Eskom

Ms Mpho Nembilwi
Air Quality Officer
Nkangala District Municipality
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MIDDELBURG
1050

Date:
27 May 2021

Enquiries:
Livhuwani Tshilate
017 615 2317

Ref: 17/4/AEL/MP312/11/09

Dear Ms Nembilwi

KRIEL POWER STATION'S ANNUAL EMISSIONS REPORT FOR FY 2020/21

This serves as the annual report required in terms of Section 7.6 in Kriel Power Station's Atmospheric Emission License, as well as in terms of other reporting requirements listed in the Minimum Emission Standards. The emissions are for Eskom's 2019/20 financial year which is from 1 April 2020 to 31 March 2021. Verified emissions of particulates, SO_2 and NOx as measured by installed CEMS as well as calculated emissions for CO_2 and N_2O are included.

Name, description and reference number of plant as specified in the AEL:

Name of facility	Eskom Holdings SOC Limited- Kriel Power Station
Description of facility	Coal fired electricity generation
Reference number of plant	Ref. 17/4/AEL/MP312/11/09

Emission Trends:

The emissions in the table below are that of the 2020/2021 financial year.

Table 1: General oversight of emissions at Kriel Power Station 2020/2021

Power Station	Coal-fired emissions (tons/annum)	Fuel-oil emissions (tons/annum)	Total (tons/annum)
Kriel Power Station	**CO_2:** 8 709 085	**CO_2:** 150 036	**CO_2:** 8 859 121
	N_2O: 66.75	**N_2O:** not calculated	**N_2O:** 66.75
	PM: 5839.6	**PM:** not calculated	**PM:** 5839.6
	SO_2: 107 523	**SO_2:** 22.57	**SO_2:** 107 545.57
	NO_x: 48 621.1	**NO_x:** not calculated	**NO_x:** 48 621.1

Generation Division
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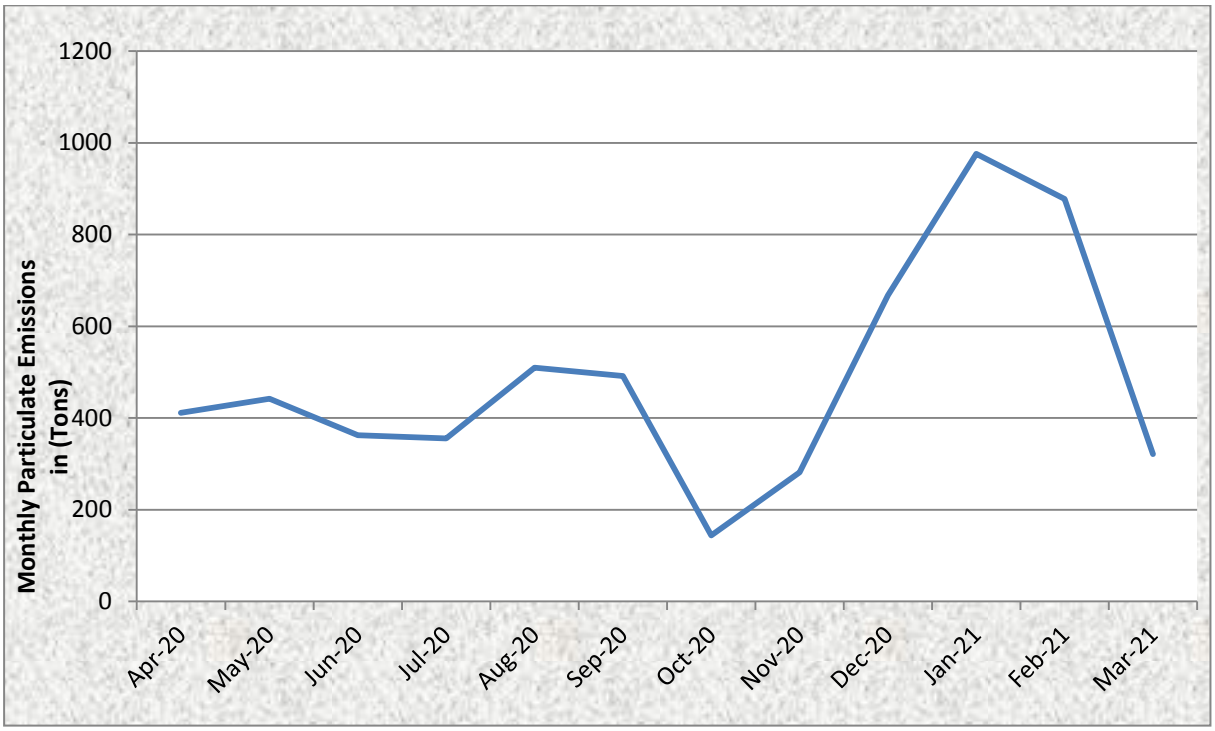

Figure 1: Monthly Particulate Emissions in tons from Kriel Power Station 2020/2021

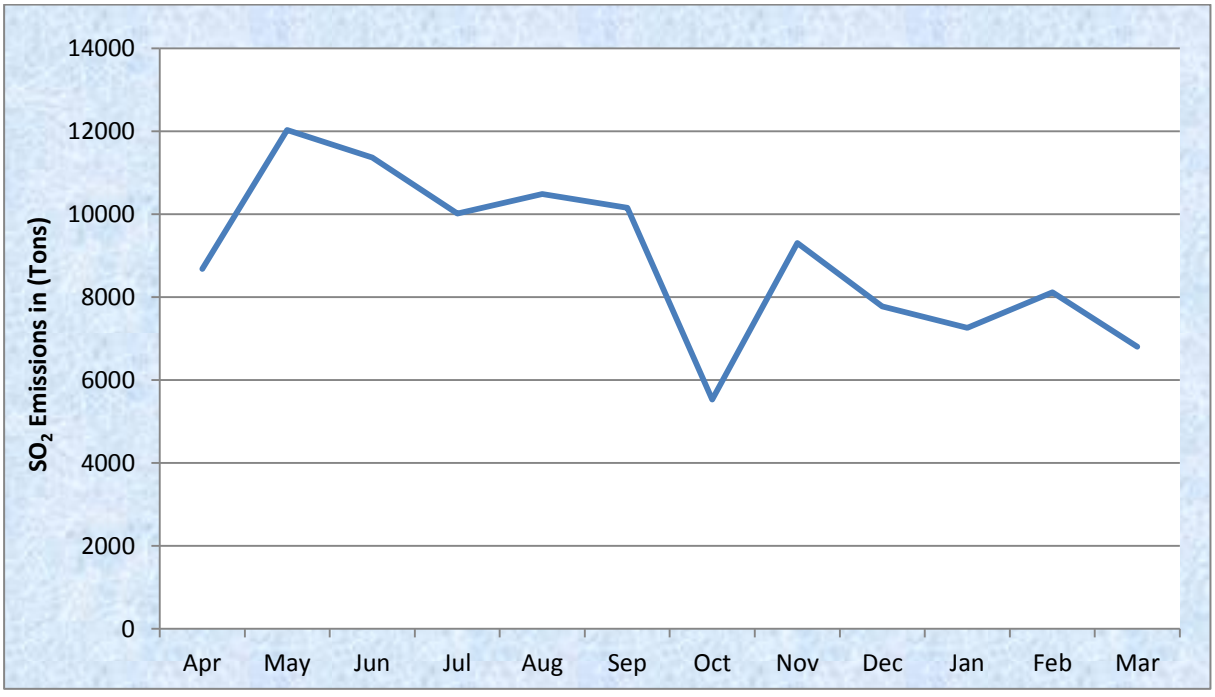

Figure 2: Monthly SO_2 emissions in tons from Kriel Power Station 2020/2021

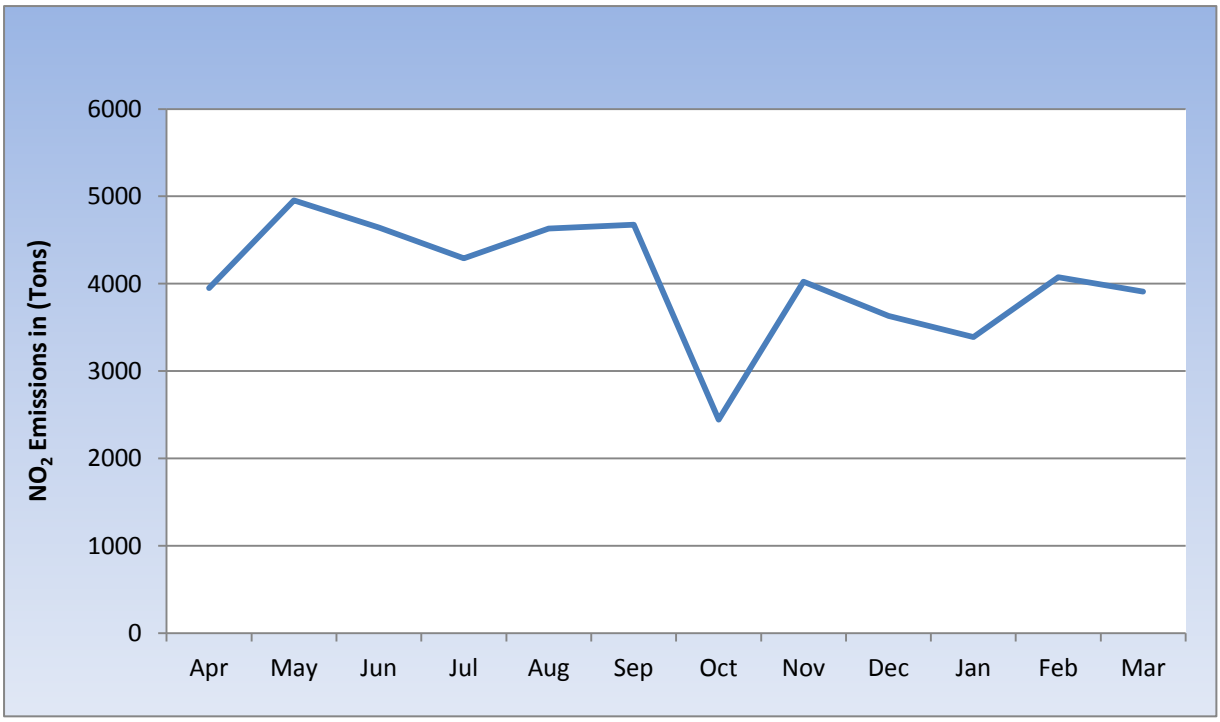

Figure 3: Monthly NO_2 emissions in tons from Kriel Power Station 2020/2021

Figure 4: Monthly CO_2 emissions in tons from Kriel Power Station 2020/2021

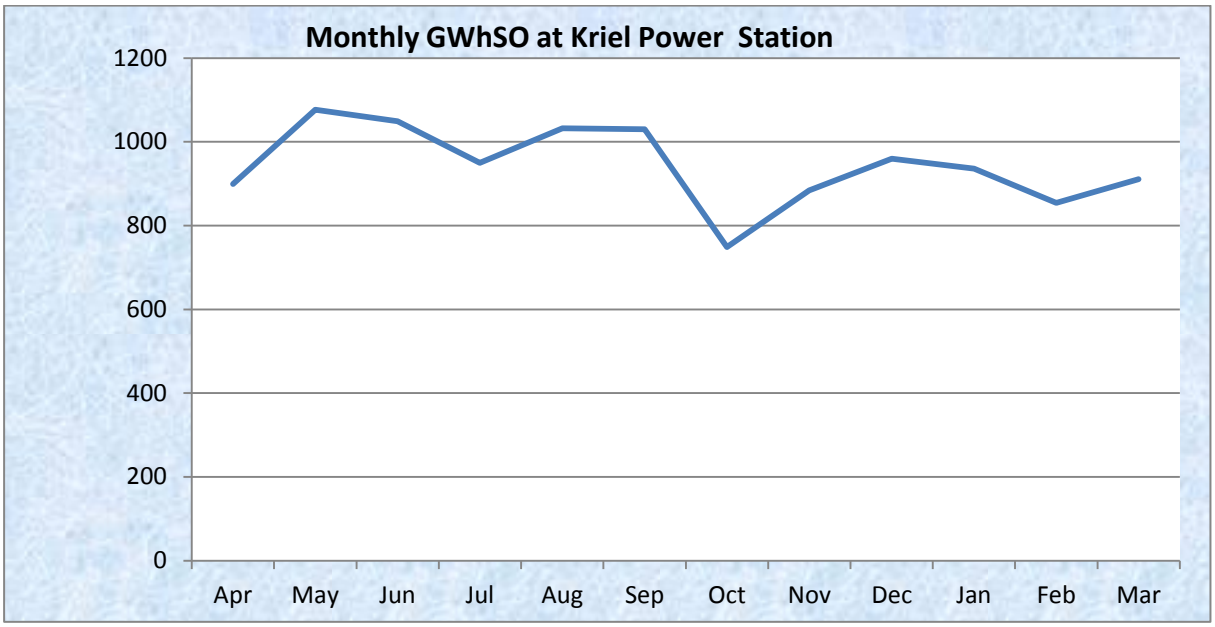

Figure 5: Monthly Energy sent out in GWh at Kriel Power Station 2020/2021

Monitoring data availability

In terms of Section 18 (c) of the Minimum Emissions Standards, it is a requirement that Kriel Power Station reports on the availability of its continuous emission monitors (PM, SOx and Nox).

Table 2: Monitoring Data availability for Kriel Power Station 2020/2021

Pollutants	North Stack	South Stack	Remarks
PM	88.01%	97.2%	-PM monitors were within the MES specified threshold for monitor availability.
SO_2	97.3%	98.7%	- SOx monitors were within the MES specified threshold for monitor availability.
NOx	92.7%	94.3%	- NOx monitors were within the MES specified threshold for monitor availability.

Compliance Audit Report(s):

There was no compliance audit held in the 2020/21 financial year.

Major upgrades projects:

High Frequency Transformer (HFT) project planned for the 2021/22 financial year.

Greenhouse gas emissions:

The CO_2 and N_2O emissions have been outlined in the tables and graphs above.

Results of correlation tests:

Table 3: Overview of dates of last conducted CEMS verification tests for PM, SO_2 and NOx (Please see attached Correlations Reports)

Activity	Test Completion Date	Validity
Parallel test for gas monitors	North Stack October 2020	2 years
	South Stack October 2020	
Correlations tests for PM_{10} monitors	North Stack November 2019	2 years
	South Stack November 2019	

<u>An explanation of all instances where minimum emission standards were exceeded:</u>

All average exceedances are reported and outlined in the monthly emission reports sent to your offices. A summary of the NEMA Section 30 incidents reported to the DEFF has been included below.

Table 4: Overview of NEMA Section 30 incidents for 2020/221 financial year

Stack	Exceedance dates [from – to]	Reason for exceedance	Remediation measure and effectiveness	Effectiveness	Status
South Stack	30/08/2020 to 06/09/2020	- High hopper levels and ash transportation backlog at unit 5 due to MCB level indicator trip.	- Raising a system deficiency. - Restoring the tripped MCB hopper level indicator. - Conducting training on the DHP on time mode. - Repairing and calibration of unitized dust monitors affected by the incident.	- Measures effective, emissions averaged around 109.35 mg/Nm3 after the repair.	- Under review by the EMIs
North Stack	07/12/2020 to 18/12/2020	-Failure of 11Kv overhead line due to development of hotspots on the conductor.	- Repair of the defective 11KV overhead line. - Restoration of 18A & 18B conveyor belt. - Refurbish and commission the existing 11KV overhead line. - Repair the	- Measures effective, emissions averaged around 115 mg/Nm3 after the measures to curb against high emissions were implemented.	- Under review by the EMIs **(*Ref:14/7/6/2/4/2/1735*).** Further incident representation submitted to DEFF based on their guidance.

			defective Stuck Hammers at Unit 1& 2 ESPs		
North Stack	29/12/2020 to 31/01/2021	-Design liability on heat transfer.	- Misfiring SO_3 electric heater due to heater phase failure - Contaminated Sulphur in the storage tank.	-	- Under review by the EMIs
North Stack	01/02/2020 to 19/02/2020	-Failure of SO_3 Program Logic Controller system -Power supply failure into the compressor plant	-Source in the service of SO_3 plant OEM to review all the control logic of the plant -Investigate the cause of the power failure -Ensure availability of Sulphur standby pump. -Repair the Process Airflow Measurement -Clearing of Unit 03 hopper levels -Source in the mobile service air compressor. -Repair the defective SO_3 plant power pack at Unit 01.	- Measures effective, emissions averaged normalized after the repairs.	- Under review by the EMIs
South Stack	12/02/2021 to 21/02/2021	-Malfunction of the Unit 04 SO_3 heater	-Repair the defective SO3 plant power pack at Unit 04 -Repair the defective SO_3 plant heater at Unit 04 -Investigate the cause of the power pack failure in the SO_3 plant	- Measures effective, emissions trended down and averaged around 74 mg/Nm3 after the repairs.	- Under review by the EMIs

			-Repair burnt SO3 blower motor at Unit 06 -Clearing of Unit 04 & 06 hopper levels -Review the SO_3 PLC program to optimize plant performance		

NAEIS reporting:

Kriel Power Station submitted its annual report on the NAEIS system by the 31st of March 2021.

The rest of the information demonstrating compliance with the emission license conditions is supplied in the monthly emission reports sent to your office including notifications for Gaseous Emissions Monitors failure.

Hoping the above will meet your satisfaction.

Yours sincerely

Morongwe Raphasha
KRIEL POWER STATION GENERAL MANAGER