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 Gert Sibande District Municipality
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Date: 06 August 2021

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Dear Mr. Hlanyane

MAJUBA POWER STATION'S MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 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 July 2021. Verified emissions of particulates are included. SO₂ and NO_x (as NO₂) 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 July 2021

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of July 2021
	Coal	Tons/month	1 800 000	1 054 290.48
	Fuel Oil	Tons/month	6 000	11 129.9
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity - MW)	Production Rate in Month of July 2021
	Energy	GWh	4 110	1 978.34
	Ash	Tons/month	Not stated in the license	305 744.24

Abatement Technology

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

Associated Unit	Technology Type	Actual Utilisation (%) for the month of July 2021	*Minimum Control Efficiency (%)
Unit 1	Fabric Filter Plant	100	99.98%
Unit 2	Fabric Filter Plant	100	99.95%
Unit 3	Fabric Filter Plant	100	99.94%
Unit 4	Fabric Filter Plant	100	99.96%
Unit 5	Fabric Filter Plant	100	99.93%
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.

Energy Source Characteristics

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

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6 to >0.94%	0.70%
Ash Content	28 to >30%	29.0%

Emissions Reporting

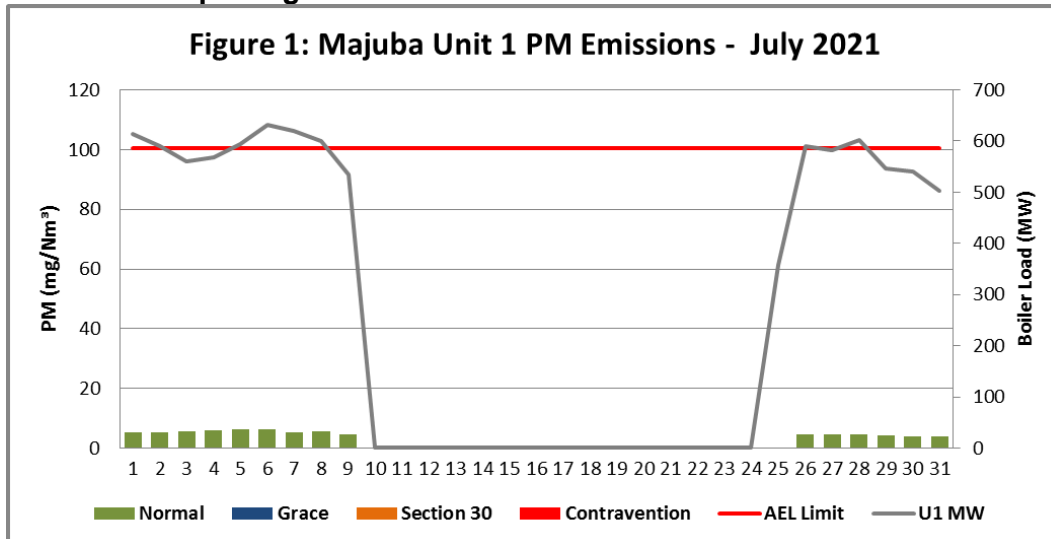


Figure 1. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 1.

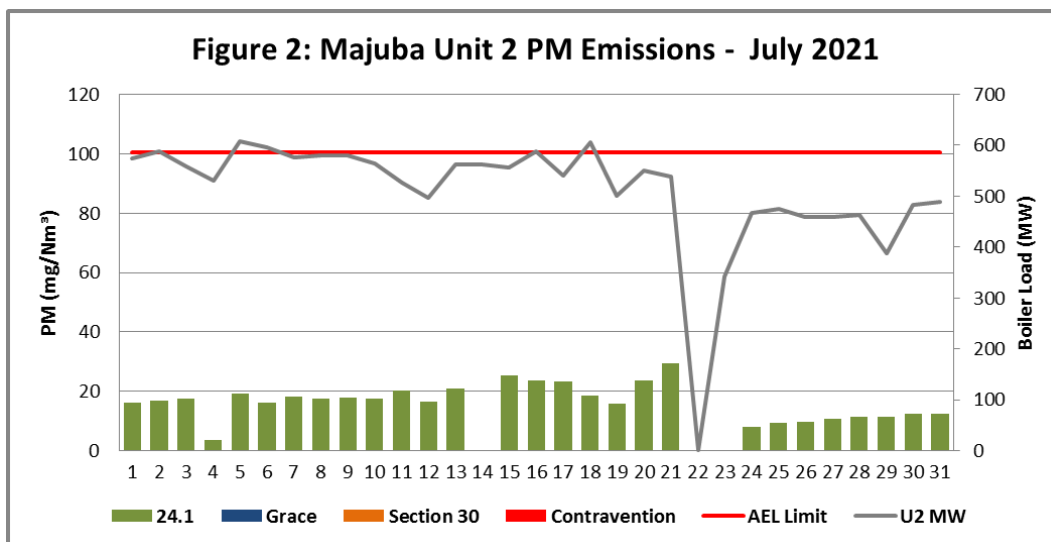


Figure 2. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 2.

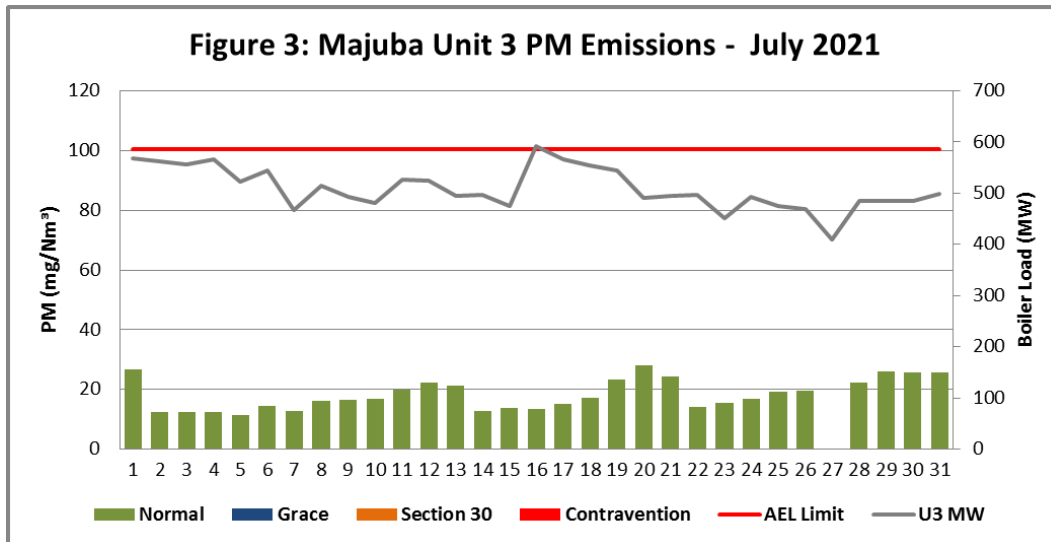


Figure 3. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 3.

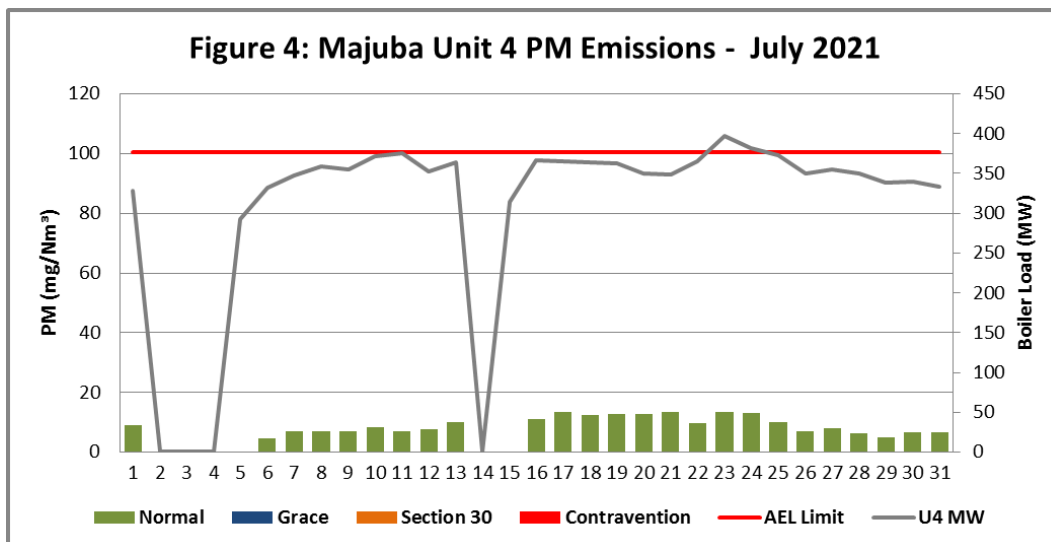


Figure 4. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 4.

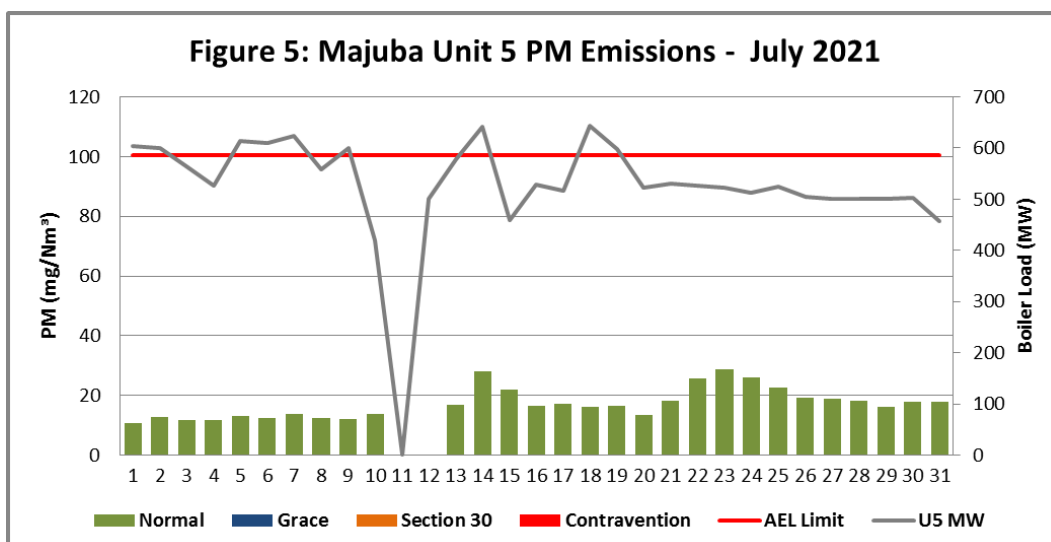


Figure 5. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 5.

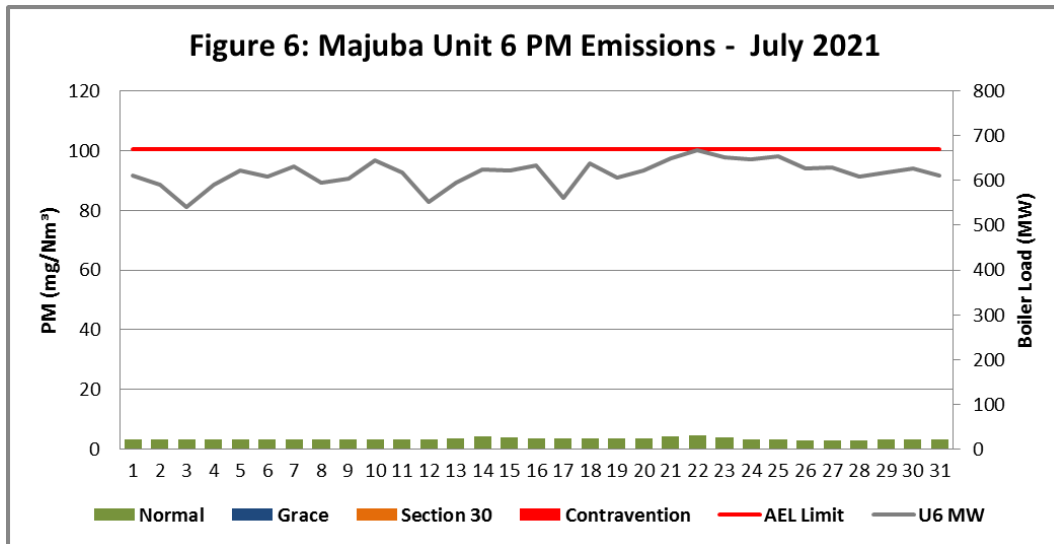


Figure 6. Particulate Matter emissions (daily averages) for the month of July 2021 against emission limit for Unit 6.

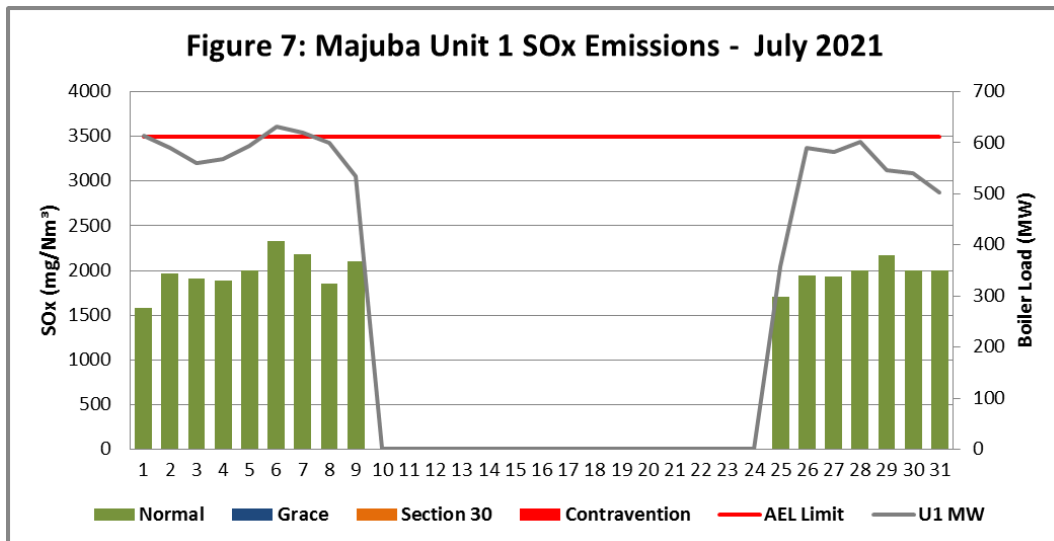


Figure 7. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 1.

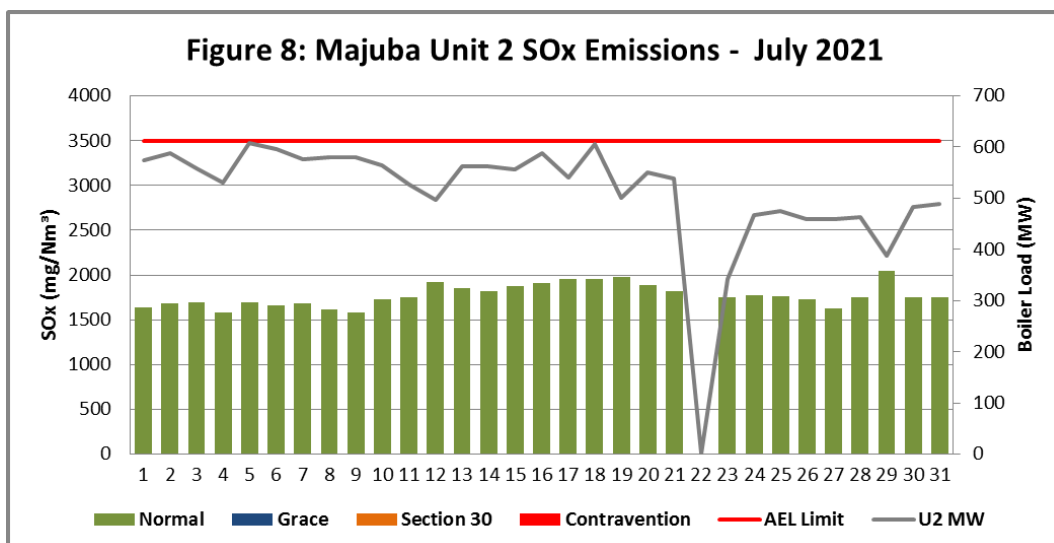


Figure 8. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 2.

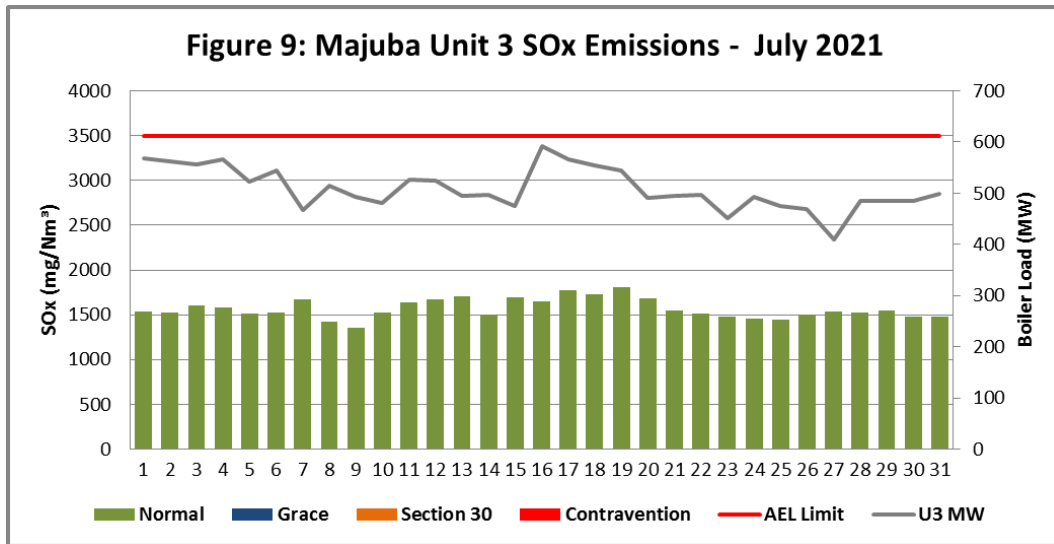


Figure 9. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 3.

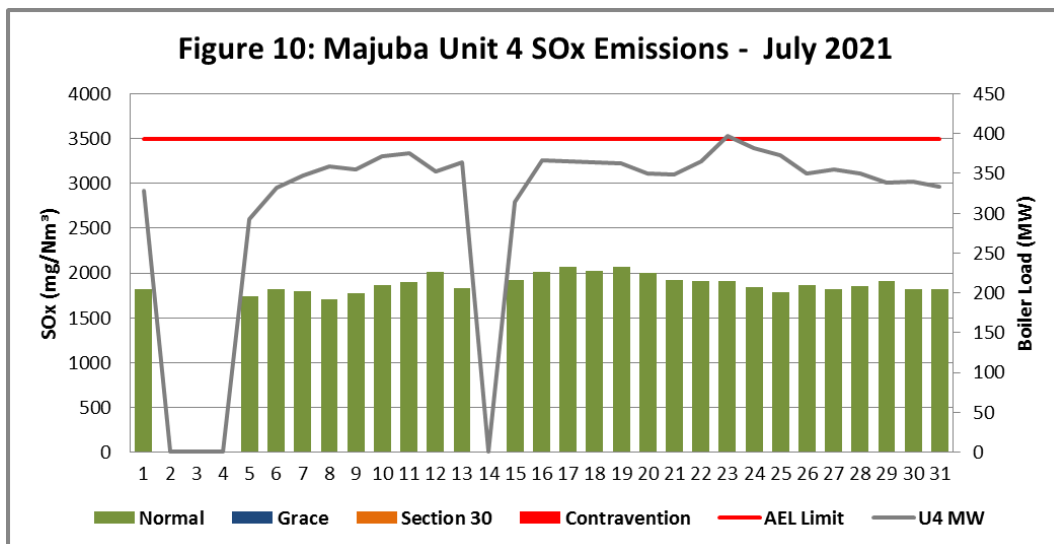


Figure 10. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 4.

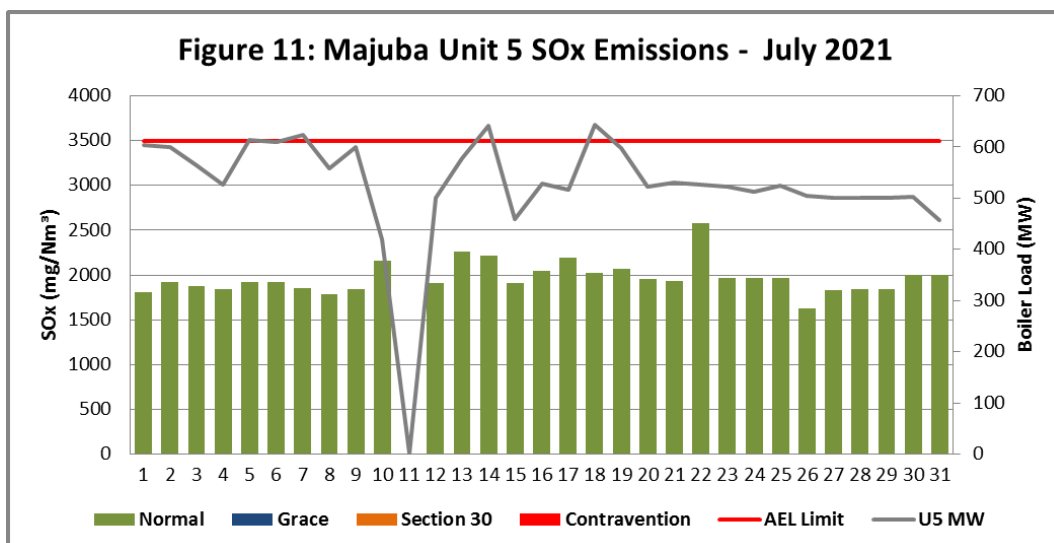


Figure 11. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 5.

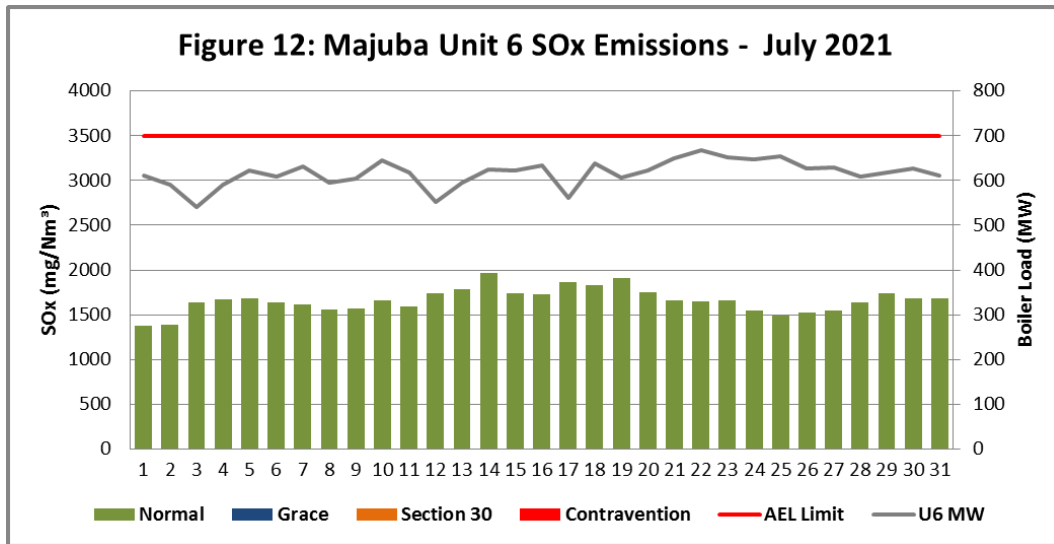


Figure 12. SOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 6.

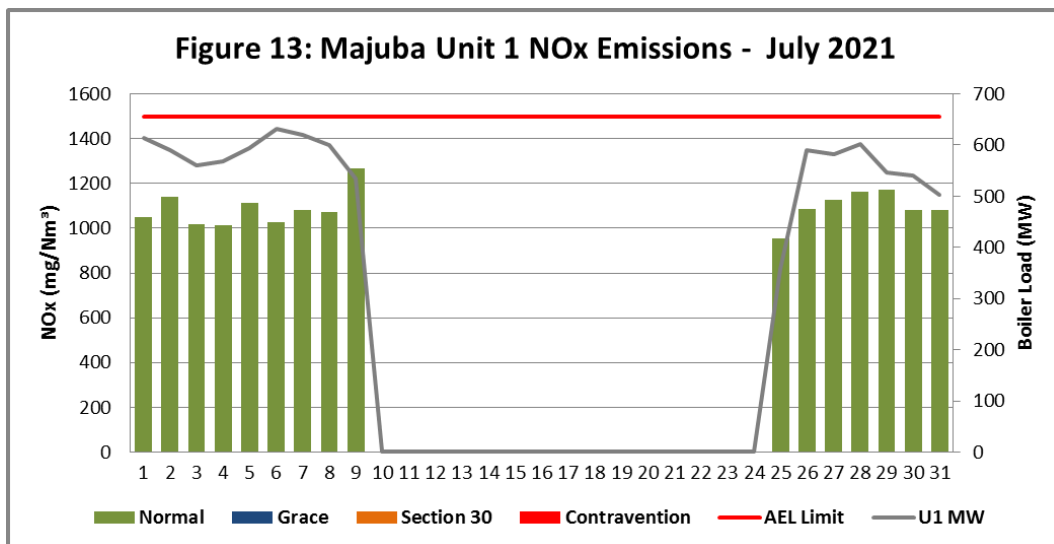


Figure 13. NOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 1.

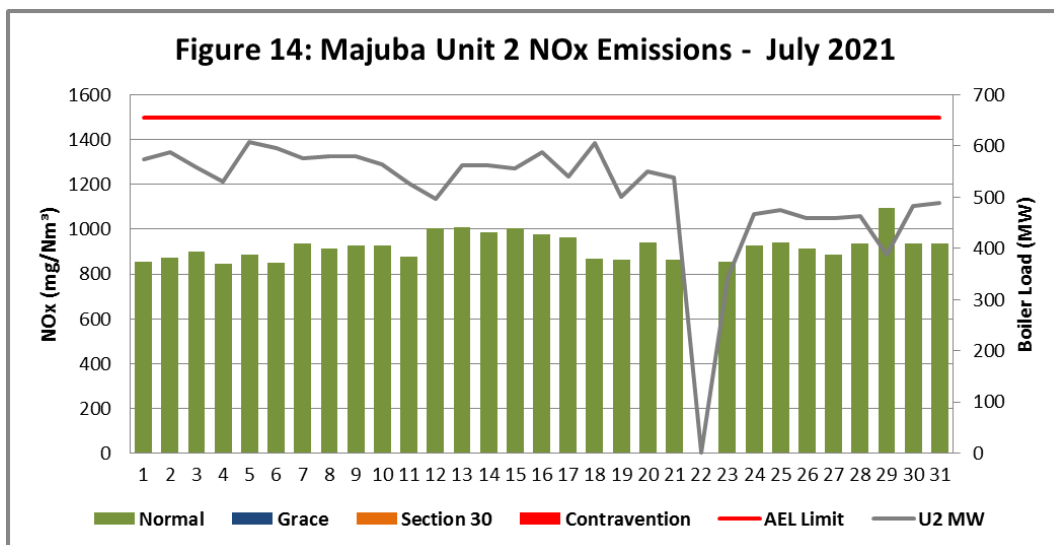


Figure 14. NOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 2.

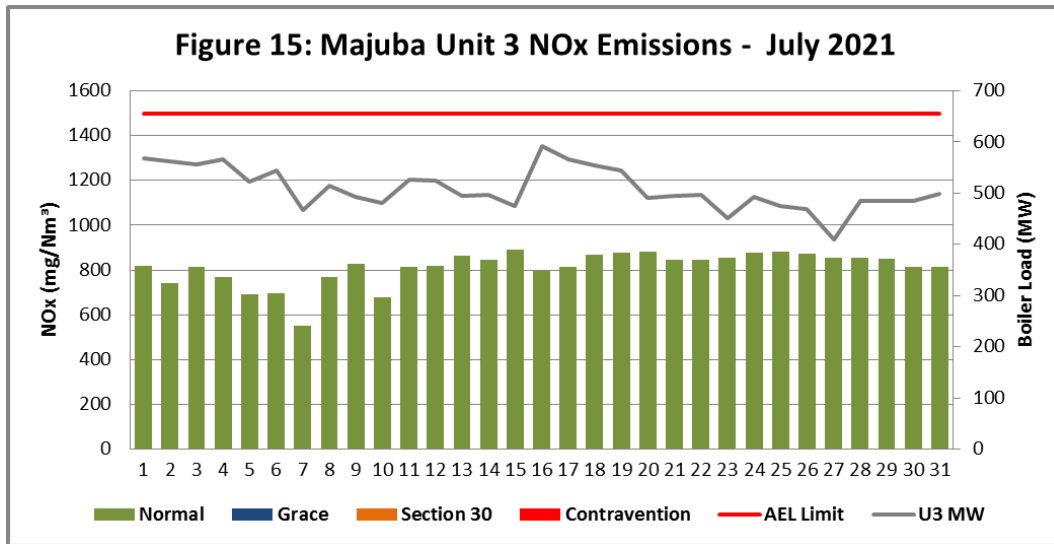


Figure 15. NOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 3.

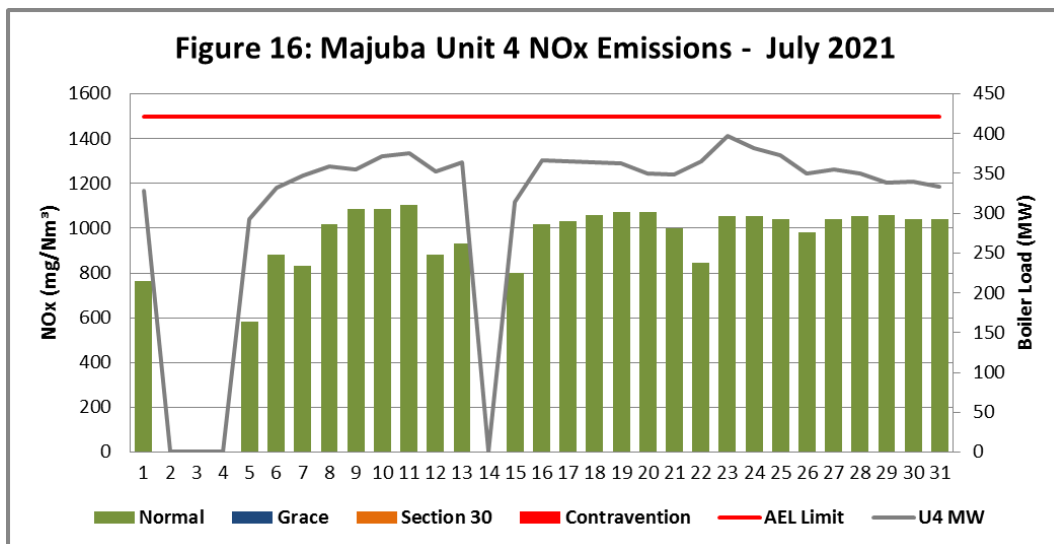


Figure 16. NOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 4

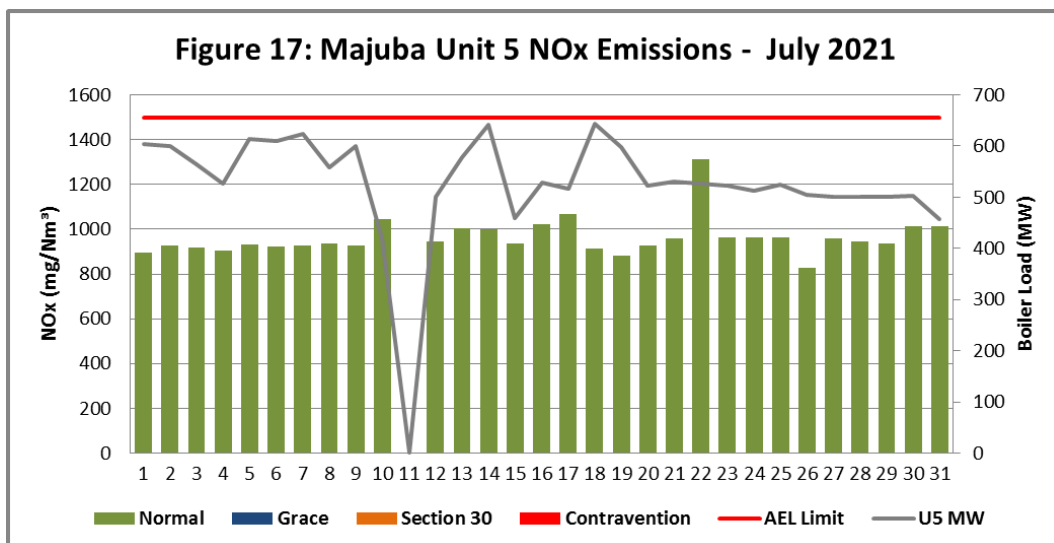


Figure 17. NOx emissions (daily averages) for the month of July 2021 against emission limit for Unit 5

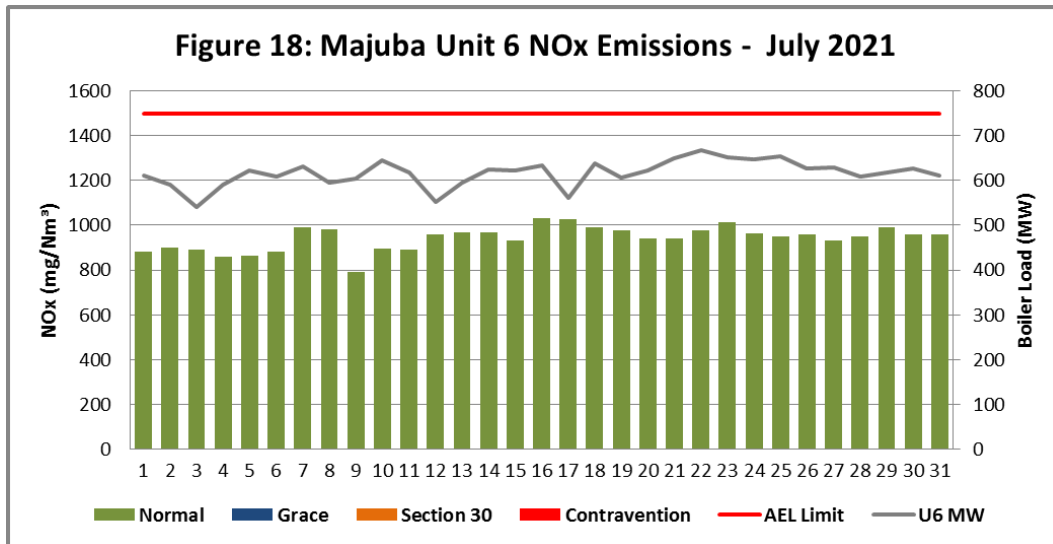


Figure 18. NO_x emissions (daily averages) for the month July 2021 against emission limit for Unit 6

Table 4: Monthly tonnages for the month of July 2021

Unit	PM (tons)	SO ₂ (tons)	NO _x (tons)
1	5.2	2 163	1 189
2	25.9	3 190	1 665
3	33.0	2 916	1 509
4	11.3	2 567	1 356
5	36.4	4 445	2 175
6	7.9	3 831	2 180
Sum	119.8	19 112	10 074

Table 5: Average monthly concentrations (mg/Nm³) for the month of July 2021

Unit	PM (Mg/Nm ³)	SO ₂ (Mg/Nm ³)	NO ₂ (Mg/Nm ³)
1	5.0	1 966.9	1 086.9
2	16.6	1 773.7	923.1
3	18.4	1 567.3	812.7
4	9.1	1 879.0	978.8
5	17.3	1 962.9	962.7
6	3.4	1 657.5	942.1

Table 6: Each unit and respective days operating in compliance to the AEL Emission Limits (SO_x, NO_x and PM)

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance
Unit 1	16	0	0	0	0
Unit 2	30	0	0	0	0
Unit 3	31	0	0	0	0
Unit 4	27	0	0	0	0
Unit 5	30	0	0	0	0
Unit 6	31	0	0	0	0

CO₂ and O₂ Relationship

Date	Final Average CO ₂ (%)					Final Average O ₂ (%)						Final Average CO ₂ + O ₂ (%)						
	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	
01-Jul	11.3	11.3	8.1	11.6	12.3	8.7	9.1	9.3	12.2	7.7	7.7	19.7	20.3	20.6	20.3	19.3	20.0	
02-Jul	11.3	11.4		11.5	12.1	9.1	9.1	9.0		8.1	7.9	19.7	20.4	20.4		19.6	20.1	
03-Jul	11.0	11.1		11.4	11.9	10.1	9.4	9.5		7.8	8.3	20.0	20.4	20.6		19.2	20.2	
04-Jul	10.9	11.2		10.7	12.1	10.0	9.3	9.4		8.3	8.1	19.9	20.2	20.7		19.0	20.2	
05-Jul	11.6	11.0	7.8	11.7	12.5	9.6	8.9	9.7	11.4	8.1	8.1	20.1	20.5	20.7	19.2	19.8	20.5	
06-Jul	11.7	10.8	8.1	11.8	12.4	9.0	8.7	9.8	11.5	8.0	8.1	20.0	20.4	20.6	19.6	19.8	20.5	
07-Jul	11.2	10.2	8.1	11.8	12.2	9.2	9.4	10.5	11.3	7.9	8.3	20.0	20.6	20.8	19.4	19.7	20.5	
08-Jul	11.5	10.5	8.3	11.2	12.1	9.7	9.1	10.2	12.4	8.3	8.3	20.1	20.6	20.7	20.6	19.5	20.4	
09-Jul	11.5	10.0	8.4	11.6	12.2	11.1	9.0	10.8	12.9	7.8	8.0	21.0	20.5	20.7	21.2	19.4	20.1	
10-Jul	11.5	9.9	8.4	9.7	12.7		9.0	10.8	12.7	10.5	7.6		20.5	20.8	21.1	20.2	20.3	
11-Jul	11.0	10.2	8.4		12.6		9.6	10.7	12.8		7.8		20.6	20.8	21.2		20.4	
12-Jul	10.7	10.3	8.3	10.8	12.0		10.1	10.6	12.0	8.6	8.6		20.8	20.9	20.3	19.4	20.6	
13-Jul	11.3	10.2	8.3	11.3	12.1		9.3	10.5	11.4	9.1	8.4		20.6	20.7	19.7	20.4	20.5	
14-Jul	11.0	10.1		11.9	12.1		9.5	10.0		8.3	8.2		20.6	20.1		20.2	20.4	
15-Jul	10.8	9.9	7.8	9.9	12.3		9.8	10.4	11.4	8.8	7.9		20.7	20.3	19.2	18.8	20.2	
16-Jul	11.2	11.3	8.2	10.8	12.1		9.4	8.9	12.5	8.5	8.2		20.6	20.2	20.7	19.3	20.3	
17-Jul	10.7	11.1	8.1	10.5	11.7		10.0	9.1	12.4	9.1	8.7		20.8	20.2	20.6	19.7	20.4	
18-Jul	11.3	11.0	8.2	11.6	12.2		9.1	9.3	12.7	7.4	8.1		20.4	20.3	21.0	19.0	20.3	
19-Jul	10.6	10.9	8.3	10.9	12.0		10.1	9.6	12.7	7.5	8.6		20.7	20.5	21.0	18.4	20.6	
20-Jul	9.9	9.9	8.3	10.8	12.3		9.6	10.7	12.7	8.6	8.1		19.6	20.6	21.0	19.5	20.4	
21-Jul		10.0	8.0	10.7	12.4		9.7	10.3	12.7	9.1	8.1		9.7	20.3	20.7	19.8	20.4	
22-Jul		9.5	7.9	9.9	12.2			10.3	11.9	10.9	8.0			19.8	19.7	20.9	20.2	
23-Jul	8.1	9.3	7.1	9.9	12.1		12.3	10.4	12.0	9.1	8.0		20.4	19.7	19.1	19.0	20.1	
24-Jul	9.3	9.4	7.0	9.9	12.0		11.0	10.6	12.2	9.1	8.0		20.4	20.0	19.2	18.9	20.0	
25-Jul	9.2	9.3	7.1	10.1	12.1		12.9	11.2	10.8	12.4	8.6	7.8	20.6	20.4	20.1	19.5	18.7	19.9
26-Jul	8.9	9.3	7.1	9.9	11.9		10.0	11.2	10.9	12.6	9.2	8.1	19.9	20.1	20.2	19.8	19.1	20.0
27-Jul	9.1	9.4	7.2	9.8	12.0		9.2	10.5	11.3	12.4	9.6	8.0	19.9	19.6	20.7	19.6	19.4	19.9
28-Jul	9.0	9.8	7.2	9.8	11.9		9.6	11.0	10.5	12.6	9.5	8.5	20.0	20.1	20.3	19.8	19.3	20.3
29-Jul	7.8	9.9	7.3	9.7	11.8		10.4	12.9	10.4	13.0	9.2	8.8	20.2	20.8	20.3	20.3	18.9	20.6
30-Jul	9.2	10.0	7.2	9.8	11.9		9.8	10.9	10.1	13.0	10.1	8.6	19.9	20.0	20.1	20.2	19.8	20.5
31-Jul	9.5	10.1	7.2	9.3	11.9		9.7	11.0	10.3	12.6	10.4	8.7	19.6	20.5	20.4	19.8	19.8	20.6
Totals	10.4	10.3	7.8	10.7	12.1		9.9	10.0	10.2	12.3	8.8	8.2	20.0	20.4	20.4	20.1	19.5	20.3

Calculation: CO₂% + O₂% = 19.5-21.5%

Table 7: CO₂ and O₂ deviations of the Month of July 2021

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

Emergency Generation

Table 8: Emergency Generation for the month of July 2021

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

Comments on the performance and availability of each unit

UNIT 1

The unit base loaded for 16 days and was on outage (IN) for 15 days. No fabric filter bags were replaced this month.

UNIT 2

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

UNIT 3

The unit base loaded for the whole month. Twenty fabric filter bags were replaced during this month.

UNIT 4

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

UNIT 5

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

UNIT 6

The unit base loaded for the whole month. No fabric filter bags were replaced during this month.

Complaints Register

Table 9: Complaints for the month of July 2021

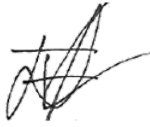
Source Code/ Name	Root Cause Analysis	Calculation of Impacts/ emissions associated with the incident	Dispersion modelling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date by which measure will be implemented
	No complaint was received during the month of July 2021				

General

There was an increase in fuel oil consumption for the month of July 2021 compared to the previous two months. The July 2021 fuel oil usage was 11 129.9 tons which exceeded the authorised AEL limit of 6000 tons/month. The station continues to implement measures to improve fuel oil consumption as committed in the letter submitted in June 2021.

Yours sincerely

Report compiled by:



Faith Kagoda
ENVIRONMENTAL MANAGER: (MAJUBA)

Date 10/08/2021

Report verified by:



Lindani Madonsela
BOILER ENGINEERING MANAGER: (MAJUBA)

Date 10 August 2021

Report approved by:



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Londi Mthembu
ENGINEERING MANAGER: (MAJUBA)

Date 10/08/2021