



Generation

Gert Sibande District Municipality
Corner of Joubert & Oosthuise Streets
Ermelo
2350

Attention:

Mr D Hlanyane

AND

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GROOTVLEI POWER STATION

Atmospheric Emission License GPS/0015/2015/F02



BOILER ENGINEERING MANAGER

2023/02/10

DATE



ENGINEERING MANAGER

2023/02/10

DATE



ENVIRONMENTAL MANAGER

2023/02/10

DATE

GROOTVLEI POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License GPS/0015/2015/F02



1 RAW MATERIALS AND PRODUCTS

| Raw Materials and Products | Raw Material Type | Units | Maximum Permitted Consumption Rate | Consumption Rate Jan-2023 |
|----------------------------|---------------------------|--------|---------------------------------------|---------------------------|
| | Coal | Tons | 650 000 | 130 155.0 |
| | Fuel Oil | Tons | 20 000 | 6826.89 |
| Production Rates | Product / By-Product Name | Units | Maximum Production Capacity Permitted | Production Rate Jan-2023 |
| | Energy | GWh | 833.28 | 214.17 |
| | Ash | Tons | 300 000 | 36 040 |
| | RE PM | kg/MWh | not specified | 0.10 |

2 ENERGY SOURCE CHARACTERISTICS

| Coal Characteristic | Units | Stipulated Range | Monthly Average Content |
|---------------------|-------|------------------|-------------------------|
| CV Content | MJ/kg | 18-24 | 19.78 |
| Sulphur Content | % | 0.6 to < 1.2 | 0.88 |
| Ash Content | % | 27 to < 32 | 27.69 |

3 EMISSION LIMITS (mg/Nm³)

| Associated Unit/Stack | PM | SO ₂ | NO |
|-----------------------|-----|-----------------|------|
| North | 100 | 3500 | 1100 |
| South | 50 | 3500 | 1100 |

4 ABATEMENT TECHNOLOGY (%)

| Associated Unit/Stack | Technology Type | Efficiency |
|-----------------------|---------------------------|---------------|
| Unit 1 | Fabric Filter Plant (FFP) | 99.931% |
| Unit 2 | Fabric Filter Plant (FFP) | 99.950% |
| Unit 3 | Fabric Filter Plant (FFP) | 99.927% |
| 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 |

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

5 MONITOR RELIABILITY (%)

| Associated Unit/Stack | PM | SO ₂ | NO | O ₂ |
|-----------------------|-------|-----------------|-------|----------------|
| North | 100.0 | 99.9 | 100.0 | 97.7 |
| South | | | | |

Note: NOx emissions is measured as NO in PPM. Final NOx value is expressed as total NO₂

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of January-2023

| Associated Unit/Stack | PM (tons) | SO ₂ (tons) | NO _x (tons) |
|-----------------------|--------------|------------------------|------------------------|
| Unit 1 | 6.71 | 560.1 | 179.2 |
| Unit 2 | 10.08 | 816.5 | 261.8 |
| Unit 3 | 5.37 | 400.4 | 125.9 |
| Unit 4 | 0.00 | 0.0 | 0.0 |
| Unit 5 | 0.00 | 0.0 | 0.0 |
| Unit 6 | 0.00 | 0.0 | 0.0 |
| SUM | 22.15 | 1 777.0 | 566.8 |

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

| Associated Unit/Stack | Normal | Grace | Section 30 | Total Exceedance | Average PM (mg/Nm ³) |
|-----------------------|-----------|----------|------------|------------------|----------------------------------|
| North | 31 | 0 | 0 | 0 | 24.7 |
| South | 0 | 0 | 0 | 0 | |
| SUM | 31 | 0 | 0 | 0 | |

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





| Associated Unit/Stack | Normal | Grace | Section 30 | Total Exceedance | Average SO ₂ (mg/Nm ³) |
|-----------------------|-----------|----------|------------|------------------|---|
| North | 31 | 0 | 0 | 0 | 1 788.5 |
| South | 0 | 0 | 0 | 0 | |
| SUM | 31 | 0 | 0 | 0 | |

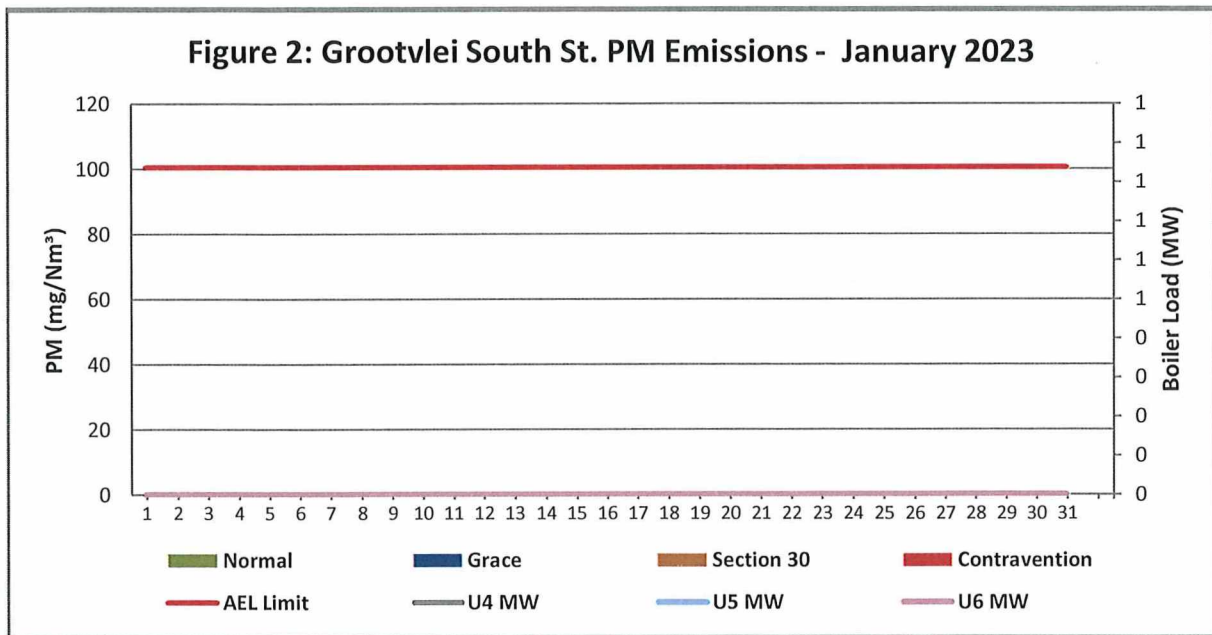
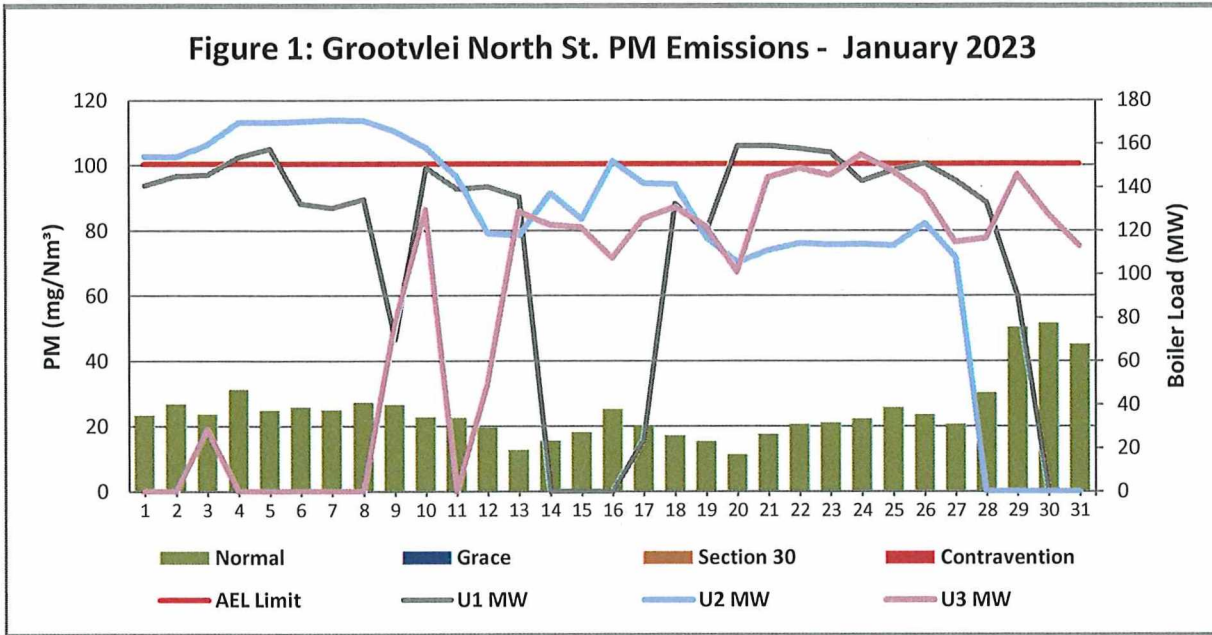
Table 6.4: Operating days in compliance to NO_x AEL Limit - January 2023

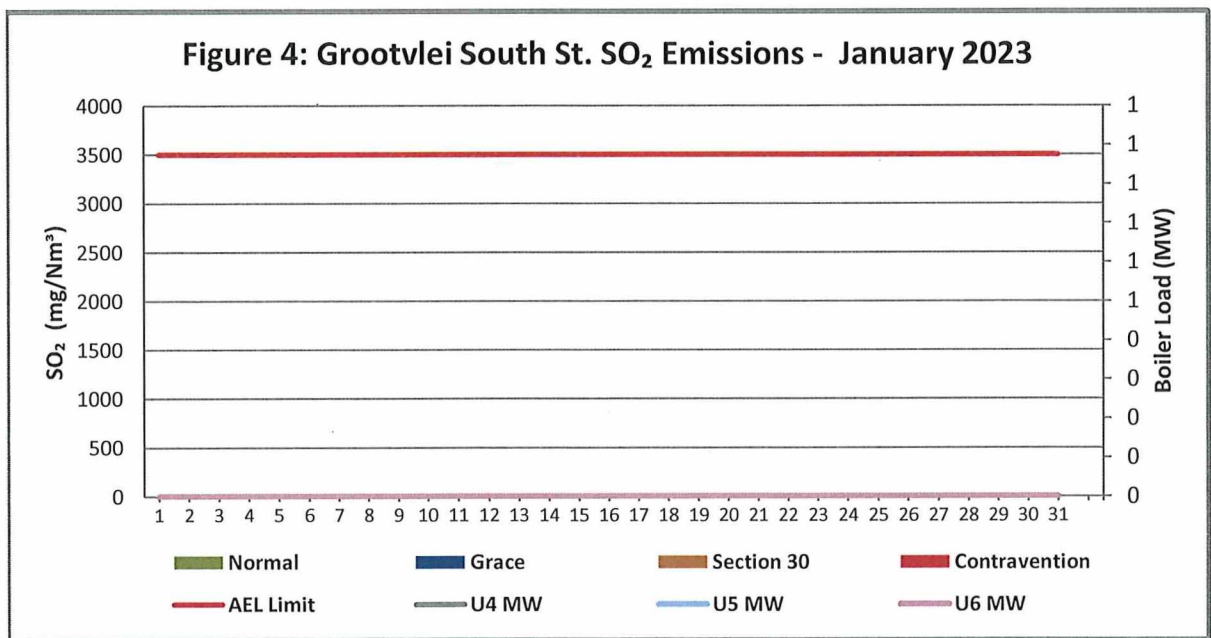
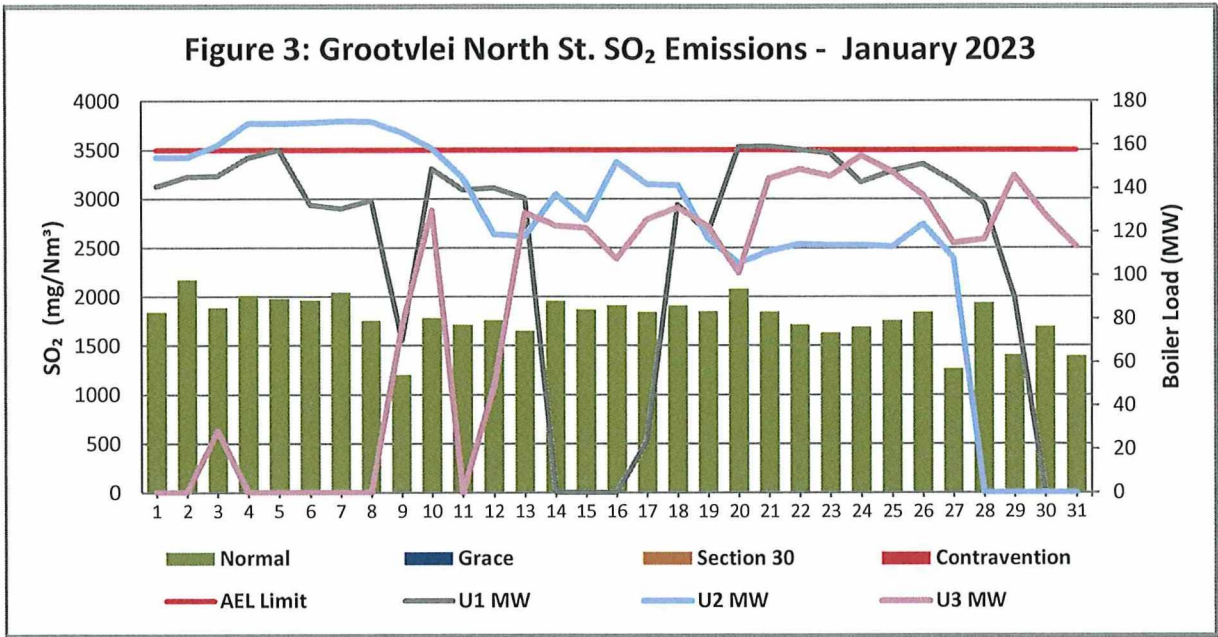
| Associated Unit/Stack | Normal | Grace | Section 30 | Total Exceedance | Average NO _x (mg/Nm ³) |
|-----------------------|-----------|----------|------------|------------------|---|
| North | 31 | 0 | 0 | 0 | 566.3 |
| South | 0 | 0 | 0 | 0 | |
| SUM | 31 | 0 | 0 | 0 | |

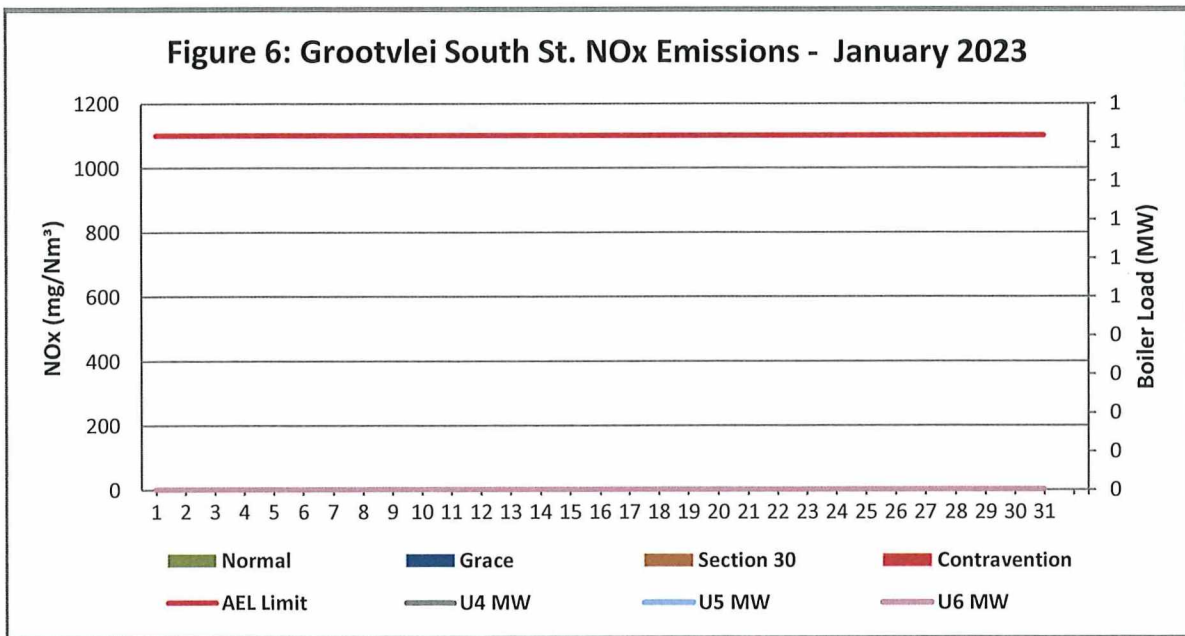
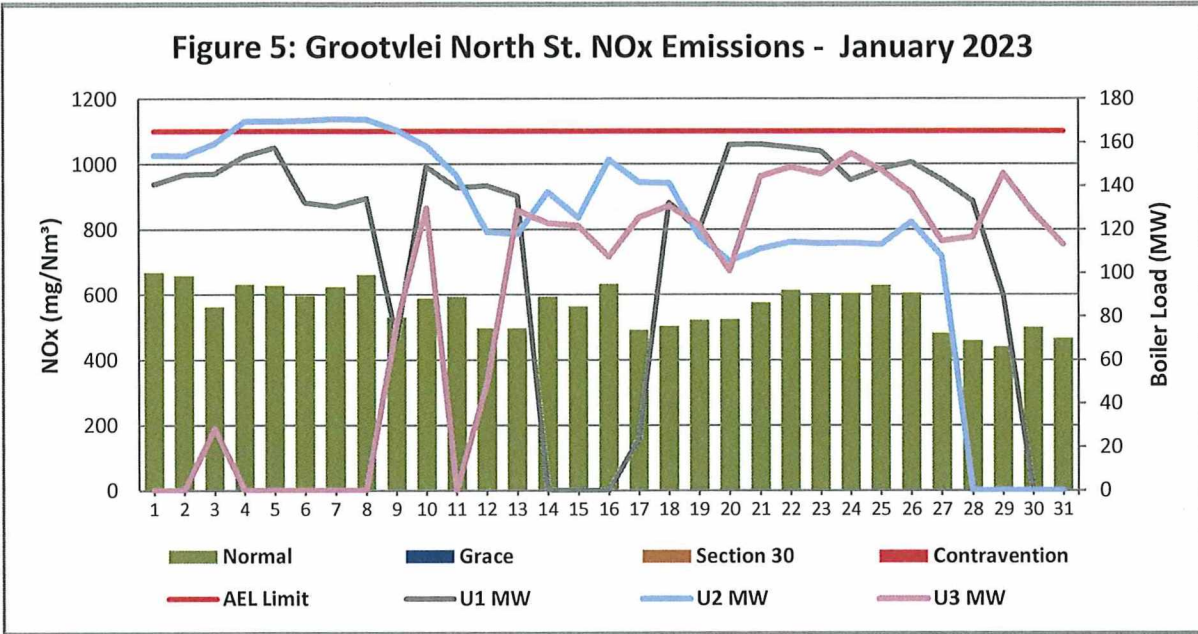
Note: NO_x emissions is measured as NO in PPM. Final NO_x value is expressed as total NO₂

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 |  | |







7 SHUT DOWN AND LIGHT UP INFORMATION

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

| North Stack | Event 1 | | Event 2 | | Event 3 | | Event 4 | |
|--|-------------|-------------|----------|------------|----------|------------|---------------|---------------|
| Unit No. | Unit 1 | | Unit 1 | | Unit 2 | | Unit 3 | |
| Breaker Open (BO) | 5:00 am | 2023/01/13 | 1:05 am | 2023/01/29 | 9:40 am | 2023/01/27 | BO previously | BO previously |
| Draught Group (DG) Shut Down (SD) | 1:05 am | 2023/01/29 | 2:00 am | 2023/01/29 | 12:55 am | 2023/01/28 | n/a | n/a |
| BO to DG SD (duration) | 15:20:05 | DD:HH:MM | 00:00:55 | DD:HH:MM | 00:15:15 | DD:HH:MM | n/a | DD:HH:MM |
| Fires in time | 12:10 pm | 2023/01/19 | | | | | 8:10 am | 2023/01/12 |
| Synch. to Grid (or BC) | 6:35 pm | 2023/01/19 | | | | | 9:40 pm | 2023/01/12 |
| Fires in to BC (duration) | 00:06:25 | DD:HH:MM | | DD:HH:MM | | DD:HH:MM | 00:13:30 | DD:HH:MM |
| Emissions below limit from BC (end date) | not > limit | not > limit | | | | | not > limit | not > limit |
| Emissions below limit from BC (duration) | n/a | DD:HH:MM | | DD:HH:MM | | DD:HH:MM | n/a | DD:HH:MM |

| North Stack ...Cont. | Event 5 | | Event 6 | | Event 7 | | Event 8 | |
|--|----------|---------------|----------|----------|----------|----------|----------|----------|
| Unit No. | no event | | no event | | no event | | no event | |
| Breaker Open (BO) | | | | | | | | |
| Draught Group (DG) Shut Down (SD) | | | | | | | | |
| BO to DG SD (duration) | | DD:HH:MM M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Fires in time | | | | | | | | |
| Synch. to Grid (or BC) | | | | | | | | |
| Fires in to BC (duration) | | DD:HH:MM M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Emissions below limit from BC (end date) | | | | | | | | |
| Emissions below limit from BC (duration) | | DD:HH:MM M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |

| South Stack | <i>Event 1</i> | | <i>Event 2</i> | | <i>Event 3</i> | | <i>Event 4</i> | |
|--|-----------------|--------------|-----------------|----------|-----------------|----------|-----------------|----------|
| Unit No. | <i>no event</i> | | <i>no event</i> | | <i>no event</i> | | <i>no event</i> | |
| Breaker Open (BO) | | | | | | | | |
| Draught Group (DG) Shut Down (SD) | | | | | | | | |
| BO to DG SD (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Fires in time | | | | | | | | |
| Synch. to Grid (or BC) | | | | | | | | |
| Fires in to BC (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Emissions below limit from BC (end date) | | | | | | | | |
| Emissions below limit from BC (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |

| South Stack ...Cont. | <i>Event 5</i> | | <i>Event 6</i> | | <i>Event 7</i> | | <i>Event 8</i> | |
|--|-----------------|--------------|-----------------|----------|-----------------|----------|-----------------|----------|
| Unit No. | <i>no event</i> | | <i>no event</i> | | <i>no event</i> | | <i>no event</i> | |
| Breaker Open (BO) | | | | | | | | |
| Draught Group (DG) Shut Down (SD) | | | | | | | | |
| BO to DG SD (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Fires in time | | | | | | | | |
| Synch. to Grid (or BC) | | | | | | | | |
| Fires in to BC (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |
| Emissions below limit from BC (end date) | | | | | | | | |
| Emissions below limit from BC (duration) | | DD:HH:M M | | DD:HH:MM | | DD:HH:MM | | DD:HH:MM |

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of January-2023 in mg/Nm³

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



ADDENDUM TO MONTHLY EMISSIONS REPORT

8 EMERGENCY GENERATION

Emergency Generation *[This is only required for stations that are requested to report on this information]*

Table 8. Emergency Generation per unit for the month of January-2023

| | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5 | Unit 6 |
|---|--------|--------|--------|--------|--------|--------|
| Emergency Generation hours declared by national Control | | | | | | |
| Emergency Hours declared including hours after stand down | | | | | | |
| Hours over the Limit during Emergency Generation | | | | | | |

9 COMPLAINTS REGISTER

Table 9. Complaints for the month of January-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 |
|--|---|---|---|--|---|
| <i>(Insert name of affected person/source)</i> | <i>(Insert root cause for incident)</i> | <i>(Insert emissions associated with incident)</i> | <i>(Insert dispersion model information where applicable)</i> | <i>(Insert mitigation measures taken)</i> | <i>(Insert date of implementation of mitigation method)</i> |
| | | | | | |
| | | | | | |

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 | Date S30 initial notification sent | Date S30 investigation report sent | Date DEA Acknowledgment | Date DEA Acceptable | Comments / Reference No. |
|---------|---------------------|-------------------|----------------|-----------------|------------------------------------|------------------------------------|-------------------------|---------------------|--------------------------|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

11 General

South Stack off. The North stack probe was replaced on the 17th of January 2023 with a new probe. As stated in the letter reference GVL/0517, the correlation for the new probe is planned for end of February 2023. The new probe installed is fully functionally showing the current emission trends.

MetisoTM 10/02/2023
Environmental Department Date

[Signature] 10/02/2023
Boiler Engineering Date

[Signature]
General Manager Date

Compiled by: Boiler Engineering Department

FFP System Engineer

For: Department of Environmental Affairs and Touri Chief Air Pollution Control Officer

Copies: Eskom Environmental Management

D Herbst
K Langerman

Group Technology Engineering

R Rampiar
E. Patel

Grootvlie Power Station:

Engineering Manager
Operating Manager
Maintenance Manager
Unit Production Manager
Boiler Engineering Manager
System Engineer
Environmental Officer
Performance and Test
Production Manager

| | | | |
|---|---|-------------------------------------|-------|
|  | GROOTVLEI POWER STATION ON LINE COAL SAMPLING DATA | Template Identifier 240-43921898 | Rev 6 |
| | | Document Identifier GVLF 0177 | Rev 0 |
| | | Effective Date | |
| | | Review Date | |

Power Station : Grootvlei PS Month-Year : Jan-23

| DAY | DATE | Coal Tons | Sampler availability | | | | | | | | | | | | I.M. (%) | F.C. (%) [AR] | F.C. (%) [AD] | ABR (mgFe) | H.I.V. |
|-------|-------------|-----------|----------------------|-----------------|--------------|--------------|---------------|---------------|----------|------------|--------|-------|-------|------|----------|---------------|---------------|------------|--------|
| | | | CV [MJ/kg] [AR] | CV [MJ/kg] [AD] | ASH (%) [AR] | ASH (%) [AD] | VOLS (%) [AR] | VOLS (%) [AD] | T.M. (%) | ABR (mgFe) | H.I.V. | | | | | | | | |
| 1 | 01-Jan-2023 | 3916 | 19.73 | 20.82 | 29.00 | 26.32 | 27.50 | 20.31 | 21.22 | 26.32 | 27.50 | 21.30 | 8.60 | 3.36 | 46.75 | 49.33 | 150.0 | 64 | |
| 2 | 02-Jan-2023 | 3831 | 20.31 | 21.22 | 26.32 | 27.50 | 20.39 | 21.30 | 8.60 | 4.50 | 44.70 | 46.70 | 226.0 | 59 | | | | | |
| 3 | 03-Jan-2023 | 5781 | 19.75 | 20.68 | 27.03 | 28.30 | 18.91 | 19.80 | 8.50 | 4.20 | 45.56 | 47.70 | 256.0 | 60 | | | | | |
| 4 | 04-Jan-2023 | 3835 | 19.46 | 20.35 | 26.96 | 28.20 | 20.65 | 21.60 | 8.60 | 4.40 | 43.79 | 45.80 | 229.0 | 61 | | | | | |
| 5 | 05-Jan-2023 | 4833 | 19.21 | 20.14 | 27.57 | 28.90 | 20.32 | 21.30 | 8.60 | 4.20 | 43.51 | 45.60 | 256.0 | 60 | | | | | |
| 6 | 06-Jan-2023 | 4819 | 19.82 | 20.77 | 27.29 | 28.60 | 20.80 | 21.80 | 8.70 | 4.3 | 43.22 | 45.30 | 155.0 | 61 | | | | | |
| 7 | 07-Jan-2023 | 4185 | 19.98 | 20.90 | 26.29 | 27.90 | 17.88 | 18.70 | 8.70 | 4.5 | 47.13 | 49.30 | 220.0 | 60 | | | | | |
| 8 | 08-Jan-2023 | 3961 | 19.89 | 20.87 | 28.30 | 29.70 | 16.68 | 17.50 | 8.70 | 4.2 | 46.32 | 48.60 | 259.0 | 61 | | | | | |
| 9 | 09-Jan-2023 | 4323 | 19.80 | 20.86 | 27.40 | 28.90 | 18.58 | 19.60 | 8.50 | 3.5 | 45.51 | 48.00 | 185.0 | 64 | | | | | |
| 10 | 10-Jan-2023 | 3371 | 20.31 | 21.42 | 25.89 | 27.30 | 18.49 | 19.50 | 8.40 | 3.4 | 47.22 | 49.80 | 238.0 | 59 | | | | | |
| 11 | 11-Jan-2023 | 2239 | 19.95 | 20.89 | 27.32 | 28.60 | 19.77 | 20.70 | 8.30 | 4 | 44.61 | 46.70 | 106.0 | 76 | | | | | |
| 12 | 12-Jan-2023 | 3791 | 20.54 | 21.59 | 28.16 | 29.60 | 16.74 | 17.60 | 8.20 | 3.5 | 46.90 | 49.30 | 305.0 | 59 | | | | | |
| 13 | 13-Jan-2023 | 3298 | 21.38 | 22.43 | 24.88 | 26.10 | 16.68 | 17.50 | 8.20 | 3.7 | 50.24 | 52.70 | 215.0 | 60 | | | | | |
| 14 | 14-Jan-2023 | 4658 | 21.46 | 22.48 | 24.91 | 26.10 | 20.61 | 21.60 | 8.00 | 3.6 | 46.48 | 48.70 | 277.0 | 59 | | | | | |
| 15 | 15-Jan-2023 | 3379 | 19.15 | 19.94 | 29.46 | 30.70 | 17.98 | 18.70 | 8.30 | 4.5 | 44.27 | 46.10 | 285 | 57 | | | | | |
| 16 | 16-Jan-2023 | 3243 | 19.16 | 19.95 | 29.29 | 30.50 | 16.52 | 17.20 | 8.00 | 4.2 | 46.19 | 48.10 | 267 | 60 | | | | | |
| 17 | 17-Jan-2023 | 4406 | 19.05 | 19.88 | 29.13 | 30.40 | 19.26 | 20.10 | 8.50 | 4.5 | 43.12 | 45.00 | 175 | 62 | | | | | |
| 18 | 18-Jan-2023 | 4648 | 20.42 | 21.44 | 27.33 | 28.70 | 17.81 | 18.70 | 8.00 | 3.4 | 46.86 | 49.20 | 321 | 64 | | | | | |
| 19 | 19-Jan-2023 | 3399 | 19.17 | 20.09 | 29.29 | 30.70 | 18.13 | 19.00 | 8.80 | 4.4 | 43.79 | 45.90 | 228 | 61 | | | | | |
| 20 | 20-Jan-2023 | 4393 | 18.55 | 19.56 | 28.73 | 30.30 | 16.21 | 17.10 | 8.40 | 3.4 | 46.65 | 49.20 | 224 | 61 | | | | | |
| 21 | 21-Jan-2023 | 5641 | 19.68 | 20.75 | 28.26 | 29.80 | 16.40 | 17.30 | 8.40 | 3.4 | 46.94 | 49.50 | 187 | 61 | | | | | |
| 22 | 22-Jan-2023 | 6052 | 21.53 | 22.56 | 26.53 | 27.80 | 19.76 | 20.70 | 7.90 | 3.5 | 45.81 | 48.00 | 206 | 60 | | | | | |
| 23 | 23-Jan-2023 | 7943 | 20.30 | 21.09 | 26.95 | 28.00 | 18.29 | 19.00 | 7.40 | 3.8 | 47.36 | 49.20 | 244 | 61 | | | | | |
| 24 | 24-Jan-2023 | 5726 | 19.55 | 20.42 | 27.96 | 29.20 | 18.48 | 19.30 | 7.90 | 3.8 | 45.67 | 47.70 | 229 | 61 | | | | | |
| 25 | 25-Jan-2023 | 4790 | 19.18 | 20.09 | 28.83 | 30.20 | 17.75 | 18.60 | 7.70 | 3.3 | 45.72 | 47.90 | 169 | 66 | | | | | |
| 26 | 26-Jan-2023 | 5592 | 19.76 | 20.64 | 27.48 | 28.70 | 18.76 | 19.60 | 7.90 | 3.8 | 45.86 | 47.90 | 141 | 69 | | | | | |
| 27 | 27-Jan-2023 | 4298 | 18.87 | 19.69 | 29.52 | 30.60 | 18.50 | 19.30 | 8.00 | 4 | 43.99 | 45.90 | 142 | 69 | | | | | |
| 28 | 28-Jan-2023 | 3813 | 19.34 | 20.14 | 28.62 | 29.60 | 18.92 | 19.70 | 7.71 | 3.9 | 44.75 | 46.60 | 118 | 70 | | | | | |
| 29 | 29-Jan-2023 | 2486 | 19.21 | 19.94 | 28.52 | 29.60 | 18.40 | 19.10 | 7.90 | 4.4 | 45.18 | 46.90 | 143 | 67 | | | | | |
| 30 | 30-Jan-2023 | 2368 | 19.91 | 20.91 | 26.47 | 27.80 | 18.95 | 19.80 | 8.50 | 3.9 | 46.08 | 48.40 | 120 | 70 | | | | | |
| 31 | 31-Jan-2023 | 1138 | 18.92 | 19.85 | 28.78 | 30.20 | 17.82 | 18.70 | 8.60 | 4.1 | 44.79 | 47.00 | 102 | 71 | | | | | |
| Month | | 130156 | 19.78 | 20.72 | 27.69 | 29.00 | 18.40 | 19.26 | 8.27 | 3.92 | 45.64 | 47.81 | 206 | 63 | | | | | |

M. M. Mabasa

Chemical Services Manager

[Signature]

P&T Manager

[Signature]

Coal Manager