Stanley Koenaite

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Date: 2023/06/30

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Ref: H16/1/13-AEL/M1/R1 – June2023

Dear Mr Koenaite

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JUNE 2023

This document serves as the monthly emissions report required in terms of Section 7.7.1 of Medupi Power Station Provisional Atmospheric Emission License (AEL), H16/1/13-AEL/M1/R1.This Report supersedes the report that was sent to the Department in July 2023, the report was revised due to findings from the Eskom Data Integrity review Audit of FY2023.

This report reflects Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of June 2023 only.

1. Raw Materials and Products

TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN JUNE 2023

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – June2023
	Coal	Tons/month	1 875 000	995866.0
	Fuel Oil	Tons/month	20 000	1313
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity)**	**Production Rate in Month of June2023**
	Energy	GWh	3 571.2	2122.03
	Ash Emitted	Tons/month	not specified	240.50

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Eskom	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	June2022		
		Review Date	June2024		

Date	Reportable hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-June	24.0	24.0	24.0	0.0	24.0	24.0	36765	669	718	653	off	651	752
02-June	24.0	24.0	24.0	0.0	24.0	24.0	36948	687	718	691	Off	650	734
03-June	24.0	24.0	24.0	0.0	24.0	24.0	32692	655	718	614	Off	618	673
04-June	24.0	24.0	24.0	0.0	24.0	24.0	32061	730	718	633	Off	600	651
05-June	24.0	24.0	24.0	0.0	24.0	24.0	35632	720	721	669	Off	587	708
06-June	24.0	24.0	24.0	0.0	24.0	24.0	35894	699	687	642	Off	624	684
07-June	24.0	24.0	24.0	0.0	24.0	24.0	35857	758	673	652	Off	629	707
08-June	24.0	24.0	24.0	0.0	24.0	24.0	36377	758	679	664	Off	755	750
09-June	24.0	24.0	24.0	0.0	24.0	24.0	36822	601	697	666	Off	655	668
10-June	24.0	24.0	24.0	0.0	24.0	24.0	36582	655	729	693	Off	617	755
11-June	24.0	1.9	24.0	0.0	24.0	24.0	34662	664	643	669	Off	641	713
12-June	24.0	18.3	24.0	0.0	24.0	24.0	34910	739	694	657	Off	604	712
13-June	24.0	24.0	24.0	0.0	24.0	24.0	34363	739	694	657	Off	551	724
14-June	0.6	24.0	24.0	0.0	21.9	24.0	31781	617	680	652	off	490	668
15-June	19.8	24.0	24.0	0.0	0.0	13.4	28124	600	681	649	Off	Off	622
16-June	24.0	24.0	24.0	0.0	0.0	6.4	30636	603	741	686	Off	Off	722
17-June	24.0	24.0	24.0	0.0	0.0	24.0	28696	603	662	689	Off	Off	725
18-June	24.0	24.0	24.0	0.0	0.0	24.0	30691	603	700	689	Off	290	755
19-June	24.0	24.0	24.0	0.0	8.1	24.0	34455	705	687	608	Off	549	701
20-June	24.0	24.0	24.0	0.0	24.0	24.0	34978	689	687	635	Off	564	702
21-June	24.0	24.0	24.0	0.0	24.0	24.0	36767	710	713	691	Off	557	718
22-June	24.0	24.0	24.0	0.0	24.0	24.0	35633	718	692	678	Off	595	731
23-June	24.0	24.0	24.0	0.0	23.3	24.0	34851	695	681	678	Off	597	717
24-June	24.0	14.2	24.0	0.0	0.0	24.0	27441	735	659	695	Off	265	746
25-June	2.6	0.0	24.0	0.0	2.3	24.0	27169	691	Off	694	Off	582	742
26-June	16.9	0.0	24.0	0.0	24.0	24.0	27534	716	Off	673	Off	600	716
27-June	24.0	0.0	24.0	0.0	24.0	24.0	28059	721	off	685	Off	600	745
28-June	24.0	0.0	24.0	0.0	24.0	24.0	29822	733	431	690	Off	600	741
29-June	24.0	8.0	24.0	0.0	24.0	24.0	35807	734	731	669	Off	595	725
30-June	24.0	24.0	24.0	0.0	24.0	24.0	33857	723	722	644	Off	546	703

NB: Reportable hours less than 24 highlighted in pink; Unit OFF highlighted in Red

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2. Abatement Technology

Table 2: Abatement Equipment Control Technology efficiency for month of June2023

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	*99.919%*	100%
Unit 2	Fabric Filter Plant (FFP)	*99.897%*	100%
Unit 3	Fabric Filter Plant (FFP)	*99.880%*	100%
Unit 4	Fabric Filter Plant (FFP)	*Off*	off
Unit 5	Fabric Filter Plant (FFP)	*99.834%*	100%
Unit 6	Fabric Filter Plant (FFP)	*99.975%*	100%

Note: FFP does not have bypass mode operation, hence plant 100% Utilised.

3. Energy Source Characteristics

TABLE 3: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF JUNE 2023

Characteristic	Stipulated Range (% by weight on a dry basis)	Monthly Average Content (% by weight on a dry basis)
	Coal	
Sulphur Content	1.3 - 2.2	1.37
Ash Content	35 - 39	34.76

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF JUNE 2023

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	2.4
Ash Content	0.02 - 0.1	0.025

4. Emissions Reporting

Medupi Power Station uses Continuous Emission Monitoring System which uses the extractive method for analysis.

The emission limits are as follows:

SO_2 Monthly = 3500 mg/Nm^3 Dust Daily= 50 mg/Nm^3 NO_2 Daily= 750 mg/Nm^3

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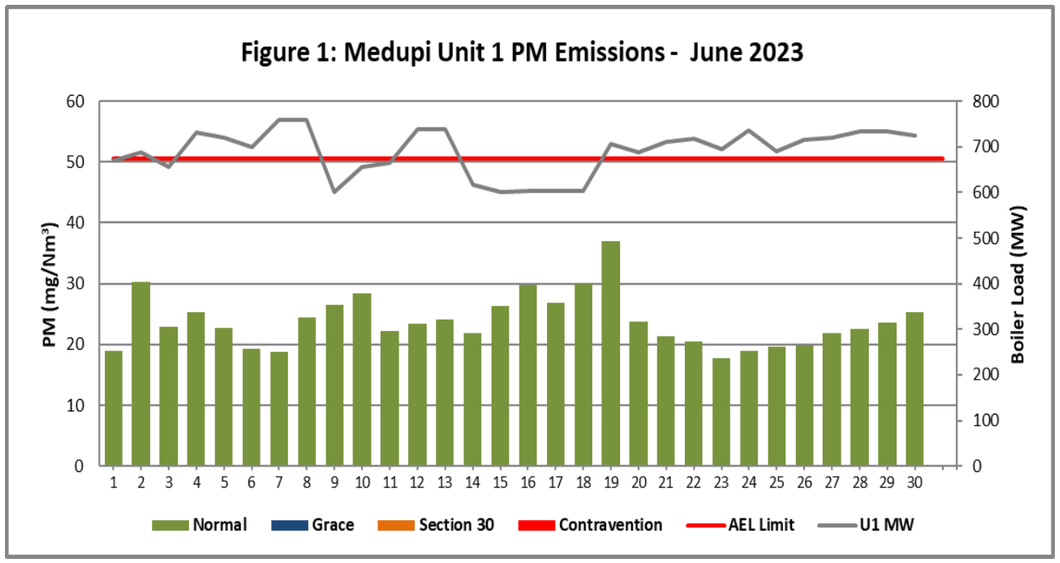
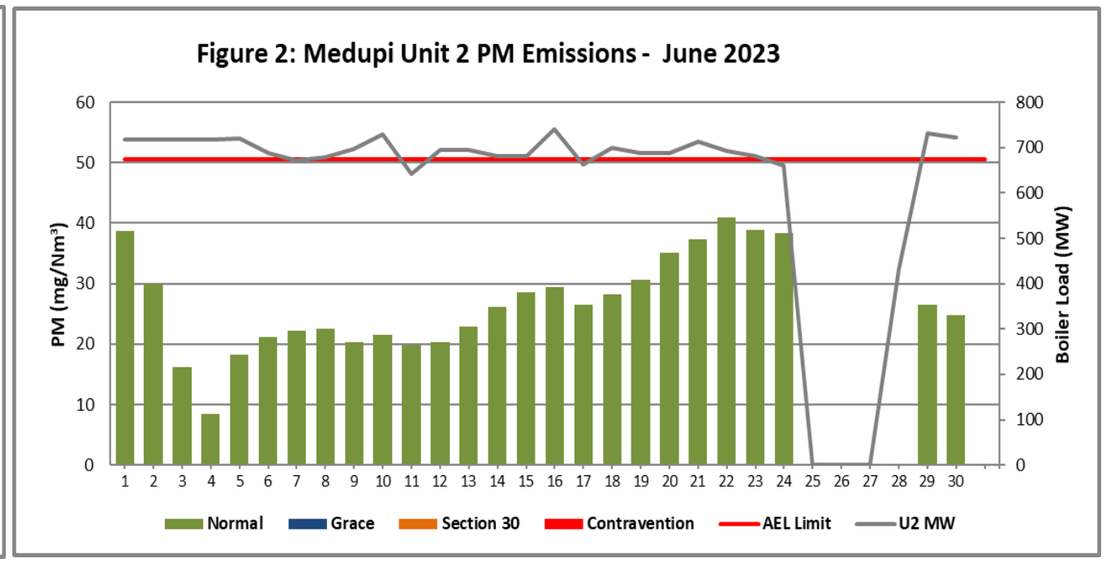
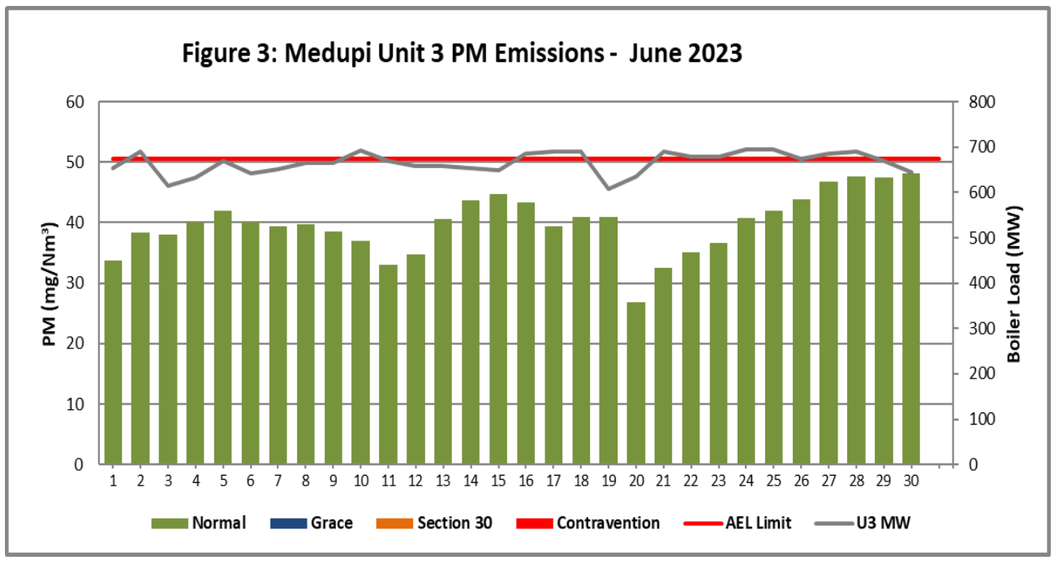
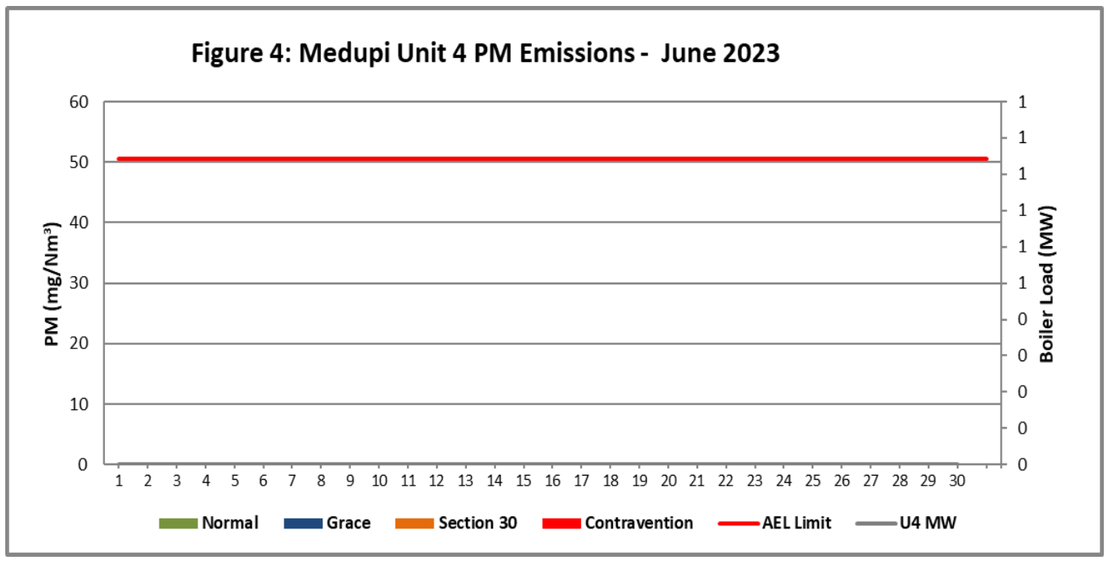
4.1PM Daily Averages









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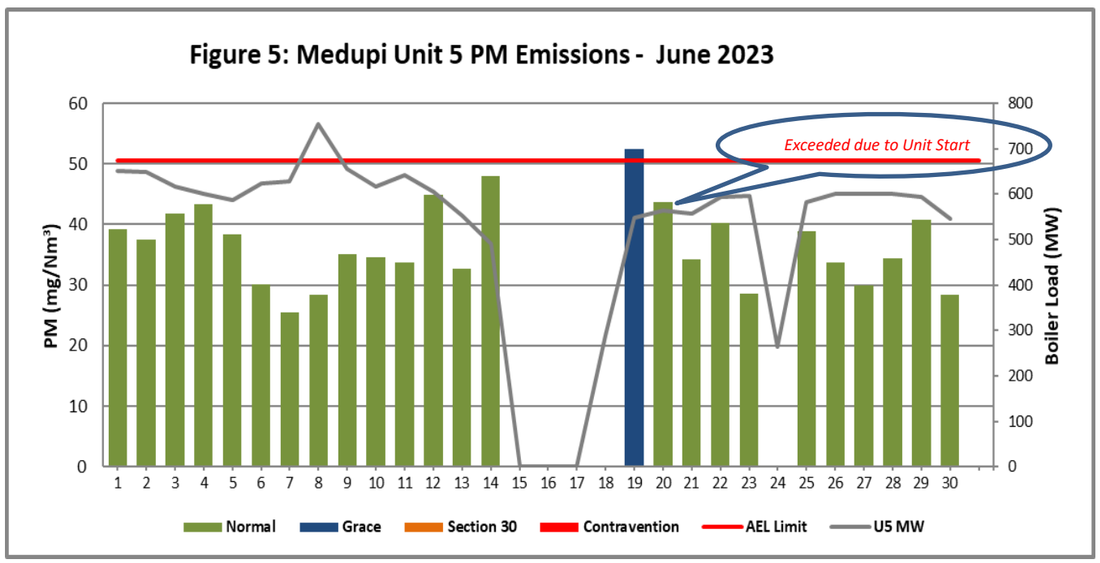
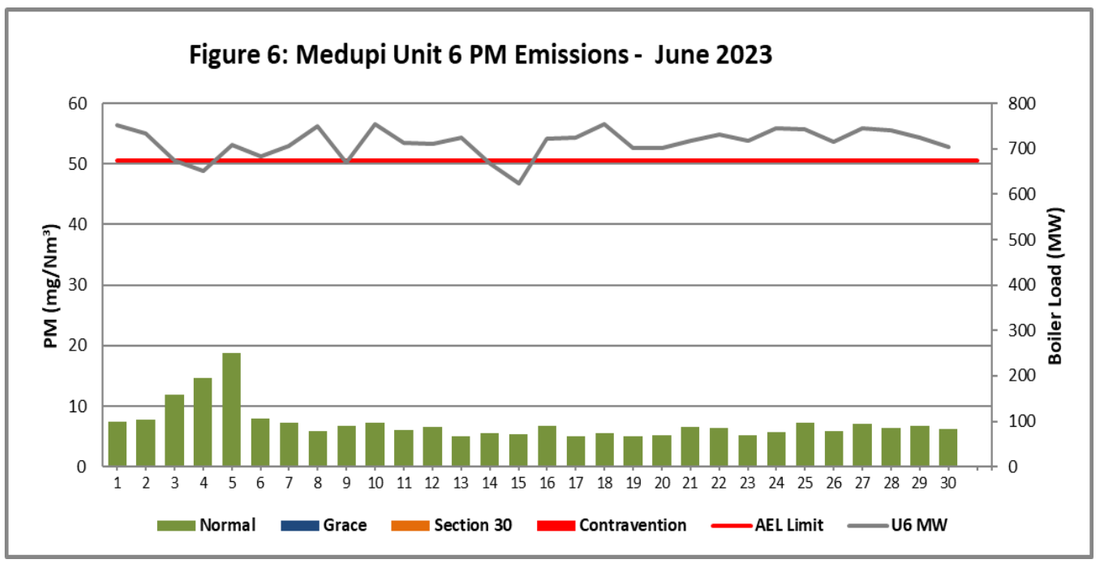
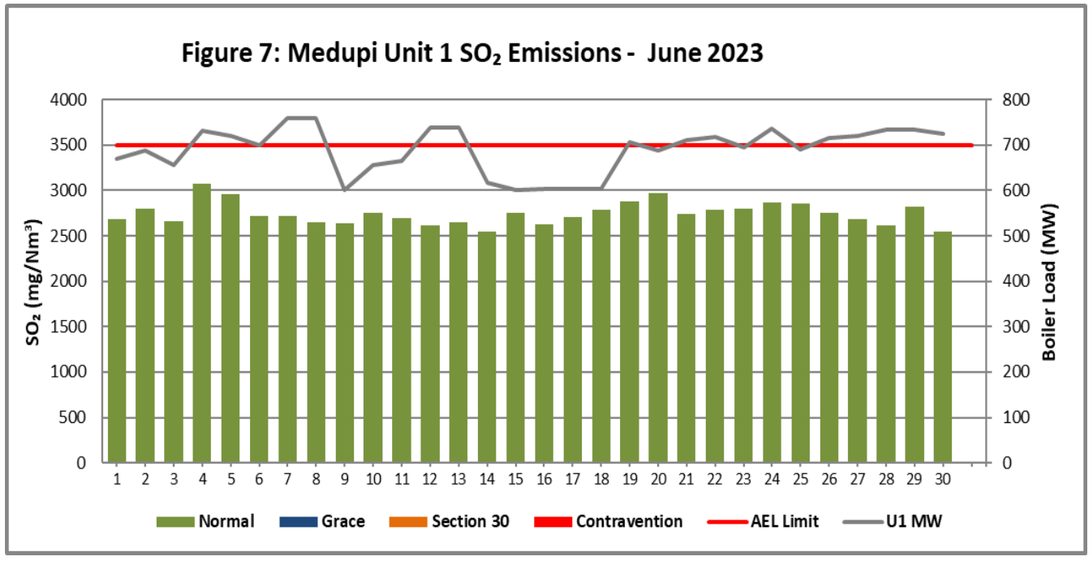
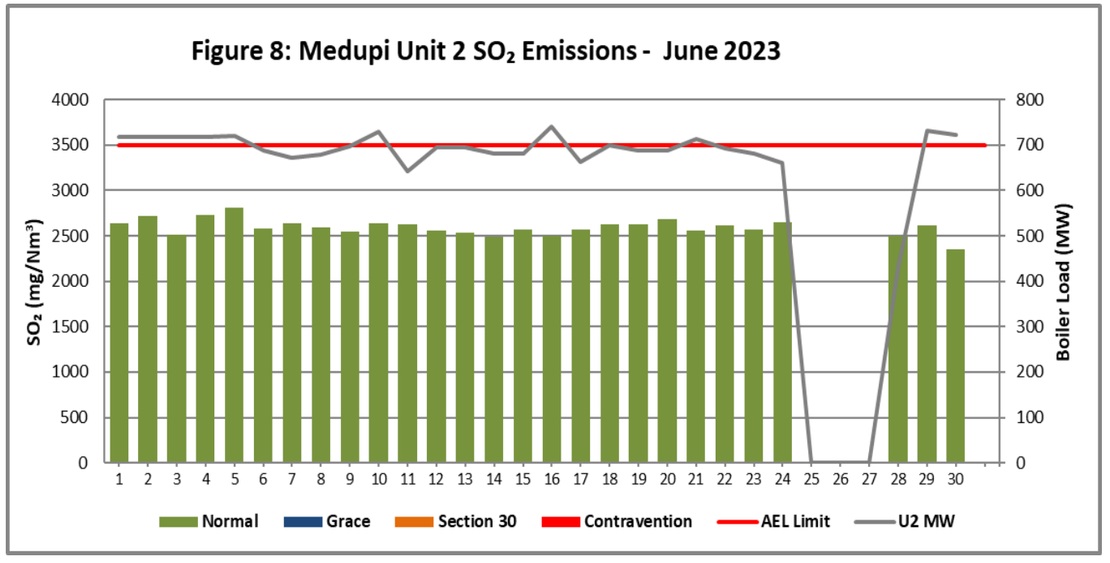




4.2 SOx Daily Averages





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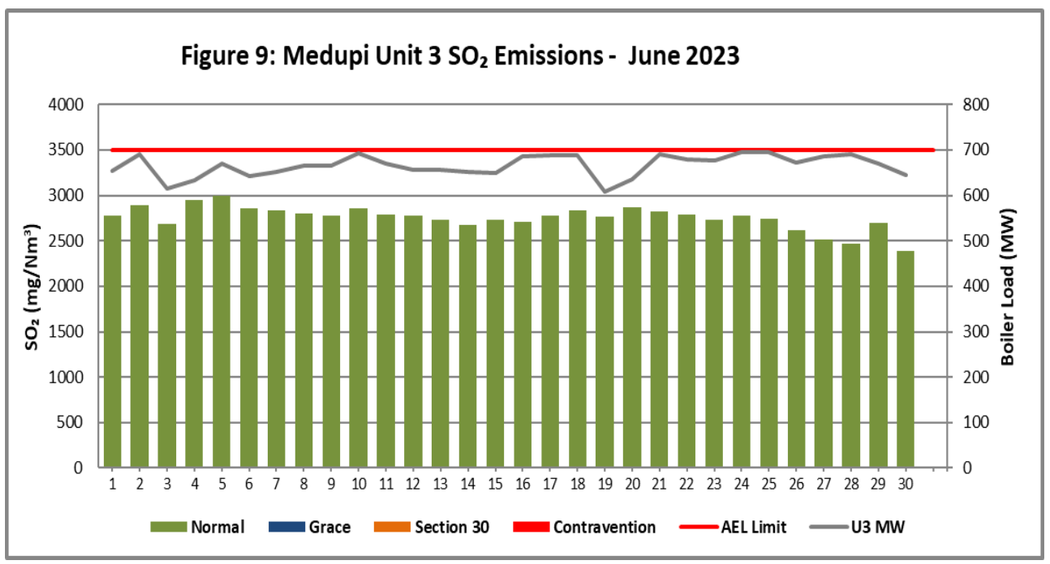

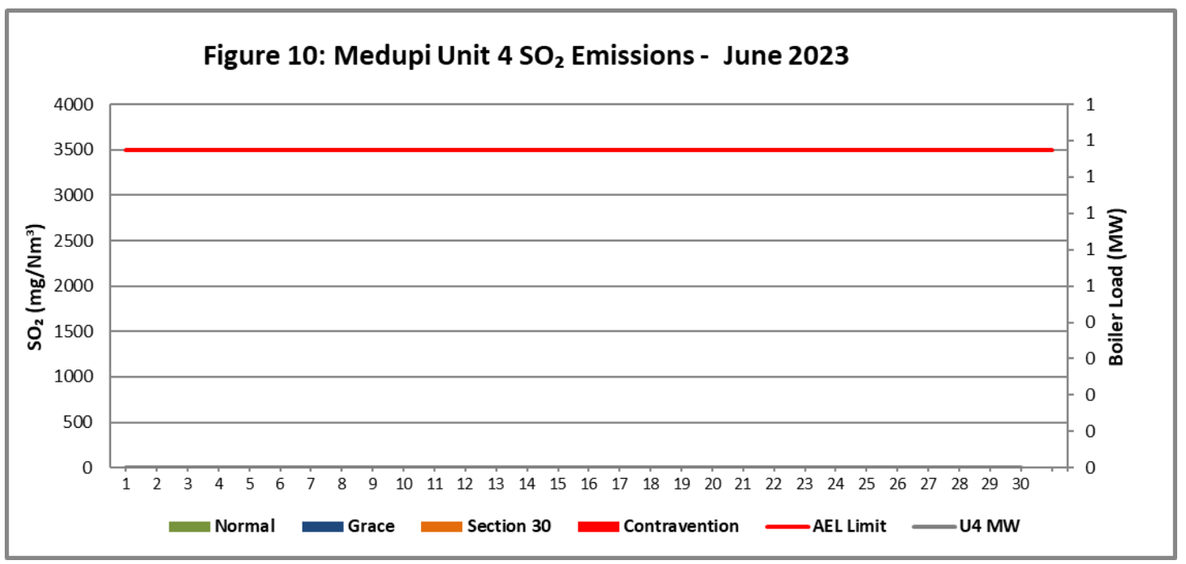

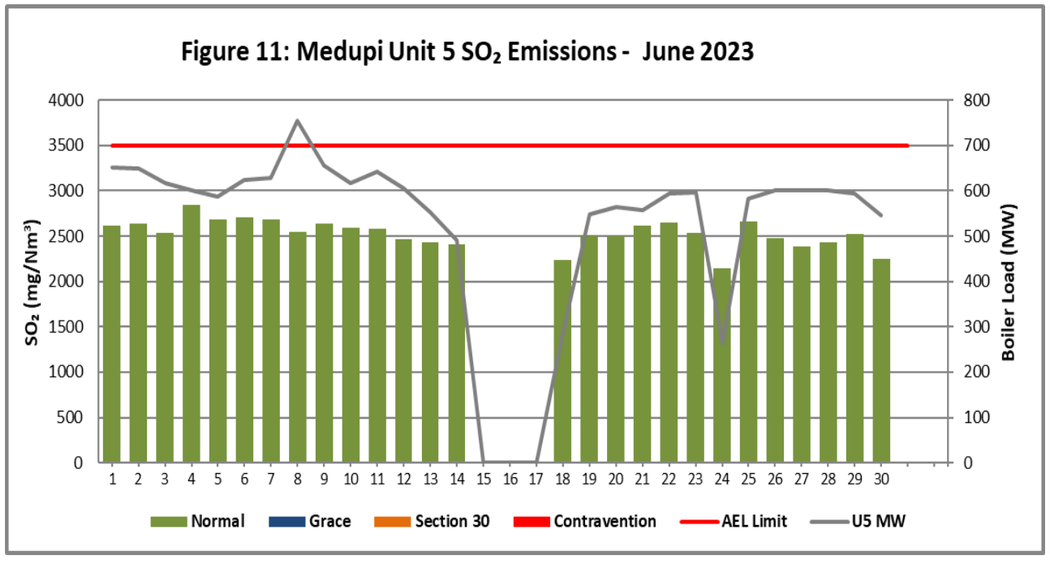

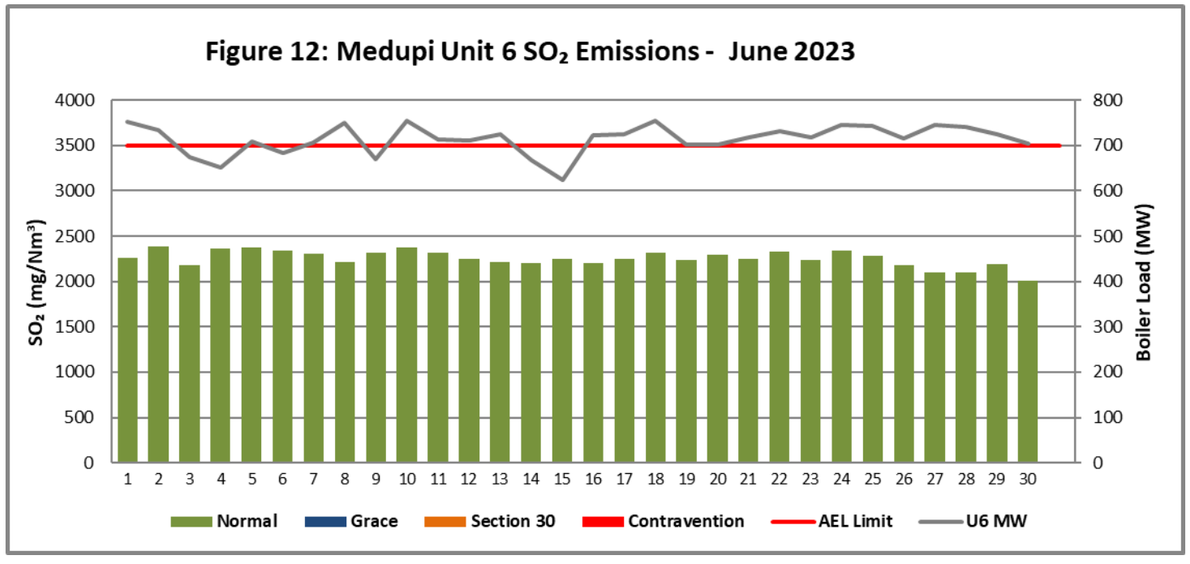

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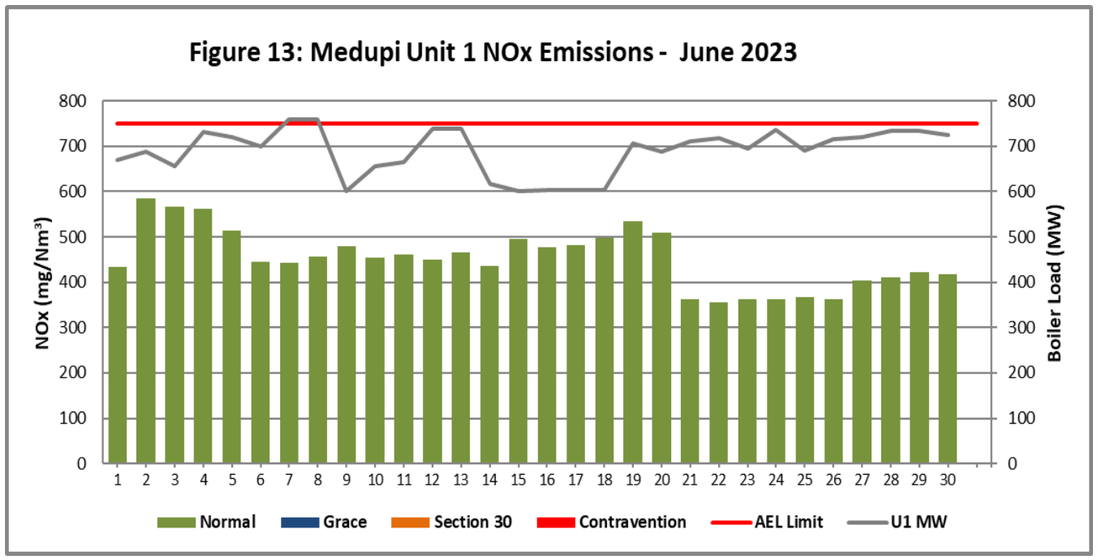
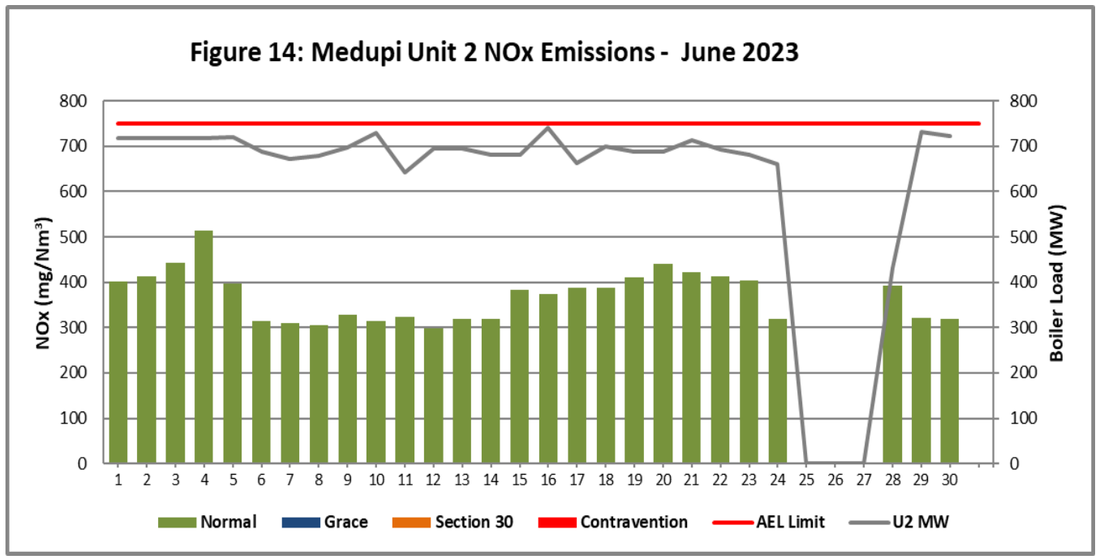
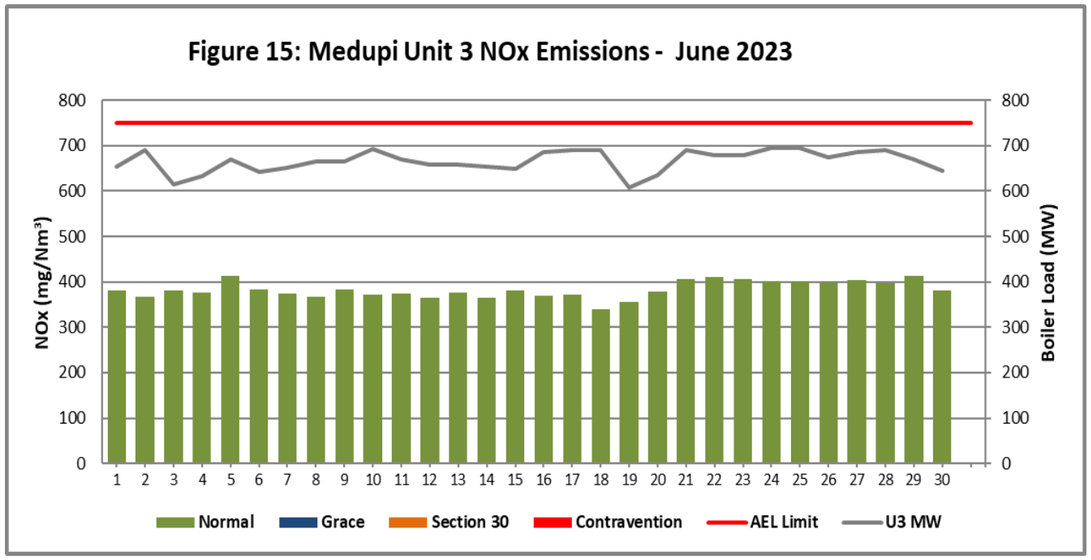
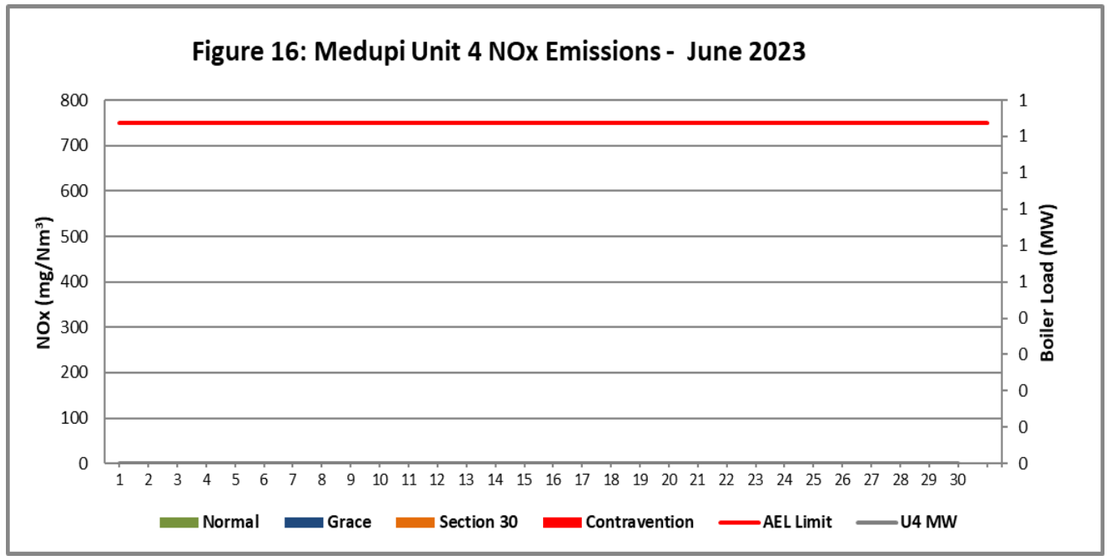
4.3 NOx Daily Averages









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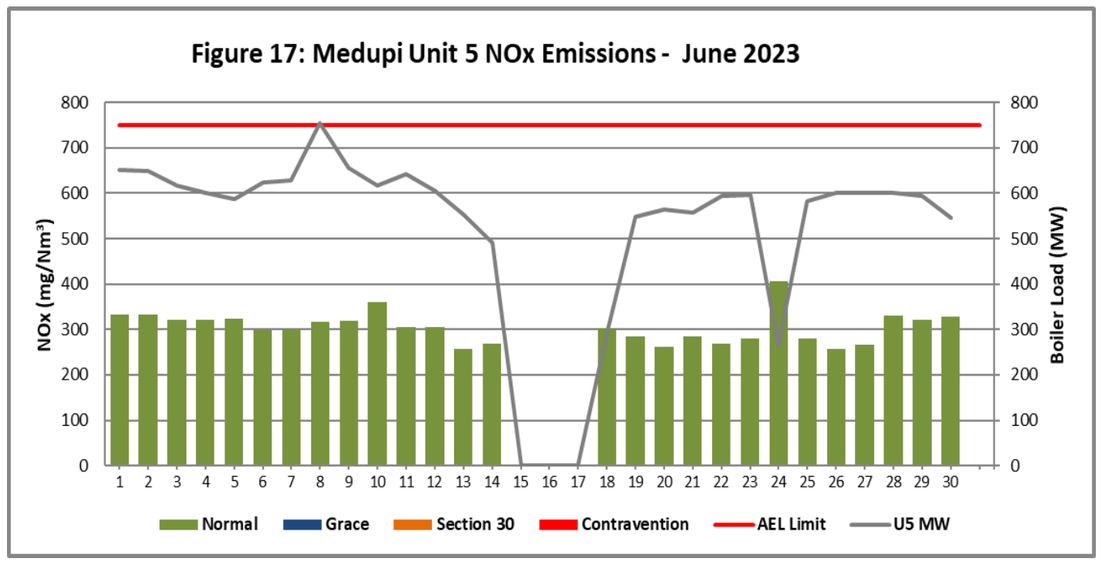

Figure 17: Medupi Unit 5 NOx Emissions - June 2023

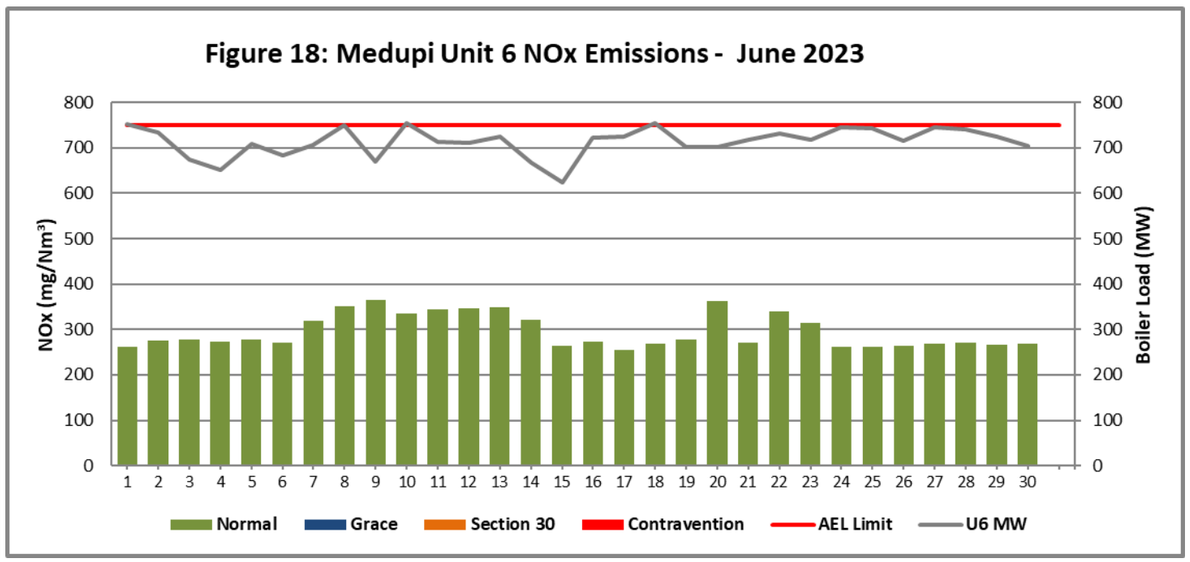

Figure 18: Medupi Unit 6 NOx Emissions - June 2023

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TABLE 6: MONTHLY TONNAGES FOR THE MONTH OF JUNE 2023

Associated Unit/Stack	PM	SO_2	NO_2
Unit 1	40.7	4 979.0	816.7
Unit 2	51.3	5 357.2	761.4
Unit 3	67.0	4 629.9	644.3
Unit 4	off	off	off
Unit 5	67.4	5 170.1	611.0
Unit 6	14.1	4 580.4	600.0
SUM (Tons)	240.5	24 716.7	3 433.4

TABLE 7: MONTHLY AVERAGES FOR THE MONTH OF JUNE 2023

Associated Unit/Stack	Average PM (mg/Nm^3)	Average SOx (mg/Nm^3)	Average NOx (mg/Nm^3)
Unit 1	23.7	2 743.9	452.3
Unit 2	26.3	2 593.4	369.4
Unit 3	39.8	2 754.2	383.1
Unit 4	off	off	off
Unit 5	36.4	2 528.1	304.9
Unit 6	7.1	2 254.0	295.1

5. Continuous Emission Monitoring Systems (CEMS)

- Unit 1, 2, 3, 5 and 6 Continuous Emission Monitoring Systems were always in operation when the unit was on load.

TABLE 8: PERIODS DURING WHICH CEMS WAS INOPERATIVE

Date	CEMS status	Comments
N/A	N/A	N/A

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TABLE 9: CEMS MONITOR RELIABILITY PERCENTAGE (%)

Associated Unit/Stack	PM	SO_2	NO_2	O_2
Unit 1	99.7	99.6	99.6	98.9
Unit 2	99.2	99.5	99.5	99.2
Unit 3	99.7	0	0	0
Unit 4	off	off	off	off
Unit 5	99.7	99.1	98.9	98.4
Unit 6	99.6	99.6	99.6	99.6

Note: SO_2, O_2 and NO was Changed to a Unity Factor (1) for accurate reporting, there was a step change in the performance of the Unit 3 gas Monitor.

6. CEMS Calibration certificates and equipment used for calibration.

A service provider was appointed to calibrate CEMS equipment at Medupi Power Station, calibration certificates to be made available upon request. The service appointed for the CEMS calibration is in a process of obtaining SANAS accreditation. Verification of the CEMS after calibration is conducted internally by Eskom.

7. Ambient Air Quality Monitoring Report

The Ambient Air Quality Monitoring and Dust fall-out report for June2023 was e-mailed to the Licensing Authority.

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8. Visual inspection of the exterior walls of the fuel oil tanks and TVOC Estimation

Visual inspection was conducted and there were no leaks observed on the exterior walls of the fuel oil tanks.

TABLE 10: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR JUNE 2023

Eskom

CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*

Date:	Wednesday, 31 May 2023
Station:	Medupi Power Station
Province:	Limpopo Province
Tank no.	1-2
Description:	Outdoor fuel oil storage tank
Tank Type:	Vertical fixed roof (vented to atmosphere)
Material stored:	Fuel Oil 150

MONTHLY INPUT DATA FOR THE STATION
Please only insert relevant monthly data inputs into the *blue cells* below
Choose from a dropdown menu in the *green cells*
The total VOC emissions for the month are in the *red cells*
IMPORTANT: Do not change ***any*** other cells without consulting the AQ CoE

MONTH:	**June**	
GENERAL INFORMATION:	**Data**	**Unit**
Total number of fuel oil tanks:	2	NA
Height of tank:*	14.2	m
Diameter of tank:	12	m
Net fuel oil throughput for the month:	***1313***	tons/month
Molecular weight of the fuel oil:	166.00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	**Data**	**Unit**
Daily average ambient temperature	16.61	°C
Daily maximum ambient temperature	25.19	°C
Daily minimum ambient temperature	9.38	°C
Daily ambient temperature range	15.81	°C
Daily total insolation factor	3.45	kWh/m²/day
Tank paint colour	***Aluminum/Specular***	NA
Tank paint solar absorbtance	0.39	NA
FINAL OUTPUT:	**Result**	**Unit**
Breathing losses:	0.71	kg/month
Working losses:	0.04	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	**0.74**	**kg/month**

*Calculations performed on this spreadsheet are taken from the USEPA AP-42- Section 7.1 Organic Liquid Storage Tanks - January 1996. This spreadsheet is derived from materials provided by Jimmy Peress, PE, Tritech Consulting Engineers, 85-93 Chevy Chase Street, Jamaica, NY 11432 USA, Tel - 718-454-3920, Fax - 718-454-6330, e-mail - PeressJ@nyc.rr.com.

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9. Air quality improvements initiatives and public education and awareness campaigns

No awareness campaigns for this month.

10. Complaints Register

TABLE 5: COMPLAINTS FOR THE MONTH OF JUNE 2023

Source Code/ Name	Air pollution complaints received	Calculation of Impacts/ emissions associated with the incident	Date of complaint and date of response by the license holder	Results of investigation	Action taken to resolve the complaint
N/A	No complaints received	N/A	N/A	N/A	N/A

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Compiled by: Lutendo Murovhi Date: 18/12/2023
Environmental Officer

Verified by: Malose Langa Date: 2023/12/20
System Engineer Boiler

Verified by: Nontuthuko Mpangase Date: 2023/12/20
System Engineer C&I

Supported by: Mokgadi Dikgale Date: 2023/12/21
Environmental Manager

Supported by: Jabulani Mkhatshwa Date: 2023/12/21
Engineering Group Manager

I Zweli Witbooi, declares that the information provided in this report is accurate and correct.

Yours sincerely

Date: 2023/12/21

Zweli Witbooi
GENERAL MANAGER: MEDUPI POWER STATION

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