Eskom

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Date:
23 March 2021

Enquiries: Monica Mokgawa
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Dear Mr. Hlanyane

TUTUKA POWER STATION SUBMISSION MONTHLY EMISSIONS PERFORMANCE MONITORING REPORT AS STIPULATED ON CONDITION 7.5 OF TUTUKA POWER STATION ATMOSPHERIC EMISSION LICENCE NO: Lekwa/Eskom H SOC Ltd TPS/0013/2019/F03 DATED 25 APRIL 2019

In terms of Tutuka PS AEL, the station is required to submit the monthly emissions monitoring report on/before the 12th every month. The report shall indicate the emission performance for the previous month. This report contains the emission performance for the month of June 2020.

We apologise for the late submission of this report. We have revised our internal controls to ensure the timeous reporting going forward.

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Max. Permitted	Actual Consumption Jun-2020
	Coal	Tons	*1 200 000*	*571 220*
	Fuel Oil	Tons	*10 000*	*10059.13*
Production Rates	**Product / By-Product Name**	**Units**	**Max. Production Capacity Permitted**	**Production Rate Jun-2020**
	Energy	MW	*30 748*	*48327*
	Ash	Tons	*350 000*	*149 603*
	RE Ash	kg/MWh	*not specified*	*1.34*

Table 1:Quantity of raw materials and products used/produces for the month of June 2020

2. ENERGY SOURCE CHARACTERISTICS

Coal Characteristics	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	*16-24*	*21.260*
Sulphur Content	%	*0.6 TO >2.6*	*0.810*
Ash Content	%	*21 TO >33*	*26.190*

Table 2: Energy sources material characteristics for the month of June 2020

3. ABATEMET TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Minimum Control Efficiency (%)	Actual Utilisation (%)
Unit 1	*Electro Static Precipitators (ESP)*	*95*	*99.2%*
Unit 2	*Electro Static Precipitators (ESP)*	*95*	*98.9%*
Unit 3	*Electro Static Precipitators (ESP)*	*98*	*98.9%*
Unit 4	*Electro Static Precipitators (ESP)*	*95*	*99.1%*
Unit 5	*Electro Static Precipitators (ESP)*	*95*	*98.9%*
Unit 6	*Electro Static Precipitators (ESP)*	*95*	*100.0%*

Table 3.1: Abatement Equipment Control Technology for month of June 2020

Note: The ESP does not have bypass mode operation, hence plant considered 100% Utilised.

4. MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SOx	NOx
Unit 1	*100.0*	*100.0*	*100.0*
Unit 2	*100.0*	*100.0*	*100.0*
Unit 3	*100.0*	*100.0*	*100.0*
Unit 4	*100.0*	*100.0*	*100.0*
Unit 5	*100.0*	*100.0*	*100.0*
Unit 6	*0*	*0*	*0*

Table 3.2: Monitor reliability for month of June 2020
Note: Unit 6 was off

4. EMISSION PERFORMANCE

Table 4.1: Monthly tonnages for the month of June-2020

Associated Unit/Stack	PM (tons)	SO_x (tons)	NO_x (tons)	CO_2 (tons)
Unit 1	172.2	1 868	611	196 122
Unit 2	259.5	1 671	661	291 776
Unit 3	351.2	3 269	1 582	346 387
Unit 4	278.2	2 418	793	230 025
Unit 5	302.5	2 947	1 153	259 234
Unit 6	0.0	0	0	7 172
SUM	1 363.5	12 174	4 799	1 330 717

Table 4.2: Legend Description

Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions

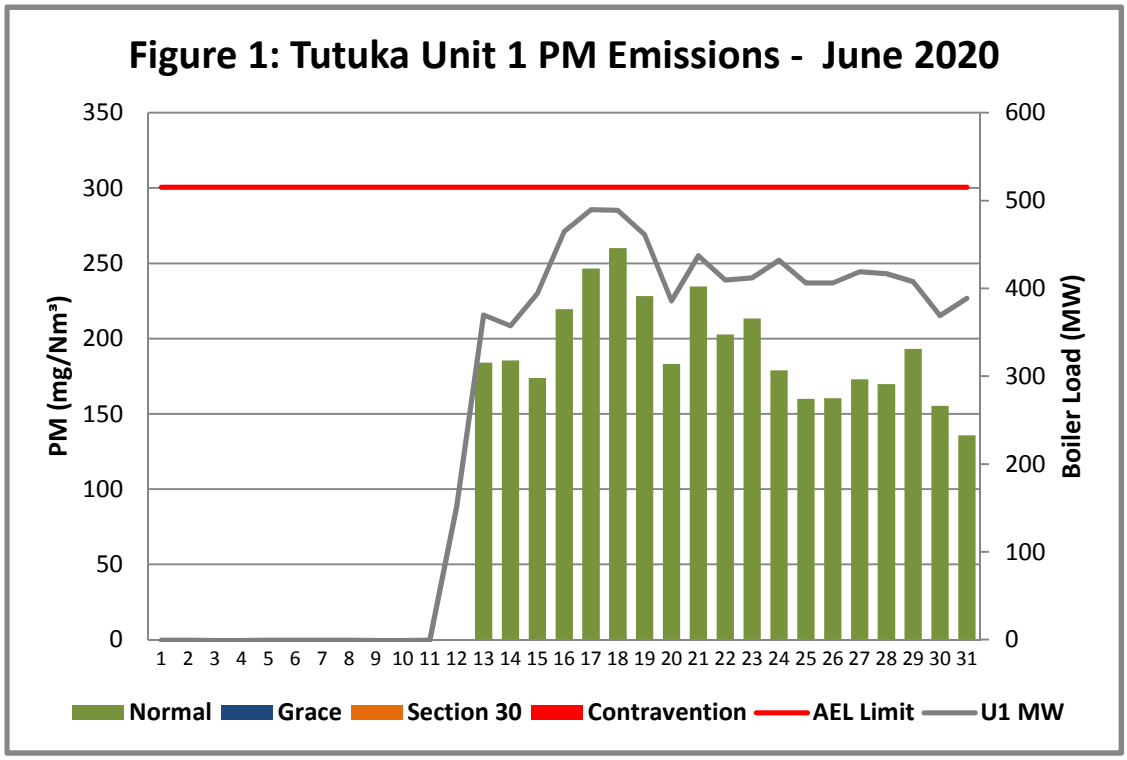

Figure 1: *Unit 1 Daily Average PM emissions for the month of June 2020(against the emission limits and load Generated)*

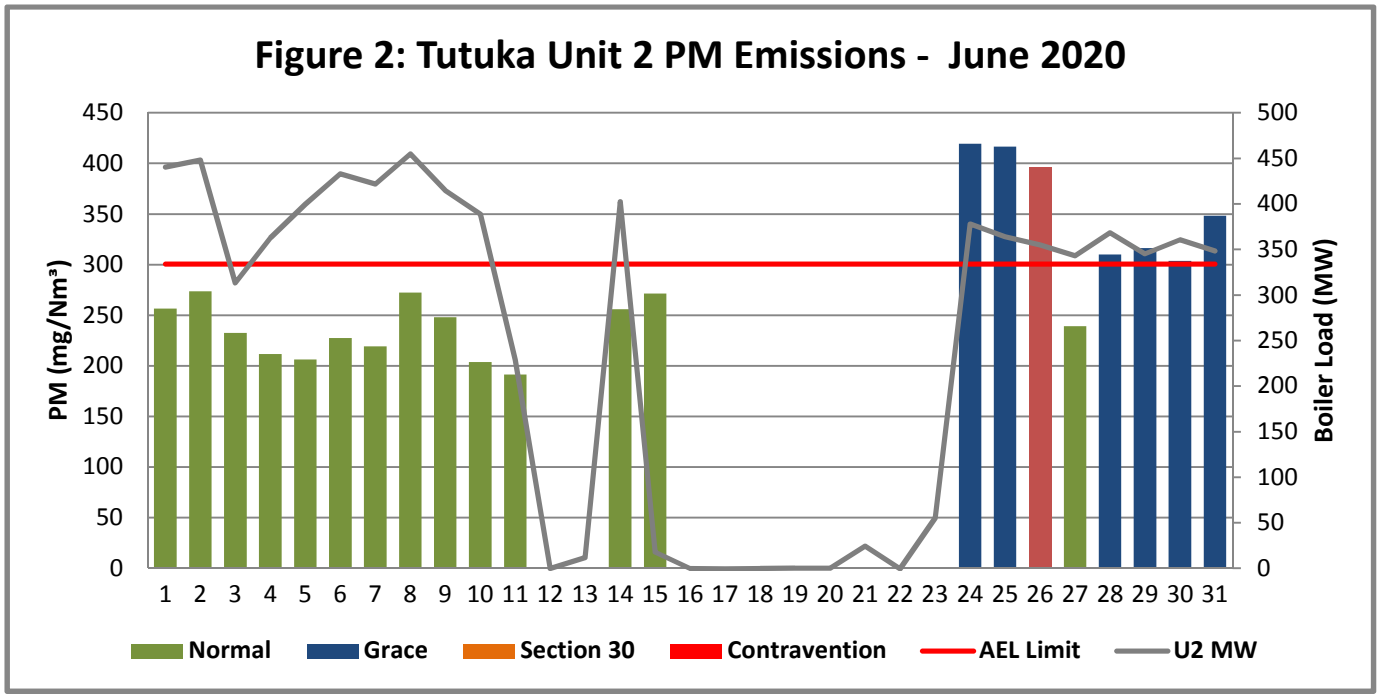

Figure 2: *Unit 2 Daily Average PM emissions for the month of June 2020(against the emission limits and load Generated)*

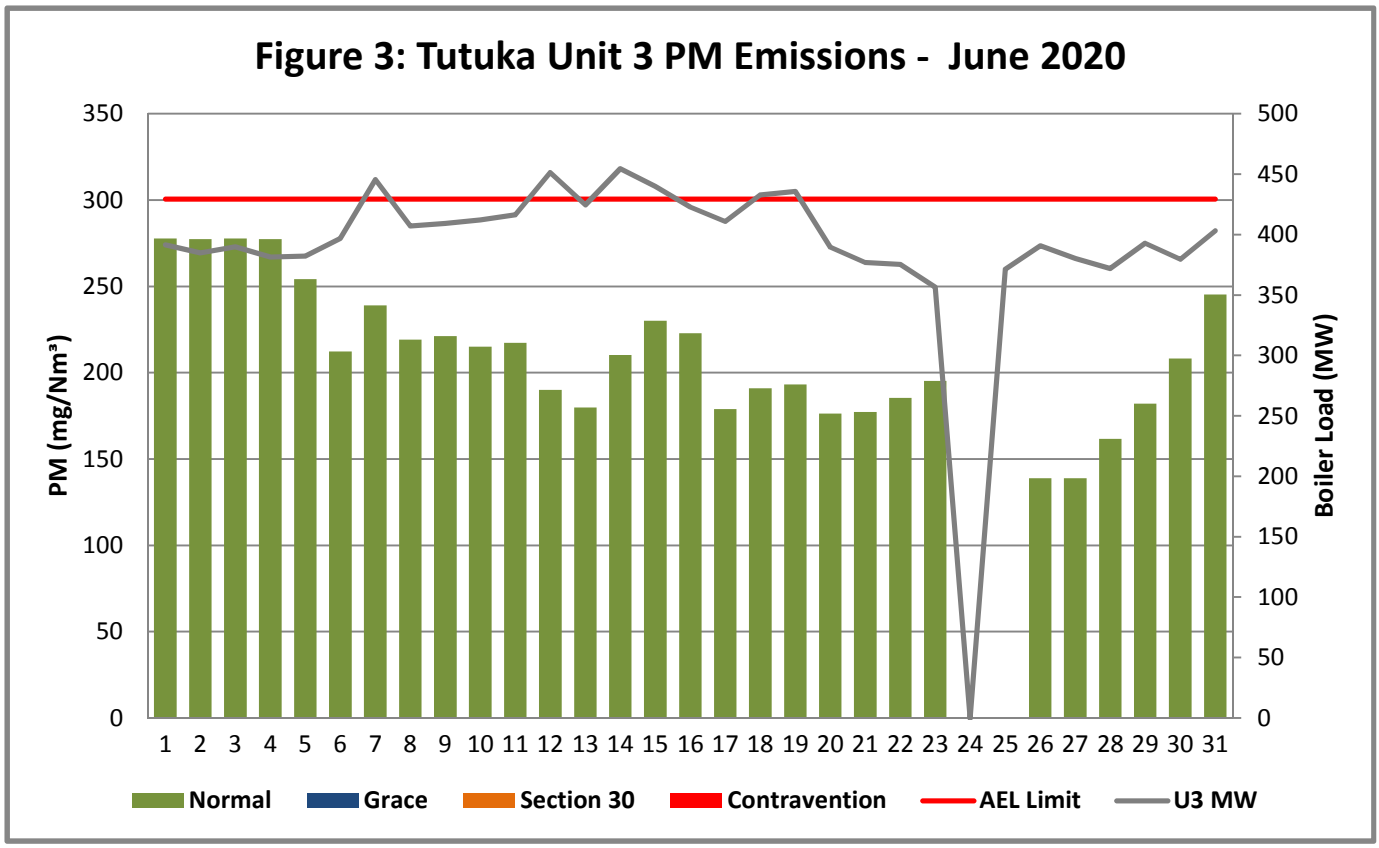

Figure 3: *Unit 3 Daily Average PM emissions for the month of June 2020(against the emission limits and load Generated)*

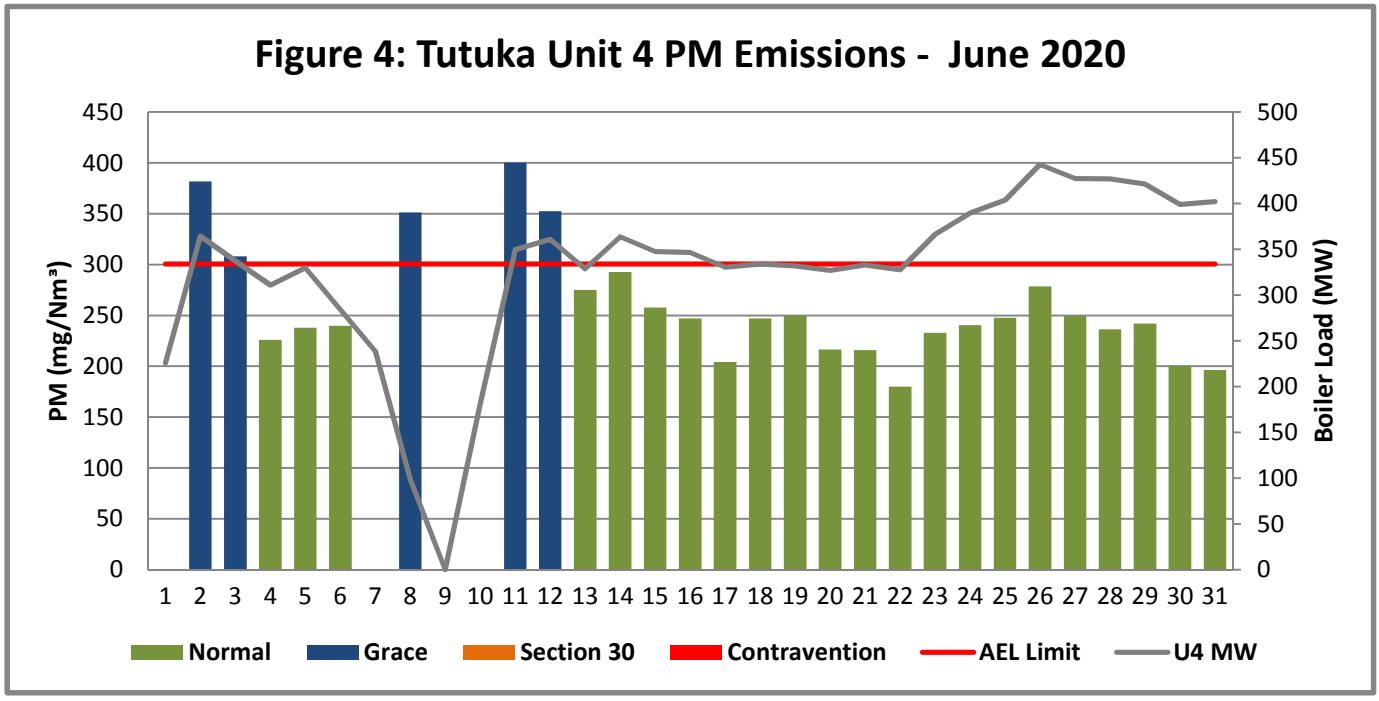

Figure 1: *Unit 1 Daily Average PM emissions for the month of June 2020(against the emission limits and load Generated)*

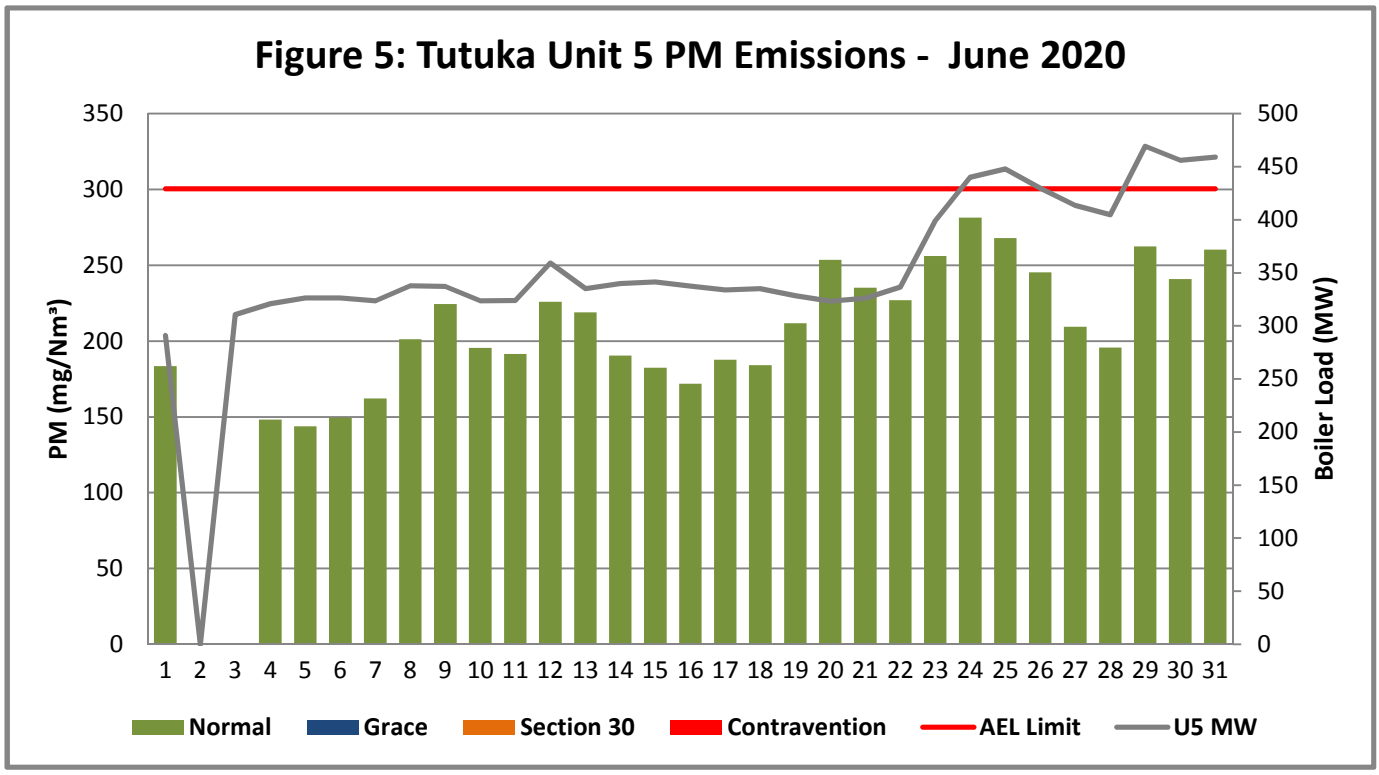

Figure 5: *Unit 5 Daily Average PM emissions for the month of June 2020(against the emission limits and load Generated)*

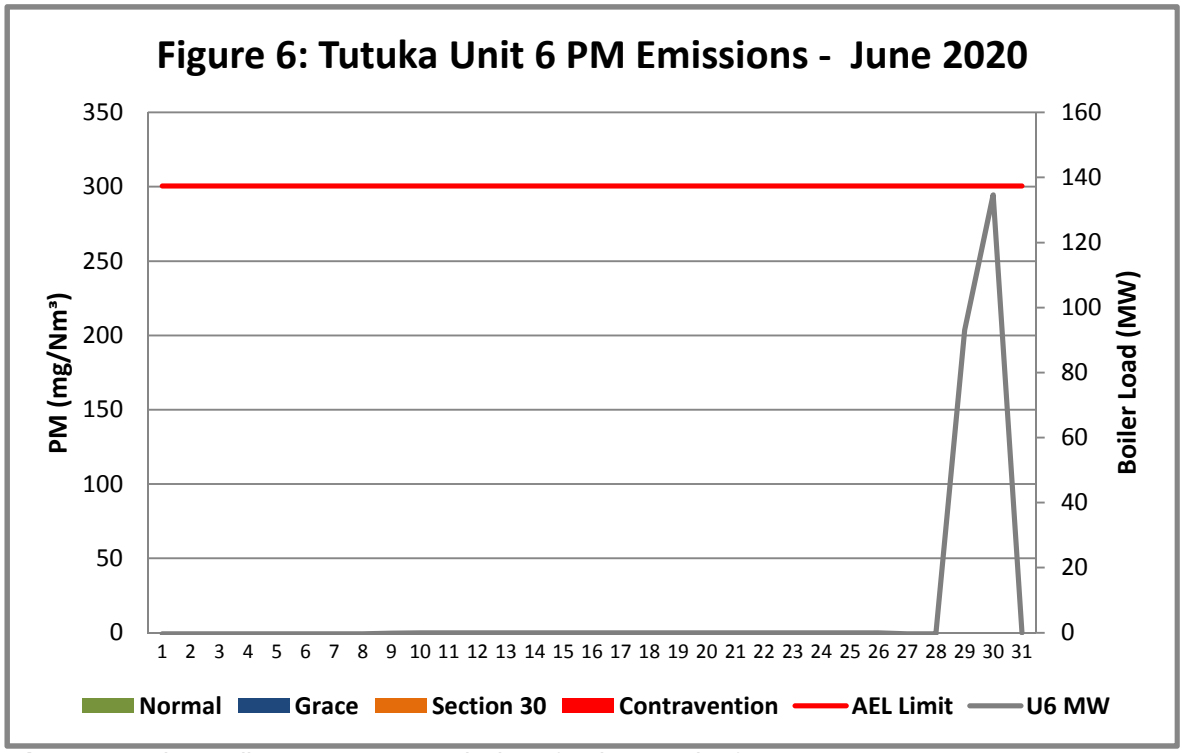

Figure 6: *Unit 6 Daily Average PM emissions for the month of June 2020*

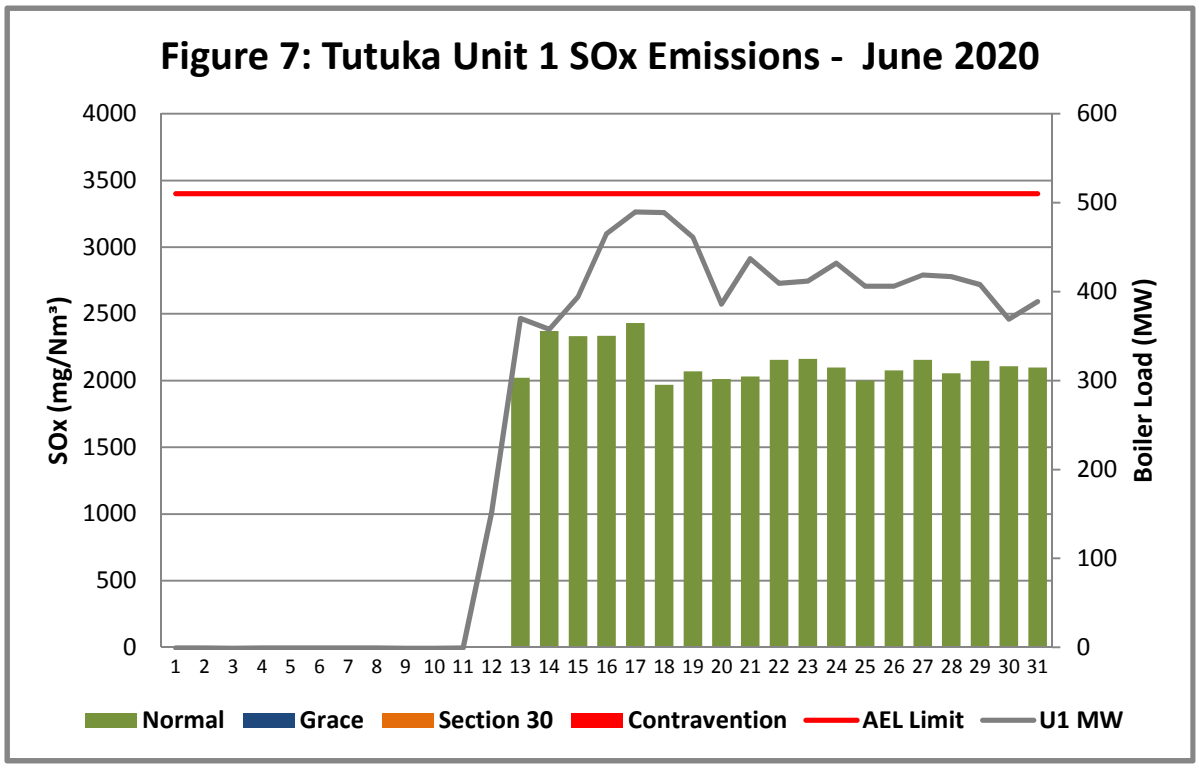

Figure 7: *Unit 1 Daily Average SOx emissions for the month of June 2020*

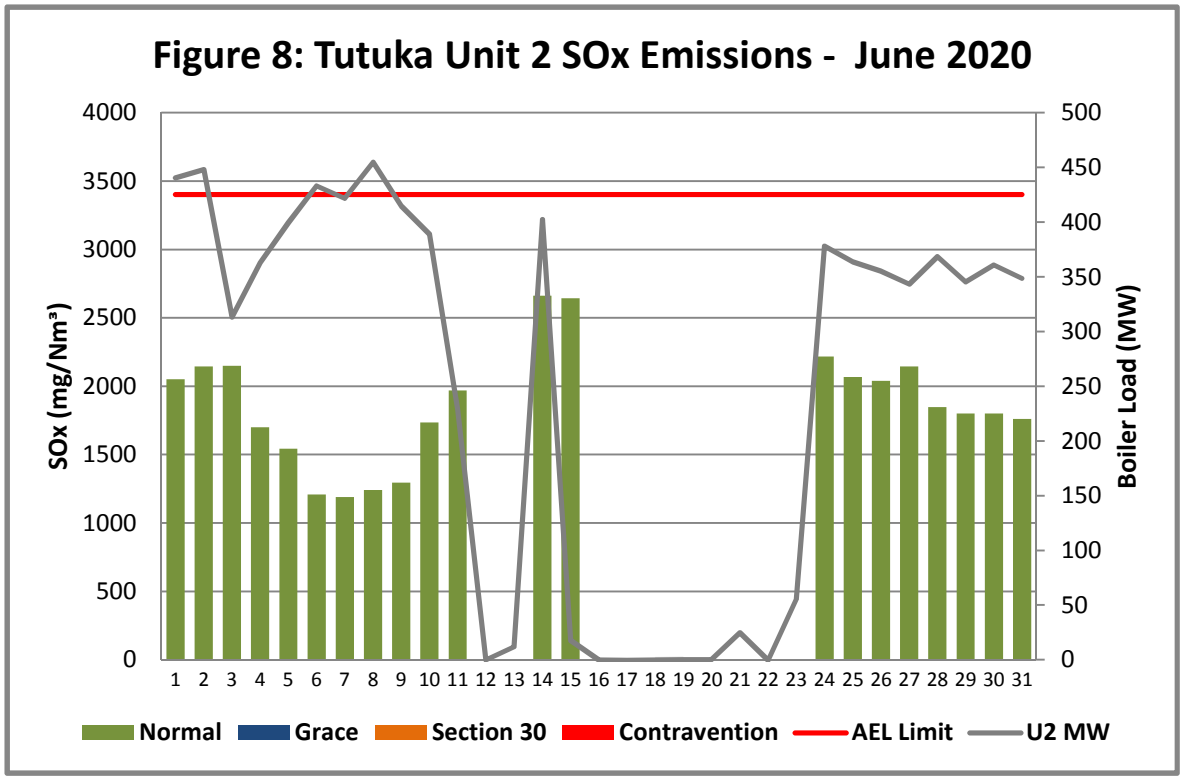

Figure 8: *Unit 2 Daily Average SOx emissions for the month of June 2020(against the emission limits and load Generated*

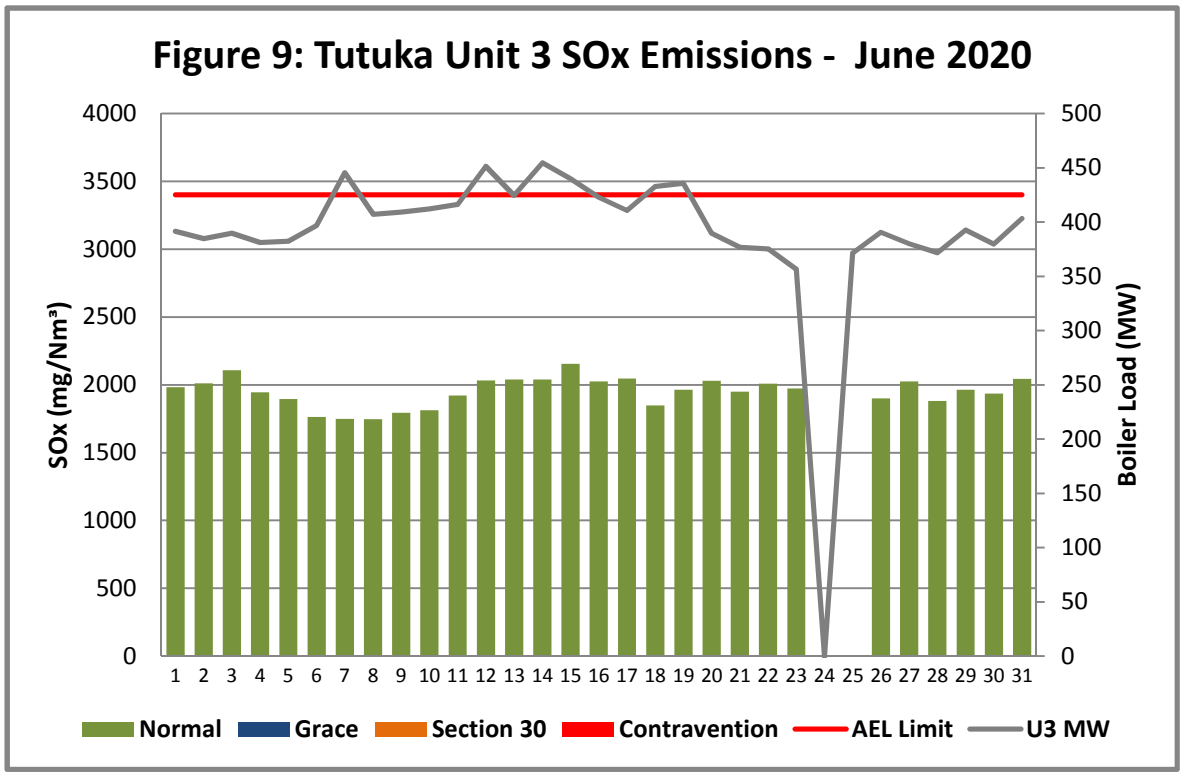

Figure 9: *Unit 3 Daily Average SOx emissions for the month of June 2020(against the emission limits and load Generated*

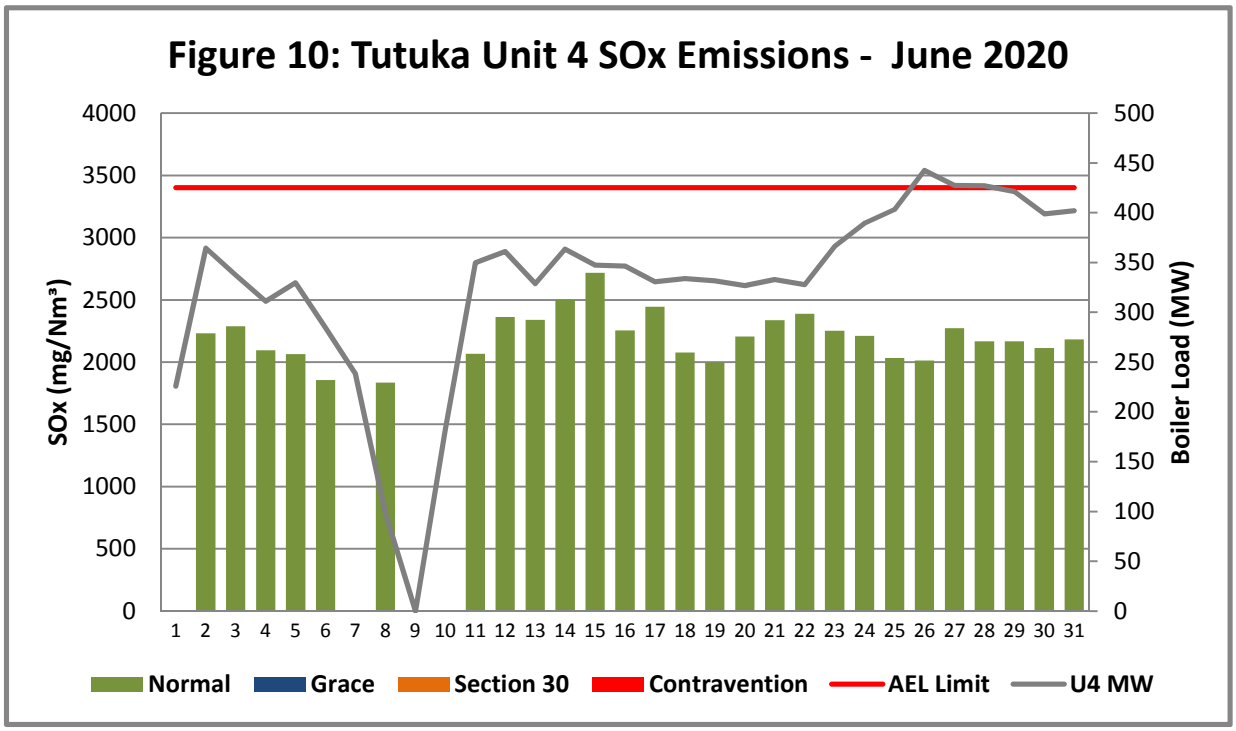

Figure 10: *Unit 4 Daily Average SOx emissions for the month of June 2020(against the emission limits and load Generated*

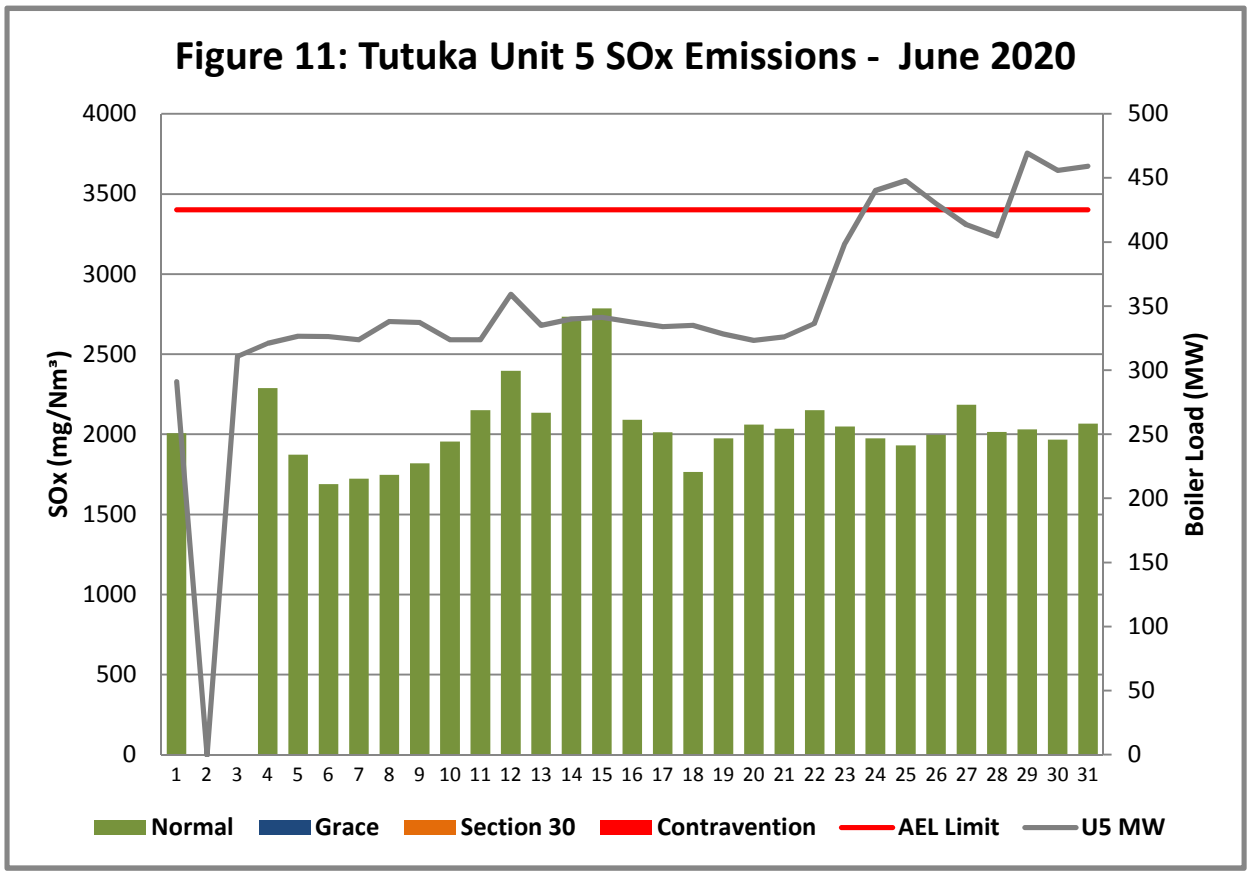

Figure 11: *Unit 5 Daily Average SOx emissions for the month of June 2020(against the emission limits and load Generated*

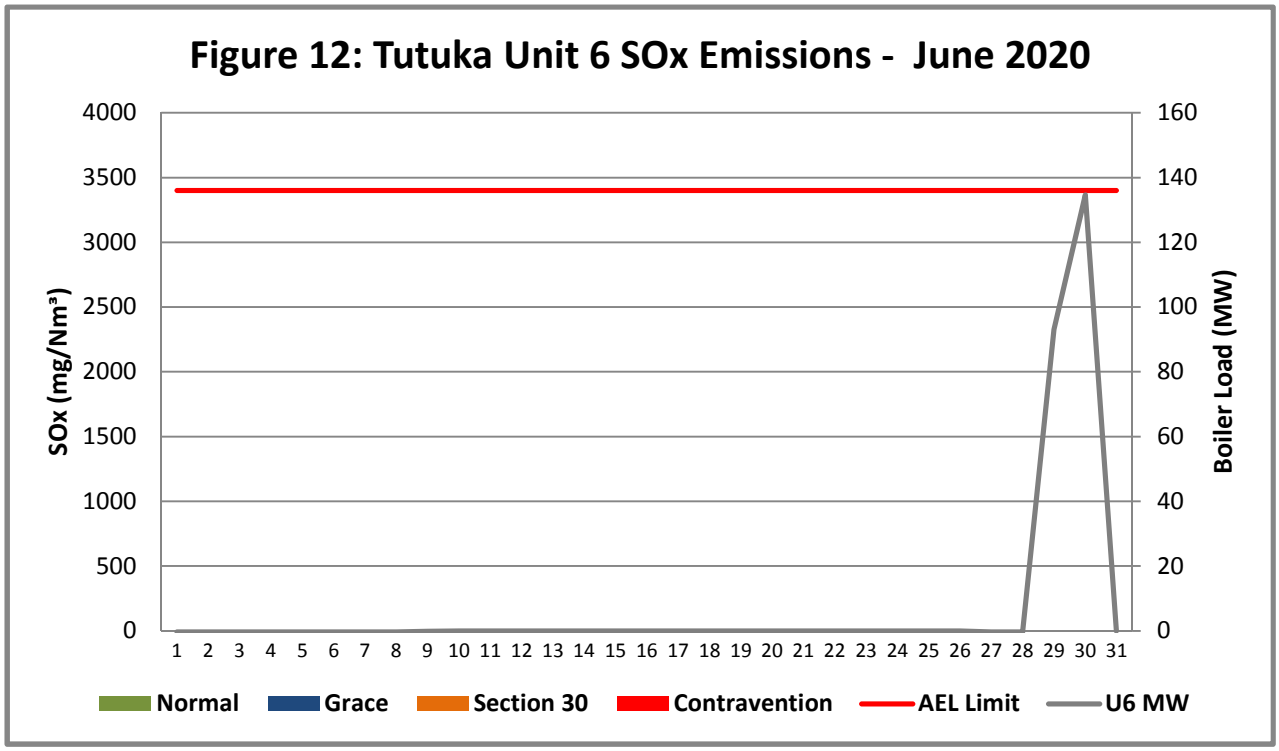

Figure 12: *Unit 6 Daily Average SOx emissions for the month of June 2020(against the emission limits and load Generated*

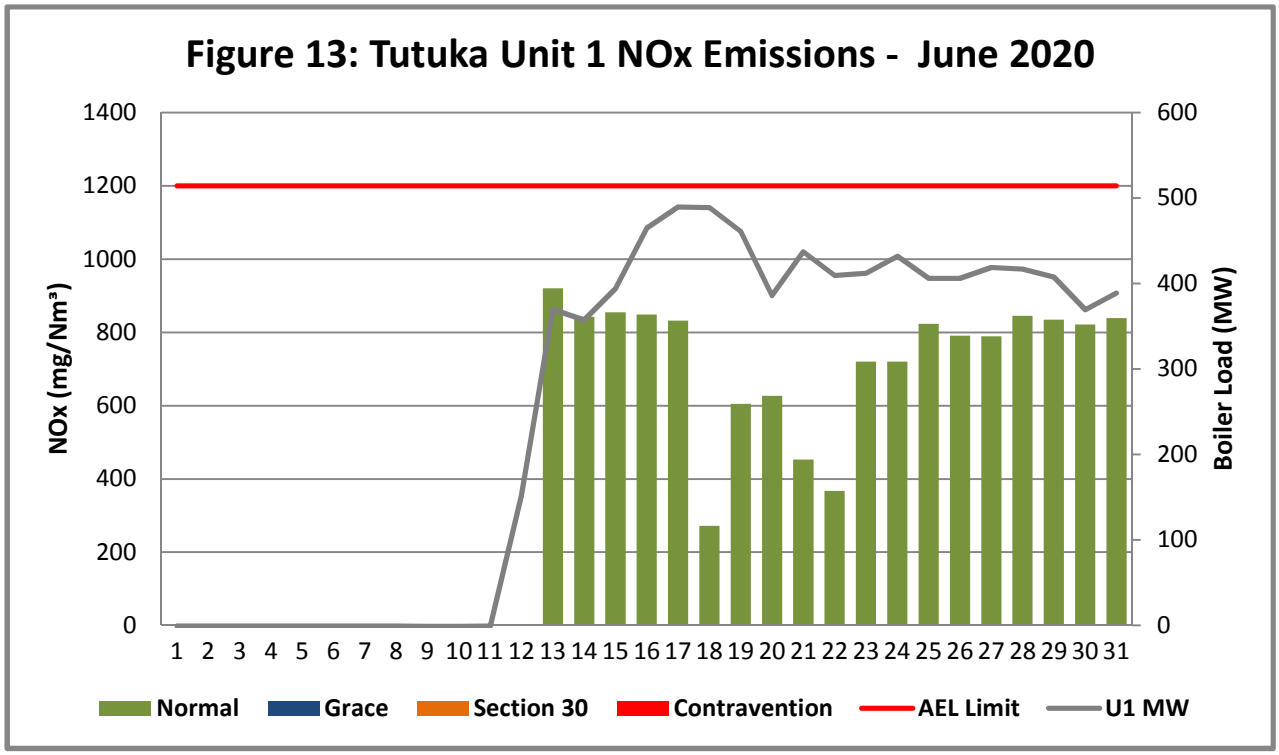

Figure 13: *Unit 1 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

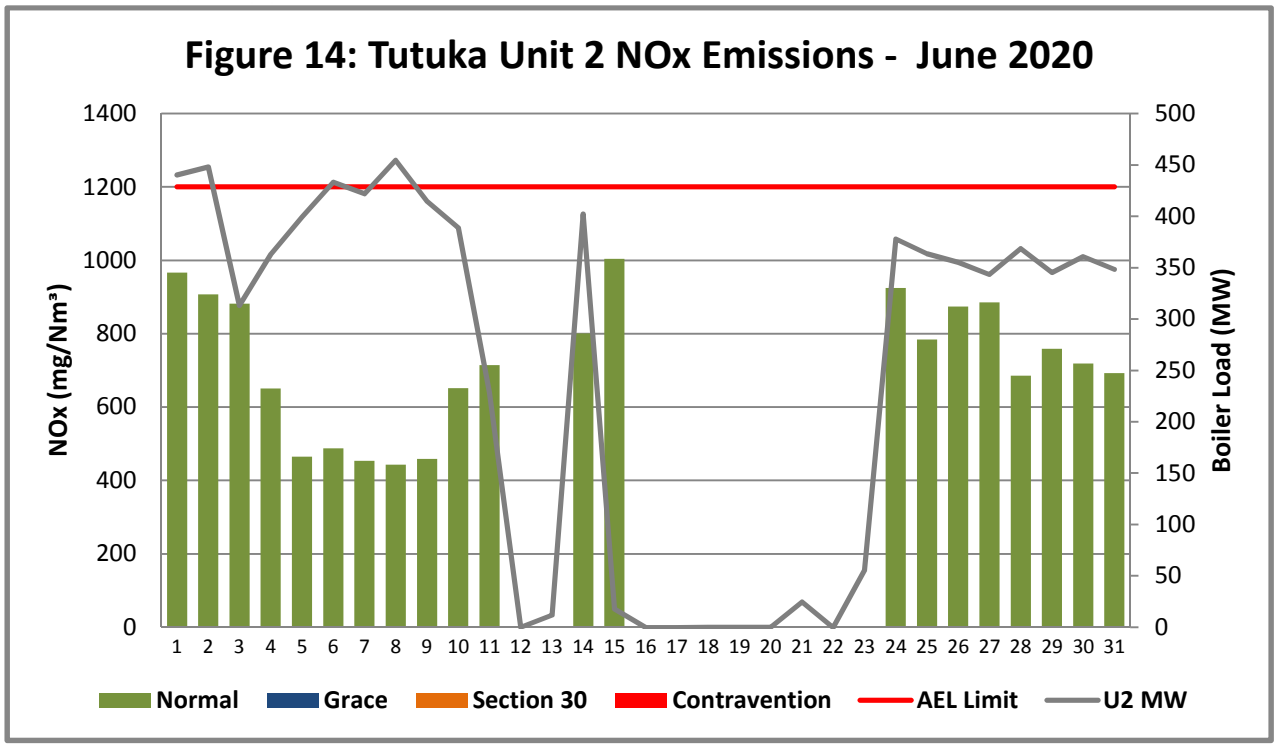

Figure 14: *Unit 2 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

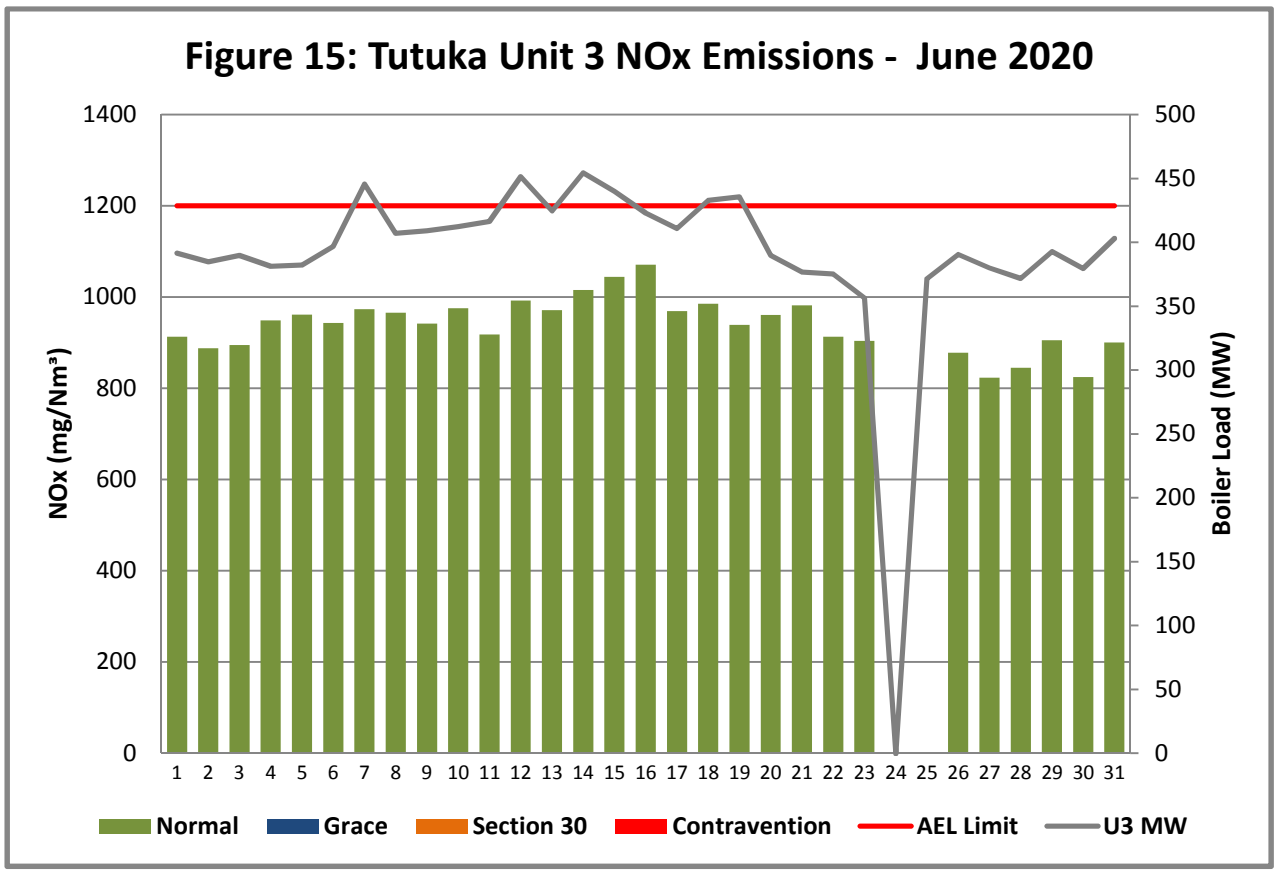

Figure 15: *Unit 3 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

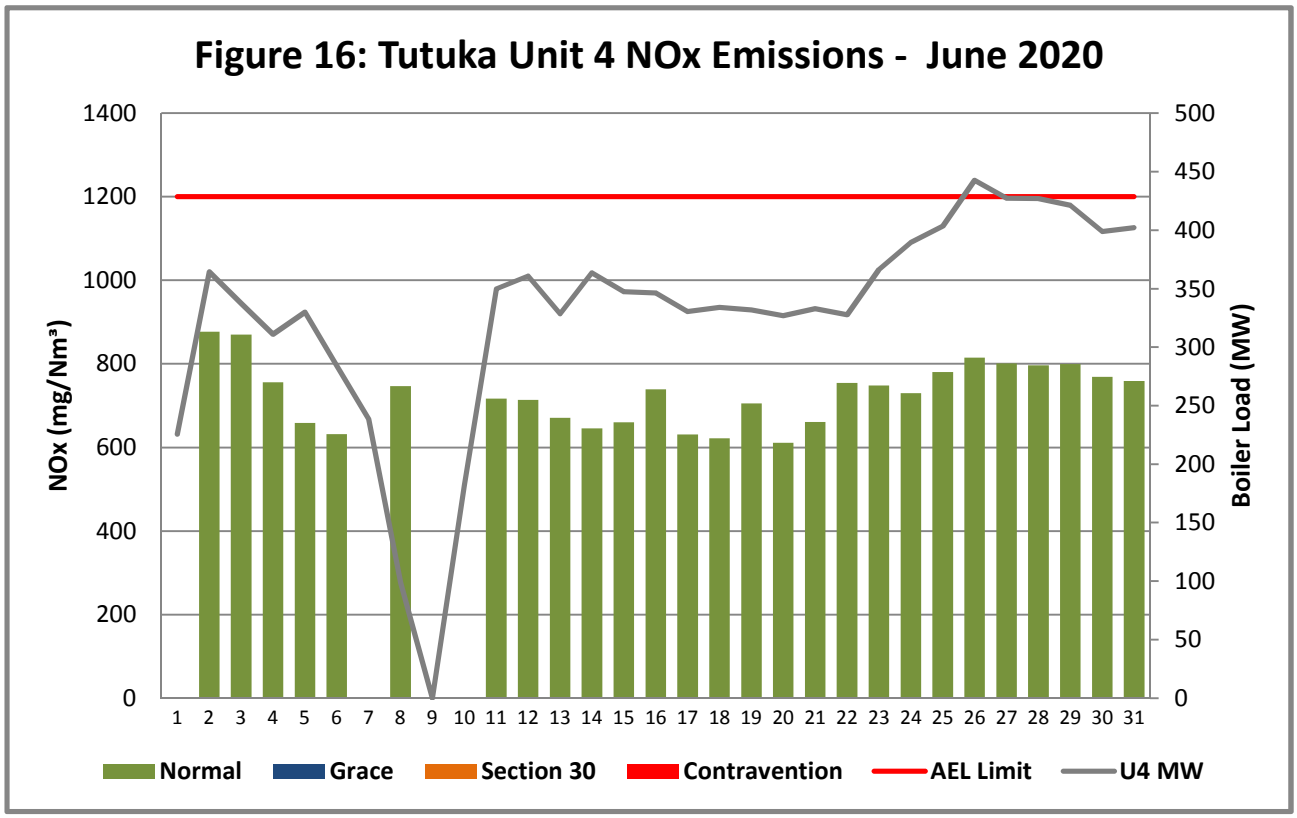

Figure 16: *Unit 4 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

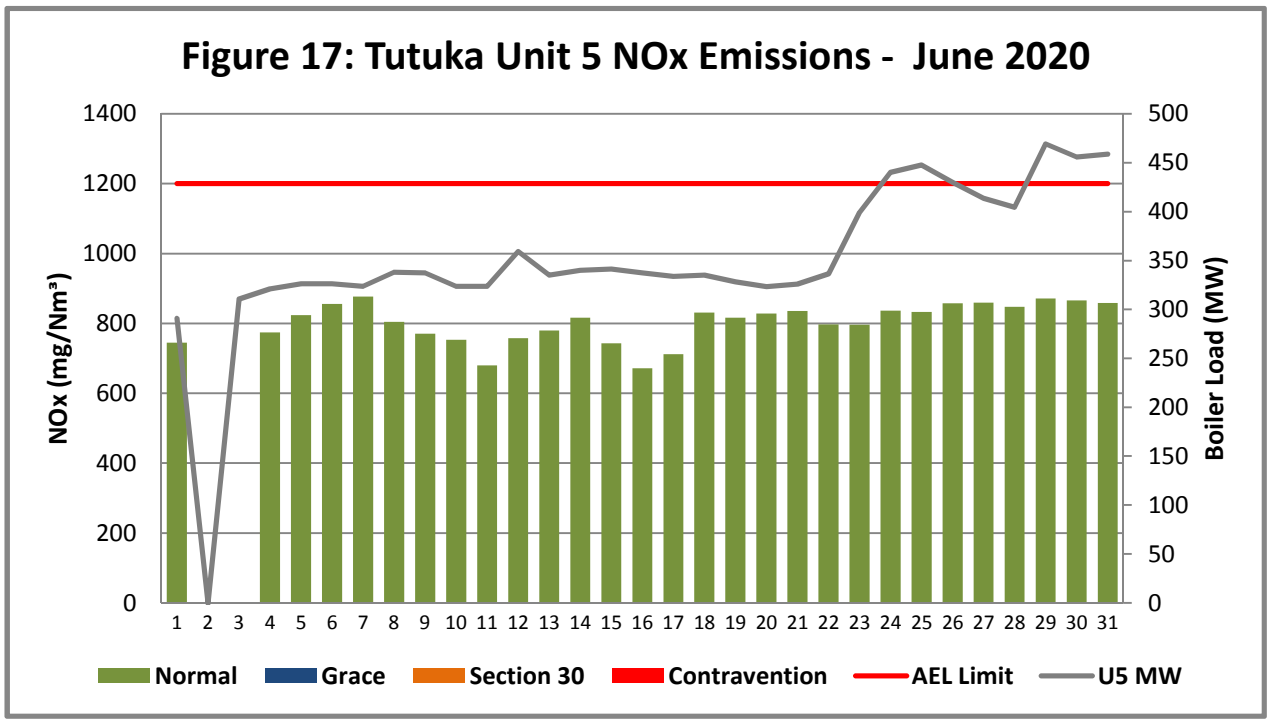

Figure 17: *Unit 5 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

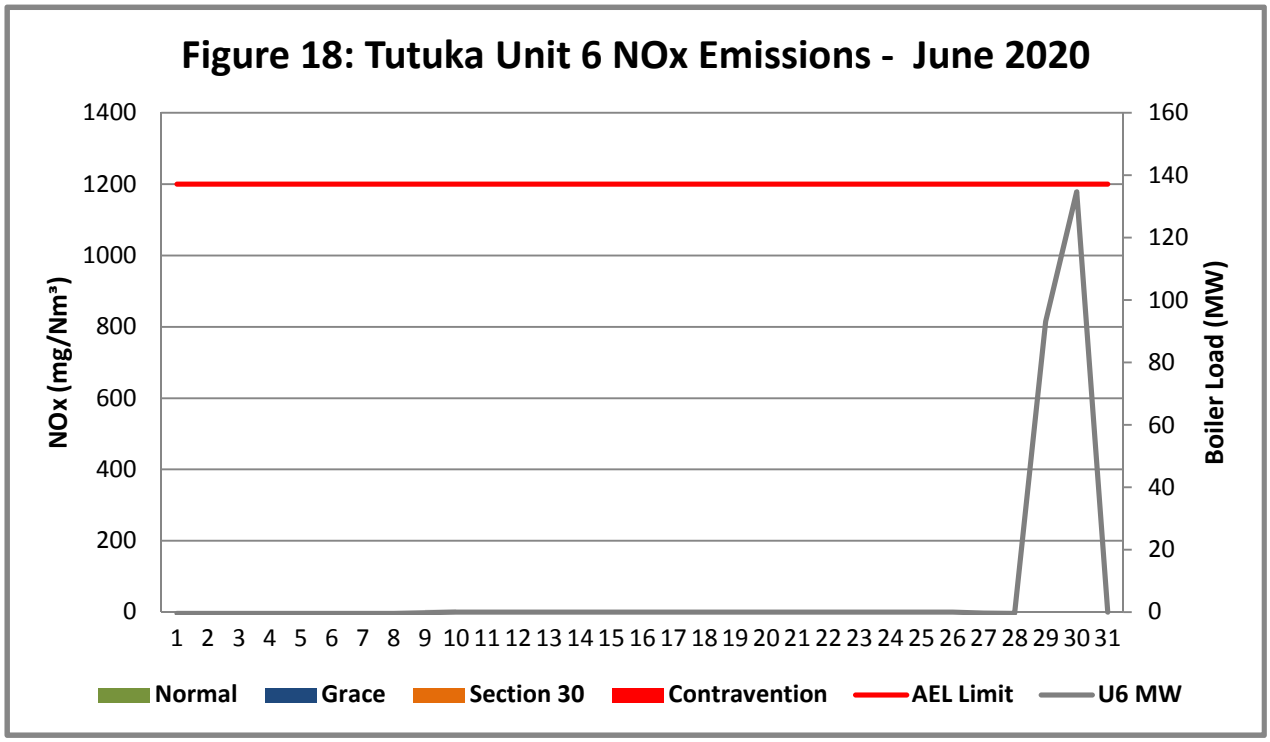

Figure 18: *Unit 6 Daily Average NOx emissions for the month of June 2020(against the emission limits and load Generated*

5. Number and Types of unit's start-ups

Number & Type of Starts	U1	U2	U3	U4	U5	U6
Number Of Hot Starts (Off-Load < 30 Hrs)	0	5	1	2	0	0
Number Of Cold Starts (Off-Load > 30 hrs)	1	2	0	1	0	1

Table 5: *Number and type of Unit start-ups for each unit respectively for the month of June 2020*

6. Complaints

No complaints were received from the stakeholders in the month of June 2020.

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 6: *Complaints for the month of June 2020*

7. General

1 Section 30 incidents was incurred on unit 2 in the month of June 2020(See table 7.4 below). The incident was due to Precipitator fields tripping thus affecting ESP efficiency. Poor performance of ESP fields due to full hoppers. Dust Handling Plant (DHP) motor failures (RC. 11 PM exceedances within the grace period were observed on unit 4 and 2(See table 7.1 below). No SOx and NOx contravention were incurred in the month of June 2020 (See table 7.2 & 7.3 below).

Table 7.1: Operating days in compliance to PM AEL Limit - June 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm³)
Unit 1	19	0	0	0	0	195.7
Unit 2	14	6	1	0	7	273.6
Unit 3	29	0	0	0	0	208.9
Unit 4	22	5	0	0	5	262.0
Unit 5	29	0	0	0	0	208.9
Unit 6	0	0	0	0	0	
SUM	**113**	**11**	**1**	**0**	**12**	

Table 7.2: Operating days in compliance to SOx AEL Limit - June 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm³)
Unit 1	19	0	0	0	0	2 140.7
Unit 2	21	0	0	0	0	1 872.5
Unit 3	29	0	0	0	0	1 948.2
Unit 4	27	0	0	0	0	2 203.3
Unit 5	29	0	0	0	0	2 054.9
Unit 6	0	0	0	0	0	
SUM	**125**	**0**	**0**	**0**	**0**	

Table 7.3: Operating days in compliance to NOx AEL Limit - June 2020

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm³)
Unit 1	19	0	0	0	0	720.6
Unit 2	21	0	0	0	0	725.9
Unit 3	29	0	0	0	0	941.1
Unit 4	27	0	0	0	0	727.3
Unit 5	29	0	0	0	0	801.5
Unit 6	0	0	0	0	0	
SUM	**125**	**0**	**0**	**0**	**0**	

Date	PM readings	Status
24-Jun	419.3	The incident investigation report was submitted to the department on the 13 July 2020
25-Jun	416.5	
26-Jun	396.5	
27-Jun	239.2	
28-Jun	310.0	
29-Jun	316.3	
30-Jun	303.6	

Table 7.4: NEMA Section 30 incident data

Note 1: Confirmation of applicable emission limits

Eskom Centre of Excellence (CoE): Air Quality submitted an application on behalf of Tutuka PS for the postponement for the implementation of the Minimum Emissions Standard (MES) limits to the Department of Environment Fisheries and Forestry (DEFF) and Gert Sibande District Municipality on the 09th of November 2018. In the application, a postponement of 300 mg/Nm^3 was requested (24 hour moving average). Tutuka PS's new PM emissions limit of 100 mg/Nm^3 (previously- 350 mg/Nm^3), came into effect on the 1st January 2020.The Station is unable to meet the limits with the current abatement technology.

All documentation in respect of the stations MES postponement application has been submitted and DEFF has confirmed that while the application is being assessed the previous emission limits apply i.e. 300 mg/Nm^3 for PM. In addition to that, the station has also submitted an AEL variation request.

For more information or enquiries contact the Tutuka environmental team.

Yours Sincerely

Compiled by:

Monica Mokgawa

ENVIRONMENTAL MANAGER: TUTUKA POWER STATION

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Date: 25 March 2021……

Verified By:

Mike Molepo

SENIOR CHEMIST CHEMISTRY: TUTUKA POWER STATION

……25/03/201**……..**

Approved by:

Sello Mametja

GENERAL MANAGER: TUTUKA POWER STATION

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Date: 2021/03/24