

Ambient air quality monitoring results – St Peters

September 2018



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GLOSSARY

Term	Description
CH ₄	Methane
CO	Carbon monoxide
NMHC	Non-methane hydrocarbons
NO	Nitric oxide
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
O ₃	Ozone
ppb	Parts per billion
ppm	Parts per million
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of less than 10 µm
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of less than 2.5 µm
THC	Total hydrocarbons
µg/m ³	Micrograms per cubic metre

1 Monitoring methodology

Air quality monitoring is undertaken in accordance with Australian standards and guidelines. Specific pollutants are monitored and reported against the relevant air quality goals in the National Environment Protection Measure (Ambient Air Quality). Meteorological conditions are also monitored locally to give a greater understanding of the conditions that may influence air quality outcomes.

A data verification process is carried out to ensure high quality data capture. The data verification process includes:

- Removal of clearly incorrect data
- Corrections for instrument drift
- Corrections for offsets
- Removal of data acquired during calibration periods
- Removal of data during servicing, maintenance and equipment breakdown periods.

The above process can cause data gaps, and may be one reason why there is some data missing in the graphs provided.

The instruments measuring pollutants are subject to some variability and the results should be read within this context.

2 Results

A summary of air quality results from the St Peters Street, St Peters (within the grounds of St Peters Public School) air quality monitoring station is provided below. Results of CO, NO₂, PM₁₀ and PM_{2.5} concentrations are provided and results are also represented graphically. The solid red line in each of the figures corresponds to the respective criteria or advisory reporting standard for that pollutant as stated in the NSW *Approved Methods* (NSW DEC, 2005).

Data from St Peters Street air quality monitoring site was compared to the free, 24 hour average data available from the NSW Office of Environment and Heritage (OEH) web site. Data were obtained for the OEH sites Chullora, Rozelle and Earlwood and the results are shown in **Section 2.2**.

A summary of the air quality results from the St Peters Street monitoring station in St Peters is provided in **Table 1**.

Table 1 St Peters Street summary statistics for air pollutants

Statistics	CO (ppm) 8 hour rolling average values	NO ₂ (ppb) 1 hour average values	PM ₁₀ (µg/m ³) 24 hour average values	PM _{2.5} (µg/m ³) 24 hour average values
Standard	9	120	50	25
Average value	0.3	15.3	28.3	11.2
Maximum value	0.9	43.4	53.9	17.1
Minimum value	0.0	2.4	13.0	6.7

Note: All monitoring instruments have an uncertainty associated with each measurement. This is normally described as \pm a specific value. Due to this, negative values could be reported at very low ambient concentrations.

Reporting

Data availability across all air quality parameters at St Peters Street was 98%.

A data gap for PM_{2.5} & PM₁₀ between 20th and 24th September was due to an instrument readings error. The instruments were inspected by an ERM Technician and reinitiated with good readings returning & no further issues identified.

An exceedance in NSW EPA criteria for PM₁₀ of 3.9µg/m³ was recorded on 19th September 2018 at Site 03: St Peters Street. Elevated levels of PM₁₀ were not recorded at this time at nearby OEH stations.

2.1 Time Series

The time series for the various pollutants during the reporting period are provided below. Pollutant concentrations are also averaged over the periods stated for short-term air quality criteria in the NSW Approved Methods. Where appropriate, the corresponding criterion is shown as a solid red line.

Figure 1 CO concentrations at Site 03 St Peters Street (eight hour rolling average)

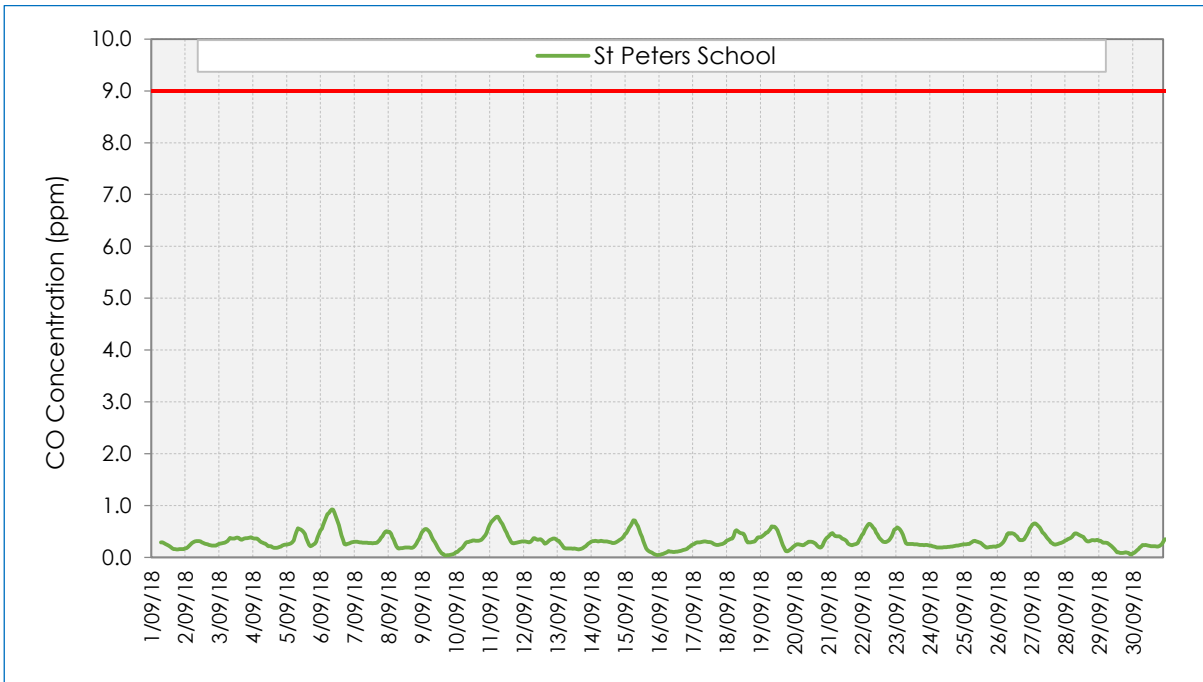


Figure 2 NO₂ concentrations at Site 03 St Peters Street (one hour average)

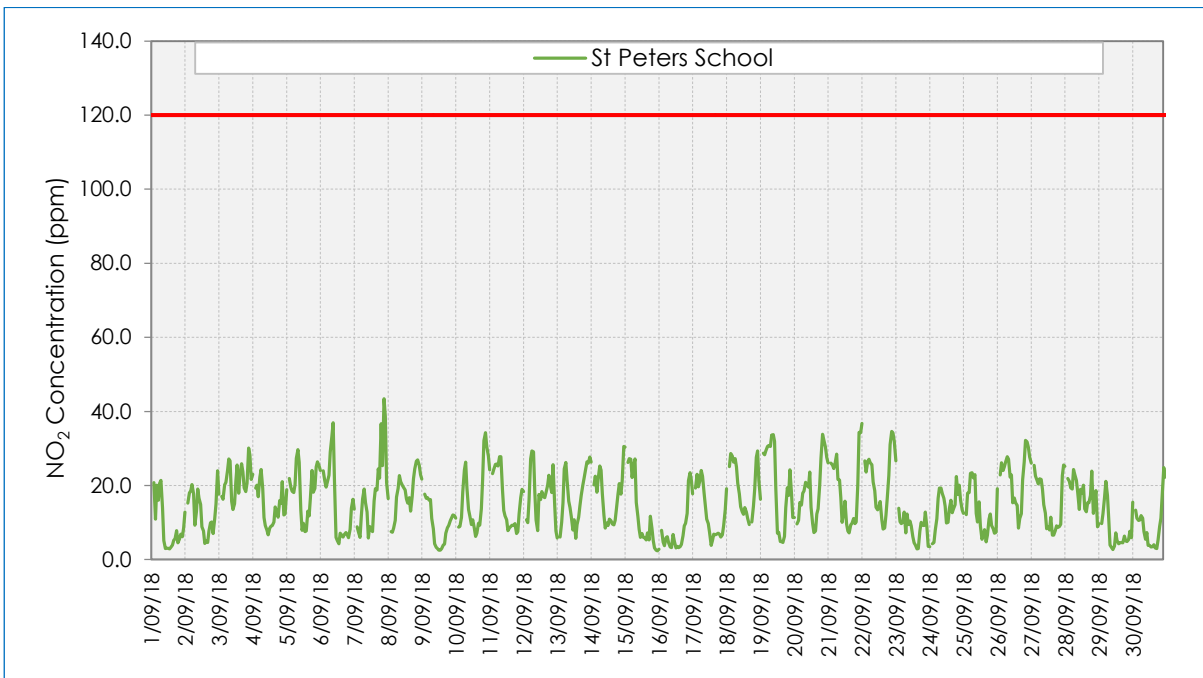
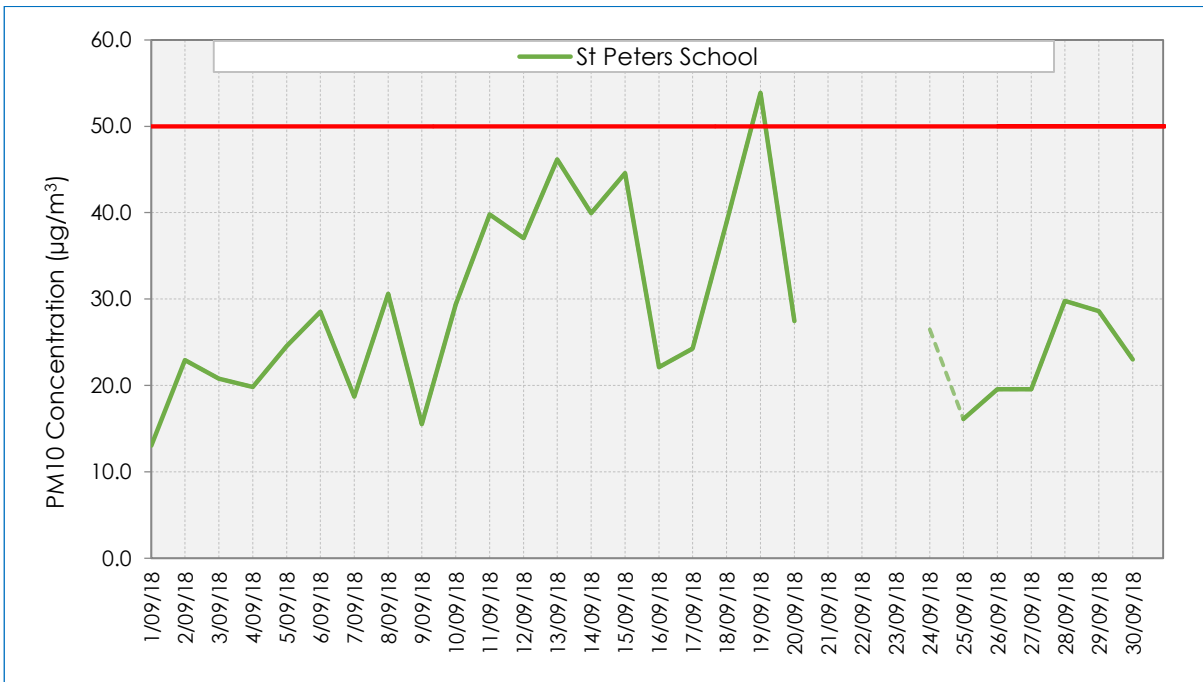
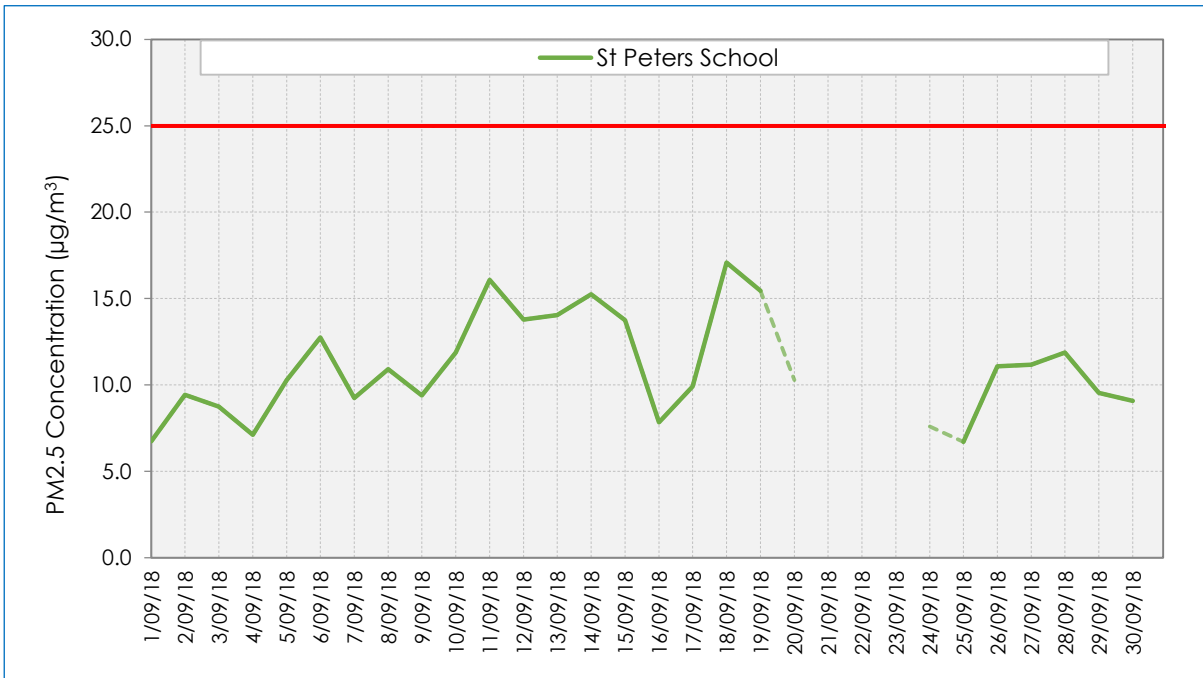


Figure 3 PM₁₀ concentrations at Site 03 St Peters Street (24 hour average)



Note: Dashed line denotes results where less than 75% of the expected samples in the averaging period are available

Figure 4 PM_{2.5} concentrations at Site 03 St Peters Street (24 hour average)



Note: Dashed line denotes results where less than 75% of the expected samples in the averaging period are available

2.2 Comparison with data from OEH monitoring sites

The following graphs show the comparison – as time series of 24-hour averages - between the particulate concentrations at Site 03 St Peters Street and those at the OEH sites. The OEH data are shown as average values for the Chullora, Rozelle and Earlwood sites, with the grey shaded area giving the range of values across the three sites (i.e. the graphs show the maximum, average and minimum values for the three OEH sites). It should be noted that concentrations will vary between the WestConnex sites and OEH due to the differing nature of the sites (e.g. roadside vs background). It is noted that PM_{2.5} and PM₁₀ data for St Peters Street site is consistently elevated compared with OEH stations nearby.

Figure 5 CO concentrations at Site 03 St Peters Street and OEH sites (24-hour average)

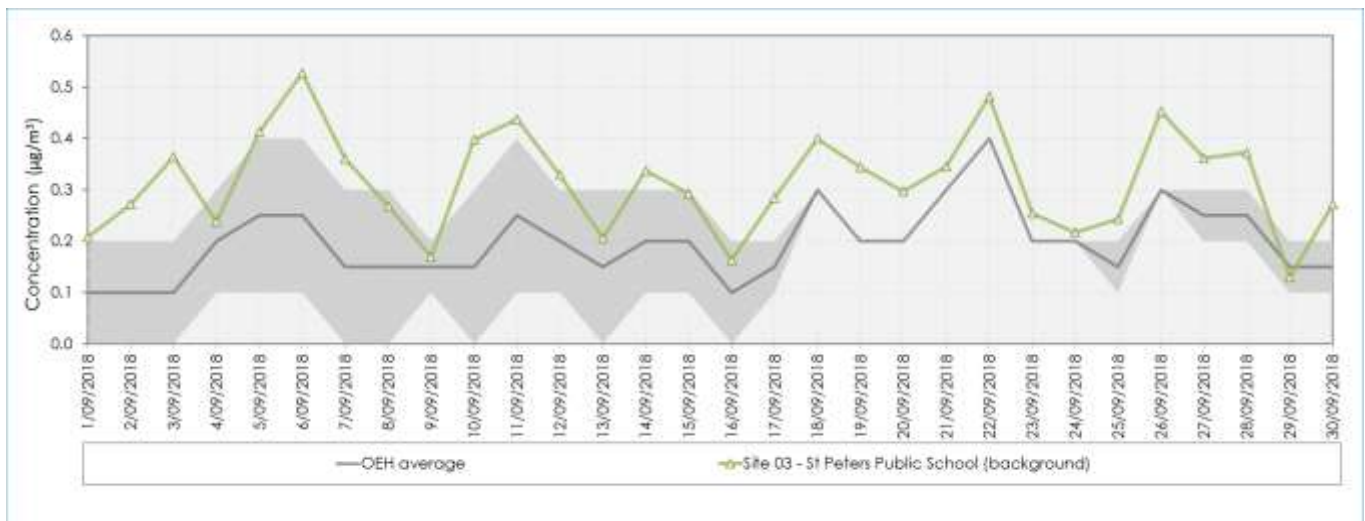


Figure 6 NO₂ concentrations at Site 03 St Peters Street and OEH sites (24-hour average)

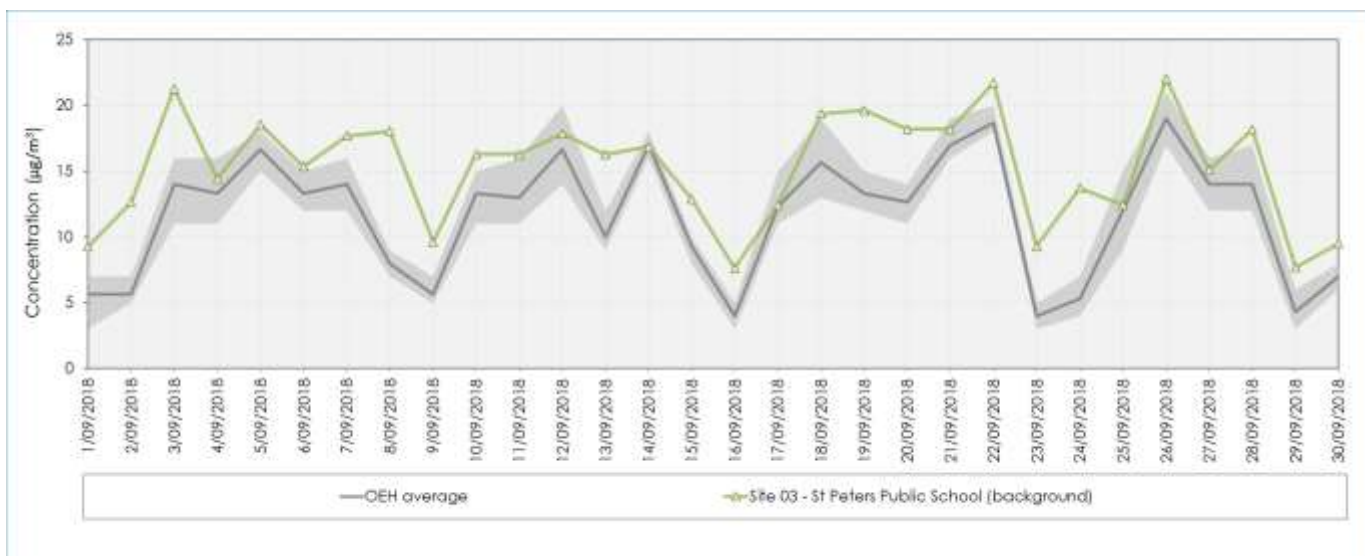
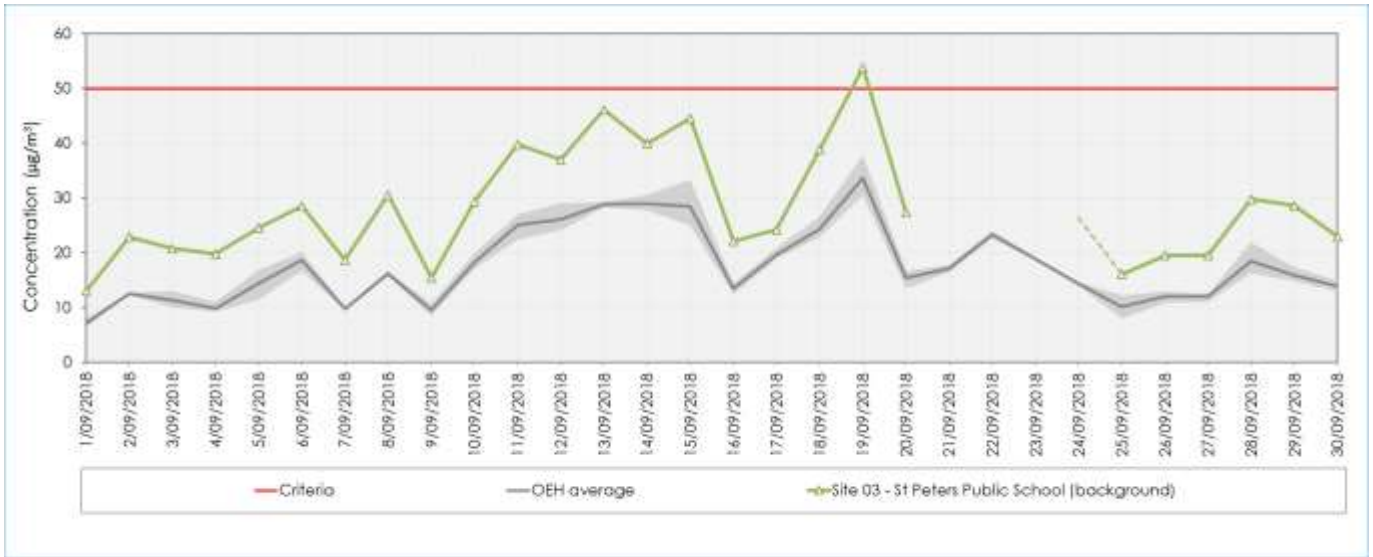
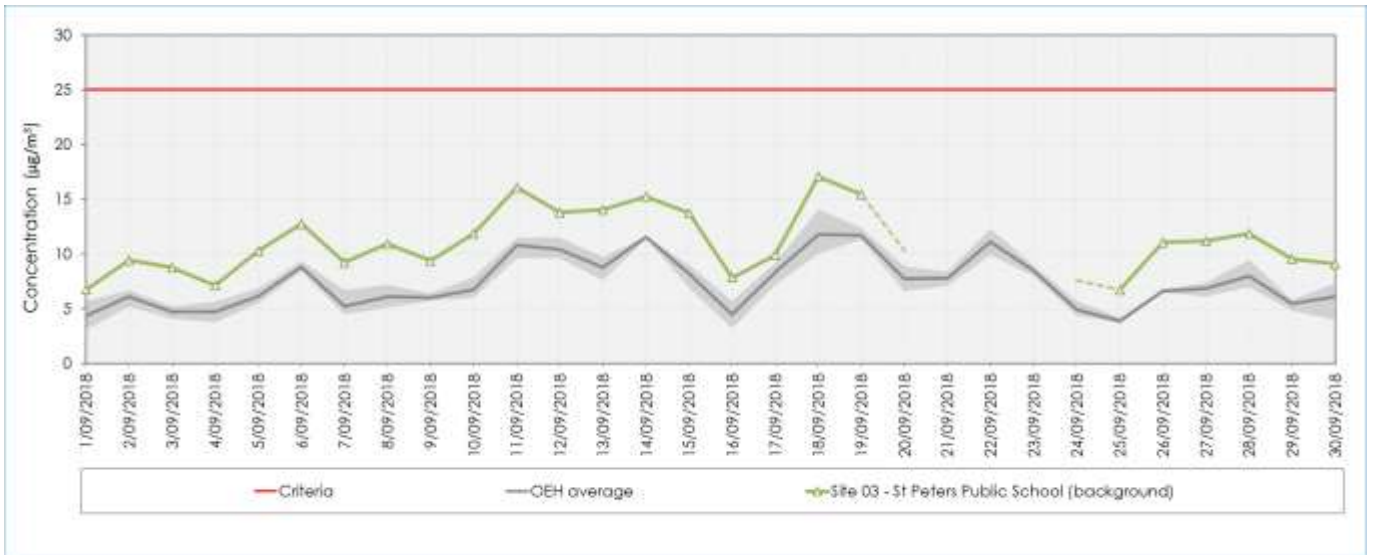


Figure 7 PM₁₀ concentrations at Site 03 St Peters Street and OEH sites (24-hour average)



Note: Dashed line denotes results where less than 75% of the expected samples in the averaging period are available.

Figure 8 PM_{2.5} concentrations at Site 03 St Peters Street and OEH sites (24-hour average)



Note: Dashed line denotes results where less than 75% of the expected samples in the averaging period are available.