

Case Study

Accurate Real-Time Monitoring Speeds up Air Quality Response Time for Australian Agency

OEH supports the community, business and government in protecting the environment in New South Wales.



Project

New South Wales Office of Environment and Heritage

Services

AQM 65 Compact Air Quality Station

Location

Sydney, NSW, Australia

Measurements

PM₁₀, PM_{2.5}, O₃, NO₂, CO and SO₂

Date

2015 - 2016

Sector

Outdoor



The customer



Sydney is Australia's largest city, home to the Opera House and Harbour Bridge and 20% of the Australian population. The overall health of the environment is the responsibility of the New South Wales Office of Environment and Heritage (OEH), a division of the Government of New South Wales.

OEH runs a network of more than 50 air quality monitoring stations across Sydney and New South Wales. These monitoring stations collect data for six routine parameters: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulphur dioxide (SO₂) and two particulate fractions (PM₁₀ and PM_{2.5}). OEH is accredited by the National Association of Testing Authorities (NATA) for the operation and maintenance of air quality instrumentation. NATA is a member of the International Laboratory Accreditation Cooperation (ILAC).

The problem

Air pollution in Australia comes from various sources including vehicle emissions, burning fossil fuel for power generation, and large anomalous events such as bushfires. Poor air quality causes more deaths in Australia than the annual national road toll. The economic costs of these premature deaths and the chronic health effects of indoor and outdoor air pollution combined may be as high as AUD 20 billion per year. So monitoring is critical to understanding and reducing air pollution.

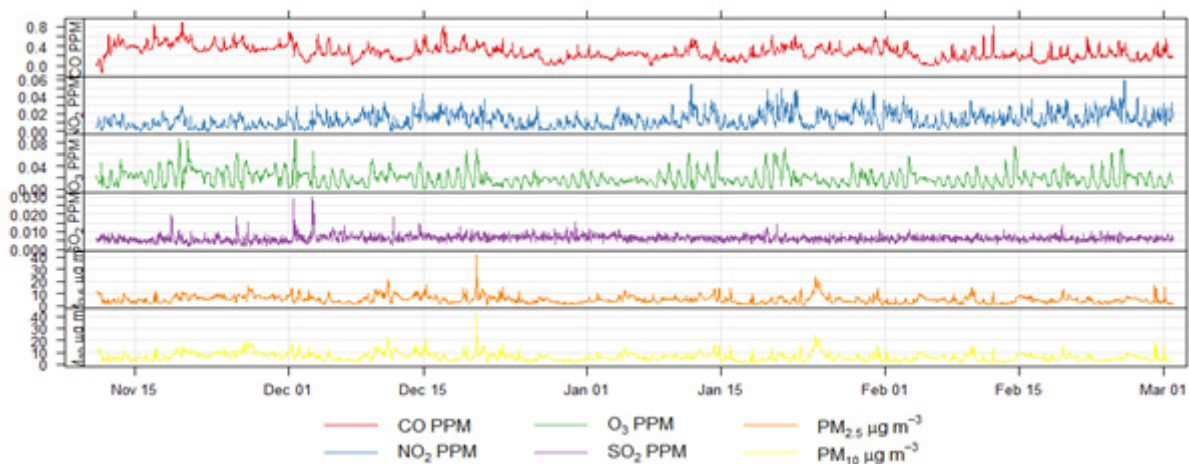
OEH typically collects air quality data with expensive, conventional stations the size of a large caravan. Due to high costs and limited sampling sites, this approach can underestimate real-life exposure rates. Also these air monitoring activities are often too slow to respond to short term events such as traffic events, industrial incidents or wildfires. This further limits information on air pollution.

The solution

In response, OEH looked for equipment that could supplement their existing air monitoring stations. After research OEH contacted Aeroqual's local partner Air-Met Scientific to learn more about the AQM 65, a low cost, compact air quality monitoring station, easy to deploy and capable of providing Near-Reference data.



To validate performance of the AQM 65 station, OEH conducted a three-month co-location field trial at the Chullora reference station, located in a light industrial area. Part of the OEH air monitoring network, Chullora often acts as a trial site for new types of instruments. In this case, the AQM 65 was installed on the reference station roof and configured to measure PM_{10} , $PM_{2.5}$, O_3 , NO_2 , CO and SO_2 . The trial evaluated the AQM 65 for accuracy, reliability and fitness for purpose under local environmental conditions by comparing its correlation to data from the OEH-run reference station.



“We were impressed with performance and reliability of the AQM 65 and will endeavour to use these instruments in upcoming projects.”

New South Wales Office of Environment And Heritage (OEH)

Evaluation

During the trial the AQM 65 performed reliably and accurately. The instrument recorded over 90% data validity for hourly data (see chart above). It handled local conditions well, including very good performance at low concentrations. Correlation between the AQM 65 and reference instruments was very satisfying, with most parameters recording excellent correlation with reference data. For the full trial summary report please contact Aeroqual.

Overall, OEH staff were impressed with the AQM 65. The technicians were delighted with the ease of calibration, the relatively low maintenance requirements, and with the software interface which they described as “user friendly and well documented.” OEH plan to use the AQM 65 in upcoming short-term monitoring projects in the CBD, near roadside, and in Rapid Response applications.