

West Gate Tunnel Project

Ambient Air Quality Monitoring

Validated Report

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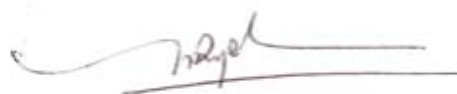
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1.0 Introduction

1.1. Air Quality Summary

Section 2.0 of this report presents summaries of air quality data for each pollutant from July to December 2017 for the West Gate Tunnel Project (WGTP) monitoring network. These tables show month-to-month variation in air quality. A month entry is given when at least 75% of the maximum number of possible observations during the month are available. When the data is unavailable for the entire month this is indicated by the abbreviation “n.d.” (no data). A dash is inserted when less than 75% of valid data is available.

- The 24 hour average PM_{2.5} at Yarraville Gardens station exceeded the *State Environmental Protection Policy (Ambient Air Quality) Environmental Quality Objectives (SEPP(AAQ)EQO)* PM_{2.5} of 25 µg/m³ on 3rd August 2017.
- The 24 hour average PM₁₀ at Primula Avenue exceeded the *SEPP (air quality management (AQM)) Schedule B* PM₁₀ intervention level of 60 µg/m³ on 19th December 2017.
- Primula Avenue CO concentration was low and did not exceed the SEPP(AAQ) CO EQO of 9.0 ppm and the SEPP(AQM) Schedule B CO intervention level of 29 ppm.
- Primula Avenue NO₂ concentration was low and did not exceed the SEPP(AAQ) NO₂ EQO of 120 ppb and the SEPP(AQM) Schedule B NO₂ intervention level of 140 ppb.
- Primula Avenue BTEX concentrations was low and did not exceed the National Environmental Protection Measures (NEPM) Air Toxics – Monitoring Intervention levels (MPL) during this reporting period.

1.2. Reporting Protocols

Data presented in this report are based on clock hours. Hourly or other averages are constrained to start and finish on a clock hour. Sampling of all parameters is continuous, with the exception of BTEX. BTEX sampling is conducted on a 6-day cycle at the Primula Avenue station.

1.3. Guidelines

Air quality measurements are compared against air quality objectives contained in the State Environmental Protection Policy (Ambient Air Quality) Environmental Quality Objectives (SEPP(AAQ)EQO) and SEPP (air quality management (AQM)) Schedule B Intervention Levels to assess whether pollutant levels could affect health and wellbeing. The relevant guidelines are shown in the air quality summary table for each pollutant. Benzene, Toluene and Xylenes (BTX) are reported against the National Environmental Protection Measures (NEPM) Air Toxics – Monitoring Intervention levels (MPL)

1.4. Compliance with Air Quality Guidelines

Table 1: Number of occasions during July to December 2017 when measured levels exceeded SEPP(Air), SEPP(AQM) or NEMP(Air Toxics MPL) objectives

Air Pollutant	Averaging Period	Exceedances
PM ₁₀	1 day	1
PM ₁₀ (Yarraville Gardens only)	1 year	0
PM _{2.5}	1 day	1
PM _{2.5} (Yarraville Gardens only)	1 year	0
CO (Primula Avenue only)	1 hour	0
NO ₂ (Primula Avenue only)	1 hour	0
Benzene (Primula Avenue only)	1 year	0
Toluene (Primula Avenue only)	1 day	0
Toluene (Primula Avenue only)	1 year	0
Xylene (Primula Avenue only)	1 day	0
Xylene (Primula Avenue only)	1 year	0

2.0 Monthly Summary Results

2.1. Monthly Summary Results for July 2017

Table 2: Monthly Summary Results for July 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	23.1	15				
	Monthly average	13.1	7				
Francis Street	Maximum 1-day	33.8	16				
	Monthly average	16.5	8				
Woods Street	Maximum 1-day	26.5	17				
	Monthly average	14.3	8				
Primula Avenue	Maximum 1-day	41.3	18	0.5	89	30	119
	Monthly average	19.2	8	0.2	19	15	34
Donald Mclean Reserve	Maximum 1-day	32.8	17				
	Monthly average	18.2	8				

Table 3: WGTP Monthly Data Capture for July 2017

Table 3 below displays data capture statistics for July 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	97.6	99.8	100.0	99.4	100.0
PM _{2.5}	97.3	99.9	100.0	99.7	100.0
WS, WD	99.0	99.9	100.0	99.7	99.9
CO				96.5	
NO, NO ₂ , NO _x				96.6	
BTEX				83.3	

2.1.1. PM₁₀ ambient concentration for the WGTP Network for July 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

July 2017

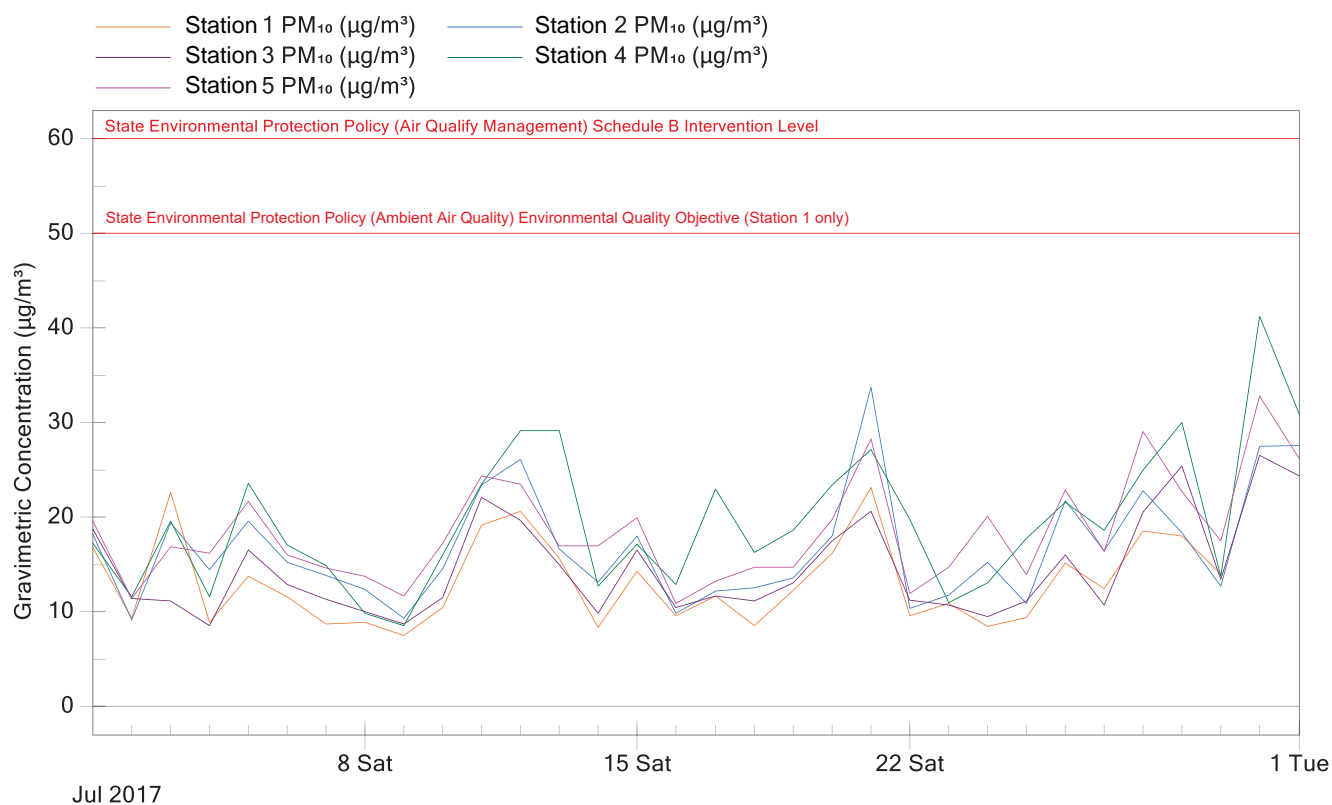


Figure 1: WGTP Network - 1-day averages of PM₁₀ ambient concentration for July 2017

2.1.2. PM_{2.5} ambient concentration for the WGTP Network for July 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

July 2017

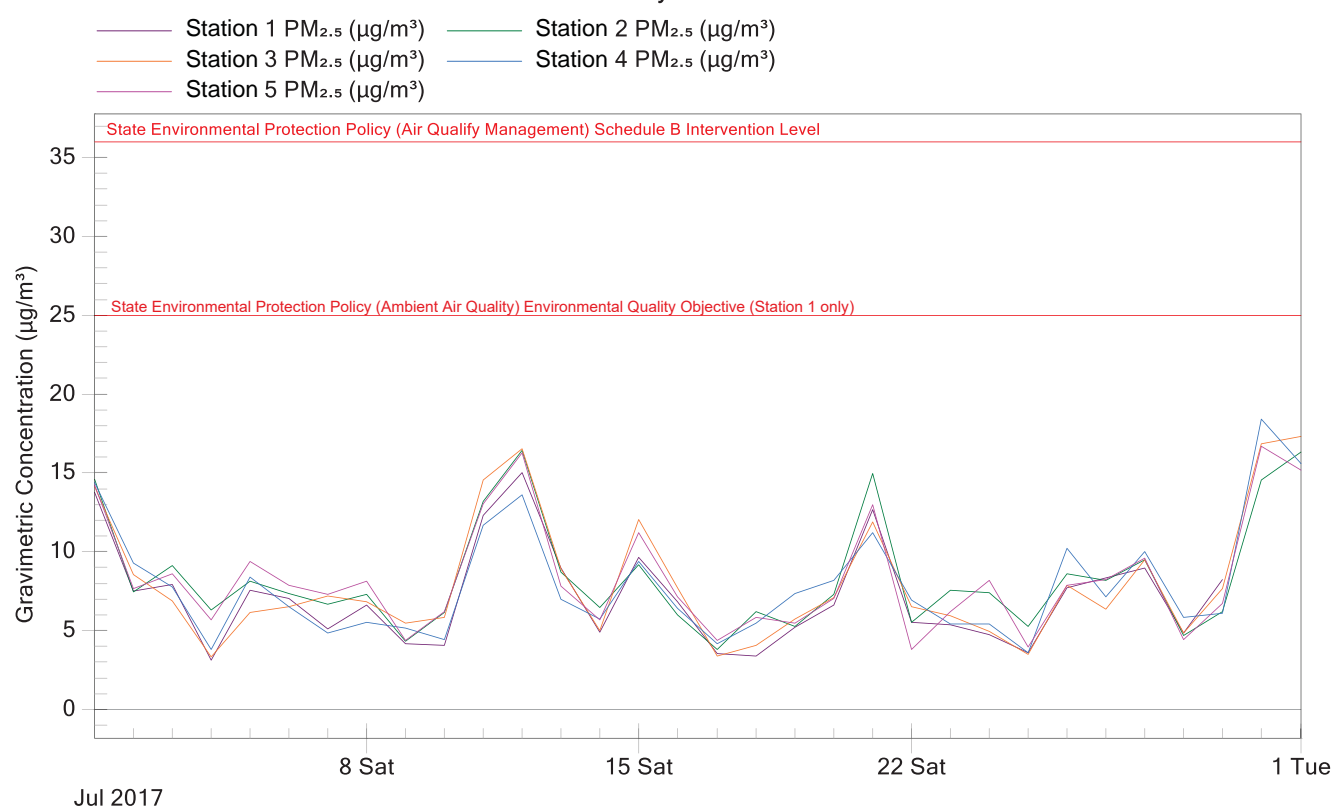


Figure 2: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for July 2017

2.1.3. CO ambient concentration at Primula Avenue station for July 2017

Primula Ave - Daily maximum of CO ambient concentration

July 2017

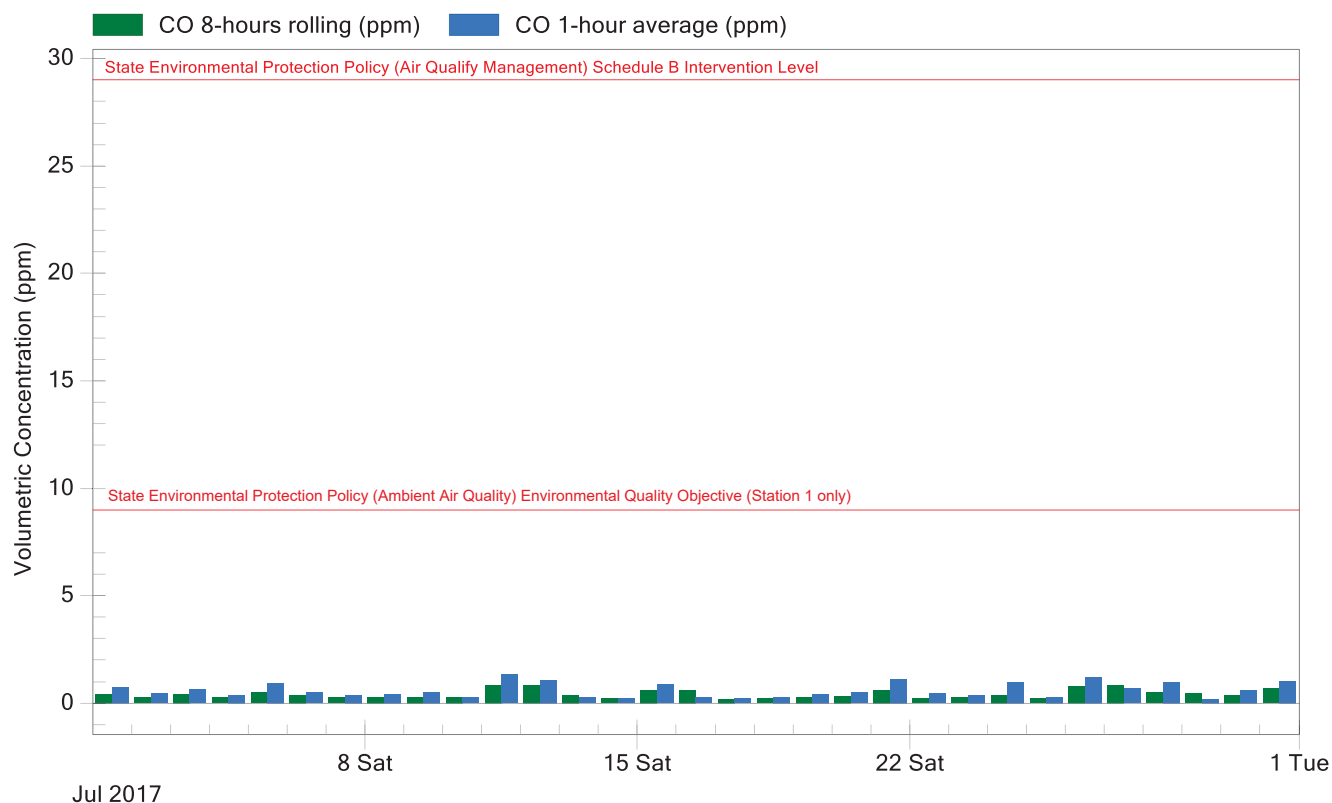


Figure 3: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for July 2017

2.1.4. NO₂ ambient concentration at Primula Avenue station for July 2017

Primula Ave - Daily maximum of NO₂ ambient concentration July 2017

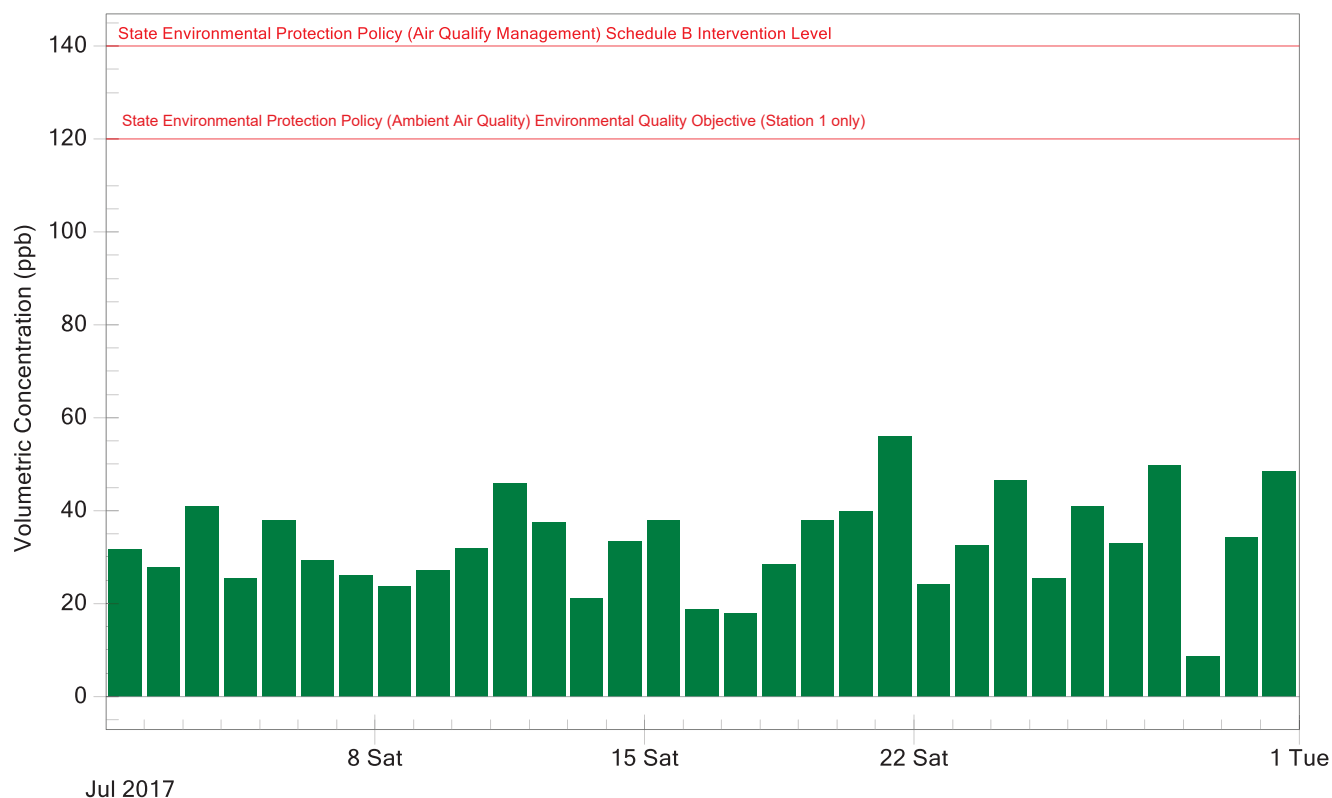


Figure 4: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for July 2017

2.1.5. BTEX Analytical Results Summary for Primula Avenue Station for July 2017

Table 4: BTEX Analytical Results Summary for July 2017

Parameter	NEMP MIL	Units	Samples					
Canister Number			L4294	L4521	L4594†	L3781	L4593	L3465†
Sample Date			01/07/17	07/07/17	13/07/17	19/07/17	25/07/17	31/07/17
Final Vacuum		inHg	0	4.9	1.8	6.3	4.9	3.9
Benzene	3 (1 year)	ppb	*	<0.7	<0.7	<0.8	<0.8	<0.7
Toluene	1000 (1 day) 100 (1 Year)	ppb	*	<0.8	<0.7	<0.8	<0.8	<0.8
Ethyl benzene	-	ppb	*	<0.7	<0.6	<0.7	<0.7	<0.6
m,p-xylenes	250 (1 day)	ppb	*	<1.4	<1.3	<1.5	<1.5	<1.4
o-xylene		ppb	*	<0.7	<0.6	<0.7	<0.7	<0.6

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

*Invalid dataset

2.2. Monthly Summary Results for August 2017

Table 5: Monthly Summary Results for August 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	33.9	32				
	Monthly average	13.2	6				
Francis Street	Maximum 1-day	34.7	33				
	Monthly average	17.0	8				
Woods Street	Maximum 1-day	30.5	33				
	Monthly average	13.9	8				
Primula Avenue	Maximum 1-day	50.6	34	0.8	128	31	159
	Monthly average	19.4	8	0.3	25	17	42
Donald Mclean Reserve	Maximum 1-day	44.5	33				
	Monthly average	20.2	8				

Table 6: WGTP Monthly Data Capture for August 2017

Table 6 below displays data capture statistics for August 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	98.1	99.9	99.3	99.9	99.9
PM _{2.5}	98.0	99.9	99.7	99.7	99.7
WS, WD	100.0	99.9	100.0	99.9	99.7
CO				96.7	
NO, NO ₂ , NO _x				97.1	
BTEX				80.0	

2.2.1. PM₁₀ ambient concentration for the WGTP Network for August 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

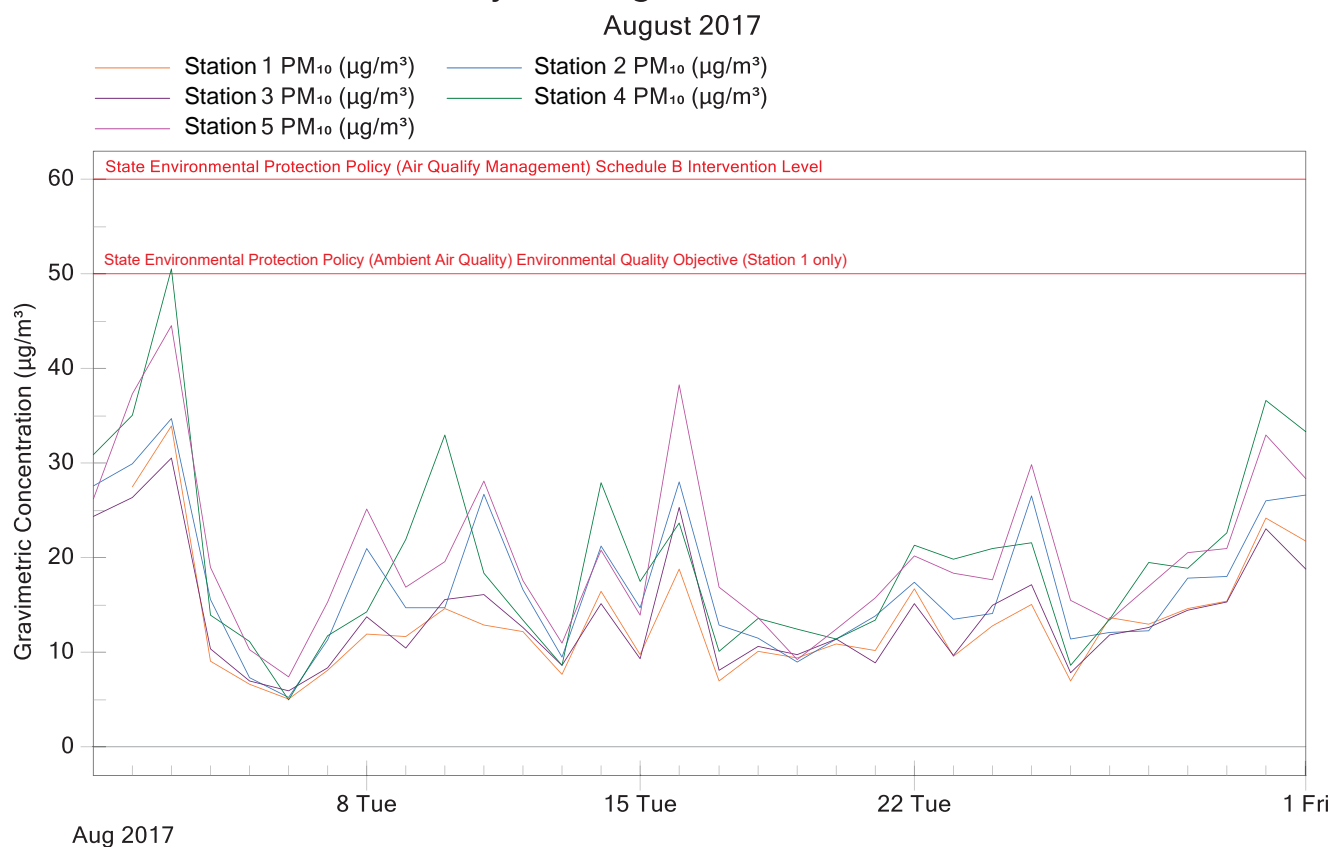


Figure 5: WGTP Network - 1-day averages of PM₁₀ ambient concentration for August 2017

2.2.2. PM_{2.5} ambient concentration for the WGTP Network for August 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

August 2017

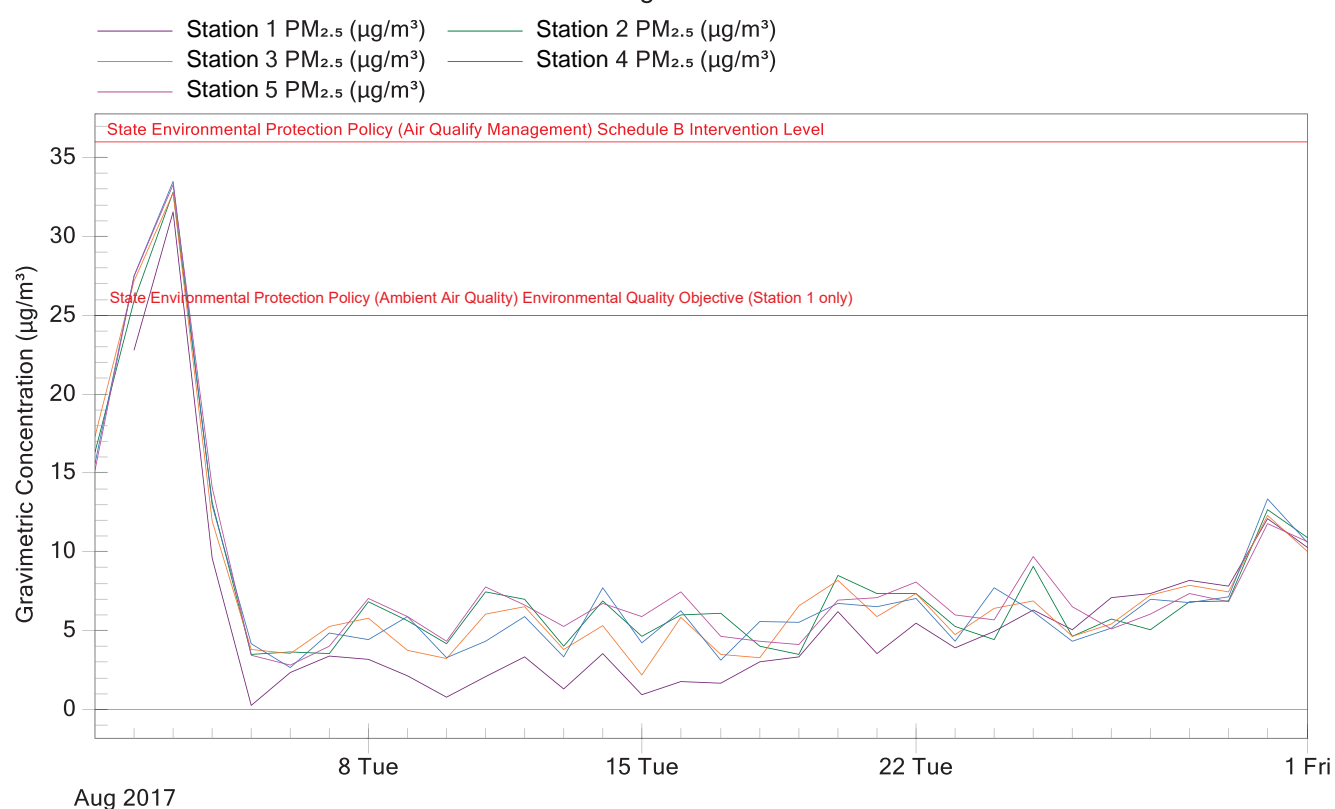


Figure 6: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for August 2017

2.2.3. CO ambient concentration at Primula Avenue station for August 2017

Primula Ave - Daily maximum of CO ambient concentration

August 2017

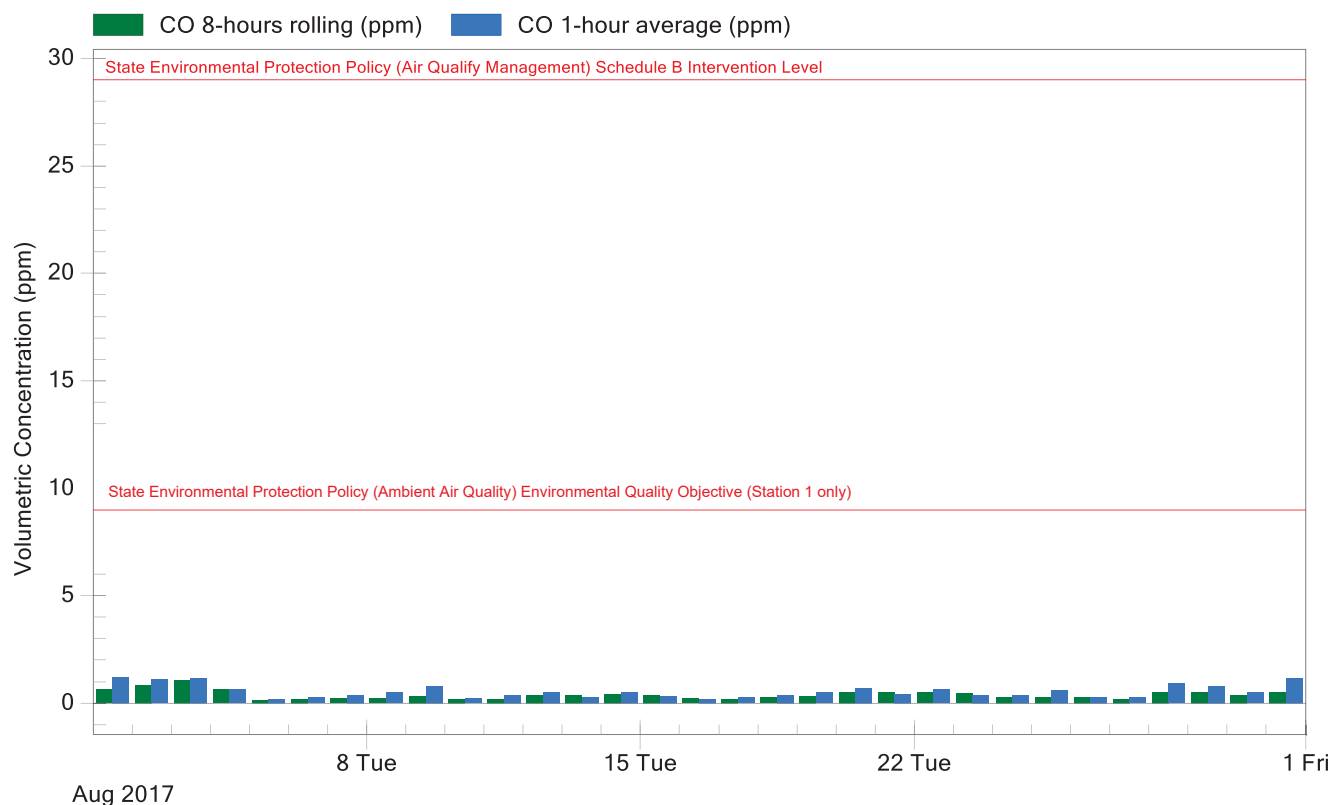


Figure 7: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for August 2017

2.2.4. NO₂ ambient concentration at Primula Avenue station for August 2017

Primula Ave - Daily maximum of NO₂ ambient concentration August 2017

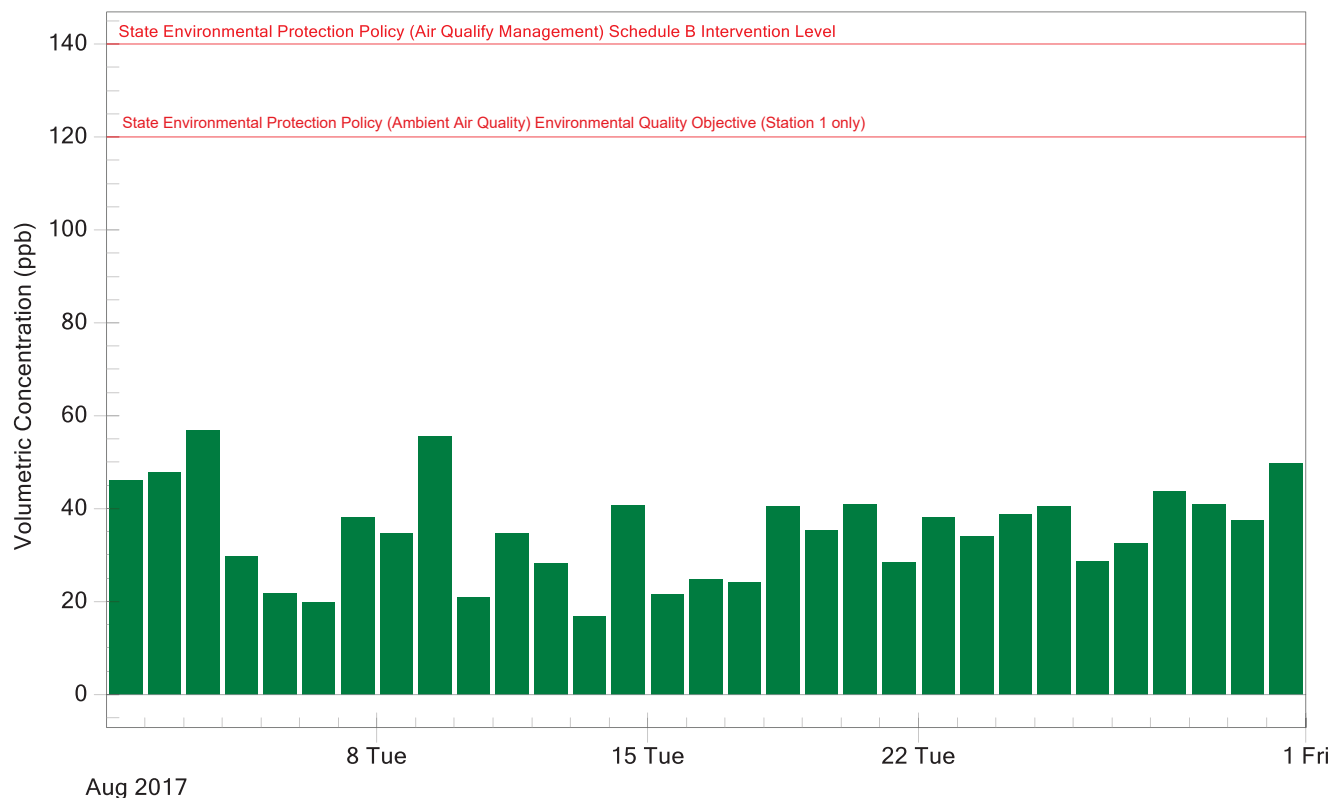


Figure 8: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for August 2017

2.2.5. BTEX Analytical Results Summary for Primula Avenue Station for August 2017

Table 7: BTEX Analytical Results Summary for August 2017

Parameter	NEMP MIL	Units	Samples				
Canister Number			L4512	L4602	L4594†	L4606†	L4291
Sample Date			06/08/17	12/08/17	18/08/17	24/08/17	30/08/17
Final Vacuum		inHg	4.7	6.7	3.9	3.7	N/A
Benzene	3 (1 year)	ppb	<0.7	<0.8	<0.7	<0.7	*
Toluene	1000 (1 day) 100 (1 Year)	ppb	<0.7	<0.8	0.97	<0.7	*
Ethyl benzene	-	ppb	<0.6	<0.7	<0.6	<0.6	*
m,p-xylenes	250 (1 day)	ppb	<1.4	<1.5	<1.4	<1.4	*
o-xylene		ppb	<0.6	<0.7	<0.6	<0.6	*

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

*Invalid dataset.

2.3. Monthly Summary Results for September 2017

Table 8: Monthly Summary Results for September 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	27.9	10				
	Monthly average	14.9	6				
Francis Street	Maximum 1-day	32.3	13				
	Monthly average	16.5	6				
Woods Street	Maximum 1-day	25.8	10				
	Monthly average	15.9	6				
Primula Avenue	Maximum 1-day	41.4	11	0.4	44	27	69
	Monthly average	21.2	6	0.2	13	14	26
Donald Mclean Reserve	Maximum 1-day	30.6	11				
	Monthly average	20.2	6				

Table 9: WGTP Monthly Data Capture for September 2017

Table 9 below displays data capture statistics for September 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	99.9	99.8	99.9	97.3	99.7
PM _{2.5}	99.9	99.8	96.7	99.4	98.3
WS, WD	100.0	100.0	100.0	100.0	99.9
CO				96.7	
NO, NO ₂ , NO _x				97.1	
BTEX				100.0	

2.3.1. PM₁₀ ambient concentration for the WGTP Network for September 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

September 2017

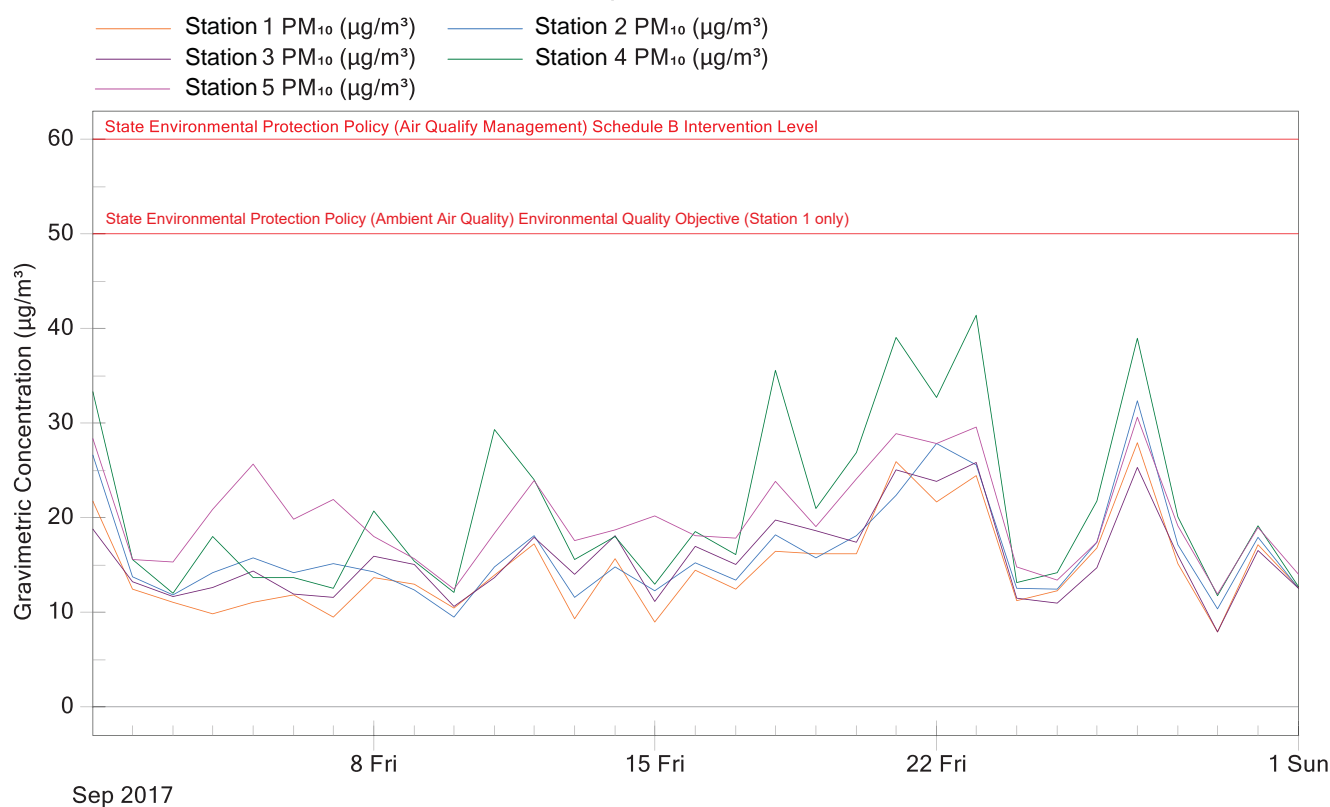


Figure 9: WGTP Network - 1-day averages of PM₁₀ ambient concentration for September 2017

2.3.2. PM_{2.5} ambient concentration for the WGTP Network for September 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

September 2017

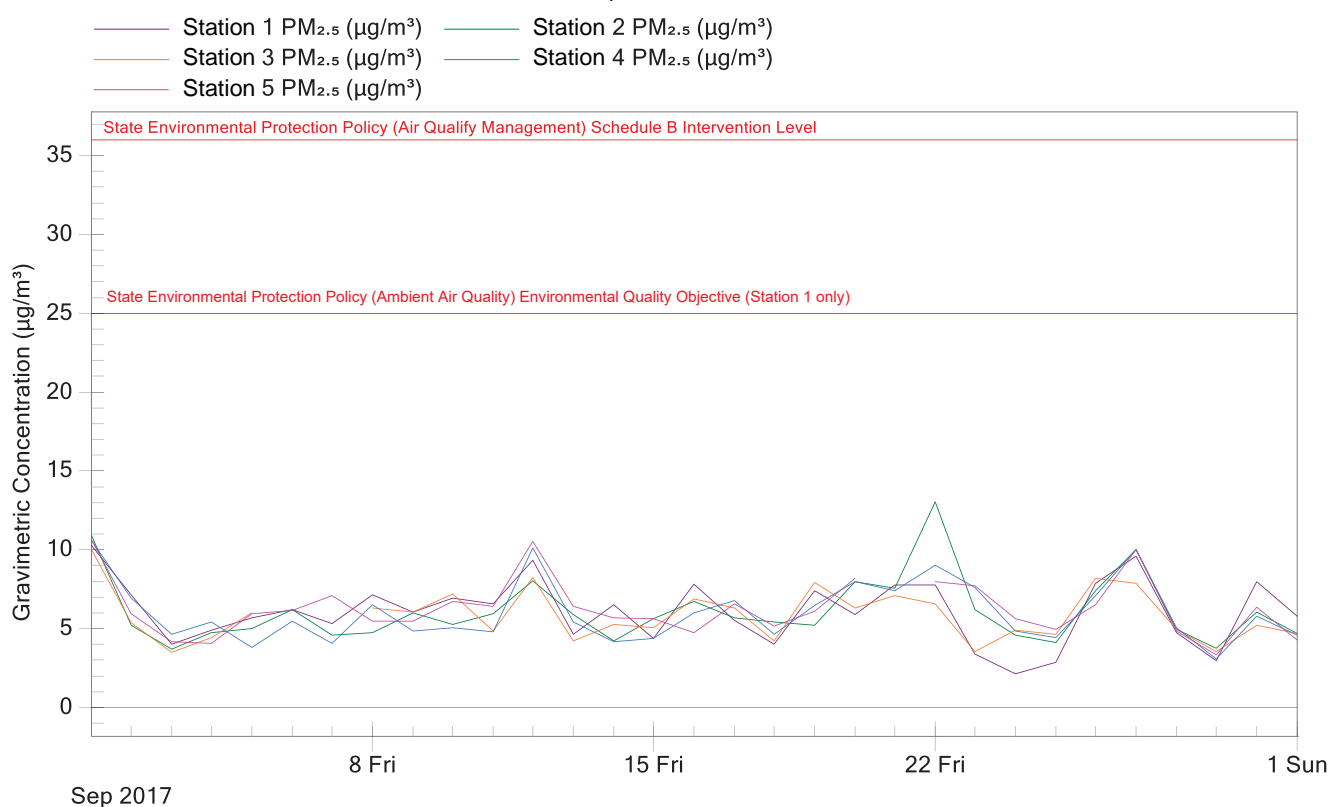


Figure 10: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for September 2017

2.3.3. CO ambient concentration at Primula Avenue station for September 2017

Primula Ave - Daily maximum of CO ambient concentration

September 2017

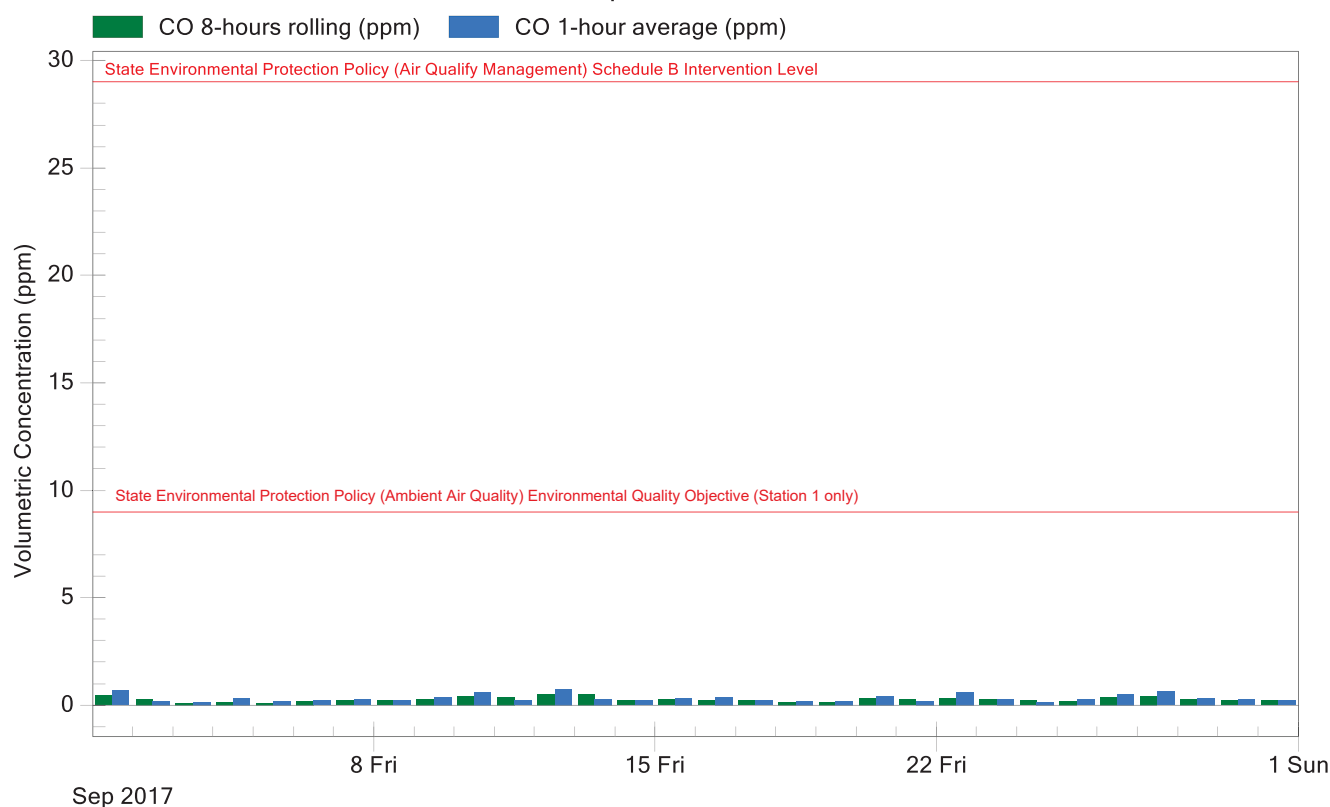


Figure 11: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for September 2017

2.3.4. NO₂ ambient concentration at Primula Avenue station for September 2017

Primula Ave - Daily maximum of NO₂ ambient concentration September 2017

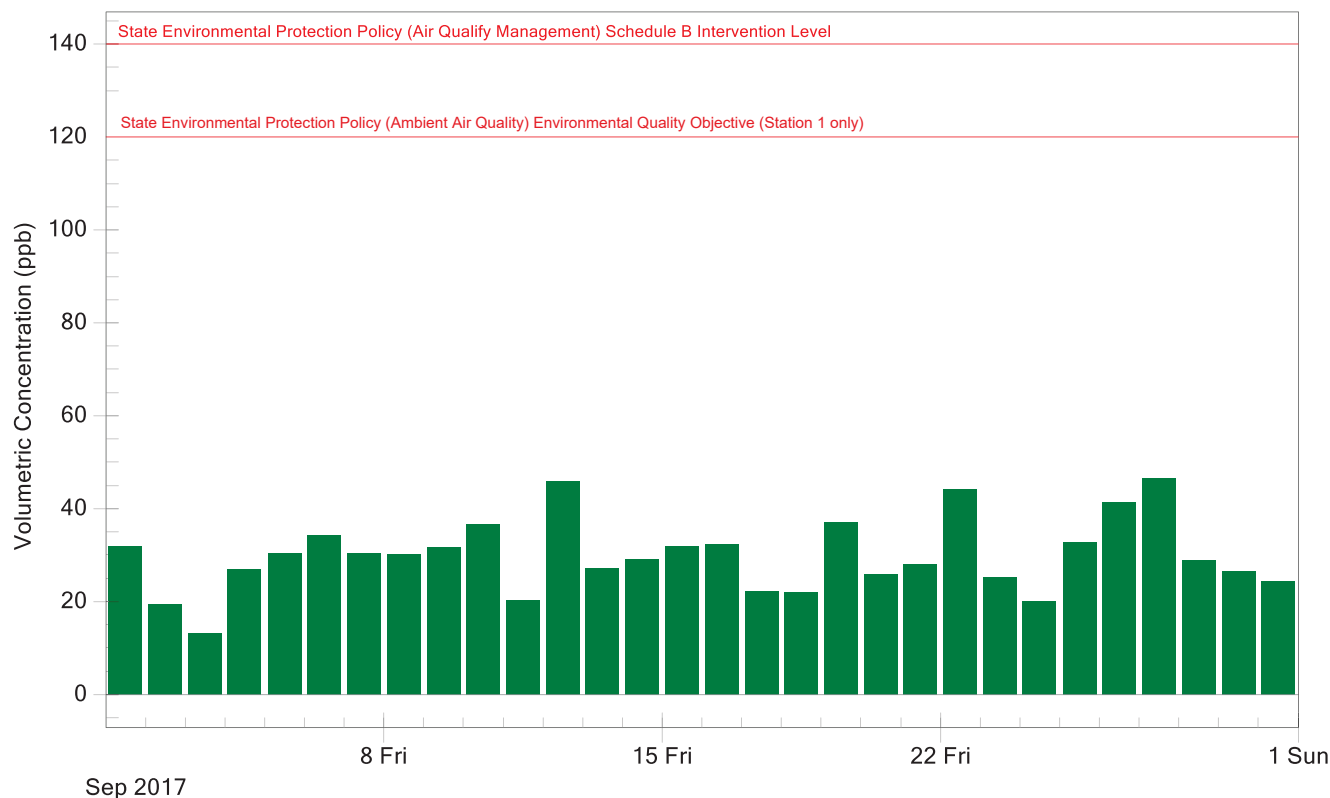


Figure 12: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for September 2017

2.3.5. BTEX Analytical Results Summary for Primula Avenue Station for September 2017

Table 10: BTEX Analytical Results Summary for September 2017

Parameter	NEMP MIL	Units	Samples				
Canister Number			L4294†	L4518	L3643	L4608	L4520
Sample Date			05/09/17	11/09/17	17/09/17	23/09/17	29/09/17
Final Vacuum		inHg	3.9	4.3	10	6.3	5.3
Benzene	3 (1 year)	ppb	<0.7	<0.7	<0.9	<0.8	<0.7
Toluene	1000 (1 day) 100 (1 Year)	ppb	1	<0.7	<0.9	<0.8	<0.8
Ethyl benzene	-	ppb	<0.6	<0.6	<0.8	<0.7	<0.7
m,p-xylenes	250 (1 day)	ppb	<1.4	<1.4	<1.8	<1.5	<1.4
o-xylene		ppb	<0.6	<0.6	<0.8	<0.7	<0.7

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

2.4. Monthly Summary Results for October 2017

Table 11: Monthly Summary Results for October 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	32.1	18				
	Monthly average	19.5	8				
Francis Street	Maximum 1-day	32.4	16				
	Monthly average	18.4	8				
Woods Street	Maximum 1-day	28.4	15				
	Monthly average	17.8	7				
Primula Avenue	Maximum 1-day	46.2	17	0.4	53	32	81
	Monthly average	23.6	8	0.2	23	18	41
Donald Mclean Reserve	Maximum 1-day	35.8	16				
	Monthly average	20.7	8				

Table 12: WGTP Monthly Data Capture for October 2017

Table 12 below displays data capture statistics for October 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	90.9	100.0	99.9	97.5	99.3
PM _{2.5}	99.9	100.0	99.9	94.0	99.7
WS, WD	100.0	100.0	100.0	100.0	99.9
CO				96.6	
NO, NO ₂ , NO _x				96.8	
BTEX				80.0	

2.4.1. PM₁₀ ambient concentration for the WGTP Network for October 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

October 2017

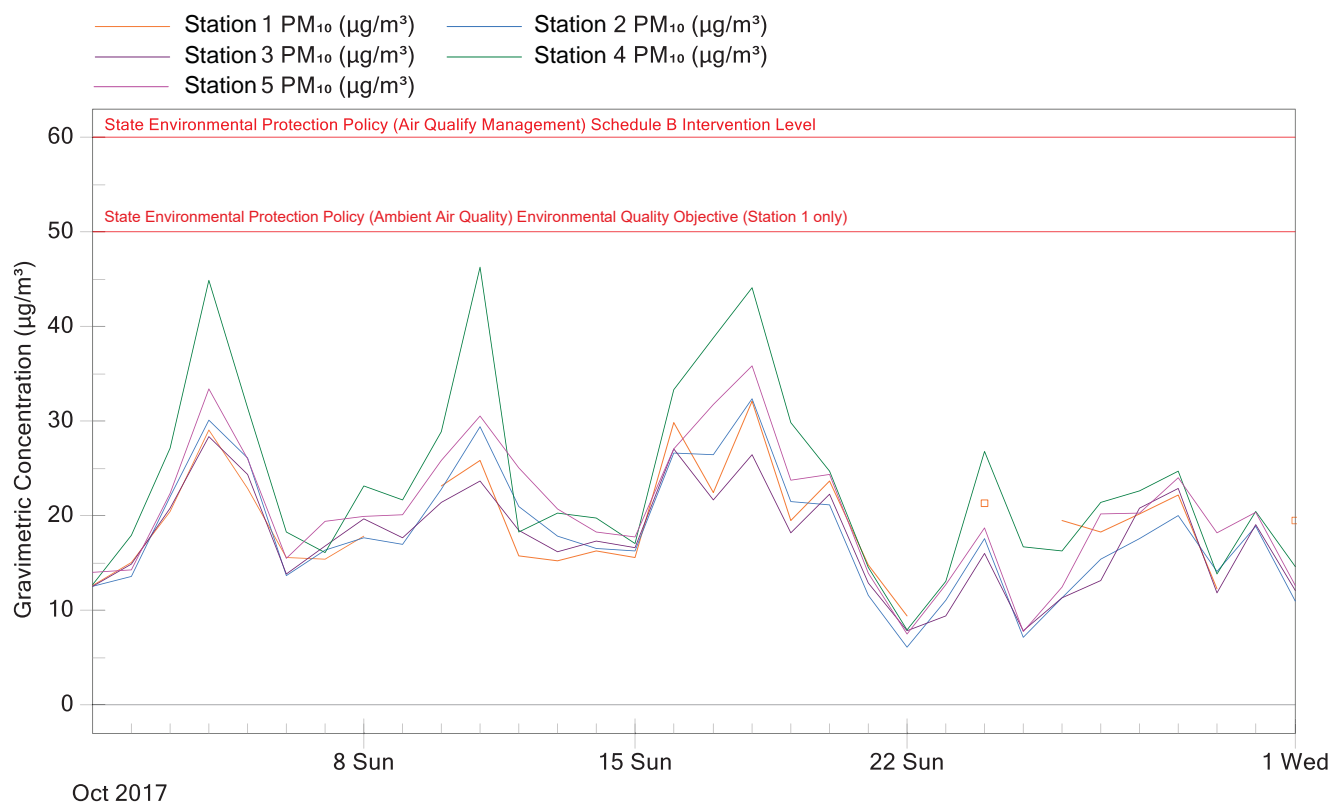


Figure 13: WGTP Network - 1-day averages of PM₁₀ ambient concentration for October 2017

2.4.2. PM_{2.5} ambient concentration for the WGTP Network for October 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

October 2017

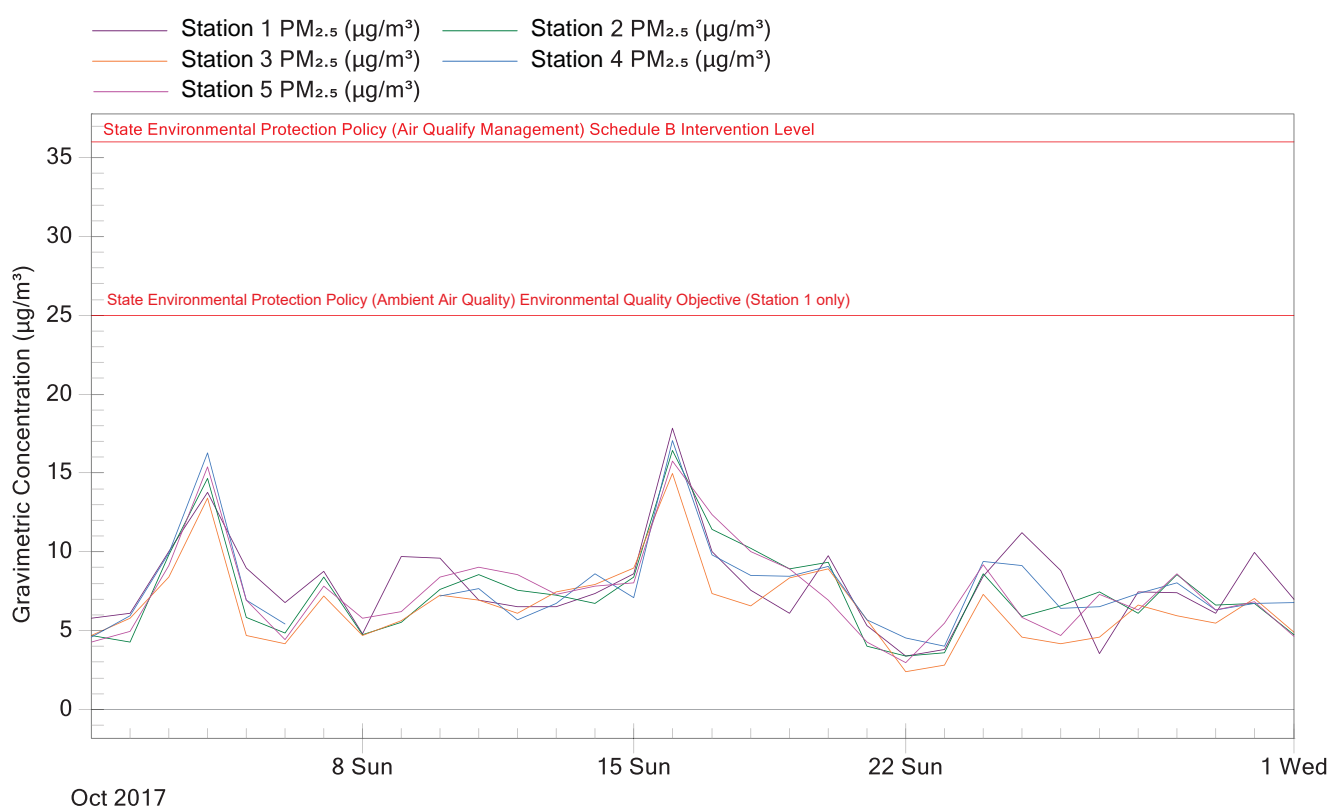


Figure 14: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for October 2017

2.4.3. CO ambient concentration at Primula Avenue station for October 2017

Primula Ave - Daily maximum of CO ambient concentration

October 2017

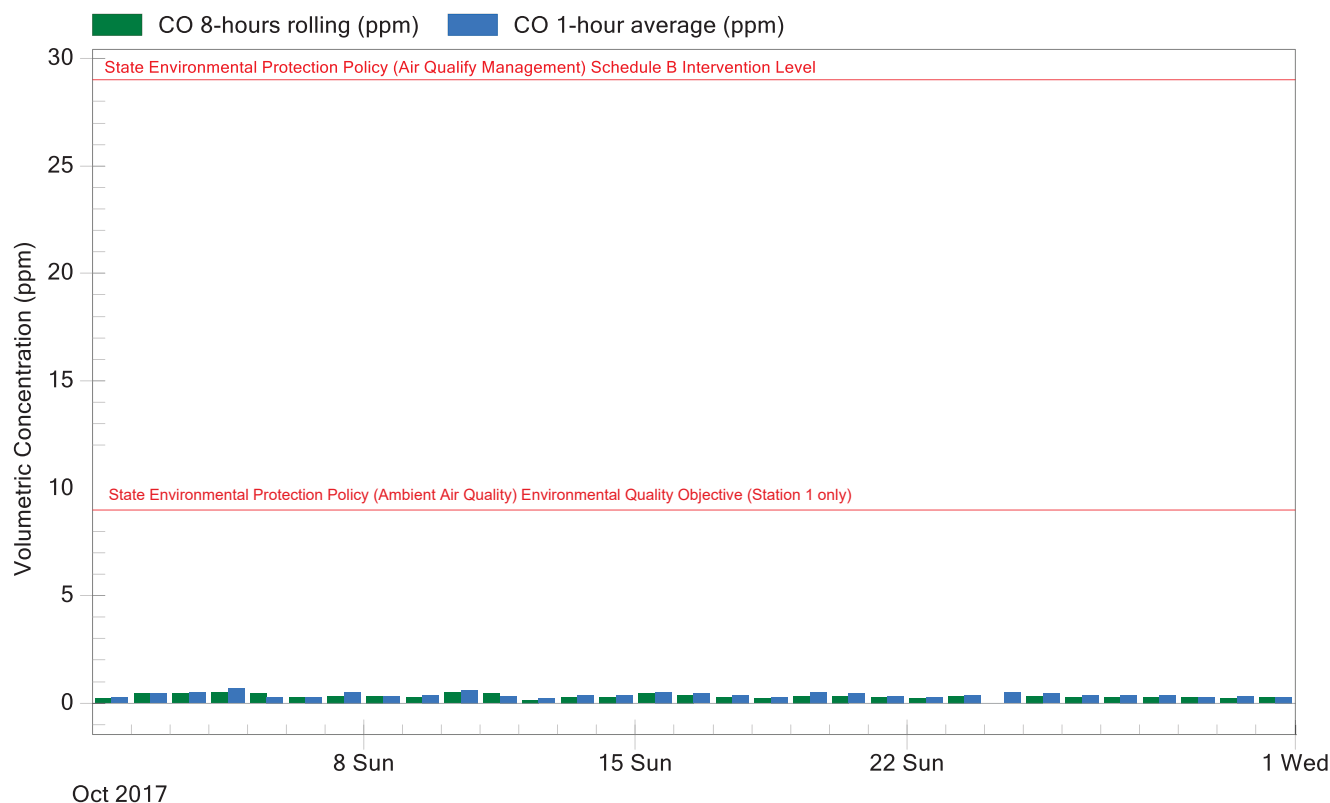


Figure 15: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for October 2017

2.4.4. NO₂ ambient concentration at Primula Avenue station for October 2017

Primula Ave - Daily maximum of NO₂ ambient concentration October 2017

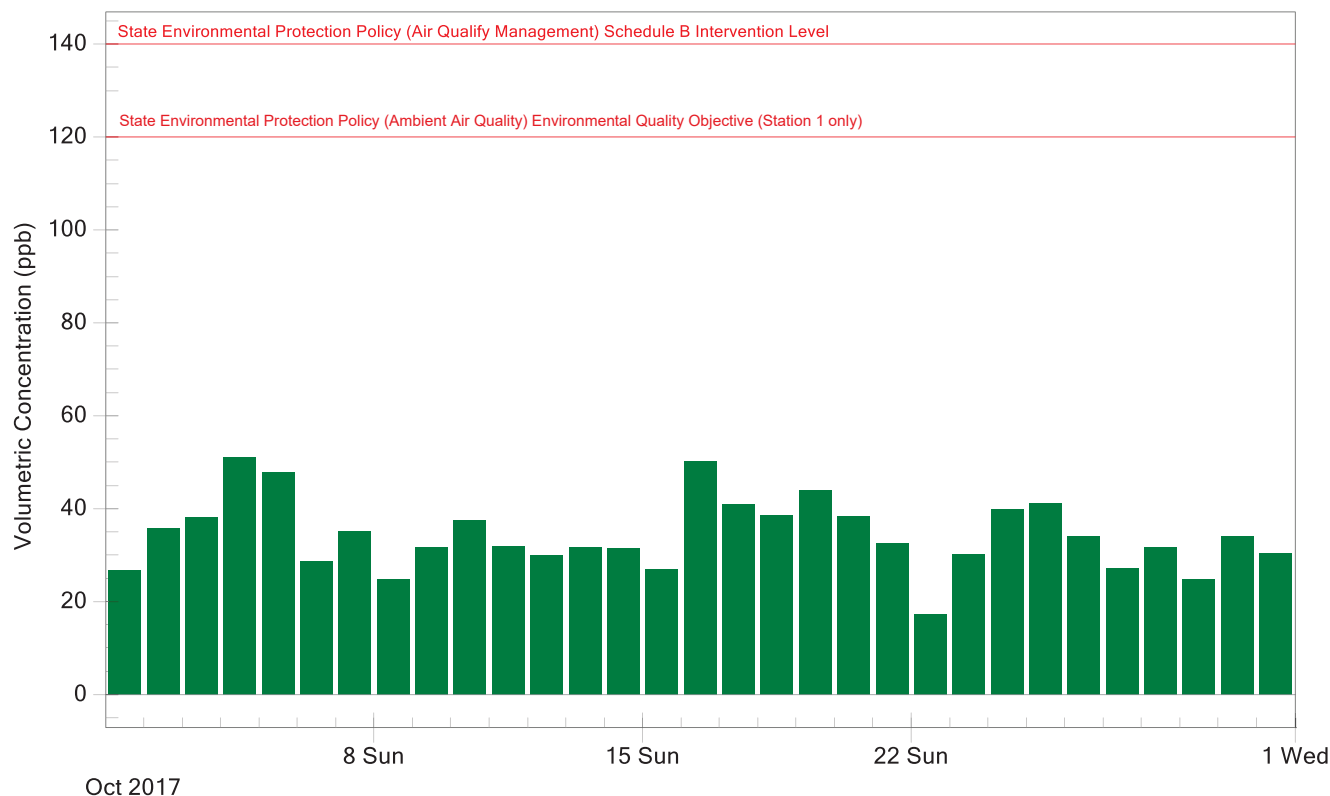


Figure 16: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for October 2017

2.4.5. BTEX Analytical Results Summary for Primula Avenue Station for October 2017

Table 13: BTEX Analytical Results Summary for October 2017

Parameter	NEMP MIL	Units	Samples				
Canister Number			L4519†	L4512†	L3782	C12626†	C4756
Sample Date			05/10/17	11/10/17	17/10/17	23/10/17	29/10/17
Final Vacuum		inHg	3.7	3.1	0.2	1	5
Benzene	3 (1 year)	ppb	<0.7	<0.7	*	<0.5	<0.5
Toluene	1000 (1 day) 100 (1 Year)	ppb	<0.7	<0.7	*	1.0	0.7
Ethyl benzene	-	ppb	<0.6	<0.6	*	<0.5	<0.5
m,p-xylenes	250 (1 day)	ppb	<1.3	<1.3	*	<1.0	<1.0
o-xylene		ppb	<0.6	<0.6	*	<0.5	<0.5

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

*Invalid dataset.

2.5. Monthly Summary Results for November 2017

Table 14: Monthly Summary Results for November 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	38.8	17				
	Monthly average	25.4	11				
Francis Street	Maximum 1-day	37.5	16				
	Monthly average	23.4	11				
Woods Street	Maximum 1-day	35.5	17				
	Monthly average	21.2	10				
Primula Avenue	Maximum 1-day	52.9	16	0.4	46	30	70
	Monthly average	27.7	10	0.3	23	20	44
Donald Mclean Reserve	Maximum 1-day	38.1	16				
	Monthly average	22.7	10				

Table 15: WGTP Monthly Data Capture for November 2017

Table 15 below displays data capture statistics for November 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	99.1	95.9	99.5	95.6	96.1
PM _{2.5}	95.0	99.7	99.6	95.0	99.2
WS, WD	99.9	100.0	100.0	99.9	99.7
CO				96.3	
NO, NO ₂ , NO _x				97.0	
BTEX				80.0	

2.5.1. PM₁₀ ambient concentration for the WGTP Network for November 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

November 2017

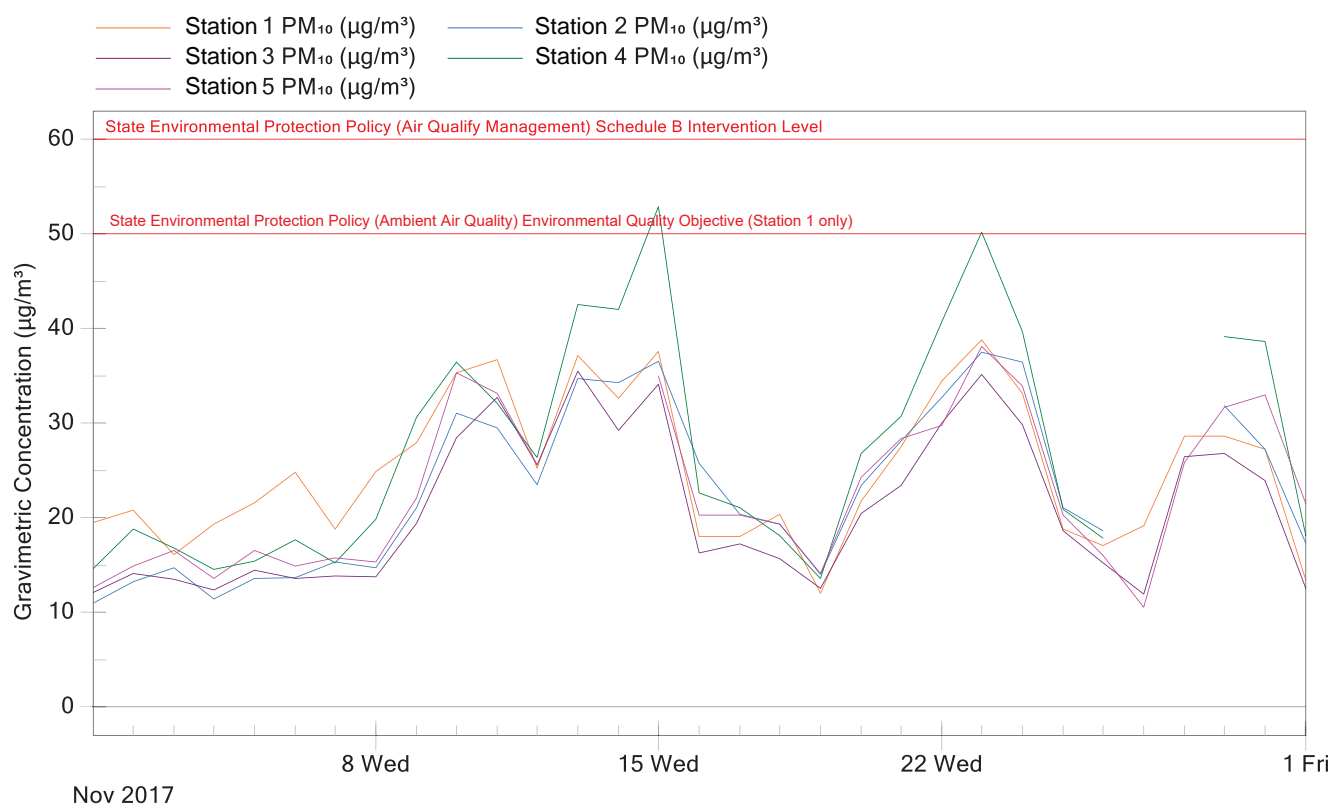


Figure 17: WGTP Network - 1-day averages of PM₁₀ ambient concentration for November 2017

2.5.2. PM_{2.5} ambient concentration for the WGTP Network for November 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

November 2017

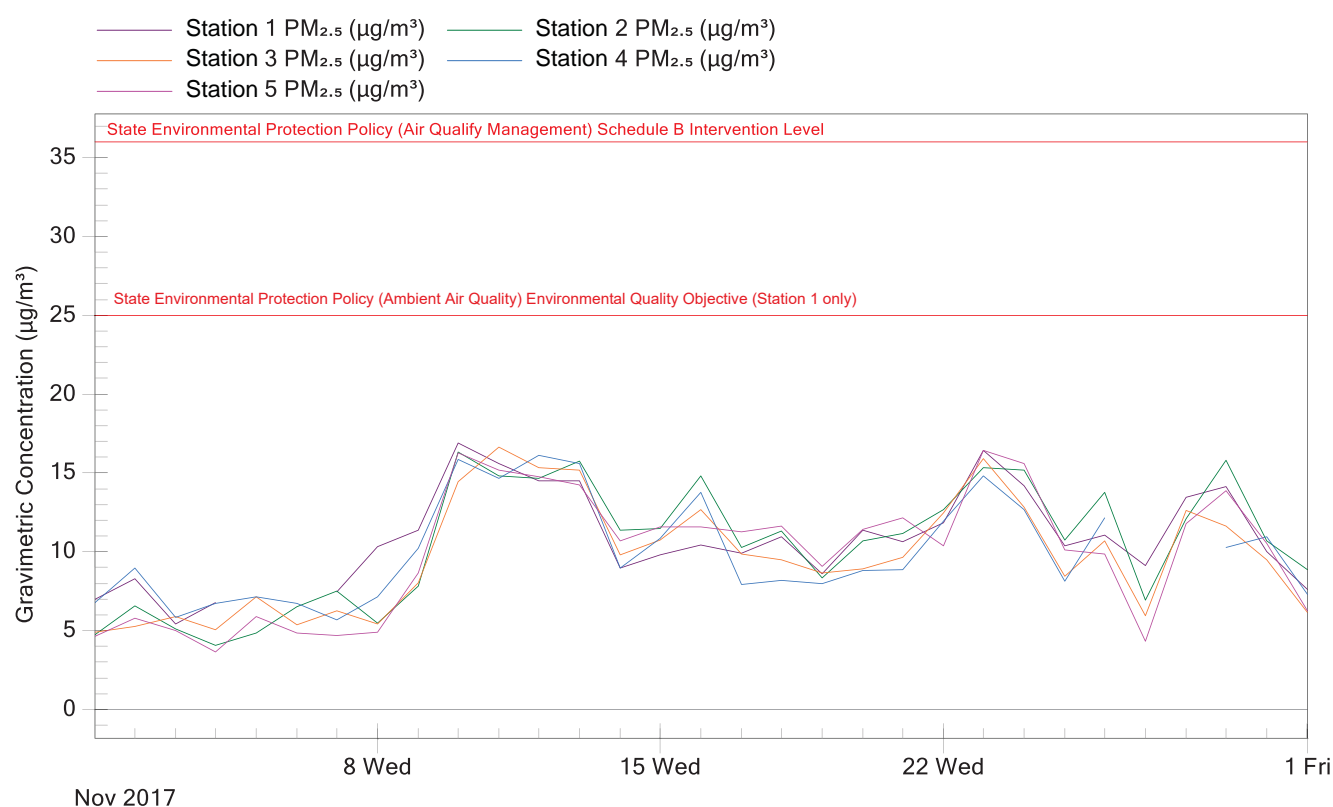


Figure 18: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for November 2017

2.5.3. CO ambient concentration at Primula Avenue station for November 2017

Primula Ave - Daily maximum of CO ambient concentration

November 2017

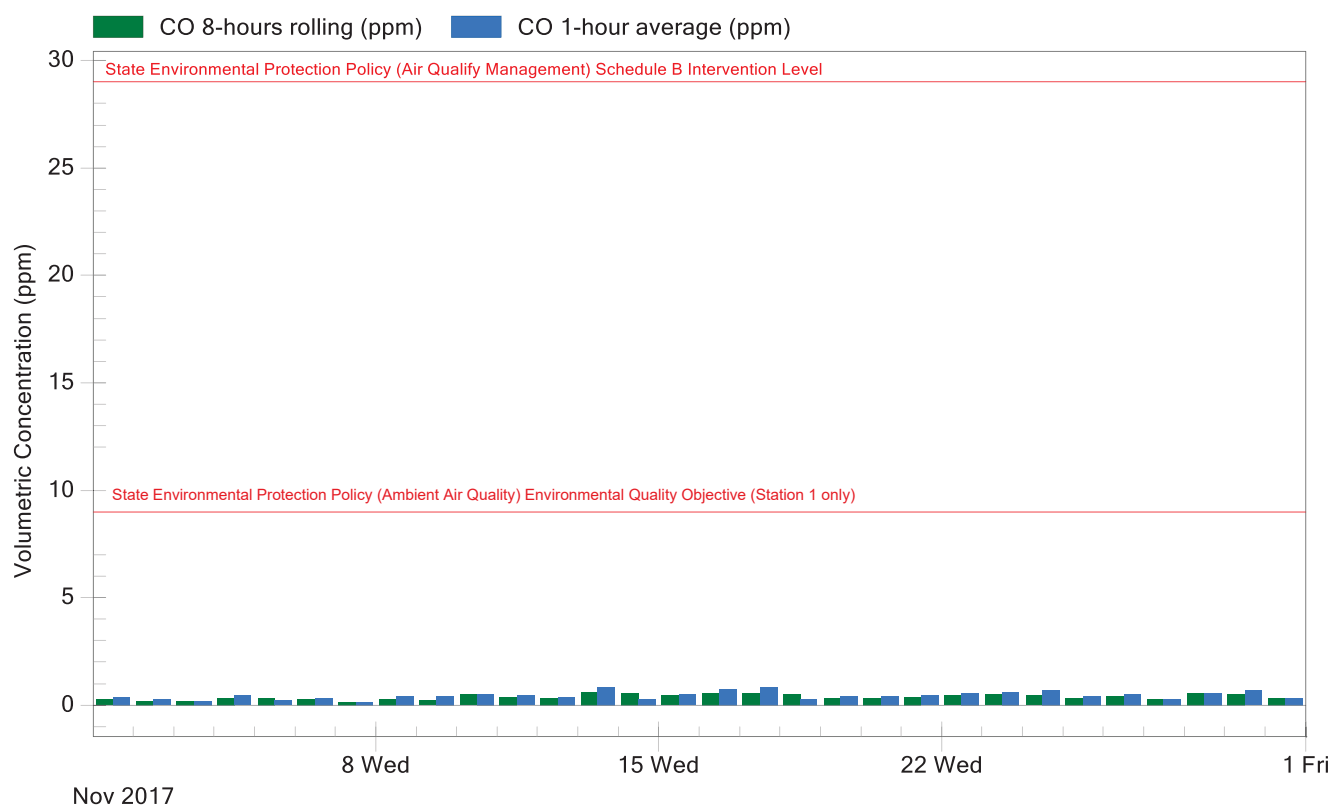


Figure 19: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for November 2017

2.5.4. NO₂ ambient concentration at Primula Avenue station for November 2017

Primula Ave - Daily maximum of NO₂ ambient concentration November 2017

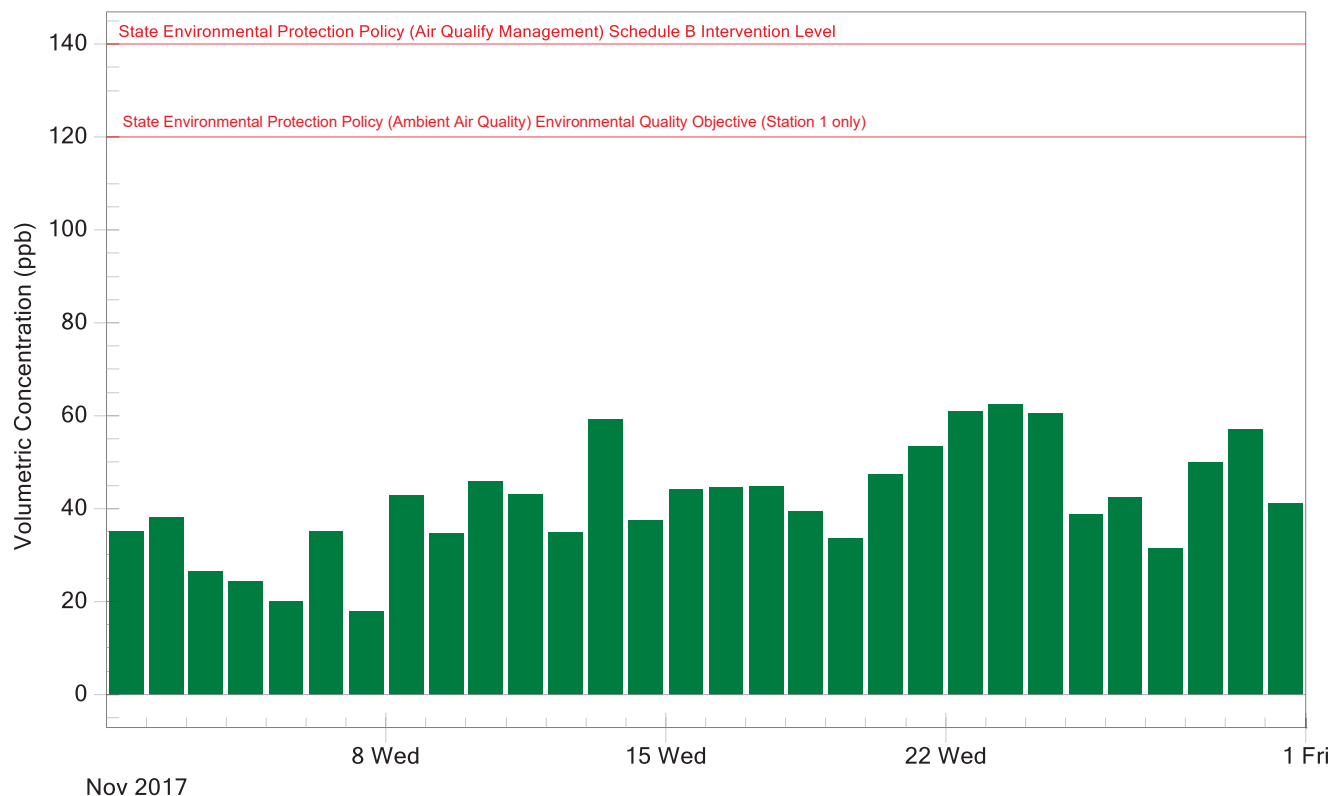


Figure 20: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for November 2017

2.5.5. BTEX Analytical Results Summary for Primula Avenue Station for November 2017

Table 16: BTEX Analytical Results Summary for November 2017

Parameter	NEMP MIL	Units	Samples				
Canister Number			C12643	C4769†	C12637	C12646	C12642
Sample Date			04/11/17	10/11/17	16/11/17	22/11/17	28/11/17
Final Vacuum		inHg	0	1	4	8	7
Benzene	3 (1 year)	ppb	*	<0.5	<0.5	<0.5	<0.5
Toluene	1000 (1 day) 100 (1 Year)	ppb	*	0.9	1.6	1.6	0.8
Ethyl benzene	-	ppb	*	<0.5	<0.5	<0.5	<0.5
m,p-xylenes	250 (1 day)	ppb	*	<1.0	<1.0	<1.0	<1.0
o-xylene		ppb	*	<0.5	<0.5	<0.5	<0.5

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

*Invalid dataset.

2.6. Monthly Summary Results for December 2017

Table 17: Monthly Summary Results for December 2017

Station		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (ppm)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)
Yarraville Gardens	Maximum 1-day	27.5	13				
	Monthly average	17.1	8				
Francis Street	Maximum 1-day	40.9	21				
	Monthly average	20.1	9				
Woods Street	Maximum 1-day	40.6	17				
	Monthly average	19.1	8				
Primula Avenue	Maximum 1-day	65.0	15	0.4	46	33	68
	Monthly average	24.6	8	0.2	21	15	36
Donald Mclean Reserve	Maximum 1-day	44.1	19				
	Monthly average	20.5	8				

Table 18: WGTP Monthly Data Capture for December 2017

Table 18 below displays data capture statistics for December 2017. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Parameter	Yarraville Gardens (%)	Francis Street (%)	Wood Street (%)	Primula Avenue (%)	Donald Mclean Reserve (%)
PM ₁₀	99.3	99.9	98.5	99.8	99.9
PM _{2.5}	99.7	99.7	98.4	99.9	95.6
WS, WD	100.0	100.0	99.1	100.0	100.0
CO				97.2	
NO, NO ₂ , NO _x				97.9	
BTEX				80%	

Note: Power interruption at Yarraville Gardens Station due to circumstances beyond Ecotech's control between 14/12/2017 and 20/12/2017. Data during this period is excluded from the data capture rate.

2.6.1. PM₁₀ ambient concentration for the WGTP Network for December 2017

WGTP Network - Daily averages of PM₁₀ ambient concentration

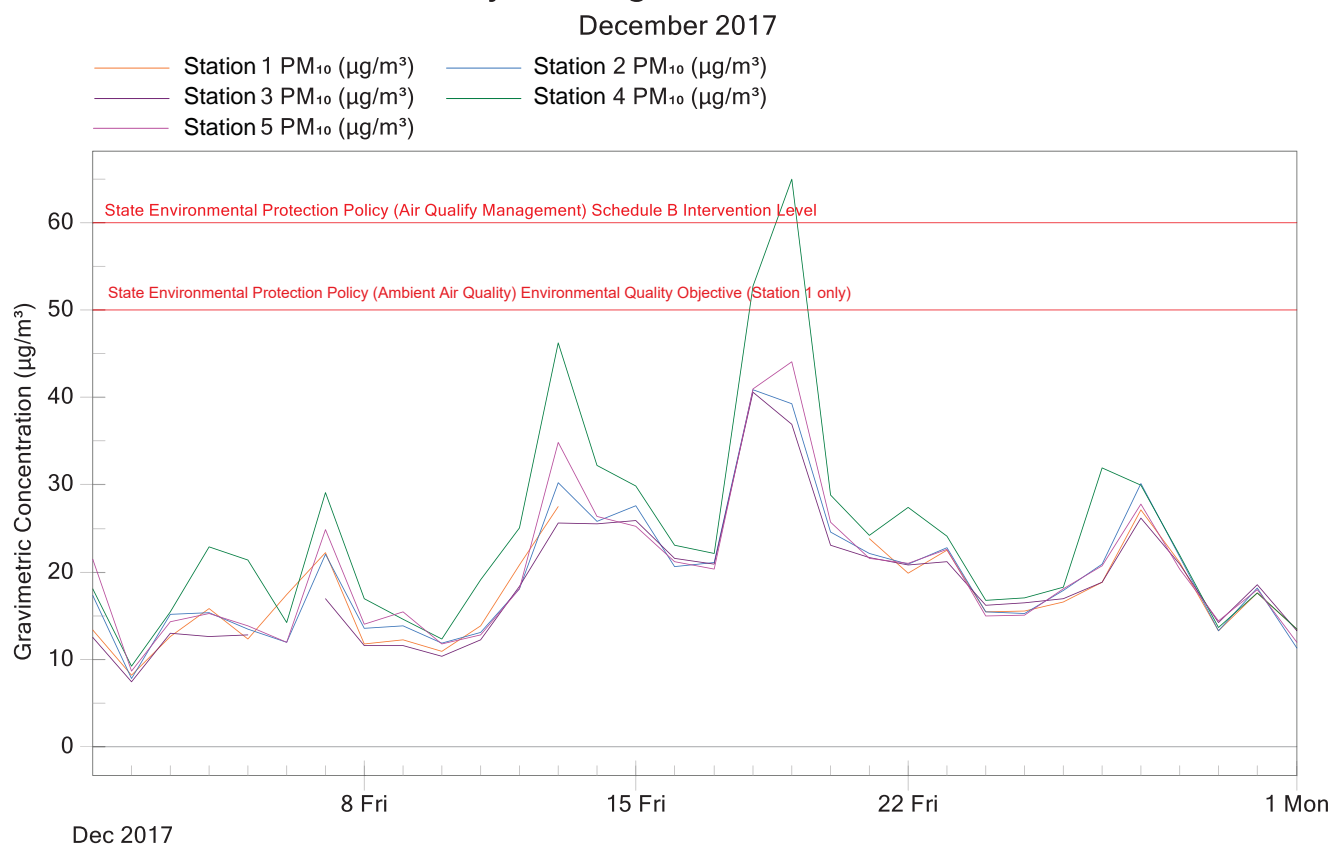


Figure 21: WGTP Network - 1-day averages of PM₁₀ ambient concentration for December 2017

2.6.2. PM_{2.5} ambient concentration for the WGTP Network for December 2017

WGTP Network - Daily averages of PM_{2.5} ambient concentration

December 2017

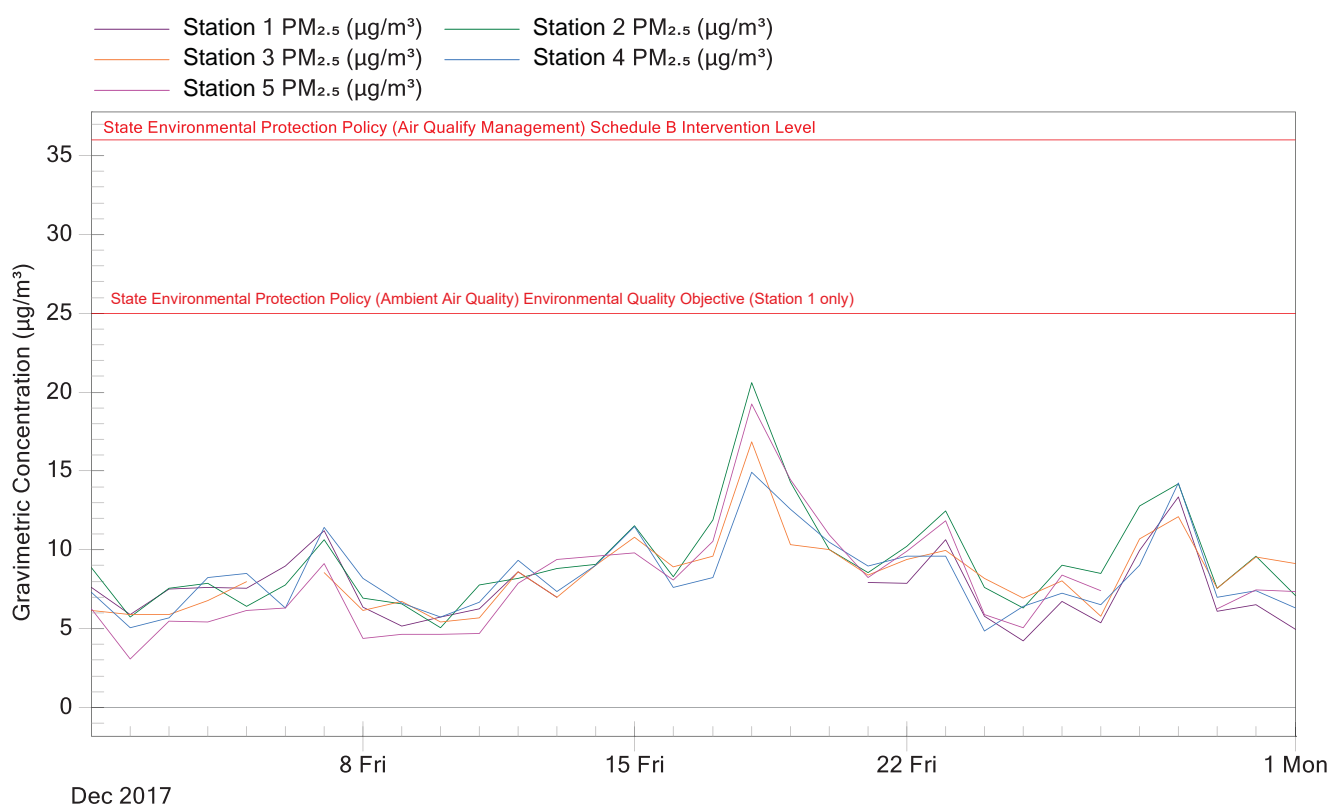


Figure 22: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for December 2017

2.6.3. CO ambient concentration at Primula Avenue station for December 2017

Primula Ave - Daily maximum of CO ambient concentration

December 2017

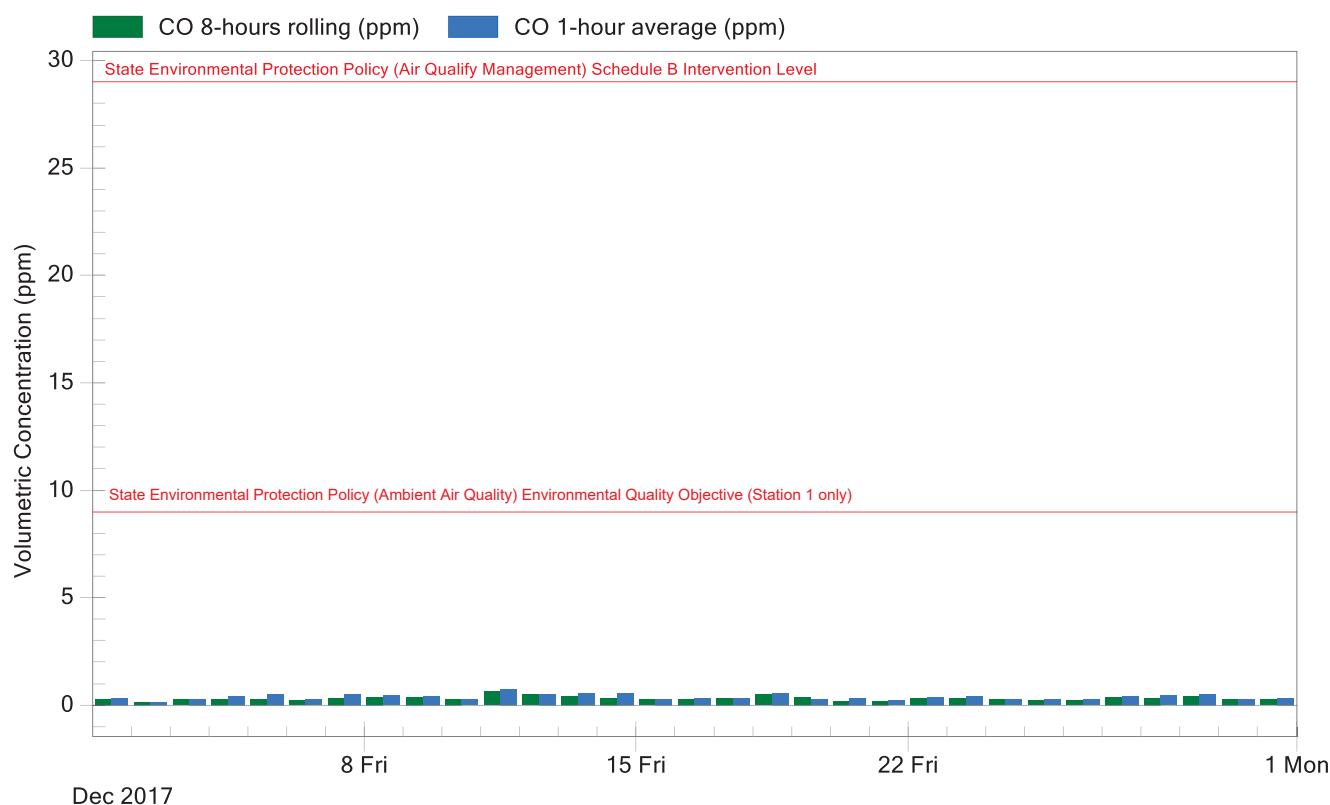


Figure 23: Primula Avenue - Daily maximum CO ambient concentration (based on 1-hour averages and 8-hour rolling averages) for December 2017

2.6.4. NO₂ ambient concentration at Primula Avenue station for December 2017

Primula Ave - Daily maximum of NO₂ ambient concentration December 2017

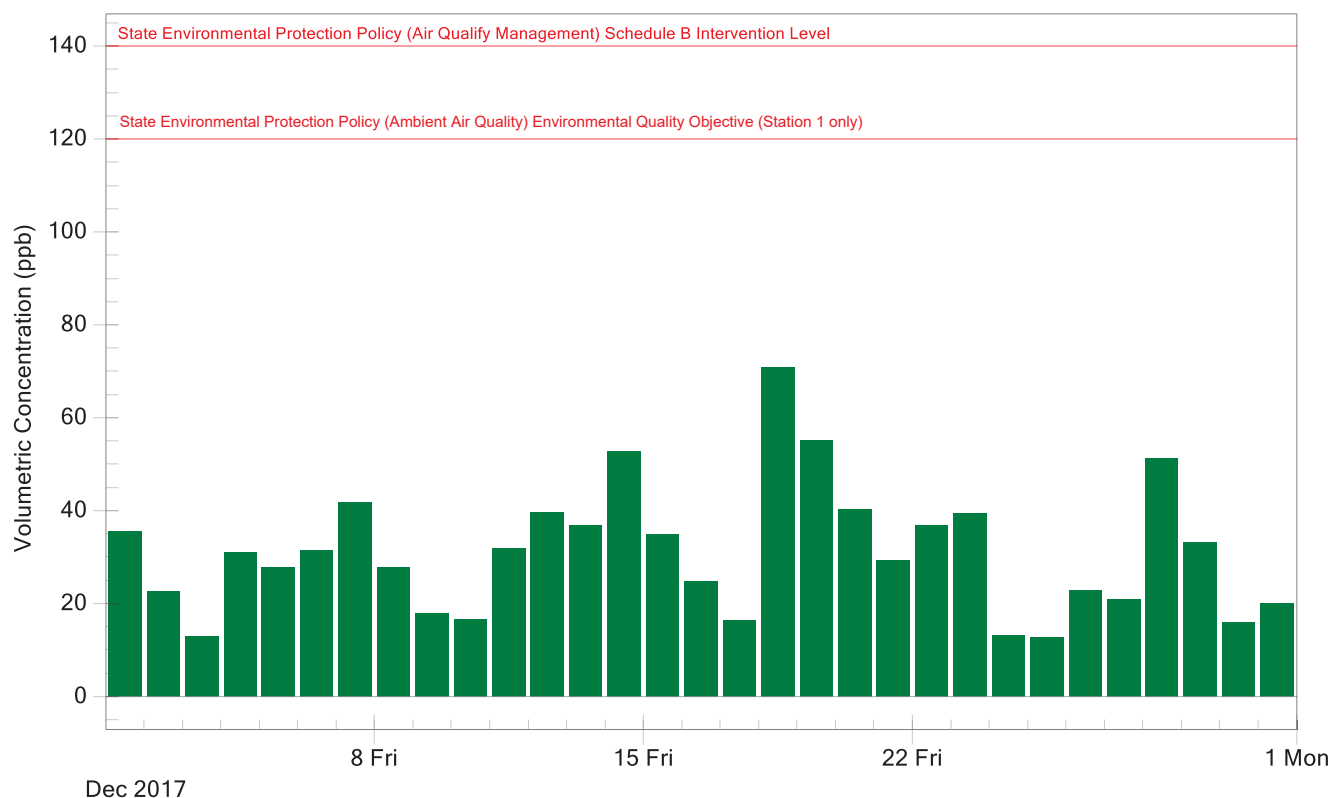


Figure 24: Primula Avenue - Daily maximum NO₂ ambient concentration (based on 1-hour averages) for December 2017

2.6.5. BTEX Analytical Results Summary for Primula Avenue Station for December 2017

Table 19: BTEX Analytical Results Summary for December 2017

Parameter	NEMP MIL	Units	Samples				
Canister Number			Lost in transit	C4771†	C4756†	C4768†	C4985
Sample Date			04/12/17	10/12/17	16/12/17	22/12/17	30/12/17
Final Vacuum		inHg	N/A	2	2	1	4
Benzene	3 (1 year)	ppb	N/A	<0.5	<0.5	<0.5	<0.5
Toluene	1000 (1 day) 100 (1 Year)	ppb	N/A	0.5	1.1	1.1	0.8
Ethyl benzene	-	ppb	N/A	<0.5	<0.5	<0.5	<0.5
m,p-xylenes	250 (1 day)	ppb	N/A	<1.0	<1.0	<1.0	<1.0
o-xylene		ppb	N/A	<0.5	<0.5	<0.5	<0.5

†Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.

3.0 Annual Summary Results

3.1. NO₂ annual summary

Table 20: NO₂ Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Primula Ave Rolling %V.A (96.1%) Rolling Ave (17 ppb)	Monthly Average	16	15	20	18	20	22	15	17	14	18	20	15
	Monthly Max (1_hour)	52	39	61	59	47	50	44	54	39	44	59	66

Annual Summary - Daily maximum of NO₂ ambient concentration
 1/01/2017 to 31/12/2017

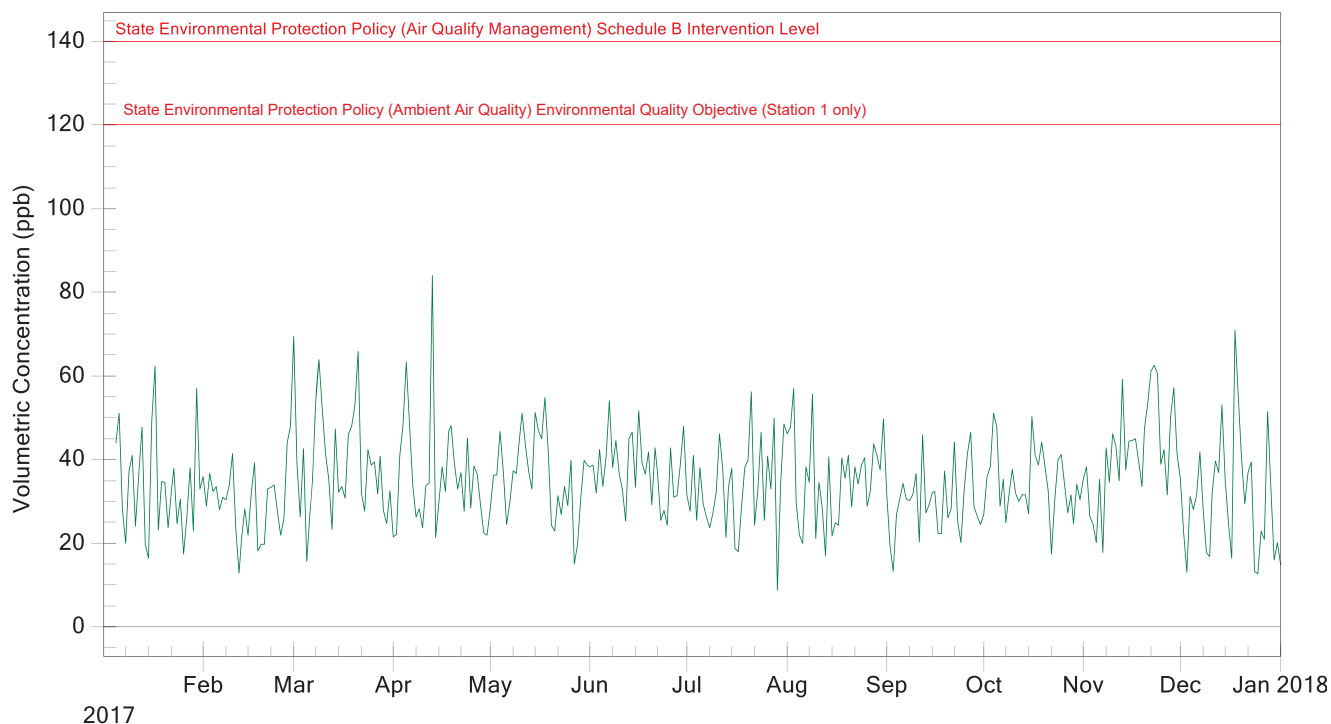


Figure 25: Primula Avenue - Daily maximum of NO₂ ambient concentration for 2017

3.2. CO annual summary

Table 21: CO Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Primula Ave Rolling %V.A (95.7%) Rolling Ave (0.3 ppm)	Monthly Average	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.3	0.2
	Monthly Max (1_hour)	0.6	0.8	1.1	1.0	1.6	1.5	1.3	1.2	0.7	0.7	0.8	0.7

Annual Summary - Daily maximum of CO ambient concentration 1/01/2017 to 31/12/2017

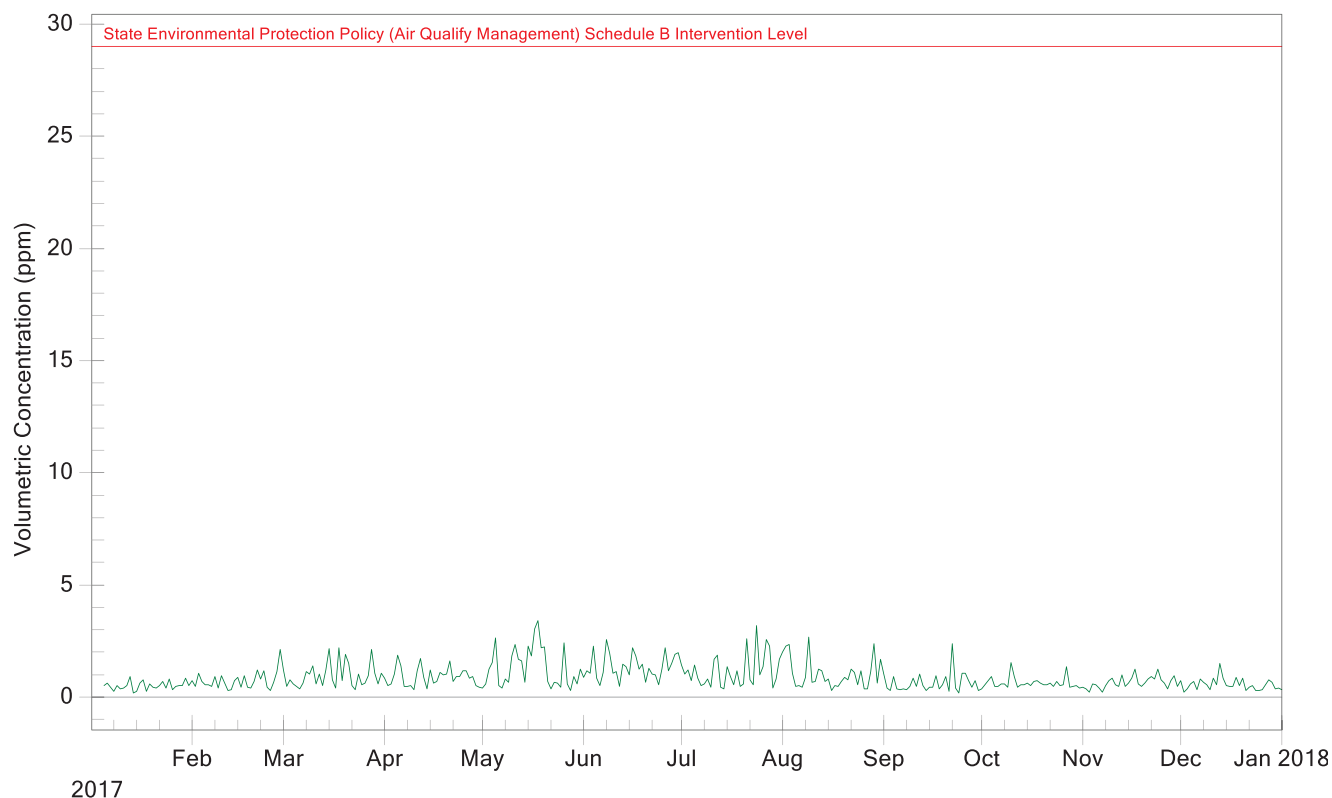


Figure 26: Primula Avenue - Daily maximum of CO ambient concentration for 2017

3.3. PM₁₀ annual summary

Table 22: PM₁₀ Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Yarraville Gardens <i>Rolling %V.A</i> (97.0%) <i>12M Rolling Ave</i> (18.8 µg/m ³)	Monthly Average	21.1	21.1	23.5	19.6	18.6	18.2	13.1	13.2	14.9	19.5	25.4	17.1
	Monthly Max (1_day)	32.3	34.7	41.2	43.4	39.1	34.1	23.1	33.9	27.9	32.1	38.8	27.5
Francis Street <i>Rolling %V.A</i> (98.9%) <i>12M Rolling Ave</i> (20.5 µg/m ³)	Monthly Average	20.3	22.0	25.9	22.0	22.8	21.1	16.5	17.0	16.5	18.4	23.4	20.1
	Monthly Max (1_day)	37.7	39.0	42.6	51.7	48.3	38.9	33.8	34.7	32.3	32.4	37.5	40.9
Woods Street <i>Rolling %V.A</i> (90.6%) <i>12M Rolling Ave</i> (18.0 µg/m ³)	Monthly Average	-	19.4	22.6	18.5	17.9	18.3	14.3	13.9	15.9	17.8	21.2	19.1
	Monthly Max (1_day)	-	33.5	36.9	37.8	37.3	30.4	26.5	30.5	25.8	28.4	35.5	40.6
Primula Avenue <i>Rolling %V.A</i> (97.7%) <i>12M Rolling Ave</i> (23.7 µg/m ³)	Monthly Average	24.8	24.3	29.0	21.8	24.4	24.9	19.2	19.4	21.2	23.6	27.7	24.6
	Monthly Max (1_day)	43.9	44.7	47.6	47.9	51.1	46.4	41.3	50.6	41.4	46.2	52.9	65.0
Donald Mclean Reserve <i>Rolling %V.A</i> (82.9%) <i>12M Rolling Ave</i> (21.8 µg/m ³)	Monthly Average	18.2	23.6	28.2	23.9	21.7	20.6	18.2	20.2	20.2	20.7	22.7	20.5
	Monthly Max (1_day)	34.7	44.5	48.7	52.6	38.8	32.6	32.8	44.5	30.6	35.8	38.1	44.1

Annual Summary - Daily averages of PM₁₀ ambient concentration

1/01/2017 to 31/12/2017

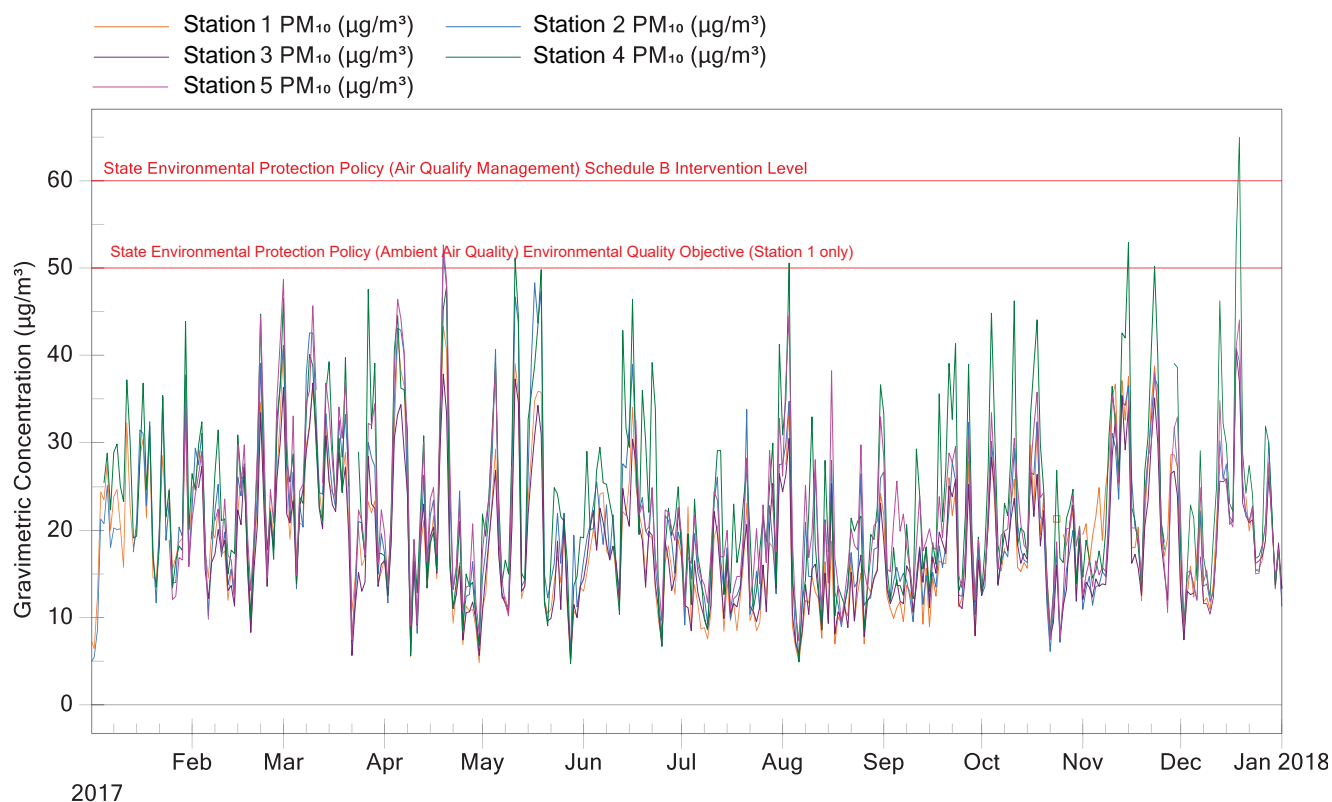


Figure 27: WGTP Network - 1-day averages of PM₁₀ ambient concentration for 2017

3.4. PM_{2.5} annual summary

Table 23: PM_{2.5} Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Yarraville Gardens Rolling %V.A (73.1%) 12M Rolling Ave (9 µg/m ³)	Monthly Average	-	-	5	9	12	12	7	6	6	8	11	8
	Monthly Max (1_day)	-	-	5	23	32	25	15	32	10	18	17	13
Francis Street Rolling %V.A (66.1%) 12M Rolling Ave (9 µg/m ³)	Monthly Average	-	-	-	9	12	13	8	8	6	8	11	9
	Monthly Max (1_day)	-	-	-	21	29	28	16	33	13	16	16	21
Woods Street Rolling %V.A (75.1%) 12M Rolling Ave (9 µg/m ³)	Monthly Average	-	-	6	9	12	12	8	8	6	7	10	8
	Monthly Max (1_day)	-	-	6	23	36	28	17	33	10	15	17	17
Primula Avenue Rolling %V.A (61.2%) 12M Rolling Ave (9 µg/m ³)	Monthly Average	-	-	-	-	9	13	8	8	6	8	10	8
	Monthly Max (1_day)	-	-	-	-	25	25	18	34	11	17	16	15
Donald Mclean Reserve Rolling %V.A (73.9%) 12M Rolling Ave (9 µg/m ³)	Monthly Average	-	-	-	11	13	12	8	8	6	8	10	8
	Monthly Max (1_day)	-	-	-	27	35	25	17	33	11	16	16	19

Annual Summary - Daily averages of PM_{2.5} ambient concentration

1/01/2017 to 31/12/2017

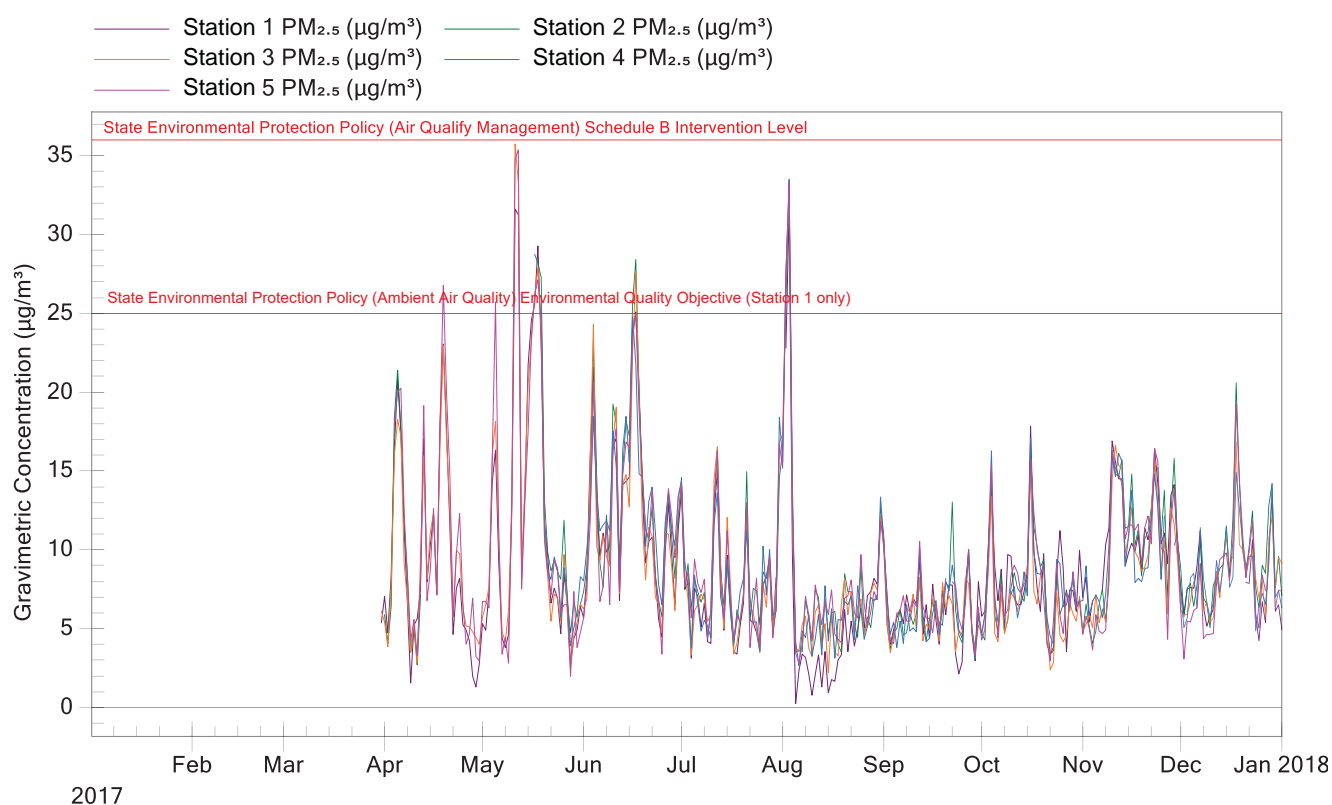


Figure 28: WGTP Network - 1-day averages of PM_{2.5} ambient concentration for 2017

3.5. Benzene

Table 24: Benzene¹ Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Primula Ave Rolling %V.A (87%) Rolling Ave (0.3 ppb)	Monthly Average	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
	Monthly Max (1_day))	<1.0	<0.9	<0.7	<0.8	<0.7	<0.8	<0.8	<0.8	<0.9	<0.7	<0.5	<0.5

3.6. Toluene

Table 25: Toluene¹ Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Primula Ave Rolling %V.A (87%) Rolling Ave (0.8 ppb)	Monthly Average	1.3	0.6	1.1	0.5	1.2	1.6	0.4	0.5	0.5	0.6	1.2	0.9
	Monthly Max (1_day))	2.1	1.3	1.8	0.9	2.7	2.5	<0.8	1.0	1.0	1.0	1.6	1.1

3.7. Total Xylenes

Table 26: Total Xylenes¹ Annual Summary Results for Year 2017

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Primula Ave Rolling %V.A (87%) Rolling Ave (1.0 ppb)	Monthly Average	1.1	1.1	0.9	1.1	1.0	1.1	1.0	1.0	1.1	0.9	0.8	0.8
	Monthly Max (1_day))	<2.8	<2.5	<2.1	<2.3	<2.1	<2.2	<2.2	<2.2	<2.6	<1.9	<1.5	<1.5

-----END OF REPORT-----

¹ Due to the very low ambient concentrations of BTEX, many test results are reported as below the laboratory's limit of detection. For the purposes of calculating average values, 1/2 the quoted detection limit has been used. Note that SGS calculate sample specific limits of detection so the values used and those shown in Max and Min may vary.

Appendix 1 - Definitions & Abbreviations

$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre at standard temperature and pressure (0°C and 101.3 kPa)
BTEX	Benzene, Toluene, Ethyl Benzene and Xylene <i>ortho</i> -, <i>meta</i> - and <i>para</i> -isomers
calm	Wind conditions where the wind speed is below the operating range of the wind sensor
CO	Carbon monoxide
deg	Degrees (True North)
m/s	Metres per second
NO	Nitric oxide
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
PM ₁₀	Particulate less than 10 microns in equivalent aerodynamic diameter
PM _{2.5}	Particulate less than 2.5 microns in equivalent aerodynamic diameter
ppb	Parts per billion
ppm	Parts per million
Sigma	Sigma Theta is the standard deviation of the horizontal wind direction fluctuations over the averaging period.
WD	Vector Wind Direction
WS	Vector Wind Speed