

	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: 2024/08/30

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Ref: H16/1/13-AEL/M1/R1 – July 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 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 July 2024 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – July 2024
	Coal	Tons/month	1 875 000	937 971
	Fuel Oil	Tons/month	20 000	2 310
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of July 2024
	Energy	GWh	3 571.2	1 899.15
	Ash Emitted	Tons/month	not specified	146.0

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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-July	24.0	24.0	24.0	0.0	0.0	24.0	32630	751	490	614	OFF	623	604
02-July	24.0	24.0	24.0	0.0	23.7	24.0	36505	748	639	637	OFF	695	720
03-July	24.0	24.0	24.0	0.0	24.0	24.0	31925	648	582	571	OFF	557	648
04-July	24.0	24.0	24.0	0.0	24.0	24.0	31370	603	602	517	OFF	600	612
05-July	24.0	24.0	24.0	0.0	24.0	24.0	32957	665	620	574	OFF	588	658
06-July	7.7	24.0	24.0	0.0	24.0	0.7	30408	546	617	589	OFF	743	596
07-July	11.7	24.0	24.0	0.0	24.0	19.0	32393	644	649	567	OFF	542	630
08-July	24.0	24.0	24.0	0.0	24.0	24.0	33247	655	634	567	OFF	615	619
09-July	24.0	16.1	24.0	0.0	24.0	24.0	30160	625	597	557	OFF	613	569
10-July	24.0	0.0	24.0	0.0	24.0	24.0	25315	725	OFF	582	OFF	554	570
11-July	24.0	0.0	24.0	0.0	24.0	24.0	27016	769	OFF	564	OFF	661	580
12-July	24.0	0.0	24.0	0.0	24.0	24.0	27004	722	OFF	563	OFF	565	667
13-July	24.0	0.0	24.0	0.0	24.0	24.0	26007	574	OFF	576	OFF	505	667
14-July	24.0	0.0	24.0	0.0	24.0	24.0	23738	585	OFF	501	OFF	529	626
15-July	24.0	0.0	24.0	0.0	24.0	24.0	27217	687	OFF	561	OFF	616	683
16-July	24.0	0.0	24.0	0.0	24.0	24.0	33120	659	544	549	OFF	679	636
17-July	24.0	23.3	24.0	0.0	24.0	24.0	33466	656	644	549	OFF	641	670
18-July	24.0	24.0	24.0	0.0	24.0	24.0	31351	674	467	512	OFF	532	652
19-July	2.1	24.0	11.2	0.0	24.0	24.0	25387	437	719	509	OFF	615	673
20-July	0.0	24.0	2.4	0.0	24.0	24.0	25177	OFF	599	540	OFF	524	674
21-July	0.0	24.0	24.0	0.0	24.0	24.0	24584	OFF	567	505	OFF	539	635
22-July	0.0	24.0	24.0	0.0	24.0	24.0	29102	469	652	534	OFF	626	663
23-July	11.1	24.0	24.0	0.0	24.0	24.0	29989	541	533	498	OFF	531	623
24-July	24.0	24.0	24.0	0.0	24.0	24.0	30318	574	559	492	OFF	583	641
25-July	24.0	24.0	24.0	0.0	3.4	24.0	31068	721	681	530	OFF	471	675
26-July	24.0	24.0	24.0	0.0	9.8	24.0	33304	673	654	490	OFF	581	672
27-July	24.0	24.0	24.0	0.0	24.0	24.0	32066	632	643	495	OFF	607	577
28-July	24.0	24.0	24.0	0.0	24.0	24.0	30335	593	590	495	OFF	557	628
29-July	24.0	6.8	24.0	0.0	24.0	24.0	34433	653	593	495	OFF	649	643
30-July	24.0	8.8	24.0	0.0	24.0	24.0	33046	653	657	495	OFF	636	653
31-July	24.0	24.0	24.0	0.0	24.0	24.0	33333	632	648	495	OFF	649	653

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 JULY 2024

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.962%	100%
Unit 2	Fabric Filter Plant (FFP)	99.927%	100%
Unit 3	Fabric Filter Plant (FFP)	99.946%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.973%	100%
Unit 6	Fabric Filter Plant (FFP)	99.941%	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 JULY 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	1.45
Ash Content	35 - 39	34.68

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.5
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

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4.1 PM Daily Averages

Figure 1: Medupi Unit 1 PM Emissions - July 2024

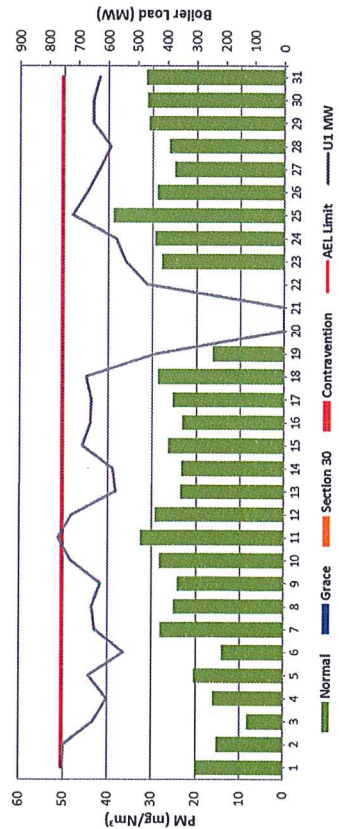


Figure 2: Medupi Unit 2 PM Emissions - July 2024

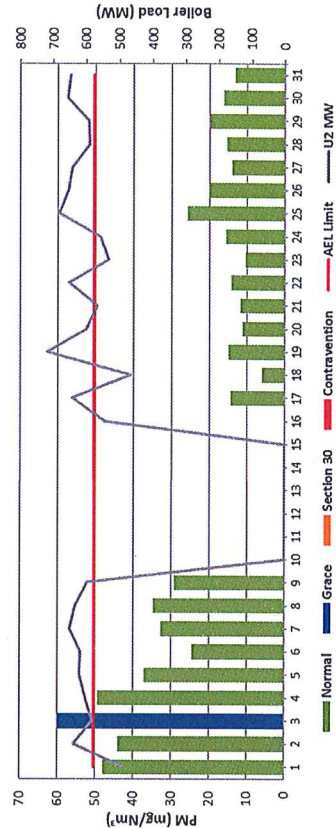


Figure 3: Medupi Unit 3 PM Emissions - July 2024

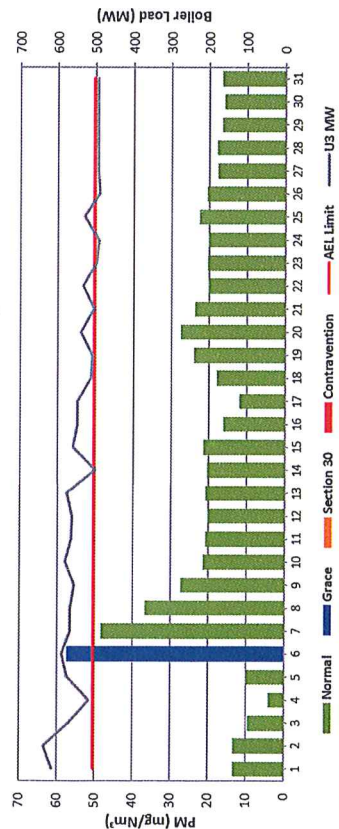
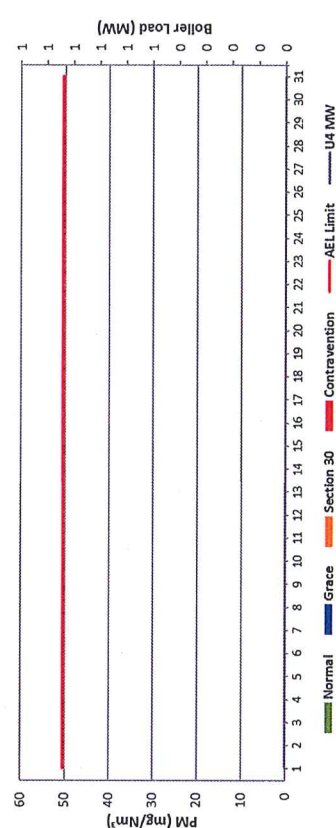
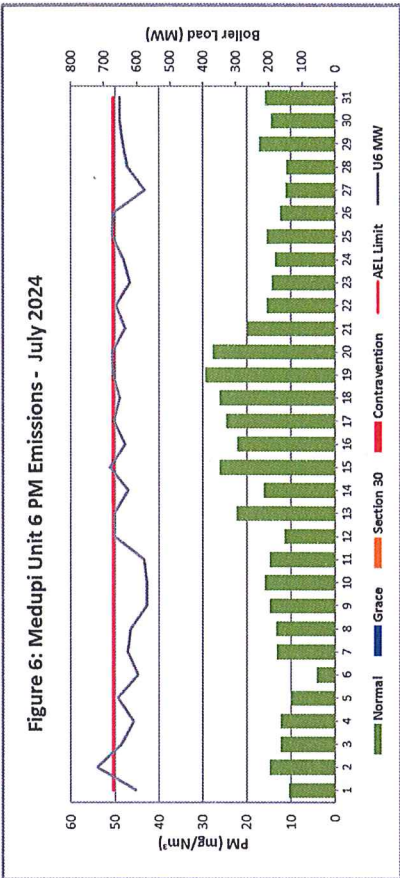
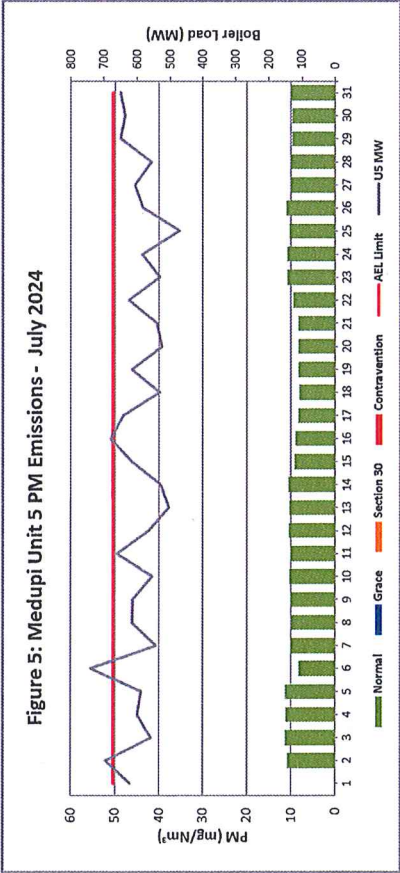


Figure 4: Medupi Unit 4 PM Emissions - July 2024

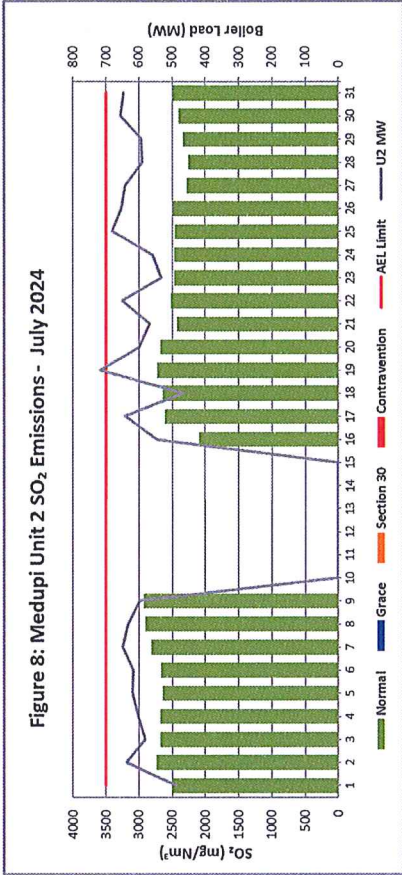
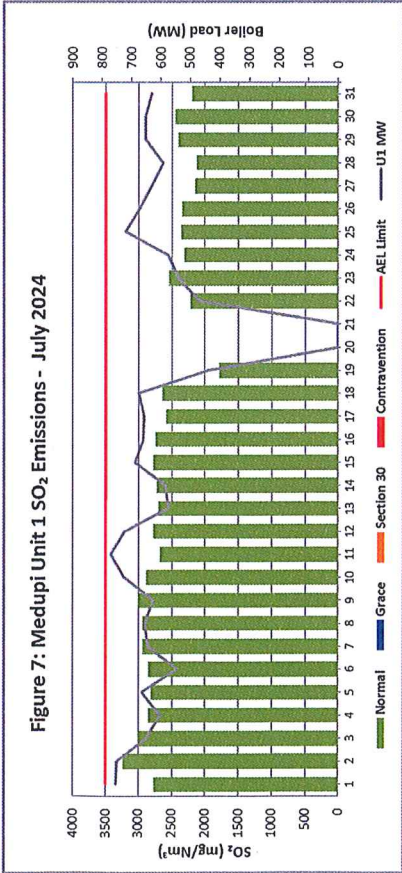


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4.2 SOx Daily Averages



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Figure 9: Medupi Unit 3 SO₂ Emissions - July 2024

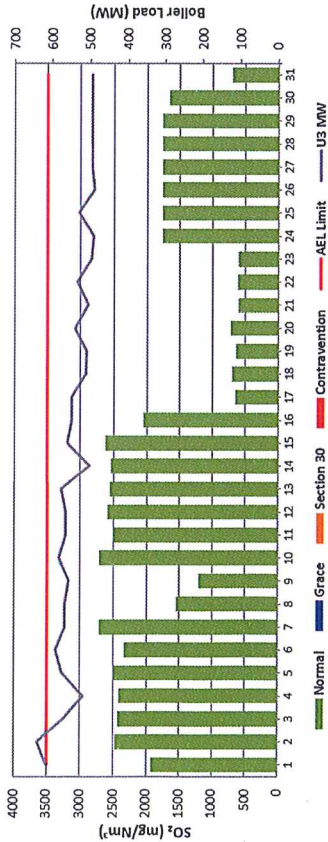


Figure 10: Medupi Unit 4 SO₂ Emissions - July 2024

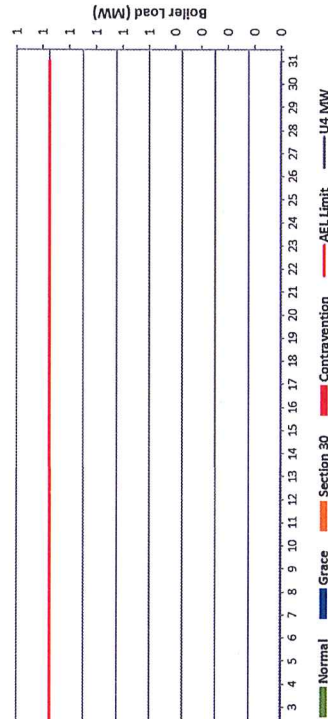


Figure 11: Medupi Unit 5 SO₂ Emissions - July 2024

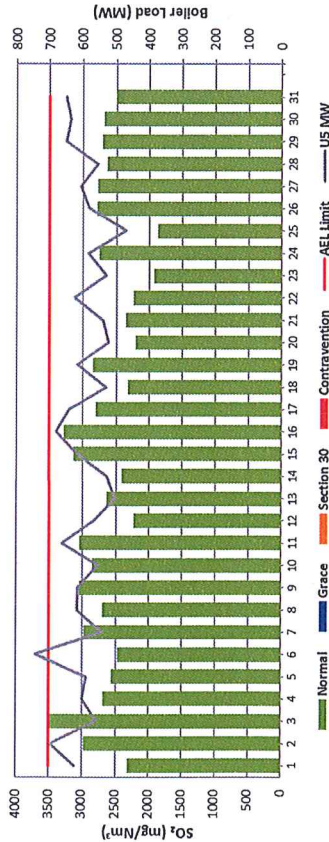
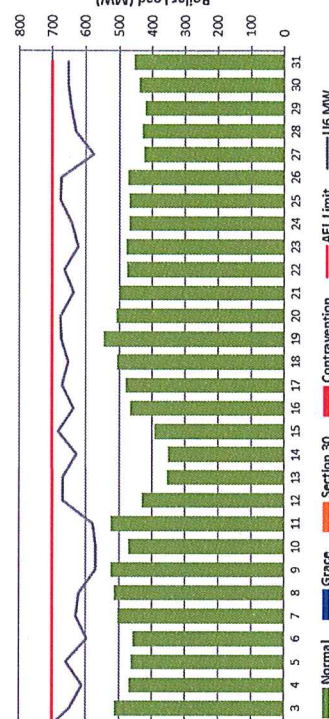


Figure 12: Medupi Unit 6 SO₂ Emissions - July 2024



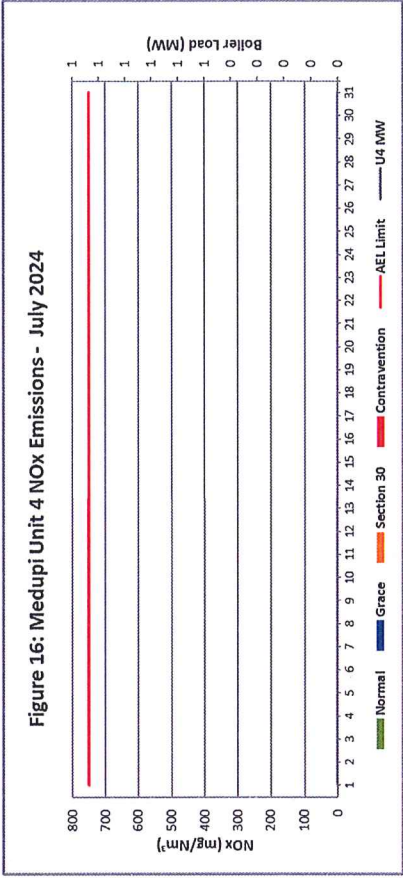
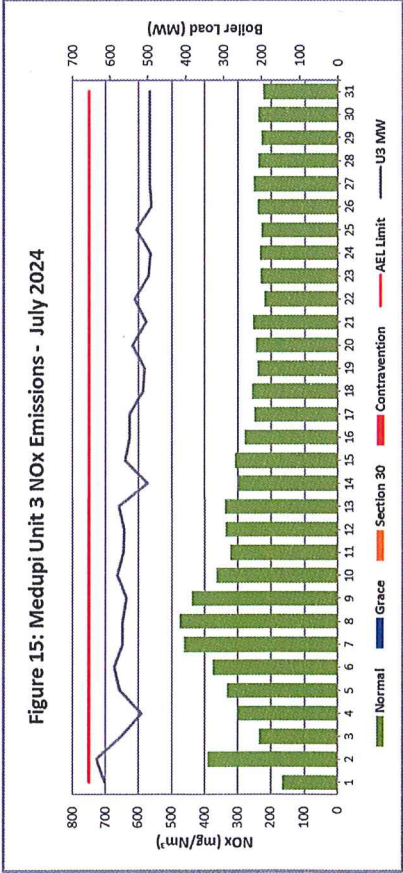
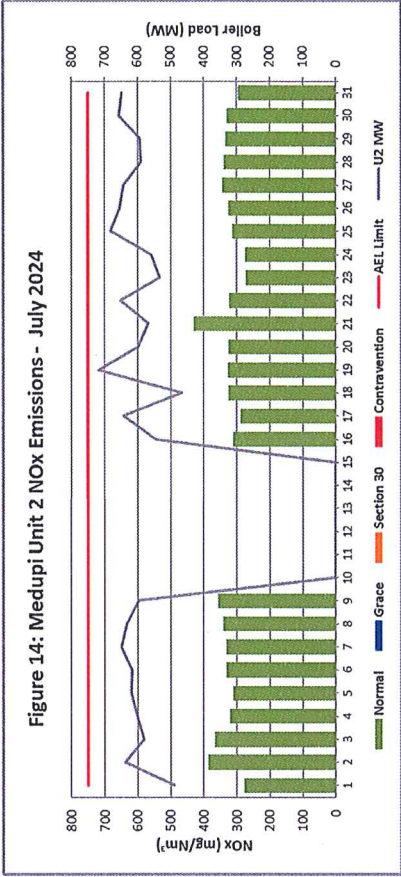
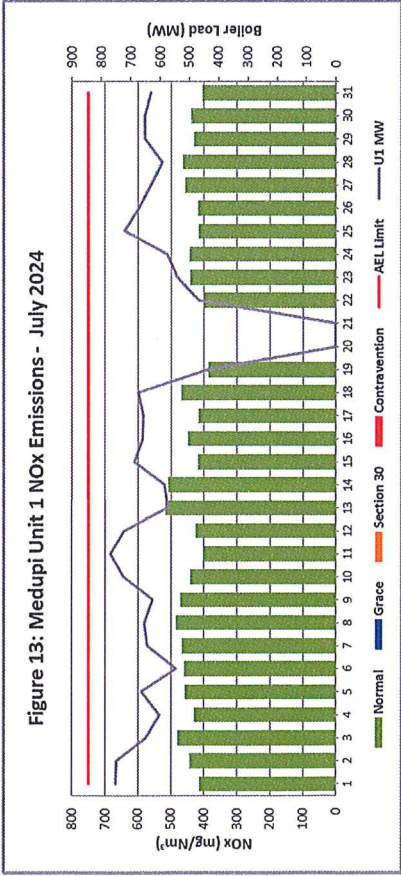
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4.3 NOx Daily Averages



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Figure 17: Medupi Unit 5 NOx Emissions - July 2024

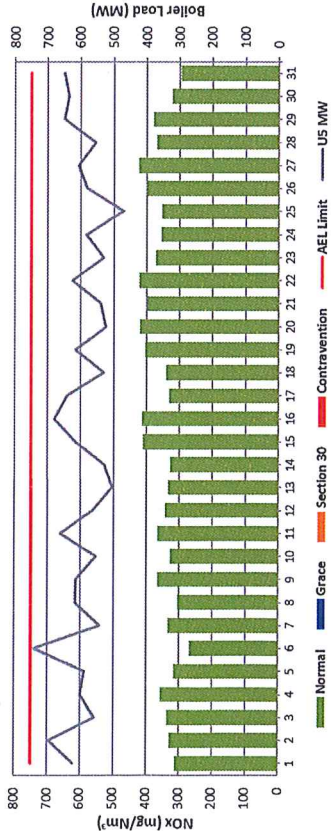
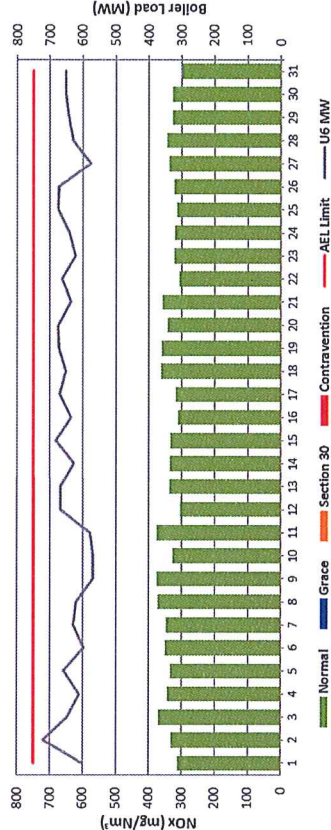


Figure 18: Medupi Unit 6 NOx Emissions - July 2024



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF JULY 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	22.8	2 613.6	433.4
Unit 2	38.2	4 346.0	556.7
Unit 3	30.7	2 777.3	448.9
Unit 4	Off	Off	Off
Unit 5	19.5	5 656.4	756.2
Unit 6	38.5	5 568.6	799.5
SUM (Tons)	149.7	20 962.0	2 994.7

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF JULY 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	25.0	2 615.5	443.7
Unit 2	24.4	2 555.2	327.4
Unit 3	21.2	1 762.4	290.9
Unit 4	Off	Off	Off
Unit 5	9.9	2 655.0	356.7
Unit 6	16.3	2 335.0	336.9

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	100.0	99.3	99.1	96.4
Unit 2	100.0	99.1	99.1	98.4
Unit 3	100.0	56.5	94.5	95.3
Unit 4	Off	Off	Off	Off
Unit 5	100.0	52.6	52.0	96.9
Unit 6	100.0	99.7	89.5	99.7

Notes: Unity Factor of 1 used for accurate reporting for Unit 3 gases.

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 July 2024 was e-mailed to the Licensing Authority.

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 JULY 2024

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Wednesday, 31 July 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:	July	
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:	2310	tons/month
Molecular weight of the fuel oil:	166.00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	17.66	°C
Daily maximum ambient temperature	25.87	°C
Daily minimum ambient temperature	10.47	°C
Daily ambient temperature range	15.40	°C
Daily total insolation factor	3.47	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:	0.07 kg/month	
TOTAL LOSSES (Total TVOC Emissions for the month):	0.76 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 July 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF JULY 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: **Thabo Khoza**
Snr Advisor Environmental Management


Date: 29/08/2024

Verified by: **Malose Langa**
System Engineer Boiler


Date: 2024/08/29

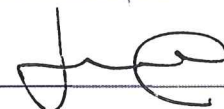
Verified by: **Shu Mpangase**
System Engineer C&I


Date: 2024/08/29

Supported by: **Mokgadi Dikgale**
Environmental Manager

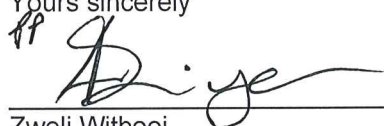

Date: 2024/08/29

Supported by: **Jabulani Mkhathswa**
Engineering Group Manager


Date: 2024/08/29

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: 29/08/2024

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