Eskom

Mrs Mpho Nembilwi
Nkangala District
P O Box 437
MIDDLEBERG
1050
By email nembilwim@nkangaladm gov za'

Date
21 October 2020

Enquiries E Madike
Tel +27 13 647 9199

Dear Mrs Mpho Nembilwi

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

KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF SEPTEMBER 2020

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:

Tshilidzi Vilane
ENVIRONMENTAL OFFICER- KENDAL

Date: 26/10/2020

Verified by:

Hlono Malatsi
SENIOR TECHNICIAN BOILER ENGINEERING- KENDAL

Date: 27/10/2020

Generation Division (Operating Unit Coal 2)
(Kendal Power Station)
N12 Balmoral Off Ramp, Emalahleni
Private Bag x7272, Emalahlani 1035 SA
Tel +27 13 647 6741 Fax +27 13 647 6904 www eskom co za
Eskom Holdings SOC Ltd Reg No 2002/015527/30

KENDAL POWER STATION'S EMISSIONS REPORT FOR THE MONTH OF SEPTEMBER 2020

Validated by:

Tendani Rasivhetshele
ACTING BOILER ENGINEERING MANAGER-KENDAL

Date 27/10/2020

Supported by:

Malibongwe Mabizela
ACTING ENGINEERING MANAGER-KENDAL

Date 28/10/2020

Approved by:

Bruce Moyo
GENERAL MANAGER-KENDAL

Date 29/10/2020

Eskom

SEPTEMBER 2020

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		Consumption Rate Sep-2020
	Coal		Tons		*906 377*
	Fuel Oil		Tons		*1804.13*
Production Rates	Product / By-Product Name		Units		Production Rate Sep-2020
	Energy		GWh		*1 513.06*
	Ash		Tons		*311 703.1*
	RE Ash		kg/MWh		*1.192*

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units		Stipulated Range	Monthly Average Content
Sulphur Content	%		*0.7 TO >1 (%)*	*0.770*
Ash Content	%		*30 TO >40 (%)*	*34.390*

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SOx		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 ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Sep-2020	Technology Type	Utlization Sep-2020
Unit 1	ESP + SO_3	99.8%	SO_3	98.5%
Unit 2	ESP + SO_3	99.7%	SO_3	Data not available on PI due to broken fibre optic at equipement
Unit 3	ESP + SO_3	97.6%	SO_3	50.2%
Unit 4	ESP + SO_3	99.3%	SO_3	Data not available on PI due to broken fibre
Unit 5	ESP + SO_3	Unit off	SO_3	Unit off
Unit 6	ESP + SO_3	99.6%	SO_3	Data not available on PI due to broken fibre optic at equipement room and power cables stolen

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	O_2
Unit 1	98.6	0.0	0.0	0.0
Unit 2	97.7	99.6	99.2	97.0
Unit 3	83.2	99.9	99.9	91.4
Unit 4	83.5	59.4	59.0	59.2
Unit 5	Unit off	Unit off	Unit off	Unit off
Unit 6	85.1	64.3	63.3	63.8

6 EMISSION PERFORMANCE

Table 6 1 Monthly tonnages for the month of September 2020

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)	CO_2 (tons)
Unit 1	105 2	5 014	1 781	409 174
Unit 2	150 5	3 888	1 501	285 138
Unit 3	1 025 7	1 319	503	124 560
Unit 4	323 2	2 156	835	178 795
Unit 5	Unit off	Unit off	Unit off	Unit off
Unit 6	199 4	2 979	926	333 645
SUM	1 804 08	15 356	5 546	1 331 312

Table 6 2 Operating days in compliance to PM AEL Limit - September 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	26	1	0	2	3	61 4
Unit 2	9	8	0	7	15	131 7
Unit 3	3	2	0	17	19	793 8
Unit 4	3	7	0	15	22	205 3
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off Unit off	Unit off
Unit 6	23	2	0	5	7	113 0
SUM	64	20	0	46	66	

Table 6 3 Operating days in compliance to SOx AEL Limit - September 2020

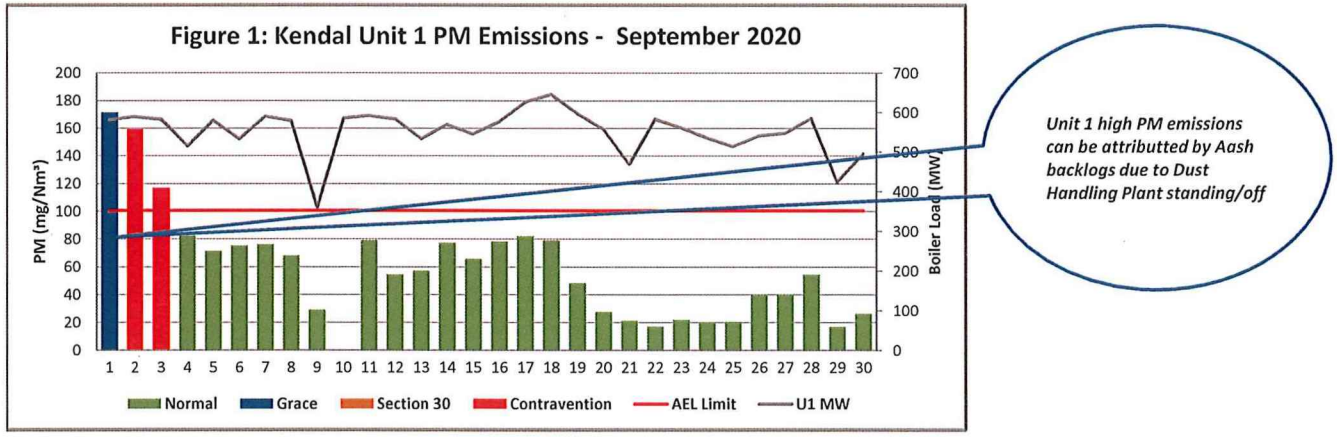
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	30	0	0	0	0	1 956 8
Unit 2	19	0	0	7	7	3 315 1
Unit 3	23	0	0	0	0	2 225 7
Unit 4	26	0	0	0	0	2 445 8
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off Unit off	Unit off
Unit 6	31	0	0	0	0	1 313 5
SUM	129	0	0	7	7	

Table 6.4: Operating days in compliance to NOx AEL Limit - September 2020

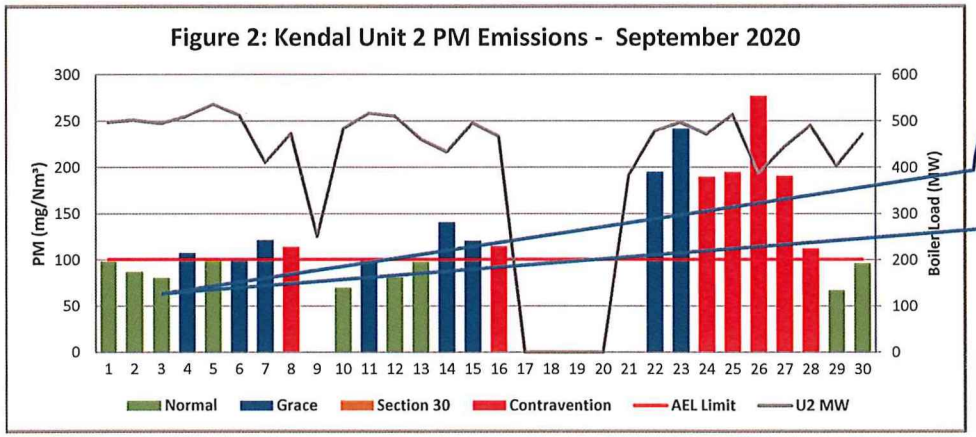
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance		Average NOx (mg/Nm³)
Unit 1	30	0	0	0	0		695.1
Unit 2	0	0	0	26	26		1 284.1
Unit 3	23	0	0	0	0		861.0
Unit 4	26	0	0	0	0		942.9
Unit 5	Unit off	Unit off	Unit off	Unit off	Unit off	Unit off	Unit off
Unit 6	30	0	0	0	0		406.6
SUM	109	0	0	26	26		

Table 6.5: Legend Description

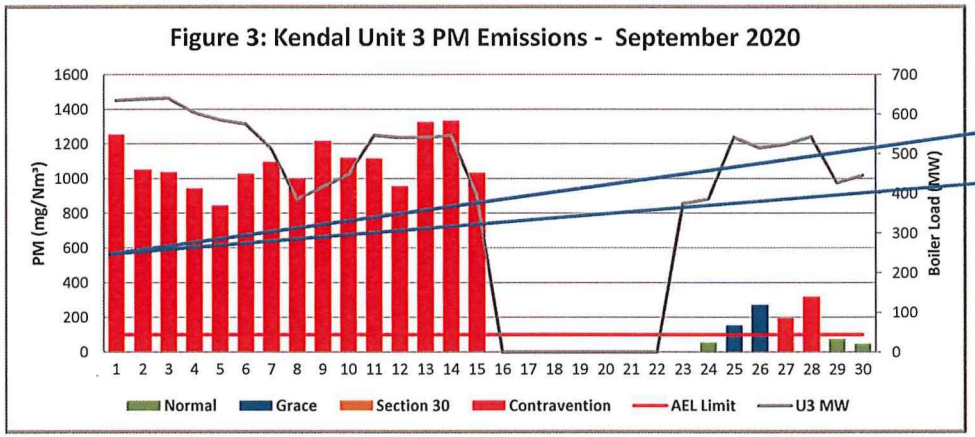
Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions



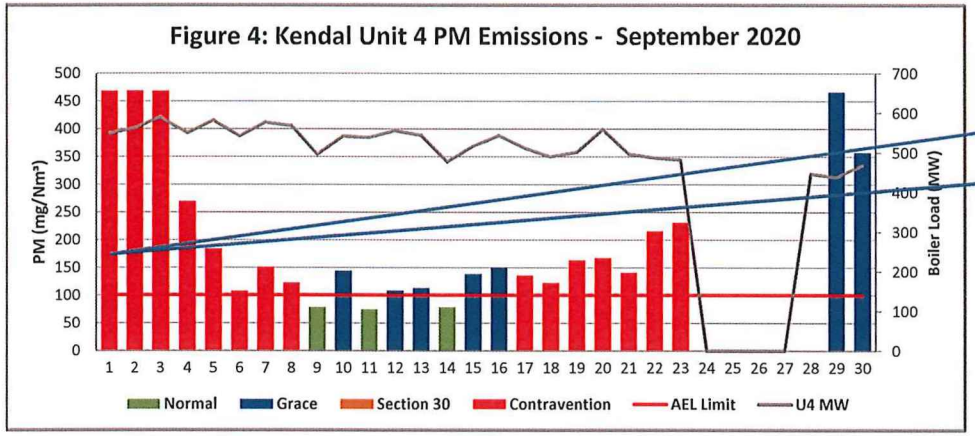
Unit 1 high PM emissions can be attributted by Aash backlogs due to Dust Handling Plant standing/off



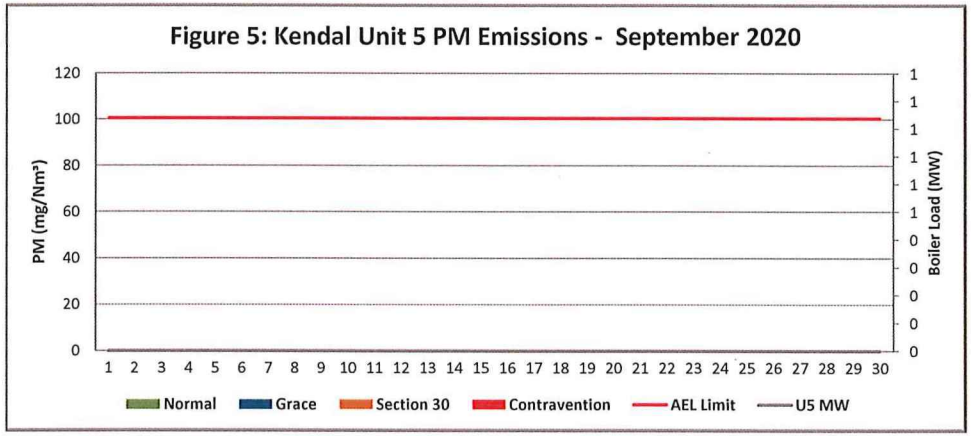
High PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing damage to electrostatic precipitators eletrodes and poor and ESP poor performance due to primary air heater leakages

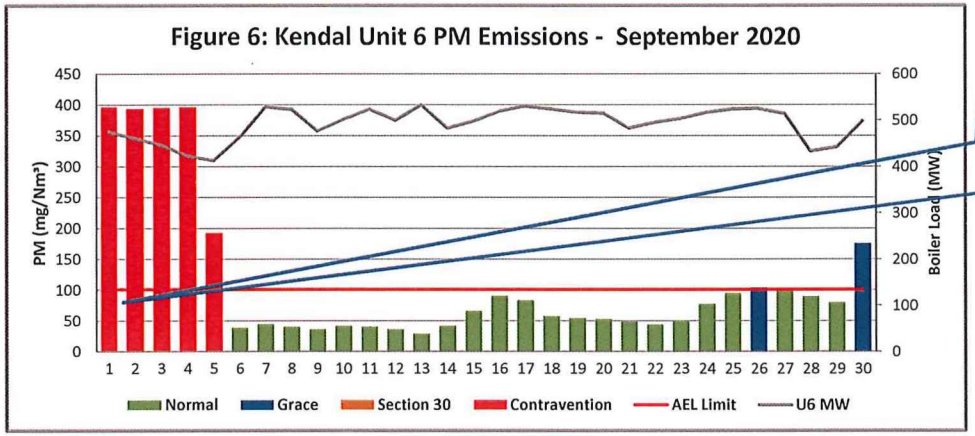


Unit 3 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing re-entrainment of of dust inside the electrostatic precipitators fields (ESP).

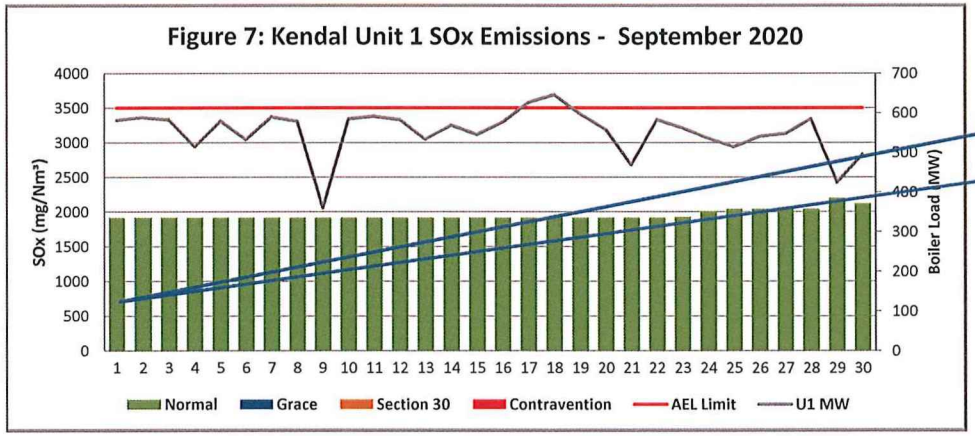


Unit 4 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing re-entrainment of of dust inside the electrostatic precipitators fields (ESP

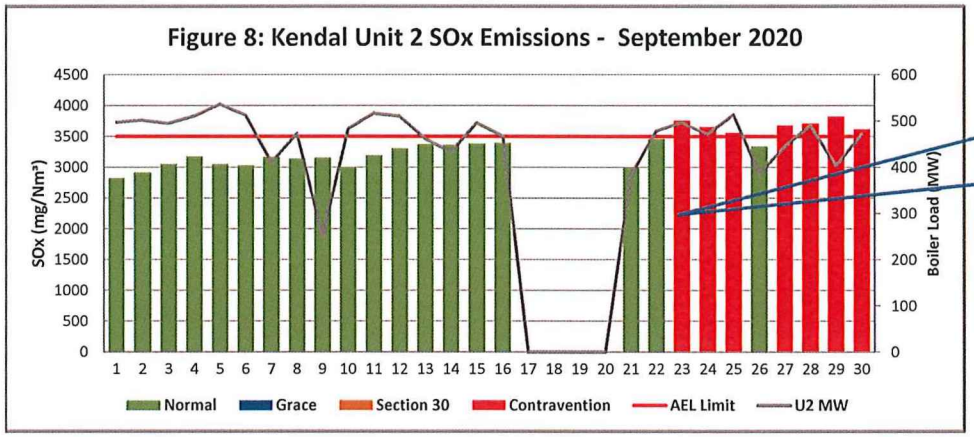




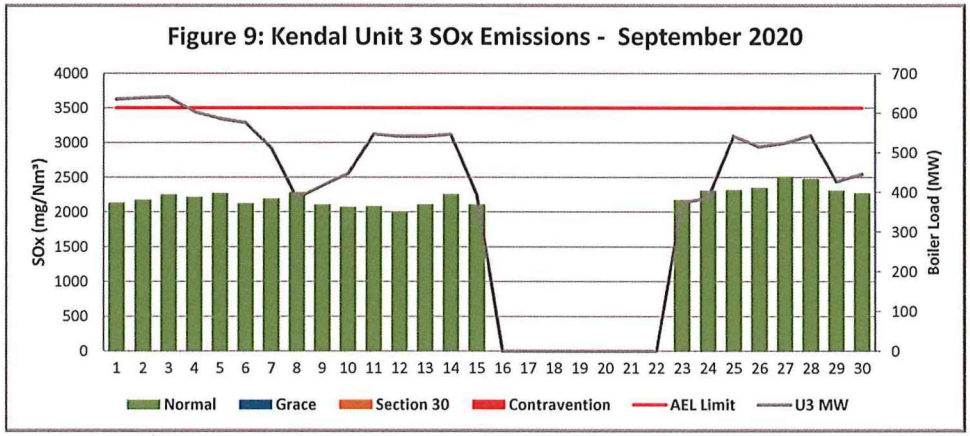
Unit 6 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing re-entrainment of of dust inside the electrostatic precipitators fields (ESP

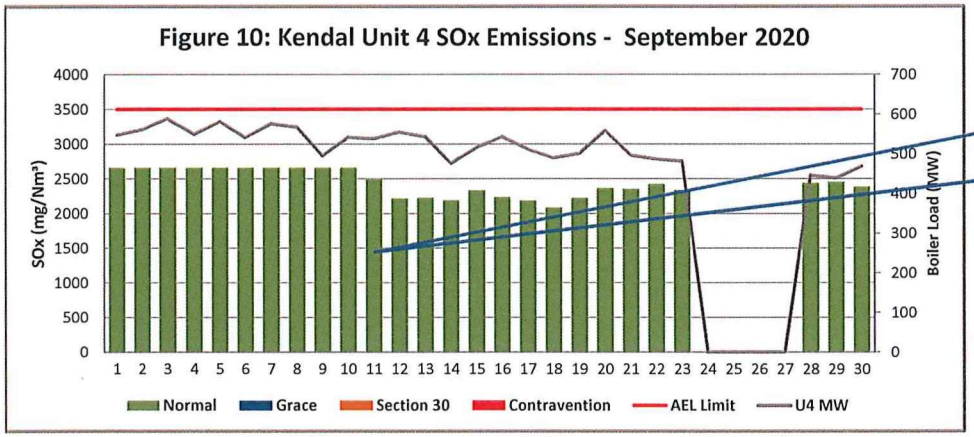


Note that gaseous emissions for unis 1 were manually entered using Independant third party QAL2 parallel test reports due to defective CEMS monitors.



Note that gaseous emissions for unit 2 were high due to high sulphur content in the coal burnt in unit 2.





Note that gaseous emissions for unit 4 from the 01st until the 11th were manually entered using Independant third party QAL2 parallel test reports due to defective CEMS monitors, but the monitors started working from the 12th.

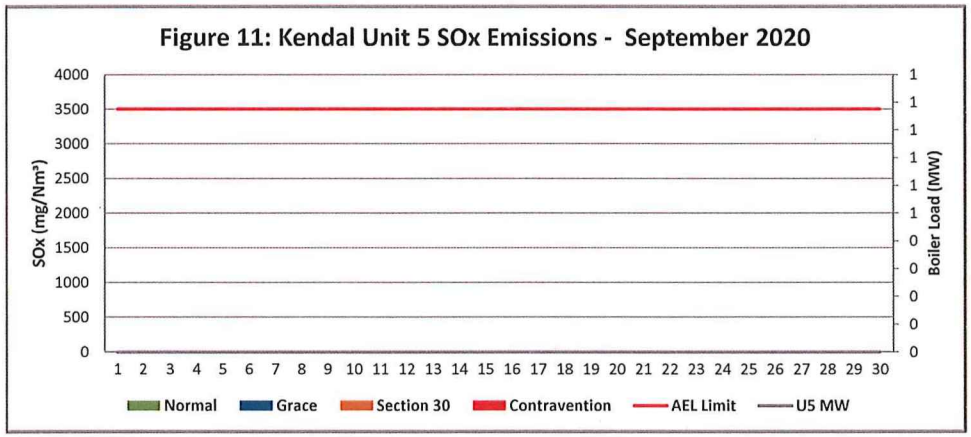


Figure 12: Kendal Unit 6 SOx Emissions - September 2020

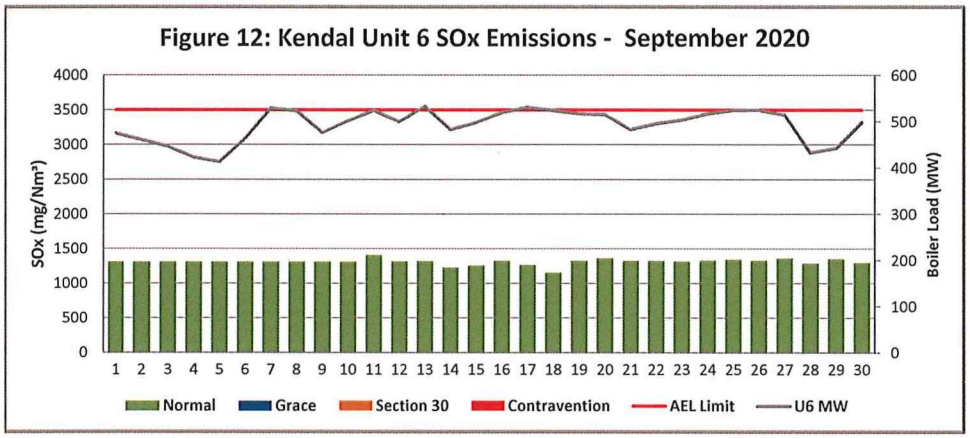
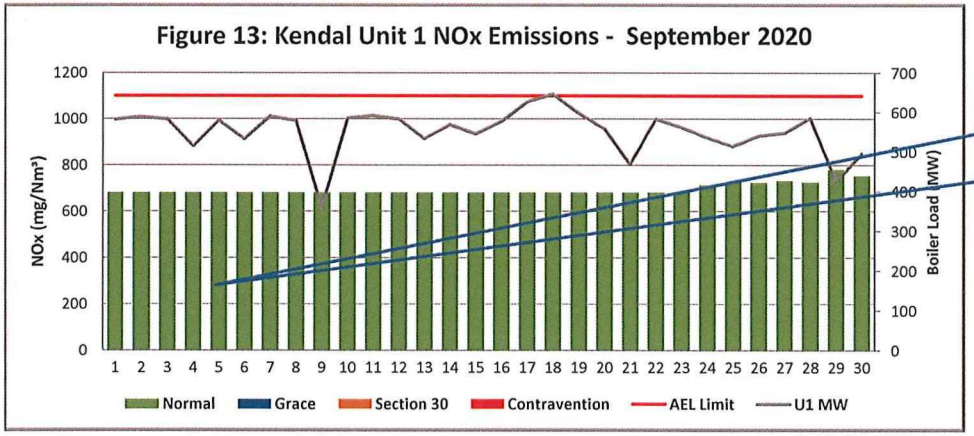
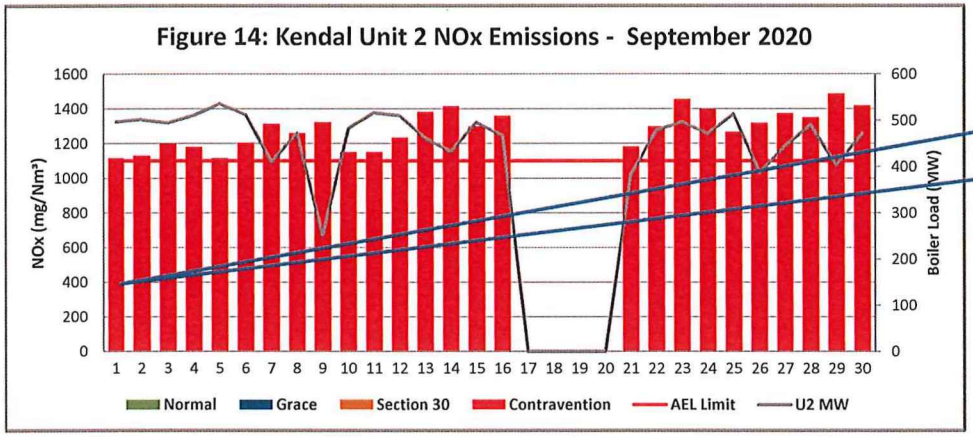


Figure 13: Kendal Unit 1 NOx Emissions - September 2020



Note that gaseous emissions for unit 1 were manually entered using Independant third party QAL2 parallel test reports due to defective CEMS monitors.



Note that NOx emissions for unit 2 were high due to unbalnced conditions of combustion process and also the current NO correction factor for unit 2 is very high as compared to the other units

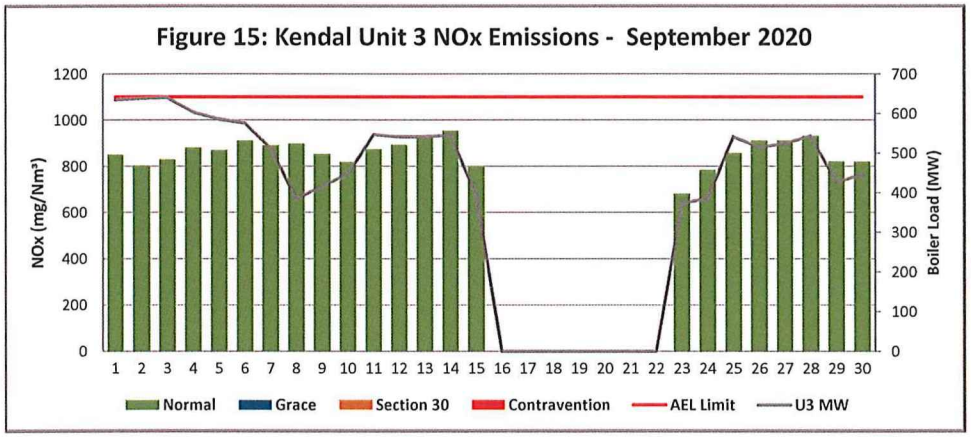
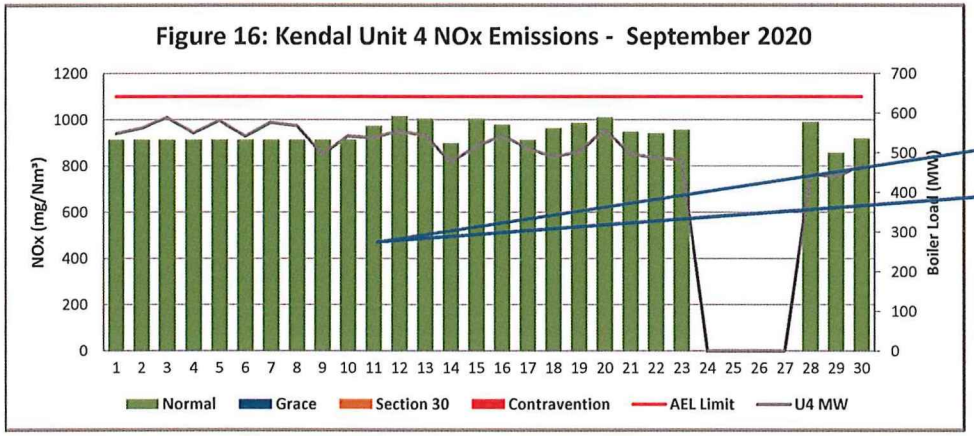
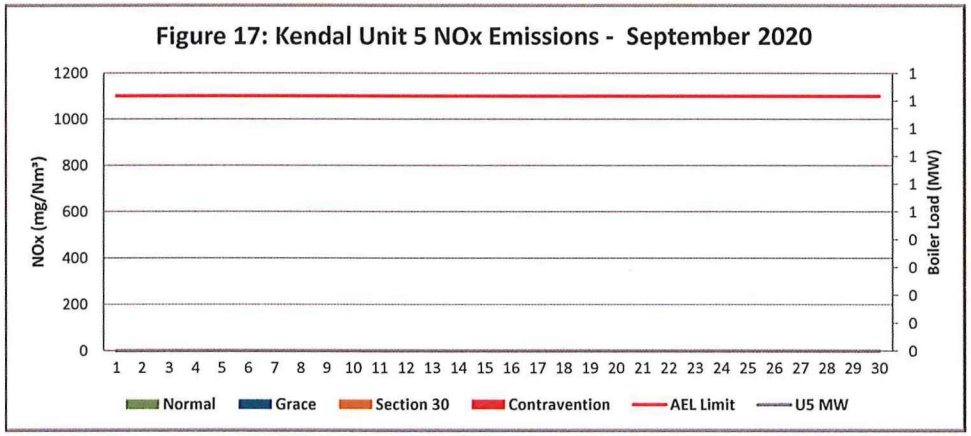


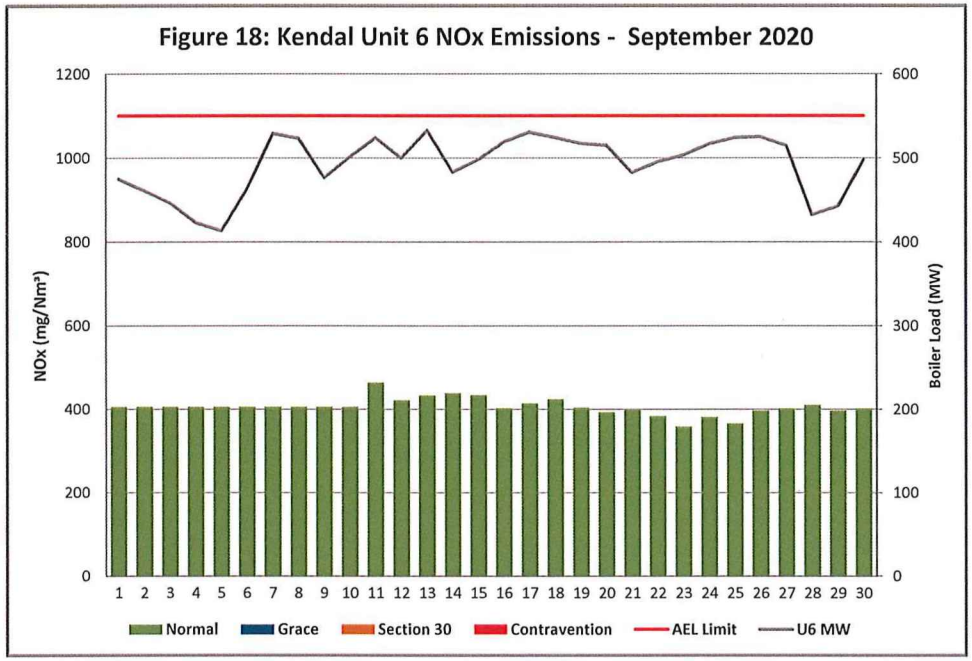
Figure 16: Kendal Unit 4 NOx Emissions - September 2020



Note that gaseous emissions for unit 4 from the 01st until the 11th were manually entered using Independant third party QAL2 parallel test reports due to defective CEMS monitors, but monitor started working from the 12th.

Figure 17: Kendal Unit 5 NOx Emissions - September 2020





7 COMMENTS

Units 1,2,3,4 & 6 high PM emissions can be attributed to poor availability of Dust Handling Plant resulting to ash backlogs causing poor performance of the electrostatic precipitators fields.

Note that gaseous emissions for units 1 & 4 were manually entered using Independant third party QAL2 parallel test reports due to defective CEMS monitors,

but for unit 1 it was for the whole month and unit 4 from the 01st until the 11th, from the 12th the monitor started to work.

Average SRM velocity values from the latest correlation report were used on the gaseous emissions on Unit 1, 2, 3 & 4 due to defective CEMS monitors and velocity correction factors were set M=1 and C=0

Average AMS velocity values from December 2019 correlation report were used for the gaseous emissions on unit 6 with the velocity correction factors

Unit 5 was still offload during the whole months of September 2020

8 COMPLAINTS

There were no complaints received during the months of September 2020