

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 JULY 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 July 2018. 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 July 2018

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of July 2018
	Coal	Tons/month	1.800.000	1175063
	Fuel Oil	Tons/month	6000	5244.90
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity - MW)	Production Rate in Month of July 2018
	Energy	GWh	4110	2262.32
	Ash	Tons/month	Not stated in the license	340768.3

Abatement Technology

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

Associated Unit	Technology Type	*Minimum Control Efficiency (%)	Actual Utilisation (%) for the month of July 2018
Unit 1	Fabric Filter Plant	100%	99.95%
Unit 2	Fabric Filter Plant	100%	99.77%
Unit 3	Fabric Filter Plant	100%	99.89%
Unit 4	Fabric Filter Plant	100%	99.82%
Unit 5	Fabric Filter Plant	100%	99.82%
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

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 July 2018

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	Not stipulated	
Sulphur Content	0.6 to >0.94%	0.65
Ash Content	28 to >30%	29.0

Emissions Reporting

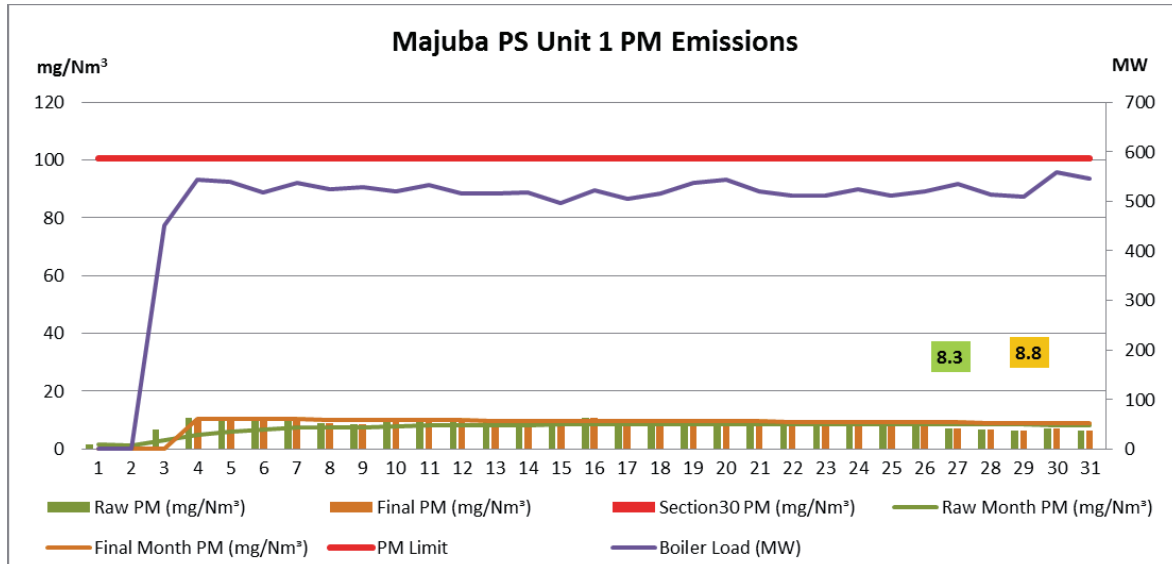


Figure 1. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 1

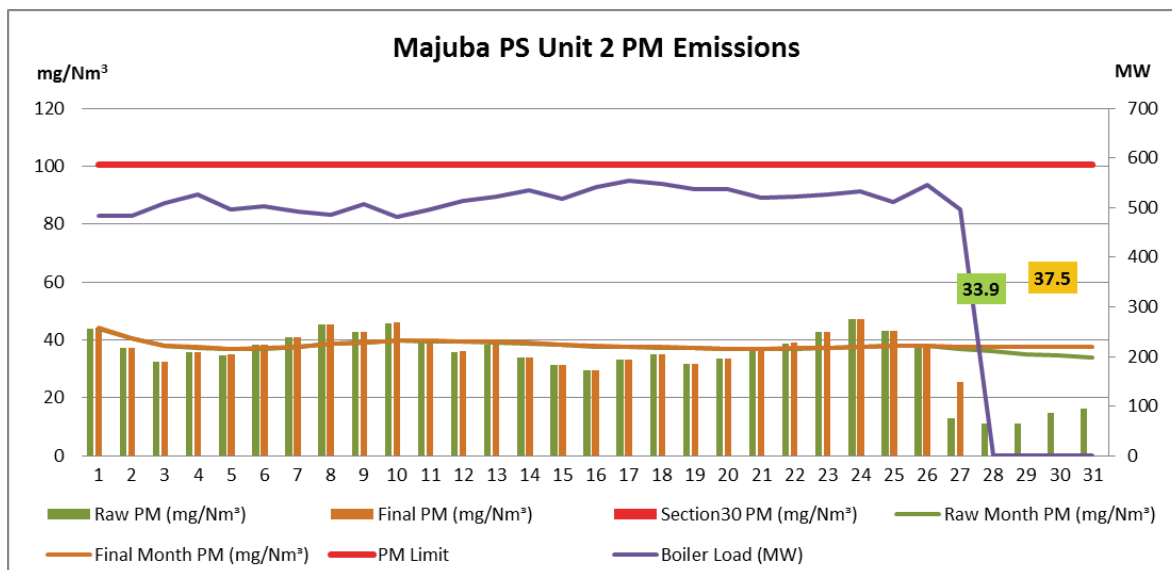


Figure 2. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 2

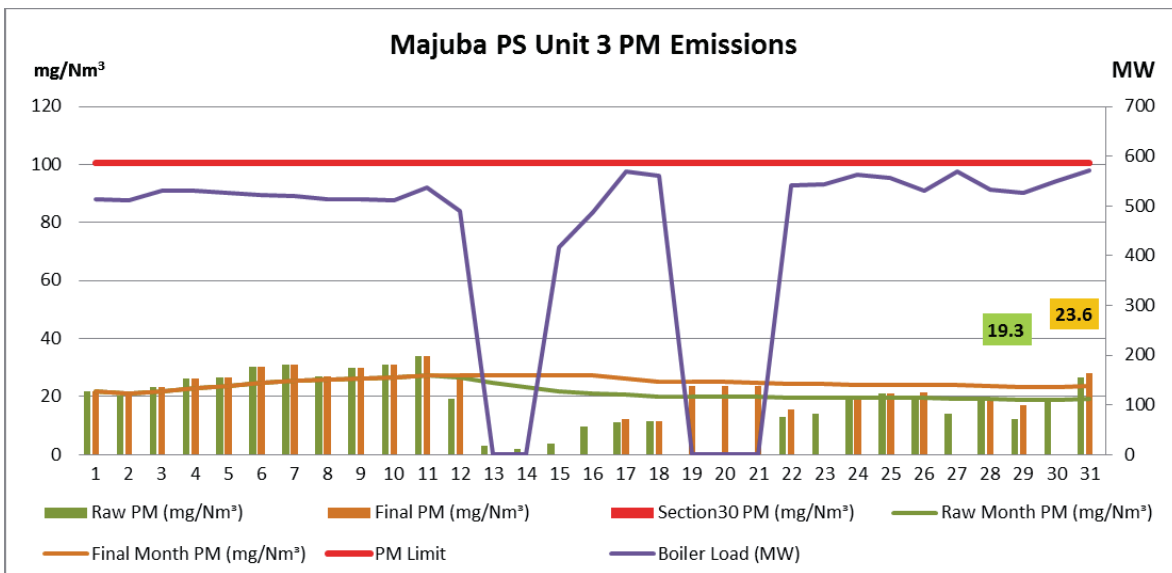


Figure 3. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 3

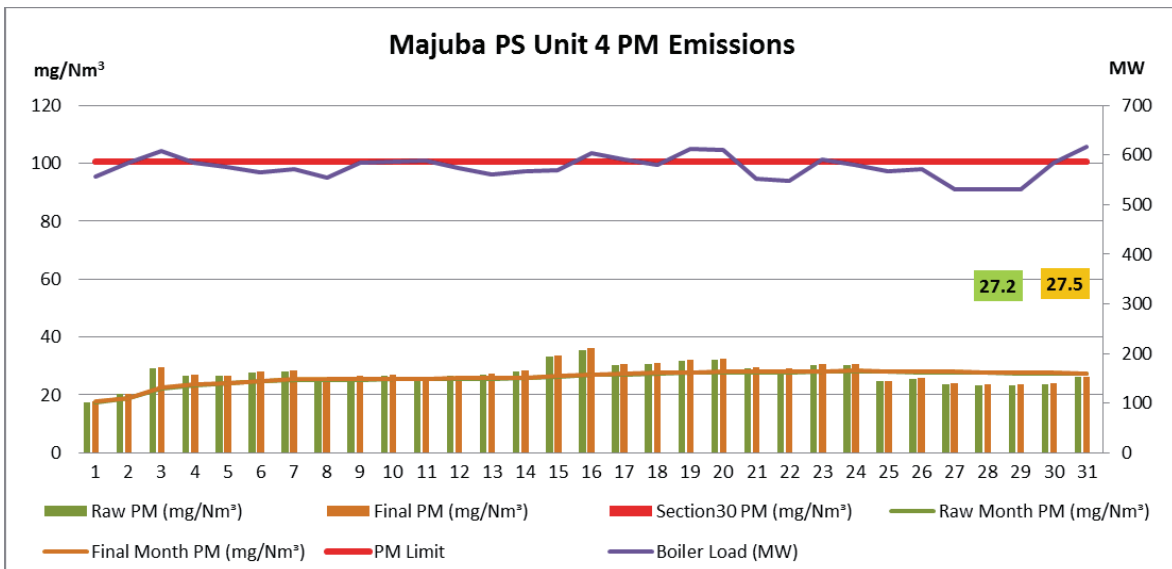


Figure 4. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 4

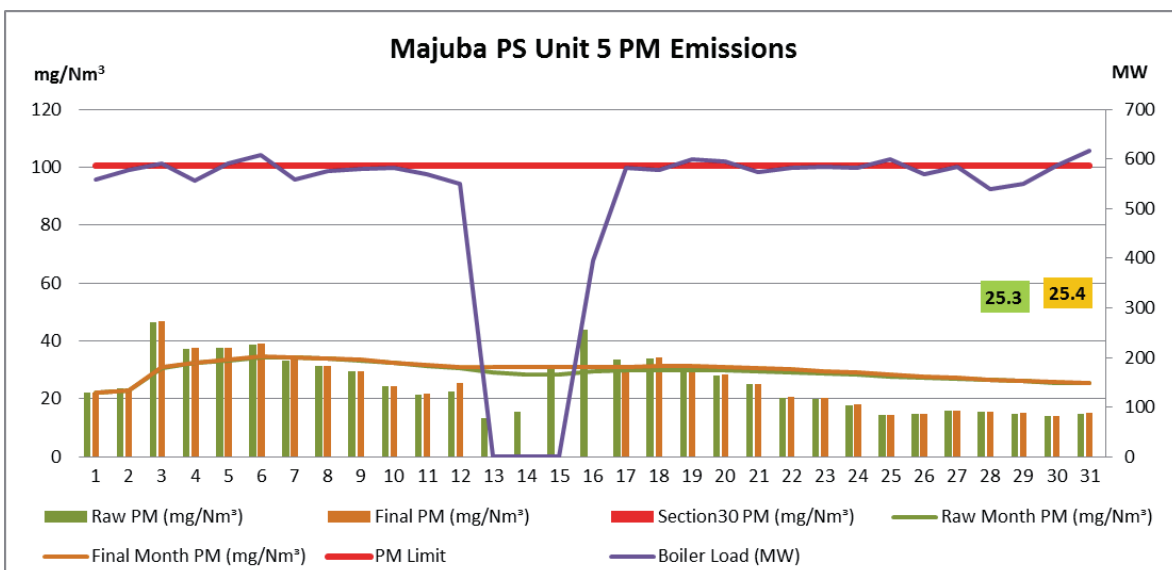


Figure 5. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 5

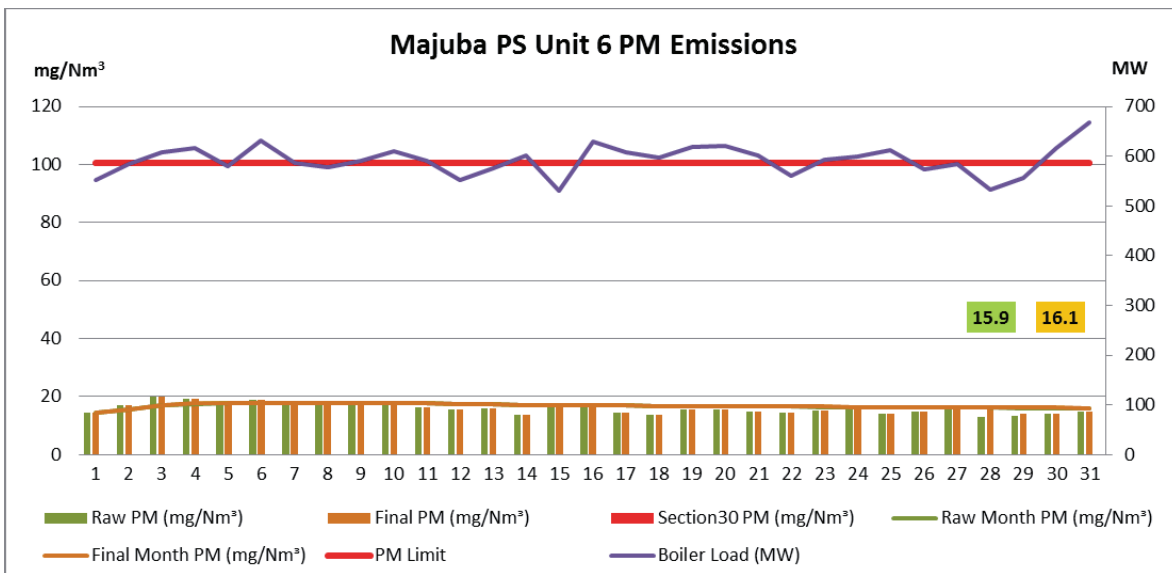


Figure 6. Particulate Matter emissions (daily averages) for the month of July 2018 against emission limit for Unit 6

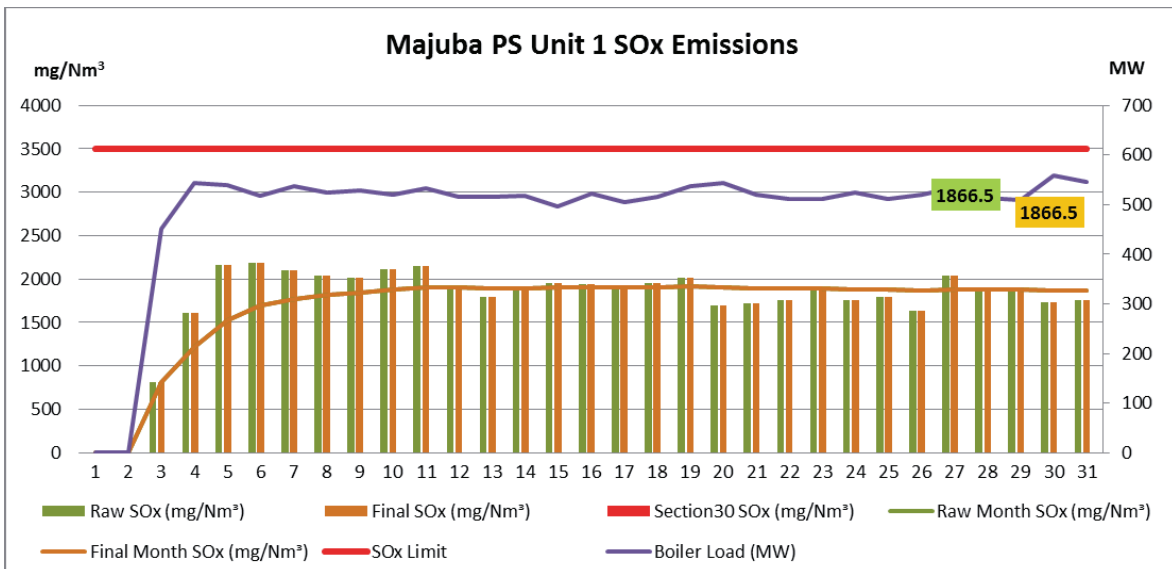


Figure 7. SOx emissions (daily averages) for the month of July 2018 against emission limit for Unit 1

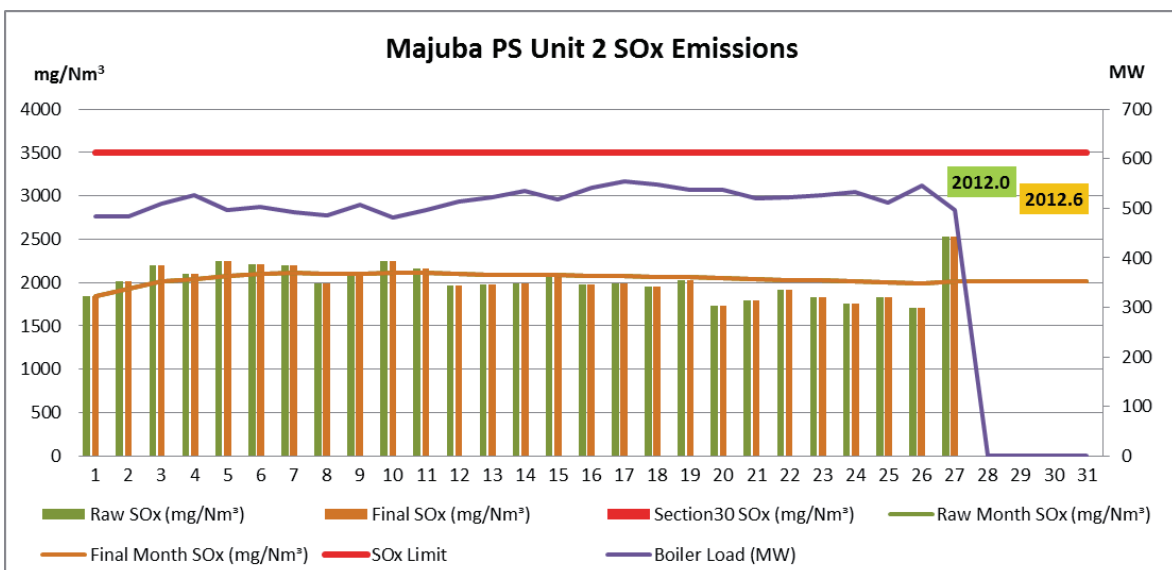


Figure 8. Sox emissions (daily averages) for the month of July 2018 against emission limit for Unit 2

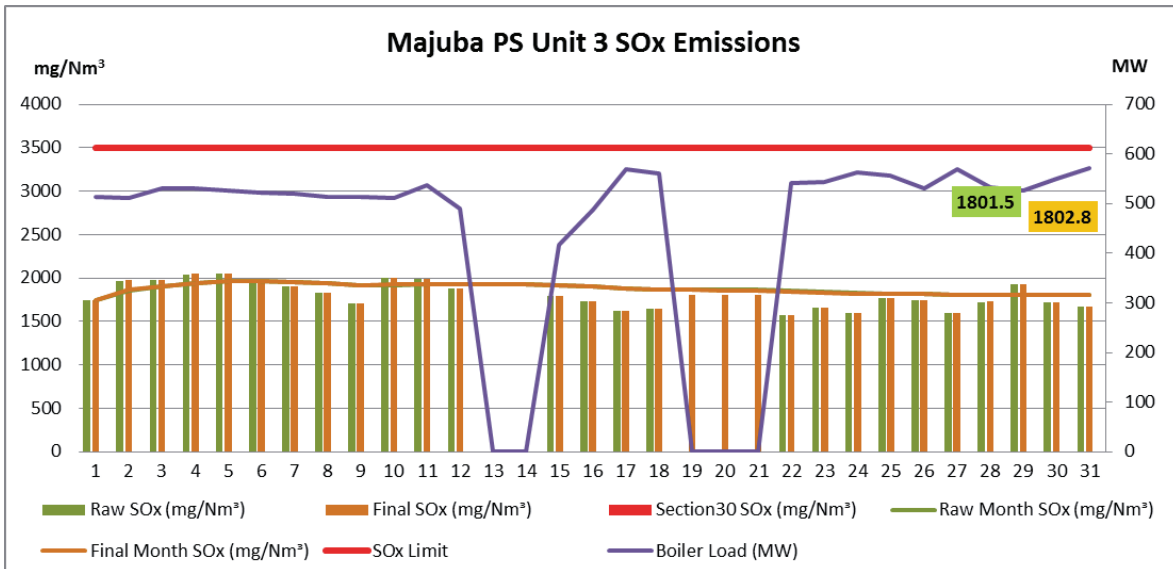


Figure 9. Sox emissions (daily averages) for the month of July 2018 against emission limit for Unit 3

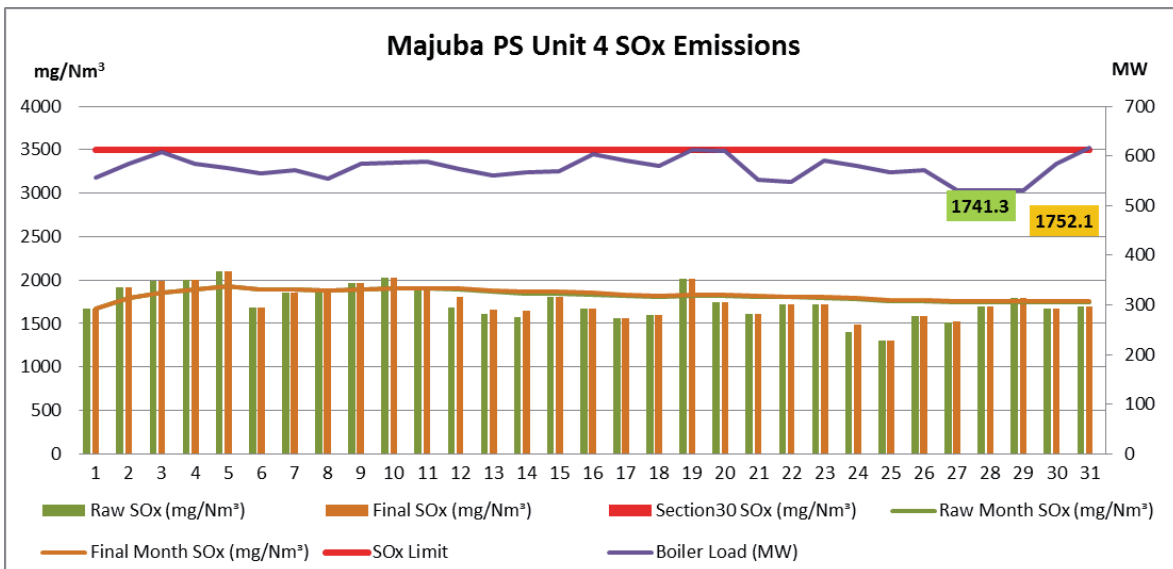


Figure 10. Sox emissions (daily averages) for the month of July 2018 against emission limit for Unit 4

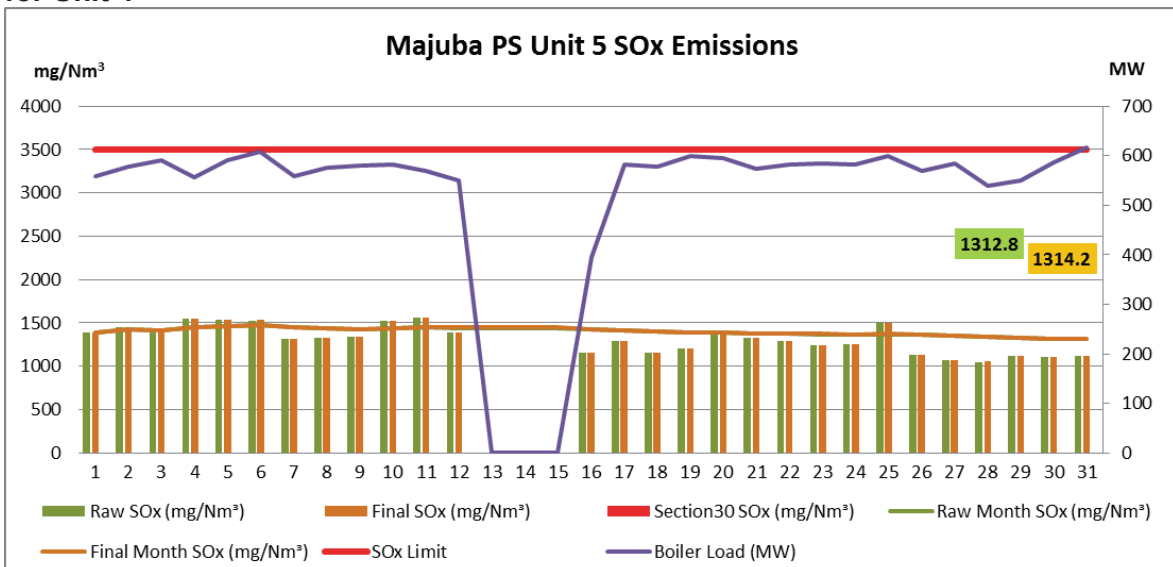


Figure 11. Sox emissions (daily averages) for the month of July 2018 against emission limit for Unit 5

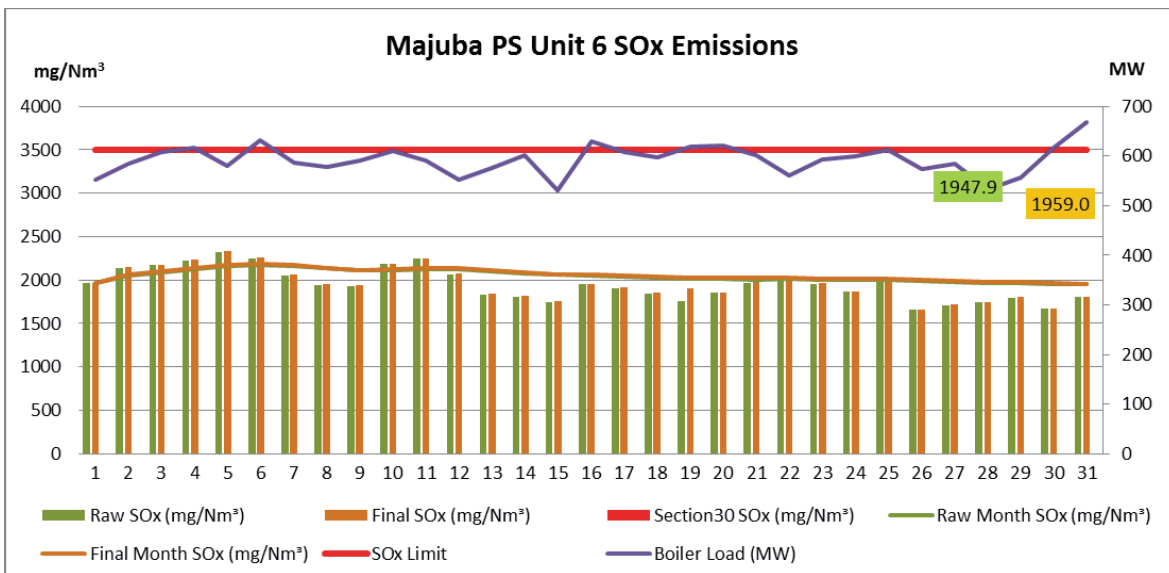


Figure 12. Sox emissions (daily averages) for the month of July 2018 against emission limit for Unit 6

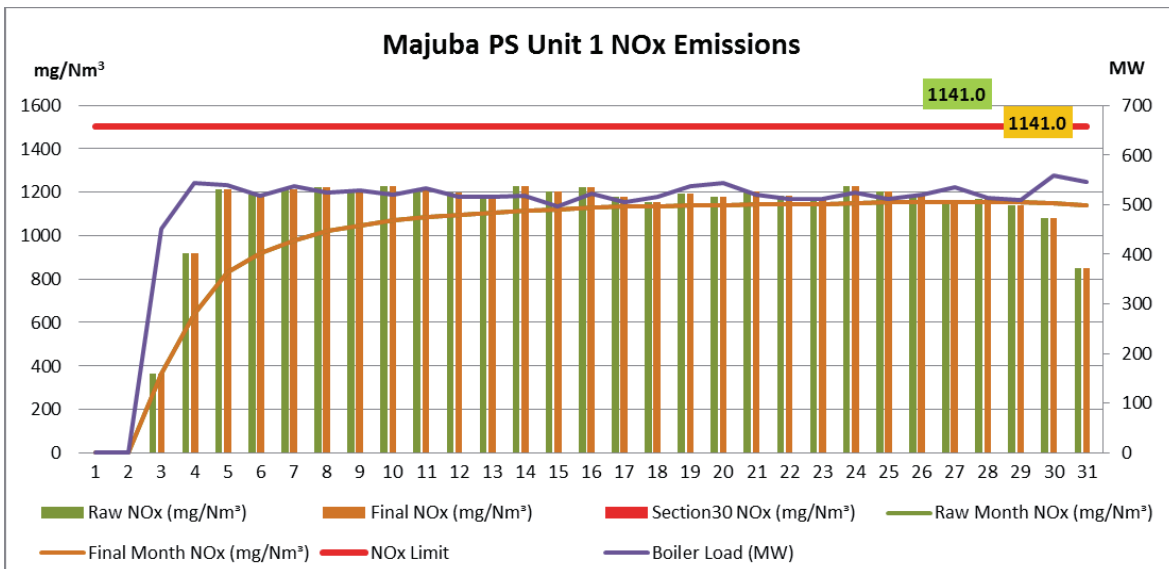


Figure 13. Nox emissions (daily averages) for the month of July 2018 against emission limit for Unit 1

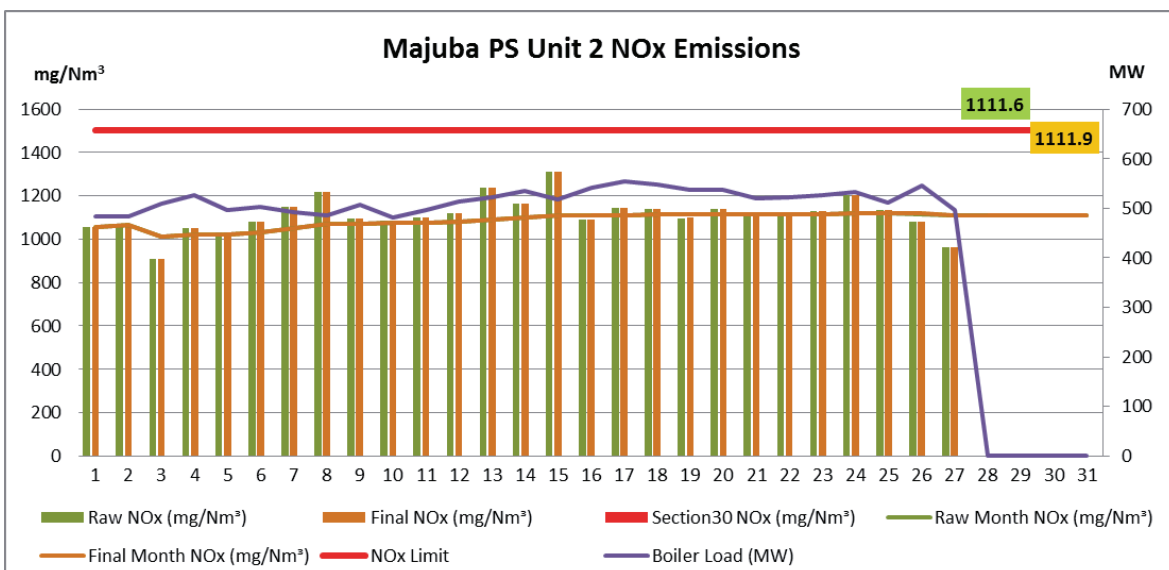


Figure 14. Nox emissions (daily averages) for the month of July 2018 against emission limit for Unit 2

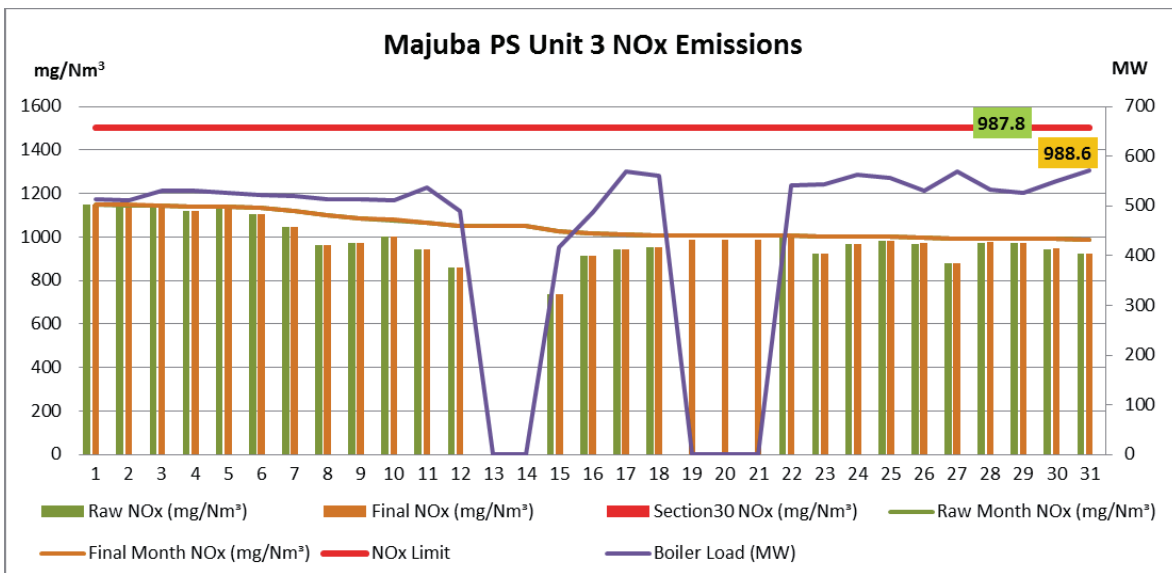


Figure 15. Nox emissions (daily averages) for the month of July 2018 against emission limit for Unit 3

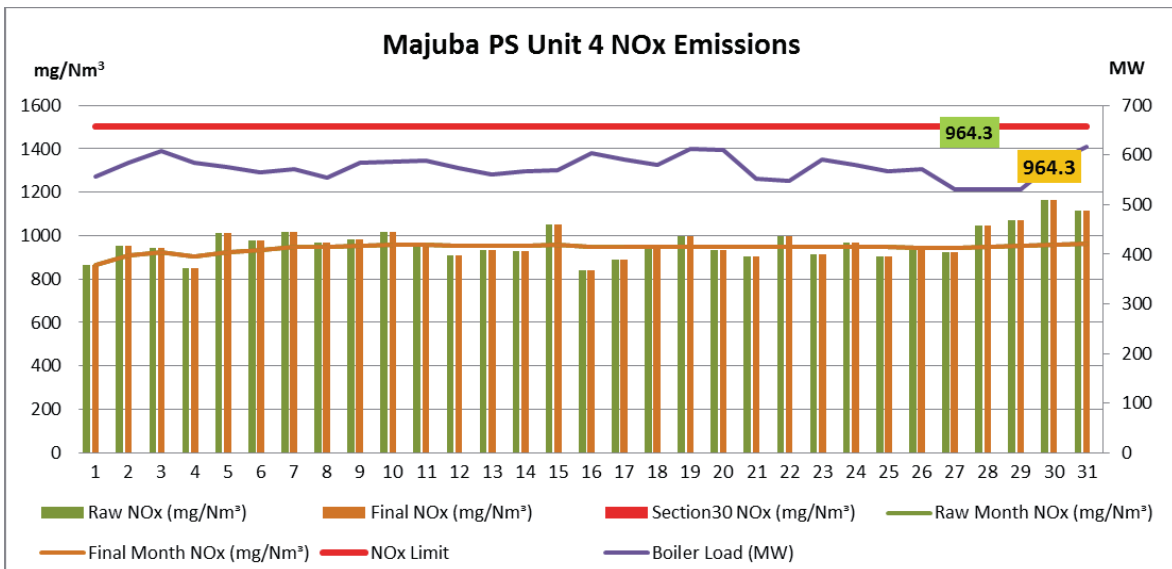


Figure 16. Nox emissions (daily averages) for the month of July 2018 against emission limit for Unit 4

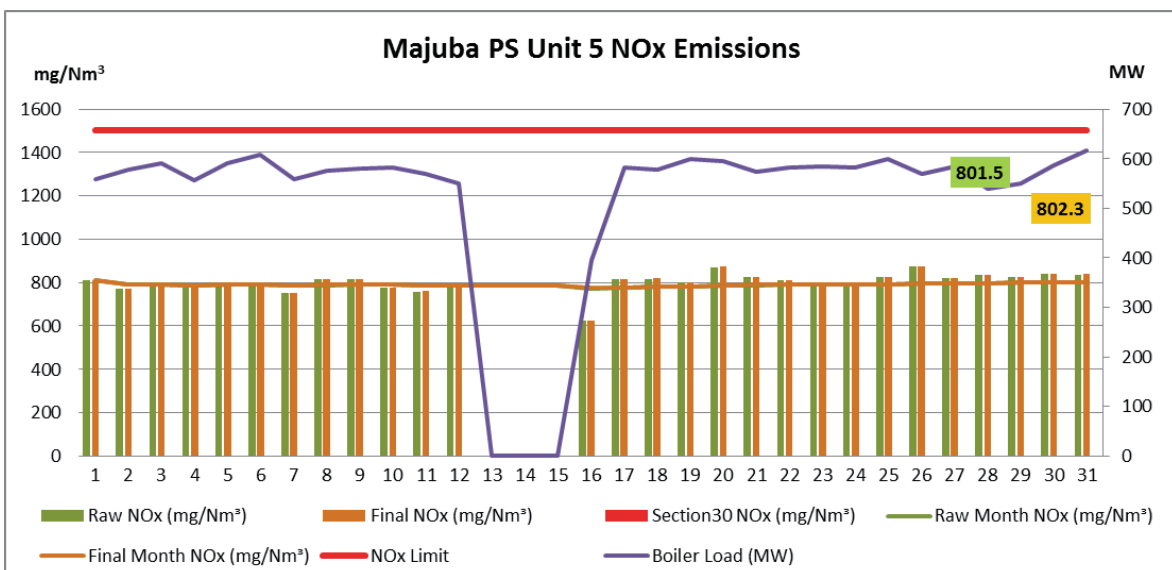


Figure 17. Nox emissions (daily averages) for the month of July 2018 against emission limit for Unit 5

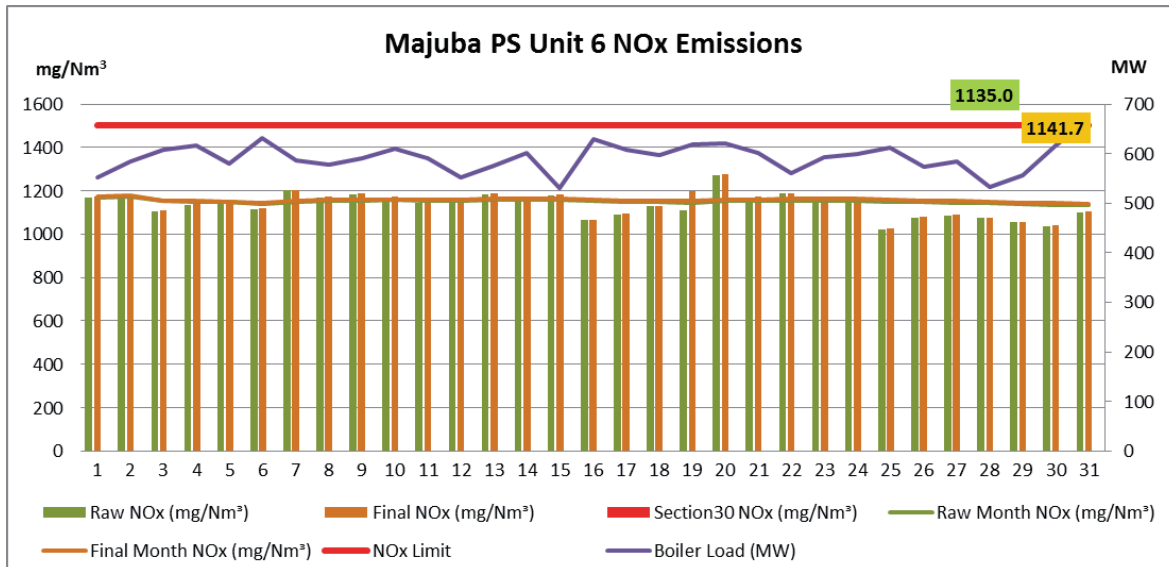


Figure 18. Nox emissions (daily averages) for the month July 2018 against emission limit for Unit 6

Table 4: Monthly tonnages for the month of July 2018

Unit	PM (tons)	SO ₂ (tons)	NO ₂ (tons)	CO ₂ (tons)
1	17.0	3 766	2 304	
2	68.1	3 581	2 010	
3	35.8	3 293	1 820	
4	68.5	4 358	2 395	
5	59.6	3 225	1 977	
6	35.5	4 462	2 596	
Sum	284.4	22 686	13 102	

Table 5: Average monthly concentrations (mg/Nm³) for the month of July 2018

Unit	PM (Mg/Nm ³)	SO ₂ (Mg/Nm ³)	NO ₂ (Mg/Nm ³)	CO ₂ (Mg/Nm ³)
1	8.84	1867	1141	
2	37.52	2013	1112	
3	23.58	1803	989	
4	27.48	1752	964	
5	25.44	1314	802	
6	16.09	1959	1142	

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 S 30	Unit off load
1	28:14:45	00:00:00	00:00:00	02:09:15
2	26:02:40	00:00:00	00:00:00	04:21:20
3	26:10:40	00:00:00	00:00:00	04:13:20
4	31:00:00	00:00:00	00:00:00	00:00:00
5	27:04:50	00:00:00	00:00:00	03:19:10
6	30:20:05	00:00:00	00:00:00	00:03:55

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

CO2 and CO Relationship

Calculation: CO2% + O2% = 19.5-21.5%

Table 7: CO2 and O2 deviations of the Month of July 2018

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-Jul								8.9	8.2	8.0	6.1	8.4						
02-Jul								9.0	8.8	8.0	5.7	8.2						
03-Jul							8.6	8.3	7.9	7.4	4.8	7.5						
04-Jul							7.8	7.9	7.9	7.9	5.9	7.4						
05-Jul							8.0	8.6	8.1	7.9	5.5	7.7						
06-Jul							8.1	8.5	8.0	7.8	5.1	7.5						
07-Jul							8.0	8.9	8.3	7.8	5.3	8.0						
08-Jul							8.7	9.0	8.5	8.4	6.1	7.9						
09-Jul							8.7	8.4	8.8	8.0	6.2	7.9						
10-Jul							8.5	8.5	8.7	7.9	5.9	7.6						
11-Jul							8.1	8.1	8.2	7.8	5.9	7.7						
12-Jul							8.4	8.2	8.9	7.9	6.0	8.2						
13-Jul							8.6	8.4		8.2		8.1						
14-Jul							8.6	8.2		8.1		7.7						
15-Jul							8.9	8.8	9.7	8.4		8.6						
16-Jul							8.6	8.4	8.6	7.8	5.6	7.2						
17-Jul							8.7	8.0	8.0	7.8	5.4	7.5						
18-Jul							8.2	8.0	8.3	7.9	5.2	7.8						
19-Jul							8.3	8.0	9.0	7.7	5.1	7.7						
20-Jul							8.1	8.3	9.0	7.6	6.2	7.9						
21-Jul							8.7	8.6	9.0	8.1	5.7	7.9						
22-Jul							8.6	8.4	9.1	8.3	5.6	8.6						
23-Jul							8.4	8.2	8.8	7.8	5.3	8.0						
24-Jul							8.2	7.9	8.4	7.9	5.5	7.9						
25-Jul							8.5	8.0	8.4	8.0	5.9	7.5						
26-Jul							8.3	7.9	8.9	7.9	6.1	7.9						
27-Jul							8.4	8.5	7.7	8.4	5.0	7.9						
28-Jul							8.8		9.2	8.7	5.5	8.5						
29-Jul							8.8		9.3	8.7	5.4	8.4						
30-Jul							7.6		8.3	8.2	5.5	7.8						
31-Jul							8.0		7.9	7.7	5.3	7.1						
Totals							8.4	8.4	8.5	8.0	5.6	7.9						

Comments on the performance and availability of each unit

Majuba has been experiencing issues with monitor reliability – specifically the Unit 5 dust monitor. The licensing authority has been notified of this issue in the email dated 06 August 2018. More details will follow once an investigation has been completed.

UNIT 1

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

UNIT 2

The unit base loaded for most of the days during the month and off for four days. Thirty 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 four days. Thirty-six fabric filter bags were replaced during the month.

UNIT 4

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

UNIT 5

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

UNIT 6

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

Emergency Generation

Table 8: Emergency Generation for the month of July 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 July 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
	No Complaints were received for the month of July 2018				

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)