Eskom

Generation

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AND

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DUVHA POWER STATION

Atmospheric Emission License 17/4/AEL/MP312/11/07

M.B Ndlovu
GENERAL MANAGER

2025/05/22
DATE

MARCH 2025

DUVHA POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License 17/4/AEL/MP312/11/07

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Mar-2025
	Coal	Tons	*1 400 000*	*444 247.30*
	Fuel Oil	Tons	*5 000*	*6136.66*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Indicative Production Rate Mar-2025**
	Energy	GWh	*2 678.40*	*696.40*
	Ash	Tons	*not specified*	*108 129.79*

Note: Maximum energy rate is as per the maximum capacity stated in the AEL: [3 600 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	*18-24*	*22.29*
Sulphur Content	%	*0.6 TO >1.2*	*0.63*
Ash Content	%	*27 TO 30*	*24.34*

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO_2	NOx
Unit 1	*100*	*3500*	*1100*
Unit 2	*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 Mar-2025	Technology Type	SO_3 Utlization Mar-2025
Unit 1	*FFP*	*99.9%*	*SO_3*	*n/a*
Unit 2	*FFP*	*100.0%*	*SO_3*	*n/a*
Unit 4	*ESP + SO_3*	*98.1%*	*SO_3*	*94.8%*
Unit 5	*ESP + SO_3*	*Off*	*SO_3*	*Off*
Unit 6	*ESP + SO_3*	*99.9%*	*SO_3*	*100.0%*
***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	*99.9*	*87.2*	*87.2*	*87.2*
Unit 2	*100.0*	*81.7*	*82.6*	*84.8*
Unit 4	*97.7*	*87.9*	*88.2*	*98.1*
Unit 6	*100.0*	*74.0*	*75.9*	*99.2*

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 March 2025

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	42.7	3 469	1 048
Unit 2	12.9	1 833	786
Unit 4	456.0	2 028	852
Unit 6	18.6	669	360
SUM	530.20	7 999	3 046

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm^3)
Unit 1	30	0	0	0	0	25.6
Unit 2	20	0	0	0	0	13.1
Unit 4	21	6	0	0	6	401.1
Unit 6	8	1	0	0	1	81.2
SUM	**79**	**7**	**0**	**0**	**7**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO_2 (mg/Nm^3)
Unit 1	31	0	0	0	0	2 044.9
Unit 2	23	0	0	0	0	1 607.8
Unit 4	29	0	0	0	0	1 508.1
Unit 6	14	0	0	0	0	1 404.7
SUM	**97**	**0**	**0**	**0**	**0**	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm^3)
Unit 1	31	0	0	0	0	615.6
Unit 2	23	0	0	0	0	686.6
Unit 4	29	0	0	0	0	632.4
Unit 6	14	0	0	0	0	714.5
SUM	**97**	**0**	**0**	**0**	**0**	

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

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

Figure 1: Duvha Unit 1 PM Emissions - March 2025

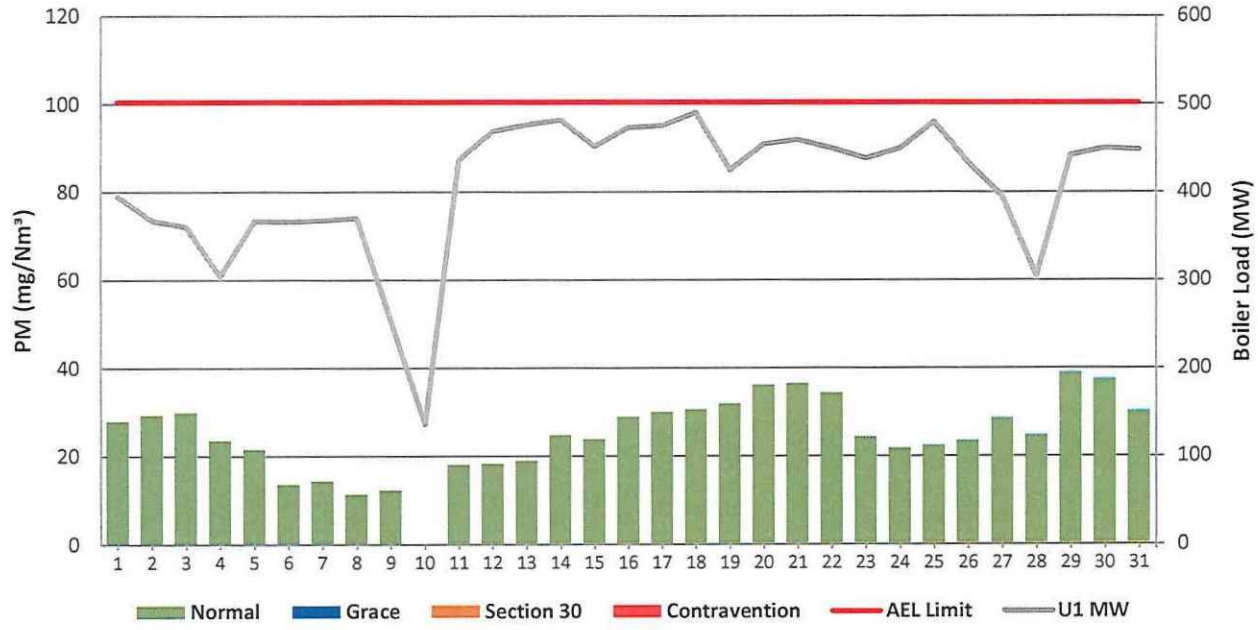


Figure 2: Duvha Unit 2 PM Emissions - March 2025

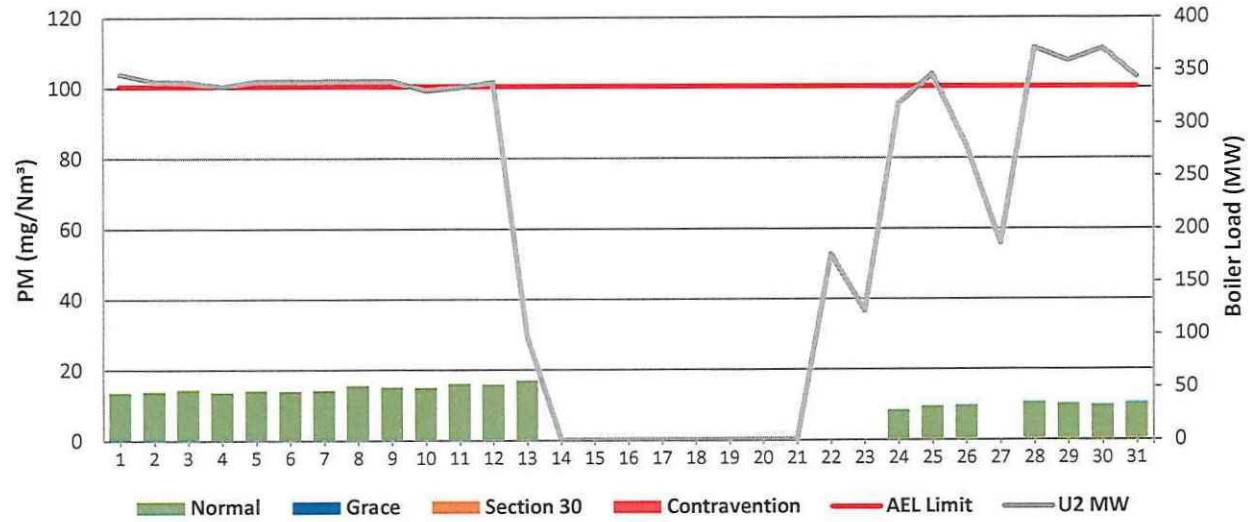


Figure 3: Duvha Unit 4 PM Emissions - March 2025

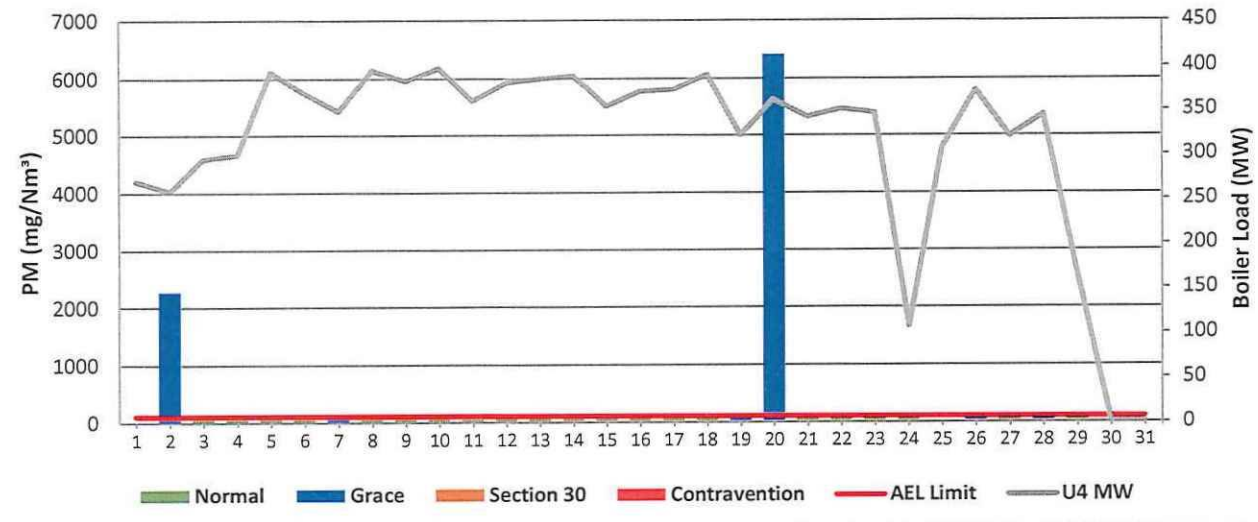


Figure 4: Duvha Unit 6 PM Emissions - March 2025

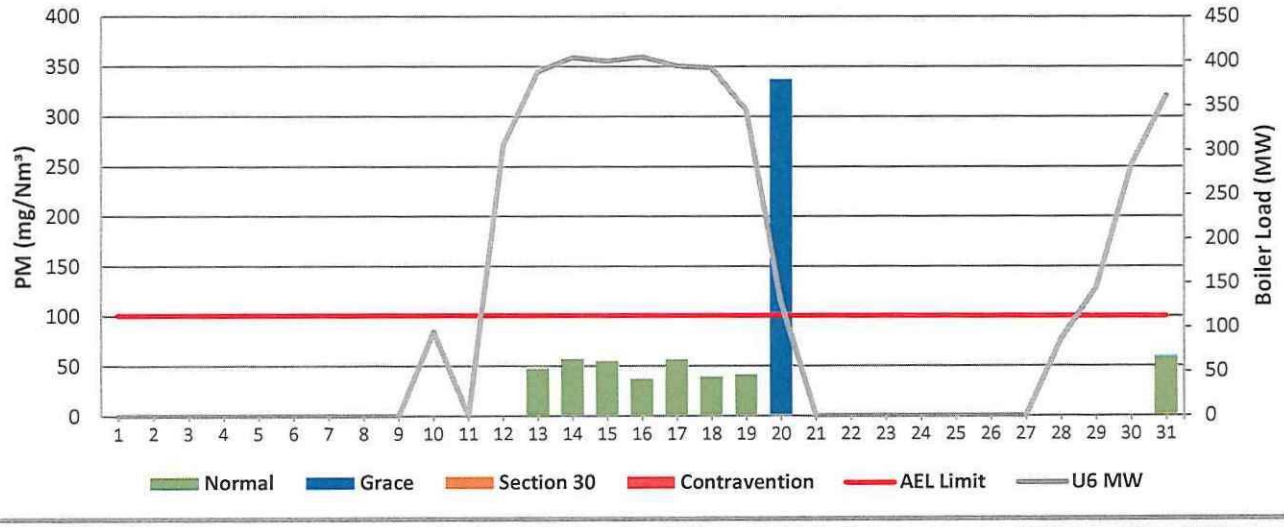


Figure 5: Duvha Unit 1 SO_2 Emissions - March 2025

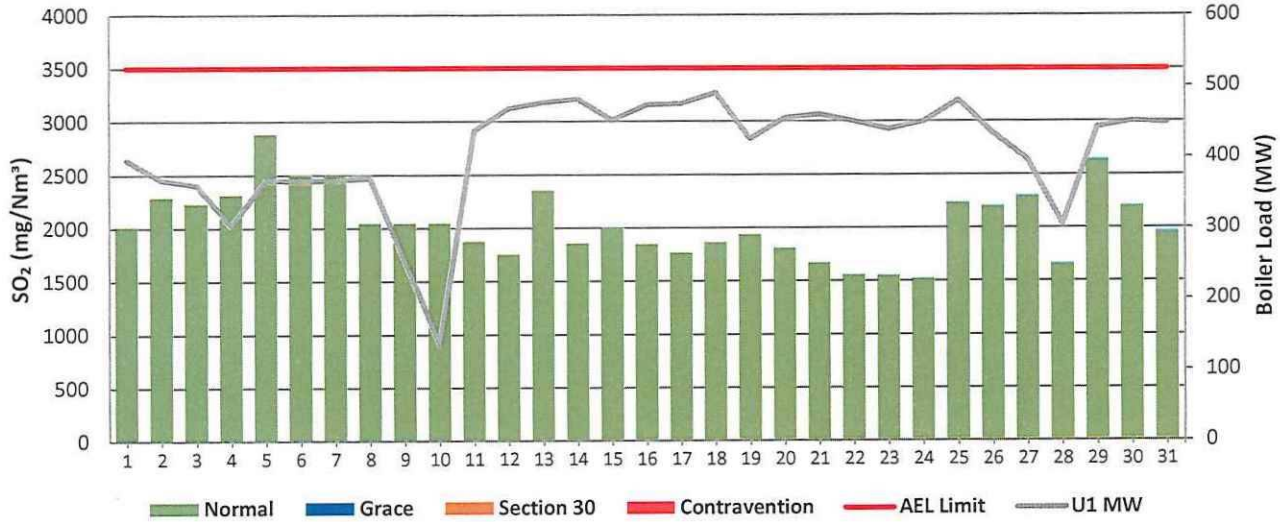


Figure 6: Duvha Unit 2 SO_2 Emissions - March 2025

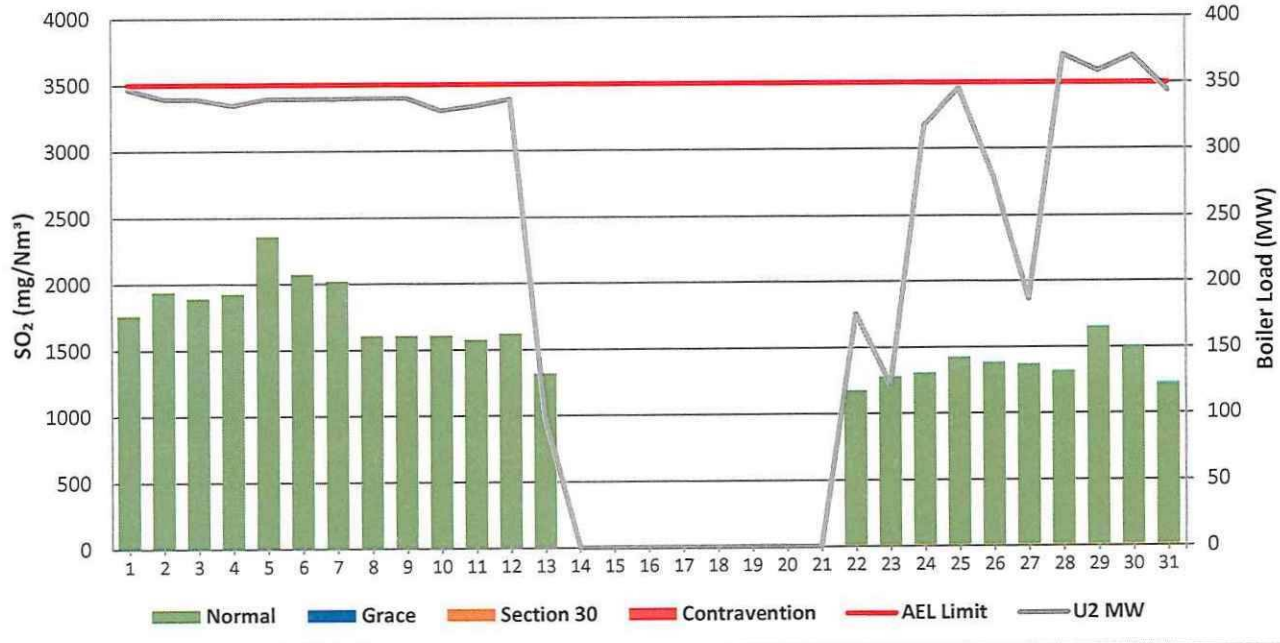


Figure 7: Duvha Unit 4 SO_2 Emissions - March 2025

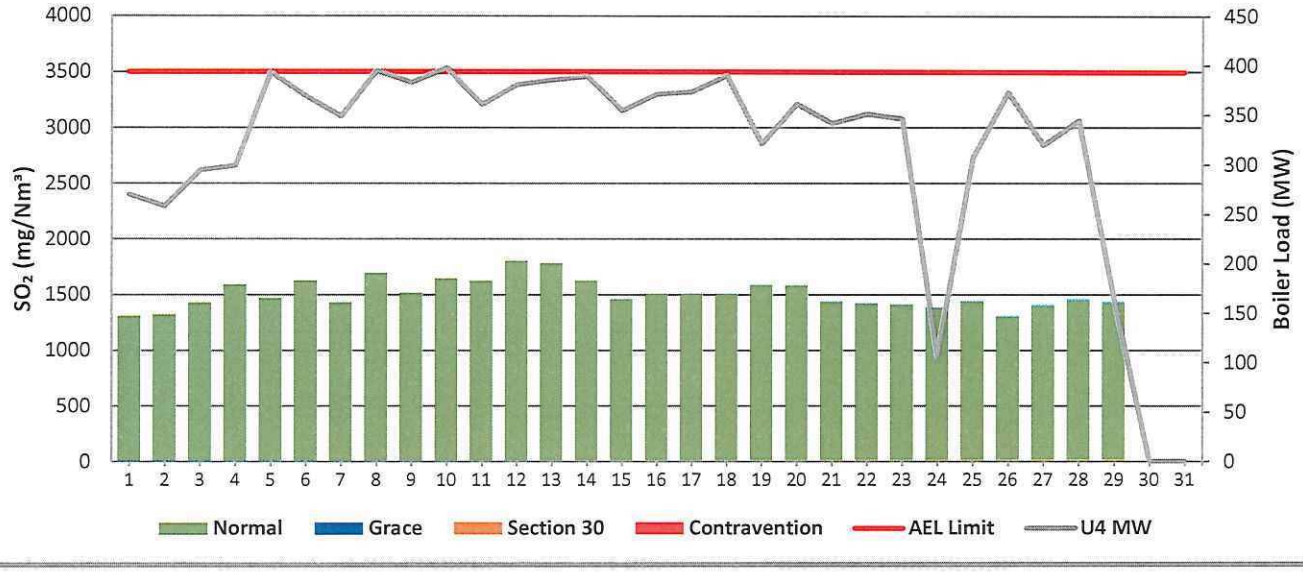


Figure 8: Duvha Unit 6 SO_2 Emissions - March 2025

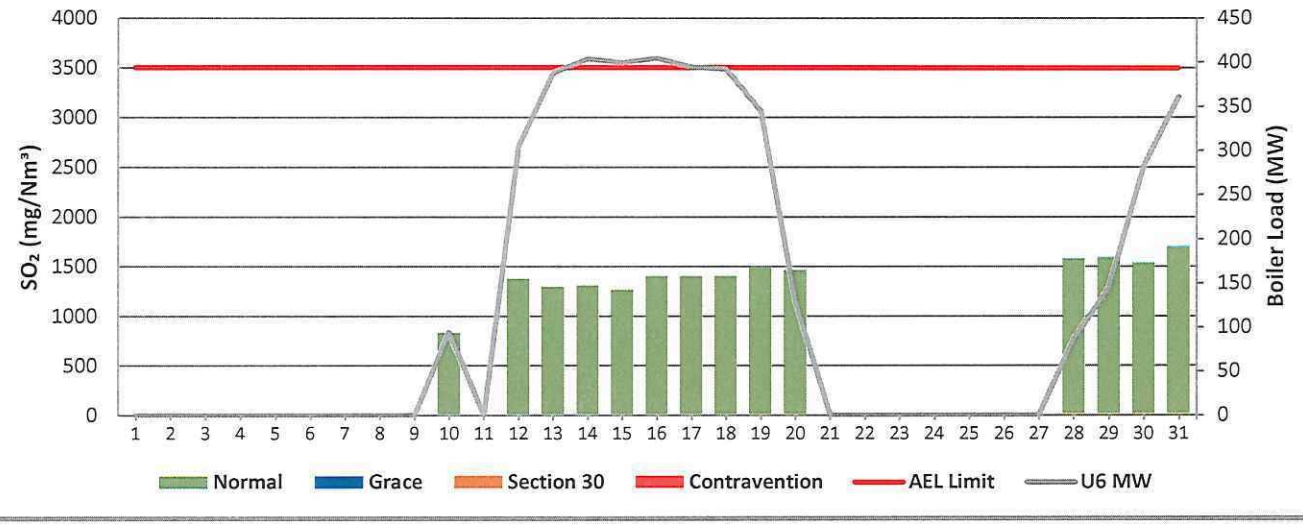


Figure 9: Duvha Unit 1 NOx Emissions - March 2025

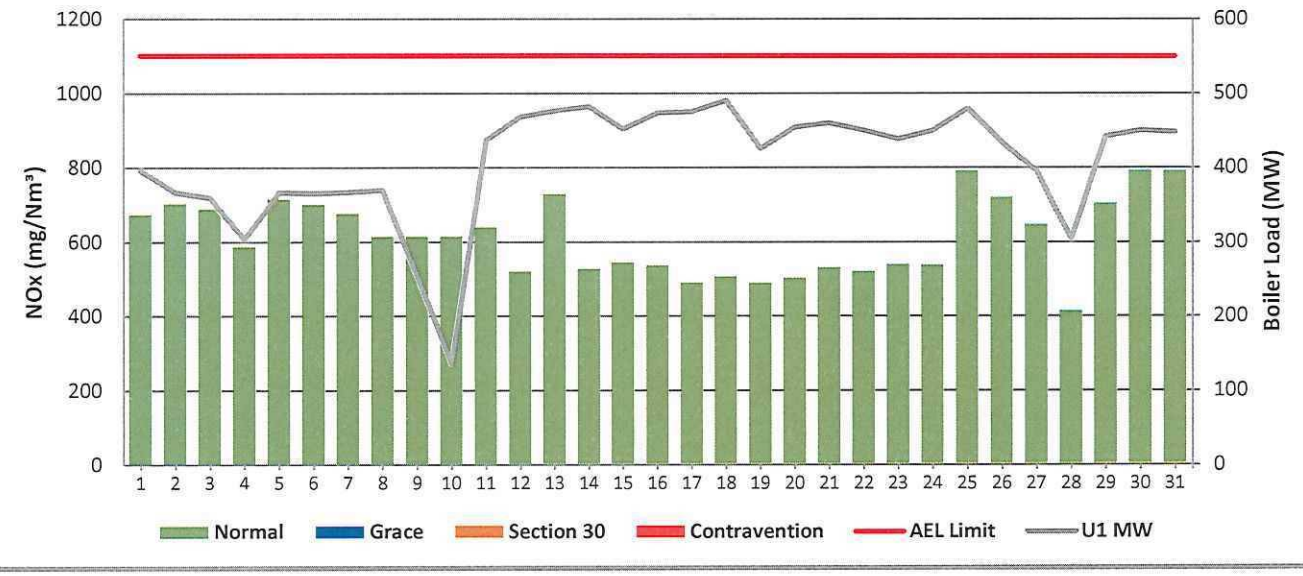


Figure 10: Duvha Unit 2 NOx Emissions - March 2025

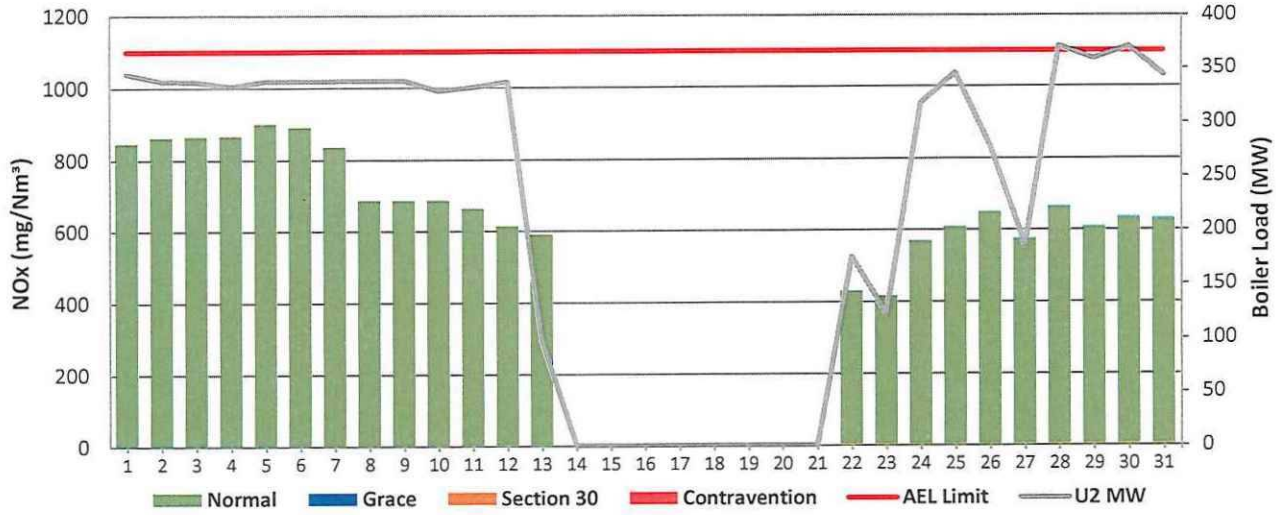


Figure 11: Duvha Unit 4 NOx Emissions - March 2025

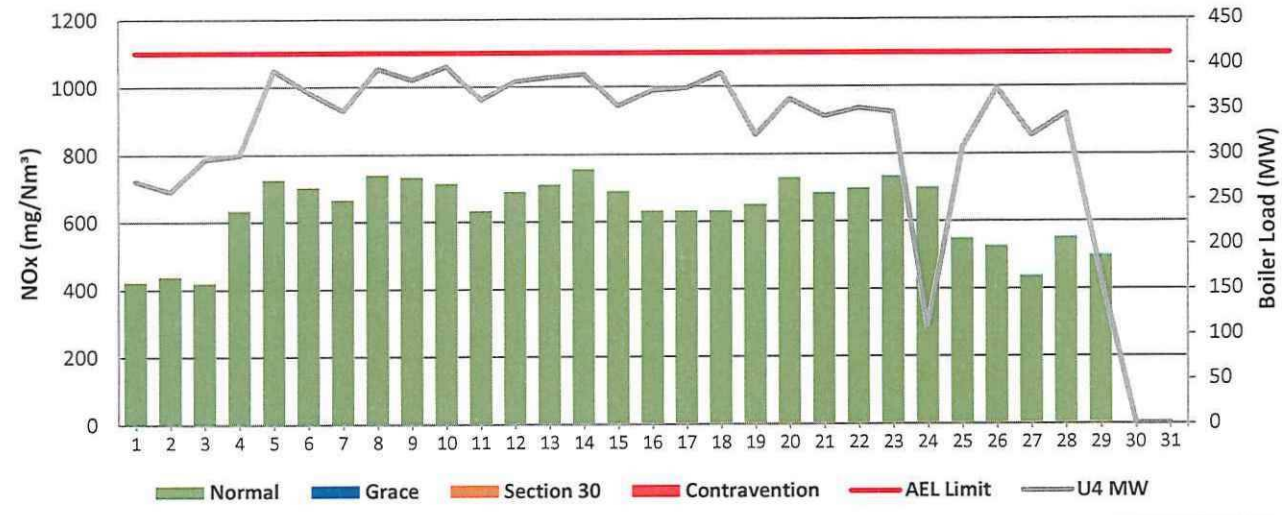
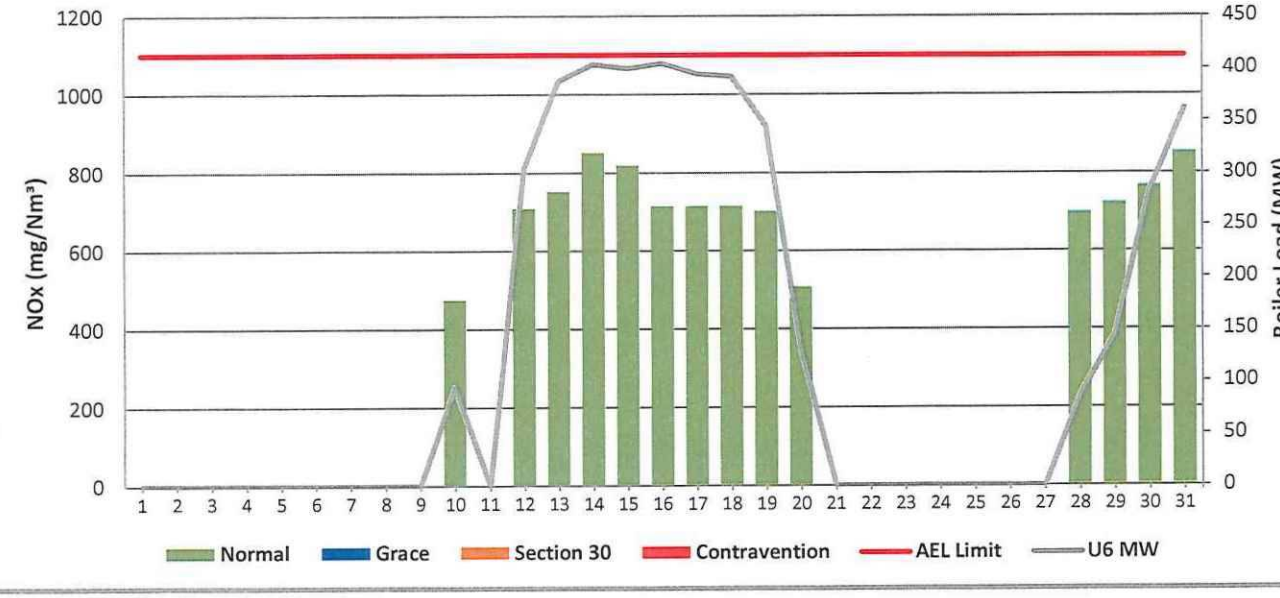


Figure 12: Duvha Unit 6 NOx Emissions - March 2025



7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of March 2025

Unit No.1	Event 1	
Breaker Open (BO)	*4:50 pm*	*2025/03/09*
Draught Group (DG) Shut Down (SD)	*DG did not trip or SD*	*DG did not trip or SD*
BO to DG SD (duration)	*n/a*	DD:HH:MM
Fires in time		
Synch. to Grid (or BC)	*4:40 pm*	*2025/03/10*
Fires in to BC (duration)	*DG did not trip or SD*	DD:HH:MM
Emissions below limit from BC (end date)		
Emissions below limit from BC (duration)	*DG did not trip or SD*	DD:HH:MM

Unit No.2	Event 1		Event 2	
Breaker Open (BO)	*7:15 am*	*2025/03/13*	*6:25 pm*	*2025/03/26*
Draught Group (DG) Shut Down (SD)	*7:45 am*	*2025/03/14*	*7:15 pm*	*2025/03/26*
BO to DG SD (duration)	*01:00:30*	DD:HH:MM	*00:00:50*	DD:HH:MM
Fires in time	*7:20 am*	*2025/03/23*	*3:40 am*	*2025/03/27*
Synch. to Grid (or BC)	*12:05 pm*	*2025/03/23*	*10:35 am*	*2025/03/27*
Fires in to BC (duration)	*00:04:45*	DD:HH:MM	*00:06:55*	DD:HH:MM
Emissions below limit from BC (end date)	*not > limit*	*not > limit*	*not > limit*	*not > limit*
Emissions below limit from BC (duration)	*n/a*	DD:HH:MM	*n/a*	DD:HH:MM

Unit No.4	Event 1		Event 2		Event 3	
Breaker Open (BO)	9:15 am	2025/03/02	7:35 am	2025/03/24	12:55 pm	2025/03/29
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	12:45 pm	2025/03/24	1:55 pm	2025/03/29
BO to DG SD (duration)	n/a	DD:HH:MM	00:05:10	DD:HH:MM	00:01:00	DD:HH:MM
Fires in time	n/a	n/a	5:25 pm	2025/03/24	3:25 pm	2025/03/30
Synch. to Grid (or BC)	11:40	2025/03/03	00:00	2025/03/26	Synch. to grid occurred in the following month.	Synch. to grid occurred in the following month.
Fires in to BC (duration)	n/a	DD:HH:MM	00:06:35	DD:HH:MM	Breaker Closes in the following month	DD:HH:MM
Emissions below limit from BC (end date)	09:00 am	2025/03/04	12:00 am	2025/03/29	not > limit	not > limit
Emissions below limit from BC (duration)	01:21:20	DD:HH:MM	04:00:00	DD:HH:MM	n/a	DD:HH:MM

Unit No.6	Event 1		Event 2	
Breaker Open (BO)	BO previously	BO previously	12:50 am	2025/03/20
Draught Group (DG) Shut Down (SD)	DG SD previously	DG SD previously	10:45 am	2025/03/29
BO to DG SD (duration)	BO to DG previously	DD:HH:MM	09:09:55	DD:HH:MM
Fires in time	4:10 am	2025/03/12	1:10 am	2025/03/30
Synch. to Grid (or BC)	9:55 am	2025/03/12	5:25 am	2025/03/30
Fires in to BC (duration)	00:05:45	DD:HH:MM	00:04:15	DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2025/03/13	12:00 am	2025/04/01
Emissions below limit from BC (duration)	00:14:05	DD:HH:MM	01:18:35	DD:HH:MM

8 COMPLAINTS

There were no complaints for this month.

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

9 GENERAL

. **Exceedance: Particulate Matter.**

Unit 4

02/03/2025

The Unit was returned to service on the 2nd of March 2025 and the unit was on Cold Unit Light Up.

Unit 4

07/03/2025

The left-hand dust hopper number 5 and 7 were blocked.

SO3 plant tripped due Process air blower not running caused by the common plant sulphur supply pump that tripped, Ops attempted to put the SO3 plant back in service without success.

Unit 4

19/03/2025

There was water ingress into the dust hoppers which caused blockages on rows 1 and 4.

The Dust hoppers were full and precips were switched off to protect the fields.

Unit 4

26/03/2025

LH dust hoppers 2,11&12 were full.

RH dust hopper 11 was full.

The Unit was still within the 72hours of a Cold Unit Light Up

The fuel oil usage for the month of March 2025 exceeded the permitted consumption rate due to the following reasons:

Unit 1

- The unit was running on half load with 3 mills in service and Electric Field Pump A (EFP A) was on permit to work (PTW) to repair leaks on the 27th and 28th March 2025.
- Fuel oil was used to support combustion while soot blowing of the boiler was being conducted.
- There was daily testing of the oil burners
- Unstable combustion, the reason for unstable combustion was wet coal and the mills unavailability.
- The normal running of each unit requires 4 mills or more, this unit was running on half load with 3 Mills, there was unavailability of Mills for the Month March 2025
- Hot Unit Light up, the unit was returned to service on the 9th of March and the unit tripped, another attempt was made to return the unit to service on the 10th of March 2025.

Unit 2

- The Unit was running on half load with 3 mills loading and Electric Field Pump B (EFP B) was on Permit to Work (PTW) to clean coolers on the 10th, 11th and 12th March 2025).
- Supporting combustion while soot blowing the boiler.
- Daily testing of oil burners
- Unstable combustion, the reason for unstable combustion was wet coal and the mills unavailability.
- Warm RTS 23 and 27 March 2025
- Long Cold RTS due to plant challenges (21 and 22 March 2025)

Unit 4

- Unit running on half load Due to unavailability of one EFP boiler Electric Feed pumps on the 1st ,2nd ,3rd ,4th ,25th and 27th of March 2025
- Supporting combustion while soot blowing the boiler
- Daily testing of oil burners
- Unstable combustion, the reason for unstable combustion was wet coal and the mills unavailability.
- Mills unavailable on the March 26,27 and 28 Mill swap.
- Low coal bunkers March 19, 20 and 21.
  Warm/hot light up 2nd ,24th and 25th March 2025.

Unit 6

- Support combustion while soot blowing the boiler
- Daily testing of oil burners
- Unstable combustion, the reason for unstable combustion was wet coal and the mills unavailability.
- Cold RTS (10th and 11th March 2025) and (28th ,29th and 30th of March 2025

Additionally, the SO3 plant efficiency and utilization was lower than the minimum rate as stipulated in the AEL due to the following reasons:

Unit 4

02 March 2025

When the unit returned to service from the outage, an issue was experienced on the SO3 PLC program which appeared to have become corrupted. This led to the plant being out of service for a long period of time due to troubleshooting and reloading the program and verifying all the parameters.

04 March 2025

SO3 plant was off due to low load.

06 March 2025

The SO3 plant was off due to low load.

27 March

The Unit was off for 8 hours, the SO3 plant tripped due to low load.

The averages for Oxygen (O2) and Carbon Dioxide (CO2) data from the QAL2 tests reports were used for reporting gaseous emissions for units 1, 2 and 4 due to poor performance of the O2 and CO2 gaseous monitors. The poor performance of the monitors, on multiple units was because of the station's inability to conduct bi-weekly calibrations and preventative maintenance of the O2 analysers for an extended period.

The lack of preventative maintenance on the O2 analysers is because the station historically did not have a long-term maintenance contract for this purpose. When a contract was eventually placed in October 2024, a fault-finding exercise was conducted by the service provider (SI analytics) gave their findings which are being addressed.
.
The station has given the service provider time to resolve these issues identified with the monitors and the monitors are expected to perform at 80% reliability by 31 April 2025.

The rest of the information demonstrating compliance with the emission license conditions is supplied in the annual emission report which will be sent to your office

10 S30 Incidents Register

There were no section 30 incidents for this month.

B Hlatshwayo

Boiler Plant Engineering Manager

02/05/2025

Date

Environmental Manager

02/05/2025

Date

pp.

Engineering Manager

02/05/2025

Date

Compiled by: Environmental Officer

For: Nkangala District Municipality Air Quality Officer

Copies:	Generation Environmental Management	D Herbst B Mccourt
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