

# 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 May-2022 |
|----------------------------|-------------------|-------|---------------------------------|---------------------------|
|                            | Coal              | Tons  | 820 000                         | 150 711.0                 |
|                            | Fuel Oil          | Tons  | 3 200                           | 941.94                    |

| Production Rates | Product / By-Product Name | Units  | Max. Production Capacity Permitted | Production Rate May-2022 |
|------------------|---------------------------|--------|------------------------------------|--------------------------|
|                  | Energy                    | GWh    | 1488                               | 233.72                   |
|                  | Ash                       | Tons   | 290 000                            | 39 411                   |
|                  | RE PM                     | kg/MWh | not specified                      | 0.070                    |

## 2 ENERGY SOURCE CHARACTERISTICS

| Coal Characteristics | Units | Stipulated Range | Monthly Average Content |
|----------------------|-------|------------------|-------------------------|
| Sulphur Content      | %     | 0.6 to < 1       | 1.15                    |
| Ash Content          | %     | 31 to < 35       | 26.15                   |

## 3 EMISSION LIMITS (mg/Nm³)

| Associated Unit/Stack | PM | SOx  | NOx  |
|-----------------------|----|------|------|
| North                 | 75 | 3200 | 1200 |
| South                 | 75 | 3200 | 1200 |

## 4 ABATEMENT TECHNOLOGY (%)

| Associated Unit/Stack | Technology Type           | Efficiency May-2022 |
|-----------------------|---------------------------|---------------------|
| Unit 1                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 2                | Fabric Filter Plant (FFP) | 99.990%             |
| Unit 3                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 4                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 5                | Fabric Filter Plant (FFP) | 99.988%             |
| Unit 6                | Fabric Filter Plant (FFP) | 99.799%             |
| Unit 7                | Fabric Filter Plant (FFP) | 99.952%             |
| Unit 8                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 9                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 10               | Fabric Filter Plant (FFP) | 99.942%             |

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                 | 100.0 | 90.2            | 91.8 | 92.2           | 100.0           |
| South                 | 100.0 | 99.7            | 99.3 | 99.7           | 91.5            |

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

## 6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of May-2022

| Associated Unit/Stack | PM (tons) | SOx (tons) | NOx (tons) | CO <sub>2</sub> (tons) |
|-----------------------|-----------|------------|------------|------------------------|
| North                 | 1.2       | 695.2      | 309.2      | 167 315.8              |
| South                 | 15.2      | 1 403.6    | 789.6      | 395 511.8              |
| SUM                   | 16.5      | 2 098.7    | 1 098.8    | 562 827.6              |

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

| Associated Unit/Stack | Normal   | Grace | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm <sup>3</sup> ) |
|-----------------------|--|-------|------------|---------------|------------------|----------------------------------|
| North                 | 16   | 0     | 0          | 0             | 0                | 3.6                              |
| South                 | 26   | 0     | 0          | 0             | 0                | 19.1                             |
| SUM                   | 42   | 0     | 0          | 0             | 0                |                                  |
| Comments North Stack  | Condition 7.3 of the Emission License exempt the station from reporting particulate matter (PM) emissions when unit is offline or during the operation of unit shut down or start-up process.<br>North Stack Units has been fully offline for 9 days, Shut down and start-up process account for 6 days.<br>North Stack PM Emissions not reportable for 15 days. |       |            |               |                  |                                  |
| Comments South Stack  | South Stack Units has been fully offline for 2 days, Shut down and start-up process account for 3 days.<br>South Stack PM Emissions not reportable for 5 days.   |       |            |               |                  |                                  |

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average SOx (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North                 | 20     | 0     | 0          | 0             | 0                | 1 636.6                           |
| South                 | 28     | 0     | 0          | 0             | 0                | 1 555.2                           |
| SUM                   | 48     | 0     | 0          | 0             | 0                |                                   |

Comments Sulphur Oxide is reportable at any time gasses are detected by monitor  
Although North Stack and South Stack Units has been offline and on shut down/ startup for some period:  
North Stack SOx Gaseous Emissions were detected for 20 days.  
South Stack SOx Gaseous Emissions were detected for 28 days.

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NOx (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|-----------------------------------|
| North                 | 20     | 0     | 0          | 0             | 0                | 731.0                             |
| South                 | 28     | 0     | 0          | 0             | 0                | 869.4                             |
| SUM                   | 48     | 0     | 0          | 0             | 0                |                                   |

Comments Nitrogen Oxide is reportable at any time gasses are detected by monitor  
Although North Stack and South Stack Units has been offline and on shut down/ startup for some period:  
North Stack Gaseous Emissions were detected for 20 days.  
South Stack Gaseous Emissions were detected for 28 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 |

Figure 1: Hendrina North Stack PM Emissions - May 2022

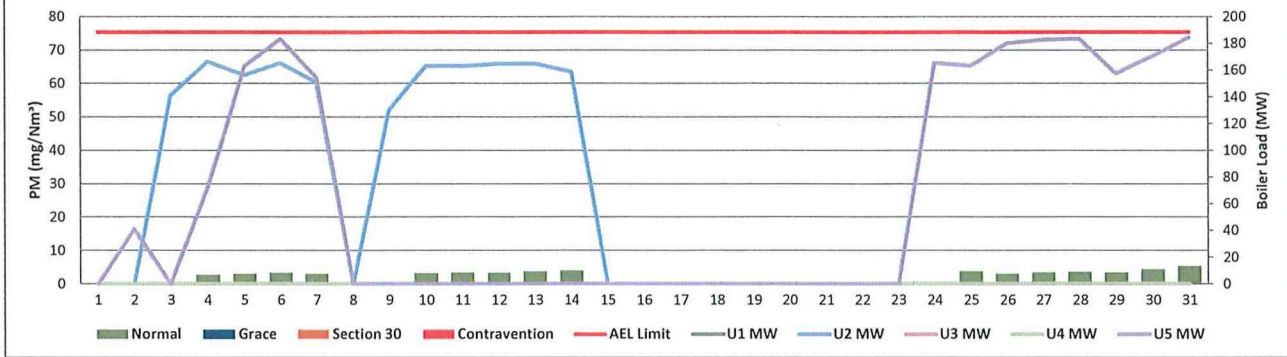


Figure 2: Hendrina South Stack PM Emissions - May 2022

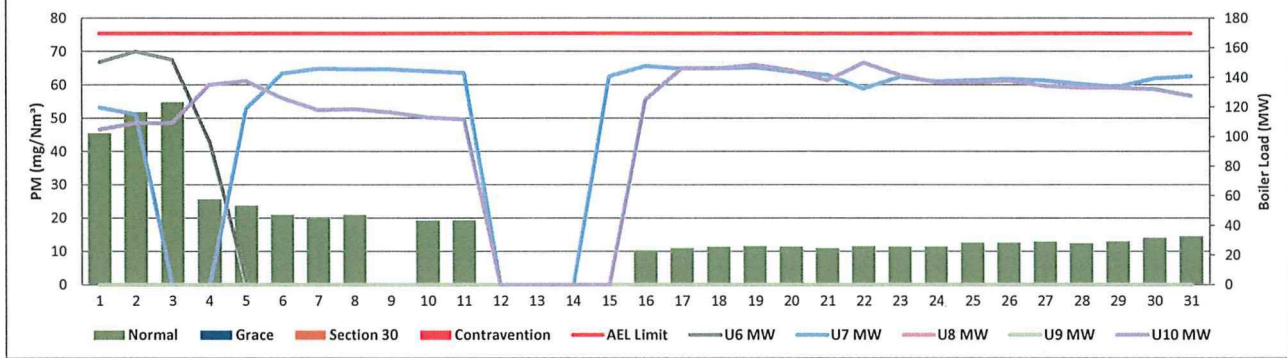




Figure 3: Hendrina North Stack SOx Emissions - May 2022

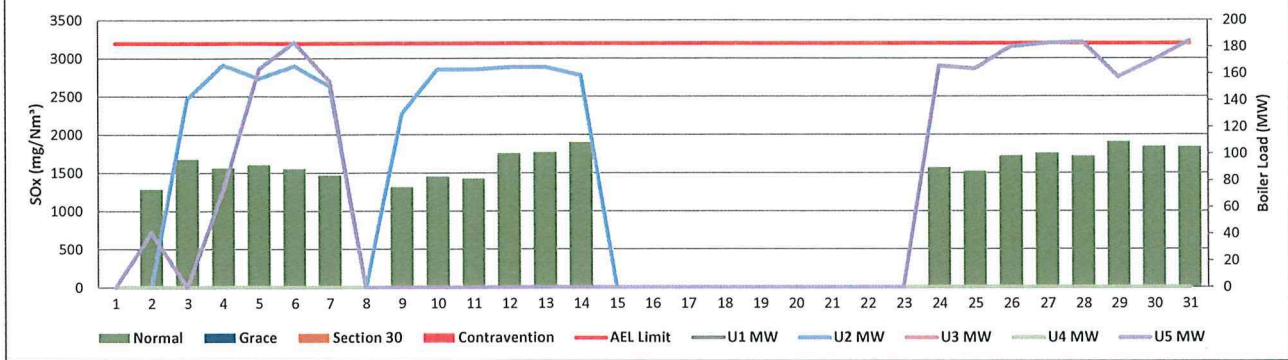


Figure 4: Hendrina South Stack SOx Emissions - May 2022

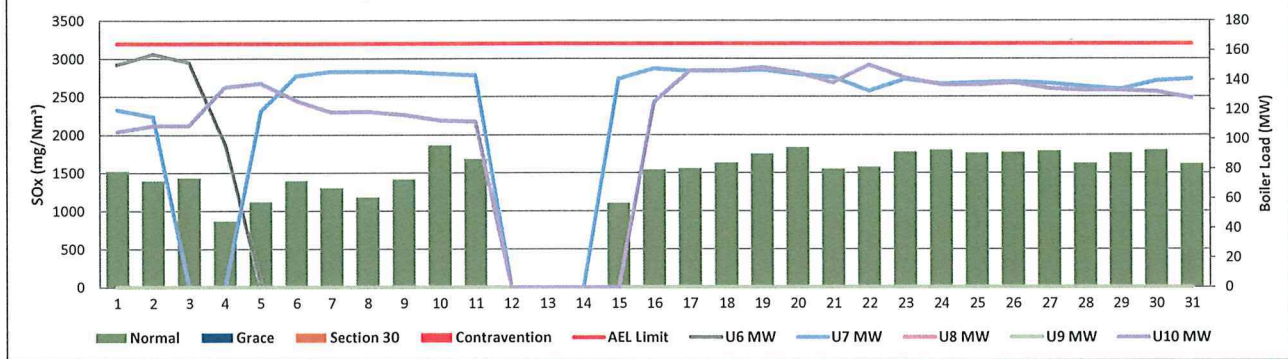


Figure 5: Hendrina North Stack NOx Emissions - May 2022

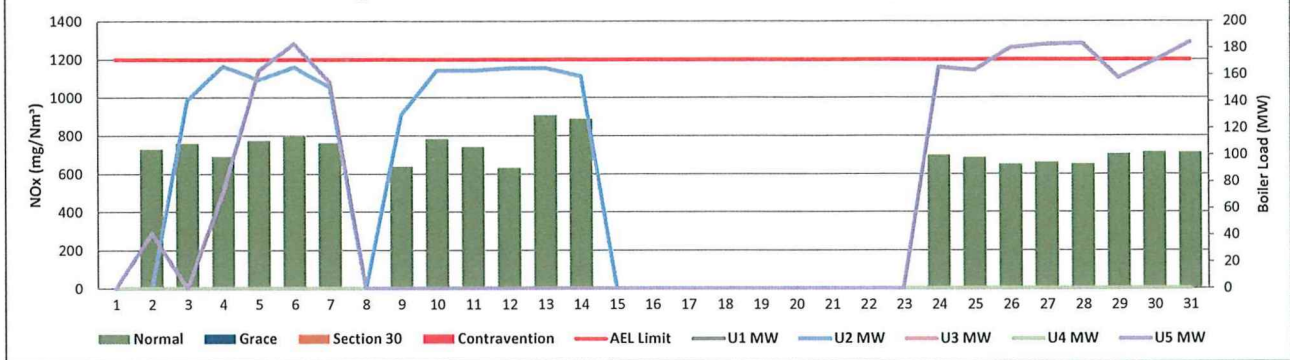
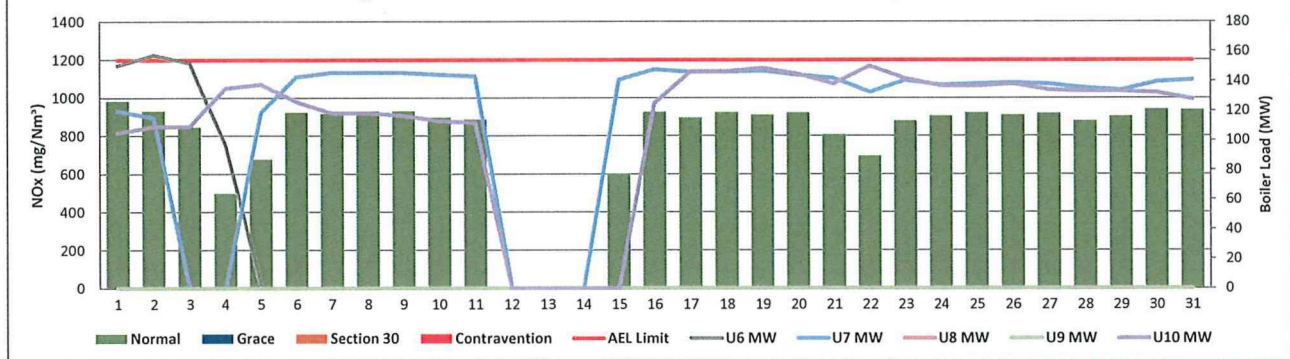


Figure 6: Hendrina South Stack NOx Emissions - May 2022



## 7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1 PM Start-up information for the month of May-2022

| 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 2</i>  |            | <i>Unit 5</i>  |             |
| Breaker Open (BO)                        |                |             |                |             | 9:55 am        | 2022/05/14 |                |             |
| Draught Group (DG) Shut Down (SD)        |                |             |                |             | 1:45 pm        | 2022/05/14 |                |             |
| BO to DG SD (duration)                   |                | DD:HH:MM    |                | DD:HH:MM    | 00:03:50       | DD:HH:MM   |                | DD:HH:MM    |
| Fires in time                            | 12:30 am       | 2022/05/03  | 2022/05/09     | 2022/05/09  |                |            | 2022/05/04     | 2022/05/04  |
| Synch. to Grid (or BC)                   | 9:30 am        | 2022/05/03  | 2:30 pm        | 2022/05/09  |                |            | 10:00 am       | 2022/05/04  |
| Fires in to BC (duration)                | 00:09:00       | DD:HH:MM    | 00:12:00       | DD:HH:MM    |                | DD:HH:MM   | 00:12:00       | DD:HH:MM    |
| Emissions below limit from BC (end date) | not > limit    | not > limit | not > limit    | not > limit |                |            | not > limit    | not > limit |
| Emissions below limit from BC (duration) | n/a            | DD:HH:MM    | n/a            | DD:HH:MM    |                | DD:HH:MM   | n/a            | DD:HH:MM    |

| North Stack ...Continued                 | <i>Event 5</i> |             |
|--|----------------|-------------|
| Unit No.                                 | <i>Unit 5</i>  |             |
| Breaker Open (BO)                        | 1:45 pm        | 2022/05/07  |
| Draught Group (DG) Shut Down (SD)        | 2:05 pm        | 2022/05/07  |
| BO to DG SD (duration)                   | 00:00:20       | DD:HH:MM    |
| Fires in time                            | 5:10 pm        | 2022/05/23  |
| Synch. to Grid (or BC)                   | 5:10 am        | 2022/05/24  |
| Fires in to BC (duration)                | 00:12:00       | DD:HH:MM    |
| Emissions below limit from BC (end date) | not > limit    | not > limit |
| Emissions below limit from BC (duration) | n/a            | DD:HH:MM    |

| South Stack                              | Event 1  |            | Event 2     |             | Event 3     |             | Event 4     |             |
|--|----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Unit No.                                 | Unit 6   |            | Unit 7      |             | Unit 7      |             | Unit 7      |             |
| Breaker Open (BO)                        | 12:45 am | 2022/05/04 | 8:05 am     | 2022/05/02  | 7:55 am     | 2022/05/11  | 10:15 am    | 2022/05/21  |
| Draught Group (DG) Shut Down (SD)        | 11:45 am | 2022/05/04 | 8:55 am     | 2022/05/02  | 3:15 pm     | 2022/05/11  | 10:15 am    | 2022/05/21  |
| BO to DG SD (duration)                   | 00:11:00 | DD:HH:MM   | 00:00:50    | DD:HH:MM    | 00:07:20    | DD:HH:MM    |             | DD:HH:MM    |
| Fires in time                            |          |            | 2022/05/05  | 2022/05/05  | 14:22:00    | 2022/05/14  | 2022/05/22  | 2022/05/22  |
| Synch. to Grid (or BC)                   |          |            | 2:20 pm     | 2022/05/05  | 2:00 am     | 2022/05/15  | 11:30 am    | 2022/05/22  |
| Fires in to BC (duration)                |          | DD:HH:MM   | 00:06:00    | DD:HH:MM    | 00:04:00    | DD:HH:MM    | 00:06:00    | DD:HH:MM    |
| Emissions below limit from BC (end date) |          |            | not > limit | not > limit | not > limit | not > limit | not > limit | not > limit |
| Emissions below limit from BC (duration) |          | DD:HH:MM   | n/a         | DD:HH:MM    | n/a         | DD:HH:MM    | n/a         | DD:HH:MM    |

|  |             |             |
|--|-------------|-------------|
| South Stack ...Continued                 | Event 1     |             |
| Unit No.                                 | Unit 10     |             |
| Breaker Open (BO)                        | 8:15 am     | 2022/05/11  |
| Draught Group (DG) Shut Down (SD)        | 3:45 pm     | 2022/05/11  |
| BO to DG SD (duration)                   | 00:07:30    | DD:HH:MM    |
| Fires in time                            | 12:10 am    | 2022/05/16  |
| Synch. to Grid (or BC)                   | 5:10 am     | 2022/05/16  |
| Fires in to BC (duration)                | 00:05:00    | DD:HH:MM    |
| Emissions below limit from BC (end date) | not > limit | not > limit |
| Emissions below limit from BC (duration) | n/a         | DD:HH:MM    |

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of May-2022 in mg/Nm<sup>3</sup>

[Include reference to once off test showing typical emissions rates during fires in and SD]



**8 EMERGENCY GENERATION**

*None*


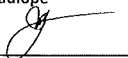
**9 COMPLAINTS REGISTER**

*No complaint received*

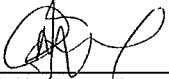
**10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER**

*No Sec 30 reported*

11 General

 21/06/2022  
 Compiled Environmental Officer Date  
 B Madiope  
 pp  2022-06-27  
 Authorised by GM Date  
 A Van Greuning

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

 21/06/2022  
 Verified by System Engineer Boiler/ FFP Date  
 Marco Cossa

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