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 Gert Sibande District Municipality  
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Date: 06 May 2021

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Dear Mr. Hlanyane

## MAJUBA POWER STATION'S MONTHLY EMISSIONS REPORT FOR THE MONTH OF APRIL 2021

This serves as the monthly report required in terms of Majuba Power Station's Atmospheric Emission License (MPS/0014/2019/F03) under section 7 routine reporting and record keeping. The emissions are for the month of April 2021. Verified emissions of particulates are included. SO<sub>2</sub> and NO<sub>x</sub> (as NO<sub>2</sub>) emissions are included for all units. Greenhouse gasses are excluded as per the agreement reached between Eskom and the Department of Environmental, Forestry and Fisheries in the first quarter of 2017/18 financial year's MINTEC and MINMEC management meeting.

### Raw Materials and Products

**Table 1. Quantity of Raw Materials and Products used/produced for the month of April 2021**

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of April 2021
	Coal	Tons/month	1 800 000	1 051 923
	Fuel Oil	Tons/month	6 000	10 039
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity - MW)	Production Rate in Month of April 2021
	Energy	GWh	4 110	1977
	Ash	Tons/month	Not stated in the license	288 227

### Abatement Technology

**Table 2. Abatement Equipment Control Technology for the month of April 2021**

Associated Unit	Technology Type	Actual Utilisation (%) for the month of April 2021	*Minimum Control Efficiency (%)
Unit 1	Fabric Filter Plant	100	99.99%
Unit 2	Fabric Filter Plant	100	99.95%
Unit 3	Fabric Filter Plant	100	99.93%
Unit 4	Fabric Filter Plant	100	99.96%
Unit 5	Fabric Filter Plant	100	99.90%
Unit 6	Fabric Filter Plant	100	99.99%

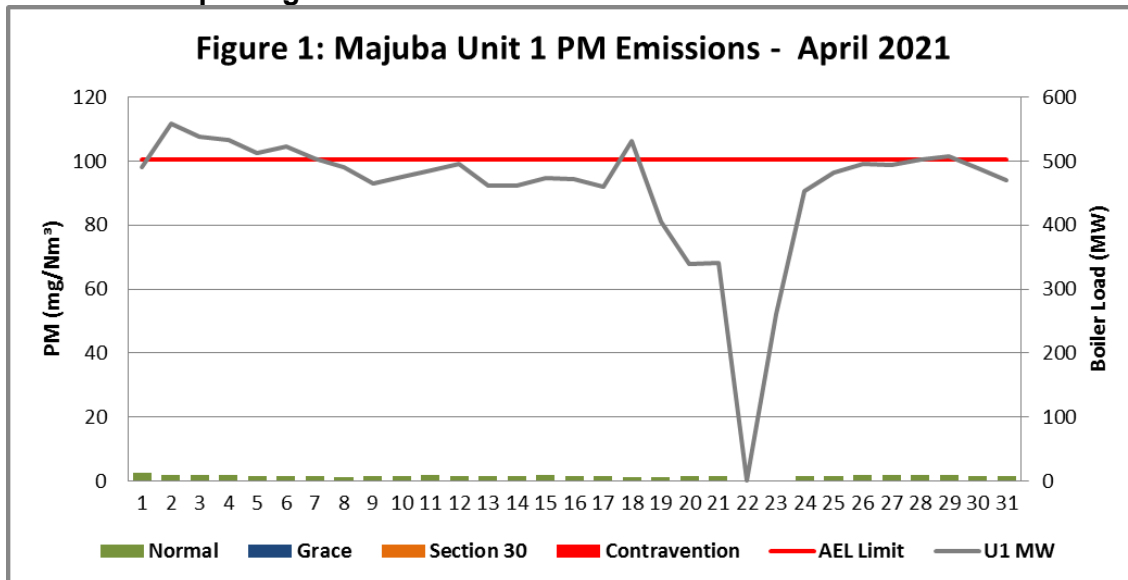
\*Calculated from the assumption of 90% fly ash to 10% bottom ash and percentage ash as measured in coal. Unit 2 was returned to service on 30 April 2021 after being on outage. The unit did not achieve full load during this period.

### Energy Source Characteristics

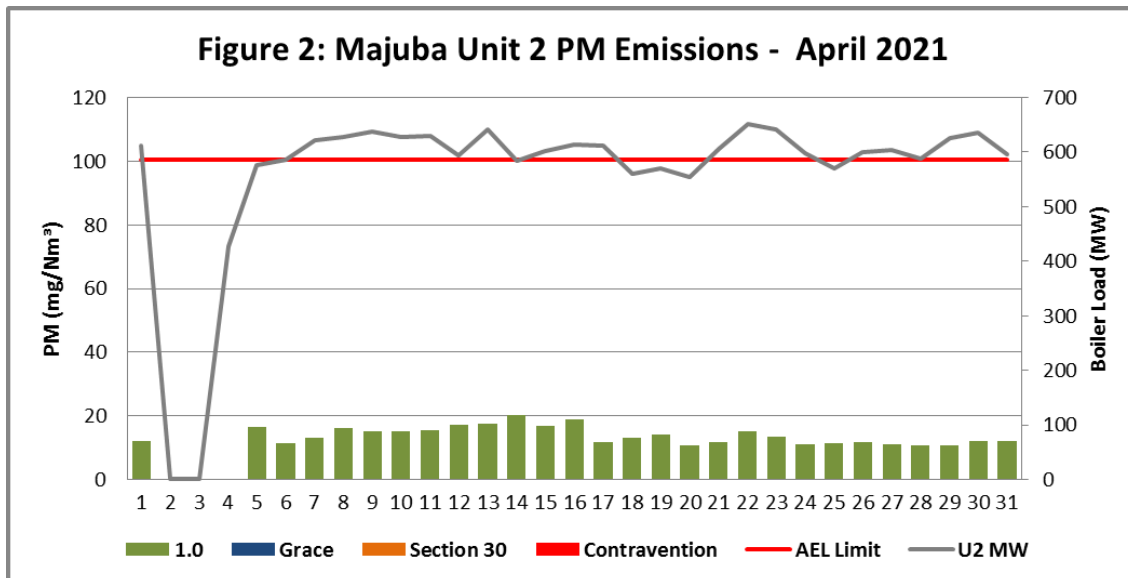
**Table 3. Energy Source Material Characteristics for the month of April 2021**

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6 to >0.94%	0.8%
Ash Content	28 to >30%	27.4%

### Emissions Reporting



**Figure 1. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 1.**



**Figure 2. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 2.**

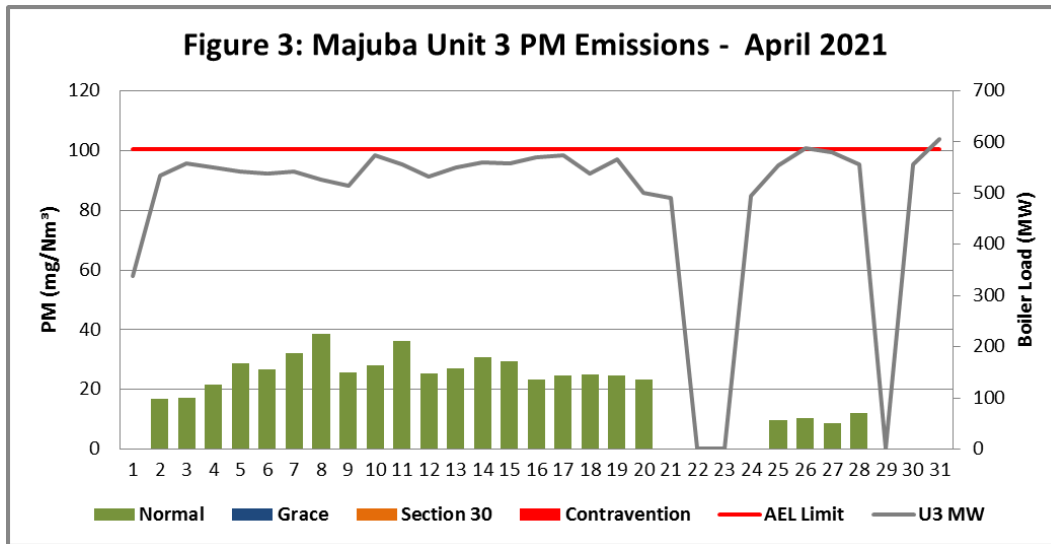


Figure 3. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 3.

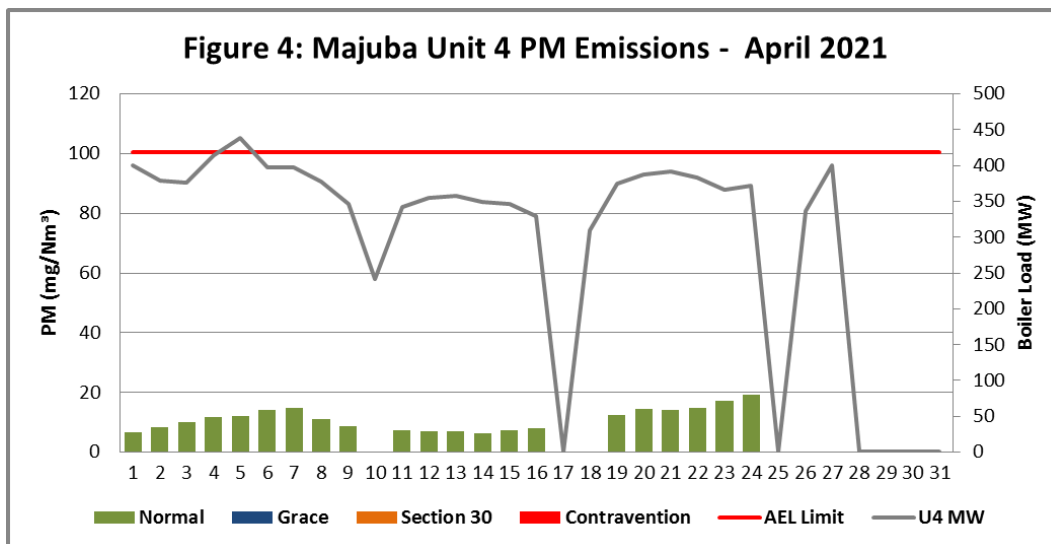


Figure 4. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 4.

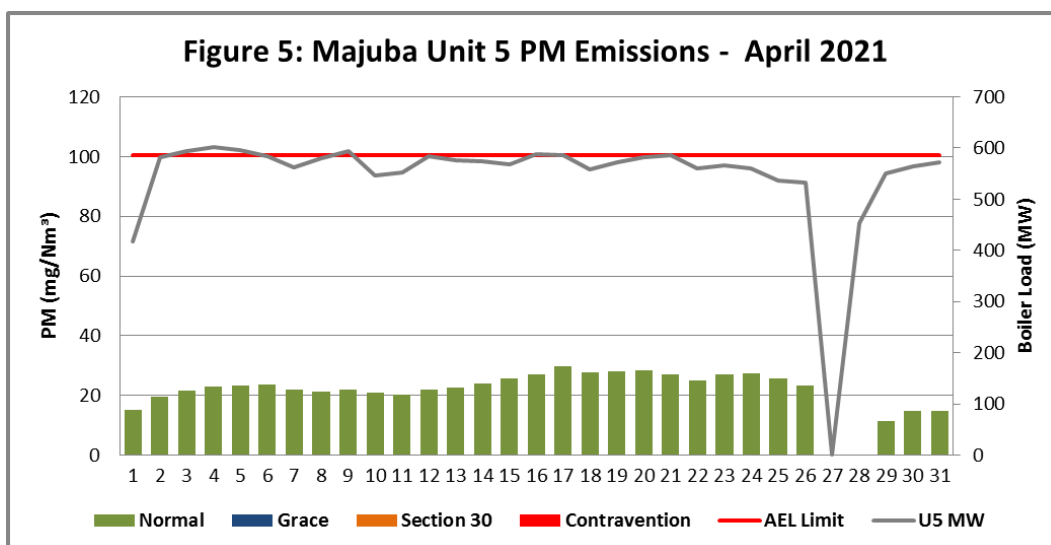


Figure 5. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 5.

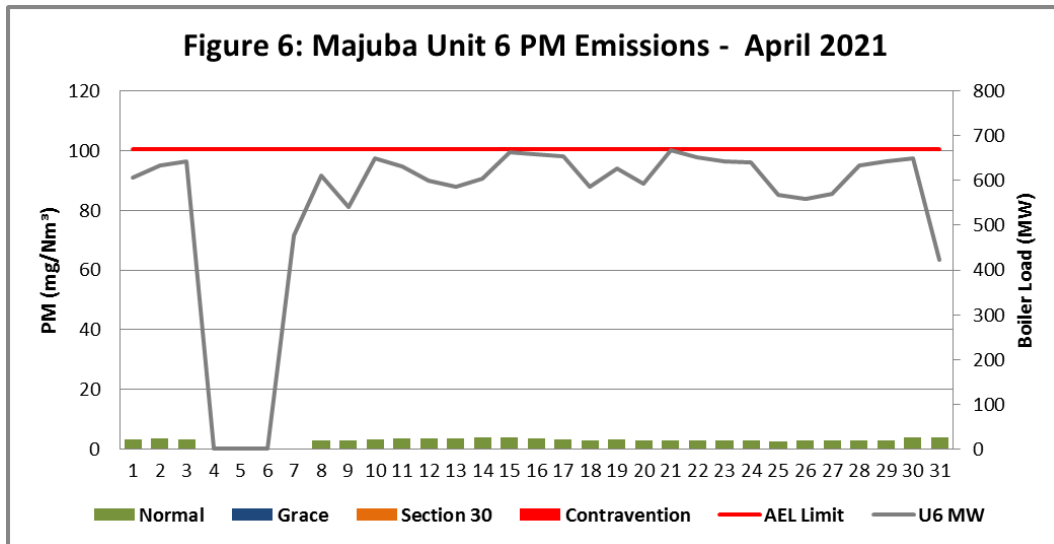


Figure 6. Particulate Matter emissions (daily averages) for the month of April 2021 against emission limit for Unit 6.

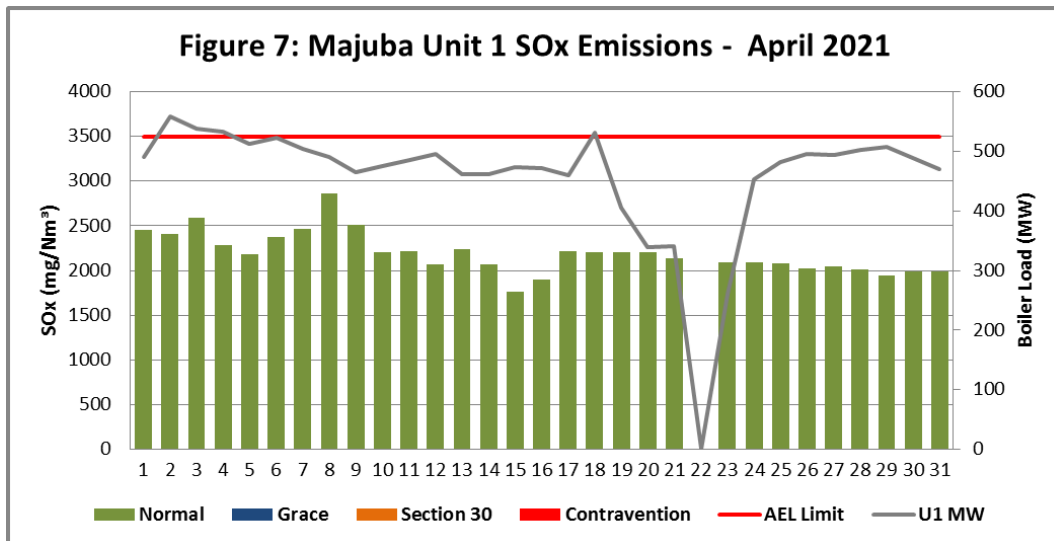


Figure 7. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 1.

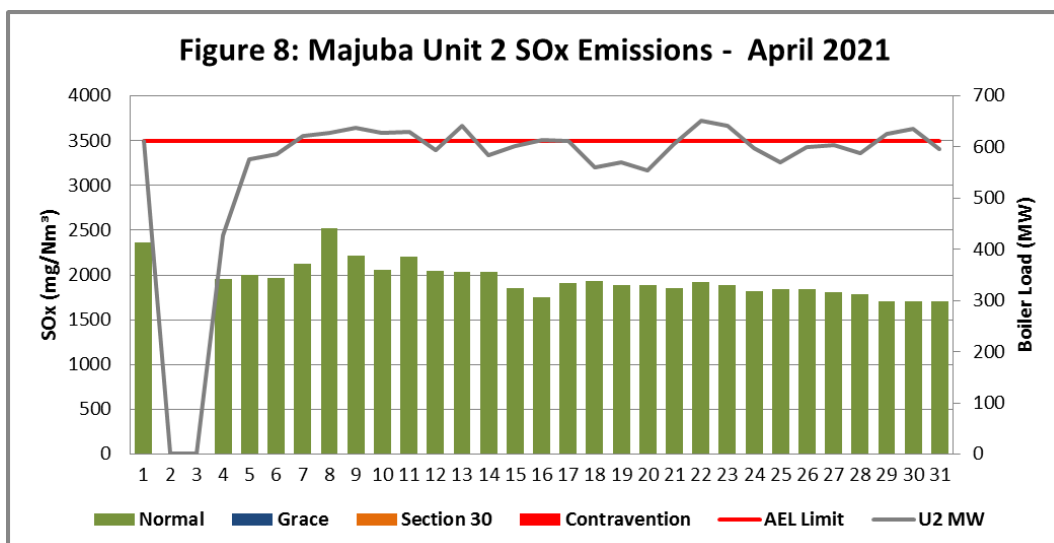
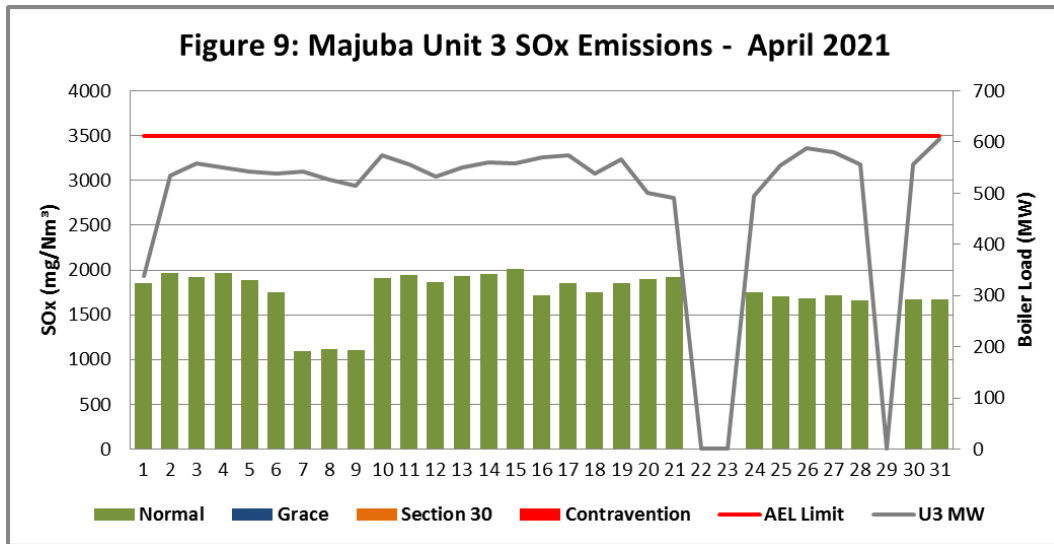
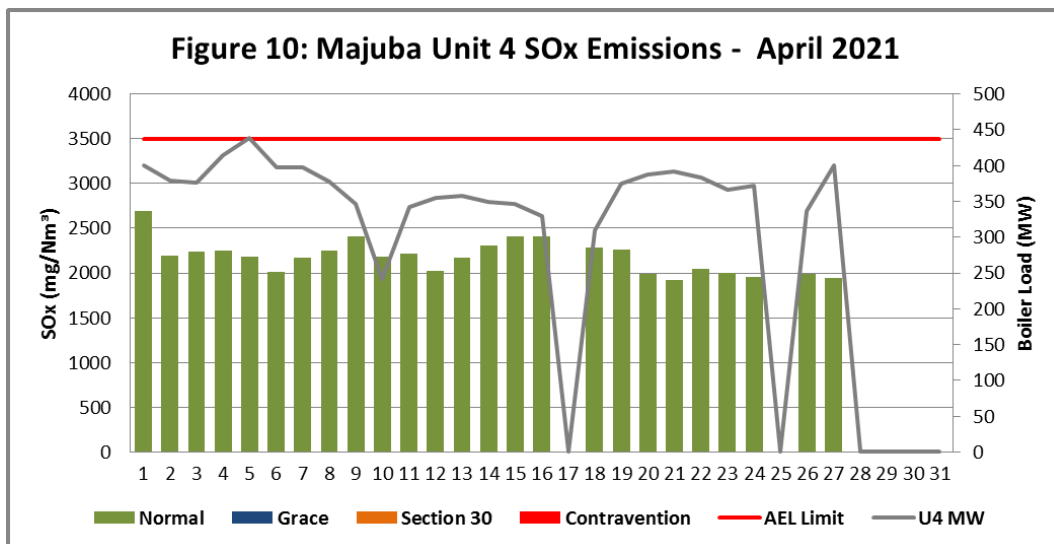


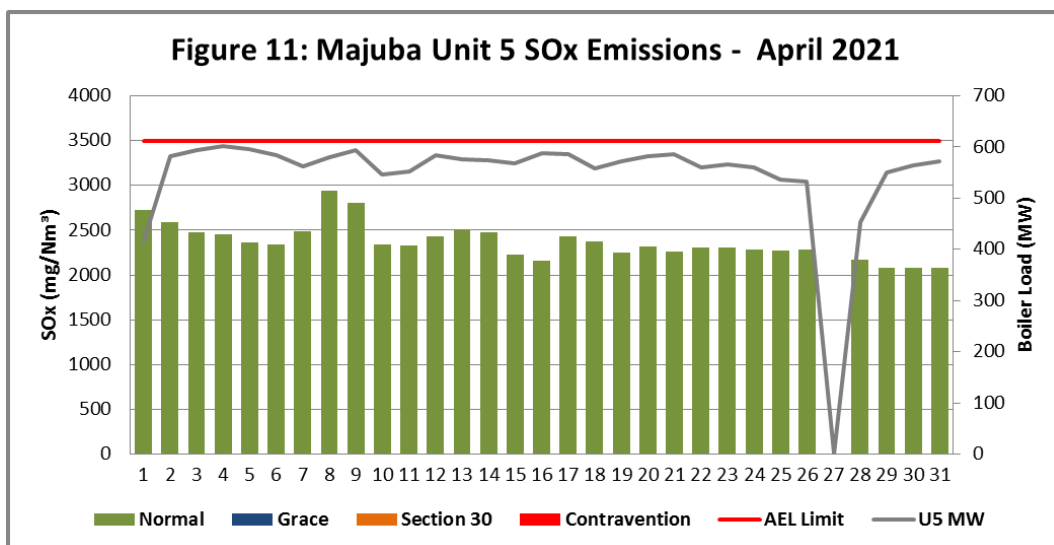
Figure 8. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 2.



**Figure 9. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 3.**



**Figure 10. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 4.**



**Figure 11. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 5.**

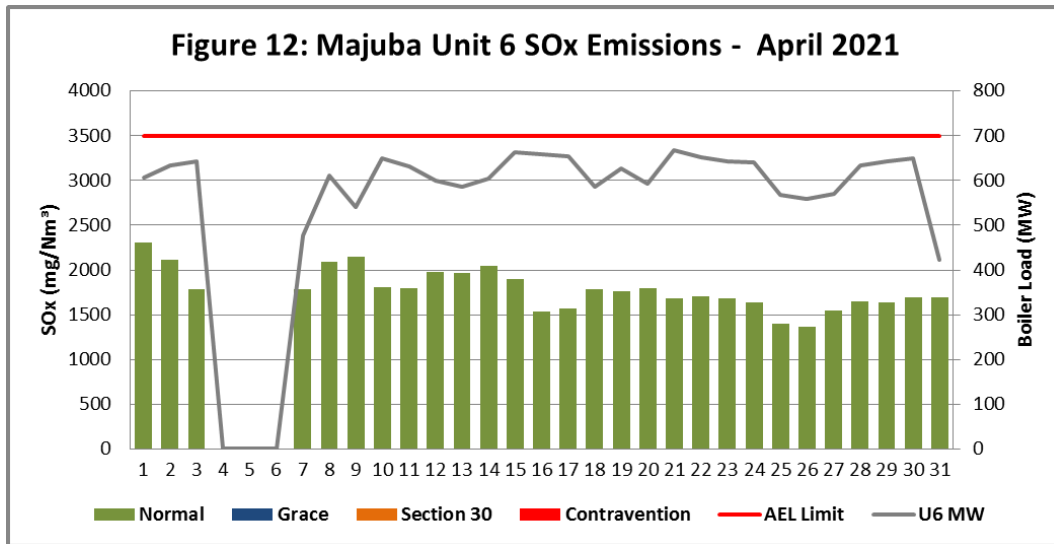


Figure 12. SOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 6.

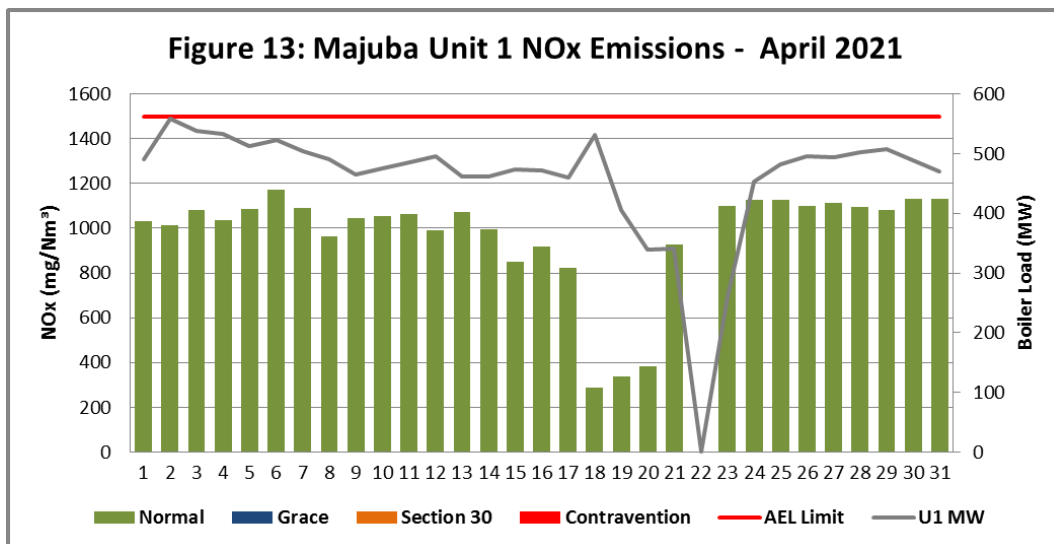


Figure 13. NOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 1.

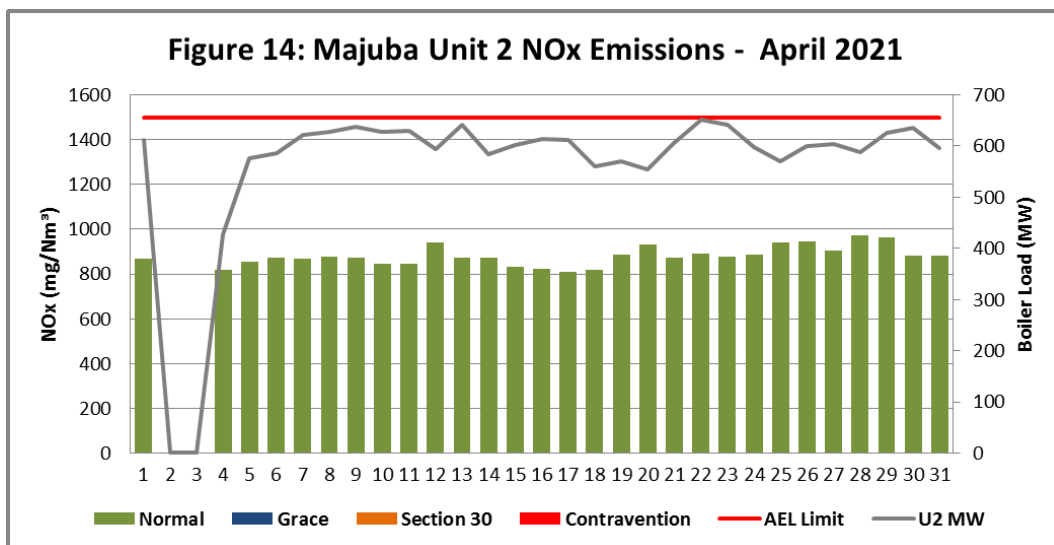
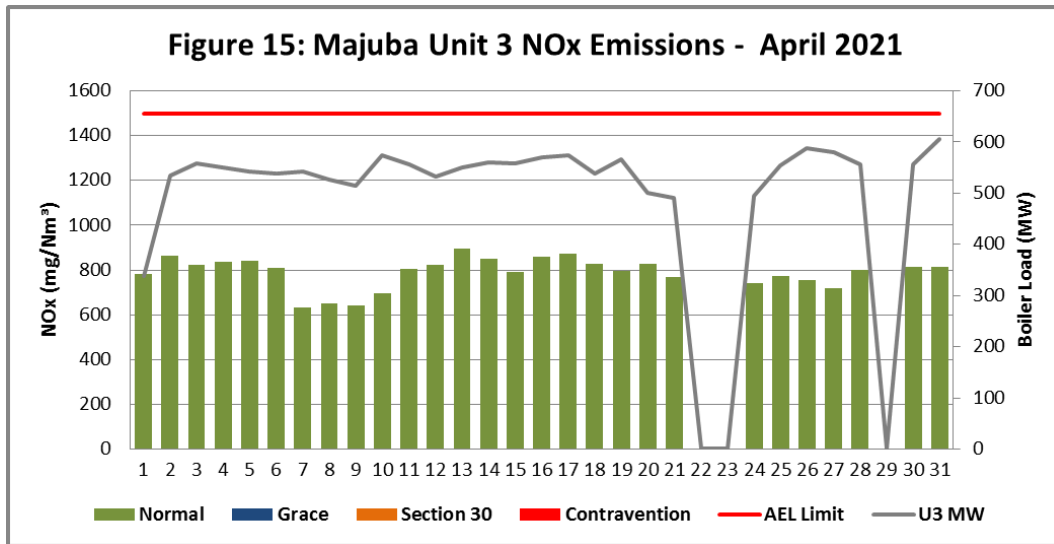
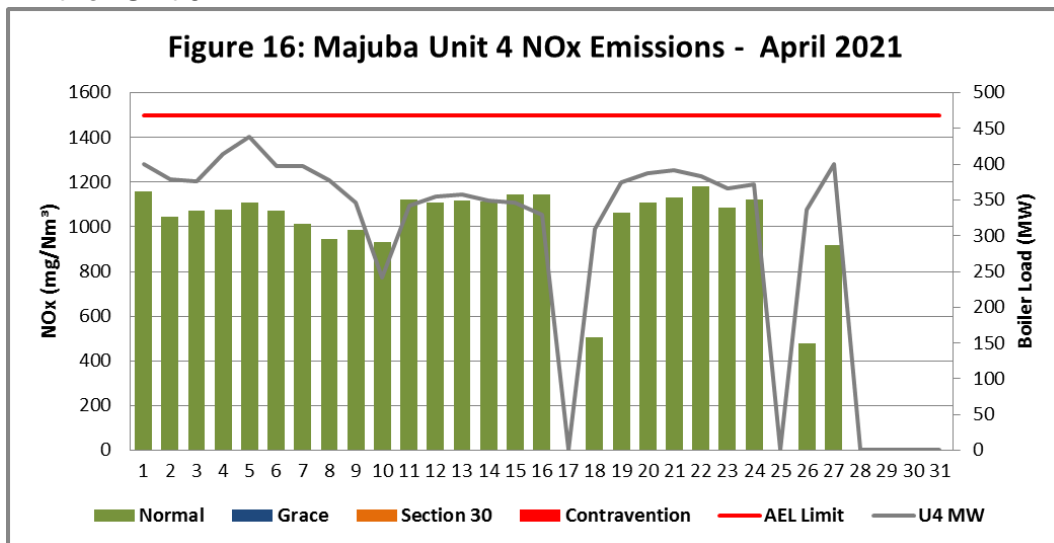


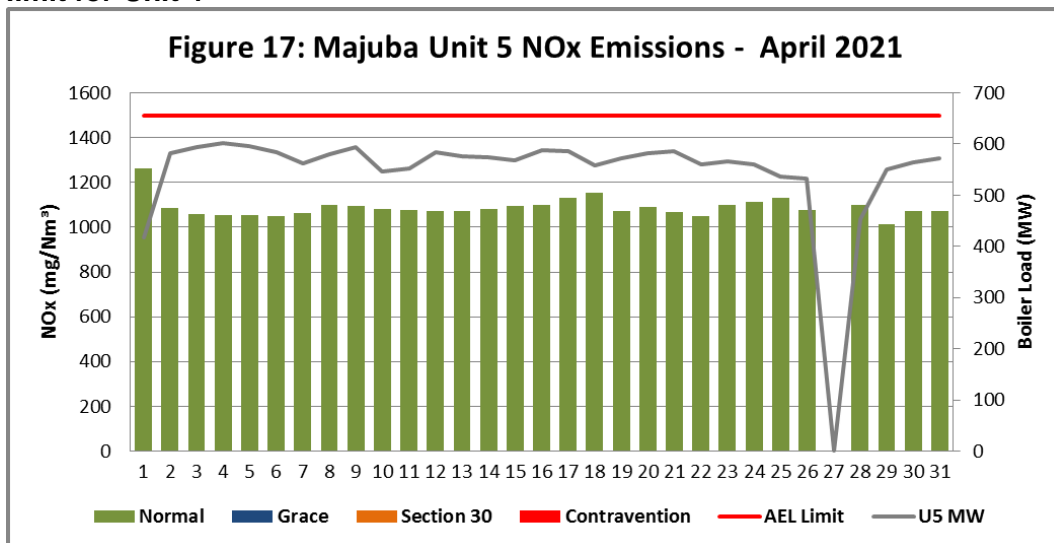
Figure 14. NOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 2.



**Figure 15. NOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 3.**



**Figure 16. NOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 4**



**Figure 17. NOx emissions (daily averages) for the month of April 2021 against emission limit for Unit 5**

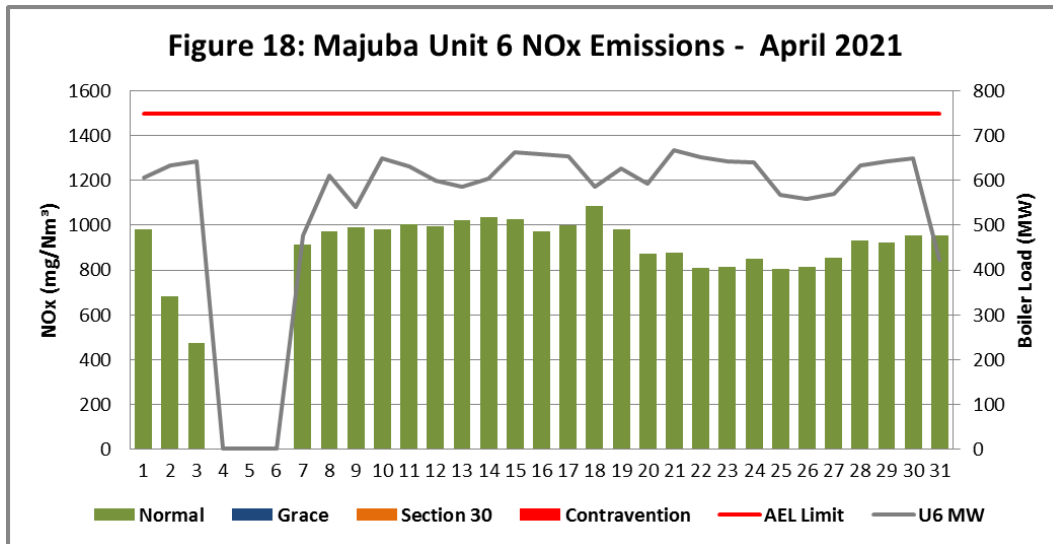


Figure 18. NO<sub>x</sub> emissions (daily averages) for the month April 2021 against emission limit for Unit 6

Table 4: Monthly tonnages for the month of April 2021

Unit	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>x</sub> (tons)
1	2.6	3 816	1 690
2	26.4	3 842	1 734
3	34.2	2 819	1 271
4	11.1	2 540	1 232
5	47.2	4 961	2 260
6	5.8	3 464	1 802
<b>Sum</b>	<b>127.2</b>	<b>21 443</b>	<b>9 988</b>

Table 5: Average monthly concentrations (mg/Nm<sup>3</sup>) for the month of April 2021

Unit	PM (Mg/Nm <sup>3</sup> )	SO <sub>2</sub> (Mg/Nm <sup>3</sup> )	NO <sub>2</sub> (Mg/Nm <sup>3</sup> )
1	1.6	2 200.5	968.3
2	13.9	1 960.7	880.2
3	23.7	1 757.8	788.5
4	11.1	2 179.6	1 029.7
5	23.2	2 382.6	1 089.1
6	3.2	1 783.9	912.1

Table 6: Each unit and respective days operating in compliance to the AEL Emission Limits (SO<sub>x</sub>, NO<sub>x</sub> and PM)

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance
Unit 1	30	0	0	0	0
Unit 2	29	0	0	0	0
Unit 3	28	0	0	0	0
Unit 4	25	0	0	0	0
Unit 5	30	0	0	0	0
Unit 6	28	0	0	0	0



## CO<sub>2</sub> and O<sub>2</sub> Relationship

Date	Final Average CO <sub>2</sub> (%)						Final Average O <sub>2</sub> (%)						Final Average CO <sub>2</sub> + O <sub>2</sub> (%)					
	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6
01-Apr	9.4	11.5	9.3	8.9	8.8	11.8	10.3	9.2	11.6	11.2	12.6	8.6	19.8	20.7	20.9	20.1	21.3	20.4
02-Apr	10.2		10.9	8.6	10.6	12.2	9.7		10.0	11.4	10.0	8.1	19.9		20.9	20.0	20.6	20.4
03-Apr	10.0		11.4	8.3	10.9	12.1	10.1		8.9	11.7	9.6	8.4	20.1		20.4	20.1	20.5	20.4
04-Apr	10.0	10.8	11.3	8.8	11.0		9.7	8.8	9.1	11.5	9.6		19.7	19.7	20.5	20.3	20.5	
05-Apr	10.0	11.9	11.1	8.9	11.0		9.7	8.3	9.4	11.3	9.6		19.7	20.2	20.4	20.2	20.6	
06-Apr	9.8	11.7	10.9	8.7	11.0		10.0	8.7	9.7	11.5	9.6		19.9	20.3	20.6	20.3	20.6	
07-Apr	9.4	11.8	10.9	9.0	10.6	11.5	10.6	8.4	9.8	11.1	10.1	8.7	20.0	20.2	20.8	20.1	20.7	20.2
08-Apr	9.1	11.7	10.6	8.8	10.5	12.5	10.7	8.6	10.2	11.4	10.2	7.7	19.8	20.4	20.8	20.2	20.7	20.1
09-Apr	8.9	11.9	10.5	8.7	10.7	11.8	11.0	8.3	10.0	11.6	10.0	8.6	19.9	20.2	20.6	20.3	20.8	20.4
10-Apr	8.9	11.9	11.4	7.9	10.4	12.8	11.0	8.5	9.0	12.0	10.5	7.6	19.9	20.4	20.4	19.9	20.9	20.4
11-Apr	8.9	11.8	11.2	8.2	10.4	12.6	11.1	8.5	9.3	12.1	10.4	8.0	20.0	20.3	20.5	20.3	20.8	20.6
12-Apr	9.2	11.6	11.0	8.4	10.8	12.4	10.4	8.6	9.6	11.8	10.0	7.9	19.6	20.1	20.6	20.2	20.8	20.3
13-Apr	8.7	12.0	10.9	8.6	10.8	12.3	11.2	8.1	9.9	11.6	9.9	8.2	19.9	20.1	20.7	20.2	20.7	20.5
14-Apr	9.3	11.8	11.0	8.5	10.8	12.5	10.5	8.5	9.7	11.6	10.0	8.2	19.8	20.3	20.8	20.1	20.8	20.7
15-Apr	9.5	12.1	11.2	8.4	10.8	12.8	10.3	8.1	9.6	11.7	10.2	7.4	19.7	20.2	20.8	20.2	21.0	20.2
16-Apr	9.5	11.9	11.2	8.1	11.0	12.8	10.1	8.2	9.6	11.8	10.3	7.3	19.7	20.2	20.8	20.0	21.3	20.1
17-Apr	9.2	12.0	11.0		10.8	12.5	10.7	8.2	10.4		10.5	7.7	19.9	20.2	21.3		21.4	20.2
18-Apr	10.1	11.6	10.6	8.5	10.6	12.1	9.5	8.7	10.2	11.4	10.9	8.1	19.6	20.3	20.8	19.9	21.4	20.2
19-Apr	8.6	11.8	11.2	8.7	10.8	12.6	11.1	8.5	9.5	11.4	10.0	7.4	19.8	20.2	20.7	20.1	20.8	19.9
20-Apr	7.8	11.6	10.3	8.6	11.0	12.6	12.4	8.6	11.1	11.6	10.0	7.5	20.1	20.2	21.4	20.1	21.0	20.0
21-Apr	8.0	12.0	10.9	8.9	11.0	12.9	12.4	8.3	10.4	11.2	9.7	7.1	20.4	20.2	21.3	20.1	20.8	20.0
22-Apr		12.1		8.8	10.6	12.9		8.0		11.3	10.1	7.0		20.1		20.1	20.7	19.9
23-Apr	7.3	12.1		9.0	10.6	12.7	12.7	8.0		11.0	10.4	7.1	20.1	20.1		20.0	21.0	19.8
24-Apr	9.3	11.9	10.7	8.7	10.6	12.8	10.5	7.9	9.9	11.3	10.5	7.2	19.8	19.9	20.6	20.0	21.0	20.0
25-Apr	9.5	11.6	11.3		10.3	12.3	10.1	8.7	9.4		11.0	7.8	19.6	20.3	20.7		21.3	20.2
26-Apr	9.7	12.0	11.2	8.8	10.4	12.0	9.9	8.1	9.3	10.9	10.6	8.1	19.6	20.1	20.5	19.7	21.1	20.0
27-Apr	9.6	11.9	11.3	9.3		11.9	10.0	8.1	9.4	10.6		8.5	19.6	20.0	20.6	19.9		20.4
28-Apr	9.8	11.8	11.1		9.6	12.6	9.8	8.4	9.5		11.3	7.7	19.7	20.2	20.6		20.9	20.4
29-Apr	9.9	12.0			10.9	12.7	9.8	8.1			9.7	7.3	19.7	20.1			20.6	20.0
30-Apr	9.8	12.0	11.2		11.0	12.7	10.2	8.3	9.8		10.0	7.7	20.0	20.2	21.0		20.9	20.4
<b>Totals</b>	<b>9.3</b>	<b>11.8</b>	<b>11.0</b>	<b>8.6</b>	<b>10.6</b>	<b>12.4</b>	<b>10.5</b>	<b>8.4</b>	<b>9.8</b>	<b>11.4</b>	<b>10.3</b>	<b>7.8</b>	<b>19.8</b>	<b>20.2</b>	<b>20.7</b>	<b>20.1</b>	<b>20.9</b>	<b>20.2</b>

Calculation: CO<sub>2</sub>% + O<sub>2</sub>% = 19.5-21.5%

**Table 7: CO<sub>2</sub> and O<sub>2</sub> deviations of the Month of April 2021**

\*Blank spaces indicate that the unit was offline during that period

## Emergency Generation

**Table 8: Emergency Generation for the month of April 2021**

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
<b>Emergency Generation hours declared by national Control</b>	0	0	0	0	0	0
<b>Emergency Hours declared including hours after stand down</b>	0	0	0	0	0	0
<b>Hours over the Limit during Emergency Generation</b>	0	0	0	0	0	0

**Comments on the performance and availability of each unit**

### UNIT 1

The unit base loaded for most days of the month and was off for one day. No fabric filter bags were replaced for this month.

### UNIT 2

The unit base loaded for most days of the month and was off for two days. No fabric filter bags were replaced for this month.

### UNIT 3

The unit base loaded for most days of the month and was off for three days. Thirteen fabric filter bags were replaced for this month.

### UNIT 4

The unit base loaded for most days of the month and was off for four days. Nine fabric filter bags were replaced for this month.

### UNIT 5

The unit base loaded for days of the month and was off for one day. Fifteen fabric filter bags were replaced this month.

### UNIT 6

The unit base loaded for most days of the month and was off for three days. No fabric filter bags were replaced this month.

## Complaints Register

**Table 9: Complaints for the month of April 2021**

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 by which measure will be implemented
	No complaints were received during April 2021				

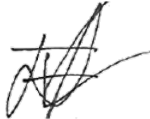
**General**

The fuel oil consumption for the month of April 2021 was above the AEL limit of 6000 ton/month. A detailed action plan to reduce the fuel oil consumption will be submitted to Gert Sibande District Municipality.

Hoping the above will meet your satisfaction

Yours sincerely

Report compiled by:



Faith Kagoda  
**ENVIRONMENTAL MANAGER: (MAJUBA)**

Date 06/05/2021

Report verified by:



Lindani Madonsela  
**BOILER ENGINEERING MANAGER: (MAJUBA)**

Date 07/05/2021

Report approved by:



Bawinile Malope  
**ENGINEERING MANAGER: (MAJUBA)**

Date 2021/05/07