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Date
28 July 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 JUNE 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

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In partnership with

G20 SOUTH AFRICA 2025

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

Verified by

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Date: 2025/08/08

Eskom

JUNE 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	Maximum Permitted Consumption Rate	Consumption Rate Jun-2025
	Coal	Tons	2 260 000	507 390
	Fuel Oil	Tons	5 000	9887.670
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Indicative Production Rate Jun-2025
	Energy	GWh	2 963.520	841.878
	Ash	Tons	770 000	160 385.979
	RE Ash	kg/MWh	not specified	3.279

Note: Maximum energy rate is as per the maximum capacity stated in the AEL: [4 116 MW] x 24 hrs x days in Month/1000 to convert to GWh

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	16-24 (MJ/kg)	18.870
Sulphur Content	%	<1 (%)	0.860
Ash Content	%	40 (%)	31.610

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO_2	NOx
Unit 1	100	3500	1100
Unit 2	100	3500	1100
Unit 3	100	3500	1100
Unit 4	100	3500	1100
Unit 5	100	3500	1100
Unit 6	100	3500	1100

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Jun-2025	Technology Type	SO_3 Utlization Jun-2025
Unit 1	*ESP + SO_3*	*98.923%*	*SO_3*	*60.0%*
Unit 2	*ESP + SO_3*	*91.233%*	*SO_3*	*13.3%*
Unit 3	*ESP + SO_3*	*99.159%*	*SO_3*	*96.7%*
Unit 4	*ESP + SO_3*	*99.553%*	*SO_3*	*26.0%*
Unit 5	*ESP + SO_3*	*98.306%*	*SO_3*	*23.3%*
Unit 6	*ESP + SO_3*	*96.315%*	*SO_3*	*56.7%*

Note: ESP plant does not have bypass mode operation, hence plant 100% Utilised

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.

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	O_2
Unit 1	*70.9*	*100.0*	*88.0*	*99.8*
Unit 2	*16.1*	*100.0*	*100.0*	*100.0*
Unit 3	*92.7*	*100.0*	*98.9*	*100.0*
Unit 4	*100.0*	*100.0*	*86.6*	*90.9*
Unit 5	*100.0*	*100.0*	*100.0*	*100.0*
Unit 6	*28.3*	*100.0*	*100.0*	*100.0*

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO_2

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of June 2025

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	307.9	2 055	620
Unit 2	724.1	485	173
Unit 3	313.0	2 230	501
Unit 4	36.0	661	152
Unit 5	274.2	997	472
Unit 6	1 105.1	1 941	851
SUM	2 760.37	8 368	2 769

Table 6.2: Operating days in compliance to PM AEL Limit - June 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	1	4	0	19	23	396.7
Unit 2	0	1	0	6	7	2 698.1
Unit 3	14	4	0	11	15	259.6
Unit 4	6	2	0	0	2	131.8
Unit 5	0	2	0	9	11	437.7
Unit 6	0	2	0	19	21	1 817.0
SUM	21	15	0	64	79	

Table 6.3: Operating days in compliance to SO_2 AEL Limit - June 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO_2 (mg/Nm³)
Unit 1	26	0	0	0	0	1 985.6
Unit 2	10	0	0	0	0	1 465.0
Unit 3	30	0	0	0	0	1 665.2
Unit 4	11	0	0	0	0	1 975.6
Unit 5	12	0	0	0	0	1 535.7
Unit 6	24	0	0	0	0	1 701.2
SUM	113	0	0	0	0	

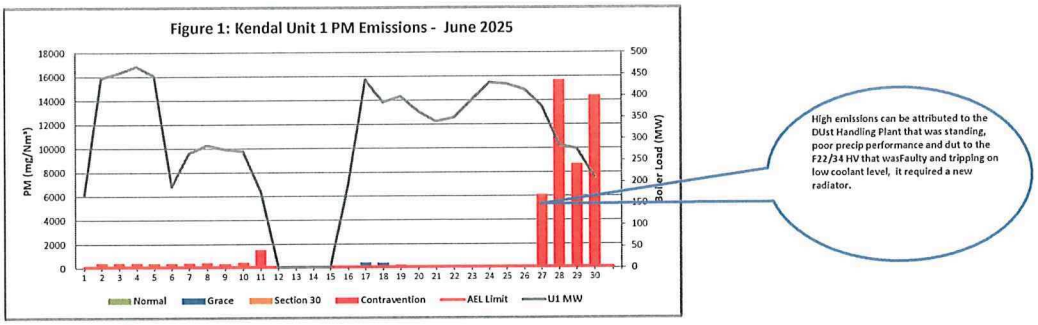
Table 6.4: Operating days in compliance to NOx AEL Limit - June 2025

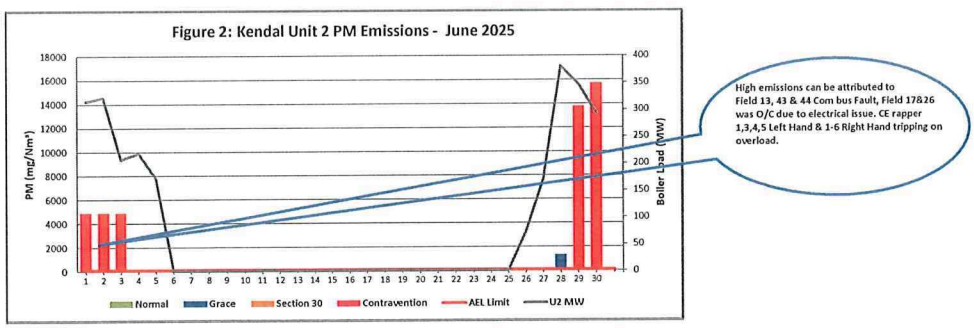
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	26	0	0	0	0	564.4
Unit 2	10	0	0	0	0	493.7
Unit 3	30	0	0	0	0	368.0
Unit 4	11	0	0	0	0	444.8
Unit 5	12	0	0	0	0	687.0
Unit 6	24	0	0	0	0	699.2
SUM	113	0	0	0	0	

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO_2

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





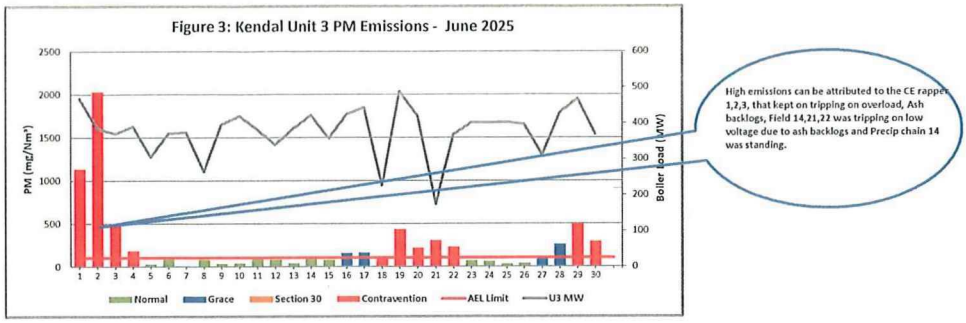


Figure 3: Kendal Unit 3 PM Emissions - June 2025
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW
High emissions can be attributed to the CE rapper 1,2,3, that kept on tripping on overload, Ash backlogs, Field 14,21,22 was tripping on low voltage due to ash backlogs and Precip chain 14 was standing.

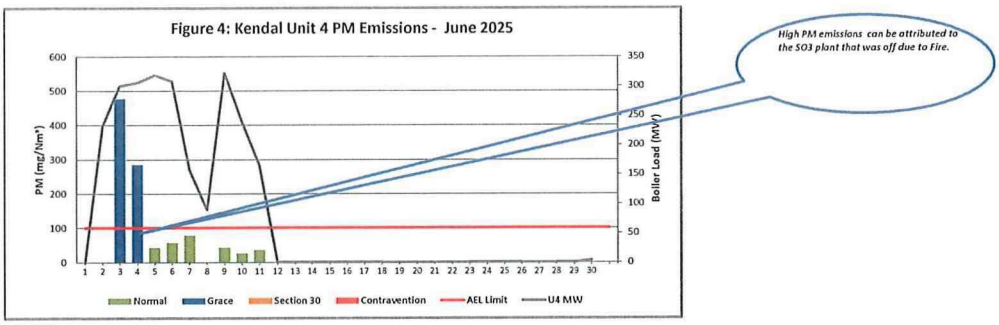


Figure 4: Kendal Unit 4 PM Emissions - June 2025
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW
High PM emissions can be attributed to the SO3 plant that was off due to Fire.

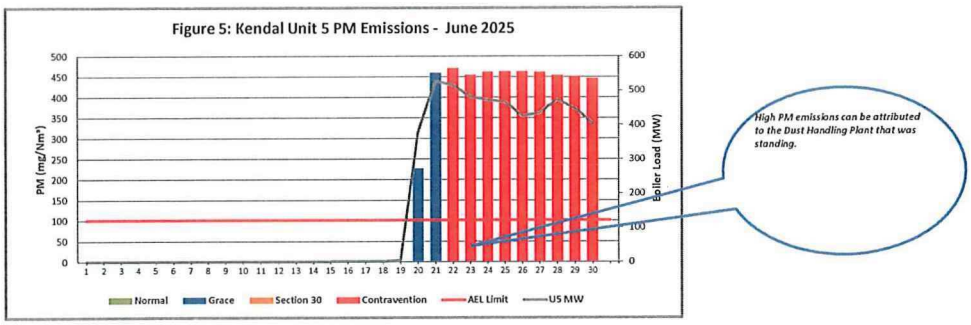


Figure 5: Kendal Unit 5 PM Emissions - June 2025
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW
High PM emissions can be attributed to the Dust Handling Plant that was standing.

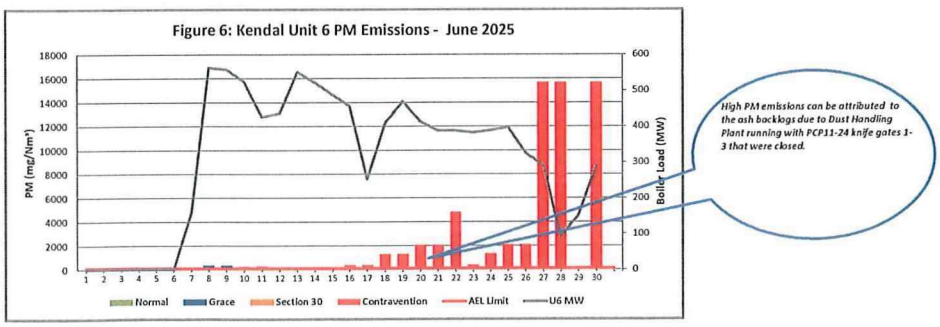


Figure 6: Kendal Unit 6 PM Emissions - June 2025
PM (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW
High PM emissions can be attributed to the ash backlogs due to Dust Handling Plant running with PCP11-24 knife gates 1-3 that were closed.

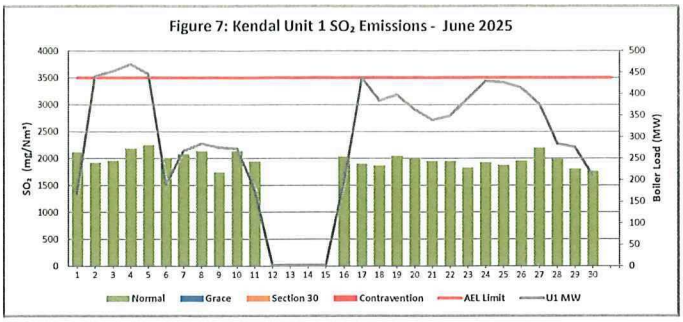


Figure 7: Kendal Unit 1 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW

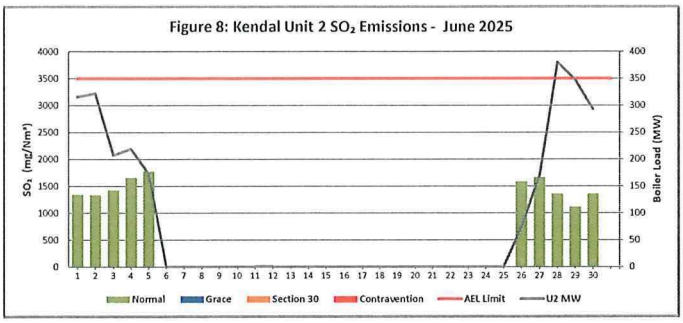


Figure 8: Kendal Unit 2 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

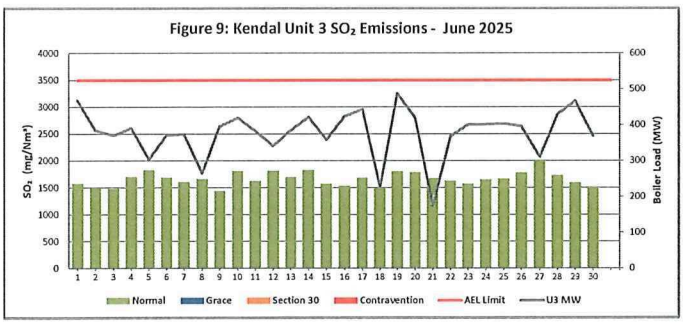


Figure 9: Kendal Unit 3 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

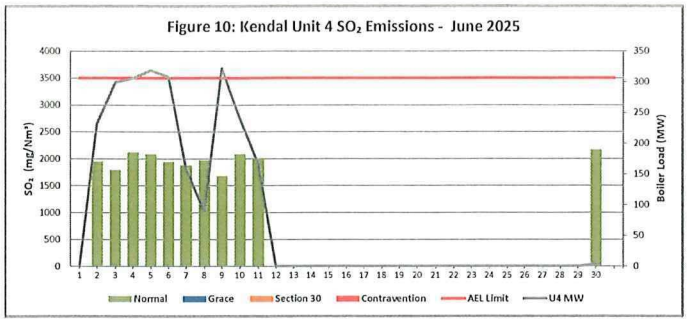


Figure 10: Kendal Unit 4 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

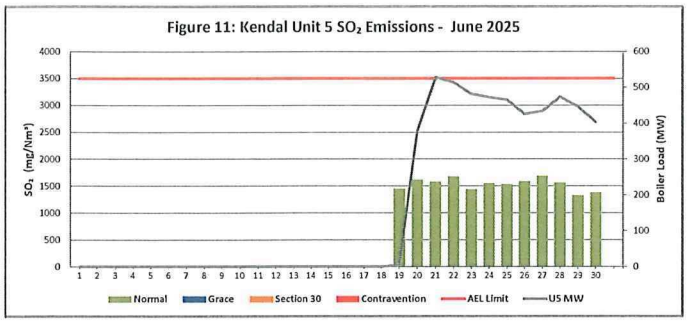


Figure 11: Kendal Unit 5 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

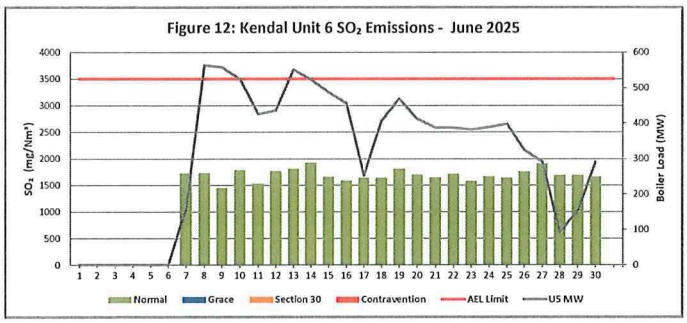


Figure 12: Kendal Unit 6 SO_2 Emissions - June 2025
SO_2 (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

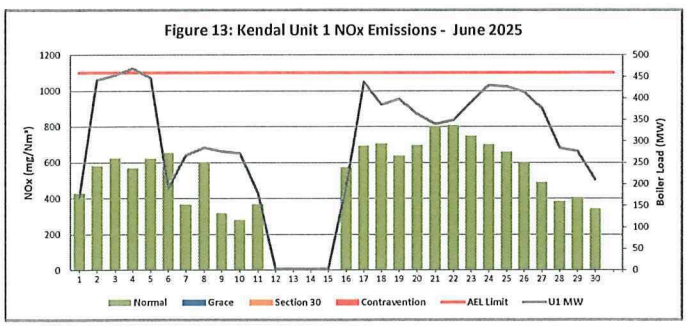


Figure 13: Kendal Unit 1 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW

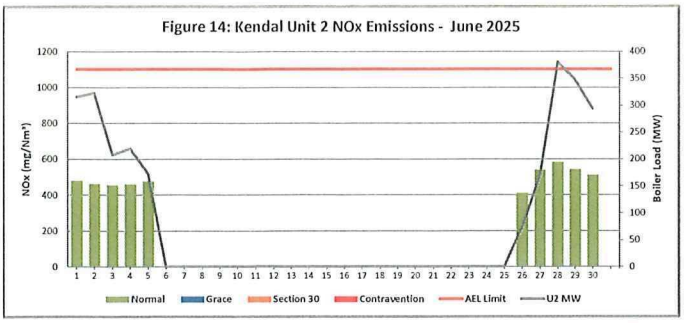


Figure 14: Kendal Unit 2 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U2 MW

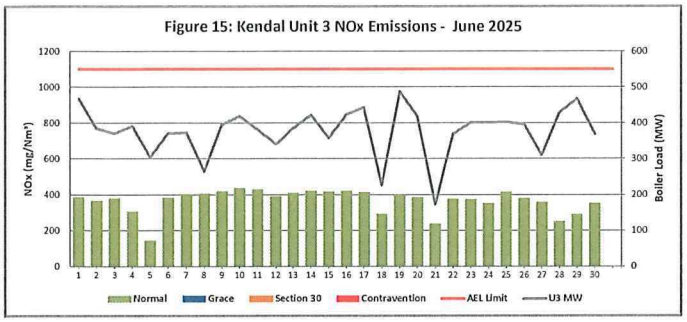


Figure 15: Kendal Unit 3 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U3 MW

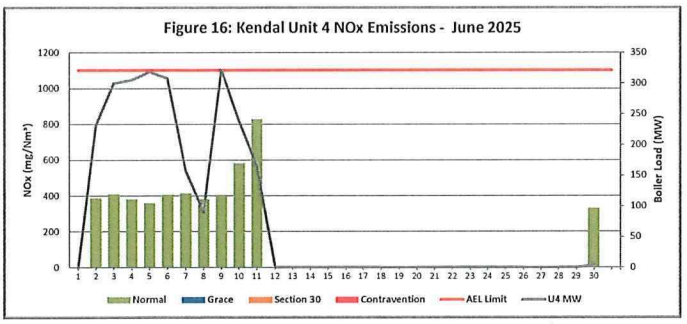


Figure 16: Kendal Unit 4 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW

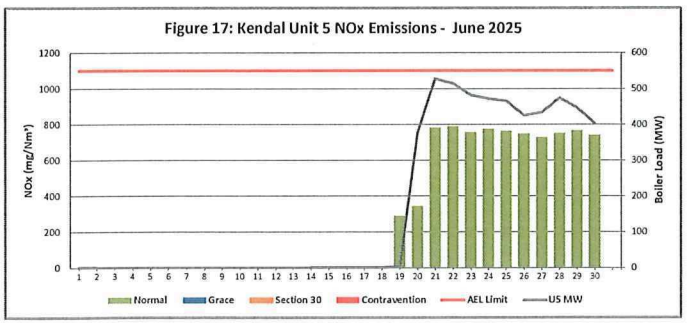


Figure 17: Kendal Unit 5 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U5 MW

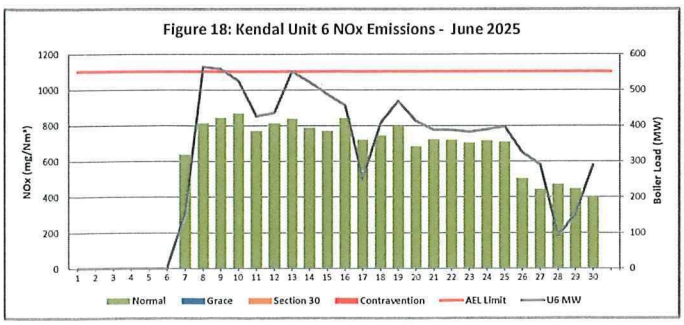


Figure 18: Kendal Unit 6 NOx Emissions - June 2025
NOx (mg/Nm³)
Boiler Load (MW)
Normal
Grace
Section 30
Contravention
AEL Limit
U6 MW

7 COMPLAINTS

There were no complaints for this months

Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence

ADDENDUM TO MONTHLY EMISSIONS REPORT

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

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

$\eta = 1 \quad \{DustEmissionFromAQRReportDustMonitor(tons)\} \times 100$
$\{CoalBurnt(tons) * \%AshContent * 80\%\}$

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 – (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 1,2,3 and 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 02 sensors are faulty as 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 montiors were not 100% reliable due ash backlogs dust flooded the dust motors

- Unit 1
- Findings The high emissions can be attributed the DUst Handling Plant that was standing, poor precip performance and dut to the F22/34 HV that wasFaulty and tripping on low coolant level, it required a new radiator
- Resolution Plant repaired

- Unit 2
- Findings Field 13, 43 & 44 Com bus Fault, Field 17&26 was O/C due to electrical issue CE rapper 1,3,4,5 Left Hand & 1 6 Right Hand tripping on overload
- Resolution Plant repaired

- Unit 3
- Findings The high PM emissions can be attributed to the CE rapper 1,2,3, that kept on tripping on overload, Ash backlogs, Field 14,21,22 was tripping on low voltage due to ash backlogs and Precip chain 14 was standing
- Resolution Plant repaired

- Unit 4
- Findings The high PM emissions can be attributed to to the SO3 plant that was off due to Fire
- Resolution Plant repaired

- Unit 5
- Findings High PM emissions can be attributed to the Dust Handling Plant that was standing
- Resolution Plant repaired

- Unit 6
- Findings High PM emissions can be attributed to the ash backlogs due to Dust Handling Plant running with PCP11 24 knife gates 1 3 that were closed
- Resolution Plant repaired