

Mr TD Hlanyane
 Air Quality Officer
 Gert Sibande District Municipality
 C/o Joubert and Oosthuisen Streets
 ERMELO
 2430

Date:
 31 May 2018

Enquiries:

Dear Mr Hlanyane

TUTUKA POWER STATION ANNUAL EMISSIONS REPORT - 2017/2018 FY

This serves as the Annual Report required in terms of Section 7.6 in Tutuka Power Station's Atmospheric Emission License (ref no: Lekwa/Eskom H SOC Ltd/TPS/0013/2015F031March2015 as well as in terms of other reporting requirements listed in the Minimum Emission Standards. The emissions are for Eskom's Tutuka Power Station 2017/2018 financial year which is from 1 April 2017 to 31 March 2018. Verified emissions of particulates, SO₂ and NO_x (as NO₂) as measured by installed CEMS and CO₂ and N₂O, as calculated, are also included.

Name, Description and Reference Number of Plant as Specified in the AEL:

Name of facility	Eskom Holding SOC Ltd
Description of facility	Tutuka Power Station
Reference number of plant	2002/015527/06

Emission Trends:

TUTUKA POWER STATION			
	Coal-fired emissions (T/A)	Fuel-oil emissions (T/A)	Total Emissions (T/A)
CO ₂			
N ₂ O	306.665	N/A	306.665
PM	14 218.27	N/A	14 218.27
SO ₂	150 080	2 543.57	152 632.57
NO _x	89 621	N/A	89 621

Table 1. General oversight of emissions at Tutuka Power Station 2017/2018 FY

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Tutuka Unit 6 was on outage due to boiler fire which occurred on 24 August 2017. This resulted in the emissions experiencing a downward trend.

In March 2018, Tutuka implemented new correlation curves on Unit 4 which resulted in a STEP change in the ash emitted tonnages. The station reported exceedances that may have occurred, to the relevant department.

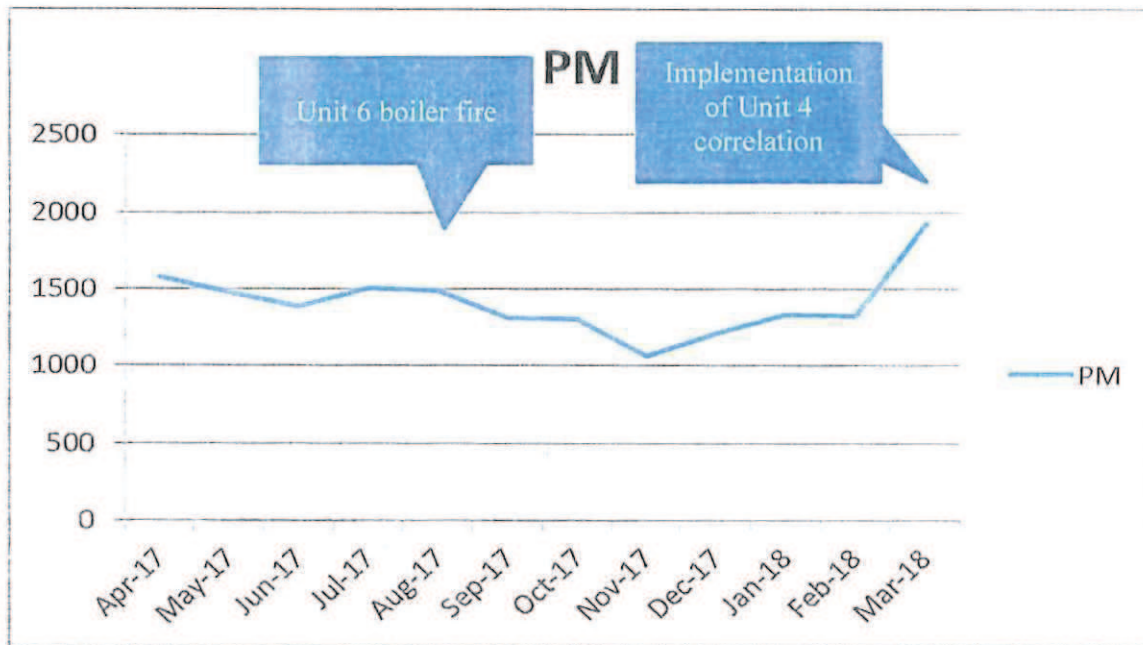


Figure 1: Monthly Particulate Emissions in tons from Tutuka Power Station 2017/2018 FY

Please note: Gaseous emissions, in particular, are largely dependent on the power generated by the power station, and thus the amount of coal burnt.

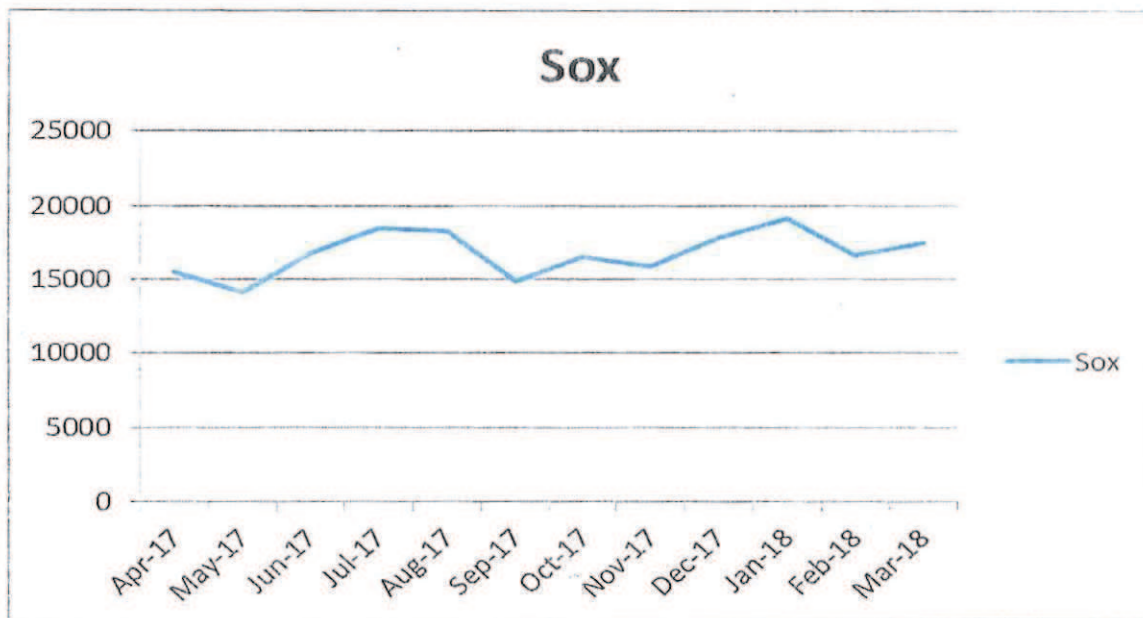


Figure 2: Monthly SO₂ Emissions in tons from Tutuka Power Station 2017/2018 FY

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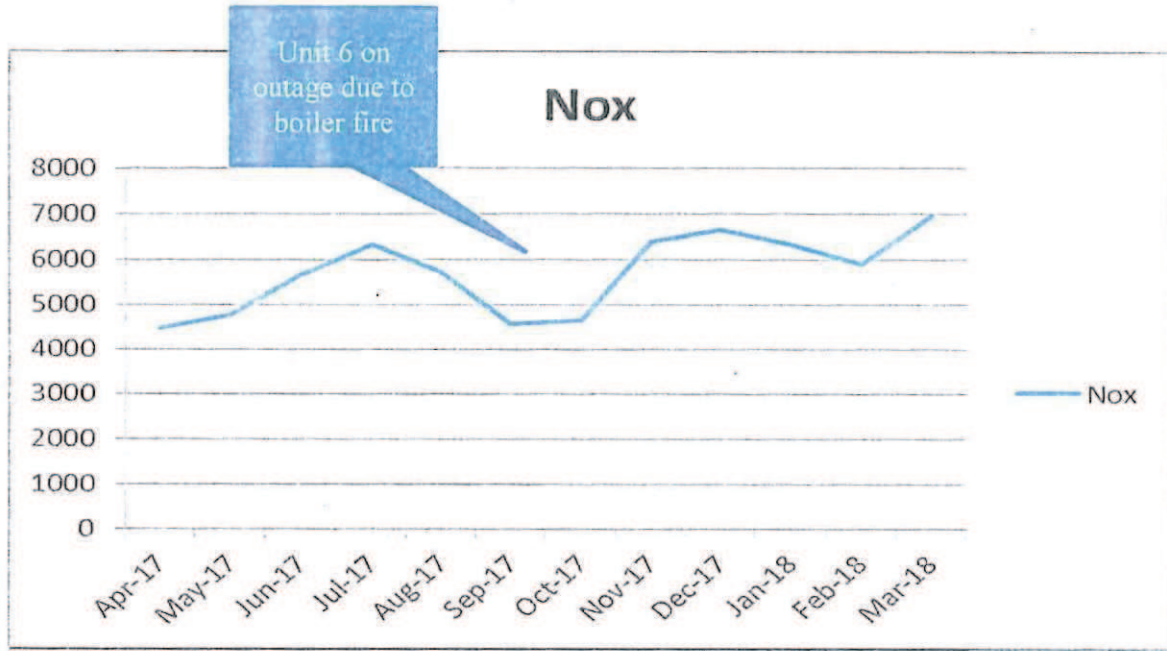


Figure 3: Monthly NO2 Emissions in tons for Tutuka Power Station 2017/2018 FY

Figure 4: Monthly CO2 Emissions in tons from Tutuka Power Station 2017/2018 FY

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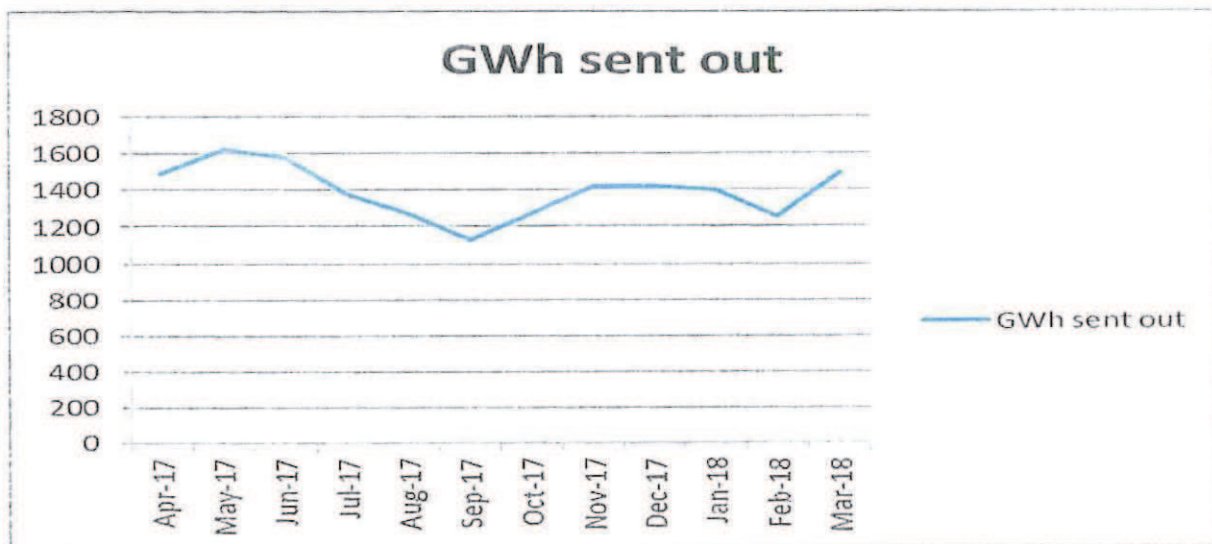


Figure 5: Monthly Energy sent out in GWh at Tutuka Power Station 2017/2018 FY

Figures showing compliance with the daily average emission limits of the respective pollutants have been presented to you in the monthly emission reports sent to your offices.

Monitoring Data Availability

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
PM	97.2	98	98.6	98	97.4	97.8
SO ₂	97.2	94.6	95.3	92.9	98.7	98.6
NO _x	92.1	89.1	80.1	92.2	89.4	91.4

Table 2: General oversight of monitoring data availability (in %) for Tutuka Power Station 2017/2018 in terms of the number of full hours per annum that valid results were obtained for the CEMS in question

Compliance Audit Report(s):

For the financial year 2017/2018, no external audits were conducted on air quality, only internal reviews were conducted.

Major Upgrades Projects:

Tutuka Power Station is currently in the planning phase in order to execute the below emissions reduction projects;

- Fabric Filter Plant retrofit
- Low NO_x Burners
- Brine water injection/evaporation in the boilers
- High Frequency Transformers
- Ammonia conditioning
- Flue gas desulphurization

Greenhouse Gas Emissions:

Greenhouse gas emissions as CO₂ and N₂O have been reported on in the above sections. These have been calculated.

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Results of Spot Measurements or Correlation Tests:

Stack/ Unit	PM	SO ₂	NOx
Unit 1	11 September 2017	22 April 2016	22 April 2016
Unit 2	12 October 2017	22 April 2016	22 April 2016
Unit 3	01 October 2017	22 April 2016	22 April 2016
Unit 4	01 March 2018	22 April 2016	22 April 2016
Unit 5	10 November 2017	22 April 2016	22 April 2016
Unit 6	30 July 2016	22 April 2016	22 April 2016

Table 3: Overview of dates of last conducted GEMS verification tests for PM, SO₂ and NOx (Please see annexure 1 for the verification test results)

Please note: Tutuka Power Station is currently conducting parallel testing on all units, that is Unit 1 to 6.

Explanation of all Instances where Minimum Emission Standards were exceeded:

Exceedance	Stack/Unit and Pollutant	Exceedance Date	Reason for Exceedance	Remediation Measure and Effectiveness
NOx	Unit 5	24 – 27/08/2017	The NOx monitor had erroneous high readings	The monitor was repaired and returned to service

Table 4: Overview of daily average limit exceedances for 2017/18 financial year

NAEIS reporting:

Tutuka Power Station submitted its annual report on the NAEIS system by the 31st of March 2018.

The rest of the information demonstrating compliance with the emission license conditions is supplied in the monthly emission reports submitted.

Compiled by:

SENIOR ENVIRONMENTAL ADVISOR

Reviewed by:

ENVIRONMENTAL MANAGER

Approved by:

GENERAL MANAGER

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ANNEXURE 1: Tutuka Power Station Dust Correlation Curves for Unit 1 to 6

CURRENT DUST CORRELATION CURVES, AIR TO GAS CURVES AND GAS CALIBRATION FUNCTIONS

mA to Emissions (mg/Nm ³) Correlation Curves												
	Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2	OP 1	OP 2
C	-113.126		-93.600		-76.587		44.3132		-91.331		-128.019	
m ²	+		+				3.3164		+		+	
m	25.665		22.611		18.016		-24.618		21.705		29.047	
	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA	*mA
Extinction												
@ 20 mA	400.2	0.0	358.6	0.0	283.7	0.0	878.5	0.0	342.8	0.0	452.9	0.0
@ 4 mA	-10.5	0.0	-3.2	0.0	-4.5	0.0	-1.1	0.0	-4.5	0.0	-11.8	0.0

Unitised Air Flow to Gas Flow (Nm ³ /s) at 10% O ₂						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
C	8.806	-240.060	-2.794	5.512	0.321	1.273
	+	+	+	+	+	+
m	9.787	11.406	9.300	0.391	0.399	0.371
	%	%	%	Km ³ /h	Km ³ /h	Km ³ /h

Note: "m" is divided by a 1000 to convert from Mega to Kilo

Velocity CEMS Adjustment Factor						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
C	0.041	0.000	0.000	1.982	1.054	0.000
	+	+	+	+	+	+
m	1.021	1.000	1.064	0.932	0.966	1.129