

	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		

Stanley Koenaitse

Waterberg District Municipality

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Date: 2024/09/30

Enquiries: MF Dikgale

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Email: DikgalMF@eskom.co.za

Ref: H16/1/13-AEL/M1/R1 – August 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF AUGUST 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 August 2024 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – August 2024
	Coal	Tons/month	1 875 000	825 363
	Fuel Oil	Tons/month	20 000	1508
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of August 2024
	Energy	GWh	3 571.2	1 729.966
	Ash Emitted	Tons/month	not specified	153.8

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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-Aug	24.0	24.0	24.0	0.0	24.0	24.0	32630	685	700	477	OFF	675	668
02-Aug	24.0	24.0	24.0	0.0	24.0	24.0	36505	745	755	495	OFF	685	703
03-Aug	24.0	24.0	24.0	0.0	24.0	24.0	31925	733	740	495	OFF	669	684
04-Aug	24.0	24.0	24.0	0.0	24.0	24.0	31370	638	644	495	OFF	601	616
05-Aug	24.0	24.0	24.0	0.0	24.0	24.0	32957	670	672	495	OFF	642	657
06-Aug	24.0	24.0	24.0	0.0	24.0	24.0	30408	748	744	487	OFF	695	565
07-Aug	24.0	24.0	24.0	0.0	24.0	24.0	32393	738	725	725	OFF	665	560
08-Aug	24.0	24.0	24.0	0.0	23.1	24.0	33247	689	718	495	OFF	637	560
09-Aug	24.0	24.0	24.0	0.0	0.0	24.0	30160	709	694	495	OFF	OFF	560
10-Aug	24.0	24.0	24.0	0.0	0.0	24.0	25315	609	572	495	OFF	OFF	596
11-Aug	24.0	24.0	24.0	0.0	0.0	24.0	27016	679	630	495	OFF	OFF	656
12-Aug	24.0	11.9	24.0	0.0	0.0	24.0	27004	693	767	495	OFF	OFF	696
13-Aug	24.0	0.0	24.0	0.0	0.0	24.0	26007	667	OFF	495	OFF	OFF	600
14-Aug	24.0	0.0	24.0	0.0	0.0	24.0	23738	615	OFF	484	OFF	OFF	515
15-Aug	24.0	0.0	24.0	0.0	0.0	24.0	27217	716	OFF	488	OFF	OFF	602
16-Aug	24.0	0.0	24.0	0.0	0.0	24.0	33120	652	OFF	495	OFF	OFF	593
17-Aug	24.0	0.0	24.0	0.0	0.0	7.7	33466	625	OFF	495	OFF	OFF	483
18-Aug	24.0	0.0	24.0	0.0	0.0	7.0	31351	618	411	486	OFF	OFF	550
19-Aug	24.0	9.6	24.0	0.0	0.0	8.1	25387	665	581	495	OFF	OFF	532
20-Aug	24.0	24.0	24.0	0.0	0.0	0.0	25177	642	565	495	OFF	OFF	416
21-Aug	24.0	24.0	24.0	0.0	0.0	8.1	24584	628	614	559	OFF	OFF	593
22-Aug	24.0	24.0	24.0	0.0	0.0	24.0	29102	658	660	488	OFF	OFF	664
23-Aug	24.0	24.0	23.7	0.0	0.0	24.0	29989	698	691	540	OFF	486	680
24-Aug	24.0	24.0	0.0	0.0	11.7	24.0	30318	618	610	OFF	OFF	606	639
25-Aug	24.0	24.0	0.0	0.0	24.0	24.0	31068	662	653	OFF	OFF	667	648
26-Aug	24.0	24.0	0.0	0.0	24.0	24.0	33304	698	695	OFF	OFF	675	624
27-Aug	24.0	24.0	0.0	0.0	24.0	24.0	32066	632	638	OFF	OFF	588	600
28-Aug	24.0	24.0	0.0	0.0	24.0	24.0	30335	669	644	OFF	OFF	666	563
29-Aug	24.0	24.0	0.0	0.0	15.1	24.0	34433	692	600	OFF	OFF	620	580
30-Aug	24.0	24.0	0.0	0.0	0.3	24.0	33046	744	726	OFF	OFF	618	524
31-Aug	24.0	24.0	0.0	0.0	24.0	24.0	33333	712	705	OFF	OFF	730	565

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 AUGUST 2024

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.951%	100%
Unit 2	Fabric Filter Plant (FFP)	99.941%	100%
Unit 3	Fabric Filter Plant (FFP)	99.938%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	99.981%	100%
Unit 6	Fabric Filter Plant (FFP)	99.905%	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 AUGUST 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	1.34
Ash Content	35 - 39	34.64

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	2.2
Ash Content	0.02 - 0.1	0.060

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 - August 2024

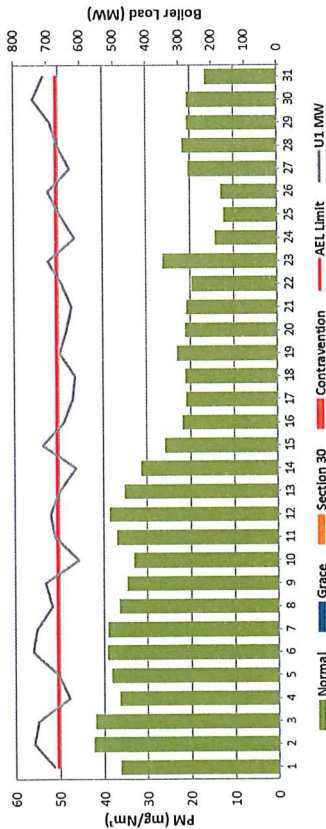


Figure 2: Medupi Unit 2 PM Emissions - August 2024

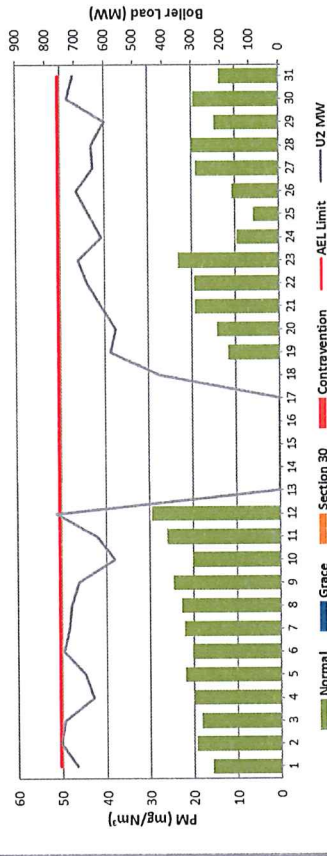


Figure 3: Medupi Unit 3 PM Emissions - August 2024

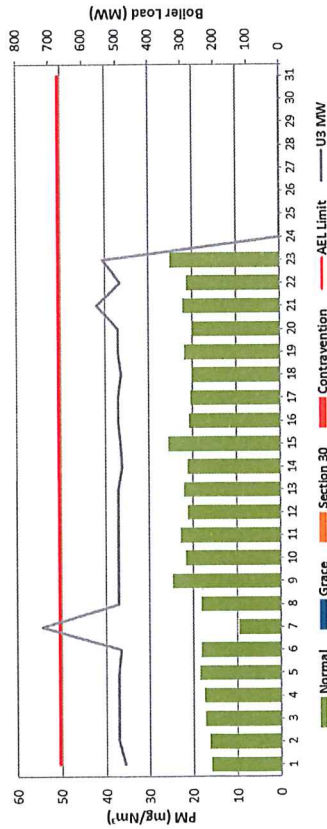
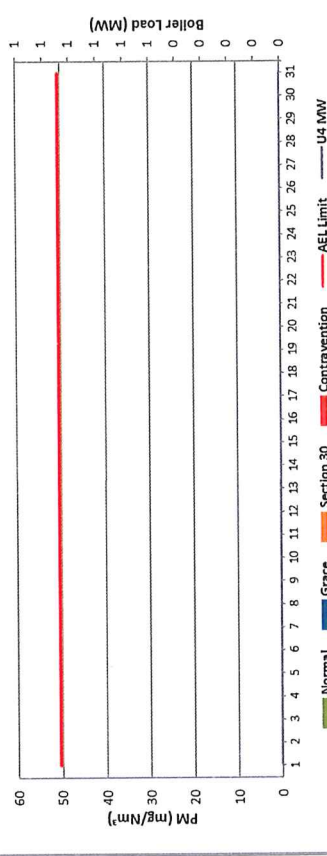


Figure 4: Medupi Unit 4 PM Emissions - August 2024



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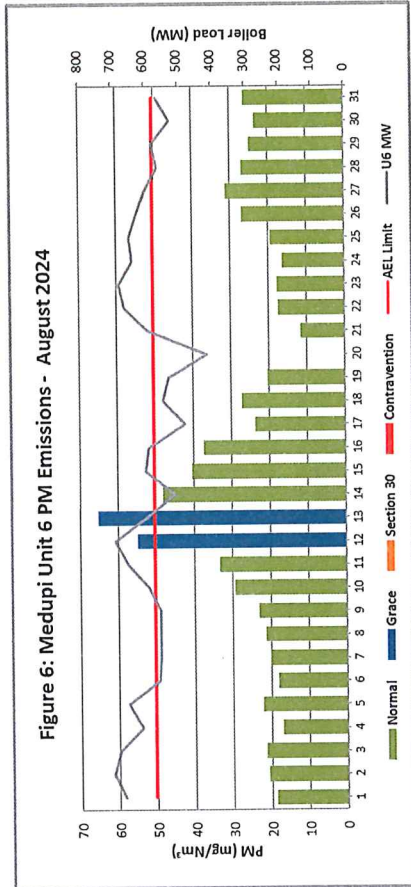
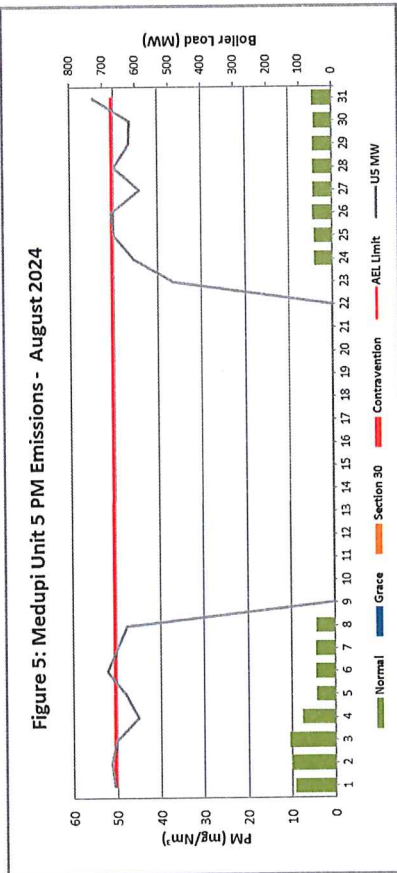
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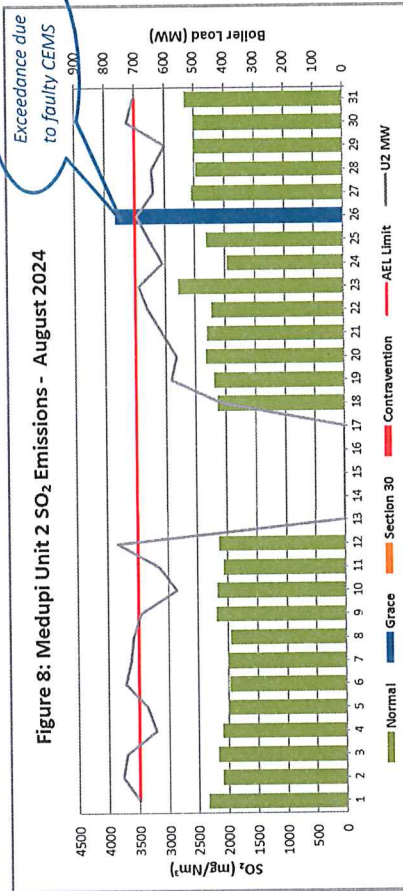
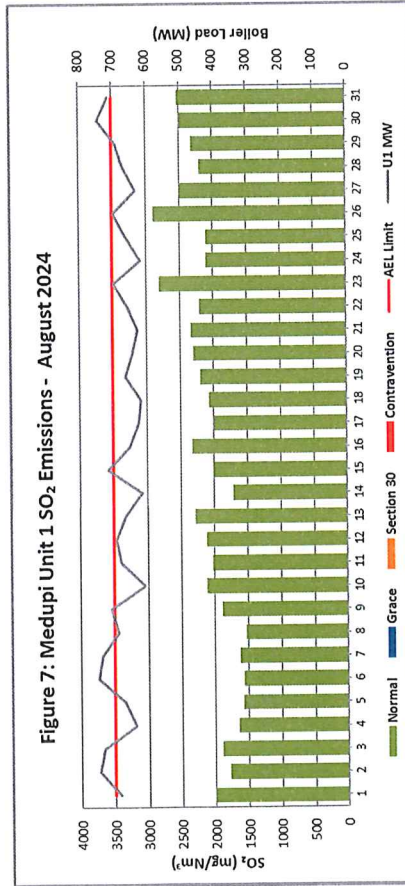


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4.2 SOx Daily Averages



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Figure 9: Medupi Unit 3 SO₂ Emissions - August 2024

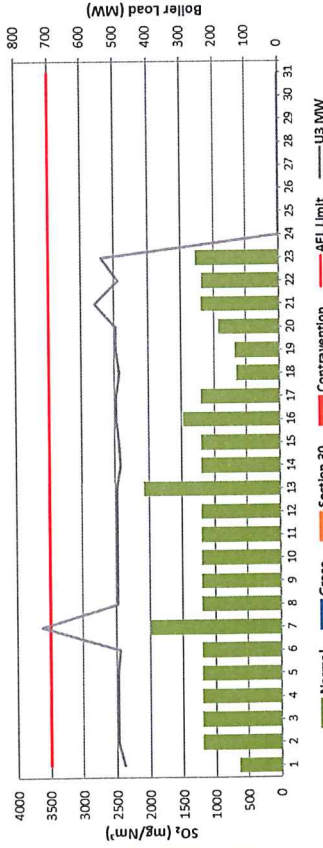


Figure 10: Medupi Unit 4 SO₂ Emissions - August 2024

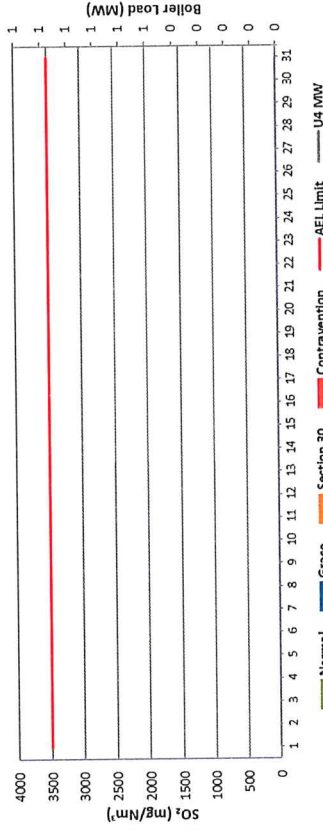


Figure 11: Medupi Unit 5 SO₂ Emissions - August 2024

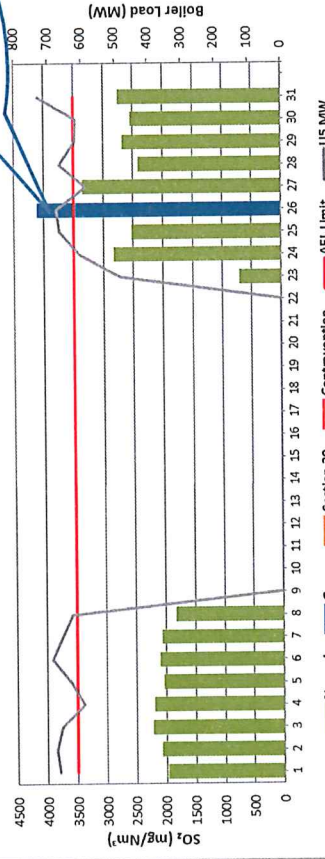
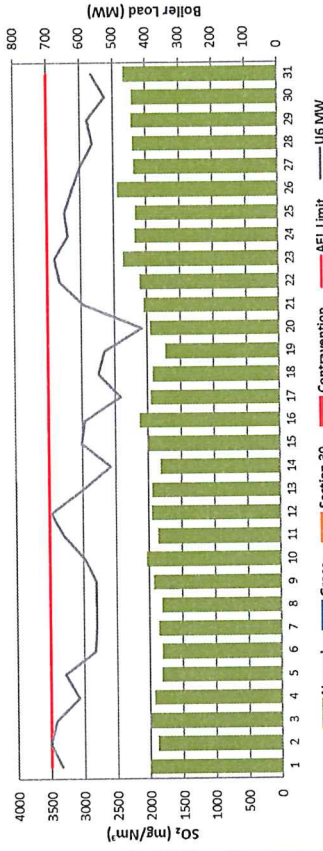


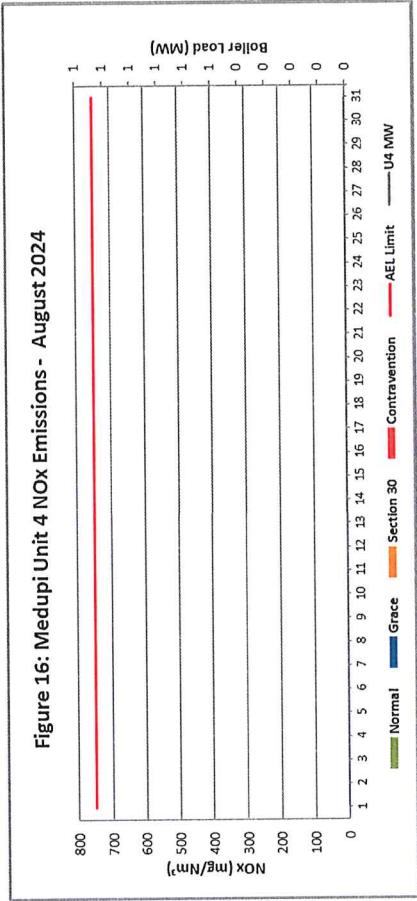
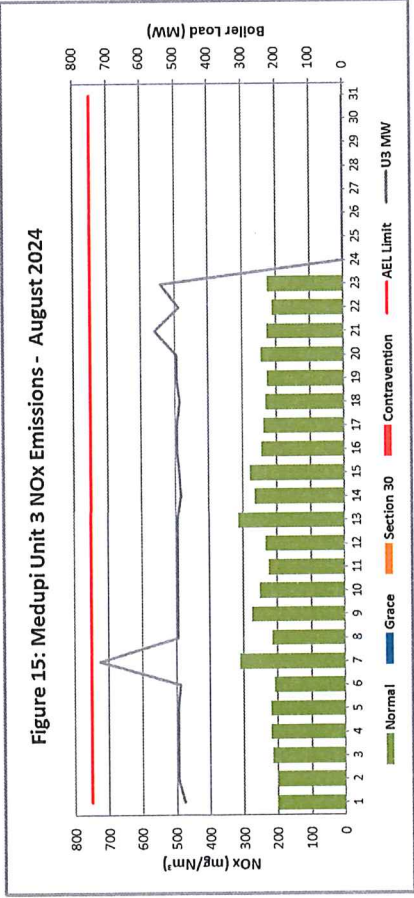
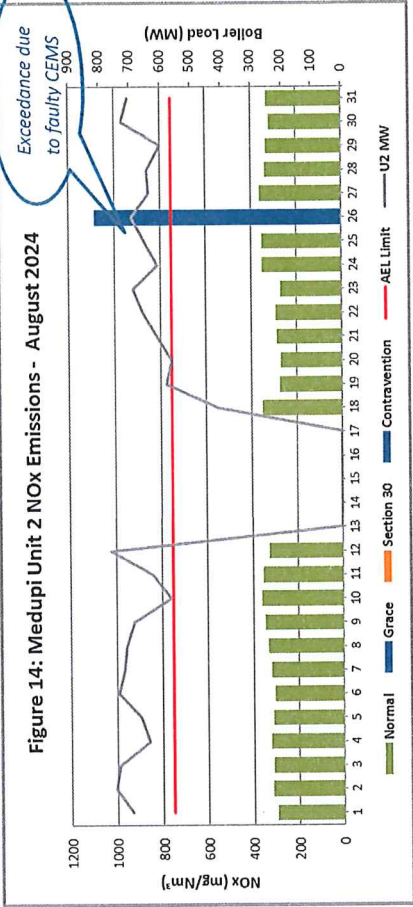
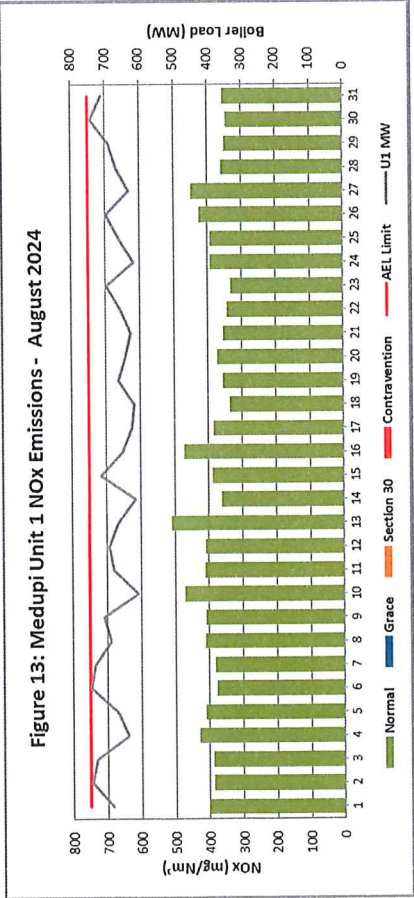
Figure 12: Medupi Unit 6 SO₂ Emissions - August 2024



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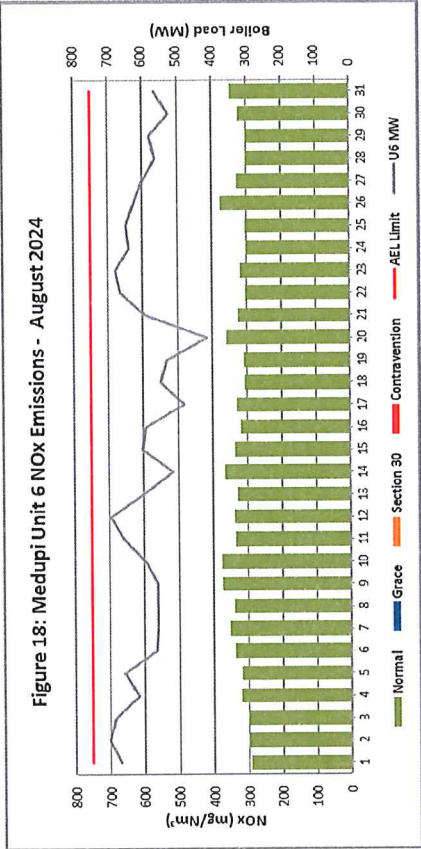
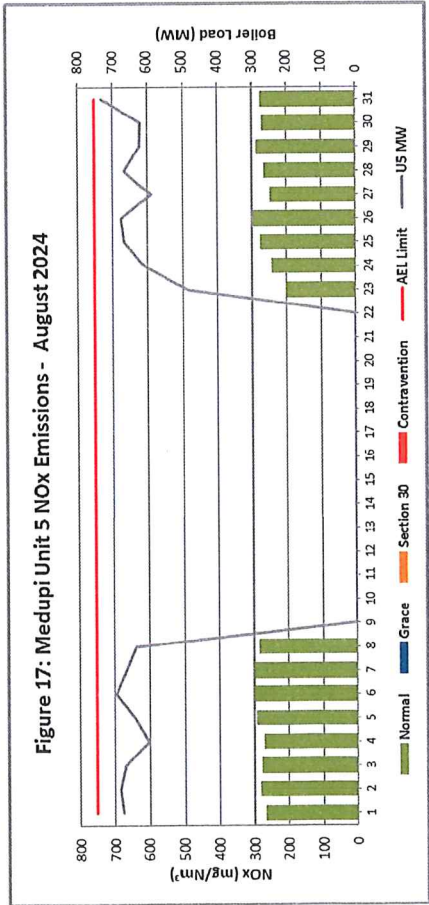
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4.3 NOx Daily Averages



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF AUGUST 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	35.0	2 738.1	504.2
Unit 2	33.7	4 342.6	665.1
Unit 3	24.1	1 483.2	290.3
Unit 4	Off	Off	Off
Unit 5	6.2	2 960.7	336.9
Unit 6	54.8	4 335.3	695.8
SUM (Tons)	153.8	15 859.9	2 492.4

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF AUGUST 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	27.7	2 102.4	393.1
Unit 2	18.5	2 306.8	351.8
Unit 3	20.1	1 207.8	238.7
Unit 4	Off	Off	Off
Unit 5	5.6	2 378.6	274.1
Unit 6	27.0	2 026.7	328.5

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	86.8	84.9	85.8
Unit 2	99.8	89.7	85.9	88.5
Unit 3	100.0	21.4	91.5	94.0
Unit 4	Off	Off	Off	Off
Unit 5	100.0	72.7	73.2	100.0
Unit 6	100.0	98.9	98.9	98.8

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 Aug 2024 was e-mailed to the Licensing Authority on 25 September 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 AUGUST 2024

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Saturday, 31 August 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:	August	
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:	1508	tons/month
Molecular weight of the fuel oil:		Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	23.67	°C
Daily maximum ambient temperature	30.21	°C
Daily minimum ambient temperature	17.89	°C
Daily ambient temperature range	12.31	°C
Daily total insolation factor	5.08	kWh/m²/day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0.66	kg/month
Working losses:	0.02	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.71	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 August 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF AUGUST 2024

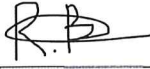
Name/ Source Code	Air pollution complaints received	Calculation of Impacts/ emissions associated with the incident	Date of complaint and date of response by the license holder	Results of investigation	Action taken to resolve the complaint
N/A	N/A	N/A	N/A	N/A	N/A

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Compiled by: **Ramokone Makgoka**
Officer Environmental Management

 Date: 25/09/2024

Reviewed by: **Thabo Khoza**
Snr Advisor Environmental Management

 Date: 25/09/2024

Verified by: **Malose Langa**
System Engineer Boiler
 M.P. LANGA
 Date: 2024/09/25

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

 Date: 2024/09/26

Supported by: **Mokgadi Dikgale**
Environmental Manager

 Date: 27/09/2024

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

 Date: 30/09/2024

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: 30/09/2024

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