



Generation

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AND

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DUVHA POWER STATION

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



GENERAL MANAGER

2024/01/29

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 Nov-2023
	Coal	Tons	1 400 000.00	439 049.42
	Fuel Oil	Tons	5 000.00	4662.31
Production Rates	Product / By-Product Name	Units	Maximum Production Capacity Permitted	Indicative Production Rate Nov-2023
	Energy	GWh	2 592.00	650.22
	Ash	Tons	not specified	114 108.90

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
Sulphur Content	%	0.6.00 TO >1.20	0.71
Ash Content	%	27.00 TO 30.00	25.99

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SO ₂	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 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Nov-2023	Technology Type	SO ₃ Utilization Nov-2023
Unit 2	FFP	100.00%		
Unit 4	ESP + SO ₃	99.70%	SO ₃	98.50%
Unit 5	ESP + SO ₃	99.60%	SO ₃	100.00%
Unit 6	ESP + SO ₃	99.50%	SO ₃	98.90%

Note: ESP and FFP plants do not have a bypass mode operation, hence plants are 100% Utilised.

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO
Unit 2	100.00	88.10	87.90
Unit 4	100.00	100.00	100.00
Unit 5	100.00	92.90	91.00
Unit 6	100.00	99.80	99.80

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 November 2023

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 2	15.35	2 254	882
Unit 4	39.64	850	418
Unit 5	55.87	978	254
Unit 6	126.10	2 271	1 166
SUM	236.97	6 353	2 721

Table 6.2: Operating days in compliance to PM AEL Limit - November 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 2	25	0	0	0	0	11.60
Unit 4	12	0	0	0	0	80.55
Unit 5	7	5	0	0	5	129.59
Unit 6	15	6	1	0	7	96.41
SUM	59	11	1	0	12	

Table 6.3: Operating days in compliance to SO₂ AEL Limit - November 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO ₂ (mg/Nm ³)
Unit 2	24	0	0	0	0	1 723.58
Unit 4	14	0	0	0	0	1 407.52
Unit 5	14	0	0	0	0	1 664.31
Unit 6	24	0	0	0	0	1 521.79
SUM	76	0	0	0	0	

Table 6.4: Operating days in compliance to NO_x AEL Limit - November 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NO _x (mg/Nm ³)
Unit 2	24	0	0	0	0	673.67
Unit 4	14	0	0	0	0	680.58
Unit 5	14	0	0	0	0	415.47
Unit 6	24	0	0	0	0	776.91
SUM	76	0	0	0	0	

Note: NO_x emissions is measured as NO in PPM. Final NO_x 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 2 PM Emissions - November 2023

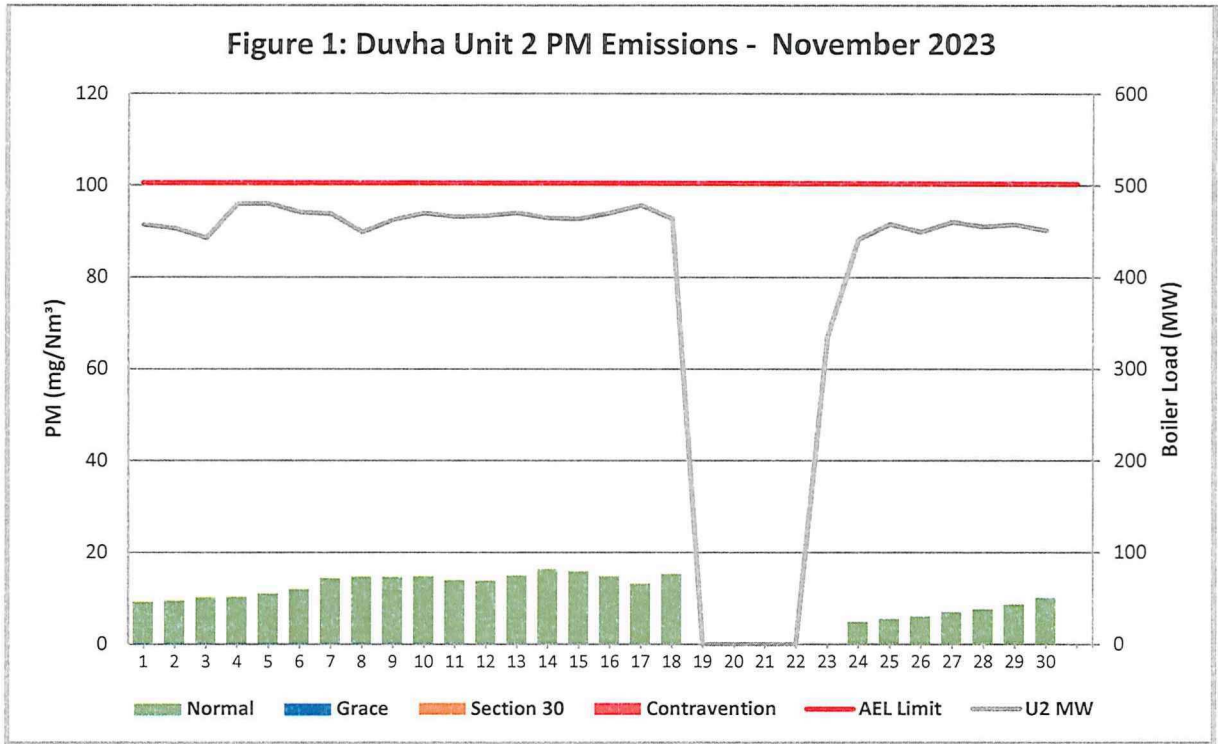


Figure 2: Duvha Unit 4 PM Emissions - November 2023

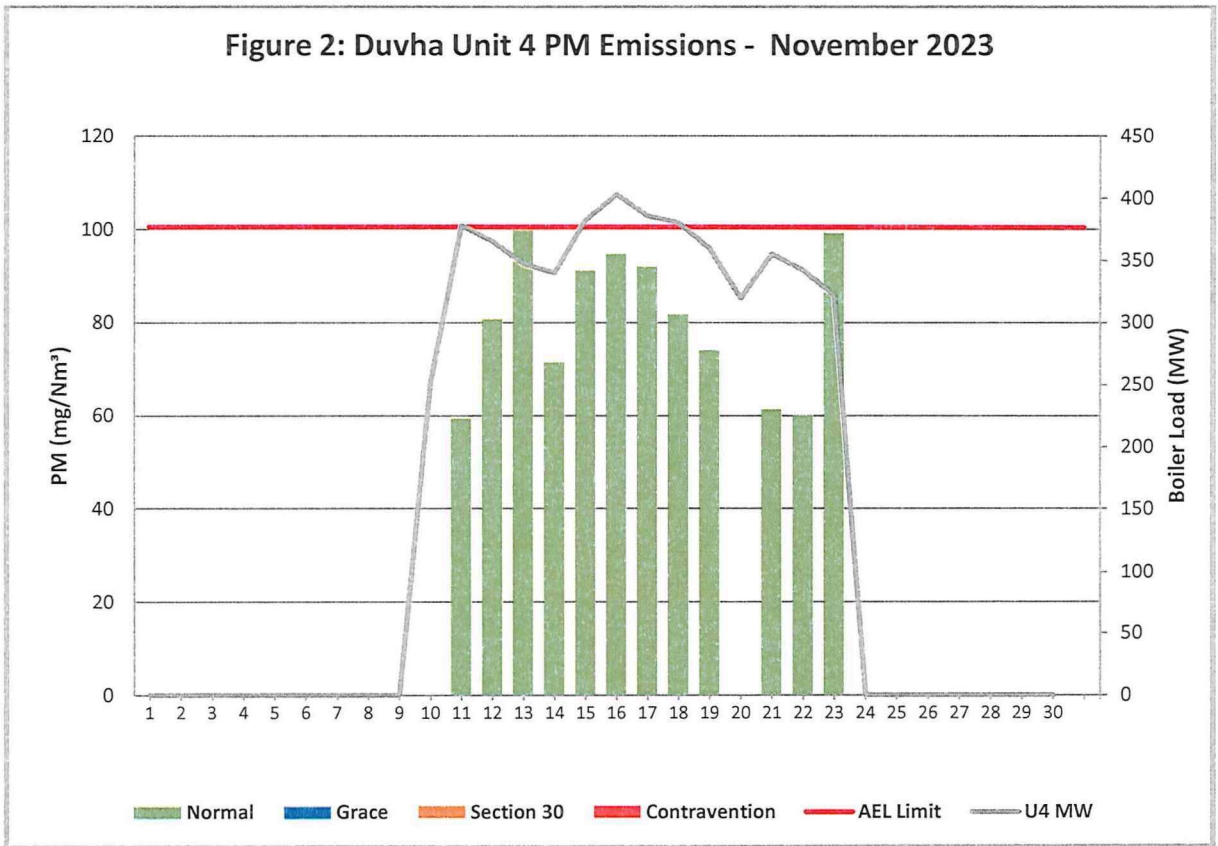


Figure 3: Duvha Unit 5 PM Emissions - November 2023

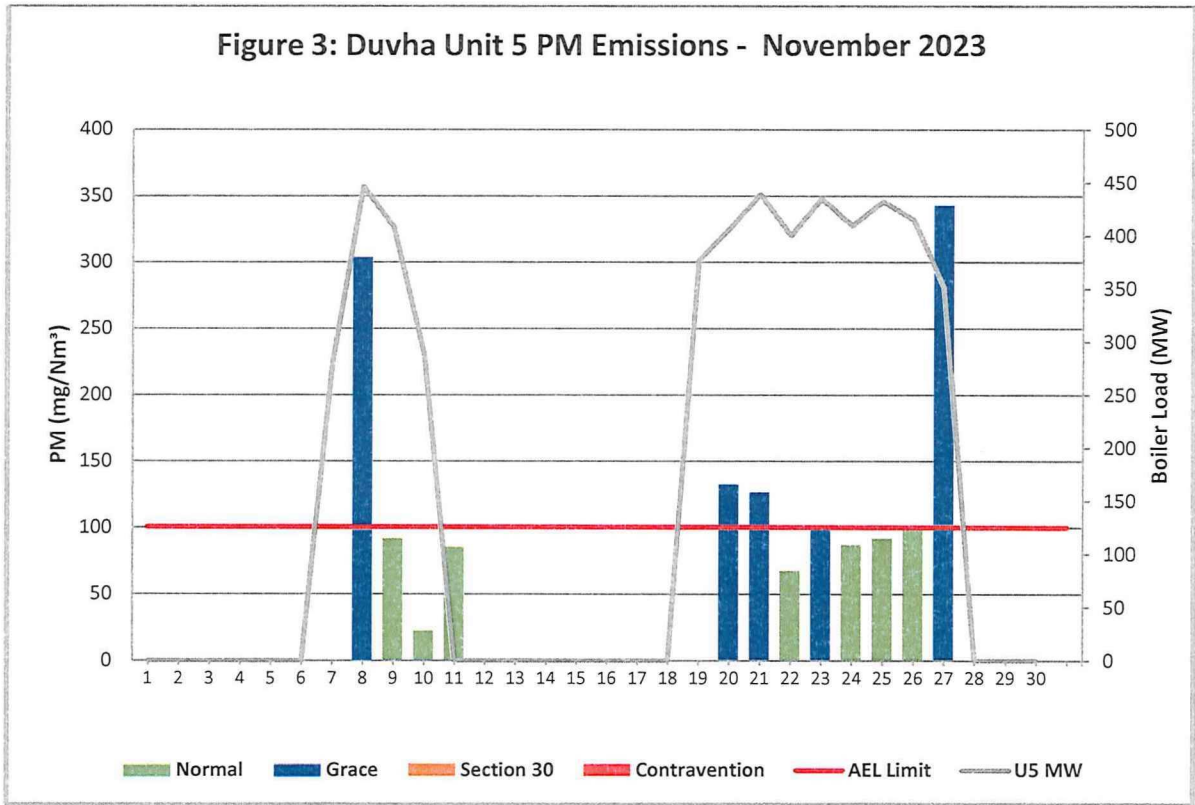


Figure 4: Duvha Unit 6 PM Emissions - November 2023

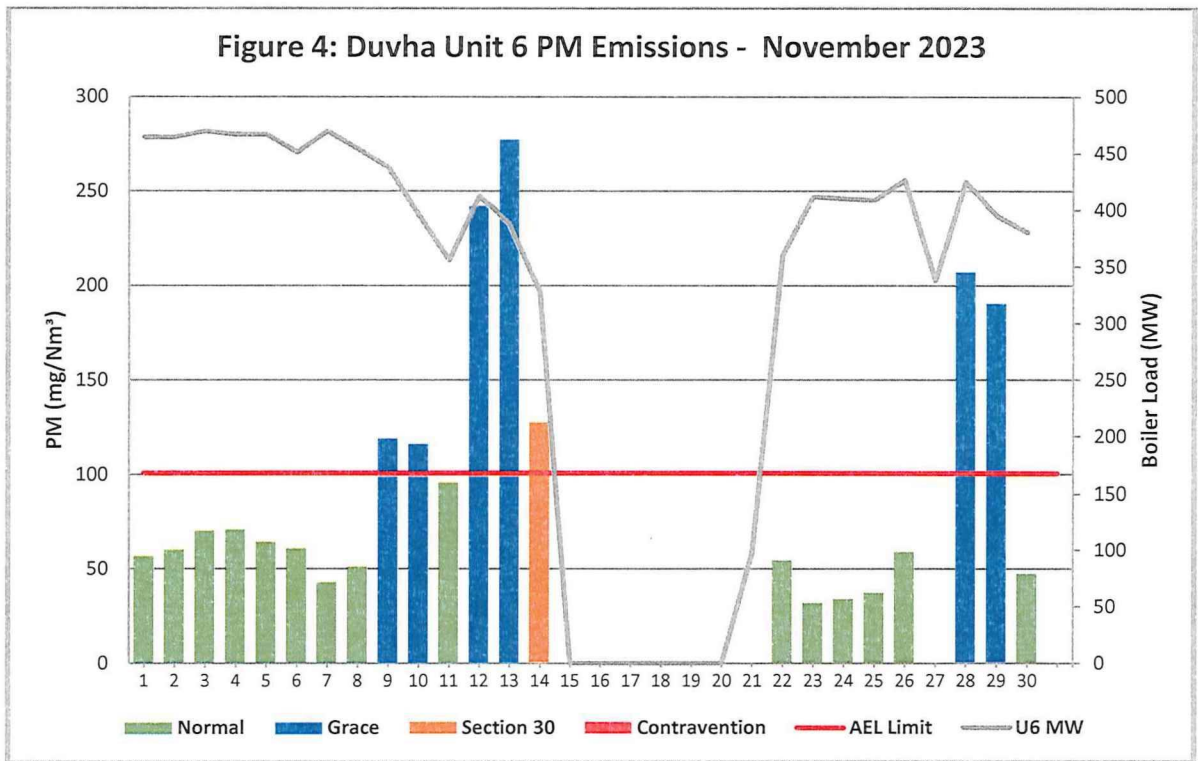


Figure 5: Duvha Unit 2 SO₂ Emissions - November 2023

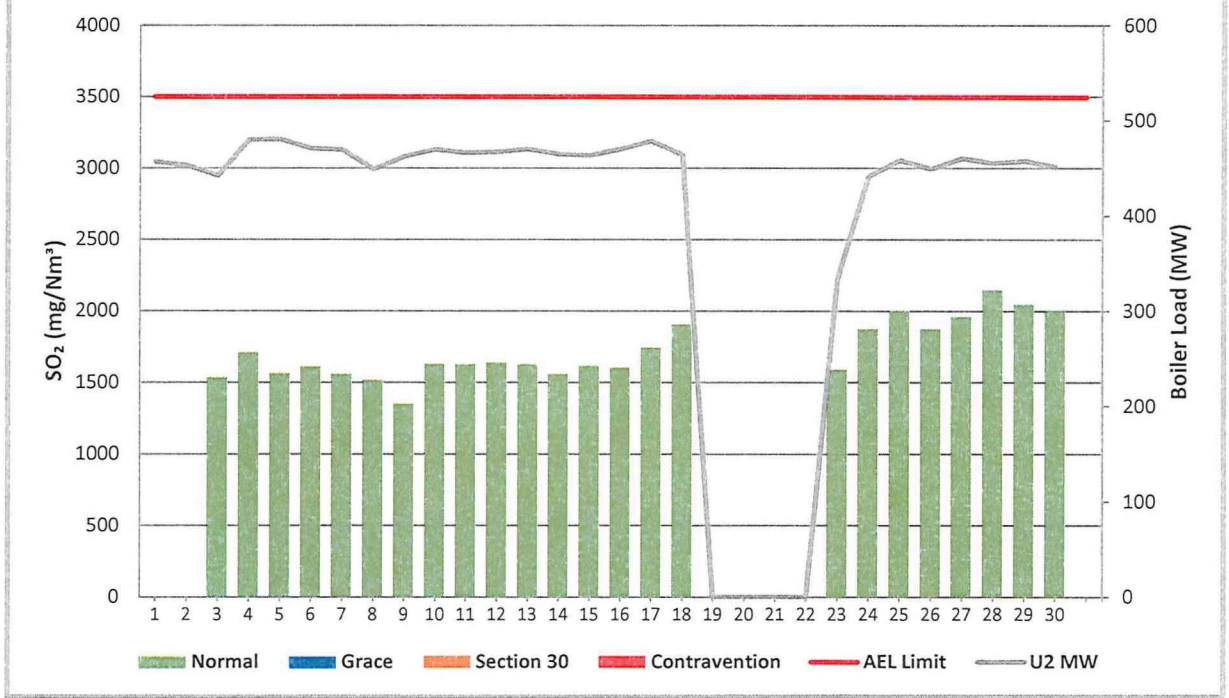


Figure 6: Duvha Unit 4 SO₂ Emissions - November 2023

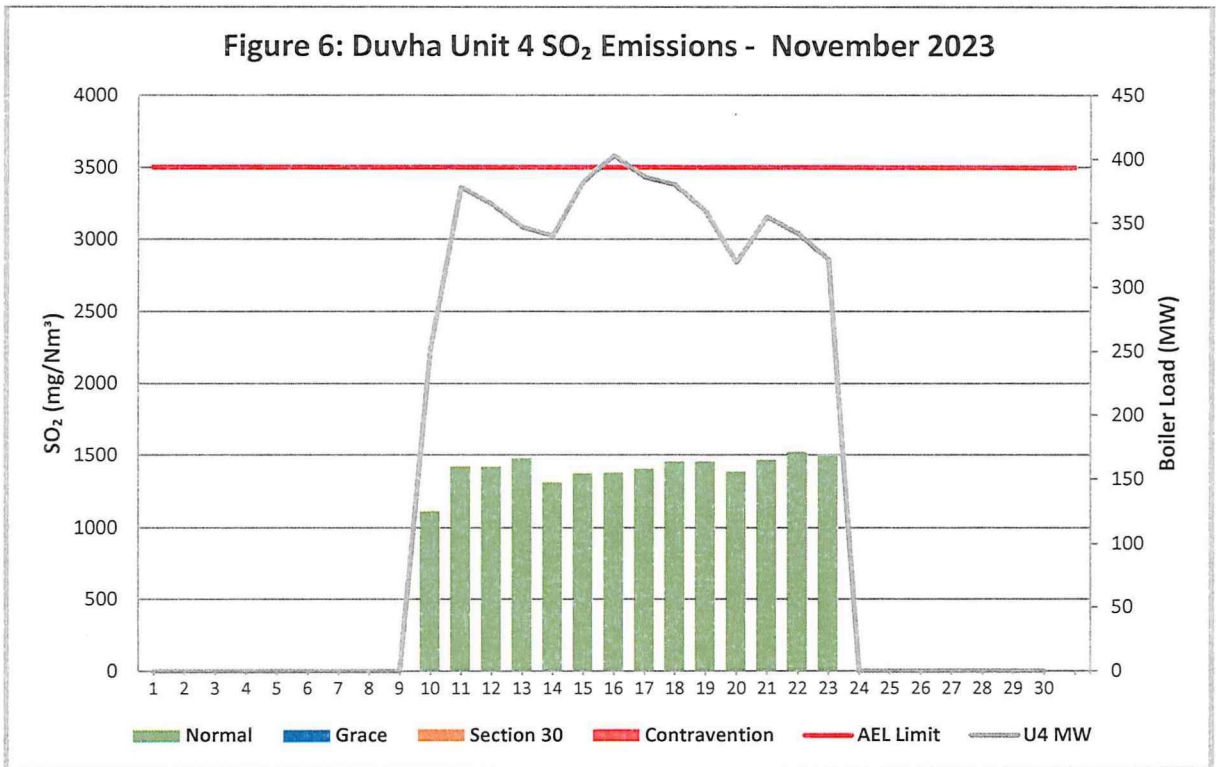


Figure 7: Duvha Unit 5 SO₂ Emissions - November 2023

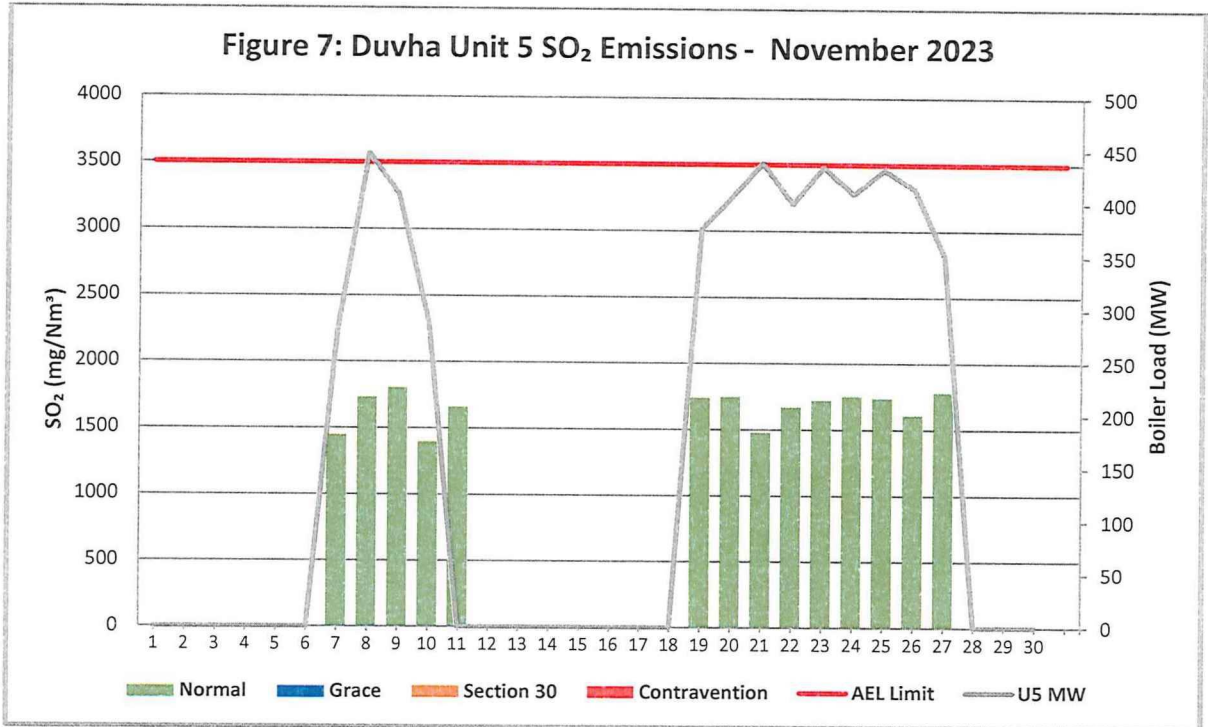


Figure 8: Duvha Unit 6 SO₂ Emissions - November 2023

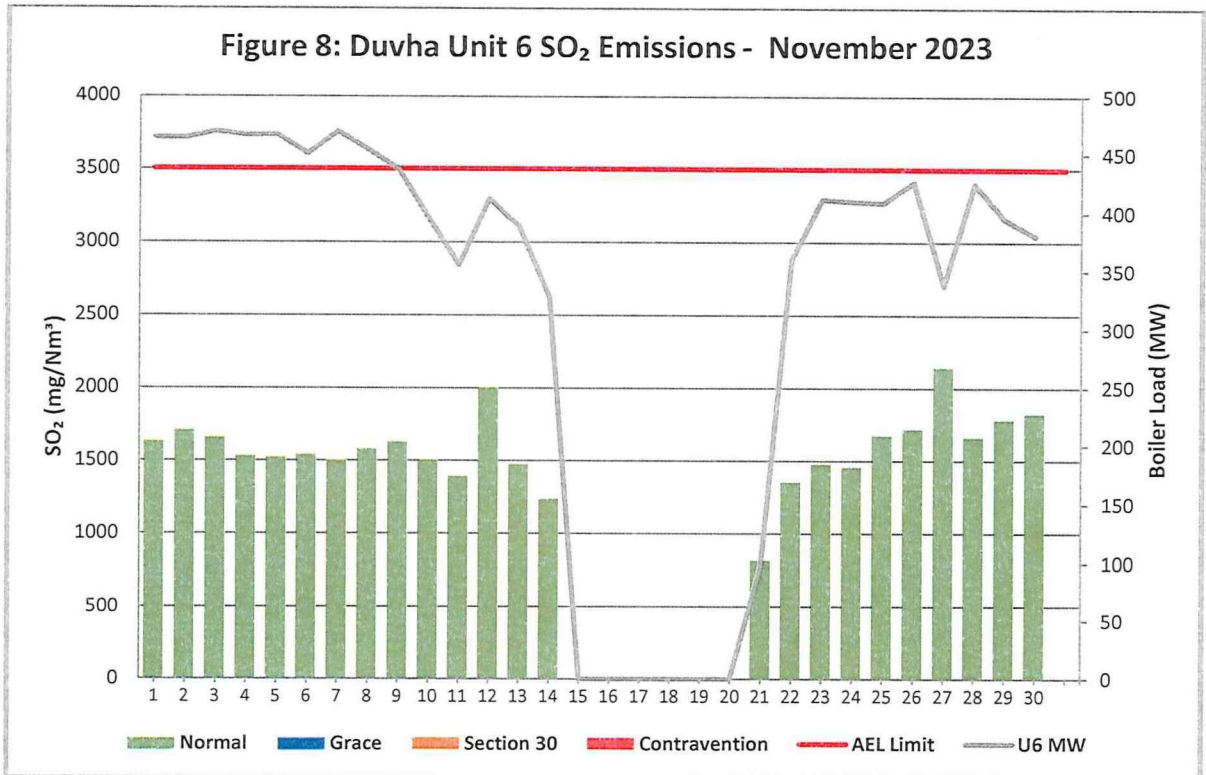


Figure 9: Duvha Unit 2 NOx Emissions - November 2023

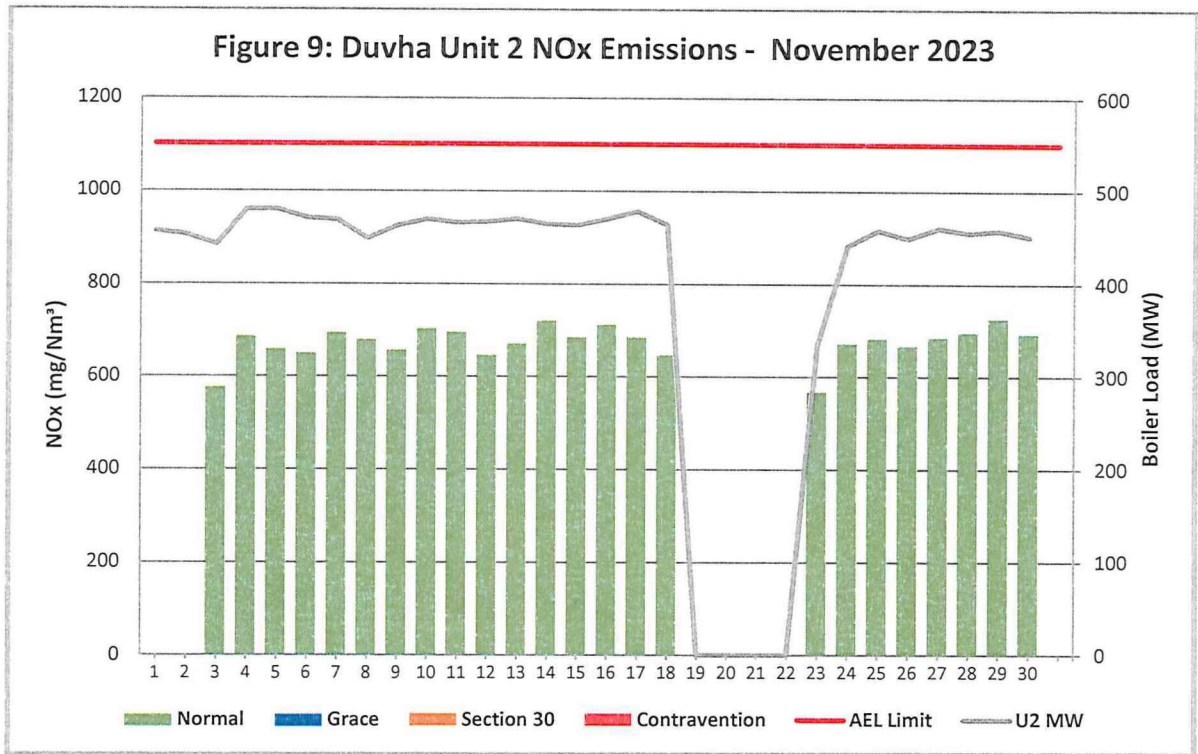


Figure 10: Duvha Unit 4 NOx Emissions - November 2023

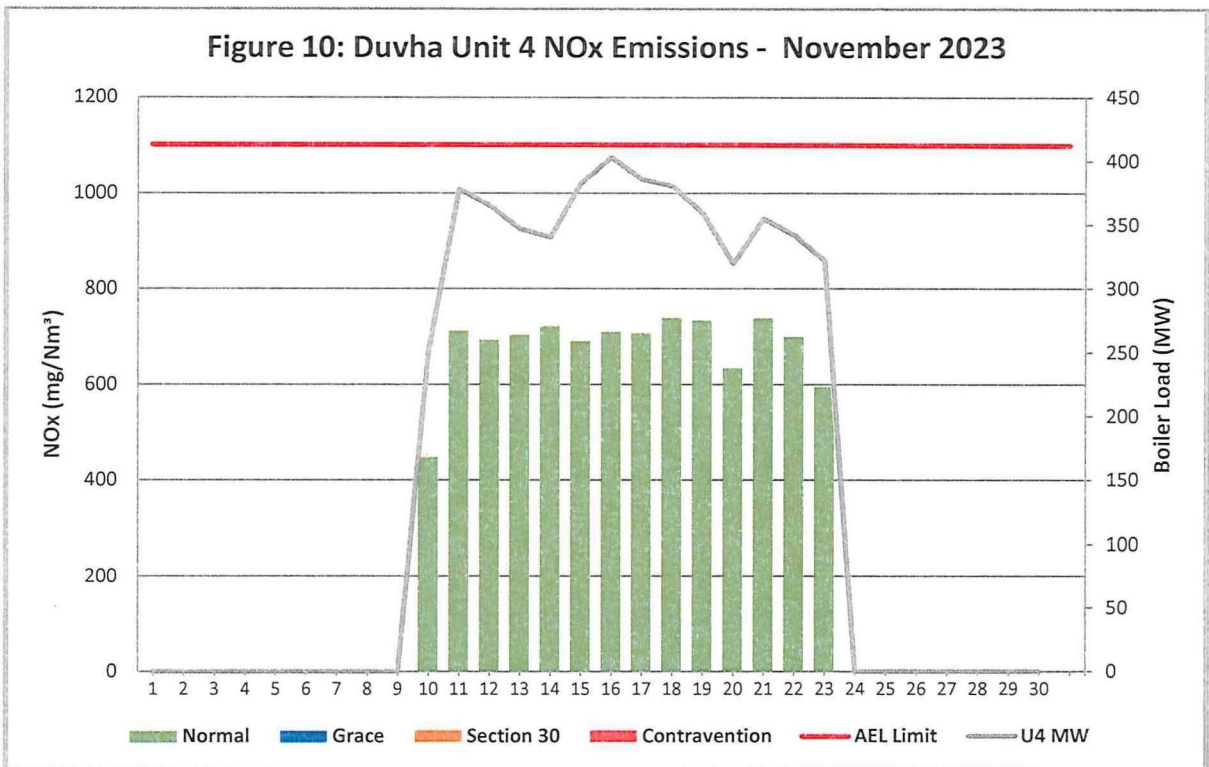


Figure 11: Duvha Unit 5 NOx Emissions - November 2023

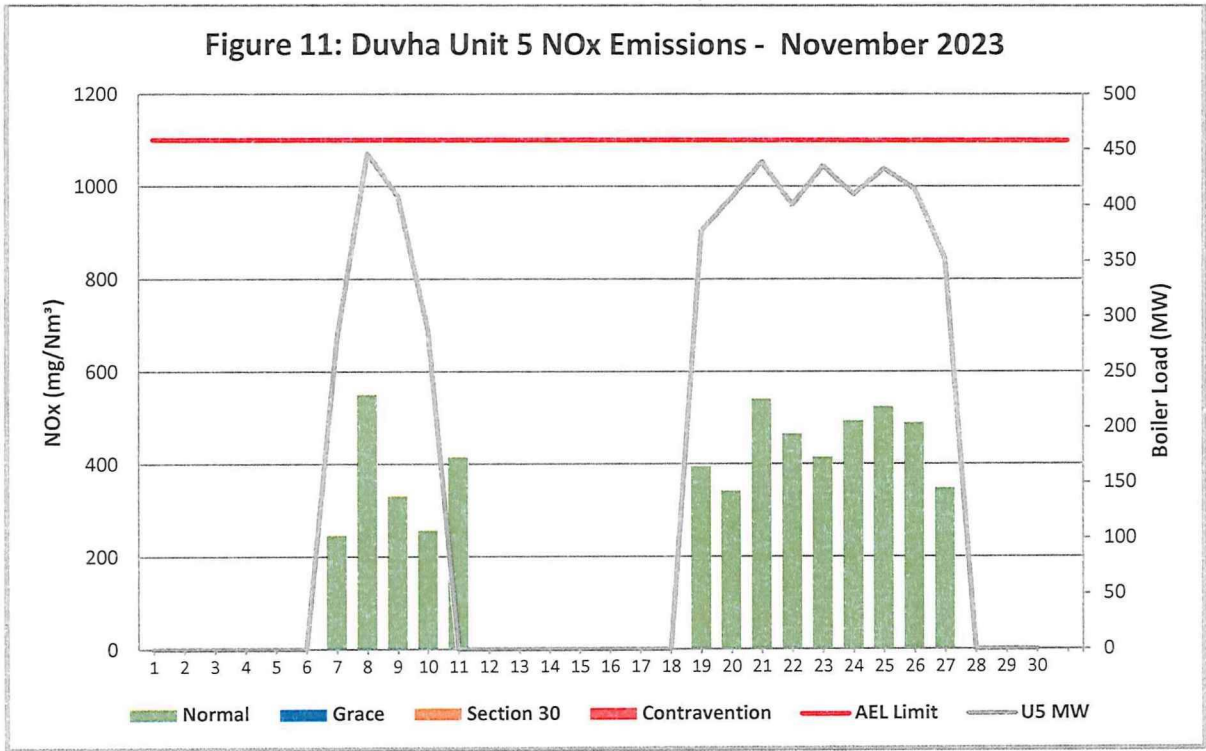
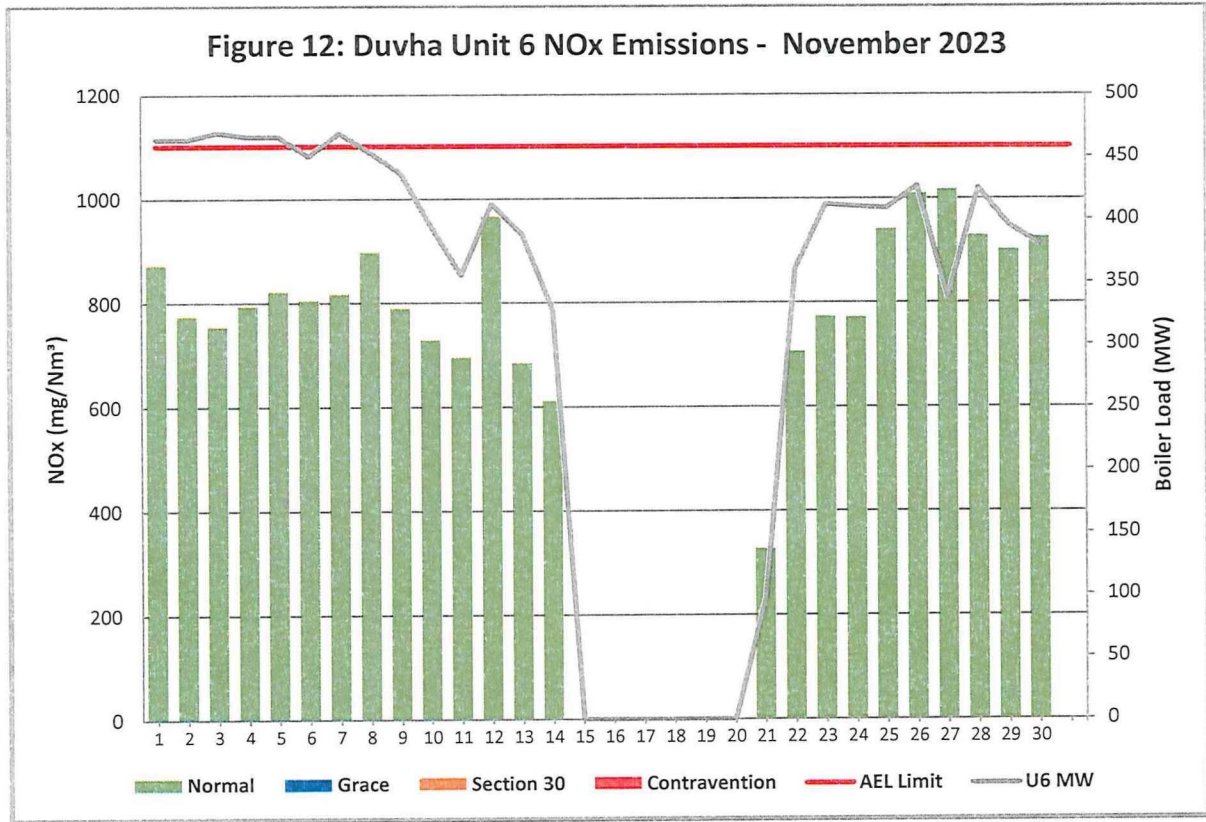


Figure 12: Duvha Unit 6 NOx Emissions - November 2023



7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of November 2023

Unit No.2	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>5:50 pm</i>	<i>2023/11/03</i>	<i>11:25 pm</i>	<i>2023/11/18</i>
Draught Group (DG) Shut Down (SD)	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>10:15 am</i>	<i>2023/11/19</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:10:50</i>	DD:HH:MM
Fires in time			<i>11:10 pm</i>	<i>2023/11/22</i>
Synch. to Grid (or BC)			<i>8:20 am</i>	<i>2023/11/23</i>
Fires in to BC (duration)		DD:HH:MM	<i>00:09:10</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)		DD:HH:MM	<i>n/a</i>	DD:HH:MM

Unit No.4	<i>Event 1</i>		<i>Event 2</i>		<i>Event 3</i>	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>10:45 pm</i>	<i>2023/11/19</i>	<i>10:10 am</i>	<i>2023/11/23</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>	<i>12:30 pm</i>	<i>2023/11/23</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM	<i>00:02:20</i>	DD:HH:MM
Fires in time	<i>4:40 am</i>	<i>2023/11/10</i>				
Synch. to Grid (or BC)	<i>4:20 pm</i>	<i>2023/11/10</i>				
Fires in to BC (duration)	<i>00:11:40</i>	DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	<i>11:00 pm</i>	<i>2023/11/13</i>				
Emissions below limit from BC (duration)	<i>03:06:40</i>	DD:HH:MM		DD:HH:MM		DD:HH:MM

Unit No.6	<i>Event 1</i>		<i>Event 2</i>	
Breaker Open (BO)	<i>10:30 pm</i>	<i>2023/11/14</i>	<i>6:45 pm</i>	<i>2023/11/26</i>
Draught Group (DG) Shut Down (SD)	<i>12:30 am</i>	<i>2023/11/15</i>	<i>DG did not trip or SD</i>	<i>DG did not trip or SD</i>
BO to DG SD (duration)	<i>00:02:00</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM
Fires in time	<i>12:30 pm</i>	<i>2023/11/20</i>		

Synch. to Grid (or BC)	8:55 pm	2023/11/21		
Fires in to BC (duration)	01:08:25	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2023/11/23		
Emissions below limit from BC (duration)	01:03:05	DD:HH:MM		DD:HH:MM

Unit No.6	Event 1		Event 2	
Breaker Open (BO)	10:30 pm	2023/11/14	6:45 pm	2023/11/26
Draught Group (DG) Shut Down (SD)	16:10 pm	2023/11/16	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	00:02:00	DD:HH:MM	n/a	DD:HH:MM
Fires in time	12:30 pm	2023/11/20		
Synch. to Grid (or BC)	8:55 pm	2023/11/21		
Fires in to BC (duration)	01:08:25	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2023/11/23		
Emissions below limit from BC (duration)	01:03:05	DD:HH:MM		DD:HH:MM

8 GENERAL

Unit 1 was not on load for the month of November 2023.

Exceedances:

Unit 5:

08/11/2023

- Cold unit light up.

20-21/11/2023

- Cold unit light up.

23/11/2023

- Underperforming Electrostatic Precipitator fields (ESP fields 1.5, 2.5, & 3.4 had communication faults and ESP fields 2.1, 2.2, & 2.3 had poor performance)
- High dust hoppers levels due to faulty right hand airlift vessel level probe.

27/11/2023

- Due to sootblowing an abnormally dirty boiler which resulted in the exceedance.

Unit 6:

09-10/11/2023

- Dust Handling plant (DHP) Right hand rows 4 and 8 were blocked,
- The right hand airlift vessel also kept on blocking,

12-14/11/2023

Contravention Incident The 48 hours allowable for Upset Conditions were exceeded on Duvha Unit 6 on the 14th of November 2023 A detailed investigation report with root cause and preventative actions will be submitted to your office once the investigation is completed

28 -29/11/2023

- Cold unit light up

Lastly the averages Oxygen(O2) and Carbon Dioxide (CO2) data from the QAL 2 tests reports were used for reporting for Units 2, 4, 5, and 6 due to poor performance of the O2 and CO2 gaseous monitors These poor performances of the gaseous monitors are due to faulty O2 analysers The Station is in the process to replace all the faulty analysers by 31 March 2024

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

25/01/2024
 Date


 Environmental
 Manager

2024/01/29
 Date


 Engineering Manager

2024-01-25
 Date

Compiled by

Environmental Officer

For

Nkangala District
Municipality

Air Quality Officer

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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 November 2023

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 November 2023					

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	14/11/2023	14/11/2023	Incident still under investigation			Contravention incident not reported as a Section 30 Final investigation report will be submitted once investigation completed	N/A	N/A	Contravention Incident: Contravention Incident The 48 hours allowable for Upset Conditions were exceeded on Duvha Unit 6 on the 14th of November 2023 A detailed investigation report with root cause and preventative actions will be submitted to your office once the investigation is completed