

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

Date:
 01 April 2020

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TUTUKA POWER STATION MONTHLY EMISSIONS REPORT – APRIL 2020

1. Raw Materials and Products

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of April 2020
	Coal	Tons/month	1 200 000	462 251
	Fuel Oil	Tons/month	10 000	7 694,03
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of April 2020
	Energy	GW	1 589 GW (based on annual permitted production capacity)	1 250.9
	Ash	kT/month	N/A	114 176

Table 1: Quantity of Raw Materials and Products used/produced for the month of April 2020

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	99.4%	100
Unit 2	Electrostatic precipitator	99.7%	100
Unit 3	Electrostatic precipitator	99.1%	100
Unit 4	Electrostatic precipitator	99.0%	100
Unit 5	Electrostatic precipitator	99.2%	100
Unit 6	Electrostatic precipitator	Unit of load	Unit off load

Table 2: Abatement Equipment Control Technology for month of April 2020

*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	21.50
Sulphur Content	0.6 - > 2.6%	1.78
Ash Content	21-33%	24.70

Table 3: Energy Source Material Characteristics for the month of April 2020

4. Emissions Reporting

Unit	PM (tons)	*SO ₂ (tons)	*NO ₂ (tons)	*CO ₂ (tons)
1	81.3	6 437	2 495	777 124
2	84.3			
3	224.1			
4	103.6			
5	194.1			
6	Unit off load			

Table 4: Monthly tonnages for the month of April 2020

*Based on coal burnt as per Emissions Summary

Unit	PM	*NO ₂	*SO ₂	*CO ₂
1	81.3	Unit off load	Unit off load	119 727
2	172.8	664	1588	169 496
3	209.8	895	1926	219 727
4	307.8	808	2395	187 888
5	148.4	728	2170	176 758
6	Unit off load	Unit off load	Unit off load	Unit off load

Table 5: Monthly average Emissions Concentration (mg/Nm³) for the month of April 2020

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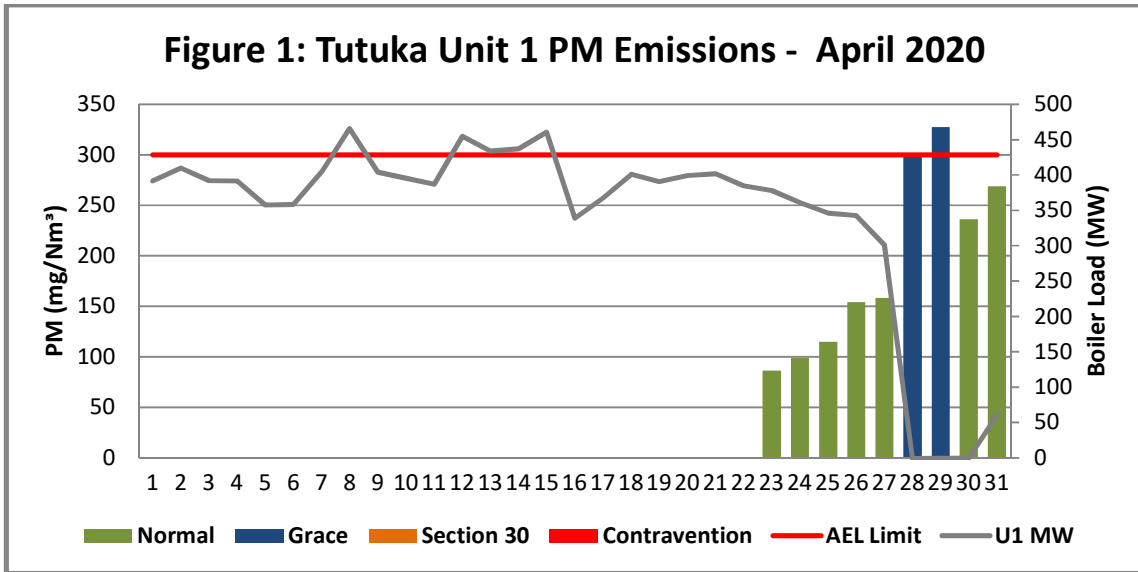


Figure 1: Unit 1 Daily Average Particulate Matter Emissions for the month of April 2020 (against the emissions limit and load generated)

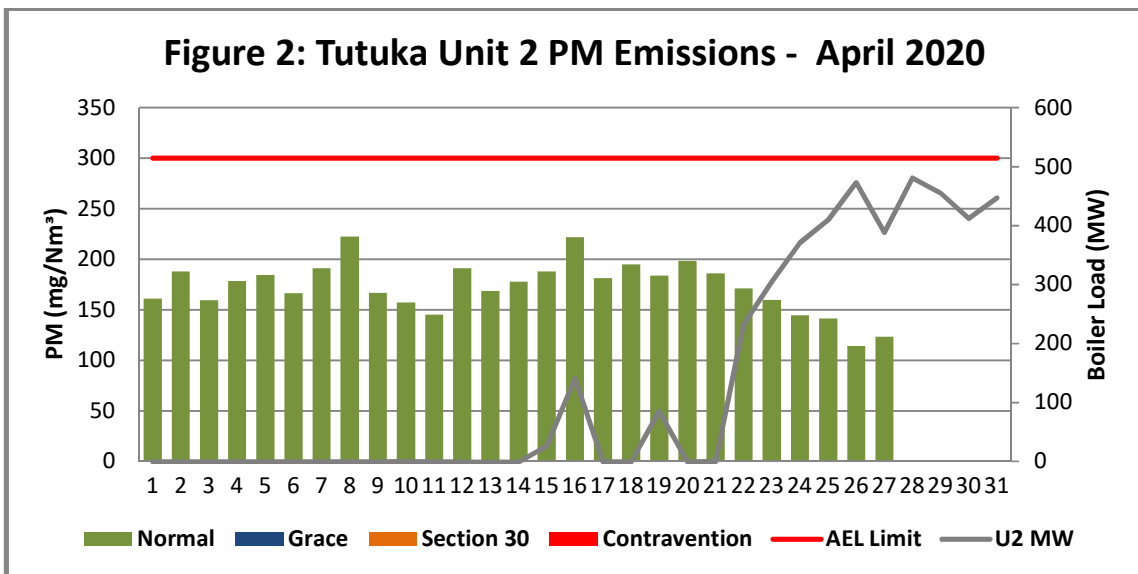


Figure 2: Unit 2 Daily Average emissions for the month of April 2020 (against the emission limits and load generated)

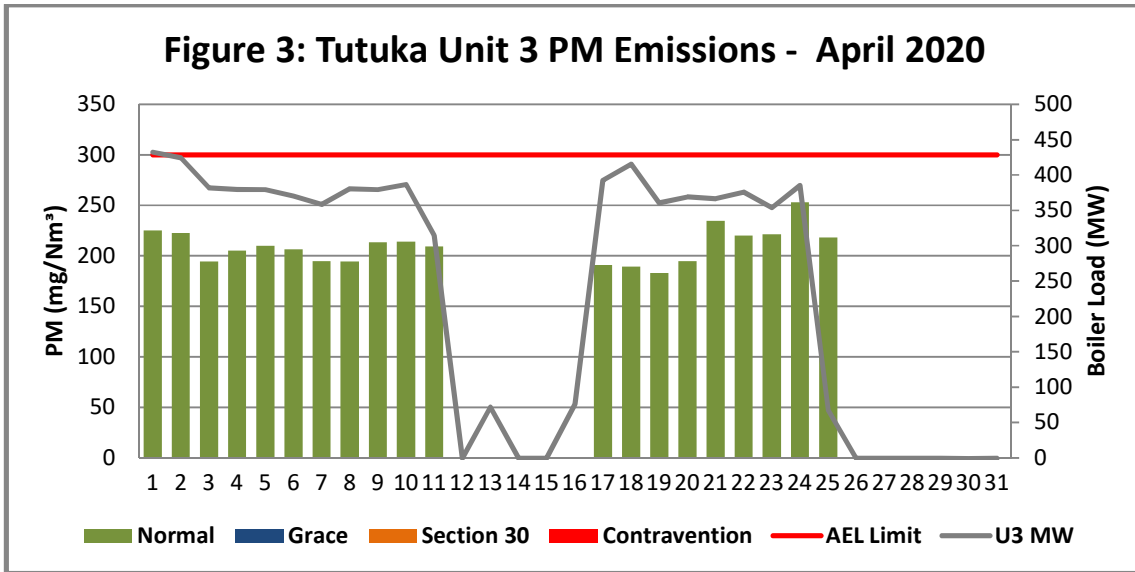


Figure 3: Unit 3 Daily Average Particulate Matter Emissions for the month of April 2020 (against the emissions limit and load generated)

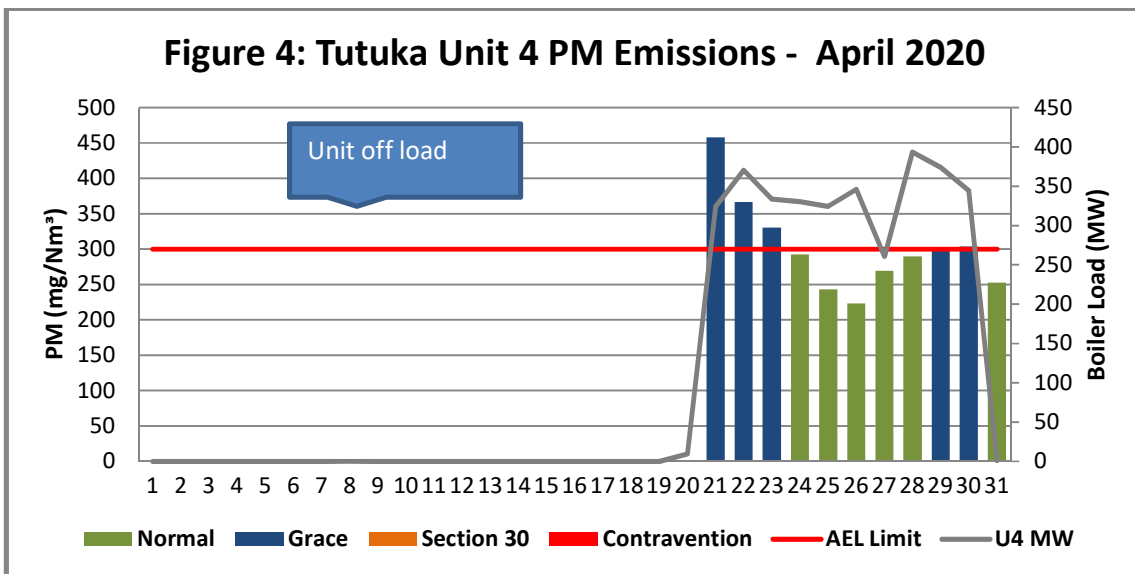


Figure 4: Unit 4 Daily Average PM emissions for the month of April 2020 (against the emission limits and load generated)

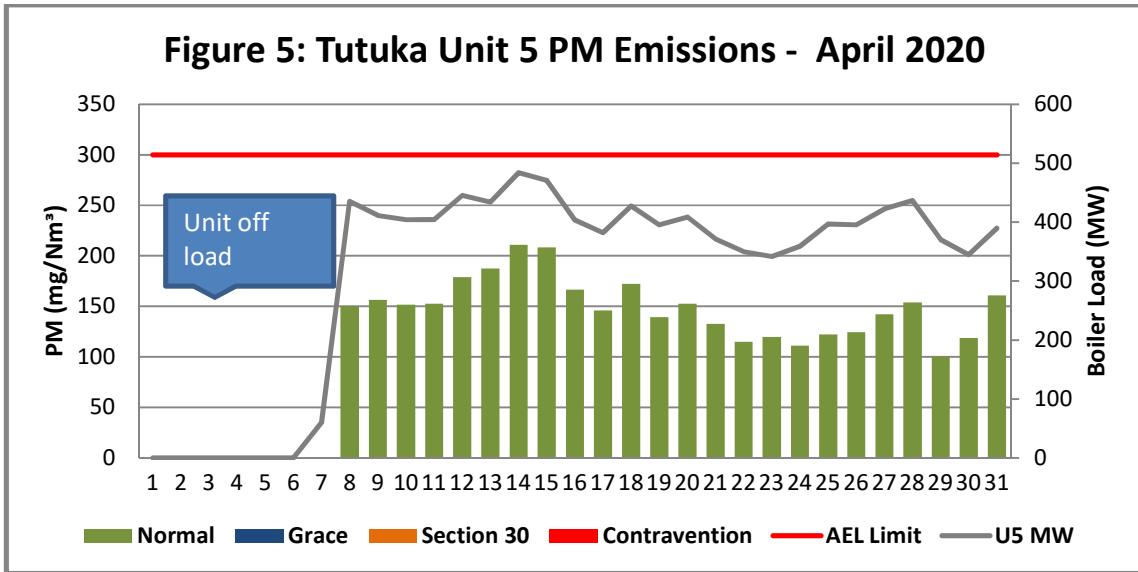


Figure 5: Unit 5 Daily Average Particulate Matter Emissions for the month of April 2020 (against the emissions limit and load generated)

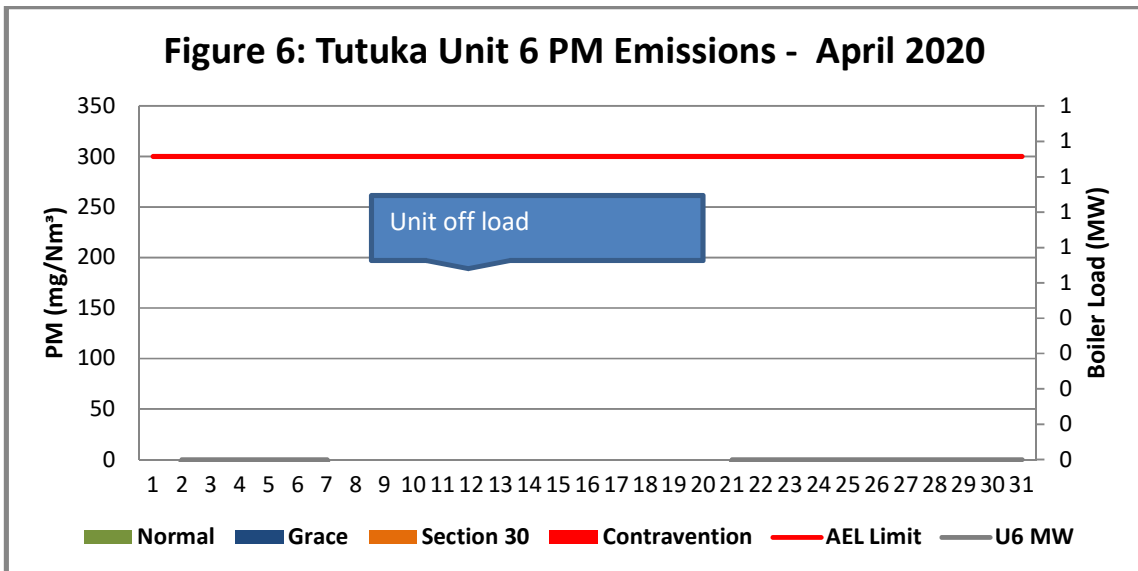


Figure 6: Unit 6 Daily Average PM emissions for the month of April 2020 (against the emission limits and load generated)

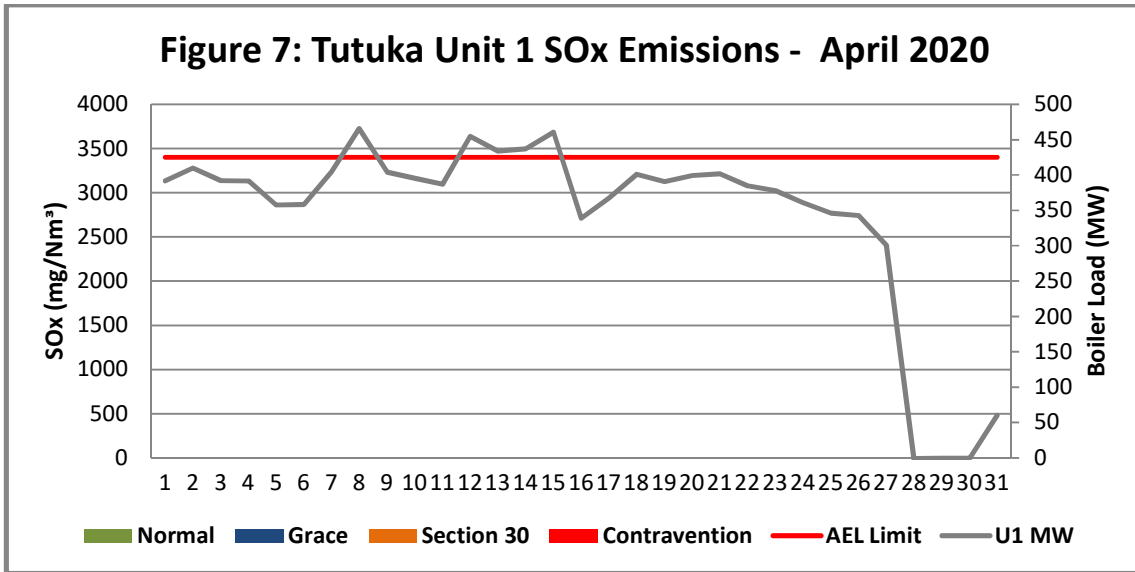


Figure 7: Unit 1 Daily Average SOx Emissions for the month of April 2020 (against the emissions limit and load generated)

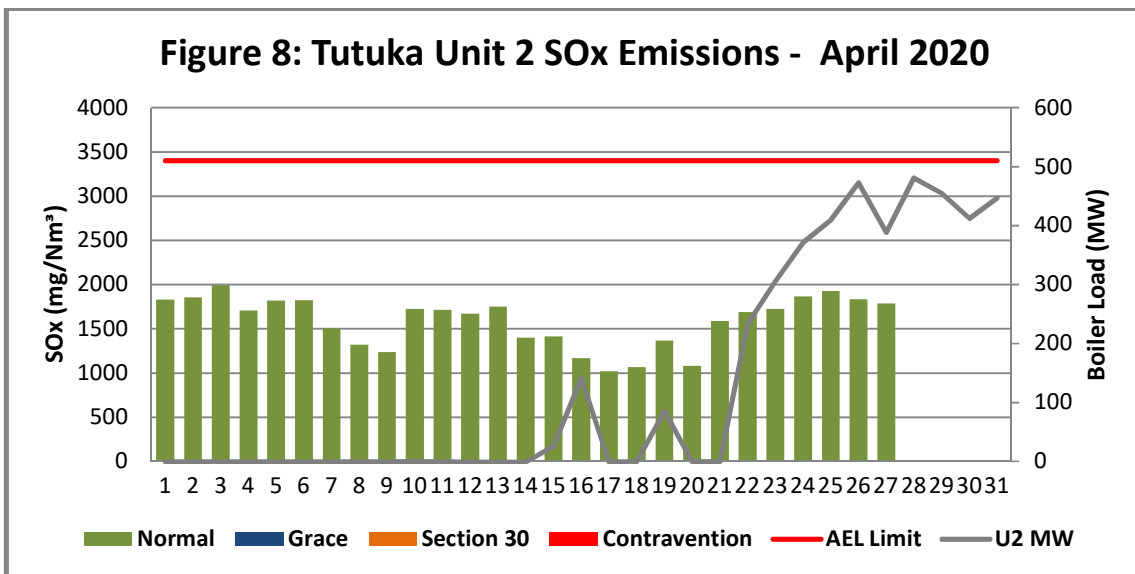


Figure 8: Unit 2 Daily Average SOx emissions for the month of April 2020 (against the emission limits and load generated)

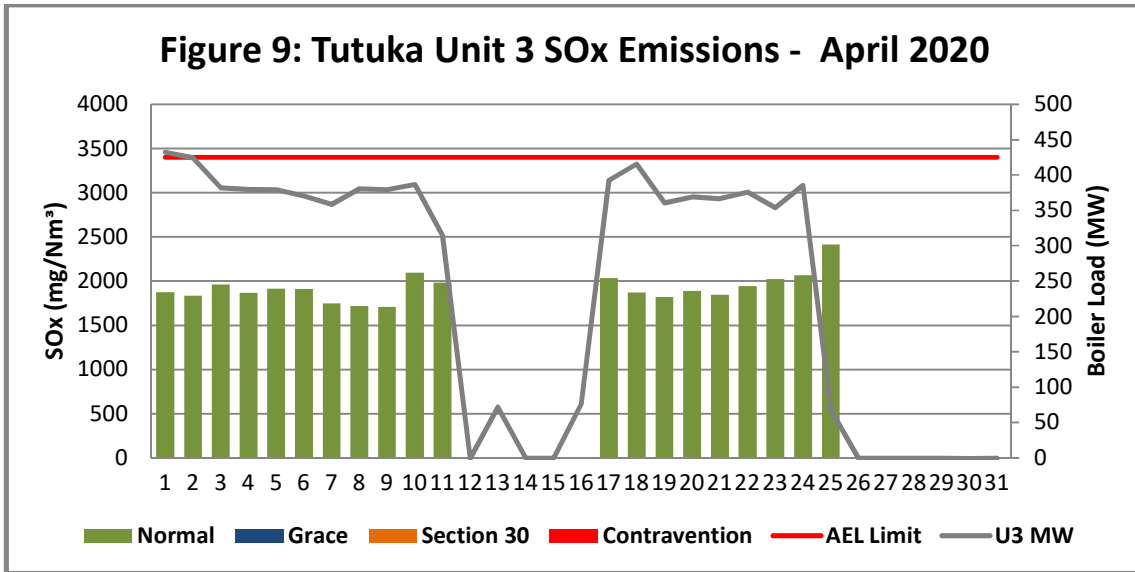


Figure 9: Unit 3 Daily Average SOx emissions for the month of April 2020 (against the emission limits and load generated)

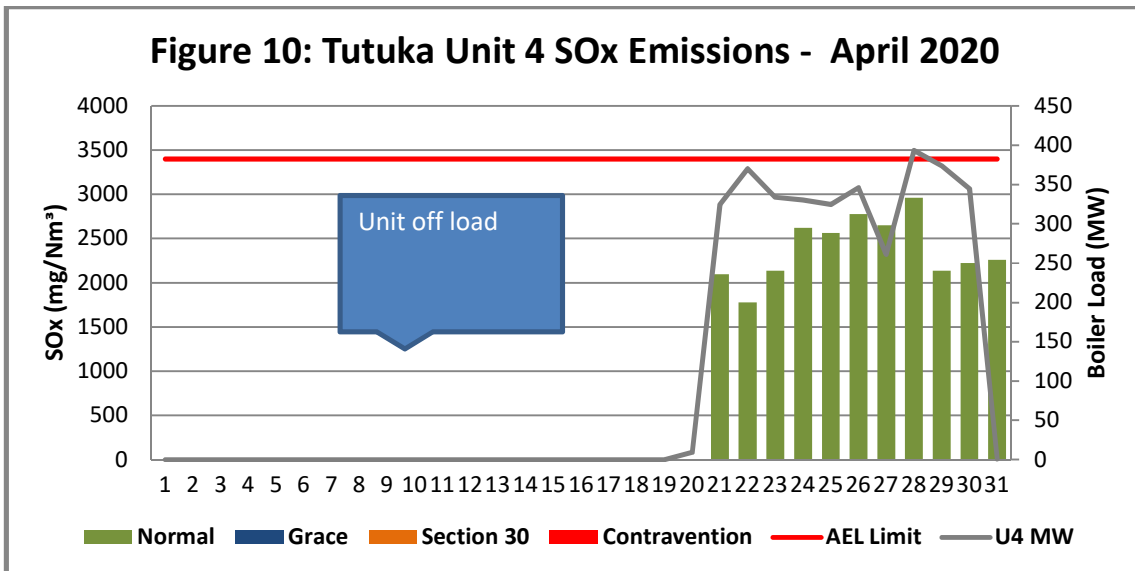


Figure 10: Unit 4 Daily Average SOx emissions for the month of April 2020 (against the emission limits and load generated)

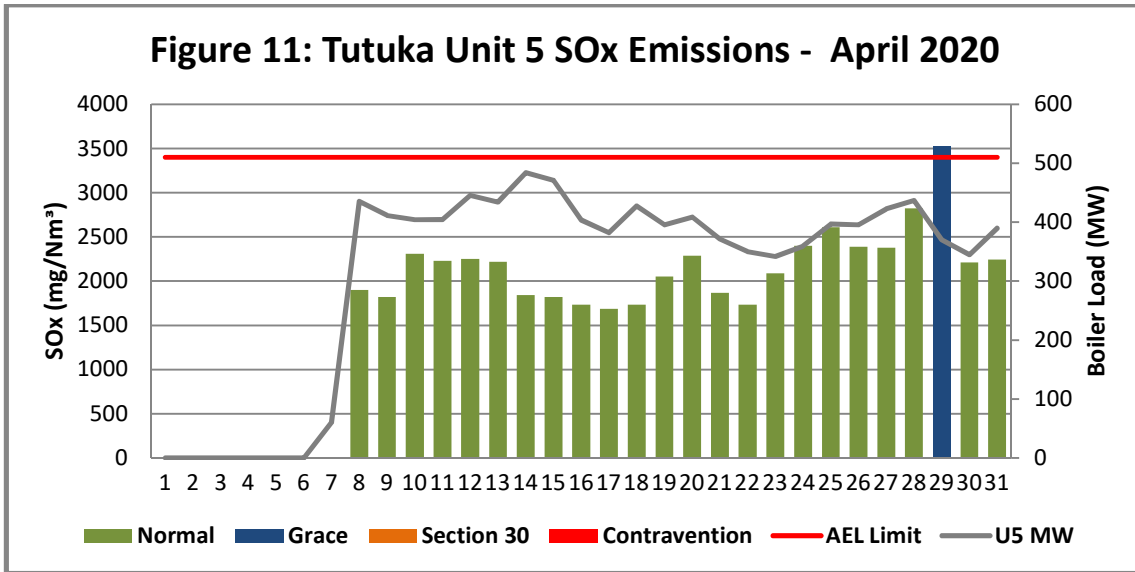


Figure 11: Unit 5 Daily Average SOx Emissions for the month of April 2020 (against the emissions limit and load generated)

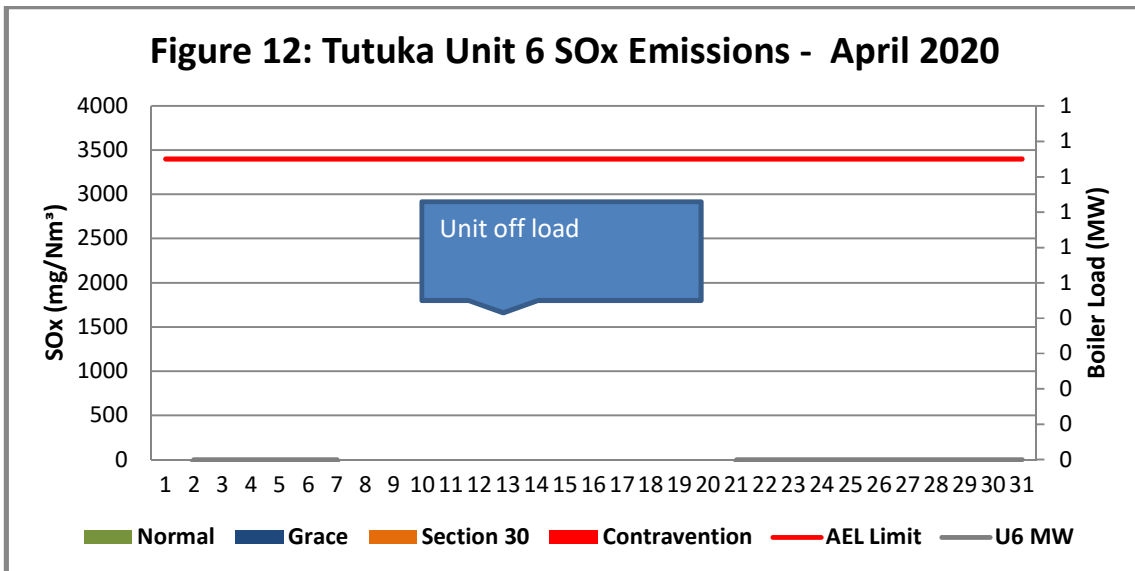


Figure 12: Unit 6 Daily SOx emissions for the month of April 2020 (against the emission limits and load generated)

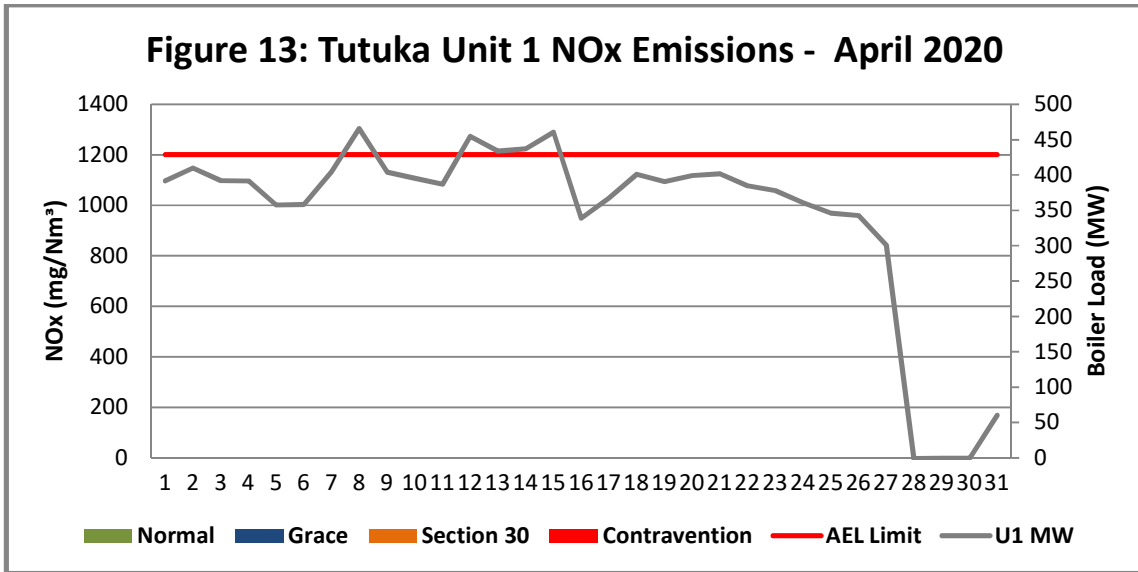


Figure 13: Unit 1 Daily Average NOx Emissions for the month of April 2020 (against the emissions limit and load generated)

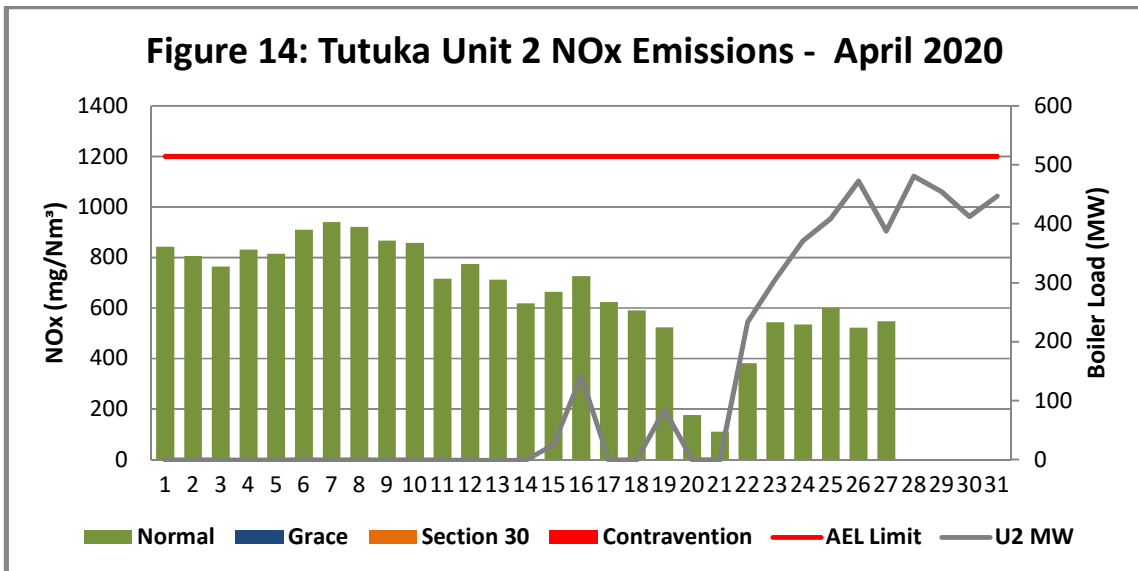


Figure 14: Unit 2 Daily Average NOx emissions for the month of April 2020 (against the emission limits and load generated)

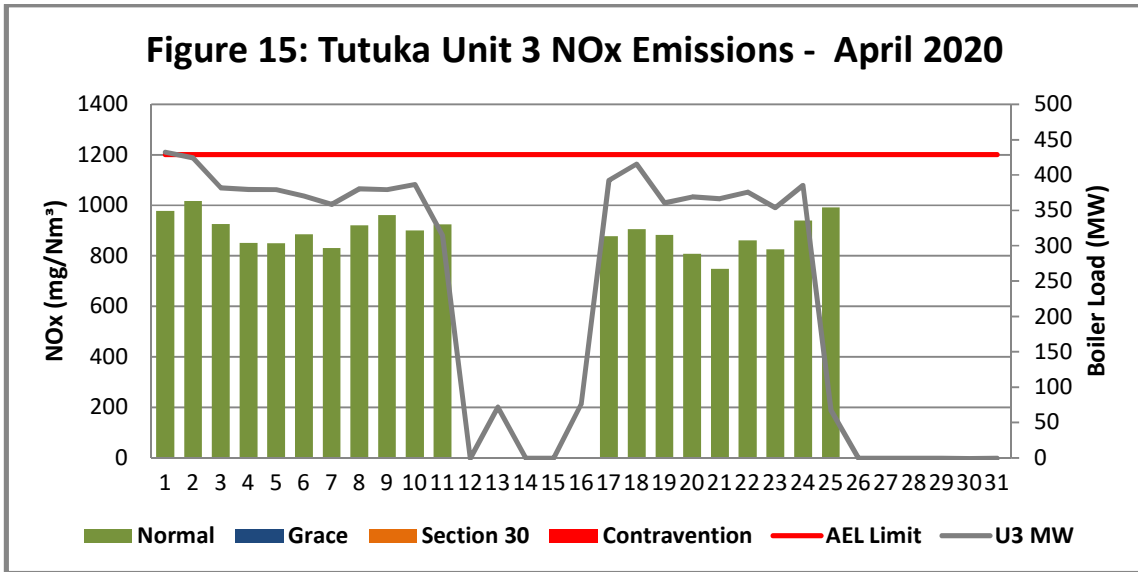


Figure 15: Unit 3 Daily Average NOx emissions for the month of April 2020 (against the emission limits and load generated)

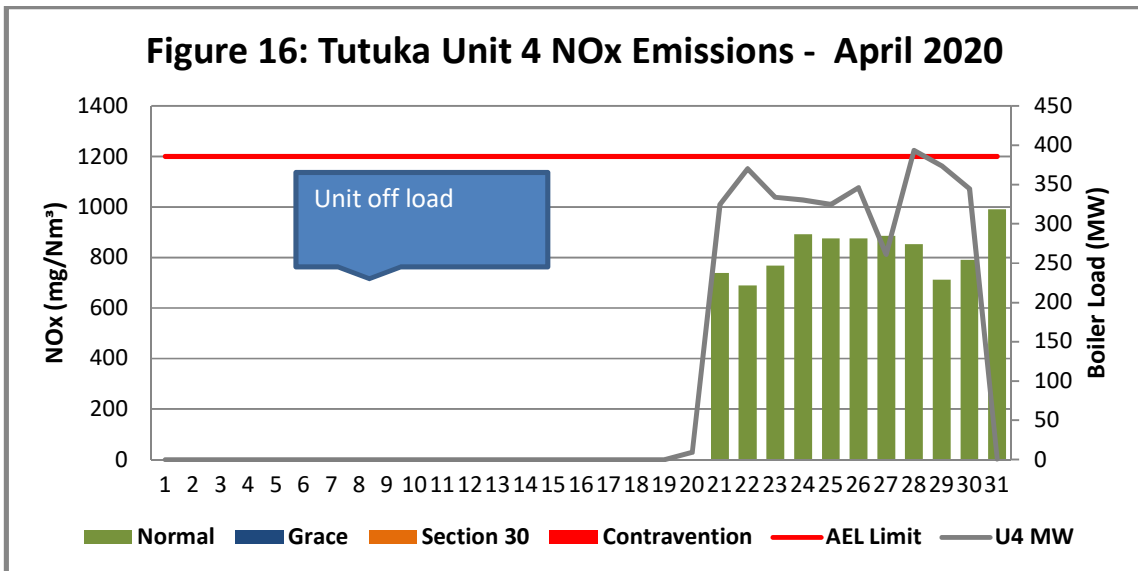


Figure 16: Unit 4 Daily Average NOx emissions for the month of April 2020 (against the emission limits and load generated)

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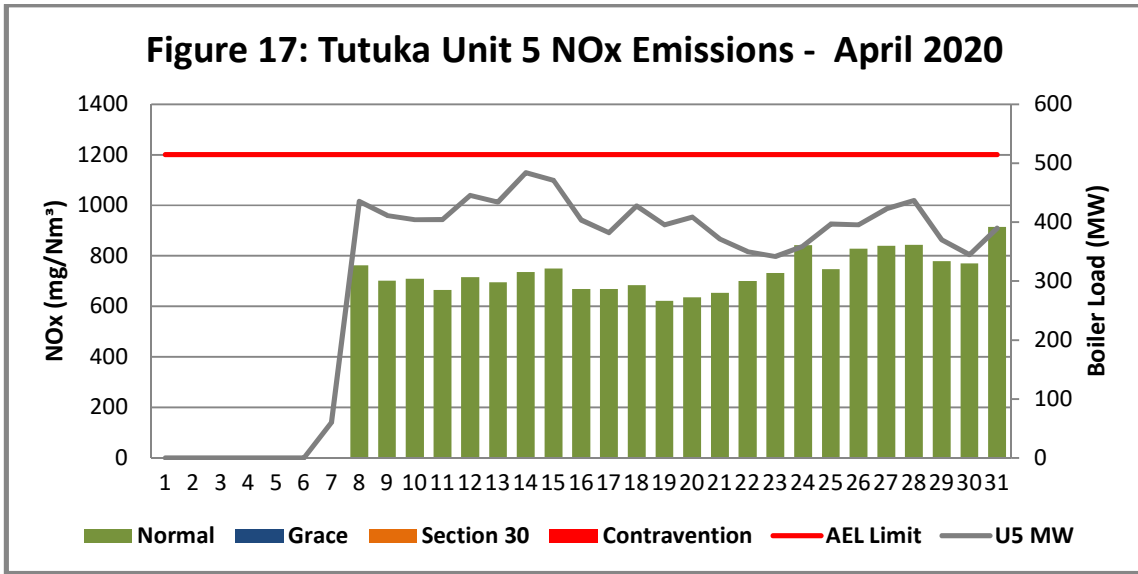


Figure 17: Unit 5 Daily Average NOx emissions for the month of April 2020 (against the emission limits and load generated)

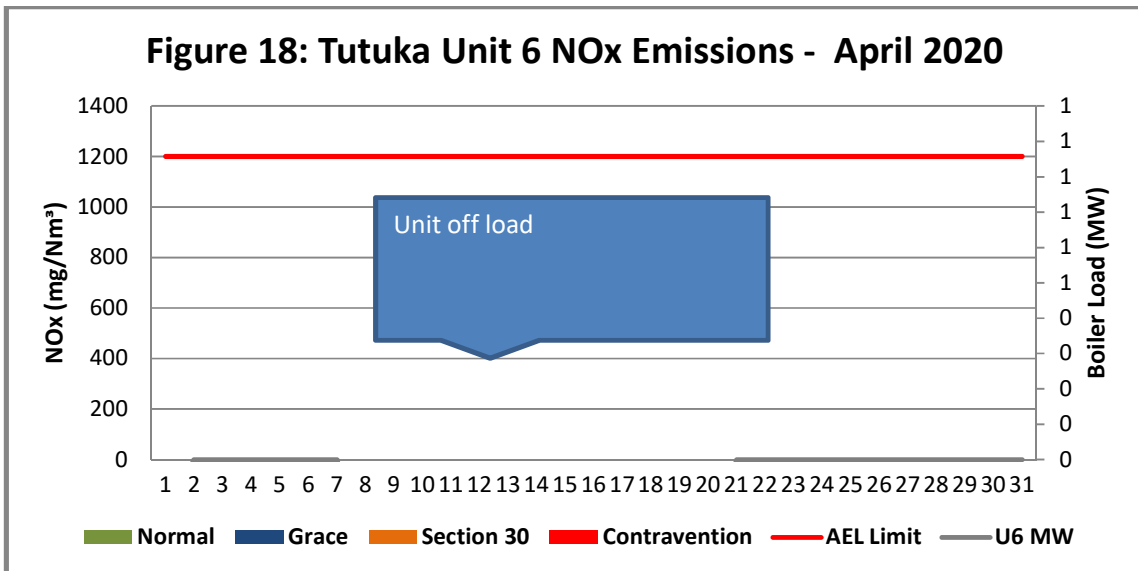


Figure 18: Unit 6 Daily Average NOx emissions for the month of April 2020 (against the emission limits and load generated)

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	Total Exceedance
1	7	2	0	0
2	27	0	0	0
3	20	0	0	0
4	6	5	1	0
5	24	0	0	0
6	Unit off load	Unit off load	Unit off load	Unit off load

Table 6: Each unit and respective days operating under normal operation, days in grace period, and section 30 days respectively for the month of April 2020

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**Values rounded to the nearest day*

Number & Type of Starts	U1	U2	U3	U4	U5	U6
Number Of Hot Starts (Off-Load < 30 Hrs)	13	3	8	4	0	0
Number Of Cold Starts (Off-Load > 30 hrs)	1	0	0	1	1	0

Table 7: Number and type of Unit start-ups for each unit respectively for the month of April 2020

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 April 2020

7. General

On 23 April 2020, Unit 4 incurred a Section 30 reportable incident. The incident was reported to the Authorities and the station has already submitted the investigation report. This Section 30 was as a result of fuel oil carry over during Unit 4 light up.

- Eskom Head Office (Sustainability Air Quality Centre of Excellence) submitted an application on behalf of Tutuka PS for the postponement for the implementation of the Minimum Emissions Standard (MES) limits to the DEA and Gert Sibande District Municipality on the 09th of November 2018. In the application, a limit of 300 mg/Nm³ was requested (24 hour moving average).
- Tutuka Power Stations' new PM emissions limit of 100 mg/Nm³ (previously 350 mg/Nm³), came into effect on the 1st of January 2020 which the Station is unable to meet with the current abatement technology and therefore an AEL variation was also applied for.
- It was communicated to the DEA and Gert Sibande District Municipality on the 20th of December 2018 that the station intended to continue to operate assuming a PM Emissions limit of 300mg/Nm from the 1st of January 2019, whilst feedback is awaited on the MES Postponement Application and the AEL variation.
- On the 31st of January 2019 Tutuka PS had a clarification meeting with Mr Dan Hlanyane, the Air Quality Officer of Gert Sibande District Municipality to establish the interim way forward until feedback is received on the postponement application.

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- During the meeting Mr Hlanyane indicated that the Station should continue the status quo of managing and reporting on emissions against the 350mg/Nm³ limit until formal response is received from the Authorities.
- On 23 April 2020, Eskom had a meeting with the DEA. The meeting was a to clarify the additional requested information for Eskom's MES application

Compiled by:



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TUTUKA EMISSIONS CONTROL OFFICER

Reviewed by:



Lyborn Xivambu
TUTUKA ENVIRONMENTAL MANAGER (acting)

Approved by:

 2020/05/20

Marcus Nematodzi
TUTUKA GENERAL MANAGER

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ANNEXURE 1: TUTUKA POWER STATION CORRELATION FORMULA FOR UNIT 1 TO 6
INCLUDING UNIT 4 NEW CURVE

mA to Emissions (mg/Nm³) 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	-		-		-		-		-		-	
m²	113.126		93.660		76.587		144.0158		91.331		119.4803	
m	25.665		22.611		18.016		31.011		21.705		27.9484	
	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA
OD												
20												
mA	400.2	0.0	358.6	0.0	283.7	0.0	476.2	0.0	342.8	0.0	439.5	0.0
4												
mA	-10.5	0.0	-3.2	0.0	-4.5	0.0	-20.0	0.0	-4.5	0.0	-7.7	0.0