

**HENDRINA POWER STATION MONTHLY EMISSIONS REPORT**

Atmospheric Emission License 17/4/AEL/MP313/11/16



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**1 RAW MATERIALS AND PRODUCTS**

| Raw Materials and Products | Raw Material Type | Units | Max. Permitted Consumption Rate | Consumption Rate Nov-2021 |
|----------------------------|-------------------|-------|---------------------------------|---------------------------|
|                            | Coal              | Tons  | 820 000                         | 105 227.0                 |
|                            | Fuel Oil          | Tons  | 3 200                           | 543.77                    |

| Production Rates | Product / By-Product Name | Units  | Max. Production Capacity Permitted | Production Rate Nov-2021 |
|------------------|---------------------------|--------|------------------------------------|--------------------------|
|                  | Energy                    | GWh    | 1440                               | 175.73                   |
|                  | Ash                       | Tons   | 290 000                            | 29 158                   |
|                  | RE PM                     | kg/MWh | not specified                      | 0.293                    |

**2 ENERGY SOURCE CHARACTERISTICS**

| Coal Characteristics | Units | Stipulated Range | Monthly Average Content |
|----------------------|-------|------------------|-------------------------|
| Sulphur Content      | %     | 0.6 to < 1       | 1.02                    |
| Ash Content          | %     | 31 to < 35       | 27.71                   |

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

| Associated Unit/Stack | PM | SO <sub>x</sub> | NO <sub>x</sub> |
|-----------------------|----|-----------------|-----------------|
| North                 | 75 | 3200            | 1200            |
| South                 | 75 | 3200            | 1200            |

**4 ABATEMENT TECHNOLOGY (%)**

| Associated Unit/Stack | Technology Type           | Efficiency Nov-2021 |
|-----------------------|---------------------------|---------------------|
| Unit 1                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 2                | Fabric Filter Plant (FFP) | 99.986%             |
| Unit 3                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 4                | Fabric Filter Plant (FFP) | 99.956%             |
| Unit 5                | Fabric Filter Plant (FFP) | 99.937%             |
| Unit 6                | Fabric Filter Plant (FFP) | 99.968%             |
| Unit 7                | Fabric Filter Plant (FFP) | 99.836%             |
| Unit 8                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 9                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 10               | Fabric Filter Plant (FFP) | Unit Off-line       |

Note: Abatement 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> | CO <sub>2</sub> |
|-----------------------|------|-----------------|------|----------------|-----------------|
| North                 | 87.3 | 39.7            | 84.6 | 34.2           | 31.8            |
| South                 | 89.0 | 85.1            | 85.1 | 85.3           | 53.9            |

**6 EMISSION PERFORMANCE**

Table 6.1: Monthly tonnages for the month of November-2021

| Associated Unit/Stack | PM (tons) | SOx (tons) | NOx (tons) | CO <sub>2</sub> (tons) |
|-----------------------|-----------|------------|------------|------------------------|
| North                 | 5.5       | 1 037.3    | 389.1      | 98 680.1               |
| South                 | 46.0      | 1 392.3    | 694.4      | 107 717.7              |
| <b>SUM</b>            | 51.5      | 2 429.6    | 1 083.4    | 206 397.7              |

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|----------------------------------|
| North                 | 17     | 0     | 0          | 0             | 0                | 11.9                             |
| South                 | 25     | 1     | 0          | 0             | 1                | 52.1                             |
| SUM                   | 42     | 1     | 0          | 0             | 1                |                                  |

Comments: Normal days for PM determined according to section 7.3.5 of AEL (PM not reportable when units are off or during start-ups/shutdowns)  
 North Stack non-normal days: 13, whereby 8 days units offload and 5 days regarded as start-up and shutdown operation.  
 South Stack non-normal days: 5, which is noted as start-up and shut down operations.

Table 6.3: Operating days in compliance to SO<sub>x</sub> AEL Limit - November 2021

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average SO <sub>x</sub> (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|---|
| North                 | 19     | 0     | 0          | 0             | 0                | 2 103.1                                       |
| South                 | 28     | 0     | 0          | 0             | 0                | 1 419.7                                       |
| SUM                   | 47     | 0     | 0          | 0             | 0                |   |

Comments: Normal days determined by when gaseous continued to be detected by monitor.  
 North Stack, gaseous emissions were not detected for a period of 11 days  
 South Stack, gaseous emissions were not detected for 2 days

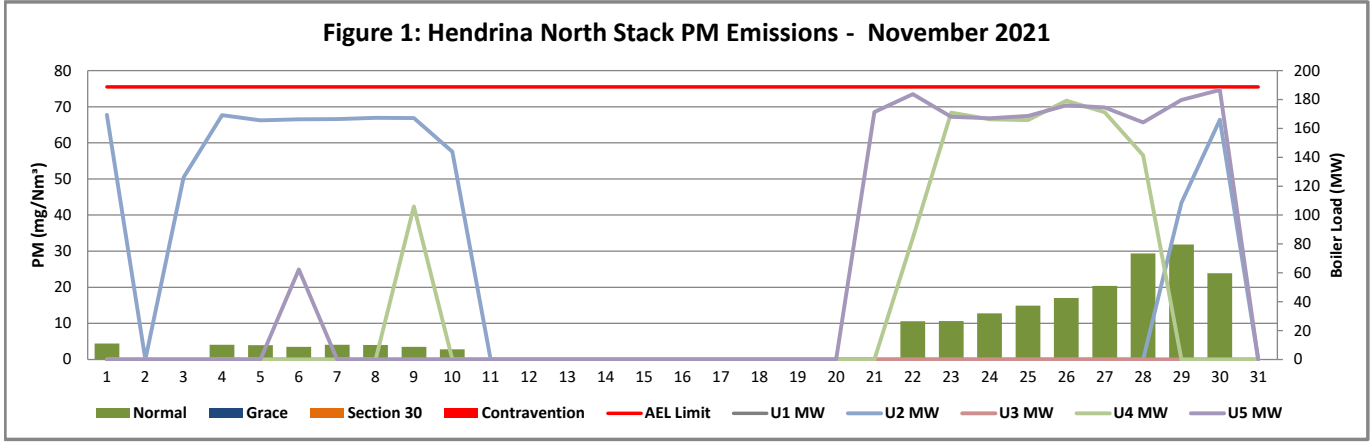
Table 6.4: Operating days in compliance to NO<sub>x</sub> AEL Limit - November 2021

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NO <sub>x</sub> (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|---|
| North                 | 19     | 0     | 0          | 0             | 0                | 749.6   |
| South                 | 28     | 0     | 0          | 0             | 0                | 703.2   |
| SUM                   | 47     | 0     | 0          | 0             | 0                |   |

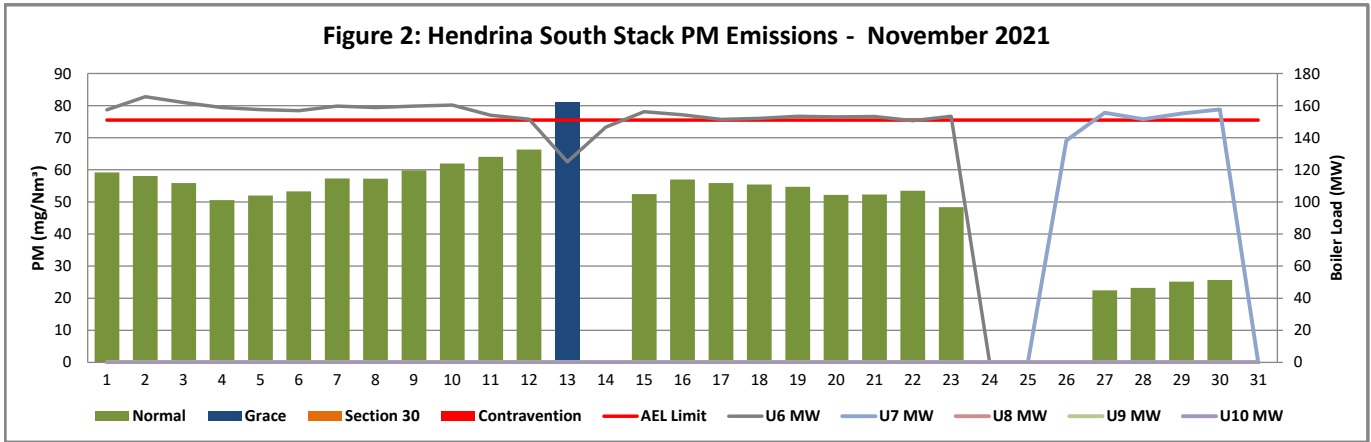
Comments: Normal days determined by when gaseous continued to be detected by monitor.  
 North Stack, gaseous emissions were not detected for a period of 11 days  
 South Stack, gaseous emissions were not detected for 2 days

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 |



Note\* Absence of green bar graphs (emission levels) and the absence of trend lines (units power output) indicates non-normal and zero emissions



Note\* Blue bar graph indicates Grace period and is therefore counted as non-normal day.

Figure 3: Hendrina North Stack SOx Emissions - November 2021

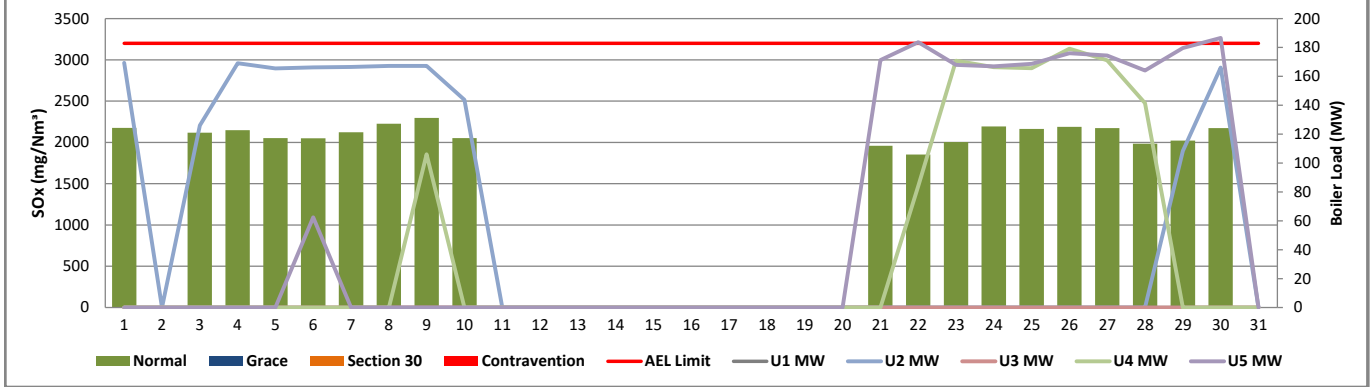


Figure 4: Hendrina South Stack SOx Emissions - November 2021

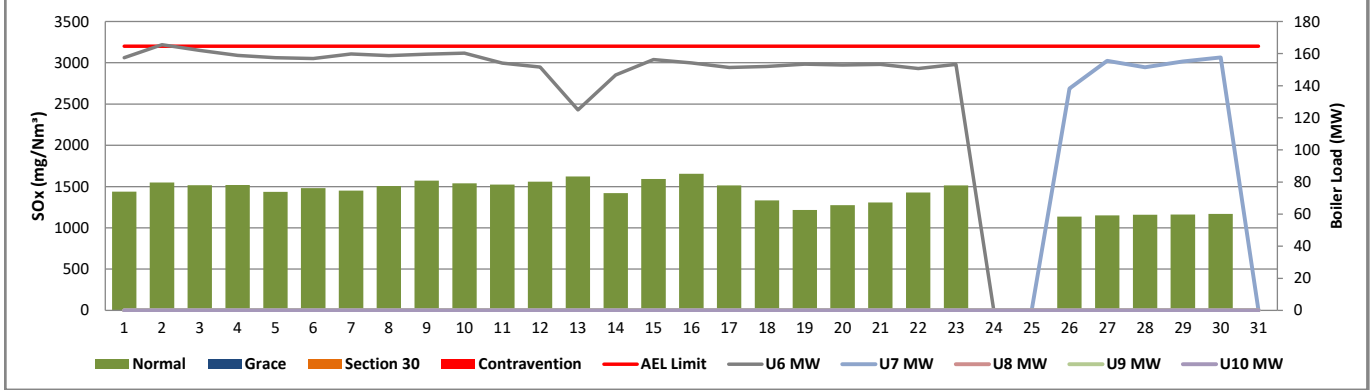


Figure 5: Hendrina North Stack NOx Emissions - November 2021

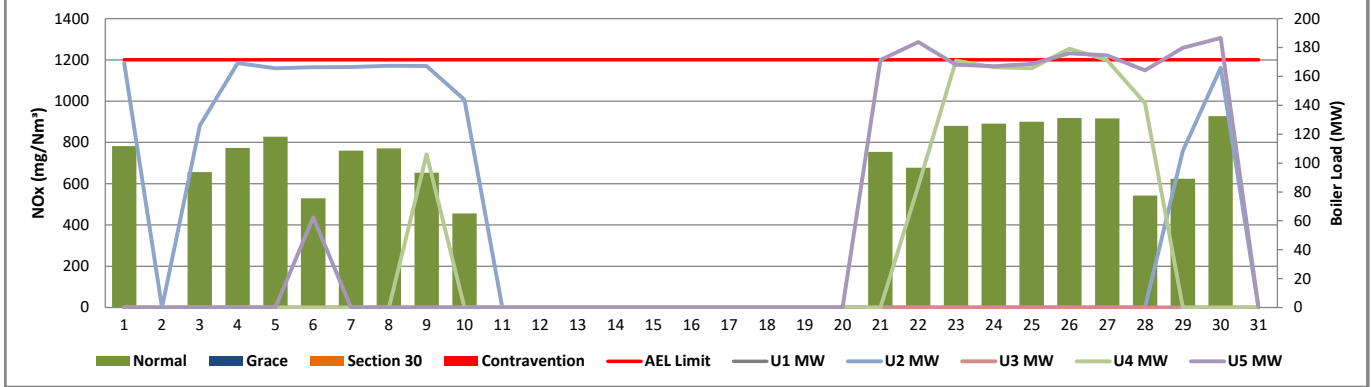
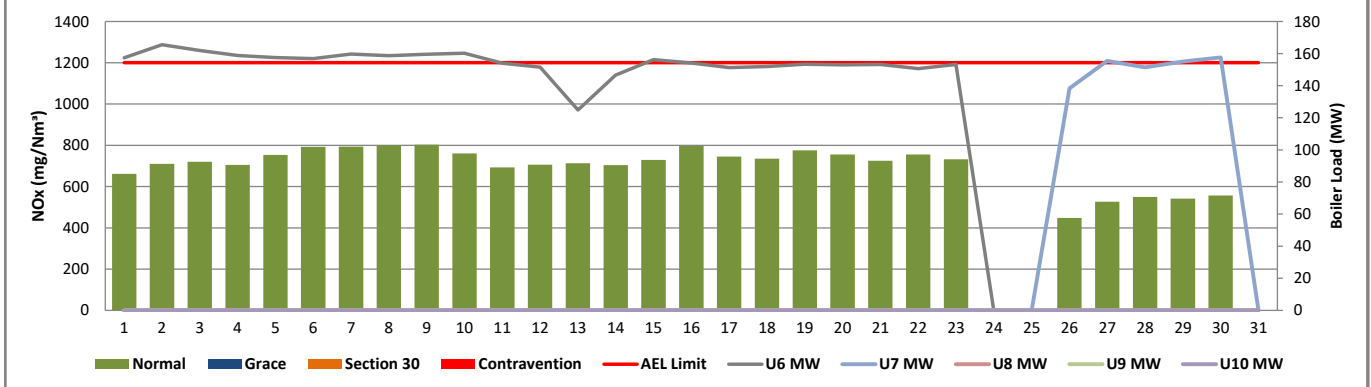


Figure 6: Hendrina South Stack NOx Emissions - November 2021



## 7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1 PM Start-up information for the month of November-2021

| North Stack                              | <i>Event 1</i>        |                       | <i>Event 2</i> |                   | <i>Event 3</i>        |                       | <i>Event 4</i>  |                   |
|--|-----------------------|-----------------------|----------------|-------------------|-----------------------|-----------------------|-----------------|-------------------|
| Unit No.                                 | <i>Unit 2</i>         |                       | <i>Unit 2</i>  |                   | <i>Unit 4</i>         |                       | <i>Unit 4</i>   |                   |
| Breaker Open (BO)                        | <i>1:15 am</i>        | <i>2021/11/01</i>     | <i>6:25 am</i> | <i>2021/11/10</i> | <i>BO previously</i>  | <i>BO previously</i>  | <i>12:15 am</i> | <i>2021/11/28</i> |
| Draught Group (DG) Shut Down (SD)        | <i>5:15 am</i>        | <i>2021/11/01</i>     | <i>6:25 am</i> | <i>2021/11/10</i> | <i>n/a</i>            | <i>n/a</i>            | <i>3:25 pm</i>  | <i>2021/11/28</i> |
| BO to DG SD (duration)                   | <i>00:04:00</i>       | DD:HH:MM              |                | DD:HH:MM          | <i>n/a</i>            | DD:HH:MM              | <i>00:15:10</i> | DD:HH:MM          |
| Fires in time                            | <i>5:10 pm</i>        | <i>2021/11/02</i>     |                |                   | <i>22:09:50</i>       | <i>2021/11/22</i>     |                 |                   |
| Synch. to Grid (or BC)                   | <i>5:10 am</i>        | <i>2021/11/03</i>     |                |                   | <i>9:50 pm</i>        | <i>2021/11/22</i>     |                 |                   |
| Fires in to BC (duration)                | <i>00:12:00</i>       | DD:HH:MM              |                | DD:HH:MM          | <i>00:12:00</i>       | DD:HH:MM              |                 | DD:HH:MM          |
| Emissions below limit from BC (end date) | <i>not &gt; limit</i> | <i>not &gt; limit</i> |                |                   | <i>not &gt; limit</i> | <i>not &gt; limit</i> |                 |                   |
| Emissions below limit from BC (duration) | <i>n/a</i>            | DD:HH:MM              |                | DD:HH:MM          | <i>n/a</i>            | DD:HH:MM              |                 | DD:HH:MM          |

| North Stack ...Continued                 | <i>Event 5</i>        |                       |
|--|-----------------------|-----------------------|
| Unit No.                                 | <i>Unit 5</i>         |                       |
| Breaker Open (BO)                        | <i>BO previously</i>  | <i>BO previously</i>  |
| Draught Group (DG) 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>4:10 am</i>        | <i>2021/11/21</i>     |
| Synch. to Grid (or BC)                   | <i>4:10 pm</i>        | <i>2021/11/21</i>     |
| Fires in to BC (duration)                | <i>00:12:00</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              |

| South Stack                              | <i>Event 1</i>  |                   | <i>Event 2</i>        |                       | <i>Event 3</i> |                   |
|--|-----------------|-------------------|-----------------------|-----------------------|----------------|-------------------|
| Unit No.                                 | <i>Unit 6</i>   |                   | <i>Unit 7</i>         |                       | <i>Unit 7</i>  |                   |
| Breaker Open (BO)                        | <i>4:05 am</i>  | <i>2021/11/23</i> | <i>BO previously</i>  | <i>BO previously</i>  | <i>5:15 pm</i> | <i>2021/11/30</i> |
| Draught Group (DG) Shut Down (SD)        | <i>11:05 am</i> | <i>2021/11/23</i> | <i>n/a</i>            | <i>n/a</i>            | <i>5:15 pm</i> | <i>2021/11/30</i> |
| BO to DG SD (duration)                   | <i>00:07:00</i> | DD:HH:MM          | <i>n/a</i>            | DD:HH:MM              |                | DD:HH:MM          |
| Fires in time                            |                 |                   | <i>2021/11/26</i>     | <i>2021/11/26</i>     |                |                   |
| Synch. to Grid (or BC)                   |                 |                   | <i>3:00 pm</i>        | <i>2021/11/26</i>     |                |                   |
| Fires in to BC (duration)                |                 | DD:HH:MM          | <i>00:06:00</i>       | DD:HH:MM              |                | 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              |                | DD:HH:MM          |



**8 EMERGENCY GENERATION**

None

**9 COMPLAINTS REGISTER**


None


**10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER**

There was no Sec 30 incident

11 General

The Station encountered 1x day graceperiod for South Stack PM Emissions on the 13th of November, as indicated in table 6.2 and Figure 2.

 29 December 2021  
 Compiled: Environmental Officer Date  
 B. Madiope

 29 December 2021  
 Boiler/ FFP Date  
 Marco Cossa

Authorised by: GM Date  
 A. Van Greuning

Validated by Manager: Boiler Eng. or Environmental Date  
 R. Goliada J. Ramagoma

Compiled by: Boiler Engineering Department  
 For: Nkangala District Municipality  
 Copies: Eskom Environmental Management  
 Group Technology Engineering  
 Hendrina Power Station:

FFP SE/ Environmental Officer  
 Air Qaulity Officer  
 D Herbst  
 B Mccourt  
 R Rampiar  
 E. Patel  
 Engineering Manager  
 Operating Manager  
 Maintenance Manager  
 Unit Production Manager  
 Boiler Engineering Manager  
 System Engineer: Boiler Engineering  
 Environmental Officer  
 C & I Engineering Manager  
 Production Manager  
 Environmental Manager  
 PSM