

Mr Dan Hlanyane
 Director Planning and Services
 Gert Sibande District Municipality
 PO BOX 3016
 ERMELO
 2350

Date: 10 June 2019

Enquiries:

Dear Mr. Hlanyane

MAJUBA POWER STATION'S MONTHLY EMISSIONS REPORT FOR THE MONTH OF MAY 2019

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 May 2019. Verified emissions of particulates are included. SO₂ and NO_x (as NO₂) emissions are included for all units.

Raw Materials and Products

Table 1. Quantity of Raw Materials and Products used/produced for the month of May 2019

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of May 2019
	Coal	Tons/month	1 800 000	1 030 095
	Fuel Oil	Tons/month	6000	2489.41
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity - MW)	Production Rate in Month of May 2019
	Energy	GWh	4110	2069.32
	Ash	Tons/month	Not stated in the license	290 899

Abatement Technology

Table 2. Abatement Equipment Control Technology for the month of May 2019

Associated Unit	Technology Type	*Minimum Control Efficiency (%)	Actual Utilisation (%) for the month of May 2019
Unit 1	Fabric Filter Plant	100	99.92%
Unit 2	Fabric Filter Plant	100	
Unit 3	Fabric Filter Plant	100	
Unit 4	Fabric Filter Plant	100	
Unit 5	Fabric Filter Plant	100	
Unit 6	Fabric Filter Plant	100	

*Calculated from the assumption of 90% fly ash to 10% bottom ash and percentage ash as measured in coal

Energy Source Characteristics

Generation Division (Operating Unit Coal 2)
 Majuba Power Station
 Between Amersfoort and Volksrust
 Private Bag x9001 Volksrust 2470 SA
 Tel +27 17 799 2100 Fax +27 17 799 3615 www.eskom.co.za
 Eskom Holdings SOC Ltd Reg No 2002/015527/30

Table 3. Energy Source Material Characteristics for the month of May 2019

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	Not stipulated	
Sulphur Content	0.6 to >0.94%	0.77
Ash Content	28 to >30%	28.24

Emissions Reporting

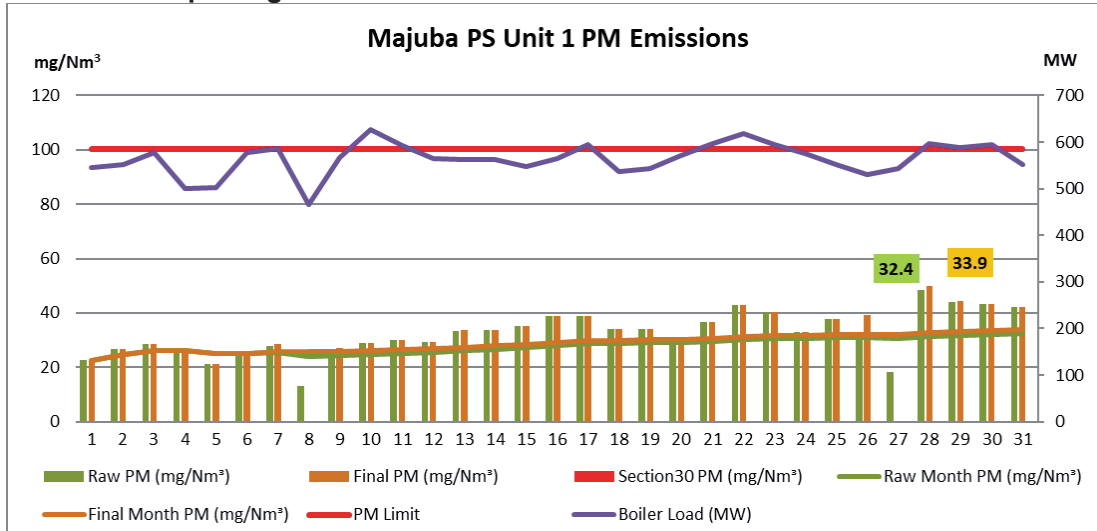


Figure 1. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 1

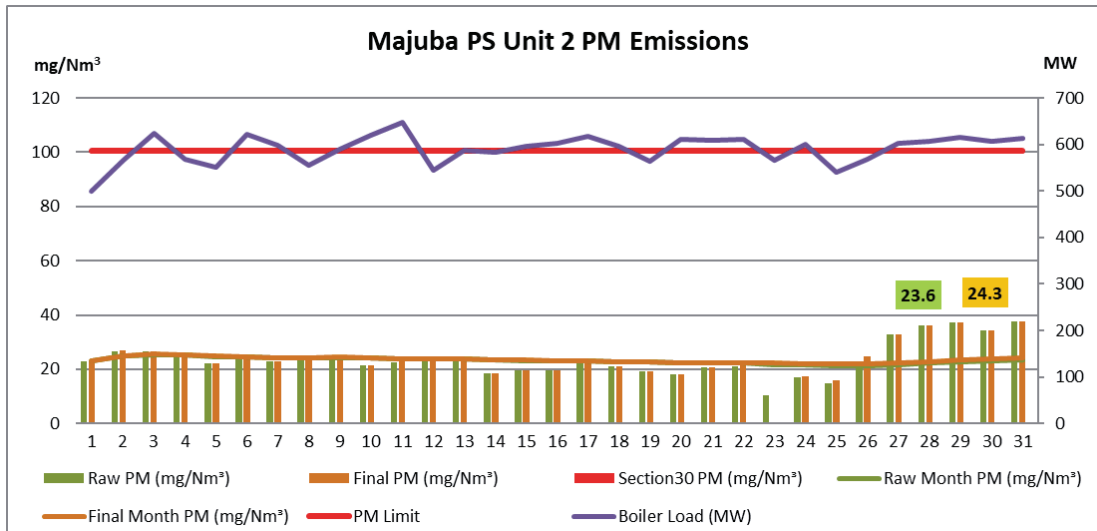


Figure 2. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 2

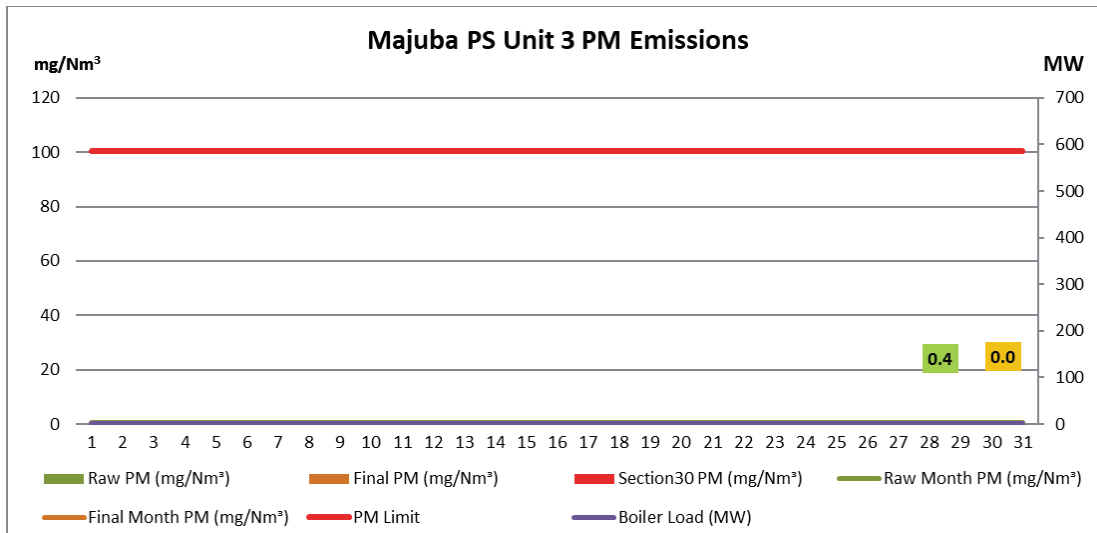


Figure 3. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 3 (Unit on outage).

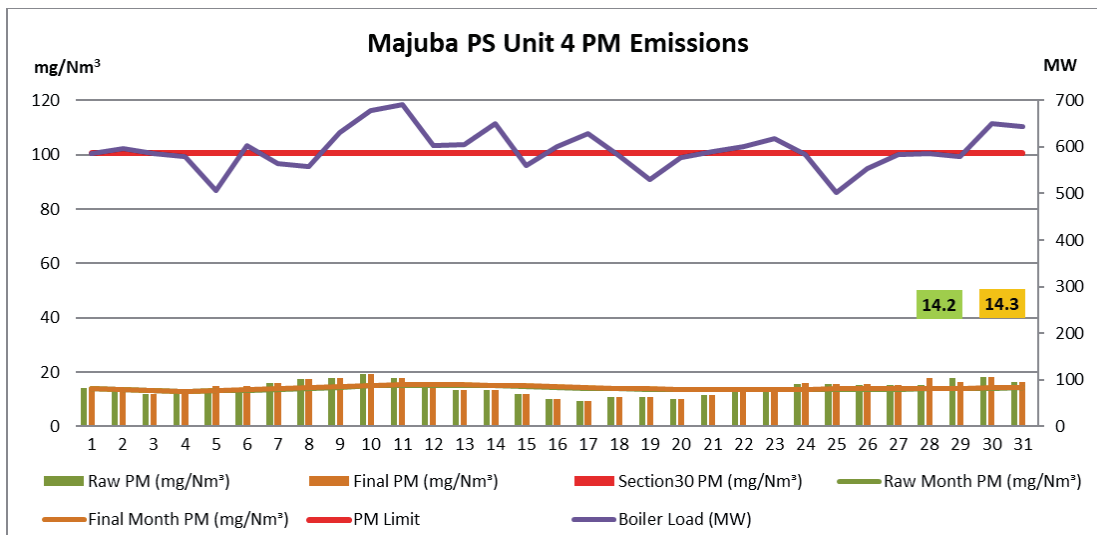


Figure 4. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 4

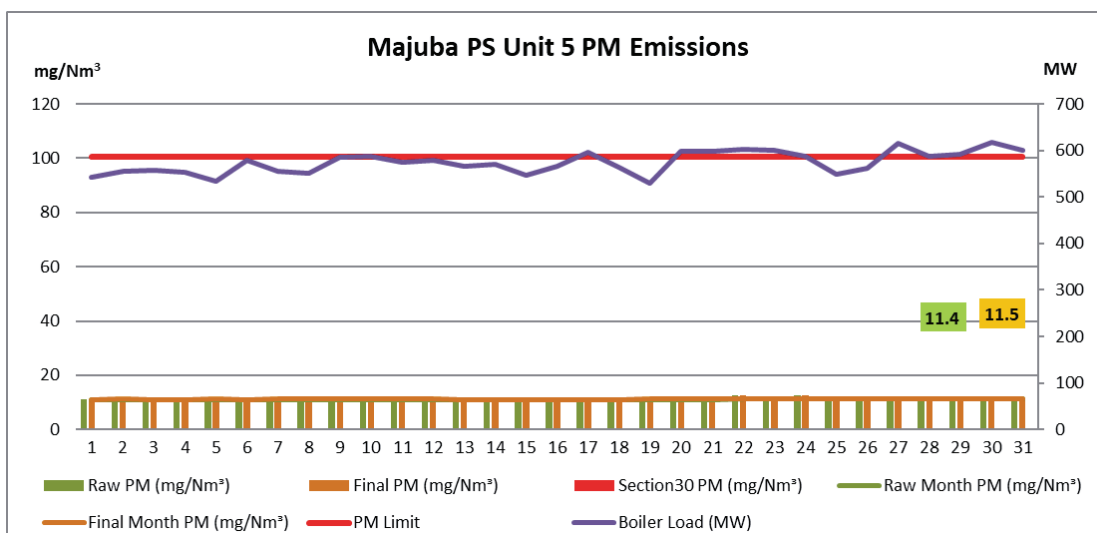


Figure 5. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 5

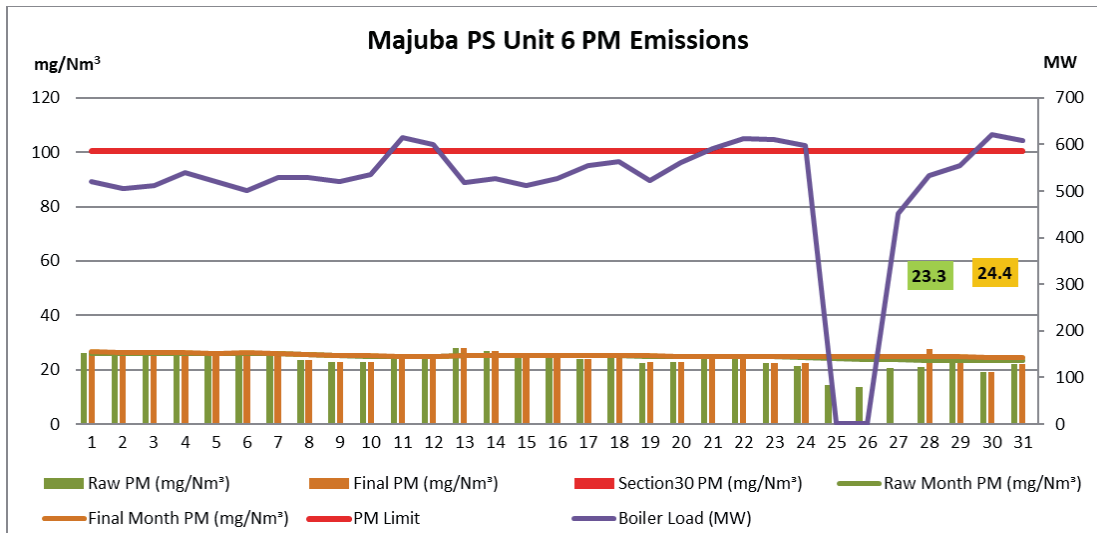


Figure 6. Particulate Matter emissions (daily averages) for the month of May 2019 against emission limit for Unit 6

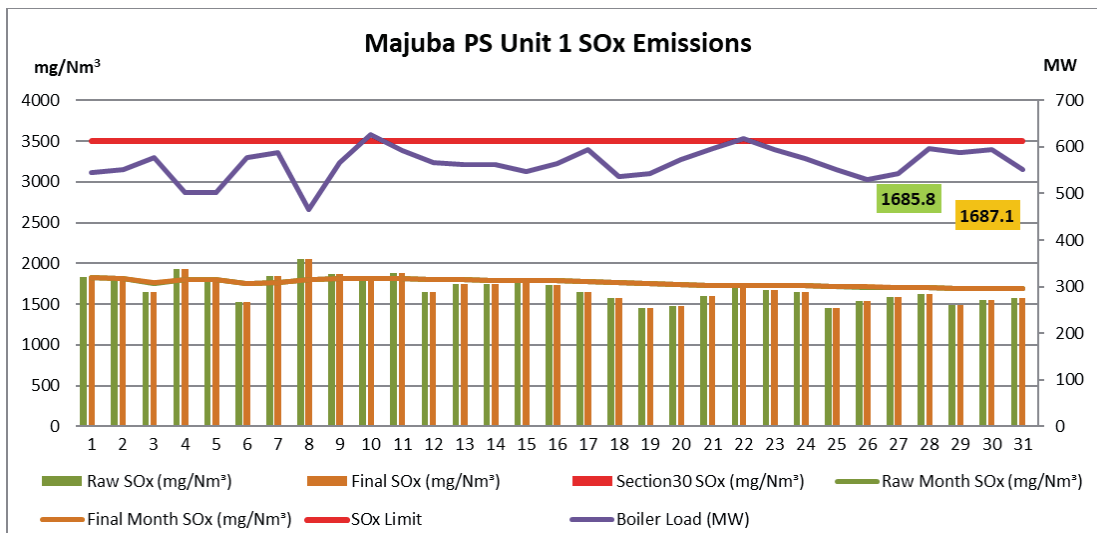


Figure 7. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 1

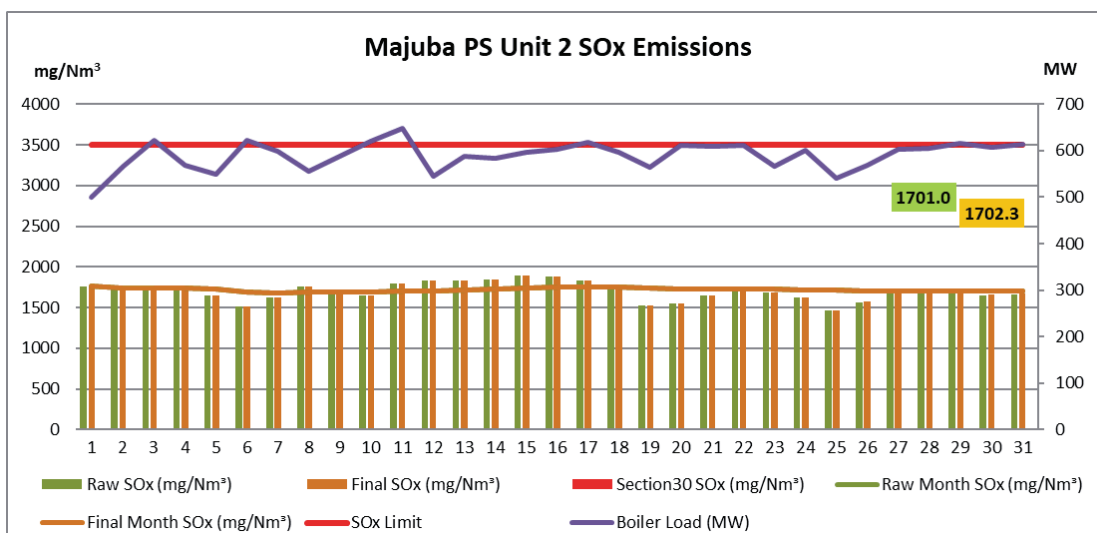


Figure 8. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 2

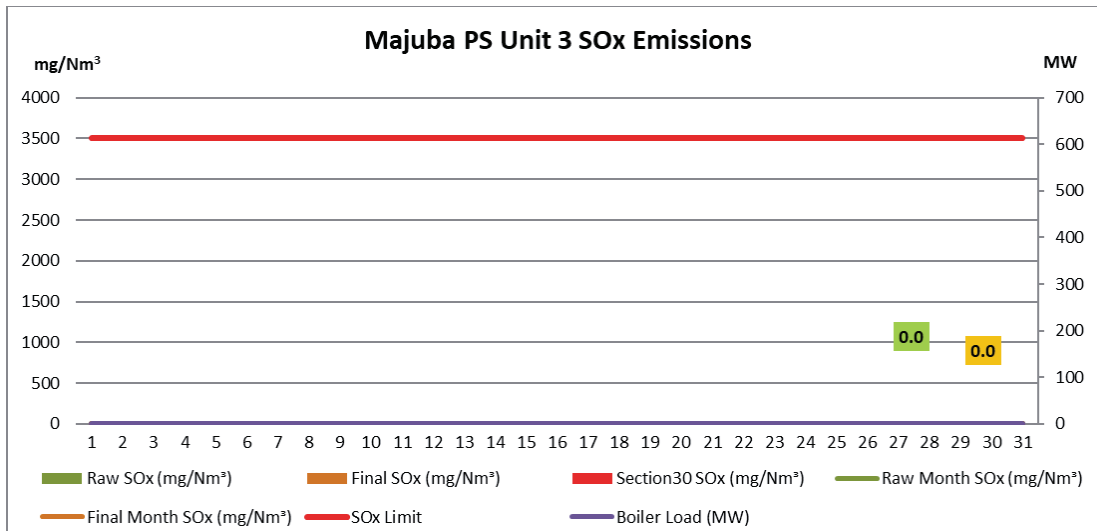


Figure 9. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 3 (Unit on outage).

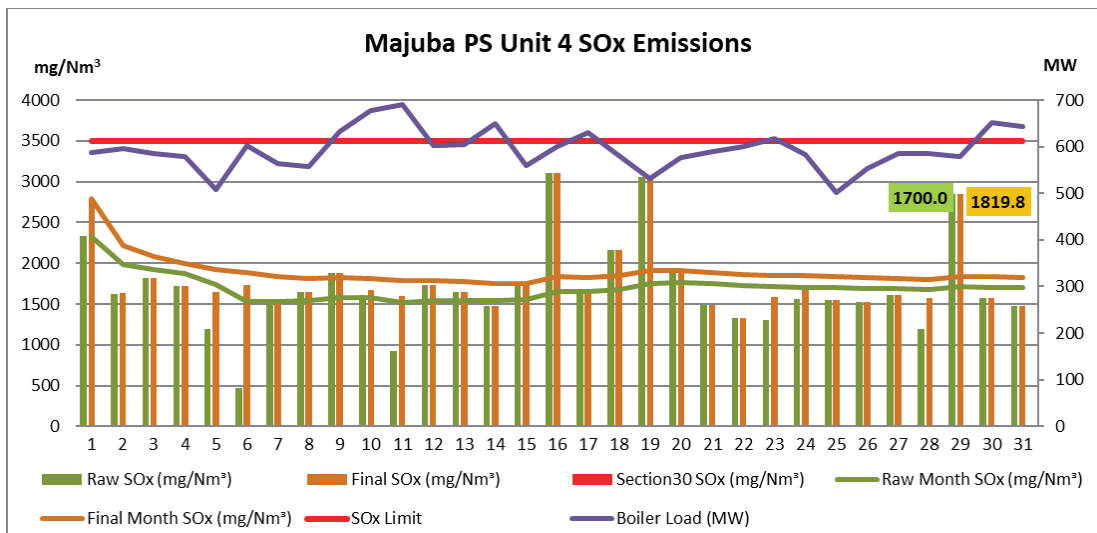


Figure 10. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 4

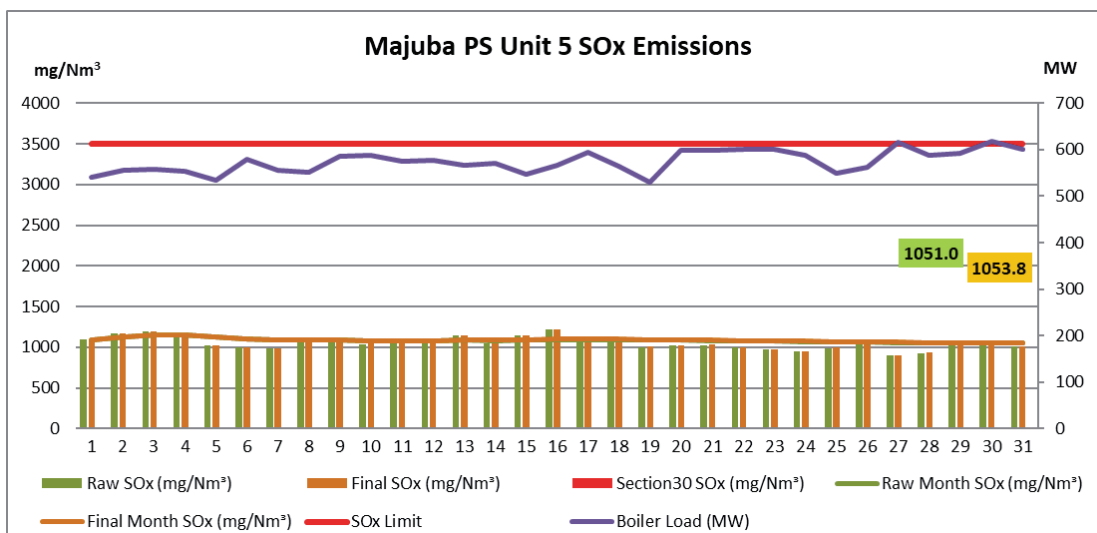


Figure 11. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 5

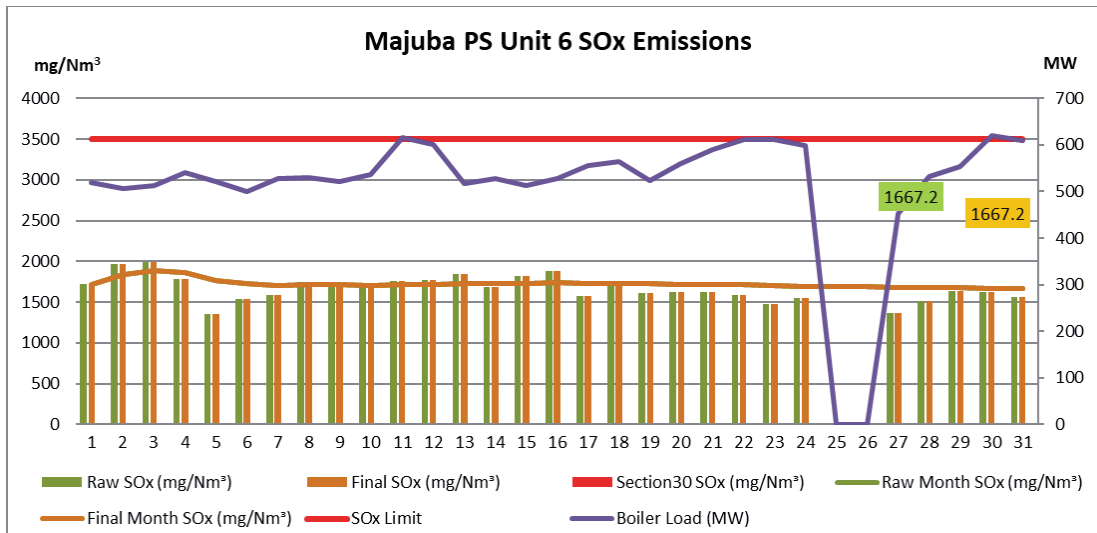


Figure 12. SOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 6

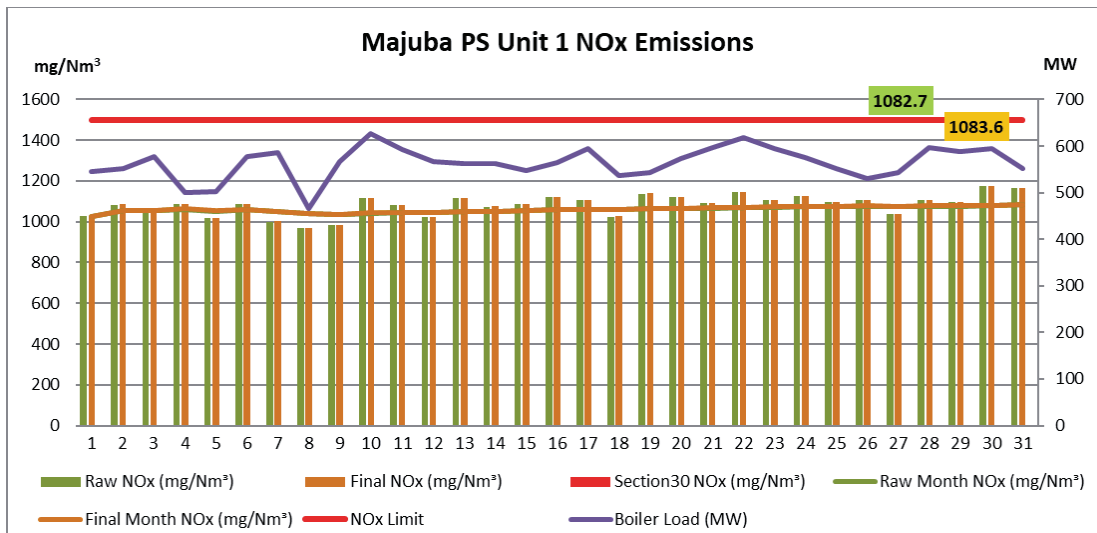


Figure 13. NOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 1

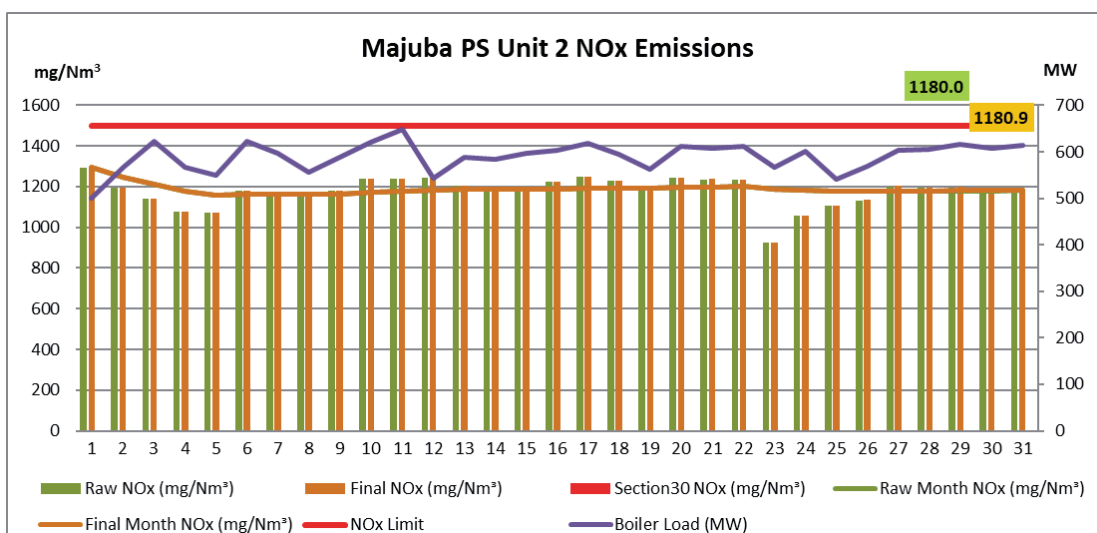


Figure 14. NOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 2

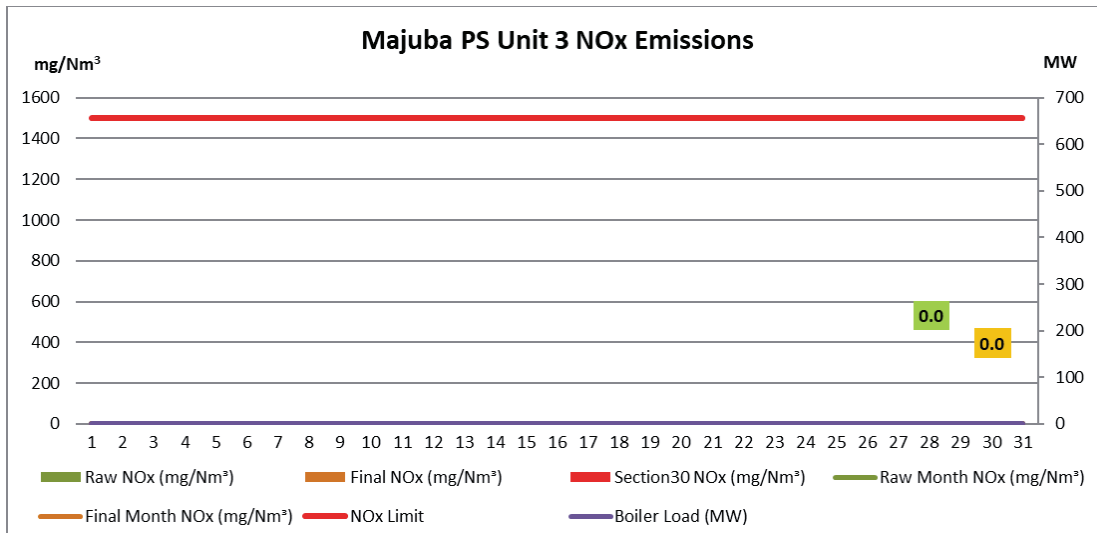


Figure 15. NOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 3 (Unit on outage).

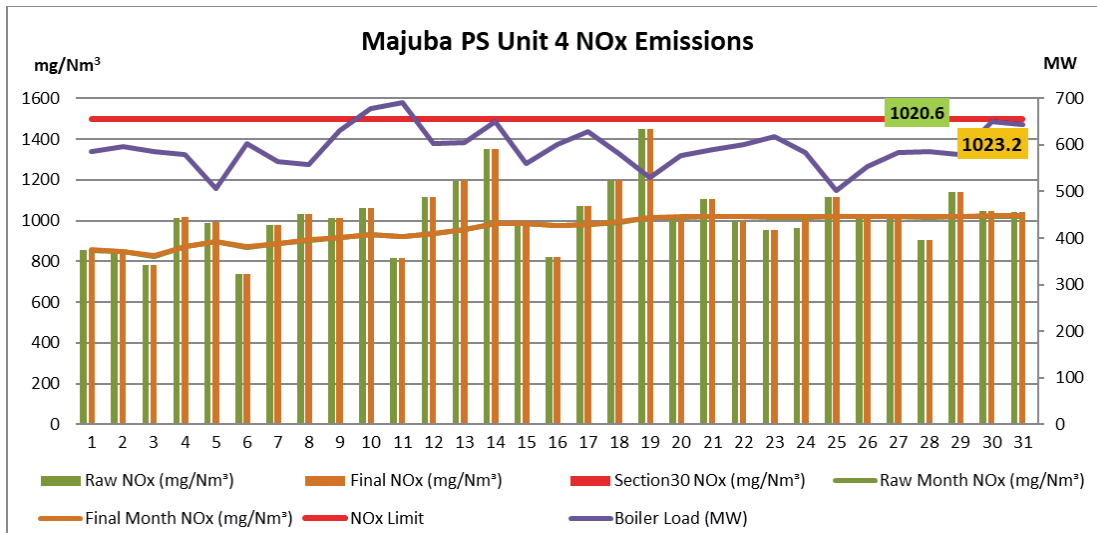


Figure 16. NOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 4

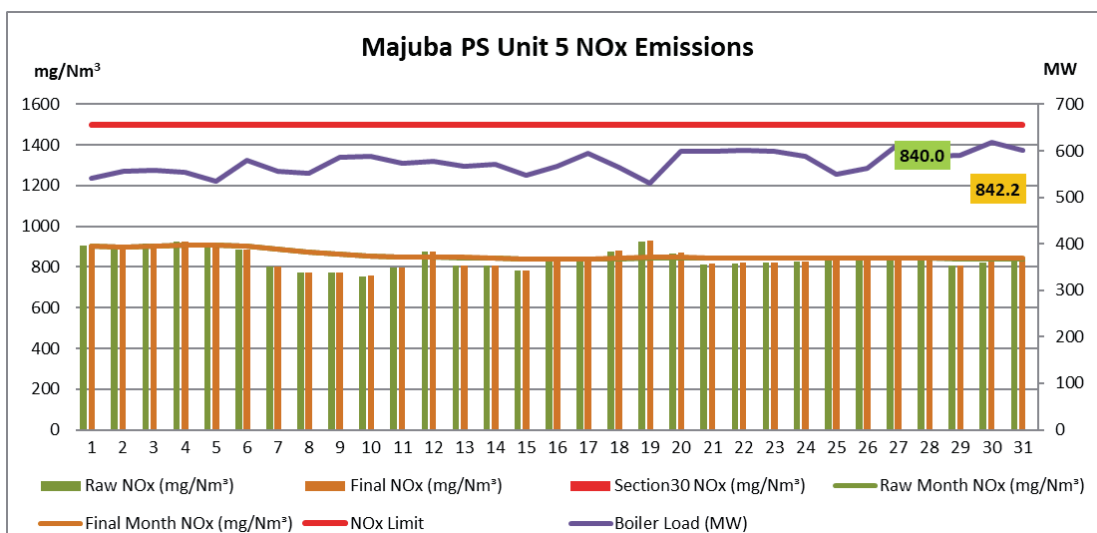


Figure 17. NOx emissions (daily averages) for the month of May 2019 against emission limit for Unit 5

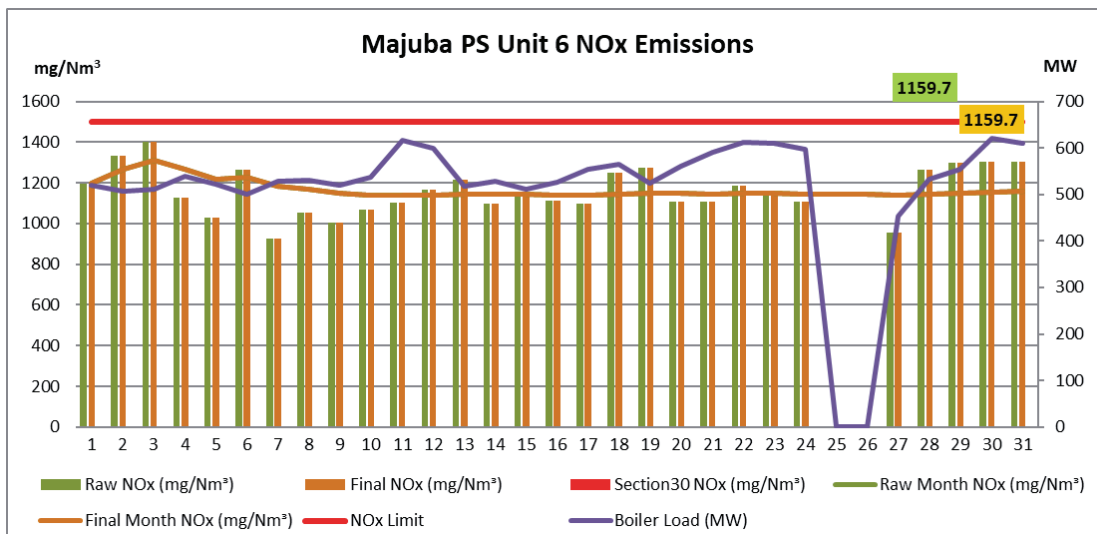


Figure 18. NOx emissions (daily averages) for the month May 2019 against emission limit for Unit 6

Table 4: Monthly tonnages for the month of May 2019

Unit	PM (tons)	SO ₂ (tons)	NO _x (tons)	CO ₂ (tons)
1	68.1	3 632	2 343	
2	49.6	3 676	2 558	
3	Unit on outage			
4	31.9	4 361	2 452	
5	26.6	2 524	2 018	
6	42.7	3 184	2 213	
Sum	218.8	17 378	11 585	

Table 5: Average monthly concentrations (mg/Nm³) for the month of May 2019

Unit	PM (Mg/Nm ³)	SO ₂ (Mg/Nm ³)	NO ₂ (Mg/Nm ³)	CO ₂ (Mg/Nm ³)
1	33.9	1687	1084	
2	24.3	1702	1181	
3	Unit on outage			
4	14.3	1820	1023	
5	11.5	1054	842	
6	24.4	1667	1160	

Table 6: Each unit and respective days operating under normal operation, days in grace period, and section 30 days respectively

Unit	Operating Days (DD:HH:MM)			
	Normal operation	In grace period	Under S30	Unit off load
1	29:19:05	00:00:00	00:00:00	01:04:55
2	30:05:00	00:00:00	00:00:00	00:19:00
3	Unit on outage			
4	30:18:00	00:00:00	00:00:00	00:06:00
5	30:22:30	00:00:00	00:00:00	00:01:30
6	28:05:35	00:00:00	00:00:00	02:18:25

CO₂ and O₂ Relationship

Calculation: CO₂% + O₂% = 19.5-21.5%

Table 7: CO₂ and O₂ deviations of the Month of May 2019

Date	Final Average CO ₂ (%)						Final Average O ₂ (%)						Final Average CO ₂ + O ₂ (%)					
	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6
01-May							8.7	9.4		8.7	8.3	9.6	20.2	20.1		20.0	20.0	20.6
02-May							9.0	7.9		8.4	7.7	10.0	20.2	19.8		20.0	19.9	20.8
03-May							8.4	7.7		8.7	7.5	9.9	20.0	19.6		20.0	19.9	20.7
04-May							9.4	8.3		8.7	7.9	9.4	20.2	19.8		20.0	19.9	20.6
05-May							9.3	8.8		9.8	8.6	9.7	20.2	19.9		20.3	20.0	20.7
06-May							8.3	7.9		8.3	7.5	10.3	20.0	19.7		19.8	19.9	20.8
07-May							8.4	8.1		8.9	7.9	9.9	20.3	19.9		20.2	19.9	20.7
08-May							9.3	8.6		9.4	8.2	9.8		19.9		20.3	20.2	20.7
09-May							8.7	8.2		8.5	7.8	9.8	20.3	19.8		20.3	20.2	20.7
10-May							8.1	8.0		7.9	7.4	9.6	20.2	19.8		19.9	20.0	20.8
11-May							8.3	7.7		8.0	7.9	8.3	20.1	19.7		19.9	20.0	20.5
12-May							8.7	8.7		8.9	7.8	8.5	20.1	20.0		20.2	20.1	20.6
13-May							8.8	8.3		8.5	7.7	9.8	20.1	19.7		20.1	19.9	20.7
14-May							8.7	8.1		8.5	7.8	9.7	20.1	19.7		20.1	19.8	20.6
15-May							9.0	8.1		9.3	7.9	9.9	20.2	19.6		20.3	19.8	20.7
16-May							8.9	8.0		8.5	7.9	9.9	20.2	19.7		19.8	20.0	20.6
17-May							8.5	7.9		8.3	7.5	9.4	20.1	19.6		19.8	19.9	20.7
18-May							9.1	8.3		8.7	8.3	9.2	20.2	19.8		19.9	20.0	20.6
19-May							9.3	8.6		9.4	9.0	9.9	20.2	19.9		19.9	20.1	20.8
20-May							8.9	8.1		8.7	8.0	9.4	20.2	19.8		19.8	20.1	20.7
21-May							8.4	7.9		8.7	7.8	8.7	20.2	19.8		19.9	20.0	20.5
22-May							8.4	8.1		8.5	7.7	8.6	20.4	19.8		19.9	20.0	20.6
23-May							8.3	8.4		8.3	7.4	8.7	20.1			19.8	19.8	20.6
24-May							8.6	8.0		8.7	7.9	8.6	20.2	19.8		20.0	19.9	20.5
25-May							9.0	8.7		10.4	8.7		20.2	19.8		20.1	20.2	
26-May							9.3	8.4		9.2	8.3		20.2	19.7		19.8	19.9	
27-May							8.2	7.9		8.9	7.3	9.0		19.6		20.0	19.8	
28-May							8.4	8.0		8.5	7.9	9.4	20.0	19.7		19.9	20.1	20.5
29-May							8.3	8.1		8.9	7.7	9.2	20.1	19.8		20.0	20.1	20.6
30-May							8.1	8.2		8.1	7.6	8.3	20.0	19.7		19.9	20.0	20.3
31-May							8.5	8.2		8.2	7.9	8.3	20.0	19.8		19.8	20.1	20.3
Totals							8.7	8.2		8.7	7.9	9.3	20.2	19.8		20.0	20.0	20.6

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

Comments on the performance and availability of each unit

Emergency Generation

Table 8: Emergency Generation for the month of May 2019

	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 most of the days during the month and off for one day. No fabric filter bags were replaced during the month.

UNIT 2

The unit base loaded for all of the days during the month. Thirty-four filter bags were replaced during the month.

UNIT 3

The unit was on Outage on all of the days during the month. No fabric filter bags were replaced during the month.

UNIT 4

The unit base loaded for all of the days during the month. No fabric filter bags were replaced during the month.

UNIT 5

The unit base loaded for all of the days during the month. No fabric filter bags were replaced during the month.

UNIT 6

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

Complaints Register

Table 9: Complaints for the month of May 2019

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 in the month of May 2019				

General

Additional information demonstrating compliance with the emission license conditions is supplied in the annual emission reports sent to your office.

Report compiled by:

Date

ENVIRONMENTAL MANAGER: (MAJUBA)

Report verified by:

Date

BOILER ENGINEERING MANAGER: (MAJUBA)

Hoping the above will meet your satisfaction

Yours sincerely

Date

SENIOR ENGINEERING MANAGER (Acting): (MAJUBA)