

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

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Date: 2022/04/30

Enquiries: MF Dikgale

Tel: 014 762 6820

Ref: H16/1/13-AEL/M1/R1 – April 2022

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF APRIL 2022

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 is a reflection of Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of April 2022 only.

1. Raw Materials and Products

TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN APRIL 2022

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – April 2022
	Coal	Tons/month	1 875 000	951 769
	Fuel Oil	Tons/month	20 000	1 124
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of April 2022
	Energy	GWh	3 571.2	2 060.74
	Ash Emitted	Tons	not specified	305.78

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TABLE 2: DAILY CONSUMPTION AND PRODUCTION RATES

Date	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	0.6		16.5	24.0	30751	792	792	361		686	580
02-Apr	24.0	24.0	0.0		24.0	24.0	27780	794	721	Off		567	550
03-Apr	24.0	24.0	0.0		24.0	24.0	28304	794	775	288		496	490
04-Apr	24.0	24.0	4.5		24.0	24.0	31603	764	707	512		450	519
05-Apr	24.0	24.0	24.0		24.0	24.0	34442	769	739	695		556	549
06-Apr	24.0	24.0	24.0		24.0	24.0	35785	696	744	717		603	580
07-Apr	23.8	24.0	24.0		24.0	24.0	35708	717	768	775		495	589
08-Apr	0.0	24.0	24.0		24.0	24.0	26716	Off	704	708		512	577
09-Apr	0.0	24.0	24.0		24.0	24.0	27062	Off	723	721		524	587
10-Apr	0.0	24.0	24.0		24.0	24.0	26319	302	745	682		529	581
11-Apr	3.7	24.0	24.0		18.3	24.0	32455	618	764	752		476	624
12-Apr	24.0	21.1	24.0		0.7	24.0	33523	760	689	760		537	649
13-Apr	24.0	0.0	24.0		24.0	24.0	27415	793	Off	769		547	590
14-Apr	24.0	0.0	24.0		24.0	24.0	27259	734	Off	763		597	618
15-Apr	24.0	0.0	24.0		24.0	24.0	26713	719	Off	708		592	581
16-Apr	24.0	0.0	24.0		24.0	24.0	25801	701	Off	673		605	575
17-Apr	24.0	0.0	24.0		24.0	24.0	26693	751	Off	772		594	573
18-Apr	24.0	0.0	24.0		24.0	24.0	29171	753	370	760		694	580
19-Apr	24.0	9.8	17.2		24.0	24.0	36608	727	778	721		723	636
20-Apr	24.0	24.0	6.8		24.0	24.0	38283	753	779	776		709	671
21-Apr	24.0	24.0	24.0		24.0	0.0	37045	709	784	790		650	628
22-Apr	24.0	24.0	17.8		24.0	0.0	36779	736	756	722		672	613
23-Apr	24.0	24.0	6.0		24.0	0.0	37129	763	794	793		648	587
24-Apr	24.0	24.0	1.3		24.0	21.0	33066	760	711	537		633	583
25-Apr	24.0	24.0	17.7		24.0	24.0	35632	725	767	764		643	613
26-Apr	24.0	24.0	24.0		24.0	24.0	35792	736	770	749		602	592
27-Apr	24.0	24.0	24.0		24.0	24.0	35535	744	776	747		683	604
28-Apr	24.0	24.0	24.0		24.0	24.0	34745	747	755	747		664	604
29-Apr	24.0	24.0	24.0		0.9	24.0	29612	753	741	767		462	610
30-Apr	24.0	24.0	24.0		0.0	24.0	28043	725	715	712		Off	592

NB: reportable hours less than 24 highlighted in pink

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2. Abatement Technology

Table 3: Abatement Equipment Control Technology efficiency for month of April 2022

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.940%	100%
Unit 2	Fabric Filter Plant (FFP)	99.916%	100%
Unit 3	Fabric Filter Plant (FFP)	99.919%	100%
Unit 4	Fabric Filter Plant (FFP)		
Unit 5	Fabric Filter Plant (FFP)	99.847%	100%
Unit 6	Fabric Filter Plant (FFP)	99.838%	100%

Note: FFP does not have bypass mode operation, hence plant 100% Utilised.

3. Energy Source Characteristics

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF APRIL 2022

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	1.32
Ash Content	35 - 39	34.1

TABLE 5: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF APRIL 2022

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	1.90
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

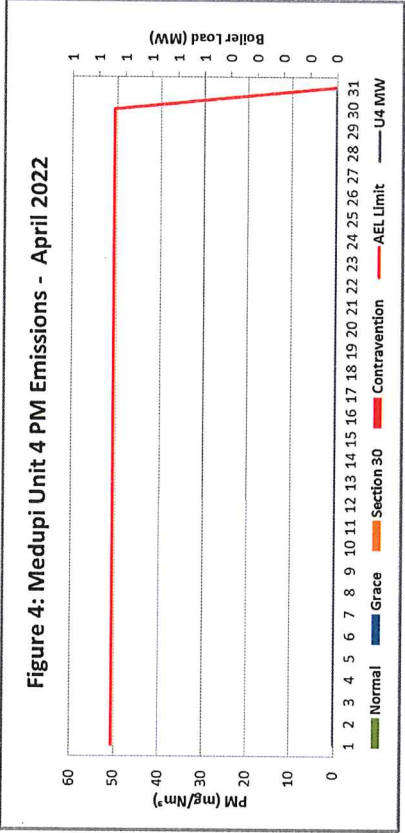
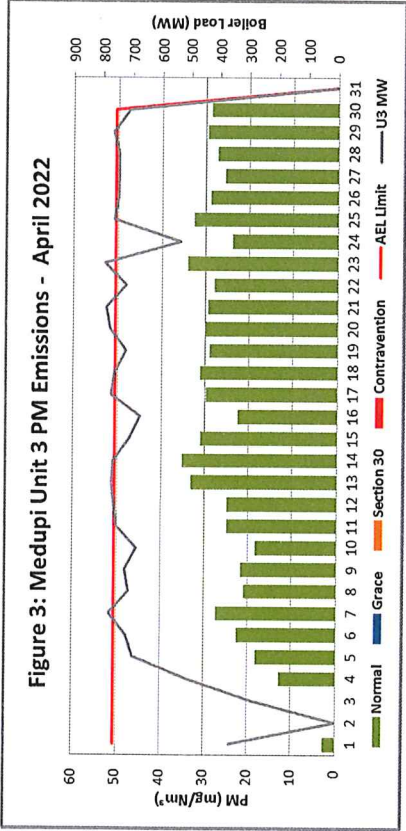
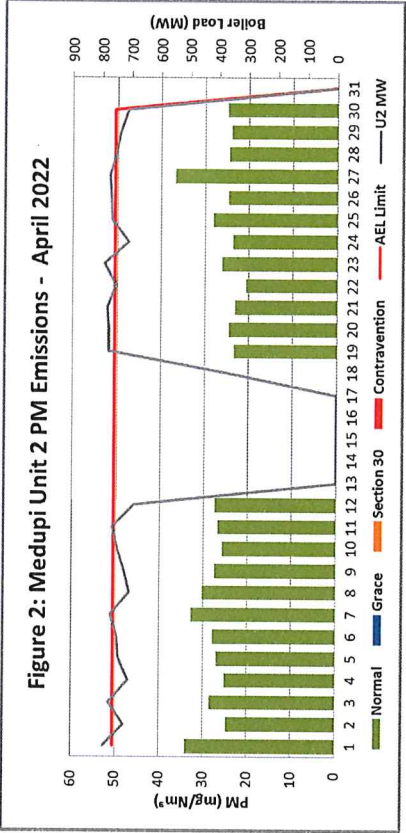
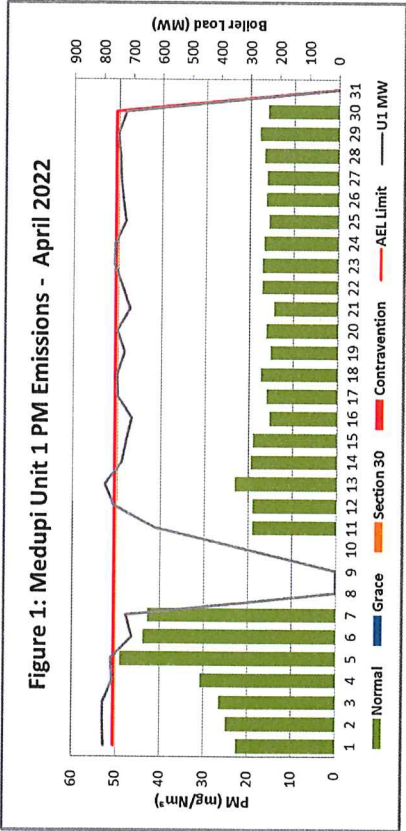
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4.1 PM Daily Averages

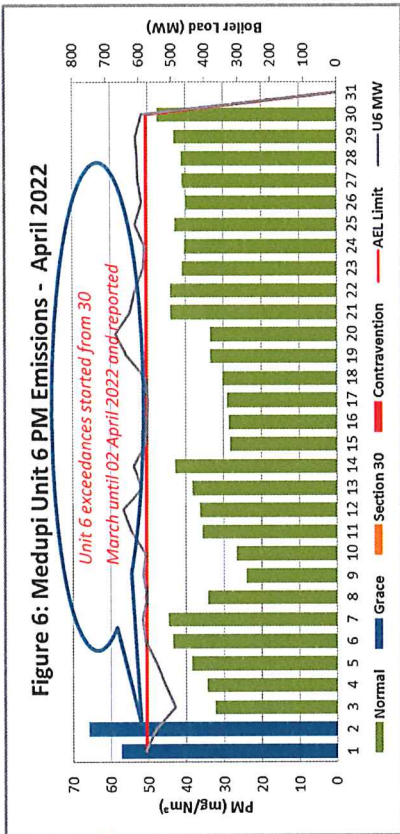
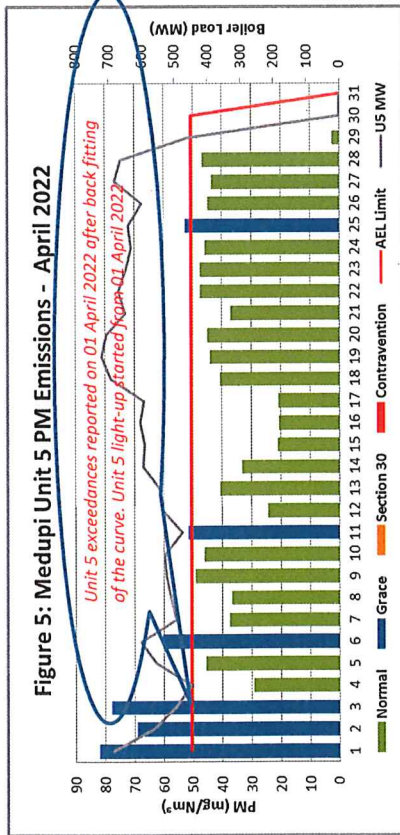


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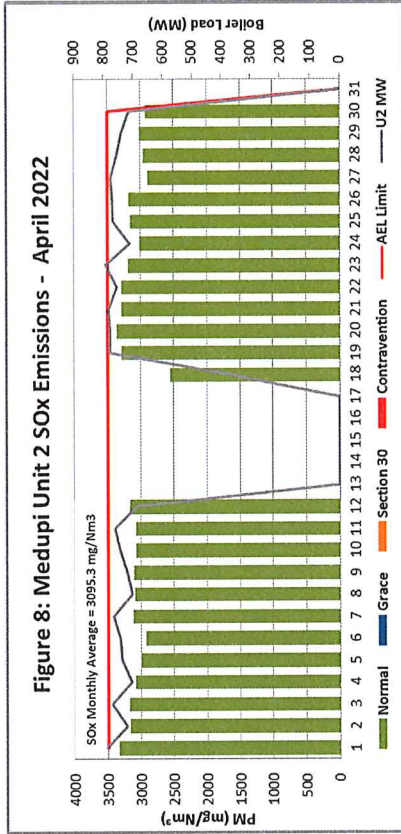
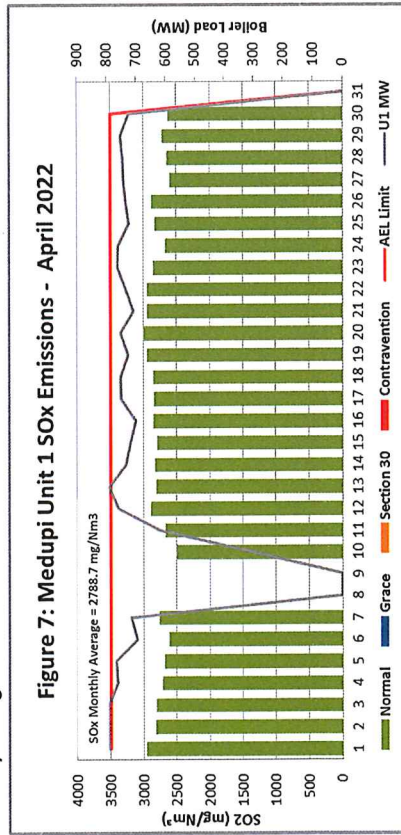


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4.2 SOx Daily Averages



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Figure 9: Medupi Unit 3 SOx Emissions - April 2022

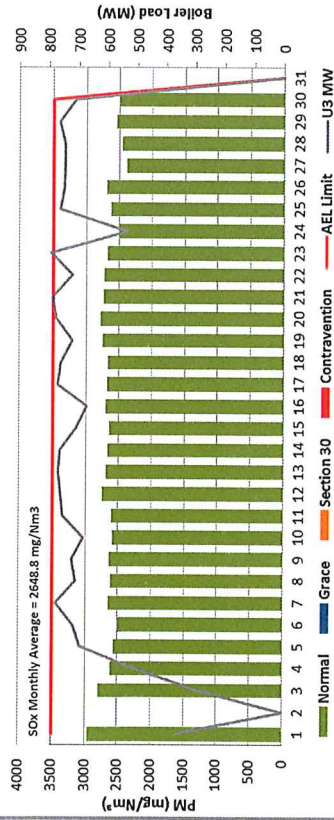


Figure 10: Medupi Unit 4 SOx Emissions - April 2022

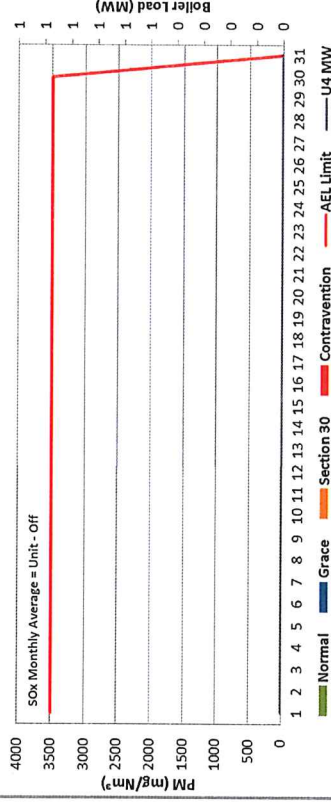


Figure 11: Medupi Unit 5 SOx Emissions - April 2022

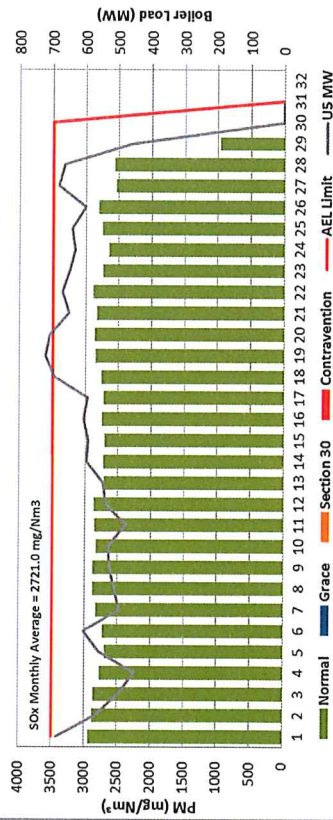
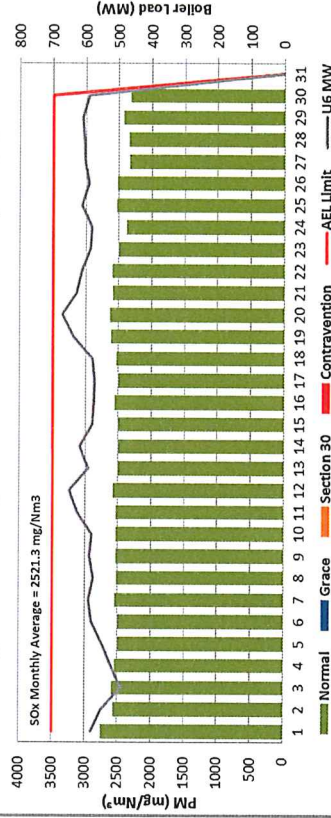


Figure 12: Medupi Unit 6 SOx Emissions - April 2022



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4.3 NOx Daily Averages

Figure 13: Medupi Unit 1 NOx Emissions - April 2022

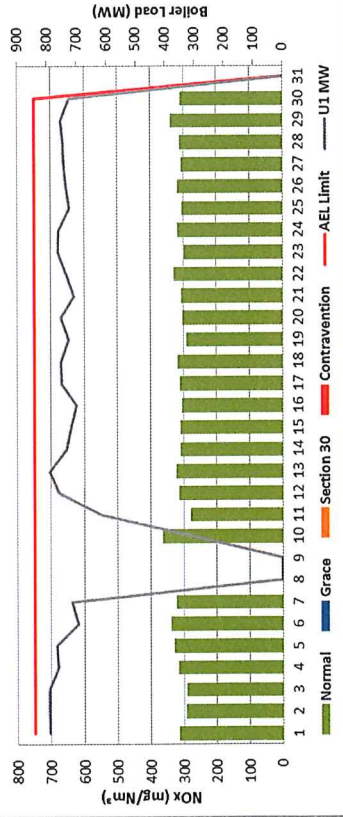


Figure 14: Medupi Unit 2 NOx Emissions - April 2022

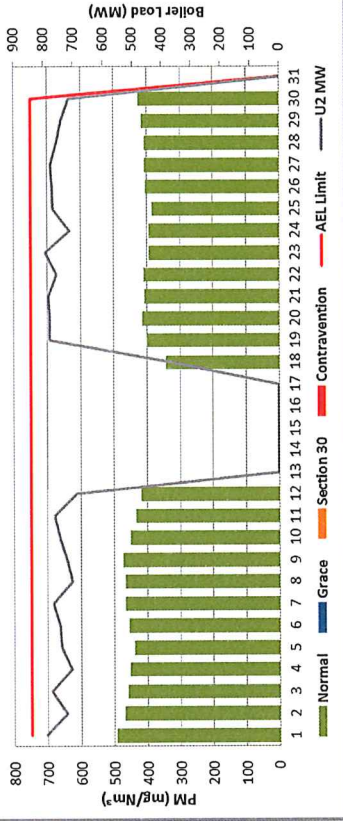


Figure 15: Medupi Unit 3 NOx Emissions - April 2022

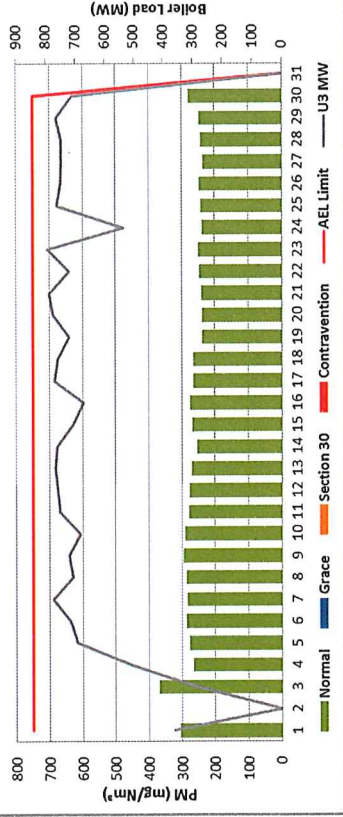
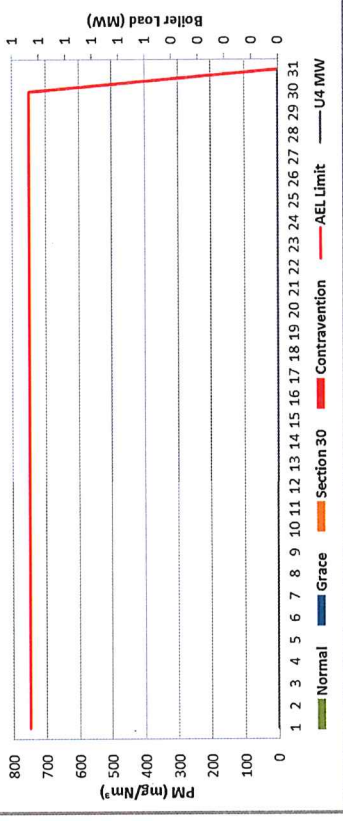


Figure 16: Medupi Unit 4 NOx Emissions - April 2022



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Figure 17: Medupi Unit 5 NOx Emissions - April 2022

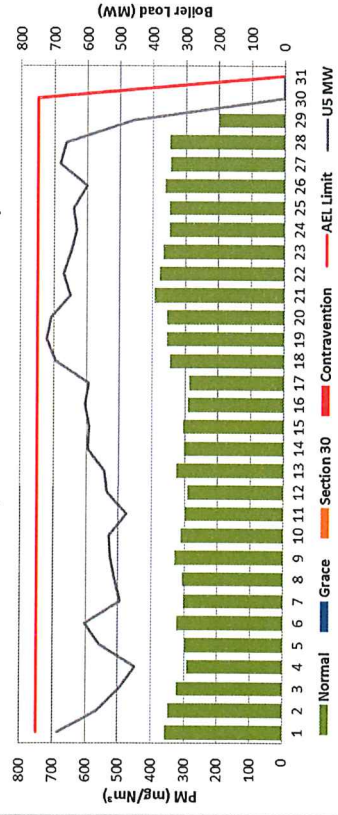
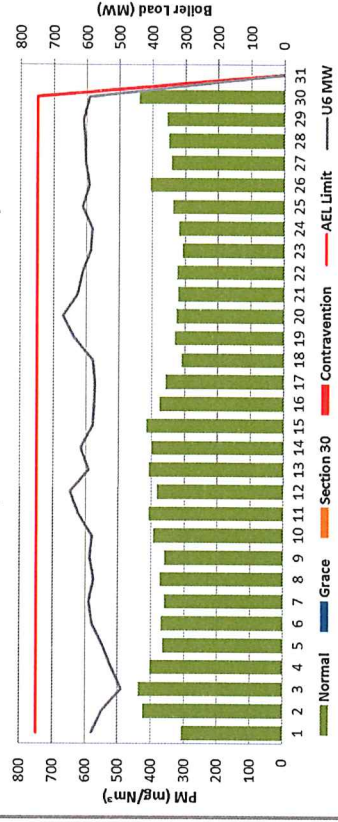


Figure 18: Medupi Unit 6 NOx Emissions - April 2022



Medupi Power Station graphical representation of the daily average emissions

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TABLE 7: MONTHLY TONNAGES FOR THE MONTH OF APRIL 2022

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	39.3	5 168.8	576.4
Unit 2	49.0	5 861.1	813.9
Unit 3	50.4	5 674.1	566.5
Unit 4			
Unit 5	76.6	5 003.5	599.7
Unit 6	90.5	5 879.3	854.5
SUM	305.8	27 586.8	3 411.1

5. Continuous Emission Monitoring Systems (CEMS)

Unit 1, 2, 3, 5 and 6 Continuous Emission Monitoring Systems were in operation at all times when the unit was on load.

TABLE 6: PERIODS DURING WHICH CEMS WAS INOPERATIVE

Date	Time	CEMS status	Comments
N/A	N/A	N/A	N/A

TABLE 7: CEMS MONITOR RELIABILITY

Associated Unit/Stack	PM	SO ₂	NO	O ₂
Unit 1	100.0	100.0	100.0	90.6
Unit 2	100.0	100.0	100.0	100.0
Unit 3	100.0	100.0	100.0	80.3
Unit 4				
Unit 5	100.0	93.1	93.1	2.5
Unit 6	100.0	100.0	100.0	99.9

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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.

7. Ambient Air Quality Monitoring Report

The Ambient Air Quality Monitoring and Dust fall-out report are emailed to the Licensing authority on a monthly basis.

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 8: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR APRIL 2022

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	30 April 2022	
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:	1124	tons/month
Molecular weight of the fuel oil:	166.00	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/m ² /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:	0.03 kg/month	
TOTAL LOSSES (Total TVOC Emissions for the month):	0.65 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, Trittech 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.

10. Complaints Register

TABLE 9: COMPLAINTS FOR THE MONTH OF APRIL 2022

Source Code/ Name	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	No complaints received	N/A	N/A	N/A	N/A

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Compiled by:

Thabo Khoza 
Senior Environmental Advisor

Verified by:

Malose Langa 
System Engineer Boiler

Supported by:

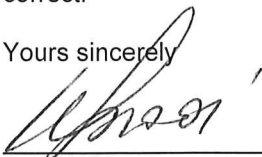
Mokgadi Dikgale 
Environmental Manager

Supported by:

Jabulani Mkhathshwa 
Engineering Group Manager

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

Yours sincerely


Zweli Witbooi

GENERAL MANAGER: MEDUPI POWER STATION (Acting)

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