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Date:
22 December 2025

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Dear Ms. Nompumelelo Simelane

Ref: Kendal Power Station AEL (17/4/AEL/MP312/11/15)

SUBMISSION OF KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF NOVEMBER 2025.

This is a monthly report required in terms of Section 7.4 in the Kendal Power Station's Atmospheric Emission License. The emissions are for Eskom Kendal Power Station.

Compiled by:

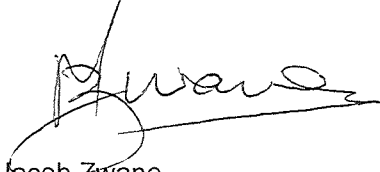

Pfarelo Tshidzumba
OFFICER ENVIRONMENTAL MANAGEMENT - KENDAL POWER STATION
Date: 22/12/2025

Supported by:


Solly Chokoe
ENVIRONMENTAL MANAGER- KENDAL POWER STATION
Date: 22/12/2025

KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF NOVEMBER 2025

Verified by



Jacob Zwane

BOILER ENGINEERING: SENIOR SYSTEM ENGINEER- KENDAL POWER STATION

Date: 22/12/2025

Validated by



Tendani Rasivhetshela

BOILER ENGINEERING MANAGER-KENDAL POWER STATION

Date: 22/12/2025

Supported by



Phindile Takane

ENGINEERING MANAGER-KENDAL POWER STATION

Date: 22-12-2025

Approved by



Tshepiso Temo

GENERAL MANAGER-KENDAL POWER STATION

Date: 22/12/2025

KENDAL POWER STATION MONTHLY EMISSION REPORT

Atmospheric Emission License: 17/4/AEL/MP312/11/15



1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Max Permitted Consumption Rate	Consumption Rate Nov-2025
	Coal	Tons	2 260 000	419 169
	Fuel Oil	Tons	5 000	18092.590
Production Rates	Product / By-Product Name	Units	Max Production Capacity Permitted	Indicative Production Rate Nov-2025
	Energy	GWh	2 963.520	723.646
	Ash	Tons	770 000	129 104.052
	RE Ash	kg/MWh	not specified	0.496

Note: Max energy rate = AEL capacity [4,116 MW] × 24 hrs × days in month ÷ 1,000 (to convert to GWh).

Fuel oil: The station is exceeding the fuel oil consumption limit due to milling plant failures. Most units do not have standby mills because of defective girth gears and pinions that are awaiting spare-part delivery. Worn girth gears and pinions are causing high drive train vibrations, resulting in a high failure rate of mill motors and gearboxes. Consequently, Kendal's cumulative fuel oil consumption has increased, mainly because units are running on fuel oil support while ongoing maintenance is in progress. The station is actively working to resolve the milling plant issues through the milling plant recovery plan.

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	16-24 (MJ/kg)	19.060
Sulphur Content	%	<1 (%)	0.700
Ash Content	%	40 (%)	30.800

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	Daily Limit		
	PM	SO ₂	NO _x
Unit 1	100	3000	750
Unit 2	100	3000	750
Unit 3	50	3000	750
Unit 4	50	3000	750
Unit 5	100	3000	750
Unit 6	50	3000	750

There is no Sulphur value for SO₃ utilization due to switch failure on the server, however DCS signals used for its tripping alarms were used to get its utilization values. Sulphur flow will be available once we have commissioned the new PI system.

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	ESP Efficiency	Technology Type	SO ₃ Plant Utilization
Unit 1	ESP + SO ₃	99.913%	SO ₃	80.0%
Unit 2	ESP + SO ₃	Off-line	SO ₃	Off-line
Unit 3	ESP + SO ₃	99.897%	SO ₃	56.7%
Unit 4	ESP + SO ₃	97.237%	SO ₃	Off-line
Unit 5	ESP + SO ₃	99.170%	SO ₃	40.0%
Unit 6	ESP + SO ₃	99.886%	SO ₃	63.3%

Note: The ESP plant does not have a bypass mode; therefore, it operates at 100% utilization.

5 DATA RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO	O ₂
Unit 1	99.0	100.0	99.0	99.6
Unit 2	Off	Off	Off	Off
Unit 3	100.0	100.0	93.8	100.0
Unit 4	16.7	100.0	100.0	100.0
Unit 5	98.2	100.0	96.3	100.0
Unit 6	100.0	100.0	100.0	100.0

Note: NO_x emissions are measured as NO in PPM. The final NO_x value is expressed as total NO₂ equivalent.

6 EMISSION PERFORMANCE

Table 6.1 Monthly tonnages for- November 2025

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	27.7	1,955	529
Unit 2	Off	Off	Off
Unit 3	21.0	1,166	240
Unit 4	84.7	252	77
Unit 5	198.2	1,583	466
Unit 6	27.3	1,388	506
SUM	358.93	6,346	1,820

Table 6.2 PM AEL Daily Compliance- November 2025

Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm ³)
Unit 1	28	1	0	0	1	23.5
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	17	3	0	0	3	31.4
Unit 4	0	0	0	2	2	3,266.0
Unit 5	0	2	0	17	19	223.1
Unit 6	18	4	0	0	4	40.6
SUM	63	10	0	19	29	

Table 6.3 SO₂ AEL Daily Compliance- November 2025

Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm ³)
Unit 1	30	0	0	0	0	1,609.2
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	22	0	0	0	0	1,517.2
Unit 4	6	0	0	0	0	1,884.0
Unit 5	20	0	0	0	0	1,592.8
Unit 6	27	0	0	0	0	1,884.4
SUM	105	0	0	0	0	

Table 6.4: NO_x AEL Daily Compliance- November 2025

Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm ³)
Unit 1	30	0	0	0	0	419.8
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	22	0	0	0	0	302.1
Unit 4	6	0	0	0	0	569.9
Unit 5	20	0	0	0	0	463.2
Unit 6	23	1	0	3	4	660.7
SUM	101	1	0	3	4	

Table 6.5: 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

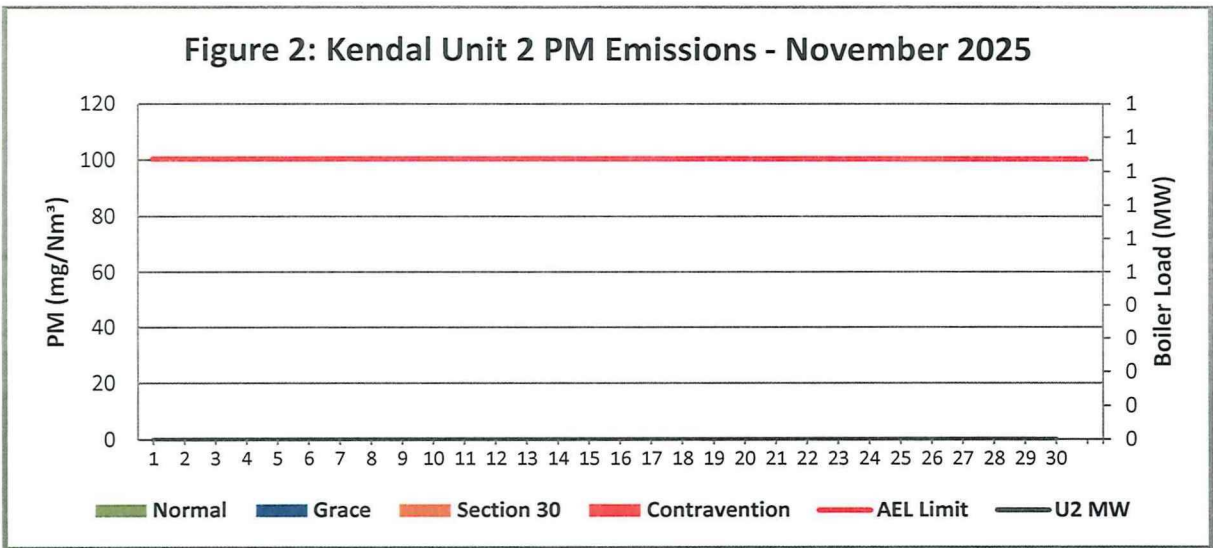
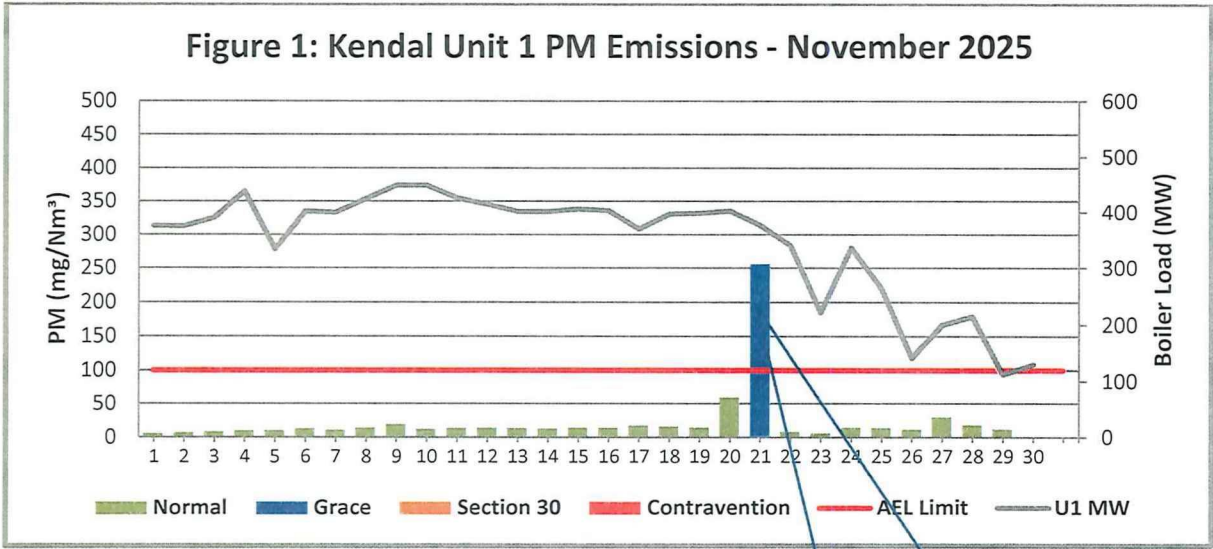
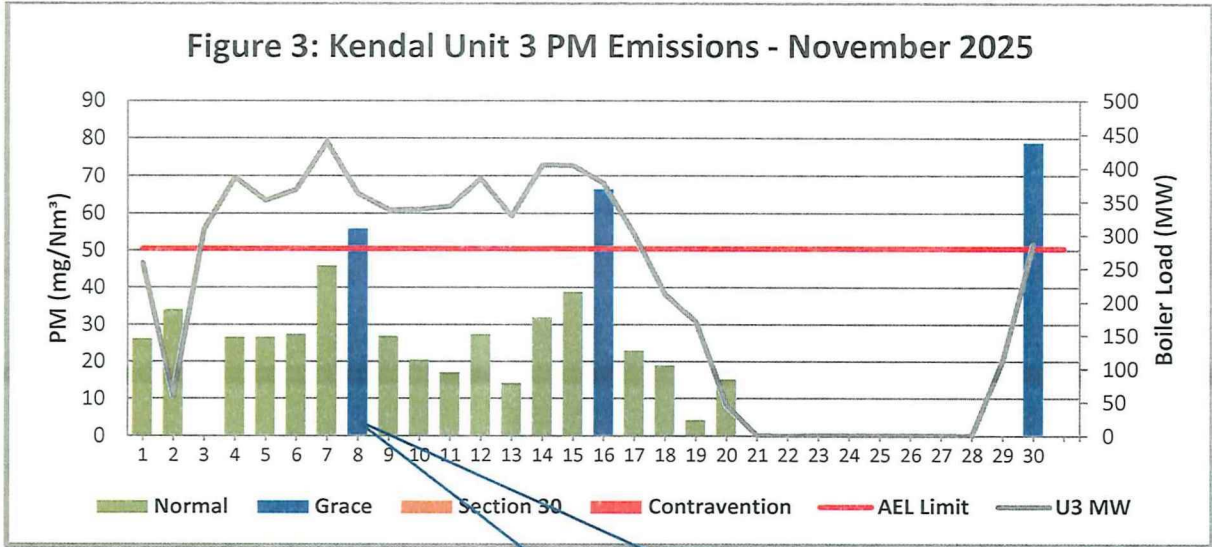
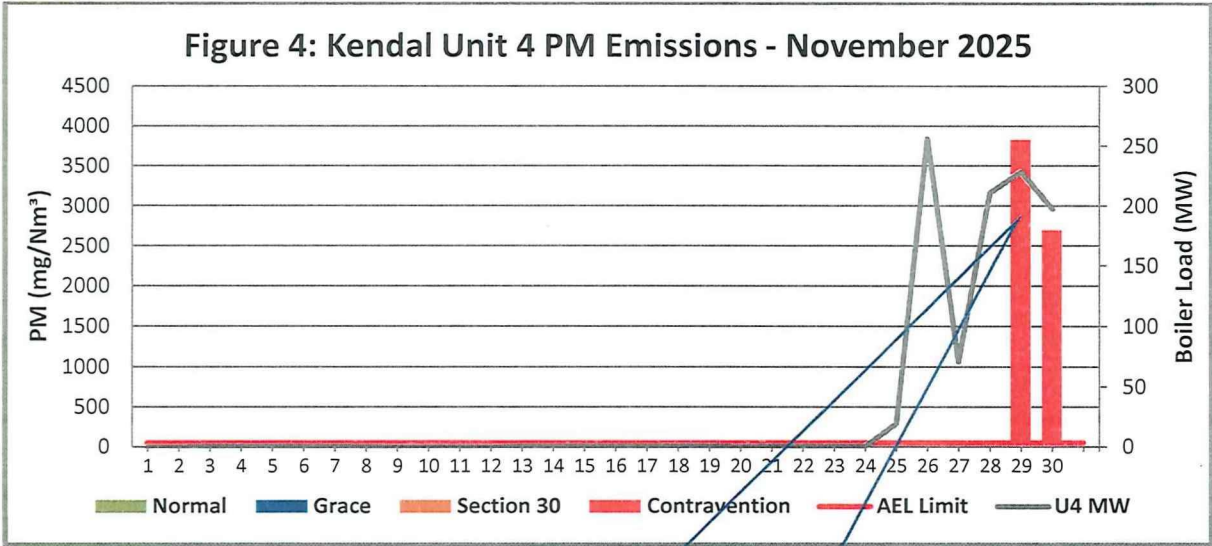


Figure 3: Kendal Unit 3 PM Emissions - November 2025



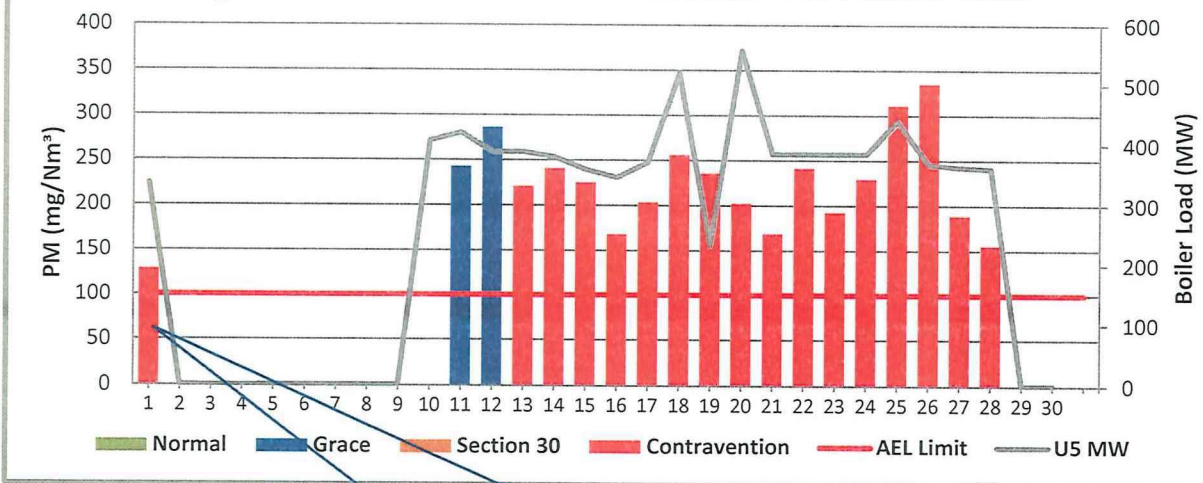
High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 50 mg/Nm³ on Unit 3, were attributed to soot blowing that was unavailable due to a faulty cable, and the SO₂ injector lance which was found to be leaking. Field 21 experienced repeated trips caused by DC link faults, while Field 22 remained offline due to a faulty fan. Field 14 failed to start and tripped on high voltage, and Field 24 encountered a high-voltage fault with 125A fuses blown. Additionally, CE Rapper No. 4 LH was tripping, and CE Rapper No. 1 RH was running on local control.

Figure 4: Kendal Unit 4 PM Emissions - November 2025



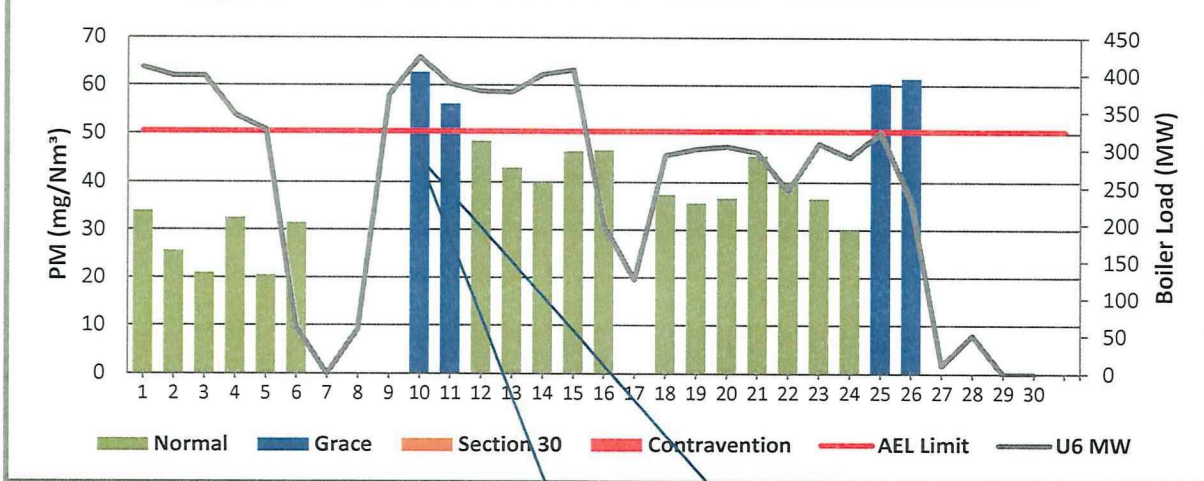
Unit 4 was supplemented with fuel oil supply during start up and was experiencing LH/RH forced draft fan vibration. Low BETs due to reduced load had resulted in SO₂ plant temperatures dropping below 110 °C. LH Dust Extractor Rapper 5 was tripping on overload, while F16 and F35 were scheduled for commissioning. F45 had a high-temperature fault, and F36 was operating in local control. Additionally, LH Induced Draft (ID) fan issues were impacting BET performance. Cladding and lagging on the Fisher valves needed to be reinstated.

Figure 5: Kendal Unit 5 PM Emissions - November 2025



High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 100 mg/Nm³ on Unit 5, were attributed to structural damage that was identified on fields F11, F12, F21, and F22. 5A mill was shut down due to unknown defective classifiers, and 5D mill was put in service, which affected the combustion process and caused disturbances in PM emissions. Field 35 was operating in local mode because of a communications bus issue, while fields 12, 27, 43, and 44 were tripping due to high ash backlogs. Additionally, fields were frequently tripping because of undervoltage, suspected to be caused by wire breakage. The SO₃ plant was offline due to low steam temperature.

Figure 6: Kendal Unit 6 PM Emissions - November 2025



High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 50 mg/Nm³ in Unit 6, were attributed to electrostatic precipitator (ESP) fields that were experiencing undervoltage faults. Fields 11 and 21 were permanently out of commission due to structural damage, which affected the performance of fields 21/26. BET readings indicated a temperature imbalance of 114 °C and 132 °C. The SO₃ plant was on hold mode due to low steam temperature, and CE Rappers 1 and 2 were frequently tripping.

Figure 7: Kendal Unit 1 SO₂ Emissions - November 2025

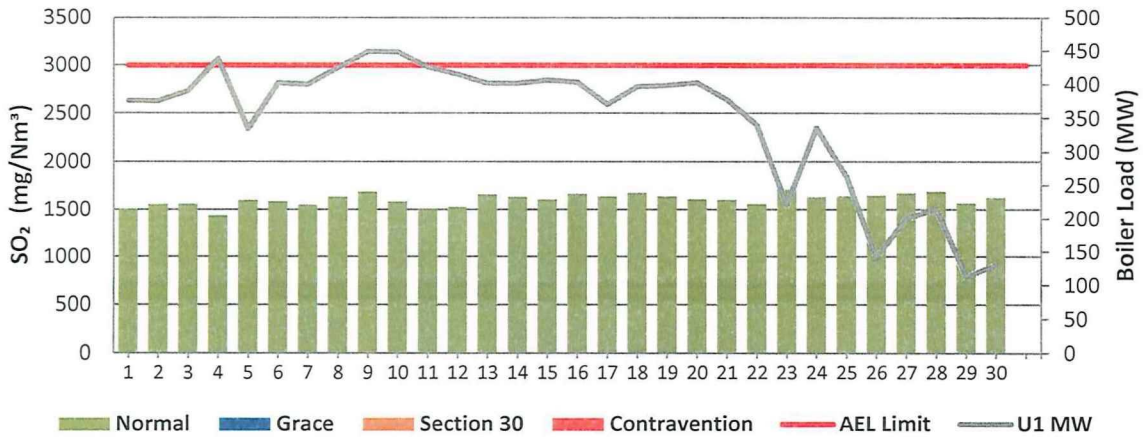


Figure 8: Kendal Unit 2 SO₂ Emissions - November 2025

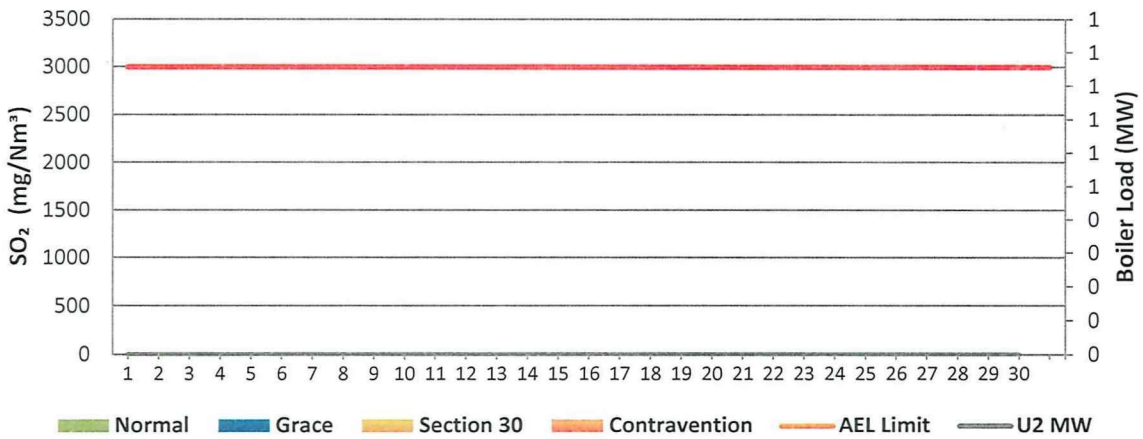


Figure 9: Kendal Unit 3 SO₂ Emissions - November 2025

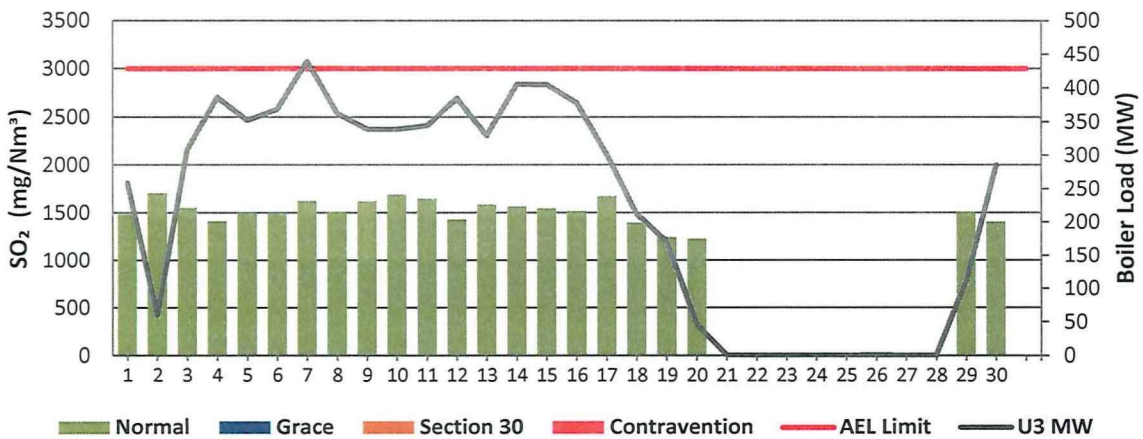


Figure 10: Kendal Unit 4 SO₂ Emissions - November 2025

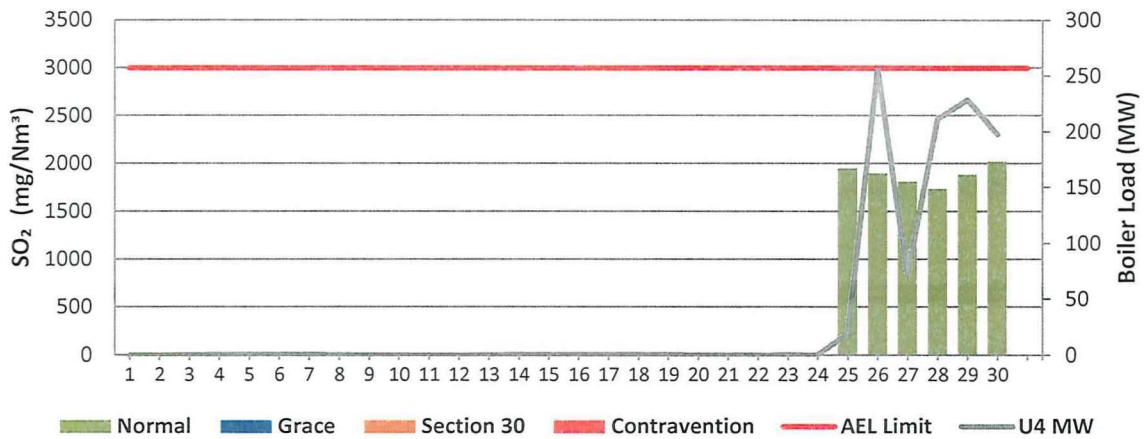


Figure 11: Kendal Unit 5 SO₂ Emissions - November 2025

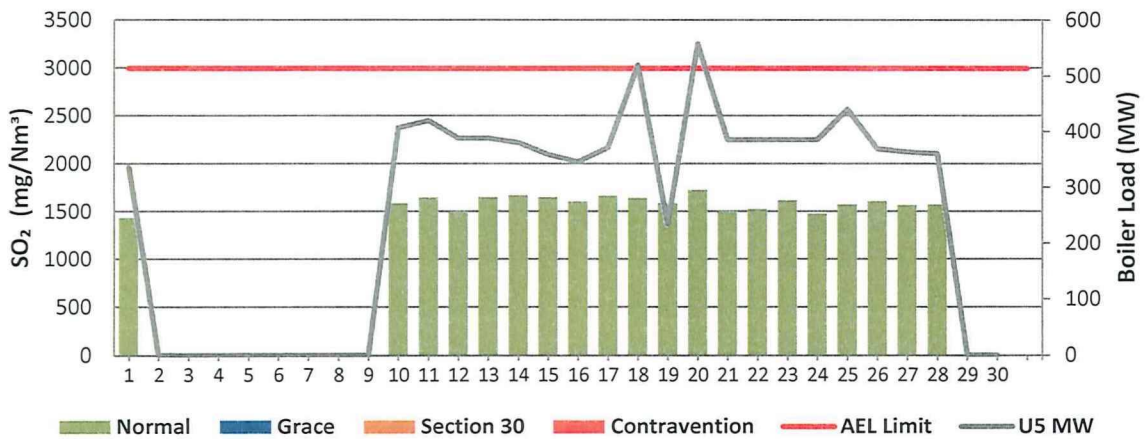


Figure 12: Kendal Unit 6 SO₂ Emissions - November 2025

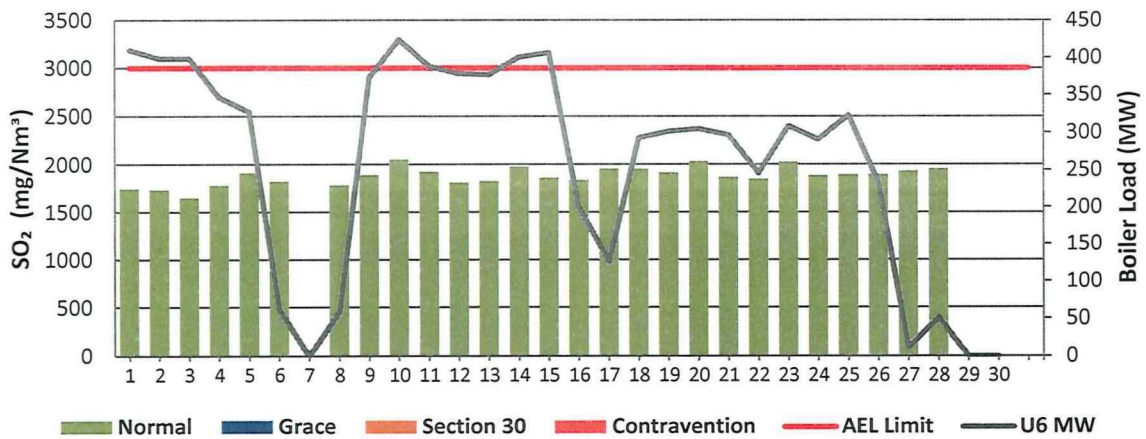


Figure 13: Kendal Unit 1 NO_x Emissions - November 2025

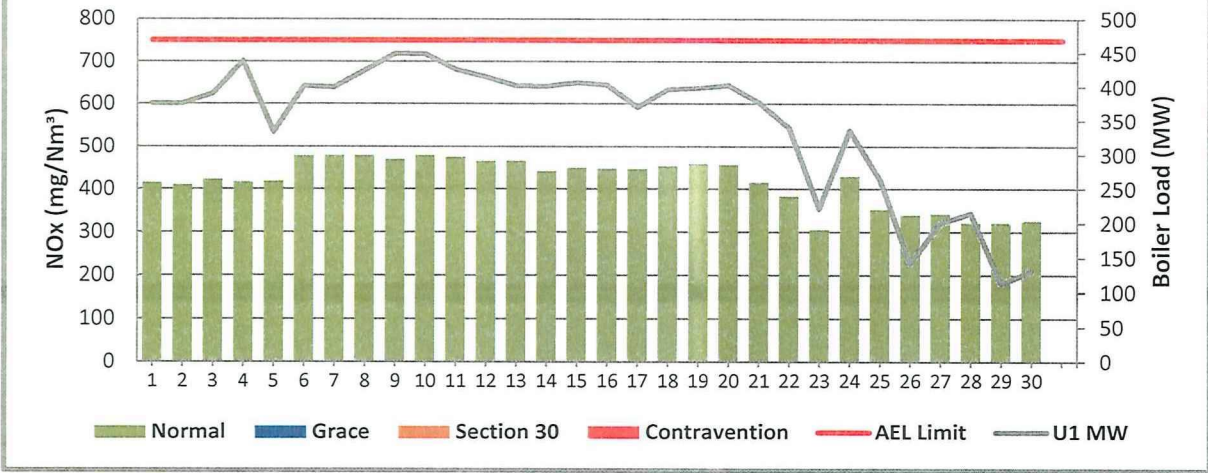


Figure 14: Kendal Unit 2 NO_x Emissions - November 2025

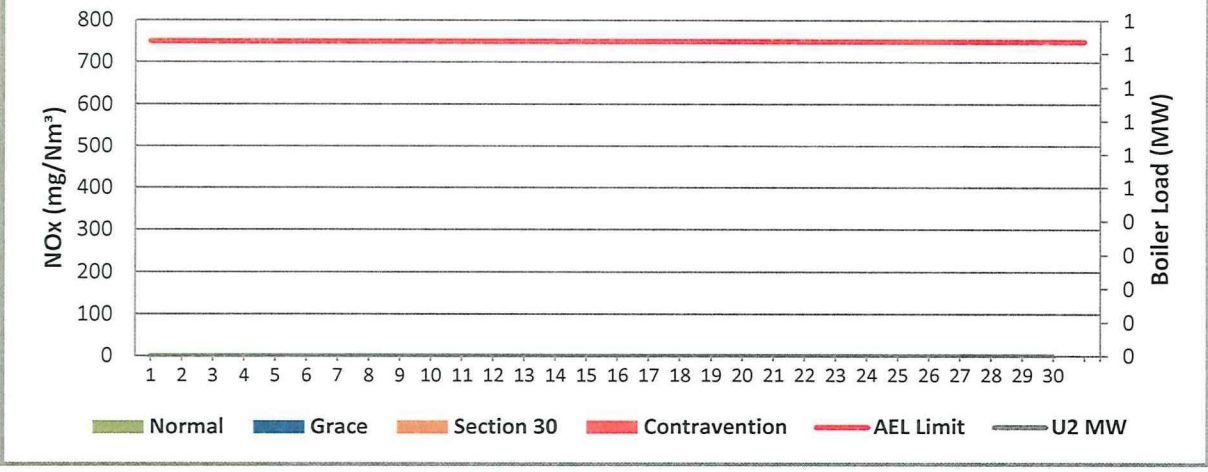


Figure 15: Kendal Unit 3 NO_x Emissions - November 2025

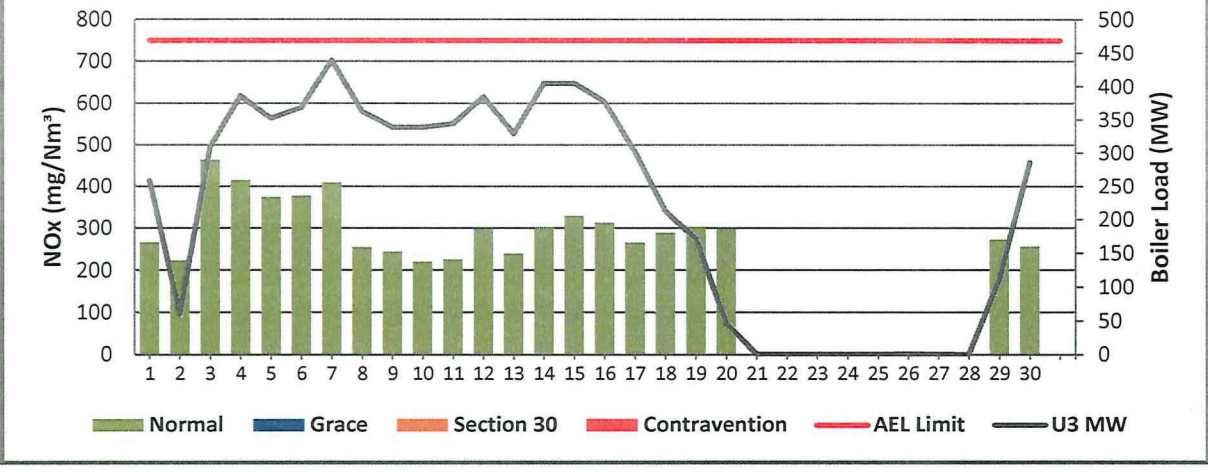


Figure 16: Kendal Unit 4 NO_x Emissions - November 2025

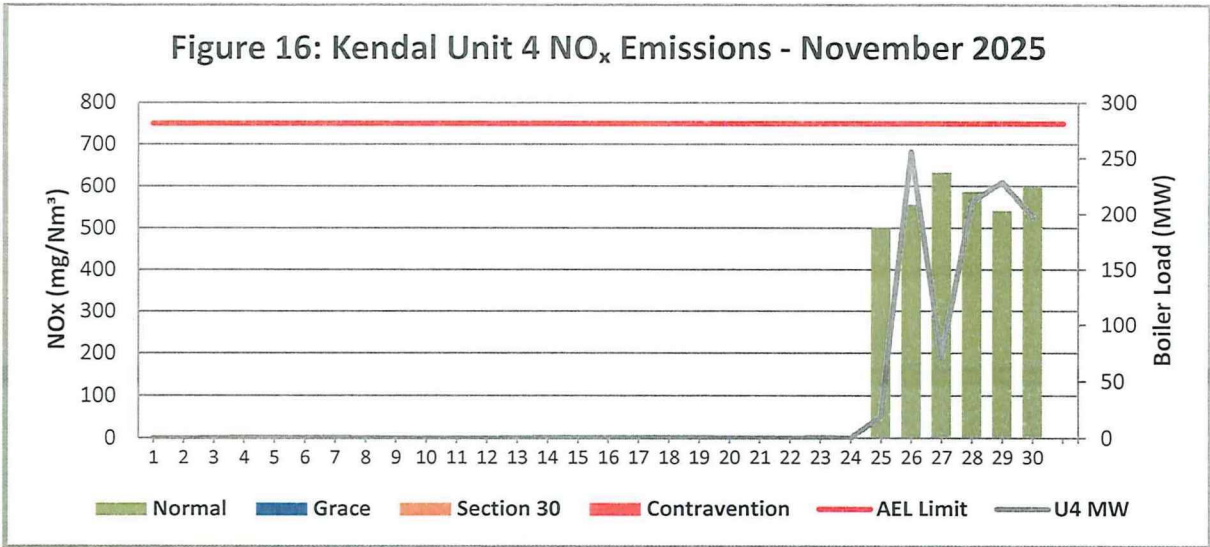


Figure 17: Kendal Unit 5 NO_x Emissions - November 2025

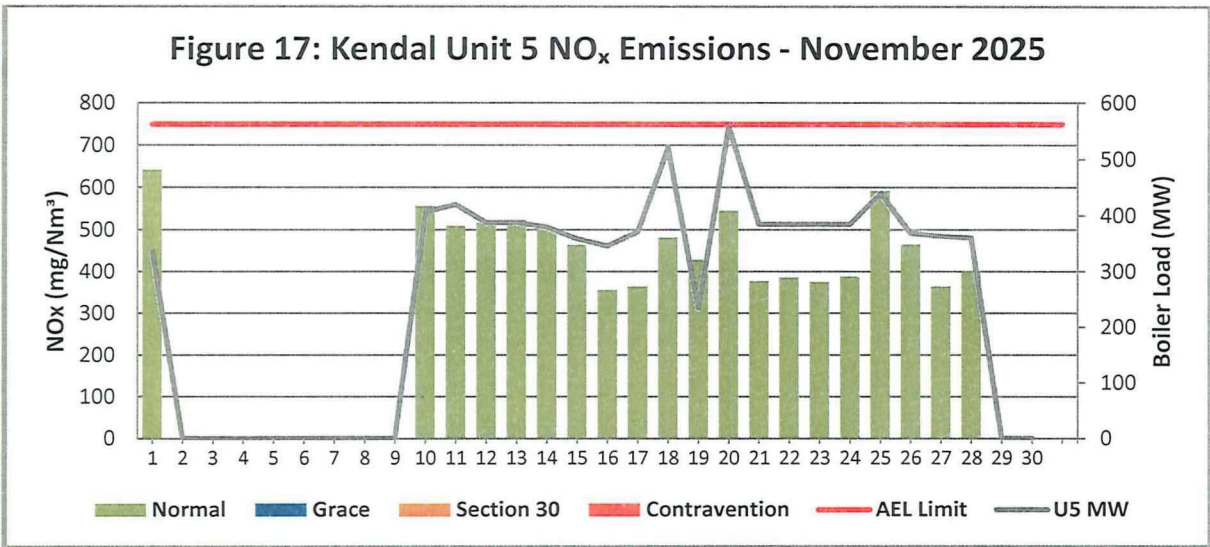
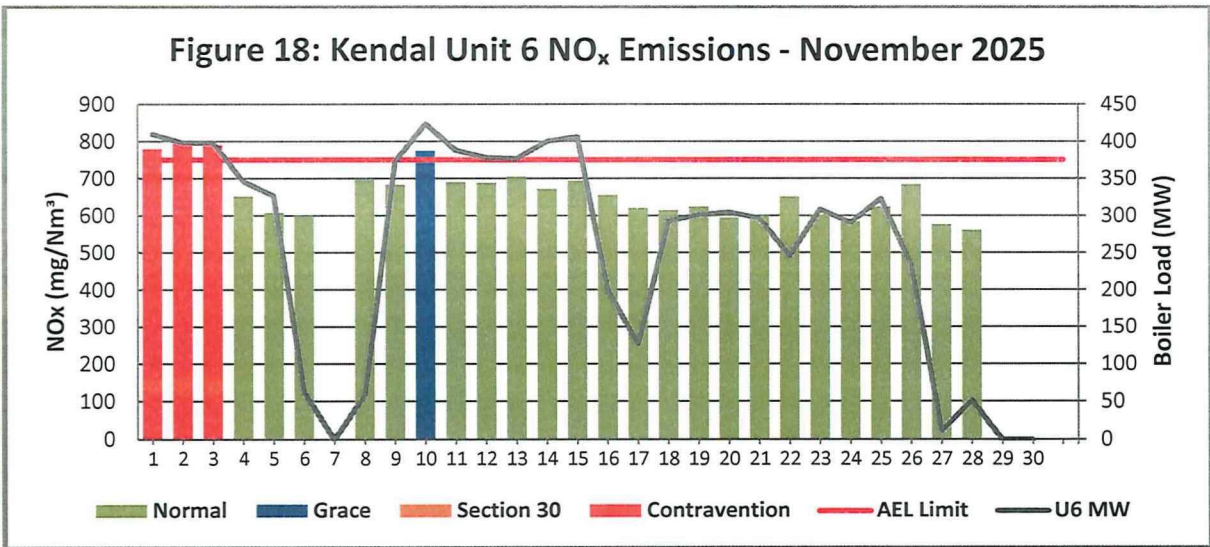


Figure 18: Kendal Unit 6 NO_x Emissions - November 2025



7 COMPLAINTS

There were no complaints for this month

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

8 GENERAL

Abatement Technology-Table 4

In order to achieve the required operational dust removal efficiency based on measured values, several assumptions such as

- Coal ash content (%) and burnt rate mass
- Fly Coarse ash ratio of 80 20 - 80% of fly-ash mass obtained from burnt coal goes to ESP
- Measurement of dust emission by Dust Monitor over a period of time (monthly)

Operational Dust Removal Efficiency

$$\eta = (1 - (\text{Output}/\text{Input})) \times 100$$

$$\eta = 1 - \frac{(\text{DustEmissionFromAQR ReportDustMonitor(tons)} \times 100)}{(\text{CoalBurnt(tons)} * \% \text{AshContent} * 80\%)}$$

Monitor Reliability-Table 5

In terms of the minimum emissions standard, the requirement is that a monitor should be 80% reliable on a monthly average

The **monitor reliability** refers to **data reliability** because the assumed value of 99 325% reliability is compared to the dust concentration signal. If the dust concentration signal is above 99 325% opacity, the data information is no longer reliable because the monitor reading is out of its maximum reading range. The data reliability looks at how many times did the dust concentration signal go above 98% over a period of time e.g. 24hours

The formula is as follows:

$$= (1 - (\text{count hours above 99 325\%/24hours})) \times 100$$

Emissions Performance:

- Average velocity values from the latest correlation report were used on the gaseous emissions on Units due to defective CEMS monitors and velocity correction factors were set M=1 and C=0
- Unit 4 & 5 maxed out, meaning the emissions were higher than what the monitor was correlated for, in which case we use surrogate values. This is attributed to abnormal plant conditions
- Please note that the reported figures in tonnage calculation are the figures after the station used the maxing out quantification exercise which is the use of "surrogate values" on days when the monitor maxed out
- The flue gas sensors for unit 3 was faulty some of the day in November, as such average value for the days that it was working was used as surrogate
- Flow was not working for the whole month because of sensors that are faulty and the sensors have to be replaced on all the units. The process for procuring new sensors is in progress
- Correlation curves for units 1,4 and 5 were changed to suite changes of the data signals from *AAA* to *HME* data values because of the damaged cables for *AAA* signal giving values that were not reliable
- Surrogation values were recalculated after updating raw data based on curves update
- The QAL 2 average values for gaseous were used as raw data in cases where the monitor had an error, were used as surrogation values
- The O₂ sensors for Unit 5 and 4 were replaced in July 2025, for Units 3 and 6 were also replaced and functioning properly in October
- The PM monitors for unit 1, 3, 4, and 5 were not 100% reliable at few days due ash backlogs, dust flooded the dust motors

➤ Unit 1

Findings: High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 100 mg/Nm³ on Unit 1, were attributed to Monitor measuring path was partially blocked, due to high volumes of dust exposure

Resolution: Plant repaired

➤ Unit 2

Findings: unit was offload

Resolution: Plant repaired

➤ Unit 3

Findings: High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 50 mg/Nm³ on Unit 3, were attributed to soot blowing that was unavailable due to a faulty cable, and the SO₃ injector lance which was found to be leaking. Field 21 experienced repeated trips caused by DC link faults, while Field 22 remained offline due to a faulty fan. Field 14 failed to start and tripped on high voltage, and Field 24 encountered a high-voltage fault with 125A fuses blown. Additionally, CE Rapper No. 4 LH was tripping, and CE Rapper No. 1 RH was running on local control

Resolution: Plant repaired

➤ Unit 4

Findings: Unit 4 was supplemented with fuel oil supply during start up and was experiencing LH/RH forced draft fan vibration. Low BETs due to reduced load had resulted in SO₃ plant temperatures dropping below 110 °C. LH Dust Extractor Rapper 5 was tripping on overload, while F16 and F35 were scheduled for commissioning. F45 had a high-temperature fault, and F36 was operating in local control. Additionally, LH Induced Draft (ID) fan issues were impacting BET performance. Cladding and lagging on the Fisher valves needed to be reinstated

Resolution: Plant repaired

➤ **Unit 5**

Findings: High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 100 mg/Nm³ on Unit 5, were attributed to structural damage that was identified on fields F11, F12, F21, and F22. 5A mill was shut down due to unknown defective classifiers, and 5D mill was put in service, which affected the combustion process and caused disturbances in PM emissions. Field 35 was operating in local mode because of a communications bus issue, while fields 12, 27, 43, and 44 were tripping due to high ash backlogs. Additionally, fields were frequently tripping because of undervoltage, suspected to be caused by wire breakage. The SO₃ plant was offline due to low steam temperature.

Resolution: Plant repaired

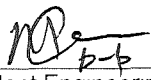
➤ **Unit 6**

Findings: High particulate matter (PM) emissions, which resulted in an exceedance of the MES limit of 50 mg/Nm³ in Unit 6, were attributed to electrostatic precipitator (ESP) fields that were experiencing undervoltage faults. Fields 11 and 21 were permanently out of commission due to structural damage, which affected the performance of fields 21/26. BET readings indicated a temperature imbalance of 114 °C and 132 °C. The SO₃ plant was on hold mode due to low steam temperature, and CE Rappers 1 and 2 were frequently tripping.

Resolution: Plant repaired

9 Complaints and S30 Incidents Register

Refer to Addendum (If any)


Boiler Plant Engineering
Manager

22/12/2025
Date

22/12/25
Environmental Manager Date


Engineering Manager

22-12-2025
Date

Compiled by

Environmental Officer

For

Nkangala District
Municipality

Air Quality Officer

Copies

Generation Environmental Management

D Herbst
B Mccourt

Generation Compliance Management
Generation Asset
Management

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E Patel

Kendal Power Station

Engineering Manager
Operating Manager
Maintenance Manager
Production Manager
Boiler Engineering Manager
System Engineer
Environmental Manager