

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	7
		Document Identifier	240-88543153	Rev	2
		Effective Date	September 2024		
		Review Date	September 2027		

Stanley Koenaitse

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Date: 2024/10/31

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Ref: H16/1/13-AEL/M1/R1 – September 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF SEPTEMBER 2024

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 reflects Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of September 2024 only.

1. Raw Materials and Products

TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN SEPTEMBER 2024

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – September 2024
	Coal	Tons/month	1 875 000	632 357
	Fuel Oil	Tons/month	20 000	1 700
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of September 2024
	Energy	GWh	3 571.2	1 335.313
	Ash Emitted	Tons/month	not specified	116.3

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Date	Daily Reportable Hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-Sep	24.0	24.0	0.0	0.0	24.0	24.0	26221	607	614	Off	Off	659	580
02-Sep	24.0	24.0	0.0	0.0	24.0	24.0	27447	662	637	Off	Off	671	579
03-Sep	16.1	24.0	0.0	0.0	24.0	24.0	25977	623	672	Off	Off	718	579
04-Sep	0.0	24.0	0.0	0.0	24.0	24.0	17382	Off	656	Off	Off	635	514
05-Sep	0.0	24.0	0.0	0.0	24.0	24.0	19276	Off	608	Off	Off	634	554
06-Sep	0.0	24.0	0.0	0.0	24.0	24.0	20685	Off	705	Off	Off	610	569
07-Sep	0.0	24.0	0.0	0.0	16.4	24.0	19118	Off	724	Off	Off	629	580
08-Sep	0.0	24.0	0.0	0.0	24.0	24.0	20589	Off	650	Off	Off	680	579
09-Sep	0.0	24.0	0.0	0.0	24.0	24.0	21199	Off	679	Off	Off	687	571
10-Sep	0.0	24.0	0.0	0.0	24.0	24.0	22766	Off	726	Off	Off	773	580
11-Sep	0.0	24.0	0.0	0.0	24.0	24.0	22545	Off	766	Off	Off	718	580
12-Sep	0.0	24.0	0.0	0.0	24.0	24.0	22095	Off	754	Off	Off	690	587
13-Sep	0.0	24.0	0.0	0.0	17.8	24.0	18513	Off	716	Off	Off	449	660
14-Sep	0.0	24.0	0.0	0.0	18.6	15.4	18867	Off	644	Off	Off	702	690
15-Sep	0.0	24.0	0.0	0.0	0.0	19.2	11566	Off	660	Off	Off	Off	501
16-Sep	13.3	24.0	0.0	0.0	0.0	18.4	13986	436	570	Off	Off	Off	584
17-Sep	0.0	24.0	0.0	0.0	0.0	23.9	15786	Off	712	Off	Off	Off	727
18-Sep	0.0	24.0	0.0	0.0	0.0	23.9	16445	Off	745	Off	Off	Off	683
19-Sep	0.0	24.0	0.0	0.0	0.0	23.9	16395	Off	764	Off	Off	Off	721
20-Sep	0.0	24.0	0.0	0.0	3.0	23.9	16011	Off	697	Off	Off	92	747
21-Sep	0.0	24.0	0.0	0.0	18.3	23.9	18260	Off	656	Off	Off	528	590
22-Sep	0.0	24.0	0.0	0.0	23.9	23.9	20151	Off	694	Off	Off	642	701
23-Sep	0.0	24.0	0.0	0.0	23.9	23.9	23154	Off	762	Off	Off	654	718
24-Sep	0.0	24.0	0.0	0.0	23.9	23.9	23025	Off	758	Off	Off	648	713
25-Sep	0.0	24.0	0.0	0.0	23.9	23.9	22872	Off	744	Off	Off	654	705
26-Sep	0.0	24.0	0.0	0.0	23.9	23.9	22120	Off	753	Off	Off	648	648
27-Sep	0.0	24.0	0.0	0.0	24.0	24.0	22308	Off	778	Off	Off	648	633
28-Sep	0.0	24.0	0.0	0.0	24.0	24.0	21863	Off	766	Off	Off	648	614
29-Sep	0.0	15.1	0.0	0.0	24.0	24.0	16605	Off	613	Off	Off	624	570
30-Sep	0.0	24.0	0.0	0.0	24.0	24.0	19002	Off	549	Off	Off	616	623

NB: Operating hours less than 24 highlighted in pink.

2. Abatement Technology

TABLE 2: ABATEMENT EQUIPMENT CONTROL TECHNOLOGY EFFICIENCY FOR MONTH OF SEPTEMBER 2024

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Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.977%	100%
Unit 2	Fabric Filter Plant (FFP)	99.932%	100%
Unit 3	Fabric Filter Plant (FFP)	Off	Off
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.962%	100%
Unit 6	Fabric Filter Plant (FFP)	99.935%	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 SEPTEMBER 2024

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	1.5
Ash Content	35 - 39	35.6

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF SEPTEMBER 2024

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.100
Ash Content	0.02 - 0.1	0.020

4. Emissions Reporting

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

The emission limits are as follows:

SO₂ Monthly = 3500 mg/Nm³

Dust Daily= 50 mg/Nm³

NO₂ Daily= 750 mg/Nm³

4.1 PM Daily Averages

Figure 1: Medupi Unit 1 PM Emissions - September 2024

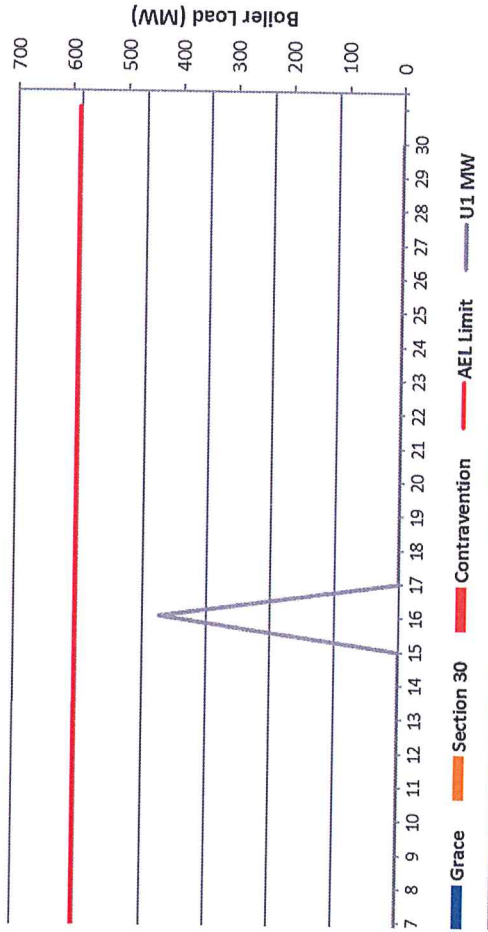


Figure 2: Medupi Unit 2 PM Emissions - September 2024

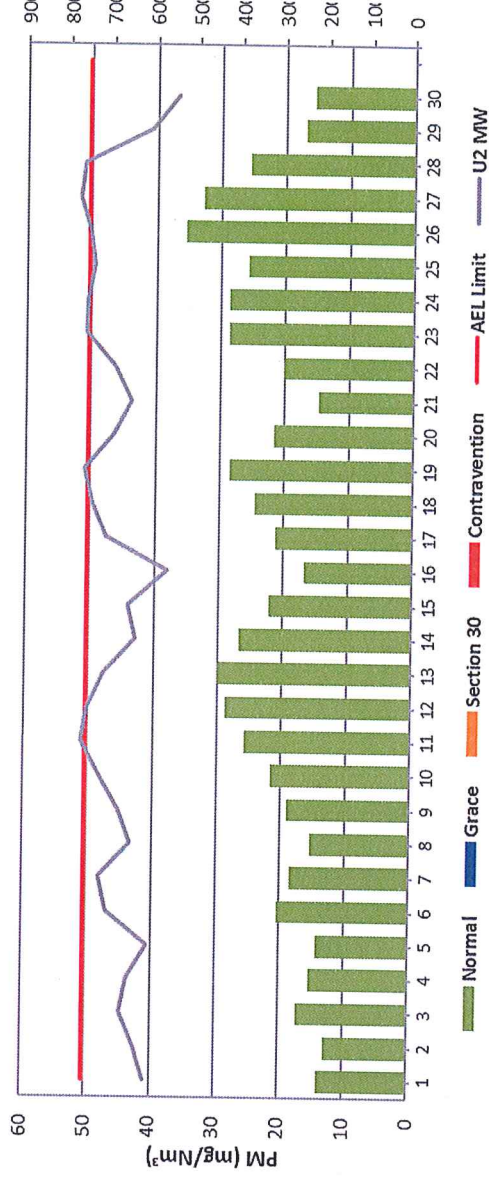


Figure 3: Medupi Unit 3 PM Emissions - September 2024

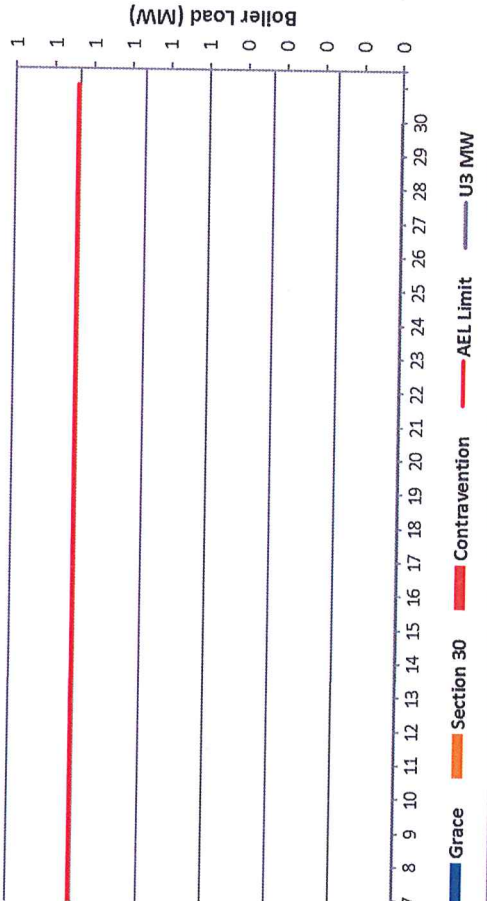
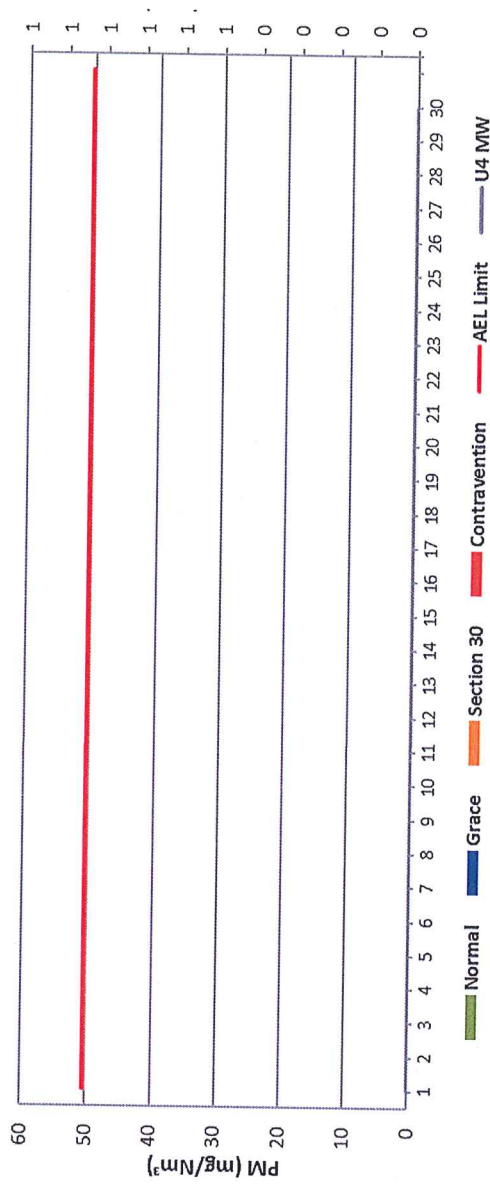


Figure 4: Medupi Unit 4 PM Emissions - September 2024



Medupi Unit 5 PM Emissions - September 2024

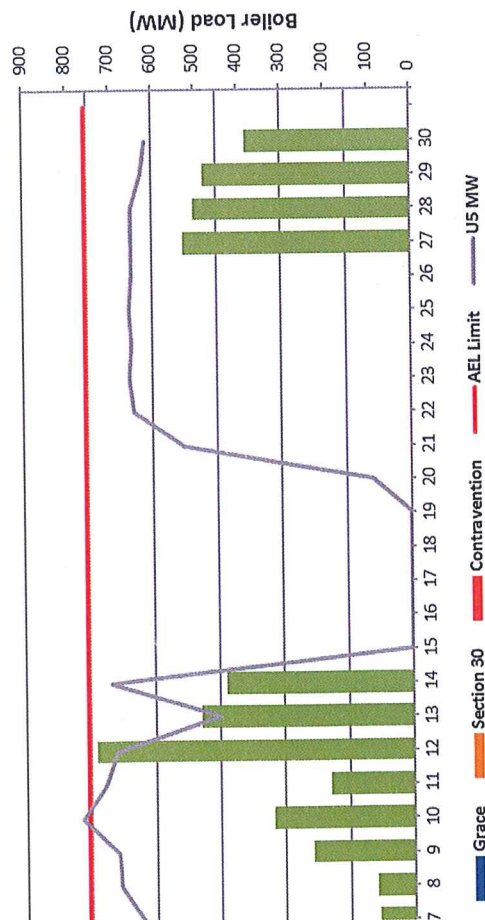
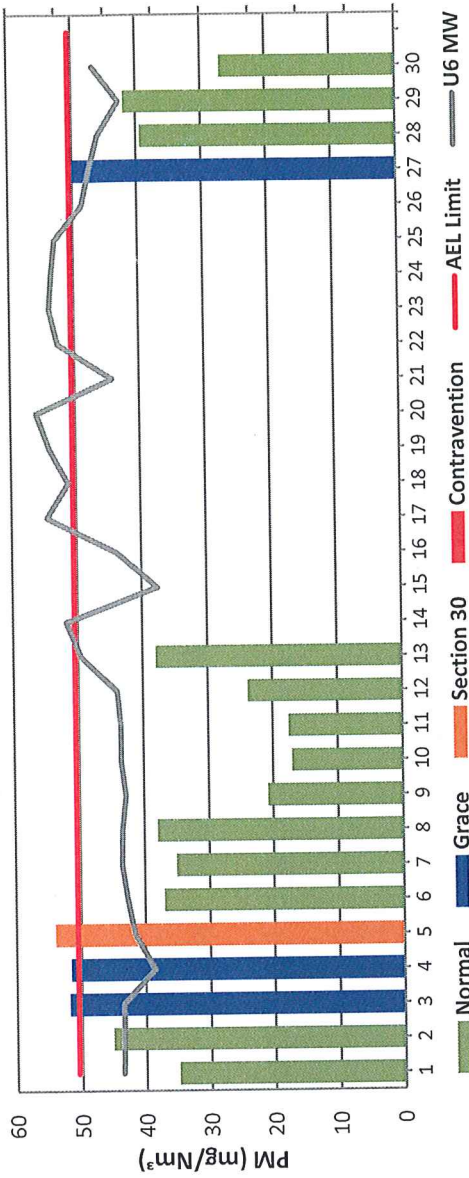


Figure 6: Medupi Unit 6 PM Emissions - September 2024



4.2 SOx Daily Averages

7: Medupi Unit 1 SO₂ Emissions - September 2024

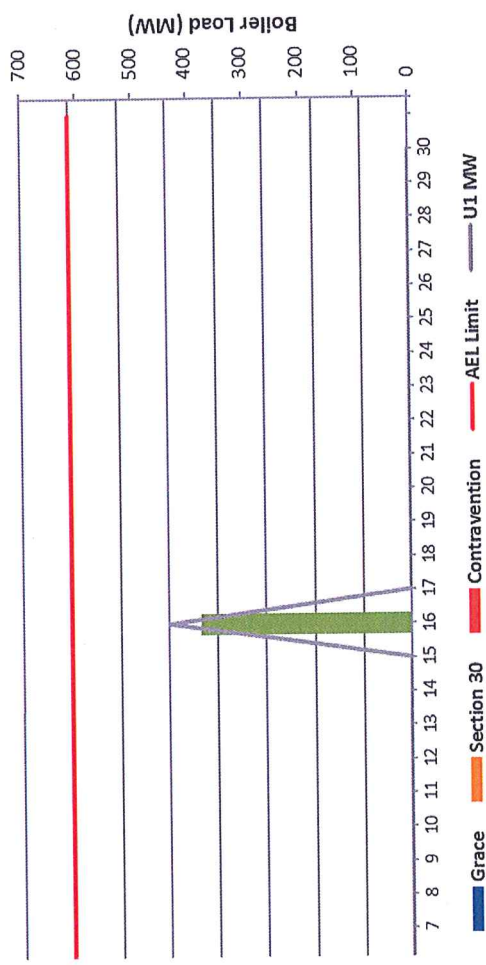
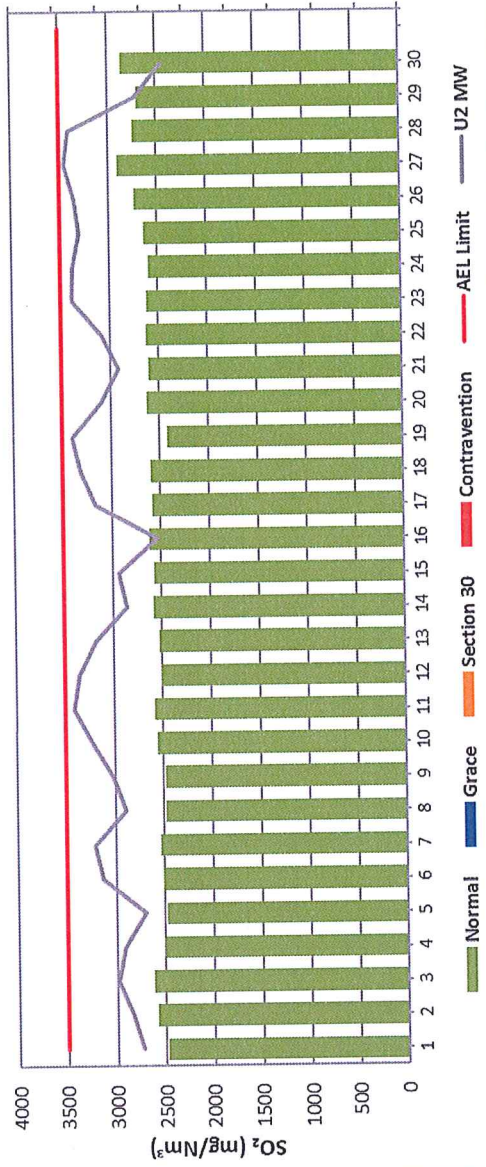


Figure 8: Medupi Unit 2 SO₂ Emissions - September 2024



Medupi Unit 3 SO₂ Emissions - September 2024

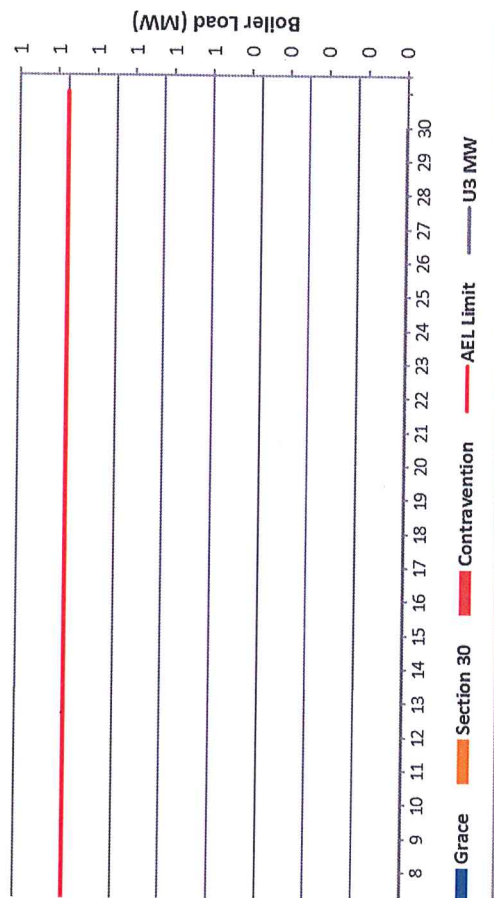
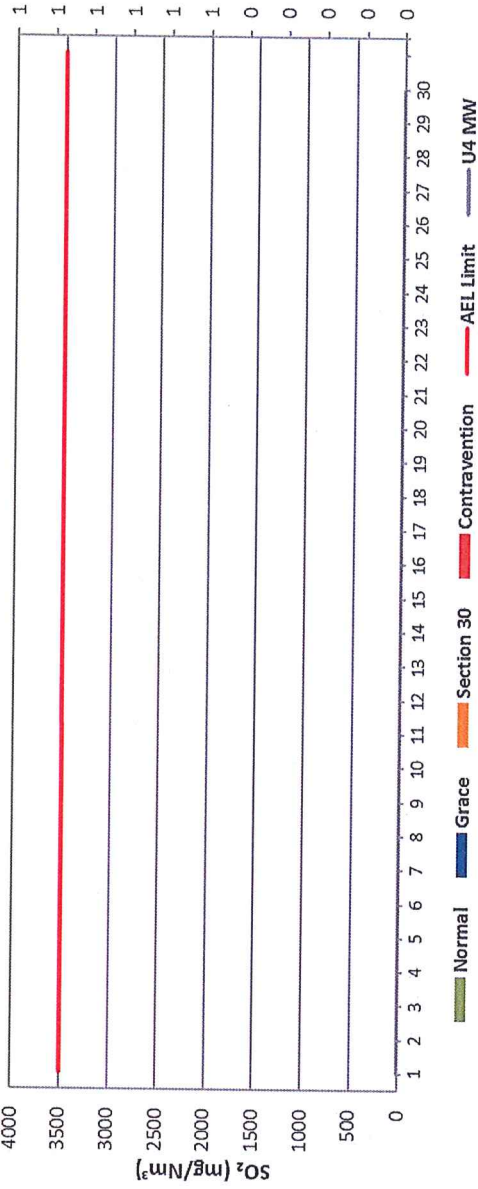


Figure 10: Medupi Unit 4 SO₂ Emissions - September 2024



: Medupi Unit 5 SO₂ Emissions - September 2024

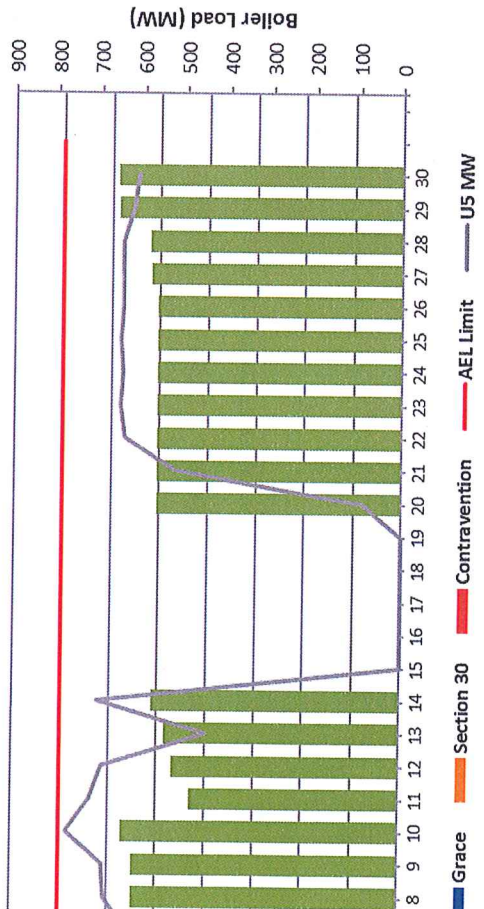
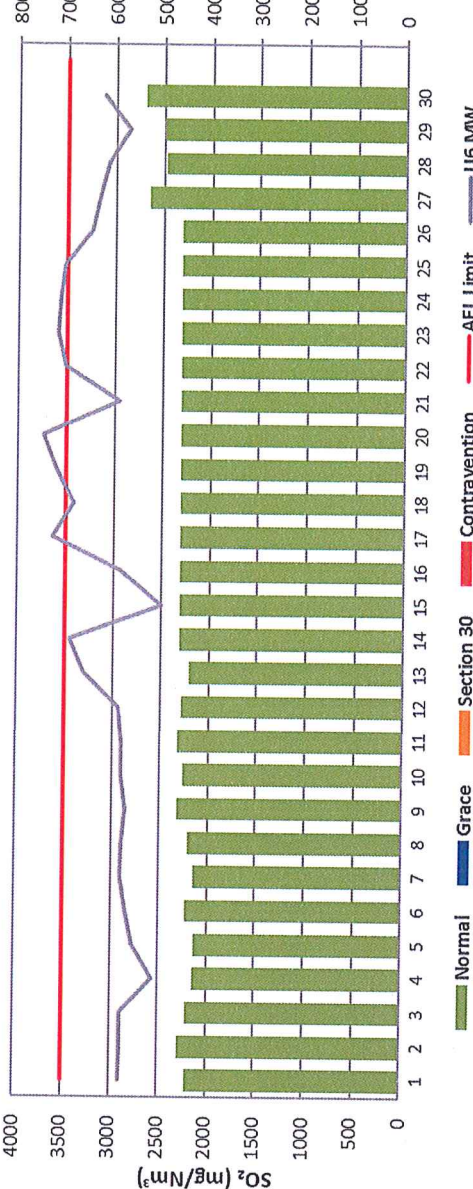


Figure 12: Medupi Unit 6 SO₂ Emissions - September 2024



4.3 NOx Daily Averages

Figure 13: Medupi Unit 1 NOx Emissions - September 2024

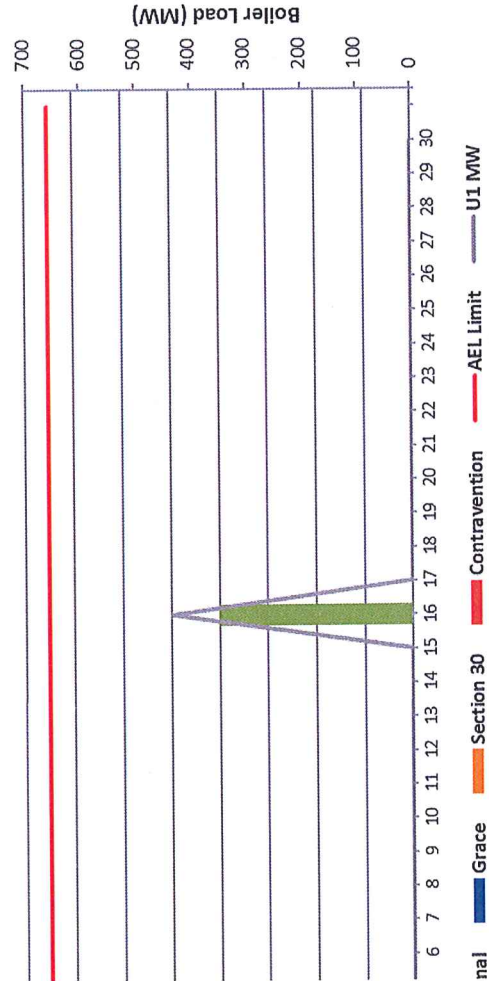


Figure 14: Medupi Unit 2 NOx Emissions - September 2024

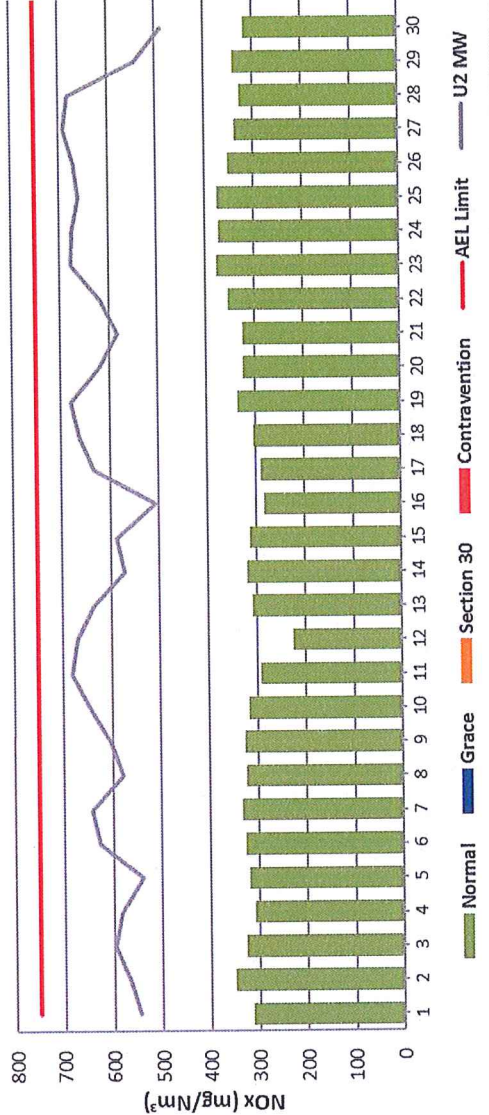


Figure 15: Medupi Unit 3 NOx Emissions - September 2024

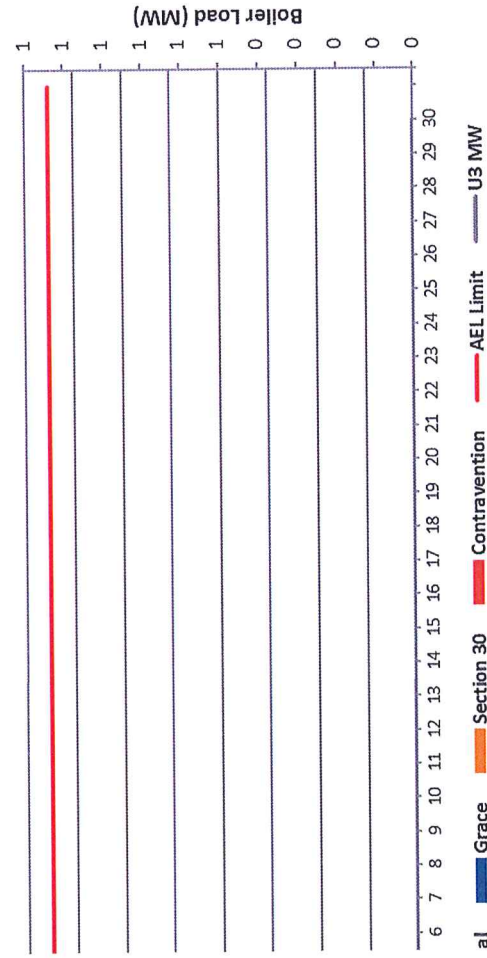
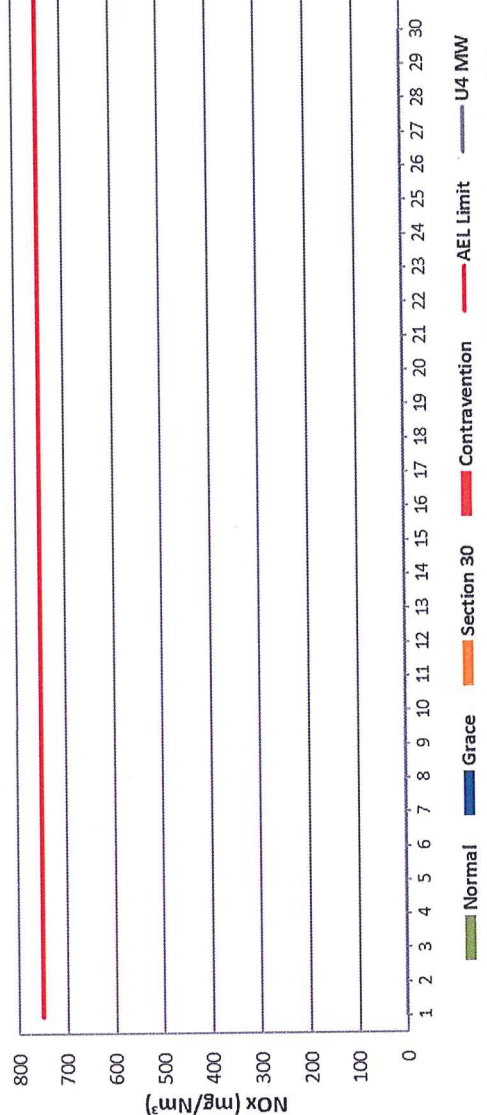


Figure 16: Medupi Unit 4 NOx Emissions - September 2024



7: Medupi Unit 5 NOx Emissions - September 2024

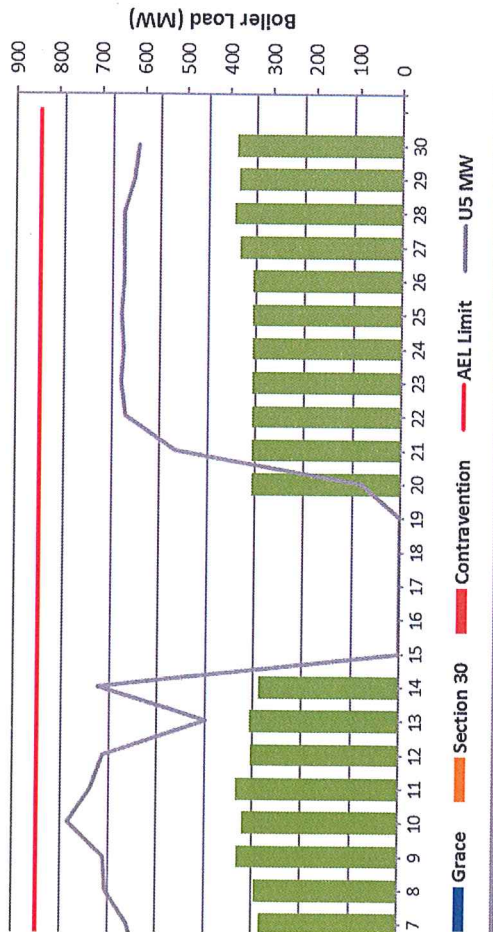
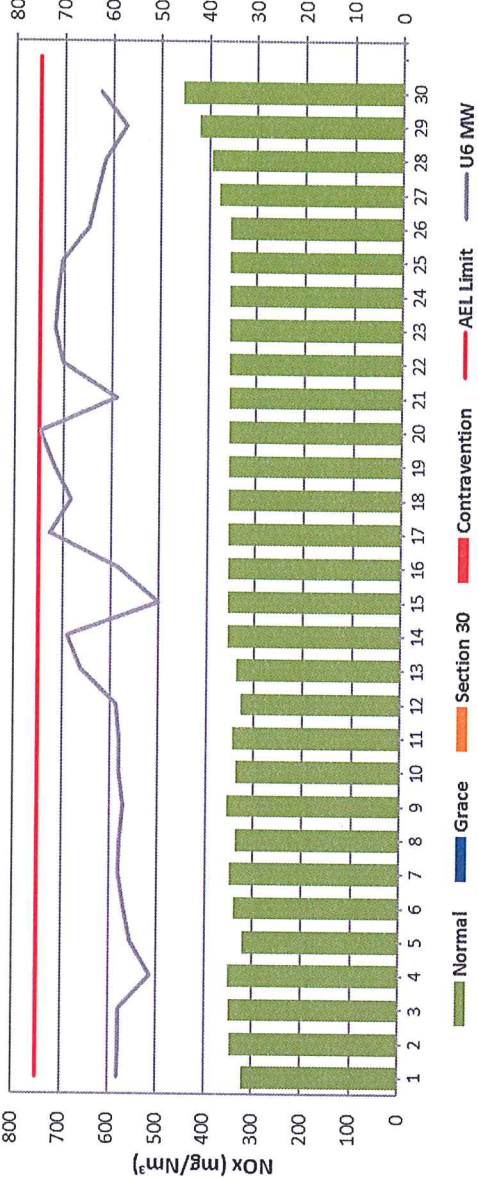


Figure 18: Medupi Unit 6 NOx Emissions - September 2024



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF SEPTEMBER 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	2.1	350.6	54.7
Unit 2	52.3	6 184.5	772.6
Unit 3	Off	Off	Off
Unit 4	Off	Off	Off
Unit 5	19.8	4 236.0	498.9
Unit 6	42.1	4 822.8	743.8
SUM (Tons)	116.3	15 594.0	2 070.0

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF SEPTEMBER 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	17.5	2 398.6	382.6
Unit 2	21.9	2 595.7	323.7
Unit 3	Off	Off	Off
Unit 4	Off	Off	Off
Unit 5	18.9	2 524.2	297.1
Unit 6	36.7	2 312.3	357.1

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 7: PERIODS DURING WHICH CEMS WAS INOPERATIVE/MALFUNCTIONING

Date	CEMS status	Comments
NA	NA	NA

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TABLE 8: CEMS MONITOR RELIABILITY PERCENTAGE (%)

Associated Unit/Stack	PM	SO ₂	NO ₂	O ₂
Unit 1	97.8	88.3	88.3	84.6
Unit 2	97.6	97.5	97.9	98.6
Unit 3	Off	Off	Off	Off
Unit 4	Off	Off	Off	Off
Unit 5	99.3	57.2	53.5	67.5
Unit 6	99.8	56.0	55.8	56.3

6. CEMS Calibration certificates and equipment used for calibration.

A service provider was appointed to calibrate CEMS equipment at Medupi Power Station, calibration certificates are in place and may be made available upon request. 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 September 2024 was e-mailed to the Licensing Authority on 22 October 2024.

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.

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TABLE 9: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR SEPTEMBER 2024

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Monday, 30 September 2024	
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:	September	
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:	1700	tons/month
Molecular weight of the fuel oil:	166.00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH		
	Data	Unit
Daily average ambient temperature	23.43	°C
Daily maximum ambient temperature	31.06	°C
Daily minimum ambient temperature	16.52	°C
Daily ambient temperature range	14.54	°C
Daily total insolation factor	4.41	kWh/m²/day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:		
	Result	Unit
Breathing losses:	0.69 kg/month	
Working losses:	0.05 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

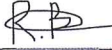
No awareness campaign conducted for September 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF SEPTEMBER 2024

Name/ Source Code	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	N/A	N/A	N/A	N/A	N/A

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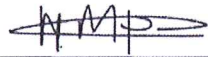
Compiled By: Ramokone Makgoka
Officer Environmental Management

Date: 22/10/2024

Reviewed by: Thabo Khoza
Snr Advisor Environmental Management

Date: 22/10/2024

Verified by: Malose Langa
System Engineer Boiler

Date: 2024/10/22

Verified by: Shu Mpangase
System Engineer C&I

Date: 22/10/2024

Supported by: Mokgadi Dikgale
Environmental Manager

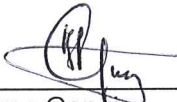
Date: 23/10/2024

Supported by: Sithokozile Hlongwa
Engineering Group Manager (Acting)

Date: 24.10.2024

I Thozama Gangi, declares that the information provided in this report is accurate and correct.

Yours sincerely


 Thozama Gangi
GENERAL MANAGER (Acting): MEDUPI POWER STATION

Date: 25/10/2024

