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Date:
 24 February 2022

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Dear Mr. Hlanyane

TUTUKA POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF NOVEMBER 2021

This serves as the monthly report required in terms of Section 7.4 in Tutuka Power Station's Atmospheric Emission License (16/4/Lekwa/Eskom H SOC Ltd TPS/0013/2019/F03 Dated 25 April 2019). The emissions are for the month of November 2021. Verified emissions of particulates matter, SO₂ and NO_x (as NO₂) are also included.

Raw Materials and Products

Table 1: Quantity of Raw Materials and Products used/produced for the month of November 2021

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of November 2021
	Coal	Tons/month	1 200 000	323 736
	Fuel Oil	Tons/month	10 000	7931.53
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of November 2021
	Ash	Tons/month	not specified	82 747
	RE PM	kg/MWh	not specified	1.93

1/...

Generation Division

Tutuka Power Station
 Portion of Pretorius Vlei No.374/S Bethal Road
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Abatement Technology

Table 2: Abatement Equipment Control Technology for November 2021

Associated Unit/Stack	Technology Type	Minimum Control Efficiency (%)	Actual Efficiency (%)
			November 2021
Unit 1	ESP	95%	98.2%
Unit 2	ESP	95%	98.9%
Unit 3	ESP	95%	98.4%
Unit 4	ESP	95%	99.3%
Unit 5	ESP	95%	98.5%
Unit 6	ESP	95%	98.8%

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of November 2021





Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6 -2.6	0.920
Ash Content	21 -33	25.560

Table 4: Monitor Reliability

Associated Unit/Stack	PM	SOx	NOx
Unit 1	0.0	99.3	99.3
Unit 2	90.5	99.5	99.5
Unit 3	0.0	97.2	97.2
Unit 4	100.0	97.8	97.8
Unit 5	64.0	99.7	99.7
Unit 6	92.6	98.7	91.9

Emissions Reporting

Table 6.5: Graph 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

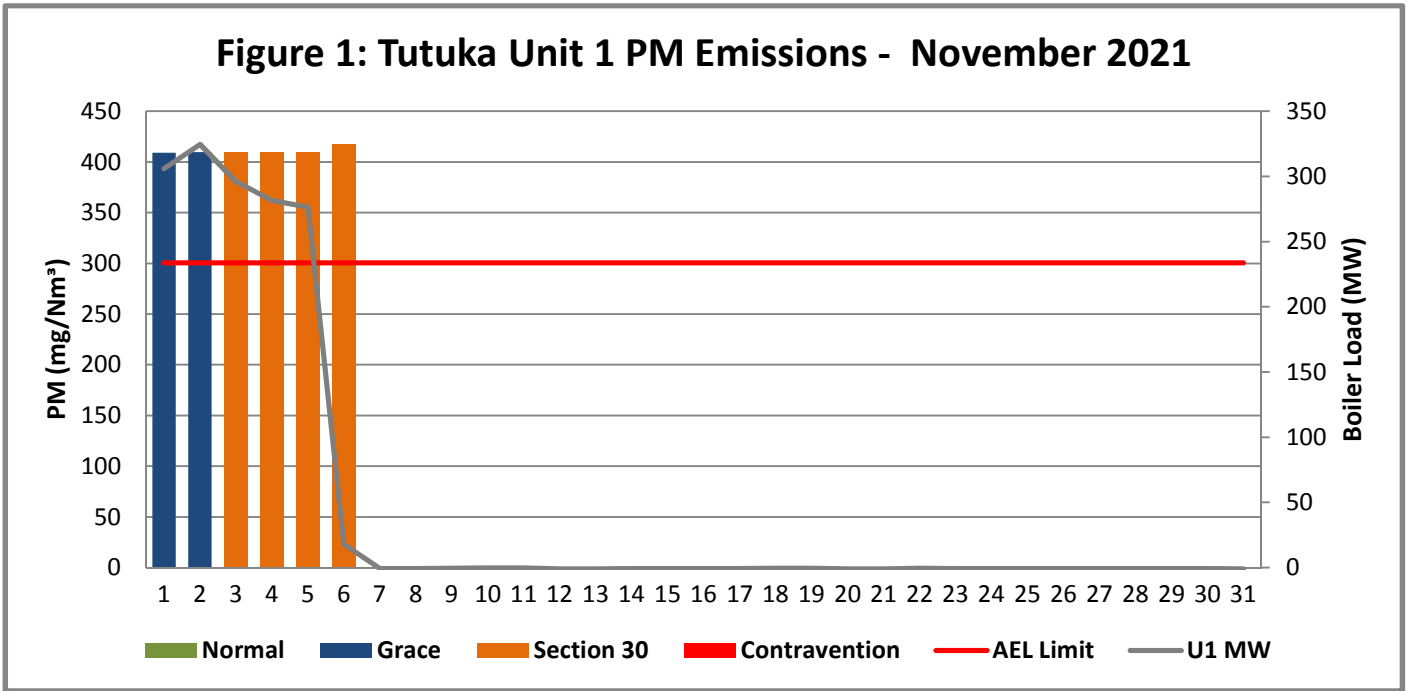


Figure 1: Unit 1 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

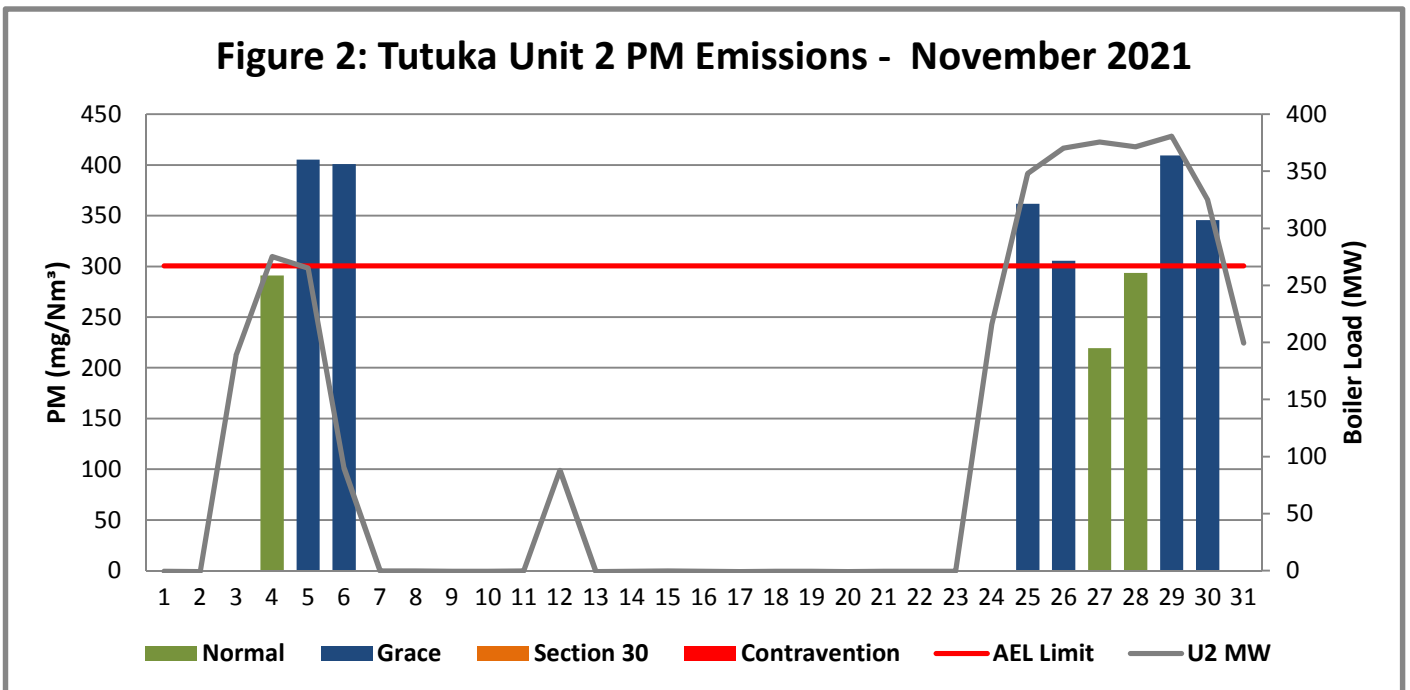


Figure 2: Unit 2 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

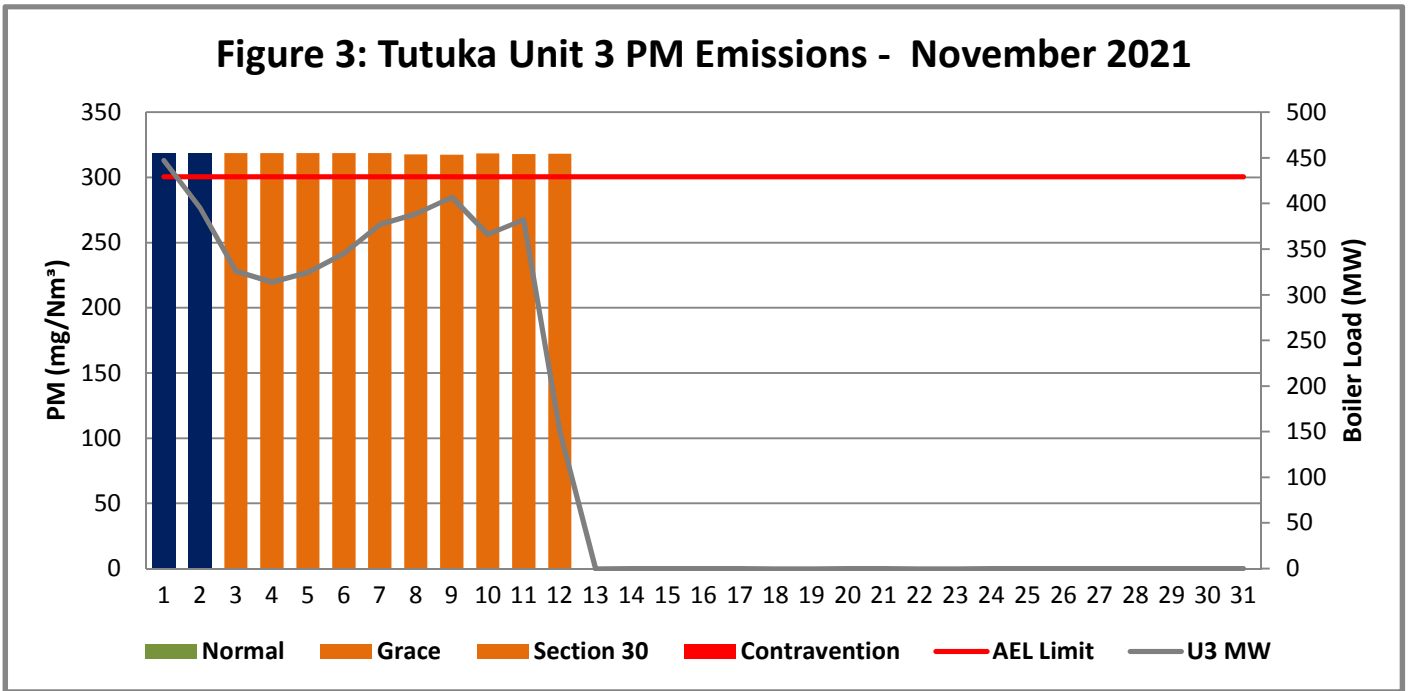


Figure 3: Unit 3 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

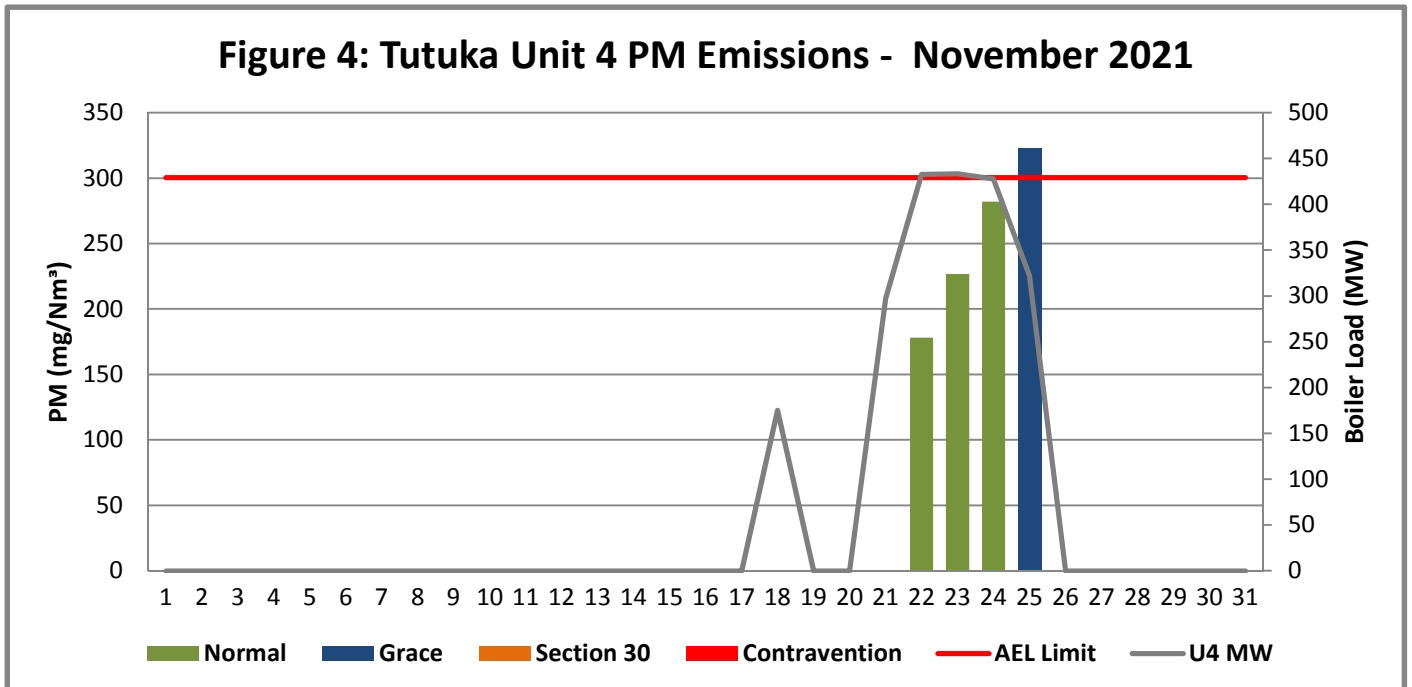


Figure 4: Unit 4 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

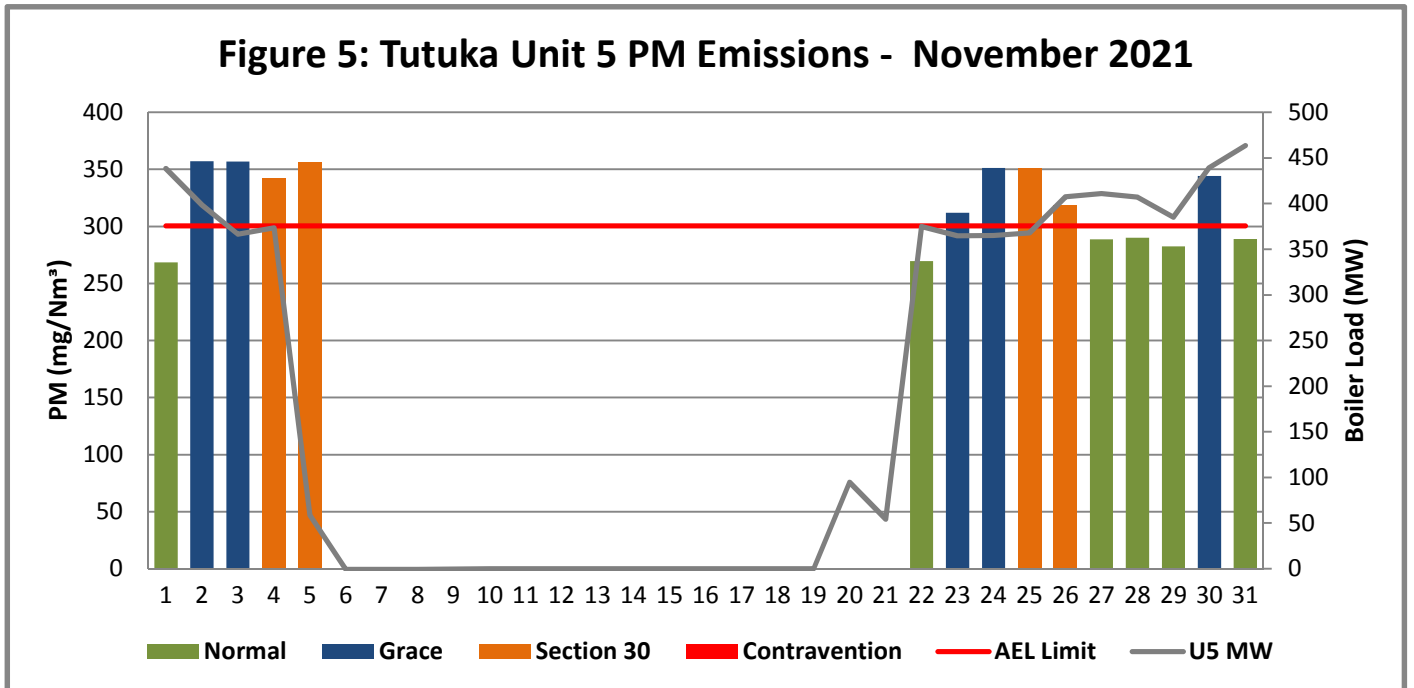


Figure 4: Unit 4 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

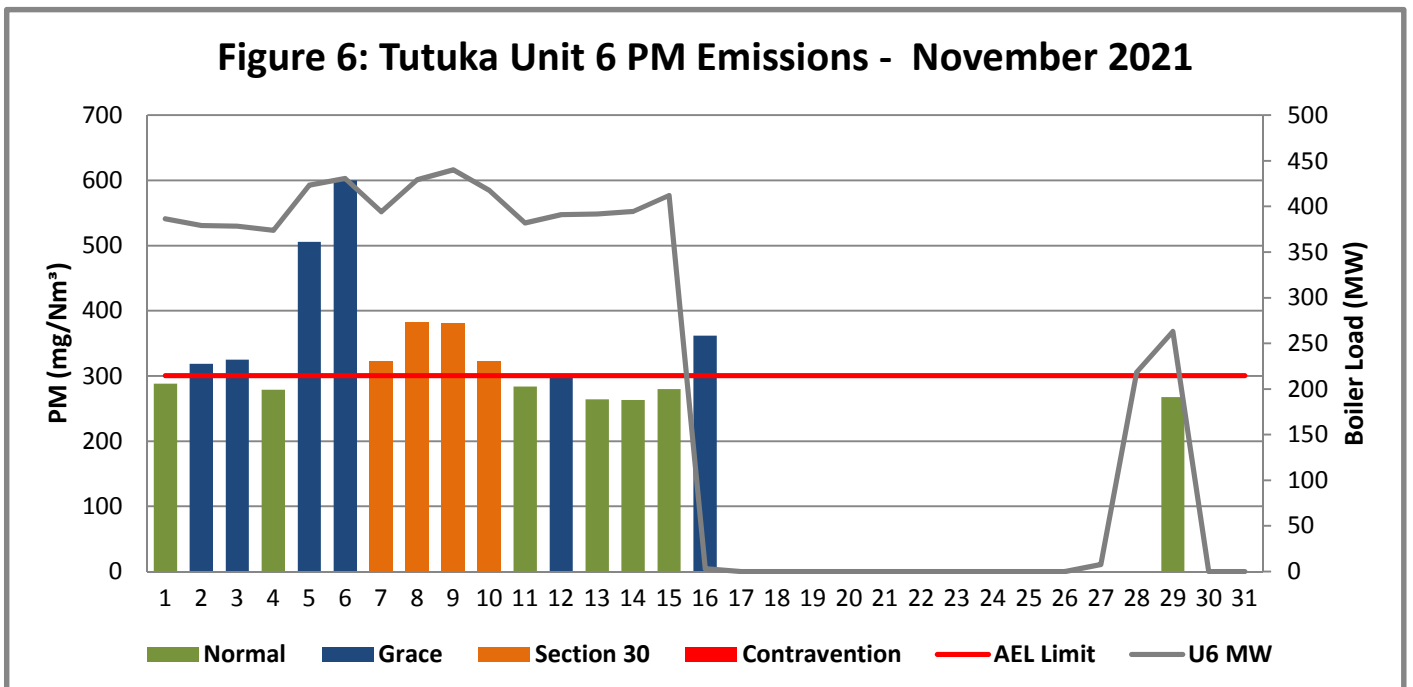


Figure 6: Unit 6 Daily Average PM emissions for the month of November 2021 (against the emission limit and load Generated)

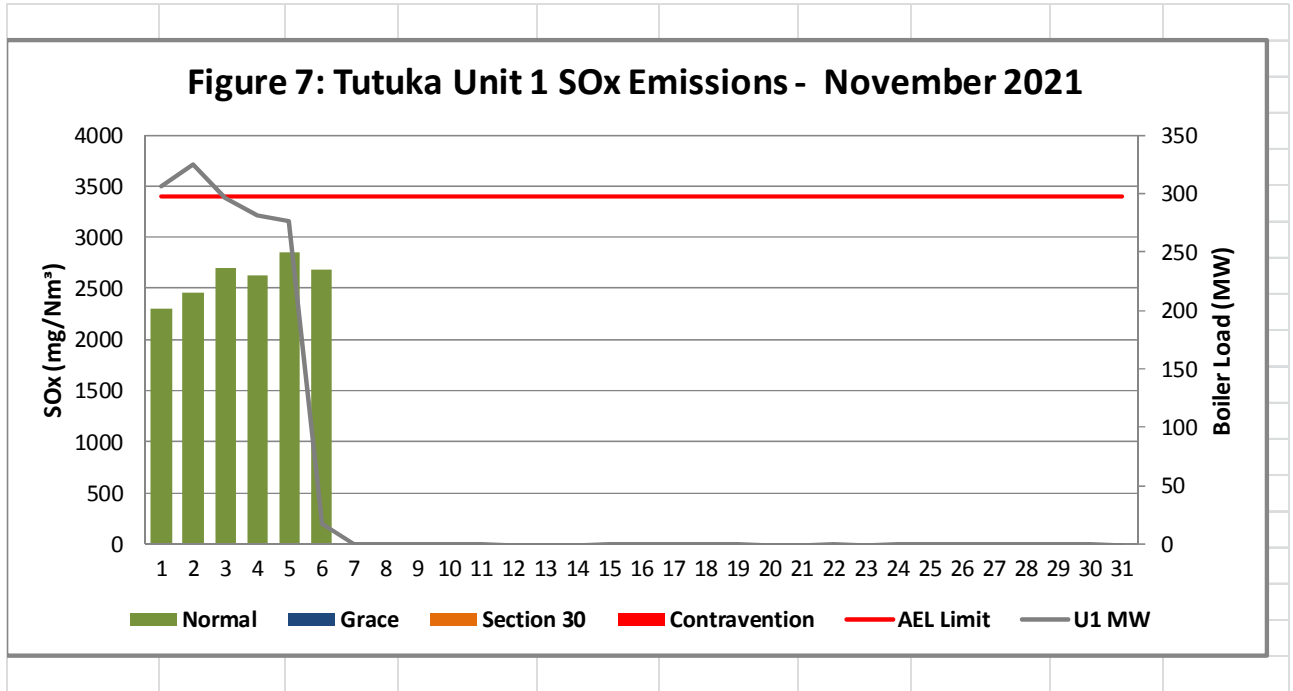


Figure 7: Unit 1 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

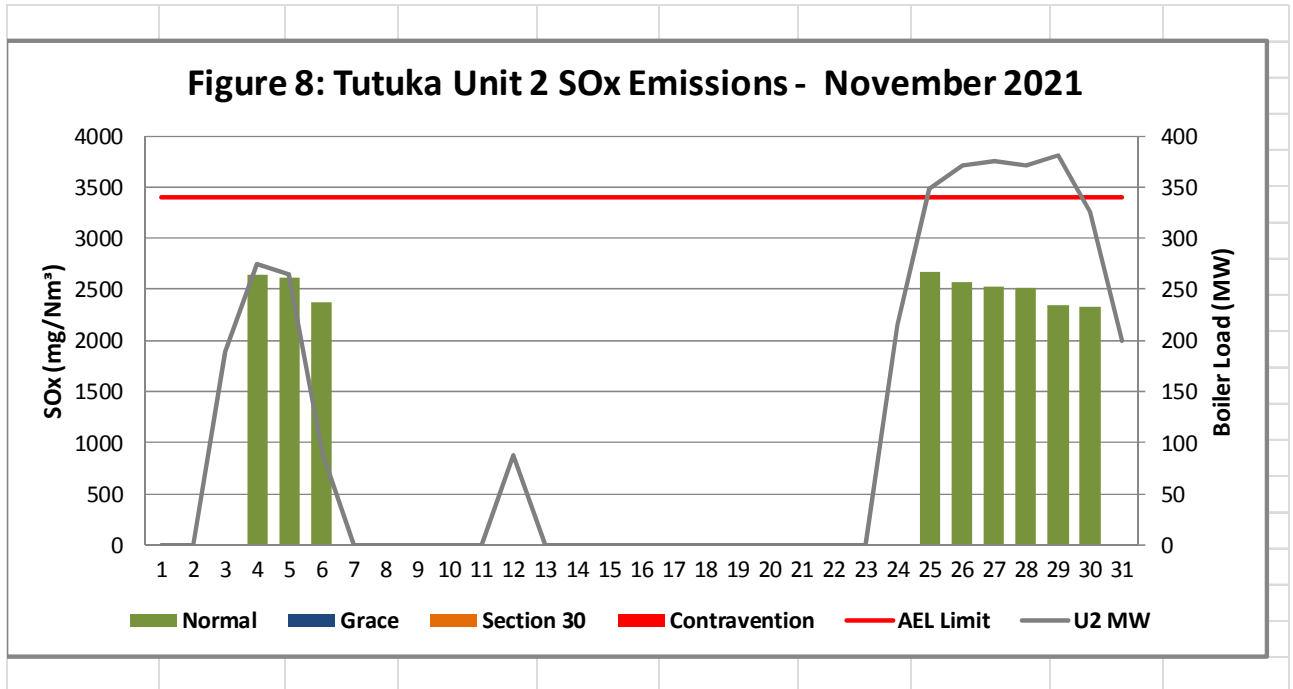


Figure 8: Unit 2 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

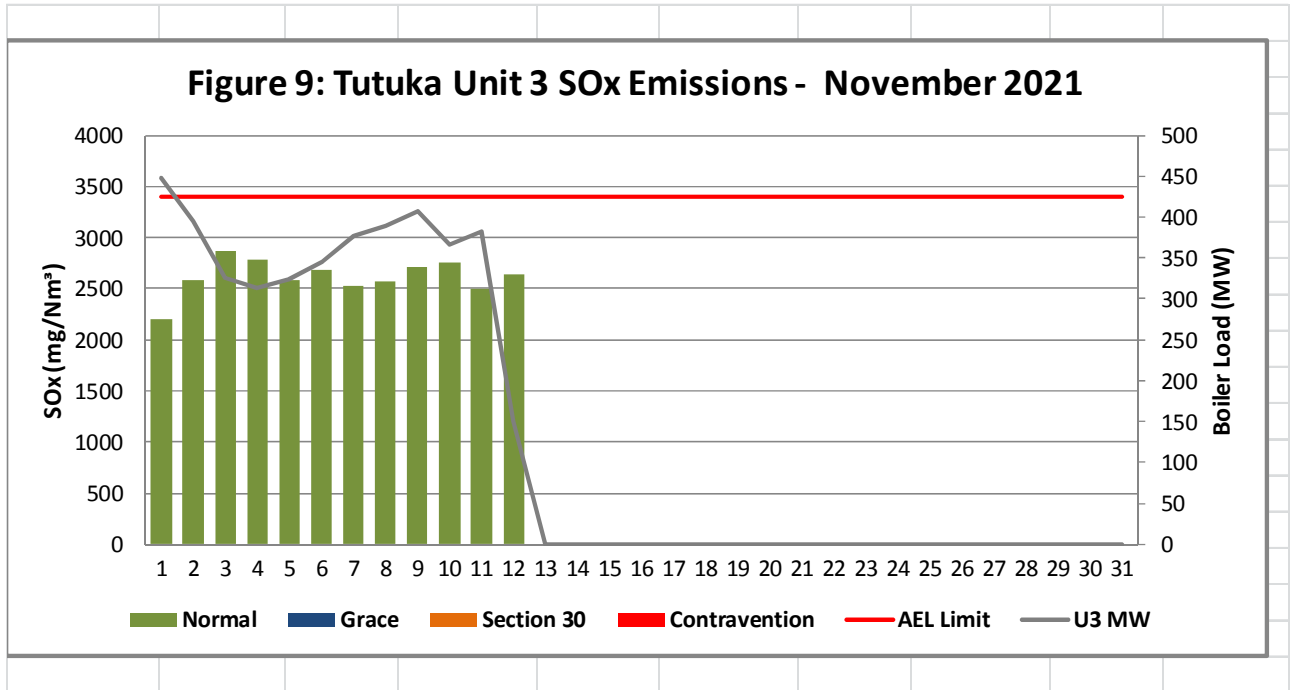


Figure 9: Unit 3 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

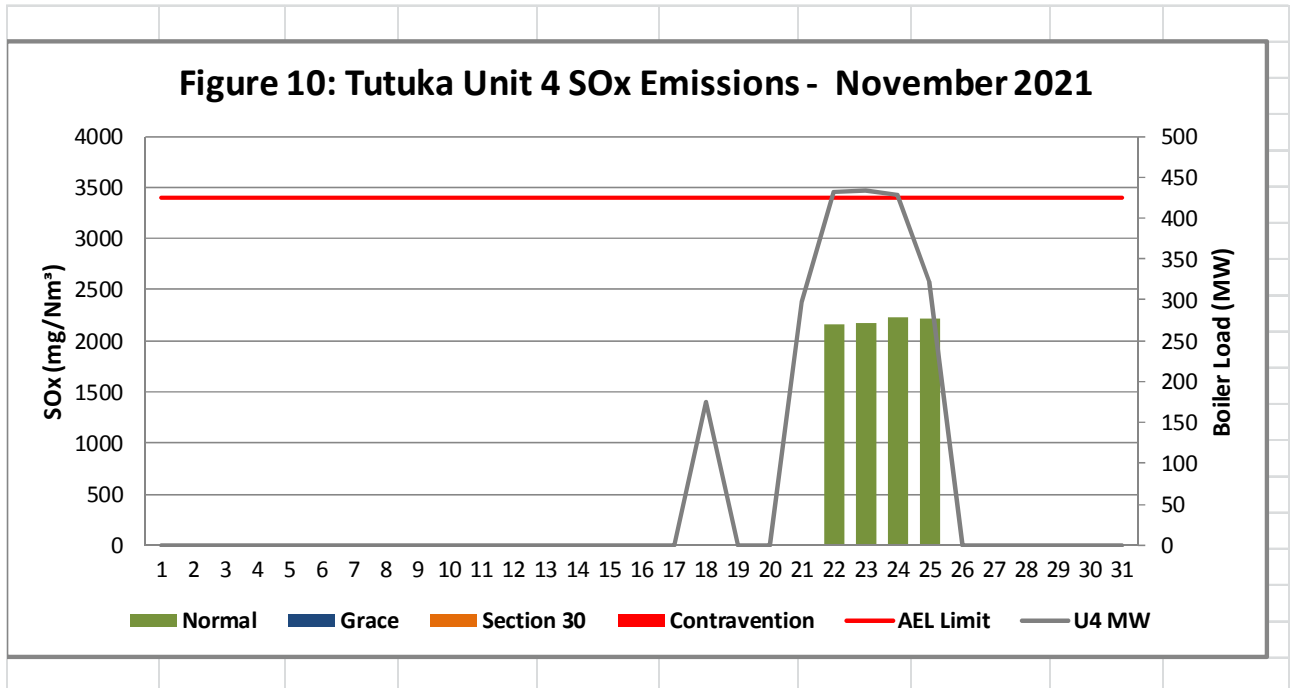


Figure 10: Unit 4 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

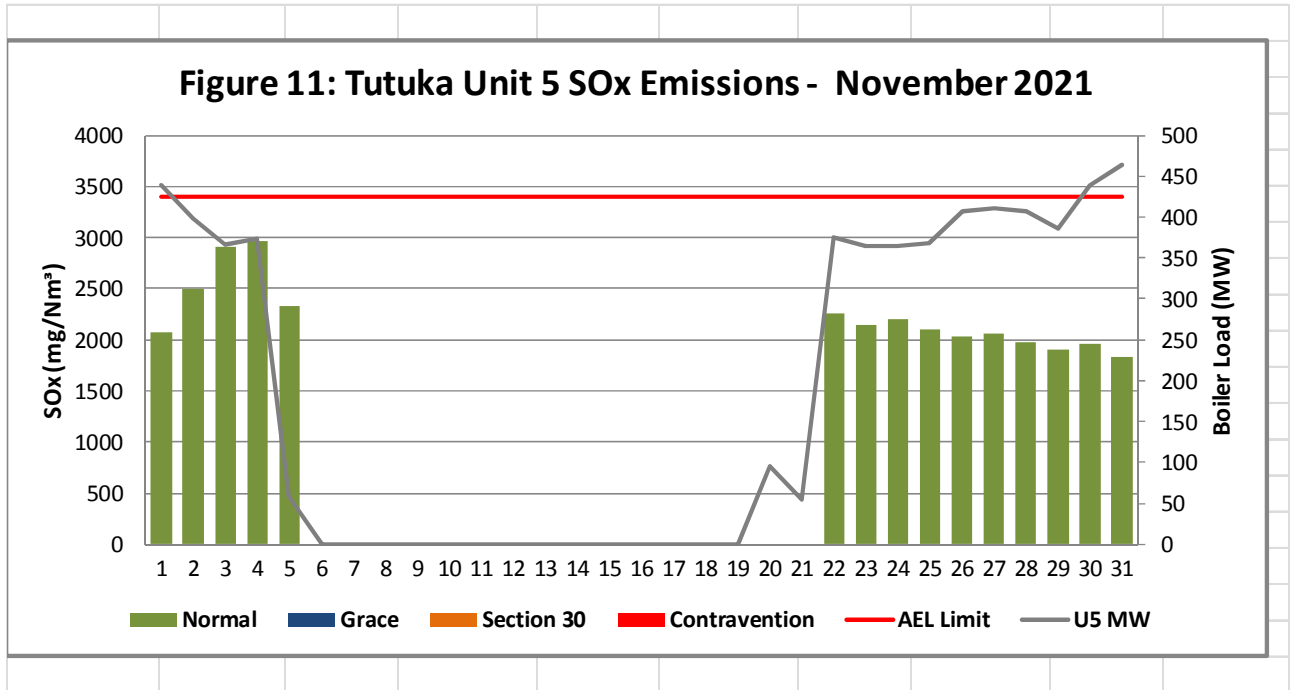


Figure 11: Unit 5 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

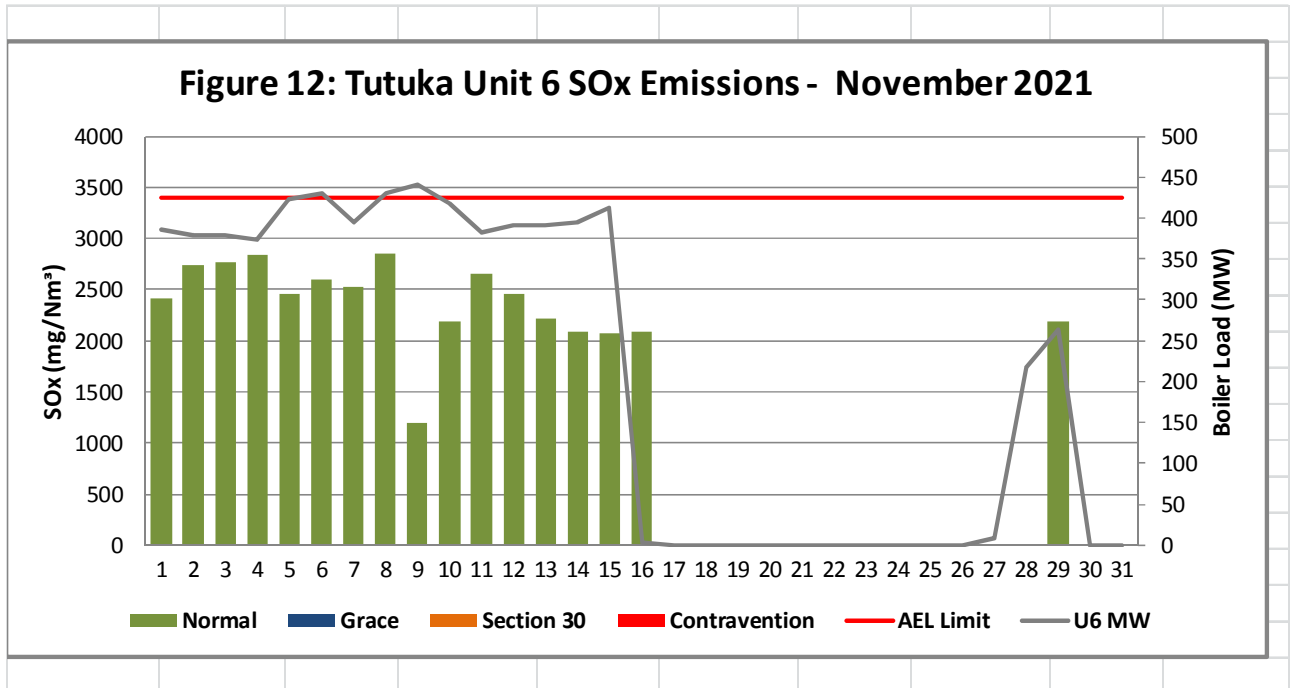


Figure 12: Unit 6 Daily Average SOx emissions for the month of November 2021 (against the emission limit and load Generated)

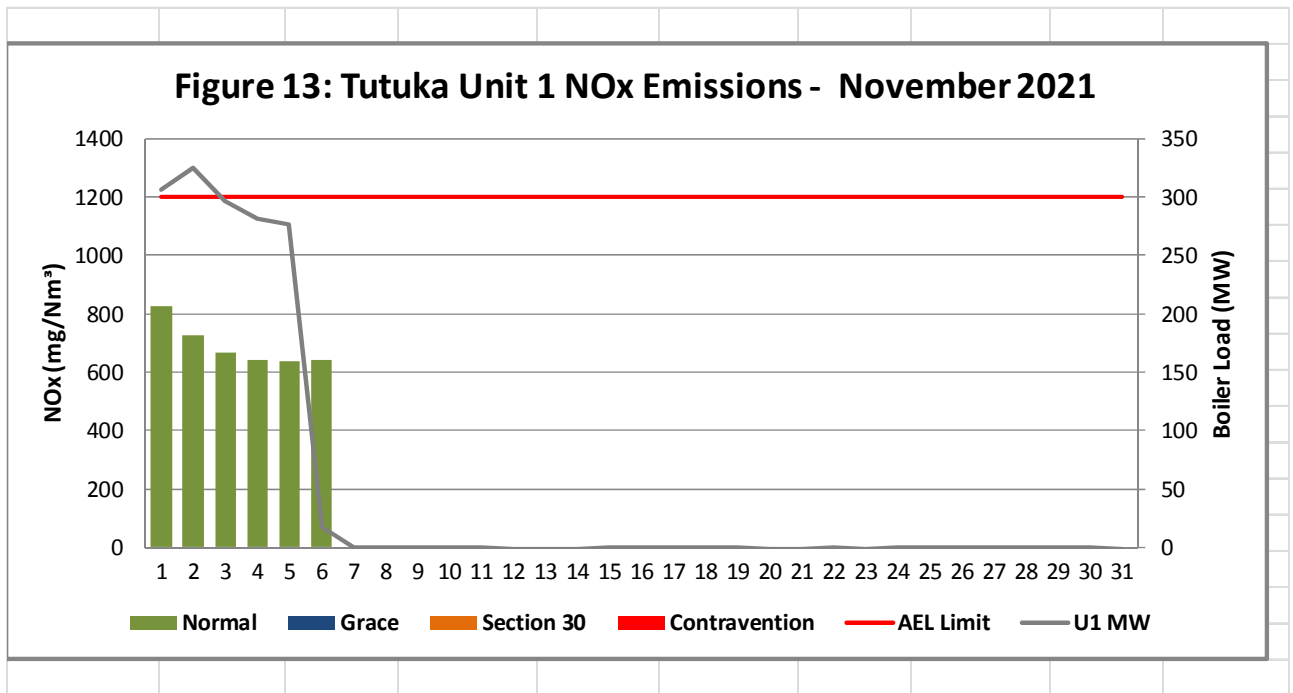


Figure 13: Unit 1 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

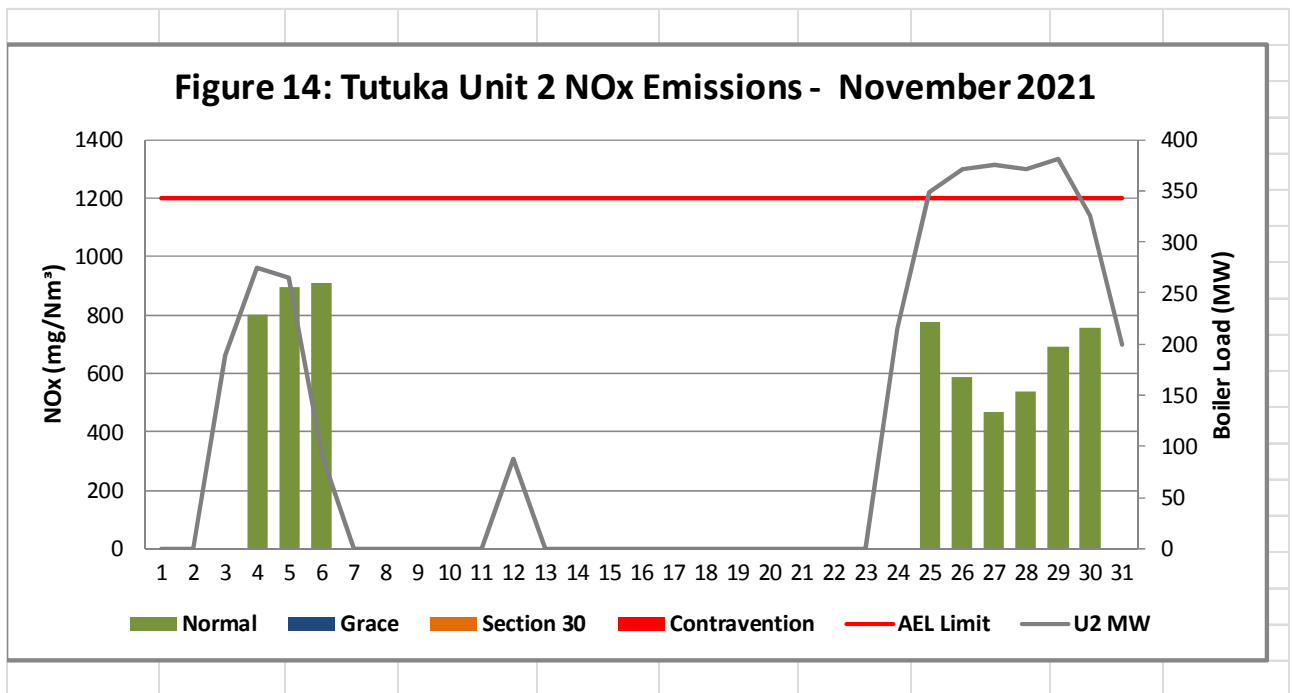


Figure 14: Unit 2 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

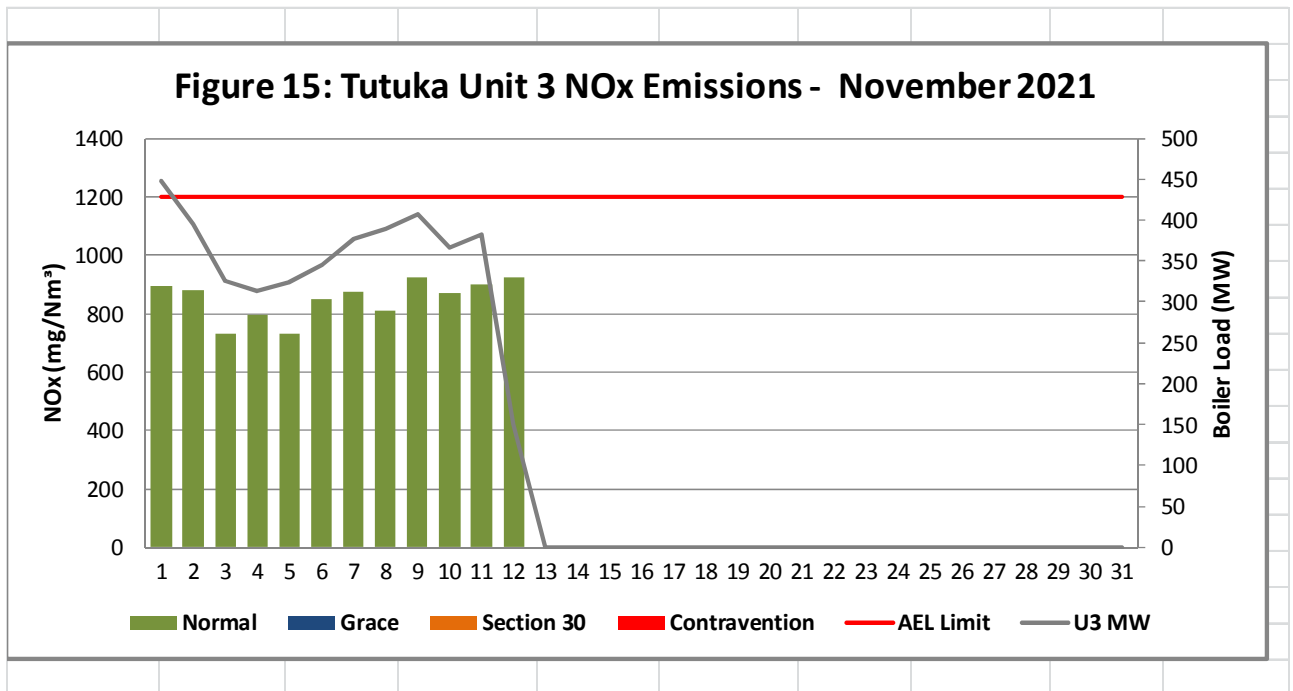


Figure 15: Unit 3 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

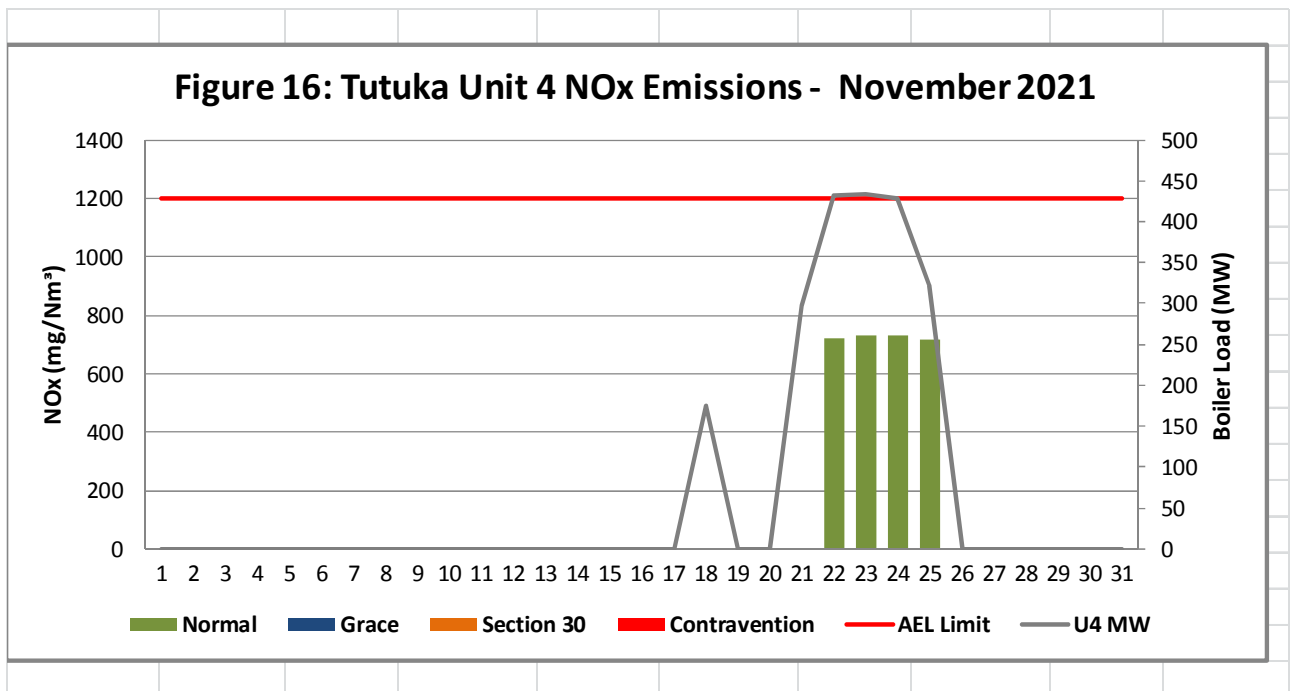


Figure 16: Unit 4 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

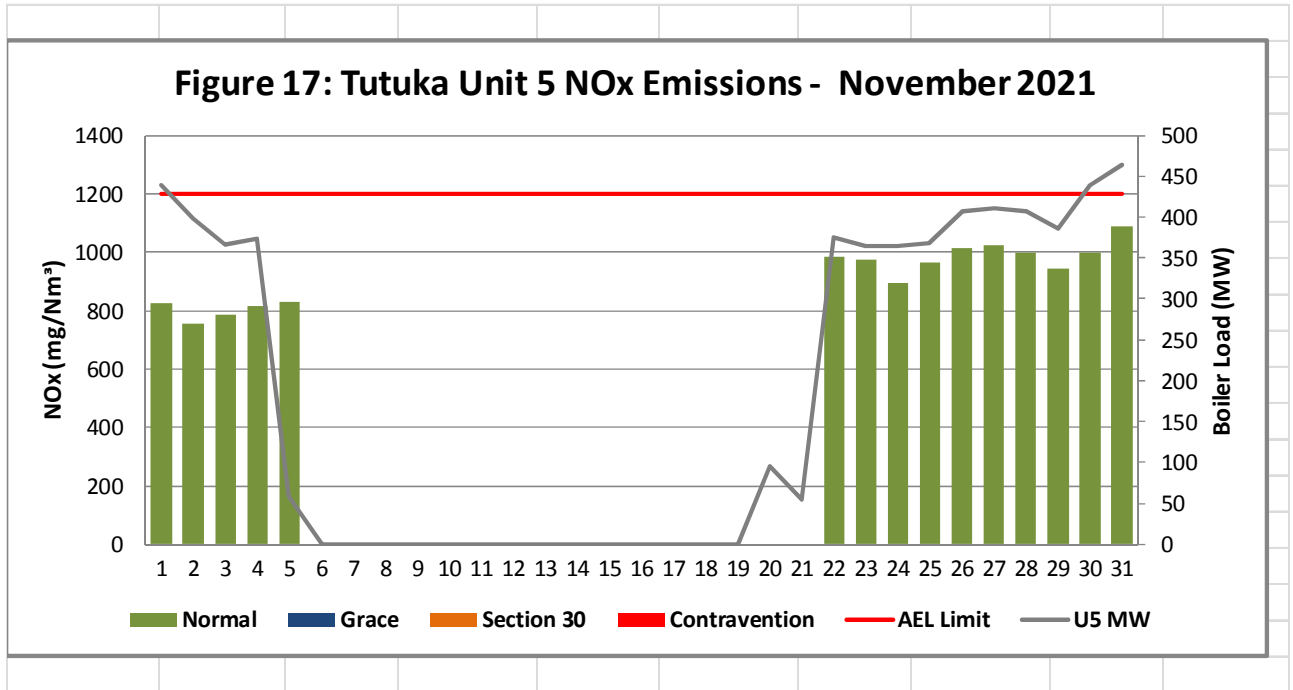


Figure 17: Unit 5 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

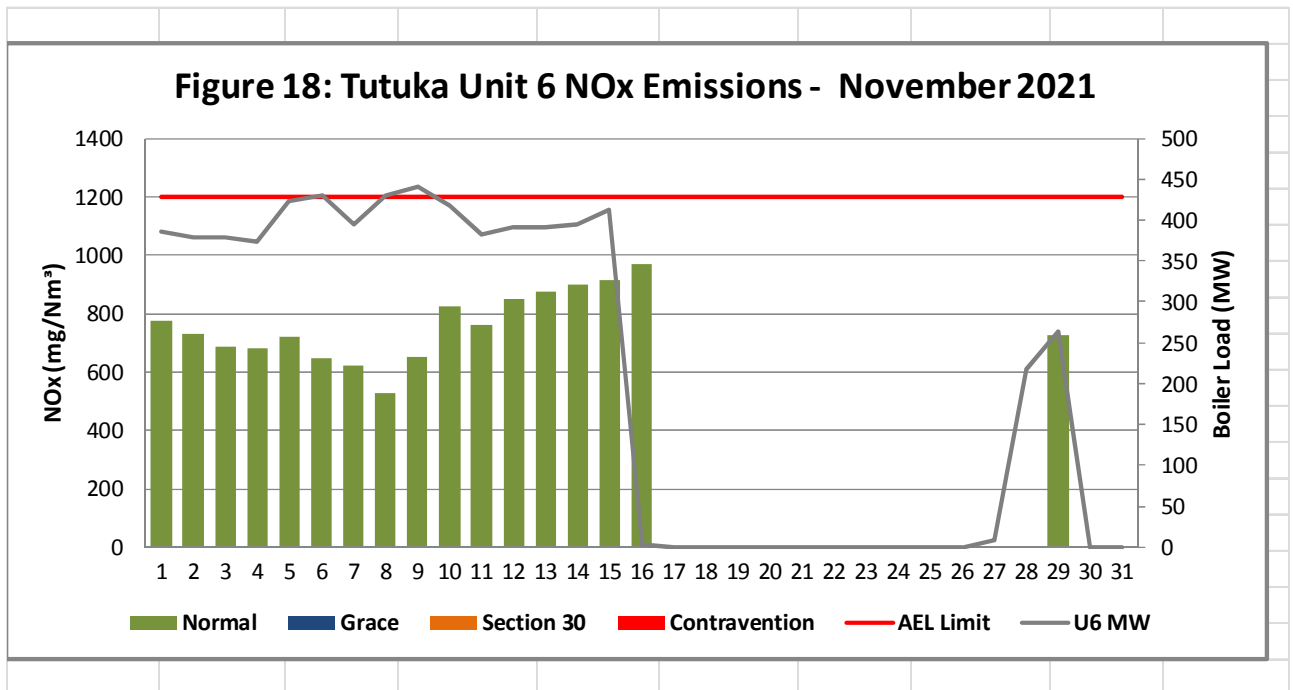


Figure 18: Unit 6 Daily Average NOx emissions for the month of November 2021 (against the emission limit and load Generated)

Table 4: Monthly tonnages for the month November 2021

Associated Unit/Stack	PM (tons)	SO ₂ (tons)	NO _x (tons)
Unit 1	91.2	575	156
Unit 2	138.7	1 051	289
Unit 3	220.2	1 804	587
Unit 4	47.4	411	136
Unit 5	199.3	1 386	571
Unit 6	266.9	1 858	576
SUM	963.6	7 086	2 316

Table 5: Each unit and respective days operating under normal operation and section 30 days respectively

Table 5.1: Operating days in compliance to PM AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
Unit 1	0	2	4	0	6	410.8
Unit 2	3	6	0	0	6	336.9
Unit 3	0	2	10	0	12	318.3
Unit 4	3	1	0	0	1	252.4
Unit 5	6	5	4	0	9	320.7
Unit 6	7	6	4	0	10	338.0
SUM	19	22	22	0	44	

Table 5.2: Operating days in compliance to SO_x AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO _x (mg/Nm ³)
Unit 1	6	0	0	0	0	2 601.2
Unit 2	9	0	0	0	0	2 509.8
Unit 3	12	0	0	0	0	2 616.0
Unit 4	4	0	0	0	0	2 192.2
Unit 5	15	0	0	0	0	2 242.4
Unit 6	17	0	0	0	0	2 372.2
SUM	63	0	0	0	0	

Table 5.3: Operating days in compliance to NO_x AEL Limit - November 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NO _x (mg/Nm ³)
Unit 1	6	0	0	0	0	689.8
Unit 2	9	0	0	0	0	712.3
Unit 3	12	0	0	0	0	849.0
Unit 4	4	0	0	0	0	725.4
Unit 5	15	0	0	0	0	914.3
Unit 6	17	0	0	0	0	756.4
SUM	63	0	0	0	0	

Light up information

Table 6: PM Start-up information for the month of fabricate November 2021

Number & Type of Starts	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Number Of Hot Starts (Off-Load < 30 Hrs)	0.00	0.00	0.00	1.00	1.00	1.00
Number Of Cold Starts (Off-Load > 30 hrs)	0.00	3.00	0.00	1.00	1.00	1.00

Complaints Register

Table 7: Complaints for the month of November 2021.

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
There was no complaint related to air quality received during the month of November 2021.					

General

Particulate matter (PM10) emissions on unit 02, 04 and 05 were within the daily limit during the month of November 2021; Unit 01, 03 and Unit 06 experienced an upset condition which persisted for more than 48 hours, resulting into a NEMA Section 30 incident being declared during the month of November 2021. The gaseous (NOx & SOx) emissions on unit 01, 02, 03, 04, 05 and 06 were within the daily limit during the month of November 2021; refer to graphs above.

NB: The rest of the information demonstrating compliance with the emission license conditions.

Summary of a NEMA Section 30 declared for Unit 01, 03 & 06 Upset Condition:

Date	U1	U2	U3	U4	U5	U6
01-Nov	409.0	Unit-off	318.4	Unit-off	Unit-off	288.3
02-Nov	409.7	Unit-off	318.5	Unit-off	Unit-off	318.4
03-Nov	409.5	Unit-off	318.6	Unit-off	Unit-off	325.0
04-Nov	409.5	291.1	318.5	Unit-off	Unit-off	278.7
05-Nov	409.4	405.3	318.6	Unit-off	Unit-off	505.8
06-Nov	417.7	400.7	318.6	Unit-off	Unit-off	600.1
07-Nov	Unit-off	Unit-off	318.5	Unit-off	Unit-off	323.0
08-Nov	Unit-off	Unit-off	317.7	Unit-off	Unit-off	382.9
09-Nov	Unit-off	Unit-off	317.4	Unit-off	Unit-off	380.3
10-Nov	Unit-off	Unit-off	318.3	Unit-off	Unit-off	322.8
11-Nov	Unit-off	Unit-off	317.8	Unit-off	Unit-off	283.5
12-Nov	Unit-off	Unit-off	318.3	Unit-off	Unit-off	300.7
13-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	264.4
14-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	263.4
15-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	279.6
16-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	361.7
17-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off
18-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off

19-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off
20-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off
21-Nov	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off	Unit-off
22-Nov	Unit-off	Unit-off	Unit-off	178.0	Unit-off	Unit-off
23-Nov	Unit-off	Unit-off	Unit-off	226.9	Unit-off	Unit-off
24-Nov	Unit-off	Unit-off	Unit-off	282.1	Unit-off	Unit-off
25-Nov	Unit-off	361.8	Unit-off	322.9	Unit-off	Unit-off
26-Nov	Unit-off	305.7	Unit-off	Unit-off	Unit-off	Unit-off
27-Nov	Unit-off	219.3	Unit-off	Unit-off	Unit-off	Unit-off
28-Nov	Unit-off	293.5	Unit-off	Unit-off	Unit-off	Unit-off
29-Nov	Unit-off	409.4	Unit-off	Unit-off	Unit/off	267.8
30-Nov	Unit-off	345.8	Unit-off	Unit-off	Unit-off	Unit-off

For more information contact the Tutuka Environmental team.

Regards

Compiled by
Monica Moggawa
AIR QUALITY OFFICER:TUTUKA POWER STATION

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Date: 24-02-2022

Verified by
Mike Molepo
SENIOR CHEMIST CHEMISTRY: TUTUKA POWER STATION

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Approved by:
Sello Mamejja
GENERAL MANAGER: TUTUKA POWER STATION

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Date: 2022/03/04