	<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		

Phumudzo Thivhafuni

Date: 2020/01/30

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Ref: 12/4/12L-W2/A3 – Dec 2019

Dear Phumudzo

**MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF DECEMBER 2019**

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 2, 3, 4, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of December 2019 only.

## 1. Raw Materials and Products


Table 1: Quantity of raw materials and products for Unit 2, 3, 4, 5 and 6 in December 2019

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Unit 2,3, 4, 5 and 6 consumption December 2019
	Coal	Tons/month	1 875 000	796 362
	Fuel Oil	Tons/month	40 000	3 517
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Unit 2, 3, 4, 5 and 6 Production Rate in Month of December 2019
	Energy	MW	4 800	2266
	Ash Emitted	Tons/month	not specified	193.8

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

Date	Reportable hours of Operation					Fuel Consumption (tons)				Production (MW)
	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Oil		Coal	Units	
						Aux Boiler	Units	Total	Units	2,3,4,5 &6
01-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	93	93	23110	2071
02-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	64	64	23807	2178
03-Dec-19	24.0	13.7	0.0	24.0	24.0	0.00	181	181	24161	2322
04-Dec-19	24.0	0.0	0.0	24.0	24.0	0.00	154	154	23693	2102
05-Dec-19	24.0	8.6	0.0	24.0	24.0	0.00	235	235	23722	2399
06-Dec-19	24.0	6.8	0.0	24.0	24.0	0.00	36	36	24693	2620
07-Dec-19	24.0	1.2	0.0	24.0	24.0	0.00	126	126	24527	2596
07-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	71	71	23871	2542
09-Dec-19	24.0	20.2	0.0	15.9	24.0	0.00	30	30	21441	2169
10-Dec-19	24.0	1.0	0.0	0.3	24.0	0.00	538	538	21450	2479
11-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	189	189	23525	2726
12-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	62	62	22616	2614
13-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	13	13	23693	2560
14-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	104	104	21979	2551
15-Dec-19	5.6	24.0	0.0	24.0	24.0	0.00	145	145	24626	2390
16-Dec-19	10.3	24.0	0.0	24.0	24.0	0.00	8	8	24547	2676
17-Dec-19	21.6	24.0	0.0	24.0	24.0	0.00	3	3	24547	2619
18-Dec-19	0.0	24.0	0.0	24.0	24.0	0.00	0	0	24132	2537
19-Dec-19	7.3	24.0	0.0	24.0	24.0	0.00	32	32	23678	2478
20-Dec-19	11.7	24.0	0.0	24.0	24.0	0.00	18	18	22813	2421
21-Dec-19	24.0	24.0	0.0	24.0	24.0	0.00	36	36	24193	2567
22-Dec-19	24.0	21.8	0.0	24.0	24.0	0.00	49	49	24074	2673
23-Dec-19	24.0	0.0	0.0	24.0	24.0	0.00	27	27	24240	2244
24-Dec-19	24.0	0.0	8.3	24.0	24.0	0.00	427	427	24740	1636
25-Dec-19	24.0	0.0	0.0	24.0	24.0	0.00	283	283	24920	2177
26-Dec-19	24.0	23.9	0.0	23.0	24.0	0.00	234	234	24865	1993
27-Dec-19	24.0	24.0	12.3	0.0	24.0	0.00	100	100	20632	1140
28-Dec-19	24.0	24.0	24.0	0.0	24.0	0.00	159	159	23848	1203
29-Dec-19	24.0	24.0	24.0	22.1	24.0	0.00	22	22	24577	1337
30-Dec-19	24.0	24.0	24.0	24.0	24.0	0.00	33	33	24372	2886
31-Dec-19	24.0	24.0	24.0	24.0	24.0	0.00	45	45	24618	1331

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## 2. Abatement Technology

Table 3: Abatement Equipment Control Technology utilisation for month of December 2019

Associated Unit/Stack	Technology Type	Efficiency
Unit 1	Fabric Filter Plant (FFP)	0
Unit 2	Fabric Filter Plant (FFP)	99.934%
Unit 3	Fabric Filter Plant (FFP)	99.895%
Unit 4	Fabric Filter Plant (FFP)	99.811%
Unit 5	Fabric Filter Plant (FFP)	99.959%
Unit 6	Fabric Filter Plant (FFP)	99.902%

## 3. Energy Source Characteristics

Table 4: Energy Source Material Characteristics for the month of December 2019

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	1.35
Ash Content	35 - 39	33.58

Table 5: Energy Source Material Characteristics for the month of December 2019

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
<b>Oil</b>		
Sulphur Content	0.5 - 3.5	no results
Ash Content	0.02 - 0.1	no results

## 4. Emissions Reporting

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

The emission limits are as follows:

SO <sub>2</sub> Monthly = 3500 mg/Nm <sup>3</sup>	Dust Daily = 50 mg/Nm <sup>3</sup>	NO <sub>2</sub> Daily = 750 mg/Nm <sup>3</sup>
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Table 6: Medupi Power Station Emissions data

Date	Final PM mg/Nm <sup>3</sup> (minus 24 hrs for tonnage calc.)						Velocity (m/s) to Gas Volume (Nm <sup>3</sup> /s)						Unit 2 Final CEM mg/Nm <sup>3</sup>				Unit 2 Other CEMS Data					Unit 3 Final CEM mg/Nm <sup>3</sup>				Unit 3 Other CEMS Data					
	U1	U2	U3	U4	U5	U6	U1	U2	U3	U4	U5	U6	SO <sub>x</sub>	NO <sub>x</sub>	CO	CO <sub>2</sub>	CO <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub> O	°C	kPa	m/s	SO <sub>x</sub>	NO <sub>x</sub>	CO	CO <sub>2</sub>	CO <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub> O	°C	kPa
2019/12/01	26	35		3.9	27.8		958.9	580.9		354.4	273.1	3 975	962	0	76 617	3.9	7.7	4.7	135.7	89.5	22.8	2 898	292	13	128 189	6.5	7.7	17.3	135.4	88.9	16.1
2019/12/02	27	41.3		4	36.6		1041.2	730.9		344.1	277.8	4 072	952	2	76 329	3.9	7.2	4.2	136.2	89.5	23.8	2 676	333	16	84 460	4.3	6.4	9.2	139	88.8	16.8
2019/12/03	31	45.7		6	33.8		1102.1	786.5		510.7	277.4	3 840	791	3	74 835	3.8	6.8	3.7	136	89.2	24.4	2 632	340	11	128 189	6.5	6.3	3.1	138.3	88.7	16.8
2019/12/04	21			8	35.7		1023.7	441		628	312.4	3 905	731	0	73 425	3.7	7.4	4.3	125.9	89.6	23.1	2 810	380	13	128 189	6.5	9.7	7.9	119	89.4	12.3
2019/12/05	20	36.1		6.2	32.5		1039.8	741.2		568.6	338	3 869	721	21	71 201	3.6	7.4	4.2	123	89.9	23.1	2 513	294	79	128 189	6.5	6.7	3.6	122.1	89.5	15.7
2019/12/06	28	39.3		11	29.5		1183.2	746.6		764.2	308.2	4 190	796	1	68 511	3.5	6.5	3.2	126.3	89.5	24.9	2 716	353	52	128 189	6.5	6.6	3.3	126.6	89.2	15.8
2019/12/07	28	29.3		11.8	31.1		1200.8	710.6		802.9	308.8	4 085	765	1	68 628	3.5	6.4	3	121.6	89.1	24.8	2 568	306	36	128 189	6.5	6.6	3.4	127.7	88.7	15.3
2019/12/08	24	33.6		8.1	32.9		1115.5	686.7		703.1	319.6	4 003	759	28	73 749	3.7	6.9	3.6	121.3	89	24	2 572	323	18	128 189	6.5	6.9	4	127.5	88.5	15.2
2019/12/09	17	33.7		8.4	29.7		795.7	543.9		538.2	251.8	3 739	705	7	87 321	4.4	8.5	7.9	126.2	89.1	20.4	2 616	411	15	128 189	6.5	8.7	6	126.2	88.6	13.9
2019/12/10	18	33.7		7.7	34		863.8	734.1		630.6	299	3 502	655	49	77 500	3.9	7.5	7.8	129.6	89.3	20.7	2 477	347	29	128 189	6.5	6.6	3.4	127.5	88.8	15.7
2019/12/11	26	43.1		13.6	36.6		1066.4	778.3		770	331.6	3 767	594	29	73 840	3.7	7	4	131.5	89.2	23.7	2 483	333	48	128 189	6.5	6.3	3	130.8	88.7	16.4
2019/12/12	21	34.3		15.8	34.1		924.4	715.5		811.5	285.6	3 771	638	4	78 400	4	8	5.2	130.3	89.3	22.3	2 548	351	16	128 189	6.5	6.9	3.8	133.2	88.7	16
2019/12/13	27	40.2		12.7	26.9		1128.8	826.8		678.2	295	3 863	570	26	69 292	3.5	6.6	3.9	125.6	89.6	24	2 521	340	18	128 189	6.5	6.1	2.9	132.3	89.1	17.2
2019/12/14	23	36.4		12.5	25.7		928	766.9		706.6	316.2	3 711	683	58	81 028	4.1	7.6	6.7	128.2	89.6	22	2 617	366	25	128 189	6.5	6.5	3.2	131.2	89	16.3
2019/12/15	25	41		13.6	32		1234.2	859.3		759.6	302.3	3 835	738	4	66 539	3.4	6.4	3.2	119.1	89.4	25.3	2 500	374	42	128 189	6.5	5.7	2.2	140.5	88.7	17.6
2019/12/16	28	50.8		16.3	30.5		1208.5	827.2		801.9	278.7	3 927	734	2	68 147	3.5	6.4	3.1	124.4	89.6	25	2 585	377	19	128 189	6.5	6.3	3	136.5	88.9	17.6
2019/12/17	28	48.3		15.5	30.7		1233.3	810.6		790	319.9	3 871	725	10	68 001	3.4	6.3	3	122.1	89.7	25.2	2 589	372	101	128 189	6.5	6.5	3.2	134.3	89.1	17.4
2019/12/18		50.1		12	34.4		1163.5	781.1		688.9	301.8	3 747	705	11	68 129	3.5	6.7	3.5	124	89.4	24.7	2 509	368	125	128 189	6.5	6.6	3.5	135.3	88.8	17.1
2019/12/19	23	42.3		15.7	31.1		1056.7	719.5		783.2	296.7	3 706	677	2	74 655	3.8	7.5	4.7	125	89.3	24.2	2 533	370	58	179 005	9.1	7	3.9	135.3	88.6	16.3
2019/12/20	18	20.7		11.7	35.7		963.2	655.1		635.9	313.2	3 709	645	28	74 949	3.8	7.8	5	129.4	89.5	22.8	2 525	399	13	170 459	8.6	7.4	4.5	133.5	88.8	15.3
2019/12/21	25	37.1		11.8	32.6		1149.6	785.4		693.9	296	4 250	850	455	72 540	3.7	7	3.9	130.9	90.6	25.1	2 756	474	134	158 033	8	6.6	4.1	141.4	89.8	17.3
2019/12/22	24	41.1		12.5	37.3		1129.1	838.8		714.1	306	3 772	673	3	72 118	3.7	7	4	129.4	89.8	24.9	2 852	322	207	136 293	6.9	6.1	2.8	143.8	89	17.9
2019/12/23	23			15.3	39.1		1139.5		351.8	778.6	327.9	3 814	651	2	71 361	3.6	7.1	4.1	127.3	89.7	25.1										
2019/12/24	11			14.3	38.1		1203.5		349.5	780.2	271.2	3 940	702	35	68 285	3.5	6.4	3.1	126.8	89.5	25.1										
2019/12/25	19			16.3	37.6		1253.5	526.8	395.9	786.7	285.3	4 032	729	43	73 142	3.7	6.1	2.7	127.4	89.3	25.5	2 871	334	15	92 266	4.7	8.3	7.1	134.1	88.6	13.6
2019/12/26	19	21.7		6.9	1.3		1231.5	652.5	333	773.5	289.8	4 161	789	11	73 142	3.7	6.1	2.8	129	89.3	25.3	3 109	360	9	76 810	3.9	6.9	3.8	136.8	88.6	14.7
2019/12/27	17	18.3	43.5	14.4	43.6		787	560.3	388.1	657.5	288.7	3 546	784	16	73 142	3.7	7.8	10.1	134.2	89.4	20	2 929	340	9	128 189	6.5	7.6	4.7	130.2	88.7	13.1
2019/12/28	25	19.4	15.5	11.2	32.2		1097.4	661.9	399.8	674.9	298.7	3 799	900	3	73 142	3.7	7.1	4.2	127	89.6	24.3	2 855	319	127	128 189	6.5	7.1	4	131.4	89	14.9
2019/12/29	21	25.7	17.1	11.2	32.2		1209.5	767.4	399.8	674.9	298.7	3 983	826	2	73 142	3.7	6.3	3.1	128.9	89.4	25.2	2 898	312	164	128 189	6.5	6.3	3.1	137	88.9	16.4
2019/12/30	26	53.8	39.7	7.1	36.6		1188.1	832	655.7	563	291.6	3 786	785	2	73 142	3.7	6.4	3.1	134.8	89.3	25.3	2 712	291	393	128 189	6.5	6	2.6	140.5	88.6	17.5
2019/12/31	26	39.6	41.2	11.2	32.2		1205.2	722.8	399.8	674.9	298.7	4 070	799	7	73 142	3.7	6.2	3	137.6	89.3	25.5	2 689	310	43	128 189	6.5	6.7	3.5	139.8	88.6	16.1

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Table 7: Medupi Power Station Emissions data

Date	Unit 4 Final CEM mg/Nm³				Unit 4 Other CEMS Data						Unit 5 Final CEM mg/Nm³				Unit 5 Other CEMS Data						Unit 6 Final CEM mg/Nm³				Unit 6 Other CEMS Data					
	SOx	NOx	CO	CO₂	CO₂	O₂	H₂O	°C	kPa	m/s	SOx	NOx	CO	CO₂	CO₂	O₂	H₂O	°C	kPa	m/s	SOx	NOx	CO	CO₂	CO₂	O₂	H₂O	°C	kPa	m/s
2019/12/01											3 261	430	2			8.9	90.4	117.7	89.6	8.4	2 722	462	11			8.6	5.8	130.7	89.6	6.6
2019/12/02											3 181	405	2			9	90.5	115.6	89.6	8.2	2 708	430	10			9	6.2	128.7	89.6	6.9
2019/12/03											3 057	452	13			7.5	88.2	126.6	89.3	11.2	2 605	411	8			8.9	6.1	129.8	89.3	6.8
2019/12/04											3 026	526	5			6.8	86.9	127.3	89.7	13	2 548	390	11			8.2	5.3	124.9	89.8	7.2
2019/12/05											3 022	571	1			7.1	87.4	116.9	90	11.7	2 605	327	21			8.1	5.1	120.6	90.1	7.6
2019/12/06											3 204	518	18			5.8	85.4	126.7	89.7	14.8	2 735	421	13			8.3	5.3	121.5	89.7	7
2019/12/07											3 194	481	24			5.4	84.6	130.8	89.2	15.3	2 802	415	21			8.3	5.4	122	89.3	7.1
2019/12/08											3 097	439	19			6.1	85.6	122.4	89.1	13.8	2 776	387	113			7.8	4.3	125.8	89.1	7.2
2019/12/09											2 827	542	4			7.3	88	121.3	89.1	11.5	2 442	475	8			9.6	7	119.6	89.2	6.4
2019/12/10											3 000	522	10			6.8	87.2	120	89.4	12.9	2 569	393	14			8.6	5.8	119.8	89.4	7
2019/12/11											2 964	452	9			5.8	85.3	130	89.3	15.1	2 585	351	8			7.8	4.8	126.9	89.3	7.4
2019/12/12											2 965	451	12			5.5	84.8	133.4	89.3	15.7	2 556	392	12			9.2	6.5	120.8	89.4	7
2019/12/13											3 010	440	19			6.3	86.1	125	89.7	13.5	2 553	362	19			8.4	5.5	121.3	89.7	6.8
2019/12/14											3 112	494	19			6	85.8	129.4	89.7	14	2 684	353	18			8.1	5.2	124	89.7	7.2
2019/12/15											2 962	524	11			5.8	85.4	133	89.4	15	2 616	373	12			8.2	5.3	129.3	89.5	7
2019/12/16											2 932	509	17			5.6	85	134.4	89.4	15.6	2 676	363	14			8.8	6	122.8	88.8	6.7
2019/12/17											3 057	497	15			5.7	85.2	131.4	89.7	15.3	2 705	343	19			8	5.1	120.6	89.8	7.1
2019/12/18											2 860	468	14			6.2	86	128	89.5	13.8	2 545	335	21			8.4	5.6	120	89.5	7
2019/12/19											2 816	461	19			5.6	85.1	134.7	89.3	15.4	2 432	339	10			8.1	5.2	126.3	89.4	6.8
2019/12/20											2 875	484	4			6.5	86.4	130.6	88.7	13.1	2 467	335	16			8.2	5.3	126.8	88.7	7.3
2019/12/21											3 067	457	7			6.1	86.2	134.8	87.2	14.3	2 520	368	7			8	5.1	127.7	87.3	6.9
2019/12/22											2 990	455	13			6	85.6	135.9	89.7	14.3	2 506	350	8			7.9	4.9	128.4	89.8	6.9
2019/12/23	2 344	520	13			11	10.4	75.4	89.8	9	2 945	455	16			5.7	85.2	134.2	89.8	15.2	2 498	348	16			8.1	5.1	126.3	89.9	7.4
2019/12/24	2 421	522	8			11.1	9	75.4	89.8	9	3 013	472	8			5.6	87.7	138.5	89.5	15.3	2 557	363	7			8.8	7	125.5	89.6	6.5
2019/12/25	2 140	569	22			9.8	14.7	75.4	89.5	9.1	3 072	489	7			5.7	87.7	140.8	89.3	15.7	2 660	365	7			8.4	6.7	129	89.4	6.7
2019/12/26	2 273	480	40			9.4	9.8	75.4	87.4	7.6	3 212	492	11			5.9	88	142.2	89.3	15.7	2 721	369	7			8.3	6.7	131.2	89.4	6.8
2019/12/27	2 566	407	51			8.2	6.6	75.4	89.5	7.8	3 236	492	10			6.6	88.7	132.9	89.4	13.7	2 639	355	6			8.4	6.7	129.1	89.5	6.8
2019/12/28	2 304	484	58			9.6	9.4	75.4	89.2	9	3 029	478	11			6.4	86.7	129.3	89.4	13.7	2 606	377	16			8.4	5.7	125.2	89.4	7
2019/12/29	2 304	484	58			9.6	9.4	75.4	89.2	9	3 029	478	11			6.4	86.7	129.3	89.4	13.7	2 606	377	16			8.4	5.7	125.2	89.4	7
2019/12/30	2 079	407	217			6.6	5.4	75.4	89.4	11.7	2 841	411	7			7.2	89.4	124.6	89.3	12	2 534	368	7			8.8	7	125.3	89.4	7
2019/12/31	2 304	484	58			9.6	9.4	75.4	89.2	9	3 029	478	11			6.4	86.7	129.3	89.4	13.7	2 606	377	16			8.4	5.7	125.2	89.4	7

Note: There is no reportable data on areas shaded grey; this is a result of unit not operational, unit trip, outage and or grace period.

- Unit 4 temperature and velocity meters are faulty. The Power station maintenance team is awaiting spares for the repairs of the instrument to be conducted.
- Medupi Power Station is awaiting installation of a new component for unit 3, 4, 5 and 6 CO₂ monitor.

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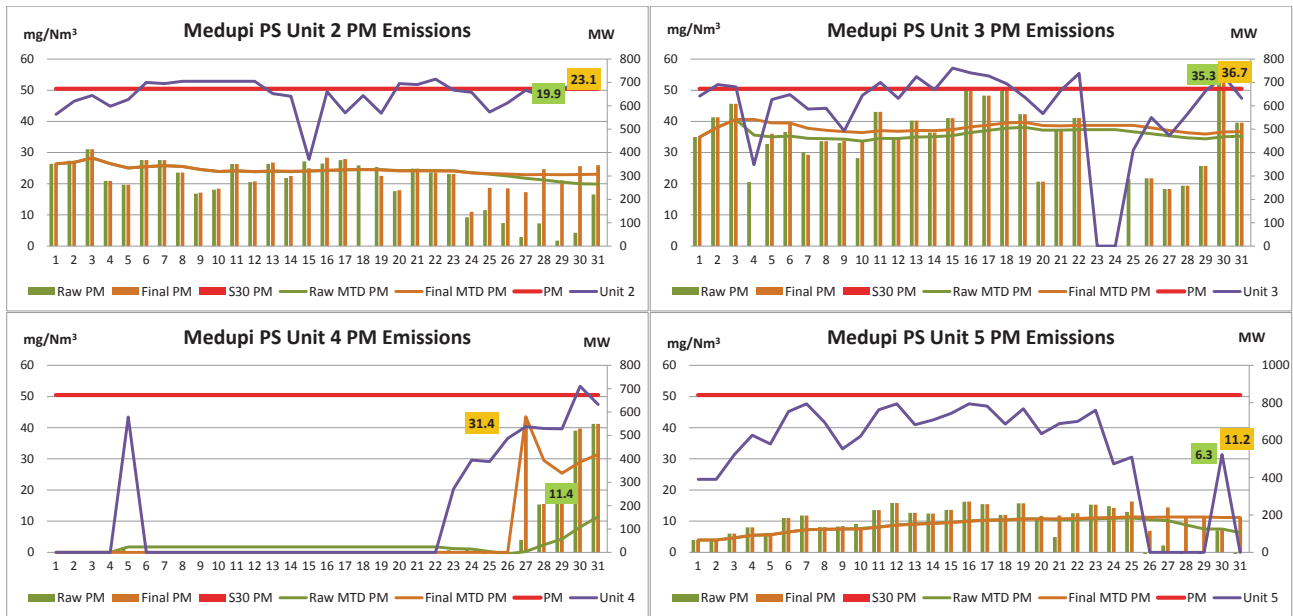
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Figure 1: Medupi Power Station graphical representation of emissions data



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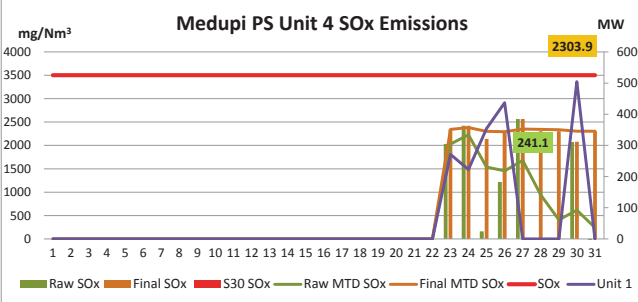
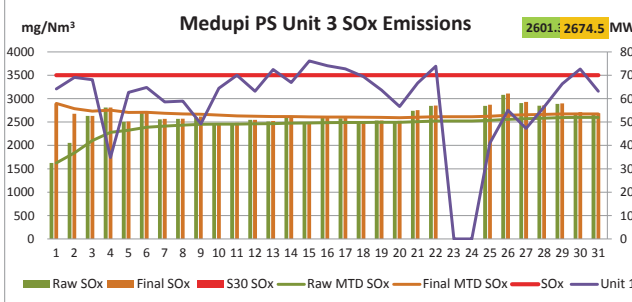
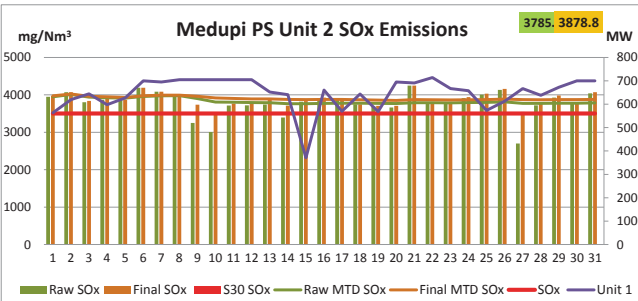
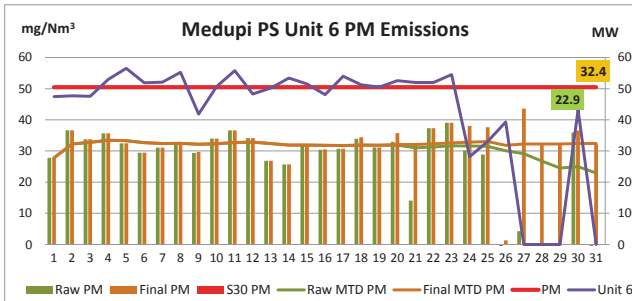
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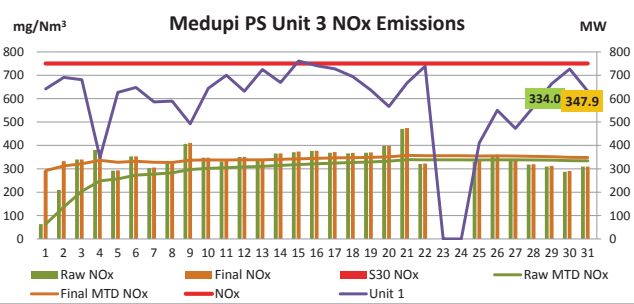
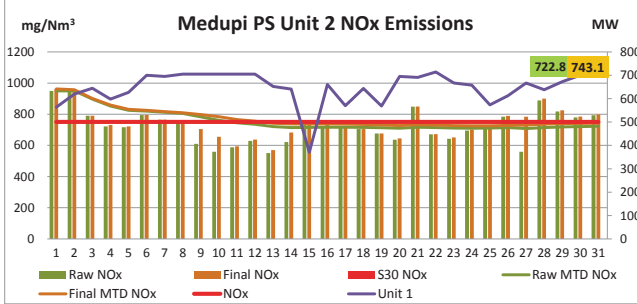
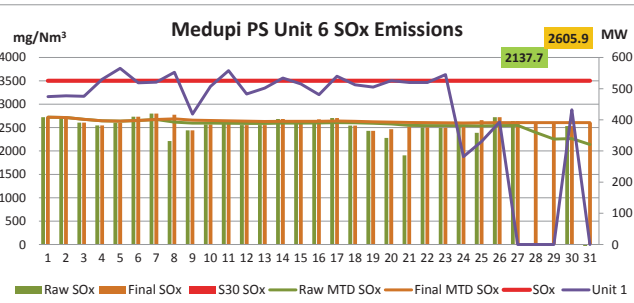
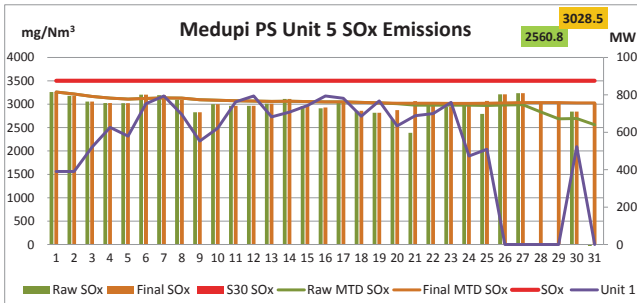
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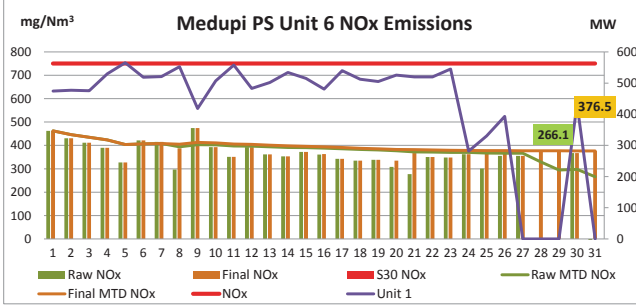
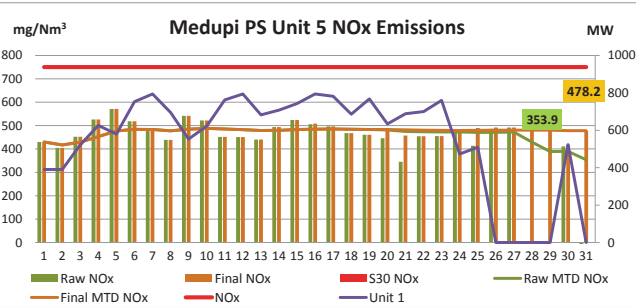
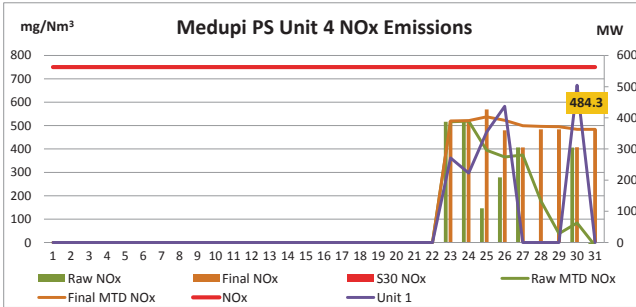
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**Table 8: Monthly tonnages for the month of December 2019**

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	44.7	8 079	1 547	61	
3	63.0	4 962	648	135	
4	3.8	601	119	23	
5	25.0	6 835	1 082	27	
6	49.6	4 069	586	26	
<b>SUM</b>	186.1	24 545	3 981	272	

Unit 2, 3, 4, 5 and 6 CO<sub>2</sub> monitoring equipment is currently not functional, procurement process is undergoing to purchase the spare required to fix/repair the equipment. The spares were received on 25 November 2019 and the installation/replacement programme is underway.

## 5. Shutdown/start-up information


**Table 9: Days operating under normal operation, days in grace period and section 30 days respectively for PM Emissions**

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance
Unit 1	0	0	0	0	0
Unit 2	30	0	0	0	0
Unit 3	25	2	0	0	2
Unit 4	2	0	0	0	0
Unit 5	31	0	0	0	0
Unit 6	31	0	0	0	0

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**Figure 2: Operating days in compliance to SOx AEL Limit**

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance
Unit 1	0	0	0	0	0
Unit 2	0	31	0	0	31
Unit 3	29	0	0	0	0
Unit 4	9	0	0	0	0
Unit 5	31	0	0	0	0
Unit 6	31	0	0	0	0

**Figure 3: Operating days in compliance to NOx AEL Limit**

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance
Unit 1	0	0	0	0	0
Unit 2	18	13	0	0	13
Unit 3	29	0	0	0	0
Unit 4	9	0	0	0	0
Unit 5	31	0	0	0	0
Unit 6	31	0	0	0	0


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

Medupi Power Station unit 2 gaseous CEMS is not verified, the power station conducted parallel test in January 2020 and is still awaiting the correction test report with the correction factors to be implemented. The power station compares the raw ppm from all the other units in order to ensure that the emissions from unit 2 is not operating outside the ambit of the law, this is to observe the principle of environmental duty of care.

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## 7. Light up information

Table 10: PM start up information

Event No.	Event 1		Event 2	
Unit	Unit 3		Unit 3	
Fires in	01:40 PM	2019/12/03	06:50 AM	2019/12/06
Synchronisation with Grid	03:40 AM	2019/12/04	06:50 AM	2019/12/06
Emissions below limit from Sync (Date and Time)	00:14:00	DD:HH:MM	00:00:00	DD:HH:MM
Fires in to synchronization	07:40 AM	2019/12/04	07:10 AM	2019/12/06
Synchronization to < limit (Duration)	03:20 PM	2019/12/04	10:45 PM	2019/12/06
Fires in to BC (duration)	00:07:40	DD:HH:MM	00:15:35	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM

## 8. 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.


CEMS CO<sub>2</sub> monitor verification test not yet conducted on all Units as a result of challenges on the equipment, the Power Station received the spares new spares and has started with the process of replacement. Licencing Authority will be notified prior to conducting the test.

Unit 4 particulates correlation test was supposed to have been conducted prior to the end of November 2019. However, due to unfavourable plant conditions the test could not be conducted. The unit was on outage until 24 December 2019. Upon return to service, the unit could not reach the required load for the test to be conducted.

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**Table 11: Periods during which CEMS was inoperative**

Date	Time	CEMS status	Comments
December 2019	N/A	No issues	Data for the month of December was available

**Table 12: CEMS Monitor Reliability**

Associated Unit/Stack	PM	SO <sub>2</sub>	NO	CO <sub>2</sub>	O <sub>2</sub>
Unit 1	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>		<i>n/a</i>
Unit 2	100.0	97.9	97.7		97.4
Unit 3	100.0	96.2	95.3		95.3
Unit 4	48.6	53.2	54.1		51.8
Unit 5	90.1	89.1	89.1		89.1
Unit 6	90.1	88.3	88.2		88.3

## 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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Table 13: Total Volatile Organic Compound (TVOC) for December 2019

		
<b>CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*</b>		
<b>Date:</b>	31 December 2019	
<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	
<p style="text-align: center;"><b>MONTHLY INPUT DATA FOR THE STATION</b></p> <p style="text-align: center;">Please only insert relevant monthly data inputs into the <i>blue cells</i> below</p> <p style="text-align: center;">Choose from a dropdown menu in the <i>green cells</i></p> <p style="text-align: center;">The total VOC emissions for the month are in the <i>red cells</i></p> <p style="text-align: center;">IMPORTANT: Do not change <i>any</i> other cells without consulting the AQ CoE</p>		
<b>MONTH:</b>	<b>December</b>	
<b>GENERAL INFORMATION:</b>	<b>Data</b>	<b>Unit</b>
<b>Total number of fuel oil tanks:</b>	2	NA
<b>Height of tank:*</b>	14.2	m
<b>Diameter of tank:</b>	12	m
<b>Net fuel oil throughput for the month:</b>	<b>3517</b>	tons/month
<b>Molecular weight of the fuel oil:</b>	166.00	Lb/lb-mole
<b>METEROLOGICAL DATA FOR THE MONTH</b>	<b>Data</b>	<b>Unit</b>
<b>Daily average ambient temperature</b>	27.35	°C
<b>Daily maximum ambient temperature</b>	33.26	°C
<b>Daily minimum ambient temperature</b>	21.97	°C
<b>Daily ambient temperature range</b>	11.30	°C
<b>Daily total insolation factor</b>	6.12	kWh/m <sup>2</sup> /day
<b>Tank paint colour</b>	<b>Aluminum/Specular</b>	NA
<b>Tank paint solar absorbance</b>	0.39	NA
<b>FINAL OUTPUT:</b>	<b>Result</b>	<b>Unit</b>
<b>Breathing losses:</b>	<b>0.69 kg/month</b>	
<b>Working losses:</b>	<b>0.10 kg/month</b>	
<b>TOTAL LOSSES (Total TVOC Emissions for the month):</b>	<b>0.79 kg/month</b>	
<p>*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.</p>		

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

No awareness campaign.

## 13. Complaints Register


Table 14: Complaints for the month of December 2019

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

Verified by: Chief Technologist Boiler

Supported by: Boiler Engineering Manager

Supported by: Environmental Manager

Supported by: Engineering Group Manager

I Wikus Janse Van Rensburg, declares that the information provided in this report is accurate and correct.

Yours sincerely \_\_\_\_\_

**GENERAL MANAGER: MEDUPI POWER STATION**


**APPENDIX 1: CEMS Calibration certificates**


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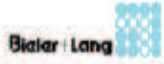
### CALIBRATION CERTIFICATE


<b>CERTIFICATE NO:</b>			
3316			
<b>CUSTOMER:</b>	Medupi Power Station	<b>JOB NO:</b>	SC1503
<b>CONTACT NAME:</b>	Christo Vorster	<b>PHONE:</b>	014 762 2255
<b>MODEL:</b>	Dr Fodisch MGA 23	<b>SERIAL NO:</b>	13668
<b>AUXILIARY EQUIPMENT:</b>	Unit 4		

CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER	EXPIRY DATE
1	ZERO	-4 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	807 ppm	804 ppm	CO	803.8 ppm	804	
2	ZERO	-3 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	819 ppm	851 ppm	NO	850.8 ppm	132	
3	ZERO	-13 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	2199 ppm	2162 ppm	SO2	2161.7 ppm	5905E	
4	ZERO	0.09 %	0.0 %	N2	89.89 %	132	
	SPAN	21.03 %	20.95 %	O2	20.95 %	Air	

*REPORT: Wash and clean rotameter, change inlet plastic fitting, inlet filter in analyser should be change. Inspect all sample lines and rotameter. Calibrate analysers with zero and span gas, calibration was done according to cylinder standards, analysers were responding to all test gas.*

**Date of Calibration:** 26 Nov 2019  
**Calibration Due Date:** Feb 2020  
**Technician:**


  
**SERVOMEX**  
ANALYTICAL INSTRUMENTS  
 Document Number: TH-PFC-002-F1 Rev 2


  
**TELEDYNE**  
**ANALYTICAL INSTRUMENTS**  
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### CALIBRATION CERTIFICATE

<b>CERTIFICATE NO:</b>			
3317			
<b>CUSTOMER:</b>	Medupi Power Station	<b>JOB NO:</b>	SC1593
<b>CONTACT NAME:</b>	Christo Vorster	<b>PHONE:</b>	014 762 2255
<b>MODEL:</b>	Dr Fodisch MGA 23	<b>SERIAL NO:</b>	13670
<b>AUXILIARY EQUIPMENT:</b>	Unit 5		


CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER	EXPIRY DATE
1	ZERO	1 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	761 ppm	804 ppm	CO	803.9 ppm	804	
2	ZERO	-3 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	815 ppm	851 ppm	NO	850.9 ppm	132	
3	ZERO	-17 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	2206 ppm	2162 ppm	SO2	2161.7 ppm	5906E	
4	ZERO	-0.08 %	0.0 %	N2	99.99 %	132	
	SPAN	20.85 %	20.96 %	O2	20.95 %	Air	

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


**Date of Calibration:** 26 Nov 2019

**Calibration Due Date:** Feb 2020

**Technician:**



**Bielor Lang**  
**SERVOMEX**  
A Mettler-Toledo Analytical Instrument  
Document Number: TH-PFC-002-F1 Rev 2





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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>		



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### CALIBRATION CERTIFICATE

				<b>CERTIFICATE NO:</b>	
				3318	
<b>CUSTOMER:</b>	Medupi Power Station	<b>JOB NO:</b>	SC1593		
<b>CONTACT NAME:</b>	Christo Vorster	<b>PHONE:</b>	014 762 2255		
<b>MODEL:</b>	Dr Fodisch MGA, 23	<b>SERIAL NO:</b>	13669		
<b>AUXILIARY EQUIPMENT:</b>	Unit 6				


CHAN		PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER	EXPIRY DATE
1	ZERO	-3 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	817 ppm	804 ppm	CO	803.9 ppm	804	
2	ZERO	-11 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	883 ppm	851 ppm	NO	850.9 ppm	132	
3	ZERO	-35 ppm	0 ppm	Air	21.0 %	Air	
	SPAN	2265 ppm	2162 ppm	SO2	2161.7 ppm	5905E	
4	ZERO	0.03 %	0.0 %	N2	99.99 %	132	
	SPAN	20.59 %	20.95 %	O2	20.95 %	Air	

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


**Date of Calibration:** 26 Nov 2019

**Calibration Due Date:** Feb 2020

**Technician:**



Document Number: TH-PFC-002-F1 Rev 2




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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>			
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### CALIBRATION CERTIFICATE

<b>CERTIFICATE NO:</b>			
3315			
<b>CUSTOMER:</b>	Medupi Power Station	<b>JOB NO:</b>	SC1593
<b>CONTACT NAME:</b>	Christo Vorster	<b>PHONE:</b>	014 762 2255
<b>MODEL:</b>	Dr Fodisch MGA 23	<b>SERIAL NO:</b>	15712
<b>AUXILIARY EQUIPMENT:</b>	Unit 3		

CHAN	PRIOR	FINAL	TEST GAS	TEST GAS VALUE	GAS CERTIFICATE NUMBER	EXPIRY DATE
1	ZERO	8 ppm	0 ppm	Air	21.0 %	Air
	SPAN	802 ppm	804 ppm	CO	803.9 ppm	80A
2	ZERO	16 ppm	0 ppm	Air	21.0 %	Air
	SPAN	849 ppm	851 ppm	NO	850.9 ppm	132
3	ZERO	23 ppm	0 ppm	Air	21.0 %	Air
	SPAN	2227 ppm	2162 ppm	SO2	2161.7 ppm	590EE
4	ZERO	0.05 %	0.0 %	N2	99.99 %	132
	SPAN	21.23 %	20.95 %	O2	20.95 %	Air

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

**Date of Calibration:** 28 Nov 2019

**Calibration Due Date:** Feb 2020

**Technician:**



Document Number: TH-PFC-002-F1 Rev 2



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