



Mr. Vusi Mahlangu  
Nkangala District Municipality

Address: PO Box 437  
Middleburg  
1050

Date:  
Oct 2018

Enquiries:

Ref: *Kusile Power Station AEL (17/4/AEL/MP312/11/12)*

Dear Mr. Mahlangu

**KUSILE POWER STATION'S MONTHLY EMISSIONS REPORT FOR SEPTEMBER 2018**

This serves as the monthly report required in terms of Section 7.6 in Kusile Power Station's Provisional Atmospheric Emission License: 17/4/AEL/MP311/12/01. The emissions are for the month of September 2018.

Please note that unsuccessful start-ups were experienced during the period 15<sup>th</sup> to 19<sup>th</sup> and 27<sup>th</sup> to 28<sup>th</sup> Sep 2018 which resulted in high NOx emissions on the 18<sup>th</sup>, 19<sup>th</sup>, 27<sup>th</sup> and 28<sup>th</sup> Sep 2018. These high NOx emissions do not constitute a Section 30 incident as the 48 hours grace period as per condition 7.3 in the licence was not exceeded.

Hoping the above will meet your satisfaction.

Yours sincerely

**ACTING GENERAL MANAGER: KUSILE POWER STATION**

**DATE:**

KUSILE POWER STATION'S MONTHLY EMISSIONS REPORT FOR SEPTEMBER 2018

**1 Raw Materials and Products**

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of September-2018
	Coal	Tons/month	1 818 083	180 774
	Fuel Oil	Tons/month	5 533	2256.664
	Limestone	Tons/month	72 917	5766
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of September-2018
	Energy	GWh	3214.08	256.10
	Ash	Tons/month	663 583	62 186.4
	Gypsum	Tons/month	129 250	3 229.0
	RE PM	kg/MWh	not specified	0.012
	RE SOx	kg/MWh	not specified	0.978

**2 Abatement Technology**

Associated Unit/Stack	Technology Type	Control Efficiency (%) for the month of September-2018	Technology Type	Control Efficiency (%) for the month of September-2018
Unit 1	FFP	99.994%	FGD	96.652%
Unit 2	FFP		FGD	
Unit 3	FFP		FGD	
Unit 4	FFP		FGD	
Unit 5	FFP		FGD	
Unit 6	FFP		FGD	

\*Both the FFP and FGD do not have a bypass system - it is therefore assumed that they are 100% Utilized

**3 Energy Source Characteristics**

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Coal CV	not specified	
Coal Sulphur	1.3 (%)	2.300
Ash in Coal	38 (%)	34.400
Fuel Oil (FO) CV	not specified	
Fuel Oil Sulphur	3 (%)	2.520

4. Monitoring reliability

UNIT	PM	SOx	NOx	CO <sub>2</sub>
Unit 1	100.0	100.0	100.0	
Unit 2				
Unit 3				
Unit 4				
Unit 5				
Unit 6				

5. Emissions Performance

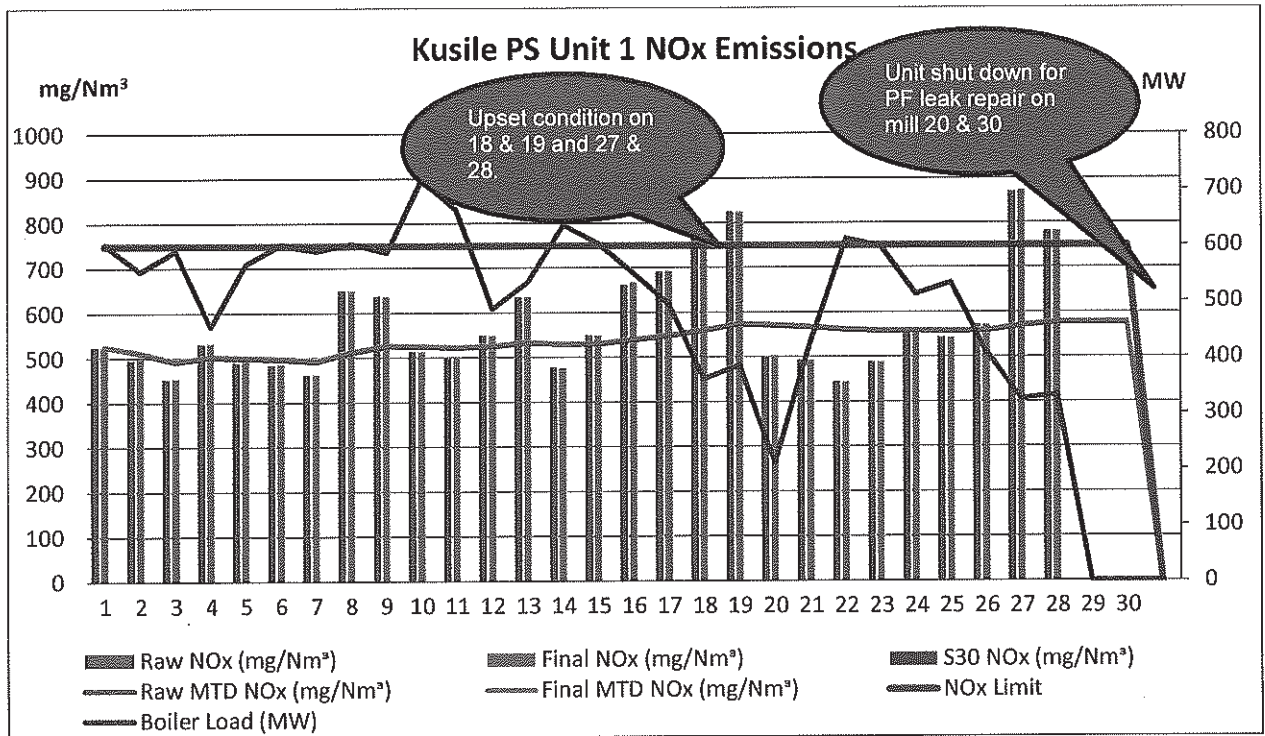


Figure 1. NOx emissions (daily averages) for the month of September-2018 against emission limit for Unit 1

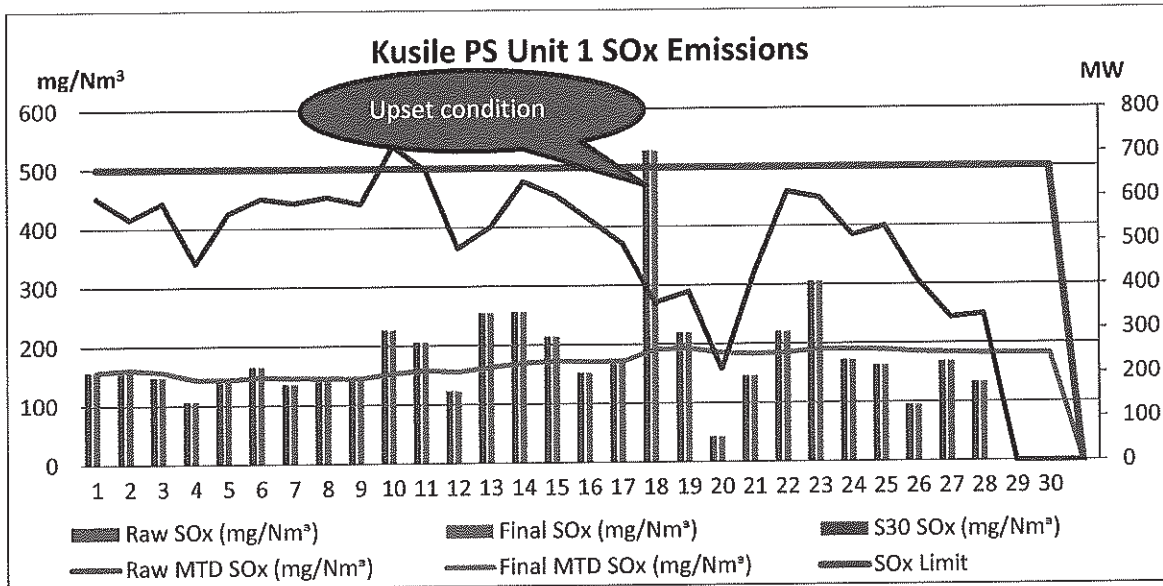


Figure 2. NOx emissions (daily averages) for the month of September-2018 against emission limit for Unit 1

The event leading to the high emission over the period from 17 to 19 Sep 2018 is as follows:

- 17/09/2018 16:35 Unit tripped on boiler protection (Pyros)
- 18/09/2018 15:27 Fires in
- 18/09/2018 21:11 Unit synchronized
- 18/09/2018 14:36 Unit tripped on eco flow
- 18/09/2018 16:33 Fires in
- 19/09/2018 22:11 Unit synchronized
- 19/09/2018 22:11 Unit tripped again on reheater 1 temperature high
- 20/09/2018 00:08 Fires in
- 20/09/2018 18:40 Unit was successfully synchronized

The events leading to high emission over the period of 27 to 28 Sep 2018 are as follows:

- 25/09/2018 13:58 Unit tripped due to loss of mills
- 25/09/2018 17:11 Fires in
- 25/09/2018 21:04 Unit synchronized
- 26/09/2018 10:41 Unit tripped due to loss of fires (no mills in service)
- 27/09/2018 03:49 Fire in
- 27/09/2018 06:44 Unit synchronized
- 28/09/2018 10:38 Unit shut down due to PF leak on mill 20 & 30

Each of the events did not exceed 48 hour grace period allowed in the license. Therefore are not classified as Section 30 incidents but as upsets conditions.

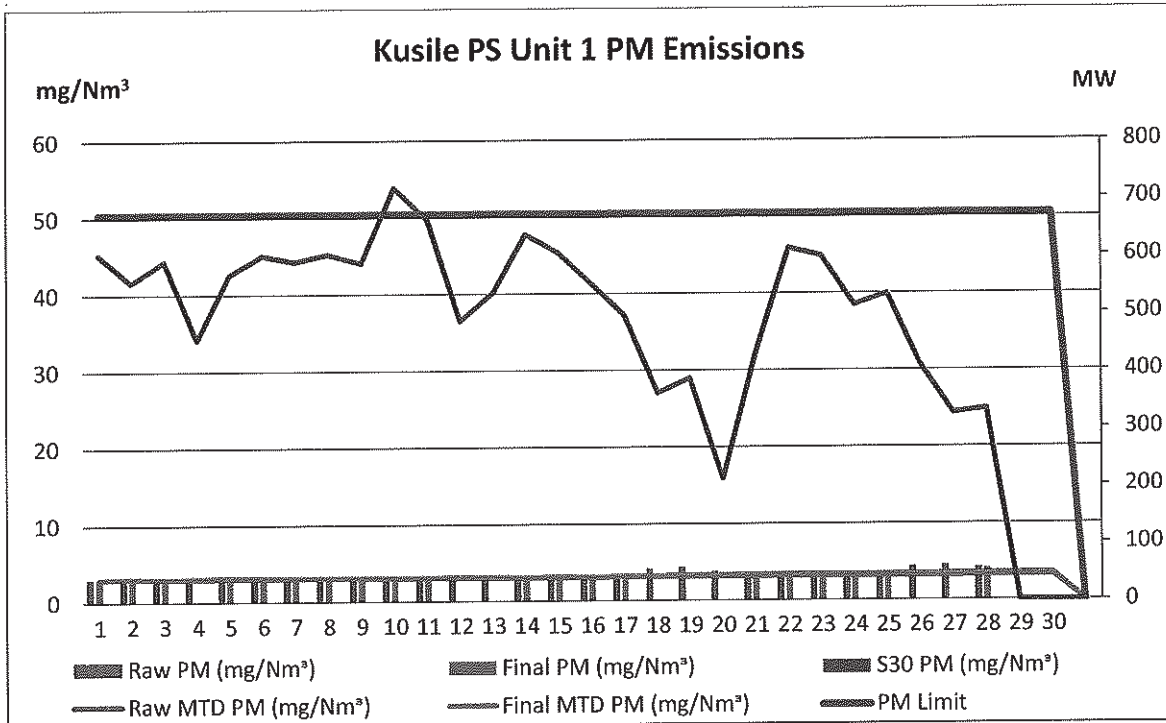


Figure 3. PM emissions (daily averages) for the month of September-2018 against emission limit for Unit 1

Table 1: Monthly tonnages for the month of September-2018

Unit	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>2</sub> (tons)	CO (tons)	CO <sub>2</sub> (tons)
1	3.1	251	771	22	
2	0.0	0	0	0	
3	0.0	0	0	0	
4	0.0	0	0	0	
5	0.0	0	0	0	
6	0.0	0	0	0	
SUM	3.1	251	771	22	

Table 2: Each unit and respective 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	22:01:50	00:00:00	00:00:00	07:22:10
2	00:00:00	00:00:00	00:00:00	00:00:00
3	00:00:00	00:00:00	00:00:00	00:00:00
4	00:00:00	00:00:00	00:00:00	00:00:00
5	00:00:00	00:00:00	00:00:00	00:00:00
6	00:00:00	00:00:00	00:00:00	00:00:00

6. Light up information

Table 3. PM Start-up information for the month of September-2018

Event No.	Event 1		Event 2		Event 3		Event 4		Event 5	
Unit 1	Unit 1		Unit 1		Unit 1		Unit 1		Unit 1	
Fires in	04:25 PM	2018/09/04	01:15 PM	2018/09/13	01:15 PM	2018/09/15	12:35 AM	2018/09/20	03:50 AM	2018/09/27
Synchronisation with Grid	07:15 PM	2018/09/04	02:35 PM	2018/09/13	07:25 PM	2018/09/15	06:35 PM	2018/09/20	06:35 AM	2018/09/27
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	did not go above limit	did not go above limit
Fires in to synchronisation	00:02:50	Hrs (dd:hh:mm)	00:01:20	Hrs (dd:hh:mm)	00:06:10	Hrs (dd:hh:mm)	00:18:00	Hrs (dd:hh:mm)	00:02:45	Hrs (dd:hh:mm)
Synchronisation to < limit (Duration)		Hrs (dd:hh:mm)		Hrs (dd:hh:mm)		Hrs (dd:hh:mm)		Hrs (dd:hh:mm)		Hrs (dd:hh:mm)

Table 4. Point Source emissions released during start-up (fires-in) for the month of SEPTEMBER-2018 in mg/Nm<sup>3</sup>

North 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 1	2018/09/04	04:25 PM	2018/09/04	07:15 PM	3.9	66.81	699.7
Unit 1	2018/09/13	01:15 PM	2018/09/13	02:35 PM	4.0	148.70	577.6
Unit 1	2018/09/15	01:20 PM	2018/09/15	07:25 PM	4.7	465.89	823.4
Unit 1	2018/09/20	12:35 AM	2018/09/20	06:35 PM	3.7	24.61	422.7
Unit 1	2018/09/29	10:35 AM	2018/09/27	06:35 AM	4.4	156.3	836.6

Table 5. Point Source emissions released during Shut-down (SD) for the month of September-2018 in mg/Nm<sup>3</sup>

North 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 1	2018/09/03	11:30 AM	2018/09/03	11:50 AM	2.8	133.7	431.9
Unit 1	2018/09/11	06:35 PM	2018/09/13	10:25 AM	3.4	161.6	623.5
Unit 1	2018/09/17	04:40 PM	2018/09/17	05:00 PM	4.0	181.1	748.3
Unit 1	2018/09/25	02:00 PM	2018/09/26	10:35 AM	4.4	92.0	597.7

**7. Emergency Generation**

**Table 6. Emergency Generation per unit for the month of SEPTEMBER 2018**

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

**8. Complaints**

No complaints received during the month of September 2018