



**Generation**

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**Attention:**

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AND

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**DUVHA POWER STATION**

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

GENERAL MANAGER

2022/04/14

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 Dec-2021
	Coal	Tons	1 400 000	530 633
Fuel Oil	Tons	5 000	3 197.34	

Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Production Rate Dec-2021
	Energy	GWh	3600	919.01
Ash	Tons	not specified	141 997.31	

**2 ENERGY SOURCE CHARACTERISTICS**

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 TO >1.2	0.97
Ash Content	%	27 TO 30	26.76

### 3 EMISSION LIMITS (mg/Nm<sup>3</sup>)

Associated Unit/Stack	PM	SO <sub>x</sub>	NO <sub>x</sub>
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 Dec-2021	Technology Type	Utilization Dec-2021
Unit 1	FFP	99.9%	FFP	100%
Unit 2	FFP	99.8%	FFP	100%
Unit 5	ESP + SO <sub>3</sub>	99.7%	SO <sub>3</sub>	97.2%
Unit 6	ESP + SO <sub>3</sub>	99.4%	SO <sub>3</sub>	97.1%

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

### 5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO <sub>2</sub>	NO
Unit 1	100.0	97.8	97.8
Unit 2	100.0	97.2	97.2
Unit 5	100.0	93.9	93.9
Unit 6	100.0	93.4	93.4

Note: NO<sub>x</sub> emissions is measured as NO in PPM. Final NO<sub>x</sub> value is expressed as total NO<sub>2</sub>

### 6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of December 2021

Associated Unit/Stack	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>x</sub> (tons)
Unit 1	47.9	4 284	1 734
Unit 2	46.6	2 205	922
Unit 5	87.1	2 225	1 399
Unit 6	135.7	1 963	858
<b>SUM</b>	<b>317.28</b>	<b>10 677</b>	<b>4 913</b>

Table 6.2: Operating days in compliance to PM AEL Limit - December 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm <sup>3</sup> )
Unit 1	30	0	0	0	0	22.6
Unit 2	23	0	0	0	0	33.1
Unit 5	24	0	0	0	0	59.7
Unit 6	10	9	0	0	0	165.4
<b>SUM</b>	<b>87</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	

Table 6.3: Operating days in compliance to SOx AEL Limit - December 2021




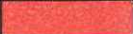
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm <sup>3</sup> )
Unit 1	30	0	0	0	0	2 000.3
Unit 2	25	0	0	0	0	1 443.2
Unit 5	25	0	0	0	0	1 395.7
Unit 6	23	0	0	0	0	1 816.7
<b>SUM</b>	<b>103</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Table 6.4: Operating days in compliance to NOx AEL Limit - December 2021

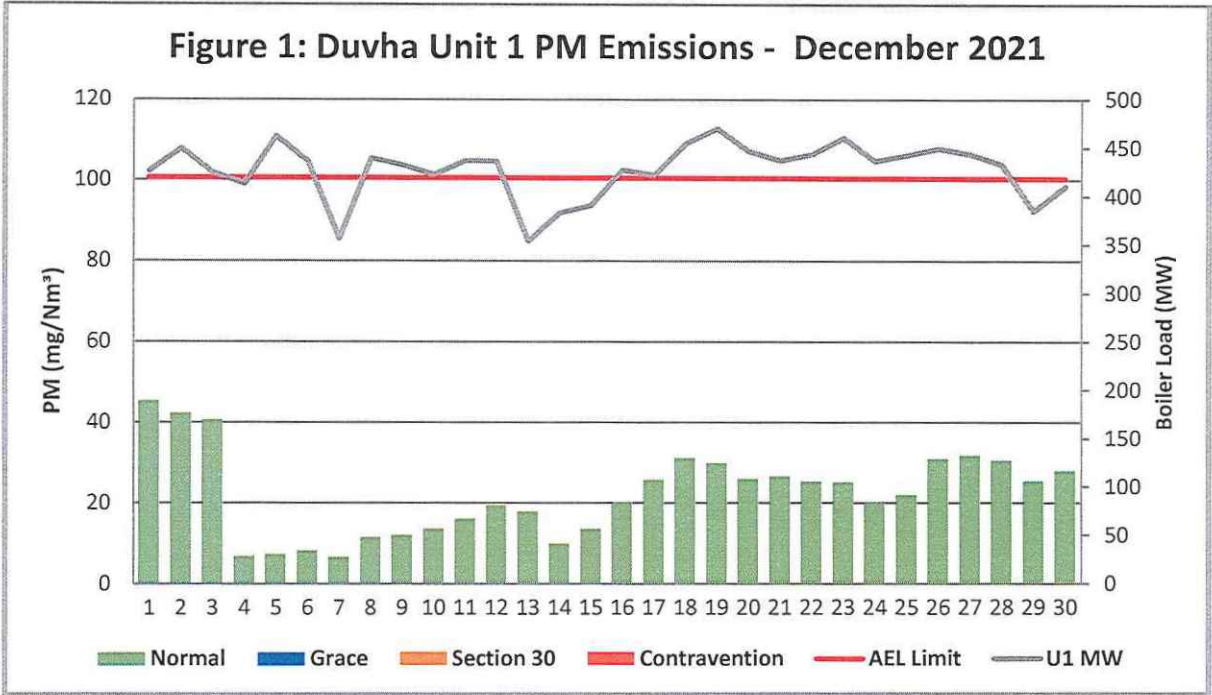
Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm <sup>3</sup> )
Unit 1	30	0	0	0	0	807.2
Unit 2	25	0	0	0	0	599.8
Unit 5	25	0	0	0	0	856.2
Unit 6	23	0	0	0	0	789.5
<b>SUM</b>	<b>103</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO<sub>2</sub>

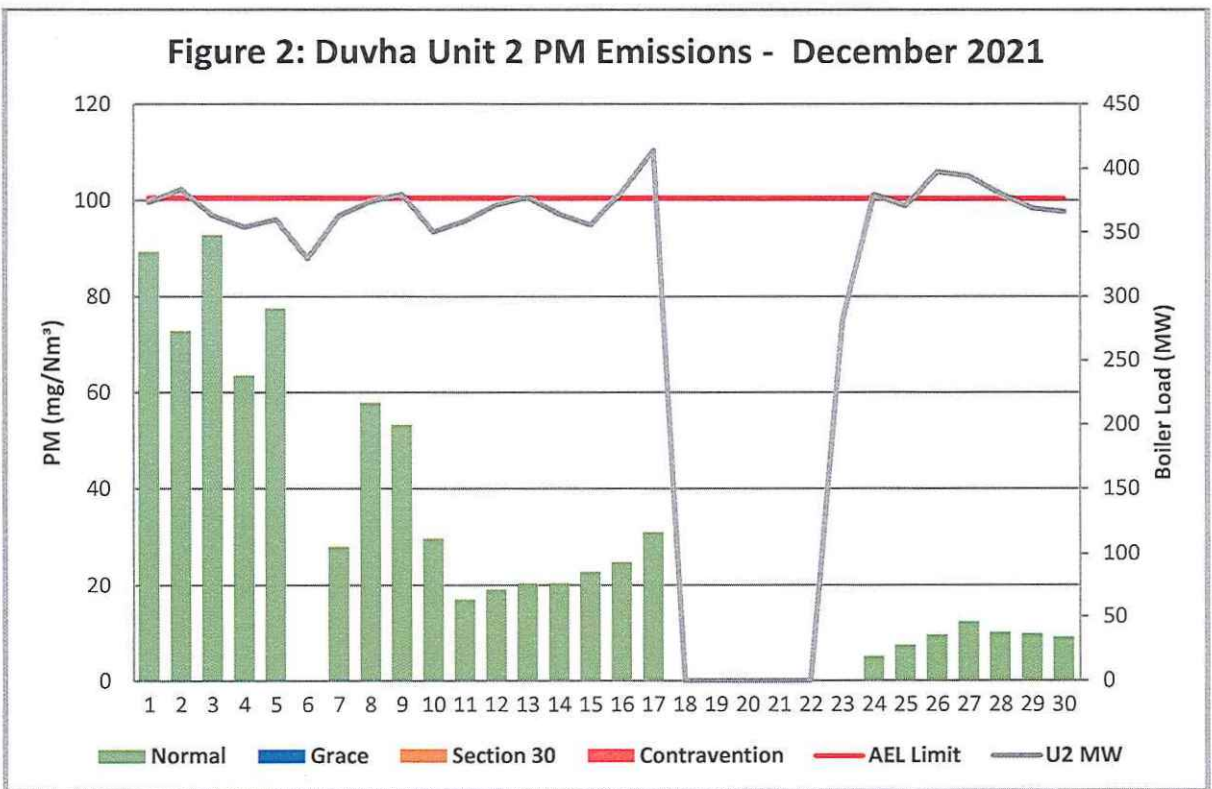
Table 6.5: Legend Description

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

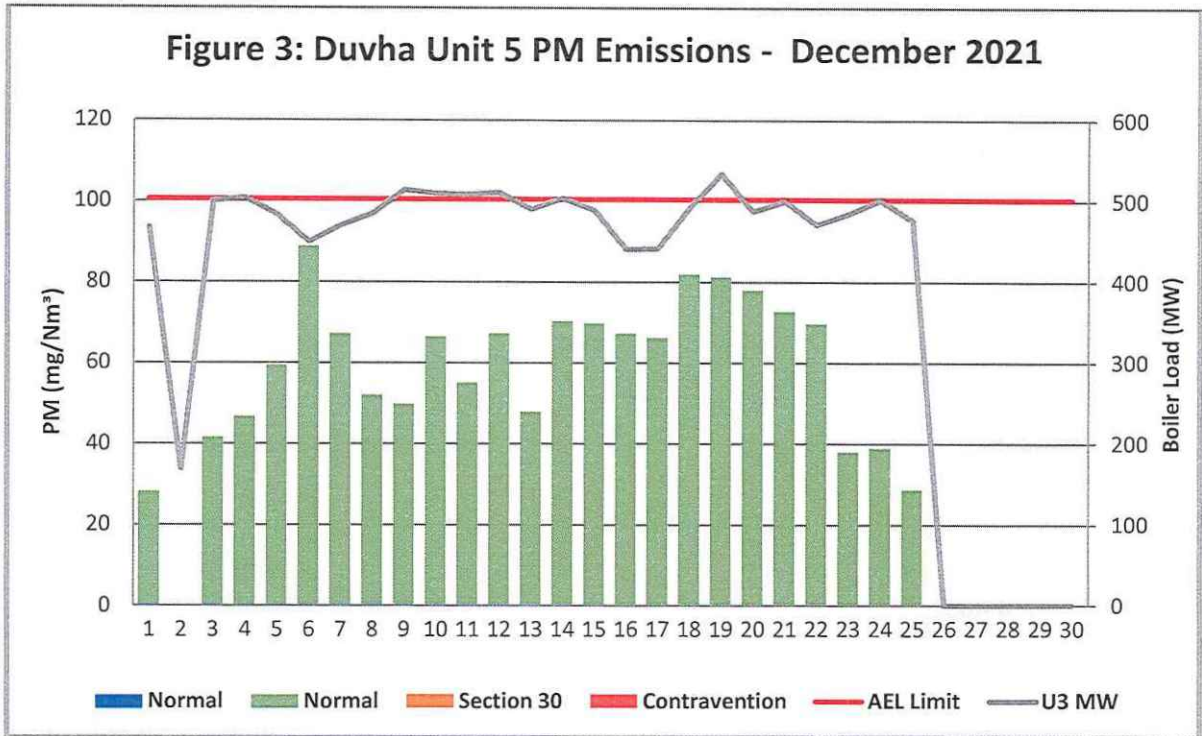
**Figure 1: Duvha Unit 1 PM Emissions - December 2021**



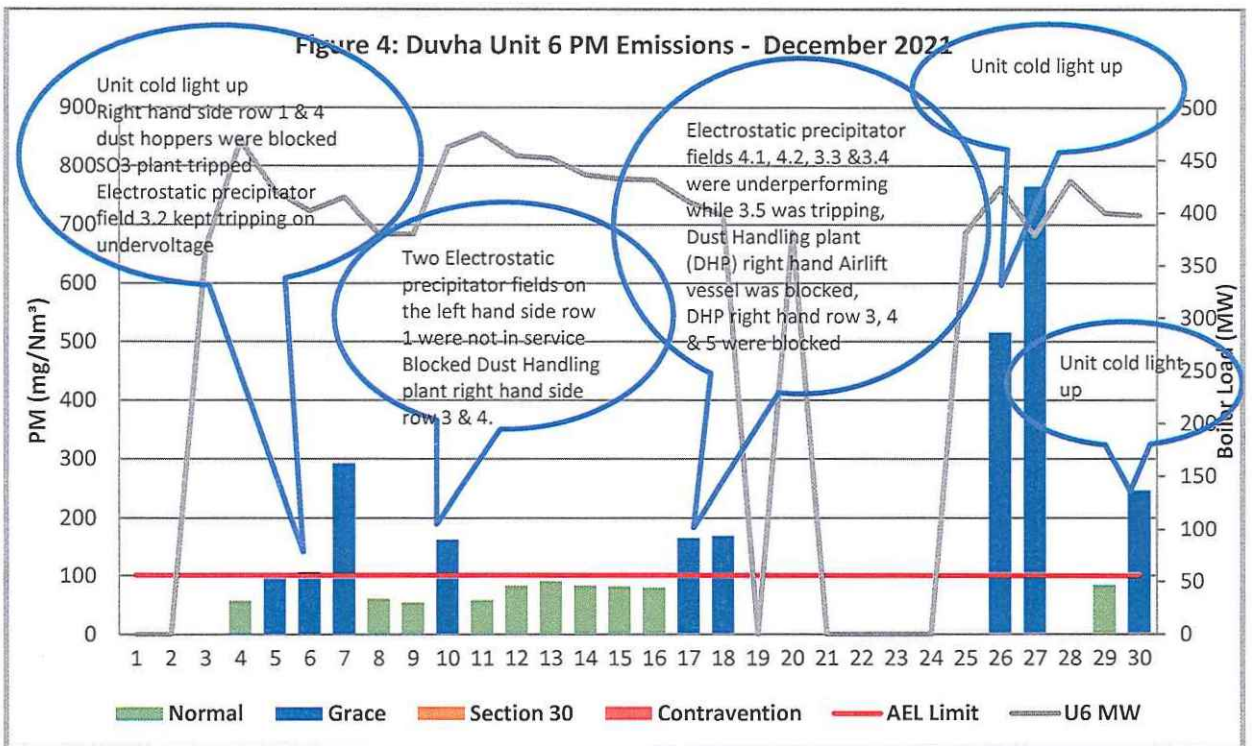
**Figure 2: Duvha Unit 2 PM Emissions - December 2021**



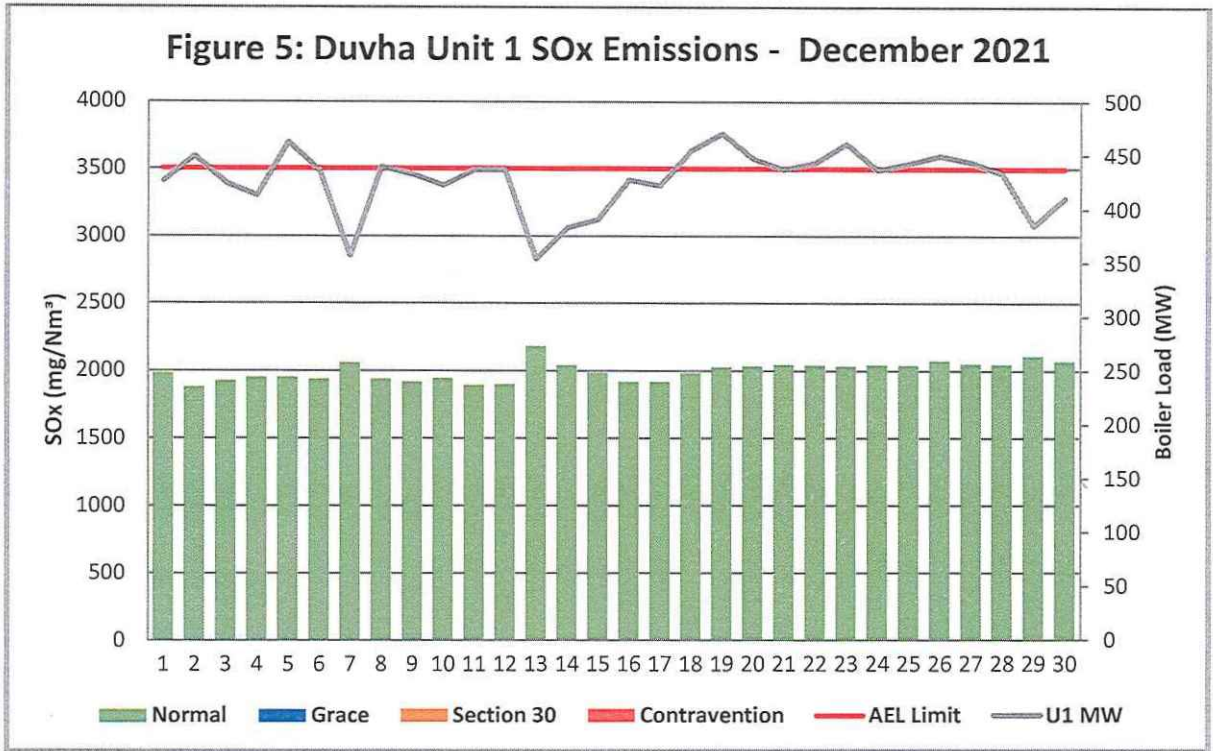
**Figure 3: Duvha Unit 5 PM Emissions - December 2021**



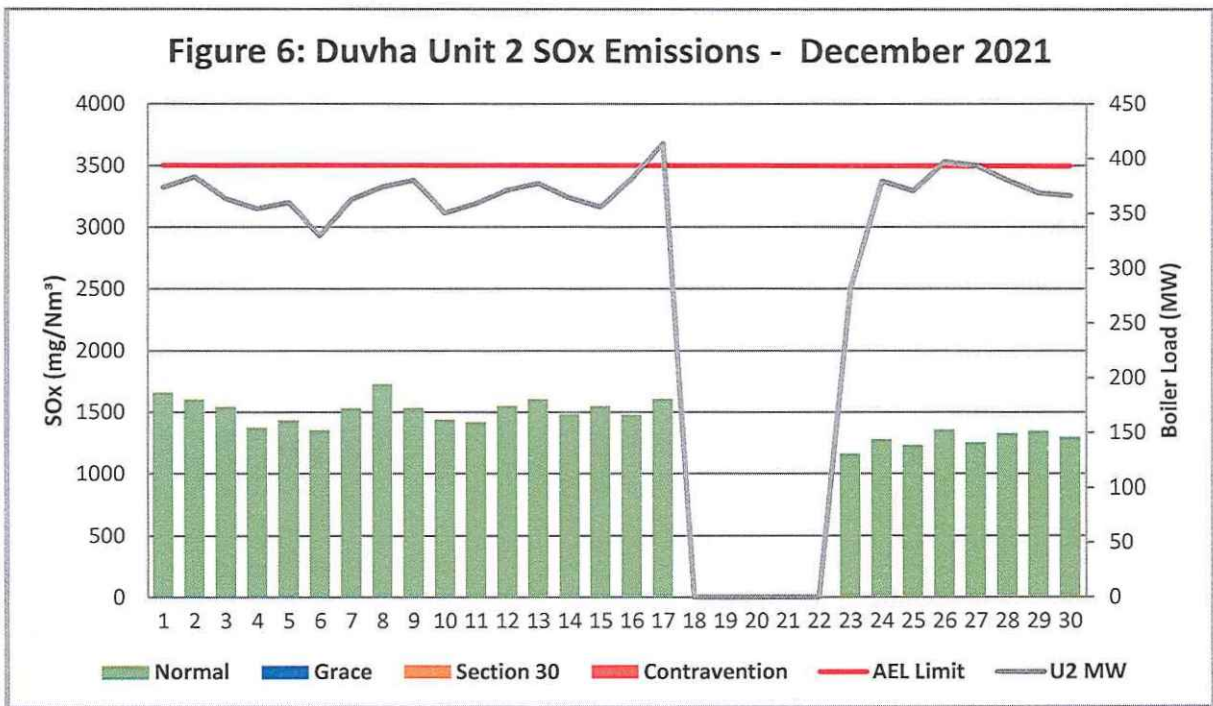
**Figure 4: Duvha Unit 6 PM Emissions - December 2021**



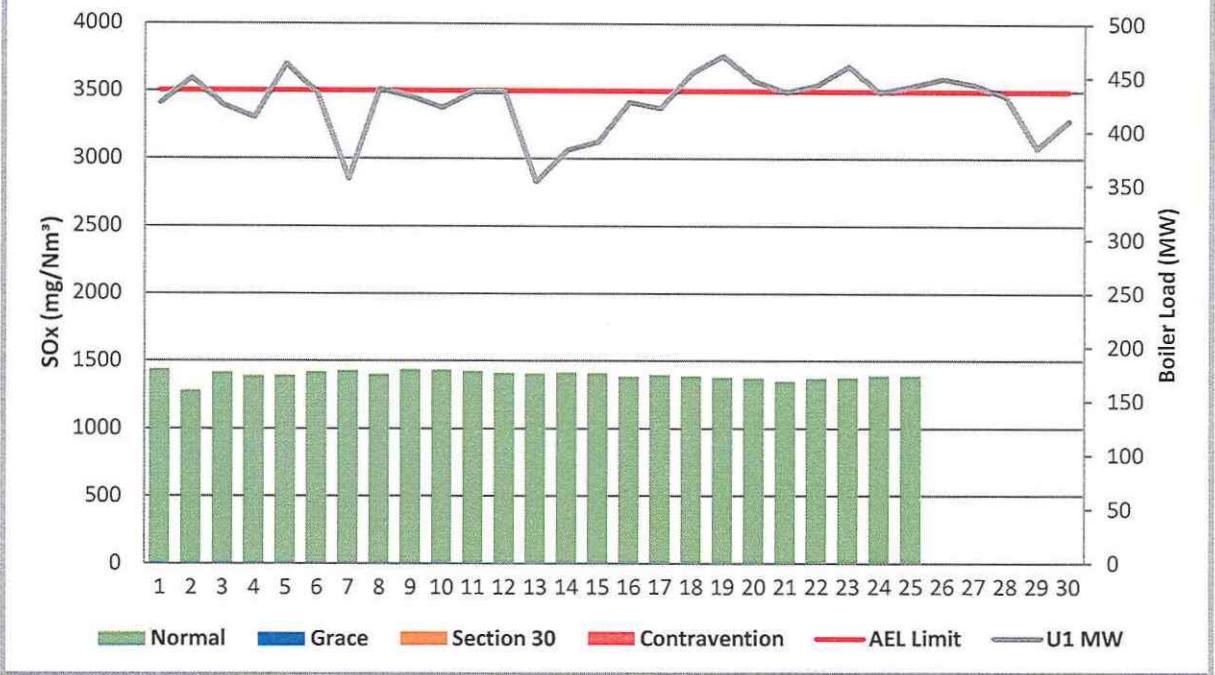
**Figure 5: Duvha Unit 1 SOx Emissions - December 2021**



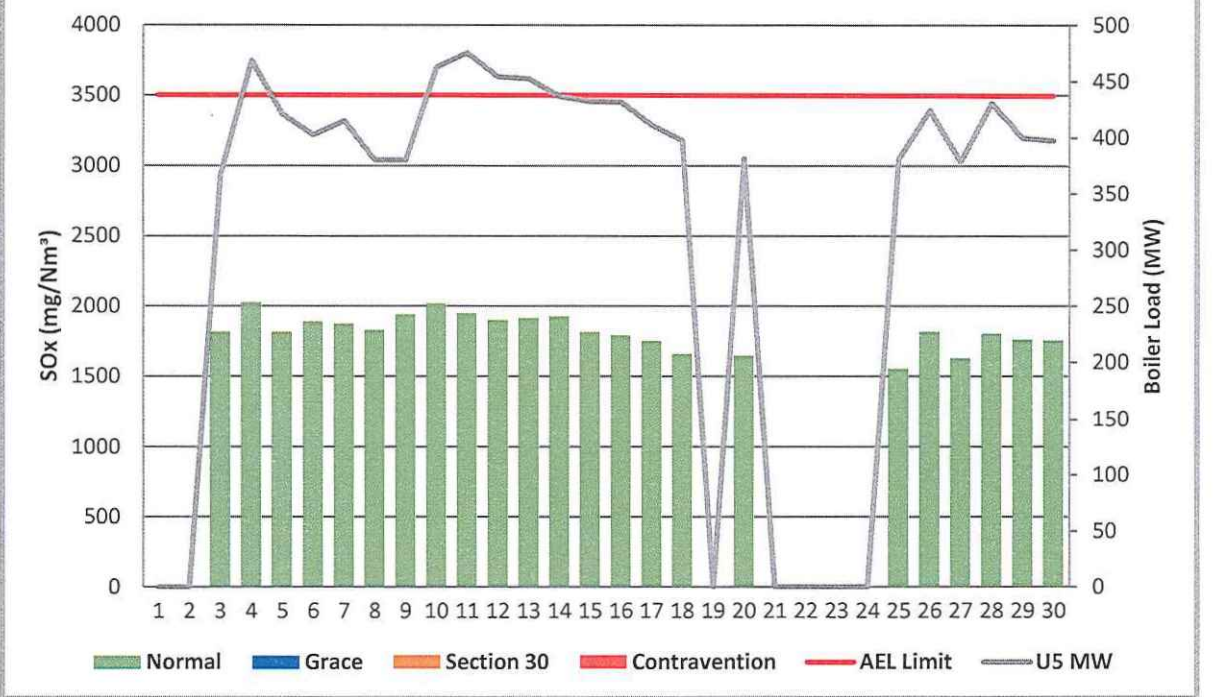
**Figure 6: Duvha Unit 2 SOx Emissions - December 2021**



**Figure 7: Duvha Unit 5 SOx Emissions - December 2021**

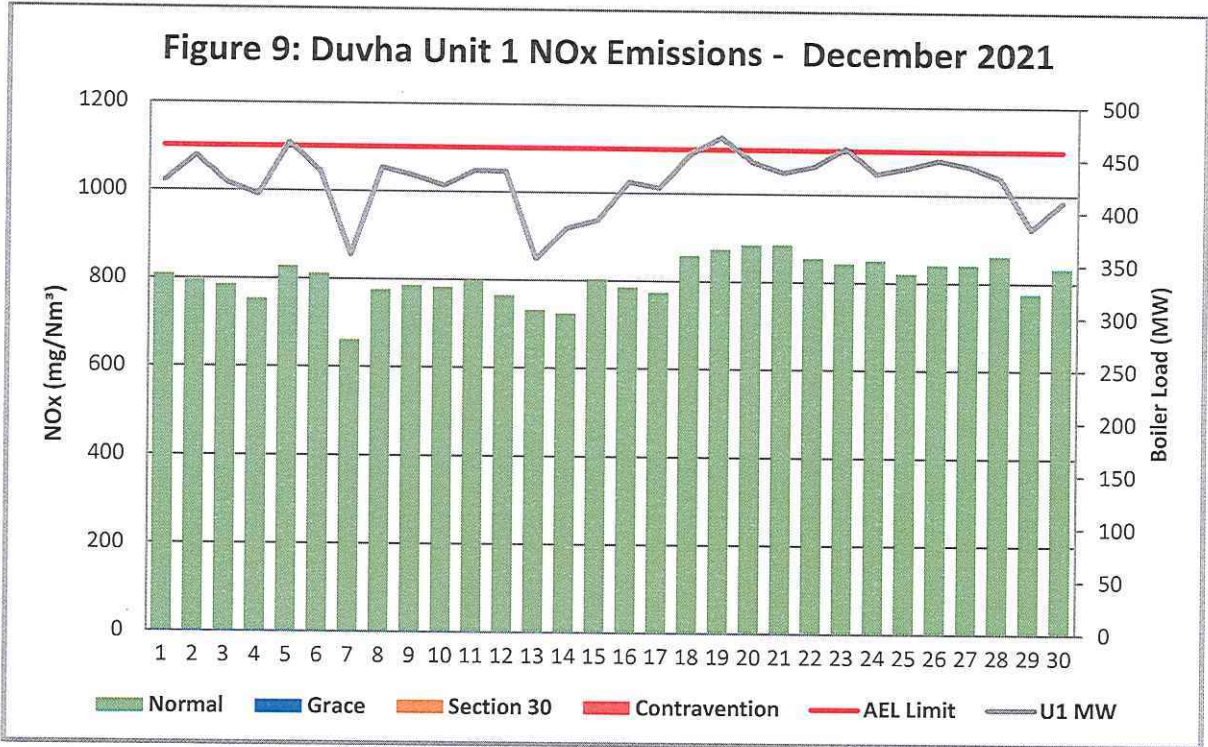


**Figure 8: Duvha Unit 6 SOx Emissions - December 2021**

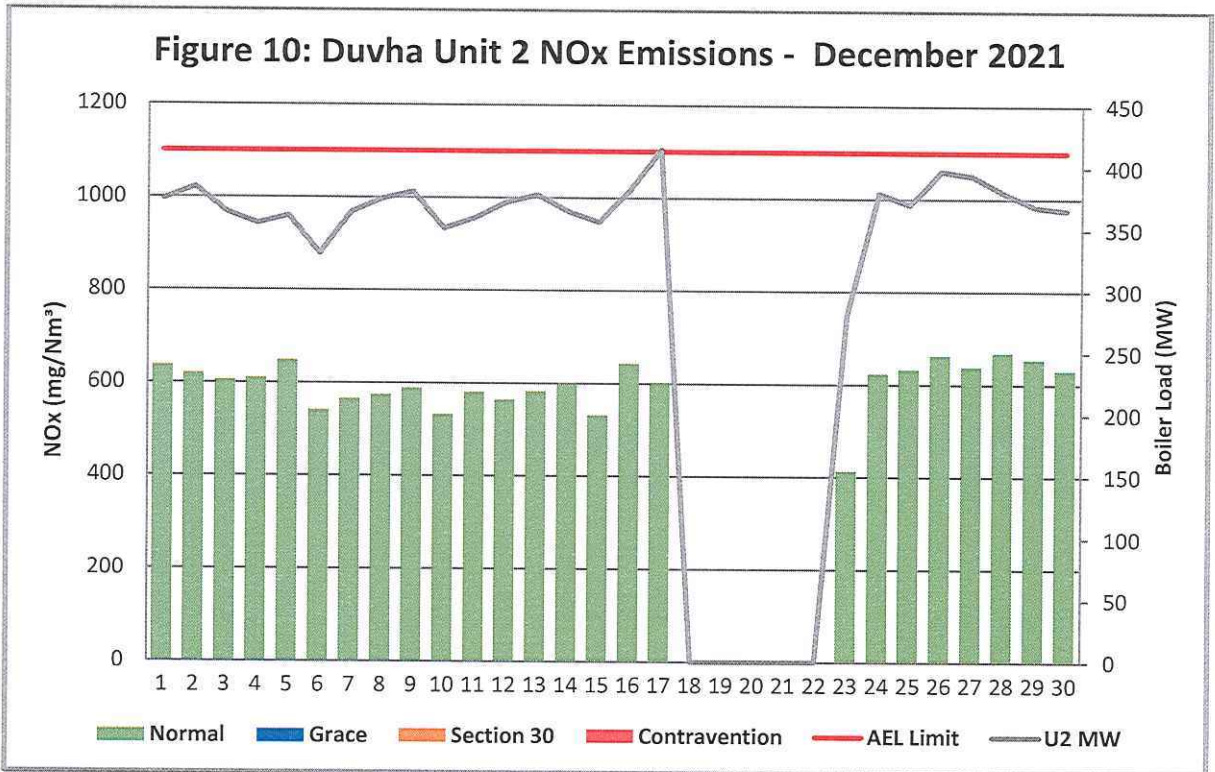




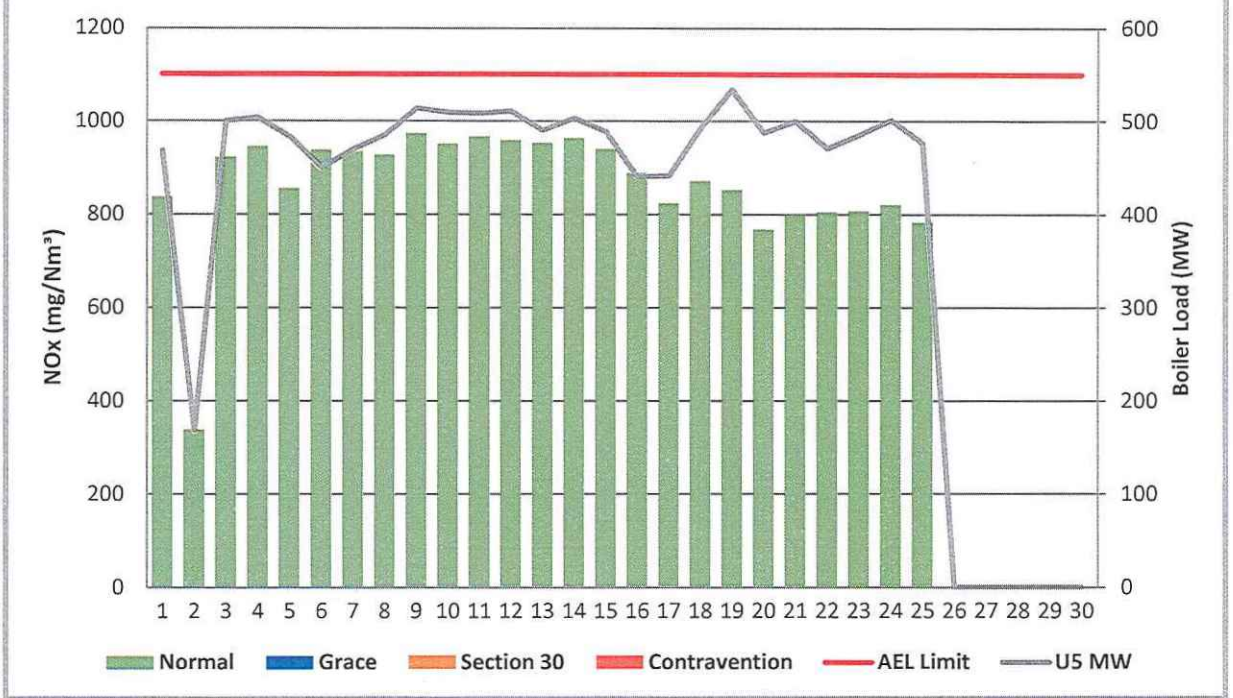
**Figure 9: Duvha Unit 1 NOx Emissions - December 2021**



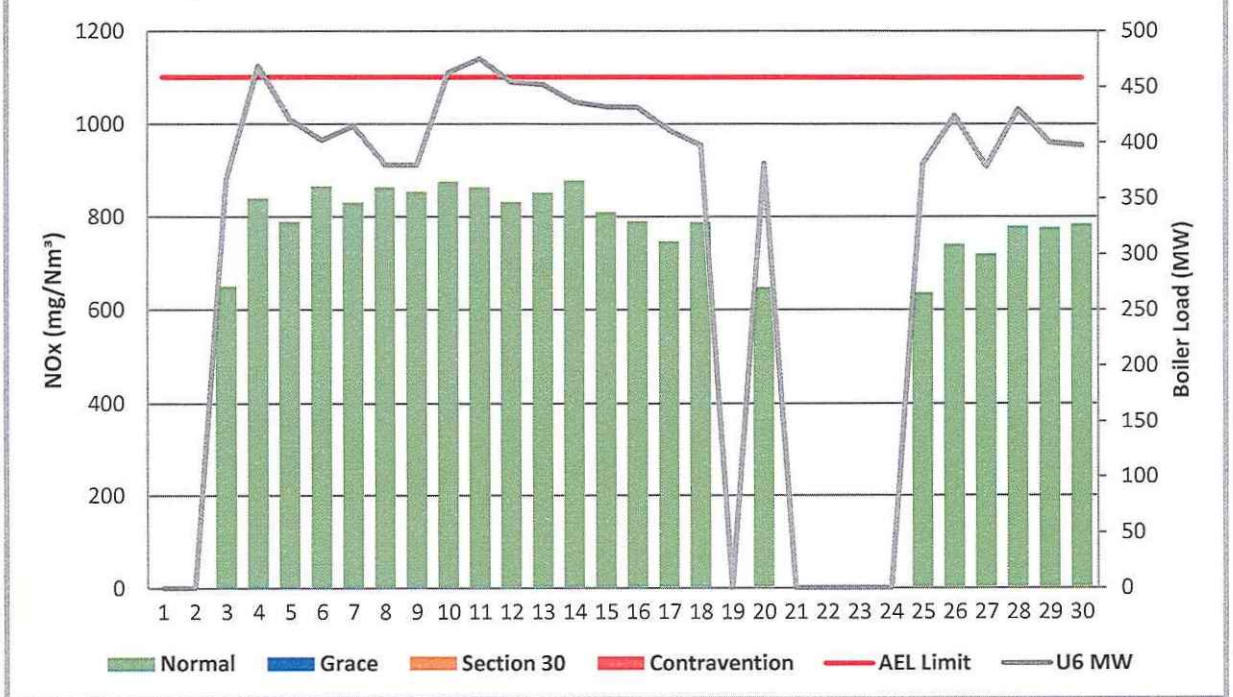
**Figure 10: Duvha Unit 2 NOx Emissions - December 2021**



**Figure 11: Duvha Unit 5 NOx Emissions - December 2021**



**Figure 12: Duvha Unit 6 NOx Emissions - December 2021**



## 7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of December 2021

Unit No.1	<i>Event 1</i>	
Breaker Open (BO)	<i>11:35 am</i>	<i>2021/12/13</i>
Draught Group (DG) Shut Down (SD)	<i>11:35 am</i>	<i>2021/12/13</i>
BO to DG SD (duration)	<i>00:00:00</i>	DD:HH:MM
Fires in time	<i>1:30 pm</i>	<i>2021/12/13</i>
Synch. to Grid (or BC)	<i>4:30 pm</i>	<i>2021/12/13</i>
Fires in to BC (duration)	<i>00:03:00</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>not &gt; limit</i>	<i>not &gt; limit</i>
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM

Unit No.2	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>5:30 pm</i>	<i>2021/12/05</i>	<i>1:25 pm</i>	<i>2021/12/17</i>
Draught Group (DG) Shut Down (SD)	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>9:55 am</i>	<i>2021/12/18</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:20:30</i>	DD:HH:MM
Fires in time			<i>12:45 pm</i>	<i>2021/12/18</i>
Synch. to Grid (or BC)			<i>5:30 pm</i>	<i>2021/12/23</i>
Fires in to BC (duration)		DD:HH:MM	<i>05:04:45</i>	DD:HH:MM
Emissions below limit from BC (end date)			<i>not &gt; limit</i>	<i>not &gt; limit</i>
Emissions below limit from BC (duration)		DD:HH:MM	<i>n/a</i>	DD:HH:MM

Unit No.5	<i>Event 1</i>		<i>Event 2</i>		<i>Event 3</i>	
Breaker Open (BO)	<i>10:05 pm</i>	<i>2021/12/01</i>	<i>2:45 pm</i>	<i>2021/12/23</i>	<i>7:25 pm</i>	<i>2021/12/25</i>
Draught Group (DG) Shut Down (SD)	<i>12:20 am</i>	<i>2021/12/02</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>11:00 am</i>	<i>2021/12/26</i>
BO to DG SD (duration)	<i>00:02:15</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM	<i>00:15:35</i>	DD:HH:MM
Fires in time	<i>2:15 pm</i>	<i>2021/12/02</i>			<i>12:30 pm</i>	<i>2021/12/26</i>
Synch. to Grid (or BC)	<i>9:05 pm</i>	<i>2021/12/02</i>			<i>10:15 am</i>	<i>2021/12/31</i>
Fires in to BC (duration)	<i>00:06:50</i>	DD:HH:MM		DD:HH:MM	<i>00:12:35</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>12:00 am</i>	<i>2021/12/03</i>			<i>not &gt; limit</i>	<i>not &gt; limit</i>
Emissions below limit from BC (duration)	<i>00:02:55</i>	DD:HH:MM		DD:HH:MM	<i>n/a</i>	DD:HH:MM

Unit No.6	Event 1		Event 2		Event 3	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>7:40 pm</i>	<i>2021/12/18</i>	<i>5:25 pm</i>	<i>2021/12/27</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>	<i>8:45 pm</i>	<i>2021/12/18</i>	<i>5:55 pm</i>	<i>2021/12/27</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:01:05</i>	DD:HH:MM	<i>00:00:30</i>	DD:HH:MM
Fires in time	<i>10:10 am</i>	<i>2021/12/03</i>	<i>10:30 pm</i>	<i>2021/12/19</i>	<i>12:15 am</i>	<i>2021/12/28</i>
Synch. to Grid (or BC)	<i>3:00 pm</i>	<i>2021/12/03</i>	<i>10:05 am</i>	<i>2021/12/25</i>	<i>1:05 pm</i>	<i>2021/12/28</i>
Fires in to BC (duration)	<i>00:04:50</i>	DD:HH:MM	<i>05:11:35</i>	DD:HH:MM	<i>00:12:50</i>	DD:HH:MM
Emissions below limit from BC (end date)	<i>10:00 pm</i>	<i>2021/12/05</i>	<i>5:25 pm</i>	<i>2021/12/27</i>	<i>5:00 am</i>	<i>2021/12/31</i>
Emissions below limit from BC (duration)	<i>02:07:00</i>	DD:HH:MM	<i>02:07:20</i>	DD:HH:MM	<i>02:15:55</i>	DD:HH:MM

## 8 GENERAL

Units 3 and 4 were offload during the month of December 2021.

The averages Oxygen(O<sub>2</sub>) and Carbon Dioxide (CO<sub>2</sub>) data from the QAL 2 tests reports were used for reporting for Units 1, 2, 5 and 6 due to poor performance of the O<sub>2</sub> and CO<sub>2</sub> gaseous monitors. These poor performances of the gaseous monitors were identified to be caused by the incorrect installation of O<sub>2</sub> analyser. An action is being implemented to relocate all the units' O<sub>2</sub> 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.

## 9 Complaints and 10 Incidents Register

Refer to addendum A

*Ndwelani*

Boiler Plant Engineering  
Manager

13-04-2022

Date

*[Signature]*

Environmental  
Manager

14-04-2022

Date



Engineering Manager

2022/04/14

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

