



Generation

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AND

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annexes:1**

DUVHA POWER STATION

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

GENERAL MANAGER

2022/12/15

DATE

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 May-2022
	Coal	Tons	1 400 000	576 208.80
Fuel Oil	Tons	5 000	4023.17	

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate May-2022
	Energy	GWh	3600	1 036.77
Ash	Tons	not specified	158 054.07	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.93
Ash Content	%	27 TO 30	27.43

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO _x	NO _x
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 (%)

Associate d Unit/Stack	Technology Type	Efficiency May-2022	Technology Type	SO ₃ Utilization May-2022
Unit 1	FFP	99.9%	SO ₃	n/a
Unit 4	ESP + SO ₃	98.5%	SO ₃	88.6%
Unit 5	ESP + SO ₃	99.3%	SO ₃	99.1%
Unit 6	ESP + SO ₃	99.7%	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
Unit 1	89.4	100.0	100.0
Unit 4	99.7	74.2	74.2
Unit 5	100.0	71.8	71.8
Unit 6	86.4	79.3	76.9

Note: NO_x emissions is measured as NO in PPM. Final NO_x value is expressed as total NO₂

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of May 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	37.5	3 889	2 210
Unit 4	391.4	2 256	1 123
Unit 5	164.1	2 470	1 170
Unit 6	141.9	2 743	1 583
SUM	734.79	11 357	6 085

Table 6.2: Operating days in compliance to PM AEL Limit - May 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	29	0	0	0	0	18.1
Unit 4	10	10	6	0	16	254.3
Unit 5	15	7	1	0	8	121.2
Unit 6	27	3	0	0	3	81.3
SUM	81	20	7	0	27	

Table 6.3: Operating days in compliance to SOx AEL Limit - May 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	30	0	0	0	0	1 644.5
Unit 4	29	0	0	0	0	1 327.5
Unit 5	24	0	0	0	0	1 619.0
Unit 6	30	0	0	0	0	1 655.6
SUM	113	0	0	0	0	

Table 6.4: Operating days in compliance to NOx AEL Limit - May 2022

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	30	0	0	0	0	932.3
Unit 4	29	0	0	0	0	649.6
Unit 5	24	0	0	0	0	767.1
Unit 6	30	0	0	0	0	954.2
SUM	113	0	0	0	0	

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO₂

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

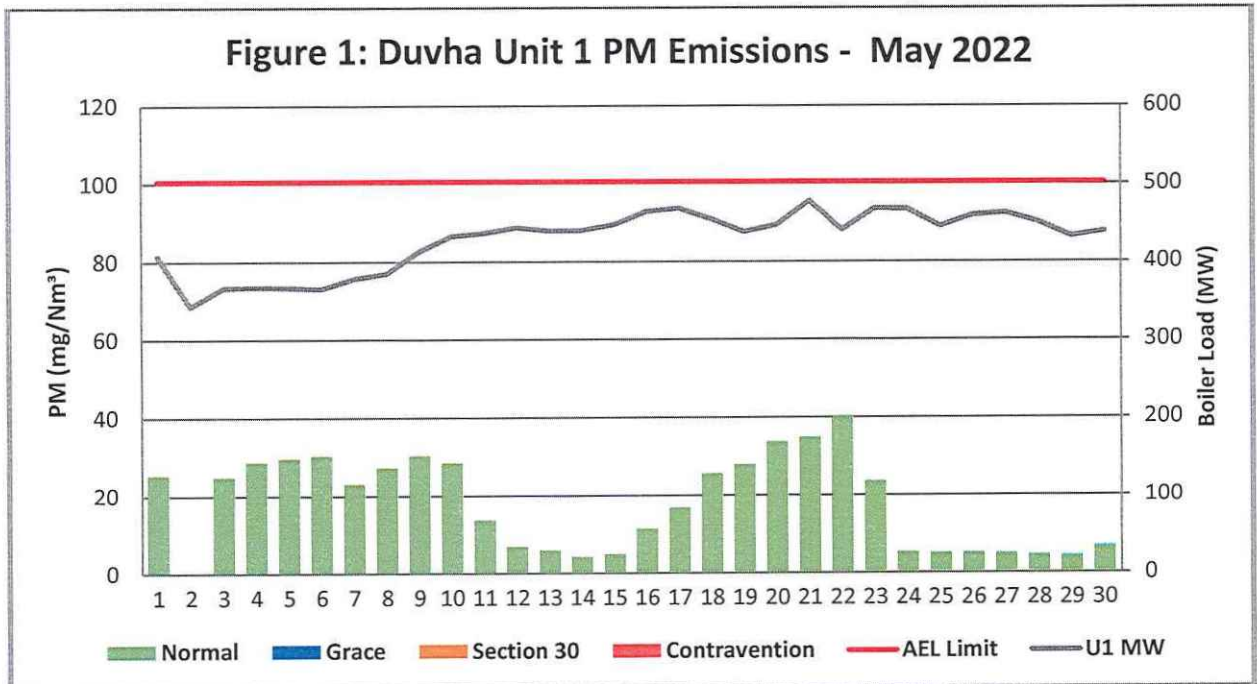


Figure 4: Duvha Unit 6 PM Emissions - May 2022

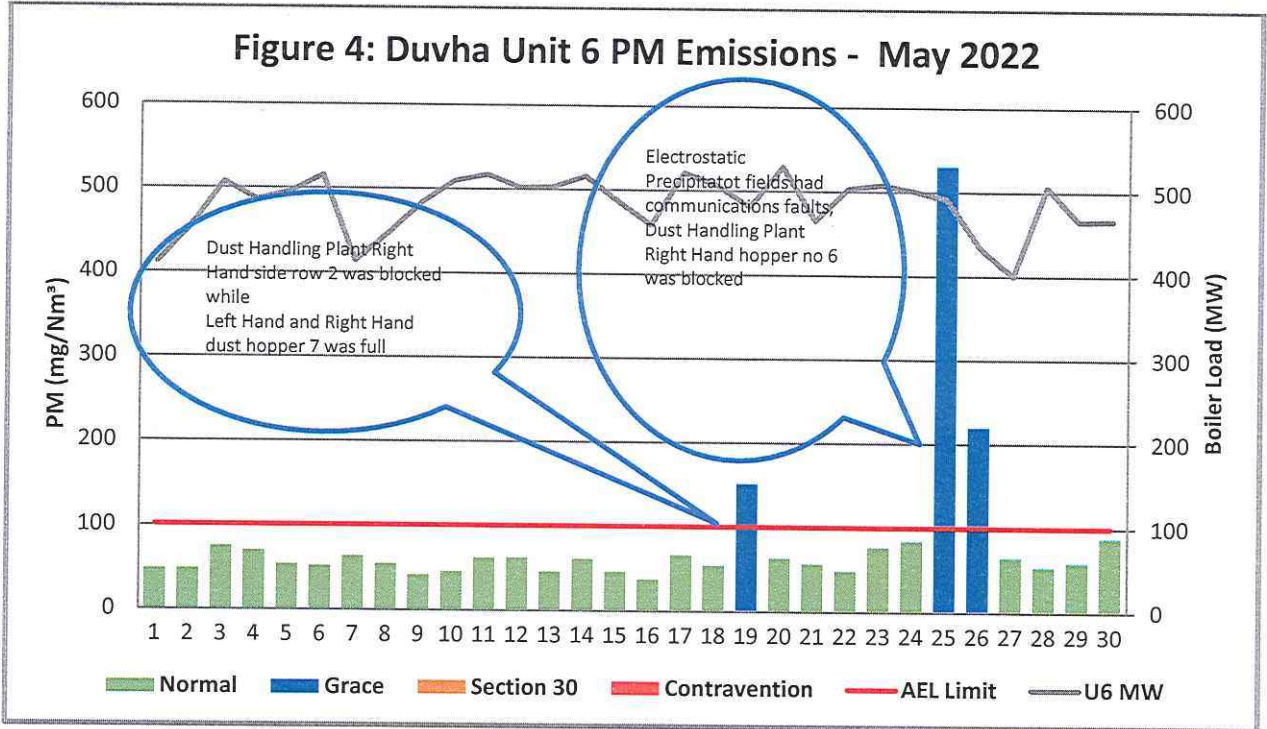


Figure 5: Duvha Unit 1 SOx Emissions - May 2022

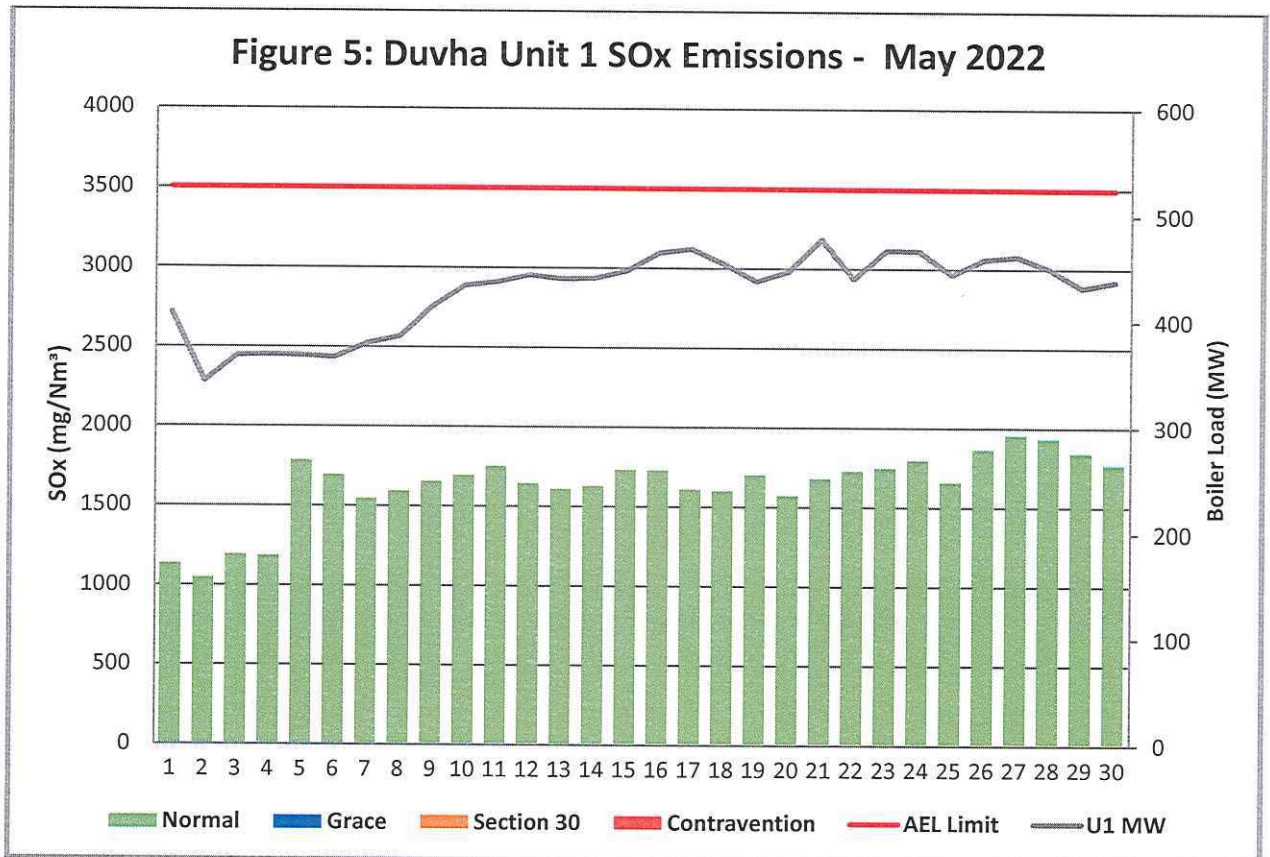


Figure 6: Duvha Unit 4 SOx Emissions - May 2022

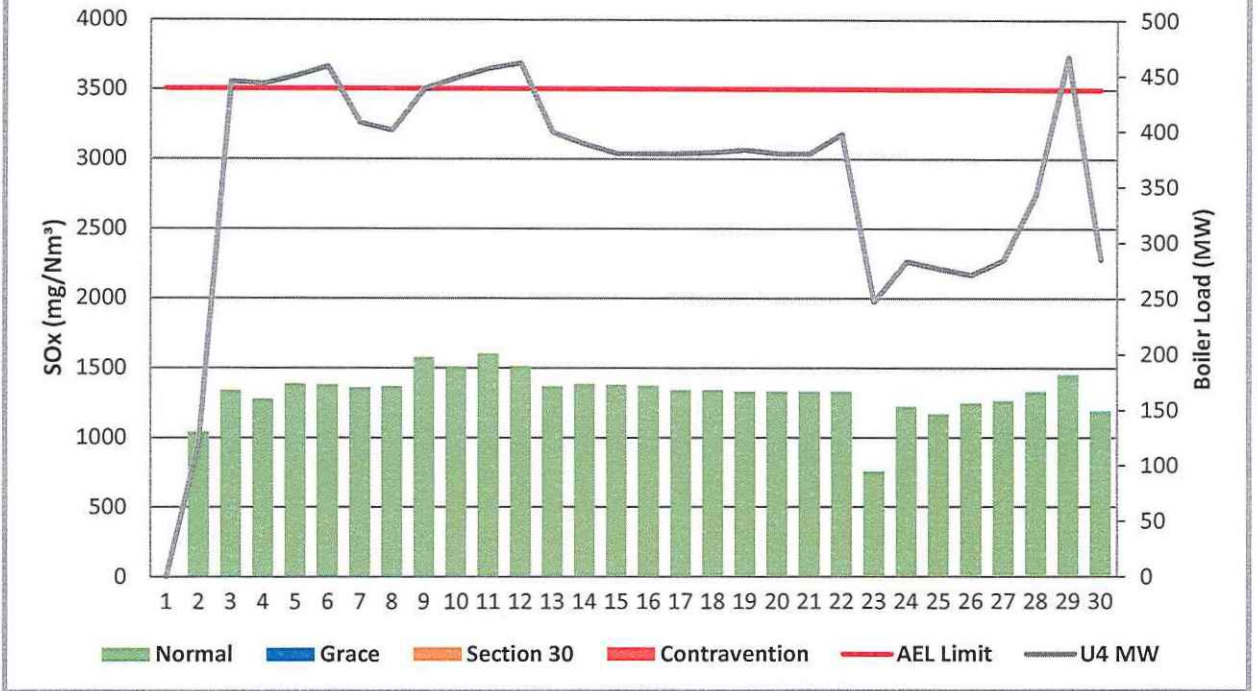


Figure 7: Duvha Unit 5 SOx Emissions - May 2022



Figure 8: Duvha Unit 6 SOx Emissions - May 2022

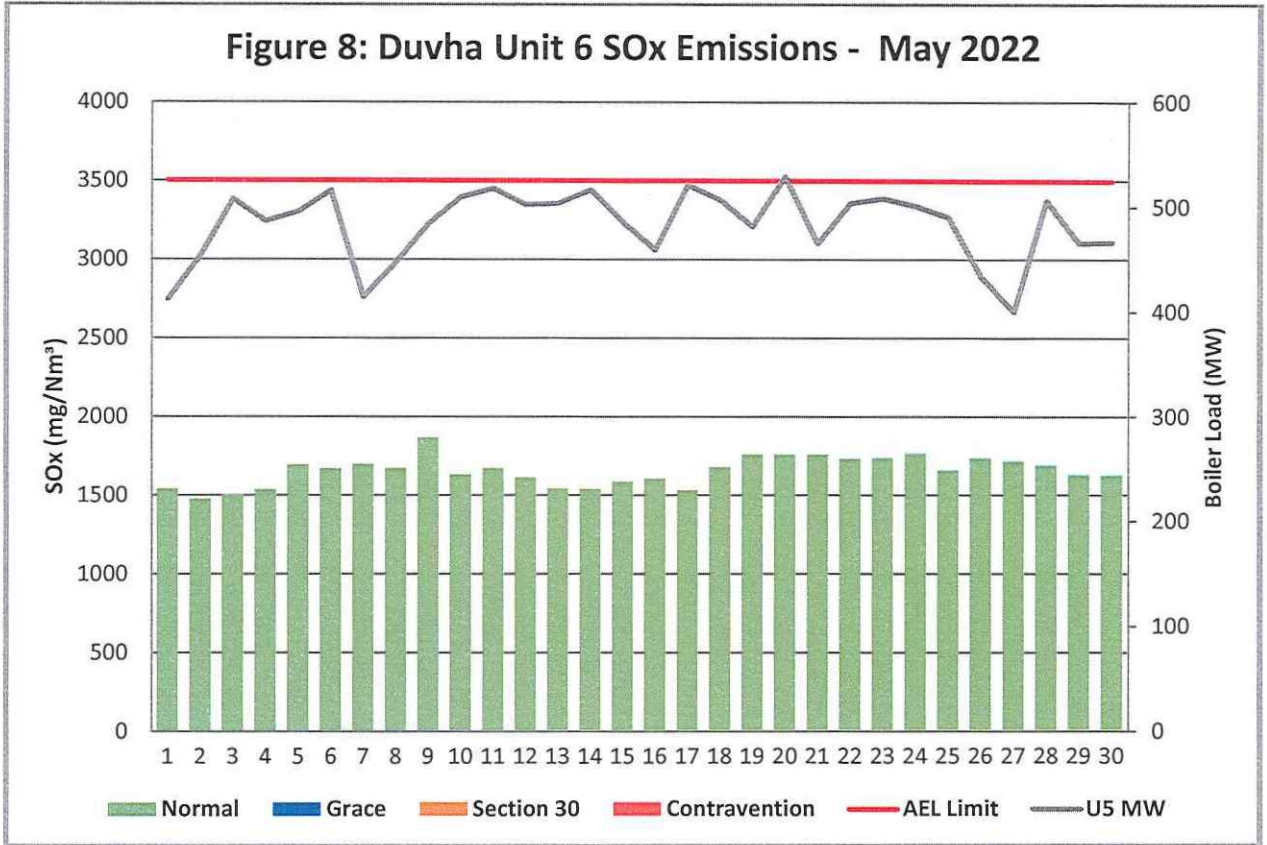


Figure 9: Duvha Unit 1 NOx Emissions - May 2022

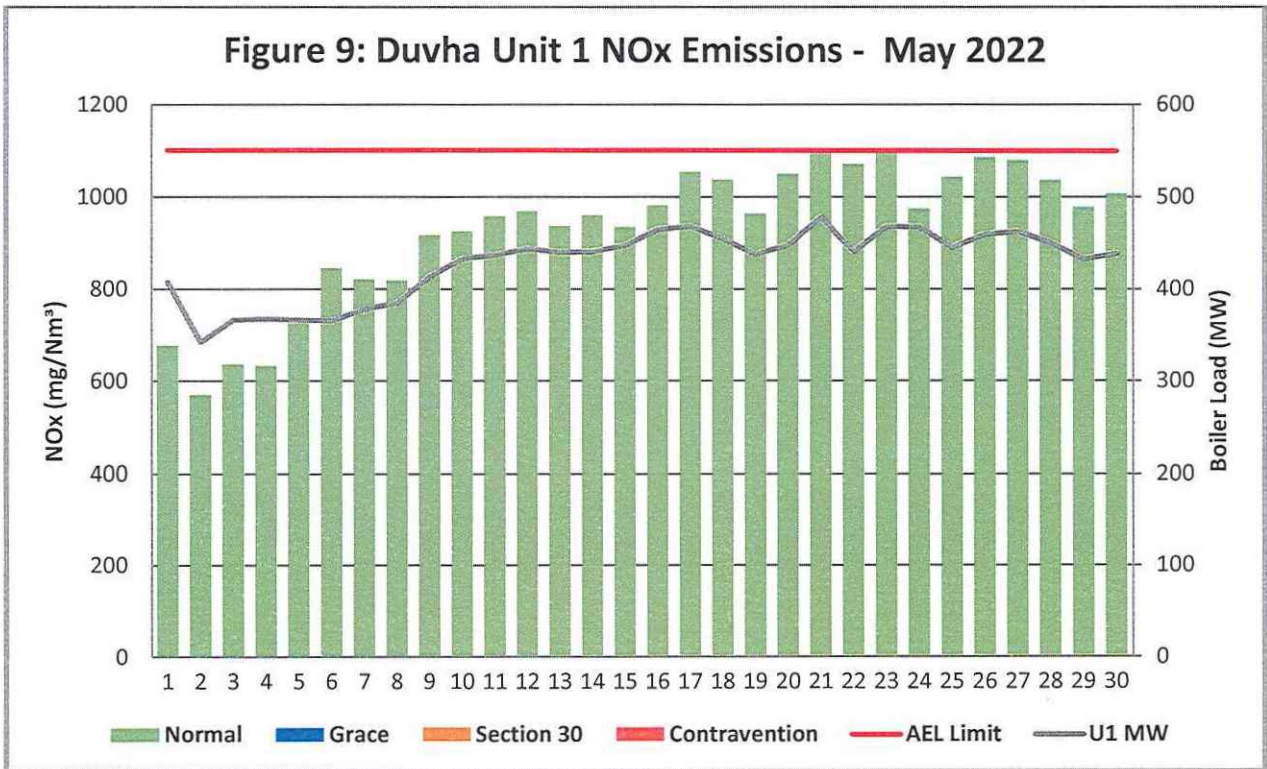


Figure 10: Duvha Unit 4 NOx Emissions - May 2022

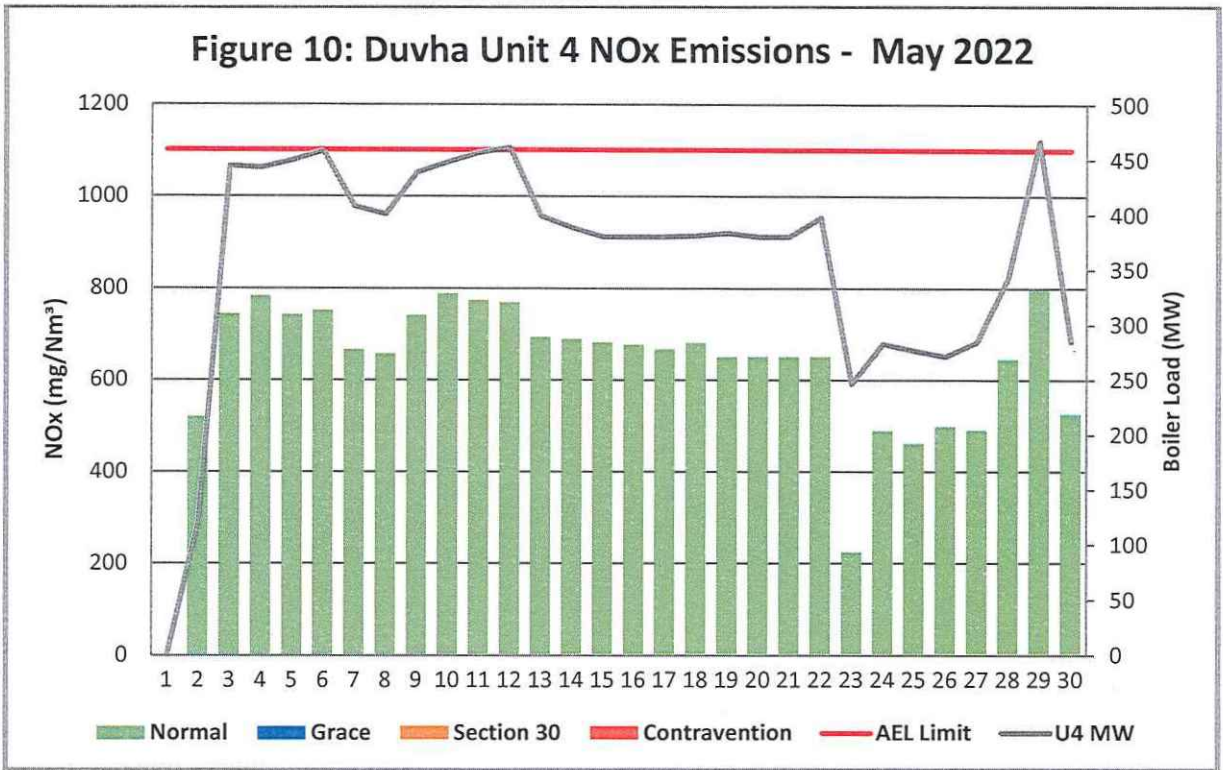
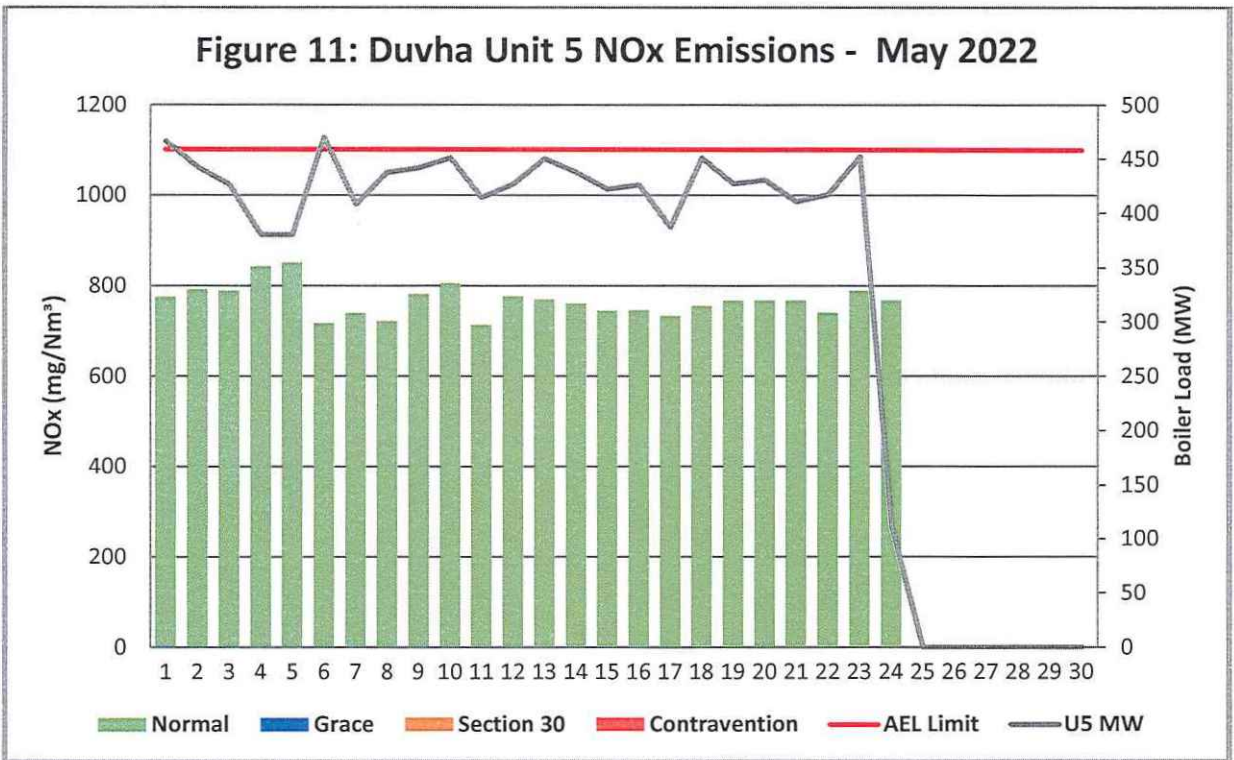
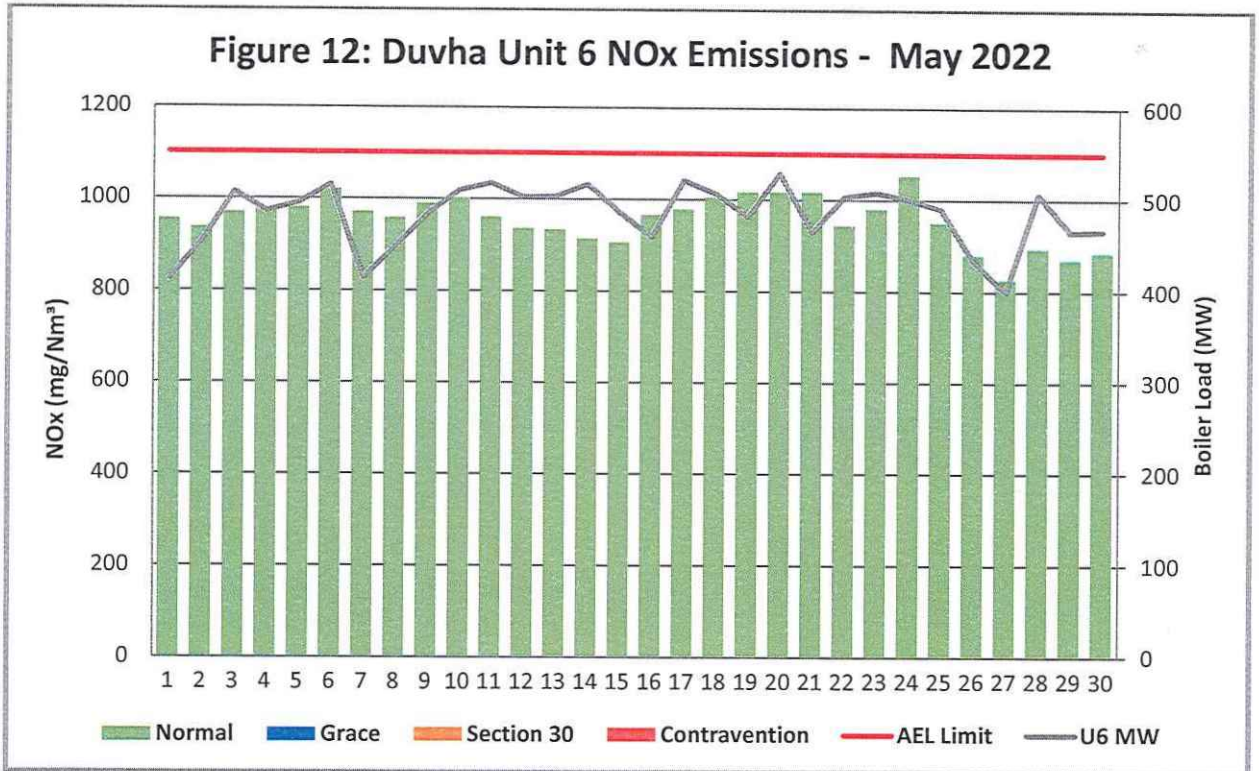


Figure 11: Duvha Unit 5 NOx Emissions - May 2022





7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of May 2022

Unit No.1	Event 1		Event 2	
Breaker Open (BO)	7:35 pm	2022/05/01	4:05 pm	2022/05/20
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM
Fires in time				
Synch. to Grid (or BC)	6:15 am	2022/05/02		
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)				
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM

Unit No.4	Event 1		Event 2		Event 3	
Breaker Open (BO)	BO previously	BO previously	2:05 pm	2022/05/22	7:25 pm	2022/05/27
Draught Group (DG) Shut Down (SD)	n/a	n/a	4:40 pm	2022/05/22	8:15 pm	2022/05/27
BO to DG SD (duration)	n/a	DD:HH:MM	00:02:35	DD:HH:MM	00:00:50	DD:HH:MM
Fires in time	12:30 pm	2022/05/02	6:35 am	2022/05/23	1:35 am	2022/05/28
Synch. to Grid (or BC)	8:20 pm	2022/05/02	4:00 pm	2022/05/23	8:20 am	2022/05/28
Fires in to BC (duration)	00:07:50	DD:HH:MM	00:09:25	DD:HH:MM	00:06:45	DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2022/05/04	7:25 pm	2022/05/27	12:00 am	2022/06/01

Emissions below limit from BC (duration)	01:03:40	DD:HH:MM	04:03:25	DD:HH:MM	03:15:40	DD:HH:MM
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Unit No.5	Event 1		Event 2		Event 3	
Breaker Open (BO)	8:35 am	2022/05/17	6:55 am	2022/05/22	8:55 pm	2022/05/23
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM
Fires in time						
Synch. to Grid (or BC)						
Fires in to BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)						
Emissions below limit from BC (duration)		DD:HH:MM		DD:HH:MM		DD:HH:MM

9 GENERAL

Units 2 and 3 were offload during the month of May 2022.

Units 4-6 SOx and NOx gaseous emissions monitors reliabilities were below 80% for the month of May 2022. This was due to power supply module failure which occurred on the 17th to the 25th of May 2022. The module was replaced on the 25th of May 2022.

The averages Oxygen(O2) and Carbon Dioxide (CO2) data from the QAL 2 tests reports were used for reporting for Units 1, 5 and 6 due to poor performance of the O2 and CO2 gaseous monitors. These poor performances of the gaseous monitors were identified to be caused by the incorrect installation of O2 analyser. An action is being implemented to relocate all the units' O2 monitors to their own measurement port. This action will be completed no later than 31 December 2022.

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 Complaints and S30 Incidents Register

Refer to addendum A


Boiler engineering
manager

14 Dec 2022

Date


Environmental
Manager pp

15/12/2022

Date


Engineering Manager

2022/12/14

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

ADDENDUM TO MONTHLY EMISSIONS REPORT

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of May 2022

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	Date measure will be implemented
No complaints were received during the month of May 2022.					

10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention:

Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledgment	Date DEA Acceptable	Comments / Reference No.
Unit 5	04/05/2022	04/05/2022	Lack of oversight from Shift Manager on site.	<p><u>Corrective Action to Be Taken:</u></p> <ol style="list-style-type: none"> Operating manager to address the failure to adhere to the emissions procedure. <p><u>Preventative Actions to Be Taken:</u></p> <ol style="list-style-type: none"> Electrical Maintenance Department to avail ash pump B motor. Maintenance training to schedule training for Electrical Maintenance Department on breakers. 	05/05/2022	27/07/2022	Only reference number received	None	14/7/6/2/4/2/2120

Unit 4	14/05/2022	19/05/2022	Lack of knowledge	<p><u>Corrective Action To Be Taken:</u></p> <ol style="list-style-type: none"> 1. Fix the silo high level switch. <p><u>Preventative Actions To Be Taken:</u></p> <ol style="list-style-type: none"> 1. Works instruction (LCI) for the replacement of the silo level probe to be developed to ensure that the silo level is below 30% before replacing the probe. 2. Review the maintenance strategy for the silo level switch. 3. The LCI needs to be presented to the maintenance team for awareness. 4. C&I Engineering to explore alternative silo level measurement to be used for level verification. 	16/05/2022	05/07/2022	Only reference number received	None	14/7/6/2/4/2/2128
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