

Fremantle Ports - Inner Harbour Ambient Air Quality Monitoring Program

Quarterly Air Quality Monitoring Report October to December 2019

EXECUTIVE SUMMARY

Fremantle Ports engaged environmental consultants Advisian and Environmental Technologies & Analytics to design, install and operate a temporary ambient air quality monitoring network within Fremantle for a period of 12 months. The purpose of this trial monitoring program is to monitor potential air pollutants from port-related sources including shipping.

The network consists of stations at four locations to monitor potential air pollutants, as highlighted in figures 1 and 2. Three of the monitoring locations are within Fremantle, in close proximity to the Inner Harbour. The fourth station is co-located at the Kwinana Industries Council Tindal Avenue air quality monitoring station (a regulatory compliance monitoring location) for calibration purposes.

The monitoring stations measure the following parameters:

- Nitrogen dioxide (NO₂);
- Sulphur dioxide (SO₂);
- Carbon monoxide (CO);
- Ozone (O₃); and
- Particulates (as PM₁₀ and PM_{2.5}).

The monitor chosen for this program is the Vaisala AQT420 monitor. This monitor was chosen as it is suitable for a monitoring network over a large area and where measuring to a regulatory standard is not required. The KIC monitor was co-located with an existing monitoring station using regulatory monitoring equipment measuring to the Australian Standard. A calibration factor is then calculated and applied to the data from the Inner Harbour monitors.

The monitoring results are compared to the National Environmental Protection (Ambient Air Quality) Measure (NEPM), which is the applicable air quality standard.

This report covers the period 1 October to 31 December 2019, inclusive.

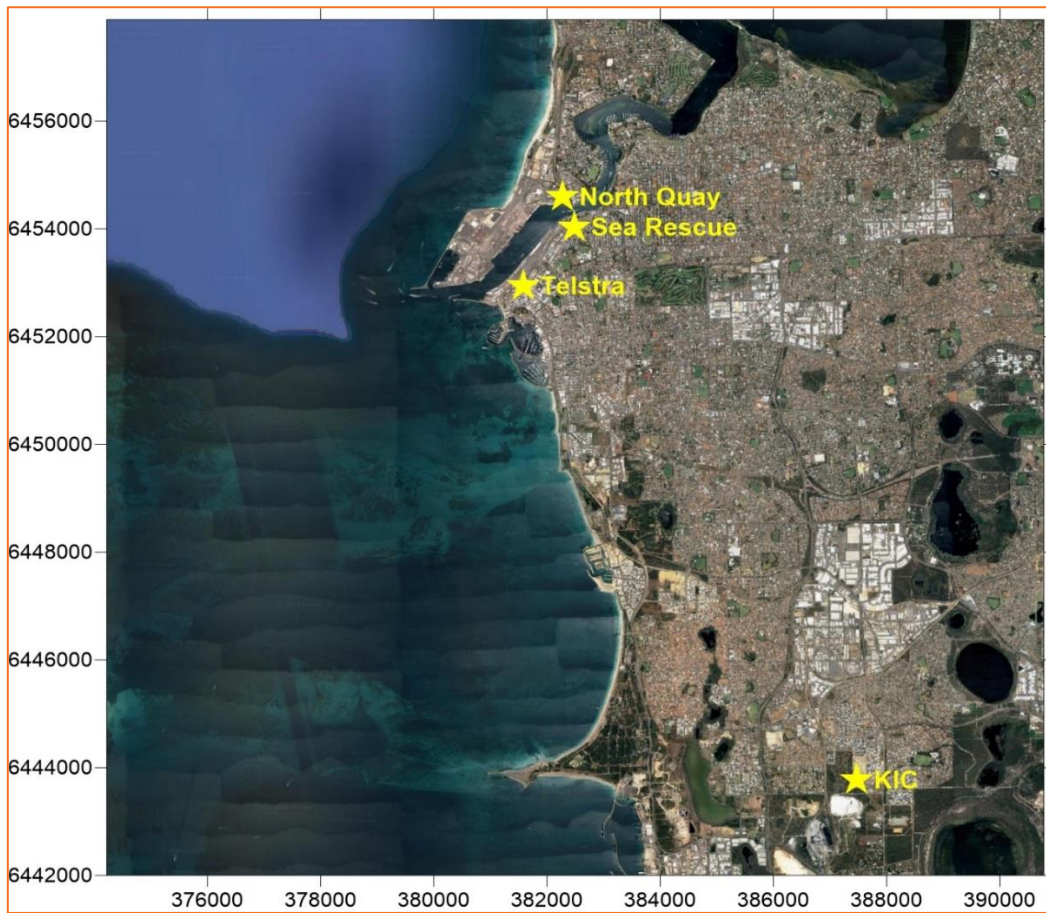


Figure 1: Monitoring locations

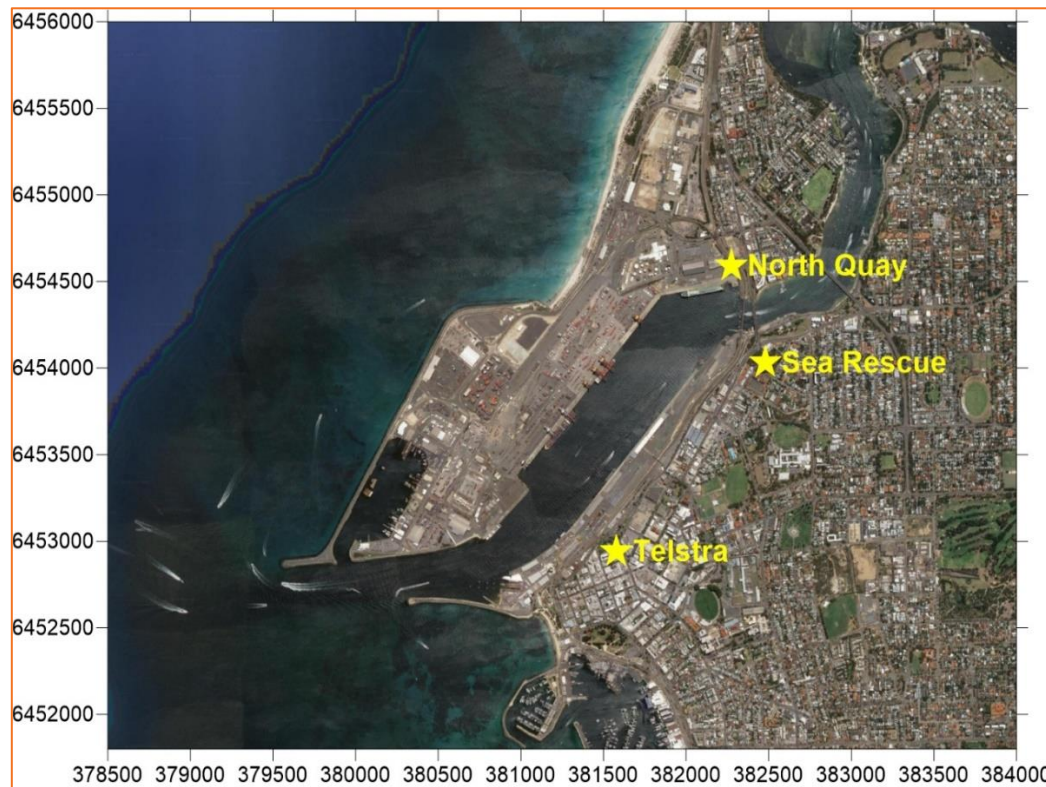


Figure 2: Monitoring locations within Fremantle

Key conclusions from the data for this reporting period are:

- Based on the limited data to date, the sensors can be considered to be returning data suitable for comparative purposes, as intended by the program.
- The air quality parameters for monitored particulates (PM₁₀ and PM_{2.5}), nitrogen dioxide, sulfur dioxide and carbon monoxide levels were all below the applicable NEPM criteria at all monitored locations in Fremantle.
- In mid-December, the maximum 1-hour concentration of ozone reached 100% and 111% and the maximum 4-hour concentration reached 112% and 120% of the NEPM criteria at the Sea Rescue and KIC Tindal Avenue (Beeliar) monitors respectively.
- An assessment of wind direction found that the ozone levels were not derived from port operations but were likely a secondary pollutant from multiple sources being blown out to sea with a strong morning easterly before being transformed into ozone, then blown back over coastal areas with the sea breeze.

For further information relating to this report please contact the Fremantle Ports Environment Team via e-mail at environment@fremantleports.com.au or phone 08 9430 3555.