



## Generation

Nkangala District Municipality  
P O Box 437  
Middelburg  
1050

**Attention:**

Mr V Mahlangu

AND

Directorate: Air Quality Management Services  
The Chief Director:  
Mr S S Maluleka  
Department of Environmental Services  
Private Bag X447  
PRETORIA  
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**Date: 2024/12/27**

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Enquiries: Ms Simthandile Nhlapo

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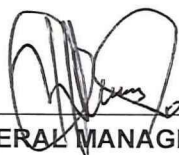
☎ +27 66 212 2105

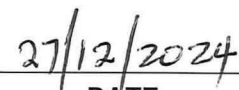
**Total number of pages: 14**

**Total number of annexes: 1**

## DUVHA POWER STATION

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

  
\_\_\_\_\_  
GENERAL MANAGER

  
\_\_\_\_\_  
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-2024           |
|----------------------------|---------------------------|-------|---------------------------------------|-------------------------------------|
|                            | Coal                      | Tons  | 1 400 000                             | 569 449.75                          |
|                            | Fuel Oil                  | Tons  | 5 000                                 | 4250.66                             |
|                            |                           |       |                                       |                                     |
| Production Rates           | Product / By-Product Name | Units | Maximum Production Capacity Permitted | Indicative Production Rate Nov-2024 |
|                            | Energy                    | GWh   | 2 592.000                             | 1 026.31                            |
|                            | Ash                       | Tons  | not specified                         | 140 711.03                          |

Note: Maximum energy rate is as per the maximum capacity stated in the AEL:  $[3\ 600\ \text{MW}] \times 24\ \text{hrs} \times \text{days in Month}/1000$  to convert to GWh

## 2 ENERGY SOURCE CHARACTERISTICS

| Coal Characteristic | Units | Stipulated Range | Monthly Average Content |
|---------------------|-------|------------------|-------------------------|
| CV Content          | MJ/kg | 18-24            | 22.00                   |
| Sulphur Content     | %     | 0.6 TO >1.2      | 0.65                    |
| Ash Content         | %     | 27 TO 30         | 24.71                   |

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

| Associated Unit/Stack | PM  | SO <sub>2</sub> | NO <sub>x</sub> |
|-----------------------|-----|-----------------|-----------------|
| 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 Nov-2024 | Technology Type | SO <sub>3</sub> Utilization Nov-2024 |
|----------------------------------------------------------------------------------------|-----------------------|---------------------|-----------------|--------------------------------------|
| Unit 1                                                                                 | FFP                   | 99.9%               | SO <sub>3</sub> | n/a                                  |
| Unit 2                                                                                 | FFP                   | 100.0%              | SO <sub>3</sub> | n/a                                  |
| Unit 4                                                                                 | ESP + SO <sub>3</sub> | 99.9%               | SO <sub>3</sub> | 97.9%                                |
| Unit 5                                                                                 | ESP + SO <sub>3</sub> | 99.7%               | SO <sub>3</sub> | 97.5%                                |
| Unit 6                                                                                 | ESP + SO <sub>3</sub> | 99.8%               | SO <sub>3</sub> | 98.6%                                |
| <b>Note:</b> ESP plant does not have bypass mode operation, hence plant 100% Utilised. |                       |                     |                 |                                      |

#### 5 MONITOR RELIABILITY (%)

| Associated Unit/Stack | PM    | SO <sub>2</sub> | NO    | O <sub>2</sub> |
|-----------------------|-------|-----------------|-------|----------------|
| Unit 1                | 100.0 | 100.0           | 100.0 | 100.0          |
| Unit 2                | 100.0 | 99.8            | 99.8  | 99.9           |
| Unit 4                | 100.0 | 89.7            | 89.5  | 89.7           |
| Unit 5                | 100.0 | 89.7            | 89.9  | 91.2           |
| Unit 6                | 100.0 | 90.5            | 90.5  | 96.4           |

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 November 2024

| Associated Unit/Stack | PM (tons) | SO <sub>2</sub> (tons) | NO <sub>x</sub> (tons) |
|-----------------------|-----------|------------------------|------------------------|
| Unit 1                | 35.5      | 2 758                  | 993                    |
| Unit 2                | 14.9      | 2 053                  | 1 038                  |
| Unit 4                | 30.3      | 1 413                  | 612                    |
| Unit 5                | 87.0      | 1 468                  | 839                    |
| Unit 6                | 51.6      | 1 923                  | 1 224                  |
| <b>SUM</b>            | 219.29    | 9 616                  | 4 706                  |

Table 6.2: Operating days in compliance to PM AEL Limit - November 2024

| Associated Unit/Stack | Normal     | Grace    | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm³) |
|-----------------------|------------|----------|------------|---------------|------------------|---------------------|
| Unit 1                | 26         | 0        | 0          | 0             | 0                | 24.2                |
| Unit 2                | 22         | 0        | 0          | 0             | 0                | 12.9                |
| Unit 4                | 20         | 0        | 0          | 0             | 0                | 31.9                |
| Unit 5                | 24         | 1        | 0          | 0             | 0                | 72.7                |
| Unit 6                | 23         | 0        | 0          | 0             | 0                | 40.8                |
| <b>SUM</b>            | <b>115</b> | <b>1</b> | <b>0</b>   | <b>0</b>      | <b>0</b>         |                     |

Table 6.3: Operating days in compliance to SO<sub>2</sub> AEL Limit - November 2024

| Associated Unit/Stack | Normal     | Grace    | Section 30 | Contravention | Total Exceedance | Average SO <sub>2</sub> (mg/Nm³) |
|-----------------------|------------|----------|------------|---------------|------------------|----------------------------------|
| Unit 1                | 27         | 0        | 0          | 0             | 0                | 1 907.7                          |
| Unit 2                | 23         | 0        | 0          | 0             | 0                | 1 710.3                          |
| Unit 4                | 23         | 0        | 0          | 0             | 0                | 1 366.8                          |
| Unit 5                | 26         | 0        | 0          | 0             | 0                | 1 200.5                          |
| Unit 6                | 24         | 0        | 0          | 0             | 0                | 1 405.3                          |
| <b>SUM</b>            | <b>123</b> | <b>0</b> | <b>0</b>   | <b>0</b>      | <b>0</b>         |                                  |

Table 6.4: Operating days in compliance to NO<sub>x</sub> AEL Limit - November 2024

| Associated Unit/Stack | Normal     | Grace    | Section 30 | Contravention | Total Exceedance | Average NO <sub>x</sub> (mg/Nm³) |
|-----------------------|------------|----------|------------|---------------|------------------|----------------------------------|
| Unit 1                | 27         | 0        | 0          | 0             | 0                | 673.7                            |
| Unit 2                | 19         | 0        | 0          | 4             | 4                | 859.6                            |
| Unit 4                | 23         | 0        | 0          | 0             | 0                | 590.7                            |
| Unit 5                | 26         | 0        | 0          | 0             | 1                | 674.6                            |
| Unit 6                | 23         | 0        | 0          | 1             | 1                | 886.4                            |
| <b>SUM</b>            | <b>118</b> | <b>0</b> | <b>0</b>   | <b>5</b>      | <b>6</b>         |                                  |

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>

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 - November 2024

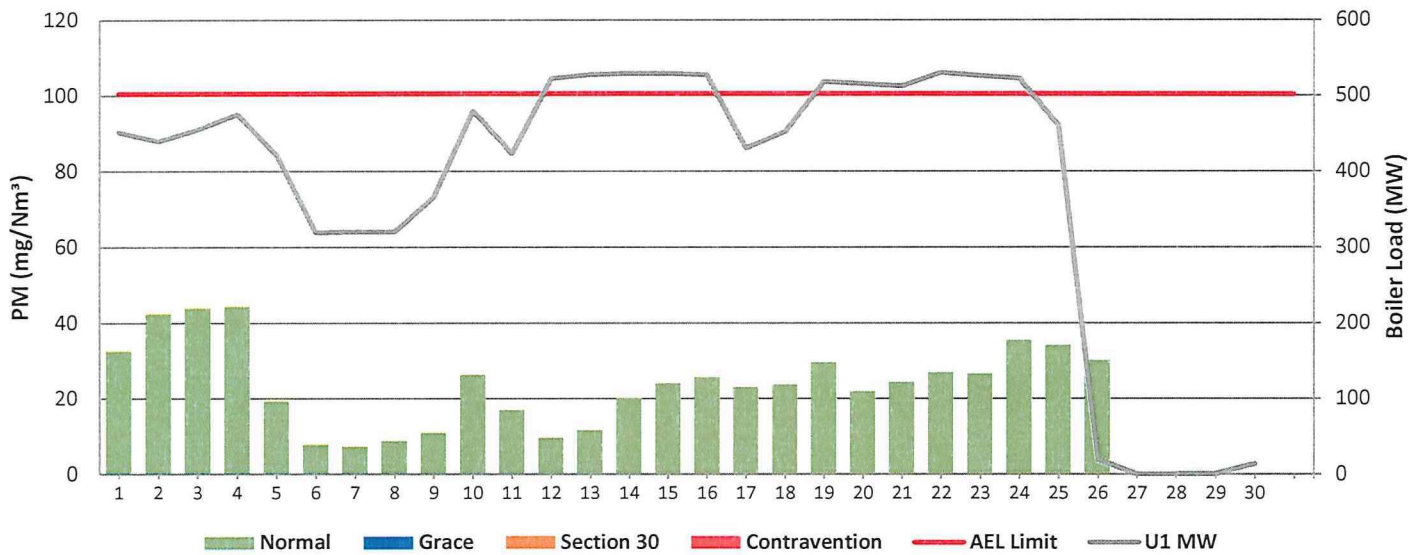


Figure 2: Duvha Unit 2 PM Emissions - November 2024

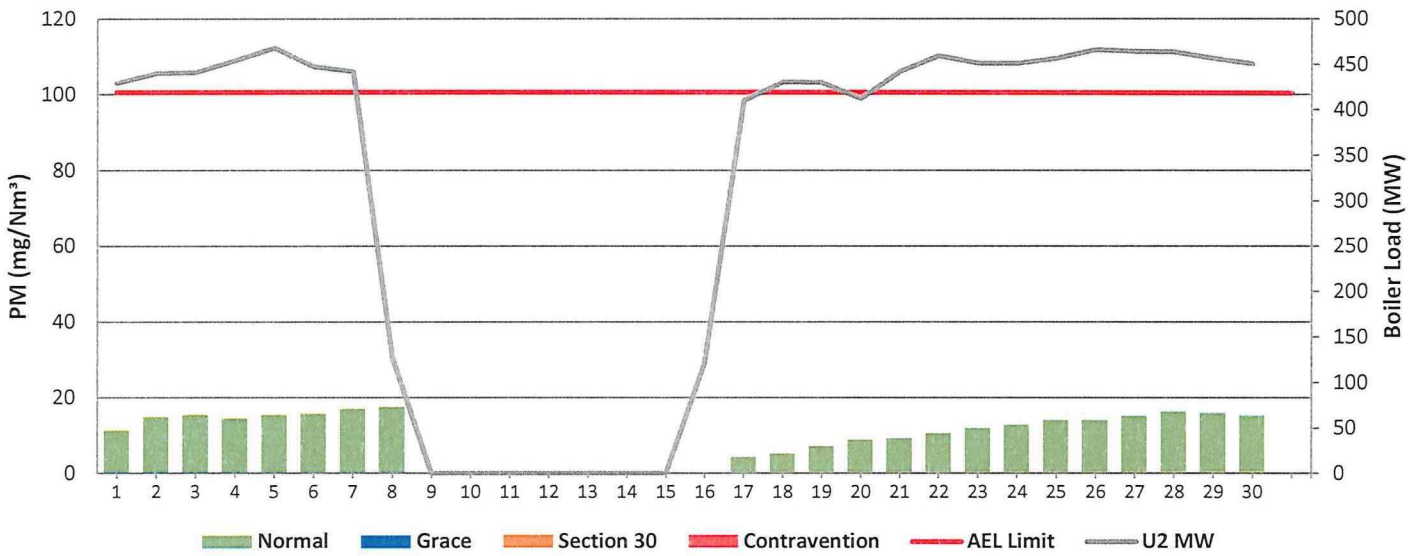


Figure 3: Duvha Unit 4 PM Emissions - November 2024

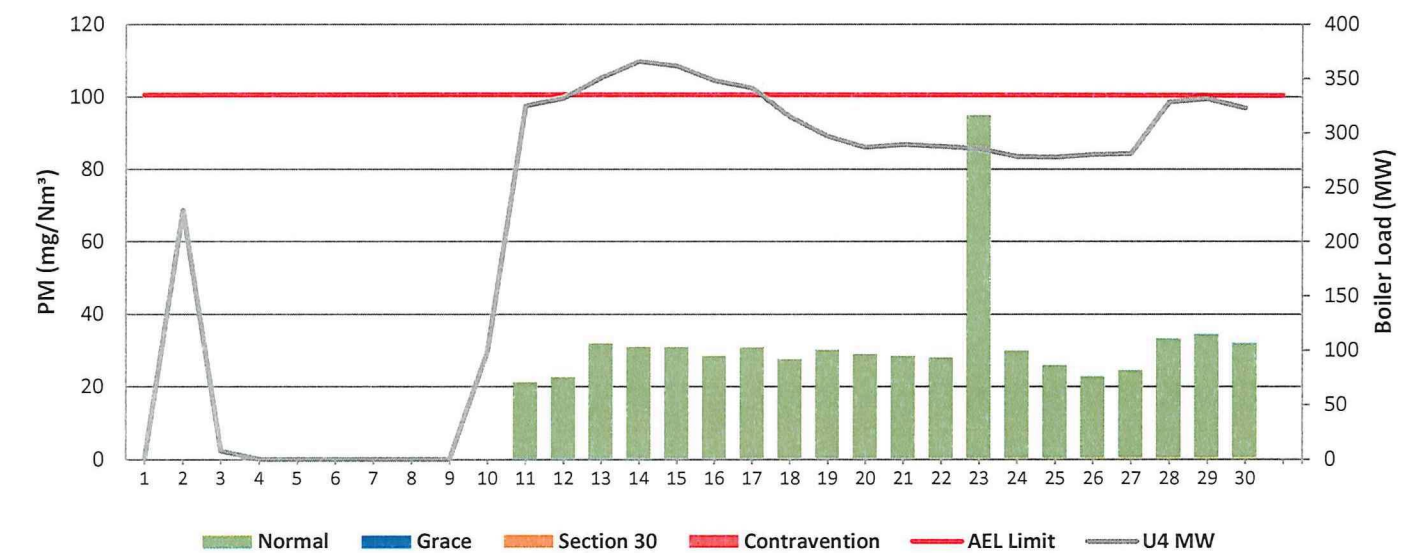


Figure 4: Duvha Unit 5 PM Emissions - November 2024

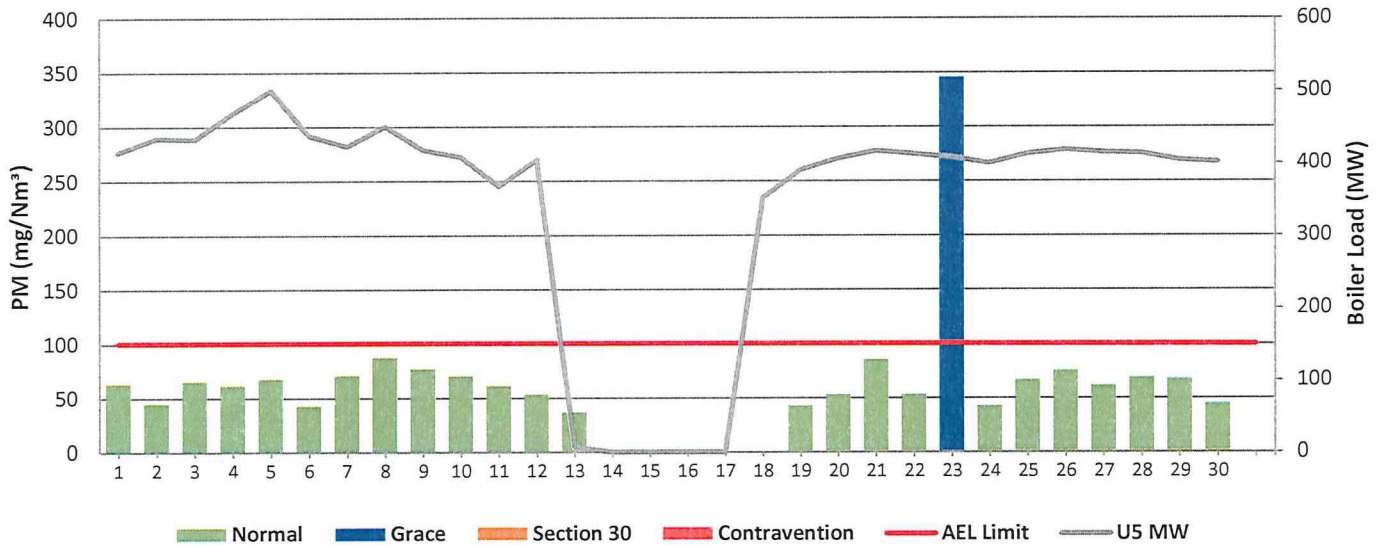


Figure 5: Duvha Unit 6 PM Emissions - November 2024

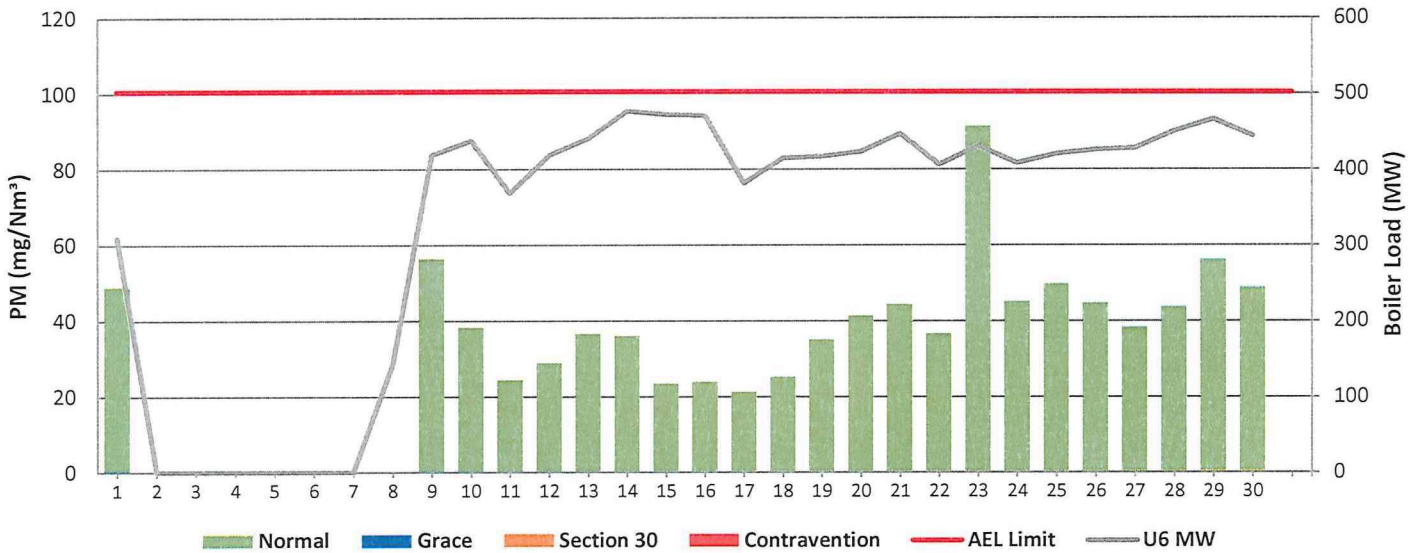


Figure 6: Duvha Unit 1 SO<sub>2</sub> Emissions - November 2024

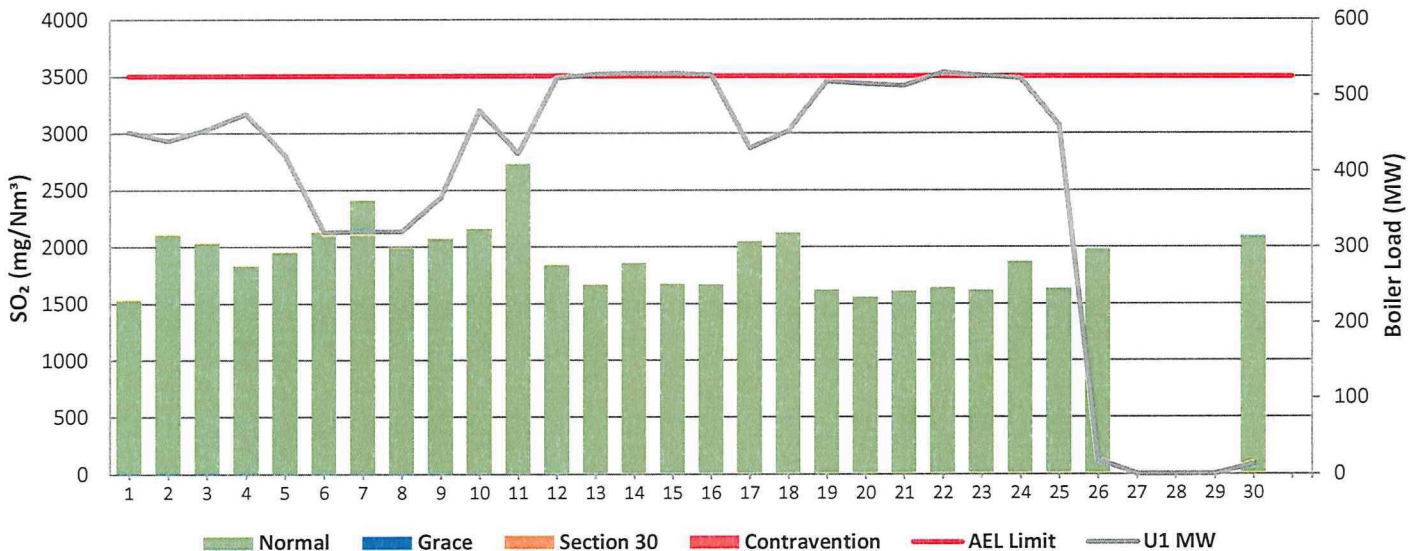


Figure 7: Duvha Unit 2 SO<sub>2</sub> Emissions - November 2024

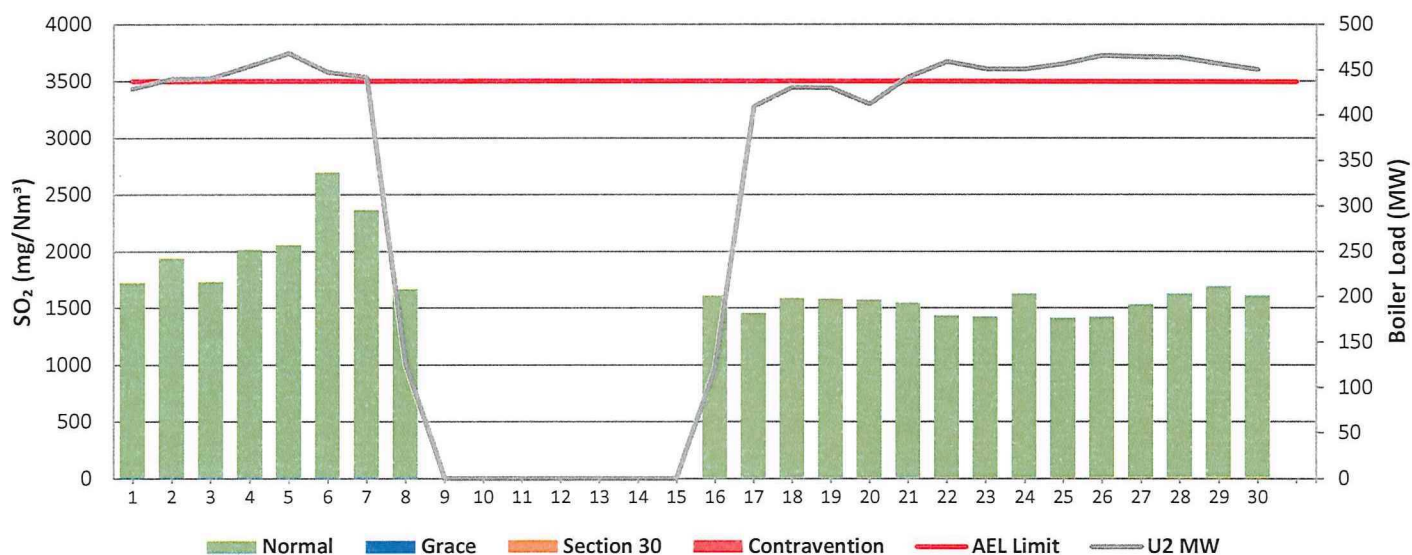


Figure 8: Duvha Unit 4 SO<sub>2</sub> Emissions - November 2024

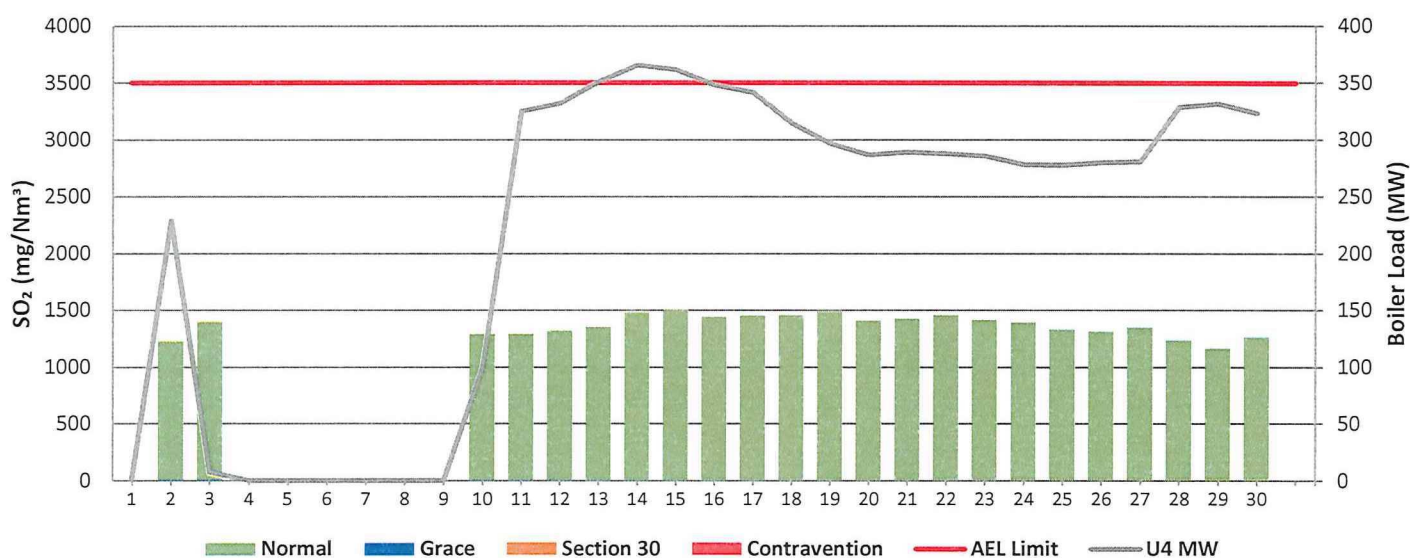


Figure 9: Duvha Unit 5 SO<sub>2</sub> Emissions - November 2024

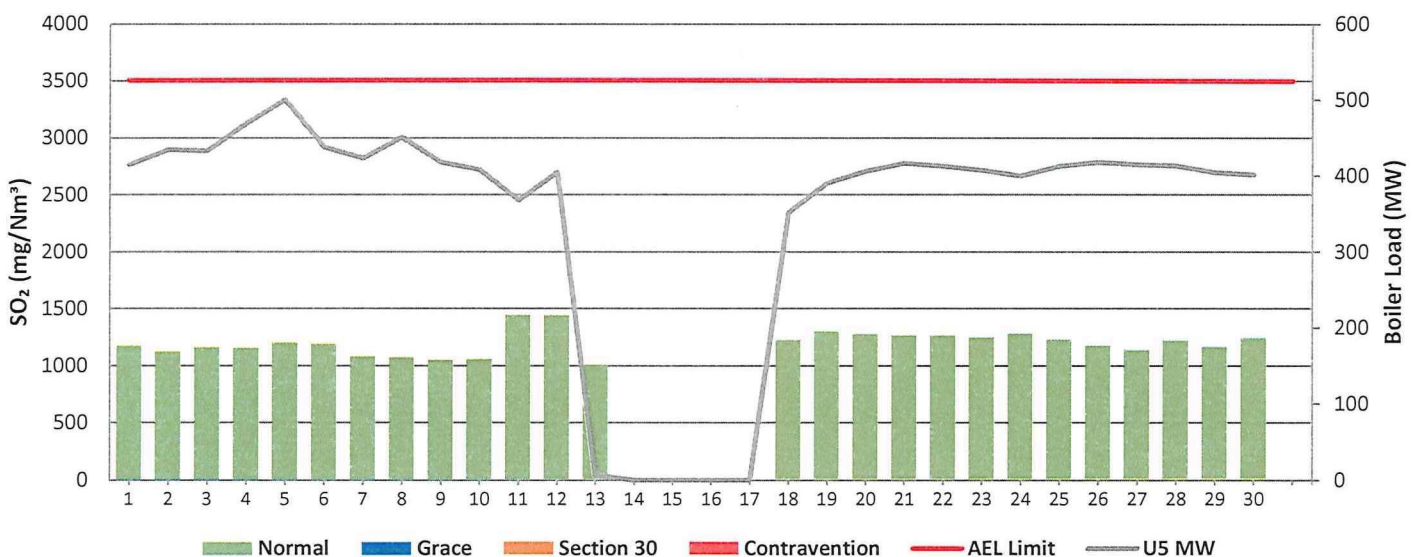


Figure 10: Duvha Unit 6 SO<sub>2</sub> Emissions - November 2024

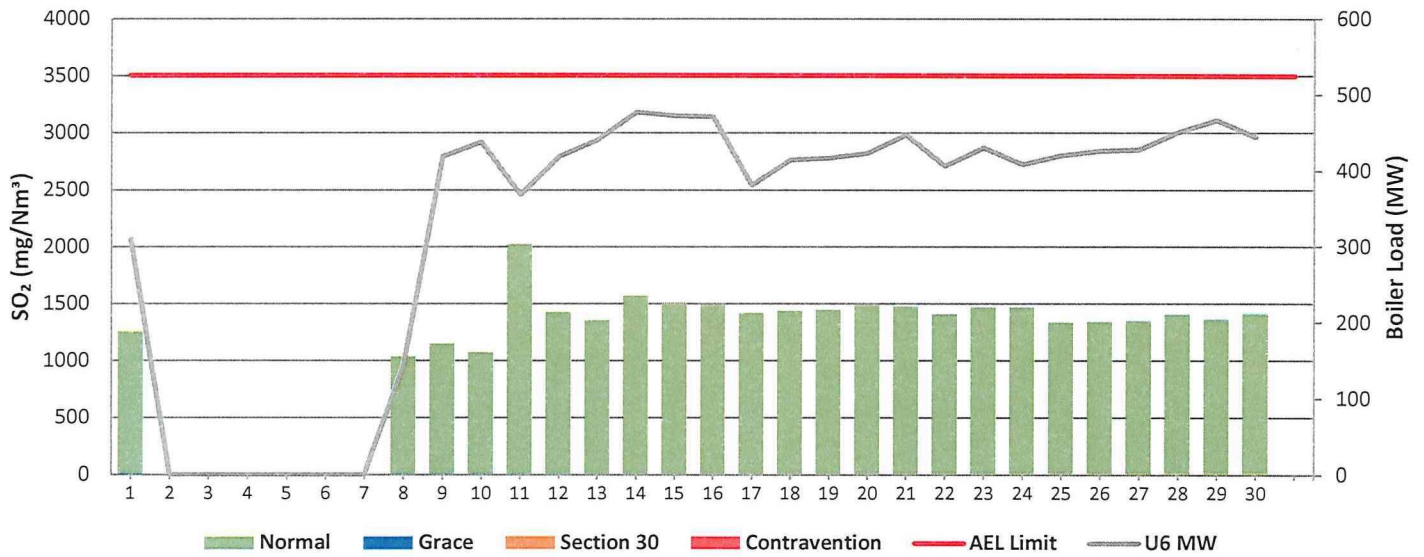


Figure 11: Duvha Unit 1 NO<sub>x</sub> Emissions - November 2024

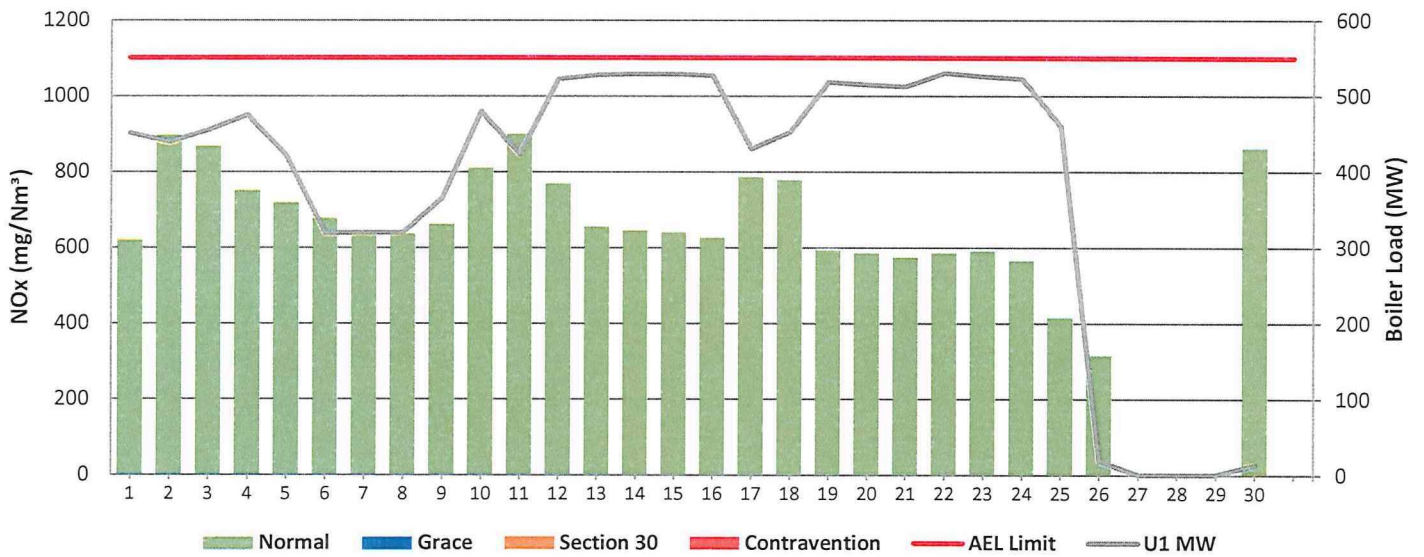


Figure 12: Duvha Unit 2 NO<sub>x</sub> Emissions - November 2024

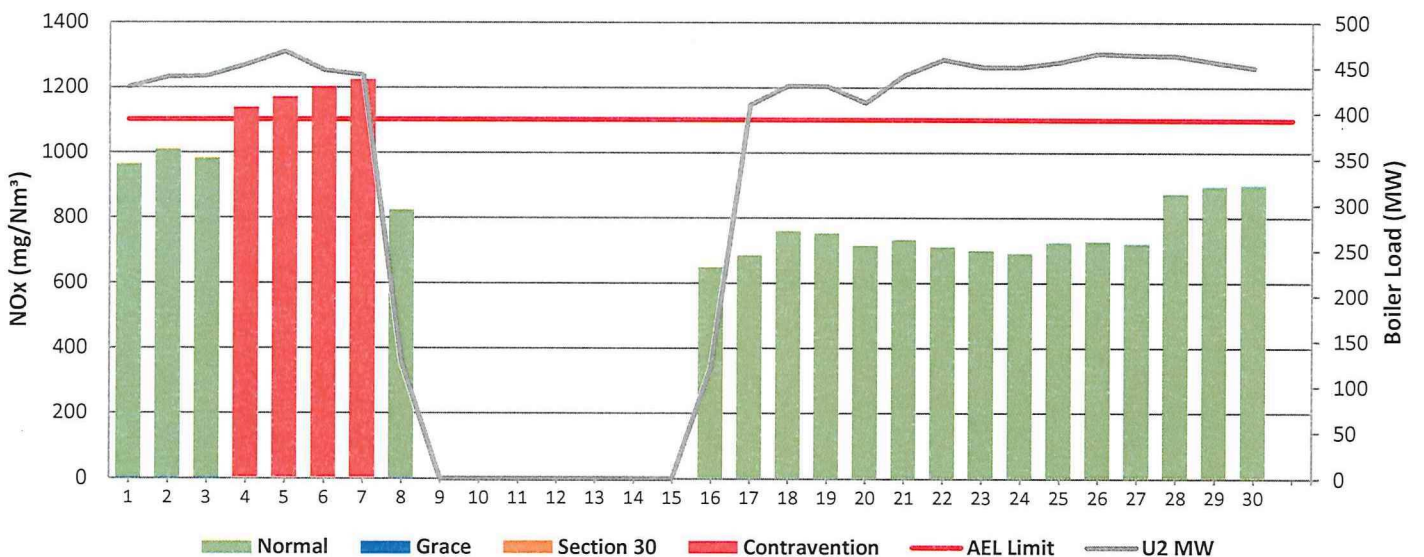


Figure 13: Duvha Unit 4 NOx Emissions - November 2024

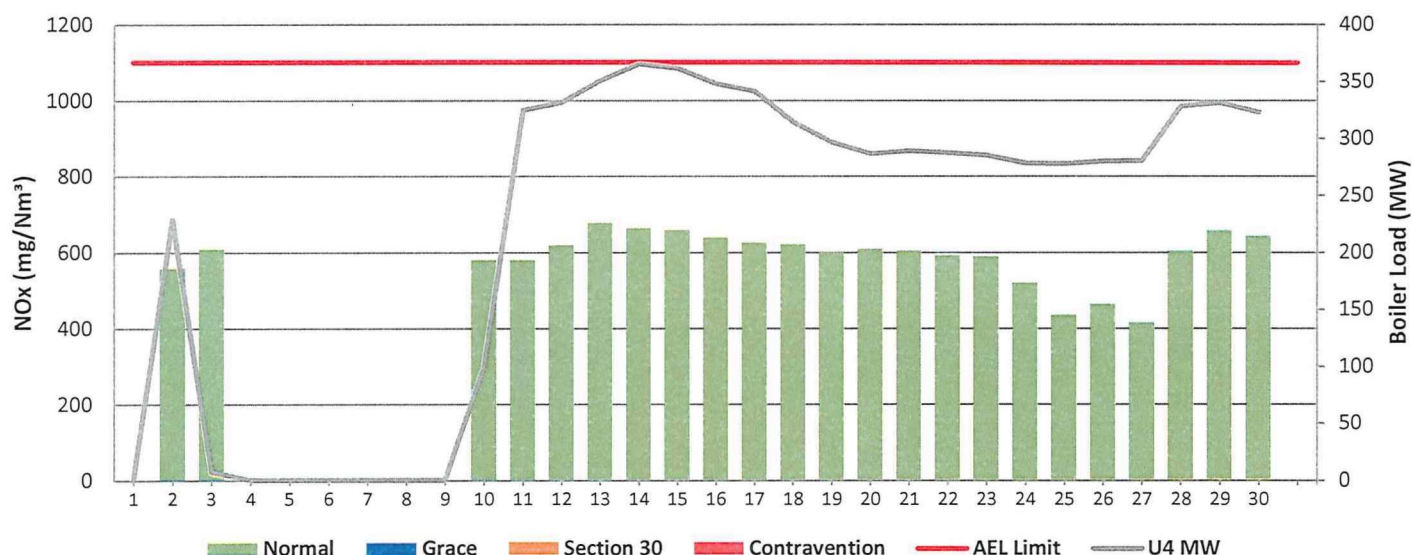


Figure 14: Duvha Unit 5 NOx Emissions - November 2024

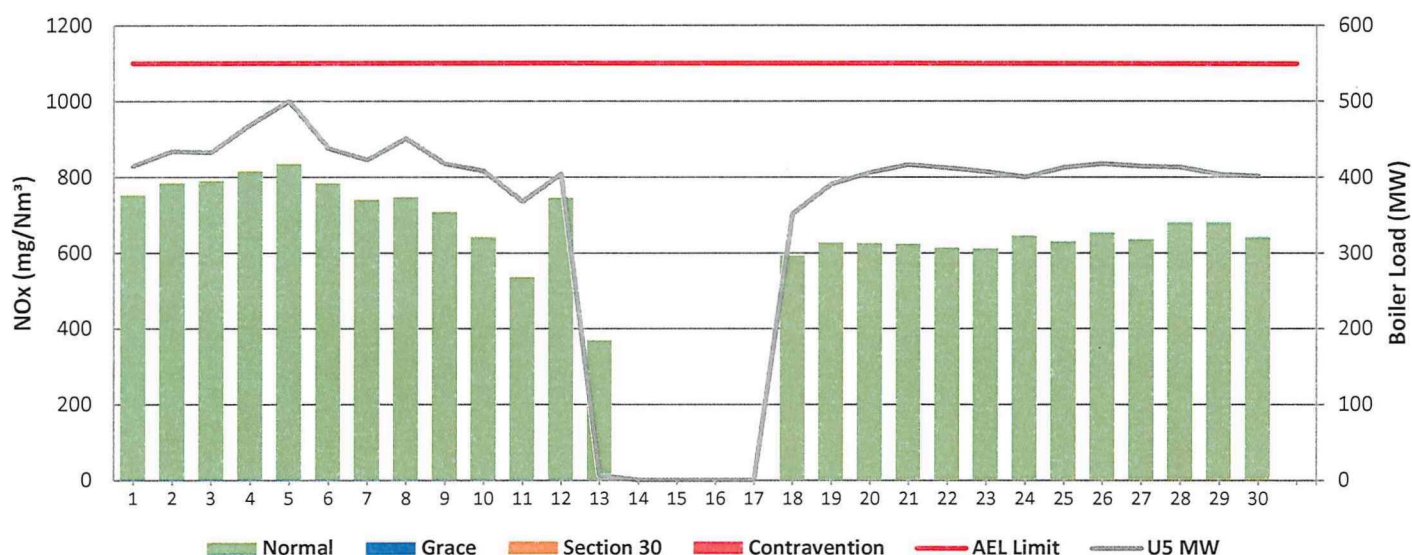
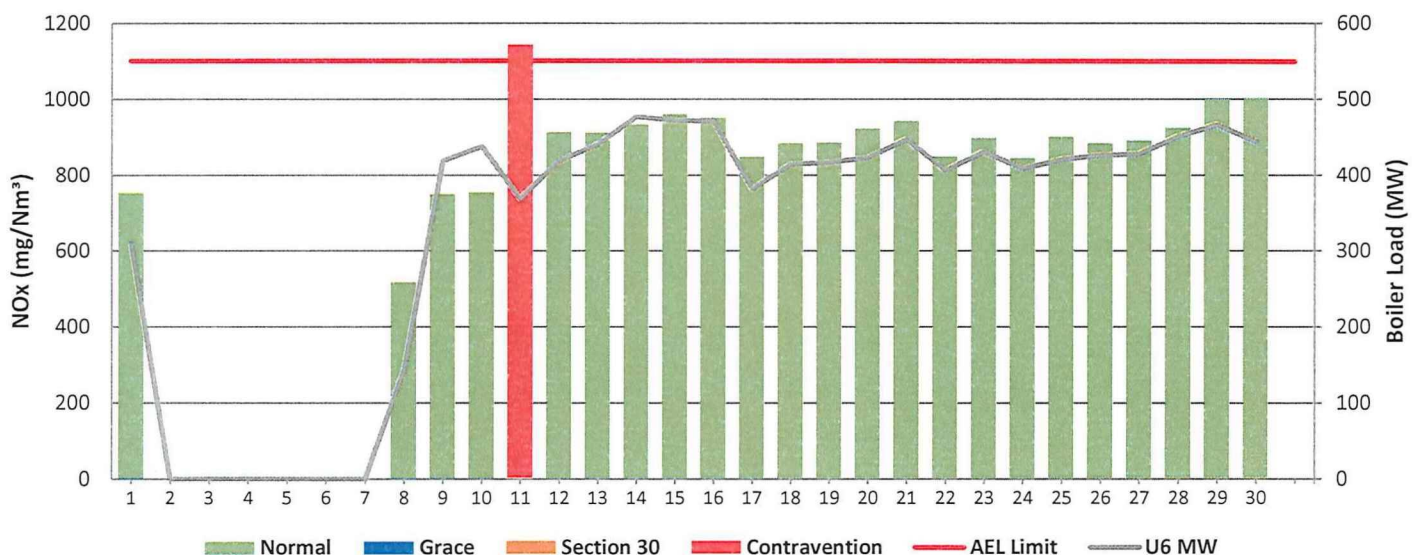


Figure 15: Duvha Unit 6 NOx Emissions - November 2024



## 7 SHUT DOWN AND LIGHT UP INFORMATION

Tables 7.1: Shut-down and light-up information for the month of November 2024

| Unit No.1                                   | <i>Event 1</i>        |                       |
|---------------------------------------------|-----------------------|-----------------------|
| Breaker Open (BO)                           | <i>1:45 am</i>        | <i>2024/11/26</i>     |
| Draught Group (DG)<br>Shut Down (SD)        | <i>9:50 pm</i>        | <i>2024/11/26</i>     |
| BO to DG SD (duration)                      | <i>00:20:05</i>       | DD:HH:MM              |
| Fires in time                               | <i>3:55 pm</i>        | <i>2024/11/30</i>     |
| Synch. to Grid (or BC)                      |                       |                       |
| Fires in to BC (duration)                   |                       | DD:HH:MM              |
| Emissions below limit<br>from BC (end date) | <i>not &gt; limit</i> | <i>not &gt; limit</i> |
| Emissions below limit<br>from BC (duration) |                       | DD:HH:MM              |

| Unit No.2                                   | <i>Event 1</i>        |                       |
|---------------------------------------------|-----------------------|-----------------------|
| Breaker Open (BO)                           | <i>7:25 am</i>        | <i>2024/11/08</i>     |
| Draught Group (DG)<br>Shut Down (SD)        | <i>3:05 am</i>        | <i>2024/11/09</i>     |
| BO to DG SD (duration)                      | <i>00:19:40</i>       | DD:HH:MM              |
| Fires in time                               | <i>7:55 am</i>        | <i>2024/11/16</i>     |
| Synch. to Grid (or BC)                      | <i>3:40 pm</i>        | <i>2024/11/16</i>     |
| Fires in to BC (duration)                   | <i>00:07:45</i>       | DD:HH:MM              |
| Emissions below limit<br>from BC (end date) | <i>not &gt; limit</i> | <i>not &gt; limit</i> |
| Emissions below limit<br>from BC (duration) | <i>n/a</i>            | DD:HH:MM              |

| Unit No.4                                   | <i>Event 1</i>        |                       |
|---------------------------------------------|-----------------------|-----------------------|
| Breaker Open (BO)                           | <i>BO previously</i>  | <i>BO previously</i>  |
| Draught Group (DG)<br>Shut Down (SD)        | <i>n/a</i>            | <i>n/a</i>            |
| BO to DG SD (duration)                      | <i>n/a</i>            | DD:HH:MM              |
| Fires in time                               | <i>5:55 pm</i>        | <i>2024/11/09</i>     |
| Synch. to Grid (or BC)                      |                       |                       |
| Fires in to BC (duration)                   | <i>00:21:15</i>       | DD:HH:MM              |
| Emissions below limit<br>from BC (end date) | <i>not &gt; limit</i> | <i>not &gt; limit</i> |
| Emissions below limit<br>from BC (duration) |                       | DD:HH:MM              |

| Unit No.5                                   | Event 1     |             |
|---------------------------------------------|-------------|-------------|
| Breaker Open (BO)                           | 12:50 am    | 2024/11/13  |
| Draught Group (DG)<br>Shut Down (SD)        | 10:05 pm    | 2024/11/13  |
| BO to DG SD (duration)                      | 00:21:15    | DD:HH:MM    |
| Fires in time                               | 8:10 pm     | 2024/11/17  |
| Synch. to Grid (or BC)                      | 2:00 am     | 2024/11/18  |
| Fires in to BC (duration)                   | 00:05:50    | DD:HH:MM    |
| Emissions below limit<br>from BC (end date) | not > limit | not > limit |
| Emissions below limit<br>from BC (duration) | n/a         | DD:HH:MM    |

| Unit No.6                                   | Event 1     |             |
|---------------------------------------------|-------------|-------------|
| Breaker Open (BO)                           | 6:45 am     | 2024/11/01  |
| Draught Group (DG)<br>Shut Down (SD)        | 5:45 am     | 2024/11/02  |
| BO to DG SD (duration)                      | 00:23:00    | DD:HH:MM    |
| Fires in time                               | 1:45 pm     | 2024/11/08  |
| Synch. to Grid (or BC)                      | 11:15 pm    | 2024/11/08  |
| Fires in to BC (duration)                   |             | DD:HH:MM    |
| Emissions below limit<br>from BC (end date) | not > limit | not > limit |
| Emissions below limit<br>from BC (duration) | n/a         | DD:HH:MM    |

## 8 COMPLAINTS

There were no complaints for the month of November.

| Source Code / Name | Root Cause Analysis | Calculation of<br>Impacts /<br>emissions<br>associated with the<br>incident | Dispersion<br>modeling of<br>pollutants<br>where<br>applicable | Measures<br>implemented to<br>prevent reoccurrence |
|--------------------|---------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------|
|                    |                     |                                                                             |                                                                |                                                    |
|                    |                     |                                                                             |                                                                |                                                    |

## 9 GENERAL

### Exceedance: Particulate Matter

Unit 5

23/11/2024

The Main Sulphur storage tank pumps were failing to start. The SO3 plant was not injecting at the moment and the SO3 Pump1 was not available due to valves that needed swapping.

Additionally, the reasons for the NOx gas exceedances for the month of November 2024 are attached in an investigation report as appendix A.

Lastly, the averages for Oxygen (O2) and Carbon Dioxide (CO2) data from the QAL2 tests reports were used for reporting gaseous emissions for units 2, 4, 5 and 6 due to poor performance of the O2 and CO2 gaseous monitors. These poor performances of the monitors are due to the inability to conduct bi-weekly calibrations and preventative maintenance of the O2 analysers due to the unavailability of a maintenance contract with a service provider. The maintenance contract was eventually placed on the 1st of October 2024. Since the maintenance contractor (SI analytics Pty Ltd) has been placed, a lot of issues have been identified with the monitors. These issues occurred because there was no maintenance contractor in place. SI analytics Pty Ltd has been given time to resolve these issues with the monitors and the monitors are expected to perform at 80% reliability by 31 January 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 Complaints and S30 Incidents Register

There were no section 30 incidents  
in the month of November

  
Boiler Plant Engineering Manager

27/12/2024  
Date

  
Environmental Manager

27/12/2024  
Date

  
Engineering Manager

27/12/2024  
Date

Compiled by Environmental Officer

For Nkangala District Municipality

Air Quality Officer

Copies Generation Environmental  
Management

D Herbst  
B Mccourt

|                                  |                     |
|----------------------------------|---------------------|
| Generation Compliance Management | R                   |
| Generation Asset Management      | Rampiar             |
|                                  | E Patel             |
| Duvha Power Station              | Engineering Manager |
|                                  | Operating Manager   |
|                                  | Maintenance Manager |
|                                  | Production Manager  |
|                                  | Boiler Engineering  |
|                                  | Manager             |
|                                  | System Engineer     |
|                                  | Environmental       |
|                                  | Manager             |