Eskom

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

Date: 14 March 2019

Enquiries:

Dear Mr. Hlanyane

MAJUBA POWER STATION'S REVISED MONTHLY EMISSIONS REPORT FOR THE MONTH OF OCTOBER 2018

This serves as the monthly report required in terms of Majuba Power Station's Atmospheric Emission License (MPS/0014/2014/F01) under section 7 routine reporting and record keeping. The emissions are for the month of October 2018. Verified emissions of particulates are included. SO_2 and NO_x (as NO_2) emissions are included for all units.

Raw Materials and Products

Table 1. Quantity of Raw Materials and Products used/produced for the month of October 2018

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of October 2018
	Coal	Tons/month	1 800 000	1115828
	Fuel Oil	Tons/month	6000	5 413.10
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity - MW)**	**Production Rate in Month of October 2018**
	Energy	GWh	4110	2093.47
	Ash	Tons/month	Not stated in the license	331 400.9

Abatement Technology

Table 2. Abatement Equipment Control Technology for the month of October 2018

Associated Unit	Technology Type	*Minimum Control Efficiency (%)	Actual Utilisation (%) for the month of October 2018
Unit 1	Fabric Filter Plant	100	*99.92%*
Unit 2	Fabric Filter Plant	100	*99.92%*
Unit 3	Fabric Filter Plant	100	*99.69%*
Unit 4	Fabric Filter Plant	100	*99.76%*
Unit 5	Fabric Filter Plant	100	*99.94%*
Unit 6	Fabric Filter Plant	100	*99.91%*

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

Generation Division (Operating Unit Coal 2)
Majuba Power Station
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Energy Source Characteristics

Table 3. Energy Source Material Characteristics for the month of October 2018

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	*Not stipulated*	
Sulphur Content	*0.6 to >0.94%*	0.80
Ash Content	*28 to >30%*	29.7

Emissions Reporting

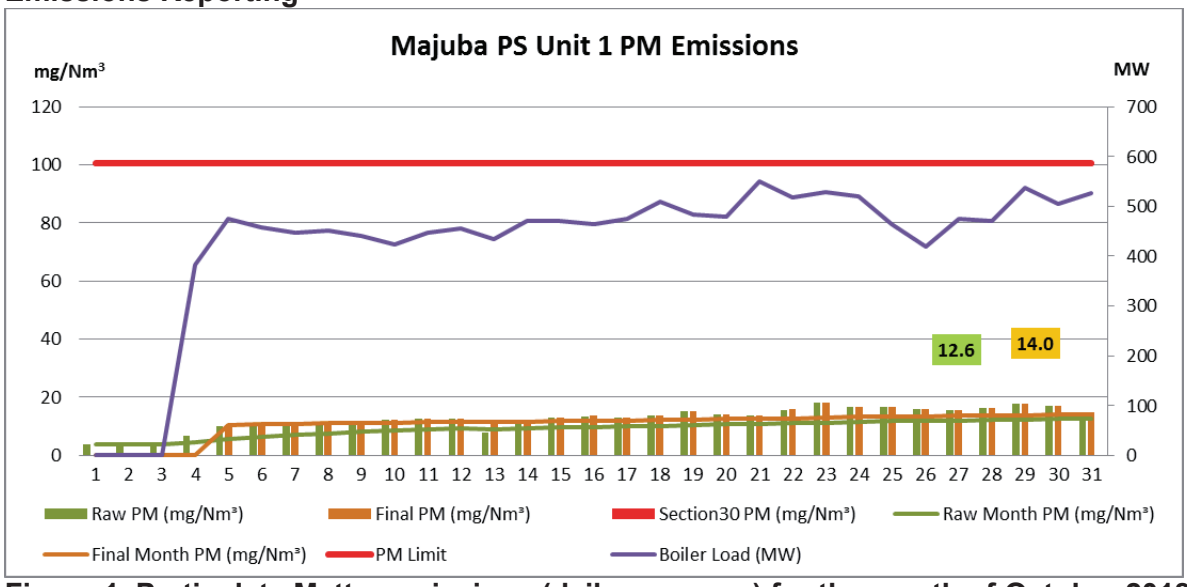

Figure 1. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 1

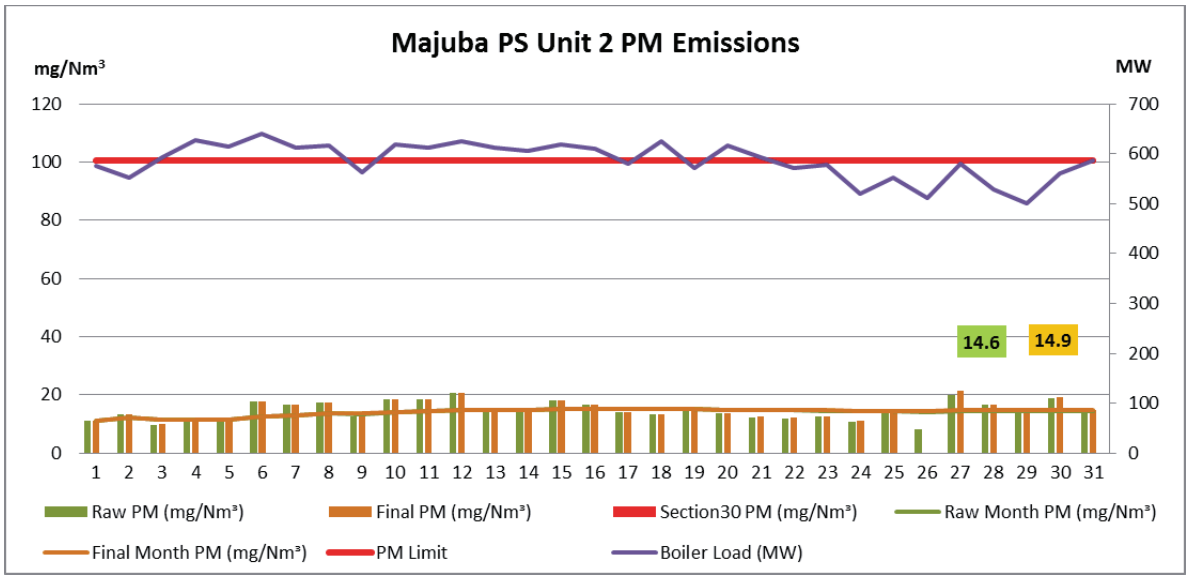

Figure 2. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 2

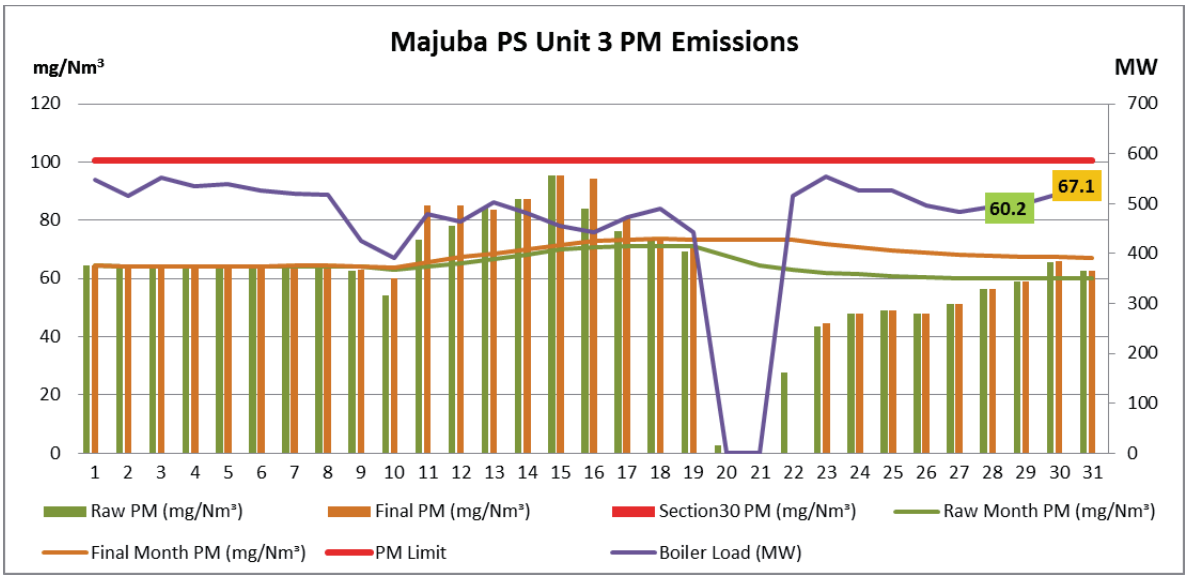

Figure 3. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 3

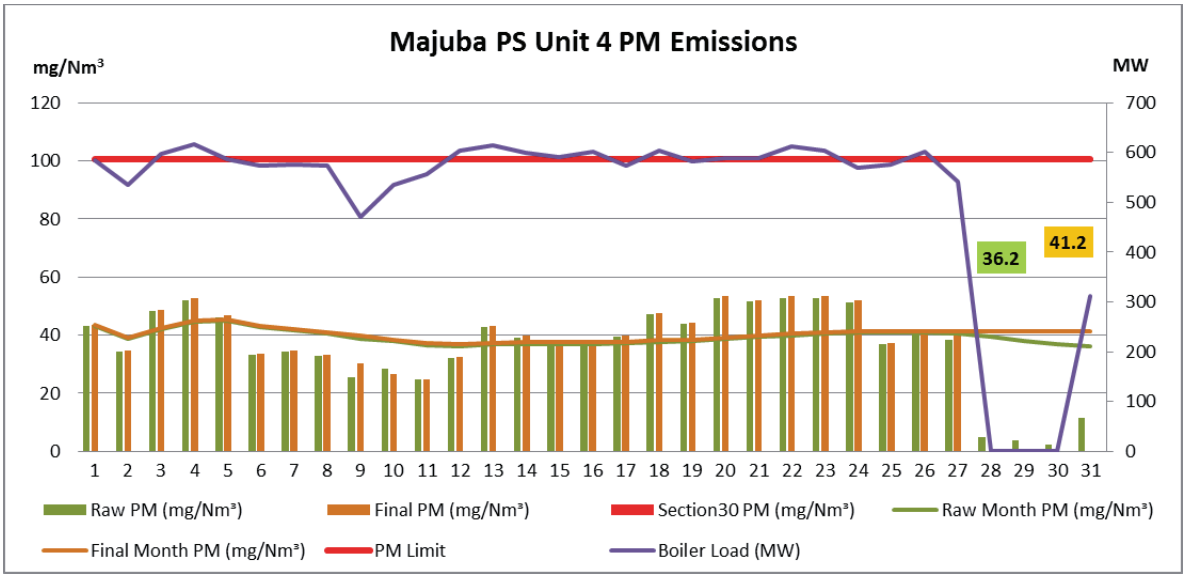

Figure 4. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 4

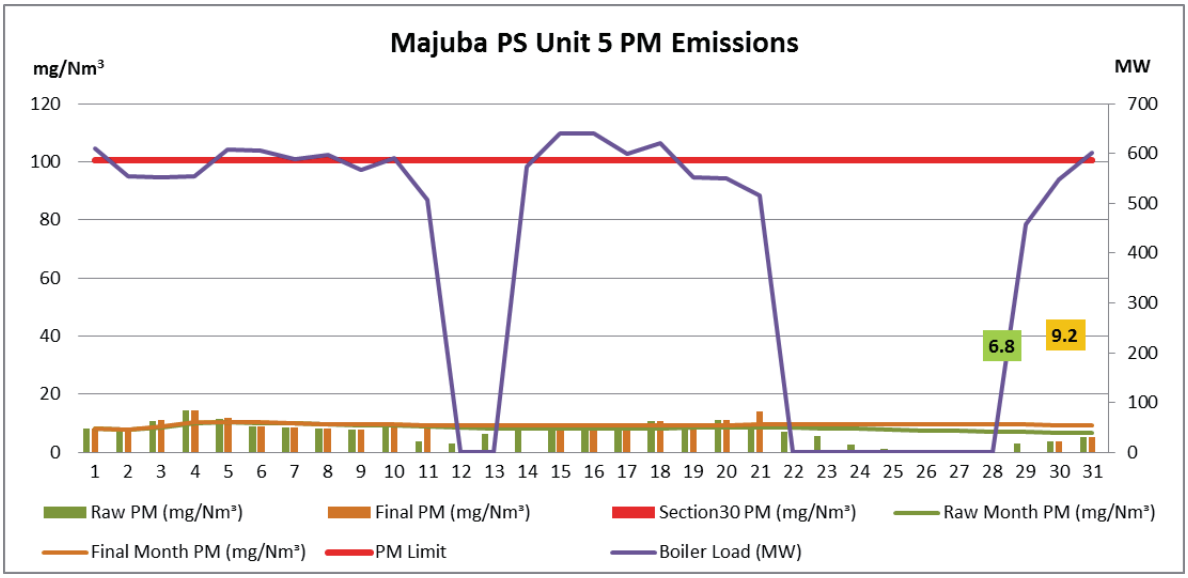

Figure 5. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 5

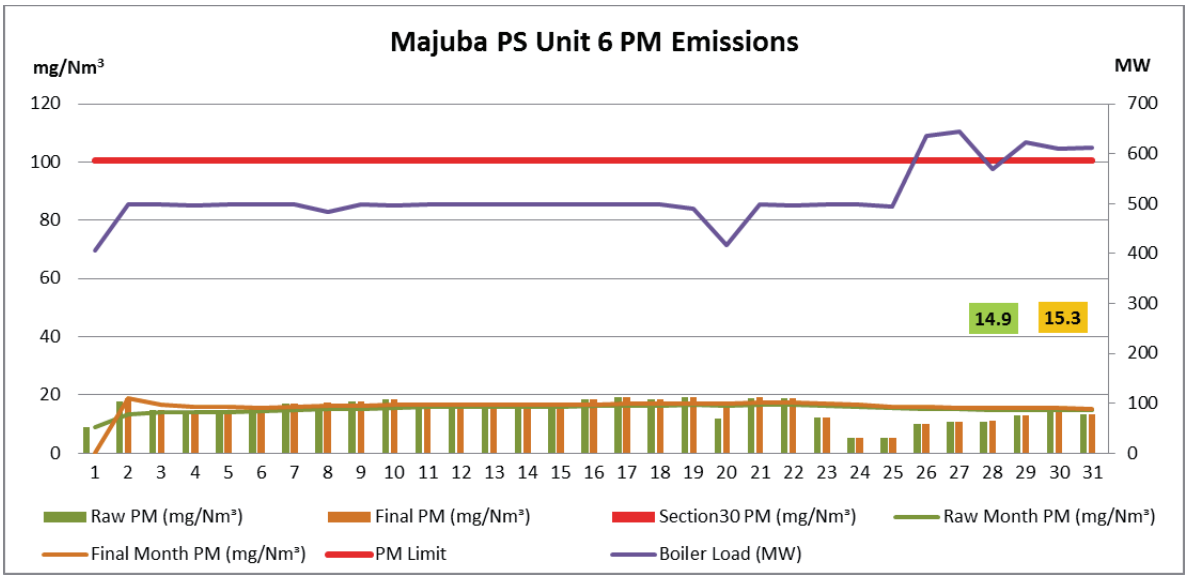

Figure 6. Particulate Matter emissions (daily averages) for the month of October 2018 against emission limit for Unit 6

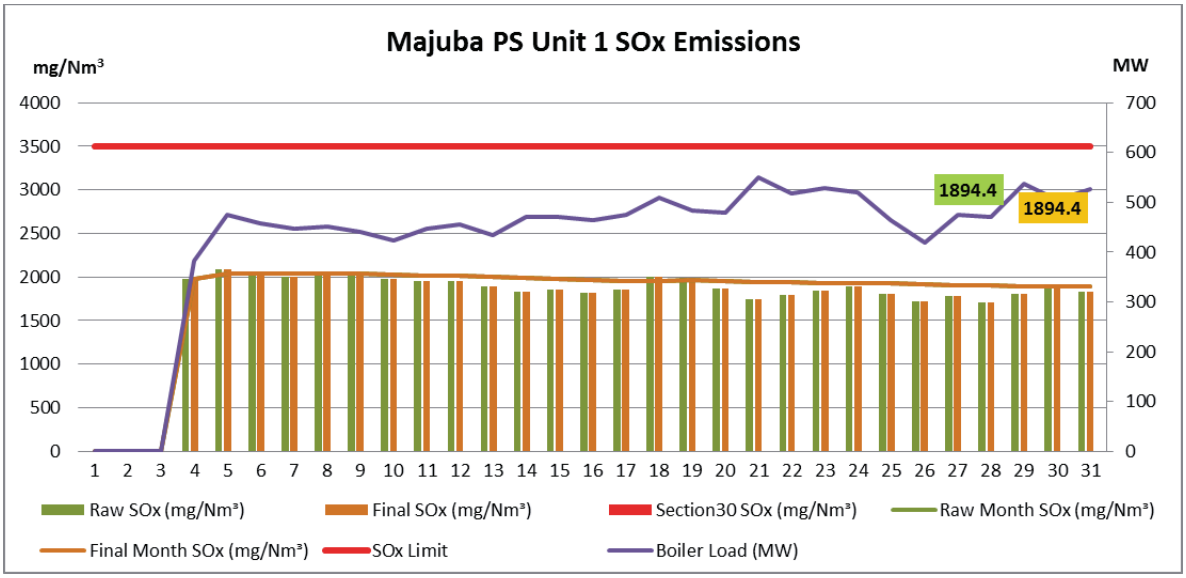

Figure 7. SOx emissions (daily averages) for the month of October 2018 against emission limit for Unit 1

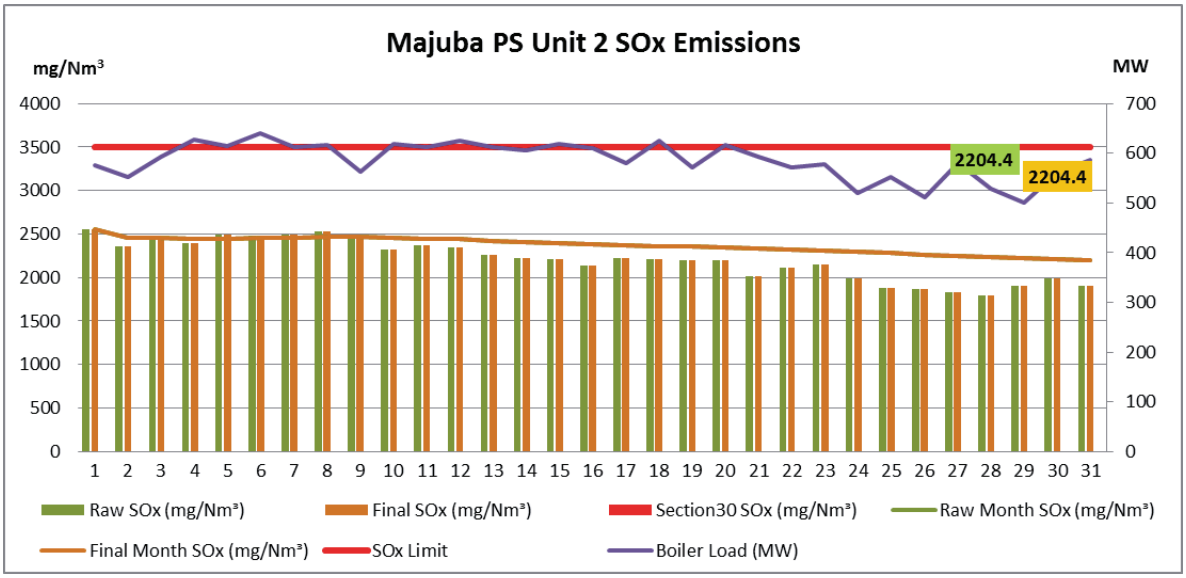

Figure 8. Sox emissions (daily averages) for the month of October 2018 against emission limit for Unit 2

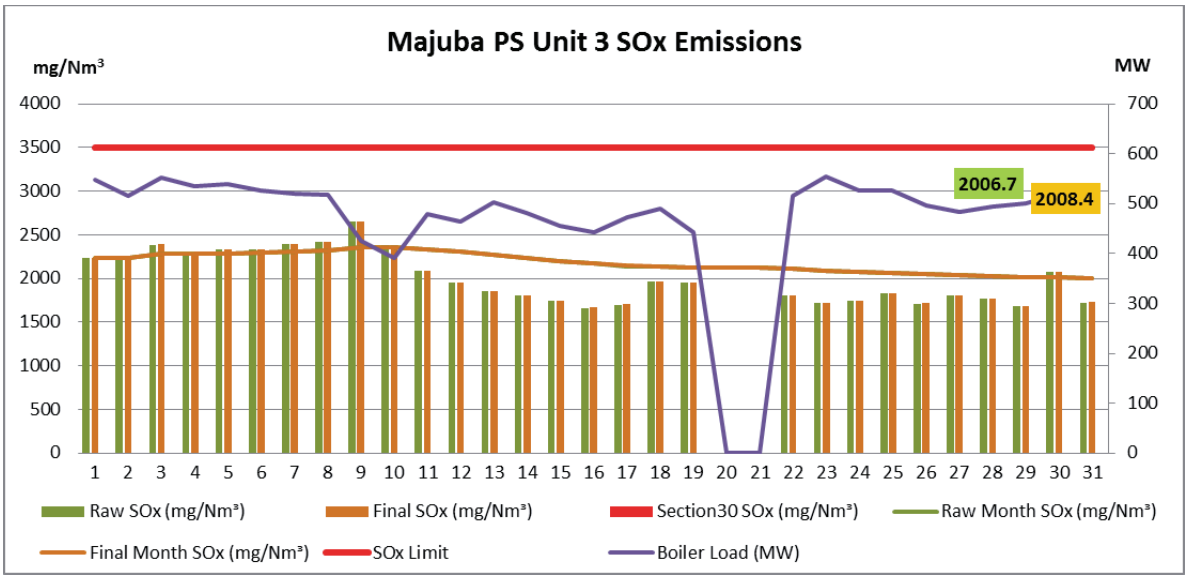

Figure 9. Sox emissions (daily averages) for the month of October 2018 against emission limit for Unit 3

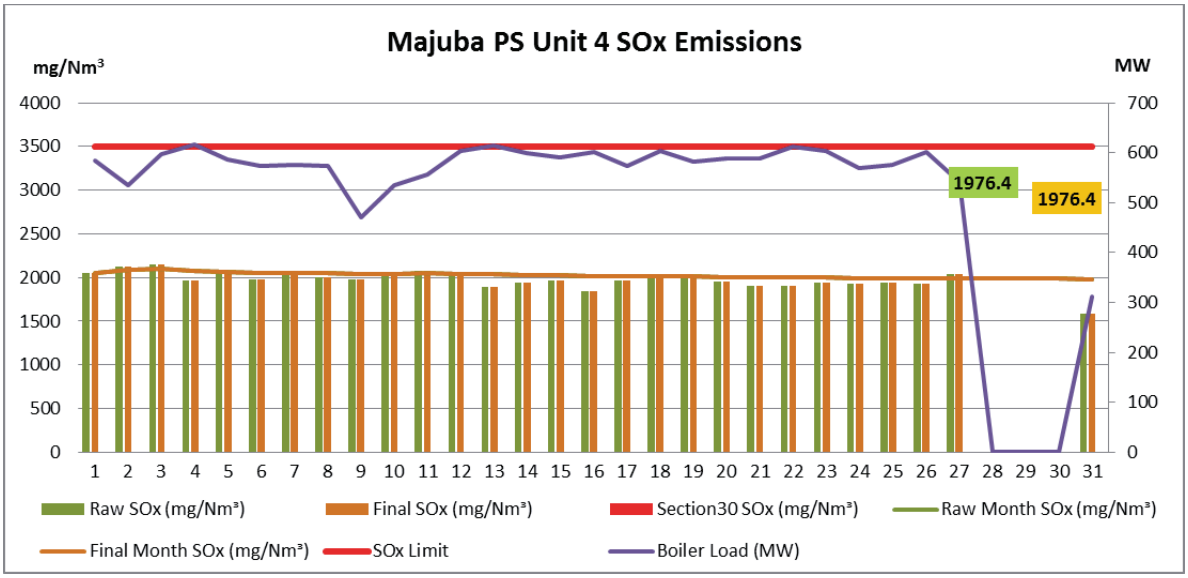

Figure 10. Sox emissions (daily averages) for the month of October 2018 against emission limit for Unit 4

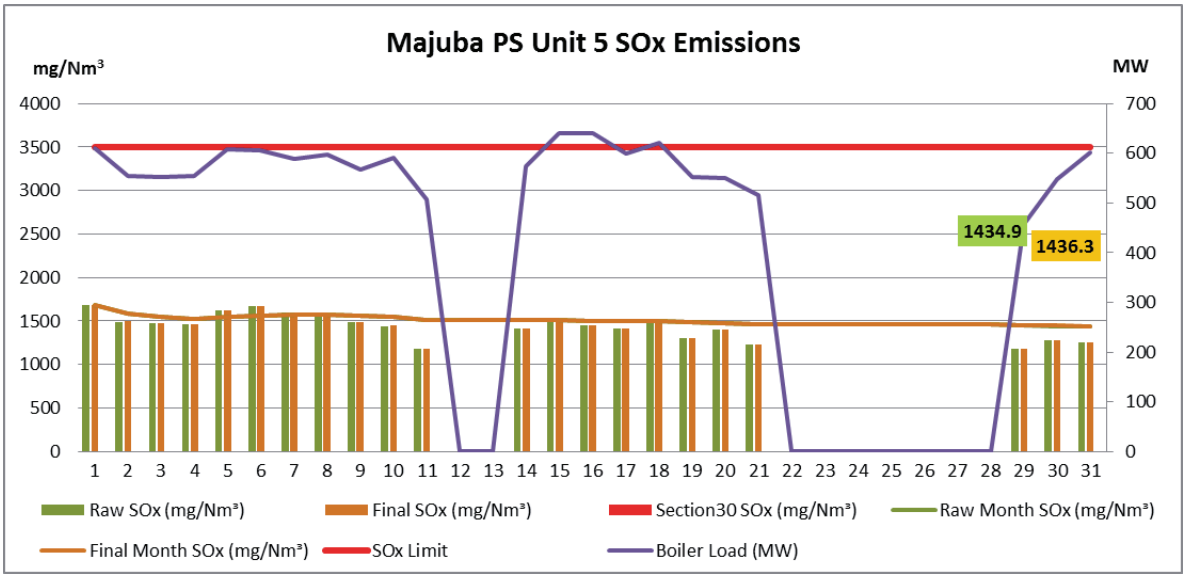

Figure 11. Sox emissions (daily averages) for the month of October 2018 against emission limit for Unit 5

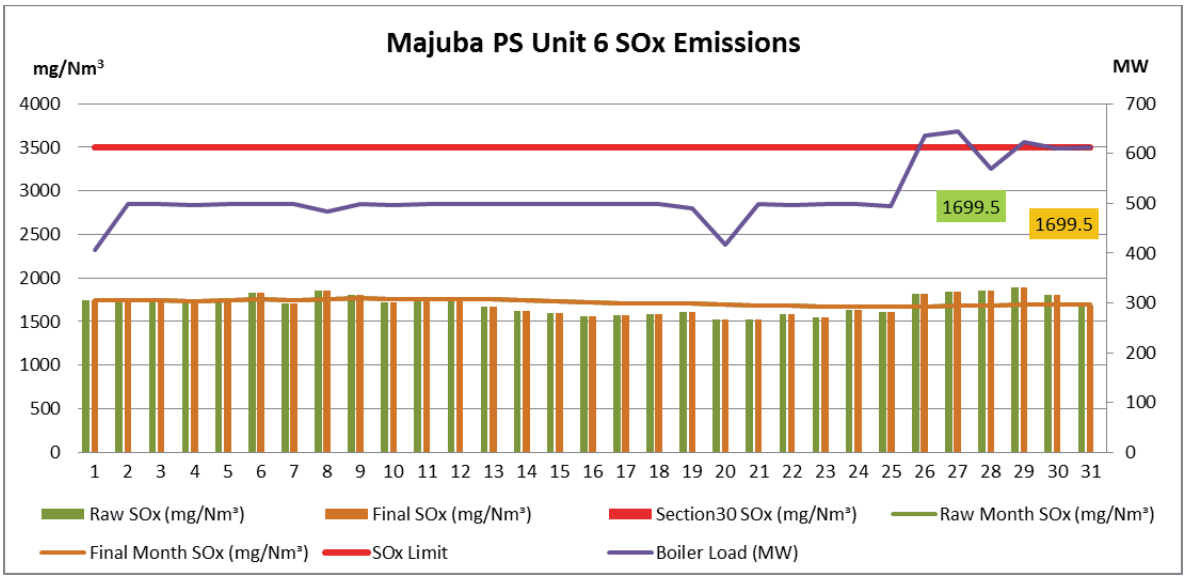

Figure 12. Sox emissions (daily averages) for the month of October 2018 against emission limit for Unit 6

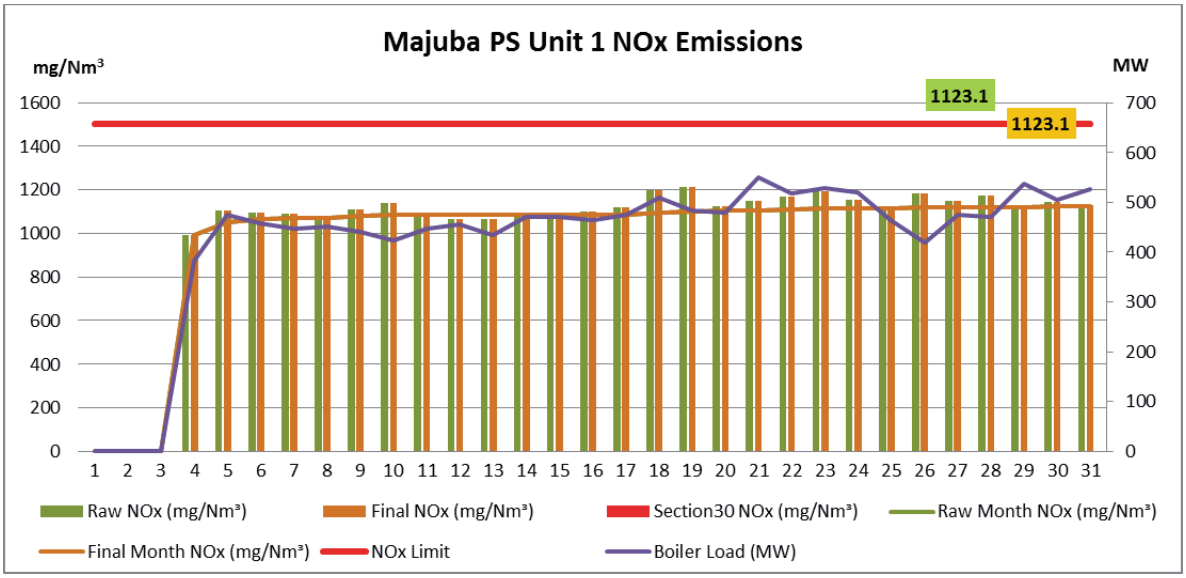

Figure 13. Nox emissions (daily averages) for the month of October 2018 against emission limit for Unit 1

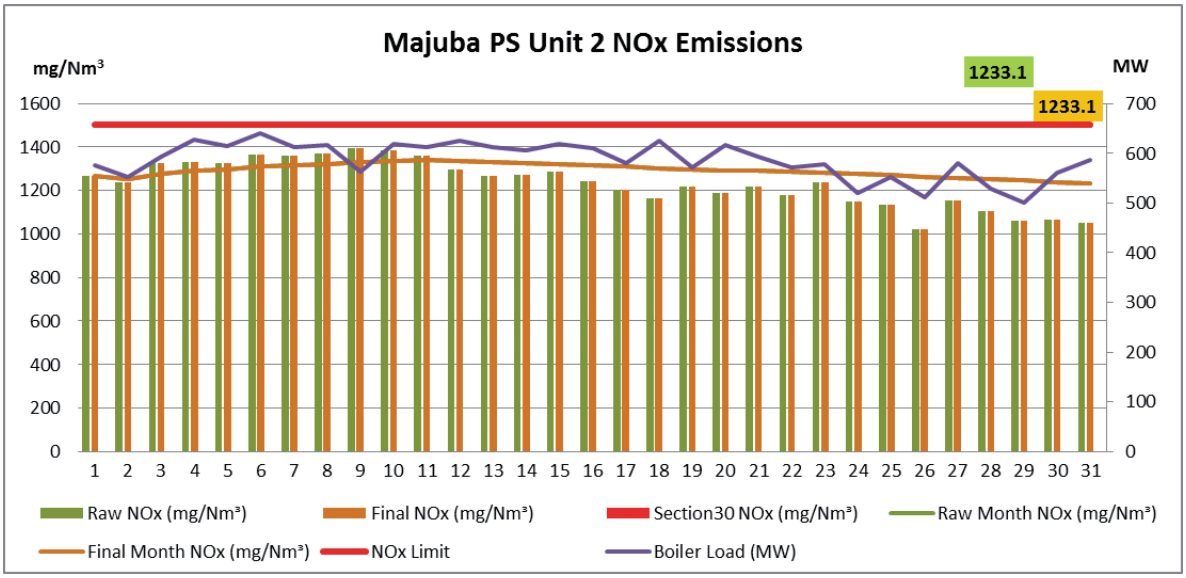

Figure 14. Nox emissions (daily averages) for the month of October 2018 against emission limit for Unit 2

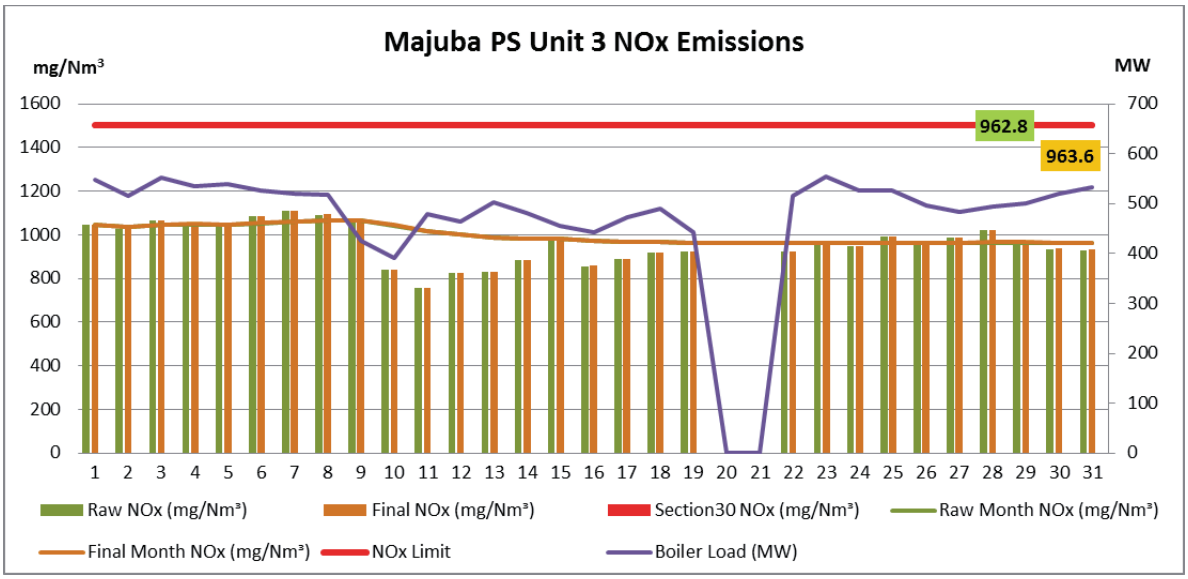

Figure 15. Nox emissions (daily averages) for the month of October 2018 against emission limit for Unit 3

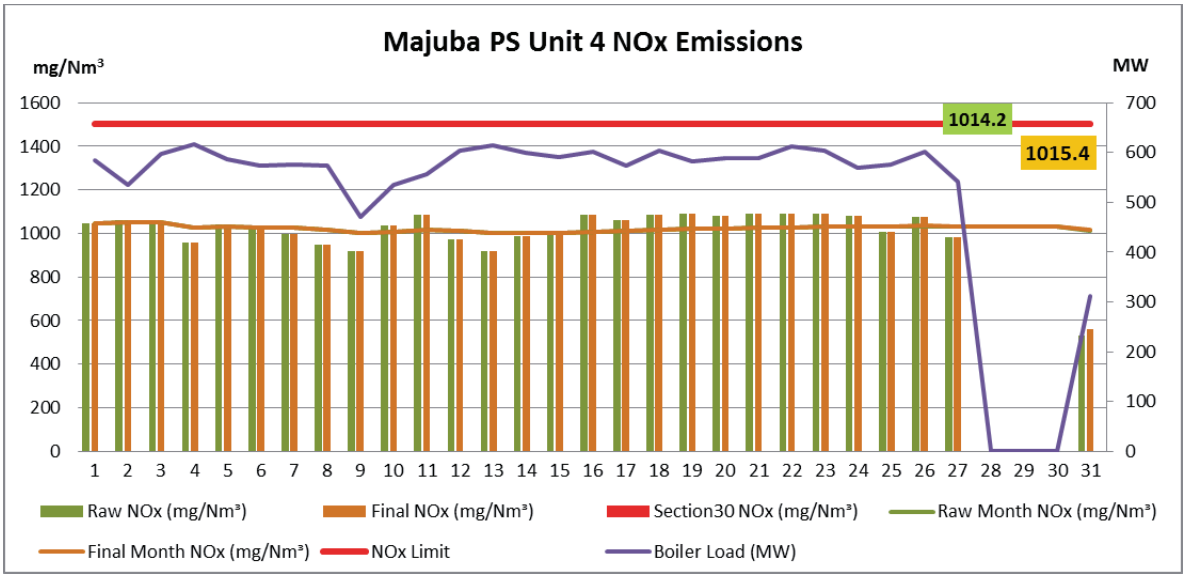

Figure 16. Nox emissions (daily averages) for the month of October 2018 against emission limit for Unit 4

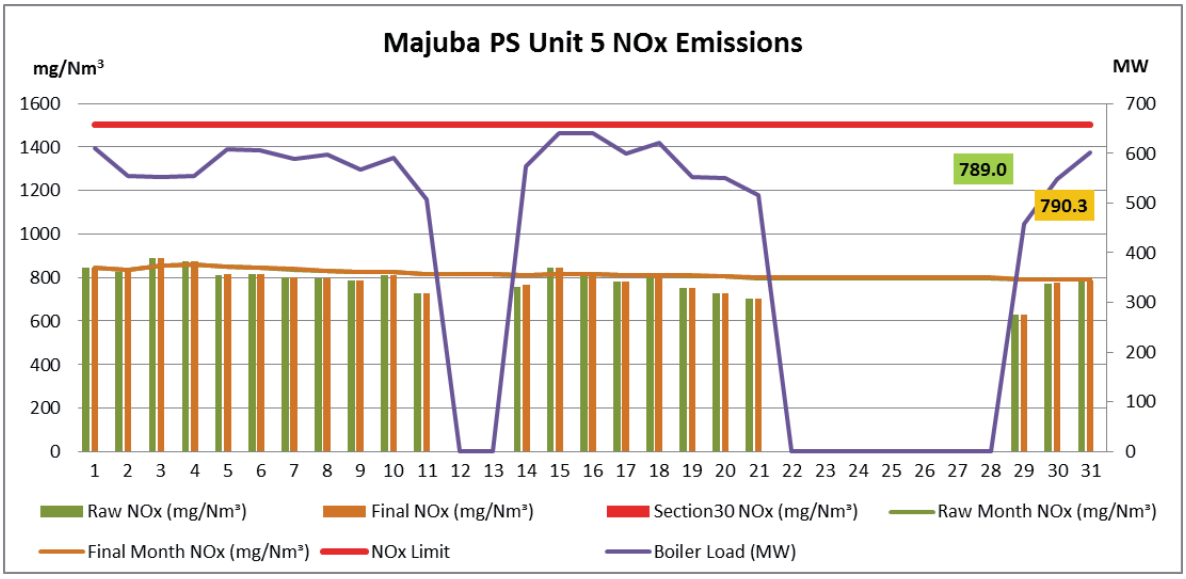

Figure 17. Nox emissions (daily averages) for the month of October 2018 against emission limit for Unit 5

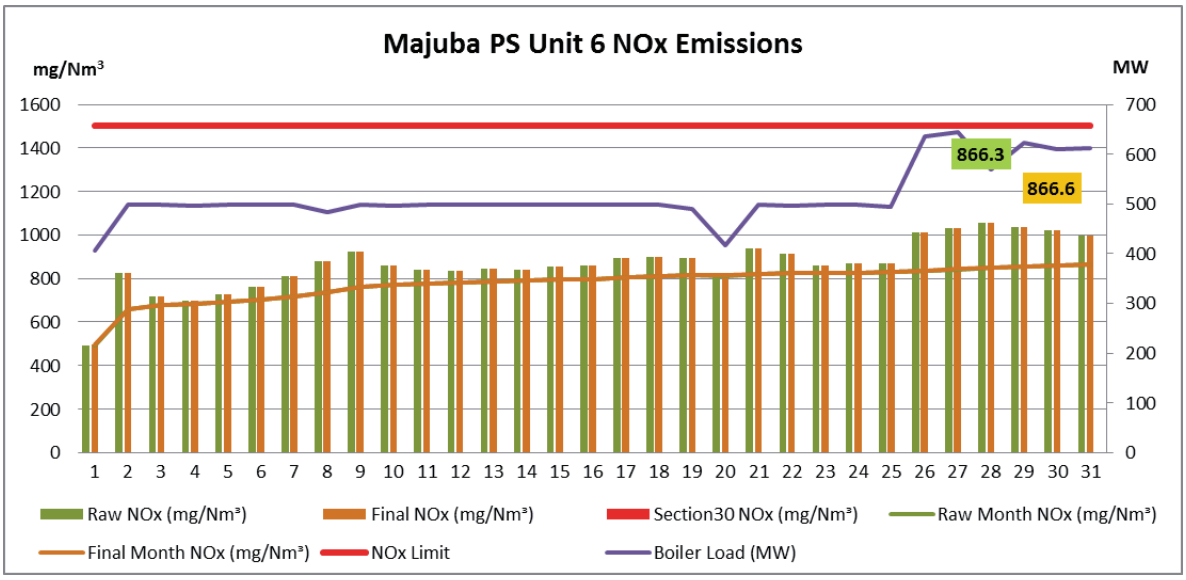

Figure 18. Nox emissions (daily averages) for the month October 2018 against emission limit for Unit 6

Table 4: Monthly tonnages for the month of October 2018

Unit	PM (tons)	SO_2 (tons)	NO_x (tons)	CO_2 (tons)
1	24.5	3 493	2 086	
2	32.9	5 037	2 821	
3	99.3	3 542	1 720	
4	83.7	4 123	2 136	
5	13.6	2 412	1 321	
6	33.0	4 139	2 124	
Sum	287.0	22 746	12 208	

*Calculated from mass balance due to low monitor reliability

Table 5: Average monthly concentrations (mg/Nm^3) for the month of October 2018

Unit	PM (Mg/Nm^3)	SO_2 (Mg/Nm^3)	NO_2 (Mg/Nm^3)	CO_2 (Mg/Nm^3)
1	13.99	1894	1123	
2	14.94	2204	1233	
3	67.10	2008	964	
4	41.25	1976	1015	
5	9.16	1436	790	
6	15.32	1699	867	

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

	Operating Days (DD:HH:MM)			
Unit	Normal operation	In grace period	Under S30	Unit off load
1	26:23:55	00:00:00	00:00:00	04:00:05
2	30:12:20	00:00:00	00:00:00	00:11:40
3	28:06:05	00:00:00	00:00:00	02:17:55
4	27:01:40	00:00:00	00:00:00	03:22:20
5	19:12:50	00:00:00	00:00:00	11:11:10
6	30:00:55	00:00:00	00:00:00	00:23:05

*Grace period referring to 48 hours after a start-up as per AEL

CO_2 and O_2 Relationship

Calculation: CO_2% + O_2% = 19.5-21.5%

	Final Average CO_2 (%)							Final Average O_2 (%)							Final Average CO_2 + O_2 (%)					
Date	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-Oct									9.4	9.2	8.3	6.8	6.7							
02-Oct									9.9	9.9	8.6	6.7	6.7							
03-Oct									9.1	9.7	8.1	6.8	6.7							
04-Oct								9.8	8.6	9.5	7.9	6.8	6.7							
05-Oct								8.5	9.0	9.4	8.5	6.8	6.7							
06-Oct								8.4	9.0	9.8	8.6	6.8	6.7							
07-Oct								8.7	9.6	10.7	8.6	6.8	6.7							
08-Oct								8.7	9.5	10.7	8.4	6.8	6.7							
09-Oct								8.5	9.7	12.0	9.4	6.8	6.7							
10-Oct								8.4	9.4	12.0	9.2	6.9	6.7							
11-Oct								8.5	9.5	9.4	9.6	6.8	6.7							
12-Oct								8.6	9.0	8.8	8.3		6.7							
13-Oct								8.9	8.6	8.6	7.9		6.7							
14-Oct								8.8	8.6	8.7	8.0	6.8	6.7							
15-Oct								8.6	8.9	8.7	8.3	6.8	6.7							
16-Oct								8.6	8.8	9.0	8.6	6.8	6.7							
17-Oct								9.1	9.2	8.8	8.8	6.8	6.7							
18-Oct								8.6	8.5	8.6	8.5	6.9	6.7							
19-Oct								9.1	9.2	9.0	8.7	7.1	6.7							
20-Oct								9.3	8.5		8.5	7.3	6.7							
21-Oct								7.9	8.8		8.7	7.3	6.7							
22-Oct								8.2	8.9	8.6	8.3		6.7							
23-Oct								7.9	8.8	8.1	8.3		6.7							
24-Oct								8.0	8.3	8.4	8.6		6.7							
25-Oct								9.0	7.8	8.5	8.7		6.7							
26-Oct								9.7	8.6	8.8	8.7		6.7							
27-Oct								8.8	7.7	9.2	9.7		6.7							
28-Oct								8.9	8.2	9.2			6.7							
29-Oct								8.0	8.9	8.8		6.7	6.7							
30-Oct								8.5	8.3	8.7		6.7	6.7							
31-Oct								8.2	7.7	8.5	10.1	6.8	6.7							
Totals								**8.6**	**8.8**	**9.3**	**8.6**	**6.9**	**6.7**							

Table 7: CO_2 and O_2 deviations of the Month of October 2018
*Blank spaces indicate that the unit was offline during that period

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 four days. No fabric filter bags were replaced during the month.

UNIT 2

The unit base loaded for all of the days during the month. Eleven fabric filter bags were replaced during the month.

UNIT 3

The unit base loaded for most of the days during the month and off for two days. Sixty-three fabric filter bags were replaced during the month.

UNIT 4

The unit base loaded for most of the days during the month and off for three days. Forty-seven fabric filter bags were replaced during the month.

UNIT 5

The unit base loaded for twenty during the month and off for eleven days. One fabric filter bags were replaced during the month.

UNIT 6

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

Ambien Air Quality Monitoring station

*Due to a transformer power surge caused by a lightning strike, power supply to Majuba's ambient air quality station was disrupted throughout most of October. Though power supply was restored, data availability for October was to low to compile the monthly ambient AQ report. Majuba will once again provide the Licencing Authority with an ambient Air Quality report for the month of November.

Emergency Generation

Table 8: Emergency Generation for the month of October 2018

	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

Complaints Register

Table 9: Complaints for the month of October 2018

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

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 14/03/2019

ENVIRONMENTAL MANAGER: (MAJUBA)

Report verified by:

Date: 19/03/2019

BOILER ENGINEERING MANAGER: (MAJUBA)

Hoping the above will meet your satisfaction.

Yours sincerely

Date 19/03/2019

SENIOR ENGINEERING MANAGER (Acting): (MAJUBA)