

Air quality monitoring in Port Augusta

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Why is air quality monitored?

Air quality can be affected by widespread factors such as dust storms, bushfires and traffic (which affect what is called 'ambient', or general, air quality), but can also be impacted by substances generated from industrial activities. There are national standards for how much of these substances industries can emit to the air.

The Environment Protection Authority (EPA) regulates industrial facilities to ensure they minimise their impact on surrounding communities and can take action against companies that exceed agreed limits. This regulation includes dust - larger dust particles can result in short-term irritation and cause 'environmental nuisance'; finer dust particles can get into the lungs and may result in health impacts, particularly for people with existing respiratory conditions.

To act effectively in its role as regulator, the EPA can require industries to monitor their air emissions and report these to the EPA. In some cases, it may also conduct its own monitoring, to verify results and provide additional data.

How is air quality monitored?

The power station operator was required to have air quality monitoring stations in the Port Augusta township and report the data to the EPA.

Five off-site high volume air samplers monitored total suspended particulates (TSP), which is an assessment of total visible dust.

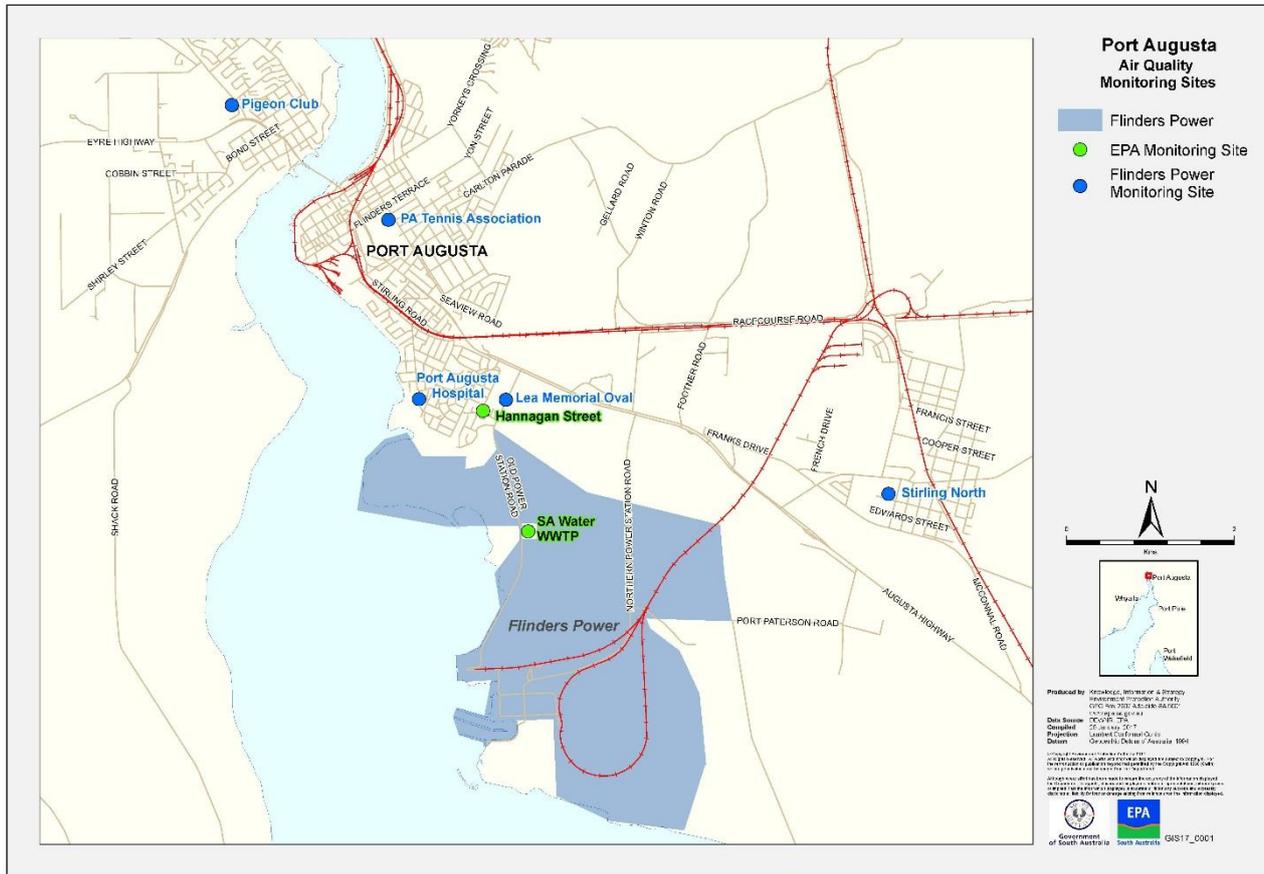
At four of these sites, PM₁₀ particles were also monitored (see map and Table 1) – these are the finer dust particles, that can be breathed into our lungs, with a diameter of 10 micrometres or less (1 micrometre is 1 millionth of a metre).

Until recently, this network operated 1 day in every 6 days and each sampler measured continuously for a 24-hour period. The data was then integrated to give a TSP and a PM₁₀ reading for that 24-hour period.

This off-site network is still operating and recently, the EPA required Flinders Power to increase the frequency of monitoring from 1 day in 6 to every day.

In October 2016, the EPA installed an air quality sample collector at the SA Water waste water treatment plant site right next to the ash dam, to allow dry wind-blown ash to be tested for chemical toxicity (see next section).

Following the major dust event in early January 2017, the EPA also installed additional monitoring stations at Hannagan Street (see map and Table 1).



Map of air quality monitoring stations in Port Augusta

What does the monitoring measure?

Table 1 Current monitoring locations and equipment

Location	Type of monitoring	Managed by	Results available
Lea Memorial Oval	TSP & PM ₁₀	Flinders Power	Yes
Stirling North	TSP & PM ₁₀	Flinders Power	Yes
PA Tennis Club	TSP & PM ₁₀	Flinders Power	Yes
Pigeon Club	TSP & PM ₁₀	Flinders Power	Yes
Port Augusta Hospital	TSP	Flinders Power	Yes
SA Water WWTP (from 4 October 2016)	Sample collection	EPA	Yes
Hannagan Street (from 7 January 2017)	TSP & PM ₁₀	EPA	Yes

Samples of the ash dam dust were analysed for chemical toxicity by a NATA (National Association of Testing Authorities) accredited laboratory in South Australia. On evaluation of the results, SA Health advised, “considering that the concentrations of potential toxic metals are very low, there seems to be no increased adverse health potential from the Alinta dam site” - see the ‘assessment’ document, in the ‘Advice from SA Health’ section at:

http://www.epa.sa.gov.au/business_and_industry/industry-updates/flinders-power-port-augusta

The laboratory found no asbestos in any of the samples tested (the laboratory reports can be found via the above link, in the ‘Other news’ section).

Current monitoring results

Table 2

How is monitoring done	How the monitoring results are reported
TSP using high volume air samplers	<p>Flinders Power monitoring station locations: Stirling North, Lea Memorial Oval, Port Augusta Hospital, Port Augusta Tennis Club and Pigeon Club.</p> <p>Until 7 January 2017, monitoring occurred 1 in every 6 days which allowed for trend data. Currently monitoring is every 24 hours.</p> <p>An EPA monitoring station is at Hannagan Street, monitoring every 24 hours.</p> <p>A graph showing annual average TSP at the 5 FP stations, from 2005 – 2016, can be found at: http://www.epa.sa.gov.au/business_and_industry/industry-updates/flinders-power-port-augusta. There is also daily data from 1/1/2017 onwards.</p> <p>There is no national standard/state criterion for TSP concentrations.</p>
PM ₁₀ using high volume air samplers	<p>Flinders Power monitoring station locations: Stirling North, Lea Memorial Oval, Port Augusta Tennis Club and Pigeon Club.</p> <p>Until 7 January 2017, monitoring occurred 1 in every 6 days which allowed for trend data. Currently monitoring is every 24 hours.</p> <p>An EPA monitoring station is at Hannagan Street, monitoring every 24 hours.</p> <p>Annual Average and Seasonal Average PM₁₀ data for the 5 FP stations can be found at: http://www.epa.sa.gov.au/business_and_industry/industry-updates/flinders-power-port-augusta. The national standard for Annual Average PM₁₀ is 25 µg/m³. Daily PM₁₀ data from 1/1/2017 onwards can be found in the section headed, "Current air quality monitoring" at the above link. The national standard/state criterion for '24 hour Average PM₁₀' is 50 µg/m³.</p>

Future monitoring

Continuous monitoring of PM₁₀ to assess community exposure to dust

In consultation with the EPA, Flinders Power has installed equipment to carry out continuous monitoring of PM₁₀ at Lea Memorial Oval and Stirling North (Table 3).

This equipment measures PM₁₀ all the time and it combines the continuous information to calculate the '24-hour Average PM₁₀'.

This more intensive monitoring will provide information on the variation in dust throughout the day and pick up short-term 'spikes' in dust, unlike the previous monitoring which averaged the result across 24 hours.

The continuous data will be available online shortly and details will be circulated to the community.

Continuous monitoring of dust at the boundary of the ash dam

Flinders Power has installed 3 optical air quality monitoring sensors at the boundary of the ash dam (Table 3) to provide data on the amount of dust arising from the ash dam itself or from earthmoving works that are extracting, transporting and spreading soil onto the ash dam as part of the long-term Ash Dam Rehabilitation Plan.

If excessive dust is being generated due to higher wind conditions, the data from the optical sensors will trigger increased dust control measures or modifications to/shutdown of construction activity, based on a Trigger Action Response Plan.

The readings from the optical sensors will be compared to those from the continuous PM₁₀ high volume samplers at the Lea Memorial Oval and Stirling North, and be used to fine tune the Trigger Action Response Plan, to better manage the dust generated by the construction activity that is an essential part of the ash dam rehabilitation process.

EPA continuous monitoring of dust

The EPA will install its own continuous monitors at the Lea Memorial Oval, to validate data collected by the company at the same site and also to gather additional air quality data. The site will monitor TSP, PM₁₀, PM_{2.5} and meteorology data, commencing early in March 2017 (Table 3).

PM_{2.5} are even finer particles than PM₁₀, which means they can reach deeper into our lungs and are a greater concern in regards to potential health impacts. The national standard/state criterion for PM_{2.5} is 25 µg/m³ for the '24 hour Average' and 8µg/m³ for the 'Annual Average'.

The data from the EPA continuous monitors will be publicly available on the EPA [website](#).

Table 3 Future monitoring locations and equipment

Location	Type of monitoring	Managed by	Results available
Lea Memorial Oval	PM ₁₀ continuous	Flinders Power	Yes
	TSP, PM ₁₀ , PM _{2.5} continuous	EPA	Yes
Stirling North	PM ₁₀ continuous	Flinders Power	Yes
Boundary of ash dam	Optical sensors (3)	Flinders Power	FP & EPA only
Hannagan Street (to be decommissioned in early March 2017, after EPA continuous monitoring commences at Lea Memorial Oval)	TSP & PM ₁₀ daily	EPA	Yes