

	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		

Stanley Koenaitse

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Date: 2022/06/30

Enquiries: MF Dikgale

Tel: 014 762 6820

Ref: H16/1/13-AEL/M1/R1 – June 2022

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JUNE 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 June 2022 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – June 2022
	Coal	Tons/month	1 875 000	1 005 408
	Fuel Oil	Tons/month	20 000	2 176
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of June 2022
	Energy	GWh	3 571.2	2 123
	Ash Emitted	Tons/month	not specified	358.3

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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-June	24.0	24.0	24.0		24.0	24.0	34630	740	734	742		635	530
02-June	24.0	24.0	24.0		24.0	24.0	34962	750	707	721		634	499
03-June	24.0	24.0	24.0		24.0	24.0	35902	757	757	763		652	556
04-June	24.0	24.0	24.0		24.0	24.0	32849	677	665	697		622	560
05-June	24.0	24.0	24.0		24.0	24.0	31544	616	655	598		569	609
06-June	24.0	24.0	24.0		24.0	24.0	33315	642	628	667		641	609
07-June	24.0	24.0	24.0		24.0	24.0	34726	705	690	705		691	593
08-June	24.0	24.0	24.0		24.0	24.0	33305	657	650	632		654	591
09-June	24.0	24.0	24.0		24.0	24.0	34302	683	658	673		679	604
10-June	24.0	24.0	24.0		24.0	24.0	36460	708	704	732		724	599
11-June	24.0	24.0	24.0		24.0	0.8	29533	687	675	716		665	400
12-June	24.0	24.0	24.0		24.0	0.0	25715	612	607	612		624	OFF
13-June	24.0	24.0	15.8		24.0	0.0	26092	704	725	536		691	OFF
14-June	24.0	24.0	24.0		24.0	0.0	29545	685	697	718		706	OFF
15-June	24.0	24.0	24.0		24.0	17.7	33372	710	719	694		708	434
16-June	24.0	24.0	24.0		24.0	24.0	33304	625	667	603		694	580
17-June	24.0	11.9	24.0		24.0	24.0	31265	676	544	683		693	667
18-June	24.0	11.8	24.0		24.0	24.0	30983	676	583	644		675	650
19-June	24.0	24.0	24.0		24.0	24.0	35768	692	662	677		686	647
20-June	24.0	24.0	24.0		24.0	24.0	35938	727	720	713		689	540
21-June	24.0	24.0	24.0		24.0	24.0	38182	769	717	754		690	631
22-June	24.0	24.0	24.0		24.0	24.0	36792	759	726	739		689	651
23-June	24.0	24.0	24.0		24.0	24.0	36885	752	710	754		688	637
24-June	24.0	24.0	24.0		24.0	24.0	37763	762	712	776		629	648
25-June	24.0	24.0	24.0		24.0	24.0	38143	782	749	785		622	642
26-June	24.0	23.7	24.0		24.0	24.0	36613	758	695	776		608	636
27-June	24.0	24.0	24.0		23.8	19.1	34097	691	733	720		594	654
28-June	21.5	24.0	24.0		0.0	0.0	23333	704	751	758		OFF	OFF
29-June	24.0	24.0	24.0		0.0	0.0	24799	794	759	763		OFF	OFF
30-June	24.0	24.0	24.0		0.0	0.0	24556	742	743	751		OFF	OFF

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 June 2022

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.915%	100%
Unit 2	Fabric Filter Plant (FFP)	99.903%	100%
Unit 3	Fabric Filter Plant (FFP)	99.901%	100%
Unit 4	Fabric Filter Plant (FFP)		
Unit 5	Fabric Filter Plant (FFP)	99.886%	100%
Unit 6	Fabric Filter Plant (FFP)	99.912%	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 JUNE 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	1.3
Ash Content	35 - 39	33.4

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.1
Ash Content	0.02 - 0.1	0.028

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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PM Daily Averages

Figure 1: Medupi Unit 1 PM Emissions - June 2022

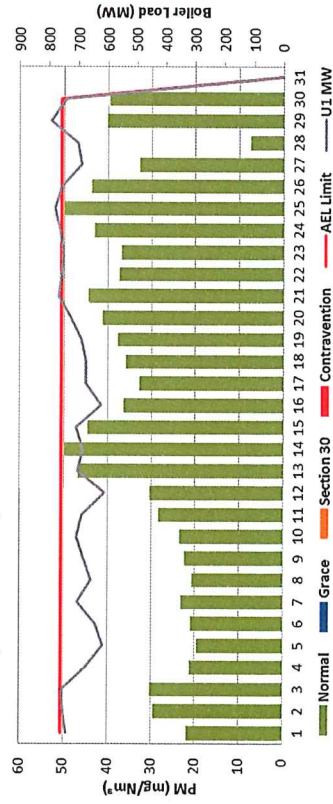


Figure 2: Medupi Unit 2 PM Emissions - June 2022

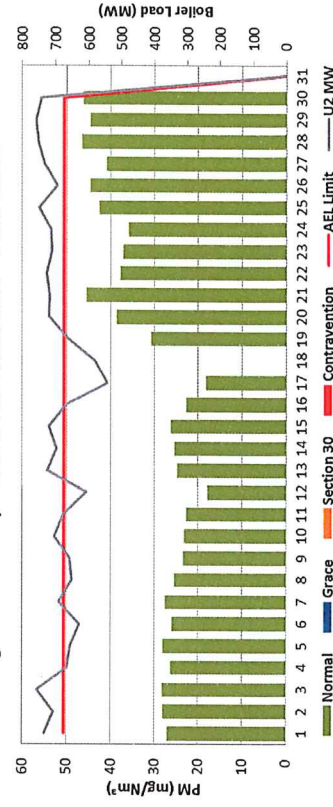


Figure 3: Medupi Unit 3 PM Emissions - June 2022

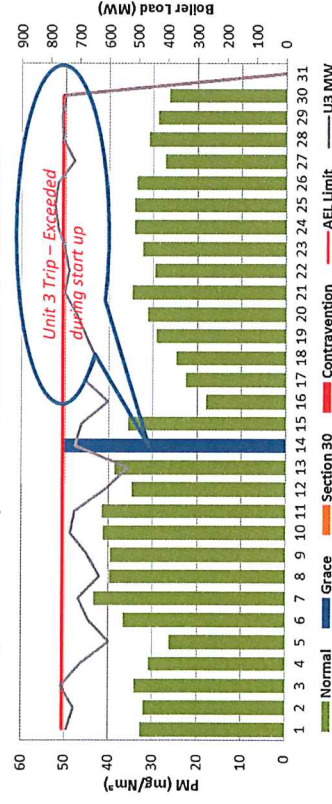
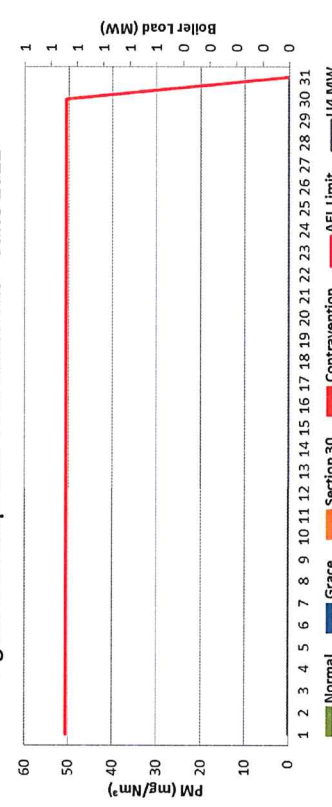


Figure 4: Medupi Unit 4 PM Emissions - June 2022



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Figure 5: Medupi Unit 5 PM Emissions - June 2022

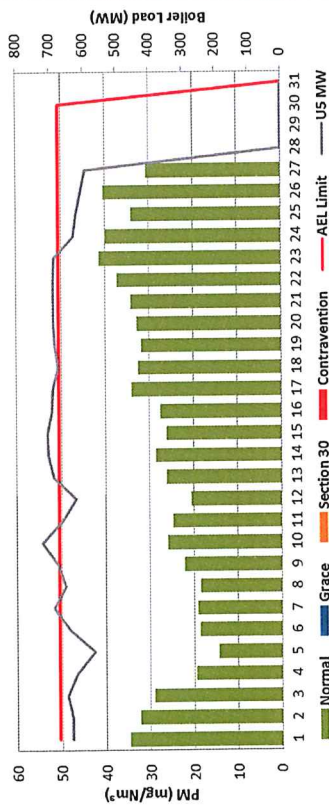


Figure 6: Medupi Unit 6 PM Emissions - June 2022

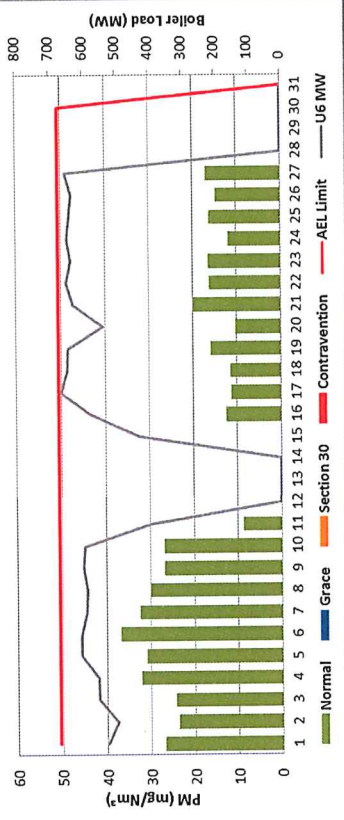


Figure 7: Medupi Unit 1 SOx Emissions - June 2022

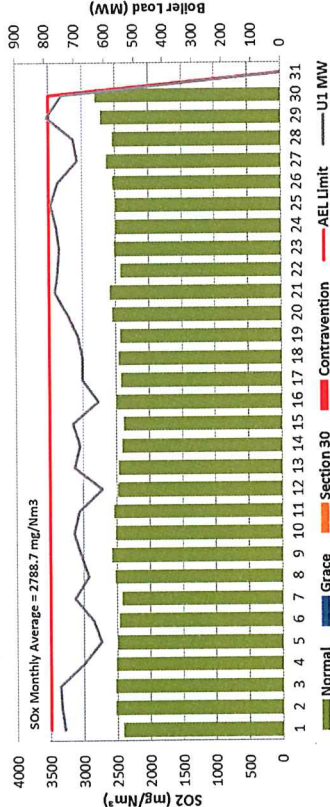
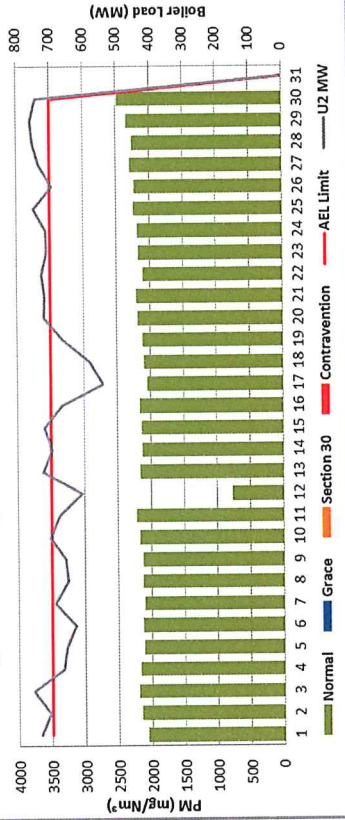


Figure 8: Medupi Unit 2 SOx Emissions - June 2022



SOx Daily Averages

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Figure 9: Medupi Unit 3 SOx Emissions - June 2022

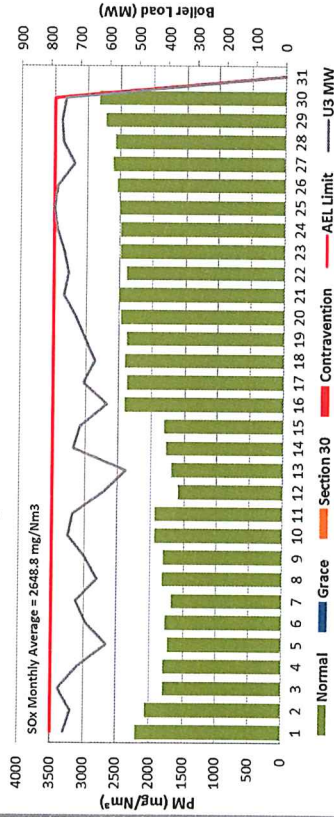


Figure 10: Medupi Unit 4 SOx Emissions - June 2022

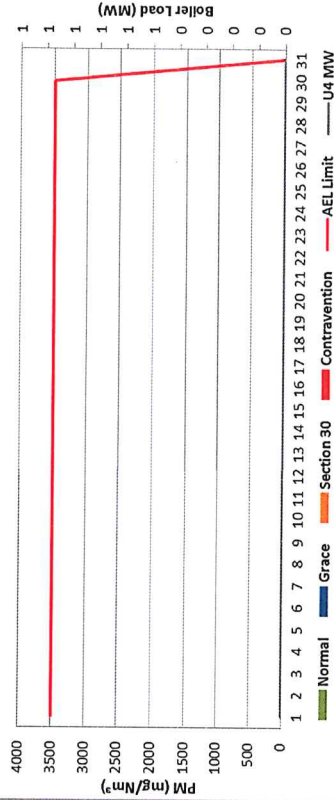


Figure 11: Medupi Unit 5 SOx Emissions - June 2022

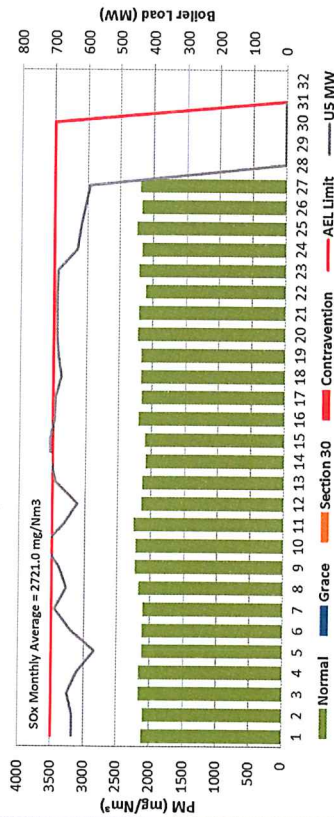
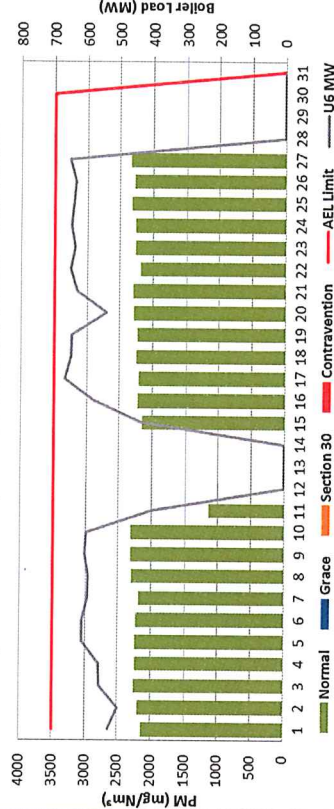


Figure 12: Medupi Unit 6 SOx Emissions - June 2022



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4.2 NOx Daily Averages

Figure 13: Medupi Unit 1 NOx Emissions - June 2022

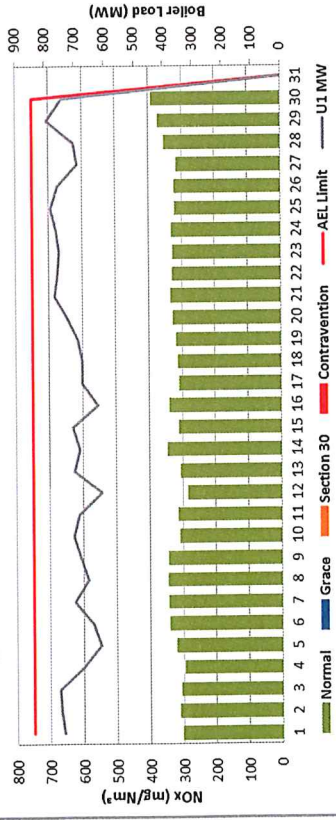


Figure 14: Medupi Unit 2 NOx Emissions - June 2022

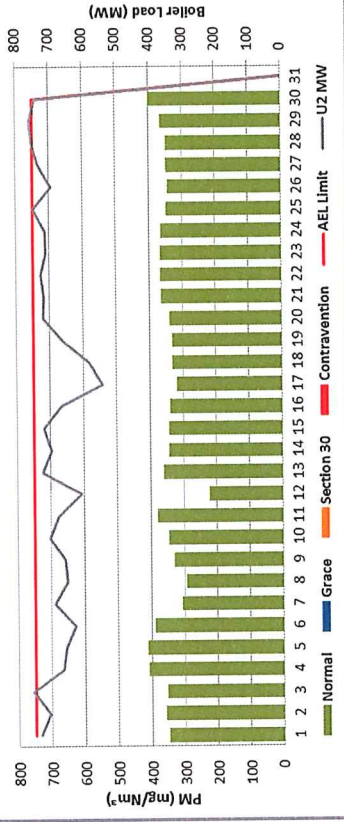


Figure 15: Medupi Unit 3 NOx Emissions - June 2022

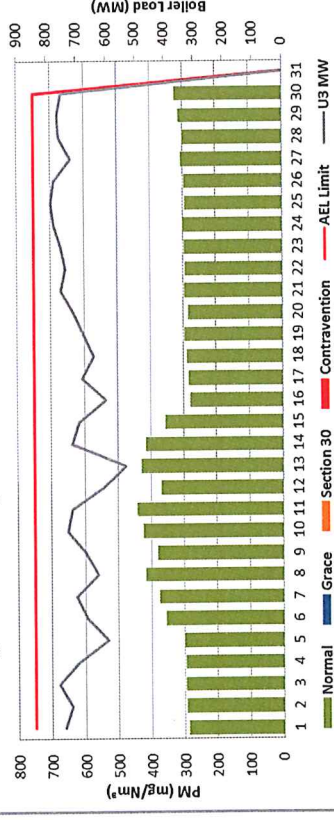
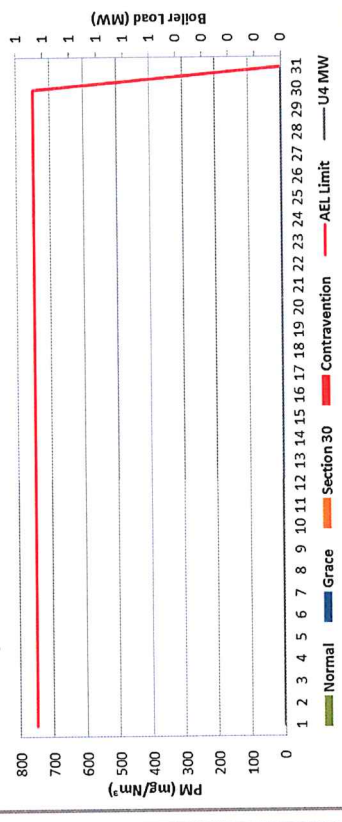


Figure 16: Medupi Unit 4 NOx Emissions - June 2022



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Figure 17: Medupi Unit 5 NOx Emissions - June 2022

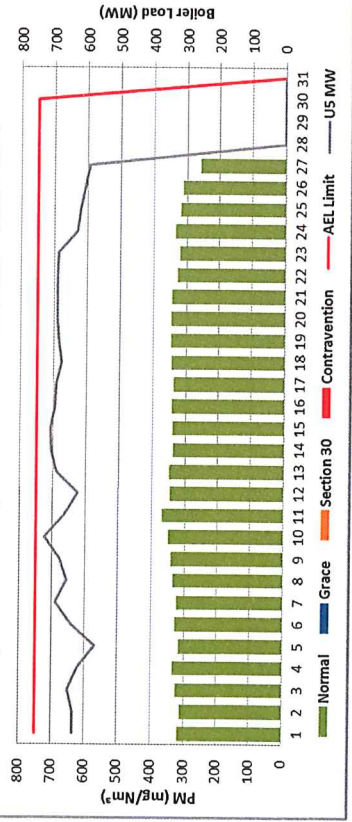
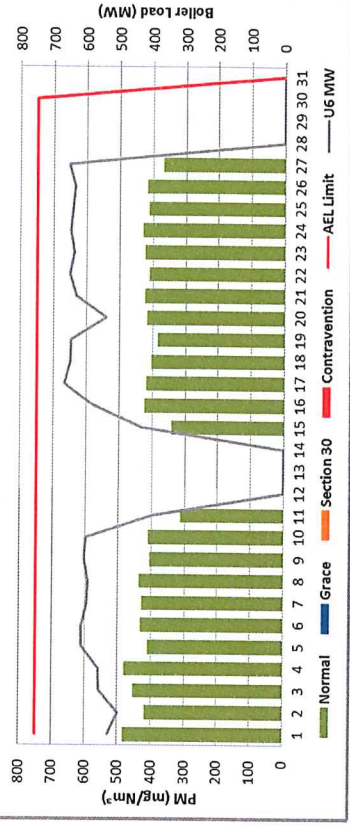


Figure 18: Medupi Unit 6 NOx Emissions - June 2022



Medupi Power Station graphical representation of the daily average emissions

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TABLE 7: MONTHLY TONNAGES FOR THE MONTH OF JUNE 2022

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	58.7	4 457.6	578.4
Unit 2	62.8	4 585.3	750.6
Unit 3	65.4	4 658.2	668.7
Unit 4	0.0	0.0	0.0
Unit 5	62.1	4 782.3	733.7
Unit 6	36.4	4 066.1	758.3
SUM	285.4	22 549.6	3 489.7

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	100.0
Unit 2	100.0	100.0	96.7	100.0
Unit 3	100.0	100.0	100.0	96.8
Unit 4				
Unit 5	100.0	99.9	99.9	99.9
Unit 6	100.0	100.0	95.8	95.7

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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 JUNE 2022

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	2022/06/31	
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 <i>blue cells</i> below Choose from a dropdown menu in the <i>green cells</i> The total VOC emissions for the month are in the <i>red cells</i> IMPORTANT: Do not change <i>any</i> other cells without consulting the AQ CoE		
MONTH:	June	
GENERAL INFORMATION:		
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:	2176	tons/month
Molecular weight of the fuel oil:	166.00	Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH		
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/m ² /day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:		
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 - 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 JUNE 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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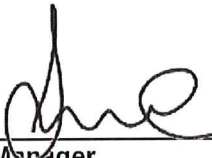
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Compiled by: Thabo Khoza 
Senior Environmental Advisor

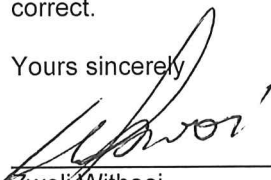
Verified by: Malose Langa 
System Engineer Boiler

Supported by: Mokgadi Dikgale 
Environmental Manager

Supported by: Jabulani Mkhathswa 
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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