

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September 2022		
		Review Date	September 2024		

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Date: 2024/07/30

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Ref: H16/1/13-AEL/M1/R1 – June 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JUNE 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 June 2024 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – June 2024
	Coal	Tons/month	1 875 000	813768
	Fuel Oil	Tons/month	20 000	2216
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of June 2024
	Energy	GWh	3 571.2	1722.21
	Ash Emitted	Tons/month	not specified	153.77

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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-June	24.0	24.0	0.0	0.0	24.0	11.1	26118	750	593	Off	Off	438	641
02-June	24.0	24.0	0.0	0.0	16.3	6.2	27685	705	577	Off	Off	547	554
03-June	24.0	17.3	0.0	0.0	0.0	11.2	24310	713	608	Off	Off	503	619
04-June	24.0	0.0	0.0	0.0	16.8	24.0	23742	787	495	Off	Off	489	517
05-June	24.0	17.9	0.0	0.0	24.0	24.0	27520	691	618	195	Off	576	586
06-June	24.0	24.0	3.8	0.0	24.0	24.0	30958	657	602	526	Off	567	650
07-June	24.0	24.0	24.0	0.0	24.0	24.0	33007	667	634	520	Off	603	617
08-June	24.0	24.0	3.8	0.0	24.0	24.0	28649	721	599	470	Off	640	674
09-June	24.0	24.0	0.0	0.0	1.1	24.0	26637	677	613	Off	Off	611	644
10-June	24.0	24.0	0.0	0.0	19.2	24.0	27343	700	614	Off	Off	651	669
11-June	24.0	24.0	0.0	0.0	24.0	24.0	26612	649	615	Off	Off	626	697
12-June	24.0	24.0	0.0	0.0	24.0	24.0	26504	740	600	Off	Off	702	712
13-June	24.0	21.2	0.0	0.0	24.0	24.0	28376	770	596	Off	Off	673	737
14-June	24.0	0.0	0.0	0.0	24.0	24.0	21284	701	Off	Off	Off	627	658
15-June	24.0	0.0	0.0	0.0	24.0	24.0	21778	775	Off	Off	Off	600	639
16-June	24.0	0.0	0.0	0.0	24.0	24.0	22620	745	Off	Off	Off	677	706
17-June	24.0	0.0	0.0	0.0	24.0	24.0	21827	670	Off	Off	Off	600	623
18-June	24.0	0.0	0.0	0.0	24.0	24.0	21928	754	Off	Off	Off	650	686
19-June	24.0	0.0	0.0	0.0	24.0	24.0	23033	767	Off	Off	Off	710	750
20-June	24.0	0.0	0.0	0.0	24.0	24.0	23399	748	205	Off	Off	707	750
21-June	24.0	4.9	0.0	0.0	24.0	24.0	28046	714	485	Off	Off	679	715
22-June	24.0	24.0	0.0	0.0	24.0	24.0	27697	687	683	Off	Off	664	607
23-June	24.0	24.0	0.0	0.0	24.0	24.0	23912	502	712	Off	Off	524	609
24-June	24.0	24.0	0.0	0.0	24.0	24.0	28029	701	731	Off	Off	620	637
25-June	24.0	24.0	0.0	0.0	24.0	24.0	32405	690	709	448	Off	672	674
26-June	24.0	24.0	13.5	0.0	24.0	24.0	32196	611	619	556	Off	599	621
27-June	24.0	24.0	24.0	0.0	24.0	24.0	35129	760	717	603	Off	685	718
28-June	24.0	24.0	24.0	0.0	24.0	24.0	35569	743	743	615	Off	706	744
29-June	24.0	24.0	24.0	0.0	24.0	24.0	33881	688	680	566	Off	627	634
30-June	24.0	24.0	24.0	0.0	10.3	24.0	29917	678	602	602	Off	582	528

NB: Operating hours less than 24 highlighted in pink.

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2. Abatement Technology

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

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.947%	100%
Unit 2	Fabric Filter Plant (FFP)	99.875%	100%
Unit 3	Fabric Filter Plant (FFP)	99.952%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.947%	100%
Unit 6	Fabric Filter Plant (FFP)	99.875%	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 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	1.51
Ash Content	35 - 39	33.98

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.05
Ash Content	0.02 - 0.1	0.01

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

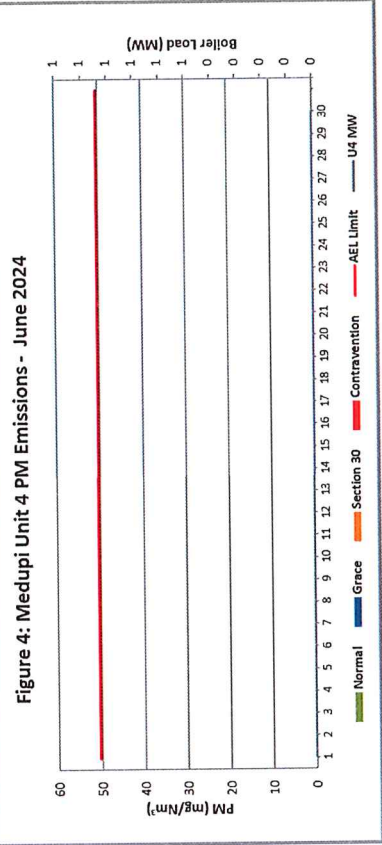
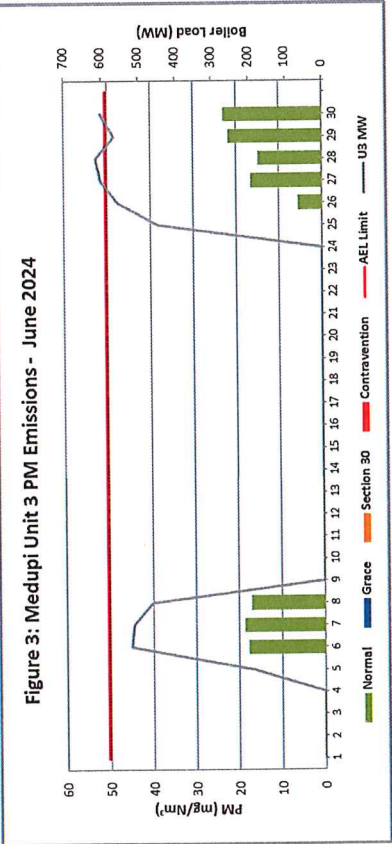
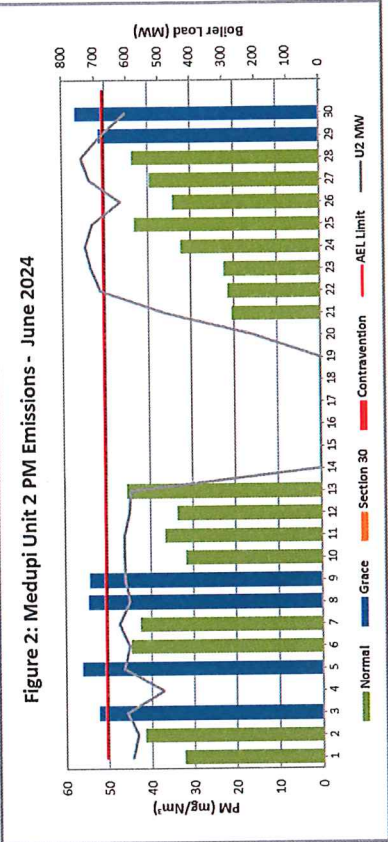
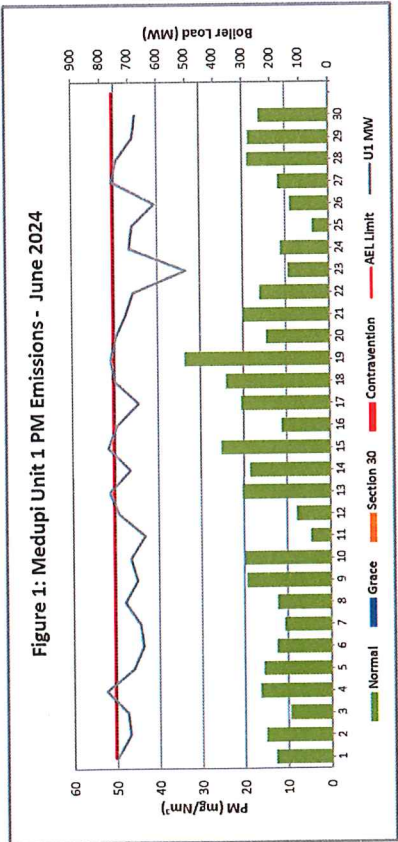
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4.1 PM Daily Averages



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Figure 5: Medupi Unit 5 PM Emissions - June 2024

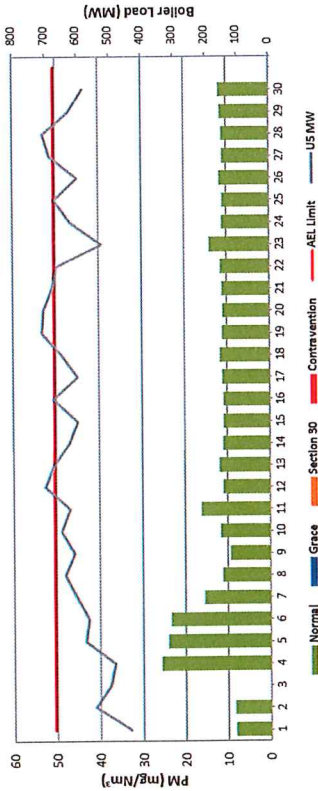


Figure 6: Medupi Unit 6 PM Emissions - June 2024

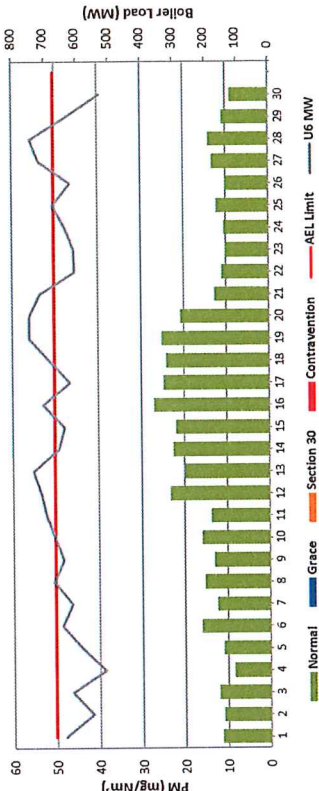


Figure 7: Medupi Unit 1 SO₂ Emissions - June 2024

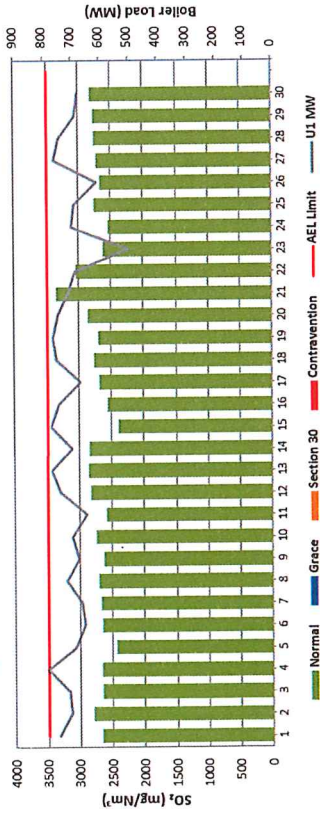
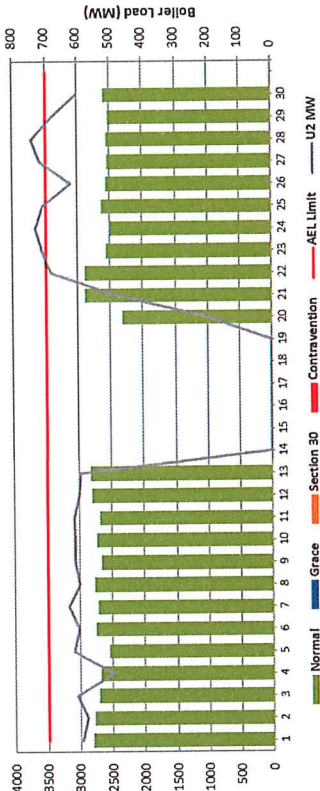


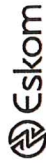
Figure 8: Medupi Unit 2 SO₂ Emissions - June 2024



4.2SOx Daily Averages

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Figure 9: Medupi Unit 3 SO₂ Emissions - June 2024

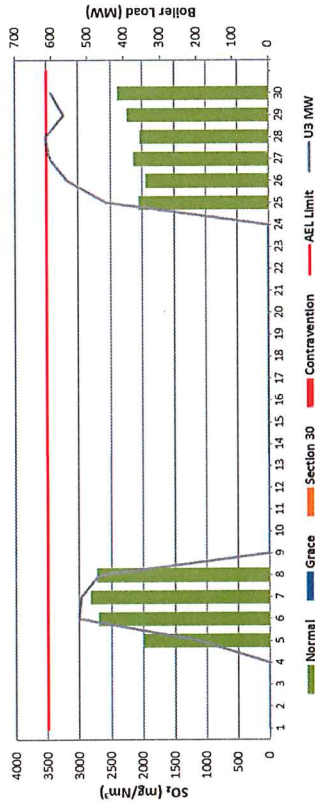


Figure 10: Medupi Unit 4 SO₂ Emissions - June 2024

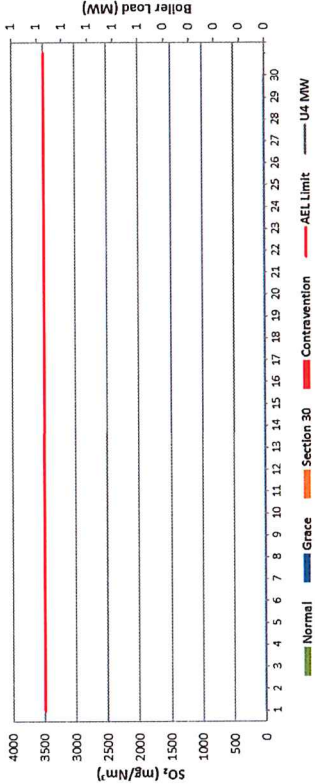


Figure 11: Medupi Unit 5 SO₂ Emissions - June 2024

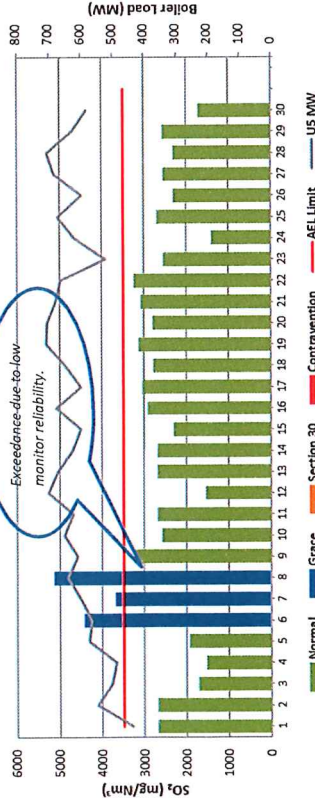
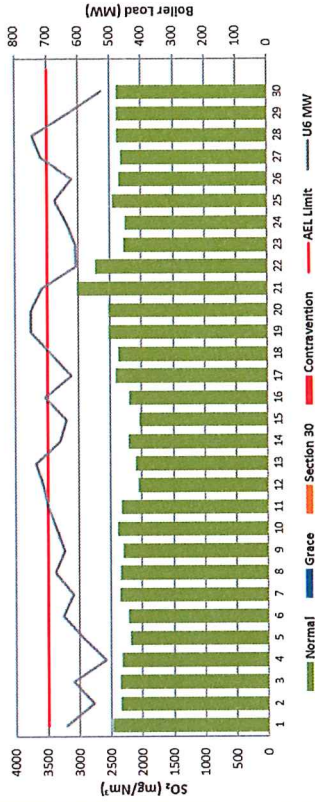


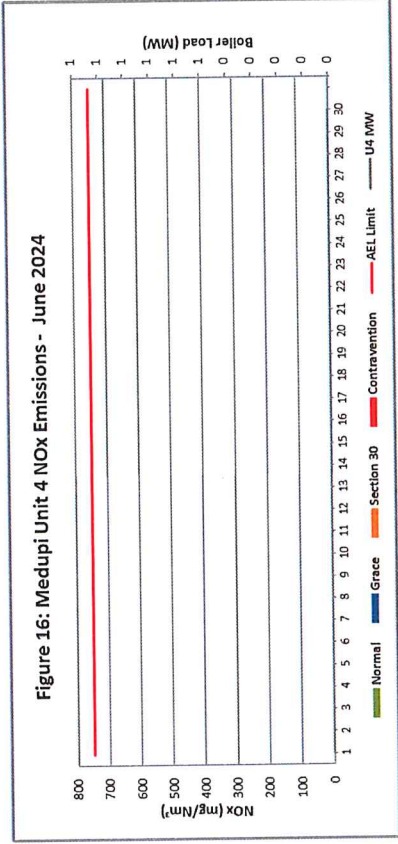
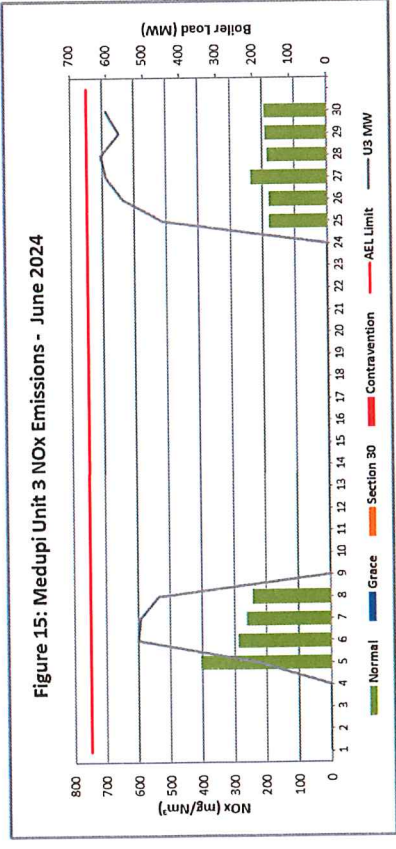
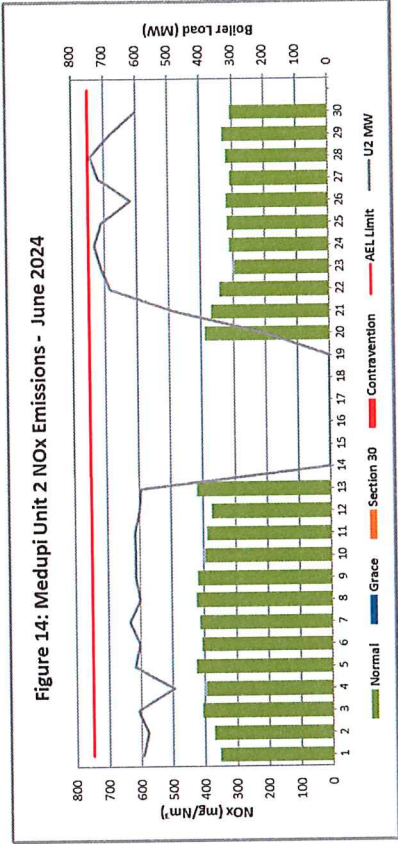
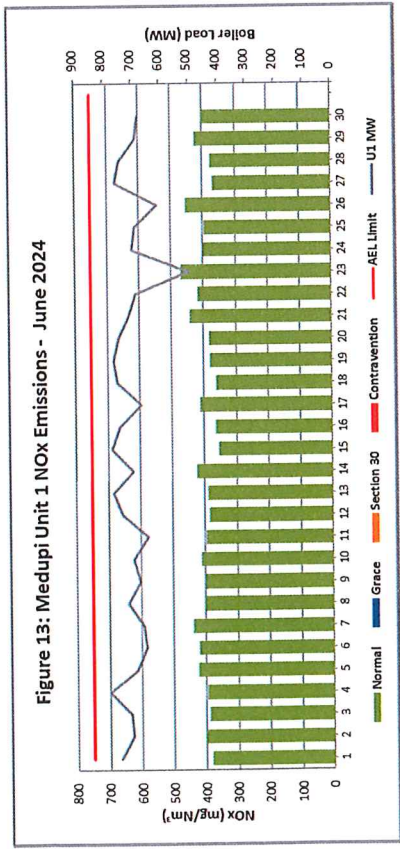
Figure 12: Medupi Unit 6 SO₂ Emissions - June 2024



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4.3 NOx Daily Averages



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Figure 17: Medupi Unit 5 NOx Emissions - June 2024

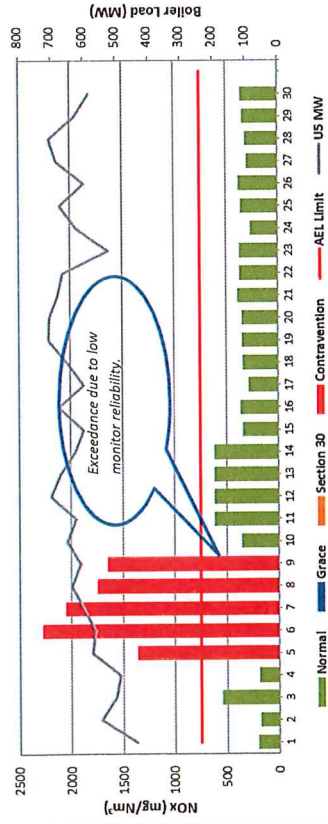
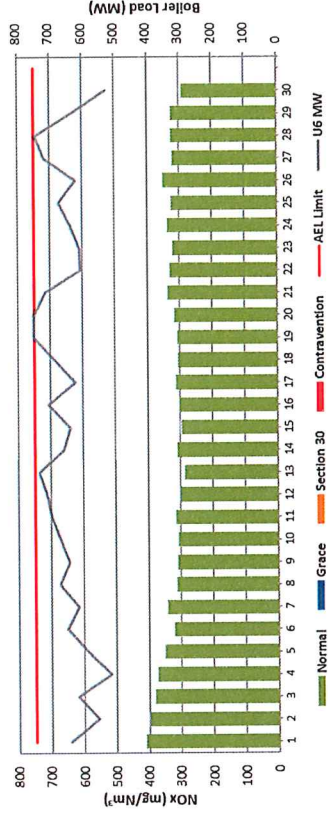


Figure 18: Medupi Unit 6 NOx Emissions - June 2024



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF JUNE 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	27.8	4 839.7	712.3
Unit 2	60.8	4 294.2	583.4
Unit 3	5.8	1 004.1	95.5
Unit 4	Off	Off	Off
Unit 5	24.1	5 513.1	1 254.8
Unit 6	35.2	5 464.5	751.9
SUM (Tons)	153.8	21115.6	3397.9

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF JUNE 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	15.3	2 719.4	402.5
Unit 2	40.5	2 663.0	367.0
Unit 3	17.0	2 299.6	236.3
Unit 4	Off	Off	Off
Unit 5	12.8	2 686.9	618.3
Unit 6	15.5	2 353.8	326.2

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. However, there were days where the monitor recorded low reliability.

TABLE 7: PERIODS DURING WHICH CEMS WAS INOPERATIVE/MALFUNCTIONING

Date	CEMS status	Comments
05 – 09 June 2024	Unit 5 & 3 CEMS recorded low reliability for gases.	Investigation report will be submitted.

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TABLE 8: CEMS MONITOR RELIABILITY PERCENTAGE (%)

Associated Unit/Stack	PM	SO ₂	NO	O ₂
Unit 1	100.0	98.5	98.3	98.3
Unit 2	100.0	100.0	100.0	99.2
Unit 3	100.0	93.0	43.1	61.9
Unit 4	Off	Off	Off	Off
Unit 5	100.0	42.6	45.1	72.2
Unit 6	100.0	98.3	95.6	98.1

Notes: SO₂, O₂ 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. 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 June 2024 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 9: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR JUNE 2024

			
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*			
Date:	Sunday, 30 June 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:	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:		2216	tons/month
Molecular weight of the fuel oil:			Lb/lb-mole
METEOROLOGICAL 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 absorbance		0.39	NA
FINAL OUTPUT:		Result	Unit
Breathing losses:		0.71	kg/month
Working losses:		0.06	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):		0.77	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 - Peress.J@nyc.rr.com.			

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

No awareness campaign conducted for June 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF JUNE 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
Environmental Officer  Date: 25 July 2024

Reviewed by: Thabo Khoza
Snr Advisor Environmental Management  Date: 25 July 2024

Verified by: Malose Langa
System Engineer Boiler  Date: 2024/07/25

Verified by: Shu Mpangase
System Engineer C&I  p.p. Date: 2024-07-26

Supported by: Mokgadi Dikgale
Environmental Manager  Date: 2024/07/29

Supported by: Jabulani Mkhathswa
Engineering Group Manager  p.p. Date: 2024/07/30

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

Yours sincerely



Zweli Witbooi

GENERAL MANAGER: MEDUPI POWER STATION

Date: 2024/07/30

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