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Stanley Koenaitse
Waterberg District Municipality
Private Bag X1018
Modimolle
0510

Date: 2022/07/30
Enquiries: MF Dikgale
Tel: 014 762 6820

skoenaite@waterberg.gov.za

Ref: H16/1/13-AEL/M1/R1 – July 2022

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JULY 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 July 2022 only.

1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – July 2022
	Coal	Tons/month	1 875 000	919 932
	Fuel Oil	Tons/month	20 000	1 781
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of July 2022
	Energy	GWh	3 571.2	2 099.6
	Ash Emitted	Tons/month	not specified	242.4

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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-July	8.8	24.0	24.0		0.0	0.0	19227	616	691	752		Off	Off
02-July	4.4	24.0	24.0		0.0	0.0	22827	731	728	744		Off	Off
03-July	24.0	24.0	24.0		0.0	0.0	23119	699	720	716		Off	Off
04-July	24.0	24.0	24.0		0.0	0.0	23962	763	741	744		Off	Off
05-July	24.0	24.0	24.0		0.0	0.0	24047	767	749	759		Off	Off
06-July	24.0	24.0	24.0		0.0	0.0	23972	746	738	747		Off	Off
07-July	24.0	24.0	24.0		0.0	0.0	24288	763	753	750		Off	Off
08-July	24.0	24.0	24.0		0.0	0.0	23743	769	744	710		Off	Off
09-July	24.0	24.0	9.2		0.0	0.0	20744	678	704	634		Off	Off
10-July	24.0	24.0	11.3		0.0	0.0	23393	729	639	793		Off	Off
11-July	24.0	24.0	24.0		0.0	0.0	27752	713	707	729		510	212
12-July	24.0	24.0	24.0		19.8	4.3	35982	755	739	739		599	672
13-July	24.0	24.0	23.6		24.0	24.0	33322	733	706	659		540	742
14-July	24.0	24.0	0.0		24.0	24.0	28119	724	704	Off		589	736
15-July	24.0	24.0	0.0		19.3	24.0	27607	758	677	Off		597	795
16-July	24.0	24.0	0.0		0.0	24.0	29433	757	726	Off		597	703
17-July	24.0	24.0	0.0		20.8	24.0	30851	680	665	273		650	707
18-July	24.0	24.0	12.8		24.0	24.0	36069	681	628	708		650	724
19-July	24.0	24.0	24.0		24.0	24.0	37948	692	679	771		650	746
20-July	24.0	24.0	24.0		22.8	24.0	38415	725	703	768		659	704
21-July	24.0	24.0	24.0		0.0	24.0	37833	686	747	777		638	779
22-July	24.0	24.0	24.0		19.3	24.0	38383	675	721	757		703	748
23-July	24.0	24.0	24.0		24.0	24.0	36464	628	707	750		650	705
24-July	24.0	24.0	5.3		24.0	24.0	27723	580	611	616		649	598
25-July	24.0	24.0	0.0		24.0	24.0	27180	658	695	Off		667	722
26-July	24.0	24.0	0.0		24.0	24.0	30263	668	700	482		Off	Off
27-July	24.0	24.0	12.0		24.0	24.0	35657	627	655	697		702	734
28-July	24.0	24.0	24.0		24.0	24.0	34973	646	646	709		658	664
29-July	24.0	24.0	24.0		24.0	24.0	34311	606	625	706		668	720
30-July	16.1	24.0	24.0		24.0	24.0	33571	637	694	745		628	744
31-July	0.0	24.0	24.0		24.0	24.0	28754	Off	688	719		643	734

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 July 2022

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.918%	100%
Unit 2	Fabric Filter Plant (FFP)	99.905%	100%
Unit 3	Fabric Filter Plant (FFP)	99.922%	100%
Unit 4	Fabric Filter Plant (FFP)		
Unit 5	Fabric Filter Plant (FFP)	99.845%	100%
Unit 6	Fabric Filter Plant (FFP)	99.878%	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 JULY 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	1.34
Ash Content	35 - 39	34.10

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.0
Ash Content	0.02 - 0.1	0.03

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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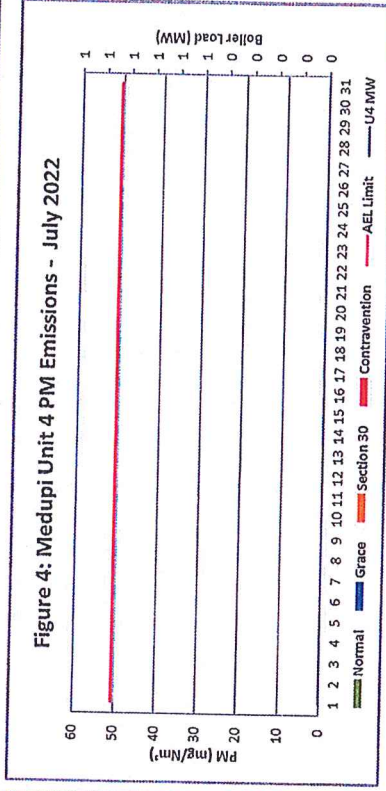
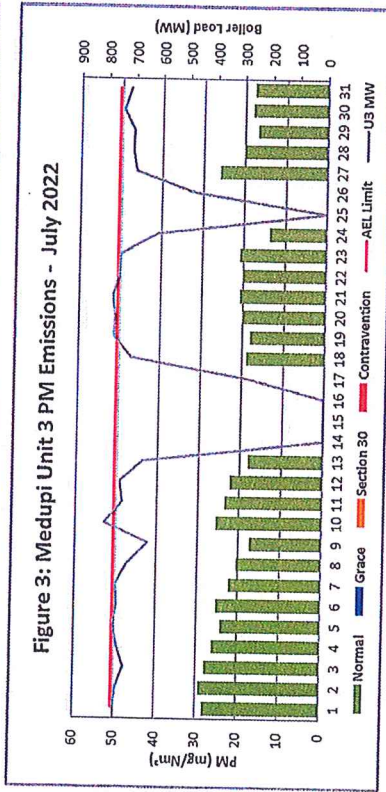
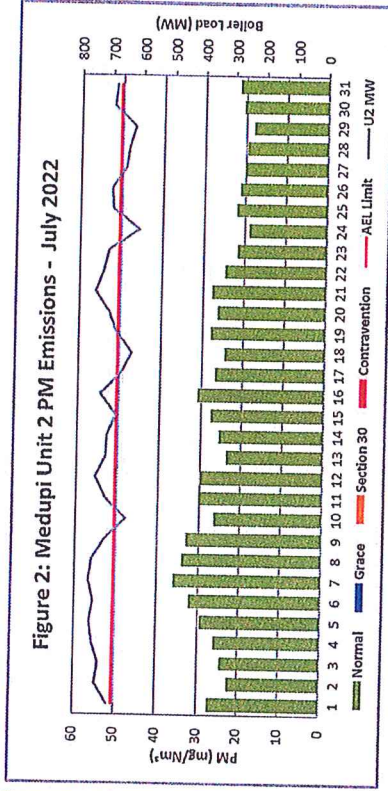
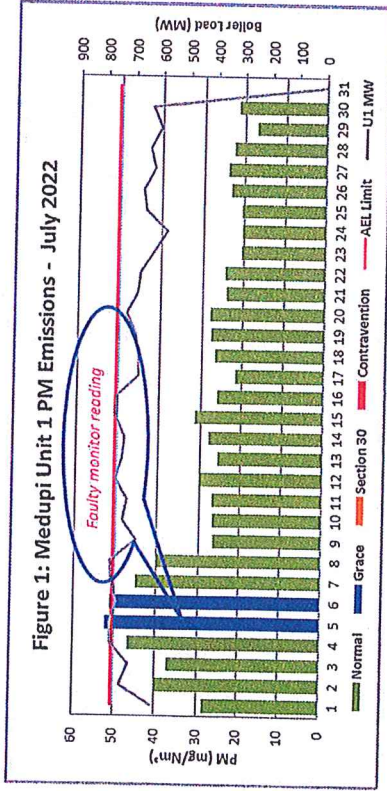
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PM Daily Averages



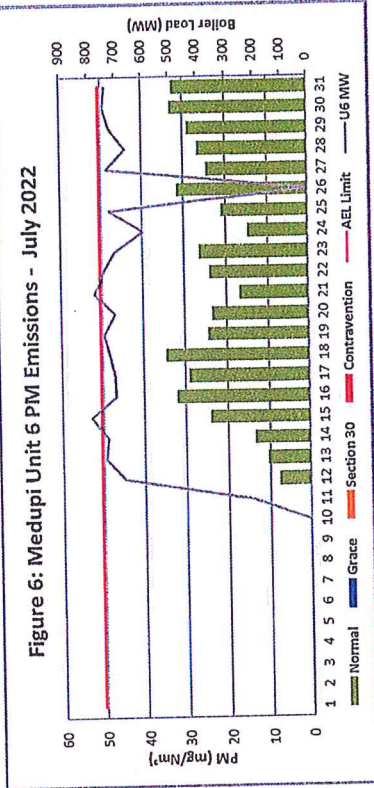
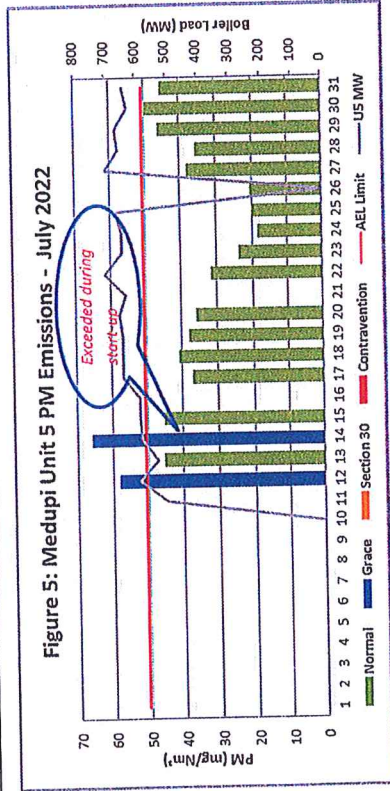
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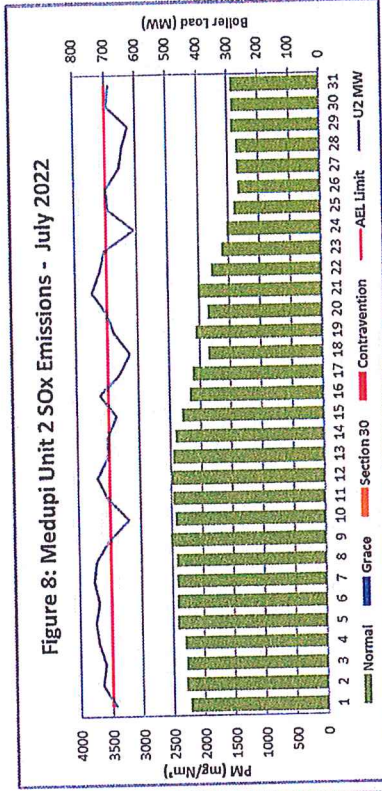
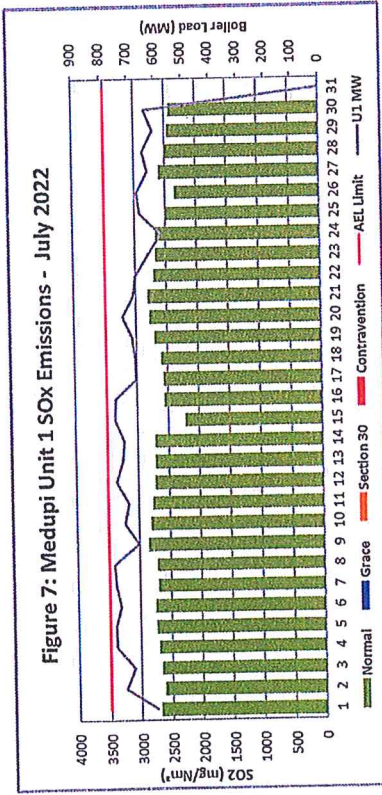


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SOx Daily Averages



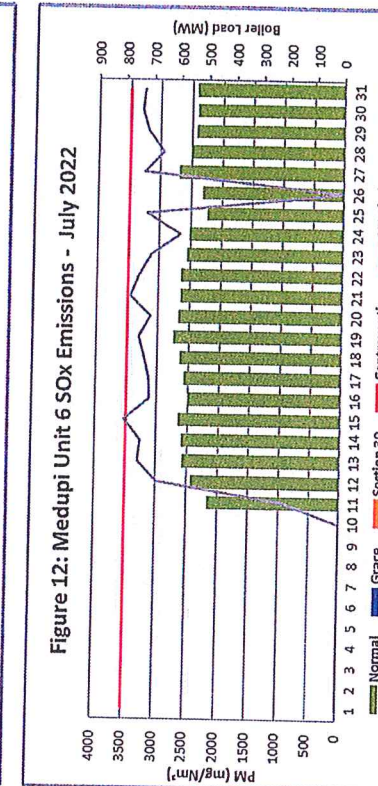
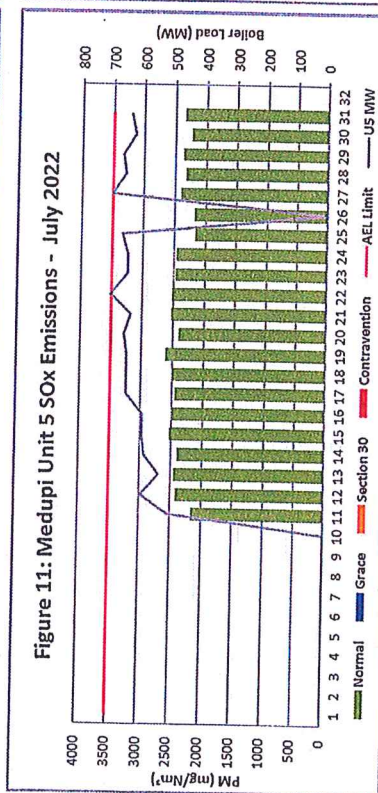
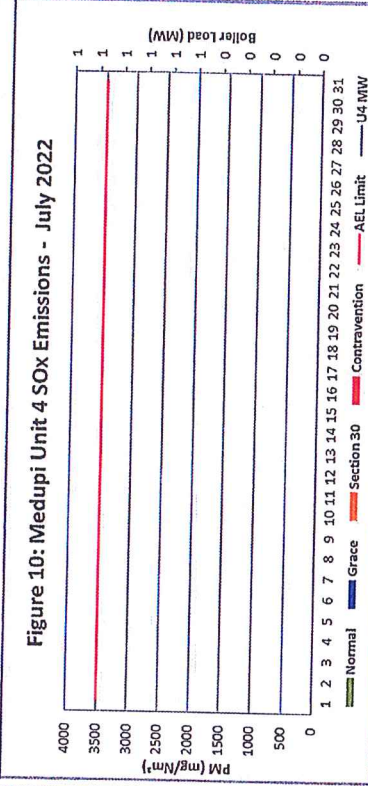
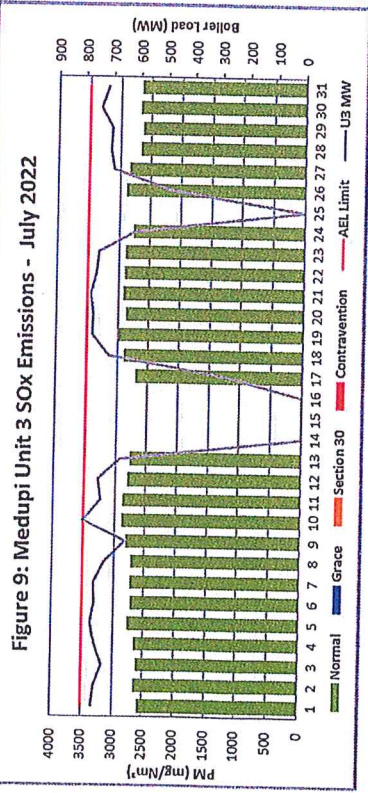
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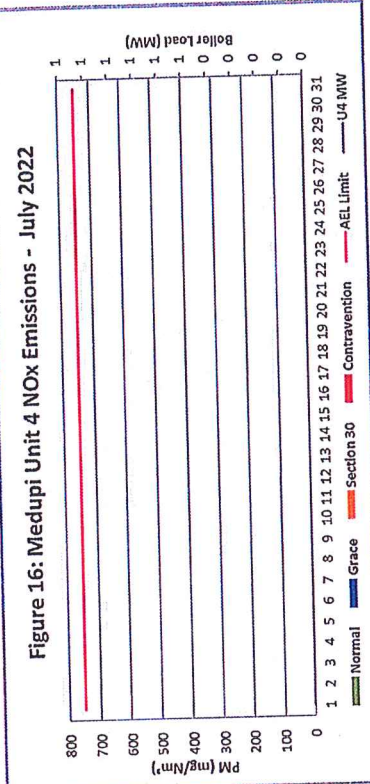
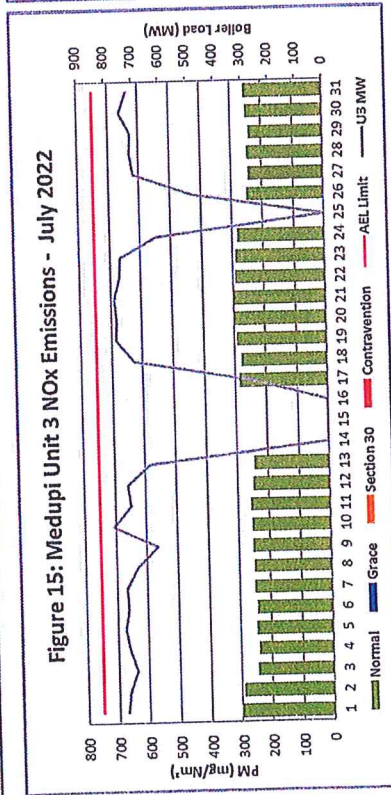
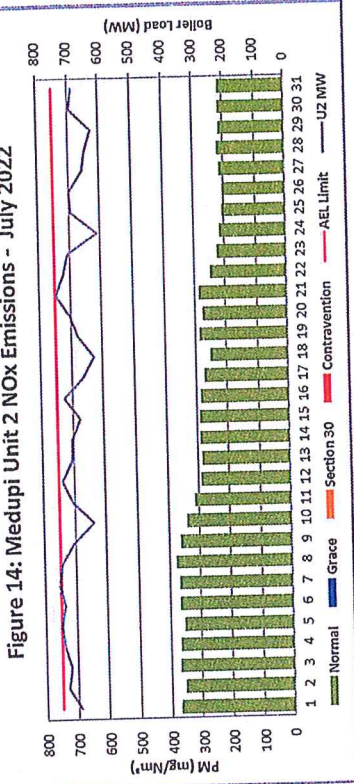
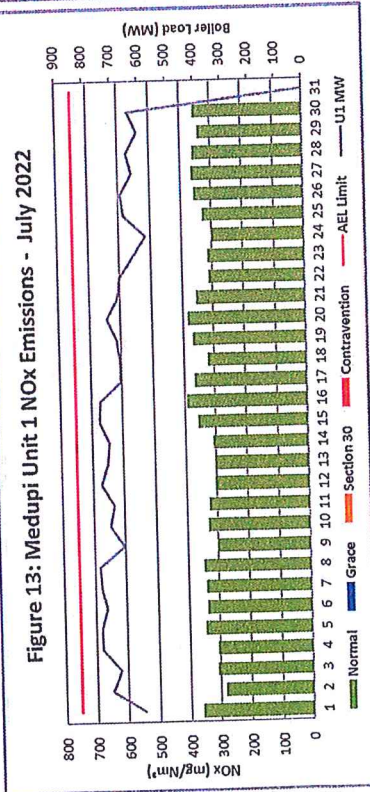
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NOx Daily Averages



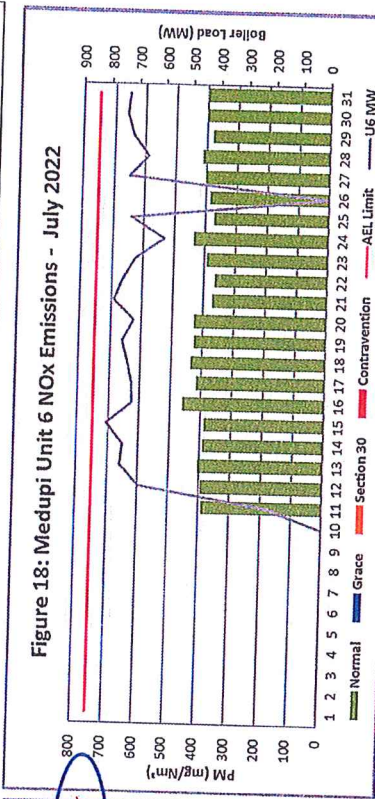
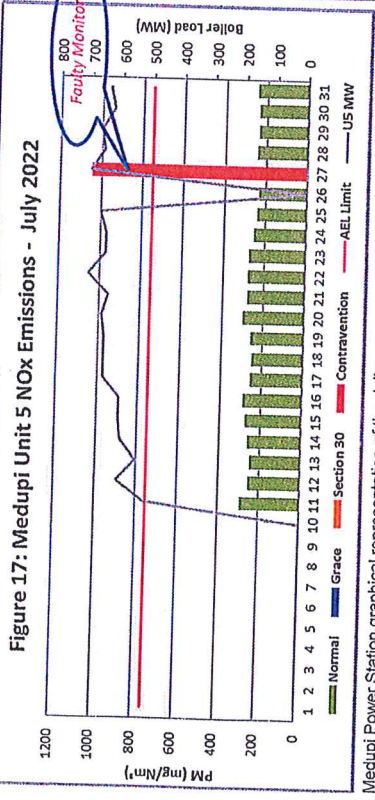
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TABLE 7: MONTHLY TONNAGES FOR THE MONTH OF JULY 2022

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	47.9	4 421.8	561.8
Unit 2	57.9	4 560.2	652.2
Unit 3	39.3	5 541.6	530.8
Unit 4	0.0	0.0	0.0
Unit 5	51.3	3 767.3	472.1
Unit 6	45.8	4 953.9	786.0
SUM	242.4	23 244.8	3 002.9

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	98.6	98.6	96.1	94.0
Unit 2	98.7	98.9	87.5	12.4
Unit 3	98.7	98.8	98.8	98.6
Unit 4				
Unit 5	98.1	89.0	93.7	89.0
Unit 6	93.8	98.8	94.0	39.3

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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 JULY 2022

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Saturday, 30 July 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	
<p align="center">MONTHLY INPUT DATA FOR THE STATION</p> <p align="center">Please only insert relevant monthly data inputs into the <i>blue cells</i> below</p> <p align="center">Choose from a dropdown menu in the <i>green cells</i></p> <p align="center">The total VOC emissions for the month are in the <i>red cells</i></p> <p align="center">IMPORTANT: Do not change <i>any</i> other cells without consulting the AQ CoE</p>		
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:	178.1	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/m ² /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:	0.05	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	0.73	kg/month
<small>*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.</small>		

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

On 15 June 2022, Phegelelo Secondary School in Marapong Township was visited by the Medupi Team for an Air Quality Management Awareness and Education session. The target audiences were grade 8 and 9 learners.

Information shared on the day included the following.

- Electricity generation process from coal fired Power Stations
- Primary pollutants associated with coal fired Power Station (SO_x, NO_x, CO₂, PM, CO)
- Emissions Control Technologies
- Legal Requirements
- Consequences of non-compliance (penalties)

10. Complaints Register


TABLE 9: COMPLAINTS FOR THE MONTH OF JULY 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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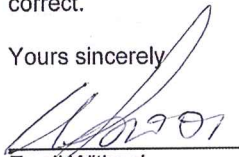
Compiled by: 
 Thabo Khoza
 Senior Environmental Advisor

Verified by: 
 Malose Langa
 System Engineer Boiler

Supported by: 
 Mokgadi Dikgale
 Environmental Manager

Supported by: 
 Jabulani 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

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