



Generation

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AND

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Total number of pages: 16

Total number of 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 Jan-2022
	Coal	Tons	1 400 000	461 649.26
Fuel Oil	Tons	5 000	2294.56	

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Jan-2022
	Energy	GWh	3600	819.73
Ash	Tons	not specified	123 491.18	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.96
Ash Content	%	27 TO 30	26.75

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 Jan-2022	Technology Type	SO3 Utilization Jan-2022
Unit 1	FFP	99.8%	n/a	n/a
Unit 2	FFP	99.9%	n/a	n/a
Unit 5	ESP + SO ₃	99.6%	SO ₃	99.9%
Unit 6	ESP + SO ₃	99.3%	SO ₃	96.8%

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

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 1	100.0	100.0	100.0
Unit 2	100.0	100.0	100.0
Unit 5	100.0	93.1	93.1
Unit 6	97.9	92.4	92.4

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

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of January 2022

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	65.7	3 955	1 999
Unit 2	4.0	590	259
Unit 5	125.3	3 071	1 293
Unit 6	180.0	2 166	872
SUM	375.11	9 782	4 424

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	30	0	0	0	0	32.0
Unit 2	7	0	0	0	0	10.4
Unit 5	25	3	0	0	3	66.9
Unit 6	13	11	1	0	12	150.7
SUM	75	14	1	0	15	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
Unit 1	30	0	0	0	0	1 853.2
Unit 2	7	0	0	0	0	1 519.9
Unit 5	28	0	0	0	0	1 615.6
Unit 6	26	0	0	0	0	1 798.7
SUM	91	0	0	0	0	

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
Unit 1	30	0	0	0	0	935.0
Unit 2	7	0	0	0	0	644.1
Unit 5	28	0	0	0	0	682.1
Unit 6	26	0	0	0	0	722.3
SUM	91	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		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 - January 2022

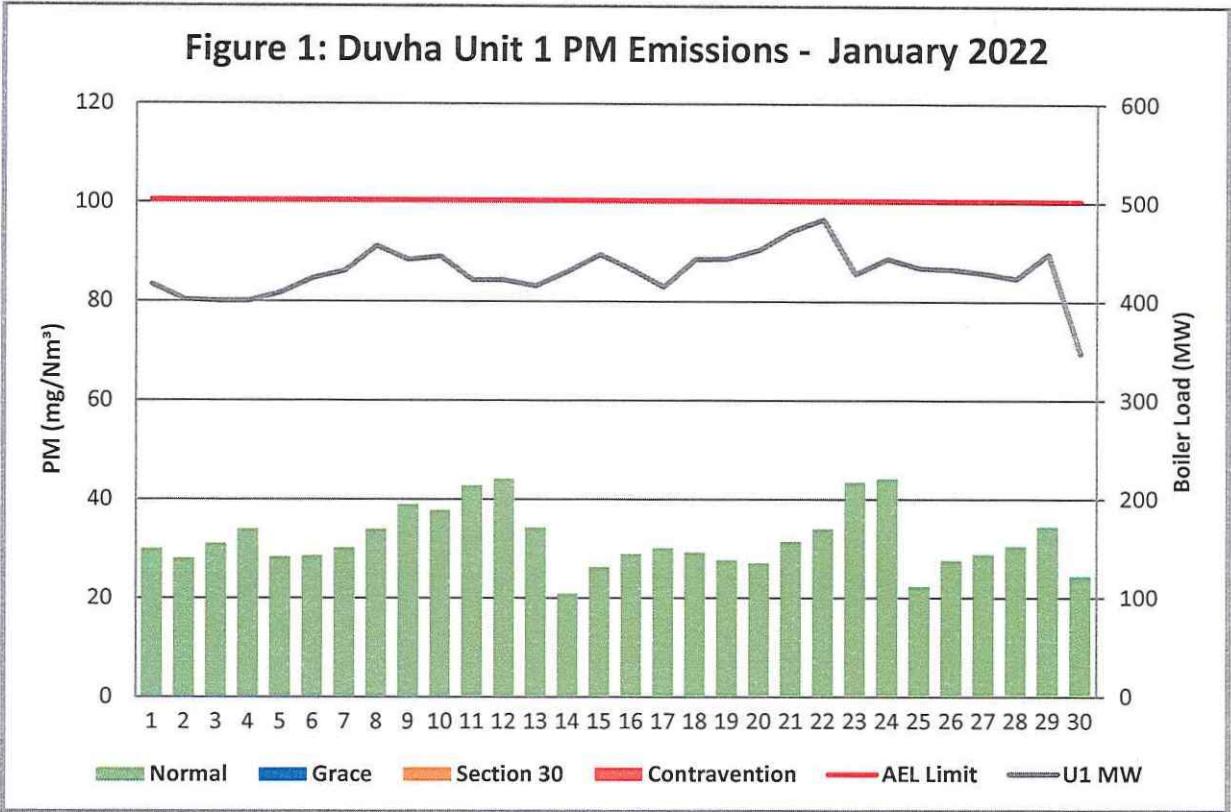


Figure 2: Duvha Unit 2 PM Emissions - January 2022

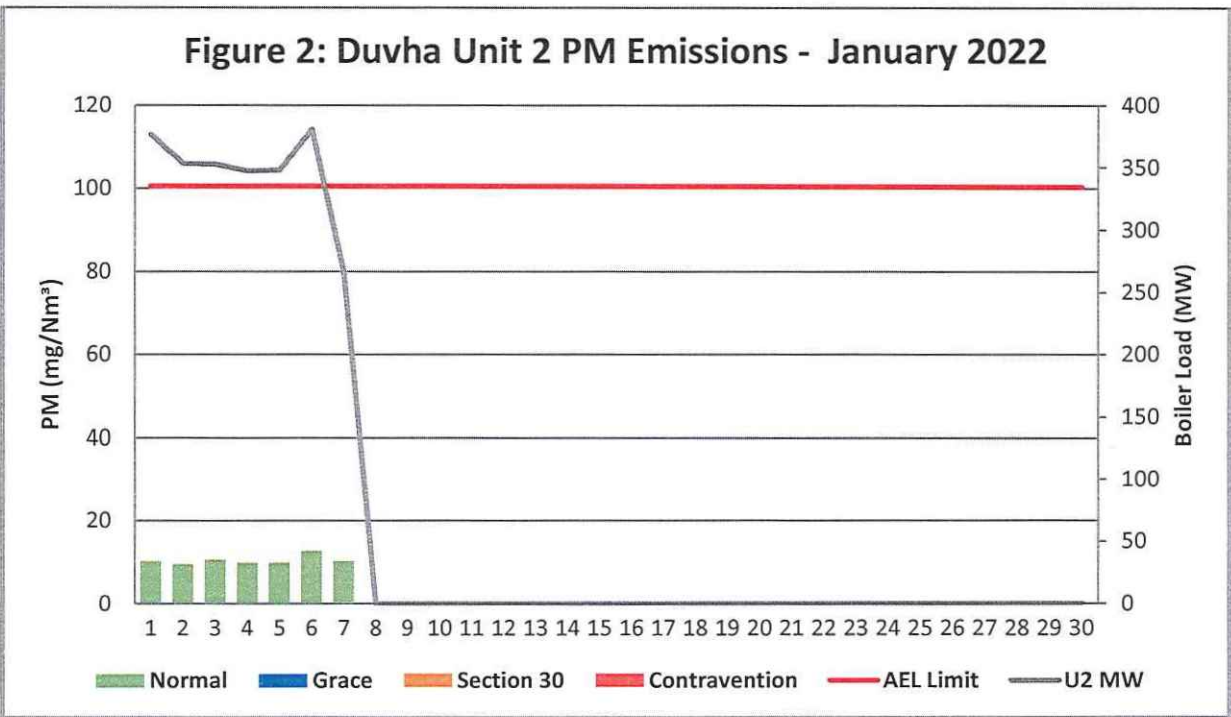


Figure 3: Duvha Unit 5 PM Emissions - January 2022

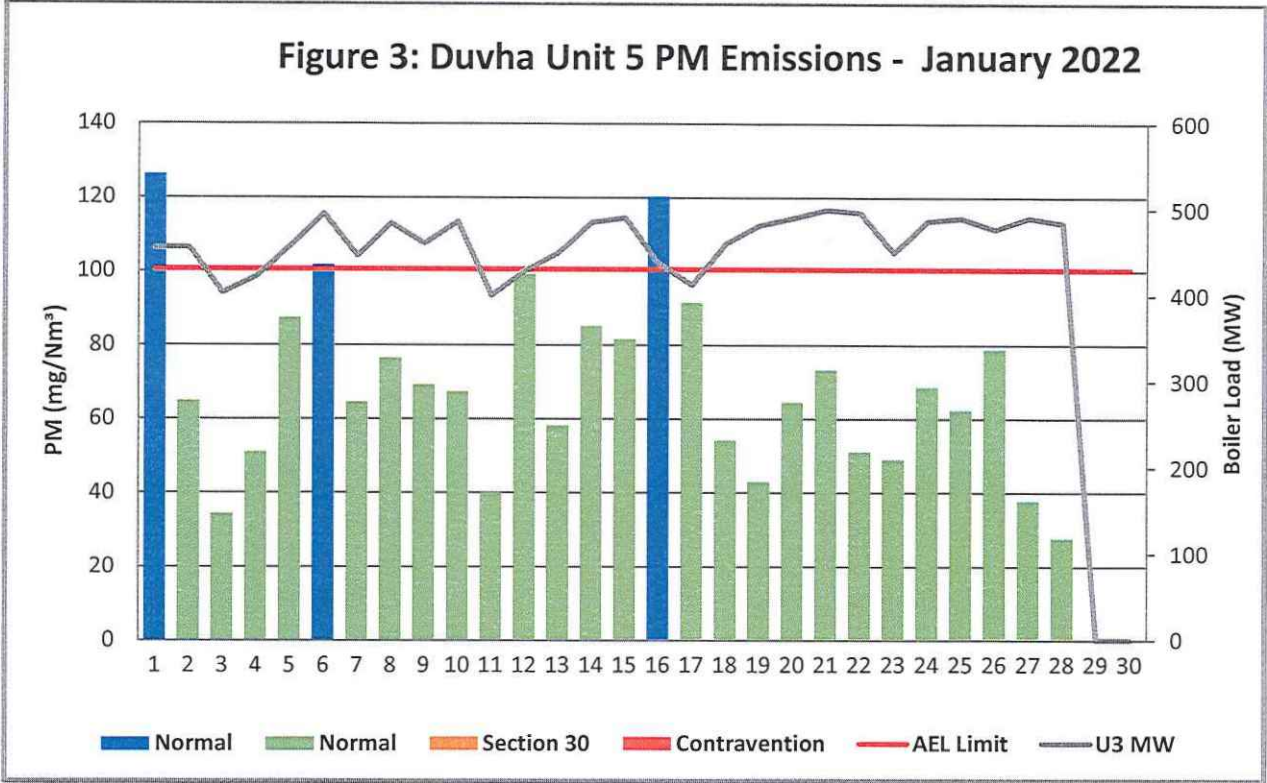


Figure 4: Duvha Unit 6 PM Emissions - January 2022

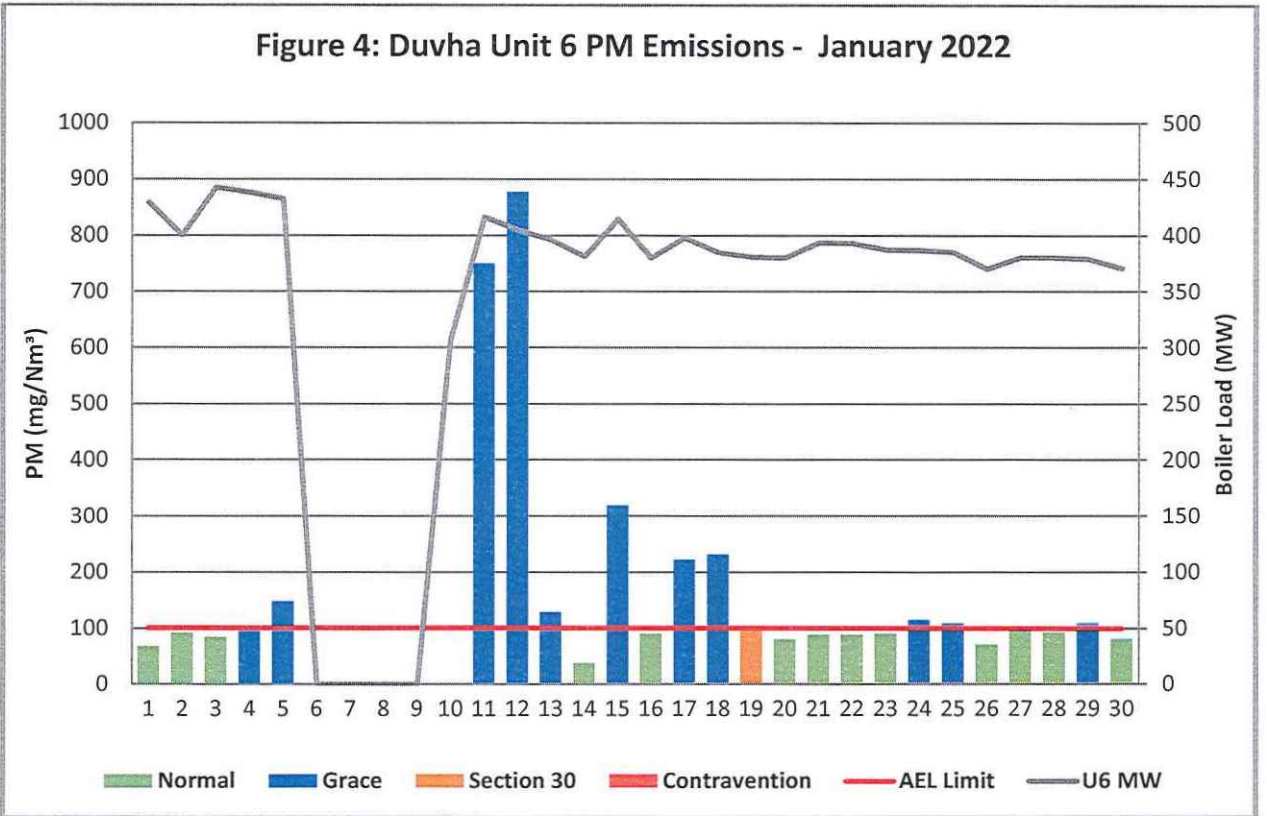


Figure 5: Duvha Unit 1 SOx Emissions - January 2022

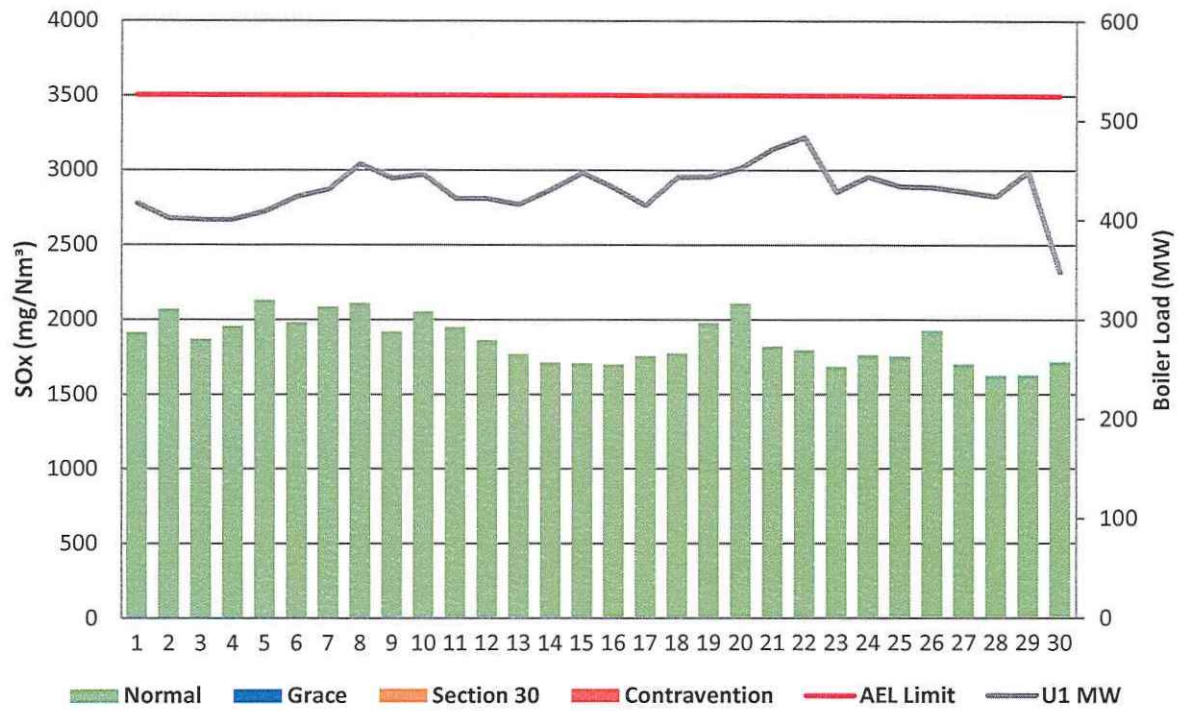


Figure 6: Duvha Unit 2 SOx Emissions - January 2022

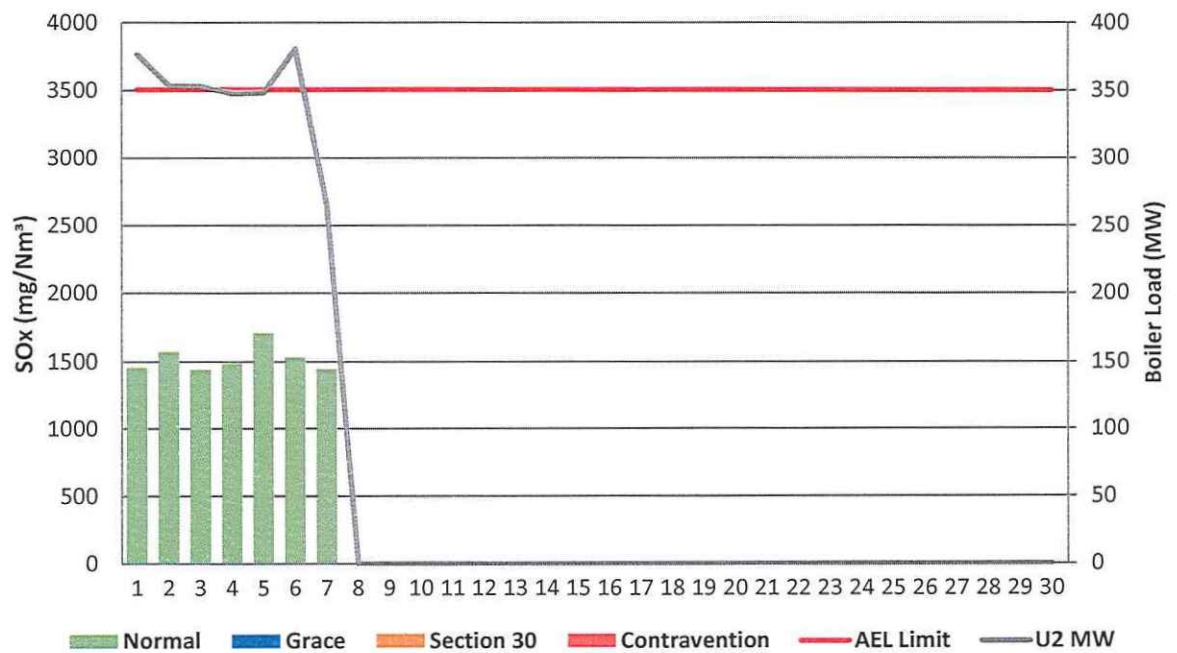


Figure 7: Duvha Unit 5 SOx Emissions - January 2022

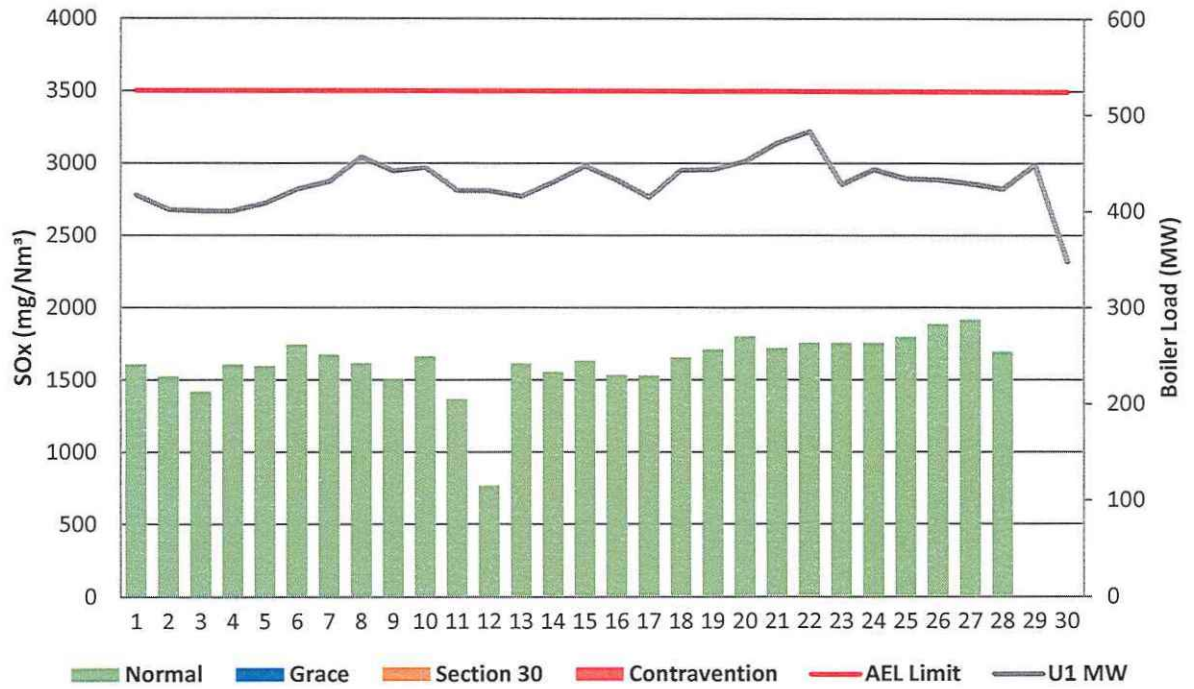


Figure 8: Duvha Unit 6 SOx Emissions - January 2022

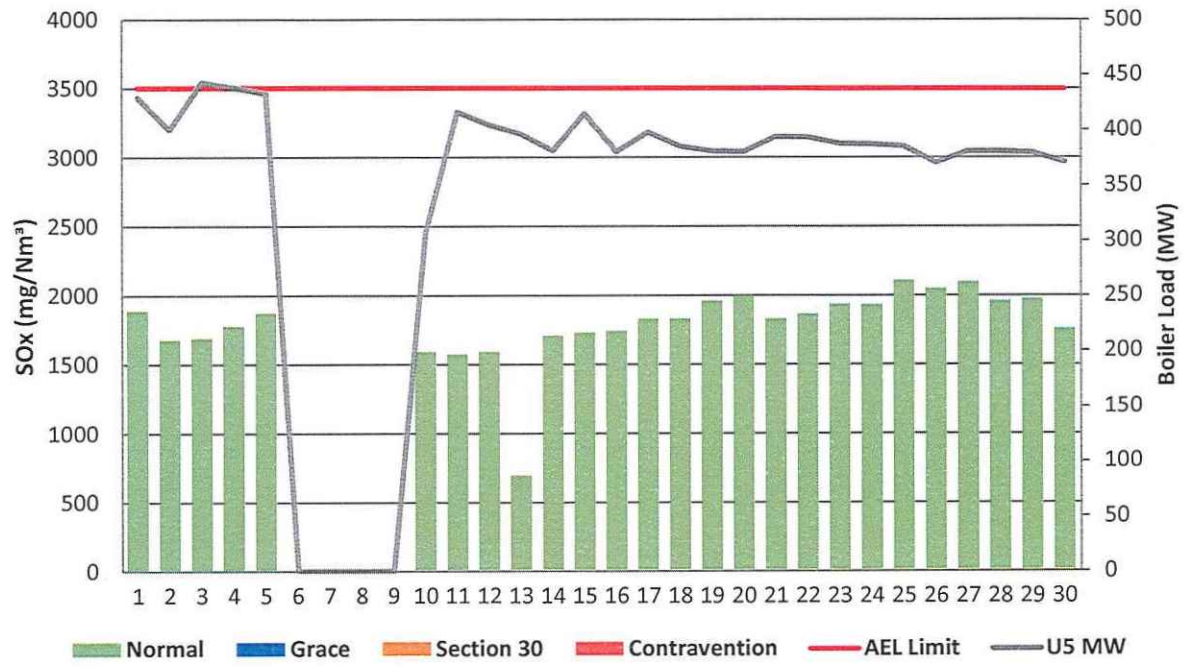


Figure 9: Duvha Unit 1 NOx Emissions - January 2022

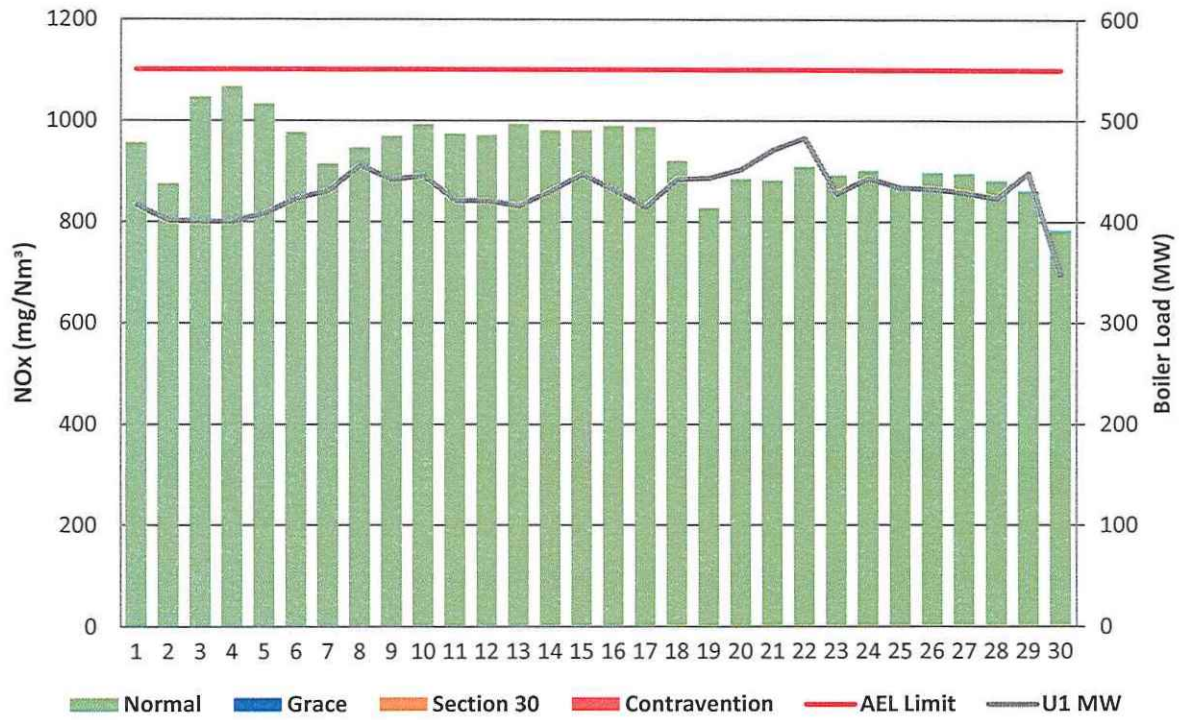


Figure 10: Duvha Unit 2 NOx Emissions - January 2022

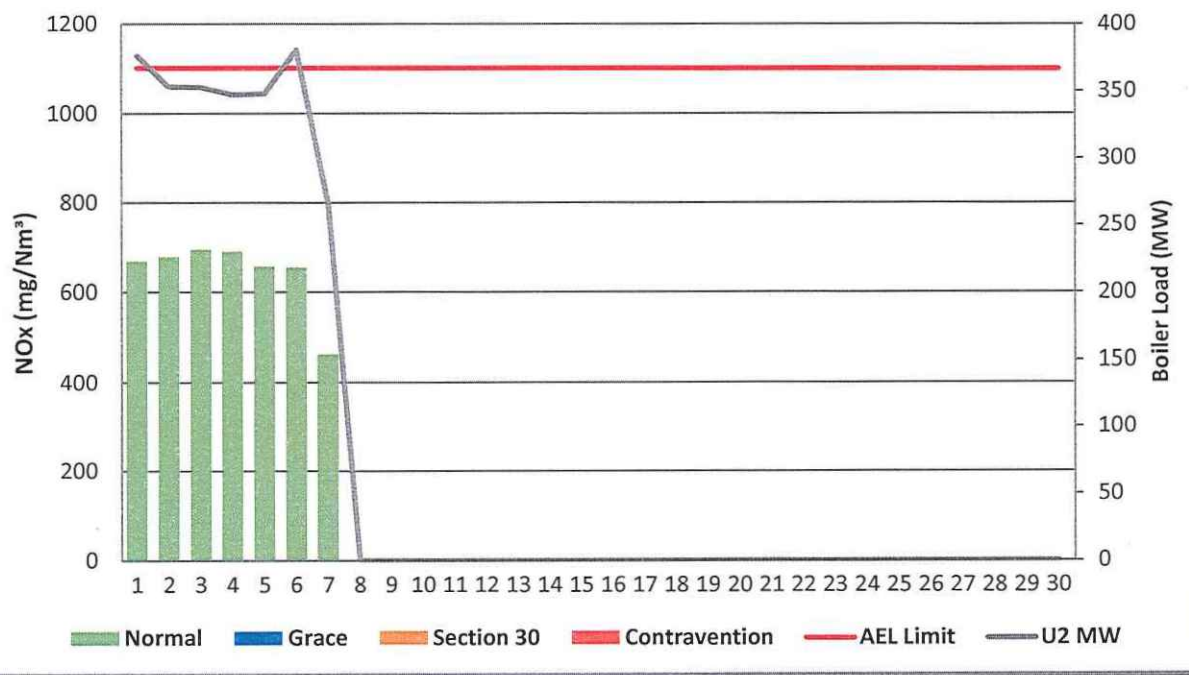


Figure 11: Duvha Unit 5 NOx Emissions - January 2022

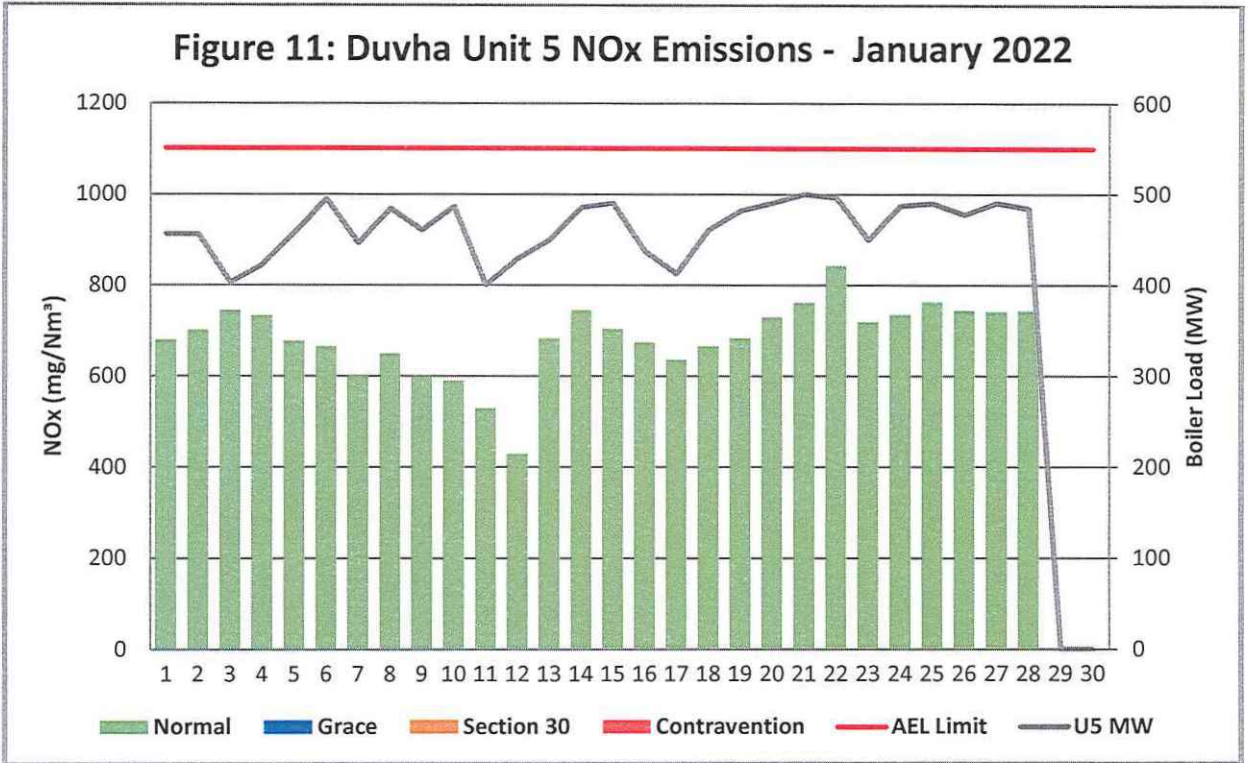
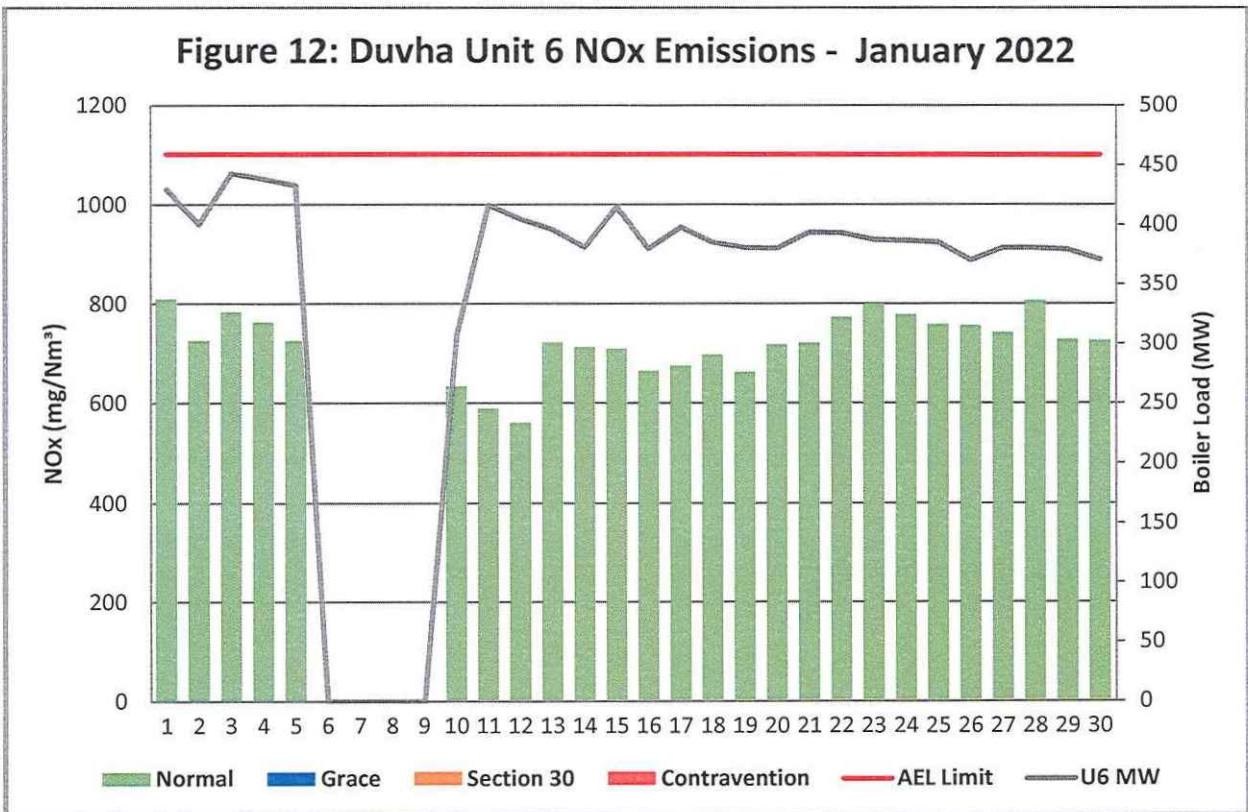


Figure 12: Duvha Unit 6 NOx Emissions - January 2022



7 SHUT DOWN AND LIGHT UP INFORMATION

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

Unit No.1	<i>Event 1</i>	
Breaker Open (BO)	<i>12:25 am</i>	<i>2022/01/30</i>
Draught Group (DG) Shut Down (SD)	<i>1:55 am</i>	<i>2022/01/30</i>
BO to DG SD (duration)	<i>00:01:30</i>	DD:HH:MM
Fires in time	<i>4:00 am</i>	<i>2022/01/30</i>
Synch. to Grid (or BC)	<i>5:25 pm</i>	<i>2022/01/30</i>
Fires in to BC (duration)	<i>00:13:25</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM

Unit No.2	<i>Event 1</i>	
Breaker Open (BO)	<i>12:50 am</i>	<i>2022/01/07</i>
Draught Group (DG) Shut Down (SD)	<i>4:25 am</i>	<i>2022/01/07</i>
BO to DG SD (duration)	<i>00:03:35</i>	DD:HH:MM
Fires in time		
Synch. to Grid (or BC)		
Fires in to BC (duration)		DD:HH:MM
Emissions below limit from BC (end date)		
Emissions below limit from BC (duration)		DD:HH:MM

Unit No.5	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>8:00 am</i>	<i>2022/01/28</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>	<i>2:20 am</i>	<i>2022/01/29</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:18:20</i>	DD:HH:MM
Fires in time				
Synch. to Grid (or BC)				
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.6	<i>Event 1</i>	
Breaker Open (BO)	<i>9:00 pm</i>	<i>2022/01/05</i>
Draught Group (DG) Shut Down (SD)	<i>3:30 pm</i>	<i>2022/01/06</i>
BO to DG SD (duration)	<i>00:18:30</i>	DD:HH:MM
Fires in time	<i>11:25 am</i>	<i>2022/01/10</i>
Synch. to Grid (or BC)	<i>4:30 pm</i>	<i>2022/01/10</i>
Fires in to BC (duration)	<i>00:05:05</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>12:00 am</i>	<i>2022/01/14</i>
Emissions below limit from BC (duration)	<i>03:07:30</i>	DD:HH:MM

8 GENERAL

Units 3 and 4 were offload during the month of January 2022.

Exceedances: PM

Unit 5:

01/01/2022

- Unit cold light up

06/01/2022

- Electrostatic Precipitator Fields 1.2, 1.5, 4.2 and 4.4 tripped on under voltage

16/01/2022

- Low availability of Sootblowers.
- Right Hand plate rapper no 1 not available
- Dust Handling plant row 1 blocked.

Unit 6:

04-05/01/2022

- Electrostatic Precipitator (ESP) fields 1.1 and 4.2 were not in service
- SO3 plant was not in service due to low sulphur temperature
- Dust Handling plant (DHP) rows 7, 8 and 11 were blocked

11-13/01/2022

- Cold unit light up

15/01/2022

- ESP fields 2.2, 3.2 & 2.4 tripped on under voltage
- DHP Right Hand row 1 blocked

17-19/01/2022

- The 48 hours allowable for upset conditions were exceeded on the 19th of January 2022. A NEMA Section 30 Emergency incident was reported to your office on 20/01/2022. The final investigation report was submitted to your office on 01/03/2022

24-25/01/2022

- Due to ESP fields 2.2, 2.4, 3.1, 3.2, 3.5 and 4.2 tripped on undervoltage.

29/01/2022

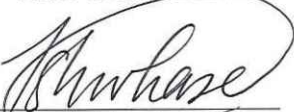


- Right hand side row 1 & 4 dust hoppers were blocked
- SO3 plant tripped
- Electrostatic precipitator field 3.2 tripped on undervoltage

The averages Oxygen(O2) and Carbon Dioxide (CO2) data from the QAL 2 tests reports were used for reporting for Units 1, 2, 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 Plant Engineering Manager	14 Dec 2022 Date	 pp Environmental Manager	15/12/2022 Date
 Engineering Manager	2022/12/14 Date		

Compiled by:	Environmental Officer	
For:	Nkangala District Municipality	Air Quality Officer
Copies:	Generation Environmental Management	D Herbst B Mccourt
	Generation Compliance Management	R Rampiar

Generation Asset
Management

E Patel

Duvha Power Station:

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

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of January 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 January 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 6	19/01/2022	19/01/2022	Unavailability of critical information required for informed decision making (decision made to increase load to support grid unaware that ESP field 3.1 is not in service).	Corrective Actions to be taken: <ol style="list-style-type: none"> 1. Provide opportunity Outage to execute ESP scope of work (defects) fully. 2. Repair Unit 6 Ash pump. 3. Expedite the Purchase Order 	20/01/2022	01/03/2022	Incident acknowledged by DFFE on 10/03/2022		14/7/6/2/4/2/2037

