Eskom

Generation

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AND

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GROOTVLEI POWER STATION

Atmospheric Emission License GPS/0015/2015/F02

BOILER ENGINEERING MANAGER	2024/10/08 DATE
ENGINEERING MANAGER	09/10/2024 DATE
ENVIRONMENTAL MANAGER	2024/10/08 DATE

Eskom

SEPTEMBER 2024

GROOTVLEI POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License GPS/0015/2015/F02

1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Maximum Permitted Consumption Rate	Consumption Rate Sep-2024
	Coal	Tons	*650 000*	*152 597 0*
	Fuel Oil	Tons	*20 000*	*2640 42*
Production Rates	**Product / By-Product Name**	**Units**	**Maximum Production Capacity Permitted**	**Indicative Production Rate Sep-2024**
	Energy	GWh	*806 4*	*243 76*
	Ash	Tons	*300 000*	*44 909*
	RE PM	kg/MWh	*not specified*	*0 28*

Note Maximum energy production is calculated as (190MW x 4 Units + 180MW x 2 Units) x 24hrs x Days in month/1000 = GWh

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristic	Units	Stipulated Range	Monthly Average Content
CV Content	MJ/kg	*18-24*	*19 56*
Sulphur Content	%	*0 6 to < 1 2*	*1 07*
Ash Content	%	*27 to < 32*	*29 43*

3 EMISSION LIMITS (mg/Nm^3)

Associated Unit/Stack	PM	SO_2	NO
North	*100*	*3500*	*1100*
South	*50*	*3500*	*1100*

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Effieciency
Unit 1	*Fabric Filter Plant (FFP)*	*99 820%*
Unit 2	*Fabric Filter Plant (FFP)*	*99 930%*
Unit 3	*Fabric Filter Plant (FFP)*	*99 917%*
Unit 4	*Fabric Filter Plant (FFP)*	*Unit Off-line*
Unit 5	*Fabric Filter Plant (FFP)*	*Unit Off-line*
Unit 6	*Fabric Filter Plant (FFP)*	*Unit Off-line*

Note Abatement plant does not have bypass mode operation, hence plant 100% Utilised

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO_2	NO	O_2
North	*100 0*	*100 0*	*100 0*	*89 7*
South				

Note NOx emissions is measured as NO in PPM Final NOx value is expressed as total NO_2

6 EMISSION PERFORMANCE

Table 6 1 Monthly tonnages for the month of September-2024

Associated Unit/Stack	PM (tons)	SO_2 (tons)	NO_x (tons)
Unit 1	12 70	724 9	132 2
Unit 2	28 87	1 358 4	254 7
Unit 3	26 64	1 064 1	203 6
Unit 4	0 00	0 0	0 0
Unit 5	0 00	0 0	0 0
Unit 6	0 00	0 0	0 0
SUM	68 21	3 147 5	590 5

Table 6 2 Operating days in compliance to PM AEL Limit - September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Total Exceedance	Average PM (mg/Nm³)
North	26	4	0	4	51 9
South	0	0	0	0	
SUM	26	4	0	4	

Table 6 3 Operating days in compliance to SO_2 AEL Limit - September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Total Exceedance	Average SO_2 (mg/Nm³)
North	28	2	0	2	2 222 2
South	0	0	0	0	
SUM	28	2	0	2	

Table 6 4 Operating days in compliance to NOx AEL Limit - September 2024

Associated Unit/Stack	Normal	Grace	Section 30	Total Exceedance	Average NOx (mg/Nm³)
North	30	0	0	0	422 6
South	0	0	0	0	
SUM	30	0	0	0	

Note NOx emissions is measured as NO in PPM Final NOx value is expressed as total NO_2

Table 6 5 Legend Description

Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		

Figure 1: Grootvlei North St. PM Emissions - September 2024

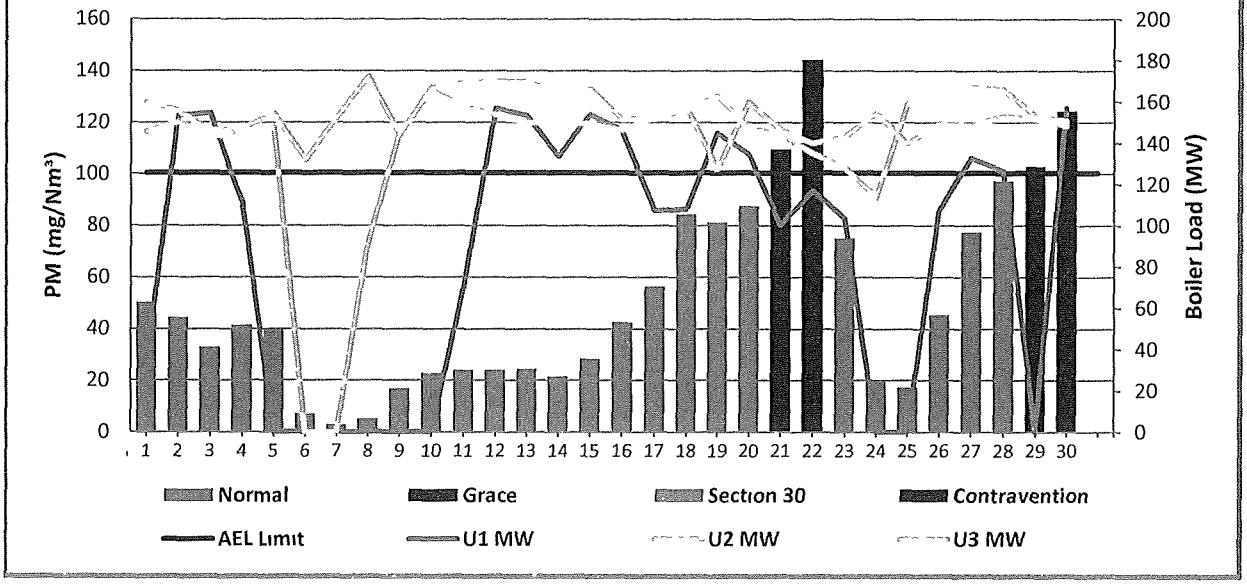
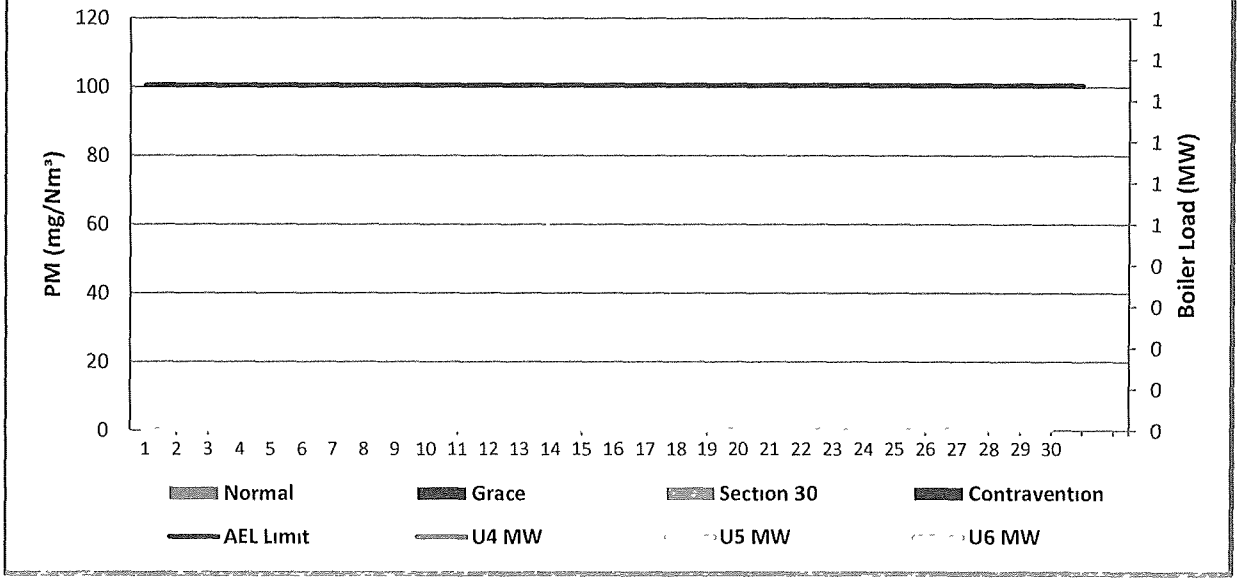


Figure 2: Grootvlei South St. PM Emissions - September 2024



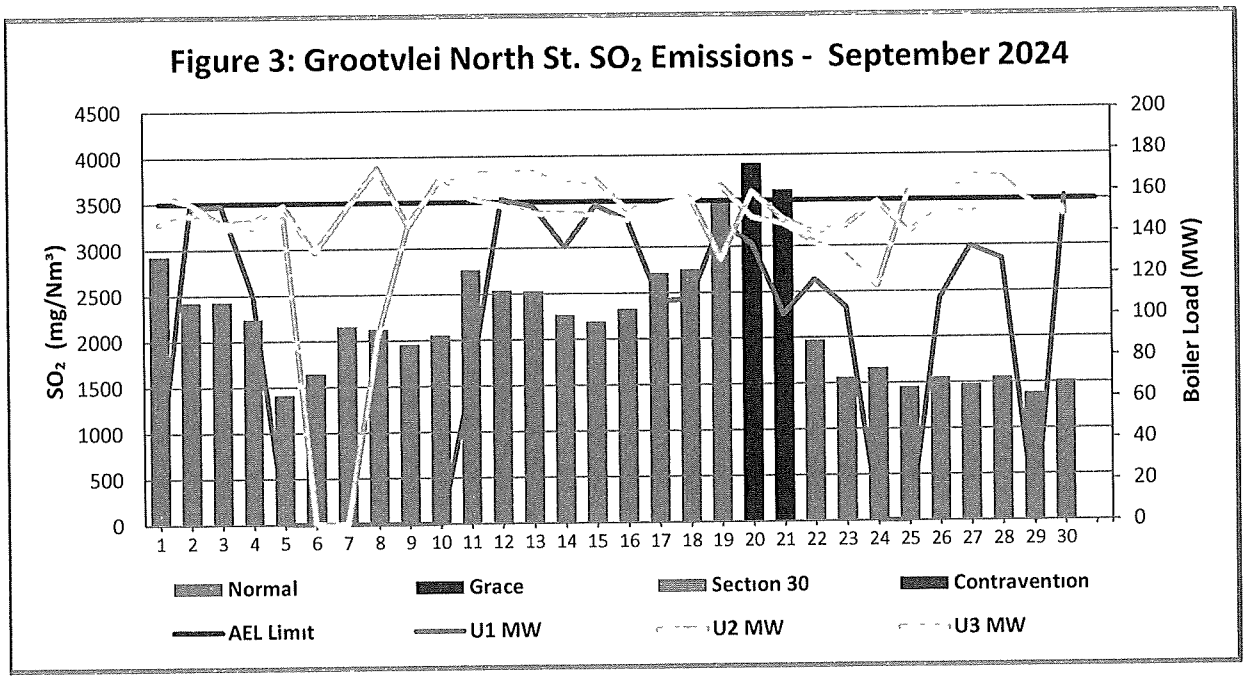


Figure 3: Grootvlei North St. SO2 Emissions - September 2024
SO2 (mg/Nm3)
Boiler Load (MW)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
200
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

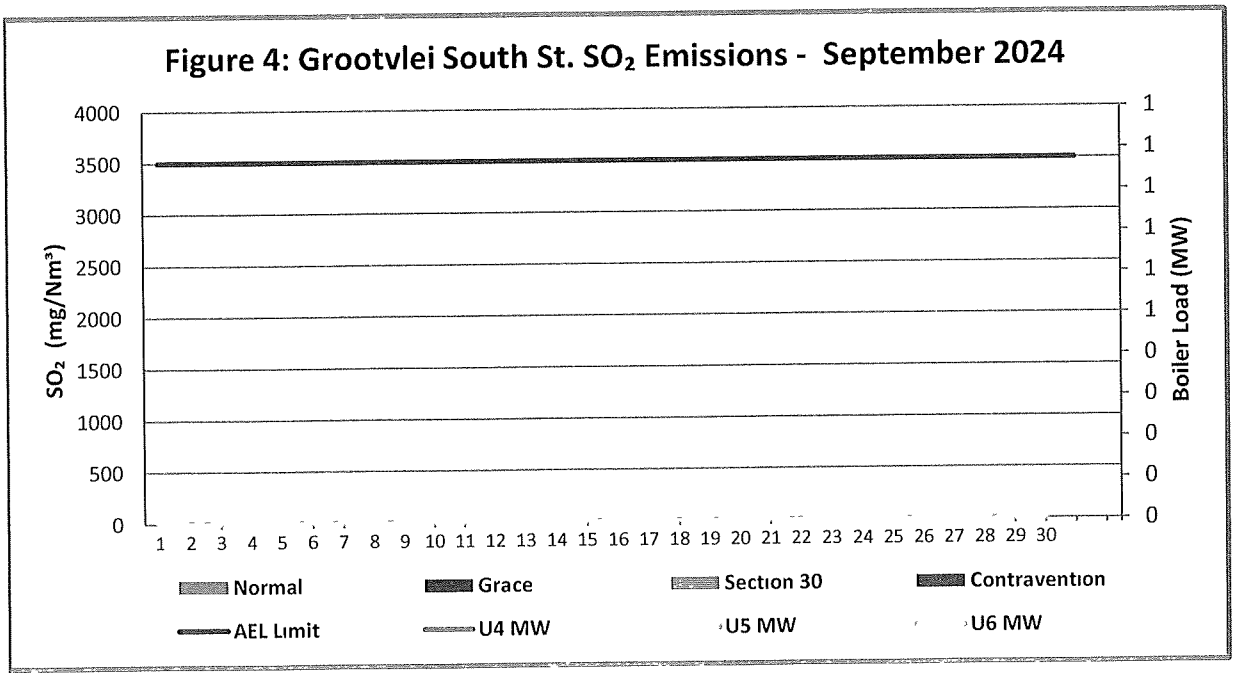


Figure 4: Grootvlei South St. SO2 Emissions - September 2024
SO2 (mg/Nm3)
Boiler Load (MW)
4000
3500
3000
2500
2000
1500
1000
500
0
1
1
1
1
1
1
0
0
0
0
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW
U5 MW
U6 MW

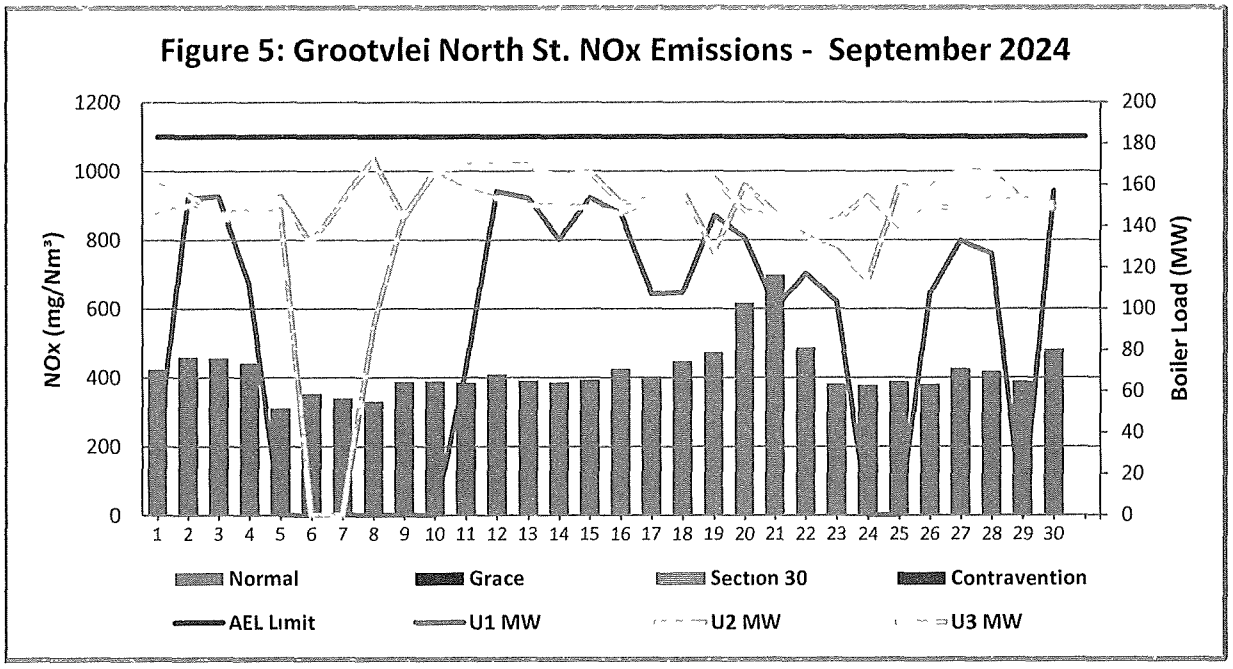


Figure 5: Grootvlei North St. NOx Emissions - September 2024
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
200
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Normal
Grace
Section 30
Contravention
AEL Limit
U1 MW
U2 MW
U3 MW

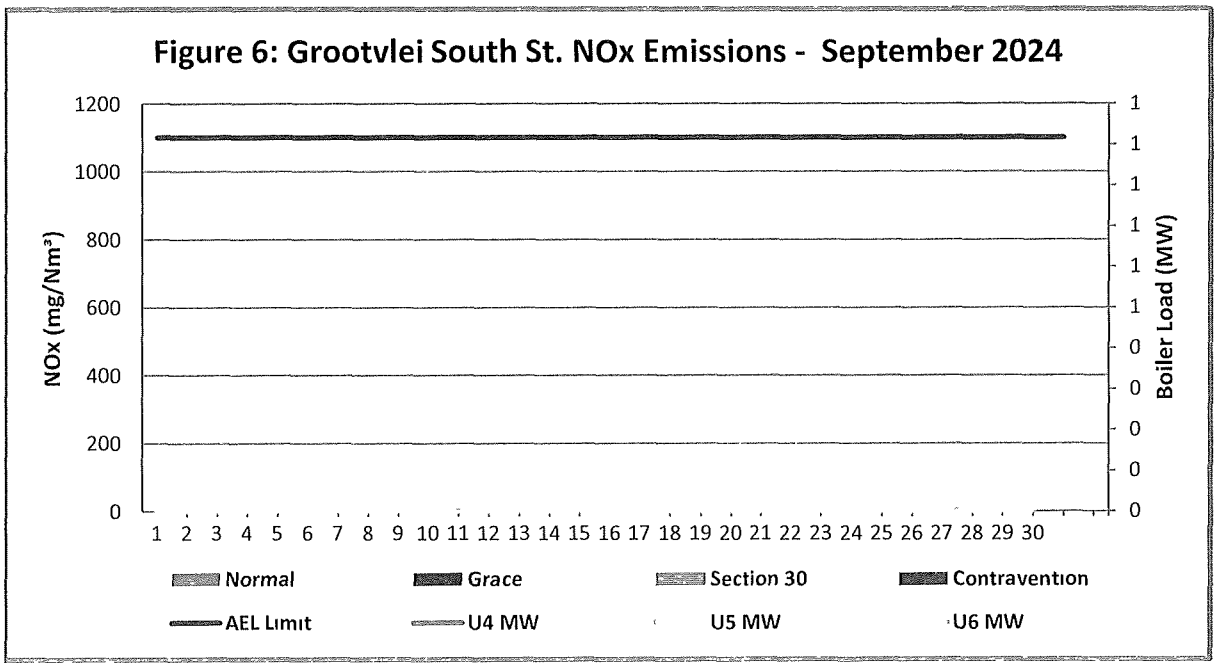


Figure 6: Grootvlei South St. NOx Emissions - September 2024
NOx (mg/Nm³)
Boiler Load (MW)
1200
1000
800
600
400
200
0
1
1
1
1
1
0
0
0
0
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Normal
Grace
Section 30
Contravention
AEL Limit
U4 MW
U5 MW
U6 MW

7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7 1 PM Start-up information for the month of September-2024

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 1		Unit 1		Unit 1	
Breaker Open (BO)	BO previously	BO previously	12 50 am	2024/09/04	7 40 am	2024/09/21	1 15 pm	2024/09/23
Draught Group (DG) Shut Down (SD)	n/a	n/a	1 15 am	2024/09/04	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD HH MM	00 00 25	DD HH MM	n/a	DD HH MM	n/a	DD HH MM
Fires in time	9 50 am	2024/09/01	10 10 pm	2024/09/10				
Synch. to Grid (or BC)	10 05 pm	2024/09/01	1 30 pm	2024/09/11				
Fires in to BC (duration)	00 12 15	DD HH MM	00 15 20	DD HH MM		DD HH MM		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		DD HH MM		DD HH MM

North Stack ...Cont.	Event 5		Event 6		Event 7		Event 8	
Unit No.	Unit 1		Unit 2		Unit 2		Unit 3	
Breaker Open (BO)	9 30 pm	2024/09/28	11 15 am	2024/09/06	6 25 pm	2024/09/26	12 20 pm	2024/09/05
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD	DG did not trip or SD
BO to DG SD (duration)	n/a	DD HH MM	n/a	DD HH MM	n/a	DD HH MM	n/a	DD HH MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	no event		no event		no event		no event	
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM

South Stack ...Cont.	Event 5		Event 6		Event 7		Event 8	
Unit No.	no event		no event		no event		no event	
Breaker Open (BO)								
Draught Group (DG) Shut Down (SD)								
BO to DG SD (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM
Fires in time								
Synch. to Grid (or BC)								
Fires in to BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM
Emissions below limit from BC (end date)								
Emissions below limit from BC (duration)		DD HH MM		DD HH MM		DD HH MM		DD HH MM

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of September-2024 in mg/Nm³

[Include reference to once off test showing typical emissions rates during fires in and SD]

ADDENDUM TO MONTHLY EMISSIONS REPORT

8 EMERGENCY GENERATION

Emergency Generation *[This is only required for stations that are requested to report on this information]*

Table 8 Emergency Generation per unit for the month of September-2024

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Emergency Generation hours declared by national Control						
Emergency Hours declared including hours after stand down						
Hours over the Limit during Emergency Generation						

9 COMPLAINTS REGISTER

Table 9 Complaints for the month of September-2024

Source Code / Name	Root Cause Analysis	Calculation of Impacts / emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date measure will be implemented
(Insert name of affected person/source)	*(Insert root cause for incident)*	*(Insert emissions associated with incident)*	*(Insert dispersion model information where applicable)*	*(Insert mitigation measures taken)*	*(Insert date of implementation of mitigation method)*

10 S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

To be completed in the case of a S30 incident or a legal contravention

Unit no	Incident Start Date	Incident End Date	Incident Cause	Remedial action	Date S30 initial notification sent	Date S30 investigation report sent	Date DEA Acknowledgment	Date DEA Acceptabe	Comments / Reference No

11 General

South Stack off. The dust probe was replaced in August, but correlation is still pending. PM limits were exceeded four times, and SO2 limits twice during the month. On Units 1 and 2, five leaking bags were replaced. Unit 3 had 47 leaking bags, which were also replaced when an opportunity arose. Ash plant unavailability is causing bags to rupture as fly ash accumulates, making them brittle and prone to breaking during pulsing.

	2024/10/08		2024/10/08
Environmental Department	Date	**Boiler Engineering**	Date
	2024/10/11		
General Manager	Date		

Compiled by	Boiler Engineering Department	FFP System Engineer
For	Department of Environmental Affairs and Tourism	Chief Air Pollution Control Officer
Copies	Eskom Environmental Management	D Herbst K Langerman
	Group Technology Engineering	R Rampiar E Patel
	Grootvlie Power Station	Engineering Manager Operating Manager Maintenance Manager Unit Production Manager Boiler Engineering Manager System Engineer Environmental Officer Performance and Test Production Manager