



Ventia Pty Ltd

AirportlinkM7 Ambient Air Quality Monitoring Report

November 2016

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ENVIRONMENTAL MONITORING TECHNOLOGIES

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Glossary

The following terms and abbreviations may be found throughout this report:

AQMS – Air Quality Monitoring Station

EPA – Environment Protection Authority

NO – Nitric Oxide

NO₂ – Nitrogen Dioxide

NO_x – Nitrogen Oxides

CO – Carbon Monoxide

PM₁₀ – Particulate matter of 10 microns or less aerodynamic equivalent size

PM_{2.5} – Particulate matter of 2.5 microns or less aerodynamic equivalent size

TSP – Total Suspended Particulate

HVAS – High Volume Air Sampler

ppm – Parts Per Million

µg/m³ – micrograms per cubic meter

AHS – Aviation High School

KSHS – Kedron State High School

LS – Lewis Street

ALOC – Airportlink Operation Centre

CS – Cartwright St

Executive Summary

Exceedance Reporting

There were no readings over the relevant Air Quality Standards during the reporting period.

AirportlinkM7 AQMS Exceedance Reporting November 2016							
Pollutant	Averaging period	Maximum Allowed Concentration	Number of Exceedences November 2016				
			Station 1 (AHS)	Station 2 (KSHS)	Station 3 (LS)	Station 4 (ALOC)	Station 5 (CS)
Carbon Monoxide	8 hour (rolling average)	8 ppm	0	0	0	0	0
Nitrogen dioxide	1 hour	0.120 ppm	0	0	0	0	0
	1 year	63 µg/m ³	0	0	0	0	0
PM2.5	24 hour	25 µg/m ³	0	0	0	0	0
PM10	24 hour	50 µg/m ³	0	0	0	0	0

Table 1 Exceedance Reporting

Maximum allowed concentration criteria are as specified in Condition 19(k) of the Conditions of Approval.

Introduction

Norditech Pty Ltd was appointed by Ventia Pty Limited in February 2015 to operate, maintain and report on the AirportlinkM7 Air Quality Monitoring Network.

The AirportlinkM7 Air Quality Monitoring Network consists of five sites located in close proximity to key locations of the Airportlink project, and is a requirement of the Conditions of Approval issued by the Coordinator General.

The addresses of the two parties are as follows

AirportlinkM7
PO Box 412
Lutwyche QLD 4030

Norditech Pty Ltd
Unit 36/70 Holbeche Rd
Arndell Park NSW 2148

Monitoring

Site Locations

AirportlinkM7 Site Location Coordinates		
	Latitude	Longitude
Station 1 (Aviation High School)	-27° 24' 46.5084"	153° 3' 48.0744"
Station 2 (Kedron State High School)	-27° 24' 47.5344"	153° 2' 17.8476"
Station 3 (Lewis Street)	-27° 24' 39.5532"	153° 3' 18.18"
Station 4 (Airportlink Operation Centre)	-27° 24' 43.2252"	153° 1' 58.3104"
Station 5 (Cartwright Street)	-27° 26' 22.5852"	153° 2' 5.784"

Table 2 Site Location Coordinates

Station Instrumentation Details

Each station continuously monitors the following pollutants:

- NO (Nitrogen Oxide)
- NO₂ (Nitrogen Dioxide)
- NO_x (Total Oxides of Nitrogen)
- CO (Carbon Monoxide)
- PM₁₀
- PM_{2.5}
- TSP (Samples on a 1 in 6 day cycle)

Monthly validated data for each site are provided in the following Microsoft® Excel™ spreadsheet

- 201611 ALM7 Monthly Validated Data Spreadsheet.xlsx
 - Sheet 1 – 5 minute average data
 - Sheet 2 – 1 hour average data
 - Sheet 3 – 8 hour average data
 - Sheet 4 – 24 hour average data

Instrumentation Details								
Parameter	Units	Uncertainty	Method	Last Calibration Date				
				Station 1	Station 2	Station 3	Station 4	Station 5
NO NO ₂ NO _x	ppm	2.78%	AS 3580.5.1	23/11/2016	22/11/2016	22/11/2016	22/11/2016	23/11/2016
CO	ppm	2.56%	AS 3580.7.1	23/11/2016	22/11/2016	22/11/2016	22/11/2016	23/11/2016
PM ₁₀	µg/m ³	3.21 µg/m ³	AS 3580.9.11	16/08/2016*	15/08/2016	15/08/2016*	15/08/2016*	16/08/2016
PM _{2.5}	µg/m ³	3.21 µg/m ³	AS 3580.9.11 / EQPM 0308- 170	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
TSP	µg/m ³	7.34%	AS 3580.9.3	26/09/2016	26/09/2016	26/09/2016	26/09/2016	26/09/2016

Table 3 Instrumentation Details

* These sites have TEOMs installed operating under method AS 3580.9.8

Data Logging

Data are recorded to a WinAQMS data logger located at each site at 5 minute averaging periods, calculated from 10 second samples. All data are retrieved periodically, approximately on an hourly basis, over a private 3G network, to a central WinCollect database, where data validation is performed to remove any data not deemed as valid prior to reporting. Data validation is performed as per the relevant standard, and/or as per the instrument manufacturers recommended guidelines.

All averages greater than 5 minute averages are calculated from the 5 minute average data set. 75% valid data must be available to calculate re-averaged data. For example, to calculate a 1hr average from 5 minute data, there must be a minimum of 9 out of 12 valid 5 minute average data points available.

All data is recorded to Australian Eastern Standard Time.

Data capture rates are calculated as per the following formula:

$$\text{Data Capture Rate \%} = \frac{\text{Available data points}}{\text{Total data points}} * 100$$

where:

Available data points = total number of 5 minute averages for the reporting period in which valid data was recorded

Total data points = total number of 5 minute averages for the reporting period inclusive of invalid data

Results

Station 1 (Aviation High School)

Summary

Station 1 Aviation High School Ambient AQMS Summary November 2016						
Parameter	Unit	EPP Goal	Averaging Period	Maximum Value	Date & Time	Capture Rate
NO ₂	ppm	0.120	1 Hour	0.022	02/11/2016 22:00	97.2
CO	ppm	8.0	8 Hours	0.5	02/11/2016 23:00	96.9
PM _{2.5}	µg/m3	25	24 Hours	17.6	06/11/2016	83.8
PM ₁₀	µg/m3	50	24 Hours	35.5	06/11/2016	96.4

Table 4 Station 1 Monthly Summary

Graphical Representations

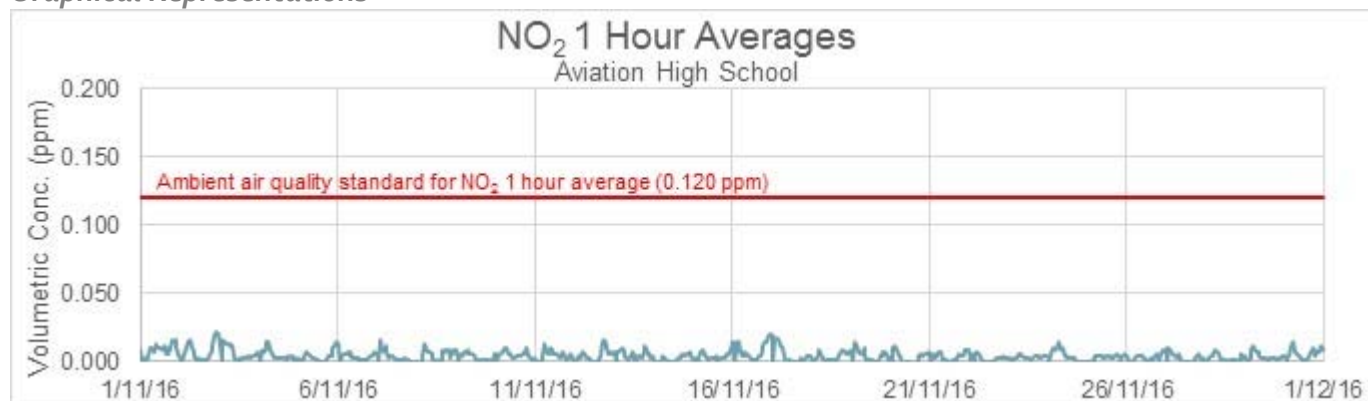


Figure 1 Station 1 Nitrogen Dioxide 1hr averages



Figure 2 Station 1 Carbon Monoxide 8hr rolling averages

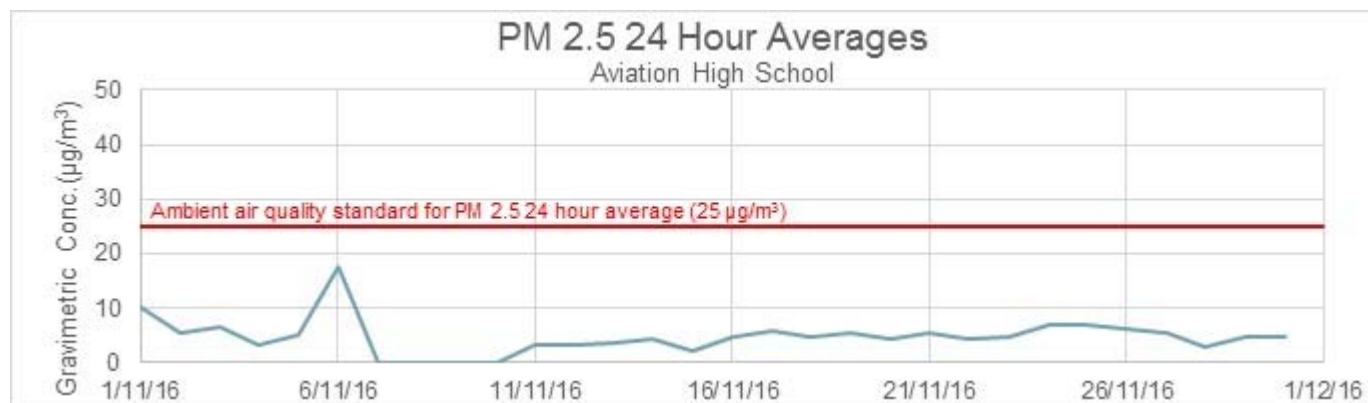


Figure 3 Station 1 PM2.5 24hr averages

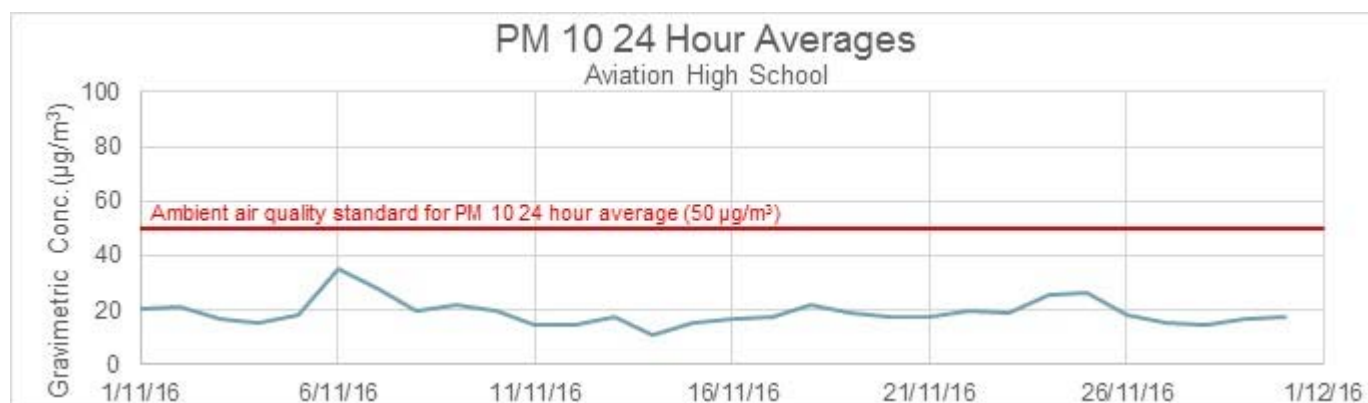


Figure 4 Station 1 PM10 24hr averages

Nitrogen Dioxide Summary

Station 1 Aviation High School Ambient AQMS Nitrogen Dioxide Summary November 2016						
Date	24hr Avg (ppm)	1 hr Avgs			Number of Exceedences 1hr Avg > 0.120 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max		
1/11/2016	0.009	0.001	0.016	21:00	0	97.2
2/11/2016	0.007	0.001	0.022	22:00	0	97.2
3/11/2016	0.007	0.001	0.016	02:00	0	97.2
4/11/2016	0.005	0.001	0.014	06:00	0	97.2
5/11/2016	0.004	0.000	0.015	23:00	0	97.2
6/11/2016	0.004	0.001	0.013	00:00	0	97.2
7/11/2016	0.004	-0.001	0.016	02:00	0	97.2
8/11/2016	0.005	-0.001	0.013	05:00	0	97.2
9/11/2016	0.004	0.001	0.009	00:00	0	97.2
10/11/2016	0.005	0.001	0.010	05:00	0	97.2
11/11/2016	0.005	0.000	0.013	06:00	0	97.2
12/11/2016	0.005	-0.001	0.016	18:00	0	97.2
13/11/2016	0.006	0.001	0.012	19:00	0	97.2
14/11/2016	0.002	-0.001	0.007	22:00	0	97.2
15/11/2016	0.004	0.001	0.009	23:00	0	97.2
16/11/2016	0.008	0.001	0.020	23:00	0	97.2
17/11/2016	0.006	0.000	0.019	00:00	0	97.2
18/11/2016	0.004	0.001	0.009	05:00	0	97.2
19/11/2016	0.005	0.000	0.015	03:00	0	97.2
20/11/2016	0.003	-0.001	0.011	03:00	0	97.2
21/11/2016	0.004	0.000	0.008	22:00	0	97.2
22/11/2016	0.003	0.000	0.009	00:00	0	97.2
23/11/2016	0.003	0.001	0.006	06:00	0	97.2
24/11/2016	0.005	-0.001	0.014	07:00	0	97.2
25/11/2016	0.003	-0.001	0.006	23:00	0	97.2
26/11/2016	0.003	-0.001	0.008	22:00	0	97.2
27/11/2016	0.003	-0.001	0.011	00:00	0	97.2
28/11/2016	0.003	0.000	0.008	06:00	0	97.2
29/11/2016	0.004	0.001	0.011	05:00	0	97.2
30/11/2016	0.006	0.002	0.014	05:00	0	97.2

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 5 Station 1 Nitrogen Dioxide Monthly Summary

Carbon Monoxide Summary

Station 1 Aviation High School Ambient AQMS Carbon Monoxide Summary November 2016								
Date	24 hr Avg (ppm)	1 hr Aves			8 hr Rolling Aves		No. of exceedences 8hr Avg > 8.0 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max	Max (ppm)	Time of Max		
1/11/2016	0.0	-0.1	0.3	13:00	0.1	13:00	0	96.9
2/11/2016	0.3	0.0	0.5	23:00	0.5	23:00	0	96.9
3/11/2016	0.0	-0.1	0.2	00:00	0.4	00:00	0	96.9
4/11/2016	0.1	0.0	0.2	06:00	0.1	08:00	0	96.5
5/11/2016	0.2	0.1	0.3	23:00	0.2	23:00	0	96.9
6/11/2016	0.1	0.1	0.2	00:00	0.2	01:00	0	96.9
7/11/2016	0.1	0.0	0.3	12:00	0.2	15:00	0	96.9
8/11/2016	0.2	0.1	0.3	13:00	0.2	14:00	0	96.9
9/11/2016	0.2	0.1	0.4	11:00	0.3	15:00	0	96.9
10/11/2016	0.0	0.0	0.3	00:00	0.1	00:00	0	96.9
11/11/2016	0.2	0.1	0.2	09:00	0.2	14:00	0	96.9
12/11/2016	0.2	0.1	0.3	17:00	0.2	23:00	0	96.9
13/11/2016	0.2	0.1	0.3	11:00	0.3	16:00	0	96.9
14/11/2016	0.1	0.0	0.1	00:00	0.2	00:00	0	96.9
15/11/2016	-0.1	-0.2	0.1	05:00	0.1	00:00	0	96.9
16/11/2016	0.2	0.0	0.5	23:00	0.2	23:00	0	96.9
17/11/2016	0.1	0.1	0.2	00:00	0.2	05:00	0	96.9
18/11/2016	0.1	0.1	0.2	05:00	0.1	16:00	0	96.9
19/11/2016	0.1	0.1	0.2	02:00	0.2	08:00	0	96.9
20/11/2016	0.1	0.1	0.2	02:00	0.1	08:00	0	96.9
21/11/2016	0.1	0.1	0.2	06:00	0.1	11:00	0	96.9
22/11/2016	0.1	0.1	0.1	06:00	0.1	13:00	0	96.9
23/11/2016	0.2	0.1	0.2	08:00	0.2	17:00	0	96.9
24/11/2016	0.1	0.0	0.2	07:00	0.2	12:00	0	96.9
25/11/2016	0.1	0.0	0.2	15:00	0.1	16:00	0	96.9
26/11/2016	0.1	0.1	0.2	08:00	0.1	23:00	0	96.9
27/11/2016	0.1	0.0	0.2	02:00	0.2	04:00	0	96.9
28/11/2016	0.1	0.0	0.2	07:00	0.1	13:00	0	96.9
29/11/2016	0.1	0.1	0.2	08:00	0.1	12:00	0	96.9
30/11/2016	0.1	0.1	0.2	17:00	0.2	11:00	0	96.9

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 6 Station 1 Carbon Monoxide Monthly Summary

PM_{2.5} Summary

Station 1 Aviation High School Ambient AQMS Particulate PM2.5 Summary November 2016

Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 25.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	10.4	1.1	18.4	20:00	0	100.0
2/11/2016	5.3	1.0	9.8	15:00	0	100.0
3/11/2016	6.7	0.3	14.8	06:00	0	91.7
4/11/2016	3.3	-0.8	8.8	06:00	0	100.0
5/11/2016	4.9	-0.7	9.0	18:00	0	100.0
6/11/2016	17.6	6.0	146.4	07:00	0	100.0
¹ 7/11/2016	-	6.0	12.8	00:00	0	50.0
¹ 8/11/2016	-	-	-	-	0	0.0
¹ 9/11/2016	-	-	-	-	0	0.0
¹ 10/11/2016	-	-0.7	3.6	17:00	0	29.2
11/11/2016	3.3	-0.8	7.8	12:00	0	100.0
12/11/2016	3.3	-0.8	11.5	16:00	0	95.8
13/11/2016	3.6	0.0	9.7	17:00	0	100.0
14/11/2016	4.3	-1.0	39.0	15:00	0	83.3
15/11/2016	2.2	-0.9	7.7	18:00	0	75.0
16/11/2016	4.6	-0.3	11.7	21:00	0	87.5
17/11/2016	5.9	2.2	11.5	20:00	0	83.3
18/11/2016	4.8	1.1	8.8	00:00	0	91.7
19/11/2016	5.3	1.0	11.5	09:00	0	95.8
20/11/2016	4.3	0.3	15.1	06:00	0	91.7
21/11/2016	5.5	1.3	11.6	14:00	0	100.0
22/11/2016	4.5	2.1	6.9	20:00	0	95.8
23/11/2016	4.8	1.0	10.4	05:00	0	91.7
24/11/2016	6.9	0.1	15.6	17:00	0	95.8
25/11/2016	7.1	3.5	14.2	22:00	0	100.0
26/11/2016	6.4	1.0	15.9	03:00	0	91.7
27/11/2016	5.5	3.4	7.0	09:00	0	79.2
28/11/2016	3.0	-1.0	7.0	04:00	0	95.8
29/11/2016	4.6	0.3	11.7	18:00	0	95.8
30/11/2016	4.8	2.0	14.4	16:00	0	91.7

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.

There will be no daily results if there is less than 75% valid data for that day

¹ Loss of data due to instrument fault

Table 7 Station 1 PM_{2.5} Monthly Summary

PM₁₀ Summary

Station 1 Aviation High School Ambient AQMS Particulate PM10 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 50.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	20.8	6.3	40.9	09:00	0	95.8
2/11/2016	21.0	4.9	41.4	11:00	0	83.3
3/11/2016	16.6	7.9	27.2	07:00	0	95.8
4/11/2016	15.2	7.8	27.6	12:00	0	95.8
5/11/2016	18.3	6.7	33.9	11:00	0	100.0
6/11/2016	35.5	17.2	69.5	14:00	0	95.8
7/11/2016	28.0	15.0	42.7	15:00	0	100.0
8/11/2016	19.6	6.3	50.1	19:00	0	91.7
9/11/2016	21.8	5.2	45.4	11:00	0	100.0
10/11/2016	19.9	9.2	45.4	11:00	0	91.7
11/11/2016	14.2	6.4	29.3	10:00	0	95.8
12/11/2016	14.3	5.8	27.4	14:00	0	95.8
13/11/2016	17.6	2.2	78.4	16:00	0	75.0
14/11/2016	11.2	6.1	18.4	08:00	0	87.5
15/11/2016	15.6	5.2	38.9	11:00	0	91.7
16/11/2016	16.9	12.5	23.7	09:00	0	100.0
17/11/2016	17.8	11.4	25.4	23:00	0	100.0
18/11/2016	21.9	16.2	29.6	06:00	0	100.0
19/11/2016	19.2	14.8	28.7	08:00	0	100.0
20/11/2016	17.3	11.7	21.3	16:00	0	100.0
21/11/2016	17.4	13.6	24.1	06:00	0	100.0
22/11/2016	19.5	11.4	26.7	12:00	0	100.0
23/11/2016	19.0	10.5	25.1	16:00	0	100.0
24/11/2016	26.0	7.6	61.9	11:00	0	100.0
25/11/2016	26.3	21.3	34.8	09:00	0	100.0
26/11/2016	18.4	5.5	28.1	00:00	0	95.8
27/11/2016	15.2	11.8	18.3	09:00	0	100.0
28/11/2016	14.6	8.5	17.7	17:00	0	100.0
29/11/2016	16.7	9.2	23.6	16:00	0	100.0
30/11/2016	17.6	10.7	31.7	15:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 8 Station 1 PM₁₀ Monthly Summary

Station 2 (Kedron State High School)

Summary

Station 2 Kedron State High School Ambient AQMS Summary November 2016						
Parameter	Unit	EPP Goal	Averaging Period	Maximum Value	Date & Time	Capture Rate
NO ₂	ppm	0.120	1 Hour	0.024	02/11/2016 23:00	93.1
CO	ppm	8.0	8 Hours	0.2	13/11/2016 00:00	96.7
PM _{2.5}	µg/m3	25	24 Hours	17.4	07/11/2016	100.0
PM ₁₀	µg/m3	50	24 Hours	38.3	07/11/2016	100.0

Table 9 Station 2 Monthly Summary

Graphical Representations

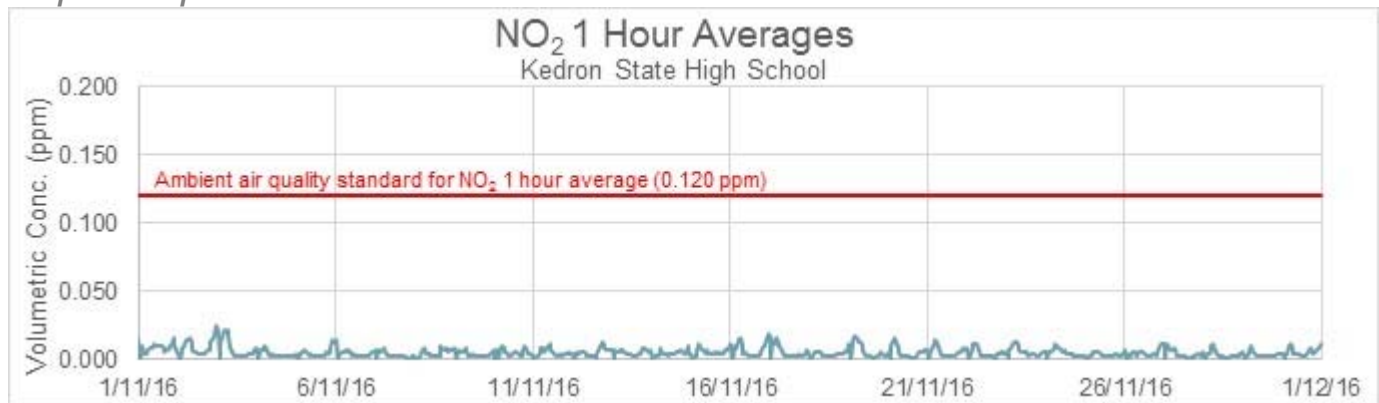


Figure 5 Station 2 Dioxide 1hr averages

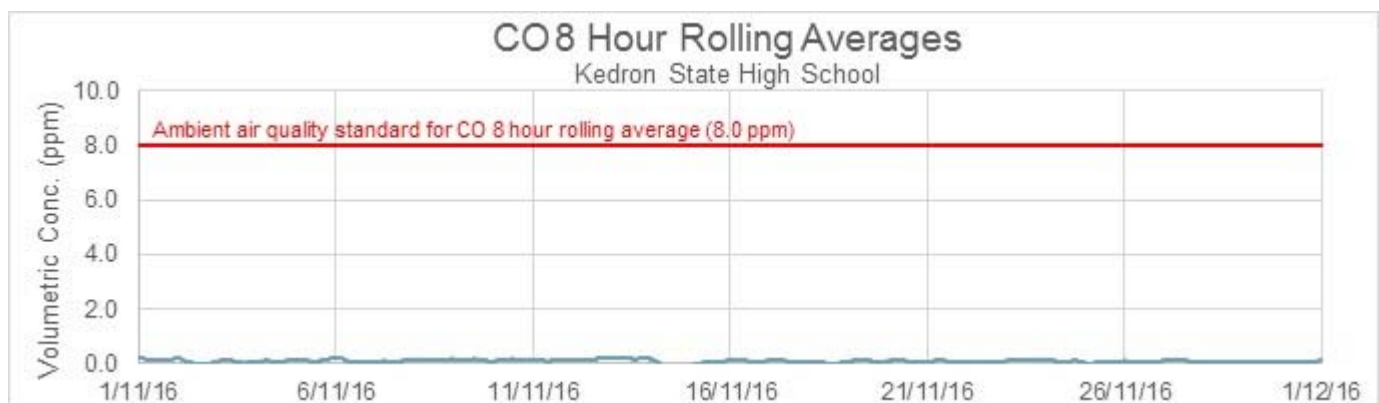


Figure 6 Station 2 Carbon Monoxide 8hr rolling averages

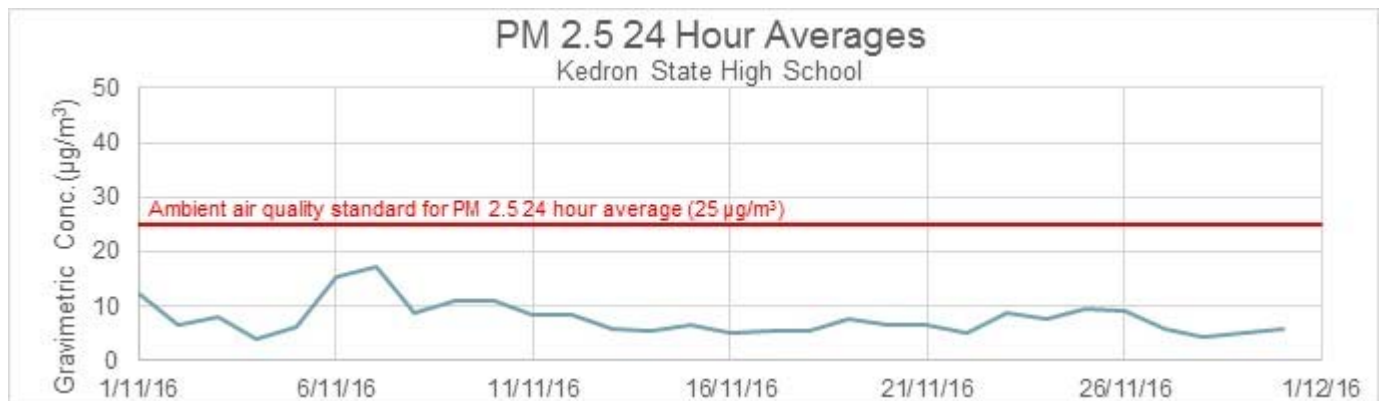


Figure 7 Station 2 PM2.5 24hr averages

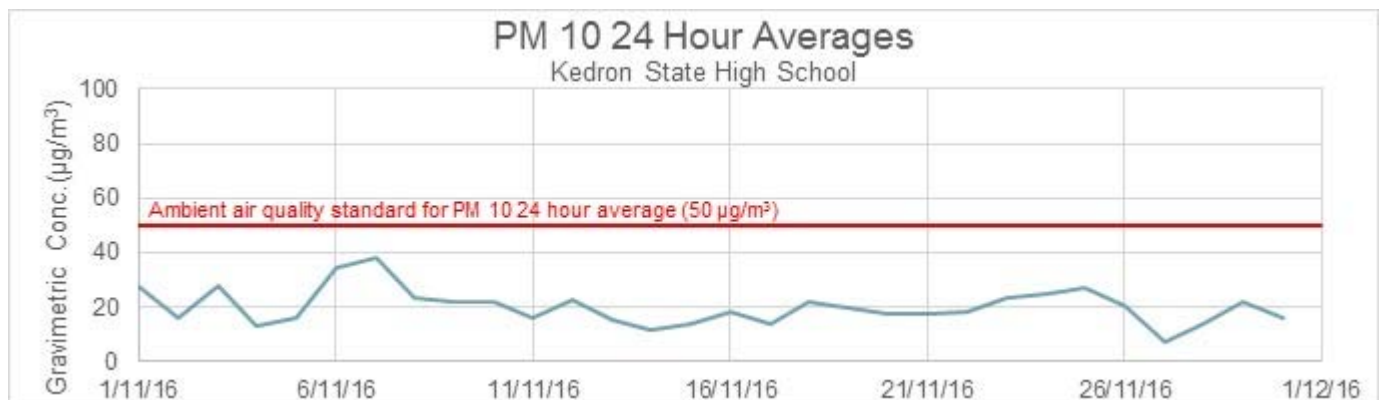


Figure 8 Station 2 PM10 24hr averages

Nitrogen Dioxide Summary

Station 2 KSHS Ambient AQMS Nitrogen Dioxide Summary November 2016						
Date	24hr Avg (ppm)	1 hr Aves			Number of Exceedences 1hr Avg > 0.120 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max		
1/11/2016	0.009	0.004	0.016	21:00	0	93.4
2/11/2016	0.009	0.004	0.024	23:00	0	95.8
3/11/2016	0.008	0.002	0.022	06:00	0	93.4
4/11/2016	0.004	0.002	0.010	05:00	0	92.7
5/11/2016	0.005	0.002	0.014	22:00	0	94.1
6/11/2016	0.005	0.002	0.015	00:00	0	92.0
7/11/2016	0.004	0.001	0.008	05:00	0	93.4
8/11/2016	0.005	0.002	0.010	16:00	0	94.1
9/11/2016	0.004	0.002	0.009	07:00	0	94.1
10/11/2016	0.006	0.003	0.010	19:00	0	90.3
11/11/2016	0.005	0.003	0.012	10:00	0	94.8
12/11/2016	0.005	0.002	0.013	18:00	0	92.7
13/11/2016	0.006	0.003	0.008	18:00	0	93.8
14/11/2016	0.005	0.002	0.009	22:00	0	93.8
15/11/2016	0.006	0.003	0.011	05:00	0	89.2
16/11/2016	0.007	0.002	0.018	23:00	0	93.4
17/11/2016	0.006	0.002	0.016	04:00	0	93.1
18/11/2016	0.004	0.002	0.006	06:00	0	93.4
19/11/2016	0.007	0.001	0.017	04:00	0	95.1
20/11/2016	0.005	0.002	0.016	04:00	0	95.1
21/11/2016	0.006	0.002	0.014	05:00	0	91.7
22/11/2016	0.005	0.002	0.012	04:00	0	89.9
23/11/2016	0.006	0.003	0.013	05:00	0	94.4
24/11/2016	0.005	0.002	0.011	06:00	0	94.1
25/11/2016	0.003	0.002	0.006	06:00	0	90.6
26/11/2016	0.005	0.002	0.012	23:00	0	92.0
27/11/2016	0.004	0.001	0.012	00:00	0	94.4
28/11/2016	0.004	0.001	0.011	06:00	0	93.1
29/11/2016	0.003	0.002	0.010	05:00	0	94.1
30/11/2016	0.006	0.002	0.012	05:00	0	92.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 10 Station 2 Nitrogen Dioxide Monthly Summary

Carbon Monoxide Summary

Station 2 KSHS Ambient AQMS Carbon Monoxide Summary November 2016								
Date	24 hr Avg (ppm)	1 hr Avgs			8 hr Rolling Avgs		No. of exceedences 8hr Avg > 8.0 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max	Max (ppm)	Time of Max		
1/11/2016	0.2	0.1	0.3	21:00	0.2	23:00	0	96.9
2/11/2016	0.0	-0.1	0.2	23:00	0.2	00:00	0	96.9
3/11/2016	0.1	0.0	0.2	00:00	0.1	06:00	0	96.9
4/11/2016	0.1	0.0	0.1	05:00	0.1	06:00	0	96.9
5/11/2016	0.1	0.0	0.3	22:00	0.2	23:00	0	96.9
6/11/2016	0.1	0.0	0.3	00:00	0.2	00:00	0	96.9
7/11/2016	0.1	0.1	0.1	17:00	0.1	23:00	0	96.9
8/11/2016	0.1	0.1	0.2	16:00	0.2	23:00	0	96.2
9/11/2016	0.1	0.1	0.2	10:00	0.2	12:00	0	96.9
10/11/2016	0.2	0.1	0.3	06:00	0.2	11:00	0	96.2
11/11/2016	0.1	0.1	0.2	00:00	0.2	00:00	0	96.9
12/11/2016	0.2	0.1	0.3	17:00	0.2	23:00	0	96.9
13/11/2016	0.2	0.1	0.2	06:00	0.2	00:00	0	96.9
14/11/2016	-0.1	-0.1	0.1	00:00	0.2	00:00	0	96.9
15/11/2016	0.1	0.0	0.1	23:00	0.1	23:00	0	96.9
16/11/2016	0.1	0.0	0.2	23:00	0.1	06:00	0	96.9
17/11/2016	0.1	0.0	0.2	00:00	0.2	04:00	0	96.9
18/11/2016	0.0	0.0	0.1	22:00	0.1	00:00	0	96.9
19/11/2016	0.1	0.1	0.2	07:00	0.2	07:00	0	96.9
20/11/2016	0.1	0.0	0.2	03:00	0.1	06:00	0	96.9
21/11/2016	0.1	0.0	0.3	05:00	0.1	06:00	0	96.9
22/11/2016	0.1	0.0	0.1	21:00	0.1	23:00	0	93.4
23/11/2016	0.1	0.1	0.2	06:00	0.1	22:00	0	96.9
24/11/2016	0.1	0.0	0.1	13:00	0.1	00:00	0	96.9
25/11/2016	0.1	0.0	0.1	22:00	0.1	23:00	0	96.9
26/11/2016	0.1	0.1	0.2	23:00	0.1	23:00	0	96.9
27/11/2016	0.1	0.1	0.2	00:00	0.2	04:00	0	96.9
28/11/2016	0.1	0.0	0.1	05:00	0.1	06:00	0	96.9
29/11/2016	0.1	0.0	0.1	05:00	0.1	23:00	0	96.9
30/11/2016	0.1	0.0	0.1	23:00	0.1	23:00	0	96.5

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 11 Station 2 Carbon Monoxide Monthly Summary

PM_{2.5} Summary

Station 2 KSHS Ambient AQMS Particulate PM _{2.5} Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 25.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	12.4	6.1	18.8	14:00	0	100.0
2/11/2016	6.4	2.1	15.5	18:00	0	100.0
3/11/2016	8.2	2.0	18.5	06:00	0	100.0
4/11/2016	3.9	1.7	7.5	14:00	0	100.0
5/11/2016	6.2	2.4	19.0	20:00	0	100.0
6/11/2016	15.6	7.2	32.4	20:00	0	100.0
7/11/2016	17.4	9.5	38.9	20:00	0	100.0
8/11/2016	8.6	4.3	19.4	00:00	0	100.0
9/11/2016	11.1	5.1	19.6	12:00	0	100.0
10/11/2016	11.1	4.2	26.7	20:00	0	100.0
11/11/2016	8.3	3.4	13.6	20:00	0	100.0
12/11/2016	8.3	3.1	19.8	14:00	0	100.0
13/11/2016	5.8	2.3	10.3	00:00	0	100.0
14/11/2016	5.5	2.2	9.6	06:00	0	100.0
15/11/2016	6.6	2.3	11.8	22:00	0	100.0
16/11/2016	5.1	2.1	9.6	08:00	0	100.0
17/11/2016	5.4	1.8	9.9	10:00	0	100.0
18/11/2016	5.5	2.3	11.1	08:00	0	100.0
19/11/2016	7.7	4.4	14.9	06:00	0	100.0
20/11/2016	6.6	3.7	9.0	10:00	0	100.0
21/11/2016	6.6	1.7	14.1	08:00	0	100.0
22/11/2016	5.2	2.3	7.5	18:00	0	100.0
23/11/2016	8.9	4.4	14.1	19:00	0	100.0
24/11/2016	7.8	2.3	15.8	16:00	0	100.0
25/11/2016	9.4	4.2	17.4	20:00	0	100.0
26/11/2016	9.1	3.9	17.8	00:00	0	100.0
27/11/2016	6.0	1.6	13.7	10:00	0	100.0
28/11/2016	4.3	2.1	8.4	04:00	0	100.0
29/11/2016	5.1	2.1	12.0	22:00	0	100.0
30/11/2016	5.7	1.6	16.8	18:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 12 Station 2 PM_{2.5} Monthly Summary

PM₁₀ Summary

Station 2 KSHS Ambient AQMS Particulate PM10 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 50.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	28.0	18.8	41.8	18:00	0	100.0
2/11/2016	16.3	5.1	32.6	20:00	0	100.0
3/11/2016	27.9	13.5	80.8	14:00	0	100.0
4/11/2016	13.2	8.6	21.5	16:00	0	100.0
5/11/2016	16.0	6.2	34.3	20:00	0	100.0
6/11/2016	34.4	22.5	51.5	20:00	0	100.0
7/11/2016	38.3	27.4	55.7	00:00	0	100.0
8/11/2016	23.1	13.0	42.3	00:00	0	100.0
9/11/2016	22.3	15.9	29.2	16:00	0	100.0
10/11/2016	21.6	12.9	43.6	20:00	0	100.0
11/11/2016	16.4	7.0	22.7	14:00	0	100.0
12/11/2016	22.8	15.0	31.1	16:00	0	100.0
13/11/2016	15.1	7.0	26.5	02:00	0	100.0
14/11/2016	11.5	4.1	19.8	08:00	0	100.0
15/11/2016	13.5	5.8	29.0	14:00	0	100.0
16/11/2016	18.0	9.3	27.7	02:00	0	100.0
17/11/2016	14.1	8.2	20.8	23:00	0	100.0
18/11/2016	21.9	15.4	28.5	10:00	0	100.0
19/11/2016	19.9	11.8	30.7	12:00	0	100.0
20/11/2016	17.4	12.3	27.6	08:00	0	100.0
21/11/2016	17.5	11.8	32.1	08:00	0	100.0
22/11/2016	18.1	4.5	28.1	18:00	0	100.0
23/11/2016	23.1	16.5	30.9	08:00	0	100.0
24/11/2016	24.8	10.3	47.7	14:00	0	100.0
25/11/2016	27.2	15.5	35.3	16:00	0	100.0
26/11/2016	20.6	3.2	44.3	10:00	0	100.0
27/11/2016	7.5	2.5	16.9	22:00	0	100.0
28/11/2016	13.5	6.8	20.1	08:00	0	100.0
29/11/2016	21.8	8.9	70.5	04:00	0	100.0
30/11/2016	16.3	9.3	21.1	18:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 13 Station 2 PM₁₀ Monthly Summary

Station 3 (Lewis Street)

Summary

Station 3 Lewis St Ambient AQMS Summary November 2016						
Parameter	Unit	EPP Goal	Averaging Period	Maximum Value	Date & Time	Capture Rate
NO ₂	ppm	0.120	1 Hour	0.019	02/11/2016 23:00	97.0
CO	ppm	8.0	8 Hours	0.8	01/11/2016 23:00	96.6
PM _{2.5}	µg/m3	25	24 Hours	18.1	06/11/2016	95.7
PM ₁₀	µg/m3	50	24 Hours	40.3	06/11/2016	96.4

Table 14 Station 3 Monthly Summary

Graphical Representations

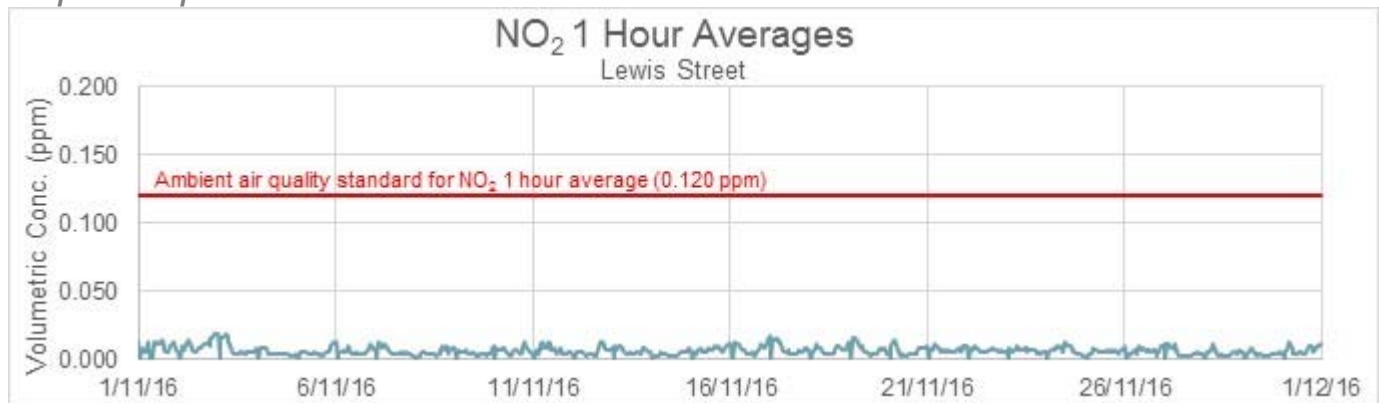


Figure 9 Station 3 Nitrogen Dioxide 1hr averages

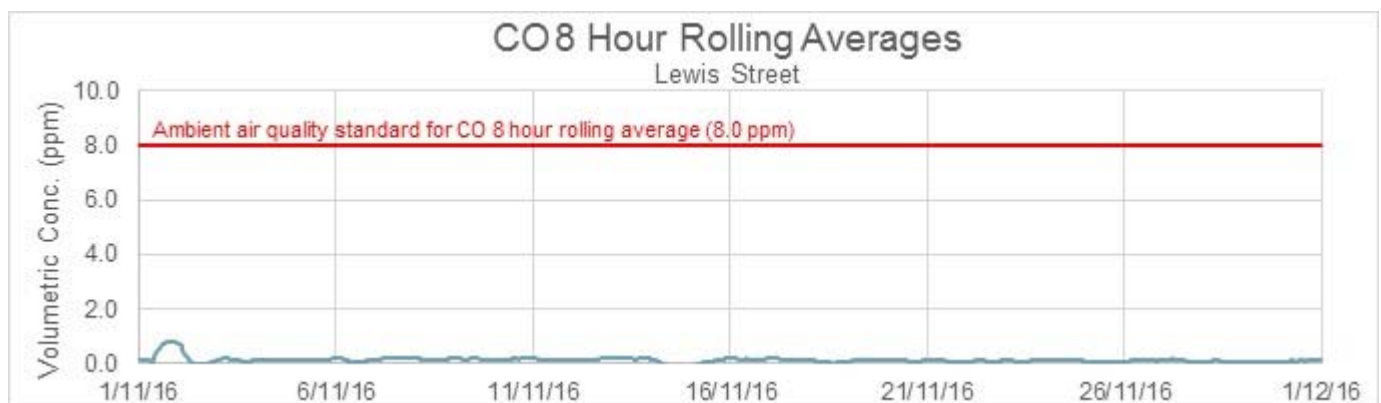


Figure 10 Station 3 Carbon Monoxide 8hr rolling averages



Figure 11 Station 3 PM2.5 24hr averages

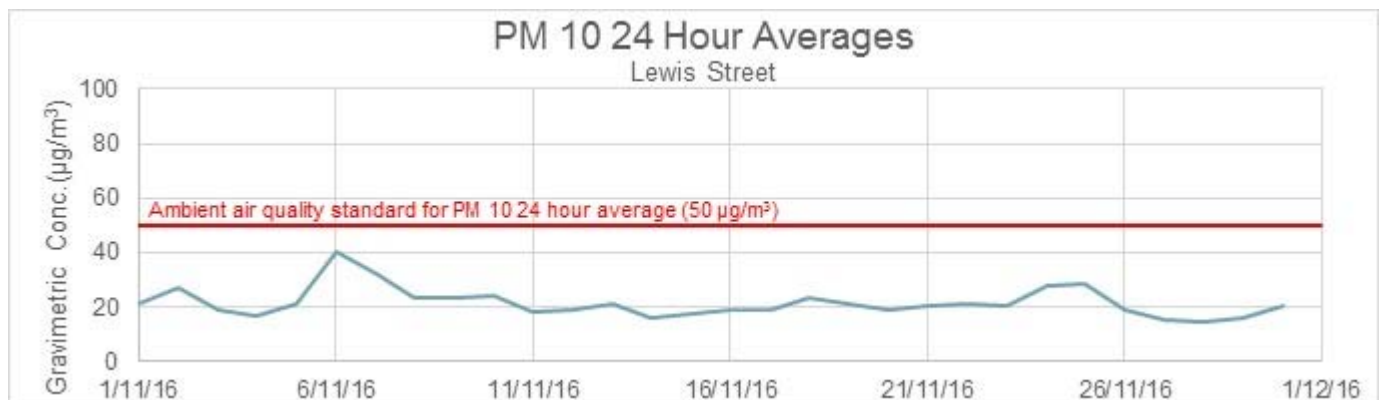


Figure 12 Station 3 PM10 24hr averages

Nitrogen Dioxide Summary

Station 3 Lewis St Ambient AQMS Nitrogen Dioxide Summary November 2016						
Date	24hr Avg (ppm)	1 hr Aves			Number of Exceedences 1hr Avg > 0.120 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max		
1/11/2016	0.010	0.005	0.015	14:00	0	90.3
2/11/2016	0.011	0.005	0.019	23:00	0	97.2
3/11/2016	0.009	0.004	0.019	00:00	0	97.2
4/11/2016	0.005	0.003	0.009	06:00	0	97.2
5/11/2016	0.006	0.003	0.014	23:00	0	97.2
6/11/2016	0.006	0.004	0.013	00:00	0	97.2
7/11/2016	0.006	0.003	0.013	02:00	0	97.2
8/11/2016	0.005	0.003	0.010	17:00	0	97.2
9/11/2016	0.005	0.003	0.009	00:00	0	97.2
10/11/2016	0.007	0.003	0.013	19:00	0	97.2
11/11/2016	0.007	0.004	0.013	06:00	0	97.2
12/11/2016	0.006	0.003	0.013	17:00	0	97.2
13/11/2016	0.006	0.004	0.010	04:00	0	97.2
14/11/2016	0.004	0.003	0.009	22:00	0	97.2
15/11/2016	0.008	0.004	0.011	23:00	0	97.2
16/11/2016	0.009	0.003	0.016	23:00	0	97.2
17/11/2016	0.009	0.004	0.017	00:00	0	97.2
18/11/2016	0.007	0.004	0.011	04:00	0	97.2
19/11/2016	0.008	0.003	0.016	04:00	0	97.2
20/11/2016	0.007	0.003	0.014	04:00	0	97.2
21/11/2016	0.008	0.005	0.011	04:00	0	97.2
22/11/2016	0.007	0.005	0.010	00:00	0	97.2
23/11/2016	0.007	0.005	0.009	06:00	0	97.2
24/11/2016	0.007	0.003	0.012	11:00	0	97.2
25/11/2016	0.006	0.003	0.008	05:00	0	97.2
26/11/2016	0.007	0.003	0.011	23:00	0	97.2
27/11/2016	0.006	0.003	0.012	02:00	0	97.2
28/11/2016	0.005	0.003	0.011	06:00	0	97.2
29/11/2016	0.005	0.003	0.009	05:00	0	97.2
30/11/2016	0.007	0.004	0.013	04:00	0	97.2

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 15 Station 3 Nitrogen Dioxide Monthly Summary

Carbon Monoxide Summary

Station 3 Lewis St Ambient AQMS Carbon Monoxide Summary November 2016								
Date	24 hr Avg (ppm)	1 hr Avgs			8 hr Rolling Avgs		No. of exceedences 8hr Avg > 8.0 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max	Max (ppm)	Time of Max		
1/11/2016	0.6	0.1	0.9	22:00	0.8	23:00	0	89.9
2/11/2016	0.0	-0.1	0.3	00:00	0.8	00:00	0	96.9
3/11/2016	0.1	0.1	0.2	00:00	0.2	05:00	0	96.9
4/11/2016	0.1	0.1	0.2	22:00	0.2	23:00	0	96.9
5/11/2016	0.1	0.1	0.3	23:00	0.2	23:00	0	96.9
6/11/2016	0.1	0.0	0.2	00:00	0.2	01:00	0	96.9
7/11/2016	0.2	0.1	0.2	05:00	0.2	23:00	0	96.9
8/11/2016	0.2	0.1	0.2	23:00	0.2	00:00	0	96.9
9/11/2016	0.1	0.1	0.2	10:00	0.2	00:00	0	96.9
10/11/2016	0.2	0.1	0.2	06:00	0.2	20:00	0	96.9
11/11/2016	0.2	0.1	0.2	00:00	0.2	01:00	0	96.9
12/11/2016	0.2	0.1	0.3	17:00	0.2	23:00	0	96.9
13/11/2016	0.2	0.1	0.2	00:00	0.2	00:00	0	96.9
14/11/2016	-0.1	-0.1	0.1	00:00	0.2	00:00	0	96.9
15/11/2016	0.1	0.0	0.2	23:00	0.2	23:00	0	96.9
16/11/2016	0.2	0.1	0.3	09:00	0.2	01:00	0	96.9
17/11/2016	0.1	0.1	0.2	00:00	0.2	02:00	0	96.9
18/11/2016	0.1	0.0	0.1	23:00	0.1	00:00	0	96.9
19/11/2016	0.1	0.1	0.2	04:00	0.2	08:00	0	96.9
20/11/2016	0.1	0.1	0.2	04:00	0.2	04:00	0	96.9
21/11/2016	0.1	0.0	0.2	06:00	0.1	07:00	0	96.9
22/11/2016	0.1	0.1	0.2	06:00	0.1	07:00	0	96.9
23/11/2016	0.1	0.1	0.1	16:00	0.1	21:00	0	96.9
24/11/2016	0.1	0.1	0.2	06:00	0.2	13:00	0	96.9
25/11/2016	0.1	0.0	0.1	22:00	0.1	23:00	0	96.9
26/11/2016	0.1	0.1	0.2	23:00	0.1	23:00	0	96.9
27/11/2016	0.1	0.1	0.2	00:00	0.2	05:00	0	96.9
28/11/2016	0.1	0.0	0.2	06:00	0.1	07:00	0	96.9
29/11/2016	0.1	0.0	0.1	05:00	0.1	23:00	0	96.9
30/11/2016	0.1	0.0	0.3	10:00	0.1	23:00	0	96.9

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 16 Station 3 Carbon Monoxide Monthly Summary

PM_{2.5} Summary

Station 3 Lewis St Ambient AQMS Particulate PM _{2.5} Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 25.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	13.4	4.3	21.7	13:00	0	91.7
2/11/2016	7.7	-1.0	18.4	19:00	0	95.8
3/11/2016	7.8	2.7	13.0	07:00	0	100.0
4/11/2016	6.3	-0.8	11.6	05:00	0	100.0
5/11/2016	8.9	4.0	16.0	21:00	0	100.0
6/11/2016	18.1	10.1	26.7	07:00	0	100.0
7/11/2016	13.0	5.3	17.8	06:00	0	100.0
8/11/2016	6.9	-0.3	17.0	14:00	0	100.0
9/11/2016	10.4	3.5	24.0	11:00	0	100.0
10/11/2016	8.9	1.4	17.0	22:00	0	100.0
11/11/2016	6.9	0.4	14.5	12:00	0	100.0
12/11/2016	7.4	1.4	20.0	15:00	0	100.0
13/11/2016	5.9	0.5	11.5	00:00	0	100.0
¹ 14/11/2016	-	0.1	7.8	00:00	0	58.3
¹ 15/11/2016	-	2.5	15.3	18:00	0	25.0
16/11/2016	7.8	1.5	16.1	01:00	0	100.0
17/11/2016	9.8	2.8	20.4	20:00	0	100.0
18/11/2016	11.5	6.3	18.5	01:00	0	100.0
19/11/2016	8.8	3.6	17.3	08:00	0	100.0
20/11/2016	8.8	4.1	13.9	14:00	0	100.0
21/11/2016	5.8	0.6	11.8	23:00	0	100.0
22/11/2016	7.7	1.3	14.0	20:00	0	100.0
23/11/2016	6.6	0.9	14.3	05:00	0	100.0
24/11/2016	9.7	0.3	24.8	14:00	0	100.0
25/11/2016	9.6	3.6	14.9	12:00	0	100.0
26/11/2016	7.9	3.0	13.6	16:00	0	100.0
27/11/2016	6.9	-0.8	13.6	03:00	0	100.0
28/11/2016	5.8	-0.5	11.4	07:00	0	100.0
29/11/2016	5.0	0.3	9.6	06:00	0	100.0
30/11/2016	6.6	2.3	10.8	13:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.

There will be no daily results if there is less than 75% valid data for that day

¹ Loss of data due to instrument fault

Table 17 Station 3 PM_{2.5} Monthly Summary

PM₁₀ Summary

Station 3 Lewis St Ambient AQMS Particulate PM10 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 50.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	21.0	6.1	40.8	09:00	0	91.7
2/11/2016	26.8	7.8	46.8	15:00	0	79.2
3/11/2016	19.3	8.4	34.0	07:00	0	100.0
4/11/2016	17.0	7.5	35.5	10:00	0	95.8
5/11/2016	21.4	7.6	37.0	11:00	0	100.0
6/11/2016	40.3	18.5	73.0	14:00	0	95.8
7/11/2016	32.4	19.3	43.8	00:00	0	100.0
8/11/2016	23.2	10.5	56.0	19:00	0	91.7
9/11/2016	23.6	6.0	49.6	11:00	0	100.0
10/11/2016	24.1	9.7	58.3	19:00	0	95.8
11/11/2016	18.4	7.5	36.5	10:00	0	95.8
12/11/2016	19.0	8.2	34.9	11:00	0	91.7
13/11/2016	21.1	5.9	73.4	16:00	0	75.0
14/11/2016	16.0	8.2	25.0	08:00	0	91.7
15/11/2016	17.3	6.2	42.2	11:00	0	91.7
16/11/2016	18.8	11.2	38.3	10:00	0	100.0
17/11/2016	19.0	11.5	28.0	19:00	0	100.0
18/11/2016	23.5	18.1	27.4	06:00	0	100.0
19/11/2016	21.3	14.9	30.7	08:00	0	100.0
20/11/2016	18.8	10.5	23.5	16:00	0	100.0
21/11/2016	20.8	11.6	65.9	07:00	0	100.0
22/11/2016	21.1	10.8	27.6	11:00	0	100.0
23/11/2016	20.4	11.7	27.3	16:00	0	100.0
24/11/2016	27.7	6.7	65.5	11:00	0	100.0
25/11/2016	28.4	23.2	37.8	09:00	0	100.0
26/11/2016	19.4	8.0	30.5	00:00	0	95.8
27/11/2016	15.6	12.1	19.1	07:00	0	100.0
28/11/2016	14.9	9.8	19.4	21:00	0	100.0
29/11/2016	16.3	10.8	24.7	10:00	0	100.0
30/11/2016	20.2	10.8	72.2	10:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 18 Station 3 PM₁₀ Monthly Summary

Station 4 (Airportlink Operation Centre)

Summary

Station 4 Airportlink Operation Centre Ambient AQMS Summary November 2016						
Parameter	Unit	EPP Goal	Averaging Period	Maximum Value	Date & Time	Capture Rate
NO ₂	ppm	0.120	1 Hour	0.028	02/11/2016 22:00	97.2
CO	ppm	8.0	8 Hours	0.3	01/11/2016 12:00	96.2
PM _{2.5}	µg/m ³	25	24 Hours	16.6	06/11/2016	98.5
PM ₁₀	µg/m ³	50	24 Hours	34.7	06/11/2016	83.3

Table 19 Station 4 Monthly Summary

Graphical Representations

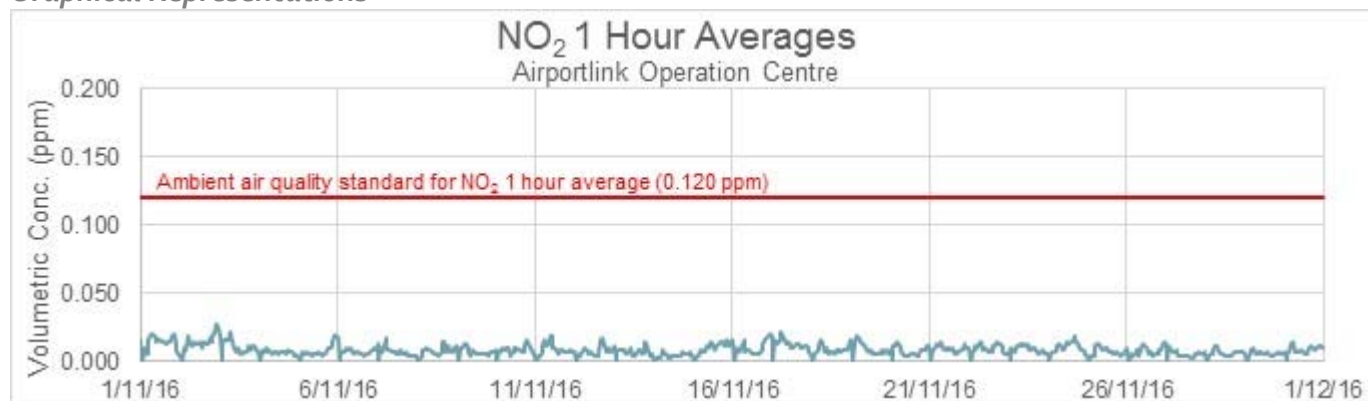


Figure 13 Station 4 Nitrogen Dioxide 1hr averages



Figure 14 Station 4 Carbon Monoxide 8hr rolling averages



Figure 15 Station 4 PM2.5 24hr averages



Figure 16 Station 4 PM10 24hr averages

Nitrogen Dioxide Summary

Station 4 Airportlink Operation Centre Ambient AQMS Nitrogen Dioxide Summary November 2016

Date	24hr Avg (ppm)	1 hr Avgs		Time of Max	Number of Exceedences 1hr Avg > 0.120 ppm	Capture Rate
		Min (ppm)	Max (ppm)			
1/11/2016	0.014	0.005	0.021	20:00	0	97.2
2/11/2016	0.014	0.005	0.028	22:00	0	97.2
3/11/2016	0.012	0.006	0.022	07:00	0	97.2
4/11/2016	0.007	0.005	0.010	05:00	0	97.2
5/11/2016	0.008	0.004	0.019	22:00	0	97.2
6/11/2016	0.008	0.004	0.017	00:00	0	97.2
7/11/2016	0.007	0.004	0.017	05:00	0	97.2
8/11/2016	0.008	0.003	0.015	16:00	0	97.2
9/11/2016	0.008	0.005	0.014	05:00	0	97.2
10/11/2016	0.009	0.004	0.017	19:00	0	97.2
11/11/2016	0.009	0.004	0.019	10:00	0	97.2
12/11/2016	0.008	0.003	0.017	17:00	0	97.2
13/11/2016	0.008	0.004	0.015	19:00	0	97.2
14/11/2016	0.005	0.002	0.008	06:00	0	97.2
15/11/2016	0.010	0.004	0.016	21:00	0	97.2
16/11/2016	0.011	0.005	0.020	23:00	0	97.2
17/11/2016	0.013	0.008	0.021	06:00	0	97.2
18/11/2016	0.008	0.006	0.016	06:00	0	97.2
19/11/2016	0.010	0.005	0.019	04:00	0	97.2
20/11/2016	0.008	0.004	0.014	04:00	0	97.2
21/11/2016	0.010	0.006	0.015	07:00	0	97.2
22/11/2016	0.010	0.005	0.015	07:00	0	95.5
23/11/2016	0.009	0.005	0.014	09:00	0	97.2
24/11/2016	0.011	0.005	0.019	16:00	0	97.2
25/11/2016	0.007	0.003	0.014	06:00	0	97.2
26/11/2016	0.008	0.004	0.014	23:00	0	97.2
27/11/2016	0.006	0.003	0.011	02:00	0	97.2
28/11/2016	0.006	0.004	0.011	06:00	0	97.2
29/11/2016	0.006	0.005	0.010	05:00	0	97.2
30/11/2016	0.009	0.005	0.014	05:00	0	97.2

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 20 Station 4 Nitrogen Dioxide Monthly Summary

Carbon Monoxide Summary

Station 4 Airportlink Operation Centre Ambient AQMS Carbon Monoxide Summary November 2016

Date	24 hr Avg (ppm)	1 hr Avgs			8 hr Rolling Avgs		No. of exceedences 8hr Avg > 8.0 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max	Max (ppm)	Time of Max		
1/11/2016	0.3	0.2	0.4	07:00	0.3	12:00	0	96.9
2/11/2016	0.2	0.1	0.4	22:00	0.3	23:00	0	96.9
3/11/2016	0.2	0.1	0.3	07:00	0.3	01:00	0	96.9
4/11/2016	0.1	0.1	0.1	06:00	0.1	00:00	0	96.9
5/11/2016	0.1	0.1	0.3	23:00	0.2	23:00	0	95.8
6/11/2016	0.2	0.1	0.2	00:00	0.2	01:00	0	96.9
7/11/2016	0.1	0.1	0.2	05:00	0.2	01:00	0	96.5
8/11/2016	0.2	0.1	0.3	19:00	0.2	23:00	0	96.5
9/11/2016	0.2	0.2	0.3	10:00	0.3	11:00	0	96.5
10/11/2016	0.2	0.2	0.4	19:00	0.3	23:00	0	96.5
11/11/2016	0.2	0.2	0.3	10:00	0.3	01:00	0	96.5
12/11/2016	0.2	0.2	0.3	16:00	0.3	23:00	0	96.5
13/11/2016	0.3	0.2	0.3	06:00	0.3	07:00	0	96.5
14/11/2016	0.1	0.0	0.1	06:00	0.2	00:00	0	94.8
15/11/2016	0.1	0.0	0.2	20:00	0.1	22:00	0	85.1
16/11/2016	0.1	0.1	0.2	23:00	0.2	23:00	0	96.5
17/11/2016	0.1	0.1	0.3	06:00	0.2	21:00	0	96.5
18/11/2016	0.1	0.0	0.2	06:00	0.1	00:00	0	96.9
19/11/2016	0.1	0.1	0.2	08:00	0.1	10:00	0	96.9
20/11/2016	0.1	0.1	0.1	00:00	0.1	02:00	0	96.9
21/11/2016	0.2	0.1	0.3	07:00	0.2	08:00	0	96.9
22/11/2016	0.1	0.1	0.2	17:00	0.2	21:00	0	95.1
23/11/2016	0.1	0.1	0.2	08:00	0.2	00:00	0	96.9
24/11/2016	0.2	0.1	0.3	17:00	0.3	19:00	0	96.9
25/11/2016	0.1	0.0	0.1	06:00	0.2	00:00	0	96.9
26/11/2016	0.2	0.1	0.3	23:00	0.2	23:00	0	96.9
27/11/2016	0.1	0.1	0.2	02:00	0.2	02:00	0	96.9
28/11/2016	0.1	0.1	0.2	06:00	0.1	08:00	0	96.9
29/11/2016	0.1	0.0	0.1	05:00	0.1	00:00	0	96.9
30/11/2016	0.2	0.1	0.3	15:00	0.2	22:00	0	96.9

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.

There will be no daily results if there is less than 75% valid data for that day

Table 21 Station 4 Carbon Monoxide Monthly Summary

PM_{2.5} Summary

Station 4 Airportlink Operation Centre Ambient AQMS Particulate PM2.5 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 25.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	12.2	5.5	16.9	07:00	0	100.0
2/11/2016	7.9	0.4	18.4	22:00	0	100.0
3/11/2016	9.0	1.2	22.9	07:00	0	100.0
4/11/2016	5.1	1.5	9.7	14:00	0	100.0
5/11/2016	6.7	3.2	10.6	10:00	0	100.0
6/11/2016	16.6	9.7	28.0	08:00	0	87.5
7/11/2016	11.9	6.0	17.4	06:00	0	100.0
8/11/2016	8.3	4.0	14.7	15:00	0	100.0
9/11/2016	11.4	3.5	27.5	12:00	0	100.0
10/11/2016	9.4	2.4	18.5	23:00	0	100.0
11/11/2016	8.3	4.2	15.1	09:00	0	100.0
12/11/2016	7.1	-0.6	16.9	14:00	0	100.0
13/11/2016	5.7	1.3	15.3	17:00	0	100.0
14/11/2016	2.3	-1.0	6.7	00:00	0	87.5
15/11/2016	4.6	0.1	11.2	23:00	0	95.8
16/11/2016	7.9	2.0	20.8	07:00	0	100.0
17/11/2016	8.5	2.0	19.3	11:00	0	100.0
18/11/2016	10.0	1.2	18.8	07:00	0	100.0
19/11/2016	9.0	3.0	17.9	09:00	0	95.8
20/11/2016	7.3	-0.7	18.0	08:00	0	100.0
21/11/2016	10.6	4.2	26.6	07:00	0	100.0
22/11/2016	6.7	4.1	9.9	13:00	0	95.8
23/11/2016	8.6	2.4	16.1	18:00	0	100.0
24/11/2016	9.3	1.1	22.5	14:00	0	100.0
25/11/2016	9.7	5.1	17.3	10:00	0	100.0
26/11/2016	11.3	3.5	29.9	07:00	0	95.8
27/11/2016	8.3	3.1	14.4	10:00	0	100.0
28/11/2016	8.3	0.1	11.7	12:00	0	95.8
29/11/2016	6.5	1.6	12.6	22:00	0	100.0
30/11/2016	7.5	3.5	16.4	08:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 22 Station 4 PM_{2.5} Monthly Summary

PM₁₀ Summary

Station 4 Airportlink Operation Centre Ambient AQMS Particulate PM10 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 50.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	24.9	8.7	39.2	08:00	0	75.0
2/11/2016	24.8	8.5	40.9	15:00	0	79.2
3/11/2016	17.8	10.5	30.7	07:00	0	95.8
4/11/2016	13.7	6.8	24.2	10:00	0	95.8
5/11/2016	17.5	6.4	30.9	18:00	0	91.7
6/11/2016	34.7	20.1	59.1	15:00	0	87.5
7/11/2016	30.1	19.3	44.8	20:00	0	87.5
¹ 8/11/2016	-	7.8	64.0	17:00	0	54.2
9/11/2016	20.8	11.0	42.2	11:00	0	100.0
¹ 10/11/2016	-	10.9	35.2	12:00	0	70.8
¹ 11/11/2016	-	3.6	26.9	10:00	0	50.0
¹ 12/11/2016	-	-	-	-	0	0.0
¹ 13/11/2016	-	-	-	-	0	0.0
14/11/2016	13.4	7.3	21.1	07:00	0	87.5
15/11/2016	16.7	7.7	34.6	18:00	0	100.0
16/11/2016	15.3	11.4	21.7	07:00	0	100.0
17/11/2016	17.9	10.4	29.2	11:00	0	95.8
18/11/2016	17.6	9.9	22.5	17:00	0	100.0
19/11/2016	16.2	9.6	27.5	08:00	0	100.0
20/11/2016	14.2	8.5	23.0	16:00	0	100.0
21/11/2016	16.5	8.5	29.8	14:00	0	95.8
22/11/2016	16.8	7.7	27.3	14:00	0	100.0
23/11/2016	18.8	10.0	30.2	11:00	0	91.7
24/11/2016	25.3	4.0	98.4	11:00	0	91.7
25/11/2016	23.4	16.6	33.2	13:00	0	100.0
26/11/2016	20.1	10.4	29.7	18:00	0	75.0
27/11/2016	11.3	6.3	15.8	18:00	0	100.0
28/11/2016	12.4	7.7	19.3	13:00	0	87.5
29/11/2016	14.1	4.1	29.4	15:00	0	87.5
30/11/2016	15.3	5.9	46.0	16:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.

There will be no daily results if there is less than 75% valid data for that day

¹ Loss of data due to instrument fault

Table 23 Station 4 PM₁₀ Monthly Summary

Station 5 (Cartwright Street)

Summary

Station 5 Cartwright St Ambient AQMS Summary November 2016						
Parameter	Unit	EPP Goal	Averaging Period	Maximum Value	Date & Time	Capture Rate
NO ₂	ppm	0.120	1 Hour	0.024	03/11/2016 05:00	97.1
CO	ppm	8.0	8 Hours	0.3	13/11/2016 21:00	96.6
PM _{2.5}	µg/m ³	25	24 Hours	21.5	06/11/2016	95.0
PM ₁₀	µg/m ³	50	24 Hours	40.2	06/11/2016	99.4

Table 24 Station 5 Monthly Summary

Graphical Representations

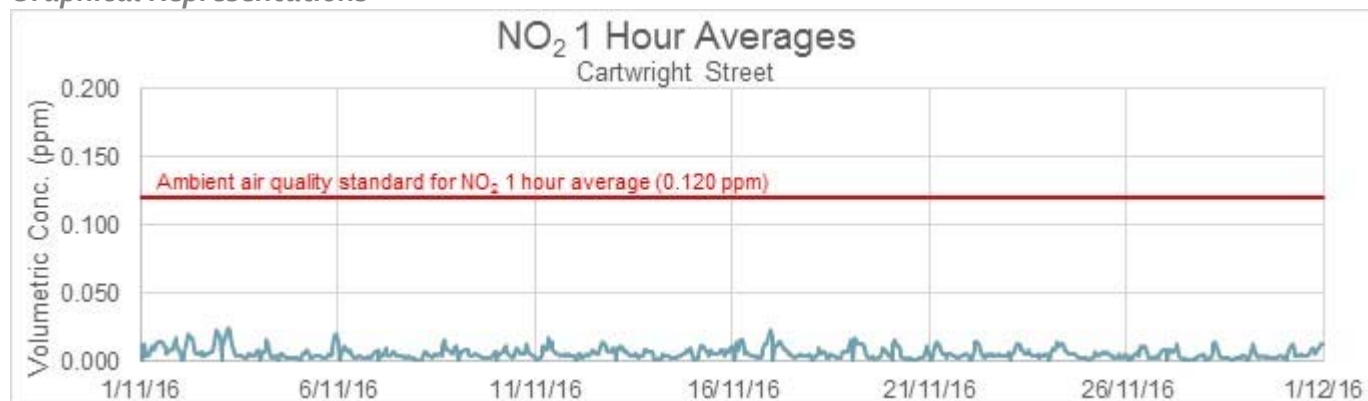


Figure 17 Station 5 Dioxide 1hr averages



Figure 18 Station 5 Carbon Monoxide 8hr rolling averages

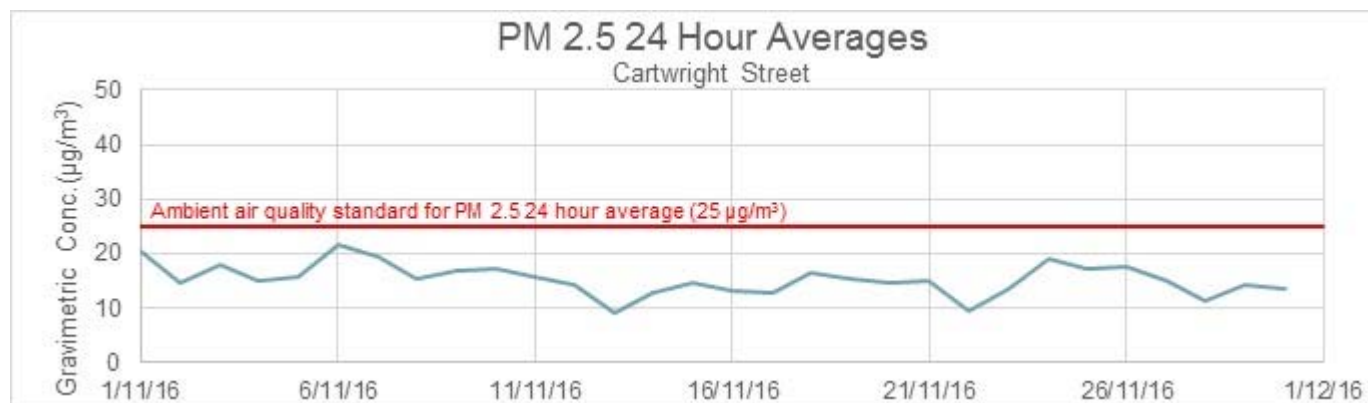


Figure 19 Station 5 PM2.5 24hr averages

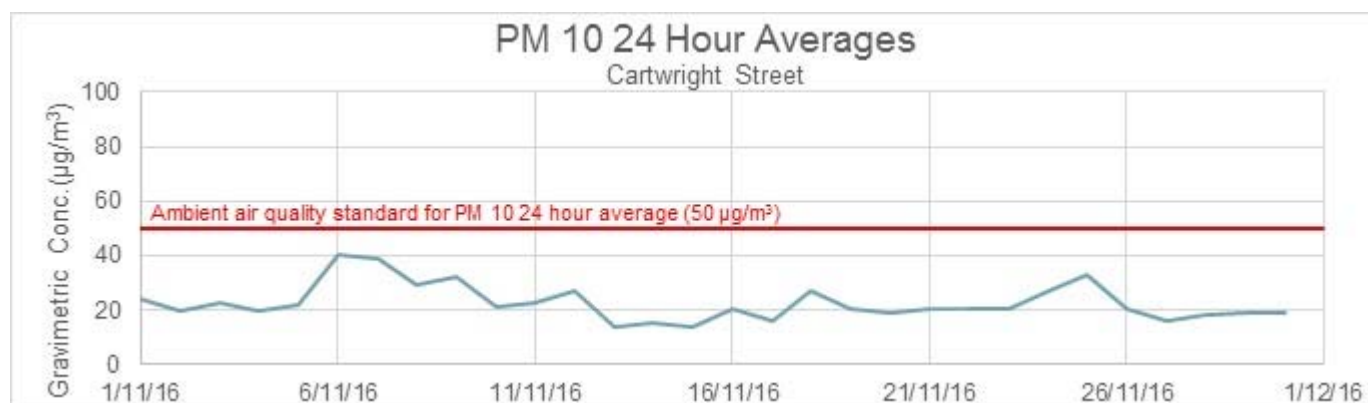


Figure 20 Station 5 PM10 24hr averages

Nitrogen Dioxide Summary

Station 5 Cartwright St Ambient AQMS Nitrogen Dioxide Summary November 2016						
Date	24hr Avg (ppm)	1 hr Avgs			Number of Exceedences 1hr Avg > 0.120 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max		
1/11/2016	0.010	0.004	0.017	21:00	0	97.2
2/11/2016	0.010	0.005	0.023	22:00	0	97.2
3/11/2016	0.009	0.003	0.024	05:00	0	97.2
4/11/2016	0.005	0.002	0.016	05:00	0	94.4
5/11/2016	0.006	0.002	0.021	23:00	0	97.2
6/11/2016	0.005	0.002	0.015	00:00	0	97.2
7/11/2016	0.005	0.001	0.010	05:00	0	97.2
8/11/2016	0.006	0.001	0.015	17:00	0	96.9
9/11/2016	0.005	0.002	0.012	00:00	0	97.2
10/11/2016	0.007	0.003	0.013	19:00	0	97.2
11/11/2016	0.007	0.002	0.018	08:00	0	97.2
12/11/2016	0.007	0.003	0.015	17:00	0	97.2
13/11/2016	0.007	0.003	0.011	04:00	0	97.2
14/11/2016	0.005	0.002	0.010	23:00	0	97.2
15/11/2016	0.007	0.003	0.011	05:00	0	97.2
16/11/2016	0.009	0.003	0.023	23:00	0	97.2
17/11/2016	0.008	0.003	0.018	00:00	0	97.2
18/11/2016	0.005	0.003	0.010	23:00	0	97.2
19/11/2016	0.008	0.002	0.017	03:00	0	97.2
20/11/2016	0.005	0.001	0.016	03:00	0	97.2
21/11/2016	0.006	0.003	0.015	04:00	0	97.2
22/11/2016	0.006	0.003	0.014	05:00	0	97.2
23/11/2016	0.007	0.003	0.014	05:00	0	96.9
24/11/2016	0.007	0.002	0.014	06:00	0	97.2
25/11/2016	0.005	0.002	0.008	10:00	0	97.2
26/11/2016	0.005	0.002	0.012	09:00	0	97.2
27/11/2016	0.005	0.001	0.013	07:00	0	97.2
28/11/2016	0.004	0.002	0.015	06:00	0	97.2
29/11/2016	0.004	0.002	0.013	05:00	0	97.2
30/11/2016	0.007	0.004	0.014	22:00	0	97.2

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 25 Station 5 Nitrogen Dioxide Monthly Summary

Carbon Monoxide Summary

Station 5 Cartwright St Ambient AQMS Carbon Monoxide Summary November 2016								
Date	24 hr Avg (ppm)	1 hr Avgs			8 hr Rolling Avgs		No. of exceedences 8hr Avg > 8.0 ppm	Capture Rate
		Min (ppm)	Max (ppm)	Time of Max	Max (ppm)	Time of Max		
1/11/2016	0.3	0.2	0.4	21:00	0.3	23:00	0	96.9
2/11/2016	0.1	0.0	0.3	22:00	0.3	00:00	0	96.9
3/11/2016	0.2	0.1	0.3	06:00	0.2	07:00	0	96.9
4/11/2016	0.2	0.1	0.2	05:00	0.2	06:00	0	94.1
5/11/2016	0.2	0.1	0.4	23:00	0.2	23:00	0	96.9
6/11/2016	0.1	0.0	0.3	00:00	0.2	04:00	0	96.9
7/11/2016	0.2	0.2	0.2	19:00	0.2	23:00	0	96.9
8/11/2016	0.2	0.2	0.3	17:00	0.3	23:00	0	96.5
9/11/2016	0.3	0.2	0.4	11:00	0.3	12:00	0	96.9
10/11/2016	0.2	0.2	0.3	06:00	0.3	23:00	0	96.9
11/11/2016	0.2	0.1	0.2	08:00	0.3	00:00	0	96.5
12/11/2016	0.3	0.2	0.3	17:00	0.3	23:00	0	96.9
13/11/2016	0.3	0.2	0.4	16:00	0.3	21:00	0	96.9
14/11/2016	0.0	0.0	0.2	00:00	0.3	00:00	0	96.9
15/11/2016	0.1	0.1	0.2	23:00	0.2	23:00	0	96.9
16/11/2016	0.2	0.0	0.2	05:00	0.2	07:00	0	96.5
17/11/2016	0.1	0.1	0.2	00:00	0.2	07:00	0	96.5
18/11/2016	0.1	0.1	0.2	23:00	0.1	23:00	0	96.5
19/11/2016	0.2	0.1	0.2	00:00	0.2	07:00	0	96.5
20/11/2016	0.2	0.1	0.2	02:00	0.2	06:00	0	96.5
21/11/2016	0.1	0.0	0.2	06:00	0.2	00:00	0	96.5
22/11/2016	0.2	0.1	0.3	06:00	0.2	07:00	0	96.5
23/11/2016	0.2	0.1	0.2	21:00	0.2	23:00	0	96.2
24/11/2016	0.2	0.1	0.3	06:00	0.2	00:00	0	96.5
25/11/2016	0.1	0.1	0.2	23:00	0.2	23:00	0	96.5
26/11/2016	0.2	0.2	0.3	22:00	0.2	23:00	0	96.5
27/11/2016	0.2	0.1	0.2	06:00	0.2	04:00	0	96.5
28/11/2016	0.1	0.1	0.2	06:00	0.2	08:00	0	96.5
29/11/2016	0.1	0.1	0.2	05:00	0.2	23:00	0	96.5
30/11/2016	0.2	0.1	0.3	22:00	0.2	23:00	0	96.5

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 26 Station 5 Carbon Monoxide Monthly Summary

PM_{2.5} Summary

Station 5 Cartwright St Ambient AQMS Particulate PM2.5 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 25.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	20.4	4.7	35.1	16:00	0	100.0
2/11/2016	14.7	6.2	43.1	17:00	0	100.0
3/11/2016	17.9	4.3	31.5	05:00	0	100.0
4/11/2016	15.1	2.9	30.7	17:00	0	95.8
5/11/2016	15.8	5.2	30.0	17:00	0	95.8
6/11/2016	21.5	5.9	37.3	07:00	0	95.8
7/11/2016	19.6	2.4	35.1	19:00	0	95.8
8/11/2016	15.4	1.5	32.0	10:00	0	100.0
9/11/2016	17.0	3.3	31.3	09:00	0	95.8
10/11/2016	17.3	6.3	31.9	10:00	0	100.0
11/11/2016	15.6	2.7	36.4	17:00	0	100.0
12/11/2016	14.2	2.0	30.8	14:00	0	95.8
13/11/2016	9.2	0.5	33.1	17:00	0	100.0
14/11/2016	12.7	-0.1	26.3	18:00	0	95.8
15/11/2016	14.5	5.0	32.7	13:00	0	87.5
16/11/2016	13.4	1.2	24.2	20:00	0	100.0
17/11/2016	12.9	1.1	27.0	16:00	0	100.0
18/11/2016	16.5	2.4	34.0	16:00	0	100.0
19/11/2016	15.5	6.3	29.1	09:00	0	100.0
20/11/2016	14.8	4.0	29.9	19:00	0	83.3
21/11/2016	15.1	2.8	43.8	18:00	0	95.8
22/11/2016	9.7	4.3	24.7	17:00	0	100.0
23/11/2016	13.5	7.0	28.9	17:00	0	91.7
24/11/2016	19.0	7.0	30.8	17:00	0	91.7
25/11/2016	17.4	-0.5	36.9	18:00	0	91.7
26/11/2016	17.5	7.2	31.5	18:00	0	87.5
27/11/2016	15.0	4.5	27.6	19:00	0	91.7
28/11/2016	11.5	3.2	25.8	19:00	0	95.8
29/11/2016	14.5	4.2	26.7	04:00	0	87.5
30/11/2016	13.6	2.4	26.8	16:00	0	75.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 27 Station 5 PM_{2.5} Monthly Summary

PM₁₀ Summary

Station 5 Cartwright St Ambient AQMS Particulate PM10 Summary November 2016						
Date	24 hr Avg ($\mu\text{g}/\text{m}^3$)	1 hr Avgs			No. of exceedences 24hr Avg > 50.0 $\mu\text{g}/\text{m}^3$	Capture Rate
		Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Time of Max		
1/11/2016	24.4	14.8	45.6	14:00	0	100.0
2/11/2016	20.0	6.1	36.8	16:00	0	100.0
3/11/2016	22.5	10.7	37.9	08:00	0	100.0
4/11/2016	20.0	10.0	45.5	14:00	0	95.8
5/11/2016	21.8	10.0	37.4	22:00	0	95.8
6/11/2016	40.2	16.5	117.6	11:00	0	100.0
7/11/2016	38.9	22.4	65.6	11:00	0	100.0
8/11/2016	29.2	8.0	72.6	14:00	0	100.0
9/11/2016	32.3	12.8	69.8	15:00	0	100.0
10/11/2016	21.5	11.1	35.5	15:00	0	100.0
11/11/2016	22.5	11.2	71.8	15:00	0	100.0
12/11/2016	27.1	5.9	86.2	14:00	0	100.0
13/11/2016	14.0	1.5	44.3	15:00	0	100.0
14/11/2016	15.2	7.3	35.8	07:00	0	100.0
15/11/2016	13.9	6.2	28.9	08:00	0	100.0
16/11/2016	20.6	10.9	33.3	14:00	0	95.8
17/11/2016	16.2	3.2	26.8	19:00	0	100.0
18/11/2016	27.1	10.8	94.3	19:00	0	100.0
19/11/2016	20.6	10.1	30.7	09:00	0	100.0
20/11/2016	19.1	10.5	27.4	17:00	0	100.0
21/11/2016	20.3	10.9	32.8	11:00	0	100.0
22/11/2016	20.3	12.3	38.5	11:00	0	100.0
23/11/2016	20.5	7.3	38.5	15:00	0	100.0
24/11/2016	27.4	9.0	48.5	18:00	0	95.8
25/11/2016	33.1	20.0	59.3	11:00	0	100.0
26/11/2016	20.4	10.2	36.1	02:00	0	100.0
27/11/2016	16.0	6.5	21.6	15:00	0	100.0
28/11/2016	18.0	9.3	36.6	15:00	0	100.0
29/11/2016	18.9	13.0	33.3	11:00	0	100.0
30/11/2016	19.3	10.0	43.5	15:00	0	100.0

Results highlighted in red indicate the highest recorded value for the relevant averaging period for the month.
There will be no daily results if there is less than 75% valid data for that day

Table 28 Station 5 PM₁₀ Monthly Summary

TSP High Volume Air Sampler Results

Total Suspended Particulate High Volume Air Sampler results are presented in Table 29 below. The HVAS are run on a one in six day cycle.

The Coordinator General's criterion of 90 $\mu\text{g}/\text{m}^3$ was not exceeded during the reporting period at any of the five sites.

TSP Results November 2016					
Sample Date	Station 1 AHS ($\mu\text{g}/\text{m}^3$)	Station 2 KSHS ($\mu\text{g}/\text{m}^3$)	Station 3 LS ($\mu\text{g}/\text{m}^3$)	Station 4 ALOC ($\mu\text{g}/\text{m}^3$)	Station 5 CS ($\mu\text{g}/\text{m}^3$)
02/11/2016	36	40	32	39	36
08/11/2016	40	43	35	35	56
14/11/2016	33	32	28	28	30
20/11/2016	28	27	28	32	26
26/11/2016	32	31	31	36	33
Monthly Average	33.8	34.6	30.8	34.0	36.2

Table 29 TSP High Volume Air Sampler Results

Validation Tables

The following tables outline any data removed during the data validation process, or automatically invalidated by the data acquisition system.

Station 1 Aviation High School

Station 1 Aviation High School Ambient AQMS Data Validation Table					
Start Date	End Date	Affected Parameters	Details of change	Validation Date	Changed By
1/11/2016 16:00:00	30/11/2016 10:50:00	PM _{2.5} , PM ₁₀	Intermittent unrealistic data less than -1.0 µg/m ³	12/12/2016	CP
2/11/2016 17:10:00	30/11/2016 23:35:00	PM _{2.5}	Intermittent instrument faults – error code logged	12/12/2016	CP
7/11/2016 11:55:00	10/11/2016 15:50:00	PM _{2.5}	Instrument fault	12/12/2016	CP

Table 30 Station 1 Aviation High School AQMS Data Validation Table

Station 2 Kedron State High School

Station 2 Kedron State High School Ambient AQMS Data Validation Table					
Start Date	End Date	Affected Parameters	Details of change	Validation Date	Changed By
1/11/2016 00:50:00	30/11/2016 16:05:00	NO, NO ₂ , NO _x	Intermittent communication errors	12/12/2016	CP
8/11/2016 09:35:00	8/11/2016 09:40:00	CO, NO, NO ₂ , NO _x	Maintenance	12/12/2016	CP

Table 31 Station 2 Kedron High School AQMS Data Validation Table

Station 3 Lewis Street

Station 3 Lewis Street Ambient AQMS Data Validation Table					
Start Date	End Date	Affected Parameters	Details of change	Validation Date	Changed By
1/11/2016 02:10:00	27/11/2016 19:20:00	PM _{2.5}	Intermittent instrument faults – error code logged	12/12/2016	CP
1/11/2016 02:35:00	29/11/2016 14:20:00	PM ₁₀ , PM _{2.5}	Intermittent unrealistic data less than -1.0 µg/m ³	12/12/2016	CP
1/11/2016 07:25:00	1/11/2016 09:00:00	All parameters	Data communication errors	12/12/2016	CP
14/11/2016 13:55:00	15/11/2016 16:05:00	PM _{2.5}	Instrument fault	12/12/2016	CP
15/11/2016 16:10:00	15/11/2016 17:50:00	PM ₁₀ , PM _{2.5}	Maintenance	12/12/2016	CP

Table 32 Station 3 Lewis St AQMS Data Validation Table

Station 4 Airport Link Operation Centre

Station 4 Airport Link Operation Centre Ambient AQMS Data Validation Table					
Start Date	End Date	Affected Parameters	Details of change	Validation Date	Changed By
1/11/2016 01:05:00	30/11/2016 23:05:00	PM _{2.5}	Intermittent instrument faults – error code logged	12/12/2016	CP
1/11/2016 01:35:00	30/11/2016 19:15:00	PM _{2.5} , PM ₁₀	Intermittent unrealistic data less than -1.0 µg/m ³	12/12/2016	CP
6/11/2016 08:55:00	6/11/2016 11:50:00	PM _{2.5} , PM ₁₀	Noisy data	12/12/2016	CP
10/11/2016 19:45:00	11/11/2016 07:00:00	PM ₁₀	Noisy data	12/12/2016	CP
11/11/2016 18:20:00	14/11/2016 01:20:00	PM ₁₀	Noisy data	12/12/2016	CP
15/11/2016 00:35:00	15/11/2016 04:35:00	CO	Intermittent instrument faults	12/12/2016	CP
22/11/2016 16:45:00	22/11/2016 17:05:00	All parameters	Maintenance	12/12/2016	CP

Table 33 Station 4 Airport Link Operation Centre AQMS Data Validation Table

Station 5 Cartwright St

Station 5 Cartwright Street Ambient AQMS Data Validation Table					
Start Date	End Date	Affected Parameters	Details of change	Validation Date	Changed By
1/11/2016 00:00:00	4/11/2016 12:00:00	CO	Data adjusted - multiplier applied to data due to low nightly spans. Multiplier A: 1.1173, Multiplier B: 1.1173	12/12/2016	CP
1/11/2016 00:40:00	30/11/2016 23:05:00	PM _{2.5} , PM ₁₀	Intermittent instrument faults – error code logged	12/12/2016	CP
4/11/2016 06:55:00	30/11/2016 20:50:00	PM _{2.5}	Intermittent unrealistic data less than -1.0 µg/m ³	12/12/2016	CP
4/11/2016 12:05:00	4/11/2016 12:40:00	CO, NO, NO ₂ , NO _x	Maintenance	12/12/2016	CP

Table 34 Station 5 Cartwright St AQMS Data Validation Table