

The Port Macquarie Response: rapid research to support public health

Background

Bushland and peat fires in the vicinity of Port Macquarie have been causing intermittent episodes of severe air pollution in the town. The size and duration of the smoke impacts has come close to triggering the 'high level response' under the NSW protocol for prolonged pollution events and conditions are expected to persist until the fires have been extinguished. The high-level response, if activated, calls for relocation of people more sensitive to the harmful effects of air pollution and consideration of setting up public clean air shelters. Guidelines from Canada about building characteristics required for public air shelters have been used to identify appropriate candidate buildings in Port Macquarie.

As such events are becoming more frequent and severe in Australia and globally, this project aims to provide evidence for public health protection that will inform future similar events. The objectives are to:

- Evaluate (1) how much protection from outdoor air pollution is offered by the public library, a site identified as a potential public clean air shelter; and (2) the additional benefit of adding portable high efficiency particle air filters (HEPA filters) in that setting;
- Provide (1) close to real-time air quality information to residents via the AirRater app to enable them to manage fluctuations in air pollution until conditions improve and track their symptoms; and (2) evaluate the perceived usefulness of this information for members of the public.

Data collection and visualisation



Figure 1. SMOGs outside Port Macquarie Library

Air quality is being measured by several indoor and outdoor Smoke Observation Gadgets (SMOGs) shown in Figure 1. These are simple, low-cost air pollution monitors developed by the CSIRO. SMOGs measure the amount of very small particles suspended in the air. One green light indicates that very little particulate air pollution is being detected. With more smoke or other sources of particles in the air, additional lights turn green, then switch to yellow, and then to red. Several SMOGs have been set up inside and outside the Port Macquarie library.

The readings from two outdoor SMOGs in Port Macquarie are available through the free AirRater app, available from the app store, Google Play or <https://www.airrater.org>. You will need to save Port Macquarie as your location in AirRater. AirRater shows **current particle concentrations** from the SMOGs, which are designed to detect rapid fluctuations in air quality. This is different from the data on the website of the Department of Planning, Industry and Environment (DPIE) which shows average particle concentrations over the previous 24 hours.

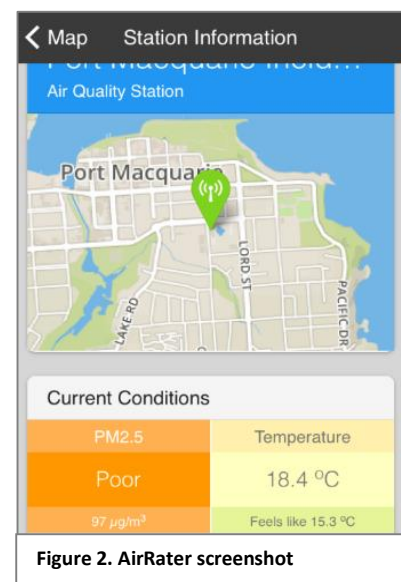


Figure 2. AirRater screenshot

Background to AirRater

AirRater was designed by researchers at the University of Tasmania in partnership with the CSIRO, the Environment Protection Authority (EPA) Tasmania, and Asthma Australia to support people with asthma, chronic bronchitis or any condition that makes them more sensitive to the effects of air pollution, pollen or other atmospheric conditions.

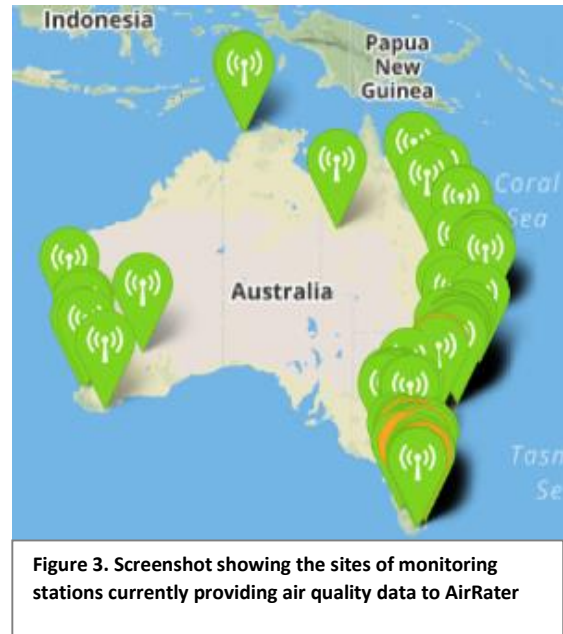
AirRater lets users track their symptoms and provides information about how these could be affected by air quality, weather or, where available, airborne pollen. It sends automatic notifications to devices to let users know if air pollution is worsening in their location. The notifications can be enabled or disabled, and the threshold for sending notifications can be set by the user.

AirRater does not provide medical advice. It helps users identify and manage their personal sensitivities to changing environmental conditions.

AirRater is funded by the University of Tasmania, The Tasmanian Department of Health, ACT Health, and the Northern Territory EPA for use in Tasmania, the ACT and Darwin.

AirRater is now supported in Port Macquarie for this short-term project.

The accuracy of air quality information seen in the AirRater app depends on the availability of functioning air quality instruments. Accuracy is not guaranteed in places without local air monitoring stations. In places where air quality measurements are not available, air pollution is estimated using satellite data and weather forecasts. For more information see <https://www.airrater.org> or email Air.Rater@utas.edu.au



Meet the research team

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