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		Effective Date	February 2021				
		Review Date	February 2024				

Stanley Koenate
Waterberg District Municipality
Private Bag X1018
Modimolle
0510
skoenaite@waterberg.gov.za
Ref: H16/1/13-AEL/M1/R1 – August 21 rev 1
Dear Mr Koenate

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF AUGUST 21

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, 4, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of August 2021 only. This report supersedes the previous submission made for the month on August 2021.

1. Raw Materials and Products

Table 1: Quantity of raw materials and products for August 21

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/Rate (Quantity)	Production Rates	
				Product/By-Product Name	Unit
Coal	Tons/month	Tons/month	1 875 000	Maximum Production Capacity Permitted (Quantity)	4 800
				Production Rate in Month of August 21	992 812
Fuel Oil	Tons/month	Tons/month	20 000	Maximum Production Capacity Permitted (Quantity)	2 814
				Production Rate in Month of August 21	238.8
				Energy	MW
				Ash Emitted	Tons/month

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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-Aug 21	24.0	24.0	24.0	0.0	7.7	24.0	30751	571	625	Off	325	588	587
02-Aug 21	24.0	24.0	24.0	0.0	0.0	24.0	27780	635	741	Off	433	663	649
03-Aug 21	24.0	24.0	24.0	0.0	8.9	24.0	28304	529	597	361	561	569	551
04-Aug 21	24.0	24.0	24.0	24.0	24.0	24.0	31603	561	602	581	565	644	579
05-Aug 21	24.0	24.0	24.0	17.0	24.0	24.0	34442	586	665	731	628	670	550
06-Aug 21	24.0	24.0	24.0	0.0	0.0	24.0	35785	589	661	640	Off	565	639
07-Aug 21	20.4	24.0	21.8	0.0	0.0	24.0	35708	595	665	679	Off	565	619
08-Aug 21	0.0	24.0	0.0	0.0	23.0	24.0	26716	342	627	435	Off	563	547
09-Aug 21	9.8	24.0	7.7	0.0	0.0	24.0	27062	586	646	448	Off	534	562
10-Aug 21	24.0	24.0	24.0	0.0	0.0	24.0	26319	648	680	451	Off	562	562
11-Aug 21	24.0	24.0	3.8	0.0	0.0	24.0	32455	575	706	378	Off	650	650
12-Aug 21	24.0	24.0	0.8	0.0	0.0	24.0	33523	628	743	618	Off	550	655
13-Aug 21	24.0	16.8	0.0	21.5	24.0	24.0	27415	700	696	765	Off	700	615
14-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	27259	600	730	Off	696	587	587
15-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	26713	689	743	297	Off	675	550
16-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	25801	694	693	638	Off	625	550
17-Aug 21	24.0	24.0	20.0	0.0	24.0	24.0	26693	696	668	743	Off	550	597
18-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	29171	721	739	745	Off	509	649
19-Aug 21	24.0	24.0	0.0	15.1	24.0	24.0	36608	516	649	718	Off	691	643
20-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	38283	657	723	749	Off	343	560
21-Aug 21	24.0	24.0	0.0	10.1	24.0	24.0	37045	680	680	746	Off	600	572
22-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	36779	624	670	597	Off	576	650
23-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	37129	681	657	660	Off	687	576
24-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	33066	621	623	630	Off	632	638
25-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	35632	619	607	648	Off	624	647
26-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	35792	580	634	686	Off	594	626
27-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	35535	589	619	650	Off	617	600
28-August 21	24.0	24.0	0.0	0.0	24.0	24.0	34745	556	500	644	Off	602	592
29-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	29612	604	620	710	Off	634	606
30-Aug 21	24.0	24.0	0.0	0.0	24.0	24.0	28043	718	534	696	Off	667	644

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Medupi Power Station uses Continuous Emission Monitoring System which uses the extractive method for analysis.

4. Emissions Reporting

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
Oil		
Sulphur Content	0.5 - 3.5	2.2
Ash Content	0.02 - 0.1	0.030

Table 5: Energy Source Material Characteristics for the month of August 21

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	1.26
Ash Content	35 - 39	33.35

Table 4: Energy Source Material Characteristics for the month of August 21


3. Energy Source Characteristics

Abatement plant does not have bypass mode operation, hence plant 100% Utilized.

Associated Unit/Stack	Technology Type	Efficiency
Unit 1	Fabric Filter Plant (FFP)	99.911%
Unit 2	Fabric Filter Plant (FFP)	99.956%
Unit 3	Fabric Filter Plant (FFP)	99.925%
Unit 4	Fabric Filter Plant (FFP)	99.979%
Unit 5	Fabric Filter Plant (FFP)	99.933%
Unit 6	Fabric Filter Plant (FFP)	99.866%

Table 3: Abatement Equipment Control Technology efficiency for month of August 21

2. Abatement Technology

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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 Emissions Averages

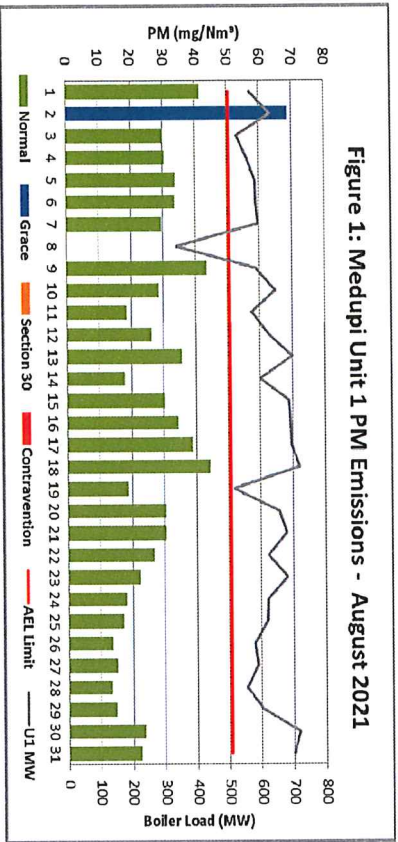


Figure 1: Medupi Unit 1 PM Emissions - August 2021

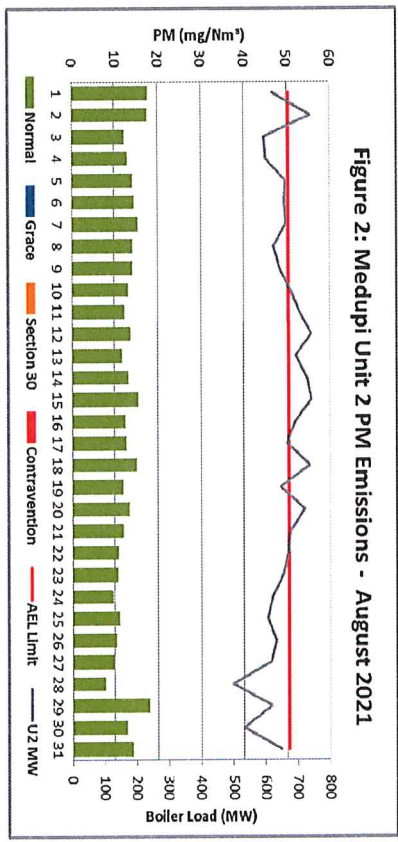


Figure 2: Medupi Unit 2 PM Emissions - August 2021

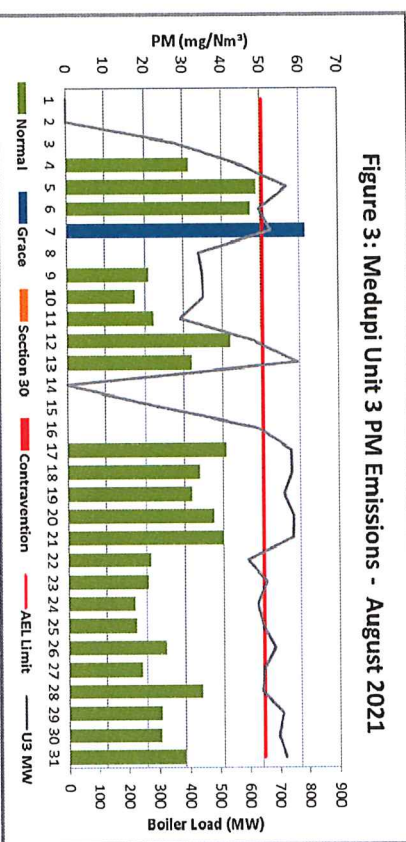


Figure 3: Medupi Unit 3 PM Emissions - August 2021

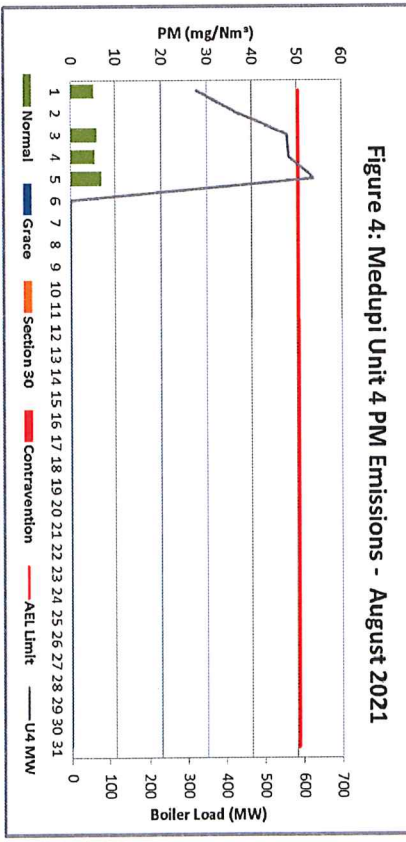


Figure 4: Medupi Unit 4 PM Emissions - August 2021

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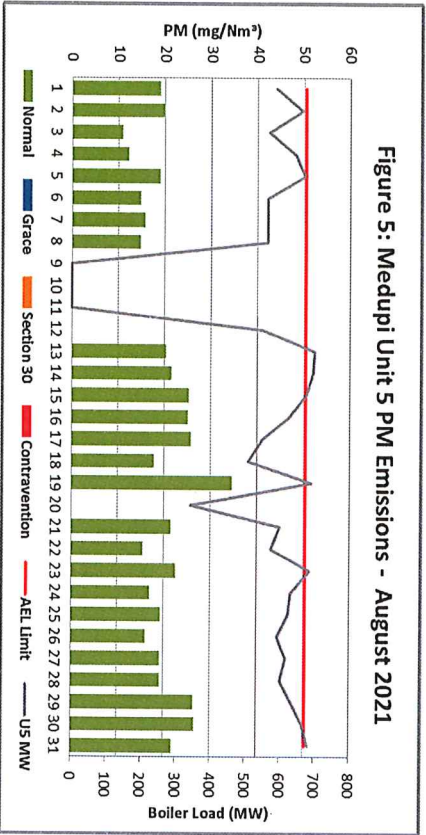


Figure 5: Medupi Unit 5 PM Emissions - August 2021

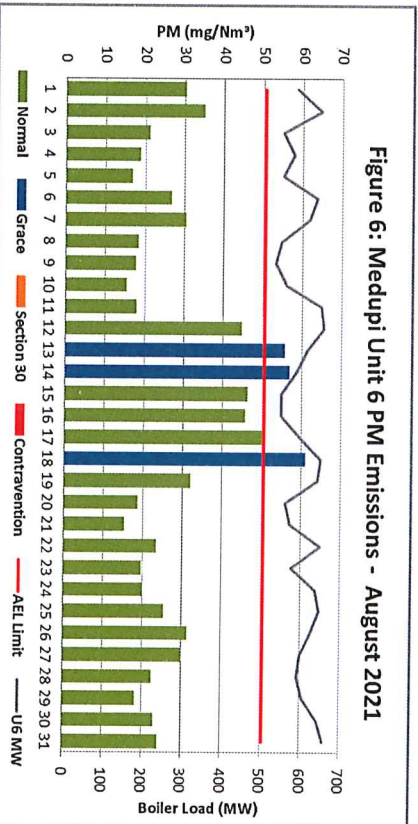


Figure 6: Medupi Unit 6 PM Emissions - August 2021

4.1 SOx Emissions Averages

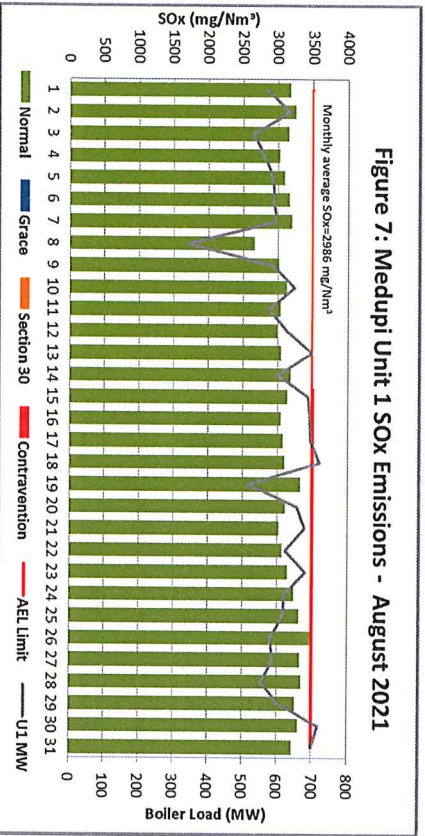


Figure 7: Medupi Unit 1 SOx Emissions - August 2021

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Figure 8: Medupi Unit 4 SOx Emissions - July 2021

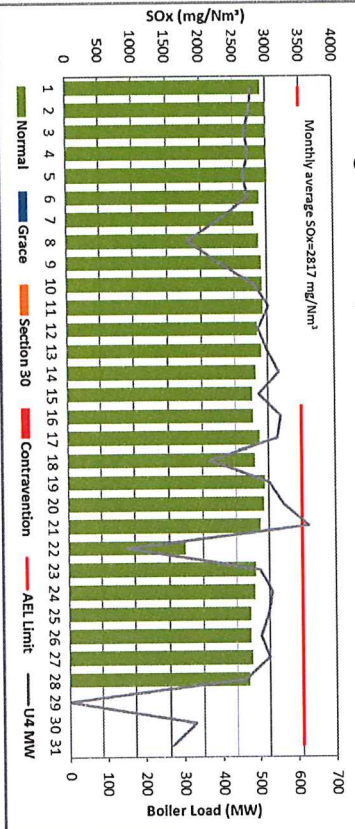


Figure 9: Medupi Unit 5 SOx Emissions - July 2021

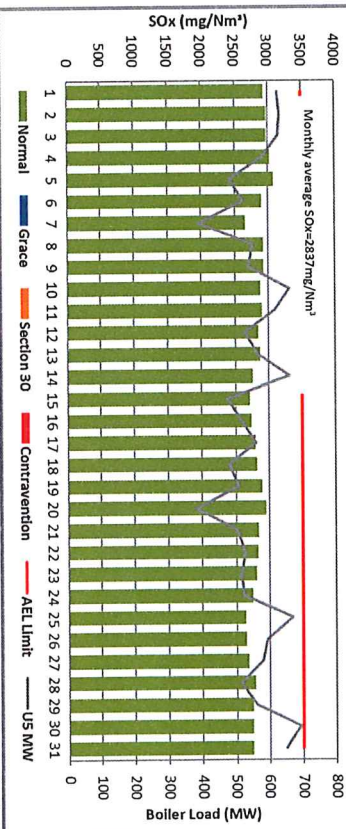
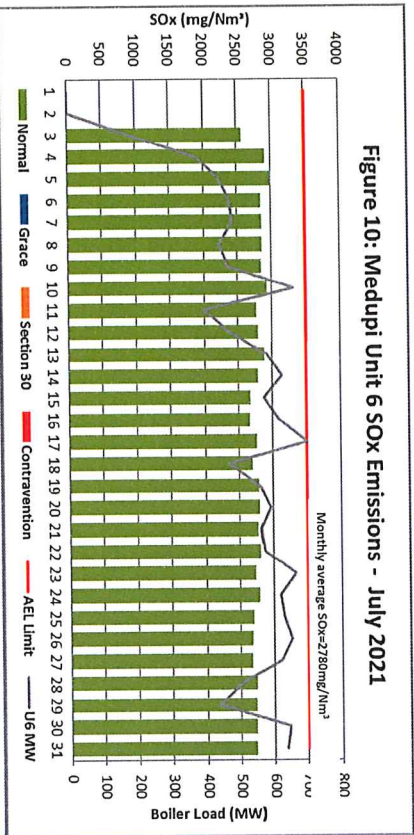


Figure 10: Medupi Unit 6 SOx Emissions - July 2021



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4.2 NOx Emissions Averages

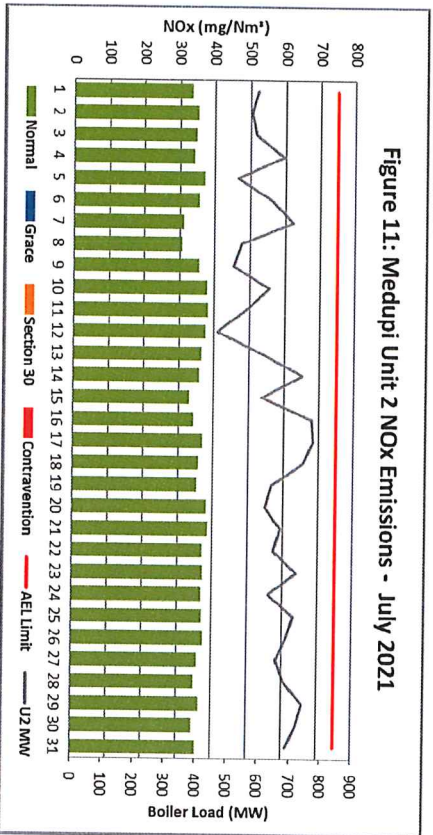


Figure 11: Medupi Unit 2 NOx Emissions - July 2021

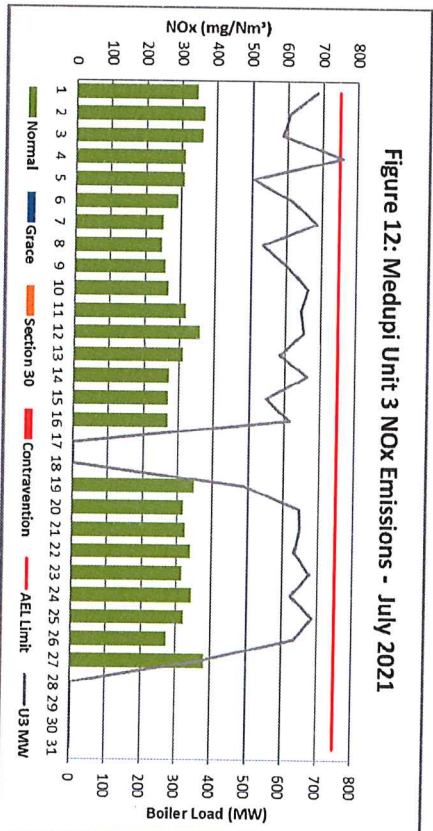


Figure 12: Medupi Unit 3 NOx Emissions - July 2021

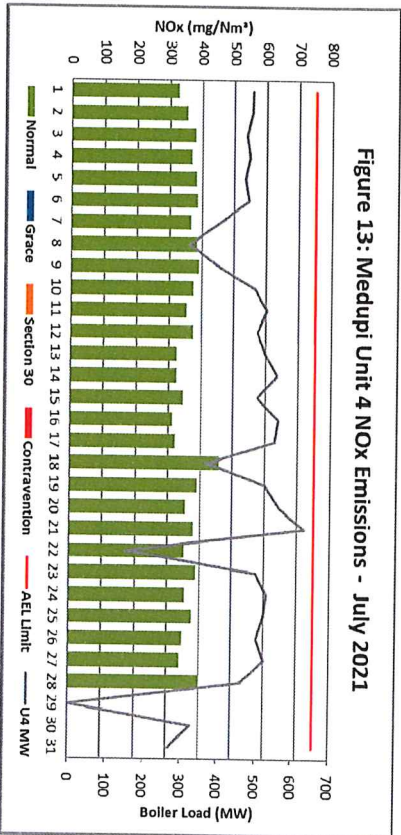


Figure 13: Medupi Unit 4 NOx Emissions - July 2021

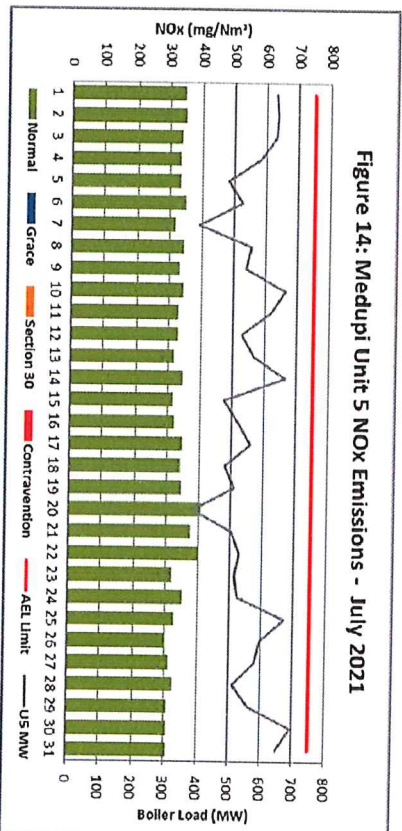


Figure 14: Medupi Unit 5 NOx Emissions - July 2021

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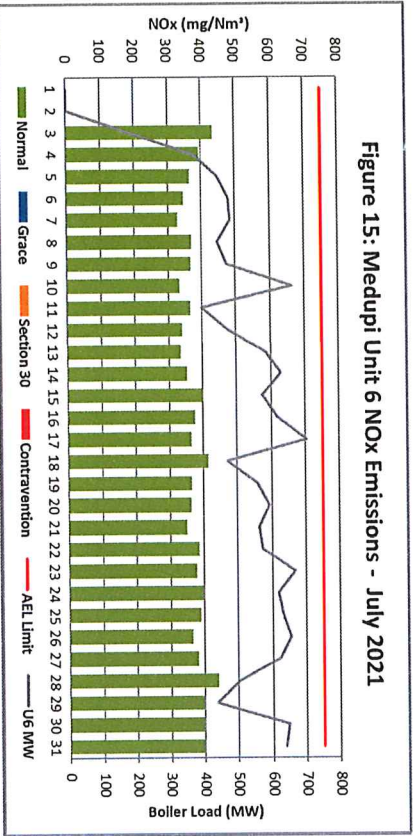
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Figure 15: Medupi Unit 6 NOx Emissions - July 2021



Medupi Power Station graphical representation of the daily average emissions

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Table 7: Monthly tonnages for the month of August 21

Associated Unit/Stack	PM	SO ₂	NO ₂	CO
Unit 1	-	-	-	-
Unit 2	31,0	6 322	755	70
Unit 3	37,1	4 551	435	107
Unit 4	12,2	6 196	786	49
Unit 5	30,2	6 275	735	169
Unit 6	44,4	5 498	739	54
SUM	154,8	28 843	3 449	448

5. Continuous Emission Monitoring Systems (CEMS)

Unit 2, 3, 4, 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
August 21	N/A	N/A	N/A


Table 7: CEMS Monitor Reliability

Associated Unit/Stack	PM	SO ₂	NO	O ₂
Unit 1	-	-	-	-
Unit 2	20,0	20,0	20,0	20,0
Unit 3	100,0	96,8	96,8	100,0
Unit 4	100,0	99,7	100,0	100,0
Unit 5	100,0	96,7	96,5	93,8
Unit 6	100,0	100,0	100,0	99,6

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6. CEMS Calibration certificates and equipment used for calibration

CEMS calibration certificates shall be made available for all units 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.

Table 8: Total Volatile Organic Compound (TVOC) for August 21

		CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*	
GENERAL INFORMATION:			
MONTH: July		Unit: NA	
Station: Medupi Power Station		Date: Saturday, 31 July 2021	
Province: Limpopo Province		Height of tank: 14,2 m	
Tank no.: 1-2		Height of tank: 14,2 m	
Description: Outdoor fuel oil storage tank		Diameter of tank: 12 m	
Material stored: Fuel Oil 150		Net fuel oil throughput for the month: 4436 tons/month	
Vertical fixed roof (vented to atmosphere)		Molecular weight of the fuel oil: 166,00	
METEOROLOGICAL DATA FOR THE MONTH			
Daily average ambient temperature		Data: 17,66	
Daily maximum ambient temperature		Data: 25,87	
Daily minimum ambient temperature		Data: 10,47	
Daily ambient temperature range		Data: 15,40	
Daily total insulation factor		Data: 3,47	
Tank paint colour		Result: Aluminium/Spectral	
Tank paint solar absorbance		Unit: NA	
FINAL OUTPUT:			
Breathing losses:		0,69 kg/month	
Working losses:		0,13 kg/month	
TOTAL LOSSES (Total TVOC Emissions for the month):		0,82 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, P.E., Titech Consulting Engineers, 85-93 Chevy Chase Street, Jamaica, NY 11432 USA, Tel - 718-454-3920, Fax - 718-454-6330, e-mail - PeressJ@nyccr.com.</small>			

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Source Code/ Name	N/A	Air pollution complaints received	No complaints received	Calculation of impacts/emissions associated with the incident	N/A	Date of complaint and date of response by the license holder	N/A	Results of investigation	N/A	Action taken to resolve the complaint	N/A
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Table 9: Complaints for the month of August 21

10. Complaints Register

No awareness campaign.

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

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Compiled by:

Thabo Khoza
Sr Environmental Advisor

Verified by:

Malose Langa
System Engineer Boiler

Supported by:

Mokgadi Dikgale
Environmental Manager

Supported by:

Jabulani Mkhatshe
Engineering Group Manager

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

Yours sincerely,

Zwelli Witbooi
[Signature]

GENERAL MANAGER: MEDUPI POWER STATION

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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 Aug 21

Source Code/ Name	N/A
Air pollution complaints received	No complaints received
Impacts/ emissions associated with the incident	N/A
Calculation of Date of complaint and date of response by the license holder	N/A
Results of investigation	N/A
Action taken to resolve the complaint	N/A

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