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Date:
01 April 2025

Enquiries:
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Ref: 17/AEL/MP312/11/09

Dear Ms. Simelane

KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF SEPTEMBER 2024

This serves as the monthly report required in terms of Section 7.4 in Kriel Power Station's Atmospheric Emission License 17/AEL/MP312/11/09. The emissions are for the month of September 2024. Verified emissions of particulates matter, SO₂ and NO_x (as NO₂) are also included.

Raw Materials and Products

Table 1: Quantity of Raw Materials and Products used/produced for the month of September 2024

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of September 2024
	Coal	Tons/month	1 227 600	439 383.00
	Fuel Oil	Tons/month	8 000	6 561.76
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of September 2024
	Energy	GWh	3 000/2 232	716.109
	Ash	Tons/month	320 000	552.7
	RE PM	kg/MWh	not specified	0.709

1/...

Abatement Technology

Table 2: Abatement Equipment Control Technology for September 2024.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Technology Type	SO ₃ Utilisation (%)
Unit 1	ESP& SO3	99.17%	SO3 Plant	82.59
Unit 2	ESP& SO3	99.36%	SO3 Plant	0.88
Unit 3	ESP& SO3	99.77%	SO3 Plant	100.00
Unit 4	ESP& SO3	99.75%	SO3 Plant	99.75
Unit 5	ESP& SO3	Off	SO3 Plant	Off
Unit 6	ESP& SO3	99.88%	SO3 Plant	100.00

Note: ESP plant does not contain bypass mode operation; hence plant 100% Utilised.

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of September 2024

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.61
Ash Content	27-32 (%)	26.73

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SO _x (%)	NO _x (%)
North	93.17	93.89	97.37
South	82.26	0.00	0.00

Emissions Reporting

Graph Legend Description

Condition	Colour	Description
Normal	Green	Emissions below Emission Limit Value (ELV)
Grace	Blue	Emissions above the ELV during grace period
Section 30	Orange	Emissions above ELV during a NEMA S30 incident
Contravention	Red	Emissions above ELV but outside grace or S30 incident conditions

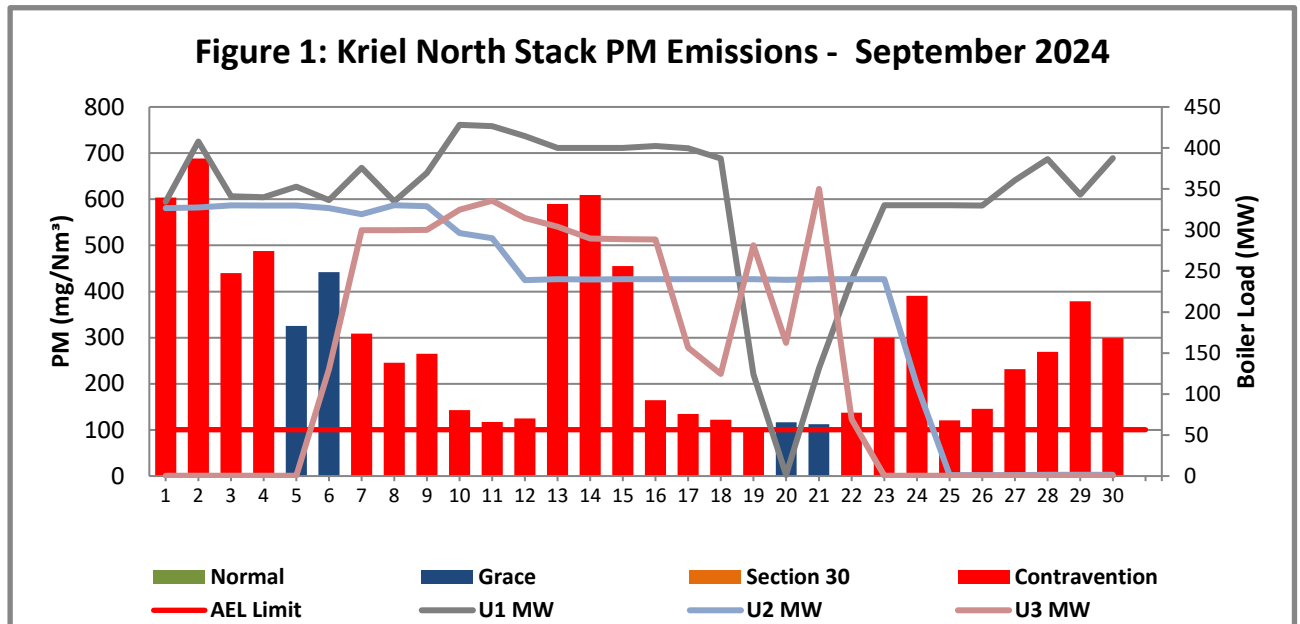


Figure 1: PM emissions for the month of September 2024 against daily emission limit (100 mg/Nm³) for the North Stack.

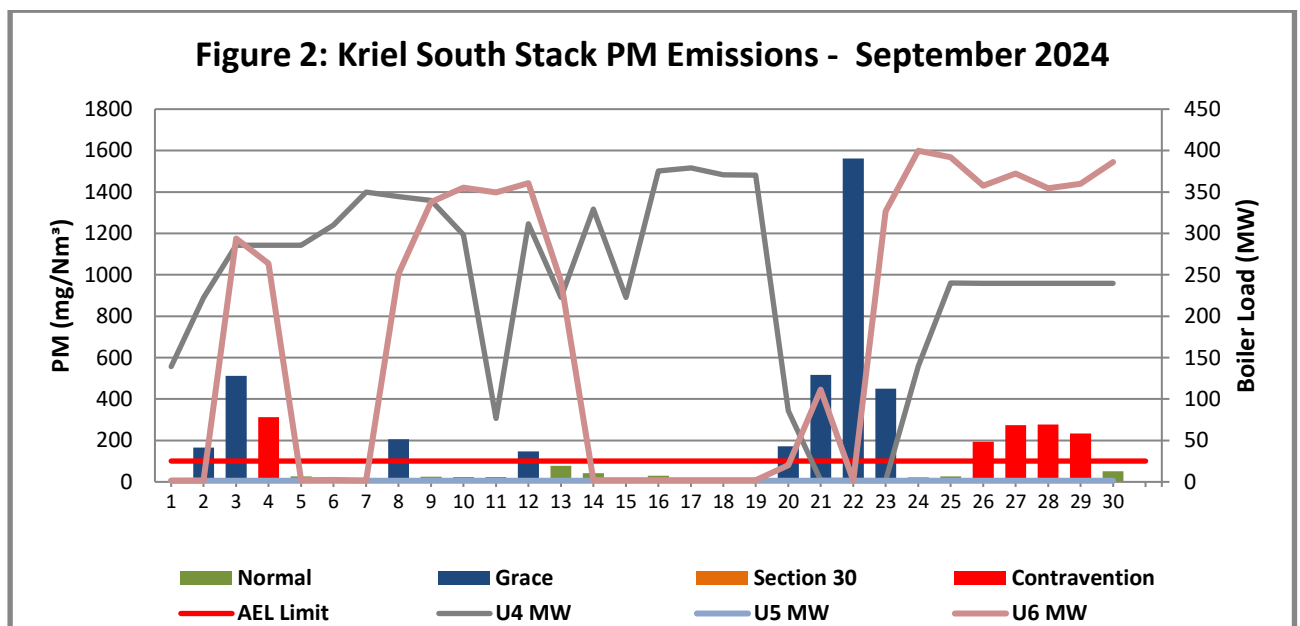


Figure 2: PM emissions for the month of September 2024 against daily emission limit (100 mg/Nm³) for the South Stack.

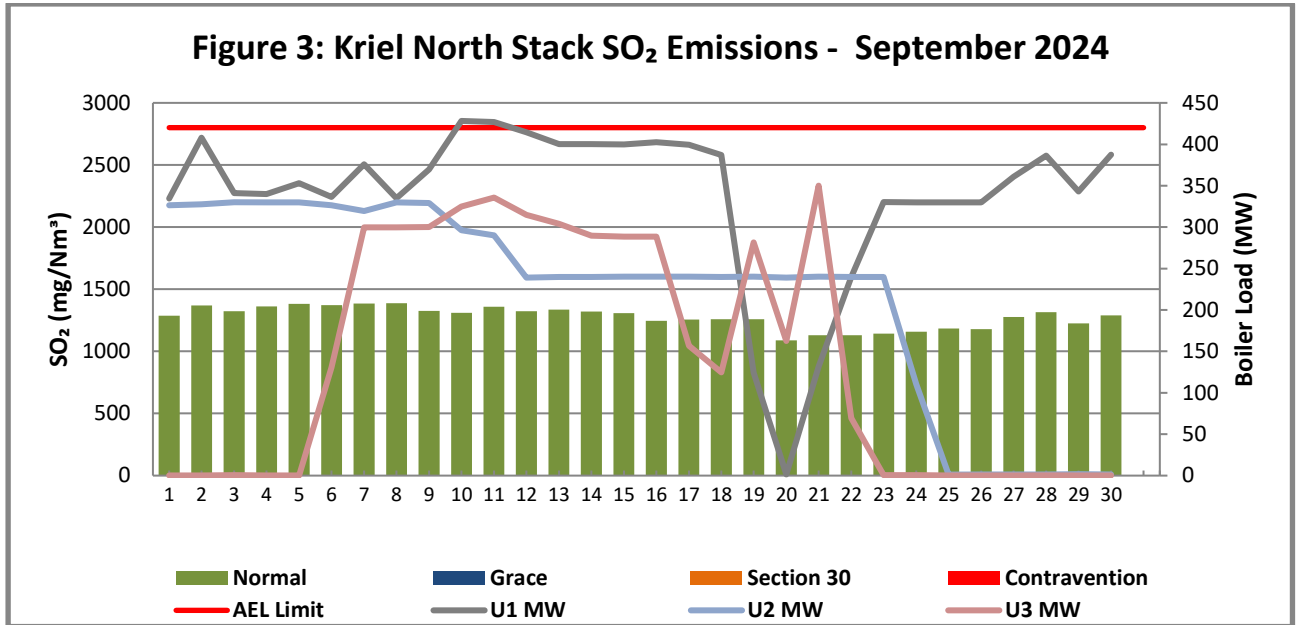


Figure 3. SO₂ emissions for the month of September 2024 against daily emission limit (2800 mg/Nm₃) for the North Stack.

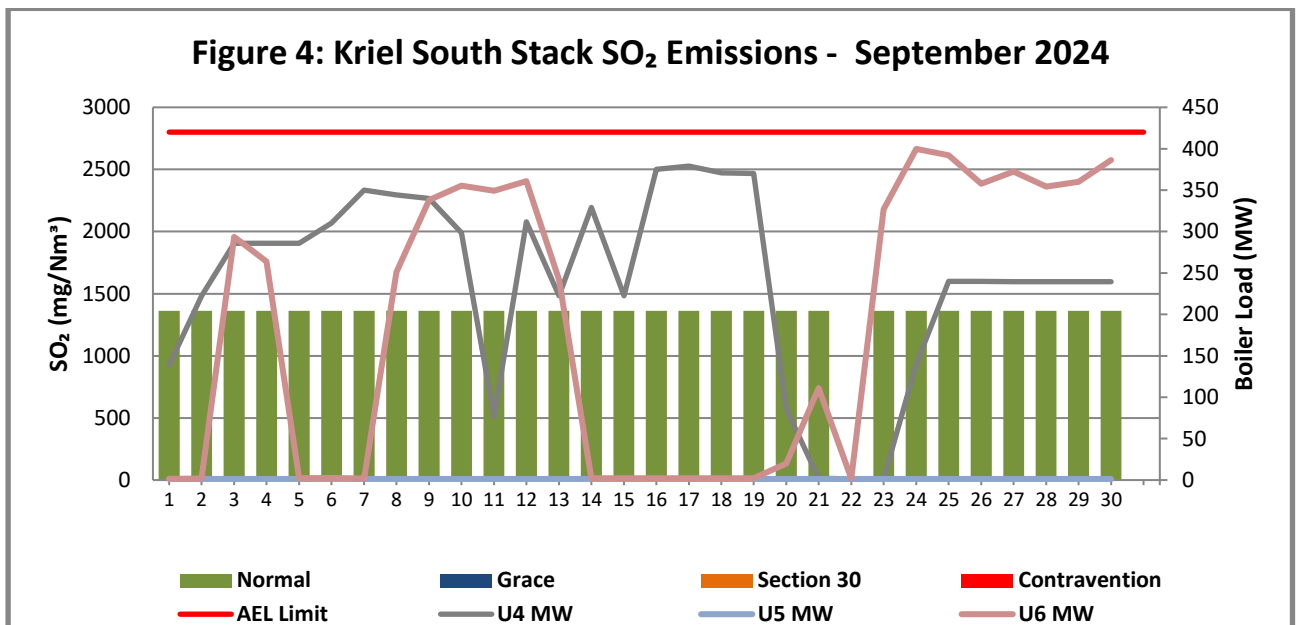


Figure 4. SO₂ emissions for the month of September 2024 against daily emission limit (2800mg/Nm₃) for the South Stack. PI (Process Information) system not available due to the HMI Upgrade project with Siemens and C&I Engineering department, as a result, PM and Gaseous readings may be unavailable and/or unreliable from 23/08/2024.

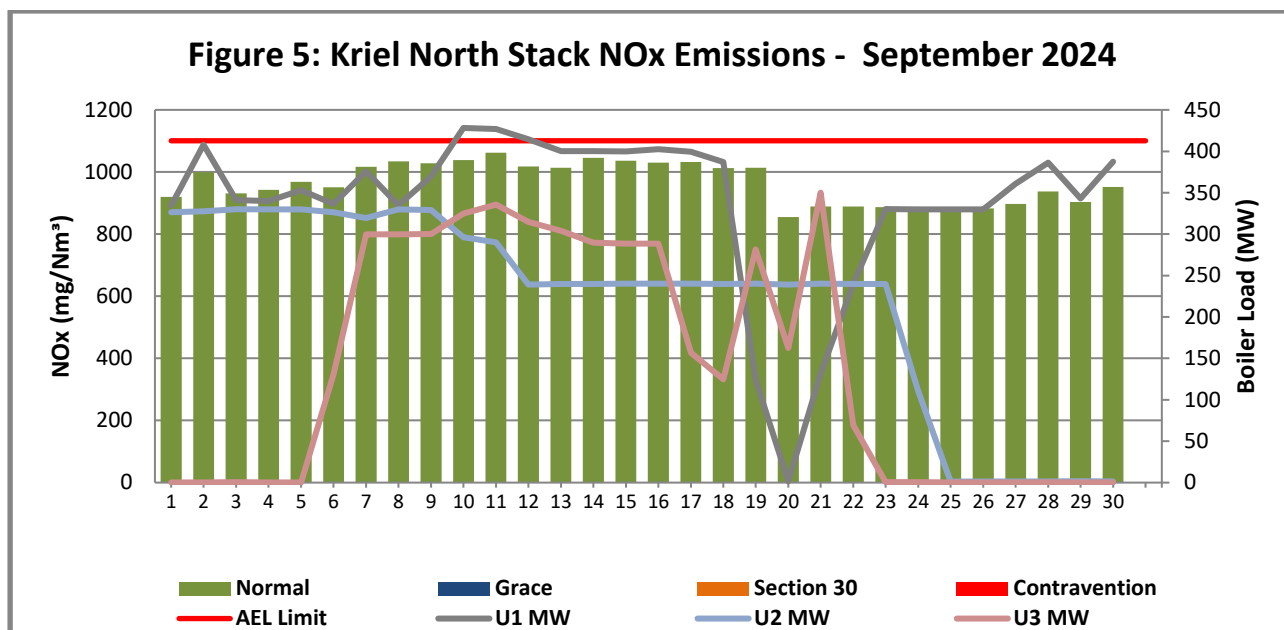


Figure 5. NO₂ emissions for the month of September 2024 against daily emission limit (1100) for the North Stack.

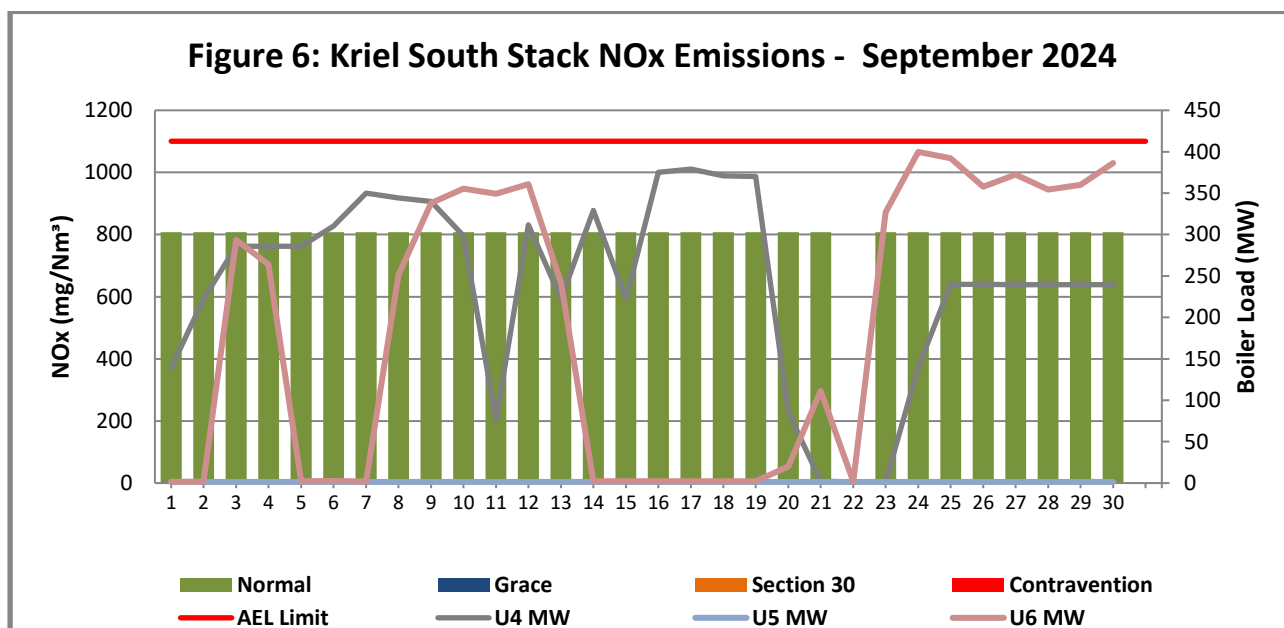


Figure 6. NO₂ emissions for the month of September 2024 against daily emission limit (1100mg/Nm³) for the South Stack. PI (Process Information) system not available due to the HMI Upgrade project with Siemens and C&I Engineering department, as a result, PM and Gaseous readings may be unavailable and/or unreliable from 23/08/2024.

Table 4: Monthly tonnages for the month September 2024

Unit	PM (tons)	SO ₂ (tons)	NO ₂ (tons)
SUM	552.7	5 501.6	3 771.4

Table 5: Each unit and respective days operating under normal operation and section 30 days respectively.

Table 5.1: Operating days in non-compliance to PM AEL Limit – September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm ³)
North	0	4	0	26	30	219.8
South	15	8	0	5	13	72.8

Table 5.2: Operating days in compliance to SO_x AEL Limit – September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO _x (mg/Nm ³)
North	30	0	0	0	0	1276.3
South	29	0	0	0	0	1361.0

Table 5.3: Operating days in compliance to NO_x AEL Limit – September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NO _x (mg/Nm ³)
North	30	0	0	0	0	956.1
South	29	0	0	0	0	807.9

Light up information

Table 6: PM Start-up information for the month of September 2024

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		no event		Unit 2		Unit 3	
Breaker Open (BO)	7:50 am	2024/09/19			11:10 am	2024/09/24		
Draught Group (DG) Shut Down (SD)	1:05 am	2024/09/20			11:55 pm	2024/09/24		
BO to DG SD (duration)	00:17:15	DD:HH:MM		DD:HH:MM	00:12:45	DD:HH:MM		DD:HH:MM
Fires in time	12:50 am	2024/09/21			4:35 pm	2024/09/30	9:00 pm	2024/09/05
Synch. to Grid (or BC)	8:15 am	2024/09/21			2:05 am	2024/10/01	11:35 am	2024/09/06
Fires in to BC (duration)	00:07:25	DD:HH:MM		DD:HH:MM	00:09:30	DD:HH:MM	00:14:35	DD:HH:MM
Emissions below limit	4:00 pm	2024/09/25			3:00 pm	2024/10/03	4:00 pm	2024/09/25

from BC (end date)								
Emissions below limit from BC (duration)	04:07:45	DD:HH:MM		DD:HH:MM	02:12:55	DD:HH:MM	19:04:25	DD:HH:MM

North Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 3		Unit 3		Unit 3		no event	
Breaker Open (BO)	4:25 am	2024/09/17	6:45 am	2024/09/20	4:25 am	2024/09/22		
Draught Group (DG) Shut Down (SD)	10:35 am	2024/09/18	9:00 am	2024/09/20	9:25 am	2024/09/23		
BO to DG SD (duration)	01:06:10	DD:HH:MM	00:02:15	DD:HH:MM	01:05:00	DD:HH:MM		DD:HH:MM
Fires in time	5:55 pm	2024/09/18	12:45 pm	2024/09/20				
Synch. to Grid (or BC)	12:35 am	2024/09/19	5:30 pm	2024/09/20				
Fires in to BC (duration)	00:06:40	DD:HH:MM	00:04:45	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	4:00 pm	2024/09/25	4:00 pm	2024/09/25				
Emissions below limit from BC (duration)	06:15:25	DD:HH:MM	04:22:30	DD:HH:MM		DD:HH:MM		DD:HH:MM

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 4		Unit 4		Unit 4		Unit 4	
Breaker Open (BO)	BO previousl y	BO previously	8:50 pm	2024/09/1 0	4:15 pm	2024/09/1 3	11:05 pm	2024/09/1 4
Draught Group (DG) Shut Down (SD)	n/a	n/a	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD:HH:M M	n/a	DD:HH:M M	n/a	DD:HH:M M	n/a	DD:HH:M M
Fires in time			8:50 pm	2024/09/1 0	4:15 pm	2024/09/1 3	11:05 pm	2024/09/1 4
Synch. to Grid (or BC)			5:05 pm	2024/09/1 1	8:30 pm	2024/09/1 3	6:20 am	2024/09/1 5
Fires in to BC		DD:HH:M M	00:20:1 5	DD:HH:M M	00:04:1 5	DD:HH:M M	00:07:1 5	DD:HH:M M

(duration)								
Emission s below limit from BC (end date)			not > limit	not > limit	not > limit	not > limit	not > limit	not > limit
Emission s below limit from BC (duration)		DD:HH:M M	n/a	DD:HH:M M	n/a	DD:HH:M M	n/a	DD:HH:M M

South Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 4		no event		Unit 6		Unit 6	
Breaker Open (BO)	5:30 am	2024/09/20			8:35 pm	2024/09/04	4:10 pm	2024/09/13
Draught Group (DG) Shut Down (SD)	8:10 pm	2024/09/20			DG did not trip or SD	DG did not trip or SD	10:15 am	2024/09/14
BO to DG SD (duration)	00:14:40	DD:HH:MM		DD:HH:MM	n/a	DD:HH:MM	00:18:05	DD:HH:MM
Fires in time	11:10 pm	2024/09/23			12:00 am	2024/09/03	10:15 am	2024/09/05
Synch. to Grid (or BC)	8:35 am	2024/09/24			11:35 pm	2024/09/02	5:15 am	2024/09/08
Fires in to BC (duration)	00:09:25	DD:HH:MM		DD:HH:MM		DD:HH:MM	02:19:00	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit			not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM		DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

Reasons for emissions poor performance for both stack in September 2024

Table 7: Reasons for emissions poor performance for September 2024

Start Date	Plant	Reason	Impact on Emissions	Actions	Feedback	Completion Date
Continuous Emission Monitoring Systems						
25/07/2024	South Smoke stack	South stack Gaseous monitors commissioning (Installation of SICK Automation)	Reliability Compromised - No gaseous readings for the South stack emissions	SICK Monitors installed. C&I awaiting commissioning of North stack lift to verify loop checks between North and South Gaseous monitors. North stack lift currently not in-service due to no contract in place.	SICK Automation will be onsite from 01/10/2024 to complete the gas analyser replacement project.	Estimated completion date TBC

				Currently in procurement phase.	(Responsible: C&I Maintenance)	
23/08/2024	PI (Process Information) system not available	PI (Process Information) system not available due to the HMI Upgrade project with Siemens and C&I Engineering department.	PM and Gaseous readings for Unit 5 may be unavailable and/or unreliable from 23/08/2026.	The HMI Upgrade Project in progress.	Project plan and end date TBC (Responsible: C&I Engineering)	Baseline Completion date 05/11/2024
Plant Failures						
31/08/2024	Unit 1 SO3 Plant	Process Air Blower Motor Burnt	No SO3 injection on Unit 1	Process Air Blower Motor and Assembly replacement	Action completed (Responsible: Maintenance)	01/09/2024
02/09/2024	Unit 2 SO3 plant	SO3 Dosing pump failure	No SO3 injection on Unit 2	EMD Department to replace pump	Action completed (Responsible: Maintenance)	05/09/2024
10/09/2024	Unit 2	Unit 2 B EFP Leak-off valve failure. Unit on half-load.	No SO3 injection on Unit 2 due to unit performing under half-load conditions.	Leak-off valve repairs require an opportunity when Unit is offload	Unit required an opportunity to attend defect. Action Completed (Responsible: Turbine Maintenance)	19/09/2024
23/09/2024	Unit 1 SO3 Plant	SO3 plant Sulphur Flow sensor faulty	Unit 1 dosing pump not in service, and no SO3 injection.	Maintenance to replace Unit 1 SO3 Sulphur flow sensor	Action completed (Responsible: Maintenance)	25/09/2024

Complaints Register

Table 8: Complaint for the month of September 2024

Source Code/ Name	Root Cause Analysis	Calculation of Impacts/ emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date by which measure will be implemented
There was no complaint related to air quality received during the month of September 2024.					

General

The rest of the information demonstrating compliance with the emissions license conditions is supplied in the annual emission reports sent to your office.