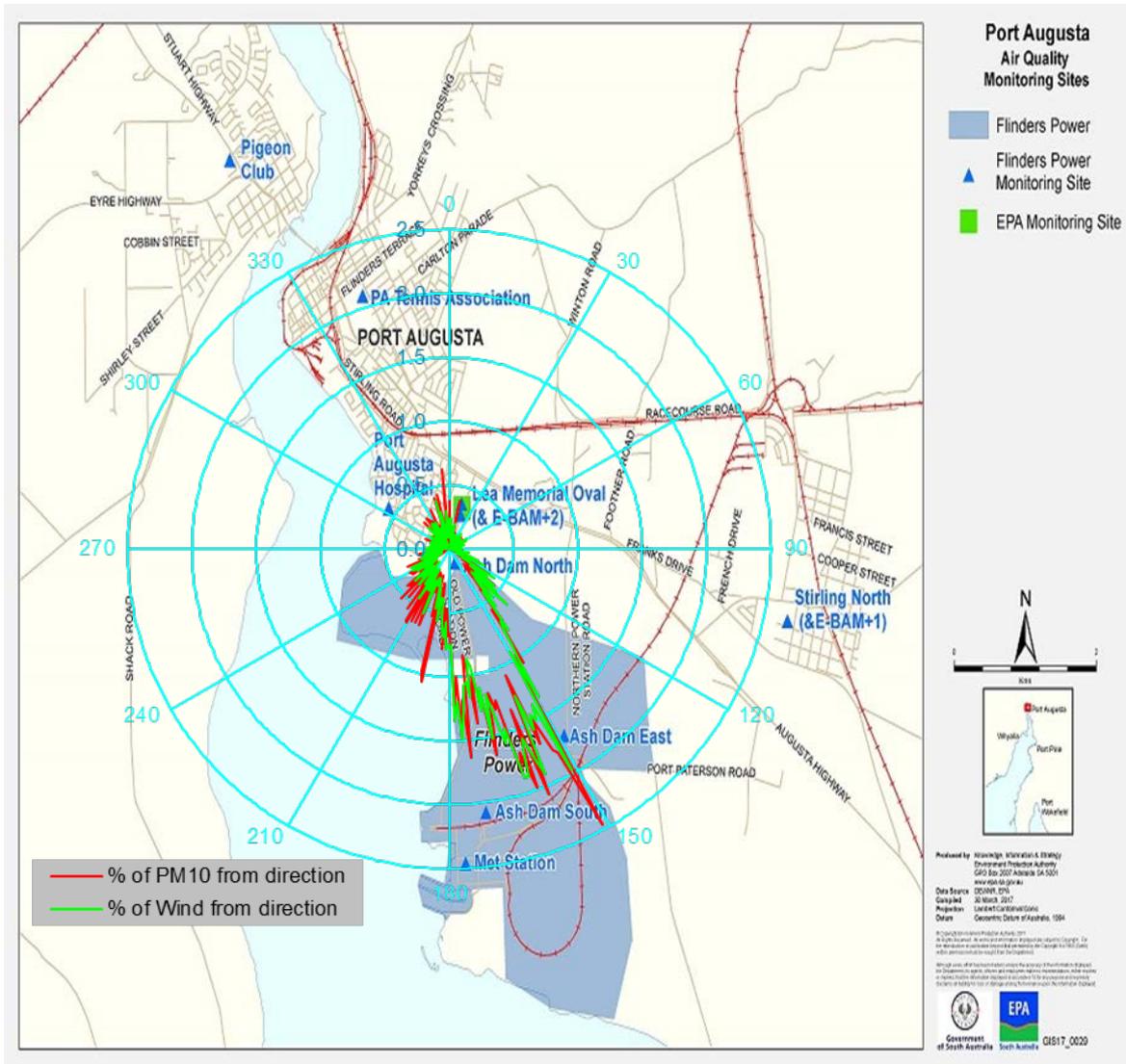


Port Augusta Lea Memorial Oval daily average PM_{2.5}, March 2017

Polar plots

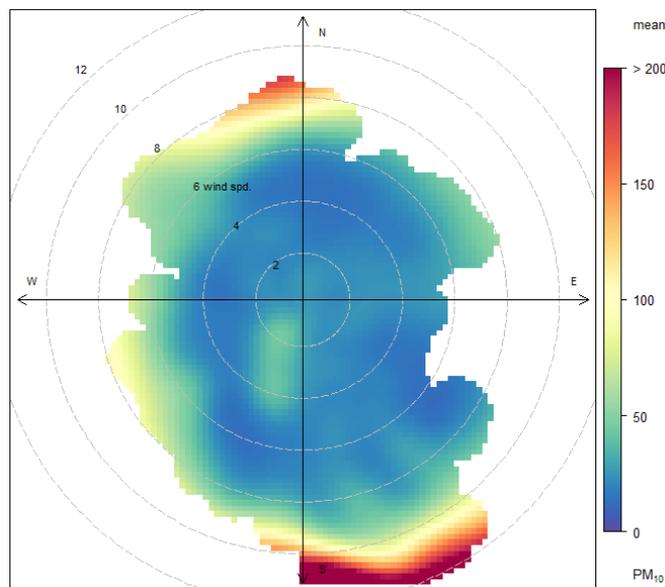
PM₁₀ polar plot

The polar plot Type 1 showed predominately that the highest percentage of PM₁₀ and wind came from the wind sector of 150 to 180° at a given time (south-southeast and south directions). However, other sources of PM₁₀ particles unrelated to wind conditions were also observed from north and south-southwest direction. This is likely due to road dust and natural sources.



Polar plot Type 1

Polar plot Type 2 showed high concentration of PM₁₀ particles associated with high wind speed (above 8 m/s) from a south-southeast direction. Wind blowing from a north direction also contributed to a high level of PM₁₀ particles. At a wind speed above 6 m/s, high concentration of PM₁₀ particles occurred.



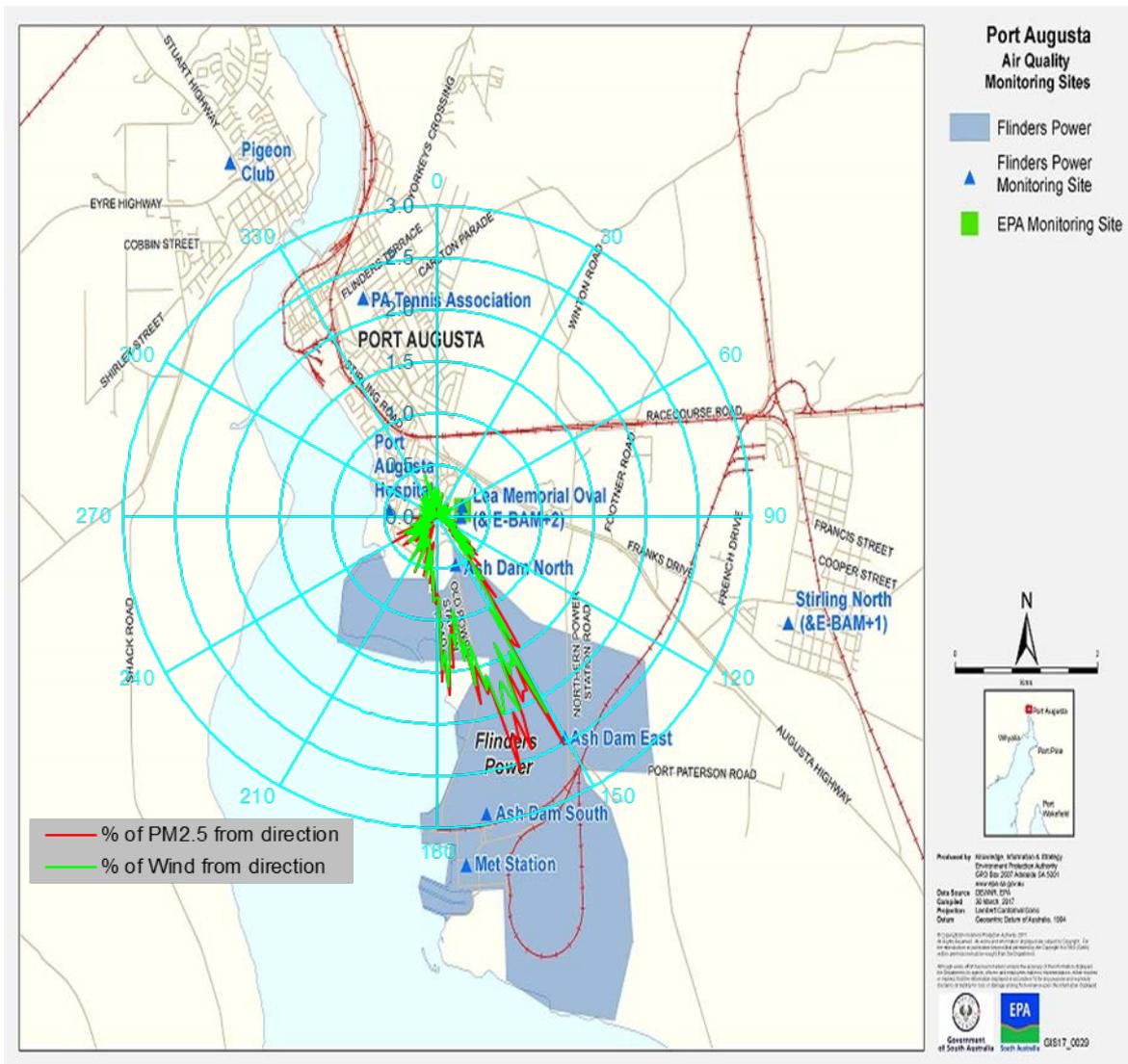
Polar plot Type 2

Following are some of the short-term 10-minute high concentration PM₁₀ events recorded in March 2017:

- On 11 March at 6 pm concentrations reached a maximum of 478 µg/m³, coincident with winds from a south-southeast direction (167°) at an average wind speed of 8.7 m/s (ie 31 km/hr, 17 knots).
- On 23 March at 12.30 pm concentrations reached a maximum of 441 µg/m³, with winds from a south-southwest direction (193°) at an average wind speed of 4.5 m/s (ie 16.2 km/hr, 8.7 knots).
- On 29 March at 4 pm concentrations reached a maximum of 533 µg/m³, coincident with winds from a south direction (175°) at an average wind speed of 10.4 m/s (ie 37.4 km/hr, 20 knots)

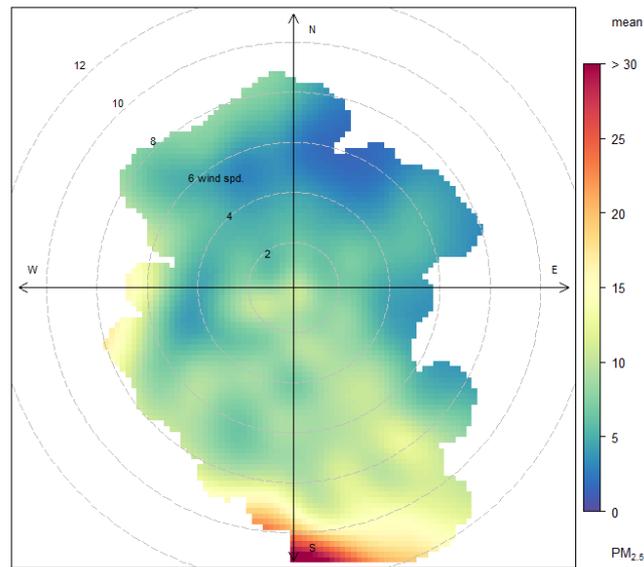
PM_{2.5} polar plot

The polar plot Type 1 showed the percentage of PM_{2.5} particles was higher than the percentage of wind that came from the wind sector of 150 to 180 degrees (south-southeast and south directions). PM_{2.5} particles from other directions were insignificant.



Polar plot Type 1

Polar plot type 2 showed high PM_{2.5} concentration associated with high wind speed came from south-southeast and south directions



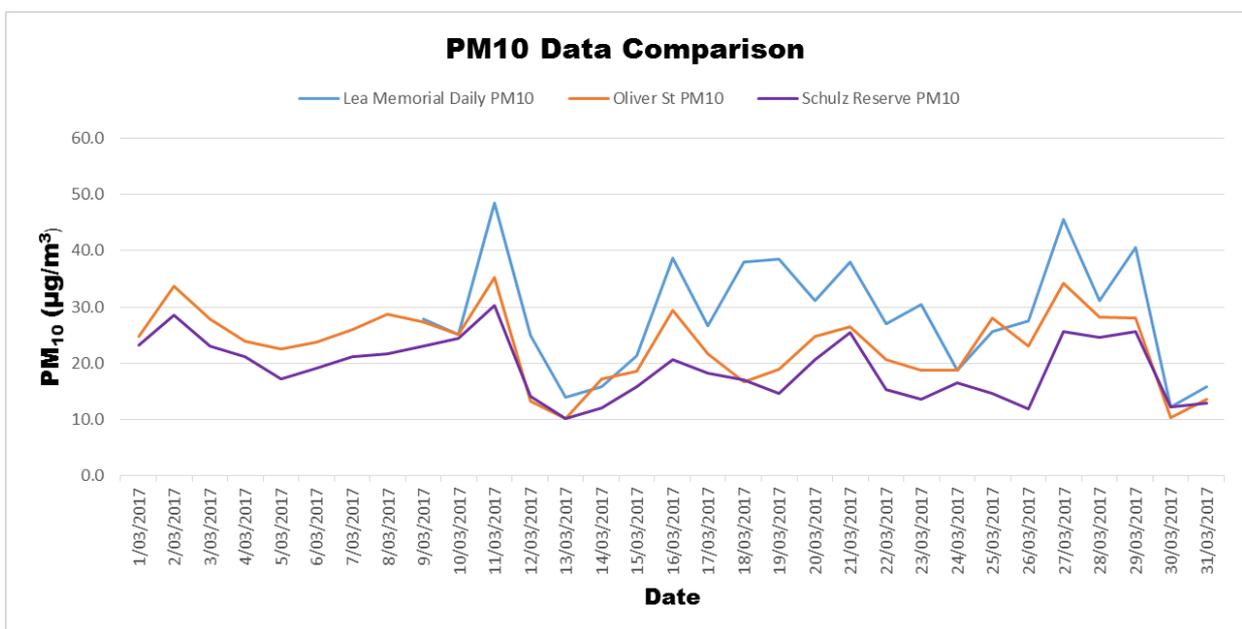
Polar plot Type 2

Following are some of the short-term 10-minute high concentration PM_{2.5} events recorded in March 2017:

- On 15 March at 11.10 pm concentrations reached a maximum of 80.6 µg/m³, coincident with winds from a south-southeast direction (149°) at an average wind speed of 6.8 m/s (ie 24 km/hr, 13 knots).
- On 27 March at 4.10 am concentrations reached a maximum of 42 µg/m³, with winds from a south-southeast direction (159°) at an average wind speed of 9.8 m/s (ie 35 km/hr, 19 knots).
- On 29 March at 4 pm concentrations reached a maximum of 57 µg/m³, coincident with winds from a south direction (175°) at an average wind speed of 10.4 m/s (ie 37.4 km/hr, 21 knots)

PM₁₀ data comparison

PM₁₀ data from Lea Memorial Oval, Oliver Street Port Pirie and Schulz Reserve Whyalla stations are presented in the graph below. PM₁₀ levels at Lea Memorial Oval station have exhibited higher concentrations with similar trend to the other two stations during the monitoring period.



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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