| Eskom | Technical and Generic Report | Matimba Power Station |
|---|---|---|

Title: **Matimba Power Station September 2023 emissions report Rev 2**

| | |
|---|---|
| Document Identifier: | **RP/247/039** |
| Plant Location: | **Emission management** |
| Area of Applicability: | **Matimba Power Station** |
| Functional Area Applicability: | **Environment** |
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| Report Date: | **September 2023** |
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| Compiled by | Functional Responsibility | Authorized by |
|---|---|---|
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| **Senior Advisor Environment** | **Environmental Manager** | **General Manager** |
| Date: | Date: 18/04/2024 | Date: 2024-04-19 |

# Content

**Figures**

## 1. Report Summary

Matimba Power Station was issued with an Atmospheric Emission License (H16/1/13-WDM05) in September 2022. The License requires the license holder to submit monthly reports to the Department. This report is the revision 2 of the initial report submitted to the licensing authority in September 2023. The revision of the report was necessitated by changes applied to the Matimba Emission Reporting tool (ERT V12.2021 to ERT V02.2024VF), which included the implementation of the spot test correlations and parallel tests (QAL 2) tests performed in July-August 2023 and the usage of surrogate particulate emissions values when monitors exceed their range due to high actual emissions using the Deutsch calculation.

During the period under review, Matimba experienced one-hundred and forty-eight (148) exceedances of the daily particulate matter emission limit (50mg/Nm3), one-hundred and thirty-three (133) of these exceedances occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence and fifteen (15) exceedances occurred within the 48-hour grace period.

There were no exceedances of the monthly SOx limit (3500mg/Nm3) and the daily NOx emission limit (750mg/Nm3) occurred.

The flue gas conditioning plant (SO3 Plant) availability for the month of September was below the required 100% for all six (06) units due to unplanned breakdowns and defects. Issues that affected the availability of the plant were addressed and the plants returned to operation.

More information regarding above mentioned issues is provided in the relevant sections within the report.

# 2. Emission information

## 2.1 Raw materials and products

**Table 1:** Quantity of Raw Materials and Products used/produced for the month.

| Raw Materials and Products used | Raw Material Type | Unit | Maximum Permitted Consumption Rate (Quantity) | Consumption Rate |
|---|---|---|---|---|
| | Coal | Tons/month | 1 500 000 | 958 104 |
| | Fuel Oil | Tons/month | 1 200 | 1020,886 |
| | | | | |
| **Production Rates** | **Product/ By-Product Name** | **Unit** | **Maximum Production Capacity Permitted (Quantity)** | **Production Rate** |
| | Energy | MW | 4000 | 2498,532 |
| | | | | |

The consumption rates for the month of September 2023 were within the permitted maximum limits.

## 2.2 Abatement technology

**Table 2:** Abatement Equipment Control Technology Utilised

| Associated Unit | Technology Type | Minimum utilisation (%) | Efficiency (%) |
|---|---|---|---|
| Unit 1 | Electrostatic Precipitator | 100% | 99,85% |
| Unit 2 | Electrostatic Precipitator | 100% | 99,84% |
| Unit 3 | Electrostatic Precipitator | 100% | 99,59% |
| Unit 4 | Electrostatic Precipitator | 100% | 99,78% |
| Unit 5 | Electrostatic Precipitator | 100% | 99,85% |
| Unit 6 | Electrostatic Precipitator | 100% | 99,90% |
| **Associated Unit** | **Technology Type** | **Minimum utilisation (%)** | **Actual Utilisation (%)** |
| Unit 1 | $SO_3$ Plant | 100% | 87% |
| Unit 2 | $SO_3$ Plant | 100% | 98% |
| Unit 3 | $SO_3$ Plant | 100% | 99% |
| Unit 4 | $SO_3$ Plant | 100% | 86% |
| Unit 5 | $SO_3$ Plant | 100% | 93% |
| Unit 6 | $SO_3$ Plant | 100% | 97% |

Flue gas conditioning plant availability was below the required 100% for all six (06) units due to unplanned breakdowns and defects. Defects were addressed and plants returned to service.

**Table 3:** Energy Source Material Characteristics.

| | Characteristic | Stipulated Range (Unit) | Monthly Average Content |
|---|---|---|---|
| **Coal burned** | **Sulphur Content** | 1.6% | 1,39% |
| | **Ash Content** | 40% | 34,59% |

Energy source characteristics remained within the ranges stipulated in the license.

## 2.3 Emissions reporting

### 2.3.1 Particulate Matter Emissions

The emission monitors Correlation spot test were performed in July/August 2023 and the results were applied and used for gaseous emissions calculation for October 2023.The spot test results for PM emissions for Unit 4 and 6 have failed the minimum requirements outlined in the Eskom emission calculation Methodology and were not applied.

**Unit 1 Particulate Emissions**

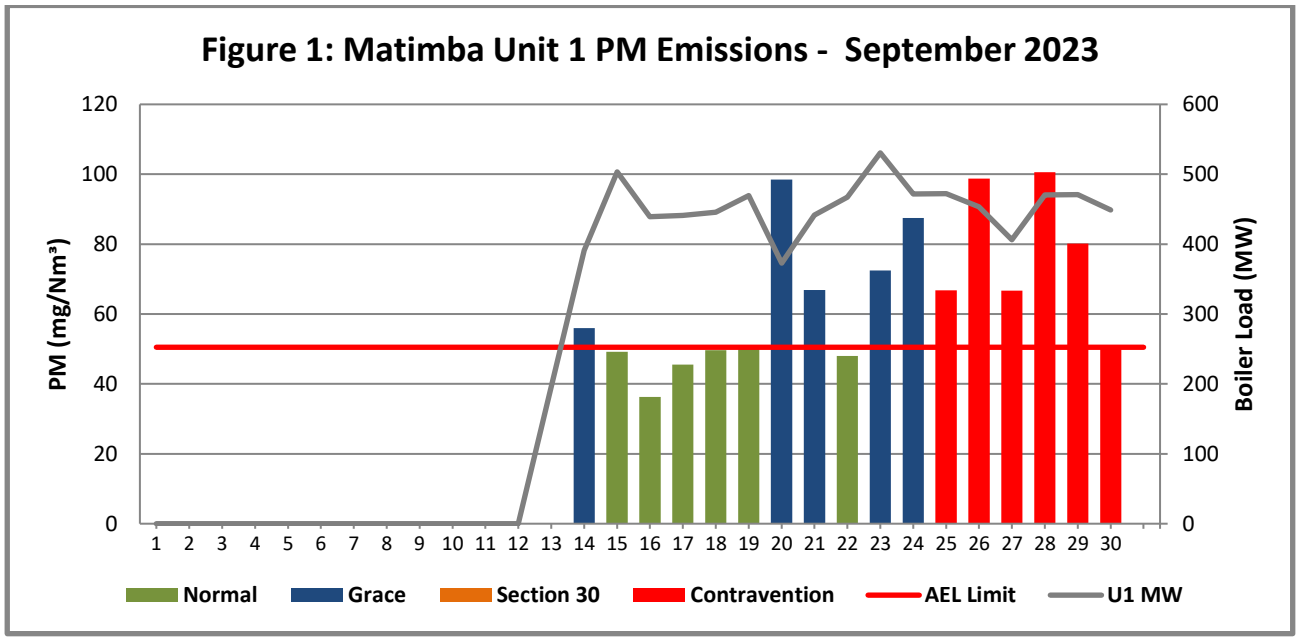


**Figure 1: Particulate matter daily average emissions against emission limit for unit 1 for the month of September 2023**

**Interpretation:**

Unit 1 exceeded the daily particulate emission limit of 50mg/Nm3 on 14,20,21,23 to 30 September 2023. The exceedances of the 25 to 30 September 2023 occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedances were due unavailability of the ash conveyance plant that led to accumulation of ash at the dust handling plant leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields). The investigation into the causes of the exceedances were done and corrective measure put in place to correct the root causes.

**Unit 2 Particulate Emissions**

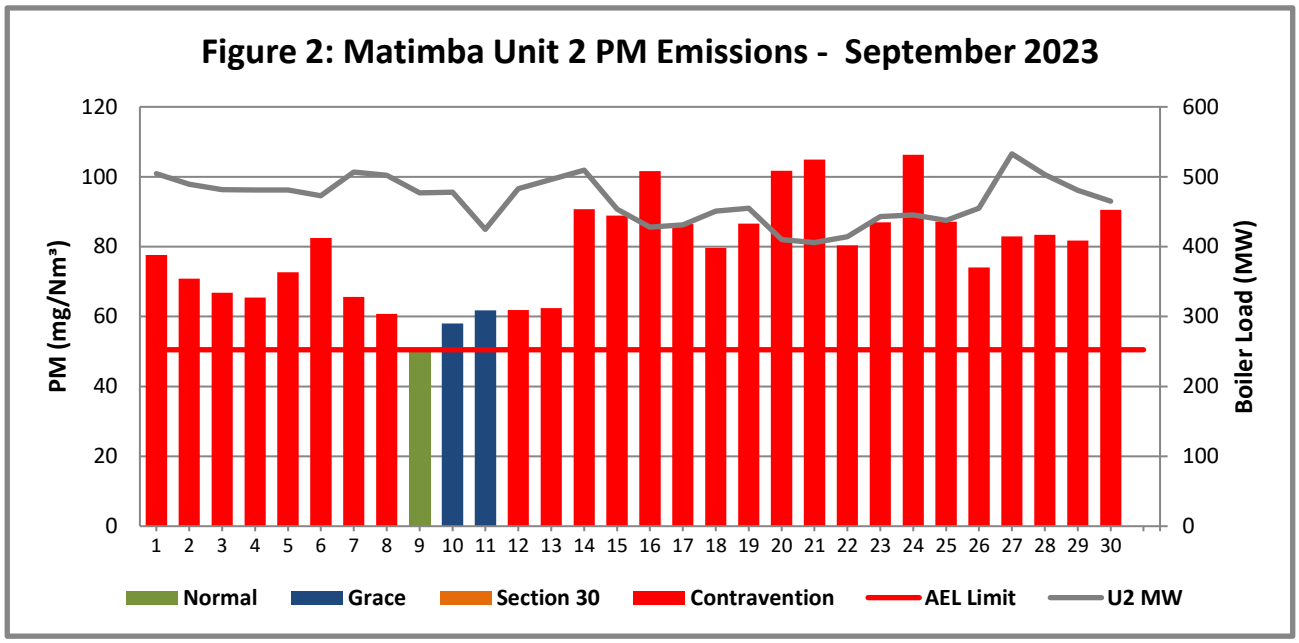


**Figure 2: Particulate matter daily average emissions against emission limit for unit 2 for the month of September 2023**

**Interpretation:**

Unit 2 exceeded the daily particulate emission limit of 50mg/Nm3 on 1 to 8 and 10 to 30 September 2023. The exceedances from the 1 to 8 and 12 to 30 September 2023 occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedances were due unavailability of the ash conveyance plant that led to accumulation of ash at the dust handling plant leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields). The investigation into the causes of the exceedances were done and corrective measure put in place to correct the root causes.

**Unit 3 Particulate Emissions**

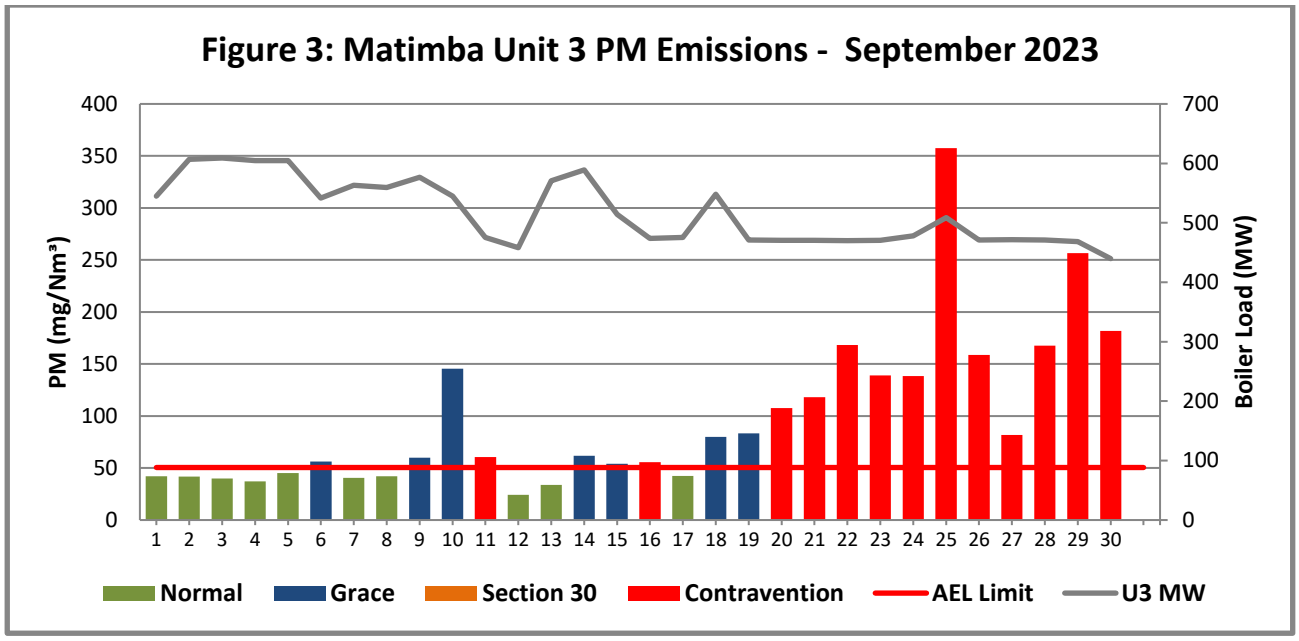


**Figure 3: Particulate matter daily average emissions against emission limit for unit 3 for the month of September 2023**

**Interpretation:**

Unit 3 Particulate matter exceeded the daily limit of 50 mg/Nm3 on 6,9 to 11,14 to 16 and 18 to 30 September 2023. The exceedances from the 11,16,20 to 30 September 2023 occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedances were due unavailability of the ash conveyance plant that led to accumulation of ash at the dust handling plant leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields). The investigation into the causes of the exceedances were done and corrective measure put in place to correct the root causes.

**Unit 4 Particulate Emissions**

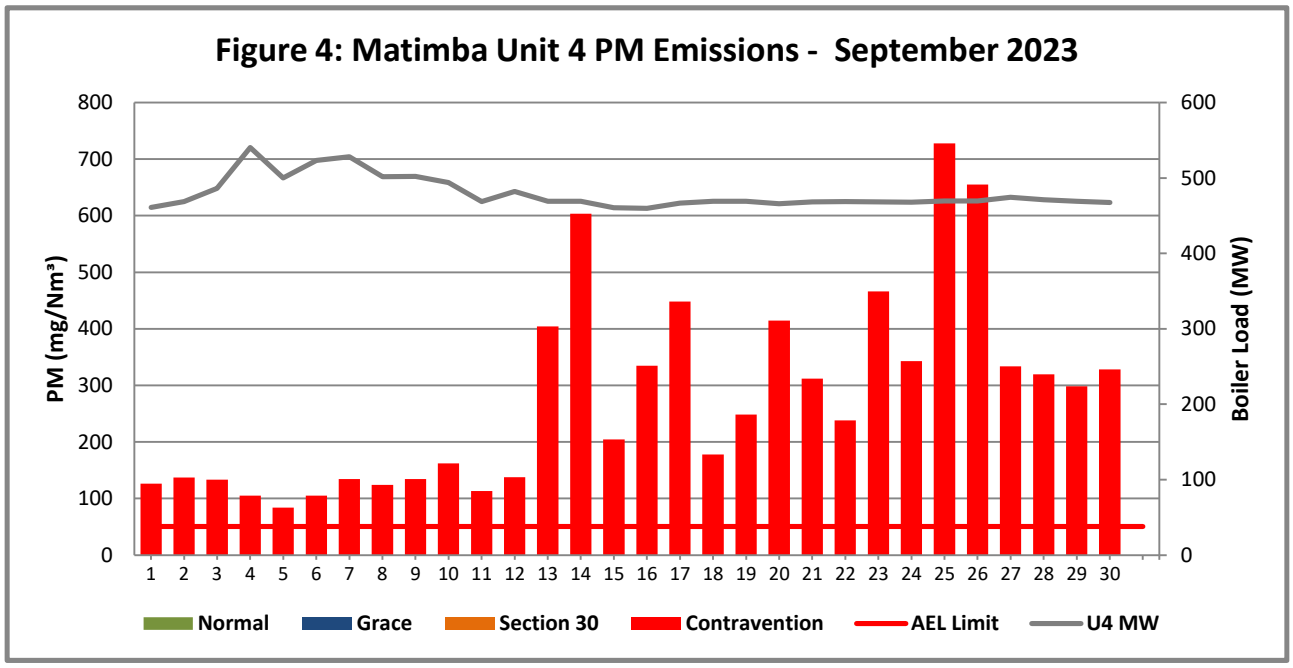


**Figure 4: Particulate matter daily average emissions against emission limit for unit 4 for the month of September 2023**

**Interpretation:**

Unit 4 Particulate matter exceeded the daily limit of 50 mg/Nm$^3$ on 1 to 30 September 2023. All exceedances occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedances were due to defects on the dust handling plants leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields). The investigation into the causes of the exceedances were done and corrective measure put in place to correct the root causes.

**Unit 5 Particulate Emissions**

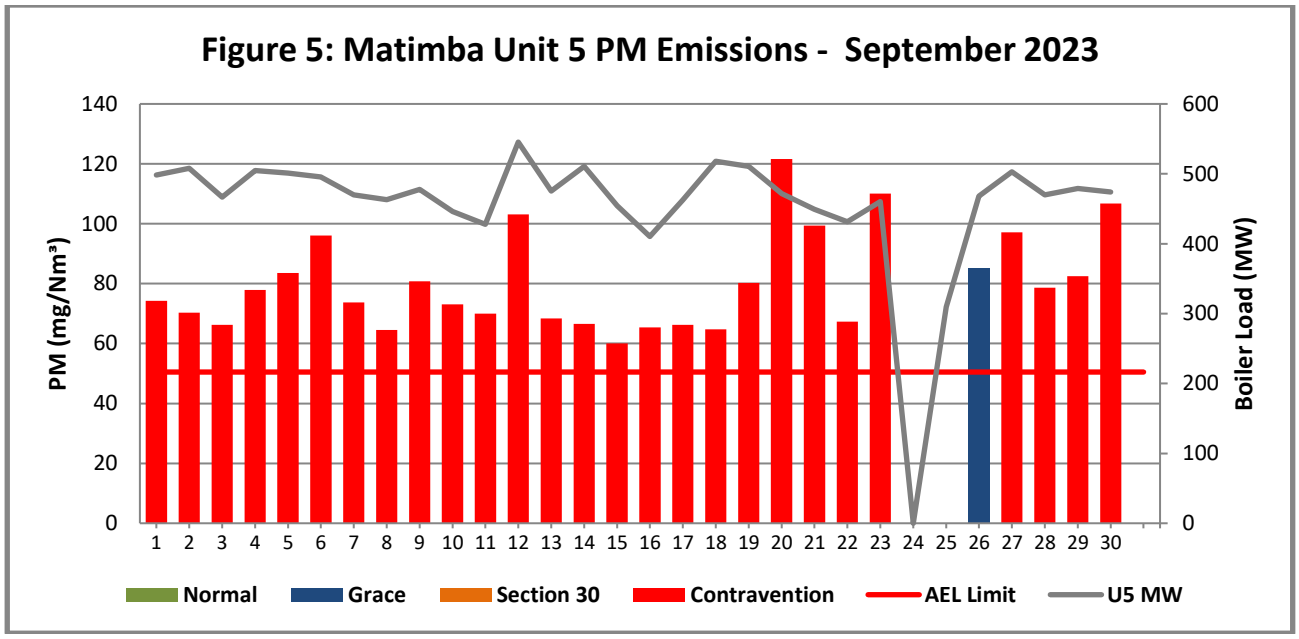


**Figure 5: Particulate matter daily average emissions against emission limit for unit 5 for the month of September 2023**

**Interpretation:**

Unit 5 Particulate matter exceeded the daily limit of 50 mg/Nm$^3$ on 1 to 23 and 26 to 30 September 2023. Exceedances from 1 to 23 and 27 to 30 September 2023 occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedances were due to defects on the dust handling plants leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields). The investigation into the causes of the exceedances were done and corrective measure put in place to correct the root causes.

**Unit 6 Particulate Emissions**

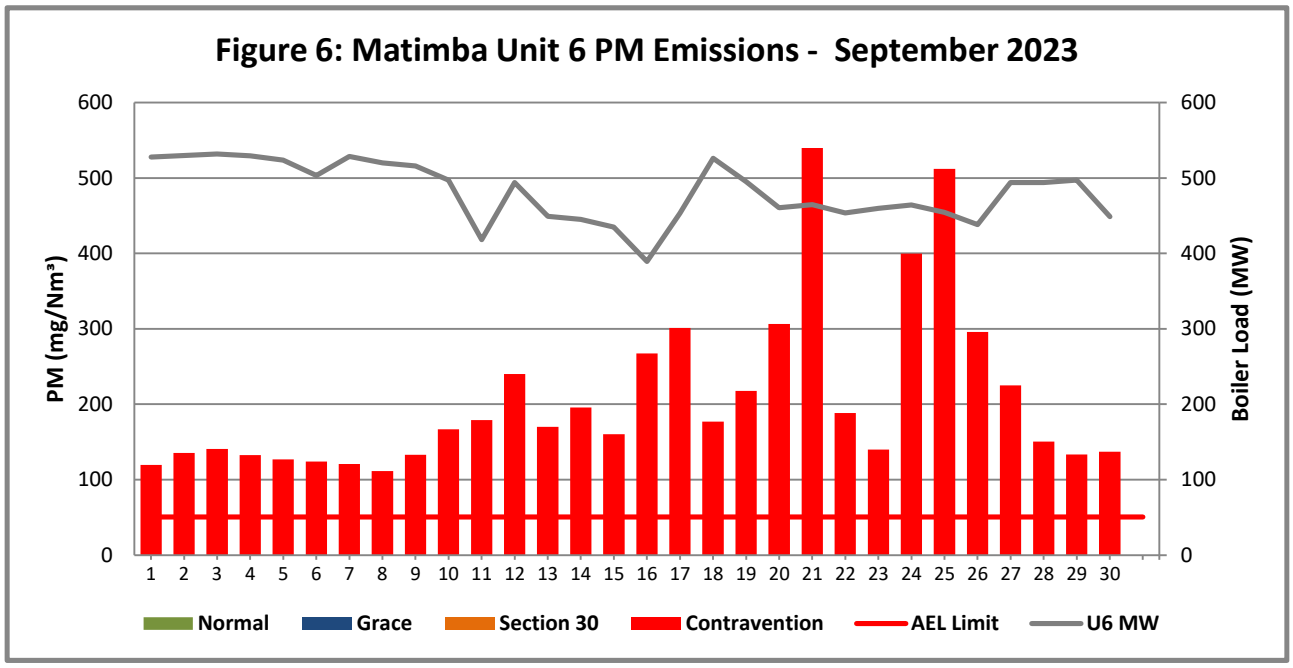


**Figure 6: Particulate matter daily average emissions against emission limit for unit 6 for the month of September 2023**

**Interpretation:**

Unit 6 Particulate matter exceeded the daily limit of 50 mg/Nm3 on 1 to 30 September 2023. All exceedances occurred outside of the 48-hour grace period and were recorded on the Eskom incident management process as non-compliance to the Atmospheric Emissions Licence. The exceedance was due to unavailability of the ash conveyance system that led to ash accumulation on the dust handling plants leading to high hopper levels within the flue gas cleaning system and reducing the efficiency of the abatement technology (electrostatic precipitator fields.

### 2.3.2 Gaseous Emissions

Gaseous emissions analyzers calibration for all 6 units were performed in September 2023 as per the AEL requirements. The quality assurance spot tests were performed on the monitors in July 2023.

**Unit 1 $SO_2$ Emissions**

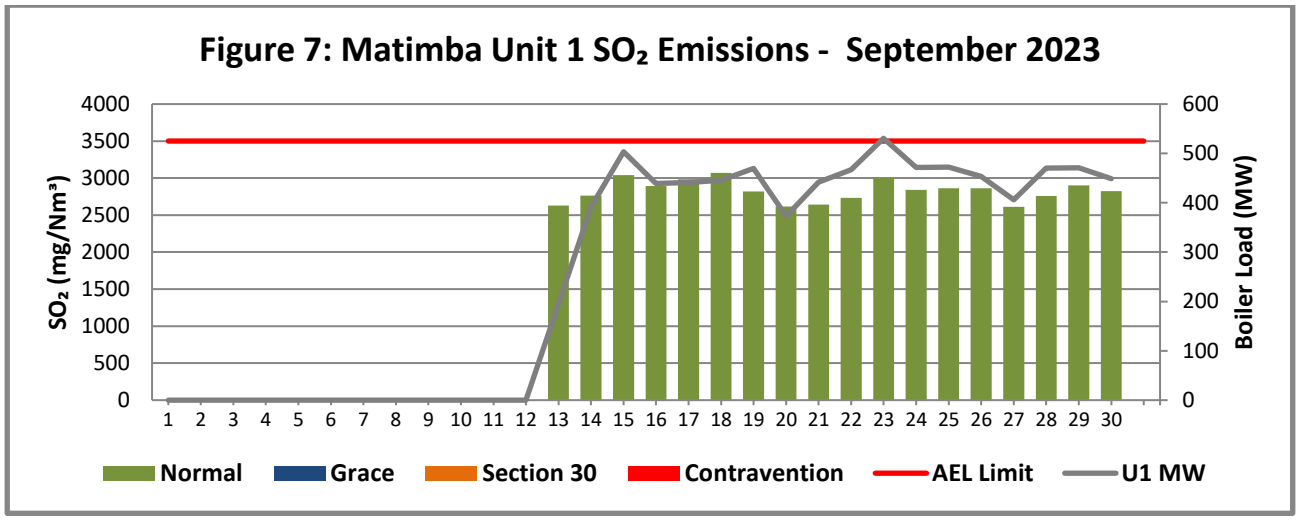


**Figure 7: SO2 daily average emissions against emission limit for unit 1 for the month of September 2023**

**Interpretation:**

All daily averages below $SO_2$ emission monthly limit of 3500 mg/$Nm^3$.

. **Unit 2 $SO_2$ Emissions**

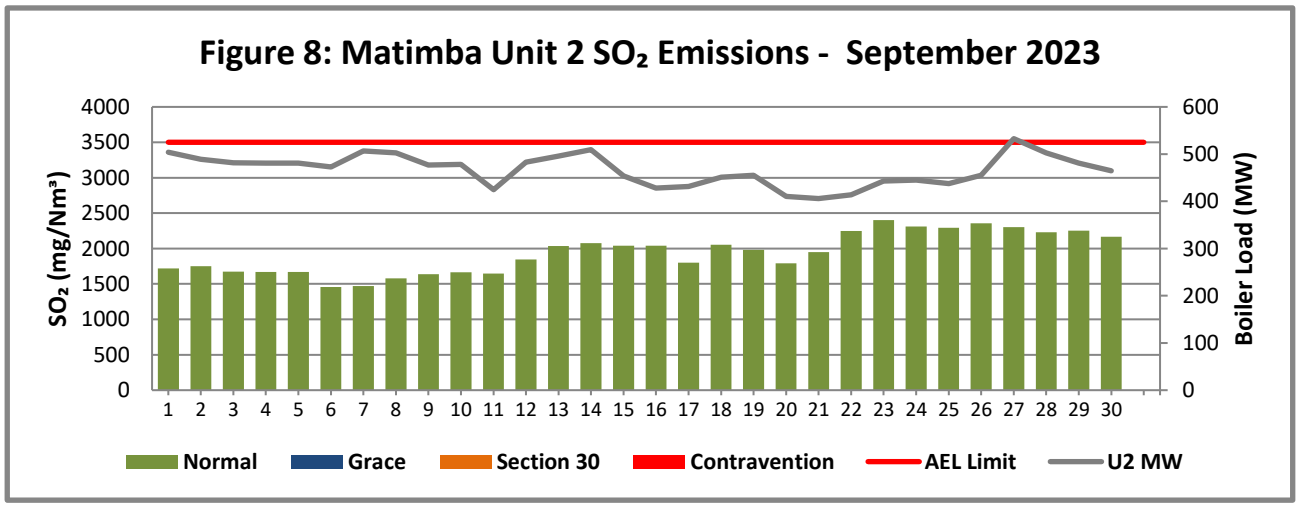


**Figure 8: SO2 daily average emissions against emission limit for unit 2 for the month of September 2023**

**Interpretation:**

All daily averages below $SO_2$ emission monthly limit of 3500 mg/$Nm^3$

**Unit 3 $SO_2$ Emissions**

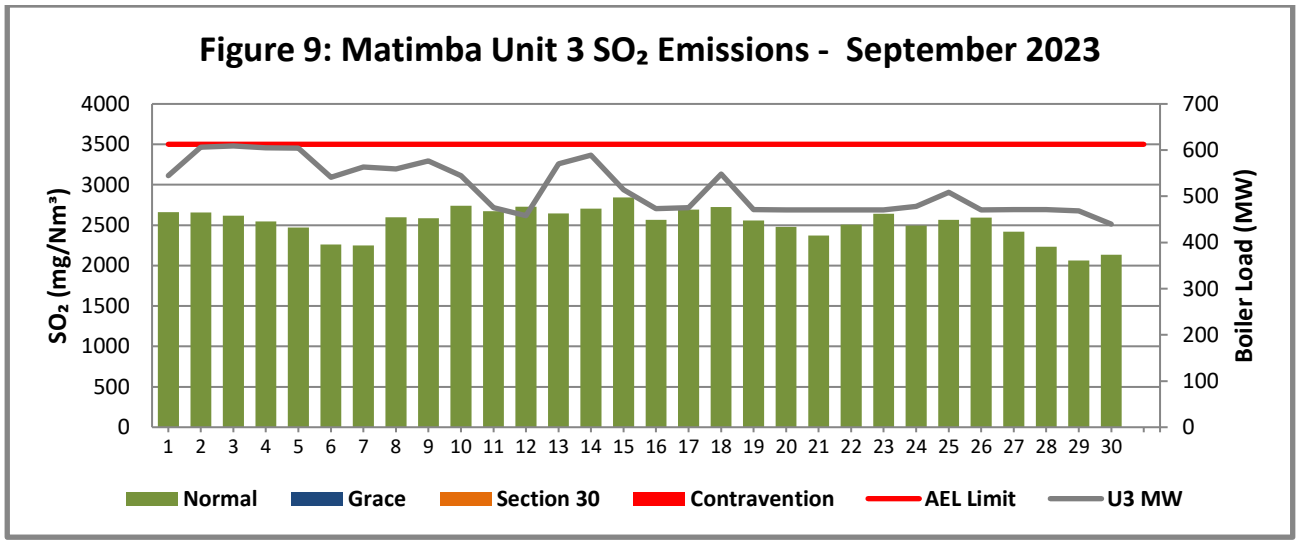


**Figure 9: SO2 daily average emissions against emission limit for unit 3 for the month of September 2023**

**Interpretation:**

All daily averages below $SO_2$ emission monthly limit of 3500 mg/$Nm^3$.

**Unit 4 $SO_2$ Emissions**

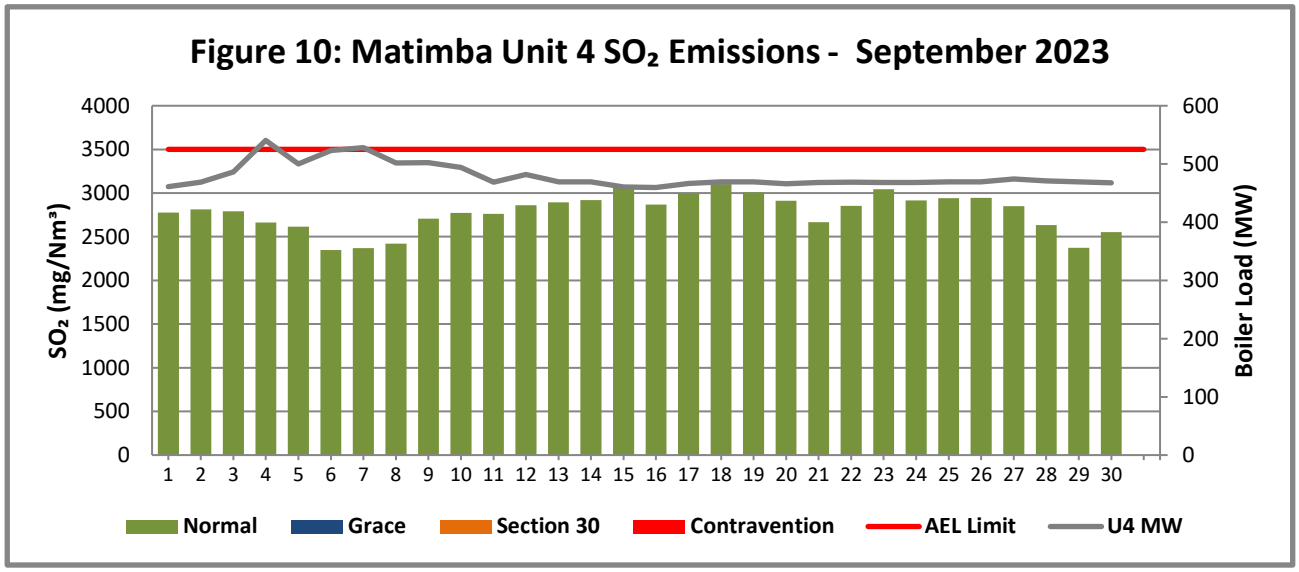


**Figure 10: SO2 daily average emissions against emission limit for unit 4 for the month of September 2023**

**Interpretation:**

All daily averages below $SO_2$ emission monthly limit of 3500 mg/$Nm^3$.

**Unit 5 $SO_2$ Emissions**

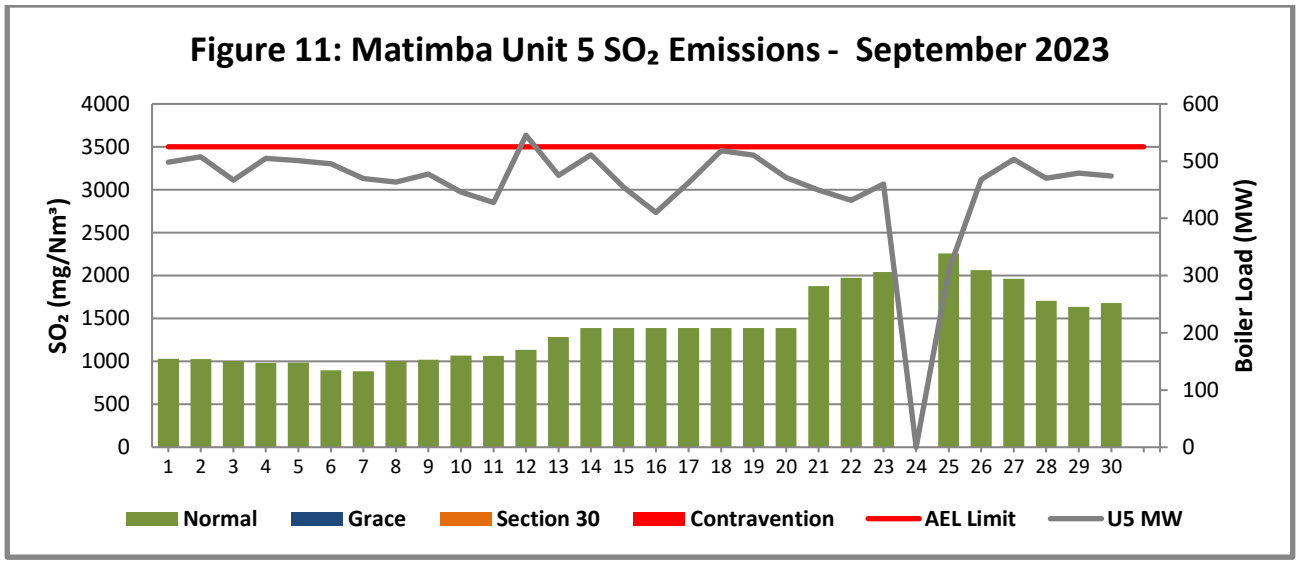


**Figure 11: SO2 daily average emissions against emission limit for unit 5 for the month of September 2023**

**Interpretation:**

All daily averages below $SO_2$ emission monthly limit of 3500 mg/Nm$^3$.

**Unit 6 $SO_2$ Emissions**

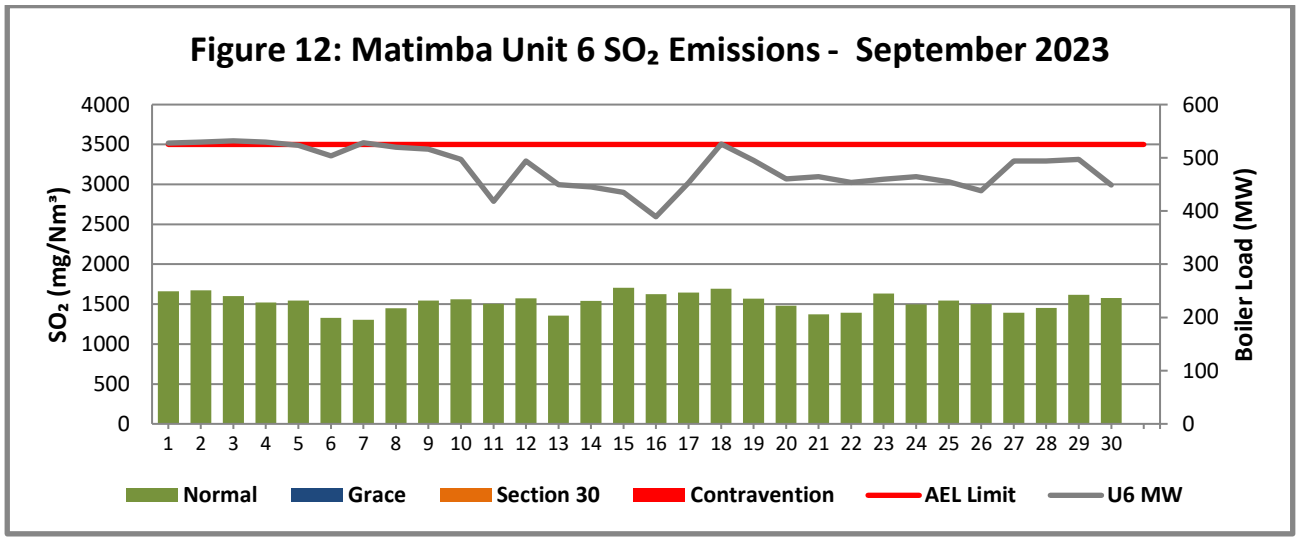


**Figure 12: SO2 daily average emissions against emission limit for unit 6 for the month of September 2023**

**Interpretation:**

All daily averages remained below $SO_2$ emission monthly limit of 3500 mg/Nm$^3$.

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**Unit 1 $NO_x$ Emissions**

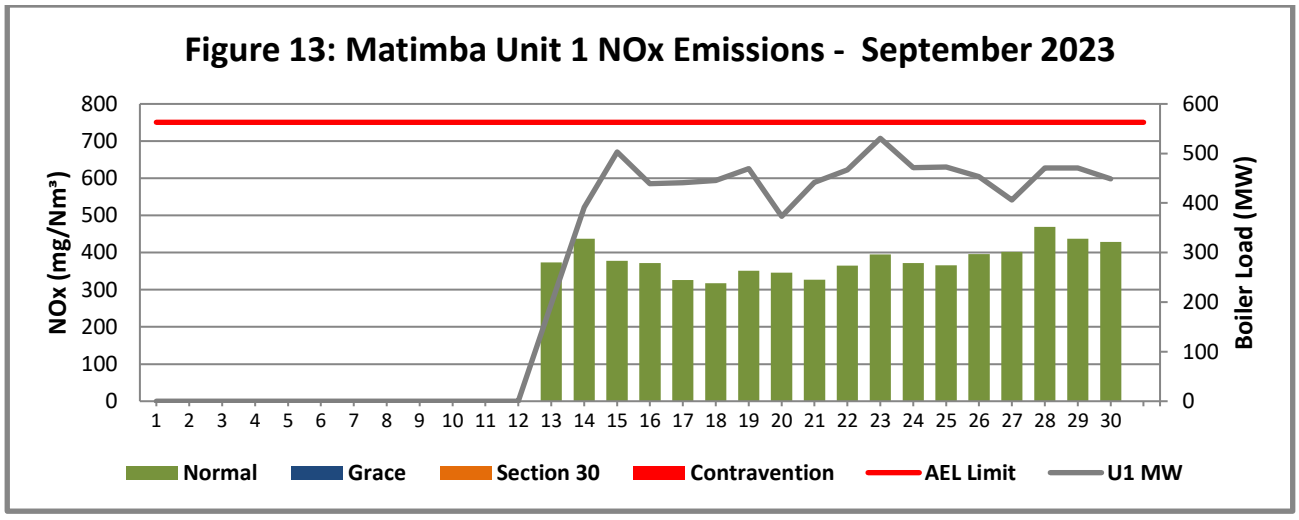


**Figure 13: NOx daily average emissions against emission limit for unit 1 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

**Unit 2 $NO_x$ Emissions**

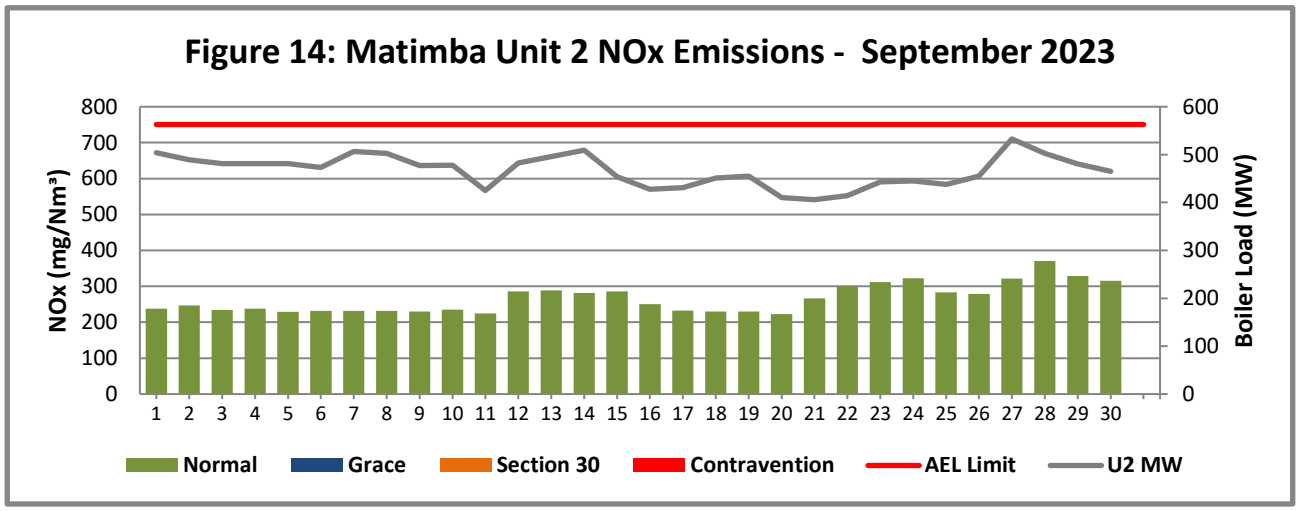


**Figure 14: NOx daily average emissions against emission limit for unit 2 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

**Unit 3 $NO_x$ Emissions**

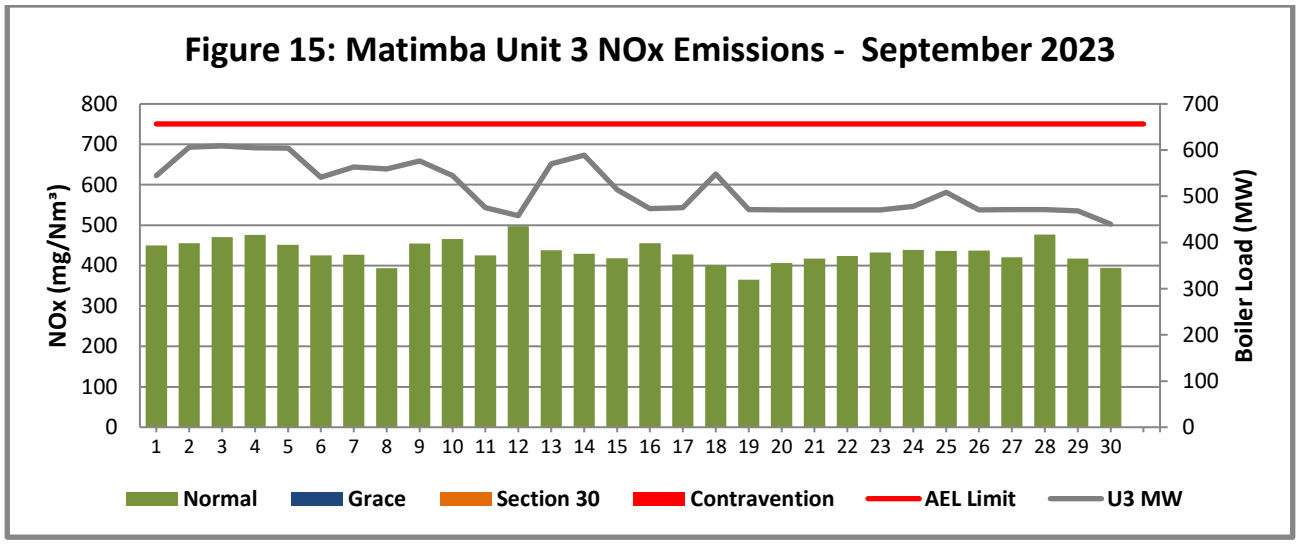


**Figure 15: NOx daily average emissions against emission limit for unit 3 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

**Unit 4 $NO_x$ Emissions**

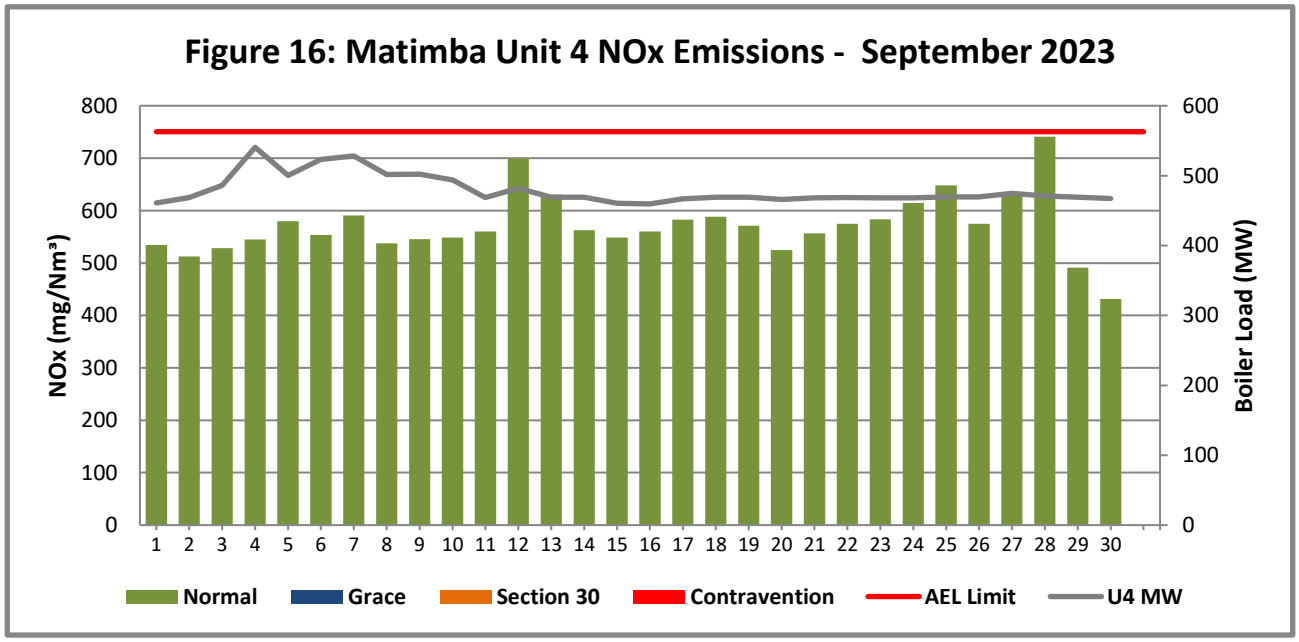


**Figure 16: NOx daily average emissions against emission limit for unit 4 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

**Unit 5 $NO_x$ Emissions**

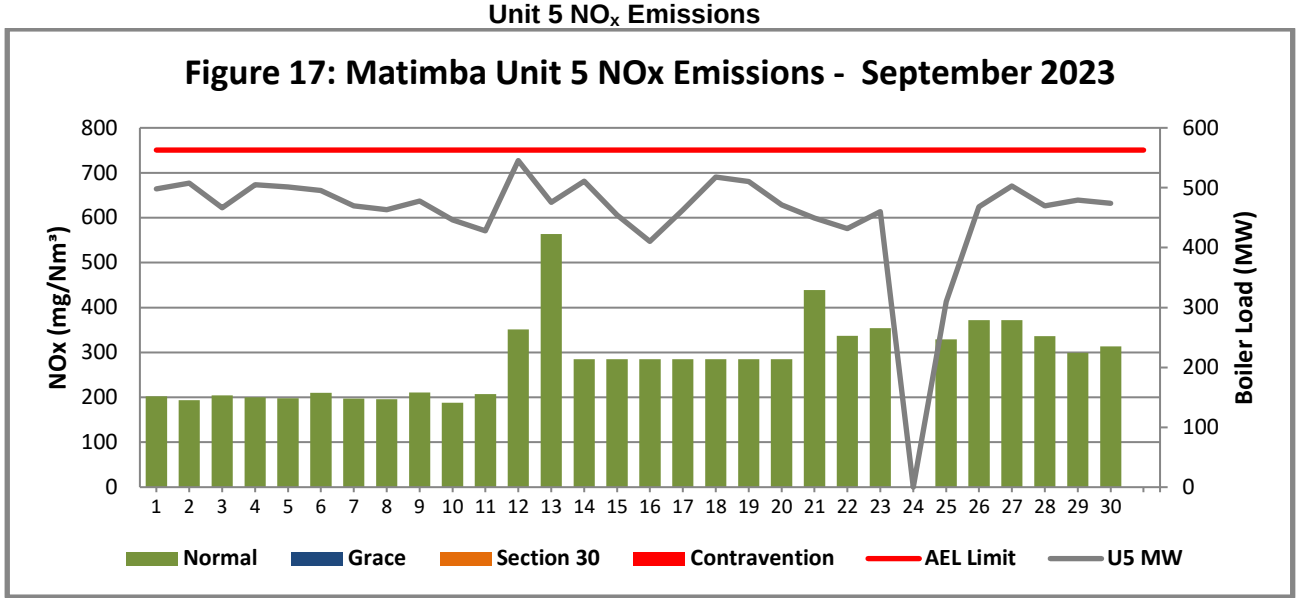


**Figure 17: NOx daily average emissions against emission limit for unit 5 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

**Unit 6 $NO_x$ Emissions**

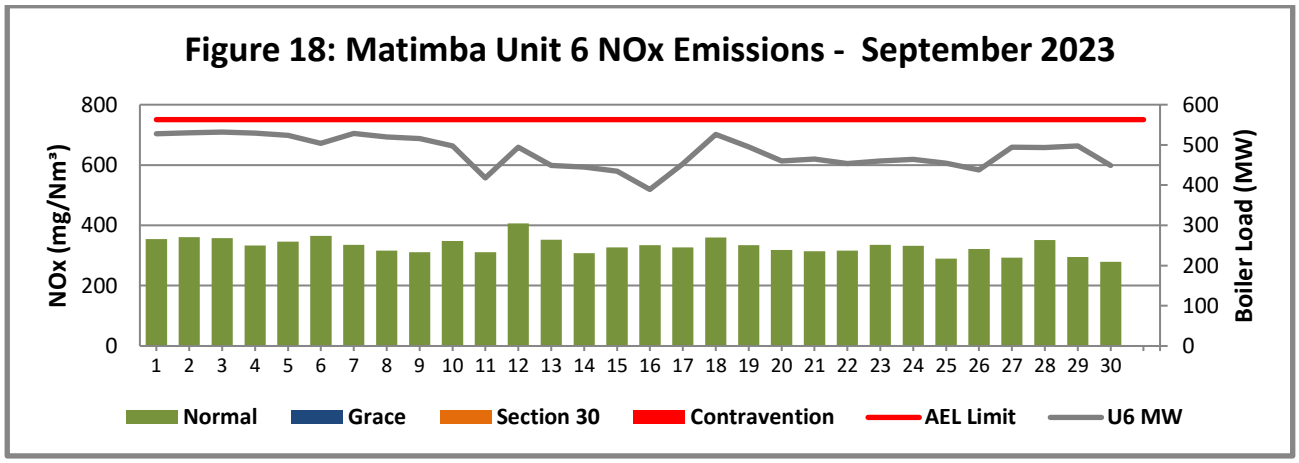


**Figure 18 NOx daily average emissions against emission limit for unit 6 for the month of September 2023**

**Interpretation:**

All daily averages below NOx emission limit of 750 mg/Nm$^3$.

### 2.3.3 Total Volatile Organic Compounds

**Table 4:** Total volatile compound estimates

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**CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS***

| | |
|---|---|
| **Date:** | Monday, 23 October 2023 |
| **Station:** | Matimba Power Station |
| **Province:** | Limpopo Province |
| **Tank no.** | 1-4 |
| **Description:** | Outdoor fuel oil storage tank |
| **Tank Type:** | Vertical fixed roof (vented to atmosphere) |
| **Material stored:** | Fuel Oil 150 |

**MONTHLY INPUT DATA FOR THE STATION**

**Please only insert relevant monthly data inputs into the *blue cells* below**
**Choose from a dropdown menu in the *green cells***
**The total VOC emissions for the month are in the *red cells***

IMPORTANT: Do not change ***any*** other cells without consulting the AQ CoE

| **MONTH:** | **September** | |
|---|---|---|
| **GENERAL INFORMATION:** | **Data** | **Unit** |
| **Total number of fuel oil tanks:** | 4 | NA |
| **Height of tank:** | 13,34 | m |
| **Diameter of tank:** | 9,53 | m |
| **Net fuel oil throughput for the month:** | ***1020,886*** | |
| **Molecular weight of the fuel oil:** | 166,00 | Lb/lb-mole |
| **METEROLOGICAL DATA FOR THE MONTH** | **Data** | **Unit** |
| **Daily average ambient temperature** | 23,43 | °C |
| **Daily maximum ambient temperature** | 31,06 | °C |
| **Daily minimum ambient temperature** | 16,52 | °C |
| **Daily ambient temperature range** | 14,54 | °C |
| **Daily total insolation factor** | 4,41 | kWh/m²/day |
| **Tank paint colour** | ***Grey/medium*** | NA |
| **Tank paint solar absorbtance** | 0,68 | NA |
| **FINAL OUTPUT:** | **Result** | **Unit** |
| **Breathing losses:** | 0,54 | kg/month |
| **Working losses:** | 0,03 | kg/month |
| ***TOTAL LOSSES (Total TVOC Emissions for the month):*** | **0,57** | **kg/month** |

*Calculations performed on this spreadsheet are taken from the USEPA AP-42- Section 7.1 Organic Liquid Storage Tanks - January 1996. This spreadsheet is derived from materials provided by Jimmy Peress, PE, Tritech Consulting Engineers, 85-93 Chevy Chase Street, Jamaica, NY 11432 USA, Tel - 718-454-3920, Fax - 718-454-6330, e-mail - PeressJ@nyc.rr.com.

### 2.3.4 Greenhouse gas ($CO_2$) emissions

$CO_2$ emissions are reported in terms of the Greenhouse gas reporting regulations (GN 43712, GNR. 994/2020) and are not included in the monthly AEL compliance report.

## 2.4 Daily power generated.

**Table 5:** Daily power generated per unit in MWh for the month of September 2023

| Date | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5 | Unit 6 |
|---|---|---|---|---|---|---|
| 2023/09/01 | | 10688,8 | 11828,6 | 9954,42 | 10762,6 | 11397 |
| 2023/09/02 | | 10369,2 | 13236,9 | 10146,9 | 10983,8 | 11464,4 |
| 2023/09/03 | | 10190,3 | 13269,5 | 10505 | 10066,3 | 11516,6 |
| 2023/09/04 | | 10192,7 | 13187,5 | 11718,4 | 10913,3 | 11464,1 |
| 2023/09/05 | | 10183,6 | 13199,9 | 10814,4 | 10830,8 | 11352,2 |
| 2023/09/06 | | 10006,8 | 11839,6 | 11308,2 | 10703,9 | 10891,1 |
| 2023/09/07 | | 10750,5 | 12279,9 | 11499,7 | 10149 | 11475,7 |
| 2023/09/08 | | 10676,7 | 12136 | 10894,5 | 9989,32 | 11285,8 |
| 2023/09/09 | | 10113,8 | 12556 | 10878,3 | 10291,9 | 11186,8 |
| 2023/09/10 | | 10165,1 | 11890,6 | 10707,1 | 9615,22 | 10765 |
| 2023/09/11 | | 8982,37 | 10308 | 10126,1 | 9210,33 | 8997,33 |
| 2023/09/12 | | 10272,2 | 9973 | 10452,6 | 11819,3 | 10646,2 |
| 2023/09/13 | 326,499 | 10566,6 | 12440,6 | 10171,1 | 10329,8 | 9739,08 |
| 2023/09/14 | 8456,93 | 10839 | 12899,6 | 10167,8 | 11039,1 | 9548,06 |
| 2023/09/15 | 10981,4 | 9598,78 | 11199,8 | 9960,37 | 9803,93 | 9373,31 |
| 2023/09/16 | 9573,1 | 9009,23 | 10259,2 | 9921,33 | 8843,28 | 8376,91 |
| 2023/09/17 | 9641,81 | 9115,14 | 10336,6 | 10108,3 | 9955,41 | 9743,59 |
| 2023/09/18 | 9741,74 | 9552,55 | 11942,6 | 10184,8 | 11201,2 | 11370,7 |
| 2023/09/19 | 10334,7 | 9629,51 | 10235,4 | 10188,6 | 11034,2 | 10694,4 |
| 2023/09/20 | 8042,96 | 8642,25 | 10205,2 | 10090,9 | 10181 | 5371,54 |
| 2023/09/21 | 9674,42 | 8549,81 | 10207,8 | 10147,7 | 9692,44 | 9997,78 |
| 2023/09/22 | 10154 | 8716,46 | 10195,7 | 10161,3 | 9333,59 | 9804,95 |
| 2023/09/23 | 11672,4 | 9348,09 | 10194,4 | 10145,8 | 4737,86 | 9874,26 |
| 2023/09/24 | 10317,8 | 9412,65 | 10358,5 | 10143,8 | | 10006 |
| 2023/09/25 | 10333,4 | 9260,73 | 11059,5 | 10177,1 | 1472,58 | 9801,12 |
| 2023/09/26 | 9895,09 | 9603,73 | 10230,5 | 10174,2 | 10070 | 9425,41 |
| 2023/09/27 | 8836,29 | 11281,4 | 10258,7 | 10247,4 | 10886,4 | 10654,9 |
| 2023/09/28 | 10284,8 | 10690 | 10249 | 10215,9 | 10177,4 | 10685,2 |
| 2023/09/29 | 10284,8 | 10148,1 | 10202,9 | 10184,8 | 10364,9 | 10733,8 |
| 2023/09/30 | 9776,17 | 9797,29 | 9529,97 | 10120,3 | 10238,8 | 9657,22 |

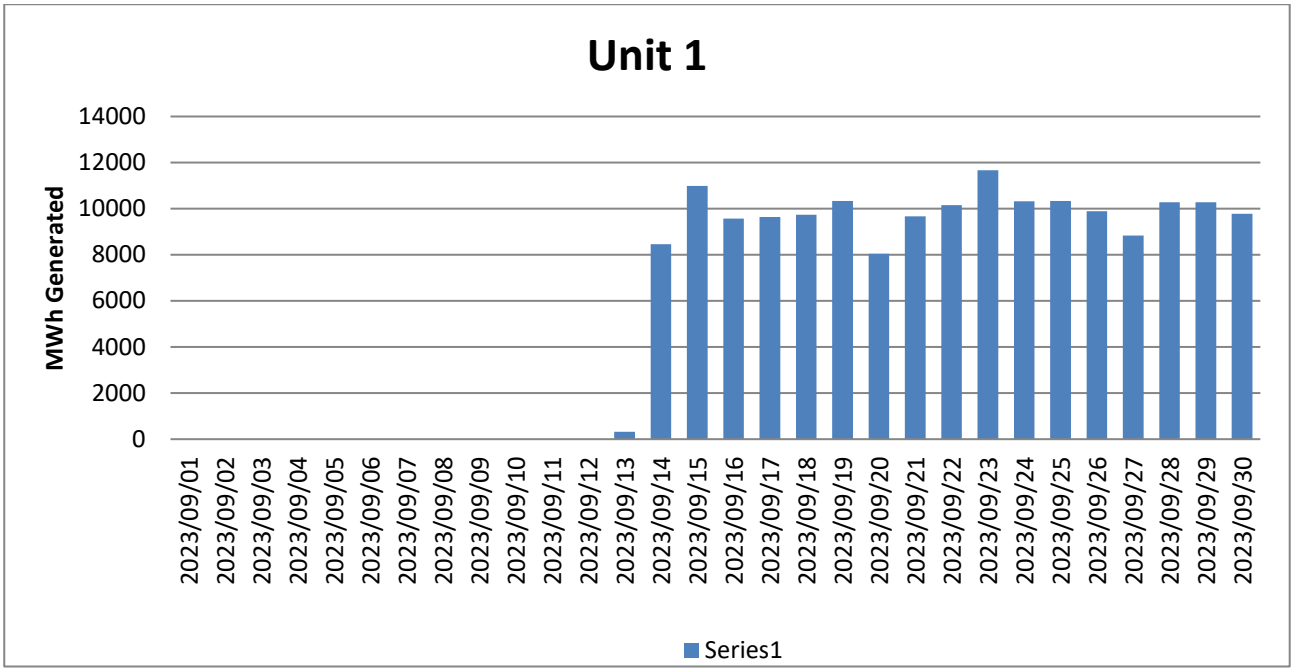


**Figure 19: Unit 1 daily generated power in MWh for the month of September 2023**

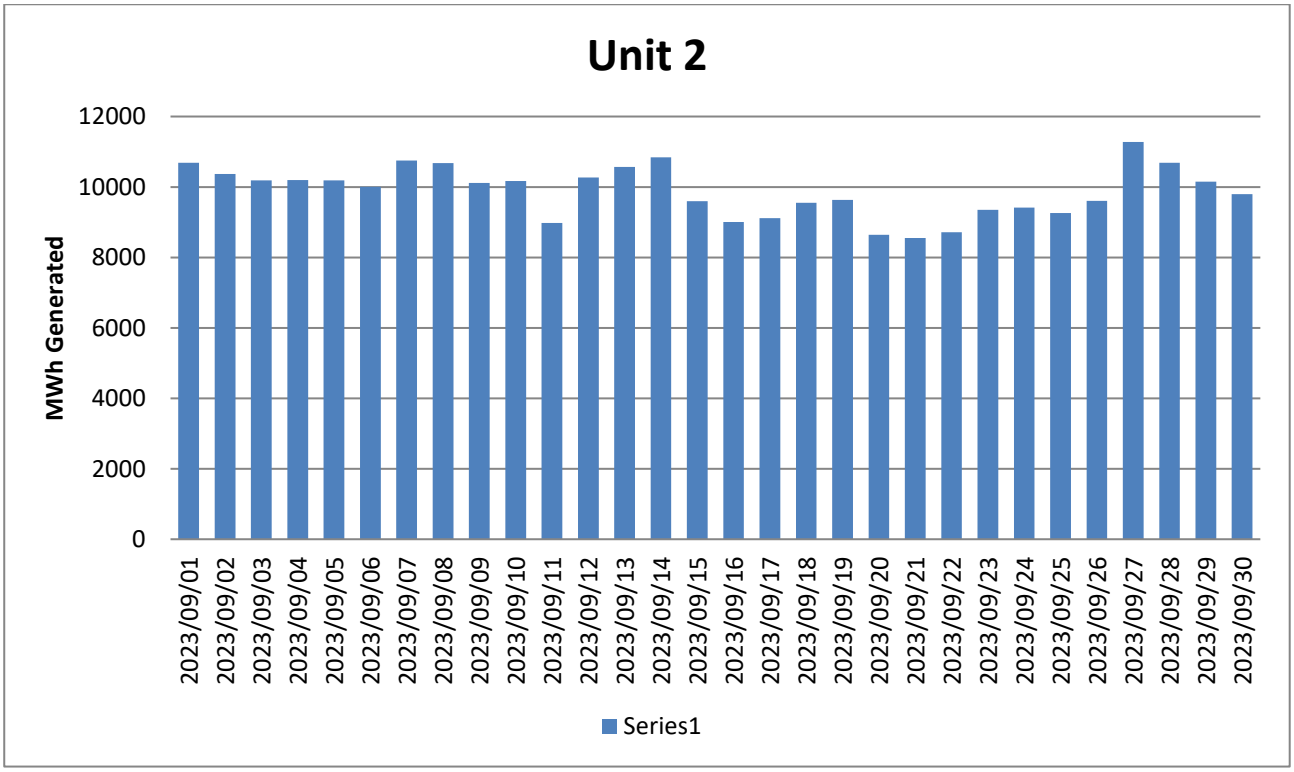


**Figure 20: Unit 2 daily generated power in MWh for the month of September 2023**

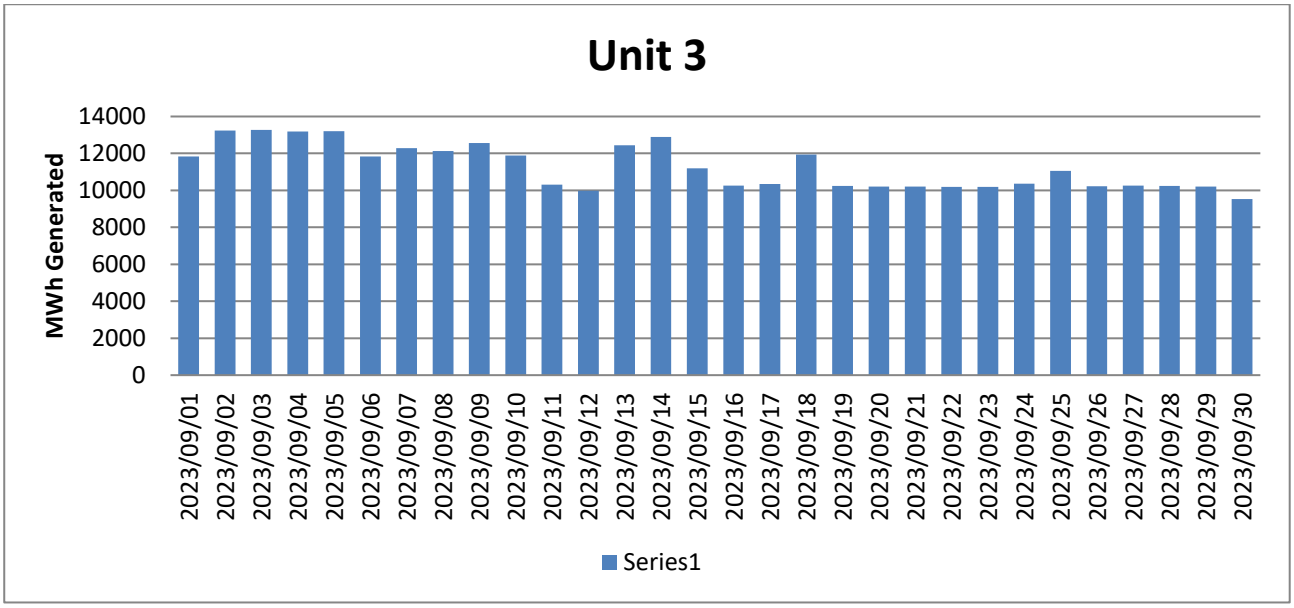


**Figure 21: Unit 3 daily generated power in MWh for the month of September 2023**

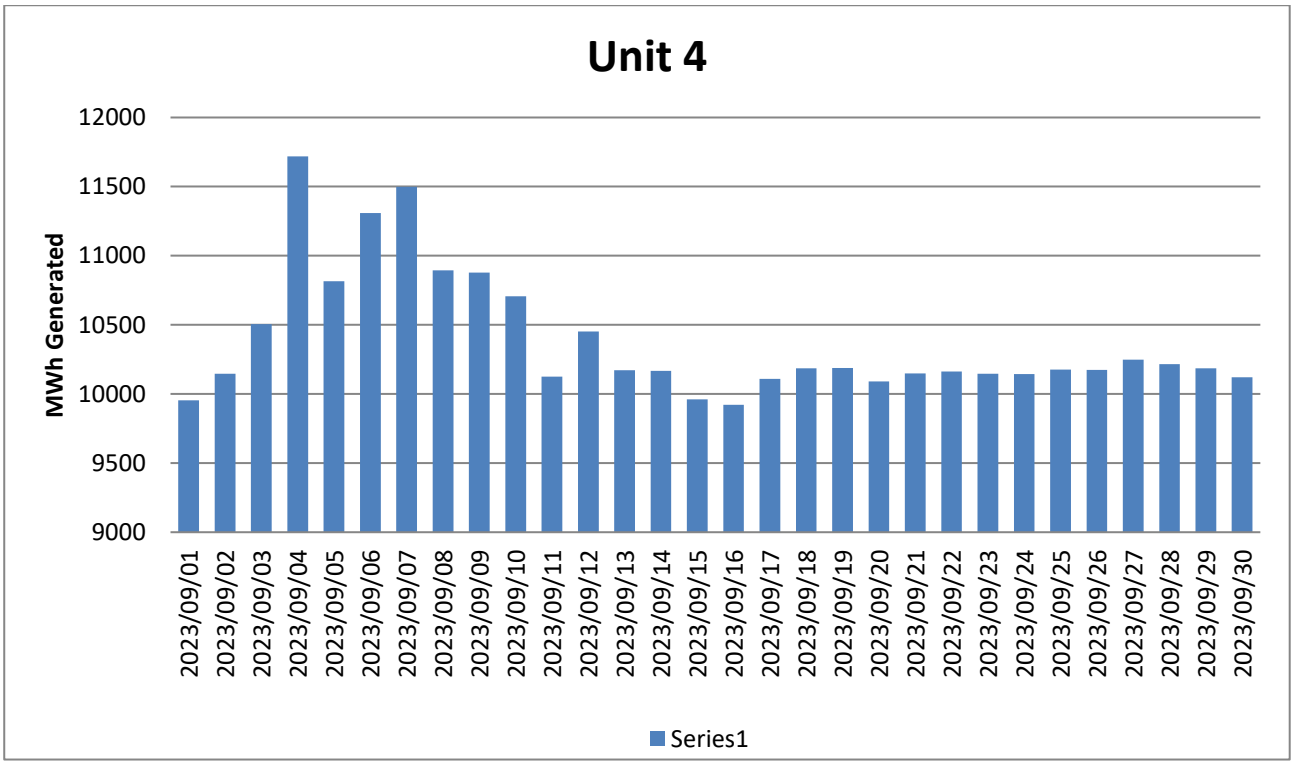


**Figure 22: Unit 4 daily generated power in MWh for the month of September 2023**

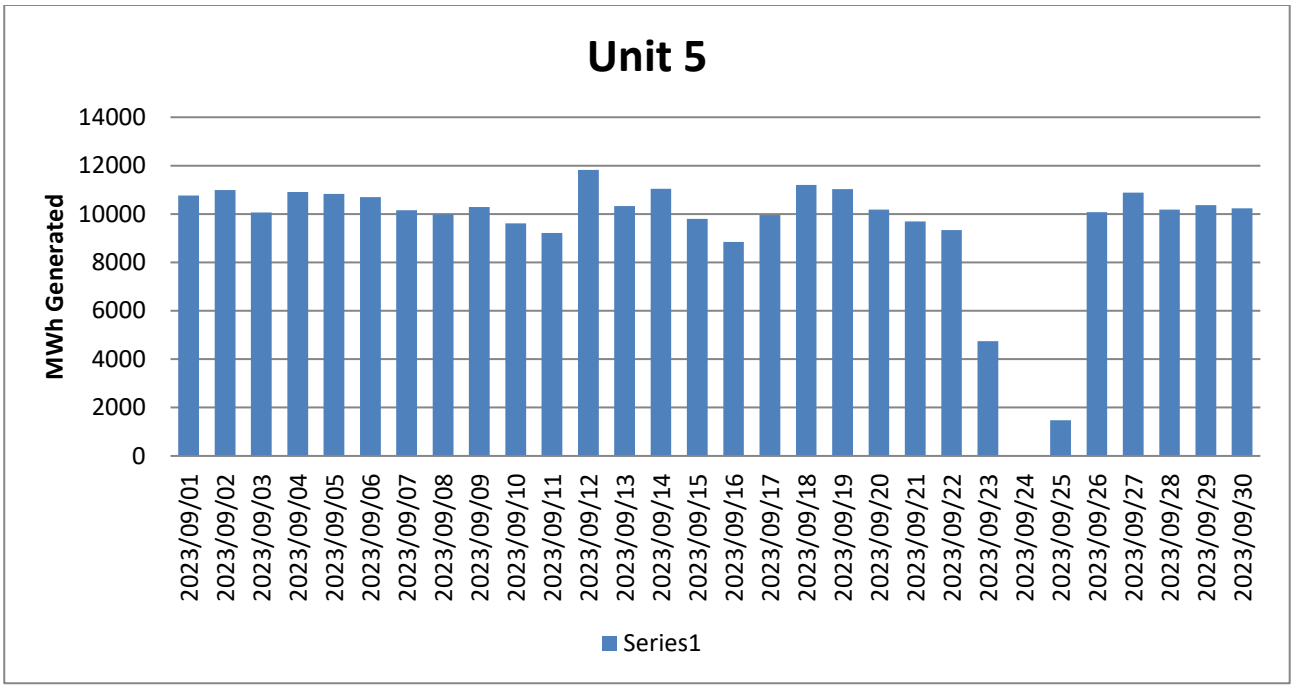


**Figure 23: Unit 5 daily generated power in MWh for the month of September 2023**

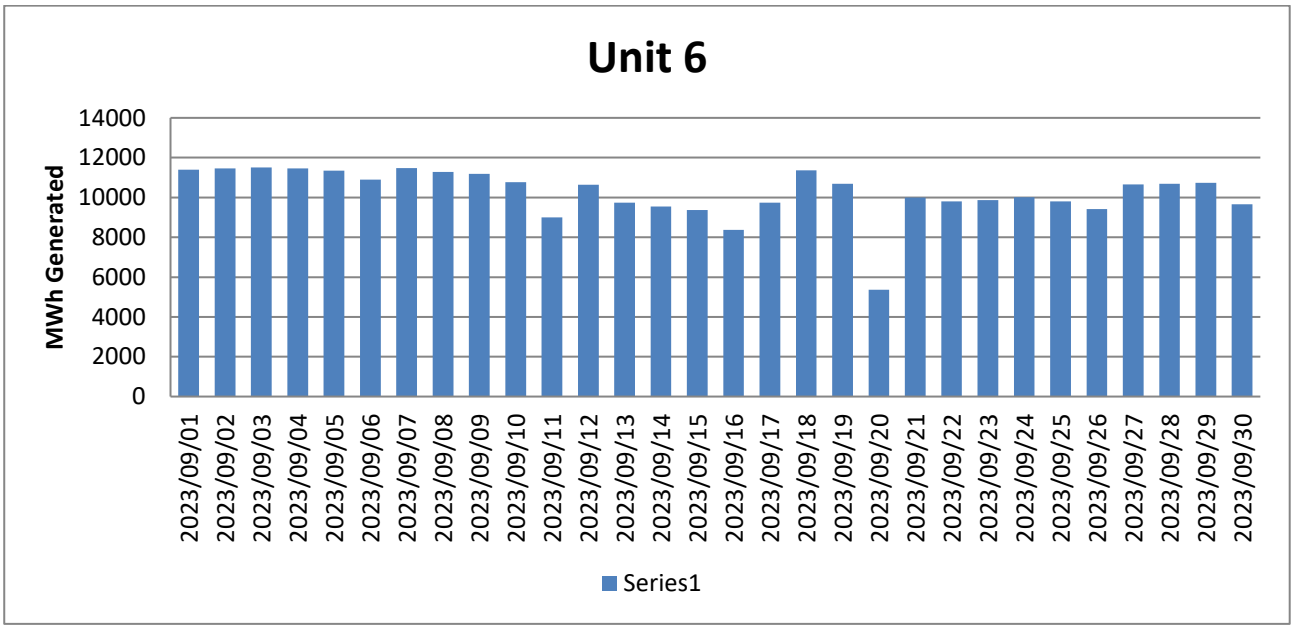


**Figure 24: Unit 6 daily generated power in MWh for the month of September 2023**

## 2.5 Pollutant Tonnages

The emitted pollutant tonnages for September 2023 are provided in table 6.

**Table 6:** Pollutant tonnages for the month of September 2023

| Associated Unit/Stack | PM (tons) | SO2 (tons) | NOx (tons) |
|---|---|---|---|
| Unit 1 | 73.1 | 3 256.4 | 438.0 |
| Unit 2 | 202.2 | 4 958.6 | 679.7 |
| Unit 3 | 228.3 | 5 818.2 | 998.2 |
| Unit 4 | 166.5 | 4 900.6 | 1 009.7 |
| Unit 5 | 138.7 | 2 424.1 | 506.2 |
| Unit 6 | 58.9 | 2 875.6 | 621.9 |
| SUM | 867.7 | 24 233.6 | 4 253.8 |

## 2.6 Operating days in compliance to PM AEL Limit

**Table 7: Operating days in compliance with PM AEL limit of September 2023**

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average PM (mg/Nm³) |
|---|---|---|---|---|---|---|
| Unit 1 | 6 | 5 | 0 | 6 | 11 | 66.3 |
| Unit 2 | 1 | 2 | 0 | 27 | 29 | 79.0 |
| Unit 3 | 10 | 7 | 0 | 13 | 20 | 100.4 |
| Unit 4 | 0 | 0 | 0 | 30 | 30 | 278.5 |
| Unit 5 | 0 | 1 | 0 | 27 | 28 | 80.5 |
| Unit 6 | 0 | 0 | 0 | 30 | 30 | 208.2 |
| **SUM** | **17** | **15** | **0** | **133** | **148** | |

## 2.7 Operating days in compliance to SOx AEL Limit

**Table 8: Operating days in compliance with SOx AEL limit of September 2023**

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average $SO_2$ (mg/Nm³) |
|---|---|---|---|---|---|---|
| Unit 1 | 18 | 0 | 0 | 0 | 0 | 2 825.2 |
| Unit 2 | 30 | 0 | 0 | 0 | 0 | 1 937.3 |
| Unit 3 | 30 | 0 | 0 | 0 | 0 | 2 533.9 |
| Unit 4 | 30 | 0 | 0 | 0 | 0 | 2 781.5 |
| Unit 5 | 29 | 0 | 0 | 0 | 0 | 1 390.3 |
| Unit 6 | 30 | 0 | 0 | 0 | 0 | 1 528.8 |
| **SUM** | **167** | **0** | **0** | **0** | **0** | |

## 2.8 Operating days in compliance to NOx AEL Limit

**Table 9: Operating days in compliance with NOx AEL limit of September 2023**

| Associated Unit/Stack | Normal | Grace | Section 30 | Contravention | Total Exceedance | Average NOx (mg/Nm³) |
|---|---|---|---|---|---|---|
| Unit 1 | 18 | 0 | 0 | 0 | 0 | 381.0 |
| Unit 2 | 30 | 0 | 0 | 0 | 0 | 265.8 |
| Unit 3 | 30 | 0 | 0 | 0 | 0 | 434.2 |
| Unit 4 | 30 | 0 | 0 | 0 | 0 | 571.8 |
| Unit 5 | 29 | 0 | 0 | 0 | 0 | 285.2 |
| Unit 6 | 30 | 0 | 0 | 0 | 0 | 331.1 |
| **SUM** | **167** | **0** | **0** | **0** | **0** | |

## 2.9 Reference values

**Table 10:** Reference values for data provided, September 2023

| Compound / Parameter | Units of Measure | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5 | Unit 6 |
|---|---|---|---|---|---|---|---|
| Oxygen | % | 6.73 | 6.25 | 5.64 | 7.79 | 6.35 | 6.94 |
| Moisture | % | 3.62 | 3.13 | 3.93 | 2.97 | 2.72 | 2.03 |
| Velocity | m/s | 23.0 | 27.8 | 25.1 | 22.4 | 21.2 | 24.5 |
| Temperature | °C | 137.3 | 121.8 | 129.6 | 132.2 | 123.9 | 164.2 |
| Pressure | mBar | 930.2 | 935.9 | 918.2 | 926.7 | 938.4 | 913.0 |

## 2.10 Continuous Emission Monitors

### 2.10.1 Reliability

Continuous emission monitors were available for more than 80% of the reporting period. The emitted pollutant tonnages for September 2023 are provided in table 6.

**Table 11:** Average percentage (%) availability of monitors for the month of September 2023.

| Associated Unit/Stack | PM | $SO_2$ | NO | $CO_2$ |
|---|---|---|---|---|
| Unit 1 | 99,8 | 99,8 | 99,8 | 99,8 |
| Unit 2 | 100,0 | 97,1 | 96,0 | 96,4 |
| Unit 3 | 98,5 | 99,9 | 99,9 | 99,7 |
| Unit 4 | 97,5 | 96,5 | 96,9 | 96,5 |
| Unit 5 | 100,0 | 72,0 | 55,3 | 28,9 |
| Unit 6 | 99,5 | 98,1 | 98,1 | 98,1 |

### 2.10.2 Changes, downtime, and repairs

**Unit 1**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

**Unit 2**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

**Unit 3**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

**Unit 4**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

**Unit 5**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

**Unit 6**

- No adjustments done on the CEMs.
- No downtime or repairs done on the particulate monitors

### 2.10.3 Sampling dates and times

**Table 12: Dates of last full conducted CEMS verification tests for PM for unit 4 and 6 only**

| **Name of service provider:** | | Stacklabs Environmental Services CC | | |
|---|---|---|---|---|
| **Address of service provider:** | | 10 Chisel Street<br>Boltonia<br>Krugersdorp<br>1739 | | |
| **Stack/ Unit** | **PM** | **$SO_2$** | **NOx** | **$CO_2$** |
| 1 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |
| 2 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |
| 3 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |
| 4 | 2021/07/13 14h31 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |
| 5 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |
| 6 | 2020/09/09 06h41 | New sampling tests in table 13 | New sampling tests in table 13 | New sampling tests in table 13 |

Note: The CEMS verification tests for PM, $SO_2$ and NOx were performed in October 2022 and failed. The spot tests were done in August 2023.

**Table 13:** Dates of last conducted CEMS Spot verification tests for PM, $SO_2$ and NOx (without unit 4 and 6 PMs)

| **Name of service provider:** | | Levego Environmental services | | |
|---|---|---|---|---|
| **Address of service provider:** | | Building R6<br>Pineland site<br>Ardeer Road<br>Modderfontein<br>1645 | | |
| **Stack/ Unit** | **PM** | **$SO_2$** | **NOx** | **$CO_2$** |
| 1 | 2023/08/01 19h33 | 2023/08/01 19:33 | 2023/08/01 19:33 | 2023/08/01 19:33 |
| 2 | 2023/07/29 21:17 | 2023/07/29 21:17 | 2023/07/29 21:17 | 2023/07/29 21:17 |
| 3 | 2023/08/06 03:00 | 2023/08/06 03:00 | 2023/08/06 03:00 | 2023/08/06 03:00 |
| 4 | Dates in table 12 above | 2023/08/04 19:39 | 2023/08/04 19:39 | 2023/08/04 19:39 |
| 5 | 2023/08/05 07:30 | 2023/08/05 07:30 | 2023/08/05 07:30 | 2023/08/05 07:30 |
| 6 | Dates in table 12 above | 2023/08/05 15:52 | 2023/08/05 15:52 | 2023/08/05 15:52 |

Note: The CEMS Spot verification tests for PM, $SO_2$ and NOx were performed in August 2023. PM spot verification test results for units 4 and 6 failed and old curves are still in use.

## 2.11 Units Start-up information

**Table 14:** Start-up information

| **Unit** | 1 | |
|---|---|---|
| **Fires in** | 2023/09/13 | 08h35 |
| **Synchronization with Grid** | 2023/09/13 | 19h40 |
| **Emissions below limit** | 2023/09/14 | 16h02 |
| **Fires in, to synchronization** | 11,5 | HOURS |
| **Synchronization to < Emission limit** | 20,20 | HOURS |

| **Unit** | 5 | |
|---|---|---|
| **Fires in** | 2023/09/25 | 11h10 |
| **Synchronization with Grid** | 2023/09/25 | 17h46 |
| **Emissions below limit** | 2023/09/25 | 20h00 |
| **Fires in, to synchronization** | 6,3 | HOURS |
| **Synchronization to < Emission limit** | 2,20 | HOURS |

| **Unit** | 6 | |
|---|---|---|
| **Fires in** | 2023/09/20 | 12h42 |
| **Synchronization with Grid** | 2023/09/20 | 22h54 |
| **Emissions below limit** | 2023/09/21 | 00h21 |
| **Fires in, to synchronization** | 10,12 | HOURS |
| **Synchronization to < Emission limit** | 1,27 | HOURS |

## 2.12 Emergency generation

**Table 15:** Emergency generation

| | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5 | Unit 6 |
|---|---|---|---|---|---|---|
| **Emergency Generation hours declared by national Control** | 720 | 720 | 720 | 720 | 720 | 720 |
| **Emergency Hours declared including hours after stand down** | | | | | | |
| **Days over the Limit during Emergency Generation** | 9 | 15 | 20 | 21 | 14 | 3 |

During the period under review all Units were on emergency generation in force from 01 September 2023 until 31 September 2023.

## 2.13 Complaints register.

**Table 16:** Complaints

| Source Code/ Name | Root Cause Analysis | Calculation of Impacts/ emissions associated with the incident | Dispersion modelling of pollutants where applicable | Measures implemented to prevent reoccurrence | Date by which measure will be implemented |
|---|---|---|---|---|---|
| Waterberg District Municipality (Air Quality) in response to public complains. | Operational changes -The ashing philosophy was updated to piggybacking format (increasing height of the dump by ashing on top of rehabilitated old ash body); | Fugitive dust fallout results for September 2023 report attached. | N/A | Acquire additional resources to extend the dust suppression with water at the ash dump to cover the piggybacking area. | Completed |
| | | | | Rehabilitation and covering of the exposed areas of the ash dump with topsoil. | March 2024 |

Matimba fugitive dust fallout results for September 2023 report attached.

## 2.14 Air quality improvements and social responsibility conducted.

### 2.14.1 Air quality improvements

None

### 2.14.2 Social responsibility conducted.

None

## 2.15 Ambient air quality monitoring

Ambient air quality monitoring report was not available at the time of publishing this report.

## 2.16 Electrostatic precipitator and Sulphur plant status

**Unit 1**

- 9 fields out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventive maintenance done during the month.

**Unit 2**

- 10 fields out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventative maintenance done during the month.

**Unit 3**

- 1 field out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventative maintenance done during the month.

**Unit 4**

- 5 fields out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventative maintenance done during the month.

**Unit 5**

- 4 fields out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventative maintenance done during the month.

**Unit 6**

- 8 fields out of service, will be repaired during next opportunity.
- No abnormalities on the SO3 plant. Preventative maintenance done during the month.

**SO3 common plant**

- No abnormalities on the sulphur storage plant.

## 2.17 General

**Name and reference number of the monitoring methods used:**

1. Particulate and gas monitoring according to standards
    a. BS EN 14181:2004 - Quality Assurance of Automated Measuring Systems
    b. ESKOM internal standard 240-56242363 Emissions Monitoring and Reporting Standard

**Sampling locations:**

1. Stack one
    a. Particulates:
        i. S23º 40' 2.8" E027º 36' 34.8" 175m from ground level and 75m from the top.
    b. Gas:
        i. S23º 40' 2.8" E027º 36' 34.8" 100m from ground level and 150m from the top.
    c. Stack height
        i. 250 meter consist of 3 flues
2. Stack two
    a. Particulates:
        i. S23º 40' 14.8" E027º 36' 47.5" 175m from ground level and 75m from the top.
    b. Gas:
        i. S23º 40' 14.8" E027º 36' 47.5" 100m from ground level and 150m from the top.
    c. Stack height
        i. 250 meter consist of 3 flues

# 3. Attachments

None

# 4. Report Conclusion

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

Hoping the above will meet your satisfaction.

I hereby declare that the information in this report is correct.

Yours sincerely

Wikus van Rensburg

GENERAL MANAGER: MATIMBA POWER STATION