Eskom

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Date:
17 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 MARCH 2025

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 March 2025. 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 March 2025

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of March 2025
	Coal	Tons/month	1 227 600	495 382.00
	Fuel Oil	Tons/month	8 000	5 583.08
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity)**	**Production Rate in Month of March 2025**
	Energy	GWh	3 000/2 232	779.360
	Ash	Tons/month	320 000	526.777
	RE PM	kg/MWh	not specified	0.600

1/…

Abatement Technology

Table 2: Abatement Equipment Control Technology for March 2025.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Technology Type	SO_3 Utilisation (%)
Unit 1	ESP& SO3	99.49%	SO3 Plant	100.00
Unit 2	ESP& SO3	99.47%	SO3 Plant	100.00
Unit 3	ESP& SO3	99.42%	SO3 Plant	100.00
Unit 4	ESP& SO3	99.58%	SO3 Plant	80.36
Unit 5	ESP& SO3	99.47%	SO3 Plant	100.00
Unit 6	ESP& SO3	Off	SO3 Plant	Off

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 March 2025

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.724
Ash Content	27-32 (%)	22.962

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SOx (%)	NOx (%)
North	99.60	96.44	99.60
South	78.36	85.50	13.89

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

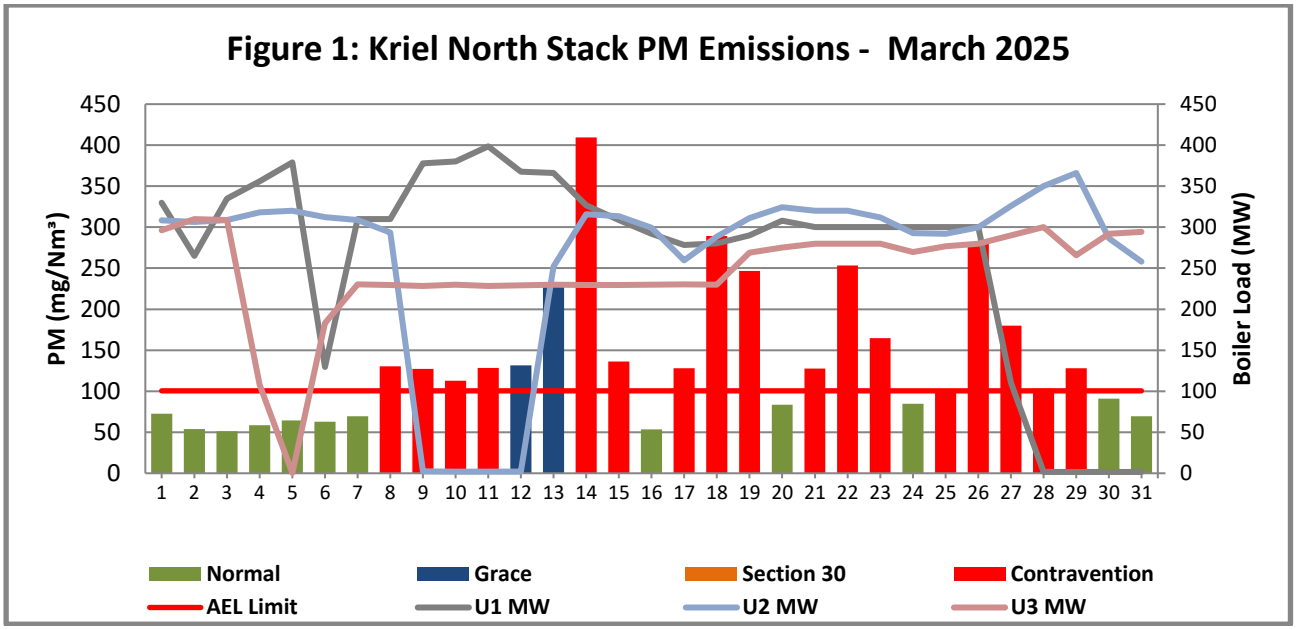

Figure 1: PM emissions for the month of March 2025 against daily emission limit (100 mg/Nm3) for the North Stack.

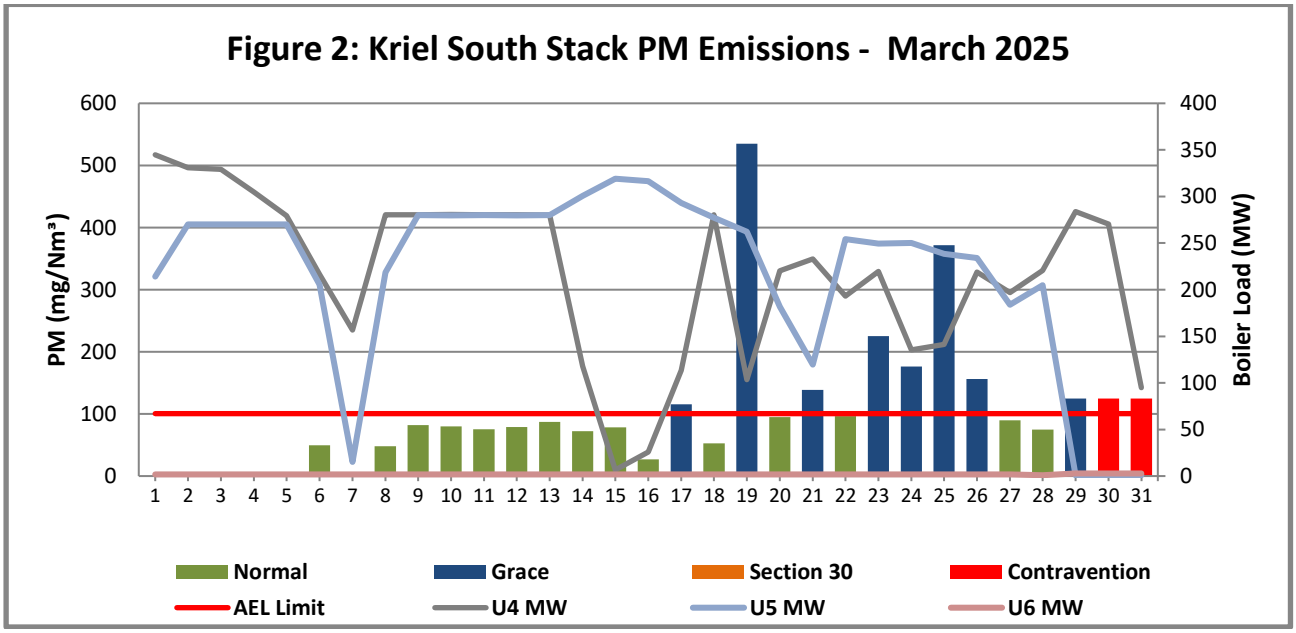

Figure 2: PM emissions for the month of March 2025 against daily emission limit (100 mg/Nm3) for the South Stack. The DCS T3000 System was upgraded from 26/02/2025 to 06/03/ 2025 and Unit 6 DCS T3000 was not accessible. As a result, the South Stack Particulate Matter Emissions Raw Data was not available from the 27/02/2025 to 05/03/2025.

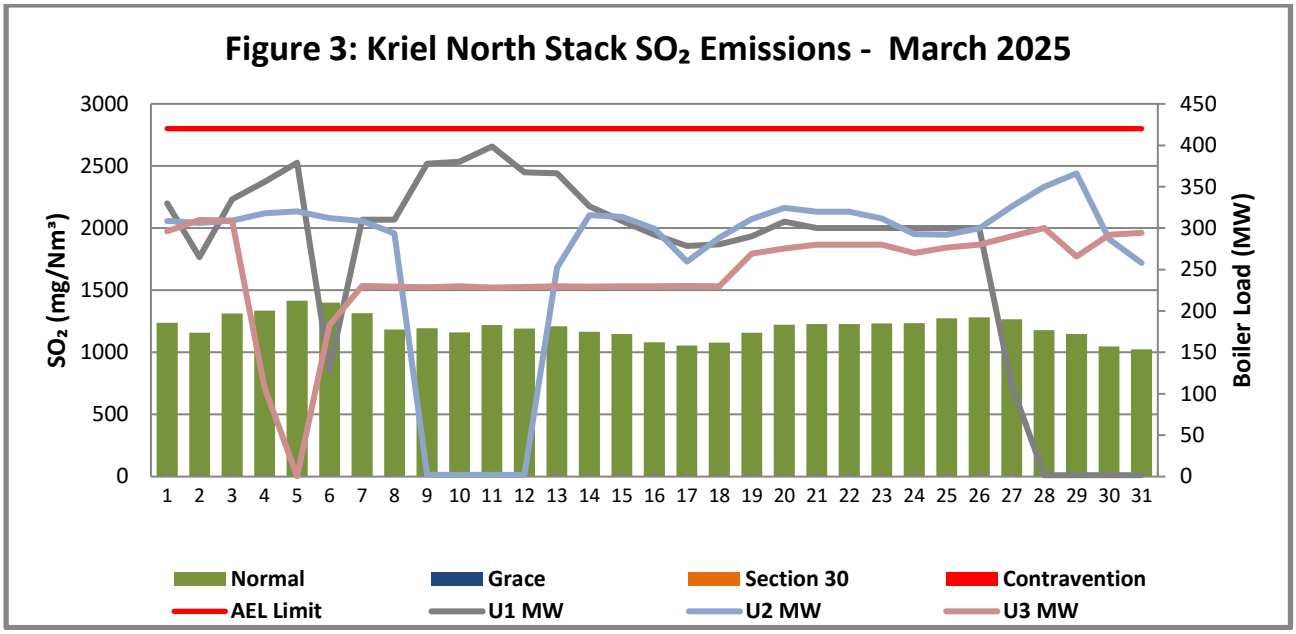

Figure 3. SO_2 emissions for the month of March 2025 against daily emission limit (2800 mg/Nm3) for the North Stack.

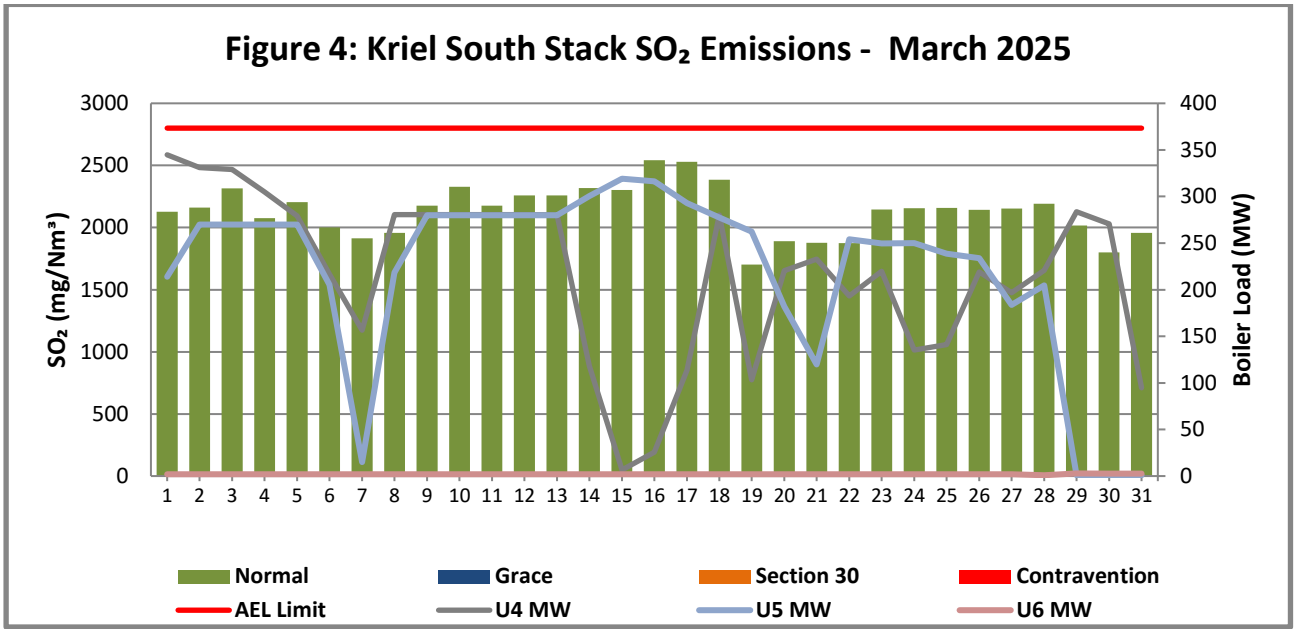

***Figure 4. SO_2 emissions for the month of March 2025 against daily emission limit (2800mg/Nm3) for the South Stack*.**

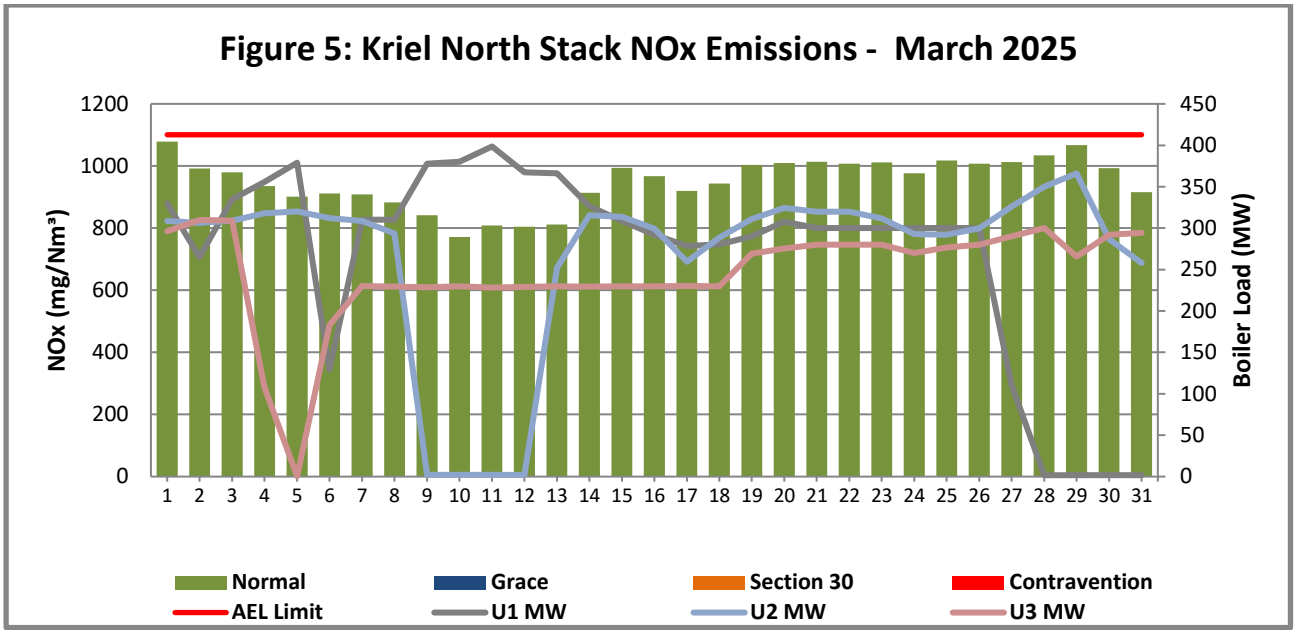

Figure 5. NO_2 emissions for the month of March 2025 against daily emission limit (1100) for the North Stack.

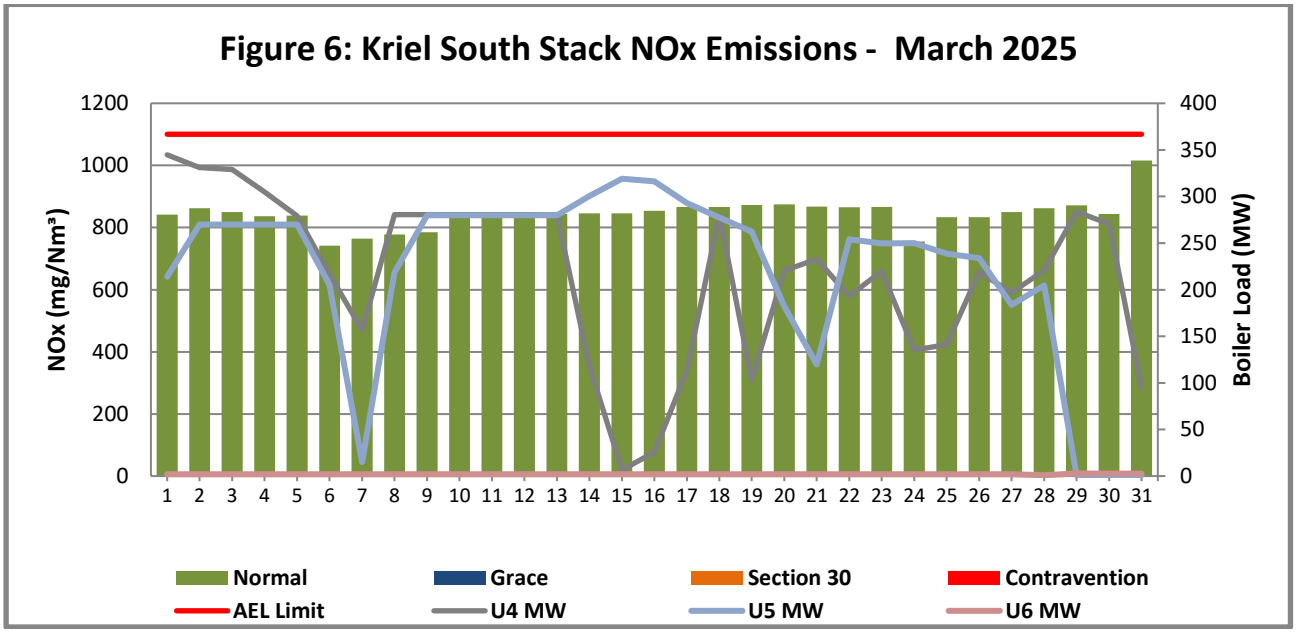

Figure 6. NO_2 emissions for the month of March 2025 against daily emission limit (1100mg/Nm3) for the South Stack.

Table 4: Monthly tonnages for the month March 2025

Unit	PM (tons)	SO_2 (tons)	NO_2 (tons)
SUM	526.8	7 283.4	4 117.0

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 – March 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm^3)
North	12	2	0	17	19	136.5
South	20	8	0	2	10	116.8

Table 5.2: Operating days in compliance to SOx AEL Limit - March 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm^3)
North	North	31	0	0	0	1 206.0
South	South	31	0	0	0	2 132.2

Table 5.3: Operating days in compliance to NOx AEL Limit – March 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm^3)
North	31	0	0	0	0	949.5
South	31	0	0	0	0	844.0

Light up information

Table 6: PM Start-up information for the month of March 2025

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 2		Unit 3		Unit 3	
Breaker Open (BO)	12:45 am	2025/03/06	11:45 pm	2025/03/08			8:25 am	2025/03/04
Draught Group (DG) Shut Down (SD)	1:00 am	2025/03/06	12:05 pm	2025/03/09			9:40 am	2025/03/04
BO to DG SD (duration)	00:00:15	DD:HH:MM	00:12:20	DD:HH:MM		DD:HH:MM	00:01:15	DD:HH:MM
Fires in time	9:15 am	2025/03/06	5:15 pm	2025/03/12			2:05 pm	2025/03/05
Synch. to Grid (or BC)	1:25 pm	2025/03/06	1:20 am	2025/03/13			3:40 am	2025/03/06

Fires in to BC (duration)	00:04:10	DD:HH:MM	00:08:05	DD:HH:MM		DD:HH:MM	00:13:35	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	12:00 am	2025/03/16			not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	02:22:40	DD:HH:MM		DD:HH:MM	n/a	DD:HH:MM

North Stack …Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		No event		No event		No event	
Breaker Open (BO)	8:55 am	2025/03/27						
Draught Group (DG) Shut Down (SD)	11:35 pm	2025/03/27						
BO to DG SD (duration)	00:14:40	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD:HH:MM		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)			6:35 pm	2025/03/06	10:05 am	2025/03/14	1:20 pm	2025/03/19
Draught Group (DG) Shut Down (SD)			1:55 am	2025/03/07	3:00 am	2025/03/16	3:45 pm	2025/03/19
BO to DG SD (duration)		DD:HH:MM	00:07:20	DD:HH:MM	01:16:55	DD:HH:MM	00:02:25	DD:HH:MM
Fires in time			5:10 am	2025/03/07	1:40 am	2025/03/17	7:55 pm	2025/03/19
Synch. to Grid (or BC)			9:05 am	2025/03/07	1:35 pm	2025/03/17	2:10 am	2025/03/20
Fires in to BC (duration)		DD:HH:MM	00:03:55	DD:HH:MM	00:11:55	DD:HH:MM	00:06:15	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 4		Unit 4		Unit 4		Unit 5	
Breaker Open (BO)	8:55 pm	2025/03/21	2:40 pm	2025/03/24	3:45 pm	2025/03/27	BO previously	BO previously
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	3:50 pm	2025/03/24	DG did not trip or SD	DG did not trip or SD	n/a	n/a
BO to DG SD (duration)	n/a	DD:HH:MM	00:01:10	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM
Fires in time	8:55 pm	2025/03/21	11:45 pm	2025/03/24	3:45 pm	2025/03/27		
Synch. to Grid (or BC)	2:30 am	2025/03/22	4:30 pm	2025/03/25	7:05 pm	2025/03/27		
Fires in to BC (duration)	00:05:35	DD:HH:MM	00:16:45	DD:HH:MM	00:03:20	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	2:40 pm	2025/03/24	12:00 am	2025/03/27	not > limit	not > limit		
Emissions below limit	02:12:10	DD:HH:MM	01:07:30	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM

from BC (duration)								

Reasons for emissions poor performance for both stacks in March 2025

Table 7: Reasons for emissions poor performance for March 2025

Start Date	Plant	Reason	Impact on Emissions	Actions	Feedback	Completion Date
	Continous Emission Monitoring Systems					
01/03/2025-05/03/2025	South Stack	No PM readings due to unit 6 DCS upgrade	No reporting	C&I Engineering to reinstate the PM monitor readings	Completed	06/03/2025
07/03/2025	South Stack	PM monitor nonresponsive	Maximum monitor range manually inputed as there was unit 4 light	C&I Engineering to inspect & reset the monitor	Completed	07/03/2025
	Plant Related Issues					
08/03/2025-11/03/2025	North Stack	Unit 3 dosing pump kept on tripping due to low load & load fluctuation due to A EFP not available	High emissions due to SO3 injection	MMD turbine to attend to A EFP defects	Completed	18/03/2025
14/03/2025-15/03/2025	North Stack	Unit 2 Sulphur dosing pump shutdown due to sulphur leak on the sulphur burner.	High emissions due to SO3 injection	Operating to purge the SO3 plant	Completed	18/03/2025
17/03/2025-19/03/2025	North Stack	Steam leak repairs; unit 1,2 and 3 SO3 plant off	High emissions due to SO3 injection	MMD Boiler to carry the steam leak repair	Completed	19/03/2025
17/03/2025-19/03/2025	North Stack	Steam leak repairs; unit 1,2 and 3 SO3 plant off	High emissions due to SO3 injection	MMD Boiler to carry the steam leak repair	Completed	19/03/2025
21/03/2025	North Stack	Unit 2 SO3 plant dosing pump kept on tripping on low sulphur temperature.	High emissions due to SO3 injection	MMD Boiler to continuously bleed the steam lines	Completed	22/03/2025
22/03/2025	North Stack	Unit 2 SO3 plant dosing pump kept on tripping on low sulphur temperature.	High emissions due to SO3 injection	MMD Boiler to continuously bleed the steam lines	Completed	22/03/2025
23/03/2025	North Stack	Unit 2 &3 SO3 plant dosing pumps tripped due to low load	High emissions due to SO3 injection			

25/03/2025-27/03/2025	North Stack	Unblocking and flushing of the north steam supply line. Steam supply line isolated and SO3 plant off	High emissions due to SO3 injection	MMD Boiler to cut, unblock and flush the steam lines	Completed	27/03/2025
28/03/2025	North Stack	Unit 2 SO3 plant dosing pump kept on tripping on low sulphur temperature.	High emissions due to SO3 injection	MMD Boiler to continously bleed the steam lines	Completed	28/03/2025
24/03/2025	South Stack	South Steam Repairs	High emissions due to SO3 injection	MMD Boiler to carry the steam leak repair	Completed	25/03/2025
29/03/2025	North Stack	Unit 3 SO3 dosing pump tripped due to load load	High emissions due to SO3 injection	EMD to attend to LH Air Heater motor trip	Completed	29/03/2026

Complaints Register

Table 8: Complaint for the month of March 2025

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 March 2025.					

General

Kriel Power Station Distributed Control System (DCS) Human-Machine Interface (HMI) hardware and software on Unit 6 was being upgraded from Version 4.2 to Version 9.2 including the Plant Information (PI) System. The reason for this upgrade project was due to obsolescence of the DCS T3000 system. The DCS T3000 System was upgraded from 26th of February 2025 to 06th of March 2025 and Unit 6 DCS T3000 was not accessible.

Below is the sequence of events for the south stack from the 1st of March 2025 until the 5th of March 2025.

Date	Unit 4	Unit 5	Unit 6	Comments
2025/02/27 14:20	Unit 4 offload		OFF	
2025/03/01 05:15	Breaker Close + 24 hours	Unit 5 Light Up	OFF	Grace Period
2025/03/02 02:40		Breaker Close + 24 hours	OFF	Grace Period
2025/03/03 02:40	On load	On load	OFF	Grace Period Ends
2025/03/04	On load	On load	OFF	
2025/03/05	On Load	On load	OFF	

On the 3rd of March 2025 spot test with two runs was conducted during the day and the average for the two runs was 183 mg/Nm^3. At the time the runs were conducted Unit 4 SO_3 plant dosing pump

was put in service in the early hours of the 3rd of March 2025. Unit 5 SO_3 plant was in service with no issues. The Electrostatic Precipitator (ESP) in both units were in service with a sum of four fields that tripped undervoltage protection combined.

On the 4th of March 2025 three runs for the spot test was conducted during the day and the average for the three runs was 108 mg/Nm^3. In the early hours of the of the 04th of March 2025 Unit 4 dosing pump was off due to communication fault and the issue was sorted by 11:00. The pump was then putback in service thereafter. Unit 5 SO_3 plant was in service with no issues. The Electrostatic Precipitator (ESP) in both units were in service with a sum of three fields that tripped undervoltage protection combined.

On the 5th of March 2025 both Unit 4 and Unit 5 SO_3 Plant was in service with no issues. The Electrostatic Precipitator (ESP) in both units were in service with a sum of four fields that tripped undervoltage protection combined. There was no spot test carried out on the 05th of March 2025 due to the unavailability of the service provider, however the plant conditions were stable, and the emissions were below the limit by the 06th of March 2025.

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