

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

Stanley Koenaitse

Waterberg District Municipality
Private Bag X1018
Modimole
0510

skoenaite@waterberg.gov.za

Date: 2024/05/31

Enquiries: MF Dikgale

Tel: 014 762 6820

Email: DikgalMF@eskom.co.za

Ref: H16/1/13-AEL/M1/R1 – April 2024

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF APRIL 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 April 2024 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – April2024
	Coal	Tons/month	1 875 000	773404
	Fuel Oil	Tons/month	20 000	909
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of April2024
	Energy	GWh	3 571.2	1623.55
	Ash Emitted	Tons/month	not specified	220.77

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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-Apr	24.0	24.0	24.0	0.0	0.0	24.0	26322	631	589	625	Off	Off	547
02-Apr	24.0	24.0	24.0	0.0	0.0	5.7	26759	676	584	669	Off	Off	601
03-Apr	24.0	24.0	6.3	0.0	0.0	5.6	28609	738	550	625	Off	Off	755
04-Apr	24.0	24.0	13.2	0.0	0.0	24.0	28254	704	598	613	Off	Off	703
05-Apr	24.0	24.0	24.0	0.0	0.0	24.0	29061	682	638	680	Off	Off	665
06-Apr	24.0	24.0	24.0	0.0	0.0	24.0	24679	541	572	594	Off	Off	547
07-Apr	24.0	24.0	24.0	0.0	0.0	24.0	25407	554	574	610	Off	Off	618
08-Apr	24.0	24.0	24.0	0.0	0.0	24.0	31055	735	694	692	Off	Off	755
09-Apr	24.0	24.0	24.0	0.0	0.0	24.0	31220	745	701	704	Off	Off	791
10-Apr	24.0	24.0	24.0	0.0	0.0	13.5	26002	634	619	614	Off	Off	654
11-Apr	24.0	24.0	24.0	0.0	0.0	7.8	24669	591	555	588	Off	Off	588
12-Apr	24.0	24.0	24.0	0.0	0.0	24.0	27592	653	609	638	Off	Off	589
13-Apr	24.0	24.0	24.0	0.0	0.0	24.0	27764	588	687	697	Off	Off	627
14-Apr	24.0	24.0	24.0	0.0	0.0	24.0	25463	735	694	692	Off	Off	585
15-Apr	24.0	24.0	24.0	0.0	0.0	24.0	28071	713	657	666	Off	Off	598
16-Apr	24.0	24.0	24.0	0.0	0.0	24.0	29706	748	657	653	Off	Off	746
17-Apr	24.0	24.0	24.0	0.0	0.0	24.0	30357	747	672	662	Off	Off	774
18-Apr	24.0	24.0	24.0	0.0	0.0	14.0	24787	585	646	565	Off	Off	554
19-Apr	24.0	24.0	24.0	0.0	0.0	5.0	28457	734	606	600	Off	Off	681
20-Apr	24.0	24.0	24.0	0.0	0.0	24.0	26677	691	575	537	Off	Off	657
21-Apr	24.0	24.0	24.0	0.0	0.0	24.0	24511	642	533	464	Off	Off	657
22-Apr	24.0	24.0	24.0	0.0	0.0	24.0	24678	606	508	497	Off	Off	632
23-Apr	24.0	24.0	24.0	0.0	0.0	24.0	25494	564	480	592	Off	Off	710
24-Apr	24.0	24.0	24.0	0.0	0.0	24.0	25204	571	462	598	Off	Off	694
25-Apr	20.3	24.0	24.0	0.0	0.0	24.0	25121	567	461	577	Off	Off	690
26-Apr	0.0	24.0	24.0	0.0	0.0	24.0	24719	575	454	621	Off	Off	782
27-Apr	0.0	24.0	24.0	0.0	0.0	9.3	18621	542	450	558	Off	Off	547
28-Apr	20.8	24.0	8.8	0.0	0.0	0.0	16127	571	454	547	Off	Off	
29-Apr	24.0	24.0	9.8	0.0	0.0	0.0	19597	645	497	594	Off	Off	
30-Apr	24.0	24.0	24.0	0.0	0.0	0.0	18421	637	525	532	Off	Off	

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 APRIL 2024

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.961%	100%
Unit 2	Fabric Filter Plant (FFP)	99.863%	100%
Unit 3	Fabric Filter Plant (FFP)	99.899%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	Off
Unit 5	Fabric Filter Plant (FFP)	Off	Off
Unit 6	Fabric Filter Plant (FFP)	99.916%	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 APRIL 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	1.24
Ash Content	35 - 39	35.27

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF APRIL2024

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.1
Ash Content	0.02 - 0.1	0.010

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 - April 2024

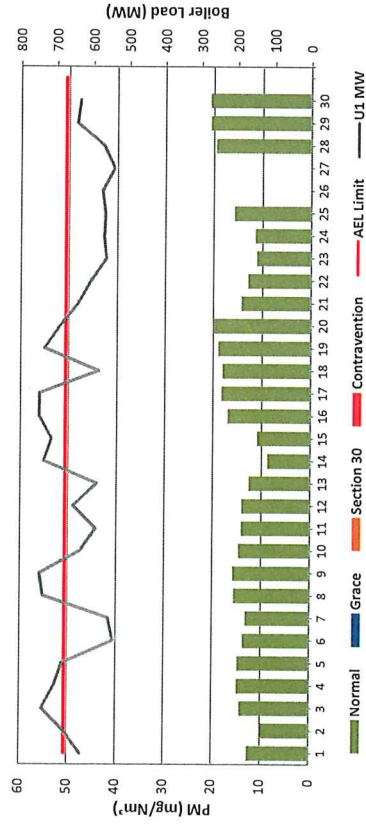


Figure 2: Medupi Unit 2 PM Emissions - April 2024

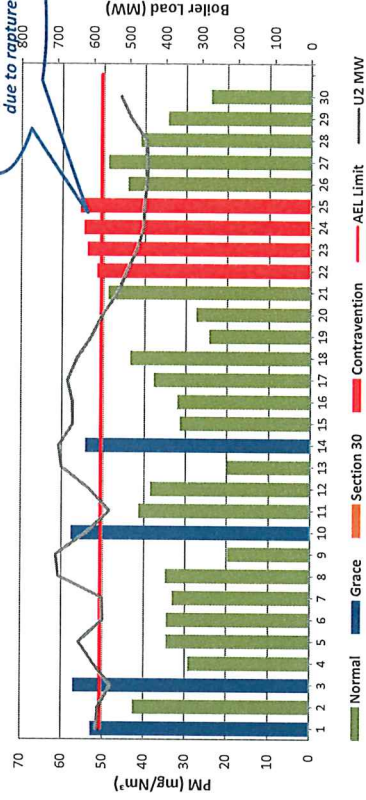


Figure 3: Medupi Unit 3 PM Emissions - April 2024

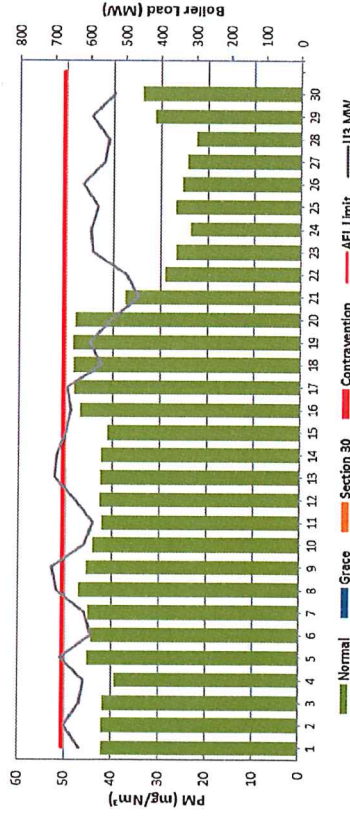
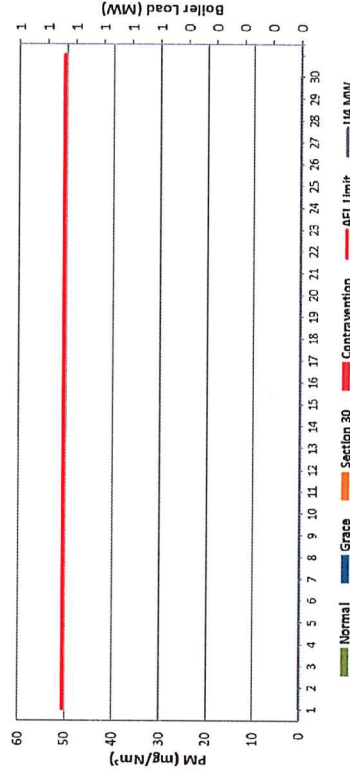
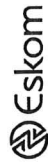


Figure 4: Medupi Unit 4 PM Emissions - April 2024



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Figure 5: Medupi Unit 5 PM Emissions - April 2024

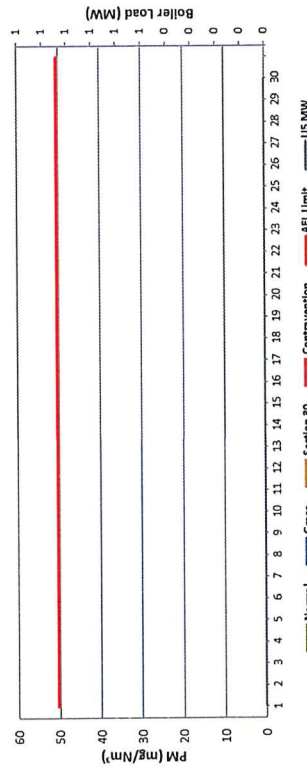
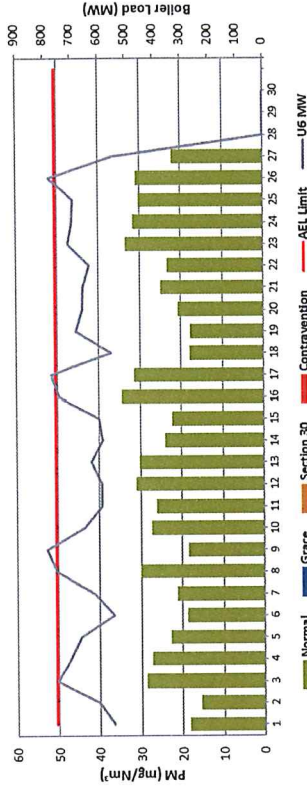


Figure 6: Medupi Unit 6 PM Emissions - April 2024



4.2 SOx Daily Averages

Figure 7: Medupi Unit 1 SO₂ Emissions - April 2024

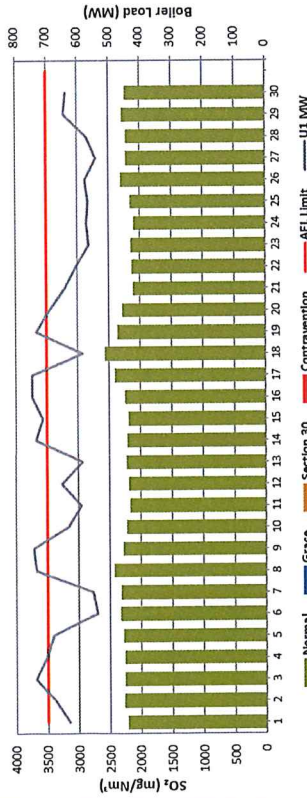
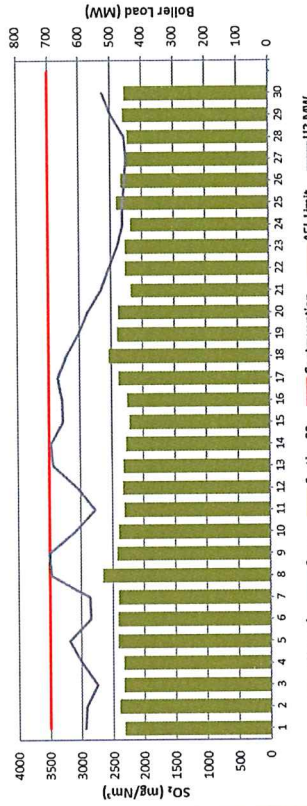


Figure 8: Medupi Unit 2 SO₂ Emissions - April 2024



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Figure 9: Medupi Unit 3 SO₂ Emissions - April 2024

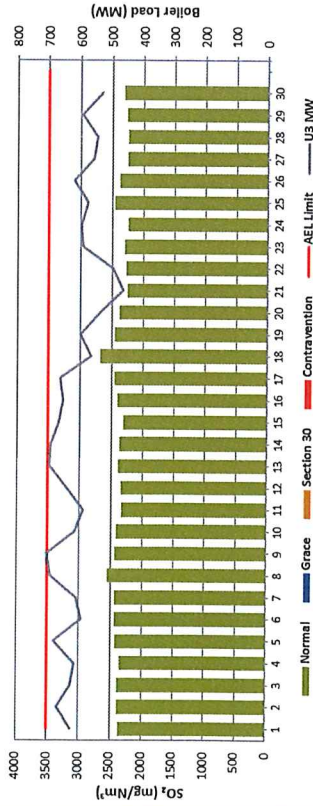


Figure 11: Medupi Unit 5 SO₂ Emissions - April 2024

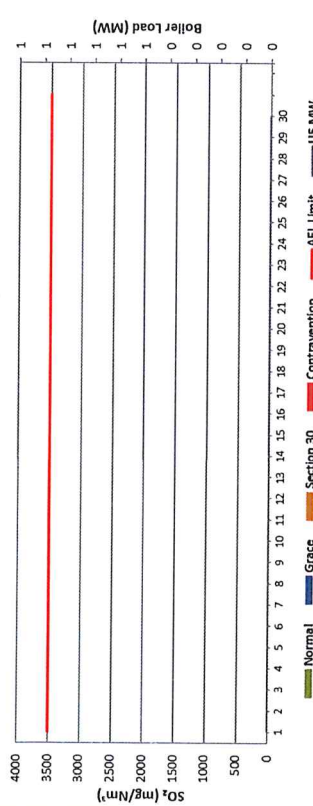


Figure 10: Medupi Unit 4 SO₂ Emissions - April 2024

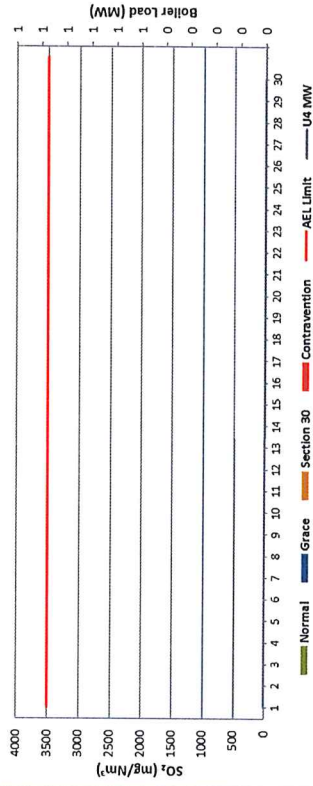
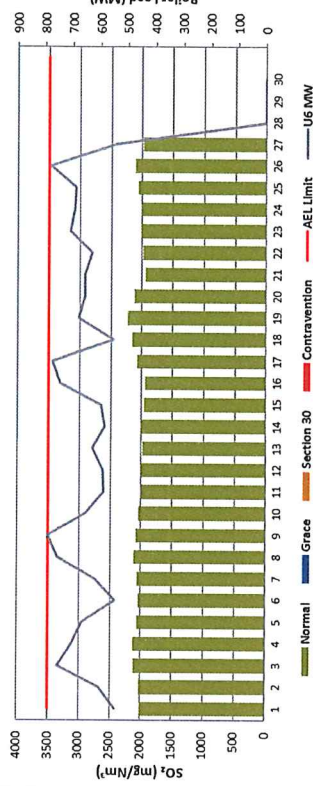


Figure 12: Medupi Unit 6 SO₂ Emissions - April 2024

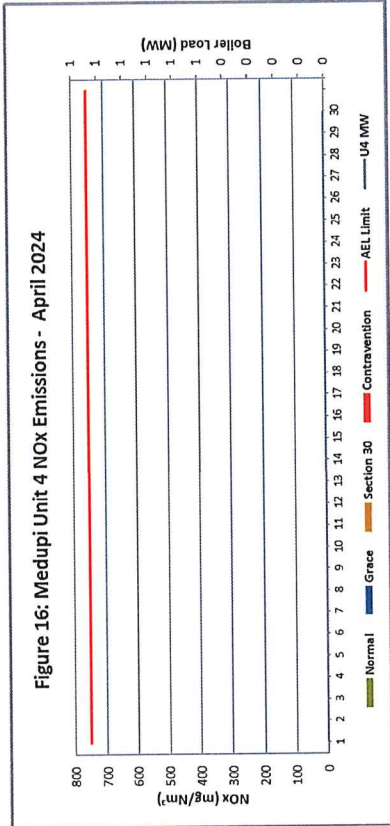
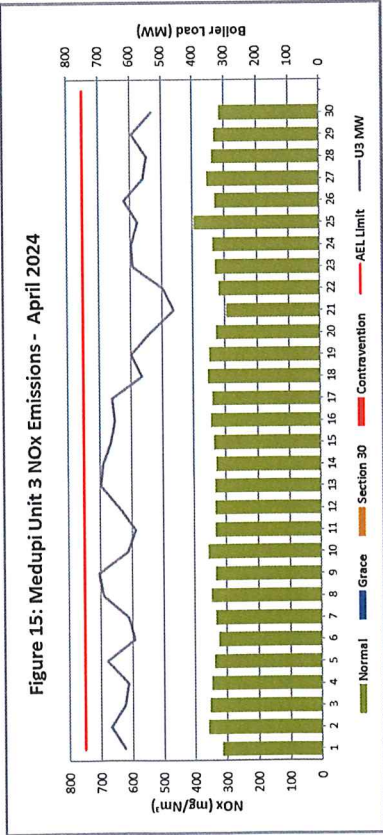
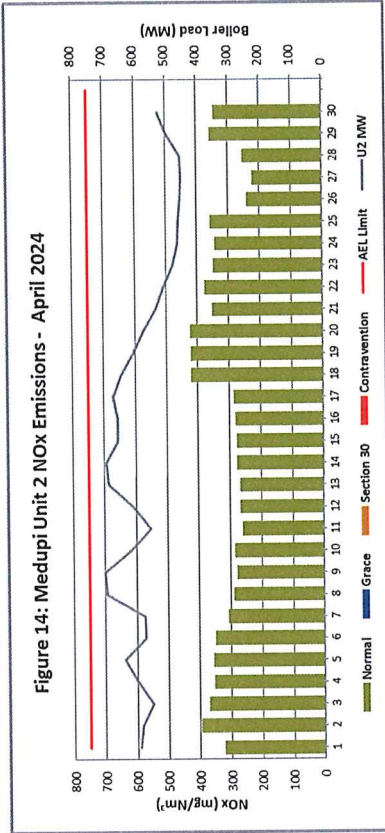
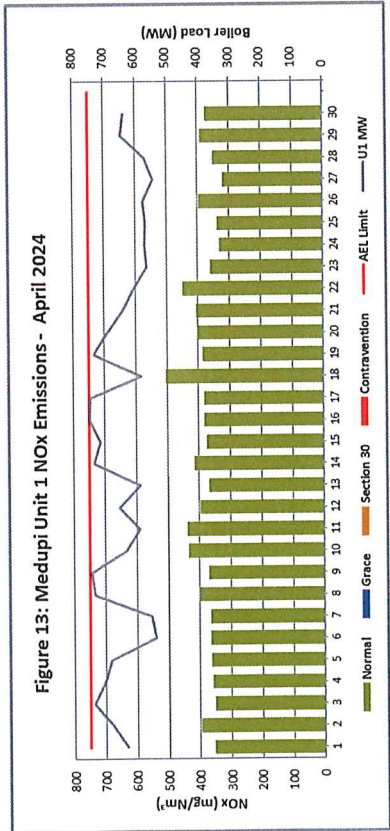


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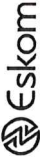
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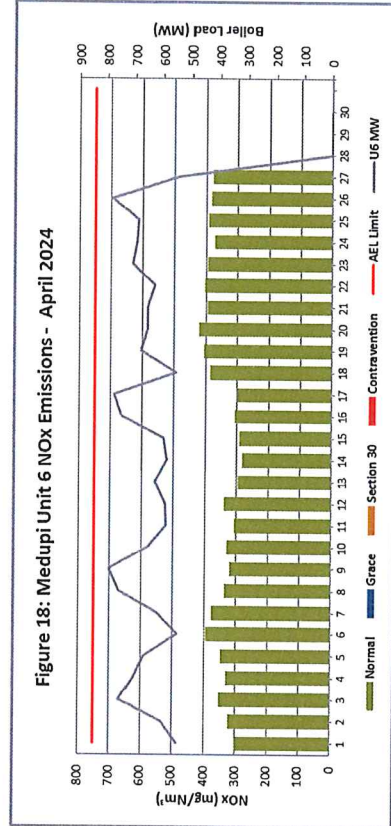
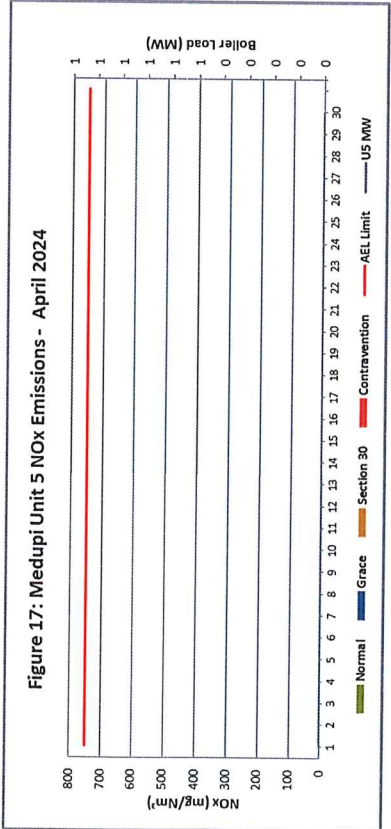
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4.3 NOx Daily Averages



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TABLE 5: MONTHLY TONNAGES FOR THE MONTH OF APRIL 2024

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	25.6	4 101.3	698.7
Unit 2	83.4	4 946.4	680.9
Unit 3	63.9	4 107.9	584.9
Unit 4	Off	Off	Off
Unit 5	Off	Off	Off
Unit 6	47.9	4 238.9	726.8
SUM (Tons)	220.8	17 394.5	2 691.3

TABLE 6: MONTHLY AVERAGES FOR THE MONTH OF APRIL 2024

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	14.9	2 257.7	384.8
Unit 2	40.1	2 341.6	323.4
Unit 3	39.0	2 377.2	338.6
Unit 4	Off	Off	Off
Unit 5	Off	Off	Off
Unit 6	25.3	2 046.1	351.4

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
N/A	N/A	N/A

TABLE 8: CEMS MONITOR RELIABILITY PERCENTAGE (%)

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Associated Unit/Stack	PM	SO ₂	NO ₂	O ₂
Unit 1	100.0	99.7	99.9	99.9
Unit 2	99.9	99.6	99.6	99.6
Unit 3	99.9	99.6	99.6	99.6
Unit 4	Off	Off	Off	Off
Unit 5	Off	Off	Off	Off
Unit 6	99.8	99.8	96.6	99.4

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 April 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 APRIL 2024

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Tuesday, 30 April 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:	April	
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:	909	tons/month
Molecular weight of the fuel oil:		Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH	Data	Unit
Daily average ambient temperature	20.60	°C
Daily maximum ambient temperature	27.37	°C
Daily minimum ambient temperature	13.11	°C
Daily ambient temperature range	10.46	°C
Daily total insolation factor	3.84	kWh/m²/day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:	Result	Unit
Breathing losses:	0.61	kg/month
Working losses:	0.02	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.64	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.I@nyc.rr.com		

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

No awareness campaign conducted for April 2024

10. Complaints Register

TABLE 10: COMPLAINTS FOR THE MONTH OF APRIL 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: 22/05/2024

Reviewed by: Thabo Khoza
Snr Advisor Environmental Management

 Date: 22/05/2024

Verified by: Malose Langa
System Engineer Boiler

 Date: 22/05/2024

Verified by: Shu Mpangase
System Engineer C&I

 Date: 22/05/2024

Supported by: Mokgadi Dikgale
Environmental Manager

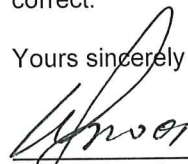
 Date: 30/05/2024

Supported by: Jabulani Mkhathshwa
Engineering Group Manager

 Date: 2024/05/30

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: 2024/05/30

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