

WestConnex

New M5

Ambient air quality monitoring results

September 2015

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1 Introduction: Understanding local air quality

WestConnex is undertaking air quality monitoring within local areas in close proximity to the proposed New M5 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 New M5.

2 Monitoring air quality

To support the development and assessment of the New M5, seven ambient air quality monitoring stations have been established along the project corridor. Data from these seven 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. A map of the monitoring station locations across the New M5 project area is provided below in **Figure 1.0**.



Figure 1.0 New M5 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.

4 Results

A summary of air quality results from the New M5 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 St Peters Public School

A summary of the air quality results from the monitoring station at St Peters Public School is provided in Table 4.1 and Figures 4.1, 4.2, 4.3 and 4.4.

Table 4.1 St Peters Public School 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
Average value	0.2	13.3	25.3	9.3
Maximum value	0.7	28.0	43.6	15.6
Minimum value	0.1	3.0	16.0	5.9

Figure 4.1 St Peters Public School CO concentrations (eight hour rolling average)

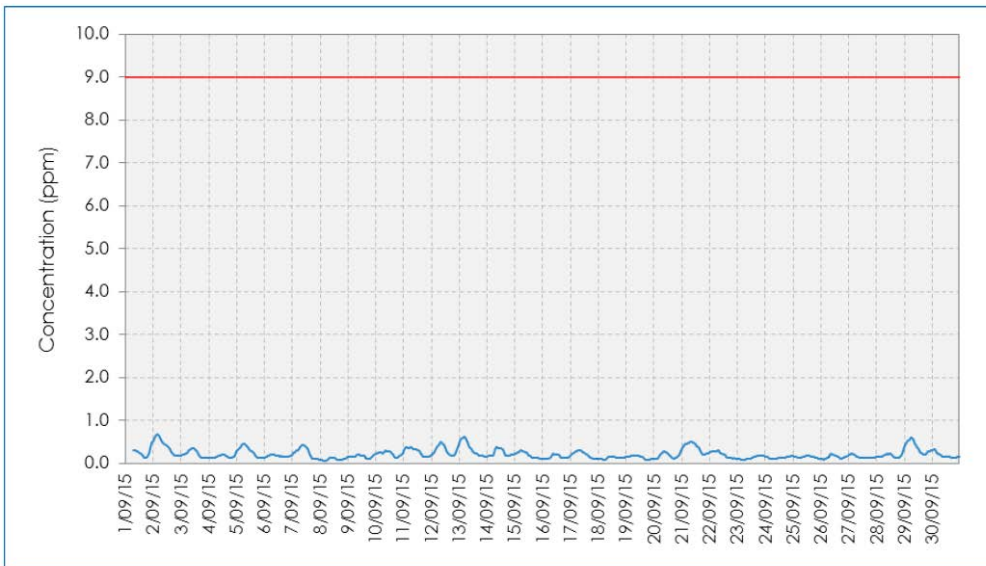


Figure 4.2 St Peters Public School NO₂ concentrations (one hour average)

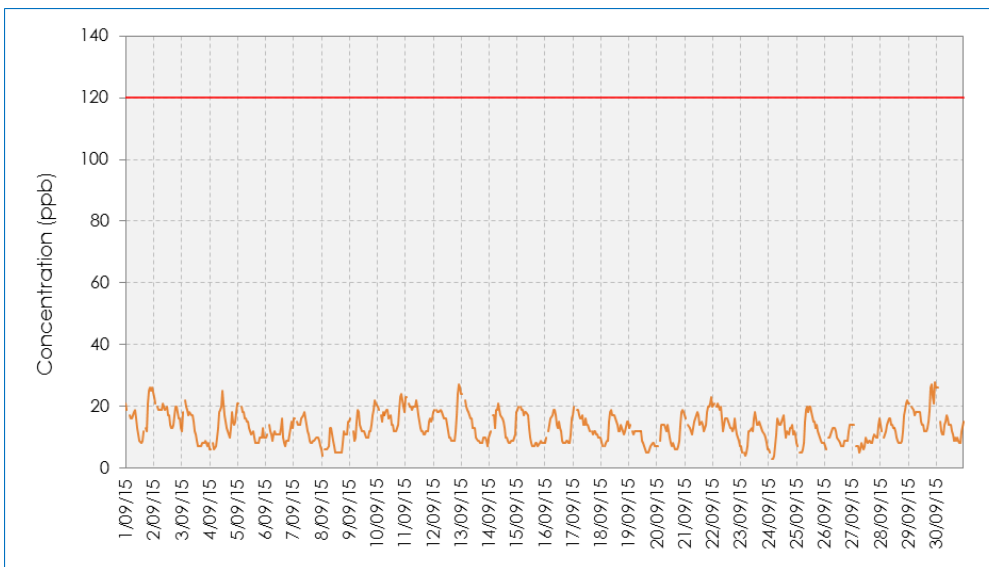


Figure 4.3 St Peters Public School PM₁₀ concentrations (24 hour average)

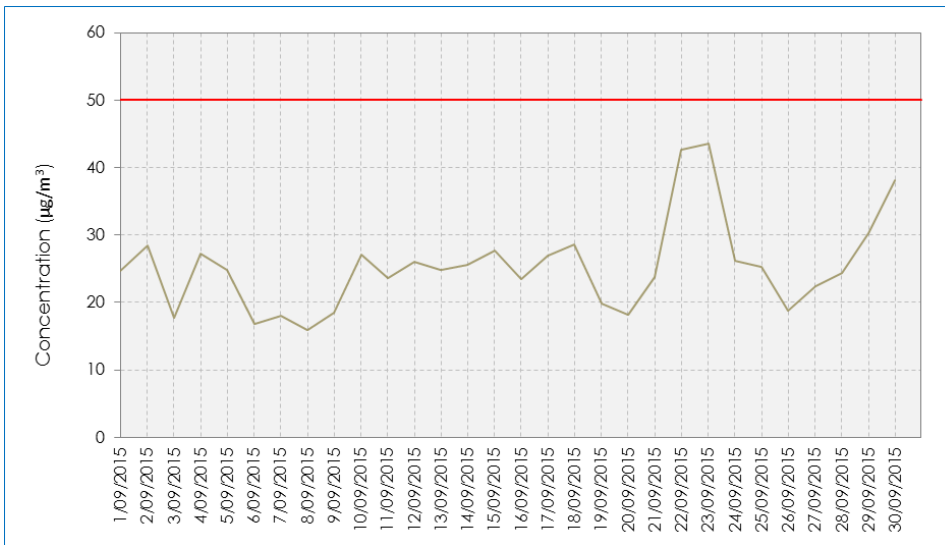
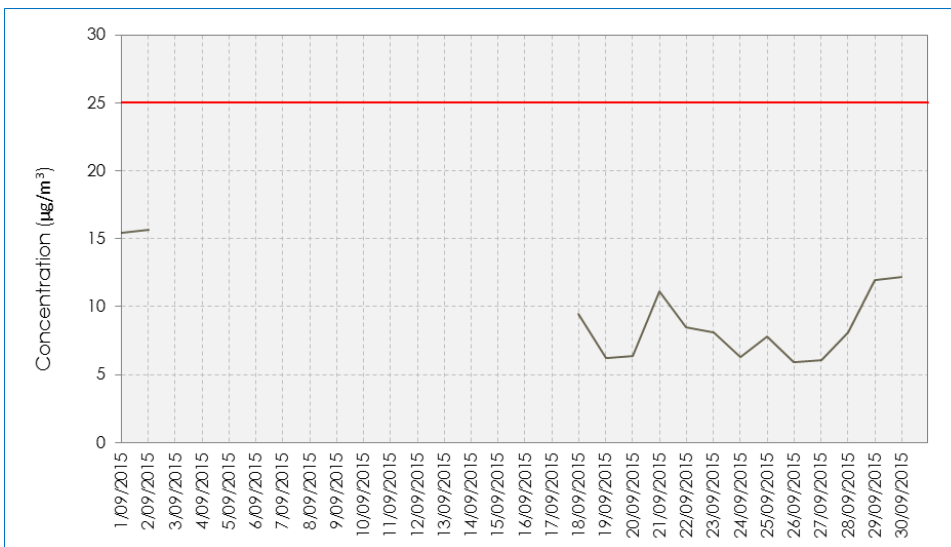


Figure 4.4 St Peters Public School PM_{2.5} concentrations (24 hour average)*



***Note:** A low count for PM_{2.5} was the result of an instrument fault. This issue has now been resolved.

Reporting

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period at the St Peters Public School monitoring station.

4.2 Princes Highway, St Peters

A summary of the air quality results from the Princes Highway monitoring station in St Peters is provided in Table 4.2 and Figures 4.5, 4.6, 4.7 and 4.8.

Table 4.2 Princes Highway 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
Average value	0.3	17.8	24.0	11.5
Maximum value	1.0	43.0	39.2	15.4
Minimum value	0.0	3.0	13.5	7.7

Figure 4.5 Princes Highway CO concentrations (eight hour rolling average)

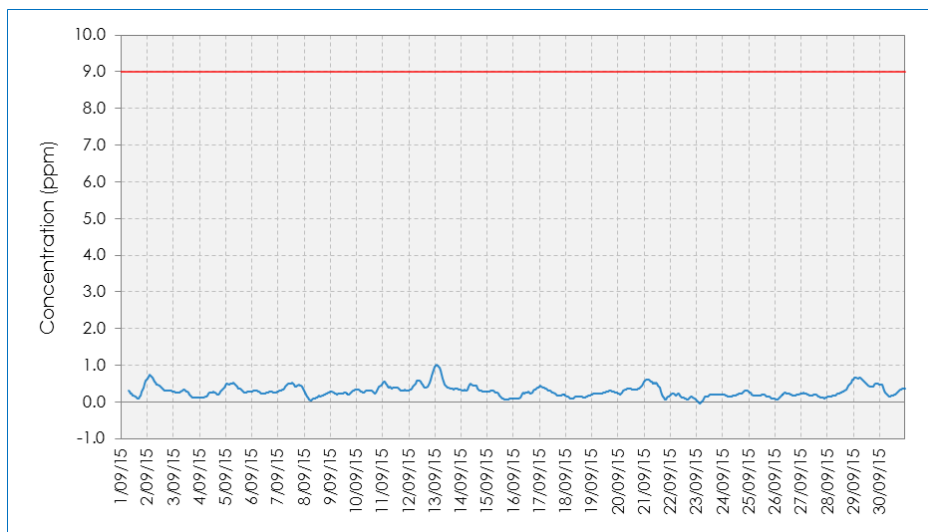


Figure 4.6 Princes Highway NO₂ concentrations (one hour average)

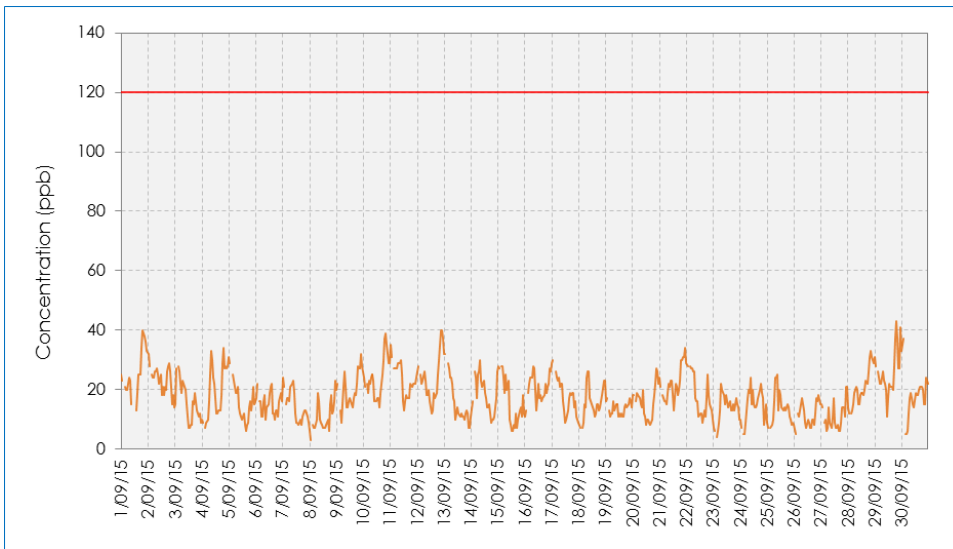


Figure 4.7 Princes Highway PM₁₀ concentrations (24 hour average)

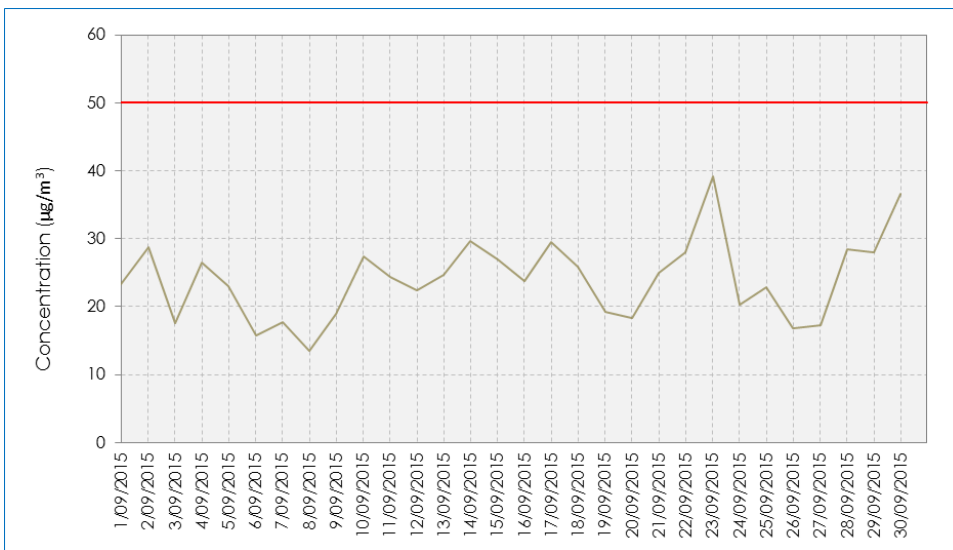
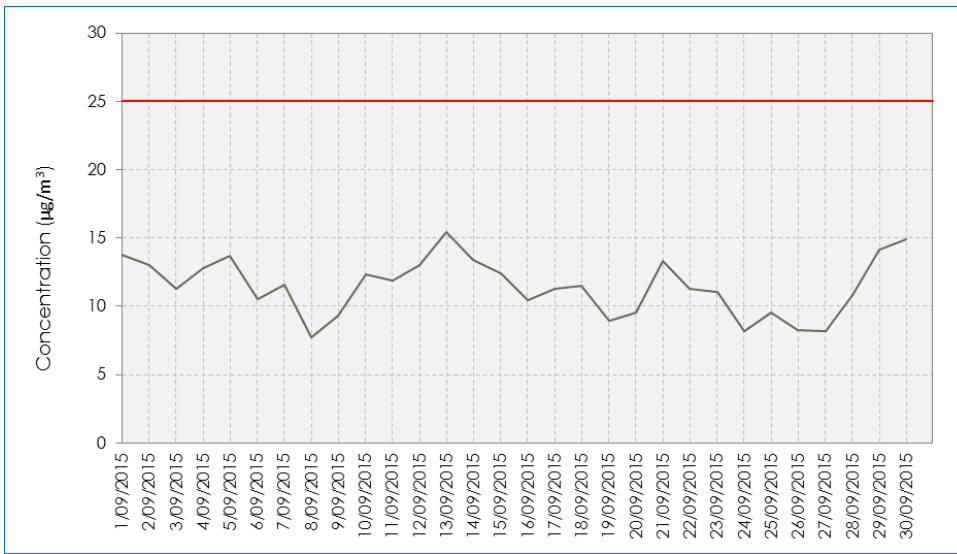


Figure 4.8 Princes Highway PM_{2.5} concentrations (24 hour average)



Reporting

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period at the Princes Highway monitoring station.

4.3 West Botany Street, Arncliffe

A summary of the air quality results from the West Botany Street monitoring station in Arncliffe is provided in Table 4.3 and Figures 4.9, 4.10, 4.11 and 4.12.

Table 4.3 West Botany 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
Average value	0.2	16.3	20.2	10.8
Maximum value	0.6	57.0	34.4	14.7
Minimum value	0.0	2.0	10.0	7.1

Figure 4.9 West Botany Street CO concentrations (eight hour rolling average)

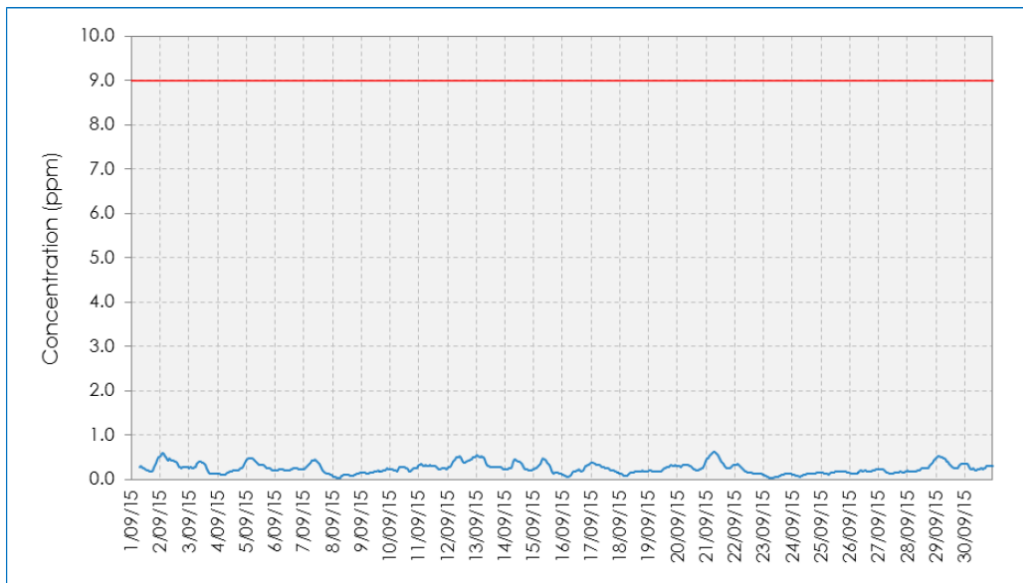


Figure 4.10 West Botany Street NO₂ concentrations (one hour average)

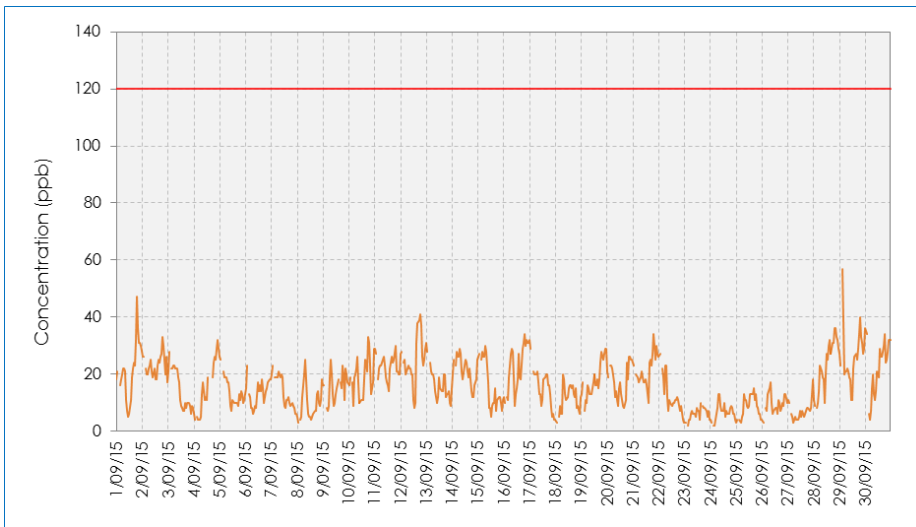
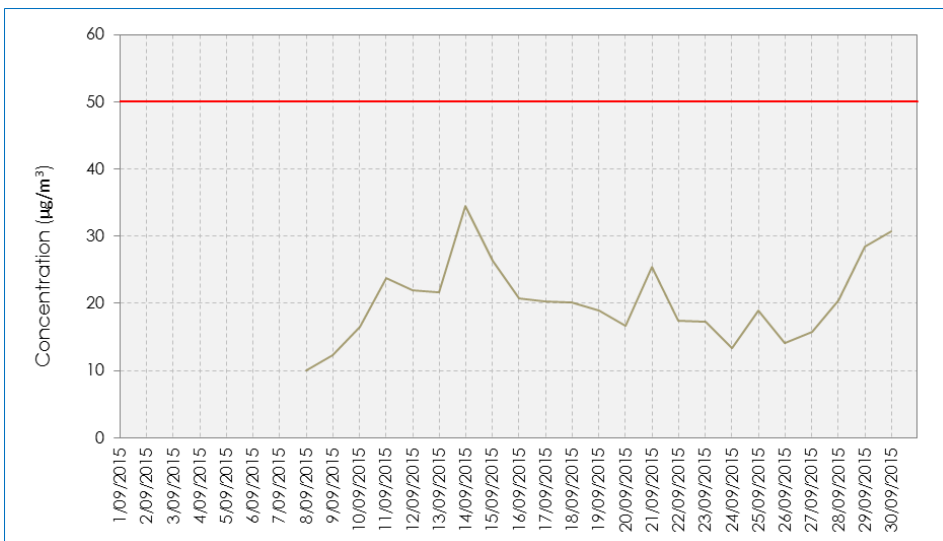
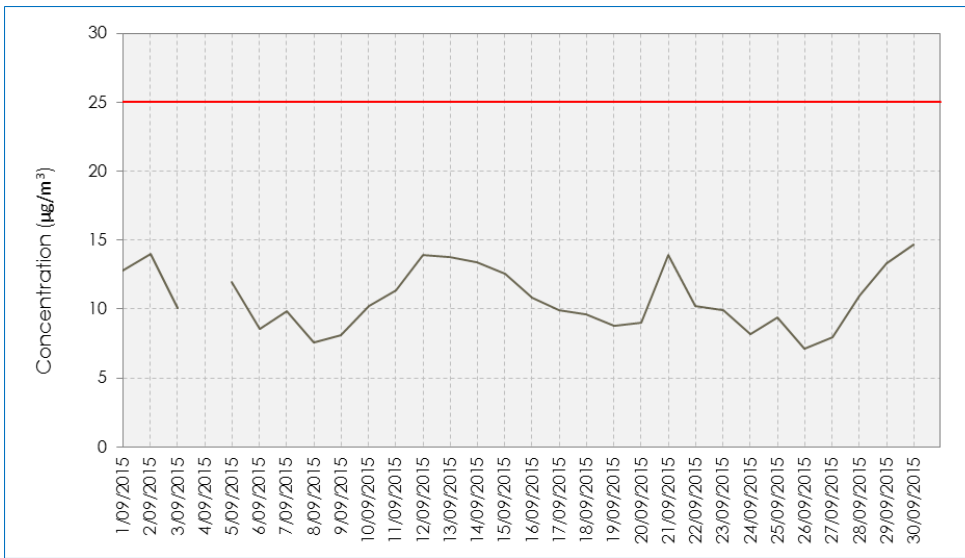


Figure 4.11 West Botany Street PM₁₀ concentrations (24 hour average)*



***Note:** Gaps in the PM₁₀ data collected were caused by technical issues with the PM units and/or delays in the availability of collection materials.

Figure 4.12 West Botany Street 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 at the West Botany Street monitoring station.

4.4 Bestic Street, Rockdale

A summary of the air quality results from the Bestic Street monitoring station in Rockdale is provided in Table 4.4 and Figures 4.13, 4.14, 4.15 and 4.16.

Table 4.4 Bestic 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
Average value	0.3	6.6	18.2	11.6
Maximum value	0.8	21.0	28.0	15.4
Minimum value	0.1	-1.0*	11.2	8.0

***Note:** The concentration of NO₂ is not measured directly but rather calculated by the difference between NO_x (NO + NO₂) and NO measured at different times. If the measured concentration of NO_x is lower than that of NO then estimated NO₂ concentration will be a negative value. When a negative value is recorded for NO₂ it can be interpreted as a concentration of 0.

Figure 4.13 Bestic Street CO concentrations (eight hour rolling average)

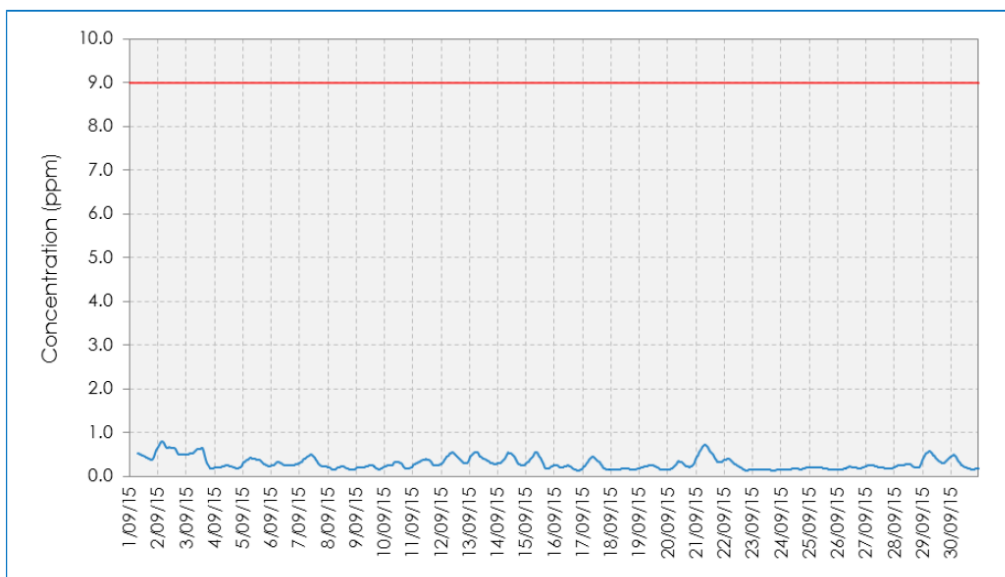


Figure 4.14 Bestic Street NO₂ concentrations (one hour average)

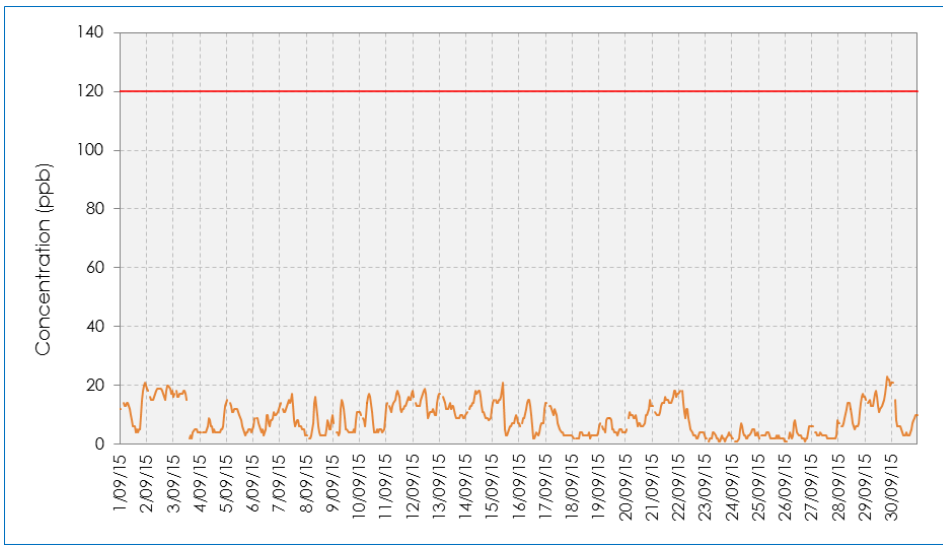


Figure 4.15 Bestic Street PM₁₀ concentrations (24 hour average)

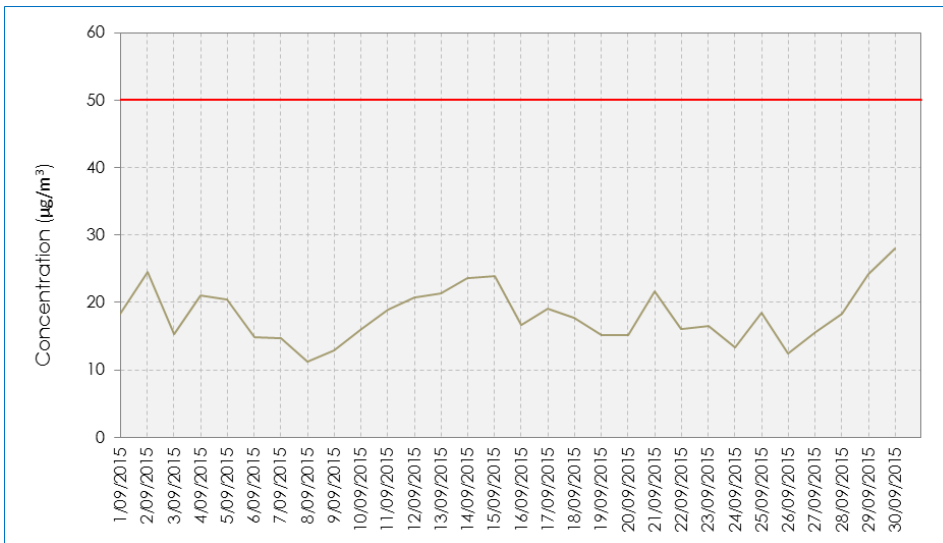
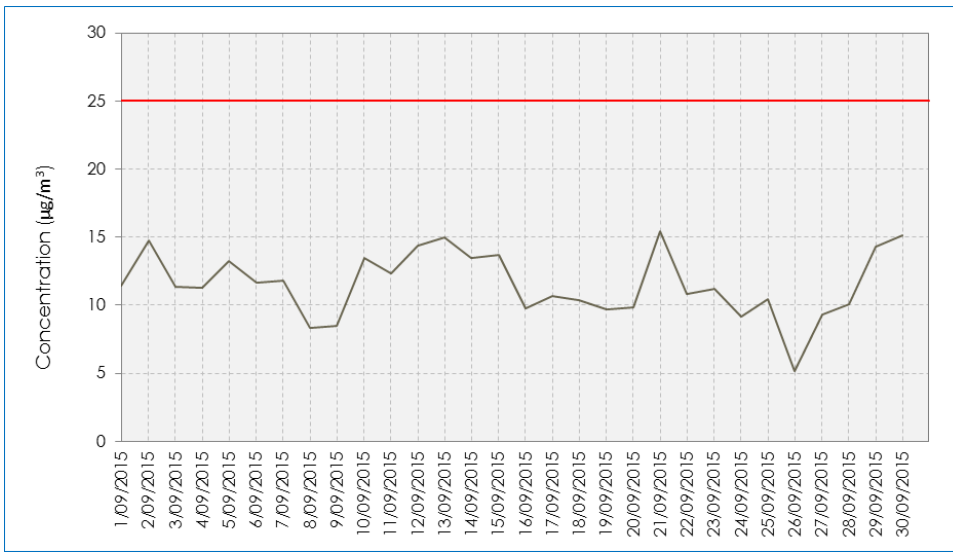


Figure 4.16 Bestic Street PM_{2.5} concentrations (24 hour average)



Reporting

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period at the Bestic Street monitoring station.

4.5 Bexley Road, Kingsgrove

A summary of the air quality results from the Bexley Road monitoring station in Kingsgrove is provided in Table 4.5 and Figures 4.17, 4.18, 4.19 and 4.20.

Table 4.5 Bexley Road 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
Average value	0.3	17.2	16.6	7.0
Maximum value	1.1	44.0	28.4	10.8
Minimum value	0.1	3.0	8.3	3.0

Figure 4.17 Bexley Road CO concentrations (eight hour rolling average)

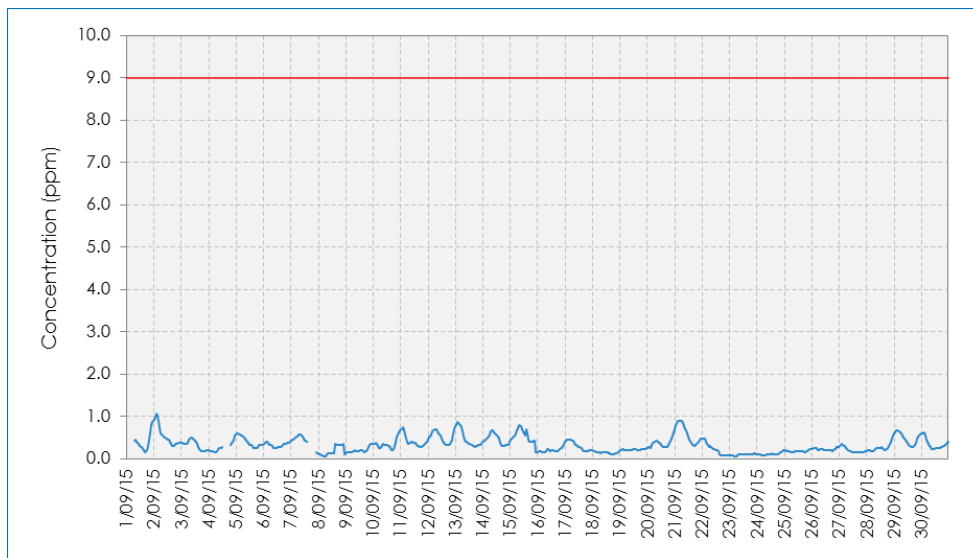


Figure 4.18 Bexley Road NO₂ concentrations (one hour average)

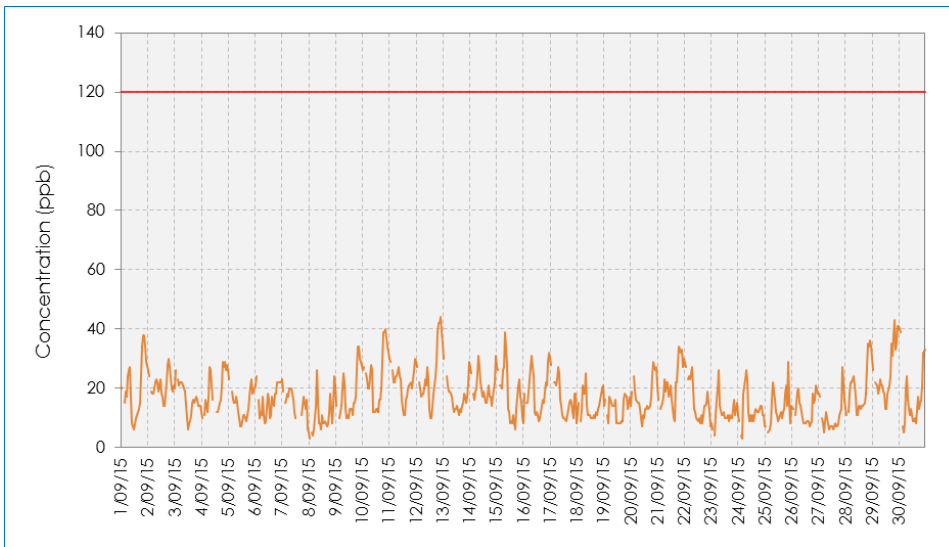
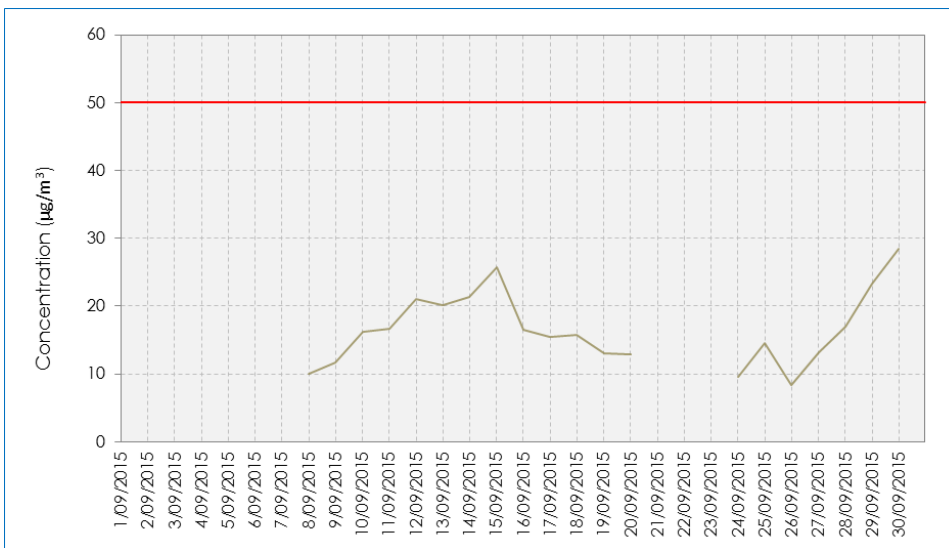
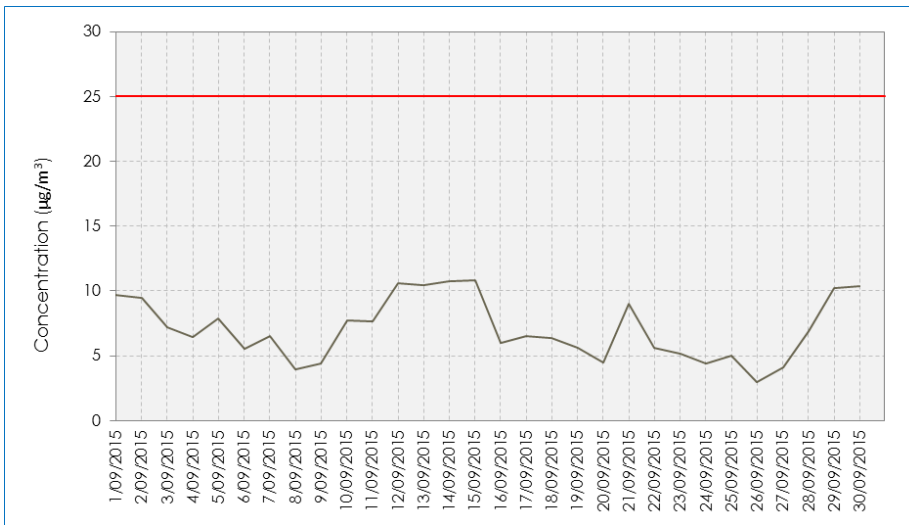


Figure 4.19 Bexley Road PM₁₀ concentrations (24 hour average)*



***Note:** Gaps in the PM₁₀ data collected were caused by technical issues with the PM units and/or delays in the availability of collection materials.

Figure 4.20 Bexley Road 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 at the Bexley Road monitoring station.

4.6 Beverley Hills Park, Beverley Hills

A summary of the air quality results from the Beverley Hills Park monitoring station is provided in Table 4.6 and Figures 4.21, 4.22, 4.23 and 4.24.

Table 4.6 Beverley Hills Park 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
Average value	0.2	11.5	16.6	5.5
Maximum value	0.7	35.0	29.9	10.1
Minimum value	0.0	1.0	8.3	1.8

Figure 4.21 Beverley Hills Park CO concentrations (eight hour rolling average)

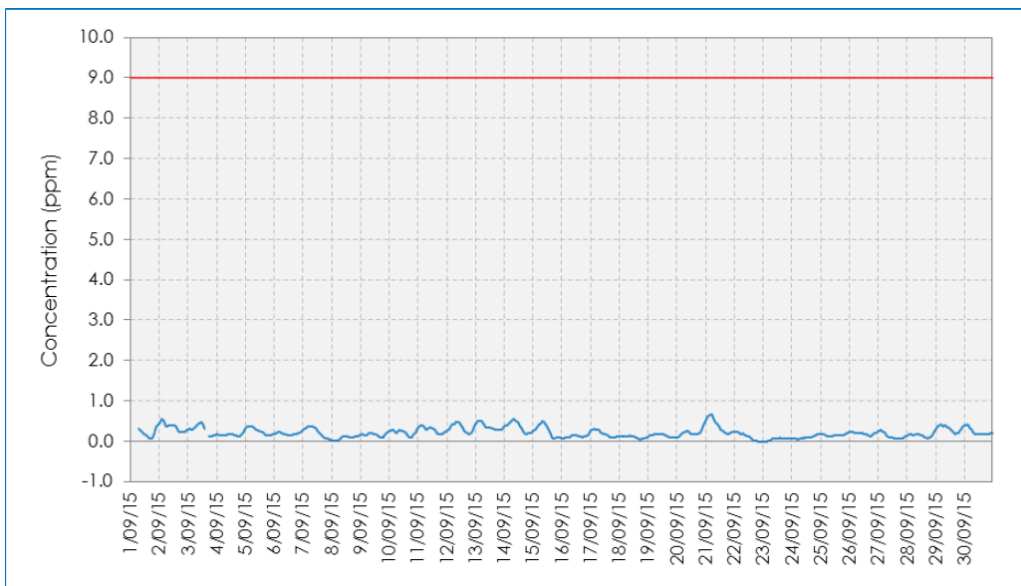


Figure 4.22 Beverley Hills Park NO₂ concentrations (one hour average)

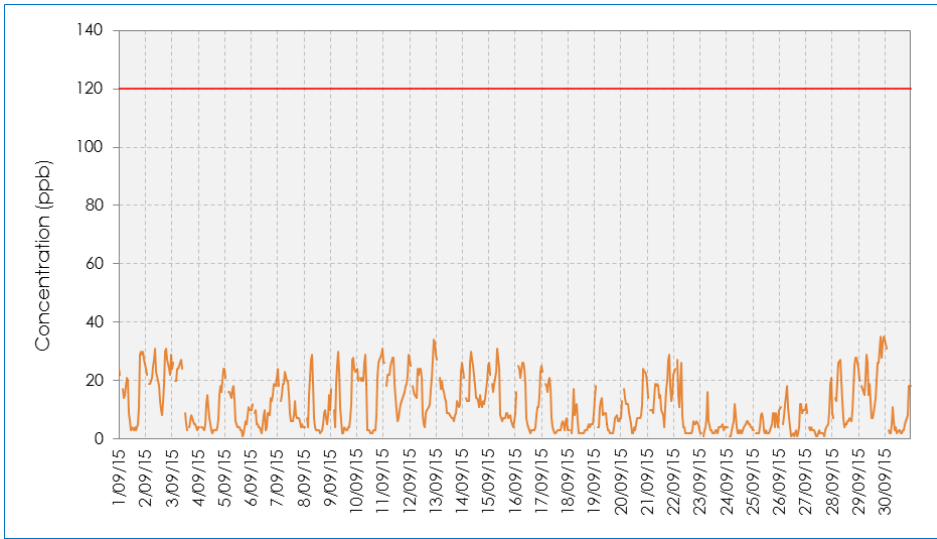


Figure 4.23 Beverley Hills Park PM₁₀ concentrations (24 hour average)

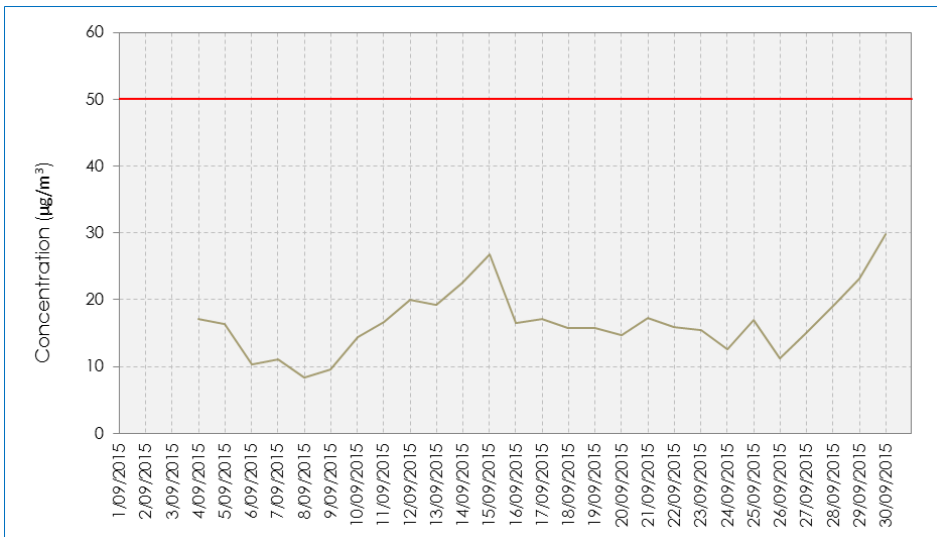
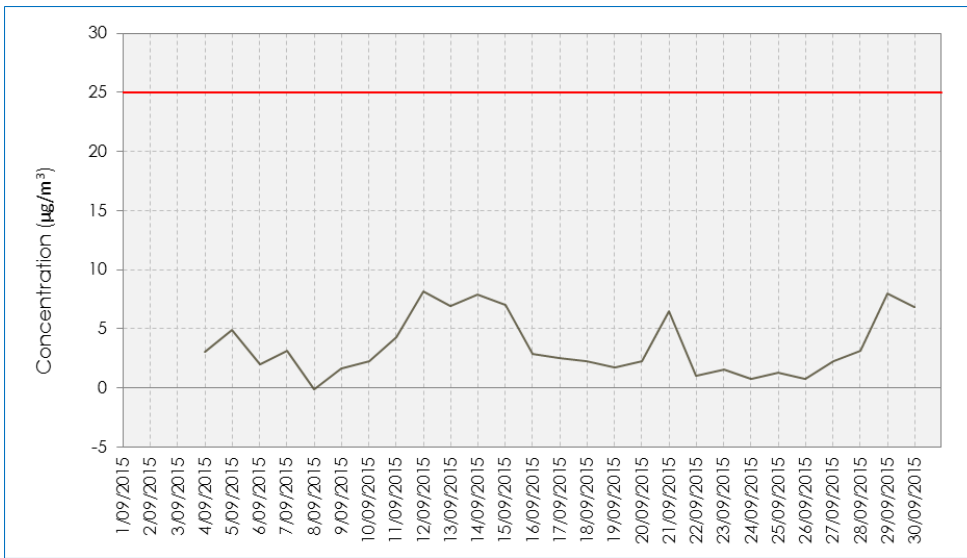


Figure 4.24 Beverley Hills Park PM_{2.5} concentrations (24 hour average)



Reporting

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period at the Beverley Hills Park monitoring station.

4.7 Canal Road, St Peters

A summary of the air quality results from the Canal Road monitoring station is provided in Table 4.7 and Figures 4.25, 4.26, 4.27 and 4.28.

Table 4.7 Canal Road 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
Average value	0.3	17.9	25.1	7.4
Maximum value	0.8	44.8	45.8	13.6
Minimum value	0.1	-1.7*	8.0	3.5

***Note:** The concentration of NO₂ is not measured directly but rather calculated by the difference between NO_x (NO + NO₂) and NO measured at different times. If the measured concentration of NO_x is lower than that of NO then estimated NO₂ concentration will be a negative value. When a negative value is recorded for NO₂ it can be interpreted as a concentration of 0.

Figure 4.25 Canal Road CO concentrations (eight hour rolling average)

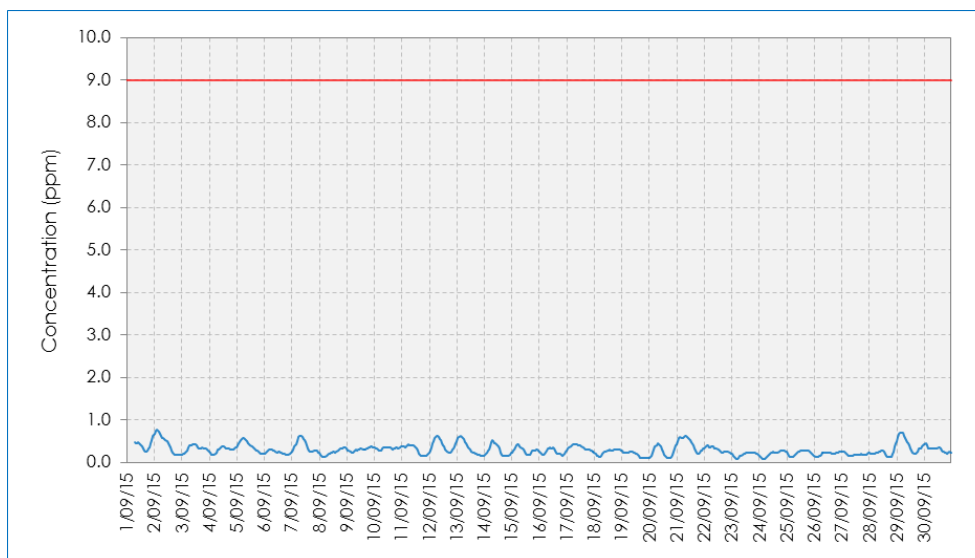


Figure 4.26 Canal Road NO₂ concentrations (one hour average)

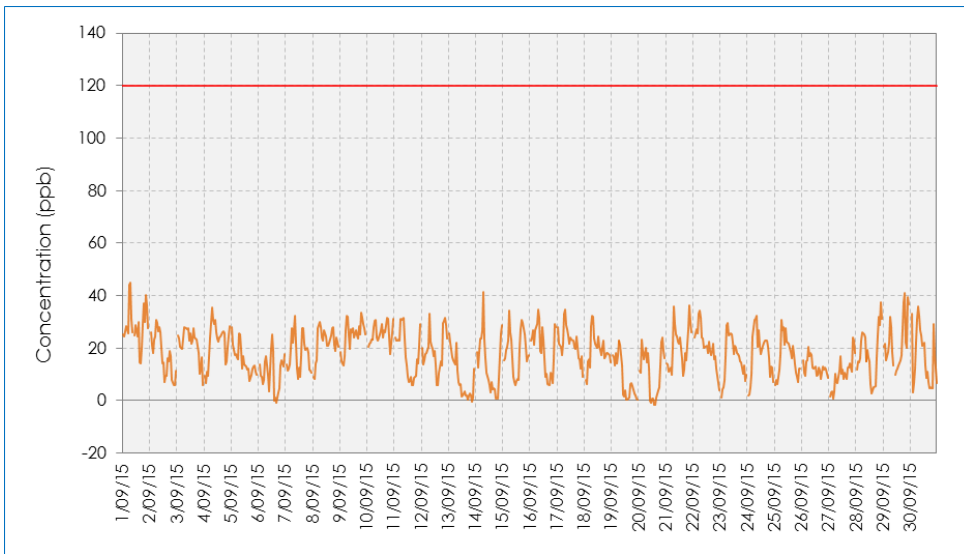


Figure 4.27 Canal Road PM₁₀ concentrations (24 hour average)

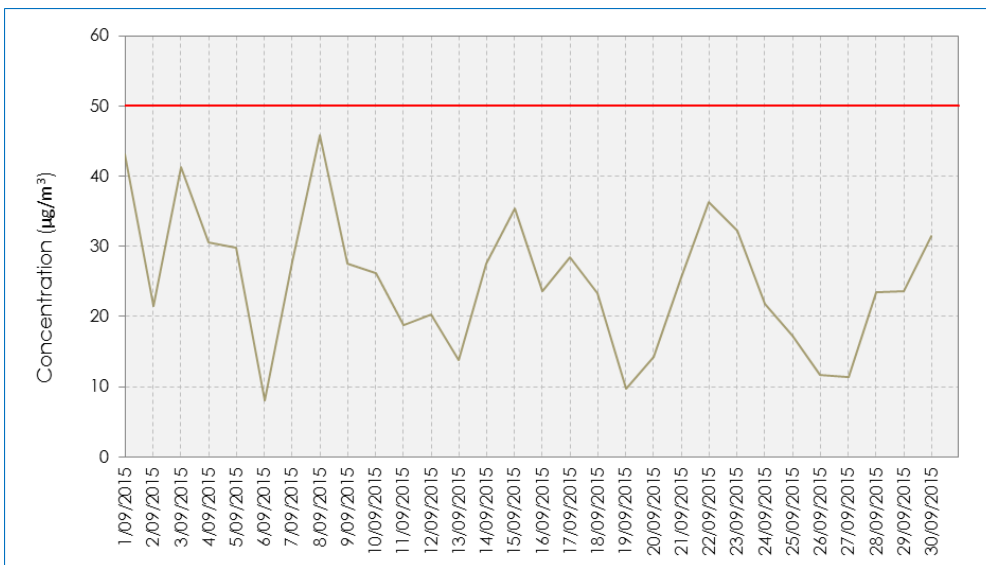
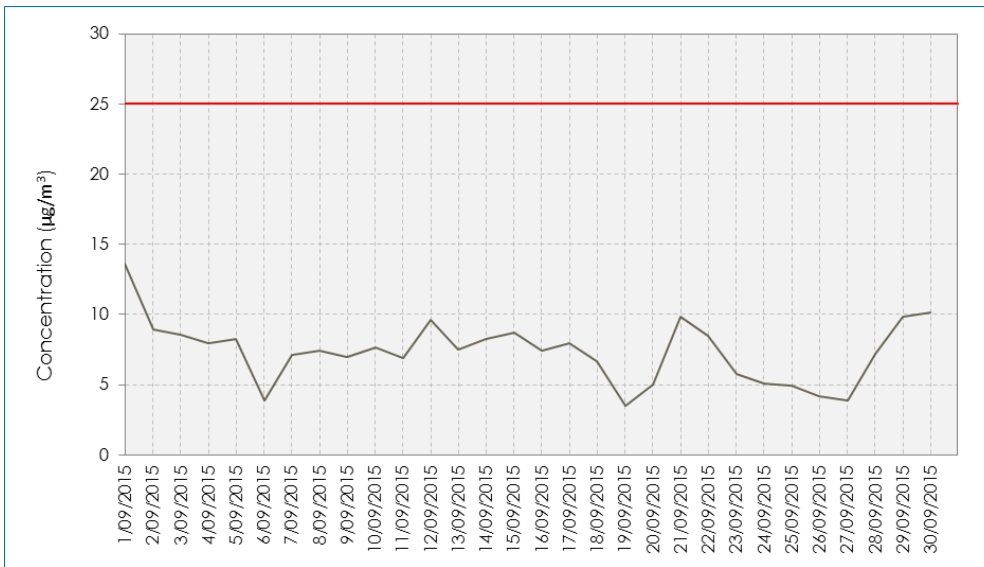


Figure 4.28 Canal Road PM_{2.5} concentrations (24 hour average)



Reporting

No exceedances of the air quality criteria in the NSW *Approved Methods* (NSW DEC, 2005) were recorded during the reporting period at the Canal Road monitoring station.