	<b>Medupi Power Station Monthly Emissions Report</b>	Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	1
		Effective Date	January 2018		
		Review Date	January 2021		

Phumudzo Thivhafuni

Date: 2018/07/20

Limpopo Dept. of Economic Development, Environment and Tourism

Enquiries:

Private Bag 9484  
POLOKWANE  
0700

Ref: 12/4/12L-W2/A3 – June 2018

Dear Phumudzo

### **MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF JUNE 2018**

This document serves as the monthly report required in terms of Section 7.7.1 of Medupi Power Station Provisional Atmospheric Emission License (AEL), 12/4/12L-W2/A3.

This report is a reflection of Unit 4, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of June 2018 only.

## **1. Raw Materials and Products**

**Table 1: Quantity of raw materials and products used/produced for Unit 4, 5 and 6 in June 2018**

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Unit 4, 5 and 6 consumption June 2018
	Coal	Tons/month	1 875 000	497166
	Fuel Oil	Tons/month	40 000	973
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Unit 4, 5 and 6 Production Rate in Month of June 2018
	Energy	MW	4800	1938.75
	Ash Emitted	Tons/month	not specified	163.6

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**Table 2: Daily consumption and production rates**

Date	Reportable hours of Operation			Fuel Consumption (tons)				Production rate (MW)		
	Unit 4	Unit 5	Unit 6	Oil			Coal	U4	U5	U6
				Aux Boiler	Unit 4, 5 & 6	Total	Unit 4, 5 & 6)			
01-June -18	24.0	24.0	24.0	0.00	0	0	21103	682	729	653
02-June -18	24.0	24.0	24.0	0.00	5	5	20629	690	698	659
03-June -18	24.0	24.0	24.0	0.00	8	8	19001	636	600	635
04-June -18	24.0	24.0	24.0	0.00	50	50	17712	666	644	652
05-June -18	24.0	24.0	24.0	0.00	21	21	17448	664	634	665
06-June -18	24.0	24.0	24.0	0.00	31	31	18284	700	638	657
07-June -18	24.0	24.0	24.0	0.00	36	36	18710	683	664	522
08-June -18	24.0	24.0	10.2	0.00	42	42	19856	684	740	557
09-June -18	24.0	24.0	8.7	0.00	25	25	20025	641	674	644
10-June -18	24.0	24.0	24.0	0.00	20	20	20076	638	676	650
11-June -18	24.0	24.0	24.0	0.00	36	36	20460	656	691	658
12-June -18	24.0	24.0	24.0	0.00	7	7	19978	637	669	632
13-June -18	24.0	24.0	24.0	0.00	16	16	19762	639	690	657
14-June -18	24.0	24.0	24.0	0.00	11	11	21119	673	745	681
15-June -18	10.4	11.4	24.0	0.00	23	23	15927	604	709	700
16-June -18	0.0	2.7	24.0	0.00	194	194	14970	373	755	689
17-June -18	0.0	24.0	24.0	0.00	0	0	13818		694	658
18-June -18	0.0	24.0	24.0	0.00	17	17	14523		738	678
19-June -18	0.0	24.0	22.8	0.00	0	0	16059	491	749	533
20-June -18	13.6	24.0	0.0	0.00	193	193	14449	673	733	
21-June -18	24.0	24.0	0.0	0.00	8	8	14029	662	740	
22-June -18	24.0	24.0	0.0	0.00	0	0	13622	656	667	
23-June -18	24.0	24.0	0.0	3.53	8	12	12963	627	627	
24-June -18	24.0	24.0	0.0	0.26	0	0	13576	635	672	
25-June -18	24.0	24.0	0.0	0.00	0	0	13446	625	662	
26-June -18	24.0	24.0	0.0	0.20	13	13	13203	615	643	
27-June -18	24.0	24.0	0.0	2.16	7	9	13473	630	665	
28-June -18	24.0	24.0	0.0	1.76	7	9	14463	656	681	
29-June -18	24.0	24.0	0.0	7.17	0	7	14237	650	692	138
30-June -18	23.9	23.9	2.2	0.00	180	180	18789	632	689	607

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## 2. Abatement Technology

Table 3: Abatement Equipment Control Technology utilisation for month of June 2018

Associated Unit/Stack	Technology Type	Actual Utilisation (%) for the month of June 2018
Unit 4,5 and 6	Low NO <sub>x</sub> Burners	100
	Pulse Jet Fabric Filter Plant	100

## 3. Energy Source Characteristics

Table 4: Energy Source Material Characteristics for the month of June 2018

Characteristic	Stipulated Range (% by weight on a dry basis)	Monthly Average Content (% by weight on a dry basis)
<b>Coal</b>		
Sulphur Content	1.3 - 2.2	1.48
Ash Content	35 - 39	34.18

Table 5: Energy Source Material Characteristics for the month of June 2018

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
<b>Oil</b>		
Sulphur Content	0.5 - 3.5	2.2
Ash Content	0.02 - 0.1	0.02

## 4. Emissions Reporting

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

The daily emission limits are as follows:

SO<sub>2</sub>= 3500 mg/Nm<sup>3</sup>

Dust= 50 mg/Nm<sup>3</sup>

NO<sub>2</sub>= 750 mg/Nm<sup>3</sup>

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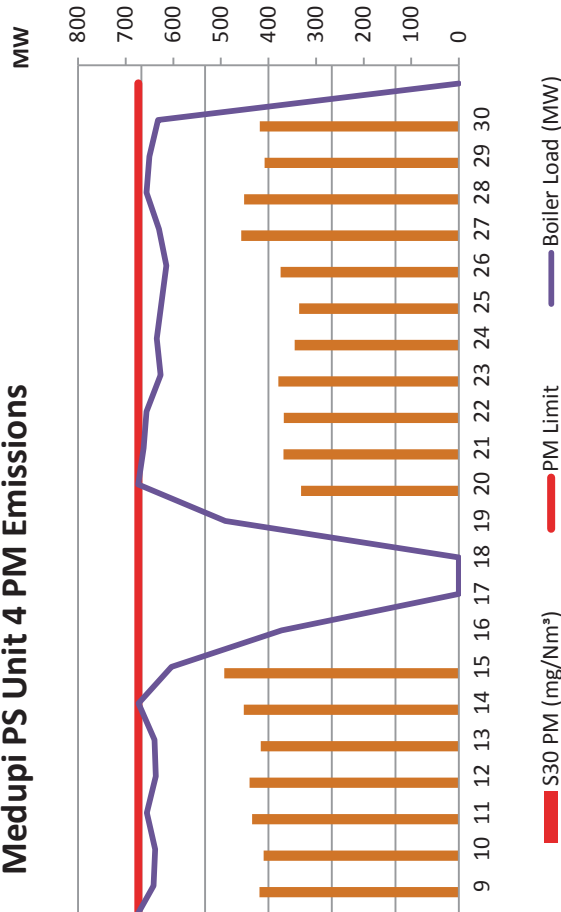
Readings for the month of June 2018

	SO <sub>2</sub> (mg/Nm <sup>3</sup> )			NO <sub>2</sub> (mg/Nm <sup>3</sup> )			CO (mg/Nm <sup>3</sup> )			Temp (°C)			Press (kPa)			Velocity (m/s)		
	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	
3	3275.9	3086.1	2657.4	667.8	482.3	430.3	22.1	6.0	7.6		131.7	131.9	89.9	89.8	89.9		18.7	
3	3176.0	2994.1	2613.7	648.7	442.5	341.6	23.6	5.4	17.8		130.8	132.0	90.1	90.1	90.1		18.1	
3	3132.9	2935.8	2553.0	632.8	382.4	369.4	18.0	5.4	11.5		124.8	129.8	90.3	90.2	90.3		16.5	
3	3035.8	2896.9	2443.0	631.0	389.7	358.7	14.2	4.6	4.2		126.8	128.3	90.4	90.3	90.4		17.6	
3	2936.9	2963.5	1755.9	644.0	380.4	386.6	16.9	6.3	15.7		122.5	126.4	90.7	90.6	90.6		17.1	
3	3110.7	3064.0	2681.0	714.4	412.8	446.0	13.3	9.4	10.2		121.0	127.7	90.7	90.7	90.6		16.6	
3	3137.6	3097.3	2677.7	656.0	478.8	455.4	10.8	5.6	39.4		125.3	118.0	90.4	90.4	90.5		17.4	
3	3223.2	3240.4	2944.4	684.1	476.7	373.9	16.3	3.6	8.8		130.7	121.6	90.3	90.3	90.3		18.9	
3	3290.1	3165.6	2901.6	660.6	386.0	405.5	4.9	11.9	7.1		127.0	128.6	90.3	90.2	90.2		17.7	
3	3122.2	3022.5	2731.9	646.6	381.7	353.6	6.5	13.5	19.4		126.7	128.6	90.2	90.2	90.2		17.6	
3	3040.7	2949.9	2688.0	648.9	391.1	351.6	7.7	4.1	12.7		128.5	128.5	90.5	90.4	90.5		18.0	
3	3147.3	3042.4	2992.3	607.3	384.5	328.9	9.2	4.1	10.7		125.5	125.3	90.7	90.6	90.7		17.7	
3	3429.9	3279.1	3079.9	515.2	375.6	335.1	9.2	4.2	16.9		125.7	126.1	90.5	90.4	90.5		17.9	
3	3509.1	3329.8	3115.5	524.2	426.0	361.4	8.6	2.9	17.2		128.0	127.6	90.1	90.0	90.1		19.0	
3	3755.8	3632.9	3403.3	509.9	407.7	342.0	17.3	10.7	32.2		123.1	130.2	89.8	89.8	89.8		18.4	
3		3456.8	3416.0		377.5	343.6		25.0	32.4		127.5	130.2		89.9	89.8		19.1	
3		3189.0	3293.7		353.1	349.3		8.4	27.9		125.2	130.8		90.2	89.9		18.2	
3		3203.6	2972.8		360.0	337.1		15.5	27.1		128.3	119.2		90.0	90.2		19.0	
3		2982.3	3468.9		367.2	411.9		15.9	24.5		130.4	118.9		89.9	90.1		19.1	
3	3107.8	2999.9		561.3	370.0		5.4	11.8			131.1		90.2	90.1			19.0	
3	3267.1	3121.0		543.8	347.3		5.1	3.3			128.9		90.5	90.4			18.7	
3	3417.1	3281.7		597.7	378.4		6.1	18.3			127.7		90.3	90.5			17.8	
3	3236.1	3194.0		530.4	342.9		5.0	11.0			126.6		90.3	90.2			17.1	
3	3306.7	3183.6		532.7	372.2		6.4	11.3			129.4		90.1	90.1			17.8	
3	3495.2	3223.1		664.8	385.0		4.1	10.6			129.4		90.1	90.2			17.9	
3	3222.3	3119.5		660.3	366.2		17.2	7.5			126.9		90.2	90.2			17.6	
3	3241.8	3180.2		655.0	361.5		18.4	3.7			128.0		90.2	90.2			18.0	
3	3273.3	3185.1		630.1	398.0		7.6	9.9			133.2		90.1	90.1			18.2	
3	3356.3	3314.1		581.6	378.2		5.8	7.3			129.7		90.1	90.0			18.7	
3	3526.1	3451.7	1732.0	545.2	359.9	403.4	6.5	26.2	20.8		129.5	122.9	90.0	89.9	90.2		18.1	

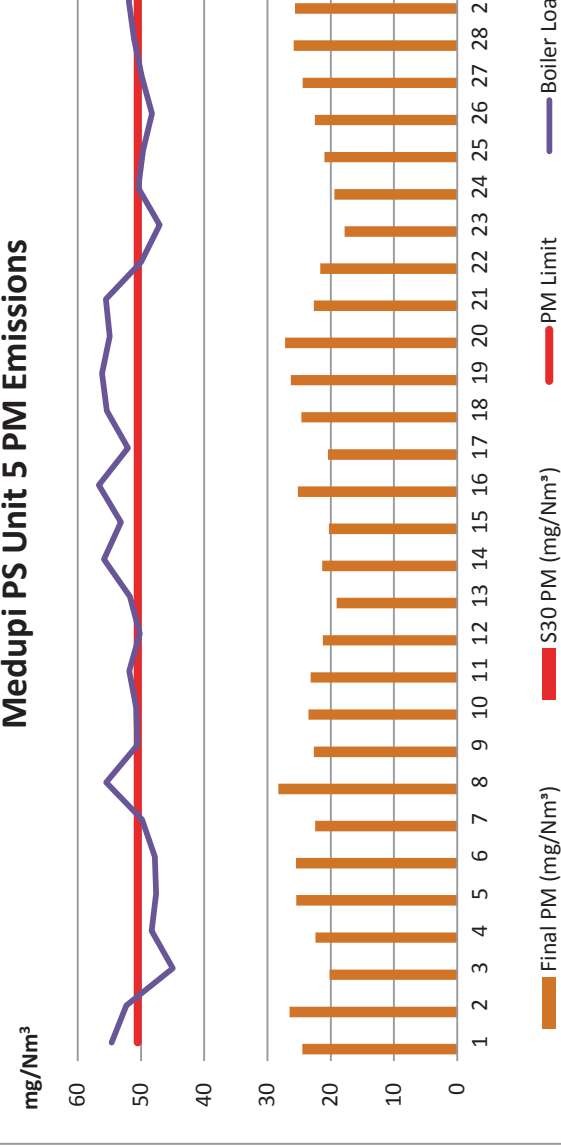
are faulty. A notification has been loaded for the maintenance team to fix the instrument. There is no reportable data on areas shaded black.

Emissions for the June 2018

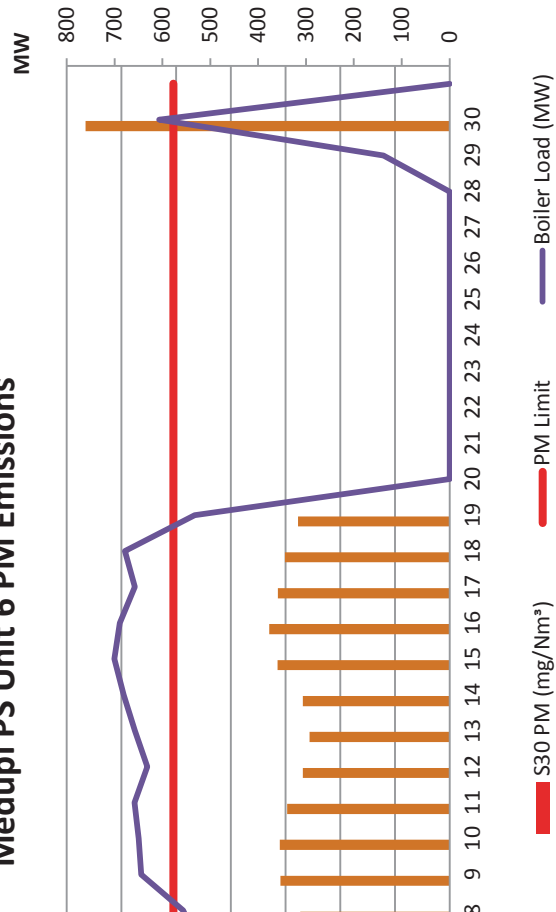
Medupi PS Unit 4 PM Emissions



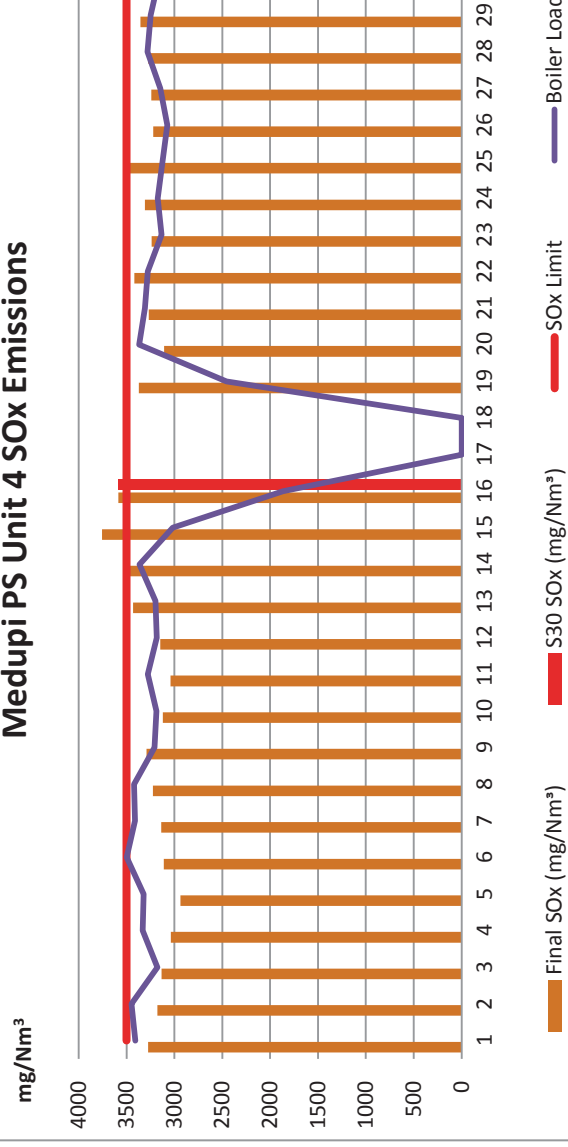
Medupi PS Unit 5 PM Emissions



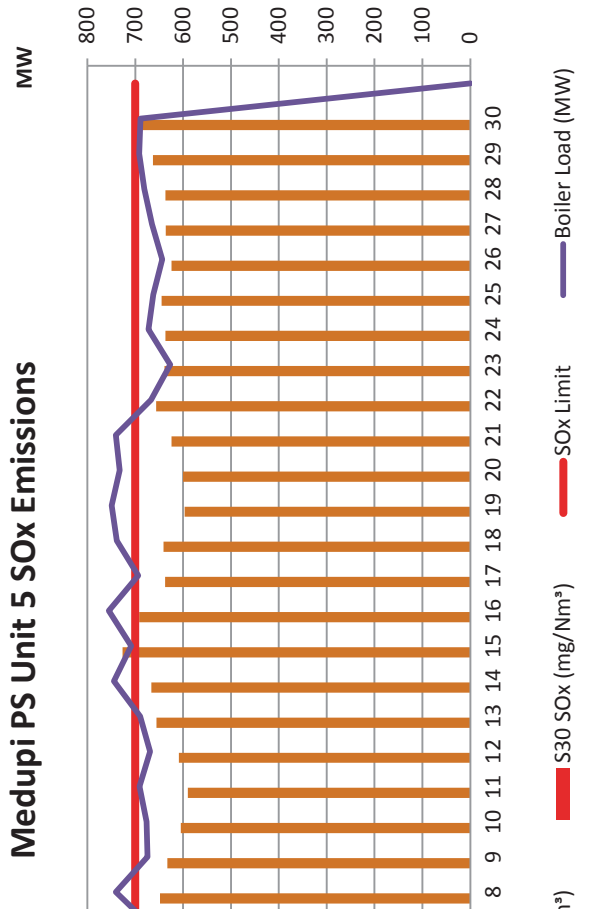
Medupi PS Unit 6 PM Emissions



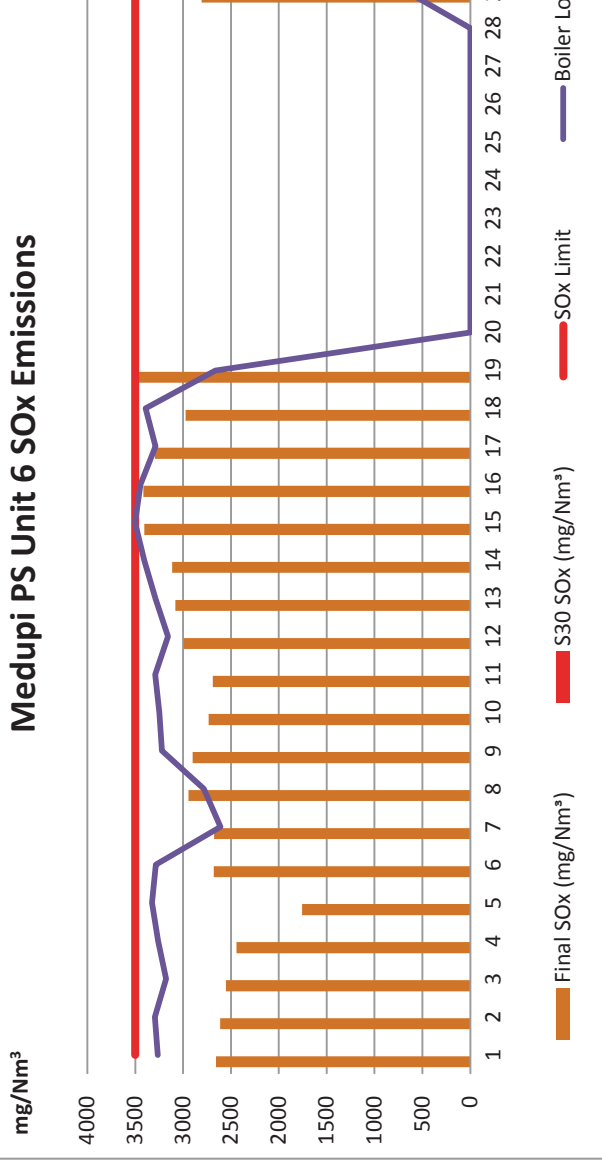
Medupi PS Unit 4 SOx Emissions



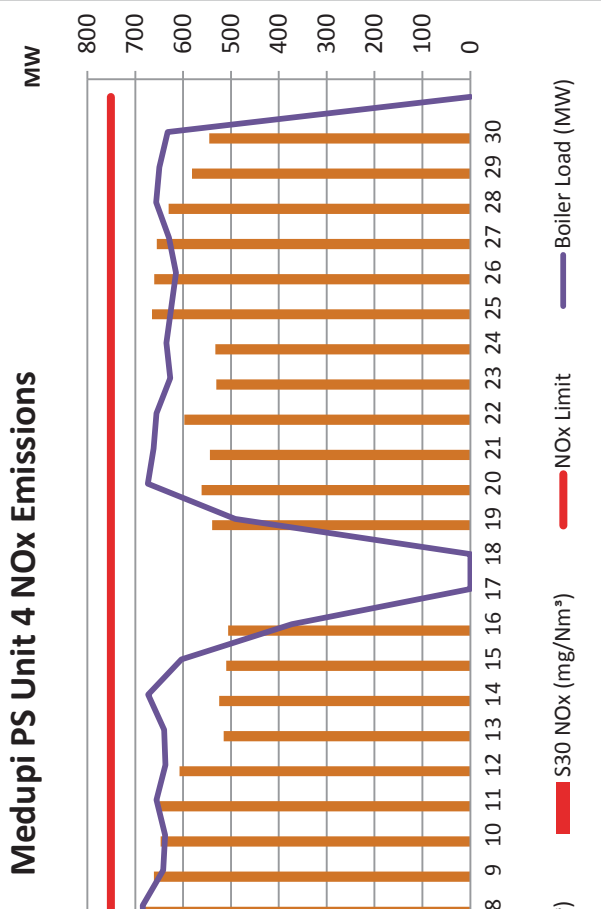
Medupi PS Unit 5 SOx Emissions



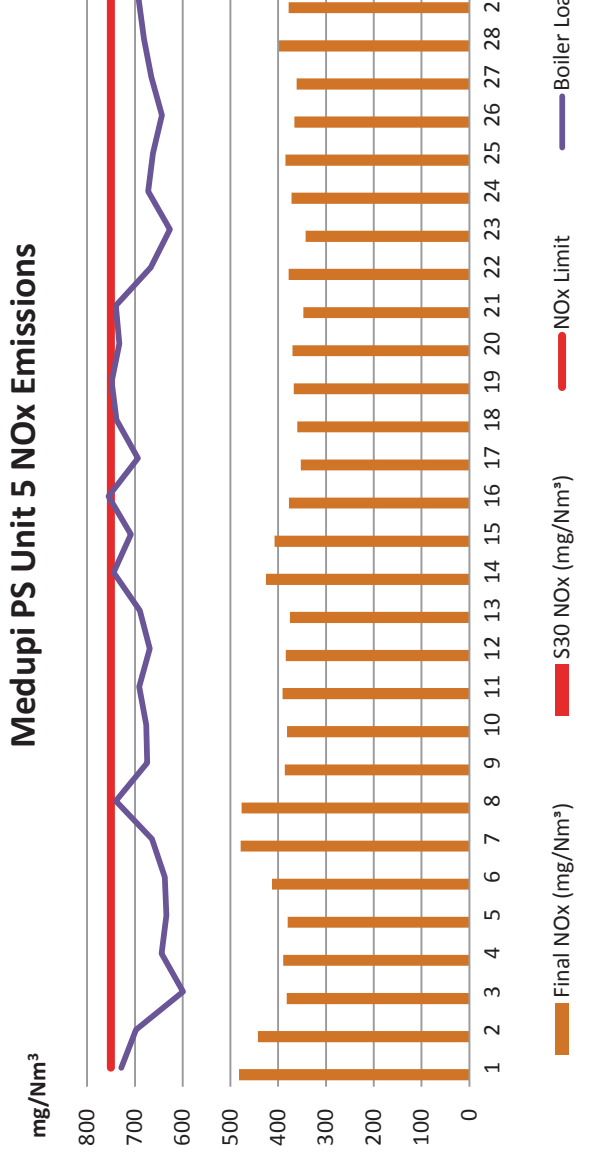
Medupi PS Unit 6 SOx Emissions



Medupi PS Unit 4 NOx Emissions



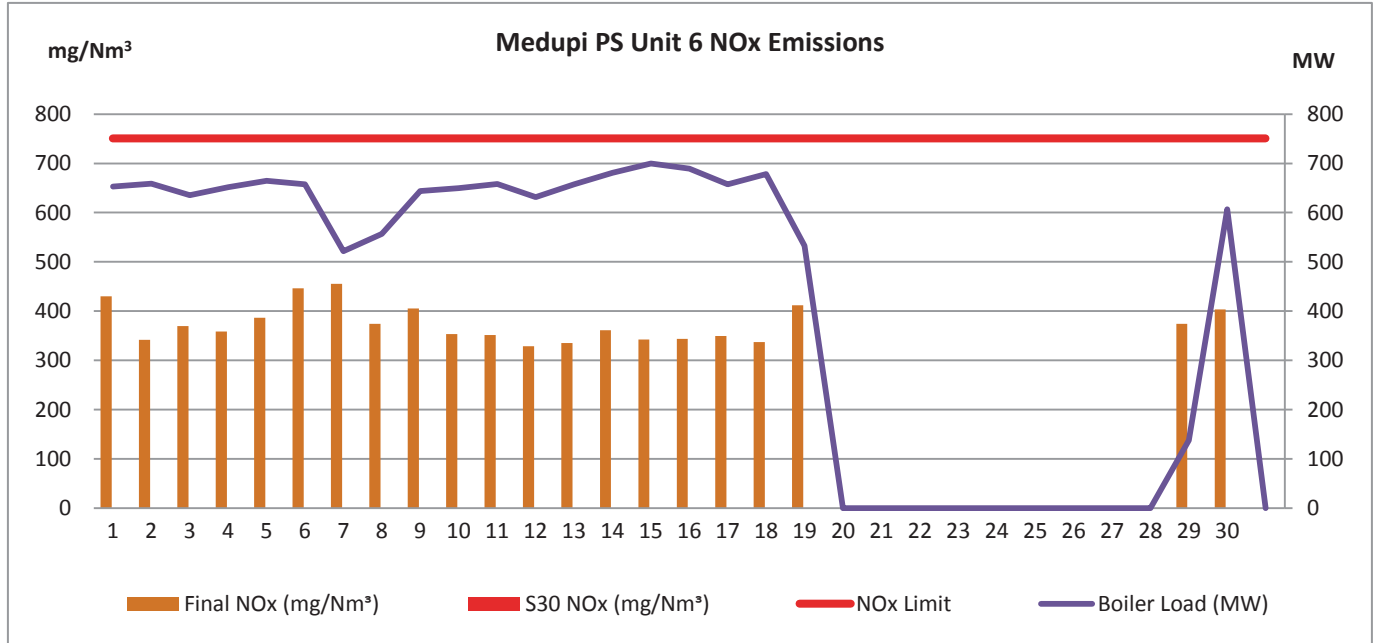
Medupi PS Unit 5 NOx Emissions





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**Table 7: Monthly tonnages for the month of June 2018**

Unit	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>2</sub> (tons)	CO (tons)	CO <sub>2</sub> (tons)
1	0.0	0	0	0	
2	0.0	0	0	0	
3	0.0	0	0	0	
4	55.2	6 901	1 304	23	
5	50.3	6 867	854	20	
6	58.1	4 987	644	33	
<b>SUM</b>	<b>163.6</b>	<b>18 755</b>	<b>2 802</b>	<b>75</b>	

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## 5. Shutdown/start-up information

**Table 8: Days operating under normal operation, days in grace period and section 30 days respectively**

Unit	Operating Days (DD:HH:MM)			
	Normal operation	In grace period	Under S 30	Unit off load
1	00:00:00	00:00:00	00:00:00	30:00:00
2	00:00:00	00:00:00	00:00:00	30:00:00
3	00:00:00	00:00:00	00:00:00	30:00:00
4	26:07:55	00:00:00	00:00:00	03:16:05
5	29:14:00	00:00:00	00:00:00	00:10:00
6	19:20:15	00:00:00	00:00:00	10:03:45

**Table 9: Days declared Emergency level one**


Hours Declared EL1		
Date	EL1 Start	EL1 End
1 June 2018	17:01	19:32
4 June 2018	17:14	20:23
5 June 2018	16:59	20:10
6 June 2018	16:43	20:22
7 June 2018	16:43	20:22
8 June 2018	16:32	20:46
10 June 2018	17:32	19:11
11 June 2018	16:52	19:57
12 June 2018	17:00	19:53
13 June 2018	15:14	20:42
15 June 2018	05:11	22:00
18 June 2018	16:19	20:57
19 June 2018	16:30	20:28
20 June 2018	15:29	20:53
21 June 2018	17:07	19:50
26 June 2018	17:25	19:35
27 June 2018	17:08	19:49
28 June 2018	17:10	20:11

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## 6. Comments on the performance and availability of each unit

- Medupi power station operating units performed well within the ambit of the Atmospheric emissions licence for both Particulate and NO<sub>x</sub> emissions. However, all three units recorded emissions above the daily average limit for SO<sub>2</sub>.

## 7. Light up information

Table 10: PM Start-up information for the month of June

Event No.	Event 1		Event 1		Event 1		Event 2	
Unit	Unit 4		Unit 5		Unit 6			
Fires in	2018/06/19	2018/06/19	11:25 AM	2018/06/15	10:10 AM	2018/06/08	07:20 PM	2018/06/29
Synchronisation with Grid	10:20 AM	2018/06/19	09:15 PM	2018/06/15	03:15 PM	2018/06/08	09:40 PM	2018/06/29
Emissions below limit from Sync (Date and Time)	did not go above limit	did not go above limit	did not go above limit	did not go above limit	did not go above limit	did not go above limit	did not go above limit	did not go above limit
Fires in to synchronization	00:03:15	Hrs (dd:hh:mm)	00:09:50	Hrs (dd:hh:mm)	00:05:05	Hrs (dd:hh:mm)	00:02:20	Hrs (dd:hh:mm)
Synchronization to < limit (Duration)	did not go above limit	Hrs (dd:hh:mm)	did not go above limit	Hrs (dd:hh:mm)	did not go above limit	Hrs (dd:hh:mm)	did not go above limit	Hrs (dd:hh:mm)


Table 11: Emission Average from Fires-in to Synchronisation

Emission Average (mg/Nm <sup>3</sup> ) from Fires-in to Synchronisation (Date and Time)							
Unit	Fires-In		Synchronisation		PM	SO <sub>2</sub>	NO <sub>x</sub>
4	2018/06/19	07:05 AM	2018/06/19	10:20 AM	41.9	1644.9	367.4
5	2018/06/15	11:25 AM	2018/06/15	09:15 PM	21.6	3552.3	418.4
6	2018/06/08	10:10 AM	2018/06/08	03:15 PM	18.3	2924.4	345.0
6	2018/06/29	07:20 PM	2018/06/29	09:40 PM	4.4	0.0	7.6

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**Table 12: Point Source emissions released during Shut-down**

Emission Average (mg/Nm <sup>3</sup> ) Breaker Open (BO) to Draft Group Shut Down (SD) (Date & Time)							
Unit	Breaker Open		DG SD		PM	SO <sub>2</sub>	NO <sub>x</sub>
4	2018/06/15	10:25 AM	2018/06/17	03:30 AM	39.0	3702.9	0.0
6	2018/06/19	10:45 PM	2018/06/20	09:50 AM	12.0	4045.9	483.4

## 8. Continuous Emission Monitoring Systems (CEMS)

Unit 4, 5 and 6 Continuous Emission Monitoring Systems were in operation at all times when the unit was on load. CEMS CO<sub>2</sub> monitor verification test not yet conducted, the Licencing Authority will be notified prior to conducting the test. The Department will be notified of the exact date for the test.

**Table 13: Periods during which CEMS was inoperative**

Date	Time	Duration	Nature of Repair/Adjustment
N/A	N/A	N/A	N/A

**Table 14: CEMS Monitor Reliability**

Variable	Unit 4	Unit 5	Unit 6
Dust	100	99.9	100
SO <sub>2</sub>	100	100	94.8
NO <sub>x</sub>	99.7	99.6	92.7
CO	100	100	99.6
O <sub>2</sub>	99.4	99.8	93.5
Temperature	-	99.9	96.7
Pressure	99.8	99.9	100
Velocity	-	99.9	93.5
CO <sub>2</sub>	-	-	-


## 9. CEMS Calibration certificates and equipment used for calibration

See attached Appendix A

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## 10. Ambient Air Quality Monitoring Report

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

## 11. Visual inspection of the exterior walls of the fuel oil tanks, fuel oil inventory data 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 15: Total Volatile Organic Compound (TVOC) for June 2018

		
<b>CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*</b>		
<b>Date:</b>	30 June 2018	
<b>Station:</b>	Medupi Power Station	
<b>Province:</b>	Limpopo Province	
<b>Tank no.</b>	1-2	
<b>Description:</b>	Outdoor fuel oil storage tank	
<b>Tank Type:</b>	Vertical fixed roof (vented to atmosphere)	
<b>Material stored:</b>	Fuel Oil 150	
<b>MONTHLY INPUT DATA FOR THE STATION</b> 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		
<b>MONTH:</b>	June	
<b>GENERAL INFORMATION:</b>	<b>Data</b>	<b>Unit</b>
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:	1126.179	tons/month
Molecular weight of the fuel oil:	166.00	Lb/lb-mole
<b>METEROLOGICAL DATA FOR THE MONTH</b>	<b>Data</b>	<b>Unit</b>
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 <sup>2</sup> /day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
<b>FINAL OUTPUT:</b>	<b>Result</b>	<b>Unit</b>
<b>Breathing losses:</b>	0.71 kg/month	
<b>Working losses:</b>	0.03 kg/month	
<b>TOTAL LOSSES (Total TVOC Emissions for the month):</b>	0.74 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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## 12. Air quality improvements initiatives and public education and awareness campaigns

There were no activities planned for the month of June 2018.

## 13. Complaints Register


Table 16: Complaints for the month of June 2018

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:**

**Senior Environmental Advisor**

**Reviewed by:**

**Boiler System Engineer**

**Supported by:**

**Boiler Engineering Manager**

**Supported by:**

**Engineering Group Manager (Acting)**

I Rudi van der Wal, declares that the information provided in this report is accurate and correct.


Yours sincerely

**GENERAL MANAGER: MEDUPI POWER STATION**

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### APPENDIX 1

CEMS Calibration certificates



12 Angeller street, Bardene,  
Bokaburg, 1459  
P.O.BOX 328, ISANDI, 1600  
TEL: +27 11 918 6994  
FAX: +27 11 894 1037

VAT REG #: 421 021 2249  
CO REG #: 2004/007607/07

### CALIBRATION CERTIFICATE

					<b>CERTIFICATE NO:</b>	
					<b>2555</b>	
					<b>Doc. No: EA_5656</b>	
<b>Customer:</b>	<b>Medupi Power</b>			<b>Job No:</b>	<b>SC943</b>	
<b>Contact Name:</b>	<b>Christo Vorster</b>	<b>Phone:</b>	<b>014 762 2255</b>	<b>Fax:</b>		
<b>Model:</b>	<b>Foedisch MGA 23</b>	<b>Serial No:</b>	<b>16339</b>			
<b>Auxiliary Equipment:</b>	<b>Unit 6</b>					

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	7 ppm	0 ppm	Air	21 %	Air
	SPAN	881 ppm	879 ppm	CO	879.2 ppm	12635
2	ZERO	3 ppm	0 ppm	Air	21 %	Air
	SPAN	829 ppm	834 ppm	NO	833.8 ppm	3207
3	ZERO	5 ppm	0.0 ppm	Air	21 %	Air
	SPAN	2507 ppm	2428 ppm	SO2	2427.7 ppm	0034
4	ZERO	0.06 %	0.0 %	N2	99.99 %	12635
	SPAN	21.07 %	20.95 %	O2	20.95 %	Air

*Report: Diagnostics OK, coolers running, but one parastelic pump on cooler 1 not working, calibration was done with zero and span gas, analyser respond to all test gas, all in place and in working order.*

Date: 09 Apr 2018

Cal Due Date: Jul 2018

Service Engineer:



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VAT REG #: 421 021 2249  
CO REG #: 2004/007607/07

## CALIBRATION CERTIFICATE

					<b>CERTIFICATE NO:</b>	
					2553	
					Doc. No: EA_5656	
Customer:	Medupi Power			Job No:	SC943	
Contact Name:	Christo Vorster	Phone:	014 762 2255	Fax:		
Model:	Voedisch MGA 23	Serial No:	13668			
Auxiliary Equipment:	Unit 4					

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	0 ppm	0 ppm	Air	21 %	Air
	SPAN	874 ppm	879 ppm	CO	879.2 ppm	12636
2	ZERO	10 ppm	0 ppm	Air	21 %	Air
	SPAN	816 ppm	834 ppm	NO	833.9 ppm	3207
3	ZERO	0 ppm	0 ppm	Air	21 %	Air
	SPAN	2347 ppm	2428 ppm	SO2	2427.7 ppm	0034
4	ZERO	0.33 %	0.0 %	N2	99.99 %	12636
	SPAN	21.49 %	20.96 %	O2	20.96 %	Air

*Report: Diagnostics OK, cooler parastatic pump not working, has to be replaced, calibration was done with zero and span gas, analyser respond to all test gas, all in working order.*

Date: 09 Apr 2018

Cal Due Date: Jul 2018

Service Engineer:



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VAT REG #: 421 021 2249  
CO REG #: 2004/007607/07

## CALIBRATION CERTIFICATE

				CERTIFICATE NO:	
				2554	
				Doc. No: EA_5656	
Customer:	Medupi Power			Job No:	SC943
Contact Name:	Christo Vorster	Phone:	014 762 2255	Fax:	
Model:	Foedisch MGA 23		Serial No:	13670	
Auxiliary Equipment:	Unit 5				

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	1 ppm	0 ppm	Air	21 %	Air
	SPAN	882 ppm	879 ppm	CO	879.2 ppm	12635
2	ZERO	2 ppm	0 ppm	Air	21 %	Air
	SPAN	838 ppm	834 ppm	NO	833.9 ppm	3207
3	ZERO	4 ppm	0 ppm	Air	21 %	Air
	SPAN	2387 ppm	2428 ppm	SO2	2427.7 ppm	0034
4	ZERO	0.02 %	0.0 %	N2	99.99 %	12635
	SPAN	21.39 %	20.95 %	Air	20.95 %	Air

*Report: All diagnostics ok. Calibration was done with zero and span gas, analyser responding to all test gas.*

Date: 09 Apr 2018

Cal Due Date: Jul 2018

Service Engineer:



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