Eskom

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Date:
22 October 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 SEPTEMBER 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: 22/10/2025

Supported by:

Solly Chokoe
ENVIRONMENTAL MANAGER- KENDAL POWER STATION
Date: 22/10/2025

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Eskom Holdings SOC Ltd Reg No 2002/015527/30

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

Verified by:

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BOILER ENGINEERING: SENIOR SYSTEM ENGINEER- KENDAL POWER STATION
Date: 22/10/2025

Validated by:

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Date: 22/10/2025.

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Tshepiso Temo
GENERAL MANAGER-KENDAL POWER STATION
Date: 2025/10/26

Eskom

SEPTEMBER 2025

KENDAL POWER STATION MONTHLY EMISSIONS 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 Sept-2025
	Coal	Tons	2 260 000	505 206
	Fuel Oil	Tons	5 000	10946.830
Production Rates	**Product / By-Product Name**	**Units**	**Max Production Capacity Permitted**	**Indicative Production Rate Sept-2025**
	Energy	GWh	2 963.520	886.348
	Ash	Tons	770 000	151 359.718
	RE Ash	kg/MWh	not specified	0.314

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

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	16-24 (MJ/kg)	19.500
Sulphur Content	%	<1 (%)	0.830
Ash Content	%	40 (%)	29.960

3 EMISSION LIMITS (mg/Nm³)

	Daily Limit		
Associated Unit/Stack	**PM**	**SO_2**	**NO_x**
Unit 1	100	3000	750
Unit 2	100	3000	750
Unit 3	100	3000	750
Unit 4	100	3000	750
Unit 5	100	3000	750
Unit 6	100	3000	750

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	ESP Efficiency	Technology Type	SO_2 Plant Utilization
Unit 1	ESP + SO_2	99.949%	SO_2	40.0%
Unit 2	ESP + SO_2	Off-line	SO_2	Off-line
Unit 3	ESP + SO_2	99.750%	SO_2	90.0%
Unit 4	ESP + SO_2	Off-line	SO_2	Off-line
Unit 5	ESP + SO_2	99.694%	SO_2	53.3%
Unit 6	ESP + SO_2	99.693%	SO_2	80.0%

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.

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	91.1	100.0
Unit 2	Off	Off	Off	Off
Unit 3	100.0	100.0	98.9	100.0
Unit 4	Off	100.0	100.0	100.0
Unit 5	100.0	100.0	93.7	100.0
Unit 6	95.5	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 NO_2 equivalent.

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for September 2025

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	14.0	1 515	622
Unit 2	Off	Off	Off
Unit 3	94.9	1 982	414
Unit 4	Exempt	35	13
Unit 5	69.8	1 520	456
Unit 6	99.9	2 244	856
SUM	278.68	7 295	2 362

Table 6.2: PM AEL Daily Compliance - September 2025

Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	22	0	0	0	0	16.1
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	24	4	0	0	4	88.4
Unit 4	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt
Unit 5	15	3	0	1	4	73.4
Unit 6	19	6	0	0	6	97.0
SUM	**80**	**13**	**0**	**1**	**14**	

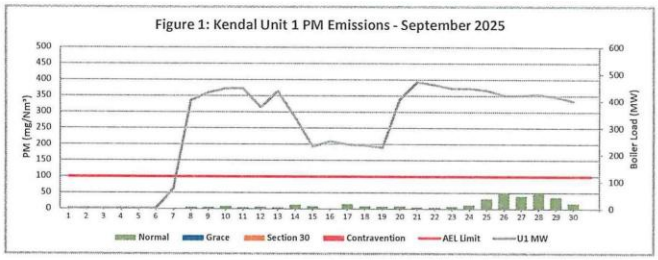
Table 6.3: SO_2 AEL Daily Compliance - September 2025

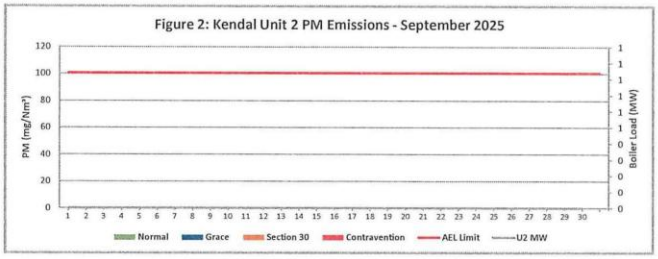
Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	24	0	0	0	0	1 613.6
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	29	0	0	0	0	1 486.3
Unit 4	1	0	0	0	0	1 693.0
Unit 5	20	0	0	0	0	1 547.9
Unit 6	26	0	0	0	0	1 877.1
SUM	**100**	**0**	**0**	**0**	**0**	

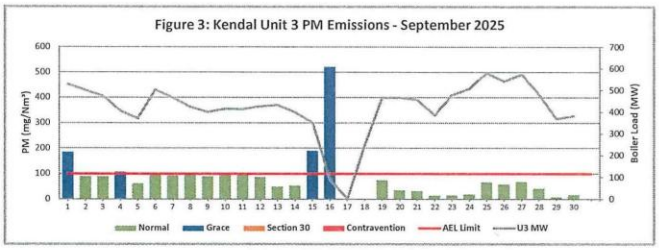
Associated Unit/Stack	Normal	Grace	Section 30	NC	Total Exceedance	Mnth Avg (mg/Nm³)
Unit 1	21	2	0	1	3	648.8
Unit 2	Off	Off	Off	Off	Off	Off
Unit 3	29	0	0	0	0	299.2
Unit 4	1	0	0	0	0	565.2
Unit 5	20	0	0	0	0	453.1
Unit 6	26	0	0	0	0	713.9
SUM	**97**	**2**	**0**	**1**	**3**	

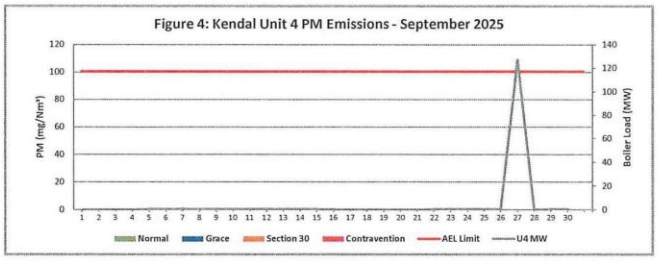
Table 6.5: Legend Description

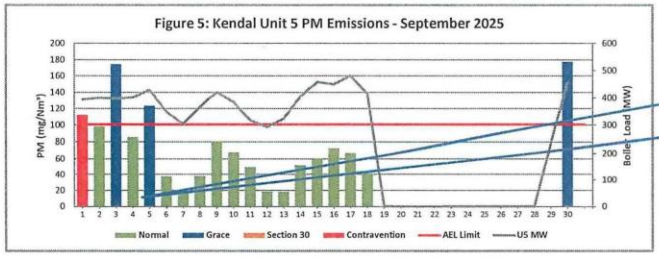
Condition	Colour	Description
Normal	GREEN	Emissions below Emission Limit Value (ELV)
Grace	BLUE	Emissions above the ELV during grace period
Section 30	ORANGE	Emissions above ELV during a NEMA S30 incident
Contravention	RED	Emissions above ELV but outside grace or S30 incident conditions











SO_3 plant was placed in hold mode due to low BET readings and low thermocouple readings on the injector lance. The 5A mill was put into service with unknown defective classifiers, which negatively affected the combustion process and caused disturbances in particulate matter (PM) emissions.

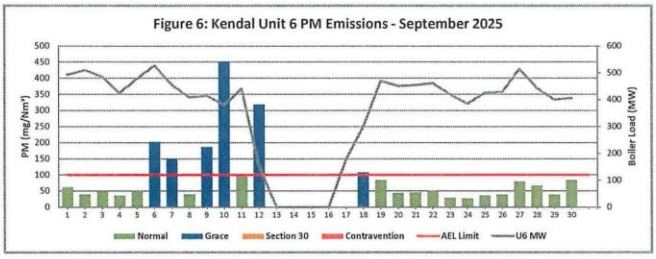


Figure 7: Kendal Unit 1 SO_2 Emissions - September 2025

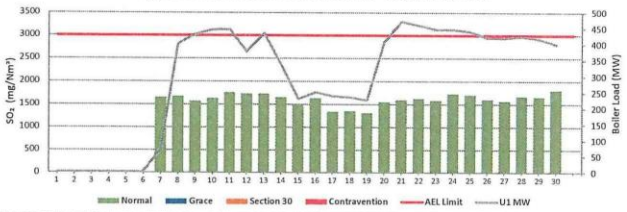


Figure 8: Kendal Unit 2 SO_2 Emissions - September 2025

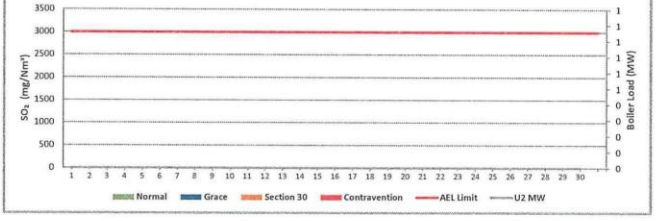


Figure 9: Kendal Unit 3 SO_2 Emissions - September 2025

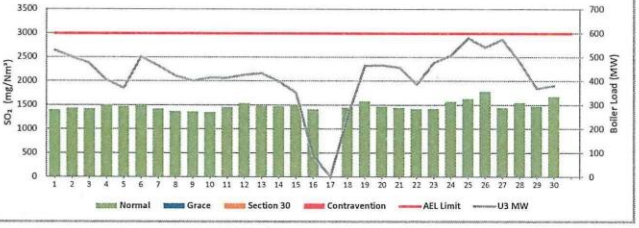


Figure 10: Kendal Unit 4 SO_2 Emissions - September 2025

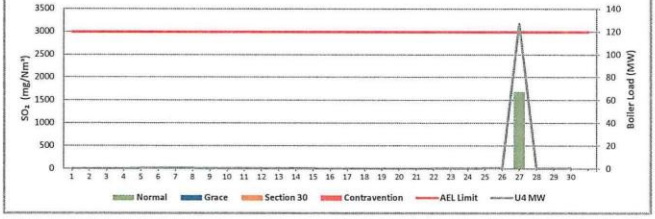


Figure 11: Kendal Unit 5 SO_2 Emissions - September 2025

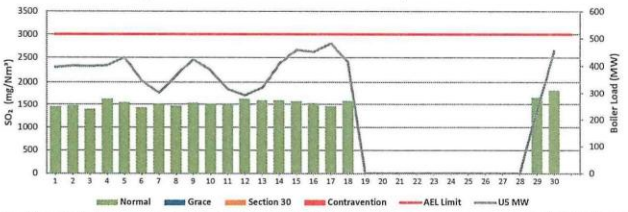
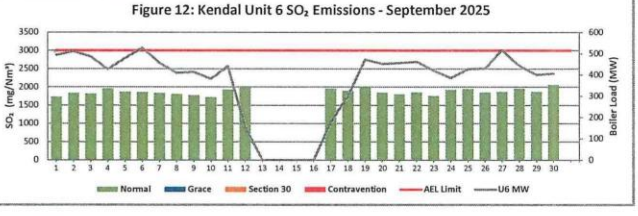
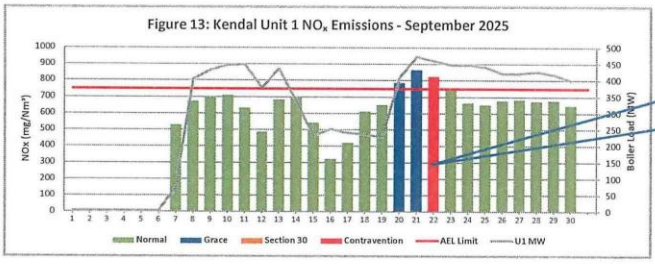
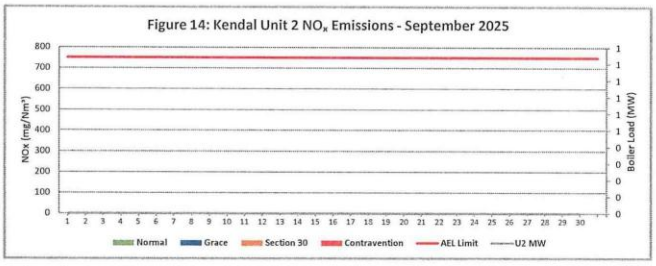


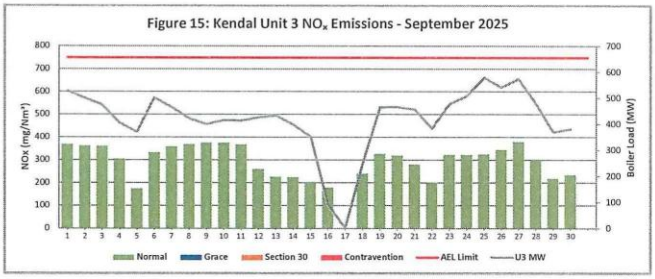
Figure 12: Kendal Unit 6 SO_2 Emissions - September 2025

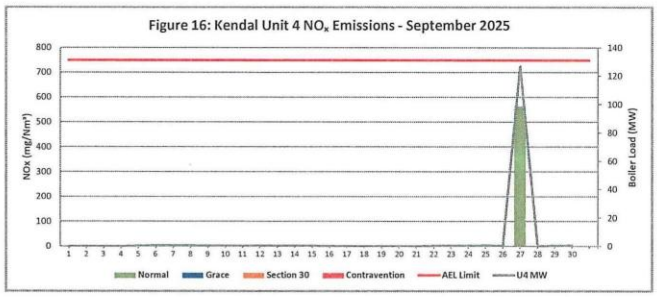


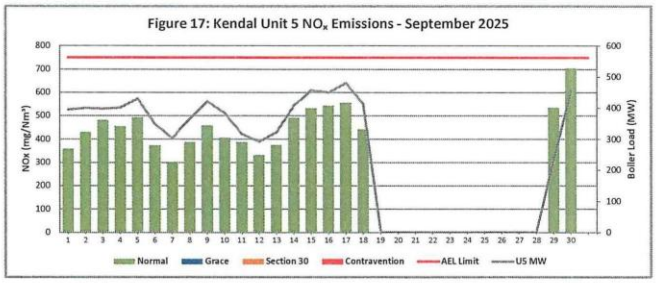


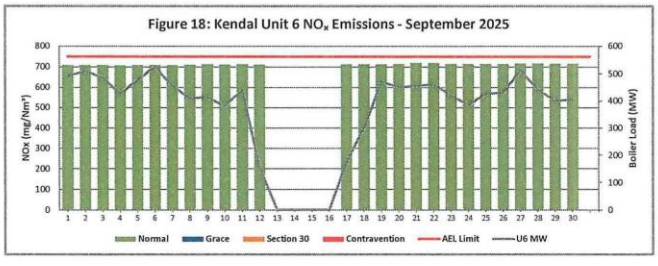
The station's gas monitors appear to be malfunctioning and providing inaccurate readings. Restoration efforts are currently underway, after which a verification process will be conducted to ensure accuracy.











7 COMPLAINTS

There were no complaints for this months

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

η = 1 - $\frac{(DustEmissionFromAQR\ ReportDustMonitor(tons)}{(CoalBurnt(tons)*\%AshContent*80\%)}$ X 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
- Unit 6 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.
- 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 vaues 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 surogation values.
- The O2 sensors for unit 2, 3 and 6 are faulty they all need to be replaced. Unit 5 and 4 O2 sensors were replaced in July 2025 and the process of replacing the other sensors is in progress.
- The PM monitors were not 100% reliable due ash backlogs, dust flooded the dust motors.

- **Unit 1**
Findings: Compliant
- Resolution: Plant repaired.

- **Unit 2**
Findings: unit was off
- Resolution: Plant repaired.

- **Unit 3**
Findings: Compliant
- Resolution: Plant repaired.

- **Unit 4**
Findings: unit was off
- Resolution: Plant repaired.

- **Unit 5**
Findings: SO_3 plant was placed in hold mode due to low BET readings and low thermocouple readings on the injector lance. The 5A mill was put into service with unknown defective classifiers, which negatively affected the combustion process and caused disturbances in particulate matter (PM) emissions.
- Resolution: Plant repaired.

- **Unit 6**
Findings: Compliant
- Resolution: Plant repaired.

9 Complaints and S30 Incidents Register

Refer to Addendum (If any)

Boiler Plant Engineering Manager — 22/10/2025 Date

Environmental Manager — 22/10/2025 Date

Engineering Manager — 22/10/2025 Date

Compiled by: Environmental Officer

For: Nkangala District Municipality

Copies: Generation Environmental Management

Generation Compliance Management
Generation Asset Management

Kendal Power Station:

Air Quality Officer

D Herbst
B Mccourt

R Rampiar
E Patel

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