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 Air Quality Officer
 Gert Sibande District Municipality
 c/o Joubert & Oosthuise Street
 ERMELO
 2350

Date:
 01 March 2018

Enquiries:

TUTUKA POWER STATION MONTHLY EMISSIONS REPORT – MARCH 2018

1. Raw Materials and Products

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of March 2018
	Coal	Tons/month	850 000	744 379
	Fuel Oil	Tons/month	5 500	3379.94
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of March 2018
	Energy	GW	1 589 GW (based on annual permitted production capacity)	1 421.7
	Ash	kT/month	N/A	190 040.0

Table 1: Quantity of Raw Materials and Products used/produced for the month of March 2018

Generation Division – Operating Unit Coal 2
 Tutuka Power Station
 Standerton/Bethal Road, Standerton
 Private Bag X2016, STANDERTON, 2430, SA
 Tel +27 17 7495700 Fax +27 17 7495736 www.eskom.co.za

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2. Abatement Technology

Associated Unit/Stack	Technology Type	*Minimum Control Efficiency (%)	Actual Utilisation (%)
Unit 1	Electrostatic precipitator	99.0%	100
Unit 2	Electrostatic precipitator	99.3%	100
Unit 3	Electrostatic precipitator	98.9%	100
Unit 4	Electrostatic precipitator	98.3%	100
Unit 5	Electrostatic precipitator	99.0%	100
Unit 6	Electrostatic precipitator	Unit off	Unit off

Table 2: Abatement Equipment Control Technology for month of March 2018

*Calculated from the assumption of 90% fly ash to 10% bottom ash and percentage ash as measured in coal (Alstom, Tutuka Power Station Capacity Increase Study).

3. Energy Source Characteristics

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	N/A	
Sulphur Content	0.6 - > 2.6%	0.75
Ash Content	21-33%	25.53

Table 3: Energy Source Material Characteristics for the month of March 2018

4. Emissions Reporting

Unit	PM (tons)	*SO ₂ (tons)	*NO ₂ (tons)	*CO ₂ (tons)
1	346.8	17464	6965	
2	255.2			
3	344.6			
4	643.2			
5	330.2			
6	Unit off			

Table 4: Monthly tonnages for the month of March 2018

**Based on coal burnt as per Emissions Summary*

Unit	PM	*NO ₂	*SO ₂	*CO ₂
1	205.8	817	2087	
2	176.1	722	1980	
3	210.5	859	1895	
4	314.9	777	1979	
5	205.7	1025	2341	
6	Unit off	Unit off	Unit off	

Table 5: Monthly average Emissions Concentration (mg/Nm³)

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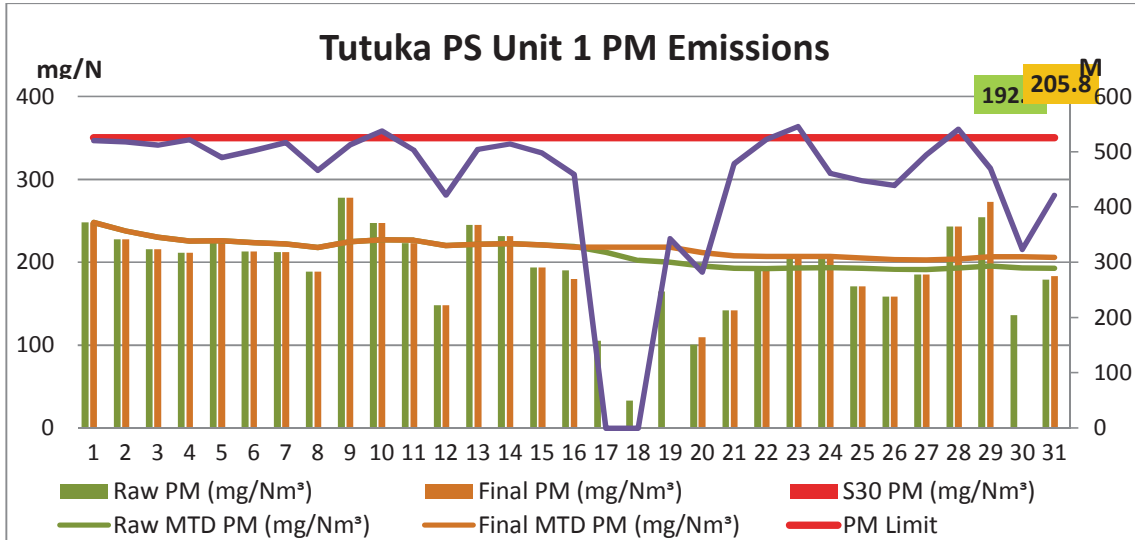


Figure 1: Unit 1 Daily Average Particulate Matter Emissions for the month of March 2018 (against the emissions limit and load generated)

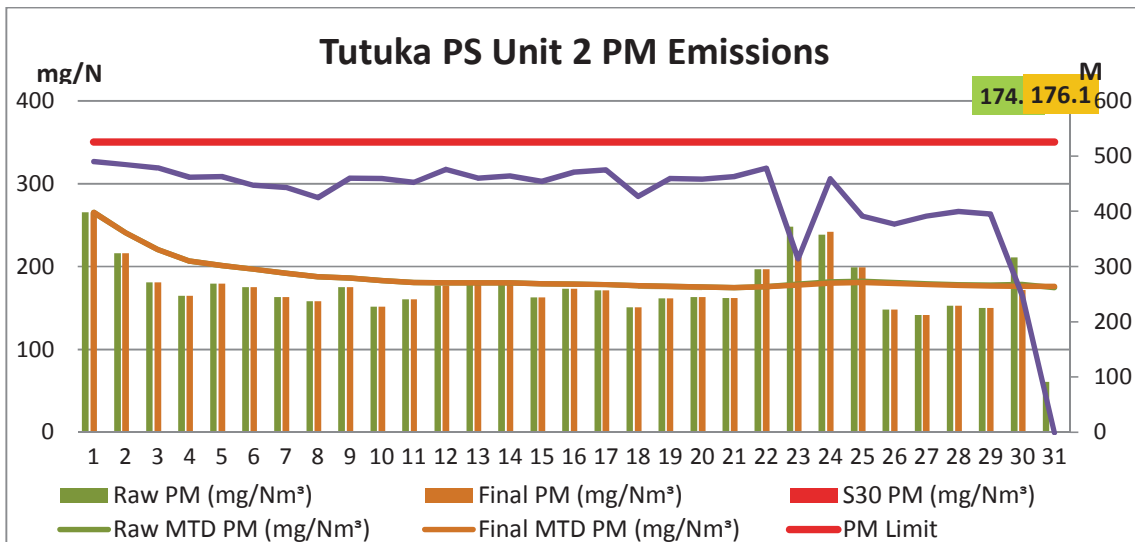


Figure 2: Unit 2 Daily Average emissions for the month of January 2017 March 2018 (against the emission limits and load generated)

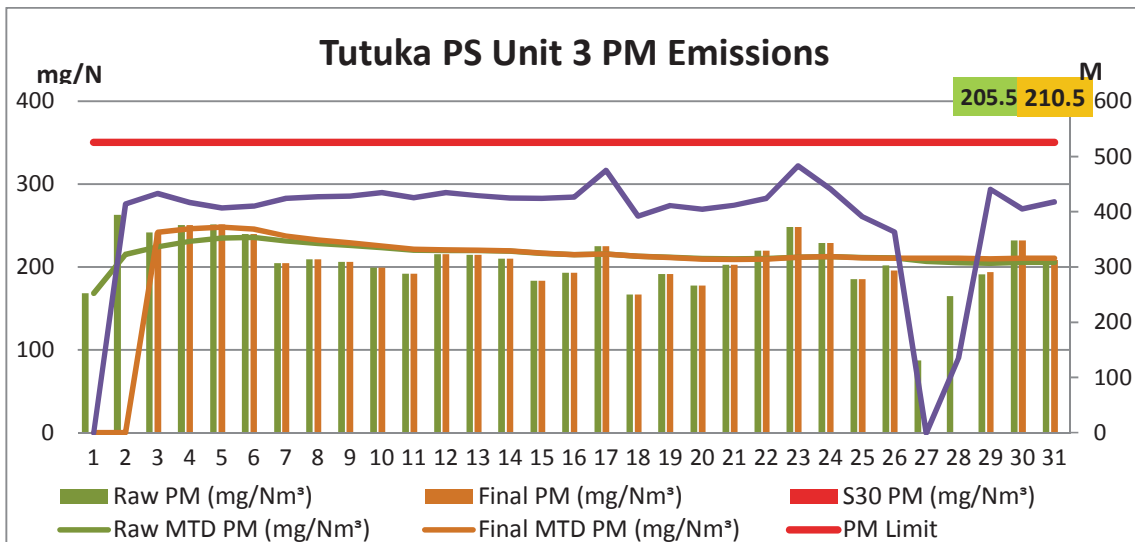


Figure 3: Unit 3 Daily Average Particulate Matter Emissions for the month of March 2018 (against the emissions limit and load generated)

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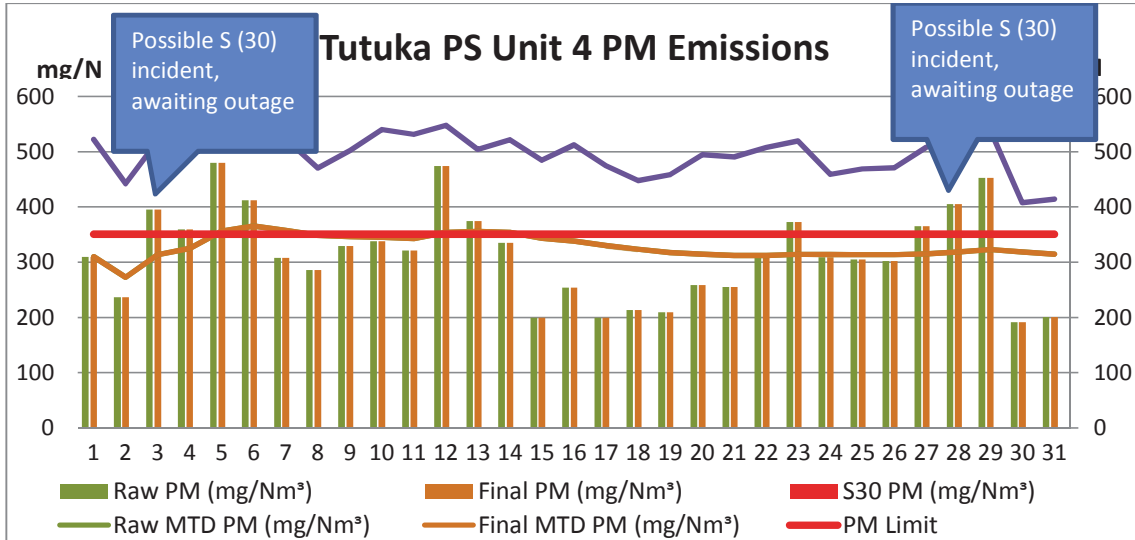


Figure 4: Unit 4 Daily Average PM emissions for the month of March 2018 (against the emission limits and load generated)

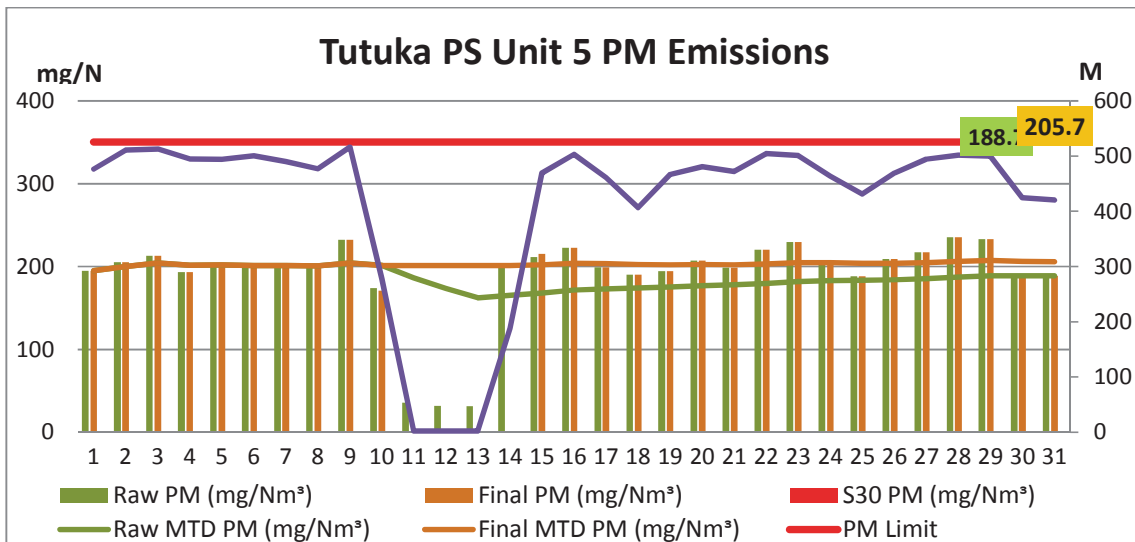


Figure 5: Unit 5 Daily Average Particulate Matter Emissions for the month of March 2018 (against the emissions limit and load generated)

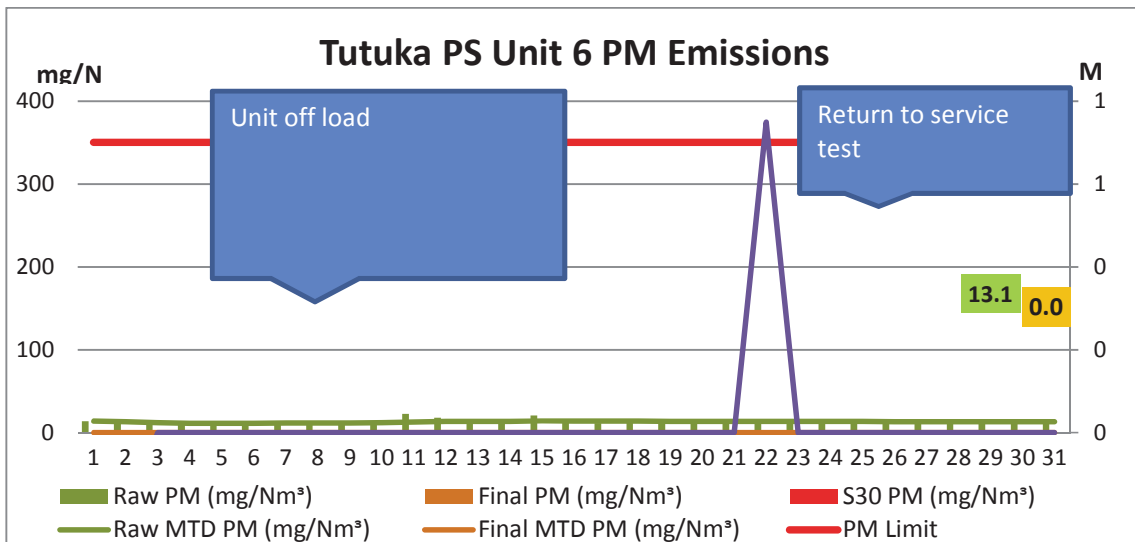


Figure 6: Unit 6 Daily Average PM emissions for the month of March 2018 (against the emission limits and load generated)

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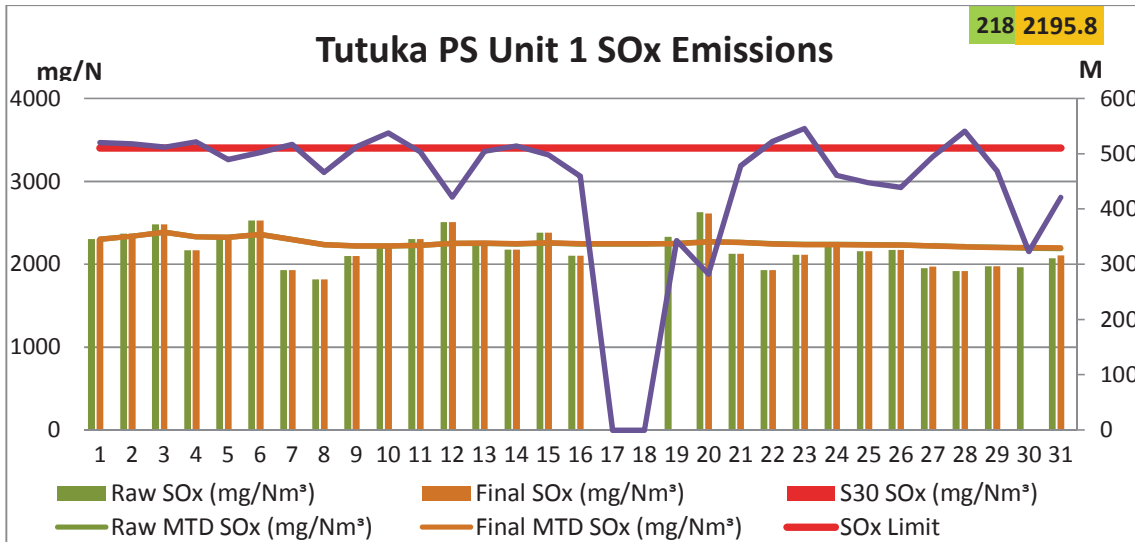


Figure 7: Unit 1 Daily Average SOx Emissions for the month of March 2018 (against the emissions limit and load generated)

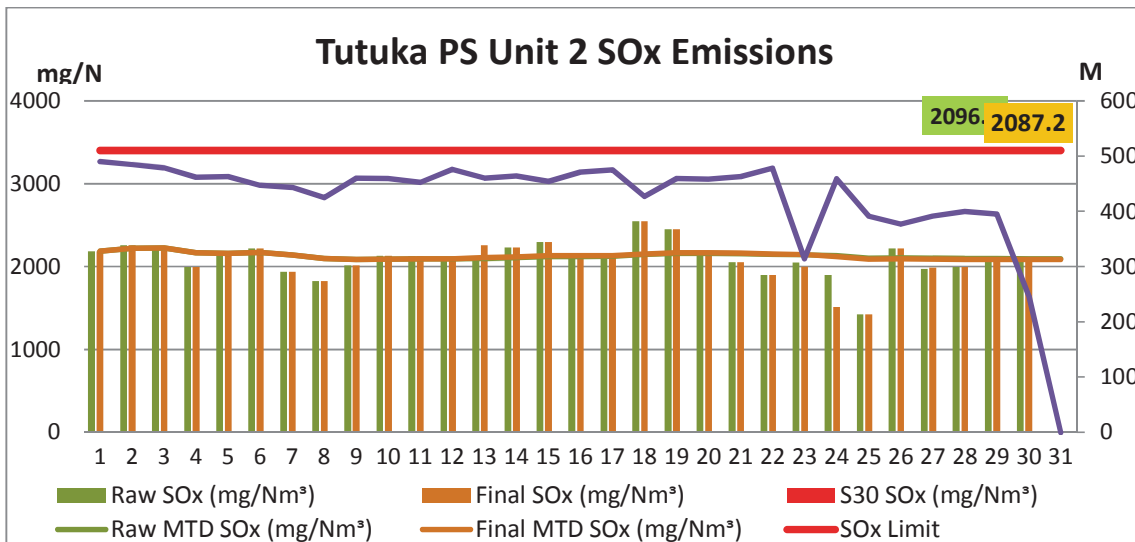


Figure 8: Unit 2 Daily Average SOx emissions for the month of March 2018 (against the emission limits and load generated)

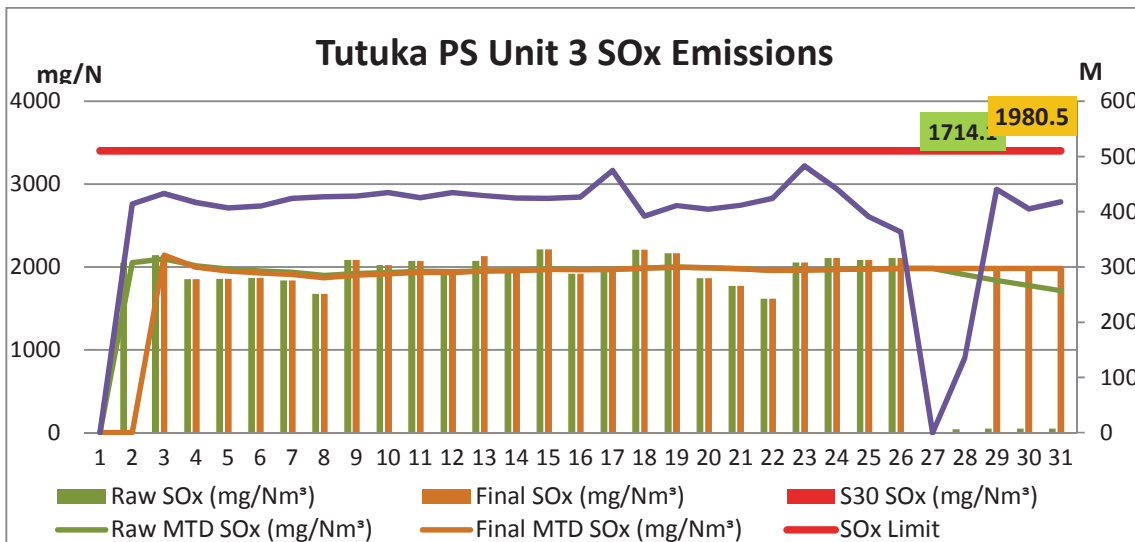


Figure 9: Unit 3 Daily Average SOx emissions for the month of March 2018 (against the emission limits and load generated)

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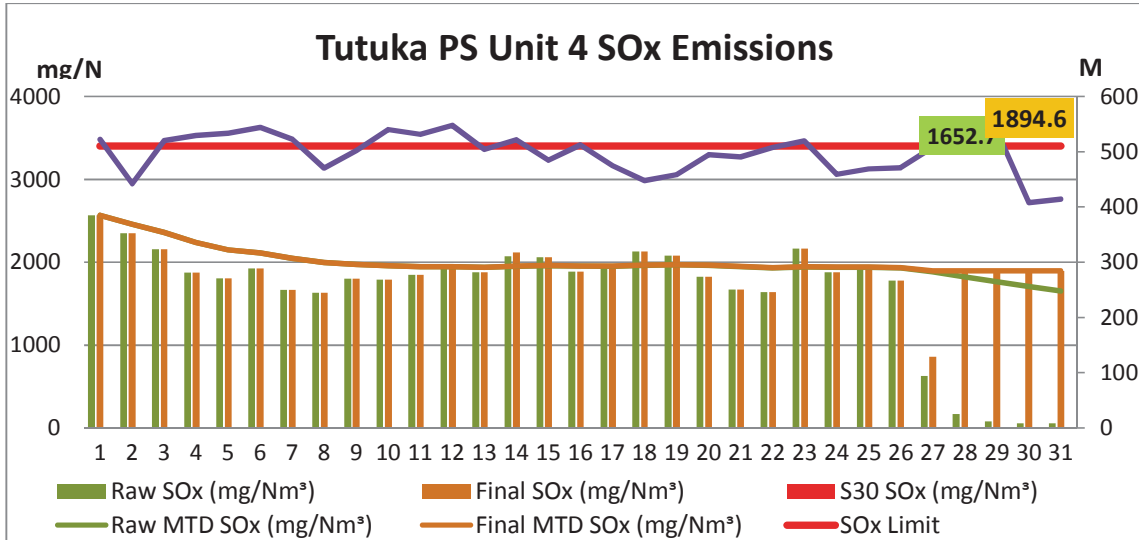


Figure 10: Unit 4 Daily Average SOx emissions for the month of March 2018 (against the emission limits and load generated)

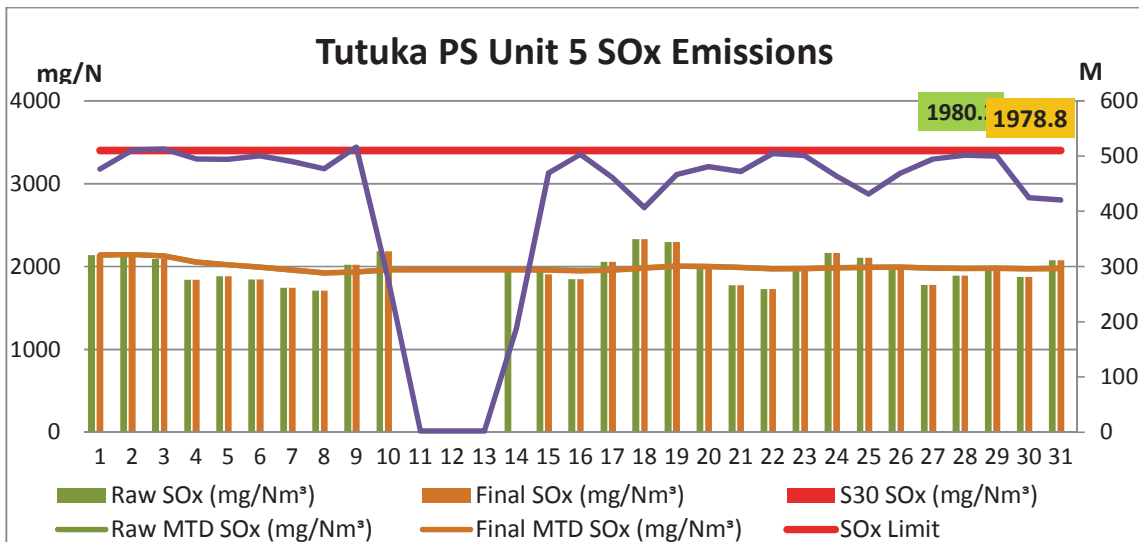


Figure 11: Unit 5 Daily Average SOx Emissions for the month of March 2018 (against the emissions limit and load generated)

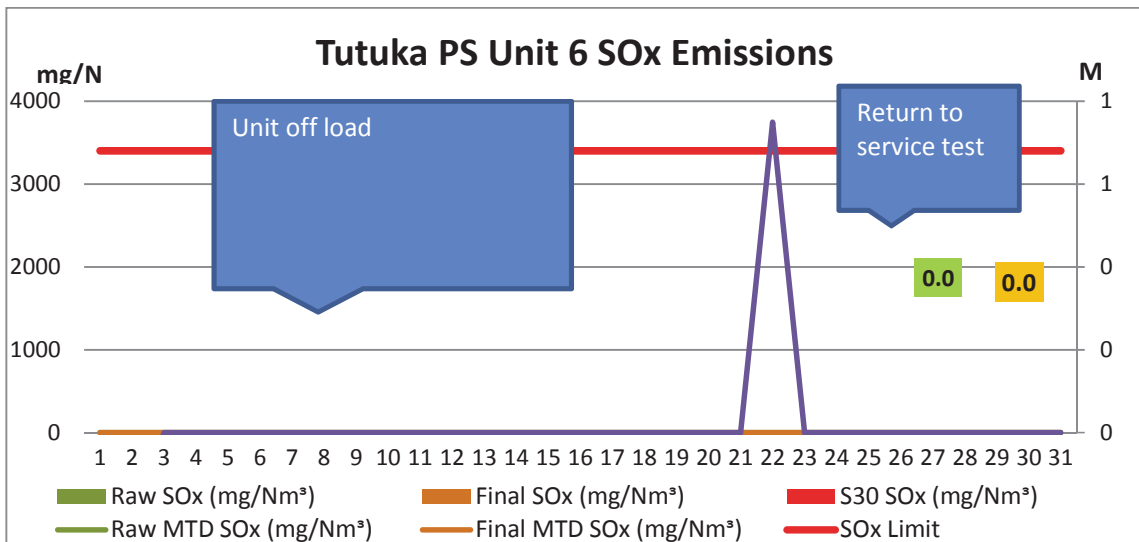


Figure 12: Unit 6 Daily SOx emissions for the month of March 2018 (against the emission limits and load generated)

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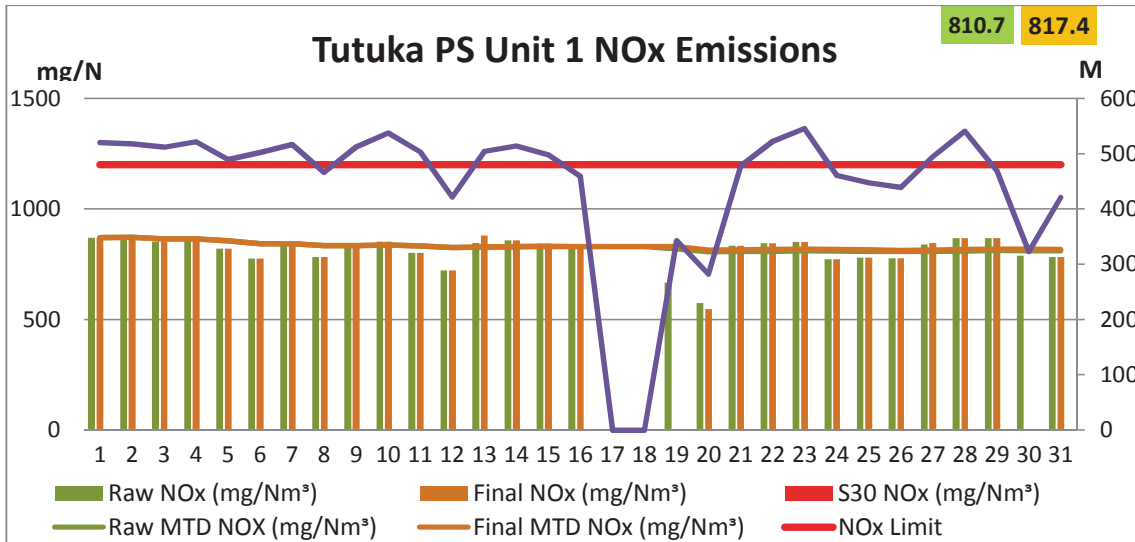


Figure 13: Unit 1 Daily Average NOx Emissions for the month of March 2018 (against the emissions limit and load generated)

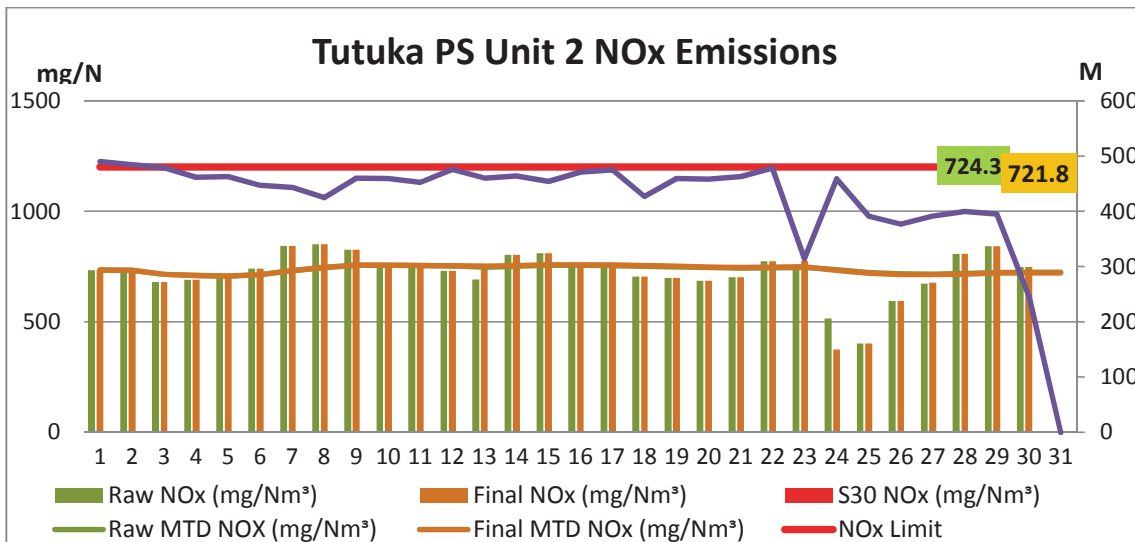


Figure 14: Unit 2 Daily Average NOx emissions for the month of March 2018 (against the emission limits and load generated)

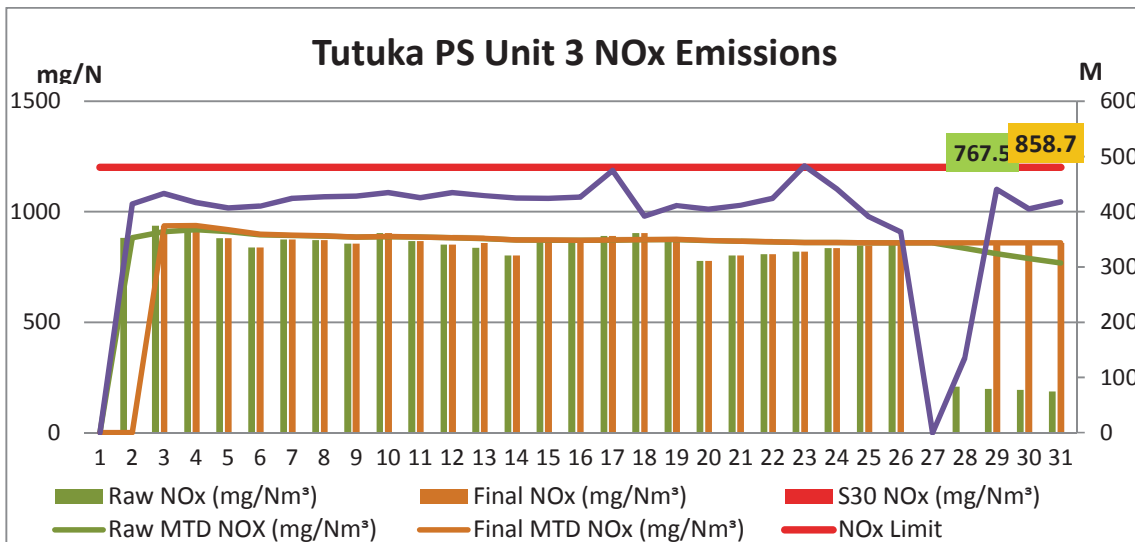


Figure 15: Unit 3 Daily Average NOx emissions for the month of March 2018 (against the emission limits and load generated)

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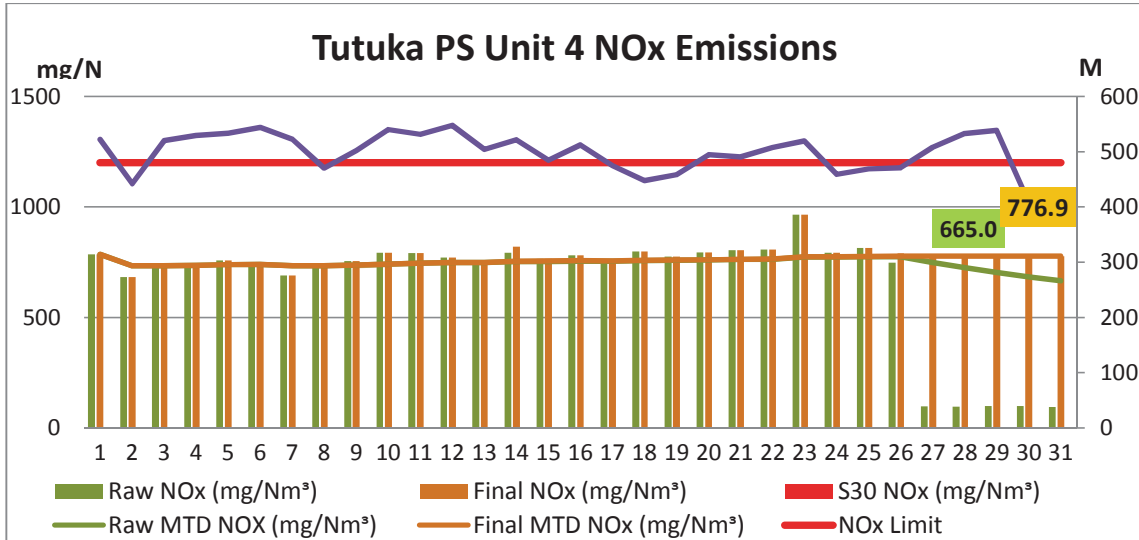


Figure 16: Unit 4 Daily Average NOx emissions for the month of March 2018 (against the emission limits and load generated)

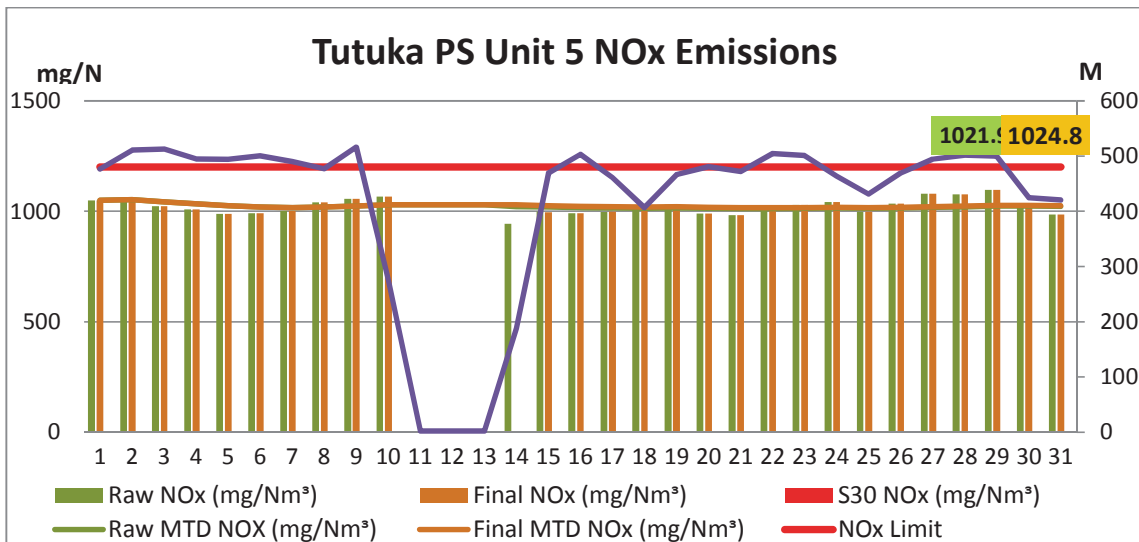


Figure 17: Unit 5 Daily Average NOx emissions for the month of March 2018 (against the emission limits and load generated)

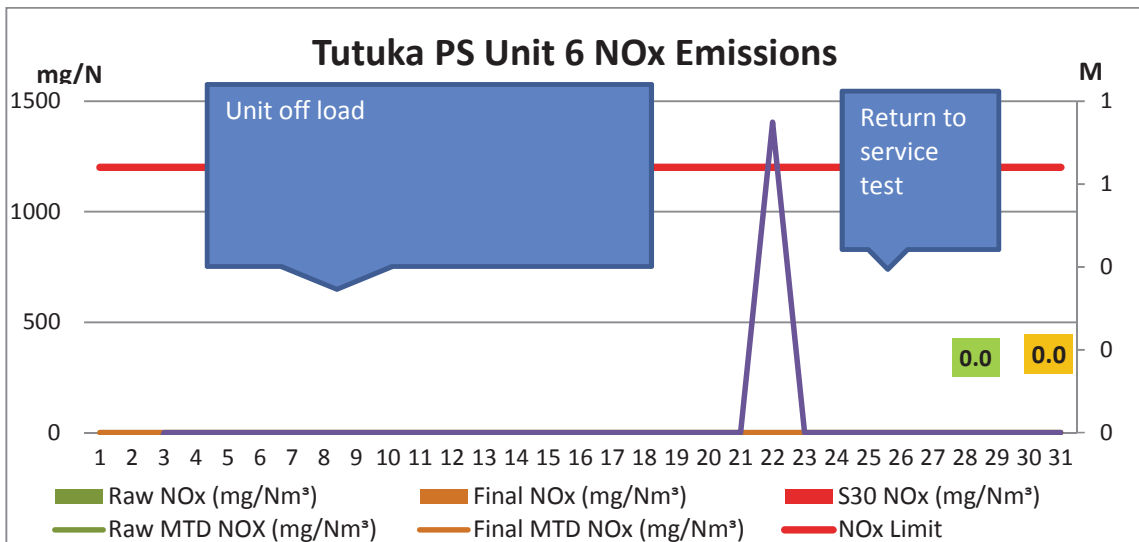


Figure 18: Unit 6 Daily Average NOx emissions for the month of March 2018 (against the emission limits and load generated)

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5. Comments on the Performance and Availability of Each Unit

Unit	Days operating under normal operation	Days operating in grace period	Days operating under S 30	Days Unit offline
1	28:11:50	00:00:00	00:00:00	02:12:10
2	29:06:05	00:00:00	00:00:00	01:17:55
3	28:06:45	00:00:00	00:00:00	02:17:15
4	31:00:00	00:00:00	00:00:00	00:00:00
5	26:22:55	00:00:00	00:00:00	04:01:05
6	00:00:20	00:00:00	00:00:00	30:23:40

Table 6: Each unit and respective days operating under normal operation, days in grace period, and section 30 days respectively for the month of March 2018

*Values rounded to the nearest day

Number & Type of Starts	U1	U2	U3	U4	U5	U6
Number Of Hot Starts (Off-Load < 30 Hrs)	0	1	5	0	0	0
Number Of Cold Starts (Off-Load > 30 hrs)	0	0	0	0	0	0

Table 7: Number and type of Unit start-ups for each unit respectively for the month of March 2018

6. Complaints

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
N/A	N/A	N/A	N/A	- N/A	N/A

Table 8: Complaints for the month of March 2018

7. General

Unit 4 new dust monitor correlation tests were conducted by Stacklabs Environmental Services after the unit was forced off load during the month of February 2018 to carry out Electro Static Precipitator inspections and repairs in preparation for the correlation tests. Correlation test report Nr RSL264 was issued by the service provider and was received by Tutuka Power Station on 20 March 2018 (refer to Annexure 1; Tutuka correlation formula for Unit 1 to 6).

Upon the implementation of the new correlation curve, the data was back fitted from 01 March 2018. Upon the back fitting of the data, it was realized that the station had exceeded the particulate matter daily average limit of 350 mgNm³ on two occasions. The incidents occurred on 03 March 2018 and on 27 March 2018.

The service provider noted in his correlation test report, that there was a possible misalignment issue with the monitor during the time in which the tests were conducted. It is believed that this will negatively affected the output of the monitor, and that the above listed exceedances might not have occurred.

Tutuka Power Station investigated the monitor flange misalignment jointly with the service provider, and it was confirmed that the flange is misaligned. The misalignment of the monitor flange will be addressed during the next available outage opportunity.

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Tutuka will continue to operate with the new curve that was implemented on 02 April 2018 and will manage emissions appropriately to ensure that license limits are not exceeded. The two possible emissions exceedances were reported to Gert Sibande District Municipality on 19 April 2018 and Gert Sibande District Air Quality Officer acknowledge the notification on

20 April 2018. Once new correlation test is conducted for Tutuka Power Station Unit 4, the station will notify the relevant authorities.

Additional information demonstrating compliance with conditions of the Air Emissions License is included in weekly, monthly and annual emission reports submitted to the Eskom Sustainability Division: Air Quality Center of Excellence and the Authorities.

Compiled by:

Emissions Control Officer

Approved by:

Tutuka Environmental Manager

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ANNEXURE 1: TUTUKA POWER STATION CORRELATION FORMULA FOR UNIT 1 TO 6

mA to Emissions (mg/Nm ³) Correlation Curves													
		Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
		OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2
C		-113.126		-93.600		-76.587		44.3132		-91.331		-128.019	
m ²	+			+				3.3164		+		+	
m		25.665		22.611		18.016		-24.618		21.705		29.047	
		*mA		*mA		*mA		*mA		*mA		*mA	
Extinction													
@ 20 mA		400.2	0.0	358.6	0.0	283.7	0.0	878.5	0.0	342.8	0.0	452.9	0.0
@ 4 mA		-10.5	0.0	-3.2	0.0	-4.5	0.0	-1.1	0.0	-4.5	0.0	-11.8	0.0