Ventia – EastLink Tunnel

Ventilation Stack Air Quality Monitoring
Validated Data Report

01 July 2025 to 30 September 2025

Ref: DR. 2025Q3.ETL
Issue Date: 12/11/2025
Report prepared by: Tim Allfrey

Document Control

Revision	Date	Details	Prepared By	Approved By
0	12/11/2025	Original	TA	BN

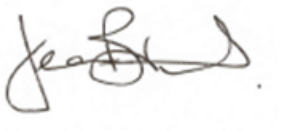
Distribution

Format	Recipient	Details
PDF	George Vasiliadis	GVasiliadis@connecteast.com.au
PDF	Robbie Kristenson	kristenson@connecteast.com.au

Prepared by

Tim Allfrey
12 November 2025

Approved by



Bruno Nourdine
12 November 2025

Norditech Accreditations

We operate a fully compliant NATA-approved lab, and our engineers are factory-trained in the repair and maintenance of most types of gas analysers on the market, including circuit board level repairs. Our instrument technicians' training is constantly updated to stay current with the latest gas analyser market trends.

Quality ISO 9001 SAI GLOBAL
Environment ISO 14001 SAI GLOBAL
OHS ISO 45001 SAI GLOBAL

NATA WORLD RECOGNISED ACCREDITATION

Accreditation number: 19660

Table of Contents

Figures

Tables

Glossary

The following terms and abbreviations are used in this report

Abbreviation	Meaning
°C	Degrees Celsius
%	Percent
CO	Carbon monoxide
eq.	Equivalents
kPa	kiloPascal
mg/m^3	Milligrams per cubic meter at dry, standard temperature and pressure (0°C and 101.3 kPa)
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
RH	Relative Humidity
PM10	Particles size ≤10µm
VOC	Volatile organic compounds
VSO	Ventilation Stack Outlet

1. Executive Summary

EastLink is a 39 km motorway running between Nunawading and Frankston, linking the Eastern, Monash Frankston and Peninsula Link freeways. Two 1.6 km tunnels pass under the Mullum Mullum Valley, with a ventilation stack at the end of each tunnel as an exit point for tunnel ventilation.

Two ventilation stacks provide ventilation for the tunnel, one at the western end of the tunnel at Discharge Point 1 (DP1), and one at the eastern end of the tunnel at Discharge Point 2 (DP2).

This report presents the monthly validated stack data for July 2025 to September 2025 to Ventia Pty Ltd for the EastLink Tunnel.

2. Introduction

2.1 Project Background

Norditech were contracted by Ventia Pty Ltd in August 2021 to provide continuous stack air quality monitoring and reporting services for the EastLink Tunnel. Ventia Pty Ltd are responsible for the operation and maintenance of the motorway.

Norditech is a NATA accredited organization (Accreditation Number: 19660)

Addresses of relevant parties:

Norditech Pty Ltd
2/87 Station Rd
Seven Hills NSW 2147

Ventia Pty Ltd
2 Hillcrest Avenue
Ringwood VIC 3134

This report presents the validated ventilation stack data for July 2025 to September 2025.

- Describe air quality measurements.
- Reports any readings above the Eastlink licence Limits.
- Compare monitoring results.
- It has been quality assured.

2.2 Outlet Monitor Locations

The locations of the EastLink Tunnel Western and Eastern ventilation stacks are detailed in Table 1 below.

Location	Latitude	Longitude
Western Ventilation Stack	-37.801229°	145.196092°
Eastern Ventilation Stack	-37.808885°	145.212012°

Table 1. Outlet Coordinates

Figure 1.Outlet monitoring location coordinates

3. Air Quality Limits

Air quality limits are provided in Condition LI_DA1.13 of the Environment Protection Authority (Victoria) Licence No 2043 for the EastLink Tunnel. The air quality limits for 1-hour mass rates are shown in Table below.

Pollutant / Parameter	Type of Measurement	Concentration Limit	Unit
NO_2	Average – 1 hour block	3.98	kg/h
CO	Average – 1 hour block	112	kg/h
$PM_{2.5}$	Average – 1 hour block	2.4	kg/h
PM_{10}	Average – 1 hour block	2.6	kg/h

Table 2. Ventilation Outlet Air Quality Limits

The procedure for reporting particulate matter results from the TEOMs and assessment of licence compliance is detailed in the EastLink Particulate Matter Protocol (PMP) dated 17/06/2013. The PMP requires validated uncorrected TEOM one hour clock average data to be compared to the following TEOM mass rate compliance limits for both DP1 and DP2.

- PM2.5: 2.0 kg/h
- PM10: 2.0 kg/h

3.1 Standards Compliance

Norditech's NATA Accreditation does not cover the following parameters monitored at the EastLink Tunnel ventilation stack air quality monitoring stations.

- Measurement of Stack Flow.
- AS/NZS 3580.9.8 refers specifically to the monitoring of PM10.

4. Explanation of Monitoring

4.1 Methodology

In the tunnel air is discharged via two ventilation stacks – one located at the Western end of the tunnel (DP1), and one located at the Eastern end (DP2). For each stack, monitoring as per the requirements of EPA Licence 2043 is undertaken.

Gaseous parameters are sampled by an extractive sampling system. Oxides of nitrogen are measured using chemiluminescence. Carbon monoxide is measured using non-dispersive infra-red absorption.

Particulates PM10 and PM2.5 are measured using tapered element oscillating microbalances.

Stack gas velocity is measured using an optical flow sensor.

Monthly routine maintenance is undertaken by Norditech. Maintenance is performed as per the relevant Australian Standard or in house method. Maintenance cycles generally involve 1, 3, 6 and 12 monthly scheduled items.

The following instrumentation and methods are used in data collection:

EastLink Ventilation Stack Measurement Methods		
Pollutant / Parameter	**Method**	**Instrument**
PM_{10}	AS/NZS 3580.9.8	Rupprecht & Patashnick TEOM
	In house method TP.005	
	AS 4323.1	
$PM_{2.5}$	In house method TP.026	Rupprecht & Patashnick TEOM
	AS 4323.1	
NO	In house method TP.001	Thermo Scientific 42i
NO_2	In house method TP.001	Thermo Scientific 42i
NOx	In house method TP.001	Thermo Scientific 42i
CO	In house method TP.003	Thermo Scientific 48i
Temperature	In house method TP.012	PT100
Stack Velocity	USEAP (CFR 40) Part 75	OSI OFS2000

Table 3. Measurement methods and instrumentation

5. Data Validation and Reporting

5.1 Data Collection

At each Air Quality Monitoring Station, data is logged to an EnviDAS data logger at 1 minute average intervals. Each 1-minute average is calculated from data sampled at 10 second intervals.

Data is transferred automatically to Norditech's data collection software via a TCP/IP link over 4G cellular network, at a frequency of not less than 1-hour. Two datasets are maintained by Norditech, one for data validation and reporting purposes, and a non-validated data set for reference purposes.

5.2 Data Validation

Data validation is performed as per Norditech's data validation procedure TP.022. The data validation process identifies any data that is deemed not to be valid. This data is flagged as invalid in the database and is removed from the reported data.

Data may be deemed invalid for several reasons, including but not limited to:

- Instrument fault.
- Instrument calibration out of tolerance.
- Maintenance activities.

For further details and explanations of reasons for invalidating data, please refer to Section 12 – Data Validation Explanations.

Initial visual inspection of data is performed by inspection of graphs to identify any anomalies in the data set.

Site visit logs and maintenance and calibration certificates are cross referenced to the data set and any data affected by maintenance activities are flagged.

Instrument drift and calibration tolerances are checked, and data flagged in the database as necessary as per NATA compliance requirements.

5.3 Reporting and Calculations

All calculations and averages are calculated from 1 minute average base data and are reported as 'end time' when the averaging periods of eight hours or less. IE the average data for 01:00 is the data from 00:00 through to 01:00. One-hour averages are calculated based on a clock hour. One day averages are calculated based on calendar days. All averages are based on a minimum of 75% valid readings within the averaging period.

All data is reported at Australian Eastern Standard Time.

Validated data for Quarter 3 Month 1 is presented in the Excel workbook named "202507 EastLink Q3M1 Validated data.xlsx"

The workbooks each consist of the following sheets:

- Sheet 1: Cover
- Sheet 2: M1 Data kg1h – Hourly data in kg/h
- Sheet 3: M1 Data g5m – 5-minute data in grams/5m
- Sheet 4: M1 Data mgm3 1h – 1-hour data in mg/m3
- Sheet 5: M1 Data mgm3 5m – 5-minute data in mg/m3
- Sheet 6: Eastern Validation Data
- Sheet 7: Western Validation Data
-

Validated data for Quarter 3 Month 2 is presented in the Excel workbook named "202508 EastLink Q3M2 Validated data.xlsx"

The workbooks each consist of the following sheets:

- Sheet 1: Cover
- Sheet 2: M2 Data kg1h – Hourly data in kg/h
- Sheet 3: M2 Data g5m – 5-minute data in grams/5m
- Sheet 4: M2 Data mgm3 1h – 1-hour data in mg/m3
- Sheet 5: M2 Data mgm3 5m – 5-minute data in mg/m3
- Sheet 6: Eastern Validation Data
- Sheet 7: Western Validation Data

Validated data for Quarter 3 Month 3 is presented in the Excel workbook named "202509 EastLink Q3M3 Validated data.xlsx"

The workbook consists of the following sheets:

- Sheet 1: Cover
- Sheet 2: M3 Data kg1h – Hourly data in kg/h
- Sheet 3: M3 Data g5m – 5-minute data in grams/5m
- Sheet 4: M3 Data mgm3 1h – 1-hour data in mg/m3
- Sheet 5: M3 Data mgm3 5m – 5-minute data in mg/m3
- Sheet 6: Eastern Validation Data
- Sheet 7: Western Validation Data

5.3.1 Data Availability

Data availability refers to the amount of available data for the reporting period. Data availability is calculated using the following formula:

$$\text{Data availability } \% = \frac{\text{sum of available data points}}{\text{sum of possible data points}} * 100$$

Where:

- Sum of available data points is the number of validated 1-hour average data points for the reporting period
- Sum of possible data points is the number of theoretically available data points for the reporting period

5.3.2 Unit Conversions

Stack velocity readings are converted to flow rate using the following stack areas:

- Western Stack area 35 m^2
- Eastern Stack area 35 m^2

Pollutant and flow data are reported at actual conditions.

6. Calibration and Maintenance

6.1 Units and Uncertainties

EastLink Ventilation Stack Instrument Units and Uncertainties				
Parameter	**Units**	**Resolution**	**Uncertainty**	**Measurement Range**
CO	mg/m^3	0.01	± 8.2% of reading at 62.5mg/m^3 (k=1.96)	0 to 200
NO	mg/m^3	0.01	± 8.1% of reading for range 25.7 – 32.8mg/m^3 (k=1.96)	0 to 150
NO2	mg/m^3	0.01	± 8.5% of reading at 25.7mg/m^3 (k=1.96)	0 to 150
NOx	mg/m^3	0.01	± 8.1% of reading for range 25.7 – 32.8mg/m^3 (k=1.96)	0 to 150
PM10	$\mu g/m^3$	0.1	±5.0 $\mu g/m^3$ or 3.6% of reading, whichever is the greater. (k=1.96)	0 to 5000
PM2.5	$\mu g/m^3$	0.1	±5.0 $\mu g/m^3$ or 3.6% of reading, whichever is the greater. (k=1.96)	0 to 5000
Temperature	°C	0.1	±2.0 °C[1]	-25 to 105
Stack Velocity	m/s	1	±0.1 m/s[1]	-40 to +40

Table 4. Measurement units and uncertainties

[1] Manufacturer's stated accuracy

6.2 Automatic Instrument Calibration Checks

Table 14 below identifies the times at which the daily gaseous parameter automatic span and zero checks are performed.

This data is removed from the dataset, however, are not included in the data validation tables of data.

Location	Parameters	Daily Calibration Checks Times
Western (to 25/07/2024)	CO	00:00 - 00:34
	NO, NO_2	01:00 - 01:44
Western (from 26/07/2024)	CO	01:00 - 01:44
	NO, NO2	
Eastern	CO	01:34 - 02:13
	NO, NO2	

Table 5. Daily Calibration Checks Times

6.3 Last Calibration and Maintenance Records

6.3.1 July 2025

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – July 2025				
Western Ventilation Stack (Discharge Point 1)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	15/07/2025	1 Monthly	15/07/2025	11/08/2025
NO/NO_2	15/07/2025	1 Monthly	15/07/2025	11/08/2025
$PM_{2.5}$	11/06/2025	Yearly	11/06/2025	Yearly
PM_{10}	11/06/2025	Yearly	11/06/2025	Yearly
Temperature	11/06/2025	Yearly	11/06/2025	Yearly
Stack Velocity	20/08/2024	Yearly	20/08/2024	Yearly

Table 6. Last Scheduled Maintenance and Calibration Dates - Western Ventilation Stack (Discharge Point 1) – July

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – July 2025				
East Ventilation Stack (Discharge Point 2)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	15/07/2025	1 Monthly	15/07/2025	15/07/2025
NO/NO_2	15/07/2025	1 Monthly	15/07/2025	15/07/2025
$PM_{2.5}$	12/06/2025	Yearly	12/06/2025	Yearly
PM_{10}	12/06/2025	Yearly	12/06/2025	Yearly
Temperature	12/06/2025	Yearly	12/06/2025	Yearly
Stack Velocity	22/08/2024	Yearly	22/08/2024	Yearly

Table 7. Last Scheduled Maintenance and Calibration Dates - East Ventilation Stack (Discharge Point 2) – July

6.3.2 August 2025

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – August 2025				
Western Ventilation Stack (Discharge Point 1)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	11/08/2025	1 Monthly	11/08/2025	11/08/2025
NO/NO_2	11/08/2025	1 Monthly	11/08/2025	11/08/2025
$PM_{2.5}$	11/06/2025	Yearly	11/06/2025	Yearly
PM_{10}	11/06/2025	Yearly	11/06/2025	Yearly
Temperature	11/06/2025	Yearly	11/06/2025	Yearly
Stack Velocity	25/08/2025	Yearly	25/08/2025	Yearly

Table 8. Last Scheduled Maintenance and Calibration Dates - Western Ventilation Stack (Discharge Point 1) – August

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – August 2025				
East Ventilation Stack (Discharge Point 2)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	11/08/2025	1 Monthly	11/08/2025	11/08/2025
NO/NO_2	11/08/2025	1 Monthly	11/08/2025	11/08/2025
$PM_{2.5}$	12/06/2025	Yearly	12/06/2025	Yearly
PM_{10}	12/06/2025	Yearly	12/06/2025	Yearly
Temperature	12/06/2025	Yearly	12/06/2025	Yearly
Stack Velocity	27/08/2025	Yearly	27/08/2025	Yearly

Table 9. Last Scheduled Maintenance and Calibration Dates - East Ventilation Stack (Discharge Point 2) - – August

6.3.3 September 2025

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – September 2025				
Western Ventilation Stack (Discharge Point 1)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	16/09/2025	3 Monthly	16/09/2025	3 Monthly
NO/NO_2	16/09/2025	3 Monthly	16/09/2025	3 Monthly
$PM_{2.5}$	16/09/2025	3 Monthly	16/09/2025	3 Monthly
PM_{10}	16/09/2025	3 Monthly	16/09/2025	3 Monthly
Temperature	11/06/2025	Yearly	11/06/2025	Yearly
Stack Velocity	25/08/2025	Yearly	25/08/2025	Yearly

Table 10. Last Scheduled Maintenance and Calibration Dates - Western Ventilation Stack (Discharge Point 1) – September

EastLink Ventilation Stack Maintenance and Last Scheduled Calibration Dates – September 2025				
East Ventilation Stack (Discharge Point 2)				
Sensor	**Date of Last Scheduled Maintenance**	**Maintenance Type**	**Date of Last Scheduled Calibration**	**Calibration Type**
CO	16/09/2025	3 Monthly	16/09/2025	3 Monthly
NO/NO_2	16/09/2025	3 Monthly	16/09/2025	3 Monthly
$PM_{2.5}$	16/09/2025	3 Monthly	16/09/2025	3 Monthly
PM_{10}	16/09/2025	3 Monthly	16/09/2025	3 Monthly
Temperature	12/06/2025	Yearly	12/06/2025	Yearly
Stack Velocity	27/08/2025	Yearly	27/08/2025	Yearly

Table 11. Last Scheduled Maintenance and Calibration Dates - East Ventilation Stack (Discharge Point 2) - – September

7. Results

7.1 Exceedances

Instances of the ventilation stack pollutants exceeding the EPA Limits goals during the reporting period are presented in Table 16 below. Maximum mass rates are provided for comparison to the limits.

There were nil exceedances of the prescribed limits during the reporting period.

EastLink Ventilation Stack Air Quality Limit Exceedances July 2025								
Location	**Parameter**	**Time Period**	**Licence Limit**	**Units**	**Maximum Mass Rate**	**Number of exceedances**	**Value of Exceedance**	**Date and Time of exceedance**
Western Ventilation Stack (Discharge Point 1)	NO_2	1-hour	3.98	kg/h	0.46	-	-	-
	CO	1-hour	112	kg/h	3.97	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.12	-	-	-
	PM_{10}	1-hour	2.6	kg/h	0.58	-	-	-
Eastern Ventilation Stack (Discharge Point 2)	NO_2	1-hour	3.98	kg/h	0.48	-	-	-
	CO	1-hour	112	kg/h	5.35	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.11	-	-	-
	PM_{10}	1-hour	2.6	kg/h	0.55	-	-	-

Table 12. July 2025 Exceedances of EPA Goals

EastLink Ventilation Stack Air Quality Limit Exceedances August 2025								
Location	**Parameter**	**Time Period**	**Licence Limit**	**Units**	**Maximum Mass Rate**	**Number of exceedances**	**Value of Exceedance**	**Date and Time of exceedance**
Western Ventilation Stack (Discharge Point 1)	NO_2	1-hour	3.98	kg/h	0.38	-	-	-
	CO	1-hour	112	kg/h	4.22	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.24	-	-	-
	PM_{10}	1-hour	2.6	kg/h	2.24	-	-	-
Eastern Ventilation Stack (Discharge Point 2)	NO_2	1-hour	3.98	kg/h	0.46	-	-	-
	CO	1-hour	112	kg/h	5.26	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.16	-	-	-
	PM_{10}	1-hour	2.6	kg/h	0.47	-	-	-

Table 13. August 2025 Exceedances of EPA Goals

EastLink Ventilation Stack Air Quality Limit Exceedances September 2025								
Location	**Parameter**	**Time Period**	**Licence Limit**	**Units**	**Maximum Mass Rate**	**Number of exceedances**	**Value of Exceedance**	**Date and Time of exceedance**
Western Ventilation Stack (Discharge Point 1)	NO_2	1-hour	3.98	kg/h	0.42	-	-	-
	CO	1-hour	112	kg/h	3.36	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.17	-	-	-
	PM_{10}	1-hour	2.6	kg/h	0.46	-	-	-
Eastern Ventilation Stack (Discharge Point 2)	NO_2	1-hour	3.98	kg/h	0.49	-	-	-
	CO	1-hour	112	kg/h	4.72	-	-	-
	$PM_{2.5}$	1-hour	2.4	kg/h	0.16	-	-	-
	PM_{10}	1-hour	2.6	kg/h	0.37	-	-	-

Table 14. September 2025 Exceedances of EPA Goals

7.2 Data Availability

Data availability for the ventilation stack outlet sensors is provided in the table below.

EastLink Ventilation Stack Data Availability July 2025								
Station	**Parameter**	**NO**	**NO_2**	**CO**	**$PM_{2.5}$**	**PM_{10}**	**Stack Velocity**	**Stack Temperature**
Western	Data Availability	91.3%	91.3%	95.6%	99.3%	100.0%	100.0%	100.0%
	Collected Periods	679.0	679.0	711.0	739.0	744.0	744.0	744.0
	Available Periods	744.0	744.0	744.0	744.0	744.0	744.0	744.0
Eastern	Data Availability	95.6%	95.6%	95.6%	100.0%	99.9%	100.0%	100.0%
	Collected Periods	711.0	711.0	711.0	744.0	743.0	744.0	744.0
	Available Periods	744.0	744.0	744.0	744.0	744.0	744.0	744.0

Table 15. July 2025 Data Availability

EastLink Ventilation Stack Data Availabiliity August 2025								
Station	**Parameter**	**NO**	**NO_2**	**CO**	**$PM_{2.5}$**	**PM_{10}**	**Stack Velocity**	**Stack Temperature**
Western	Data Availability	91.7%	91.7%	95.4%	99.2%	99.9%	100.0%	100.0%
	Collected Periods	682.0	682.0	710.0	738.0	743.0	744.0	744.0
	Available Periods	744.0	744.0	744.0	744.0	744.0	744.0	744.0
Eastern	Data Availability	95.6%	95.6%	95.6%	99.9%	98.9%	100.0%	100.0%
	Collected Periods	711.0	711.0	711.0	743.0	736.0	744.0	744.0
	Available Periods	744.0	744.0	744.0	744.0	744.0	744.0	744.0

Table 16. August 2025 Data Availability

EastLink Ventilation Stack Data Availabiliity September 2025								
Station	**Parameter**	**NO**	**NO_2**	**CO**	**$PM_{2.5}$**	**PM_{10}**	**Stack Velocity**	**Stack Temperature**
Western	Data Availability	95.6%	95.6%	95.6%	99.2%	99.3%	100.0%	100.0%
	Collected Periods	688.0	688.0	688.0	714.0	715.0	720.0	720.0
	Available Periods	720.0	720.0	720.0	720.0	720.0	720.0	720.0
Eastern	Data Availability	95.0%	95.0%	95.0%	98.6%	96.5%	100.0%	100.0%
	Collected Periods	684.0	684.0	684.0	710.0	695.0	720.0	720.0
	Available Periods	720.0	720.0	720.0	720.0	720.0	720.0	720.0

Table 17. September 2025 Data Availability

Remarks: Data Availability is calculated with 1 hour average data

7.3 Tabulated Results

7.3.1 Statistical Summary of 1-hour Mass Rate Data Western and Eastern Ventilation Stacks

Table 18 presents 1-hour mass rate statistical data for the Western and Eastern ventilation stacks.

1-hour mass rates are calculated from 1 minute average data.

EastLink Ventilation Stack Summary July 2025					
Location	**Parameter**	**1hr Average Maximum**	**1hr Average Minimum**	**Monthly Average**	**Monthly Total**
Western Ventilation Stack	NO (kg/h)	2.50	0.00	0.52	350.77
	NO_2 (kg/h)	0.46	0.00	0.10	65.05
	CO (kg/h)	3.97	0.00	1.10	783.43
	$PM_{2.5}$ (kg/h)	0.12	-0.00	0.02	16.84
	PM_{10} (kg/h)	0.58	0.00	0.06	45.29
Eastern Ventilation Stack	NO (kg/h)	2.75	-0.00	0.75	536.70
	NO_2 (kg/h)	0.48	0.00	0.12	85.51
	CO (kg/h)	5.35	0.00	1.43	1019.65
	$PM_{2.5}$ (kg/h)	0.11	-0.00	0.02	18.16
	PM_{10} (kg/h)	0.55	-0.00	0.09	63.27

Table 18. July 2025 Summary Table

EastLink Ventilation Stack Summary August 2025					
Location	**Parameter**	**1hr Average Maximum**	**1hr Average Minimum**	**Monthly Average**	**Monthly Total**
Western Ventilation Stack	NO (kg/h)	2.38	0.00	0.49	331.01
	NO_2 (kg/h)	0.38	0.00	0.09	64.44
	CO (kg/h)	4.22	-0.00	1.13	803.24
	$PM_{2.5}$ (kg/h)	0.24	-0.00	0.02	16.95
	PM_{10} (kg/h)	2.24	-0.00	0.06	43.90
Eastern Ventilation Stack	NO (kg/h)	2.90	-0.00	0.75	531.35
	NO_2 (kg/h)	0.46	0.00	0.12	85.37
	CO (kg/h)	5.26	-0.00	1.36	964.27
	$PM_{2.5}$ (kg/h)	0.16	-0.00	0.03	18.67
	PM_{10} (kg/h)	0.47	-0.00	0.08	60.01

Table 19. August 2025 Summary Table

EastLink Ventilation Stack Summary September 2025					
Location	**Parameter**	**1hr Average Maximum**	**1hr Average Minimum**	**Monthly Average**	**Monthly Total**
Western Ventilation Stack	NO (kg/h)	2.48	0.00	0.48	330.15
	NO_2 (kg/h)	0.42	0.00	0.09	64.39
	CO (kg/h)	3.36	0.00	1.08	739.66
	$PM_{2.5}$ (kg/h)	0.17	-0.00	0.02	16.56
	PM_{10} (kg/h)	0.46	-0.00	0.06	41.04
Eastern Ventilation Stack	NO (kg/h)	2.89	-0.00	0.76	518.13
	NO_2 (kg/h)	0.49	0.00	0.13	88.83
	CO (kg/h)	4.72	0.00	1.31	899.38
	$PM_{2.5}$ (kg/h)	0.16	-0.00	0.03	20.59
	PM_{10} (kg/h)	0.37	-0.00	0.08	58.59

Table 20. September 2025 Summary Table

EastLink Ventilation Stack Percentile Summary July 2025								
Location	**Parameter**	**Maximum**	**99th Percentile**	**98th Percentile**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Western Ventilation Stack	NO (kg/h)	2.50	2.23	2.08	1.68	1.19	0.84	0.40
	NO_2 (kg/h)	0.46	0.35	0.33	0.26	0.19	0.15	0.10
	CO (kg/h)	3.97	3.15	3.03	2.76	2.41	1.81	1.23
	$PM_{2.5}$ (kg/h)	0.12	0.10	0.09	0.07	0.05	0.04	0.02
	PM_{10} (kg/h)	0.58	0.33	0.31	0.23	0.14	0.09	0.05
Eastern Ventilation Stack	NO (kg/h)	2.75	2.59	2.44	2.18	1.87	1.49	0.47
	NO_2 (kg/h)	0.48	0.41	0.39	0.34	0.29	0.21	0.10
	CO (kg/h)	5.35	4.77	4.24	3.77	3.23	2.37	1.67
	$PM_{2.5}$ (kg/h)	0.11	0.09	0.08	0.07	0.06	0.05	0.02
	PM_{10} (kg/h)	0.55	0.39	0.33	0.28	0.24	0.14	0.05

Table 21. July 2025 Percentile Summary of 1-hour mass rate pollutant data

EastLink Ventilation Stack Percentile Summary August 2025								
Location	**Parameter**	**Maximum**	**99th Percentile**	**98th Percentile**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Western Ventilation Stack	NO (kg/h)	2.38	2.11	2.01	1.65	1.16	0.79	0.39
	NO_2 (kg/h)	0.38	0.34	0.33	0.26	0.19	0.15	0.10
	CO (kg/h)	4.22	3.16	3.05	2.83	2.45	1.92	1.26
	$PM_{2.5}$ (kg/h)	0.24	0.10	0.09	0.08	0.05	0.04	0.02
	PM_{10} (kg/h)	2.24	0.32	0.26	0.18	0.12	0.08	0.05
Eastern Ventilation Stack	NO (kg/h)	2.90	2.66	2.48	2.25	1.95	1.48	0.49
	NO_2 (kg/h)	0.46	0.42	0.40	0.36	0.28	0.21	0.11
	CO (kg/h)	5.26	4.35	4.10	3.60	3.05	2.33	1.54
	$PM_{2.5}$ (kg/h)	0.16	0.09	0.09	0.08	0.07	0.05	0.02
	PM_{10} (kg/h)	0.47	0.33	0.31	0.26	0.21	0.14	0.06

Table 22. August 2025 Percentile Summary of 1-hour mass rate pollutant data

EastLink Ventilation Stack Percentile Summary September 2025								
Location	**Parameter**	**Maximum**	**99th Percentile**	**98th Percentile**	**95th Percentile**	**90th Percentile**	**75th Percentile**	**50th Percentile**
Western Ventilation Stack	NO (kg/h)	2.48	2.20	2.06	1.66	1.18	0.76	0.34
	NO_2 (kg/h)	0.42	0.36	0.32	0.27	0.19	0.15	0.10
	CO (kg/h)	3.36	3.25	3.02	2.79	2.27	1.74	1.23
	$PM_{2.5}$ (kg/h)	0.17	0.11	0.10	0.08	0.06	0.04	0.02
	PM_{10} (kg/h)	0.46	0.33	0.29	0.20	0.14	0.08	0.05
Eastern Ventilation Stack	NO (kg/h)	2.89	2.64	2.59	2.35	2.07	1.51	0.41
	NO_2 (kg/h)	0.49	0.46	0.45	0.39	0.33	0.23	0.11
	CO (kg/h)	4.72	4.42	4.08	3.54	2.99	2.24	1.34
	$PM_{2.5}$ (kg/h)	0.16	0.11	0.10	0.09	0.08	0.05	0.02
	PM_{10} (kg/h)	0.37	0.33	0.31	0.26	0.23	0.15	0.06

Table 23. September 2025 Percentile Summary of 1-hour mass rate pollutant data

7.4 Graphical Representations

7.4.1 Eastlink Ventilation Stack Outlet Monthly Charts

The following charts present ventilation stack outlet data for CO, NO_x, VOC, PM10, Stack Temperature, Stack Pressure, Stack Velocity and Stack Moisture for Eastlink.

1-hour Averages are calculated from 1 minute average data.

7.4.2 July 2025

7.4.2.1 July 2025 – Monthly 1-hour mass rate NO_2

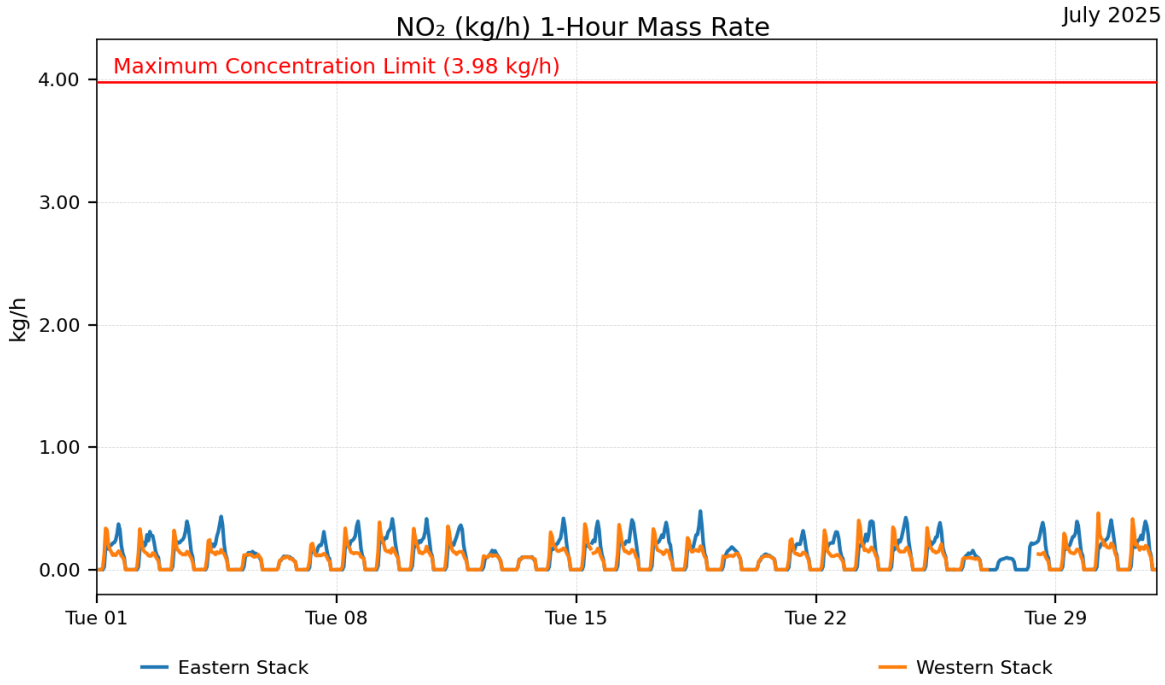


Figure 2. July 2025 Monthly 1-hour mass rate NO2

7.4.2.2 July 2025 – Monthly 1-hour mass rate NO

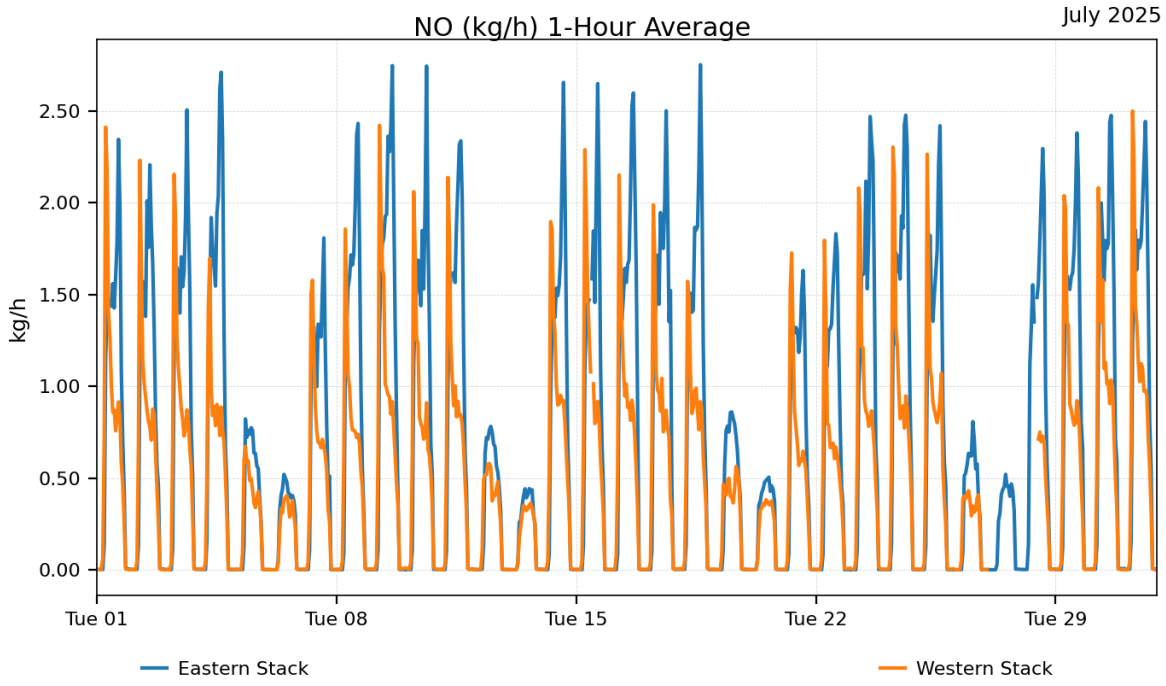


Figure 3. July 2025 Monthly 1-hour mass rate NO

7.4.2.3 July 2025 – Monthly 1-hour mass rate CO

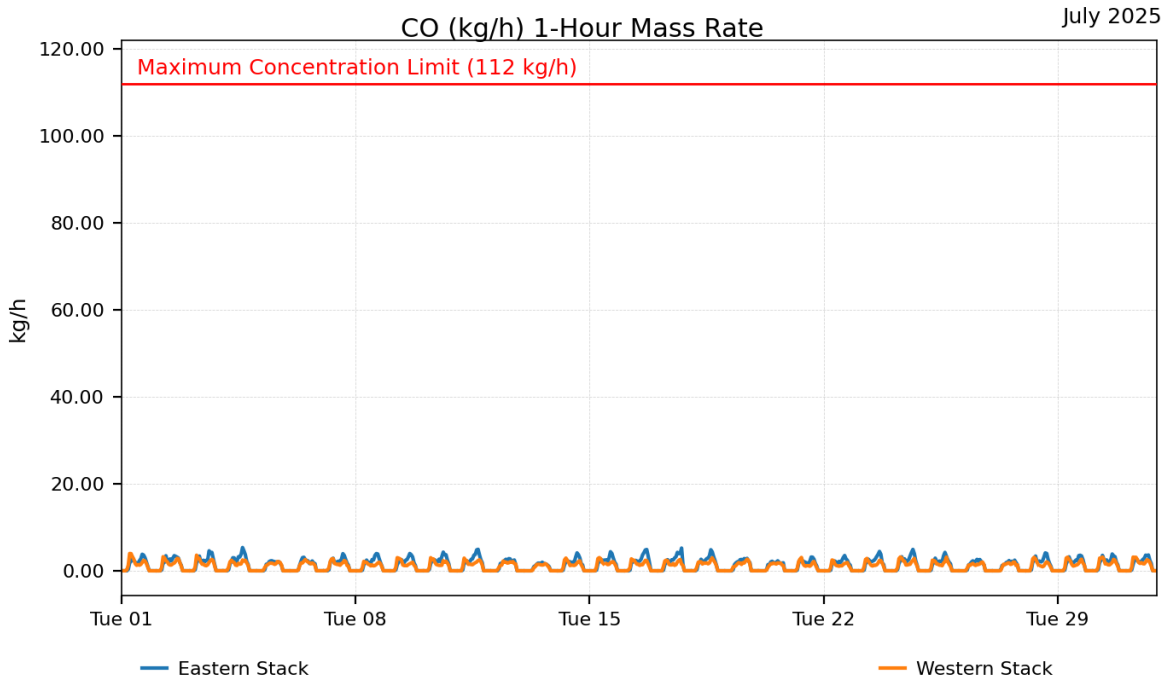


Figure 4. July 2025 Monthly 1-hour mass rate CO

7.4.2.4 July 2025 – Monthly 1-hour mass rate $PM_{2.5}$

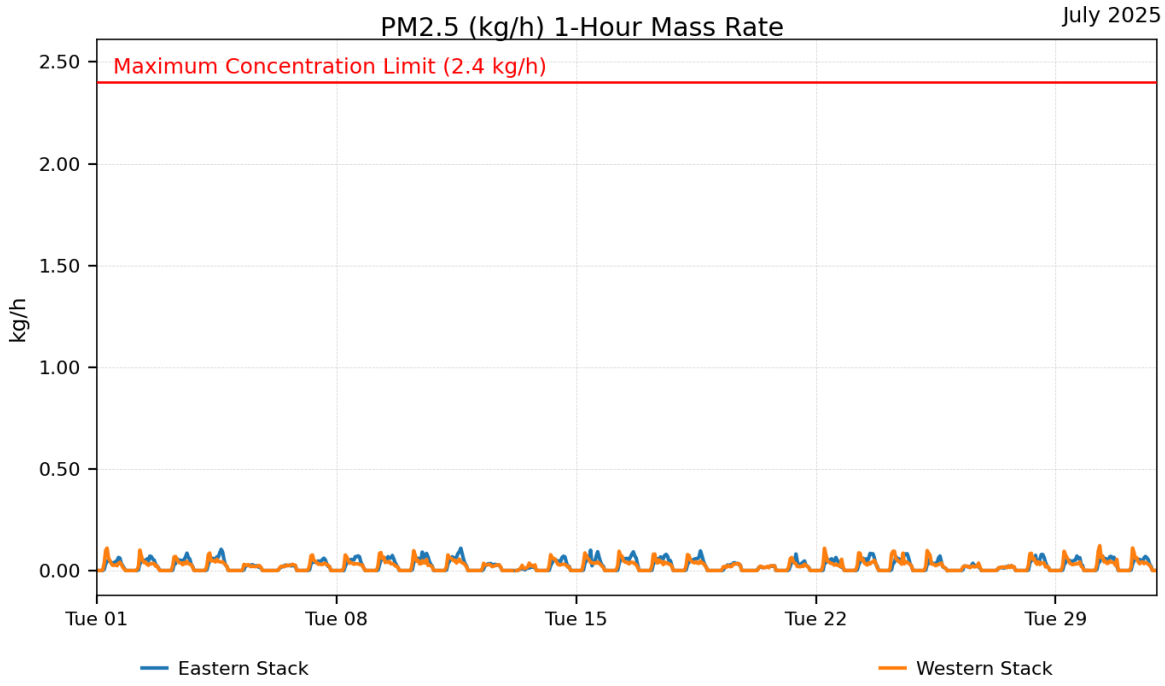


Figure 5. July 2025 Monthly 1-hour mass rate $PM_{2.5}$

7.4.2.5 July 2025 – Monthly 1-hour mass rate PM_{10}

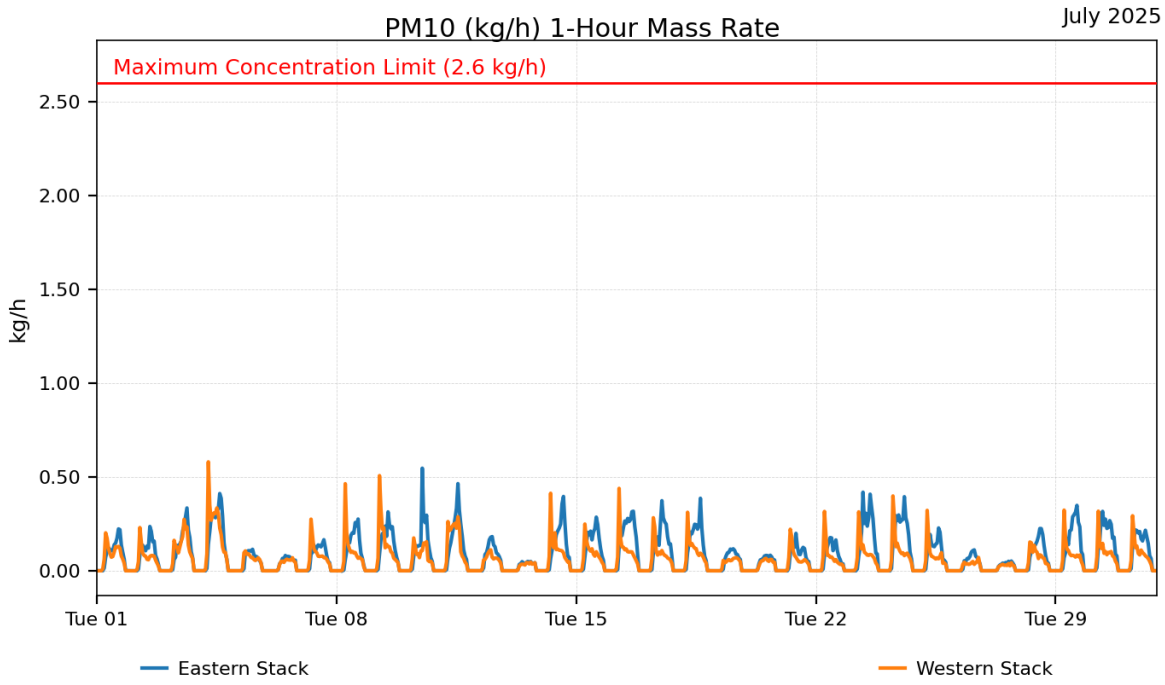


Figure 6. July 2025 Monthly 1-hour mass rate PM_{10}

7.4.2.6 July 2025 – Monthly 1-hour average stack velocity

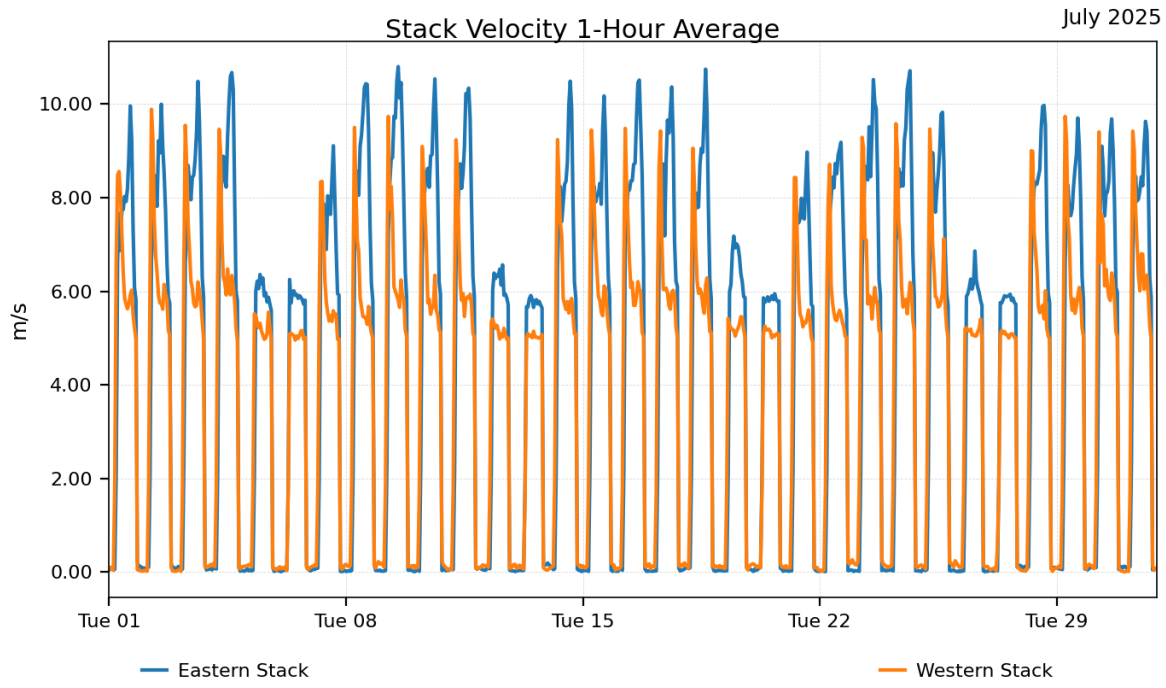


Figure 7. July 2025 Monthly 1-hour average stack velocity

7.4.2.7 July 2025 – Monthly 1-hour average stack temperature

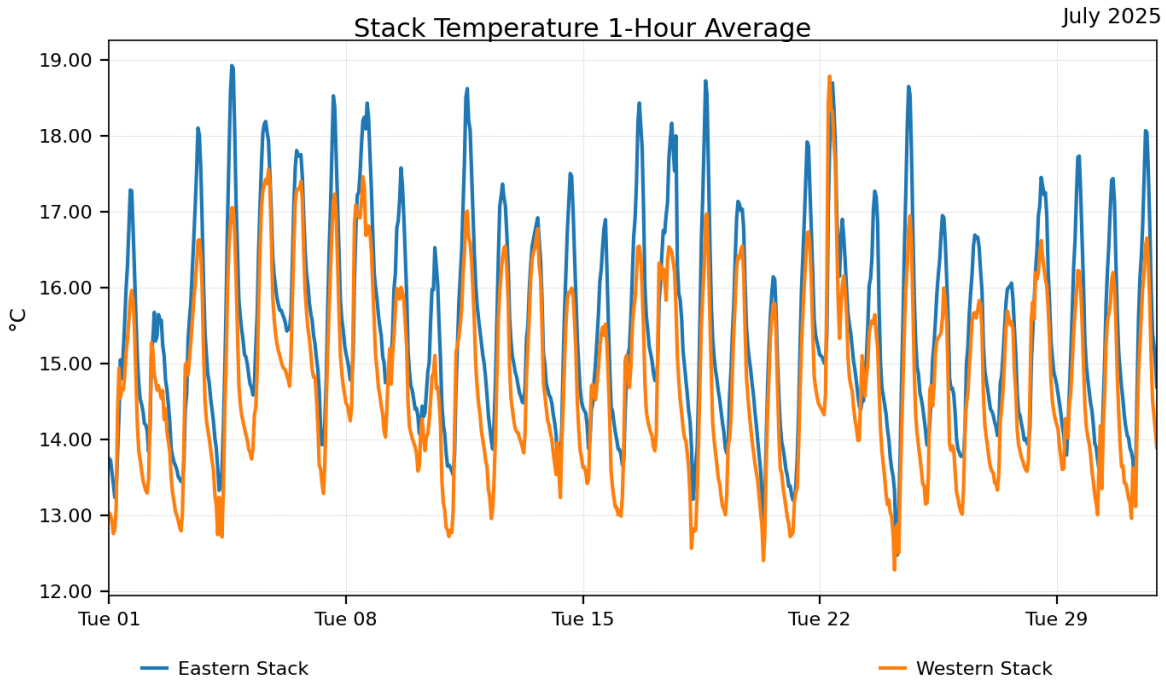


Figure 8. July 2025 Monthly 1-hour average stack temperature

7.4.3 August 2025

7.4.3.1 August 2025 – Monthly 1-hour mass rate NO_2

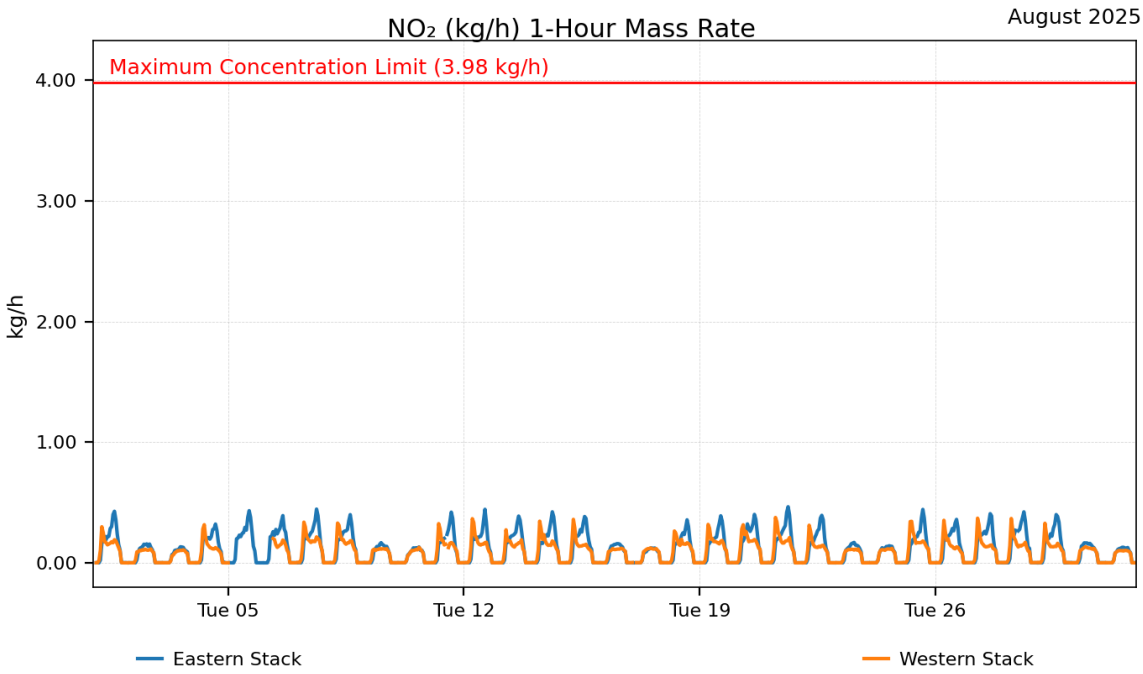


Figure 9. August 2025 Monthly 1-hour mass rate NO2

7.4.3.2 August 2025 – Monthly 1-hour mass rate NO

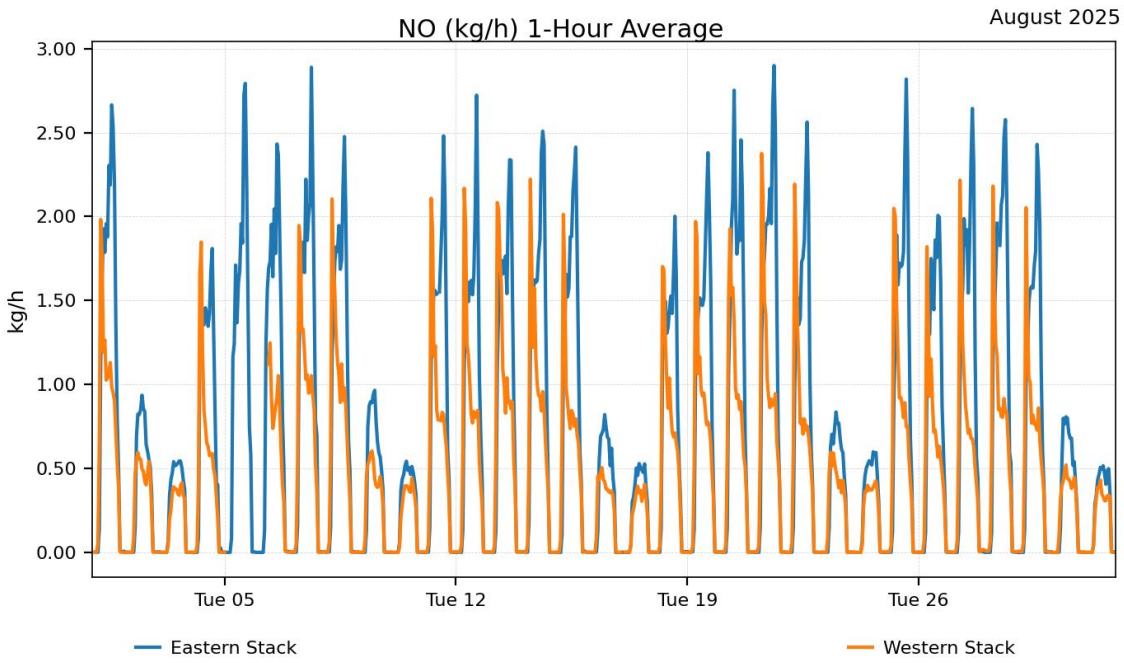


Figure 10. August 2025 Monthly 1-hour mass rate NO

7.4.3.3 August 2025 – Monthly 1-hour mass rate CO

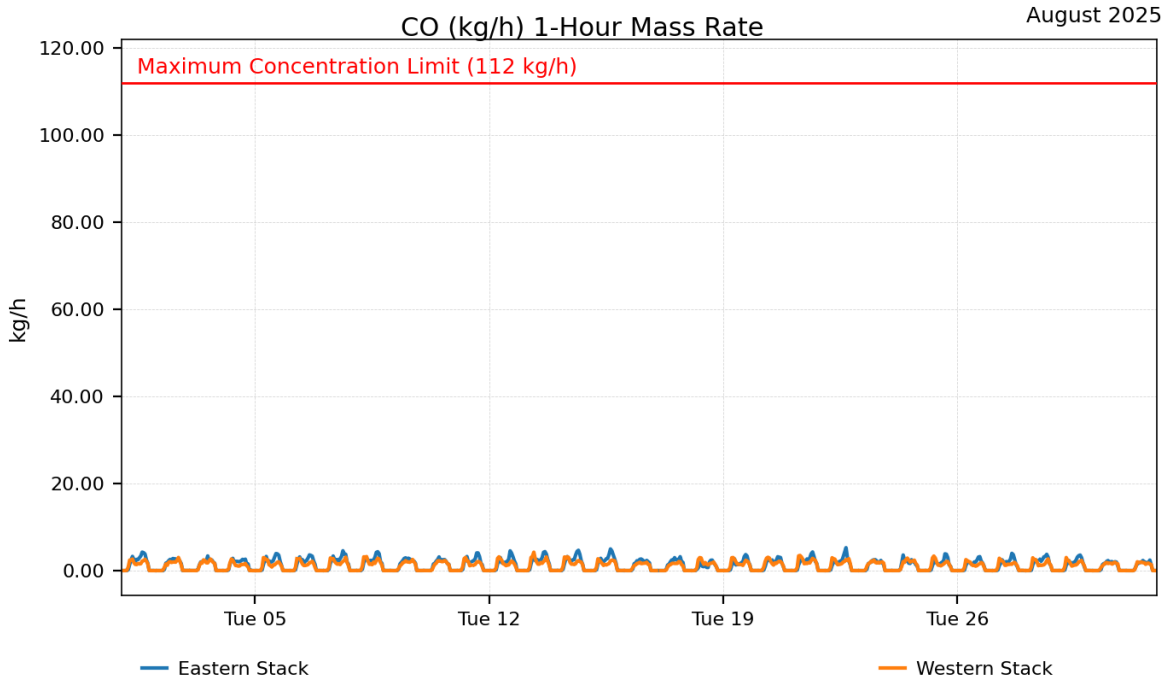


Figure 11. August 2025 Monthly 1-hour mass rate CO

7.4.3.4 August 2025 – Monthly 1-hour mass rate $PM_{2.5}$

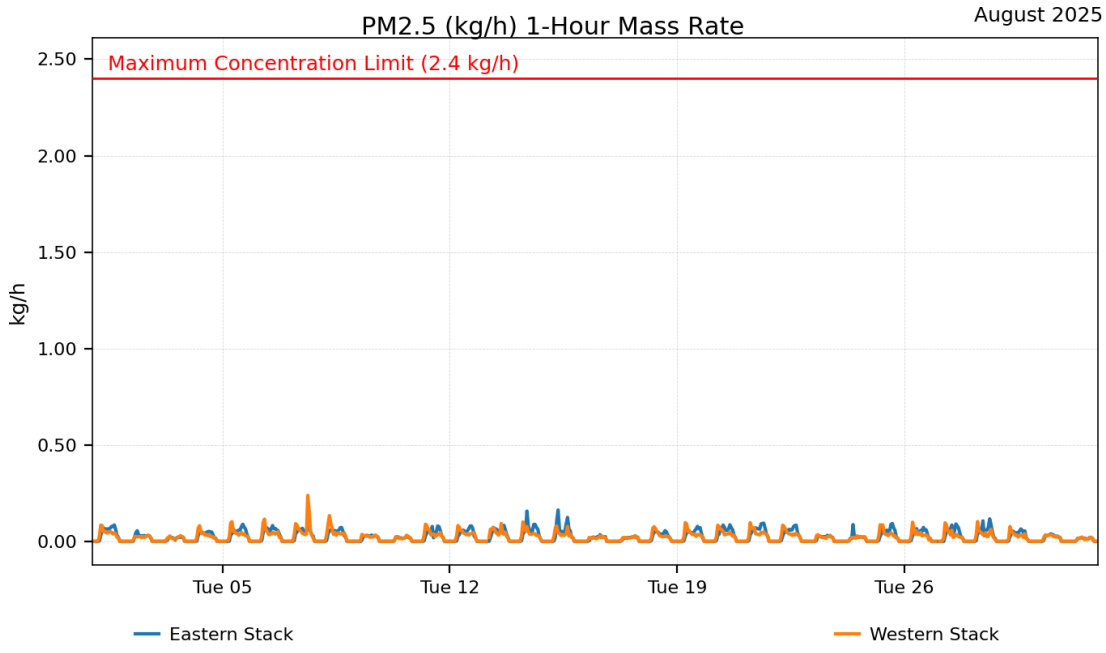


Figure 12. August 2025 Monthly 1-hour mass rate $PM_{2.5}$

7.4.3.5 August 2025 – Monthly 1-hour mass rate PM_{10}

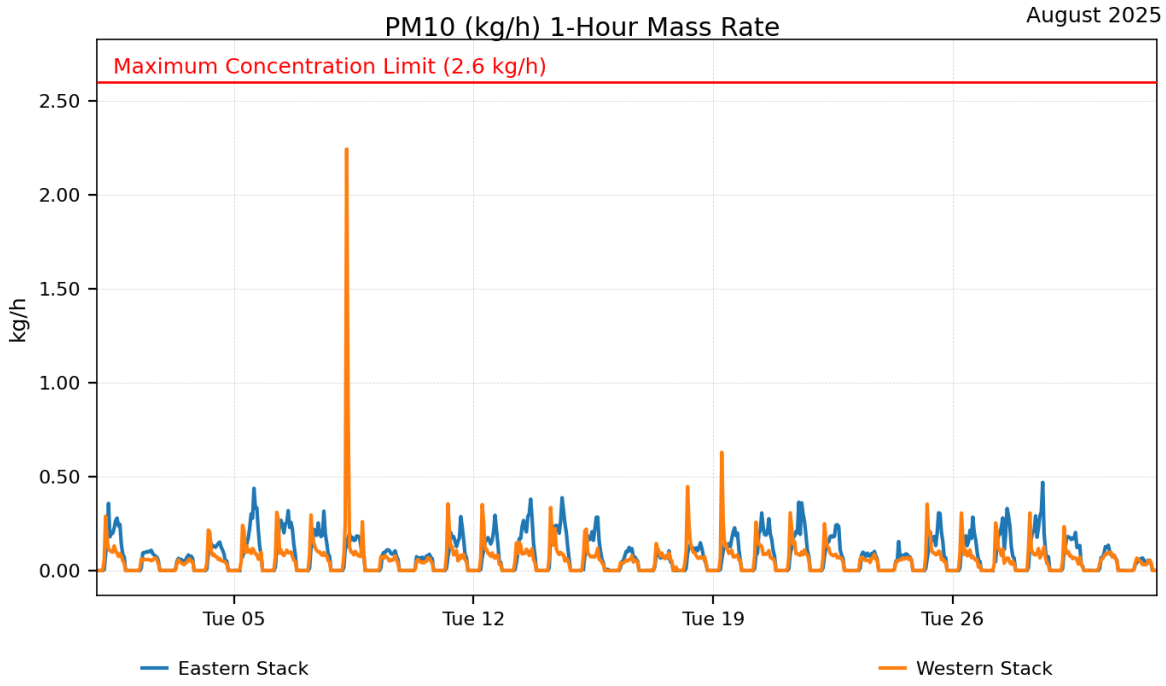


Figure 13. August 2025 Monthly 1-hour mass rate PM_{10}

7.4.3.6 August 2025 – Monthly 1-hour average stack velocity

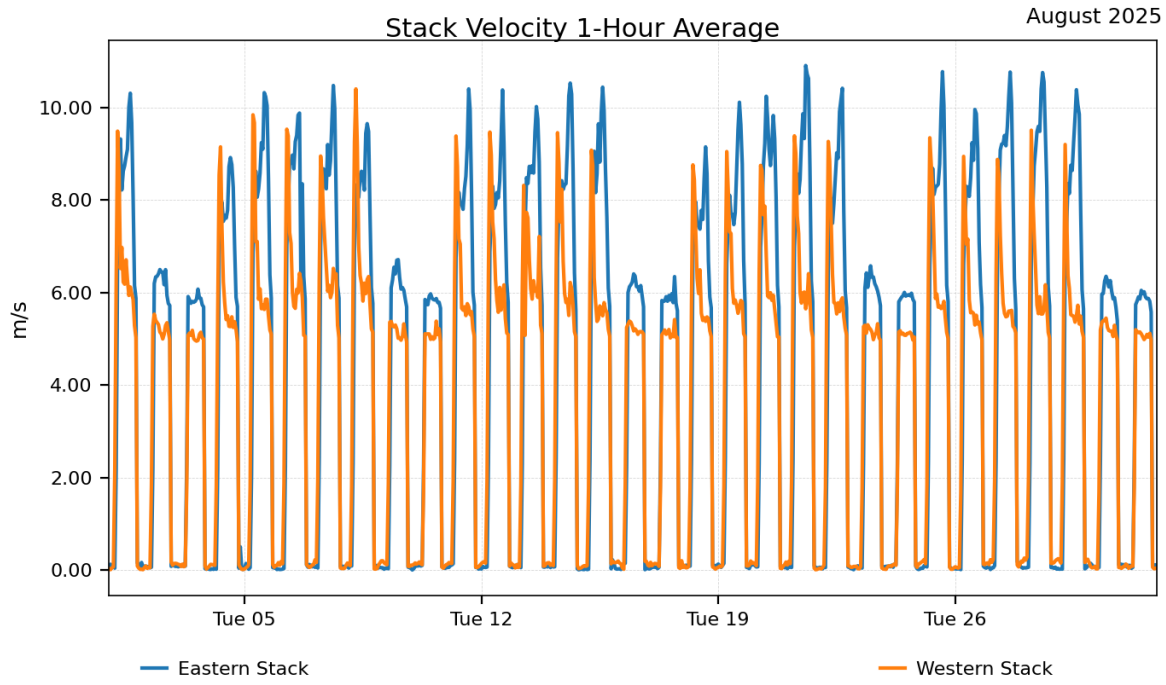


Figure 14. August 2025 Monthly 1-hour average stack velocity

7.4.3.7 August 2025 – Monthly 1-hour average stack temperature

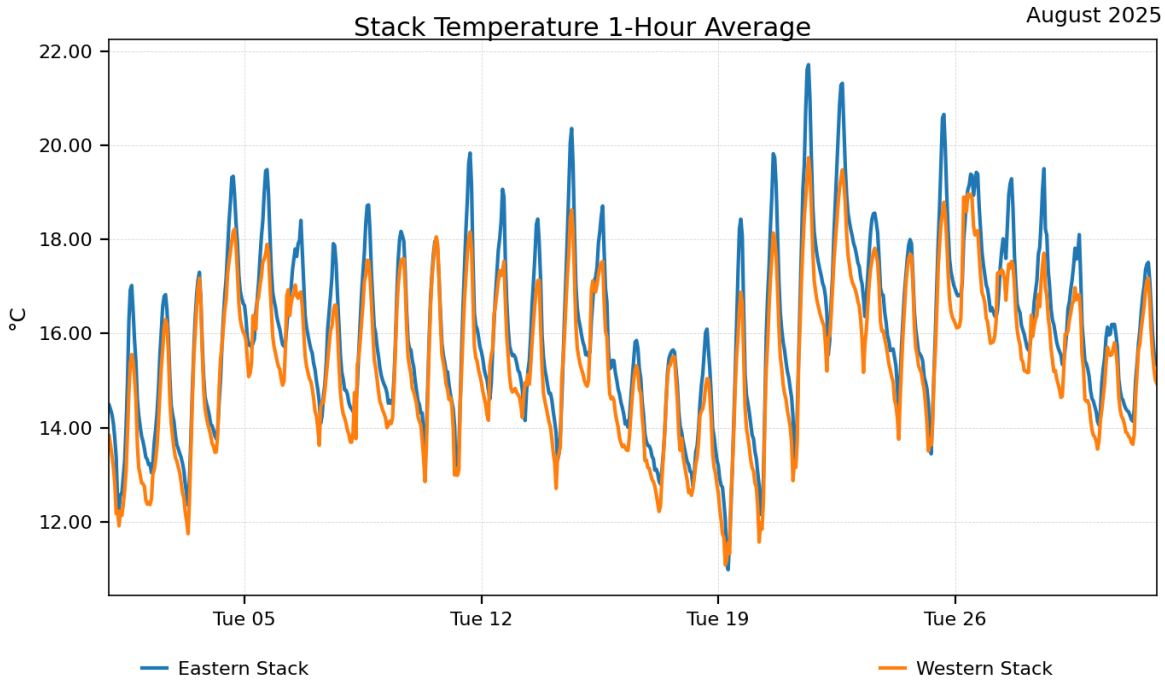


Figure 15. August 2025 Monthly 1-hour average stack temperature

7.4.4 September 2025

7.4.4.1 September 2025 – Monthly 1-hour mass rate NO_2

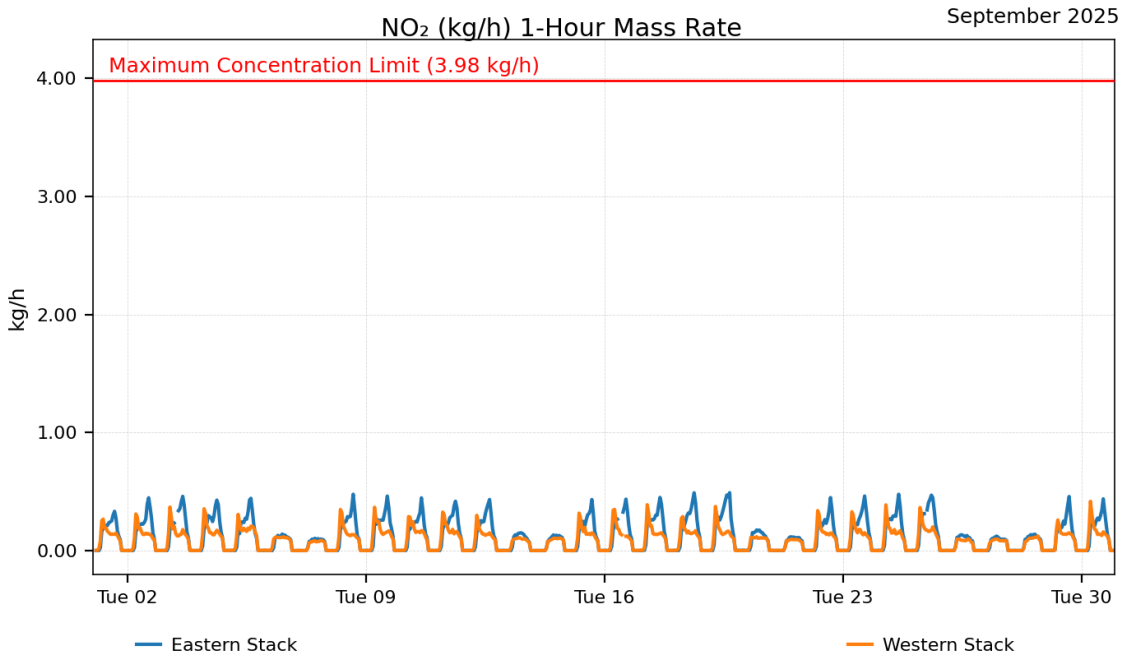


Figure 16. September 2025 Monthly 1-hour mass rate NO2

7.4.4.2 September 2025 – Monthly 1-hour mass rate NO

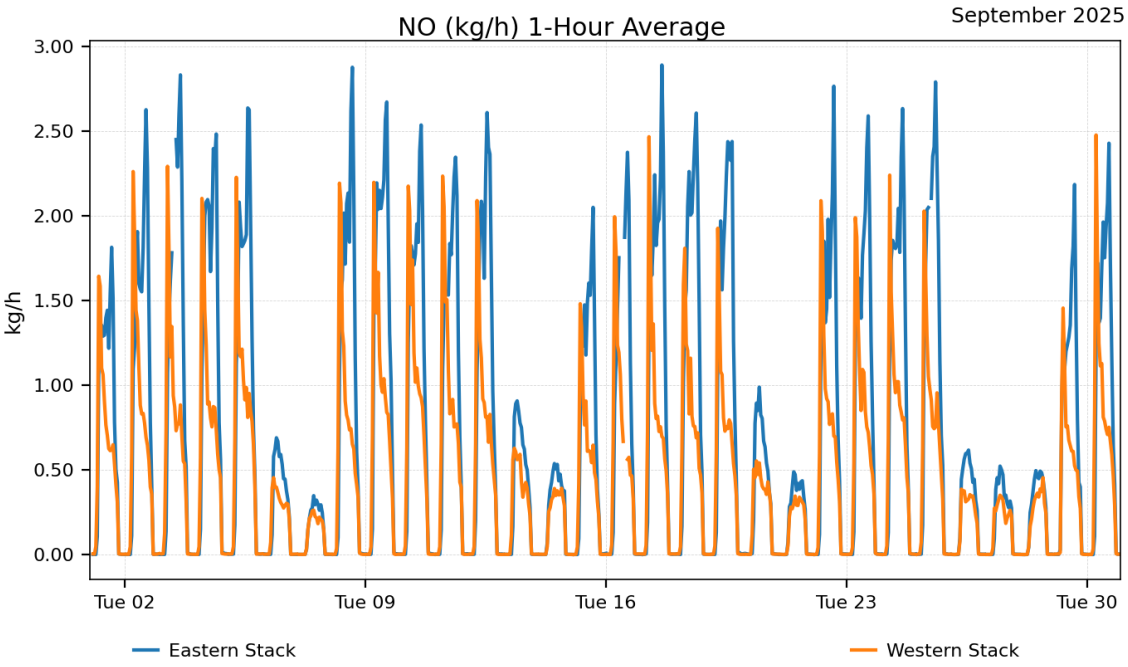


Figure 17. September 2025 Monthly 1-hour mass rate NO

7.4.4.3 September 2025 – Monthly 1-hour mass rate CO

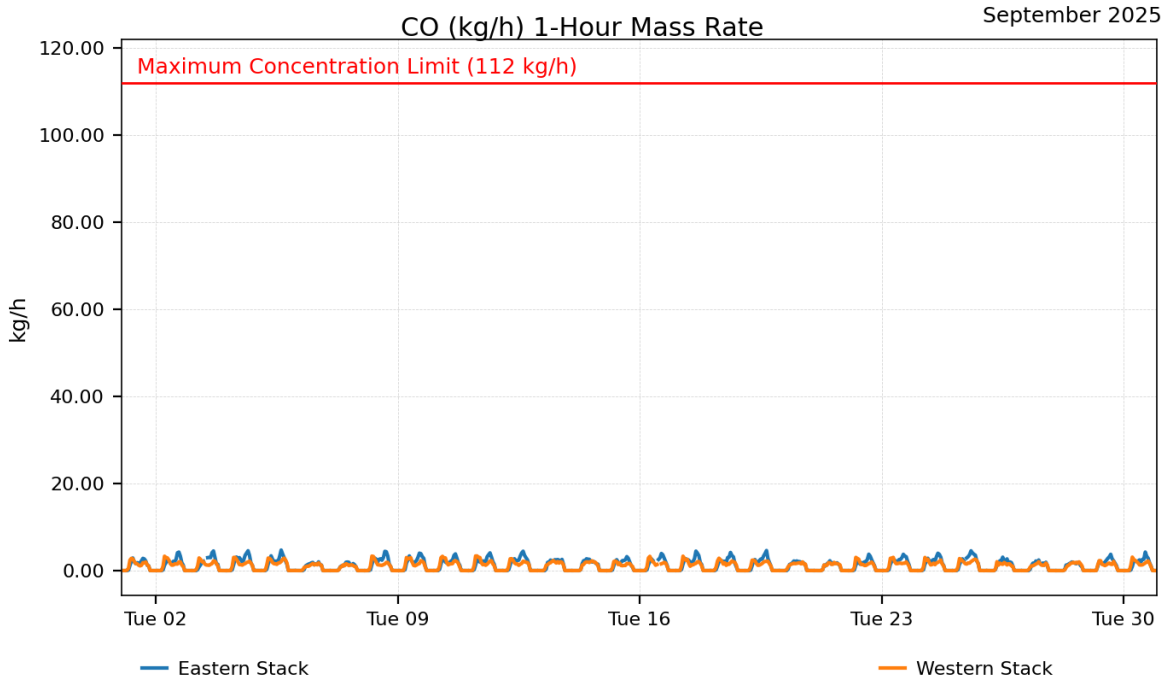


Figure 18. September 2025 Monthly 1-hour mass rate CO

7.4.4.4 September 2025 – Monthly 1-hour mass rate $PM_{2.5}$

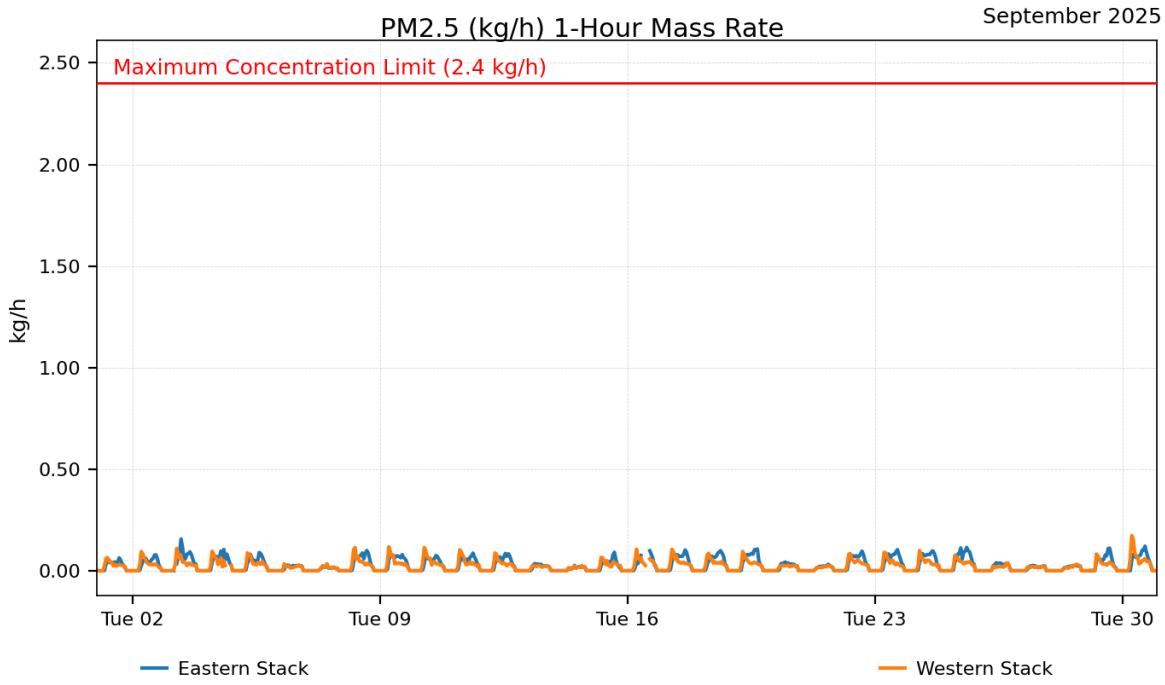


Figure 19. September 2025 Monthly 1-hour mass rate $PM_{2.5}$

7.4.4.5 September 2025 – Monthly 1-hour mass rate PM_{10}

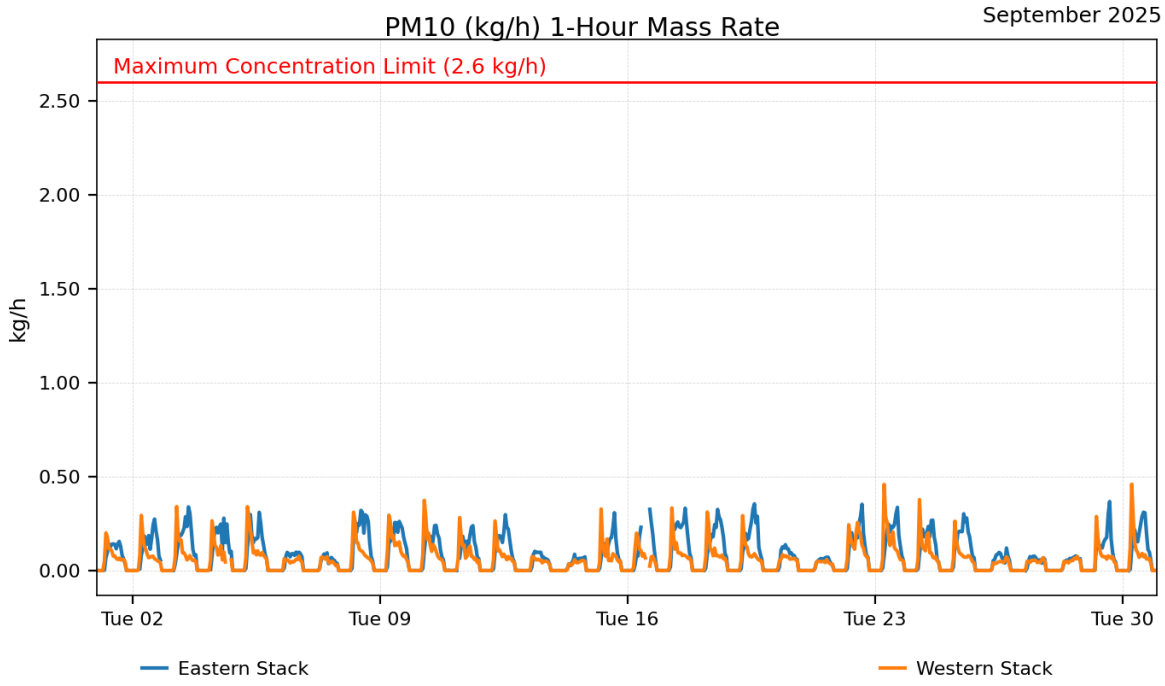


Figure 20. September 2025 Monthly 1-hour mass rate PM_{10}

7.4.4.6 September 2025 – Monthly 1-hour average stack velocity

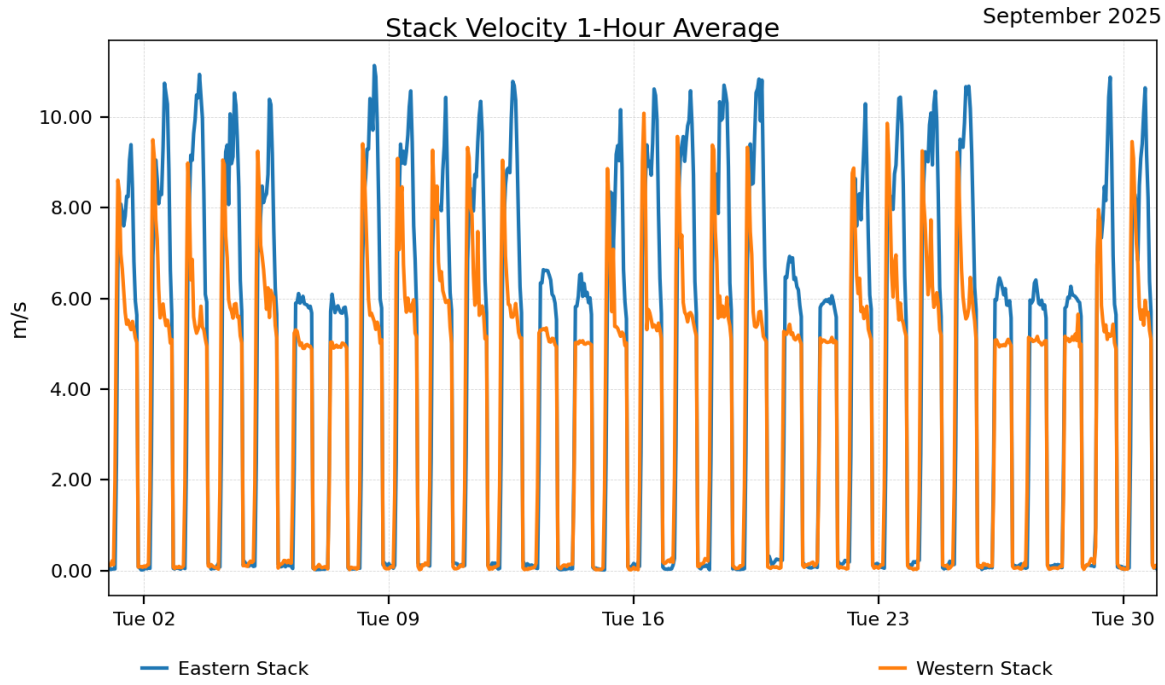


Figure 21. September 2025 Monthly 1-hour average stack velocity

7.4.4.7 September 2025 – Monthly 1-hour average stack temperature

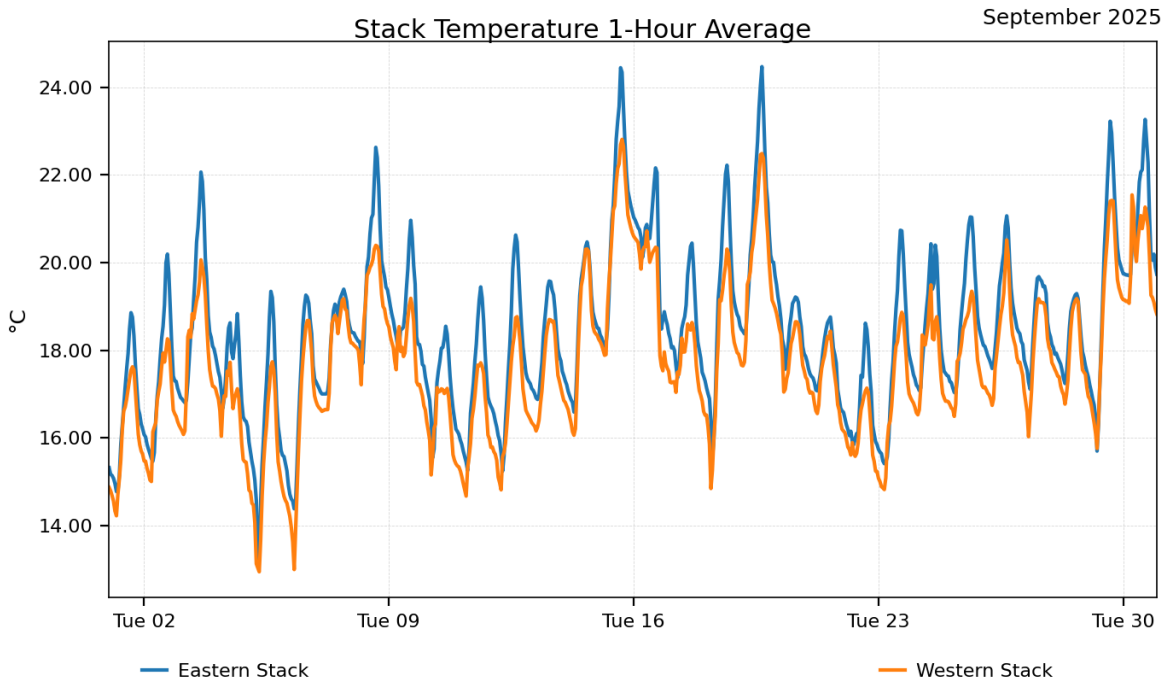


Figure 22. September 2025 Monthly 1-hour average stack temperature

8. Data Exceptions

This section outlines any issues noted with the monitoring equipment during the reporting period.

8.1 July 2025

8.1.1 July 2025 Eastern Ventilation Stack

EastLink Ventilation Eastern Ventilation Stack Data Validation – July 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
06/07/2025 3:53	31/07/2025 4:44	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
15/07/2025 10:23	15/07/2025 11:00	CO, NO, NO_2, NO_x	Maintenance	0.6	TA	28/10/2025 0:00

Table 24. July 2025 Eastern Ventilation Stack data validation

8.1.2 July 2025 Western Ventilation Stack

EastLink Ventilation Western Ventilation Stack Data Validation – July 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
01/07/2025 23:17	31/07/2025 2:52	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
04/07/2025 1:46	08/07/2025 1:01	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 0.91632 Multiplier B: 0.91632	N/A	TA	28/10/2025 0:00
15/07/2025 11:34	15/07/2025 12:14	CO, NO, NO_2, NO_x	Maintenance	0.7	TA	28/10/2025 0:00
20/07/2025 1:46	27/07/2025 1:00	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 1.054893 Multiplier B: 1.054893	N/A	TA	28/10/2025 0:00
27/07/2025 1:46	28/07/2025 11:26	NO, NO_2, NO_x	Calibration out of tolerance	33.7	TA	28/10/2025 0:00
28/07/2025 11:27	28/07/2025 11:56	CO, NO, NO_2, NO_x	Maintenance	0.5	TA	28/10/2025 0:00
28/07/2025 11:57	05/08/2025 1:00	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 1.0 Multiplier B: 0.846597	N/A	TA	28/10/2025 0:00

Table 25. July 2025 Western Ventilation Stack data validation

8.2 August 2025

8.2.1 August 2025 Eastern Ventilation Stack

EastLink Ventilation Eastern Ventilation Stack Data Validation – August 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
01/08/2025 0:00	05/08/2025 2:13	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 0.950164 Multiplier B: 0.950164	N/A	TA	28/10/2025 0:00
01/08/2025 0:53	29/08/2025 21:22	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
05/08/2025 2:14	11/08/2025 11:04	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 1.15128 Multiplier B: 1.067744	N/A	TA	28/10/2025 0:00
11/08/2025 11:04	11/08/2025 11:40	CO, NO, NO_2, NO_x	Maintenance	0.6	TA	28/10/2025 0:00
17/08/2025 2:14	28/08/2025 9:56	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 1.0 Multiplier B: 1.090768	N/A	TA	28/10/2025 0:00
17/08/2025 2:14	28/08/2025 9:56	CO	Multiplier applied to data: Multiplier A: 0.919959 Multiplier B: 0.919959	N/A	TA	28/10/2025 0:00
18/08/2025 5:40	28/08/2025 9:56	CO	Offset applied to data: Offset A: -1.3 Offset B: -1.3	N/A	TA	28/10/2025 0:00
28/08/2025 9:56	28/08/2025 11:00	CO, NO, NO_2, NO_x	Maintenance	1.1	TA	28/10/2025 0:00
17/08/2025 2:14	28/08/2025 9:56	CO	Multiplier applied to data: Multiplier A: 0.919959 Multiplier B: 0.919959	N/A	TA	28/10/2025 0:00

Table 26. August 2025 Eastern Ventilation Stack data validation

8.2.2 August 2025 Western Ventilation Stack

EastLink Ventilation Western Ventilation Stack Data Validation – August 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
01/08/2025 2:14	30/08/2025 6:51	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
05/08/2025 1:46	06/08/2025 7:18	NO, NO_2, NO_x	Calibration out of tolerance	29.5	TA	28/10/2025 0:00
06/08/2025 7:19	06/08/2025 7:49	CO, NO, NO_2, NO_x	Maintenance	0.5	TA	28/10/2025 0:00
06/08/2025 7:50	11/08/2025 12:16	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 0.925057 Multiplier B: 0.898333	N/A	TA	28/10/2025 0:00
11/08/2025 12:16	11/08/2025 13:13	CO, NO, NO_2, NO_x	Maintenance	0.9	TA	28/10/2025 0:00
11/08/2025 13:14	17/08/2025 2:27	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 1.062185 Multiplier B: 1.062185	N/A	TA	28/10/2025 0:00

Table 27. August 2025 Western Ventilation Stack data validation

8.3 September 2025

8.3.1 September 2025 Eastern Ventilation Stack

EastLink Ventilation Eastern Ventilation Stack Data Validation – September 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
01/09/2025 2:19	30/09/2025 23:50	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
02/09/2025 22:45	03/09/2025 2:14	$PM_{2.5}$, PM_{10}	Unrealistic data - PM2.5 > PM10	3.5	TA	28/10/2025 0:00
03/09/2025 10:26	03/09/2025 12:07	CO, NO, NO_2, NO_x	Maintenance	1.7	TA	28/10/2025 0:00
16/09/2025 10:33	16/09/2025 12:49	CO, NO, NO_2, NO_x	Maintenance	2.3	TA	28/10/2025 0:00
16/09/2025 10:33	16/09/2025 14:17	$PM_{2.5}$, PM_{10}	Maintenance	3.7	TA	28/10/2025 0:00
20/09/2025 2:14	25/09/2025 10:03	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 0.911944 Multiplier B: 0.911944	N/A	TA	28/10/2025 0:00
25/09/2025 10:03	25/09/2025 10:27	CO, NO, NO_2, NO_x	Maintenance	0.4	TA	28/10/2025 0:00

Table 28. September 2025 Eastern Ventilation Stack data validation

8.3.2 September 2025 Western Ventilation Stack

EastLink Ventilation Western Ventilation Stack Data Validation – September 2025						
Start Date	**End Date**	**Parameters**	**Reason**	**Hours affected**	**User Name**	**Changed Date**
01/09/2025 2:41	30/09/2025 2:41	$PM_{2.5}$, PM_{10}	Intermittent unrealistic data - negative	N/A	TA	28/10/2025 0:00
04/09/2025 16:12	04/09/2025 18:28	$PM_{2.5}$, PM_{10}	Unrealistic data - PM2.5 > PM10	2.3	TA	28/10/2025 0:00
16/09/2025 13:09	16/09/2025 14:39	CO, NO, NO_2, NO_x	Maintenance	1.5	TA	28/10/2025 0:00
16/09/2025 14:40	30/09/2025 23:59	NO, NO_2, NO_x	Multiplier applied to data: Multiplier A: 0.992025 Multiplier B: 0.913559	N/A	TA	28/10/2025 0:00

Table 29. September 2025 Western Ventilation Stack data validation

9. Report Summary

There were nil exceedances of the prescribed limits during the reporting period.

10. Data validation explanations

Automatic background check refers to when analyser samples zero air and measures the level of the concentration voltage. This voltage is taken as the zero signal level and this value is subtracted from any subsequent readings as an active zero compensation. This is the analyser's fine zero measurement.

Calibration check outside tolerance refers to when the calibration values are outside the tolerance limits set for the precision check.

Offset or Multiplier Applied to data refers to an offset or multiplier applied to the data. This operation may be performed for a number of reasons including: (a) when a clear trend / drift outside the tolerance limit can be demonstrated by repeated operation precision checks, (b) when a correction is required on previously logged data due to a calibration check being outside the allowable tolerance

Data transmission error refers to a period of time when the instrument could not transmit data. This may be due to a communication fault between the logger and the instrument.

Equipment malfunction/instrument fault refers to a period of time when the instrument was not in the normal operating mode and did not measure a representative value of the existing conditions.

Missing data/data not available refers to a period of time when either data has been lost or could not be collected.

Instrument Alarm refers to an alarm produced by the instrument. A range of alarms can be produced depending on how the operation of the instrument is being affected.
Instrument out of service refers to an unavailability of data due to an instrument being shut down for repair, maintenance, or factory calibration.

Logger error refers to when an error occurs and instrument readings are not correctly recorded by the logger.

Maintenance refers to a period of time when the logger / instrument was unavailable due to maintenance.

Overnight span/zero out of tolerance refers to when the span/zero reading measured by the analyser during an automatic precision check falls outside of the expected concentration limits.

Power Interruption refers to no power to the station therefore no data was collected at this time.

Remote Calibration refers to when a technician remotely connects to the station and manually performs a span check.

Warm up after power interruption refers to the startup period of an instrument after power has been restored.