Eskom

Ms Nompumelelo Simelane
Nkangala District Municipality
PO BOX 437
Middelburg
1050

Date:
01 April 2025

Enquiries:
Livhuwani Tshilate
017 615 2317

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

Dear Ms. Simelane

KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF NOVEMBER 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 November 2024. Verified emissions of particulates matter, SO_2 and NO_x (as NO_2) are also included.

Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of November 2024
	Coal	Tons/month	1 227 600	384 758.00
	Fuel Oil	Tons/month	8 000	5 371.36
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity)**	**Production Rate in Month of November 2024**
	Energy	GWh	3 000/2 232	622.156
	Ash	Tons/month	320 000	589.40
	RE PM	kg/MWh	not specified	0.859

1/…

Abatement Technology

Table 2: Abatement Equipment Control Technology for November 2024.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Technology Type	SO_3 Utilisation (%)
Unit 1	ESP& SO3	Off	SO3 Plant	Off
Unit 2	ESP& SO3	99.08%	SO3 Plant	100.00
Unit 3	ESP& SO3	99.66%	SO3 Plant	100.00
Unit 4	ESP& SO3	99.64%	SO3 Plant	92.33
Unit 5	ESP& SO3	99.42%	SO3 Plant	99.00
Unit 6	ESP& SO3	100.00%	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 November 2024

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.70
Ash Content	27-32 (%)	22.03

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SOx (%)	NOx (%)
North	86.79	79.62	85.58
South	82.78	56.19	87.60

Emissions Reporting
Graph Legend Description

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

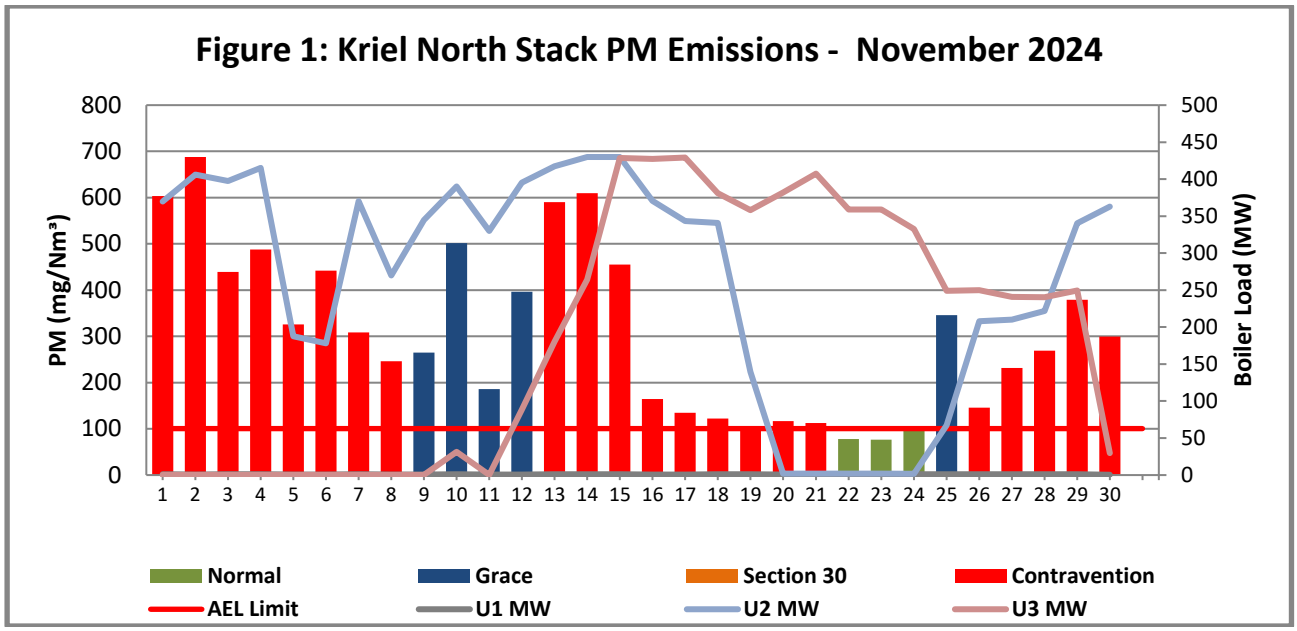

Figure 1: PM emissions for the month of November 2024 against daily emission limit (100 mg/Nm3) for the North Stack.

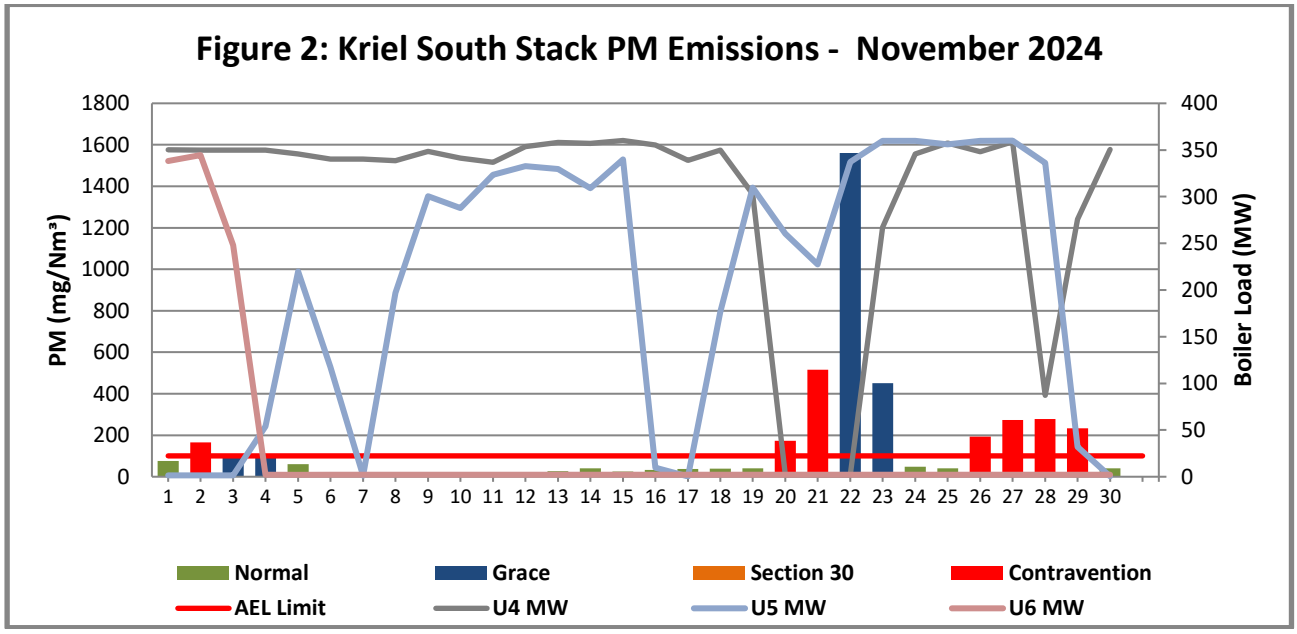

Figure 2: PM emissions for the month of November 2024 against daily emission limit (100 mg/Nm3) for the South Stack.

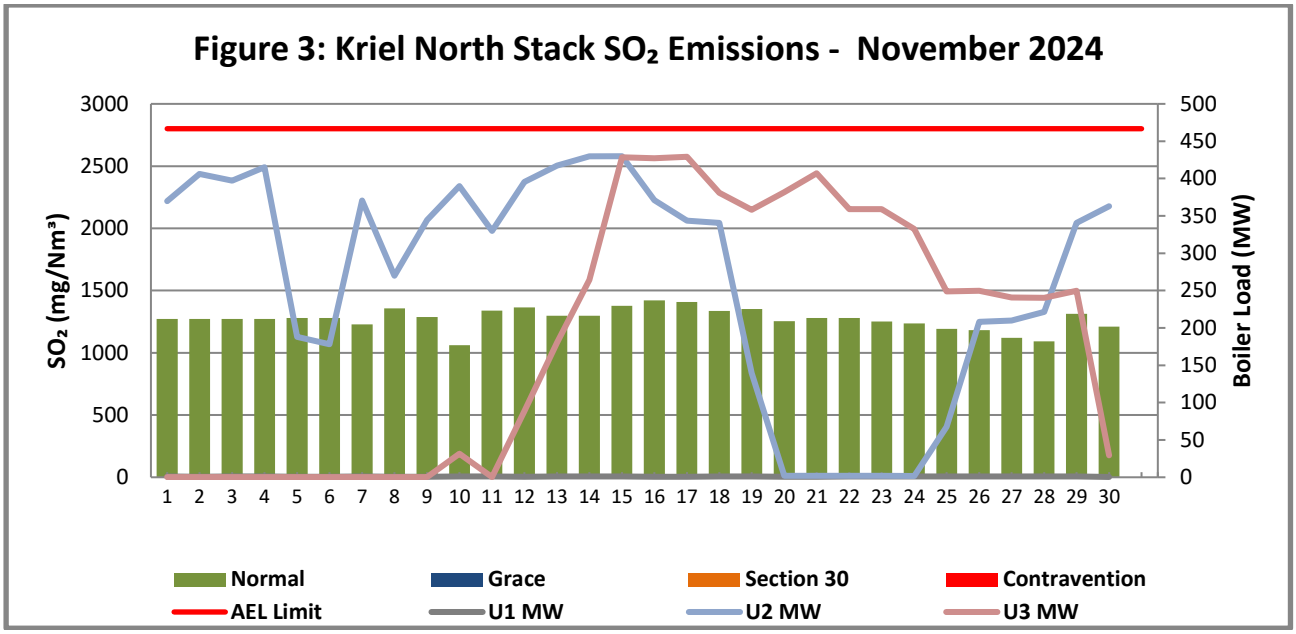

Figure 3. SO_2 emissions for the month of November 2024 against daily emission limit (2800 mg/Nm3) for the North Stack.

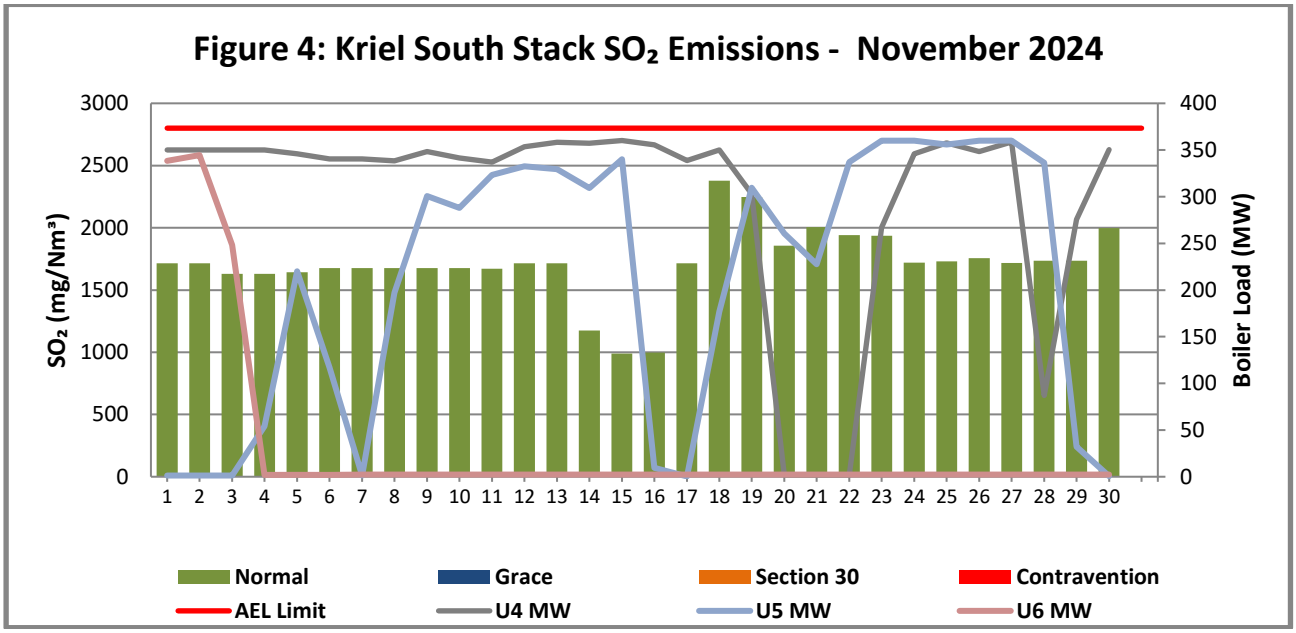

Figure 4. SO_2 emissions for the month of November 2024 against daily emission limit (2800mg/Nm3) for the South Stack.

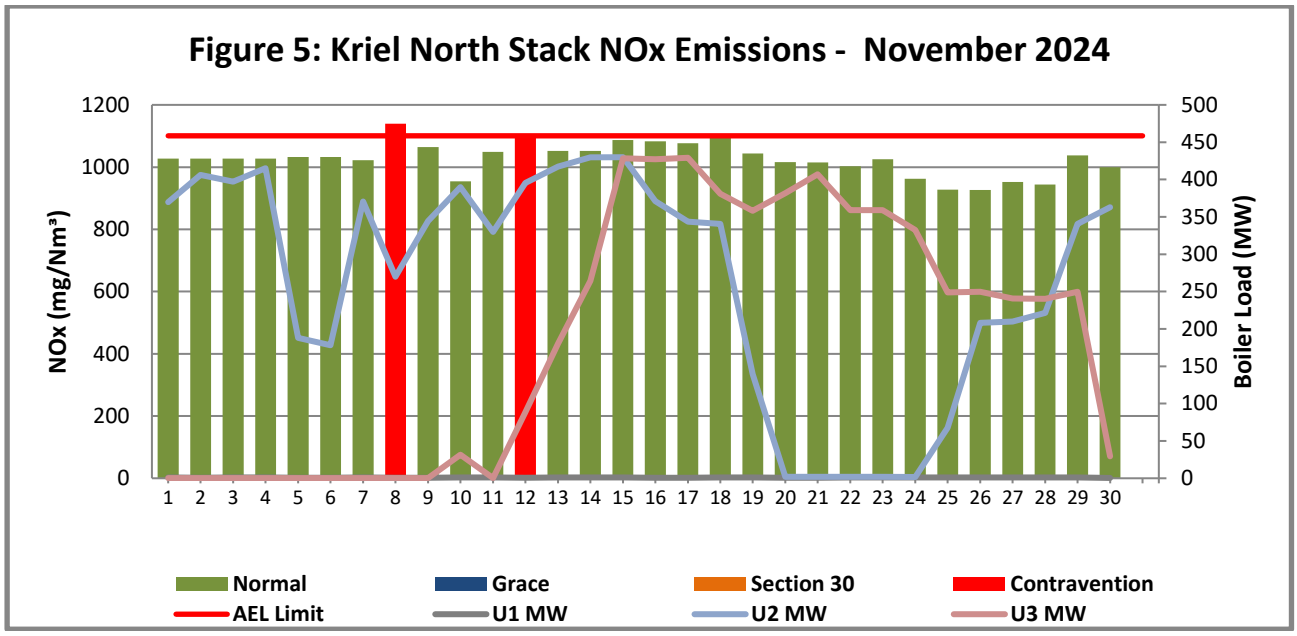

Figure 5. NO_2 emissions for the month of November 2024 against daily emission limit (1100) for the North Stack.

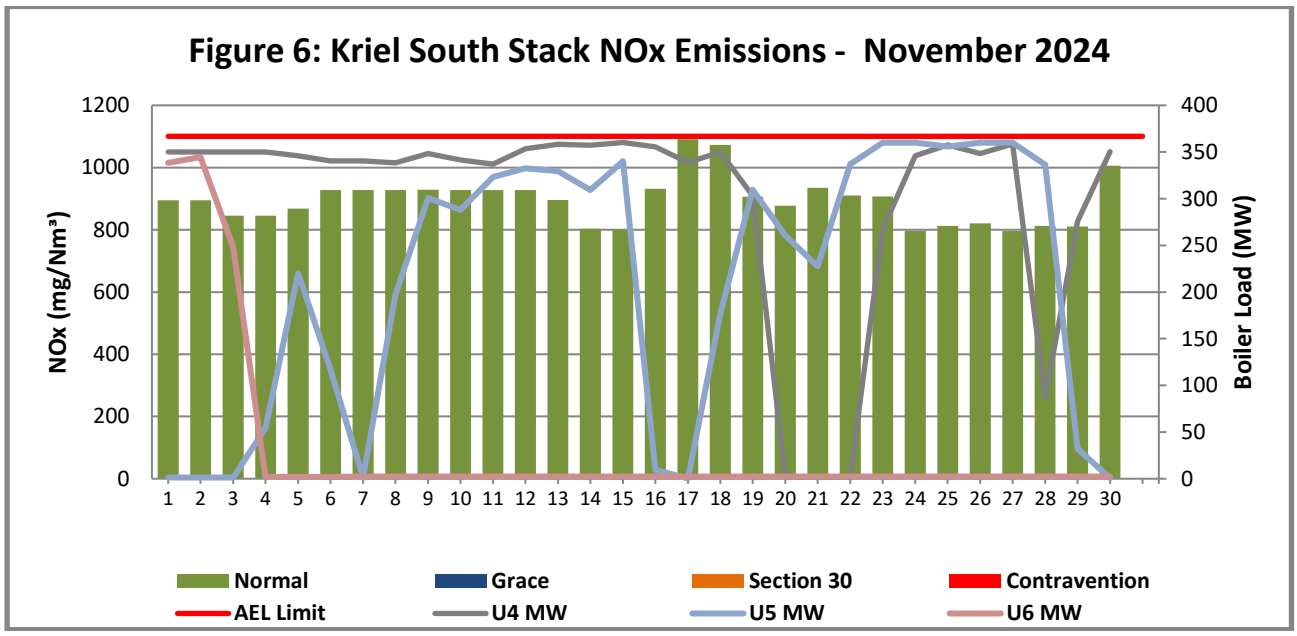

Figure 6. NO_2 emissions for the month of November 2024 against daily emission limit (1100mg/Nm3) for the South Stack.

Table 4: Monthly tonnages for the month November 2024

Unit	PM (tons)	SO_2 (tons)	NO_2 (tons)
SUM	589.4	5 041.4	3 153.0

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 – November 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm³)
North	3	5	0	22	27	303.6
South	19	4	0	7	11	203.3

Table 5.2: Operating days in compliance to SOx AEL Limit - November 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
North	30	0	0	0	0	1 273.0
South	30	0	0	0	0	1 715.1

Table 5.3: Operating days in compliance to NOx AEL Limit – November 2024

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
North	28	0	0	2	2	1 026.8
South	30	0	0	0	0	894.4

Light up information

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

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 2		Unit 2		Unit 2		Unit 3	
Breaker Open (BO)	6:15 am	2024/11/05	3:00 pm	2024/11/08	9:10 am	2024/11/19	1:55 am	2024/11/30
Draught Group (DG) Shut Down (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	10:25 pm	2024/11/19	5:25 pm	2024/12/02
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	00:13:15	DD:HH:MM	02:15:30	DD:HH:MM
Fires in time	6:15 am	2024/11/05	3:00 pm	2024/11/08	4:00 am	2024/11/25	5:45 am	2024/11/12
Synch. to Grid (or BC)	2:30 pm	2024/11/06	1:20 am	2024/11/09	1:35 pm	2024/11/25	5:25 am	2024/11/14

Fires in to BC (duration)	01:08:15	DD:HH:MM	00:10:20	DD:HH:MM	00:09:35	DD:HH:MM	01:23:40	DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2024/11/22	12:00 am	2024/11/22	not > limit	not > limit	12:00 am	2024/11/22
Emissions below limit from BC (duration)	15:09:30	DD:HH:MM	12:22:40	DD:HH:MM	n/a	DD:HH:MM	07:18:35	DD:HH:MM

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	No event		Unit 4		Unit 5		Unit 5	
Breaker Open (BO)			9:55 pm	2024/11/19	BO previously	BO previously	12:50 pm	2024/11/06
Draught Group (DG) Shut Down (SD)			1:20 pm	2024/11/20	n/a	n/a	5:05 pm	2024/11/06
BO to DG SD (duration)		DD:HH:MM	00:15:25	DD:HH:MM	n/a	DD:HH:MM	00:04:15	DD:HH:MM
Fires in time			1:05 am	2024/11/22	5:25 pm	2024/11/04	12:15 am	2024/11/08
Synch. to Grid (or BC)			11:40 pm	2024/11/22	5:20 pm	2024/11/04	5:10 am	2024/11/08
Fires in to BC (duration)		DD:HH:MM	00:22:35	DD:HH:MM		DD:HH:MM	00:04:55	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)		DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

South Stack …Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 5		Unit 5		Unit 6		Unit 4	
Breaker Open (BO)	12:50 am	2024/11/16	10:50 am	2024/11/20	5:10 pm	2024/11/03	12:20 am	2024/11/28
Draught Group (DG) Shut Down (SD)	1:05 pm	2024/11/16	DG did not trip or SD	DG did not trip or SD	8:30 pm	2024/11/04	DG did not trip or SD	DG did not trip or SD

BO to DG SD (duration)	00:12:15	DD:HH:MM	n/a	DD:HH:MM	01:03:20	DD:HH:MM	n/a	DD:HH:MM
Fires in time	3:10 am	2024/11/18	10:50 am	2024/11/20			12:20 am	2024/11/28
Synch. to Grid (or BC)	7:50 am	2024/11/18	5:20 pm	2024/11/21			5:55 am	2024/11/29
Fires in to BC (duration)	00:04:40	DD:HH:MM	01:06:30	DD:HH:MM		DD:HH:MM	01:05:35	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit			6:00 am	2024/11/30
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM	01:00:05	DD:HH:MM

Reasons for emissions poor performance for both stack in November 2024

Table 7: Reasons for emissions poor performance for November 2024

Start Date	Plant	Reason	Effect on Emissions	Action	Feedback	End Date
CEMS Issues						
25/07/2024	South Smoke stack	South stack Gaseous monitors commisioning (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. Currently in procurement phase.	SICK Automation will be onsite from 01/10/2024 to complete the gas analyser replacement project. (Responsible: C&I Maintenance)	COMPLETED 14/11/2024
23/08/2024	PI (Process Information) system not available	PI (Process Information) system not available due to the HMI Upgrade project with Siemens.	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)	Unit 5 PI Upgrade complete 01/11/2024
01/10/2024	North Smoke stack	North stack Gaseous monitors commissioning (Installation of	Reliability Compromised - No gaseous readings for	SICK Monitors installed. C&I and SICK Automation Technician to	SICK Automation will be onsite from 01/10/2024 to	COMPLETED 14/11/2024

		SICK Automation)	the North stack emissions	commence with commisioning	complete the gas analyser replacement project. (Responsible: C&I Maintenance)	
01/10/2024	North Smoke stack	PM Monitor not calibrated	Unreliable PM values	Sick Automation to come onsite and calibrate PM Monitor	Sick Automation Technician will be on site from 09/10/2024 (Responsible: C&I Maintenance)	COMPLETED 09/10/2024
11/11/2024	South Smoke stack	Unit 5 PI System currently off. CIE waiting for SIEMENS to come on site and fix.	Stuck readings for Unit 5 tags and South stack Gaseous readings	SIEMENS to attend to HMI errors	SIEMENS notified of Unit 5 PI unavailability (C&I Engineering). PI System is online as of 13h00 22/11/2024.	COMPLETED 22/11/2024
Plant related issues						
01/11/2024	South Smoke stack	Unit 5 SO3 temperature not increasing	No SO3 Dosing on the unit	EMD to attend heater defects	EMD attended to defect	01/11/2024
01/11/2024	North and South Smoke stack	18B Overland conveyor trip on line fault	No transporting of ash	CID to attend to defect	CID attended to defect	01/11/2024
01/11/2024	South Smoke stack	Main silo 4B Conditioner blocked.	Unit 4 Main Silo and Transfer Silo on Max Level, no transporting of ash possible	MMD to unblock 4B Ash conditioner	MMD attended to defect	02/11/2024
02/11/2024	North Smoke stack	Unit 2 SO3 not converting	No SO3 Dosing on the unit	EMD to attend heater defects	EMD attended to defect	02/11/2024
02/11/2024	South Smoke stack	Unit 6 Blow tanks fail to transport ash	No transporting of ash	MMD to attend both Blow tank defects	MMD attended to defect	02/11/2024
03/11/2024	South Smoke stack	Unit 4 High hoppers due to Back log of blocked 4B Ash conditioner	Increase in emissions	OPS to ensure continuous transportation of ash	Hopper alarms dropping from 22 to 17	03/11/2024
03/11/2024	South Smoke stack	Unit 5 Blow tanks fail to start	No transporting of ash	MMD and CID to attend to defects	Defects attended	03/11/2024
04/11/2024	South Smoke stack	Unit 5 SO3 temperature not increasing	No SO3 Dosing on the unit	EMD to attend heater defects	EMD attended to defect	04/11/2024
04/11/2024	South Smoke stack	Unit 5 Blow tanks not transporting (5.1 Dust inlet	No transporting of ash	MMD and CID to attend to defects	Defects attended	04/11/2024

		valve fails to close, 5.2 Air Inlet valve fails to open)				
05/11/2024	South Smoke stack	Unit 5 half-load conditions due to RH Draught Group unavailable	No SO3 Dosing on the unit	Boiler Maintenance to return RH DG	RH DG back in service	13/11/2024
06/11/2024	South Smoke stack	Unit 4 Dry Dust line F5 Isolated, Key lost.	No transporting of ash on the line. Increase in hopper alarms	OPS to locate key and De-Isolate ash line	Key found and Line back in service	06/11/2024
07/11/2024	North Smoke stack	Unit 3 LH Precip off due to broken Castlet Key.	Increase in emissions due to no rapping system not available	OEM to come on site with spare Castlet key and re-energize LH ESP	OEM coming on site 15/11/2024	15/11/2024
12/11/2024	North Smoke stack	Unit 2 SO3 pump fails to start	No SO3 Dosing on the unit	EMD to attend pump failure	Defect attended	12/11/2024
14/11/2024	North Smoke stack	Units 2 and Unit 3 on Oil burner support	Increase on emissions	Oil support to be removed when boiler is stable	Oil Support removed from both Units	14/11/2024
18/11/2024	North Smoke stack	Unit 3 Dry Dust Plant with high hoppers 15, due to 3 ash lines with seal failures	Increase in Hopper levels to 20, causing reintry to flue gas stream	MMD and CID to attend to defects	Defects attended	18/11/2024
19/11/2024	North smoke stack	Unit 2 Blow tanks 2.1 and 2.2 on PTW	Increase in Hopper levels to 15, causing reintry to flue gas stream	CID to attend to defect	Defects attended	19/11/2024
19/11/2024	South Smoke stack	Unit 5 with 4 Plate Rappers and 4 Wire Rappers stuck on opportunity/ not running	Rapping system not in optimal condition, increasing the amount of dust through the flue gas stream. Increase in emissions.	EMD and MMD(Vanedi) to revive stuck rappers	Defects to be attended on opportunity	30/11/2024
19/11/2024	North Smoke stack	Unit 3 with multiple ash line defects and defective blow tanks	Unit 3 with 18 alarms. Dust reintry to flue gas stream	MMD and CID to attend to defects	Defects attended	19/11/2024
19/11/2024	North Smoke stack	Unit 2 with defective blow tanks	Unit 2 with 14 alarms. Dust reintry to flue gas stream	MMD and CID to attend to defects	Defects attended	20/11/2024
20/11/2024	South Smoke stack	Unit 5 Blow tanks on PTW (5.1 Fails to transport, 5.2	No transportation of ash, increasing	MMD and CID to attend to defects	Blow tank 5.2 Defects attended. 5.1 has no spare	21/11/2024

		Dust inlet seal failure)	hopper levels to 32		Dust inlet solenoids to complete blow tank recovery.	
26/11/2024	North smoke stack	Unit 2 on low-load 210MW, unit on Oil burner support.	SO3 not in-service	Operating to increase load when unit is stable	Load increased, load at 320MW	28/11/2024
28/11/2024	North smoke stack	Unit 3 low load at 230MW, unit is on Oil burner support	SO3 not in-service	Operating to increase load when unit is stable	Unit load on 250MW, Oil burners still in service	29/11/2024
28/11/2024	North smoke stack	Unit 2 SO3 not in service due to Condensate in pipeline	SO3 not in-service	MMD/TE Filters, to bleed condensate out of the pipe-work, and return SO3 Pump in service.	Defects curently being attended to	30/11/2024

Complaints Register

Table 8: Complaint for the month of November 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 November 2024.					

General

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