	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

Stanley Koenaitse

Waterberg District Municipality
Private Bag X1018
Modimole
0510

skoenaite@waterberg.gov.za

Date: 2023/10/31

Enquiries: MF Dikgale

Tel: 014 762 6820

Ref: H16/1/13-AEL/M1/R1 – October2023

Dear Mr Koenaitse

MEDUPI POWER STATION MONTHLY EMISSIONS REPORT FOR THE MONTH OF OCTOBER 2023

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 reflects Unit 1, 2, 3, 5 and 6 gaseous and particulate emissions performance against the AEL limit for the month of October 2023 only.

1. Raw Materials and Products


TABLE 1: QUANTITY OF RAW MATERIALS AND PRODUCTS CONSUMPTION IN OCTOBER 2023

Raw Materials and Products used	Raw Material Type	Unit	Maximum Permitted Consumption/ Rate (Quantity)	Consumption – October2023
	Coal	Tons/month	1 875 000	1 077 573.0
	Fuel Oil	Tons/month	20 000	1331
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of October 2023
	Energy	GWh	3 571.2	2292.41
	Ash Emitted	Tons/month	not specified	235.11

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6	
		Document Identifier	240-88543153	Rev	2	
		Effective Date	September2022			
		Review Date	September2024			


Date	Daily Hours of Operation						Coal usage	Production rate (MW)					
	U1	U2	U3	U4	U5	U6		U1	U2	U3	U4	U5	U6
01-Oct	24.0	24.0	24.0	0.0	24.0	24.0	35020	694	600	616	Off	635	682
02-Oct	24.0	24.0	24.0	0.0	24.0	5.6	29057	669	596	638	Off	649	567
03-Oct	24.0	24.0	24.0	0.0	24.0	0.0	28667	739	600	660	Off	663	
04-Oct	24.0	24.0	24.0	0.0	24.0	0.0	30326	719	647	629	Off	729	
05-Oct	24.0	24.0	24.0	0.0	24.0	5.8	31806	719	707	627	Off	734	311
06-Oct	24.0	24.0	24.0	0.0	24.0	24.0	37187	694	731	631	Off	743	665
07-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36956	707	718	628	Off	635	682
08-Oct	24.0	24.0	21.8	0.0	24.0	24.0	33345	668	658	574	Off	554	752
09-Oct	24.0	24.0	24.0	0.0	24.0	24.0	33584	716	702	639	Off	482	746
10-Oct	24.0	24.0	24.0	0.0	24.0	24.0	34849	714	701	662	Off	552	746
11-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36008	729	691	663	Off	706	761
12-Oct	24.0	24.0	24.0	0.0	24.0	24.0	35860	715	716	607	Off	663	753
13-Oct	24.0	24.0	24.0	0.0	24.0	24.0	35419	726	698	653	Off	648	707
14-Oct	24.0	24.0	24.0	0.0	24.0	24.0	35017	641	686	623	Off	696	673
15-Oct	24.0	24.0	24.0	0.0	24.0	24.0	34362	709	674	639	Off	644	712
16-Oct	21.1	24.0	24.0	0.0	24.0	24.0	34980	660	709	673	Off	626	712
17-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36806	726	713	659	Off	715	758
18-Oct	24.0	24.0	24.0	0.0	24.0	24.0	37080	735	689	665	Off	715	758
19-Oct	24.0	24.0	24.0	0.0	24.0	24.0	35611	711	682	616	Off	710	739
20-Oct	24.0	24.0	24.0	0.0	24.0	24.0	33423	740	679	589	Off	637	686
21-Oct	24.0	24.0	24.0	0.0	24.0	24.0	32545	643	670	571	Off	584	662
22-Oct	24.0	22.6	24.0	0.0	24.0	24.0	30450	563	620	543	Off	555	564
23-Oct	24.0	19.4	24.0	0.0	24.0	24.0	34035	655	579	640	Off	731	731
24-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36574	723	634	643	Off	729	738
25-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36395	679	756	679	Off	717	704
26-Oct	24.0	24.0	24.0	0.0	24.0	24.0	38207	697	719	645	Off	733	778
27-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36756	694	701	616	Off	731	778
28-Oct	24.0	24.0	24.0	0.0	24.0	24.0	37196	634	727	575	Off	706	782
29-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36541	640	726	605	Off	715	787
30-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36528	724	714	648	Off	687	765
31-Oct	24.0	24.0	24.0	0.0	24.0	24.0	36983	701	670	659	Off	668	790

NB: Operating hours less than 24 highlighted in pink; Unit OFF highlighted in Red.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

2. Abatement Technology

Table 2: Abatement Equipment Control Technology efficiency for month of October2023

Associated Unit/Stack	Technology Type	Efficiency	FFP Utilization
Unit 1	Fabric Filter Plant (FFP)	99.913%	100%
Unit 2	Fabric Filter Plant (FFP)	99.865%	100%
Unit 3	Fabric Filter Plant (FFP)	99.909%	100%
Unit 4	Fabric Filter Plant (FFP)	Off	off
Unit 5	Fabric Filter Plant (FFP)	99.939%	100%
Unit 6	Fabric Filter Plant (FFP)	99.966%	100%

Note: FFP does not have bypass mode operation, hence plant 100% Utilised.

3. Energy Source Characteristics

TABLE 3: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER 2023

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	1.37
Ash Content	35 - 39	34.42

TABLE 4: ENERGY SOURCE MATERIAL CHARACTERISTICS FOR THE MONTH OF OCTOBER 2023

Characteristic	Stipulated Range (%)	Monthly Average Content (%)
	Oil	
Sulphur Content	0.5 - 3.5	2.4
Ash Content	0.02 - 0.1	0.030

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

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

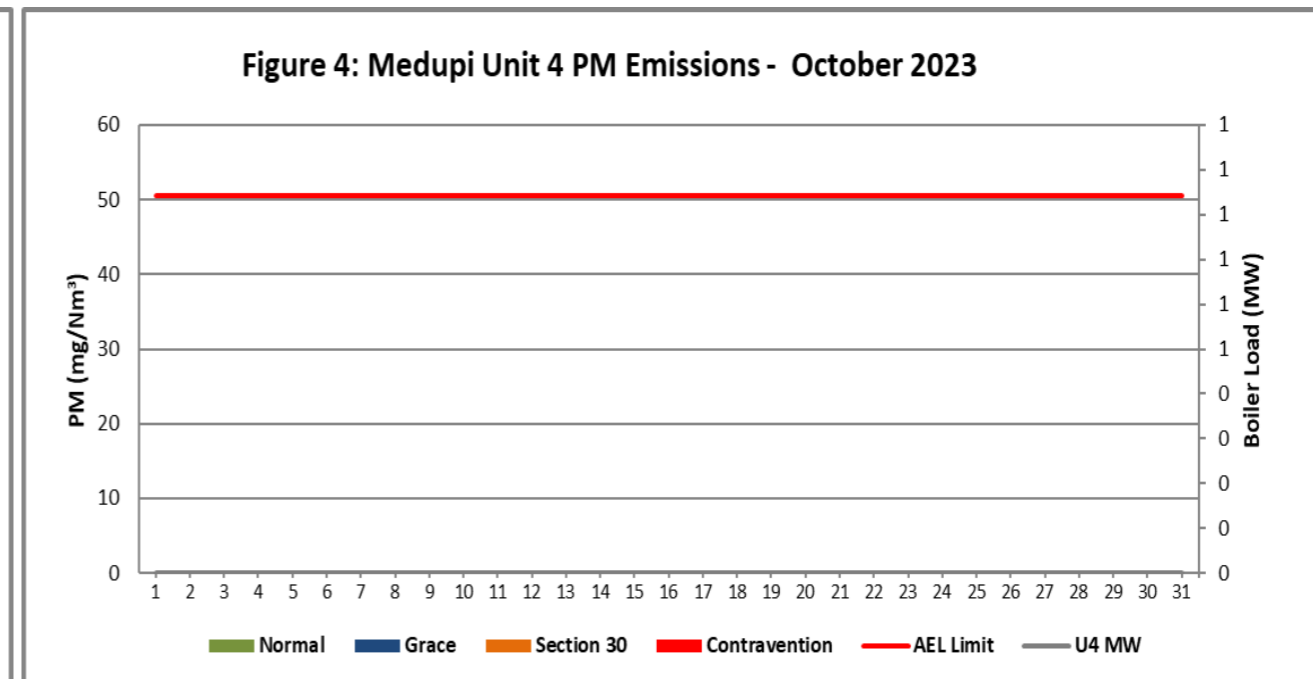
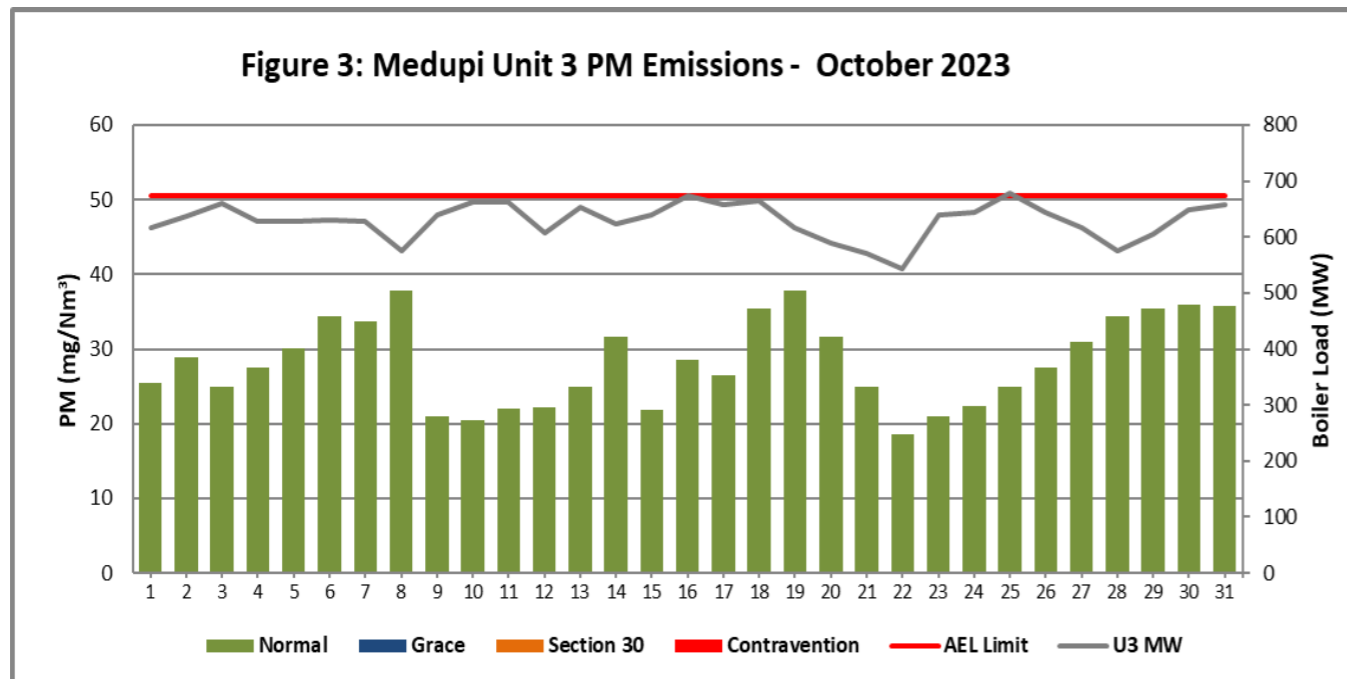
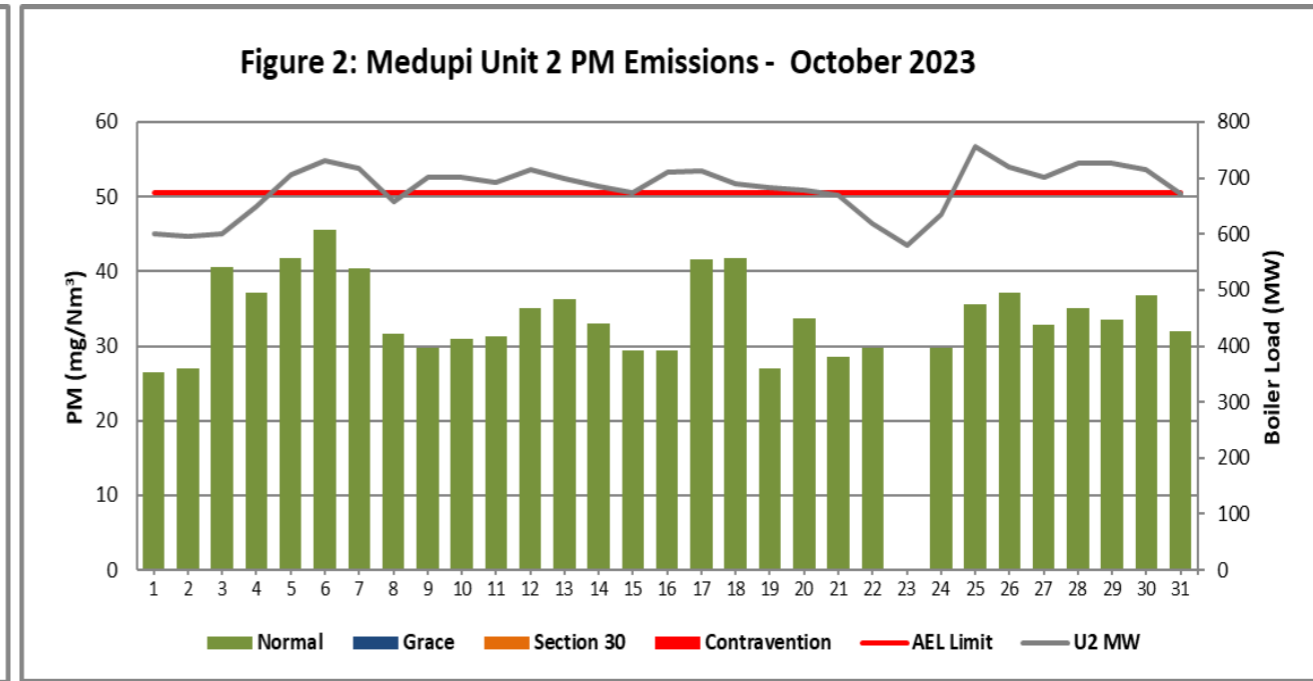
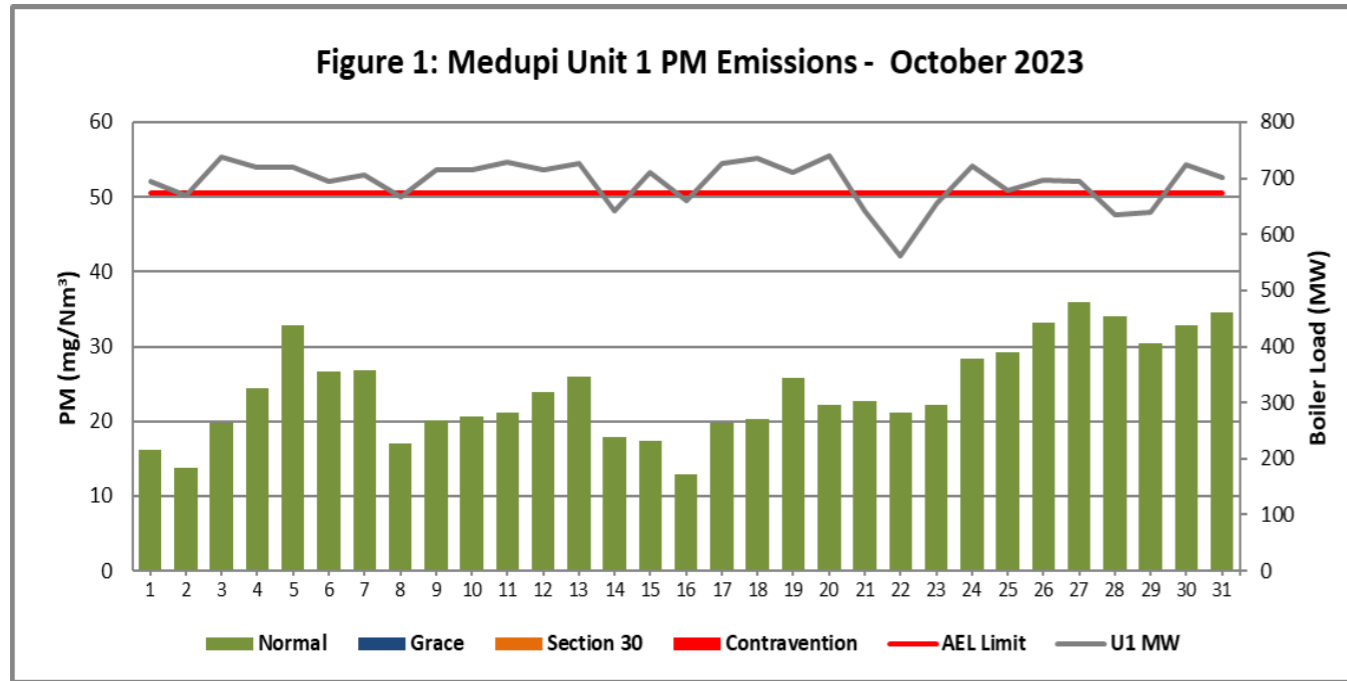
No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.



Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	September2022		
Review Date	September2024		

4.1 PM Daily Averages



CONTROLLED DISCLOSURE

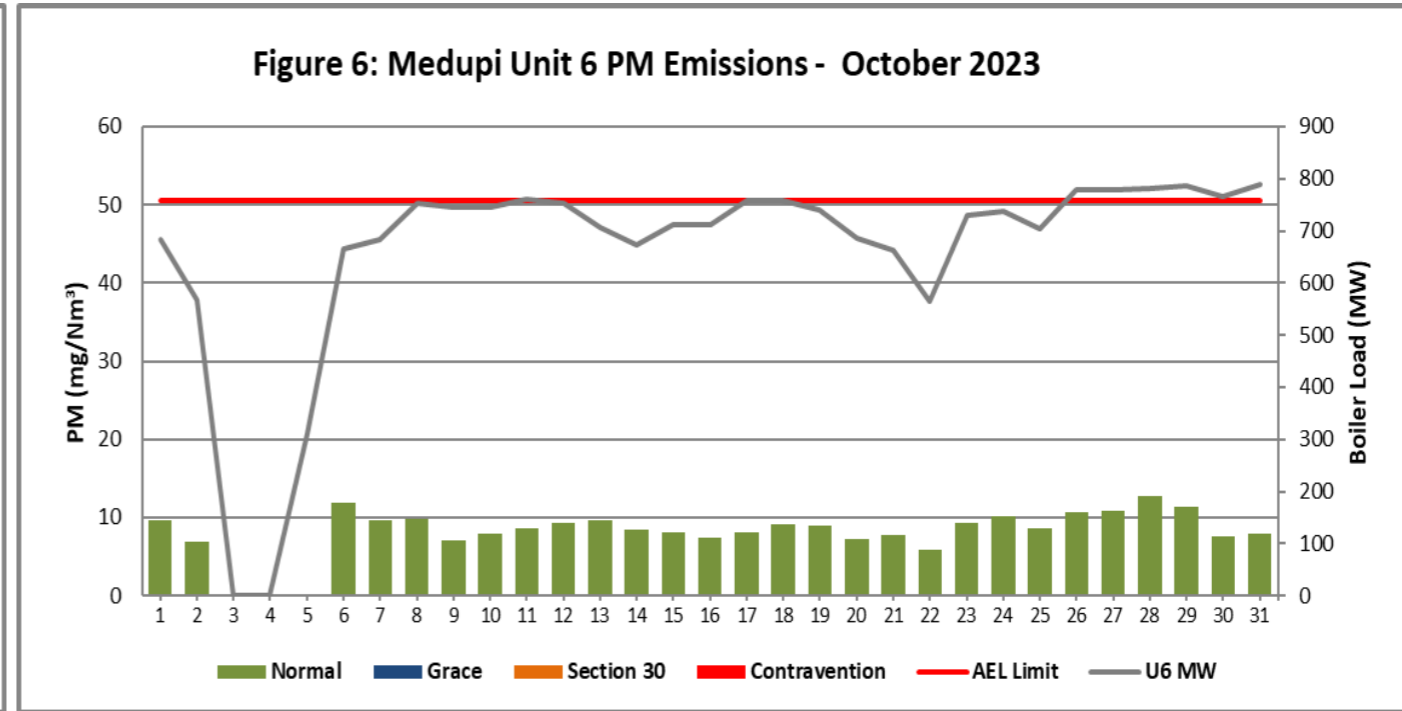
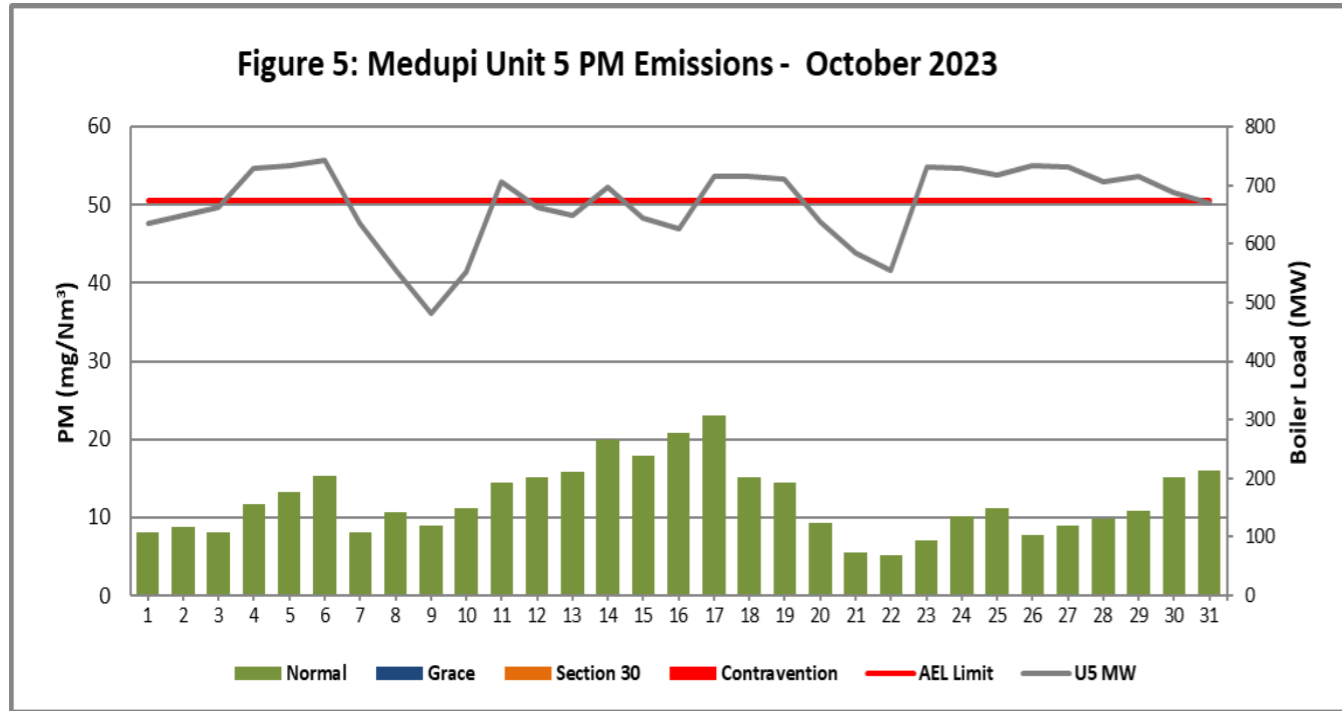
When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

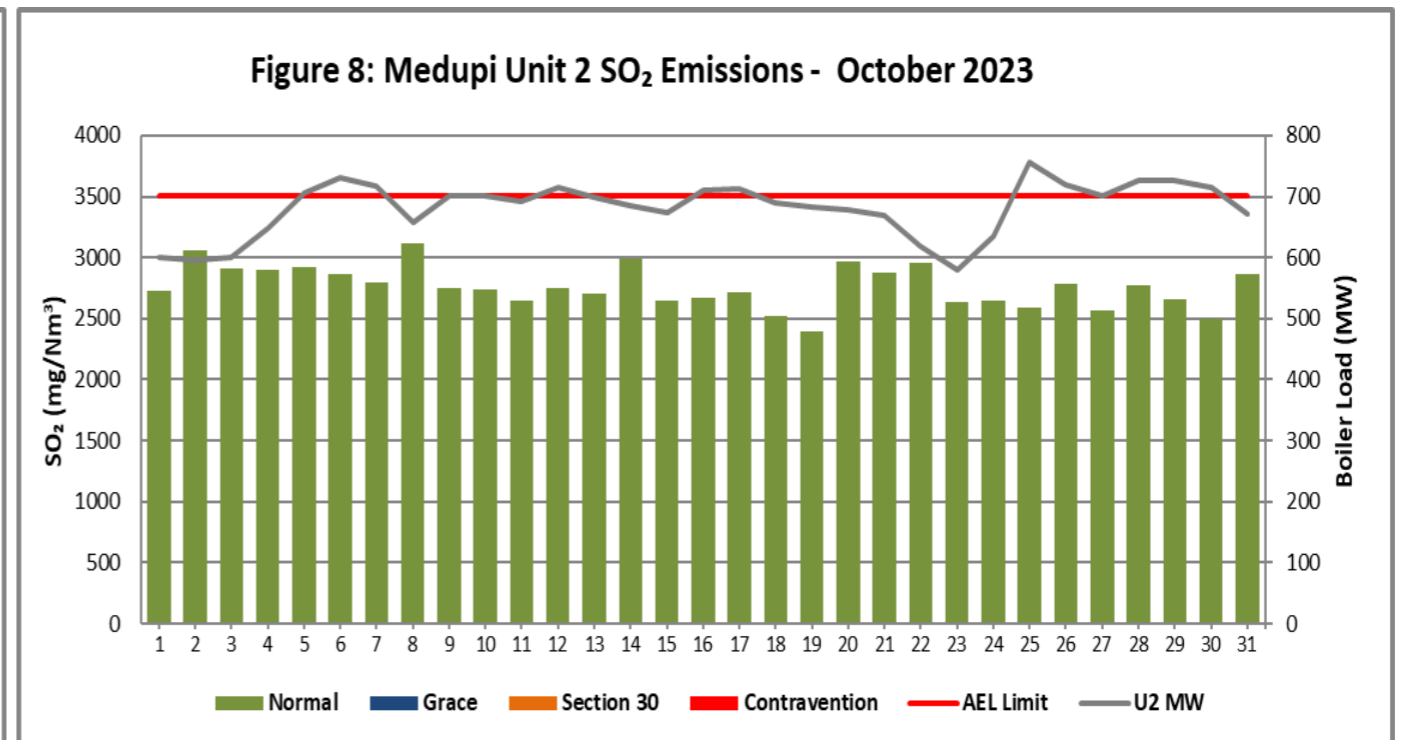
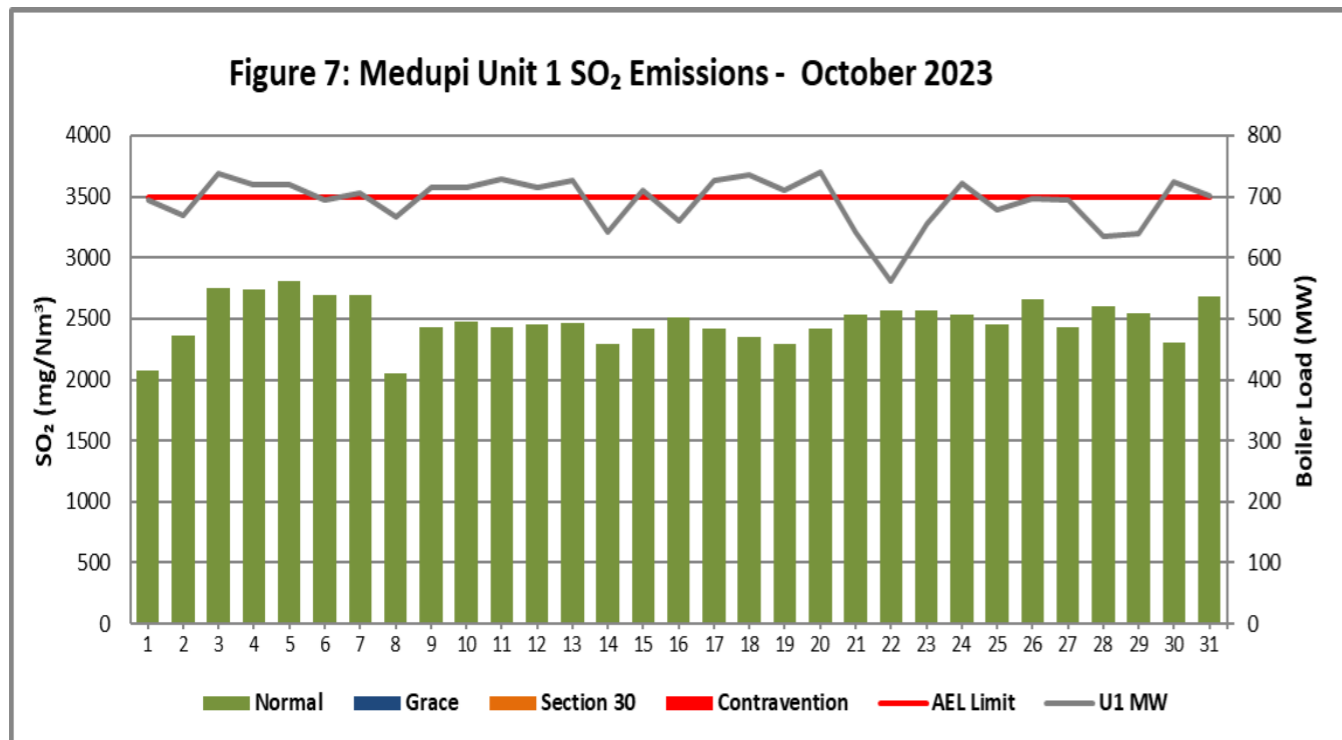


Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	September2022		
Review Date	September2024		



4.2 SOx Daily Averages



CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.



Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	September2022		
Review Date	September2024		

Figure 9: Medupi Unit 3 SO₂ Emissions - October 2023

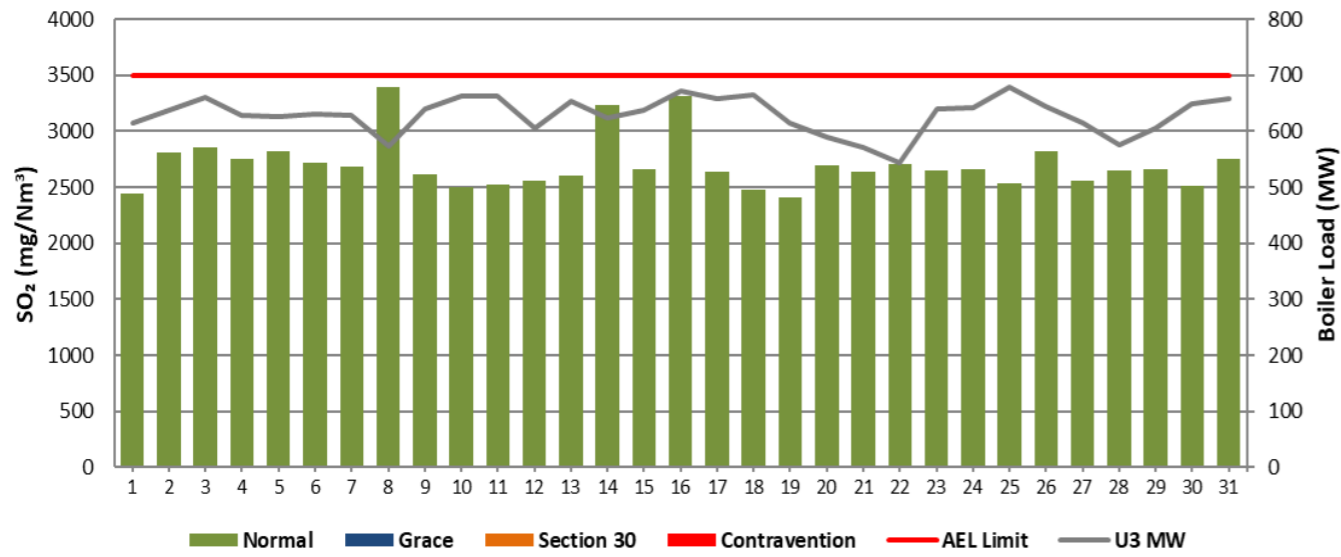


Figure 10: Medupi Unit 4 SO₂ Emissions - October 2023

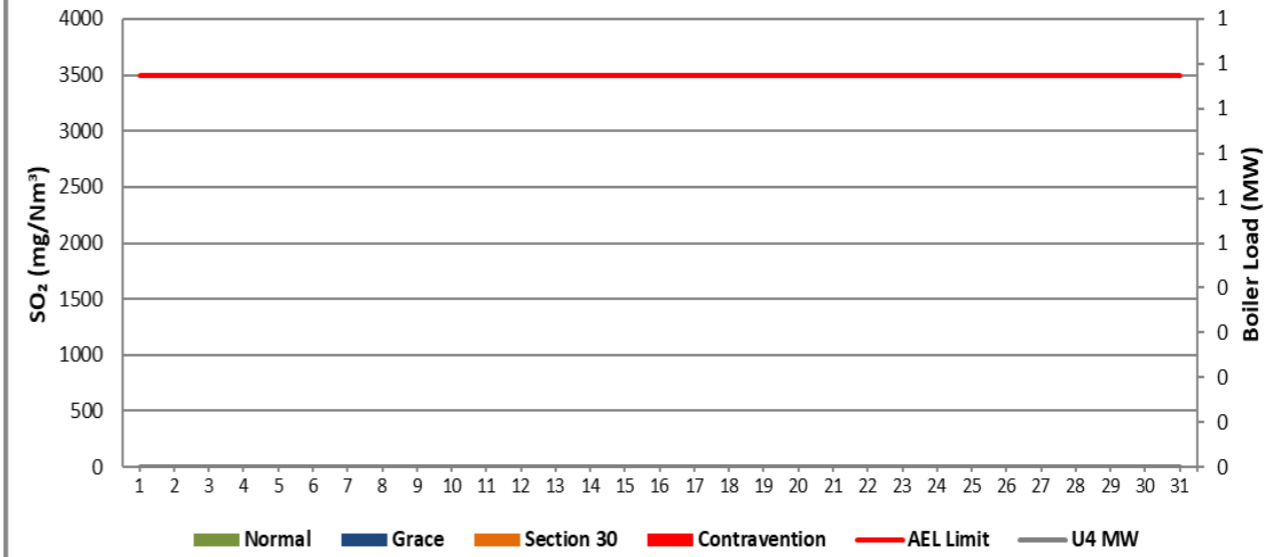


Figure 11: Medupi Unit 5 SO₂ Emissions - October 2023

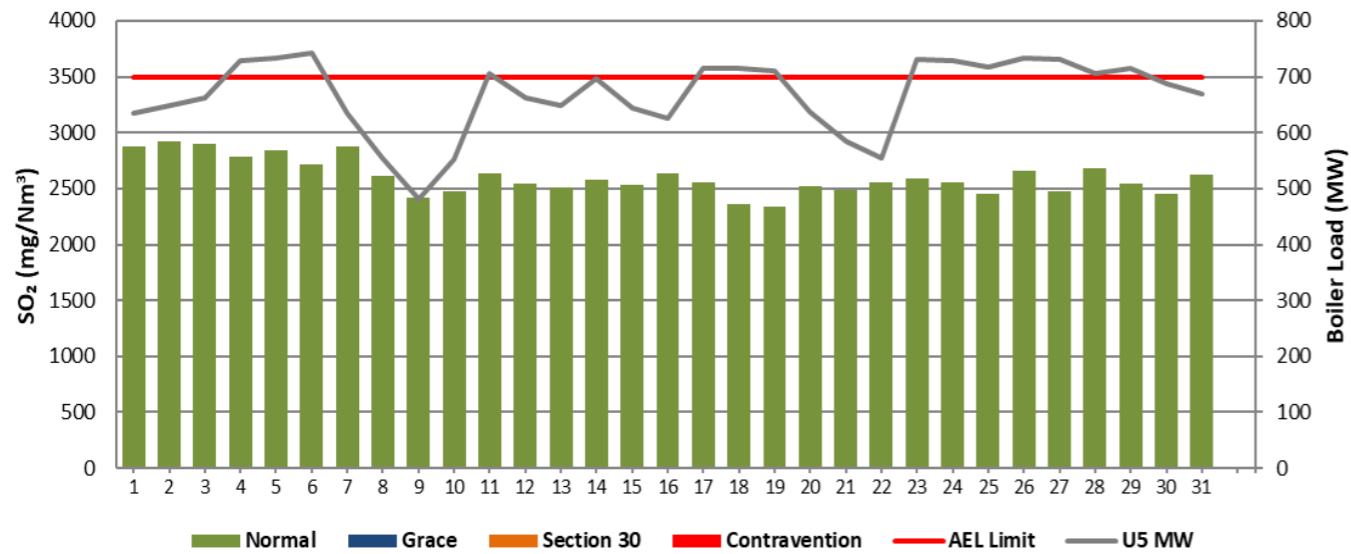
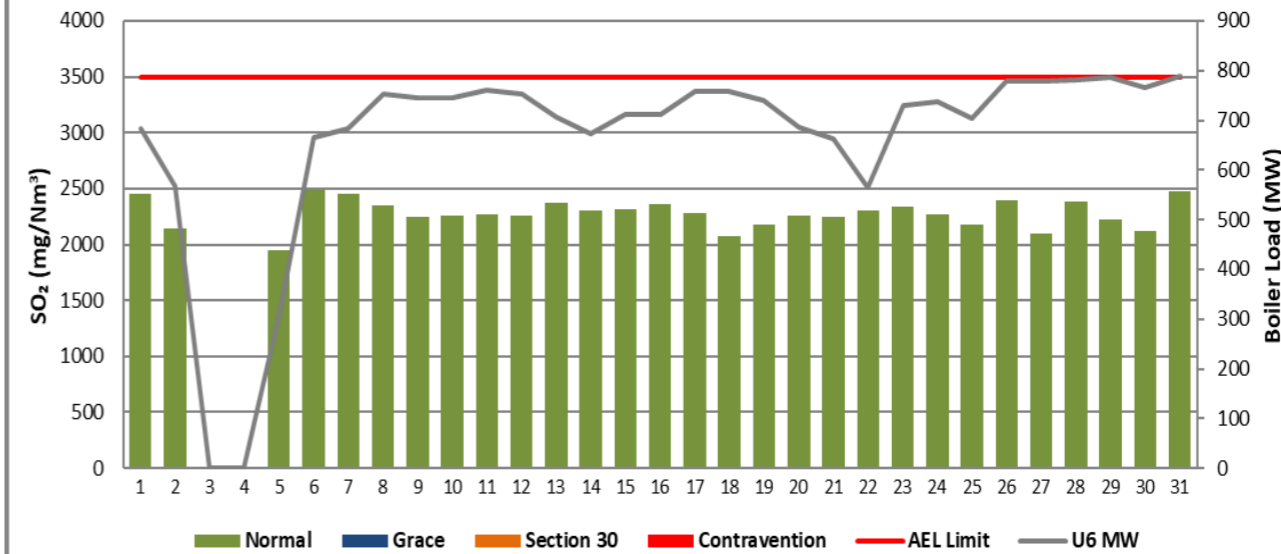


Figure 12: Medupi Unit 6 SO₂ Emissions - October 2023



CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

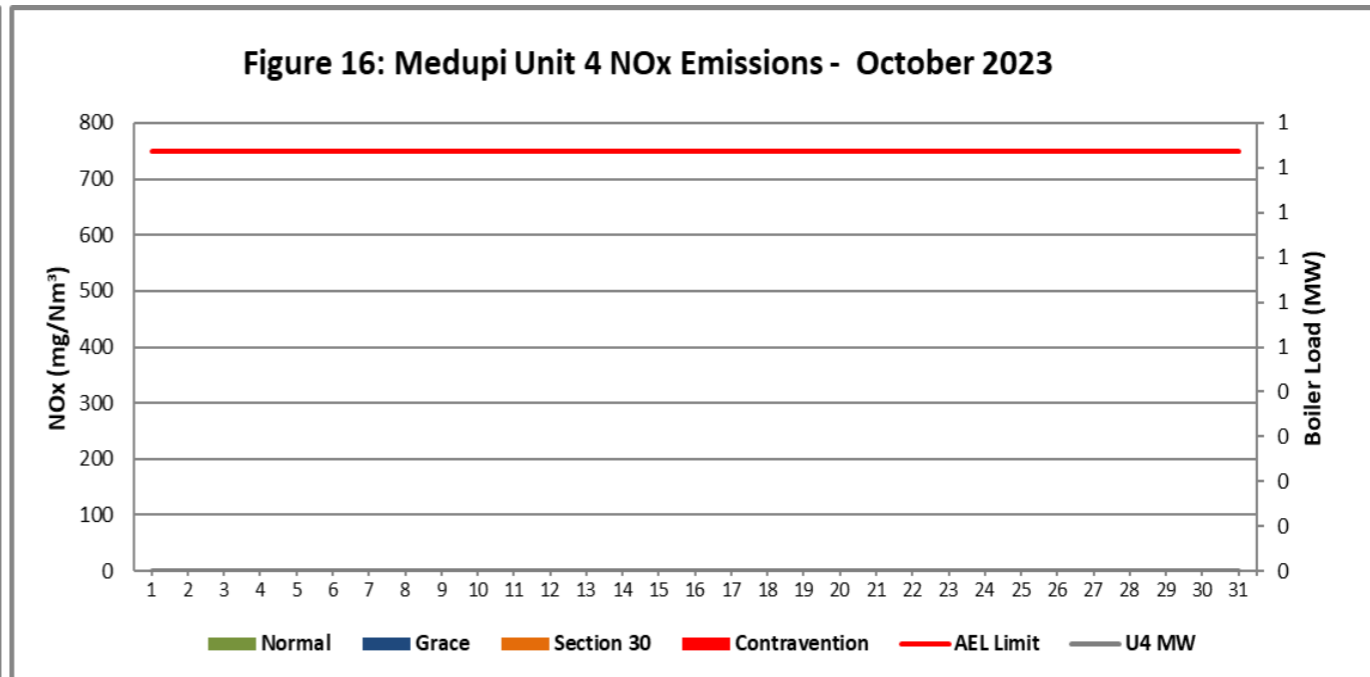
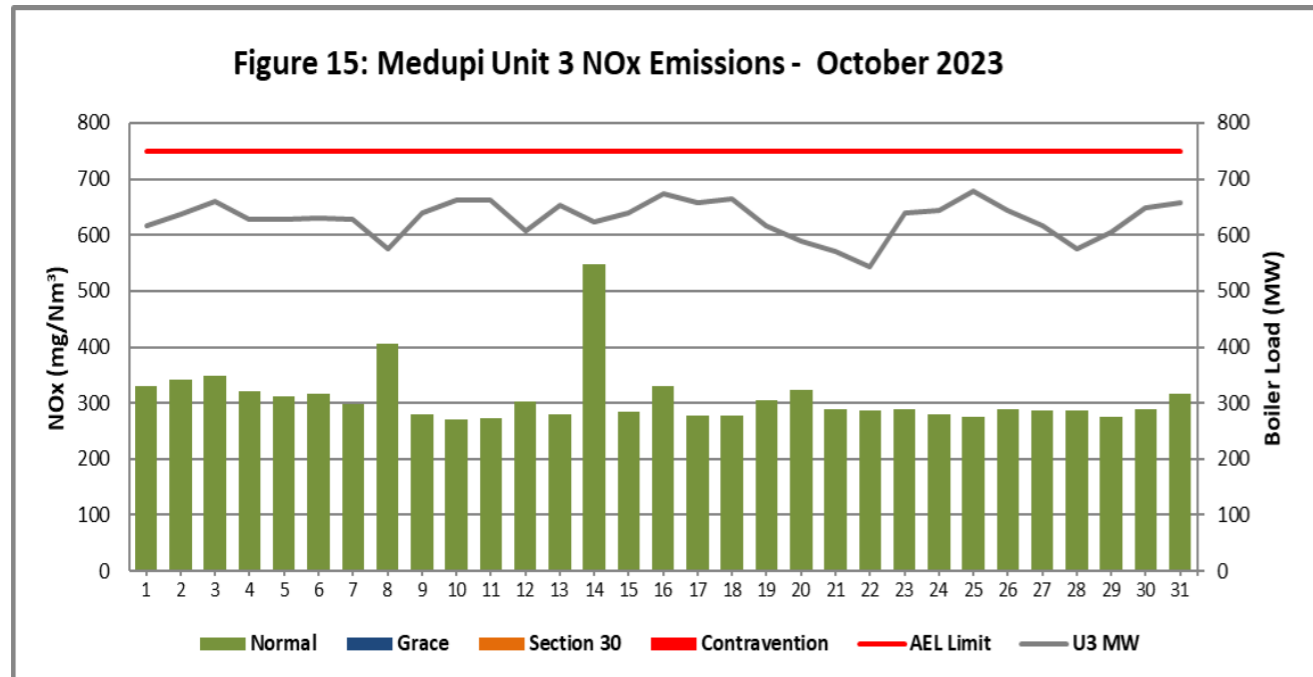
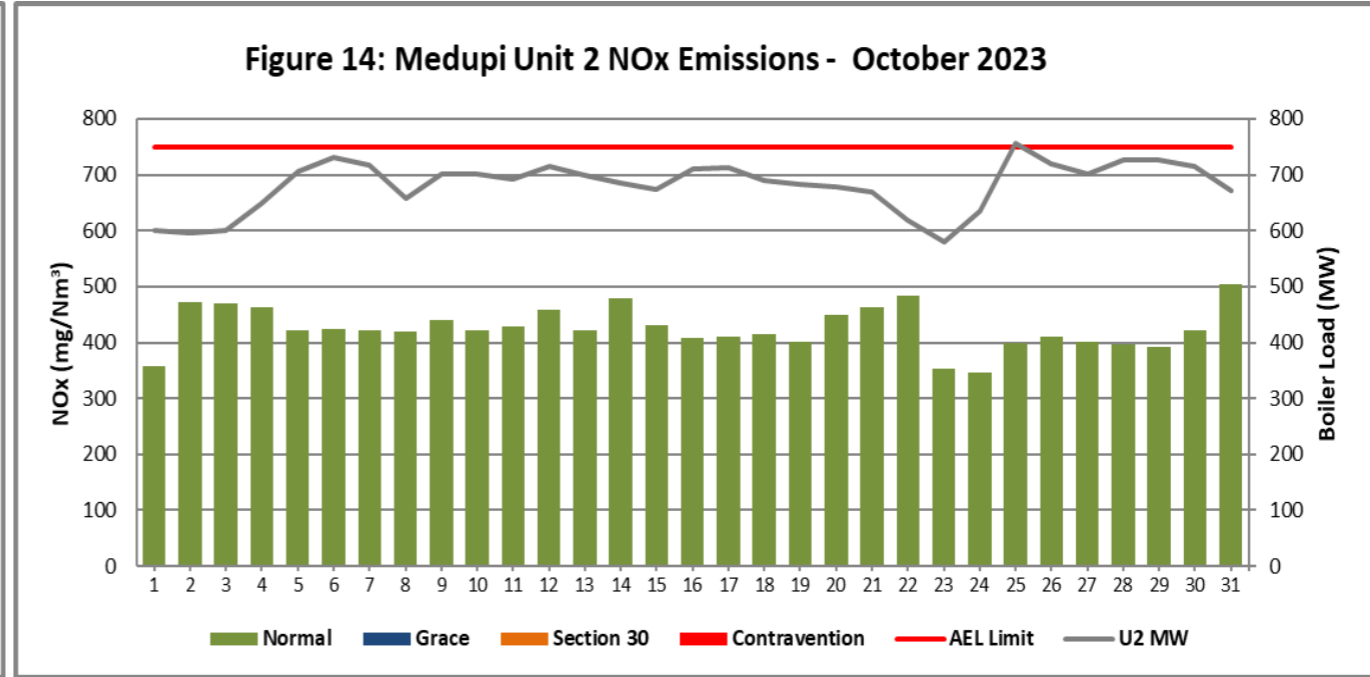
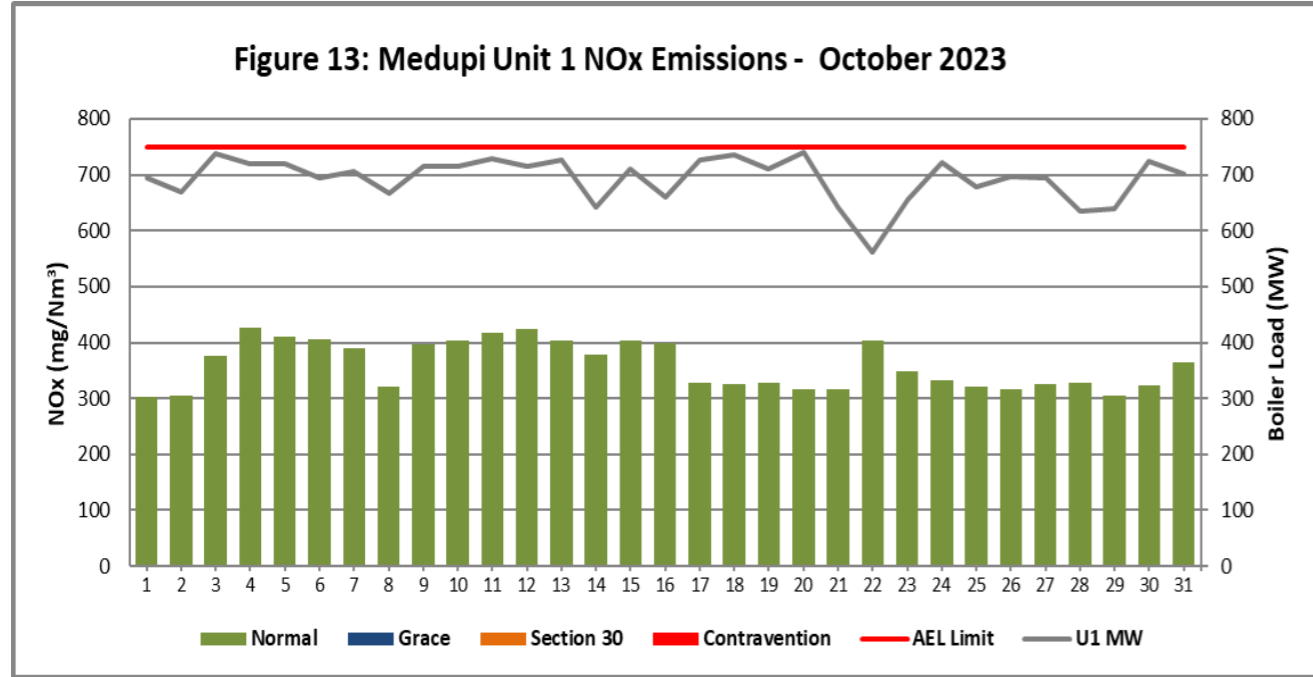
No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.



Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	September2022		
Review Date	September2024		

4.3 NOx Daily Averages



CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.



Medupi Power Station Monthly Emissions Report

Template Identifier	240-43921804	Rev	6
Document Identifier	240-88543153	Rev	2
Effective Date	September2022		
Review Date	September2024		

Figure 17: Medupi Unit 5 NOx Emissions - October 2023

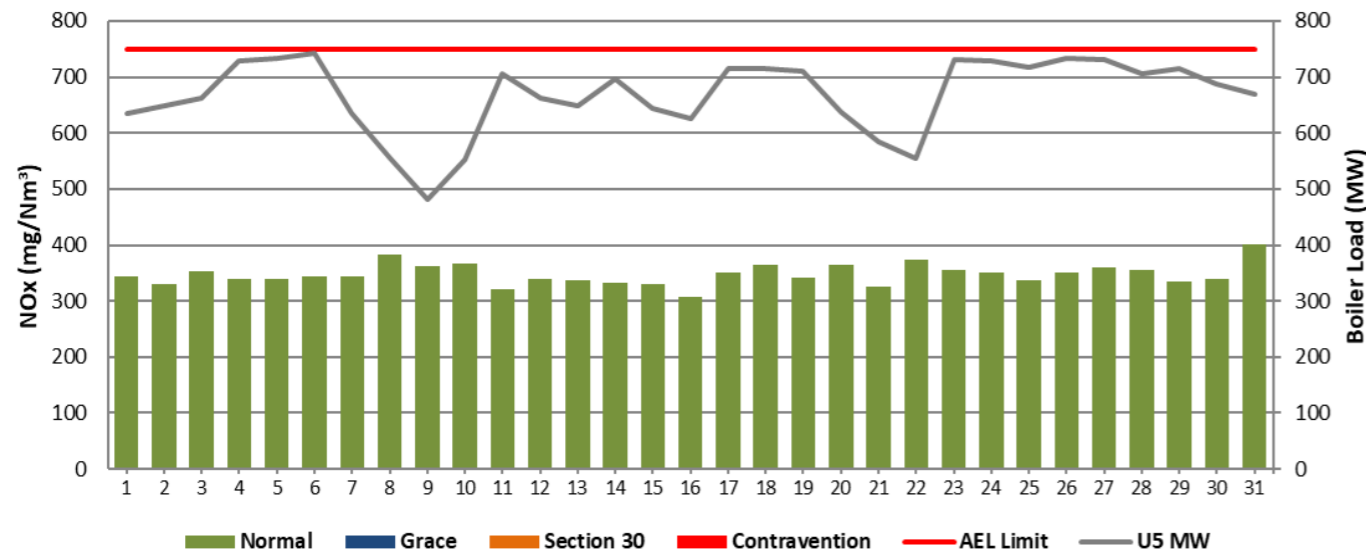
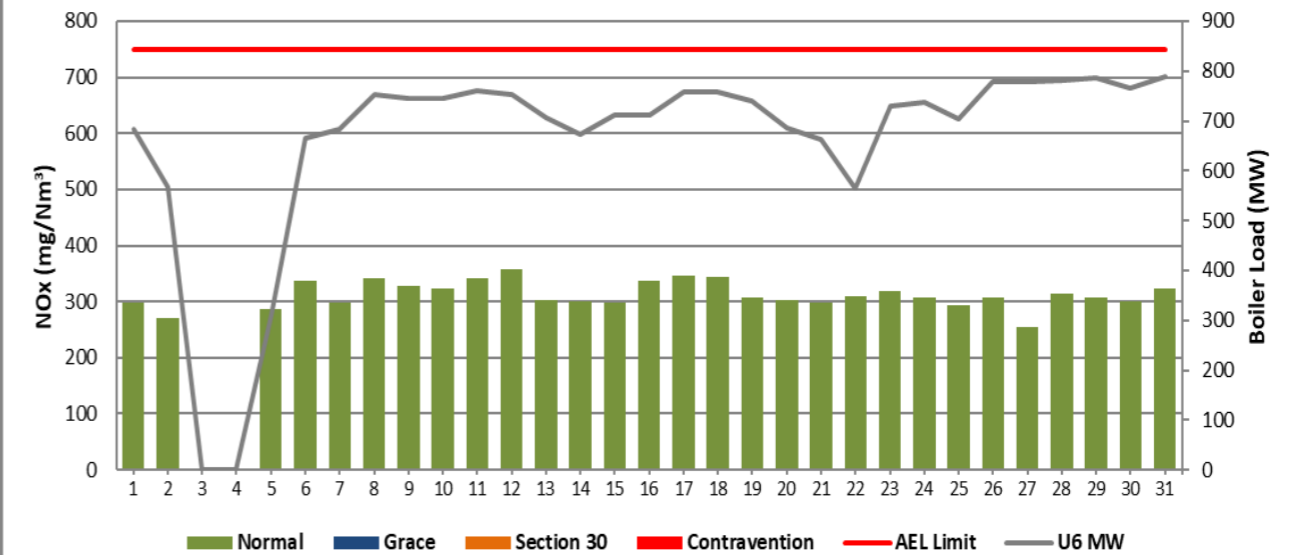


Figure 18: Medupi Unit 6 NOx Emissions - October 2023



CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.


	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

TABLE 6: MONTHLY TONNAGES FOR THE MONTH OF OCTOBER 2023

Associated Unit/Stack	PM	SO ₂	NO ₂
Unit 1	53.0	5 555.3	804.3
Unit 2	82.0	6 837.7	1 052.7
Unit 3	49.6	4 868.6	555.6
Unit 4	Off	Off	Off
Unit 5	33.2	7 055.0	940.3
Unit 6	17.3	4 586.7	629.9
SUM (Tons)	235.1	28 903.4	3 982.8

TABLE 7: MONTHLY AVERAGES FOR THE MONTH OF OCTOBER 2023

Associated Unit/Stack	Average PM (mg/Nm ³)	Average SO _x (mg/Nm ³)	Average NO _x (mg/Nm ³)
Unit 1	24.2	2 484.0	359.4
Unit 2	34.0	2 761.8	425.5
Unit 3	28.3	2 705.4	309.4
Unit 4	Off	Off	Off
Unit 5	12.2	2 603.2	347.5
Unit 6	9.0	2 276.5	312.2

4 Continuous Emission Monitoring Systems (CEMS)

- Unit 1, 2, 3, 5 and 6 Continuous Emission Monitoring Systems were always in operation when the unit was on load.

TABLE 8: PERIODS DURING WHICH CEMS WAS INOPERATIVE


Date	CEMS status	Comments
N/A	N/A	N/A

TABLE 9: CEMS MONITOR RELIABILITY PERCENTAGE (%)

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

Associated Unit/Stack	PM	SO ₂	NO ₂	O ₂
Unit 1	100.0	100.0	99.7	99.7
Unit 2	100.0	100.0	100.0	99.7
Unit 3	100.0	0	0	0
Unit 4	Off	Off	Off	Off
Unit 5	100.0	99.9	99.9	99.7
Unit 6	100.0	99.2	99.2	96.4

Notes: SO₂, O₂ and NO was Changed to a Unity Factor (1) for accurate reporting, there was a step change in the performance of the Unit 3 gas Monitor.

5 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. The service appointed for the CEMS calibration is in a process of obtaining SANAS accreditation. Verification of the CEMS after calibration is conducted internally by Eskom.


6 Ambient Air Quality Monitoring Report

The Ambient Air Quality Monitoring and Dust fall-out report for October2023 was e-mailed to the Licensing Authority.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.


No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

7 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 10: TOTAL VOLATILE ORGANIC COMPOUND (TVOC) FOR OCTOBER 2023

		
CALCULATION OF EMISSIONS OF TOTAL VOLATILE COMPOUNDS FROM FUEL OIL STORAGE TANKS*		
Date:	Tuesday, 31 October 2023	
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	
MONTHLY INPUT DATA FOR THE STATION Please only insert relevant monthly data inputs into the blue cells below Choose from a dropdown menu in the green cells The total VOC emissions for the month are in the red cells IMPORTANT: Do not change any other cells without consulting the AQ CoE		
MONTH:	October	
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:	1331	tons/month
Molecular weight of the fuel oil:		Lb/lb-mole
METEROLOGICAL DATA FOR THE MONTH		
	Data	Unit
Daily average ambient temperature	26.19	°C
Daily maximum ambient temperature	33.65	°C
Daily minimum ambient temperature	19.11	°C
Daily ambient temperature range	14.54	°C
Daily total insolation factor	5.81	kWh/m ² /day
Tank paint colour	Aluminum/Specular	NA
Tank paint solar absorbance	0.39	NA
FINAL OUTPUT:		
	Result	Unit
Breathing losses:	0.74	kg/month
Working losses:	0.04	kg/month
TOTAL LOSSES (Total TVOC Emissions for the month):	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>		

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		


8 Air quality improvements initiatives and public education and awareness campaigns

No awareness campaign for October 2023

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

9 Complaints Register


TABLE 5: COMPLAINTS FOR THE MONTH OF OCTOBER 2023


Name/ Source Code	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																
Medupi Power Station ADF	Ash found in a farm 30 km from Medupi power station ADF in the Steenbokpan area.	PM ₁₀	Date of the complaint - 29 October 2023	<p>The farm is located downwind in the vicinity of major sources of dust. Relative to the farm, Medupi power station ash dump is about 30 km, Matimba power station ash dump about 37 km, Grootegeluk coal mine about 28 km and Lephalale Afrimat and Quarry about 31 km.</p> <p>According to the PM₁₀ data that was analyzed, at the Ambient Monitoring Station located 30 km away from the farm it is evident that there were incidents of high levels of dust in the Lephalale area that could have negatively impacted the farm, but it should be noted that the farm in question is located downwind of various potential sources of dust. The high concentrations of PM₁₀ were recorded between 29 and 30 October and there were 2 exceedances of the daily limit recorded during this period.</p> <p>Ambient Monitoring Results</p> <table border="1"> <thead> <tr> <th colspan="4">PM10 Daily Exceedances</th> </tr> <tr> <th>Pollutants</th> <th>Limit</th> <th>Date</th> <th>Conc.(ug/m³)</th> </tr> </thead> <tbody> <tr> <td>PM10</td> <td>75</td> <td>29/10/2023</td> <td>327.5</td> </tr> <tr> <td>PM10</td> <td>75</td> <td>30/10/2023</td> <td>168.7</td> </tr> </tbody> </table> <p>Fugitive Dust Results The dust fallout results at the perimeter fence and Steenbokpan road (D11a, 19, 17,09, 20)did not exceed the non-residential limits.</p>	PM10 Daily Exceedances				Pollutants	Limit	Date	Conc.(ug/m ³)	PM10	75	29/10/2023	327.5	PM10	75	30/10/2023	168.7	<p>1. Add an additional bucket on the Dust Fallout monitoring Network closer to the farm. This will help in identifying the sources of the dust monitored,</p> <p>2. Ensure that all actions on the Medupi Power Station Dust monitoring plan are implemented to minimise the dust from Medupi Power station such as:</p> <ul style="list-style-type: none"> Irrigation using sprinklers. Applying of chemical suppressant Adding tap-off on the ADI system Dust suppression of Haul roads by water tankers Frequent cleaning of the Coal and Ash transfer houses.
PM10 Daily Exceedances																					
Pollutants	Limit	Date	Conc.(ug/m ³)																		
PM10	75	29/10/2023	327.5																		
PM10	75	30/10/2023	168.7																		


CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.


No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

	Medupi Power Station Monthly Emissions Report	Template Identifier	240-43921804	Rev	6
		Document Identifier	240-88543153	Rev	2
		Effective Date	September2022		
		Review Date	September2024		

Compiled by: Lutendo Murovhi  Date: 28/11/2023
Environmental Officer

Verified by: Malose Langa  Date: 2023/11/29
System Engineer Boiler

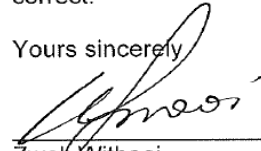
Verified by: Shu Mpangase  Date: 2023/11/29
System Engineer C&I

Supported by: Mokgadi Dikgale  Date: 2023/11/30
Environmental Manager

Supported by: Jabulani Mkhathshwa  Date: 2023-11-30
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

Date: 2023/11/30

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.

No part of this document should be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.