



## Medupi Power Station Monthly Emissions Report

Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	1
Effective Date	January 2018		
Review Date	January 2021		

Phumudzo Thivhafuni

Date: 2018/12/15

Limpopo Dept. of Economic Development, Environment and Tourism

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Ref: 12/4/12L-W2/A3 – Nov 2018

Dear Phumudzo

### MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF NOVEMBER 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 November 2018 only. Unit 6 was on outages for most days of the reporting period.

## 1. Raw Materials and Products

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

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Unit 4, 5 and 6 consumption November 2018
	Coal	Tons/month	1 875 000	440 269
	Fuel Oil	Tons/month	40 000	1123
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Unit 4, 5 and 6 Production Rate in Month of November 2018
	Energy	MW	4800	1729.9
	Ash Emitted	Tons/month	not specified	140

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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	Units	Total	Units			
01-Nov -18	24.0	24.0	0.0	0.00	0	0	11490	452.6	599.2	
02-Nov -18	24.0	24.0	0.0	2.39	0	2	12669	558.1	639.6	
03-Nov -18	24.0	24.0	0.0	0.00	6	6	12763	531.6	650.0	
04-Nov -18	24.0	24.0	0.0	0.00	11	11	12083	555.6	565.1	
05-Nov -18	24.0	24.0	0.0	0.00	55	55	12929	539.1	658.0	
06-Nov -18	24.0	17.1	0.0	0.00	0	0	10709	526.0	657.6	
07-Nov -18	24.0	0.0	0.0	1.66	93	95	10550	548.9	508.5	
08-Nov-18	24.0	20.7	0.0	0.00	136	136	9153	548.0	646.8	
09-Nov -18	24.0	24.0	0.0	0.00	6	6	10247	581.0	603.8	
10-Nov -18	24.0	24.0	0.0	0.00	35	35	13525	593.9	642.2	
11-Nov -18	24.0	24.0	0.0	0.00	3	3	12910	533.5	658.0	
12-Nov -18	24.0	24.0	0.0	0.00	26	26	13223	553.7	658.0	
13-Nov -18	24.0	24.0	0.0	0.00	20	20	12872	534.9	636.6	
14-Nov -18	24.0	24.0	0.0	0.00	28	28	13160	527.7	652.4	
15-Nov -18	24.0	24.0	0.0	0.00	13	13	13143	548.5	643.9	183.6
16-Nov -18	24.0	7.1	2.6	0.00	15	15	15419	489.8	541.1	476.0
17-Nov -18	24.0	12.9	0.0	0.00	235	235	12718	520.7	659.1	142.8
18-Nov -18	24.0	24.0	0.0	0.00	32	32	14117	473.1	655.1	329.4
19-Nov -18	24.0	24.0	6.8	0.00	29	29	17634	510.4	637.5	468.9
20-Nov -18	24.0	10.3	24.0	0.00	7	7	15713	515.4	611.9	661.8
21-Nov -18	24.0	0.0	16.5	0.00	18	18	10813	504.8		667.1
22-Nov -18	24.0	0.0	0.7	0.00	147	147	17456	515.0	528.1	593.8
23-Nov -18	24.0	23.6	24.0	0.00	47	47	20197	548.8	606.8	753.3
24-Nov -18	24.0	24.0	24.0	0.00	29	29	21189	590.5	657.0	770.4
25-Nov -18	24.0	24.0	24.0	0.00	28	28	20440	540.8	657.0	702.0
26-Nov -18	24.0	24.0	24.0	0.00	0	0	19631	537.8	657.0	662.5
27-Nov -18	24.0	24.0	24.0	0.00	9	9	19327	499.4	656.9	674.0
28-Nov -18	24.0	24.0	24.0	0.00	80	80	17446	497.8	628.3	612.4
29-Nov -18	24.0	24.0	24.0	0.00	11	11	17087	527.7	659.8	751.0
30-Nov -18	24.0	24.0	24.0	0.00	0	0	19661	497.4	647.8	695.2

Note: the auxiliary boilers were not utilised for the purpose of steam generation throughout the reporting period, this boilers were run to conduct the reliability test in preparation for the annual emissions test. The aux boilers were not reliable and such, there was no emission test conducted.

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## 2. Abatement Technology

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

Associated Unit/Stack	Technology Type	Actual Utilisation (%) for the month of November 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 November 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	1.37
Ash Content	35 - 39	35.27

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

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
<b>Oil</b>		
Sulphur Content	0.5 - 3.5	1.84
Ash Content	0.02 - 0.1	0.036

## 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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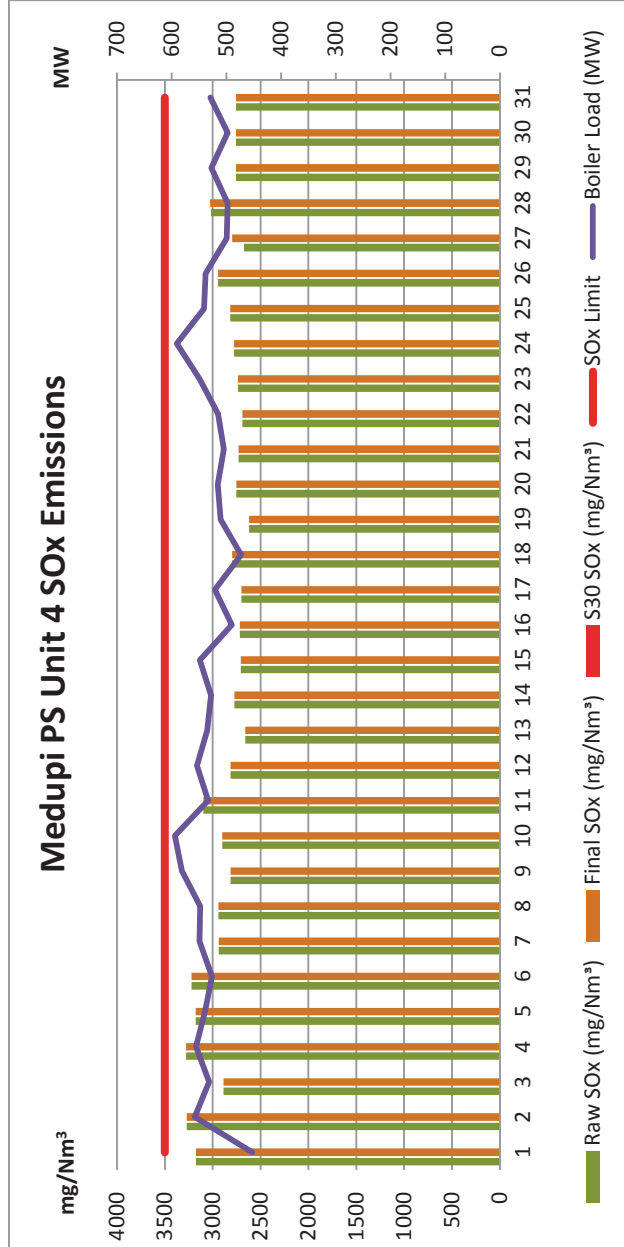
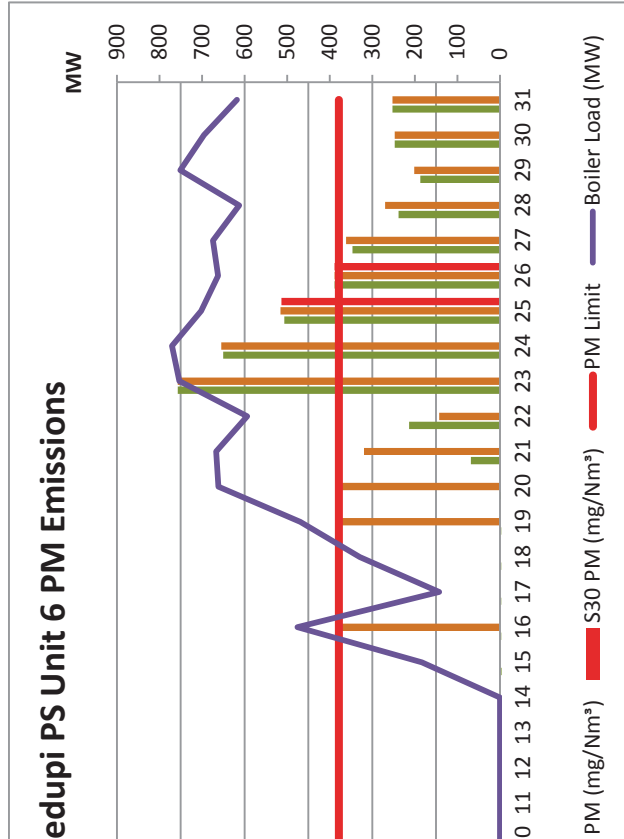
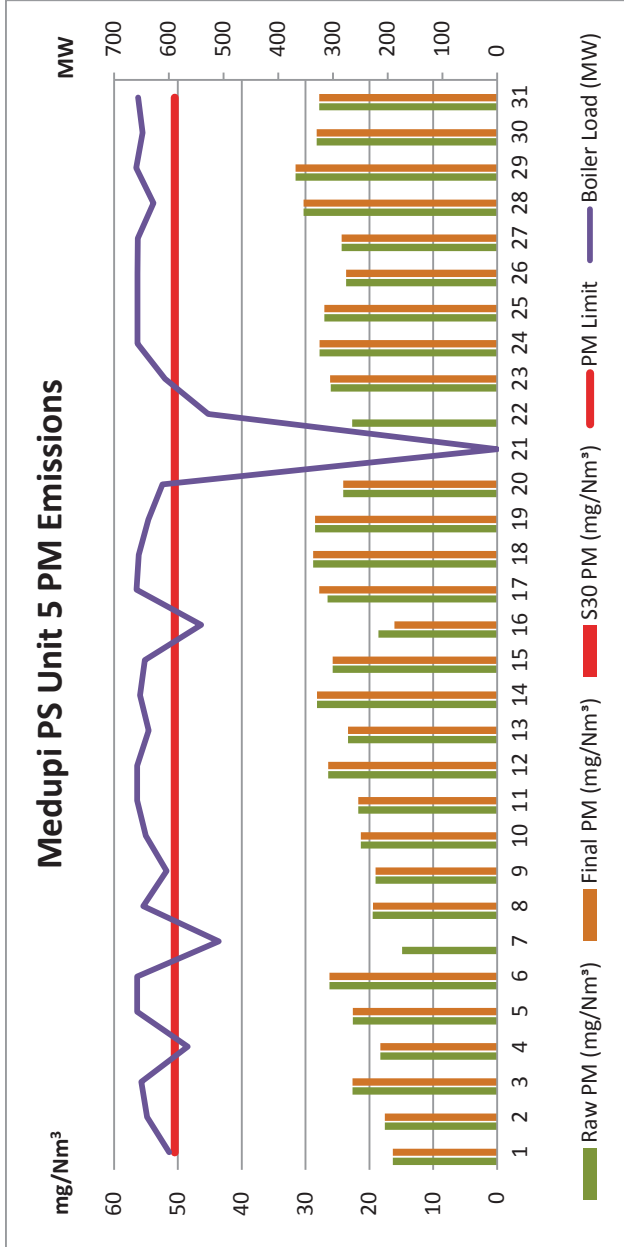
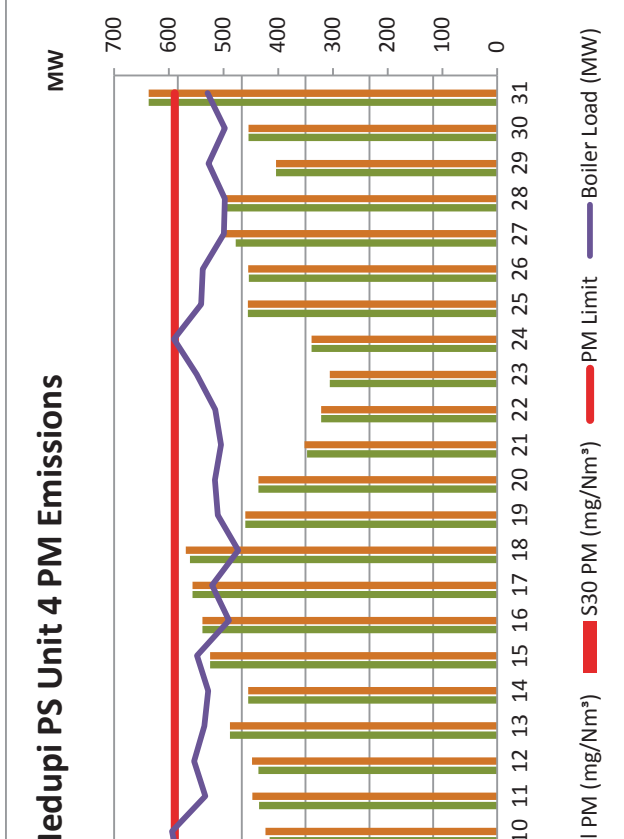
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Averages emissions for the month of November 2018

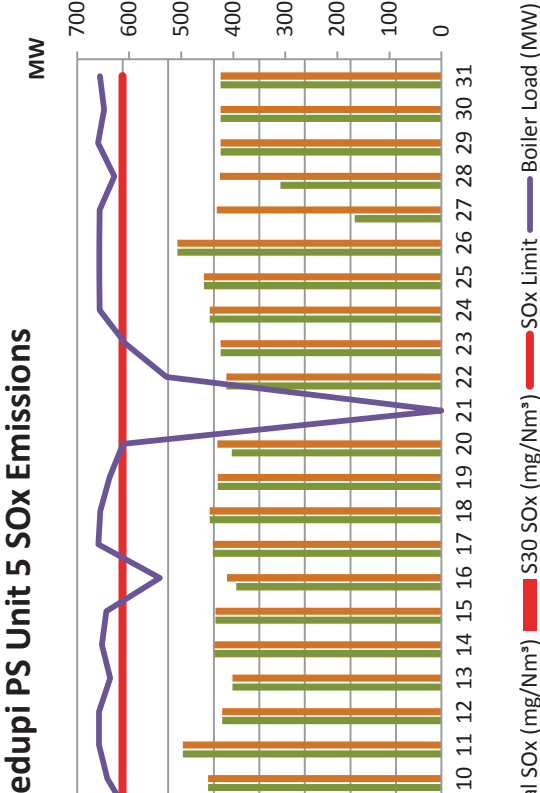
	PM (mg/Nm <sup>3</sup> )		SO <sub>2</sub> (mg/Nm <sup>3</sup> )			NO <sub>2</sub> (mg/Nm <sup>3</sup> )			CO (mg/Nm <sup>3</sup> )			Temp (°C)			Press (kPa)			Velocity (m/s)			O <sub>2</sub> (%)			(m)
	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	
	16.3		3 175	2 652		731	491		7	4		133.2	89.3	89.2	17.4	9.1	7.4							
	17.6		3 271	2 833		656	506		8	4		131.1	89.7	89.6	18.1	8.1	7.3							
	22.6		2 887	2 504		670	498		9	4		130.8	90.0	89.9	17.9	8.3	7.1							
	18.3		3 277	2 845		696	433		7	4		126.5	89.7	89.6	16.6	8.3	7.9							
	22.6		3 177	2 913		680	409		7	4		138.6	89.4	89.3	18.5	8.3	7.0							
	26.2		3 222	2 769		659	400		7	4		132.8	89.4	89.2	17.7	8.5	7.1							
			2 936			634			8			122.2	89.9		17.1	8.2								
	19.4		2 942	2 612		672	394		7	6		129.8	90.2	90.1	18.1	8.6	7.3							
	19.1		2 814	2 527		705	479		6	3		129.2	90.0	90.0	17.3	8.6	7.6							
	21.3		2 899	2 562		711	470		6	4		134.3	90.0	89.9	17.9	8.4	7.1							
	21.7		3 098	2 840		688	472		7	4		136.5	89.9	89.8	18.2	8.7	7.0							
	26.5		2 813	2 406		717	496		7	4		138.2	90.1	90.0	18.2	8.5	7.0							
	23.3		2 659	2 293		693	470		7	5		136.0	89.9	89.8	18.0	8.7	7.1							
	28.2		2 772	2 492		687	480		7	4		138.0	89.7	89.6	18.2	8.7	6.9							
	25.7		2 705	2 481		722	467	452	7	4	3	139.2	89.8	89.6	18.2	11.6	8.5	7.0					11.3	
	16.1		2 716	2 353		714	469	495	9	7	7	132.7	89.9	89.7	16.0	14.3	9.1	7.9					8.0	
	27.8		2 700	2 509		686	453		8	4	4	140.2	89.8	89.6	18.4	8.4	6.9							
	28.8		2 798	2 544		839	486		8	5	3	142.7	89.8	89.6	18.5	9.3	7.0							
	28.5		2 621	2 457		672	454	506	8	4	4	137.9	89.9	89.7	18.1	14.0	8.8	7.0					8.1	
	24.1		2 752	2 460		714	439	499	7	6	16	133.1	89.6	89.6	16.5	18.0	8.5	7.4					6.0	
			2 730			671		499	8		16	144.9	89.3		17.8	8.4							5.9	
			2 691			731		477	7		24	138.5	89.5		17.1	8.7							6.7	
			2 735	2 426		780	420	466	7	5	14	133.3	89.8	89.6	17.6	20.8	8.5	7.5					5.5	
	27.8		2 778	2 545		792	441	485	8	5	11	136.9	89.8	89.7	18.1	21.4	8.4	6.8					5.6	
	27.0		2 817	2 607		722	463	533	8	5	13	140.2	89.7	89.6	18.3	19.8	8.5	6.9					6.1	
	23.7		2 942	2 899		780	471	535	11	6	9	142.2	89.5	89.4	18.4	18.7	9.4	6.9					6.1	
	24.3		2 796	2 468		769	202	554	11	8	15	140.5	89.4	89.2	18.4	18.0	9.3	7.0					7.2	
	30.3		3 026	2 432		769	419	534	8	7	20	139.6	89.4	89.2	18.1	18.1	8.8	7.2					6.3	
	31.6		2 757	2 426		720	400	491	5	6	19	132.4	90.0	89.9	18.0	15.1	8.7	6.9					6.9	
	28.3		2 961	2 620		732	468	469	7	6	14	131.2	90.0	89.9	17.8	16.7	9.7	7.1					6.2	

no reportable data on areas shaded black.  
 temperature and velocity meters are faulty. The Power station maintenance team is awaiting spares for the repairs of the instrument to be conducted.  
 articulate emissions monitoring instrument was faulty between 16 and 20 November 2018.

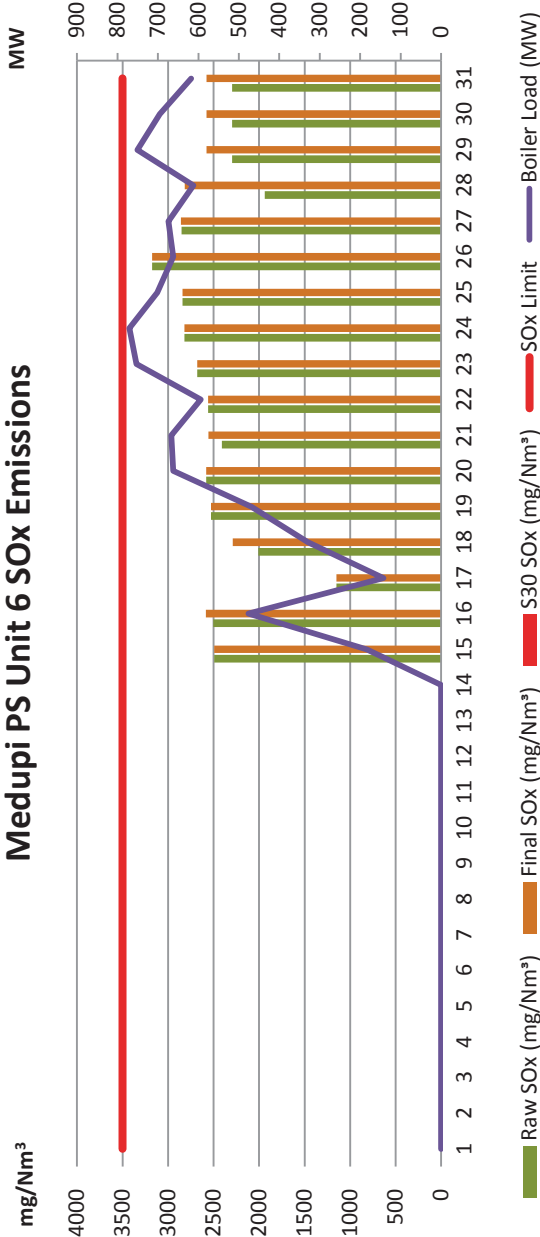
Graphical representation of the daily average emissions



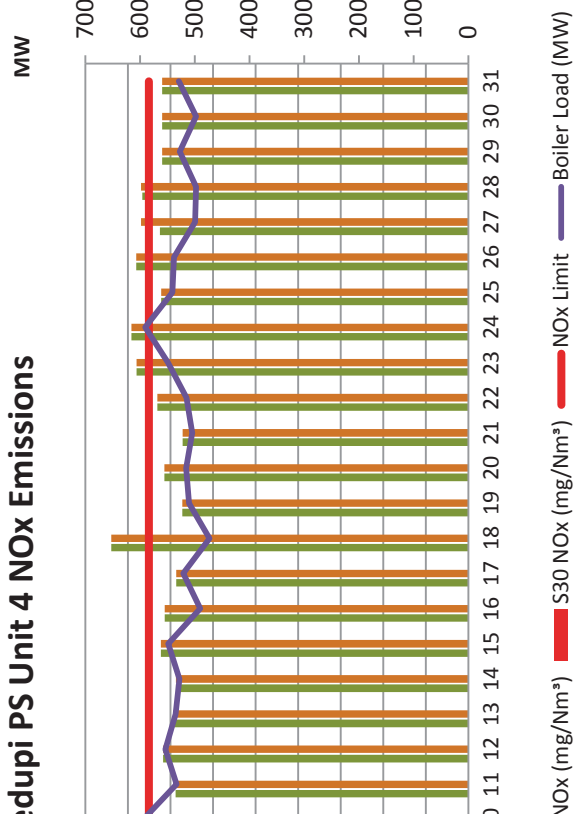
### Medupi PS Unit 5 SOx Emissions



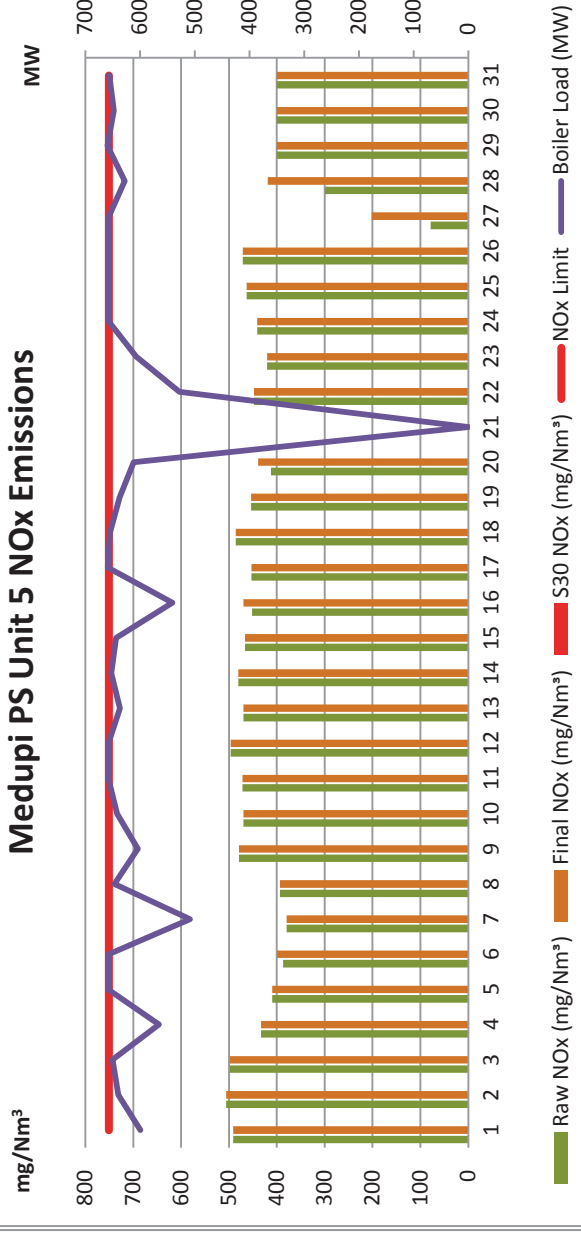
### Medupi PS Unit 6 SOx Emissions




### Medupi PS Unit 4 NOx Emissions



### Medupi PS Unit 5 NOx Emissions



s represents the days of November month, however point no 31 is a representation of December 1.

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**Table 7: Monthly tonnages for the month of November 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	60.9	3 520	870	9	
5	41.5	4 377	757	8	
6	37.4	1 840	331	9	
SUM	139.7	9 737	1 959	27	

Note: Unit 6 was on outage for most of the day during the reporting period, units 1 to 3 are not yet in commercial operation. CO<sub>2</sub> monitoring equipment is currently not functional, procurement process is undergoing to purchase the spare required to fix/repair the equipment.

## 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	30:00:00	00:00:00	00:00:00	00:00:00
5	27:19:35	00:00:00	00:00:00	02:04:25
6	09:03:10	02:00:00	02:05:00	16:15:50

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**Table 9: Days declared Emergency Level one (EL1)**


Hours Declared EL1	
Date	EL1 Start
1 November 2018	(15:12) EL1 and MCR in force. (22:17) EL1 and MCR cancelled
2 November 2018	05:18 EL1 & MCR in force. 22:28 EL1 & MCR cancelled.
3 November 2018	17:14 EL1 and MCR in force and cleared at 20:25
4 November 2018	12:00 EL1 and MCR in force and cleared at 20:29
5 November 2018	EL1 and MCR in force at 15h04 and cancelled at 21h54
6 November 2018	EL1 and MCR in force at 15h04 and cancelled at 21h54
7 November 2018	05:35 EL1 and MCR in force 21h56: EL1 & MCR cancelled
8 November 2018	EL1 and MCR in force at 05h46 and cancelled at 21h37
9 November 2018	11:18 EL1 and MCR in force and cancelled at 21:46
10 November 2018	06:51 EL1 and MCR in force. 22:15 Cancelled
11 November 2018	EL1 and MCR in force at 15h12 and cancelled at 22h03
12 November 2018	EL1 and MCR in force at 15h12 and cancelled at 22h03
13 November 2018	EL1 and MCR in force at 05h02 and cancelled at 23h04
14 November 2018	EL1 and MCR was in force from 05h10 to 23h04
15 November 2018	None
16 November 2018	EL1 & MCR in force 07:07 cancelled 21:52
17 November 2018	EL1 & MCR in force 07:07 cancelled 21:37

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Hours Declared EL1	
Date	EL1 Start
18 November 2018	07h07)EL1 in force EL1 and MCR cancelled
19 November 2018	(14:00) EL1 and MCR in force
20 November 2018	(10:21) EL1 and MCR in force. (21h48) EL1 and MCR cleared.
21 November 2018	(04:55) EL1 and MCR in force.
22 November 2018	04:34 EL1 and MCR inforce.
23 November 2018	(22:55) EL1 and MCR cancelled.
24 November 2018	(06:53) EL1 and MCR in force. (21:51) EL1 and MCR cancelled.
25 November 2018	(16h00) EL1 and MCR in force. Cleared
26 November 2018	3:57 EL1 and MCR inforce
26 November 2018	(03h57) EL1 still in force (23h22) EL1 and MCR cleared. (04h08) EL1 and MCR in force.
28 November 2018	17:45 EL1 and MCR inforce
29 November 2018	EL1 and MCR was in force from 04h27 to 22h13 and reinstated again at 04h30
30 November 2018	EL1 and MCR was in force from 04h30 to 21h52 and reinstated again at 04h36

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

Medupi power station operating unit 5 performed well within the ambit of the Atmospheric Emissions Licence in all parameters. Unit 4 NO<sub>x</sub> exceeded the limit of 750 mg/Nm<sup>3</sup> on six occasions; Medupi Power Station has planned to conduct verification test on unit 4 CEMS in the month of November 2018. The department will be notified of the outcome of the tests as soon as the report is available.

Unit 4 particulates emissions incidents were witnessed and reported to the Authorities in terms of NEMA s30. It is also important to note that on the days the emissions exceeded the limit, EL1 was also declared and in force.

## 7. Light up information


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

Event No.	Event 1		Event 2		Event 3	
<b>Unit</b>	5		5		6	
<b>Fires in</b>	09:20 PM	2018/11/06	07:25 PM	2018/11/21	03:25 PM	2018/11/17
<b>Synchronisation with Grid</b>	03:15 AM	2018/11/07	12:20 AM	2018/11/22	05:10 PM	2018/11/18
<b>Emissions below limit from Sync (Date and Time)</b>	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
<b>Fires in to synchronization</b>	00:05:55	Hrs (dd:hh:mm)	00:04:55	Hrs (dd:hh:mm)	01:01:45	Hrs (dd:hh:mm)
<b>Synchronization to &lt; limit (Duration)</b>	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)

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**Table 11: Emission Average from Fires-in to Synchronisation**

South Stack Emission Average from Fires-in to Synchronisation (Date and Time)							
Unit	Fires-In		Synchronisation		PM	SO <sub>2</sub>	NO <sub>x</sub>
Unit 5	2018/11/06	09:20 PM	2018/11/07	03:15 AM	6.4	2307.1	424.9
Unit 5	2018/11/21	07:25 PM	2018/11/22	12:20 AM	21.7	1683.3	510.6
Unit 6	2018/11/17	03:25 PM	2018/11/18	05:10 PM	-0.4	1159.9	254.0

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

South Stack Emission Average 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>
Unit 5	2018/11/06	05:05 PM	2018/11/06	08:25 PM	4.0	289.8	49.8
Unit 5	2018/11/20	10:15 AM	2018/11/20	10:05 PM	7.8	-49.5	7.7
Unit 6	2018/11/16	11:15 PM	2018/11/16	11:15 PM	-0.4	-3.8	14.5

## 8. Continuous Emission Monitoring Systems (CEMS)

Unit 4 and 5 Continuous Emission Monitoring Systems were in operation at all times when the units were on load. CEMS CO<sub>2</sub> monitor verification test not yet conducted as a result of challenges on the equipment; the power station is in the process of procuring spares to fix the equipment and the Licencing Authority will be notified prior to conducting the test.


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

Date	Nature of Repair/Adjustment
20 November 2018	Adjustment of the limit of the purging valve

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

**Table 14: CEMS Monitor Reliability**

Variable	Unit 4	Unit 5	Unit 6
Dust	100.0	100.0	99.7
SO2	99.9	96.2	96.0
NOx	99.7	96.0	96.0
CO	99.9	99.8	100.0
O2	99.6	95.6	95.1
Temperature	0.0	100.0	100.0
Pressure	100.0	100.0	100.0
Velocity	0.0	100.0	95.8
CO <sub>2</sub>	0.0	0.0	44.3

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

See attached Appendix A

## 10. 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.

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


Table 15: Total Volatile Organic Compound (TVOC) for November 2018

		
<b>CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*</b>		
<b>Date:</b>	2018/11/31	
<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>	November	
<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:	2082.048	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	26.22	°C
Daily maximum ambient temperature	32.63	°C
Daily minimum ambient temperature	20.19	°C
Daily ambient temperature range	12.44	°C
Daily total insolation factor	6.14	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>	0.72 kg/month	
<b>Working losses:</b>	0.06 kg/month	
<b>TOTAL LOSSES (Total TVOC Emissions for the month):</b>	0.77 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, 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.</small>		

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		<b>Effective Date</b>	<b>January 2018</b>		
		<b>Review Date</b>	<b>January 2021</b>		

## 12. Air quality improvements initiatives and public education and awareness campaigns

There were no activities relating to community awareness campaign during the month of November 2018.

## 13. Complaints Register


Table 16: Complaints for the month of November 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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		<b>Document Identifier</b>	<b>240-88543153</b>	<b>Rev</b>	<b>1</b>
		<b>Effective Date</b>	<b>January 2018</b>		
		<b>Review Date</b>	<b>January 2021</b>		

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**Compiled by:**

**Senior Environmental Advisor**

**Reviewed by:**

**Boiler System EIT**

**Supported by:**

**Boiler Engineering Manager**

**Supported by:**

**Environmental 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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# Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	1
Effective Date	January 2018		
Review Date	January 2021		

## APPENDIX 1

CEMS Calibration certificates



12 Angeller Street, Bardene,  
Boksburg, SA, 1469  
PO Box 328, Isando, SA, 1600  
VAT REG #: 421 021 2249  
[www.e-analytics.co.za](http://www.e-analytics.co.za)

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Fax: +27 11 894 1037  
CO REG #: 2004/007607/07  
[info@e-analytics.co.za](mailto:info@e-analytics.co.za)

### CALIBRATION CERTIFICATE

		<b>CERTIFICATE NO: 2816</b>	
CUSTOMER:	Medupi Power Station	JOB NO:	SC1267
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Dr Fodisch MGA 23	SERIAL NO:	13670
AUXILIARY EQUIPMENT:	Unit 5		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	-2.6 ppm	0 ppm	Air	21 %	Air
	SPAN	795 ppm	804 ppm	CO	803.9 ppm	80A
2	ZERO	-9.0 ppm	0 ppm	Air	21 %	Air
	SPAN	821 ppm	834 ppm	NO	833.9 ppm	3207
3	ZERO	-4.2 ppm	0 ppm	Air	21 %	Air
	SPAN	2113 ppm	2090 ppm	SO2	2090.4 ppm	12633
4	ZERO	0.05 %	0.0 %	N2	99.99 %	3207
	SPAN	20.98 %	20.95 %	O2	20.95 %	Air

*REPORT: Inspect sample lines and sample system, check diagnostics. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.*

Date: 30 Oct 2018

Calibration Due Date: Feb 2019

Technician:

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Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	1
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## CALIBRATION CERTIFICATE

CERTIFICATE NO: 2817

CUSTOMER:	Medupi Power Station	JOB NO:	SC1287
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Foedisch MGA 23	SERIAL NO:	18339
AUXILIARY EQUIPMENT:	Unit 6		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	+1.0 ppm	0 ppm	Air	21 %	Air
	SPAN	802 ppm	804 ppm	CO	803.9 ppm	804
2	ZERO	+1.0 ppm	0 ppm	Air	21 %	Air
	SPAN	854 ppm	834 ppm	NO	833.9 ppm	3207
3	ZERO	+3.0 ppm	0 ppm	Air	21 %	Air
	SPAN	2265 ppm	2090 ppm	SO2	2090.4 ppm	12633
4	ZERO	0.07 %	0.0 %	N2	99.99 %	3207
	SPAN	20.79 %	20.95 %	O2	20.95 %	Air

**REPORT:** Inspect sample lines and sample system, check diagnostics. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.

Date: 30 Oct 2018

Calibration Due Date: Feb 2019

Technician:



Document Number: TH-PFC-002-F1 Rev 1

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Document Identifier	240-88543153	Rev	1
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ESST Level 4 Company

## CALIBRATION CERTIFICATE

<b>CERTIFICATE NO: 2818</b>			
CUSTOMER:	Medupi Power Station	JOB NO:	SC1267
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Dr Fodisch MGA 12 CO2	SERIAL NO:	
AUXILIARY EQUIPMENT:	Unit 6		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	0.6 %	0.0 %	Air	21 %	Air
	SPAN	622 ppm	22.0 %	CO2	22.1 %	222321

*REPORT: Inspect sample lines and sample system, check diagnostics. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.*

Date: 30 Oct 2018

Calibration Due Date: Feb 2019

Technician:



Document Number: TH-PFC-002-F1 Rev 1

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## CALIBRATION CERTIFICATE

<b>CERTIFICATE NO: 2615</b>			
CUSTOMER:	Medupi Power Station	JOB NO:	SC1267
CONTACT NAME:	Christo Vorster	PHONE:	014 762 2255
MODEL:	Dr Fodisch MGA 23	SERIAL NO:	13668
AUXILIARY EQUIPMENT:	Unit 4		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER
1	ZERO	-5.0 ppm	0 ppm	Air	21 %	Air
	SPAN	788 ppm	804 ppm	CO	803.9 ppm	80A
2	ZERO	-12.0 ppm	0 ppm	Air	21 %	Air
	SPAN	818 ppm	834 ppm	NO	833.9 ppm	3207
3	ZERO	-17.3 ppm	0 ppm	Air	21 %	Air
	SPAN	1945 ppm	2090 ppm	SO2	2090.4 ppm	12633
4	ZERO	0.11 %	0.0 %	N2	99.99 %	3207
	SPAN	27.15 %	20.95	O2	20.95 %	Air

*REPORT: Inspect sample lines and sample system, check diagnostics. Change sample tubing on cooler parastatic pump. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.*

Date: 30 Oct 2018

Calibration Due Date: Feb 2019

Technician:



Document Number: TH-PFC-002-F1 Rev 1



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