Eskom

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Date:
24 November 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 OCTOBER 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: 24/11/2025

Supported by:

Solly Chokoe
ENVIRONMENTAL MANAGER- KENDAL POWER STATION
Date: 24/11/2025

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

Verified by

Jacob Zwane
BOILER ENGINEERING: SENIOR SYSTEM ENGINEER- KENDAL POWER STATION
Date: 24/11/2025

Validated by

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BOILER ENGINEERING MANAGER-KENDAL POWER STATION
Date: 24/11/2025

Supported by

Phindile Takane
ENGINEERING MANAGER-KENDAL POWER STATION
Date: 27-11-2025

Approved by

Tshepiso Temo
GENERAL MANAGER-KENDAL POWER STATION
Date: 03/12/2025

Eskom

OCTOBER 2025

KENDAL POWER STATION MONTHLY EMMISSION 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 Oct-2025
	Coal	Tons	2 260 000	619 047
	Fuel Oil	Tons	5 000	7493.590
Production Rates	**Product / By-Product Name**	**Units**	**Max Production Capacity Permitted**	**Indicative Production Rate Oct-2025**
	Energy	GWh	3 062.304	1 086.783
	Ash	Tons	770 000	189 614.096
	RE Ash	kg/MWh	not specified	0.250

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)	19.270
Sulphur Content	%	<1 (%)	0.830
Ash Content	%	40 (%)	30.630

3 EMISSION LIMITS (mg/Nm^3)

	Daily Limit		
Associated Unit/Stack	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	99.940%	SO_3	71.0%
Unit 2	ESP + SO_3	Off-line	SO_3	Off-line
Unit 3	ESP + SO_3	99.893%	SO_3	100.0%
Unit 4	ESP + SO_3	Off-line	SO_3	Off-line
Unit 5	ESP + SO_3	99.580%	SO_3	93.5%
Unit 6	ESP + SO_3	99.880%	SO_3	100.0%

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	100.0	100.0	97.8	100.0
Unit 2	Off	Off	Off	Off
Unit 3	100.0	100.0	99.7	100.0
Unit 4	Off	Off	Off	Off
Unit 5	97.7	93.7	93.7	100.0
Unit 6	97.2	99.5	100.0	100.0

Note: NOx emissions are measured as NO in PPM. The final NOx value is expressed as total NO_2 equivalent.

6 EMISSION PERFORMANCE

Table 6 1 Monthly tonnages for October 2025

Associated Unit/Stack	PM (tons)	SO2 (tons)	NOx (tons)
Unit 1	20 5	1 990	820
Unit 2	Off	Off	Off
Unit 3	43 9	2 471	520
Unit 4	Off	Off	Off
Unit 5	161 4	2 520	949
Unit 6	45 8	2 391	901
SUM	271 51	9 373	3 191

Table 6 2: PM AEL Daily Compliance-October 2025

Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	28	0	0	0	0	20 9
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	28	3	0	0	3	30 1
Unit 4	Off	Off	Off	Off	Off	Off
Unit 5	18	7	0	6	13	133 5
Unit 6	25	4	0	2	6	40 0
SUM	**99**	**14**	**0**	**8**	**22**	

Table 6.3: SO_x AEL Daily Compliance-October 2025

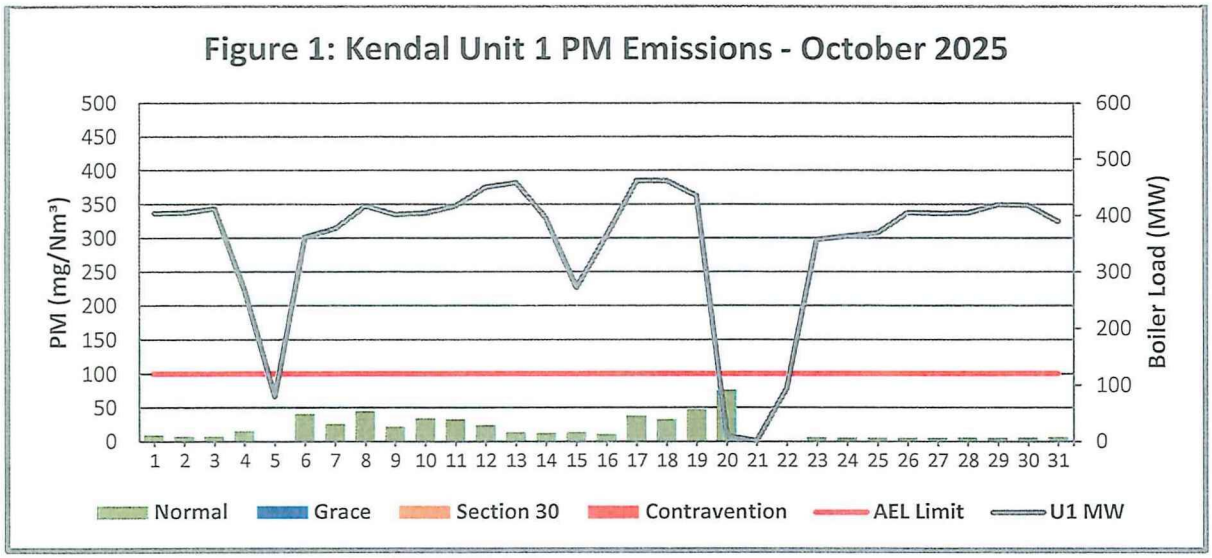
Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	30	0	0	0	0	1 665 5
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	31	0	0	0	0	1 697 0
Unit 4	Off	Off	Off	Off	Off	Off
Unit 5	31	0	0	0	0	1 591 1
Unit 6	31	0	0	0	0	1 829 8
SUM	**123**	**0**	**0**	**0**	**0**	

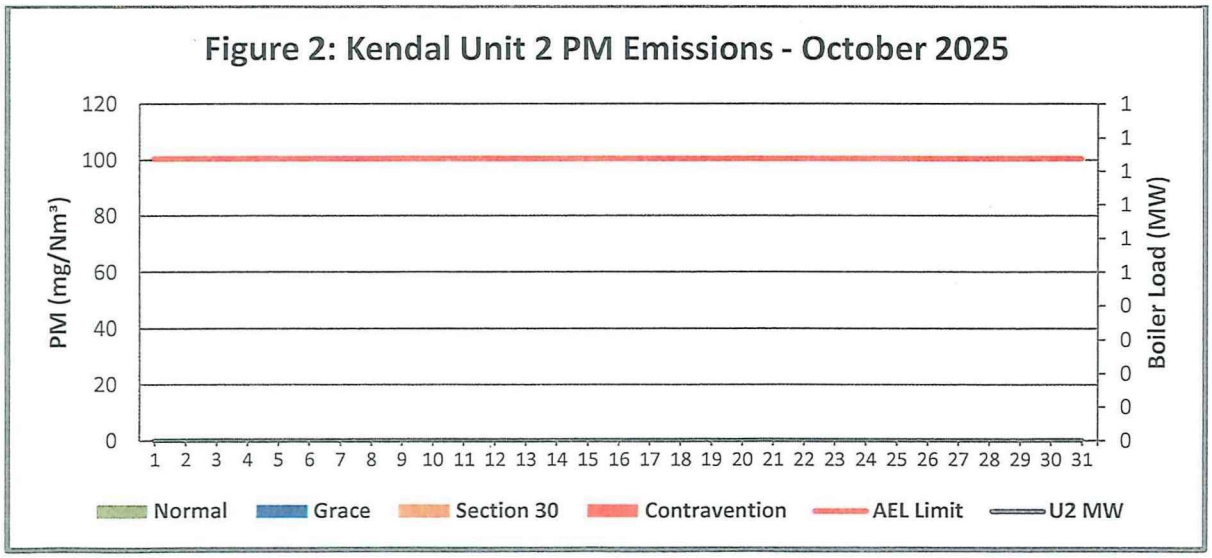
Table 6.4: NO_x AEL Daily Compliance-October 2025

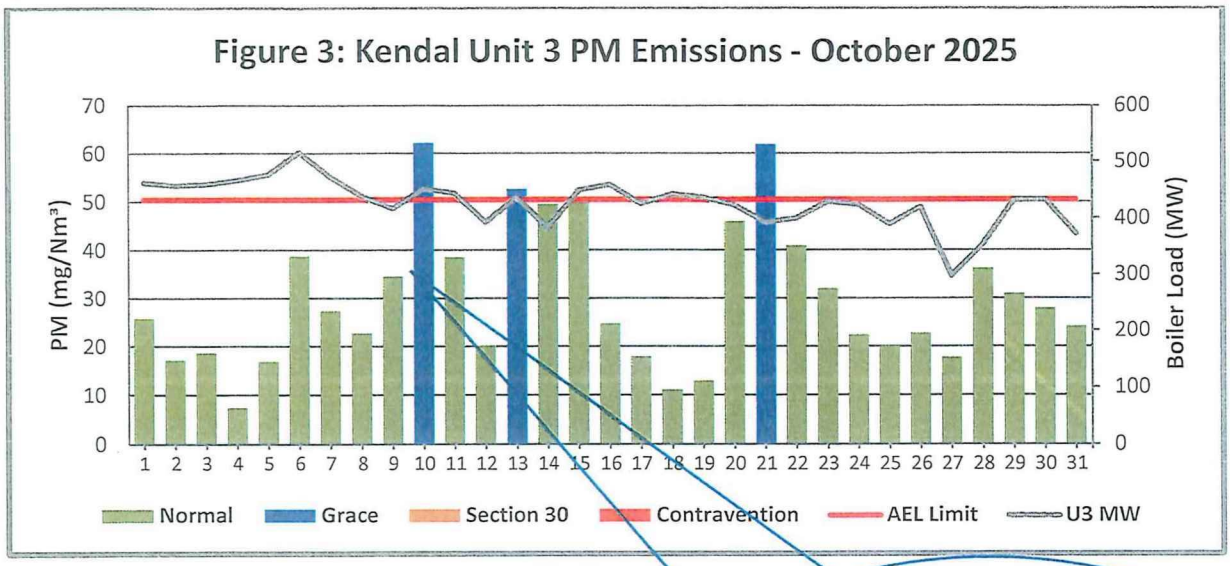
Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	25	5	0	0	5	683 2
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	31	0	0	0	0	357 1
Unit 4	Off	Off	Off	Off	Off	Off
Unit 5	29	2	0	0	2	600 1
Unit 6	31	0	0	0	0	689 1
SUM	**116**	**7**	**0**	**0**	**7**	

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







High particulate matter (PM) emissions resulting in an exceedance of the MES limit of 50 mg/Nm^3 on Unit 3 were attributed to Soot blowing that was unavailable due to a faulty cable, and the SO_3 injector lance 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. In addition, Field 24 encountered a high-voltage fault, with 125A fuses blown.

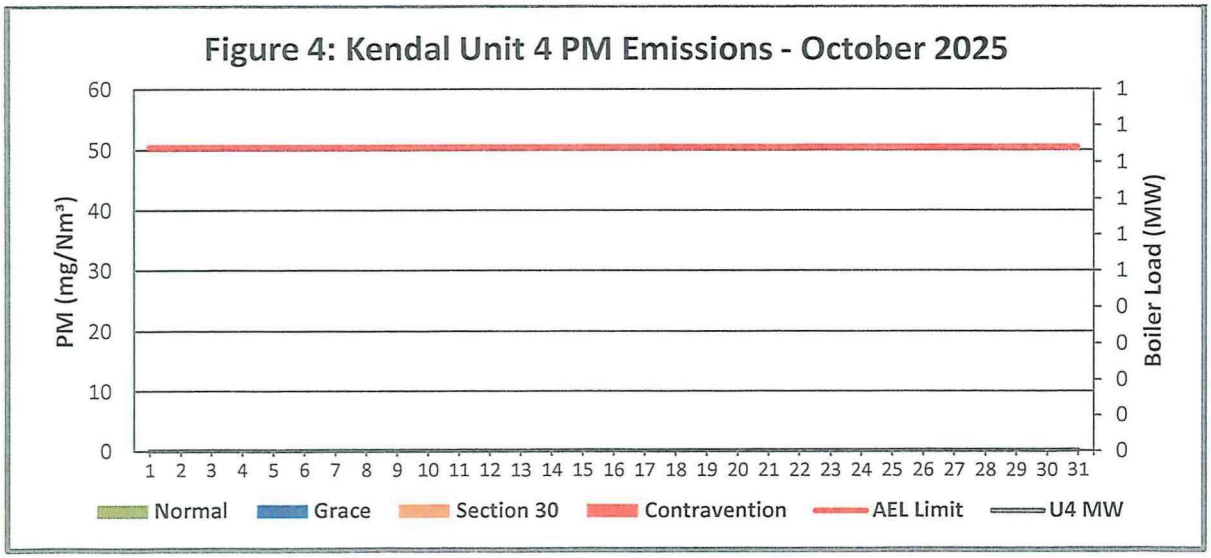
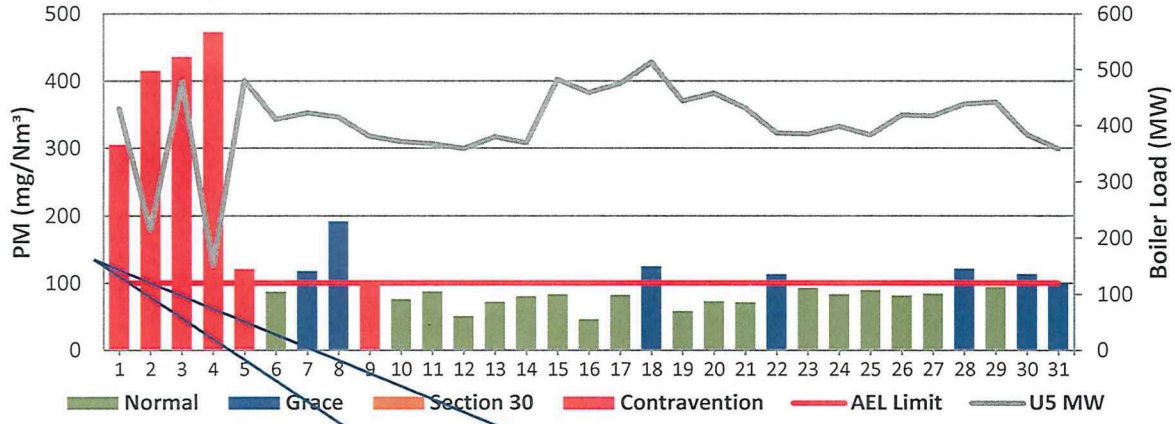
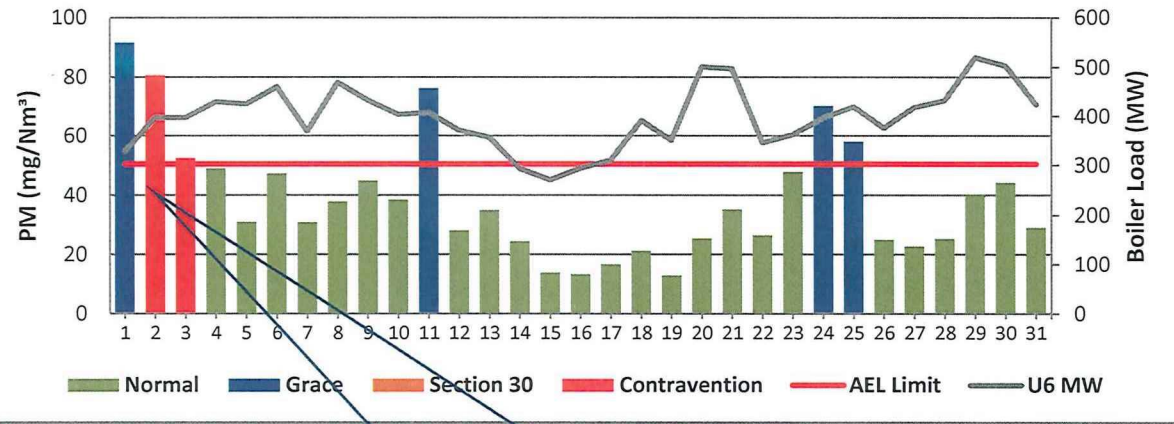


Figure 5: Kendal Unit 5 PM Emissions - October 2025



High particulate matter (PM) emissions resulting in an exceedance of the MES limit of 100 mg/Nm³ on Unit 5 were attributed to structural damage identified on fields F11, F12, F21, and F22. 5A Mill was put in service with unknown defective classifiers, which affected the combustion process and resulted in disturbances in PM emissions. Field 35 operated in local mode due to a communications bus issue, while Fields 43 and 44 were tripping because of high ash backlogs.

Figure 6: Kendal Unit 6 PM Emissions - October 2025



High particulate matter (PM) emissions resulting 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. Field 11 and 21 were permanently out of commission due to structural damage, affecting 21/26 fields performance. BETs indicated a temperature imbalance at 114°C and 132°C, which affected overall efficiency.

Figure 7: Kendal Unit 1 SO_2 Emissions - October 2025

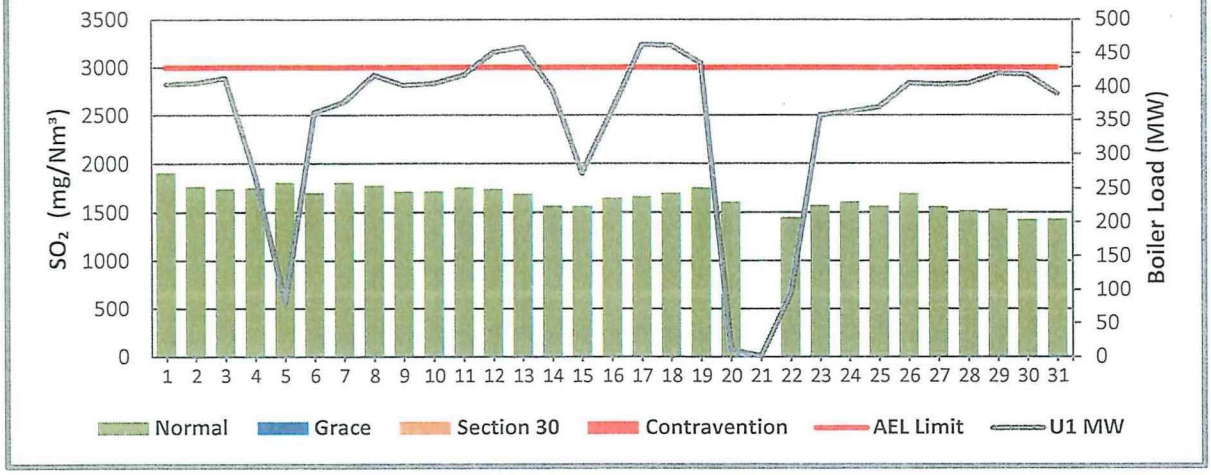


Figure 8: Kendal Unit 2 SO_2 Emissions - October 2025

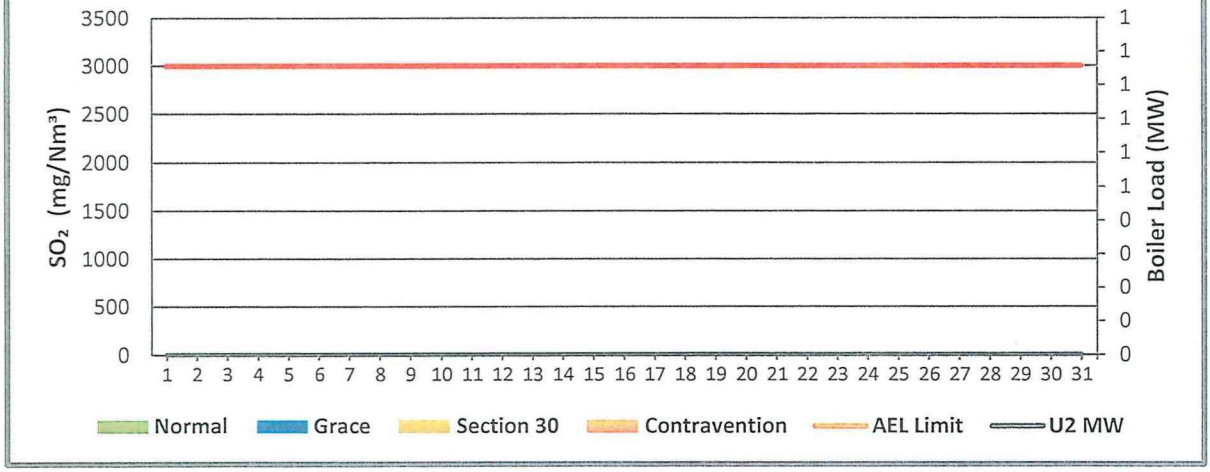


Figure 9: Kendal Unit 3 SO_2 Emissions - October 2025

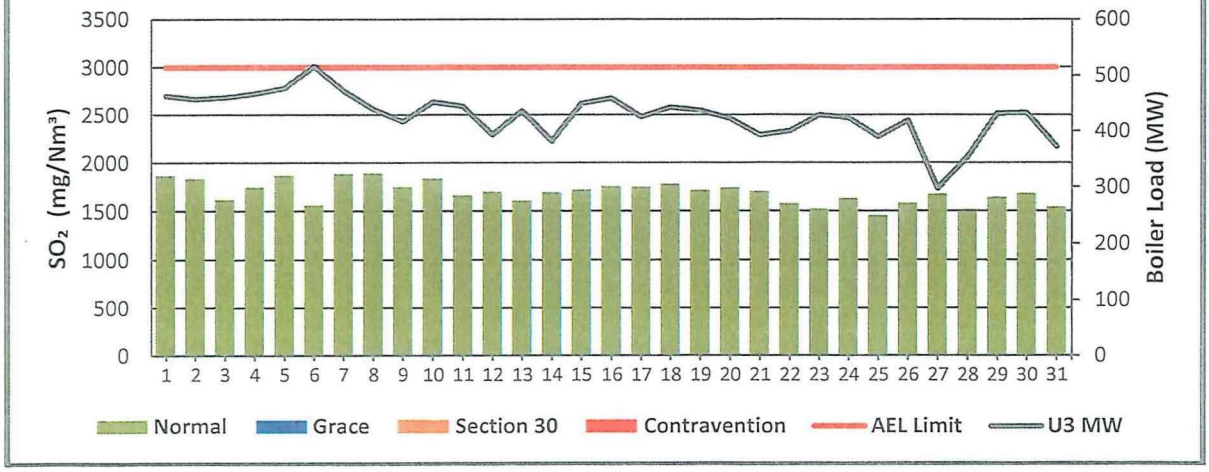


Figure 10: Kendal Unit 4 SO_2 Emissions - October 2025

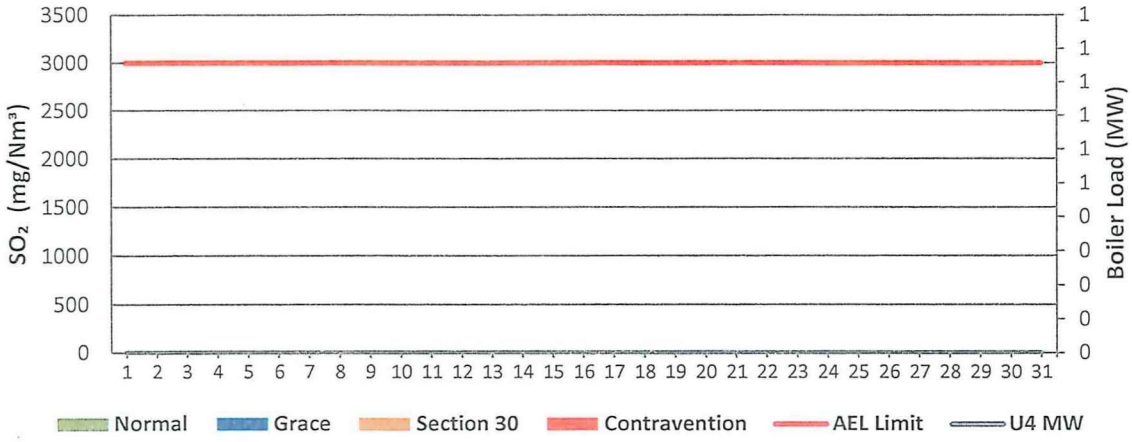


Figure 11: Kendal Unit 5 SO_2 Emissions - October 2025

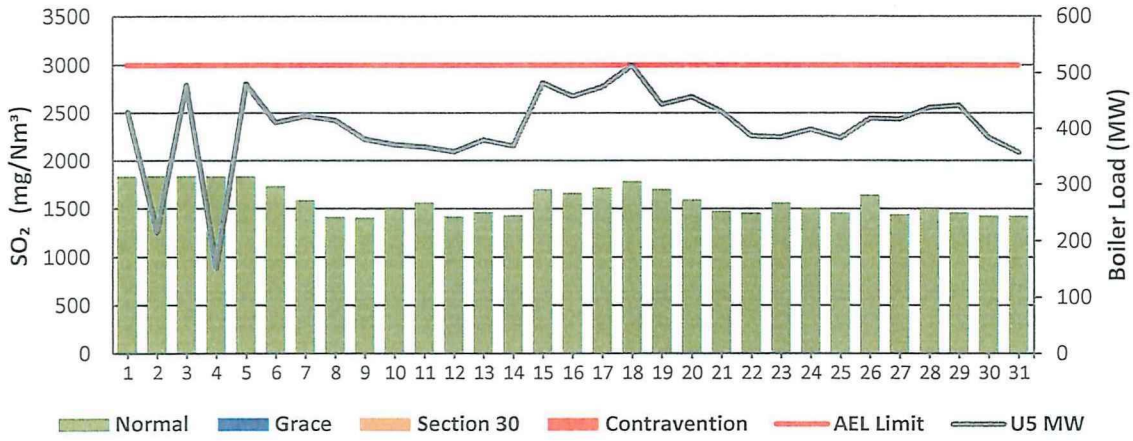


Figure 12: Kendal Unit 6 SO_2 Emissions - October 2025

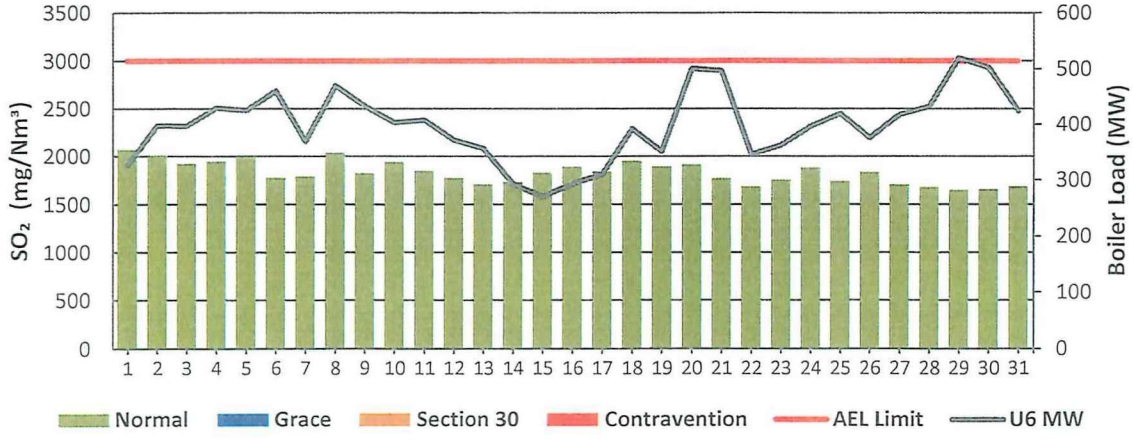


Figure 13: Kendal Unit 1 NO_x Emissions - October 2025

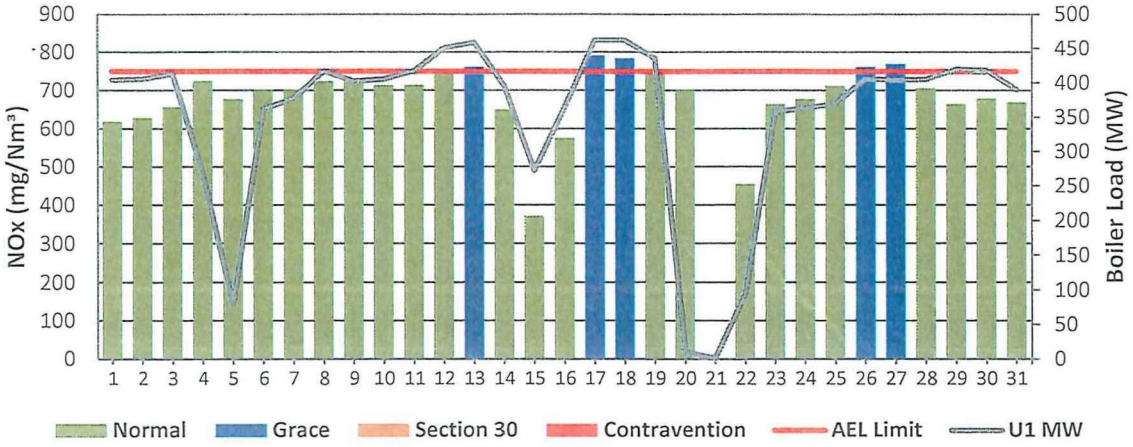


Figure 14: Kendal Unit 2 NO_x Emissions - October 2025

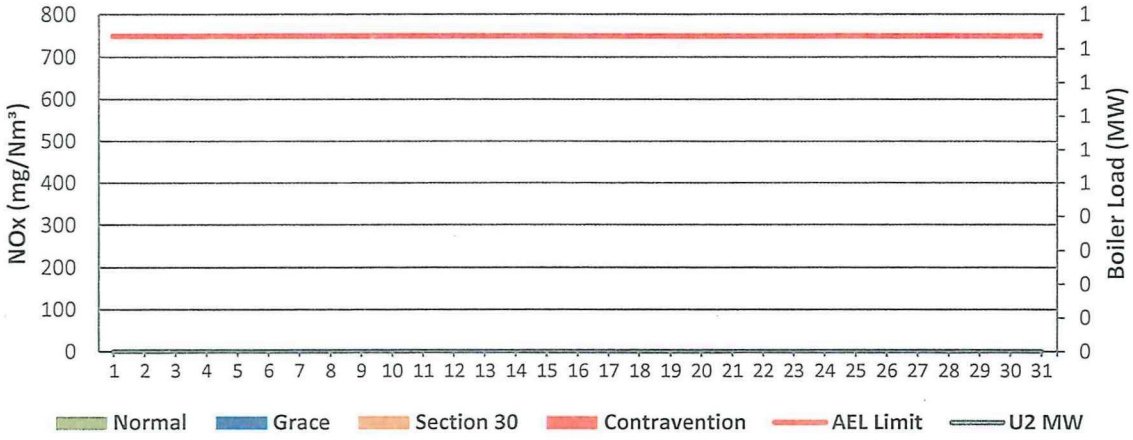


Figure 15: Kendal Unit 3 NO_x Emissions - October 2025

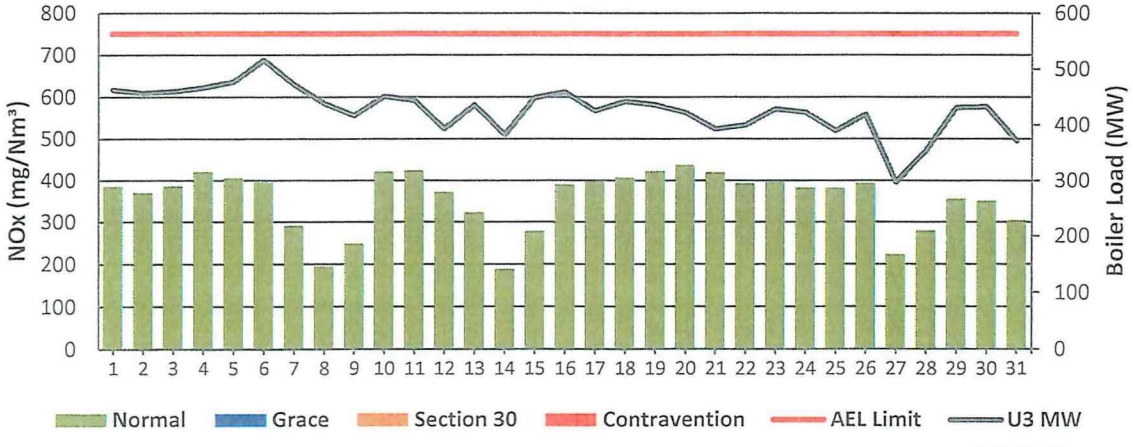


Figure 16: Kendal Unit 4 NO_x Emissions - October 2025

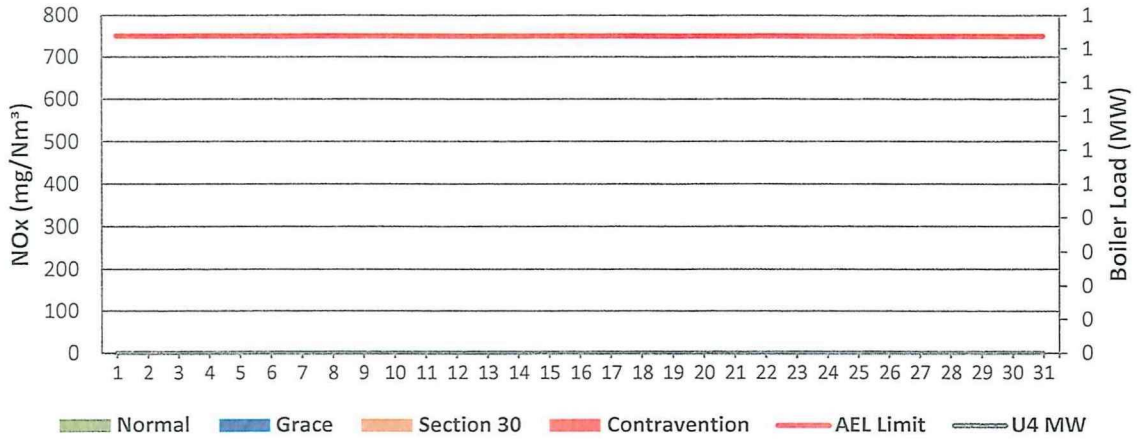


Figure 17: Kendal Unit 5 NO_x Emissions - October 2025

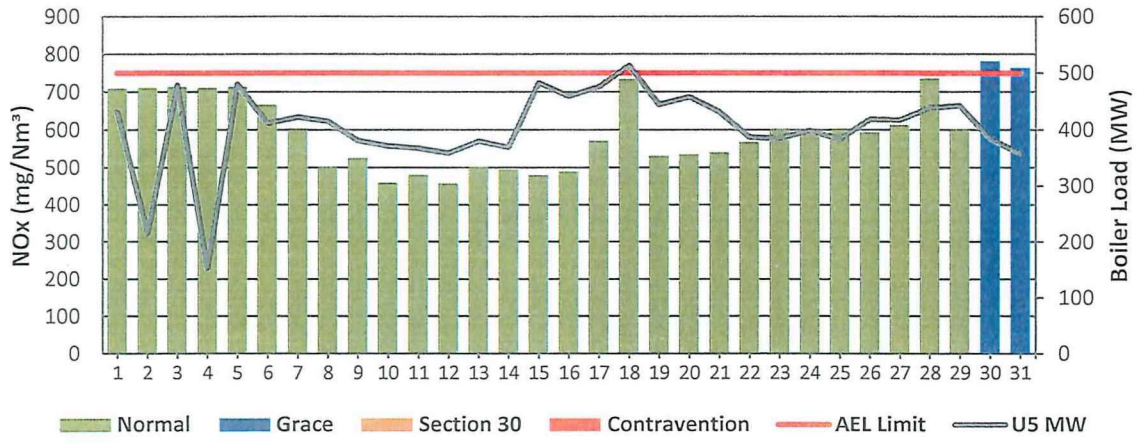
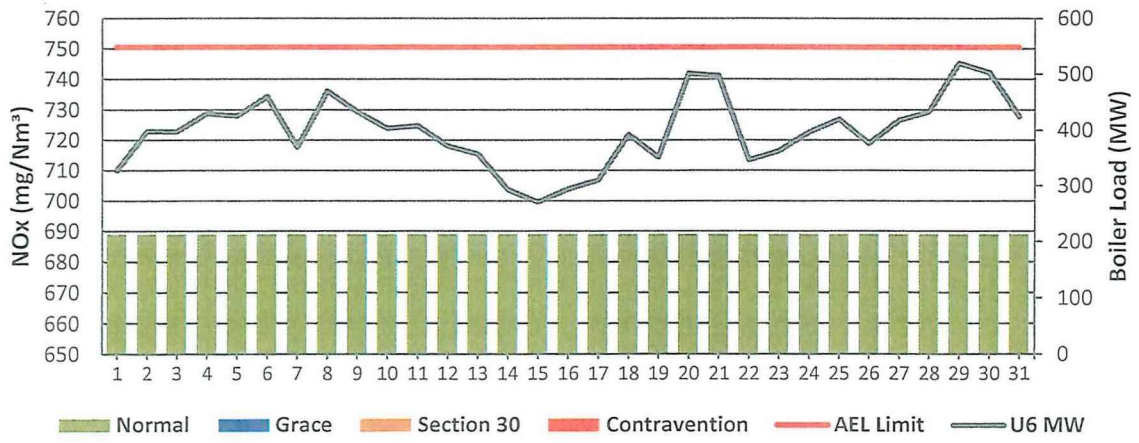


Figure 18: Kendal Unit 6 NO_x Emissions - October 2025



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

η = (1 – ($Output/Input$)) x 100

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

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 – (count hours above 99.325%/24hours))x 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
- 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.

- 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 O_2 sensors for Unit 5 and 4 were replaced in July 2025, for Units 3 and 6 were also replaced and functioning properly in October

- **Unit 1**

Findings: Compliant

Resolution: Plant repaired

- **Unit 2**

Findings: unit was offload

Resolution: Plant repaired

- **Unit 3**

Findings: High particulate matter (PM) emissions resulting 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 SO_3 injector lance 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 In addition, Field 24 encountered a high-voltage fault, with 125A fuses blown

Resolution: Plant repaired

- **Unit 4**

Findings: Unit was offload

Resolution: Plant repaired

- **Unit 5**

Findings: High particulate matter (PM) emissions resulting in an exceedance of the MES limit of 100 mg/Nm³ on Unit 5 were attributed to structural damage identified on fields F11, F12, F21, and F22 5A Mill was put in service with unknown defective classifiers, which affected the combustion process and resulted in disturbances in PM emissions Field 35 operated in local mode due to a communications bus issue, while Fields 43 and 44 were tripping because of high ash backlogs

Resolution: Plant repaired

- **Unit 6**

Findings: High particulate matter (PM) emissions resulting 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 Field 11 and 21 were permanently out of commission due to structural damage, affecting 21/26 fields performance BETs indicated a temperature imbalance at 114°C and 132°C, which affected overall efficiency

Resolution: Plant repaired

9 Complaints and S30 Incidents Register

Refer to Addendum (If any)

Boiler Plant Engineering Manager — Date 24/11/2025

Environmental Manager — Date 24/11/25

Engineering Manager — Date 27-11-25

Compiled by	Environmental Officer	
For	Nkangala District Municipality	Air Quality Officer
Copies	Generation Environmental Management	D Herbst B Mccourt
	Generation Compliance Management	R Rampiar
	Generation Asset Management	E Patel
	Kendal Power Station	Engineering Manager Operating Manager Maintenance Manager Production Manager Boiler Engineering Manager System Engineer Environmental Manager