

**HENDRINA POWER STATION MONTHLY EMISSIONS REPORT**

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


**1 RAW MATERIALS AND PRODUCTS**

| Raw Materials and Products | Raw Material Type | Units | Max. Permitted Consumption Rate | Consumption Rate Feb-2023 |
|----------------------------|-------------------|-------|---------------------------------|---------------------------|
|                            | Coal              | Tons  | 820 000                         | 60 933.0                  |
| Fuel Oil                   | Tons              | 3 200 | 671.85                          |                           |

| Production Rates | Product / By-Product Name | Units         | Max. Production Capacity Permitted | Production Rate Feb-2023 |
|------------------|---------------------------|---------------|------------------------------------|--------------------------|
|                  | Energy                    | GWh           | 1344                               | 83.78                    |
| Ash              | Tons                      | 290 000       | 15 221                             |                          |
| RE PM            | kg/MWh                    | not specified | 0.073                              |                          |

**2 ENERGY SOURCE CHARACTERISTICS**

| Coal Characteristics | Units | Stipulated Range | Monthly Average Content |
|----------------------|-------|------------------|-------------------------|
| Sulphur Content      | %     | 0.6 to < 1       | 0.67                    |
| Ash Content          | %     | 31 to < 35       | 24.98                   |

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

| Associated Unit/Stack | PM | SO <sub>2</sub> | NO <sub>x</sub> |
|-----------------------|----|-----------------|-----------------|
| North                 | 75 | 3200            | 1200            |
| South                 | 75 | 3200            | 1200            |

**4 ABATEMENT TECHNOLOGY (%)**

| Associated Unit/Stack | Technology Type           | Efficiency Feb-2023 |
|-----------------------|---------------------------|---------------------|
| Unit 1                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 2                | Fabric Filter Plant (FFP) | 99.958%             |
| Unit 3                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 4                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 5                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 6                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 7                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 8                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 9                | Fabric Filter Plant (FFP) | Unit Off-line       |
| Unit 10               | Fabric Filter Plant (FFP) | 100.000%            |

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

**5 MONITOR RELIABILITY (%)**

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|----------------------------------|
| North                 | 11     | 0     | 0          | 0             | 0                | 13.6                             |
| South                 | 14     | 0     | 0          | 0             | 0                | 13.9                             |
| SUM                   | 25     | 0     | 0          | 0             | 0                |                                  |

Table 6.3: Operating days in compliance to SO<sub>2</sub> AEL Limit - February 2023

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average SO <sub>2</sub> (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|---|
| North                 | 13     | 0     | 0          | 0             | 0                | 1 112.3                                       |
| South                 | 15     | 0     | 0          | 0             | 0                | 898.0   |
| SUM                   | 28     | 0     | 0          | 0             | 0                |   |

Table 6.4: Operating days in compliance to NO<sub>x</sub> AEL Limit - February 2023

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NO <sub>x</sub> (mg/Nm <sup>3</sup> ) |
|-----------------------|--------|-------|------------|---------------|------------------|---|
| North                 | 13     | 0     | 0          | 0             | 0                | 367.7   |
| South                 | 15     | 0     | 0          | 0             | 0                | 487.2   |
| SUM                   | 28     | 0     | 0          | 0             | 0                |   |

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 |

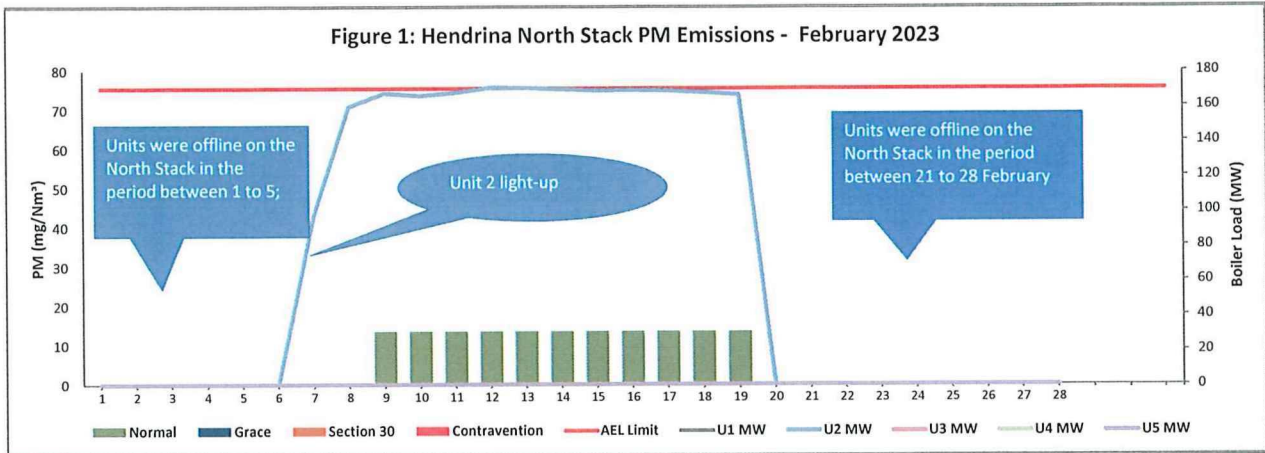


Figure 1: PM emissions for the month of February 2023 against emission limit for the North Stack. The average was 13.6mg/Nm3

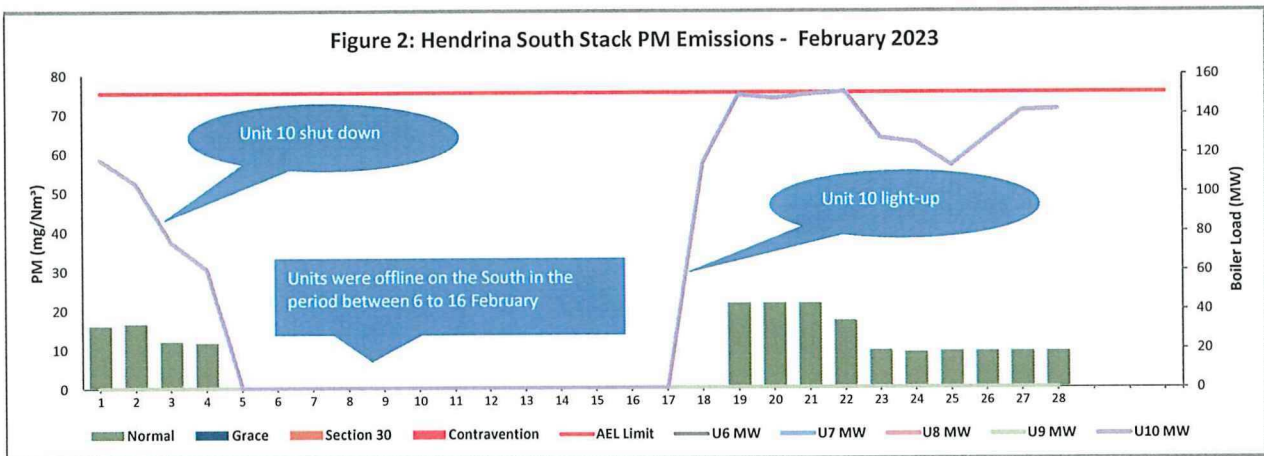


Figure 2: PM emissions for the month of February 2023 against emission limit for the South Stack. The average was 13.9mg/Nm3

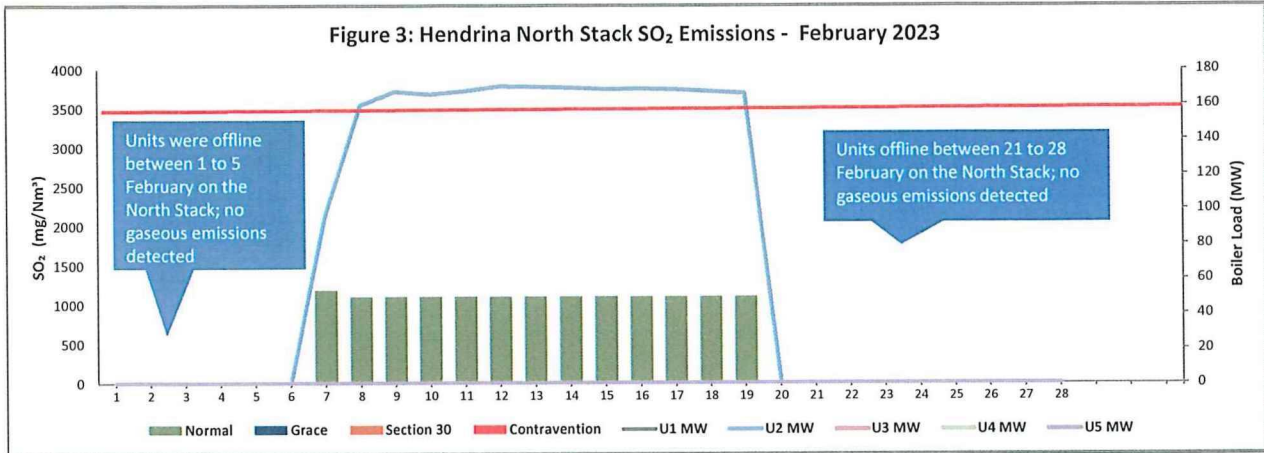


Figure 3: SO<sub>x</sub> emissions for the month of February 2023 against emission limit for the North Stack. The SO<sub>x</sub> limit is 3500mg/Nm<sup>3</sup>

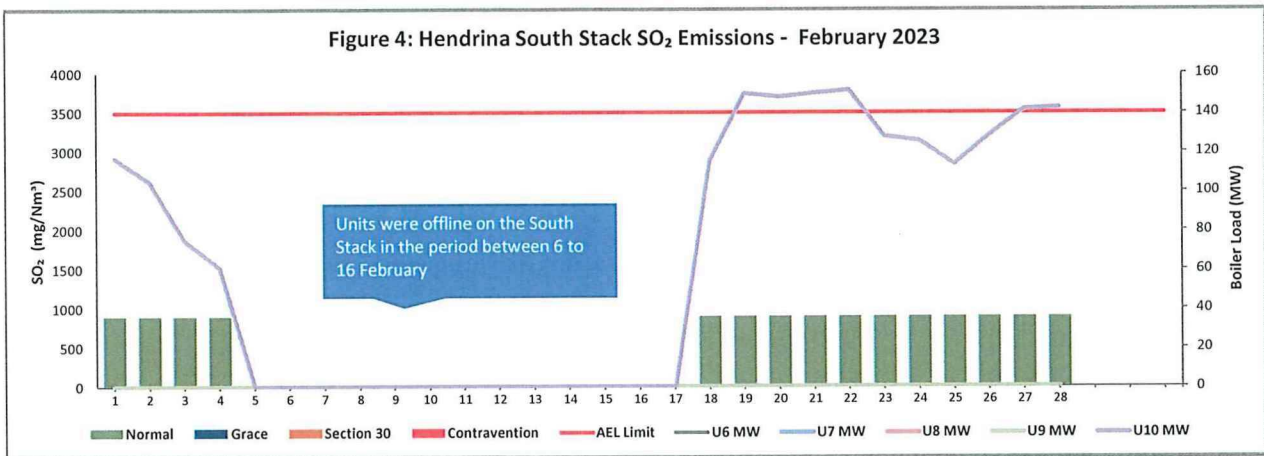


Figure 3: SO<sub>x</sub> emissions for the month of February 2023 against emission limit for the South Stack. The SO<sub>x</sub> limit is 3500mg/Nm<sup>3</sup>

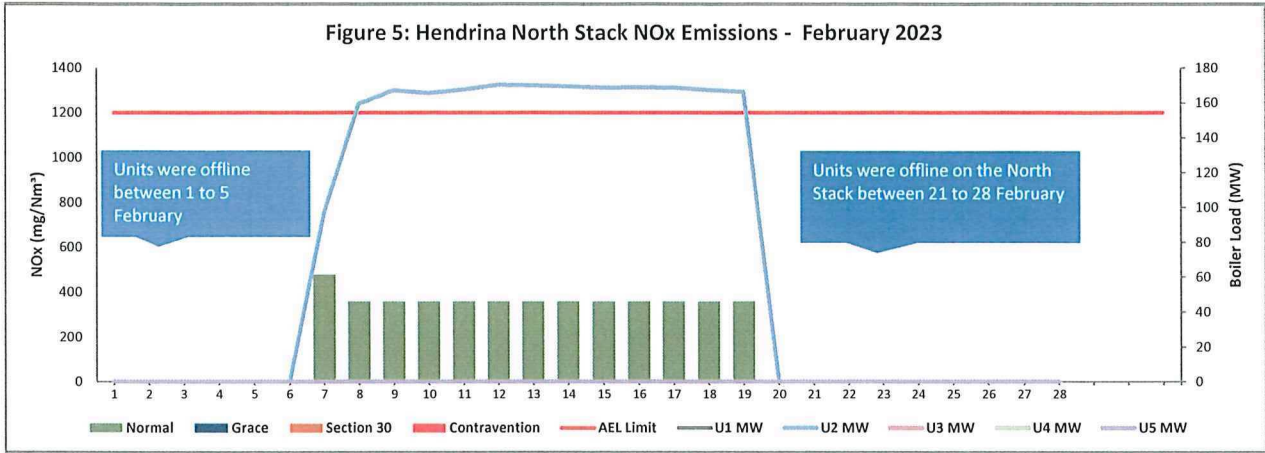


Figure 5: NOx emissions for the month of February 2023 against emission limit for the North Stack. The NOx limit is 1200mg/Nm3

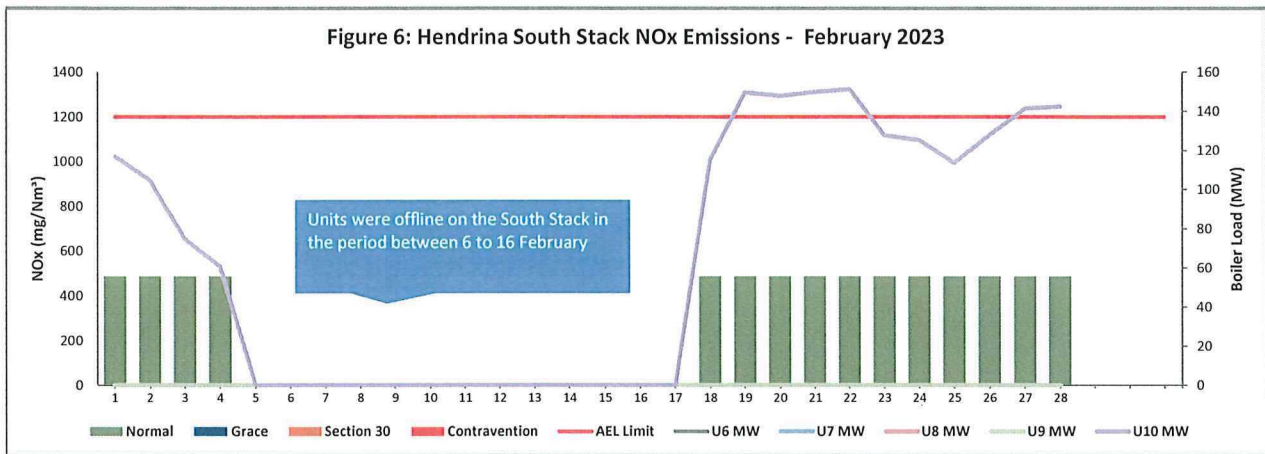


Figure 6: NOx emissions for the month of February 2023 against emission limit for the South Stack. The NOx limit is 1200mg/Nm3

## 7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1 PM Start-up information for the month of February-2023

| North Stack                              | Event 1     |             | Event 2  |            |
|--|-------------|-------------|----------|------------|
| Unit No.                                 | Unit 2      |             | Unit 2   |            |
| Breaker Open (BO)                        |             |             | 5:35 pm  | 2023/02/19 |
| Draught Group (DG) Shut Down (SD)        |             |             | 6:45 pm  | 2023/02/19 |
| BO to DG SD (duration)                   |             | DD:HH:MM    | 00:01:10 | DD:HH:MM   |
| Fires in time                            | 3:50 pm     | 2023/02/07  |          |            |
| Synch. to Grid (or BC)                   | 3:50 am     | 2023/02/08  |          |            |
| Fires in to BC (duration)                | 00:12:00    | DD:HH:MM    |          | 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    |          | DD:HH:MM   |

| South Stack                              | Event 1               |                       |
|--|-----------------------|-----------------------|
| Unit No.                                 | Unit 10               |                       |
| Breaker Open (BO)                        | 2:15 am               | 2023/02/04            |
| Draught Group (DG) Shut Down (SD)        | 2:15 am               | 2023/02/04            |
| BO to DG SD (duration)                   |                       | DD:HH:MM              |
| Fires in time                            | 6:10 pm               | 2023/02/18            |
| Synch. to Grid (or BC)                   | 12:10 am              | 2023/02/18            |
| Fires in to BC (duration)                | 00:06:00              | 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              |


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| Source Code / Name  | Root Cause Analysis | Calculation of Impacts / emissions associated with the incident | Dispersion modeling of pollutants where applicable | Date measure will be implemented | Measures implemented to prevent reoccurrence |
|---|---------------------|---|--|----------------------------------|--|
| There were no complaints related to air quality received during the month of February 2023. |                     |   |  |                                  |  |

9 General

The particulate matter (PM10) emissions on the North and South Common Stack were within the monthly limit, North stack recorded PM10 average emissions figure of 13.6 mg/Nm<sup>3</sup> while south stack recorded PM10 average figure of 13.9 mg/Nm<sup>3</sup>

NB The rest of the information demonstrating compliance with the emission license conditions is supplied in the annual emission reports sent to your office


 16/03/2023

Compiled Environmental Officer Date  
B Madiope

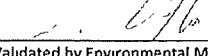
 2023-03-20

Authorised by GM Date  
P Ndwandwe

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

 20/03/2023

Boiler/ FFP Date  
Marco Cossa

 20/03/2023

Validated by Environmental Manager  
L Ntla

FFP SE/ Environmental Officer  
Air Quality 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