

WestConnex M4-M5 Link Ambient air quality monitoring results

April 2016

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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 Introduction: Understanding local air quality

WestConnex is undertaking air quality monitoring within local areas in close proximity to the proposed M4-M5 Link motorway. Monitoring stations have been established to measure the existing air quality conditions. The data collected through our monitoring program provides a baseline for the current air quality conditions along the project corridor. The data is being collected as part of the environmental assessment process for the M4-M5 Link project.

2 Monitoring air quality

To support the development and assessment of the M4-M5 Link, three ambient air quality monitoring stations have been established along the project corridor. Data from these three stations supplements the multiple long-term monitoring stations operated by NSW Office of Environment and Heritage and Roads and Maritime Services. Air quality specialists have been commissioned to operate and maintain the monitoring network during the planning phase of the project. A map of the monitoring station locations across the M4-M5 Link project area is provided below in **Figure 1**.

Figure 1 M4-M5 Link air quality monitoring station locations



3 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. For more information on the pollutants measured and monitoring methodology visit www.westconnex.com.au

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.

This 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.

4 Results

A summary of air quality results from the M4-M5 Link monitoring network 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).

4.1 Ramsay Street, Haberfield

A summary of the air quality results from the Ramsay Street monitoring station in Haberfield is provided in **Table 1** and **Figure 2**, **Figure 3**, **Figure 4** and **Figure 5**. This monitoring station was established in mid-April 2016, as reflected in the figures below.

Table 1 Ramsay 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
<i>Standard</i>	9	120	50	25
Average value	0.3	13.9	12.8	8.4
Maximum value	0.8	38.4	18.8	19.2
Minimum value	0.0	3.9	8.8	3.8

Figure 2 Ramsay Street CO concentrations (eight hour rolling average)

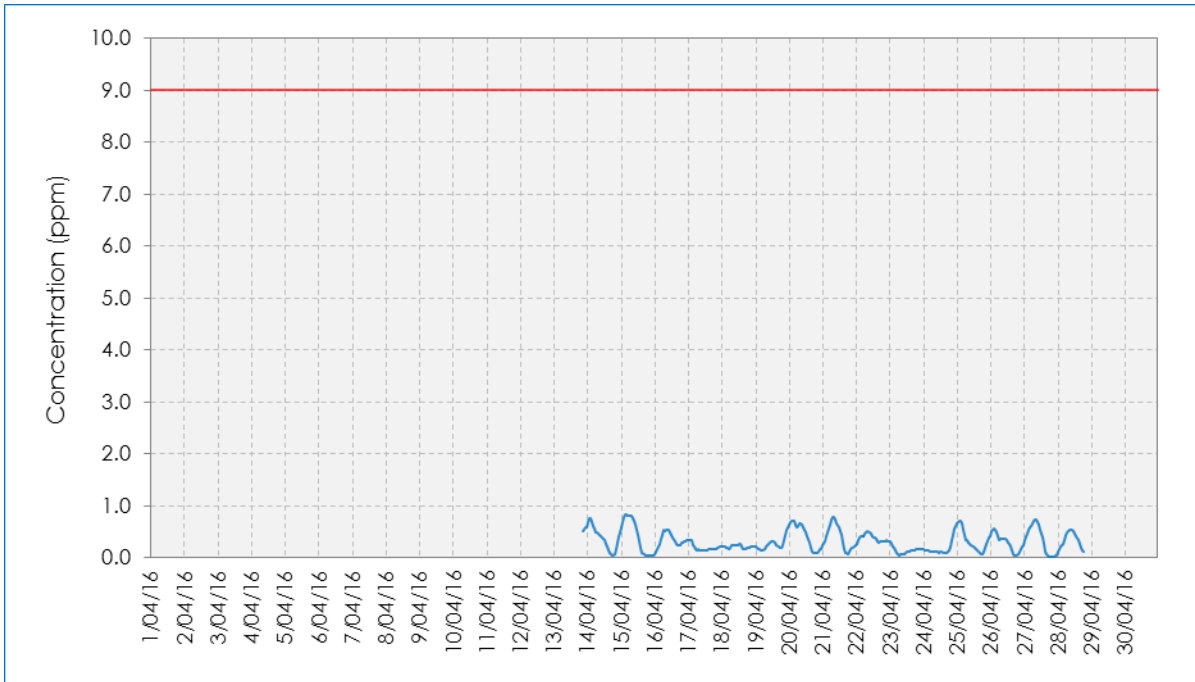


Figure 3 Ramsay Street NO₂ concentrations (one hour average)

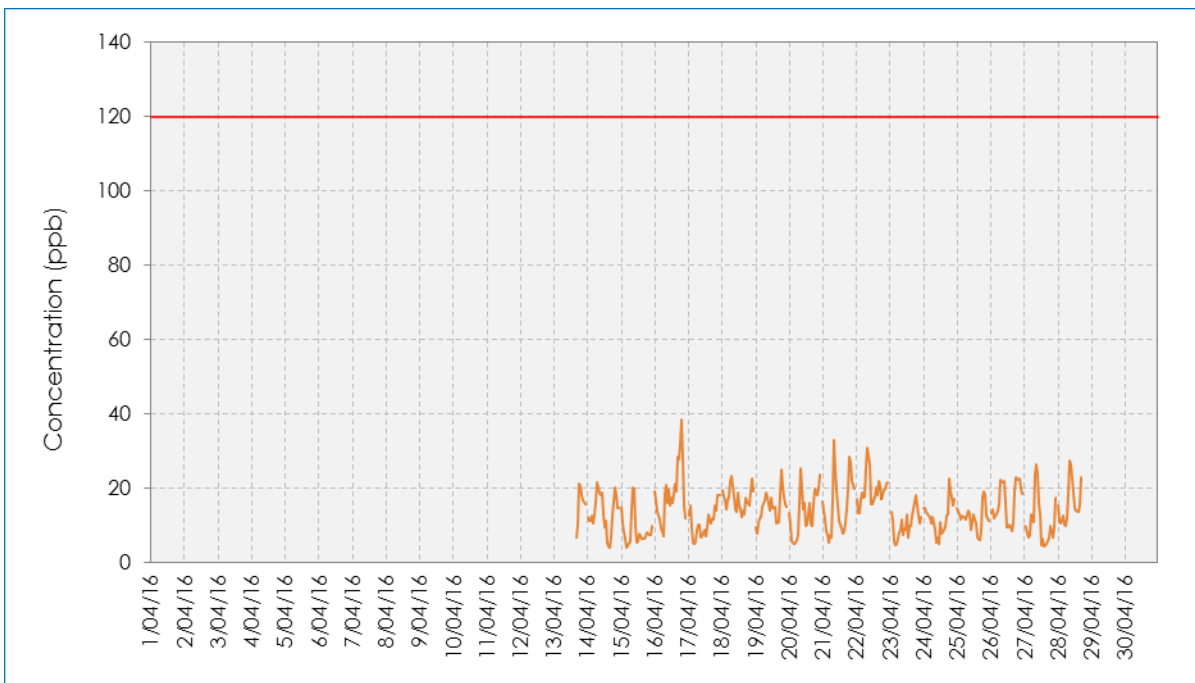


Figure 4 Ramsay Street PM₁₀ concentrations (24 hour average)

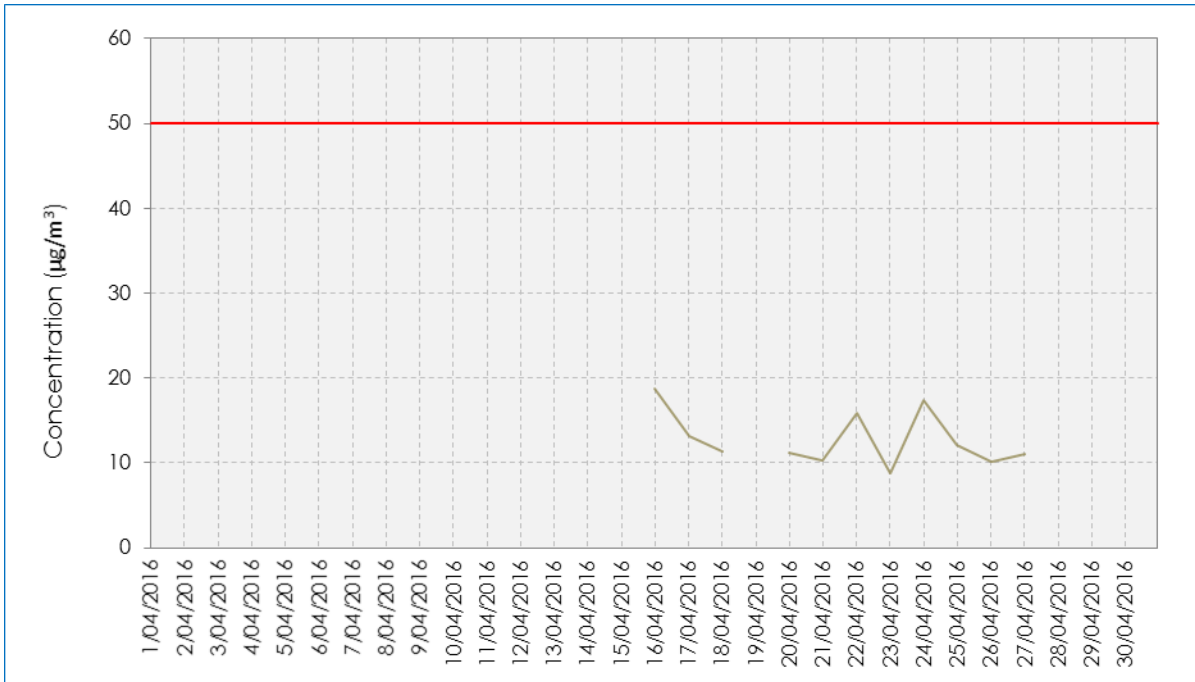
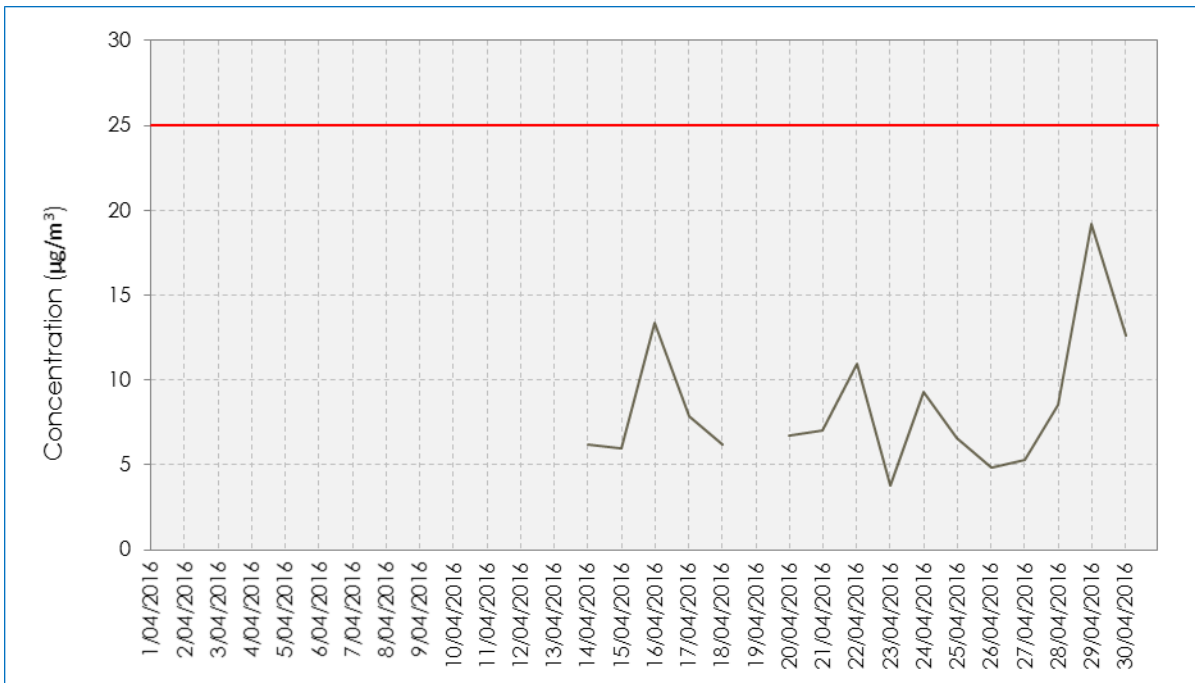


Figure 5 Ramsay Street PM_{2.5} concentrations (24 hour average)*



Reporting

A circuit breaker tripping occurred on 28th April at the Ramsay Street monitoring station, resulting in data loss. This issue was resolved on 18 May by a Pacific Environmental technician.

Data gaps for PM_{2.5} and PM₁₀ was due to some instances of PM_{2.5} concentrations being greater than PM₁₀. These results were invalidated in accordance with the data validation and ratification procedures.

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period for the key pollutants outlined above at the Ramsay Street monitoring station in Haberfield.

4.2 City West Link, Rozelle

A summary of the air quality results from the City West Link monitoring station in Rozelle is provided in **Table 2** and **Figure 6**, **Figure 7**, **Figure 8** and **Figure 9**.

Table 2 City West Link 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	20.4	22.1	10.5
Maximum value	0.7	62.5	47.0	20.3
Minimum value	0.0	1.8	11.9	4.8

Figure 6 City West Link CO concentrations (eight hour rolling average)

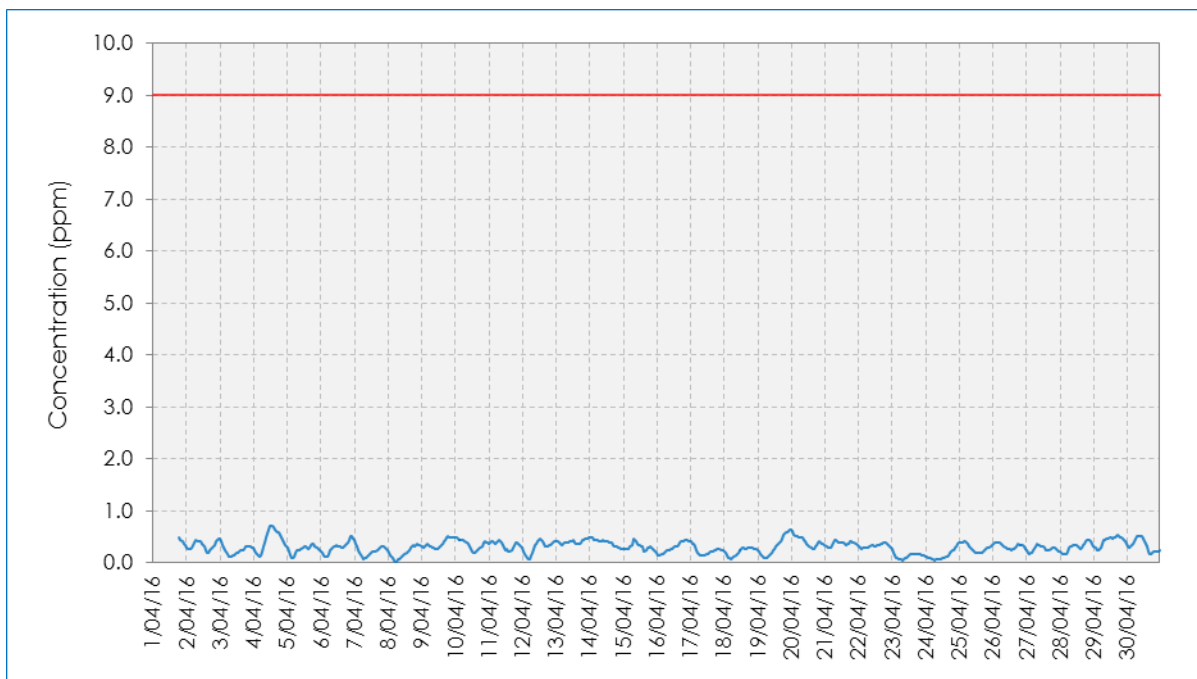


Figure 7 City West Link NO₂ concentrations (one hour average)

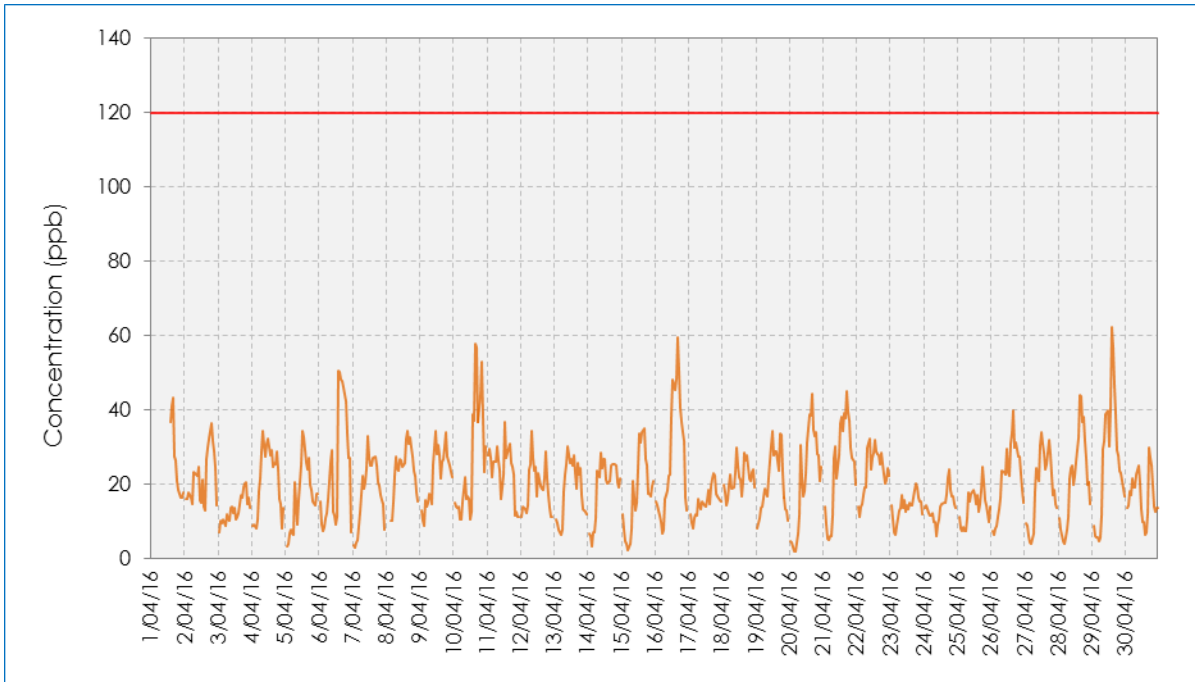


Figure 8 City West Link PM₁₀ concentrations (24 hour average)

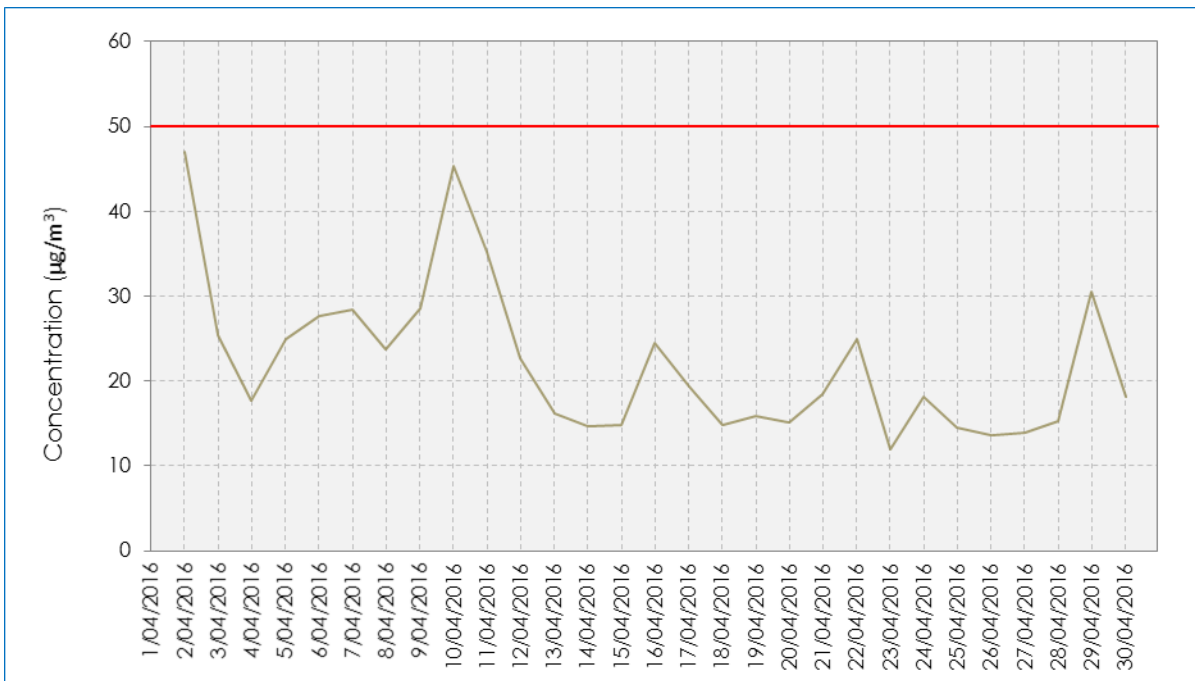
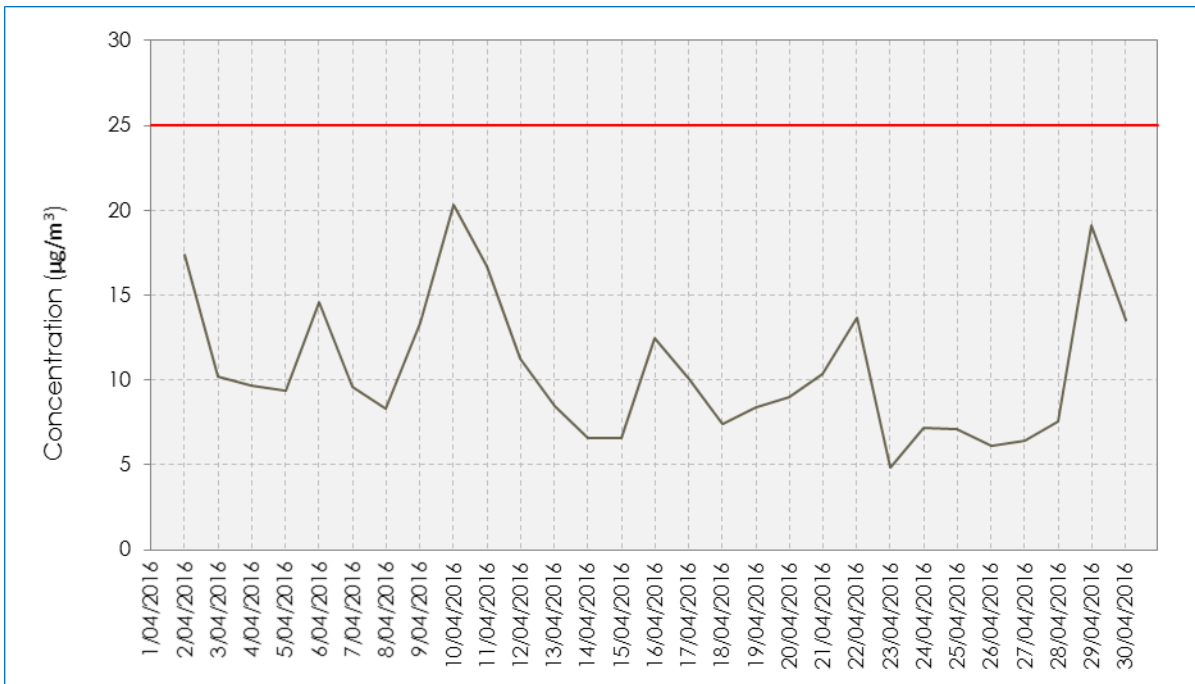


Figure 9 City West Link PM_{2.5} concentrations (24 hour average)



Reporting

No exceedances of the air quality criteria in the NSW Approved Methods (NSW DEC, 2005) were recorded during the reporting period for the key pollutants outlined above at the City west Link monitoring station in Rozelle.

4.3 St Peters Public School, St Peters

A summary of the air quality results from the St Peter Public School monitoring station in St Peters is provided in **Table 3** and **Figure 10**, **Figure 11**, **Figure 12** and **Figure 13**.

Table 3 St Peters 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	0.4	11.2	21.7	8.6
Maximum value	0.9	26.3	33.8	17.9
Minimum value	0.1	2.1	12.7	3.1

Figure 10 St Peters CO concentrations (eight hour rolling average)

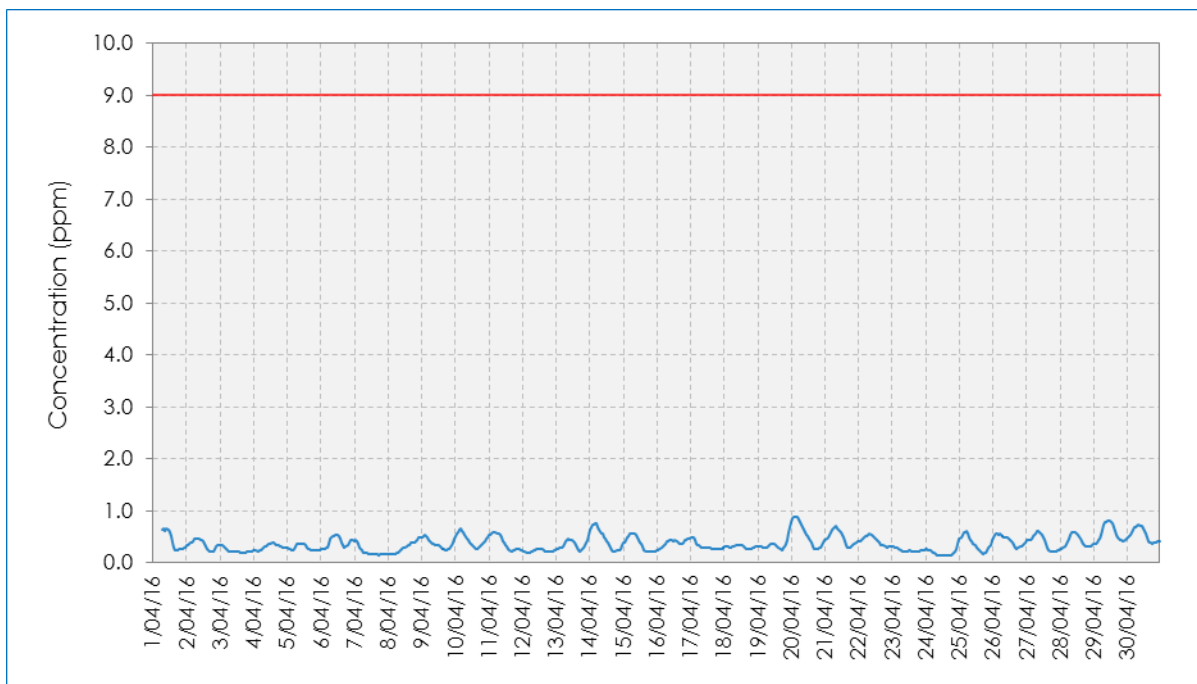


Figure 11 St Peters NO₂ concentrations (one hour average)

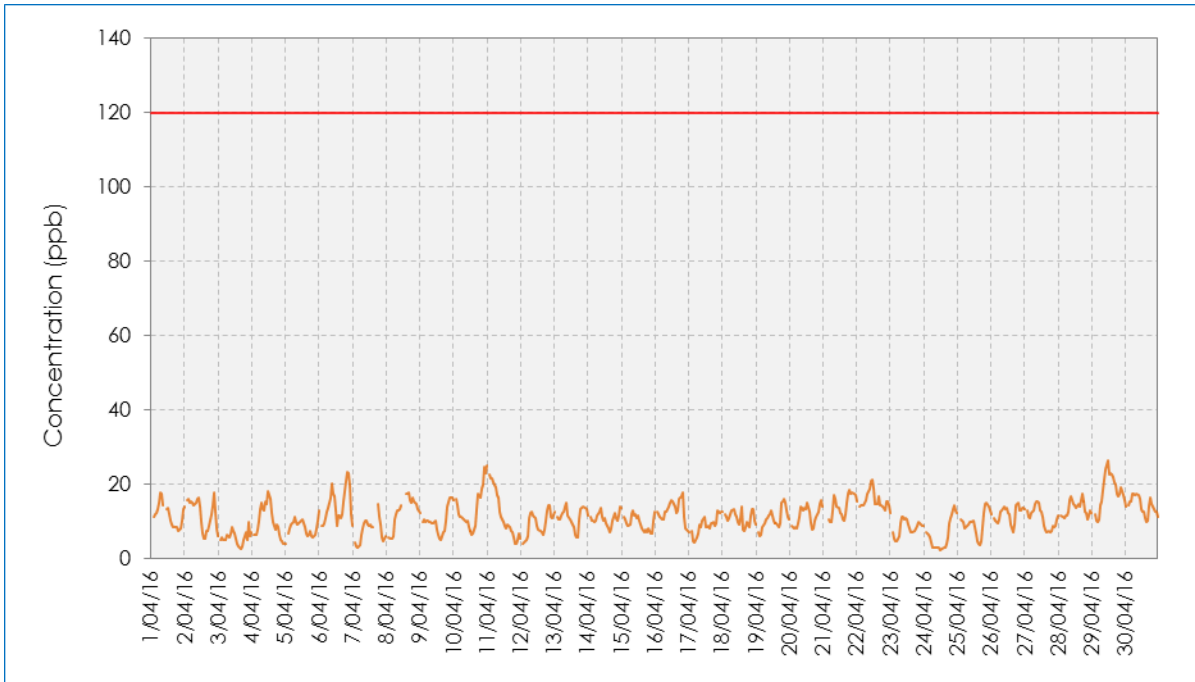


Figure 12 St Peters PM₁₀ concentrations (24 hour average)

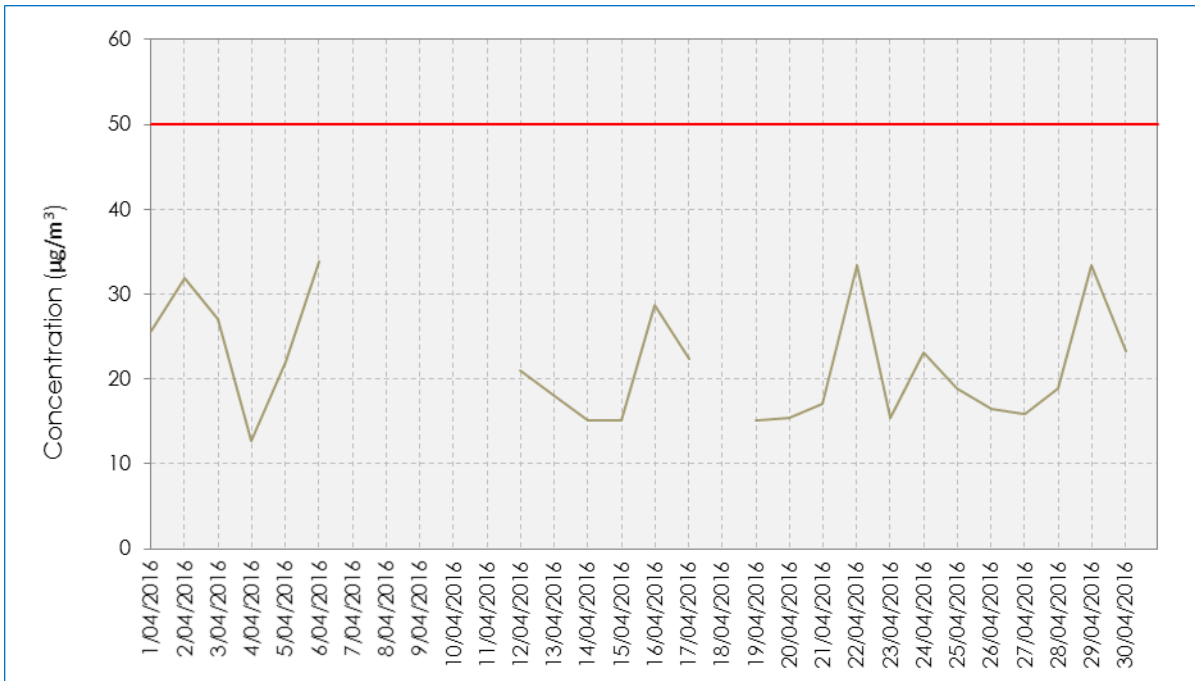
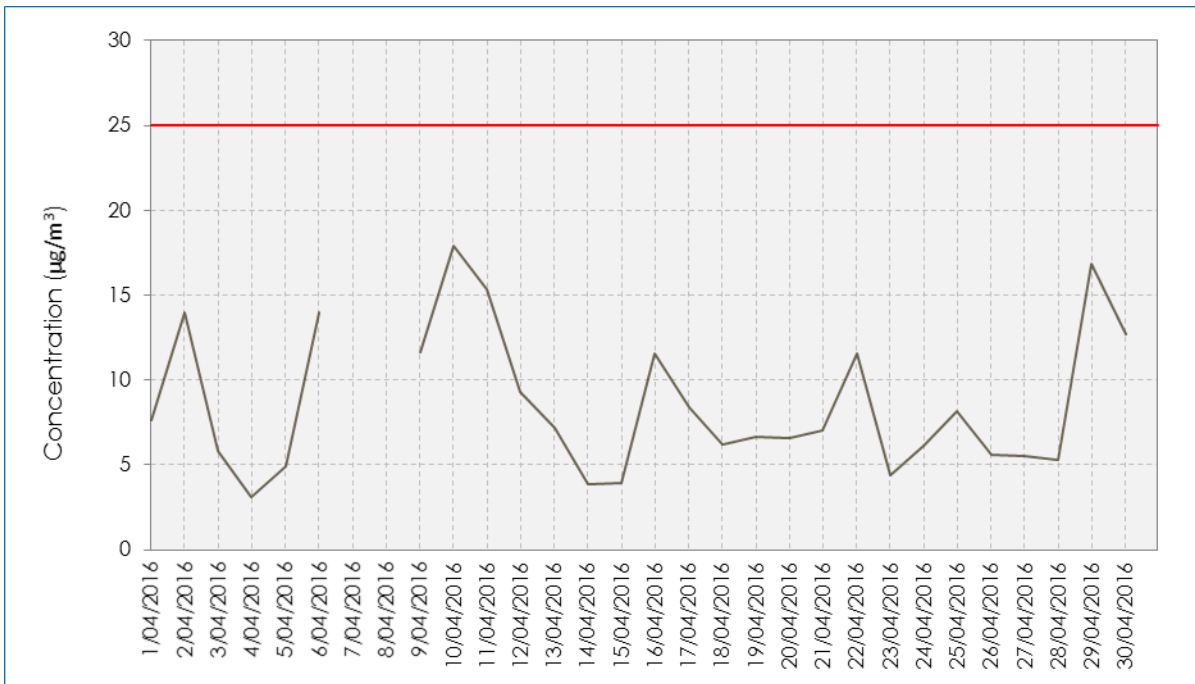


Figure 13 St Peters PM_{2.5} concentrations (24 hour average)



Reporting

Due to a mechanical issue with the PM_{2.5} and PM₁₀ analyser's capstan shaft and filter tape a lower capture rate occurred, resulting in several data gaps. This issue was subsequently resolved by a Pacific Environment Limited technician.

No exceedances of the air quality criteria in the *NSW Approved Methods* (NSW DEC, 2005) were recorded during the reporting period for the key pollutants outlined above at the City West Link monitoring station in St Peters School.