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Date
31 May 2022

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Ref Kendal Power Station Annual Emissions Report

Dear Mrs Nembilwi

KENDAL POWER STATION'S ANNUAL EMISSIONS REPORT FOR THE FINANCIAL YEAR 2021/2022

This serves as the annual report required in terms of Section 7.6 in Kendal 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 2021/2022 financial year, which is from 1 April 2021 to 31 March 2022. Verified emissions of particulates, as measured by installed CEMS and for SO₂ and NO_x (as NO₂) from Eskom Research and Technology Division (RT&D) calculated data was used.

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

Name of facility	Eskom Holdings SOC Limited –Kendal Power Station
Description of facility	Power Generation
Reference number of plant	AEL License No 17/AEL/MP312/11/15

1. Pollutant Emission Trends:

The emissions in the table below are that of the 2021/2022 financial year. Eskom Research and Technology Division (RT&D) calculated emissions data for N₂O, SO₂ & NO₂ was used.

Table 1 General oversight of emissions at Kendal Power Station 2021/2022

Power Station	Coal-fired emissions (tons/annum)	Fuel-oil emissions (tons/annum)	Total (tons/annum)
Kendal Power Station	N ₂ O: 252 615		N ₂ O: 252 615
	PM: 8321.18		PM: 8321.18
	SO ₂ : 116396		SO ₂ : 118,436.26
	NO ₂ : 47749	SO ₂ : 2 040.26	NO ₂ : 47749

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Table 2. Pollutant Emission Trends for 2021/2022

Month	PM (tons)	SO ₂	NO _x	N ₂ O
April 2021	300.5	8605	3482	19
May 2021	395.28	8001	3402	18
June 2021	1169.19	9673	4124	22
July 2021	706.47	10388	4458	24
August 2021	1176.57	11656	4931	26
September 2021	835.17	9823	4095	22
October 2021	1 219.22	7966	3334	18
November 2021	581.39	8233	3210	17
December 2021	365.05	8763	3486	18
January 2022	540.03	10707	4095	21
February 202	842.69	11157	4421	23
March 2022	584.9	11425	4710	25

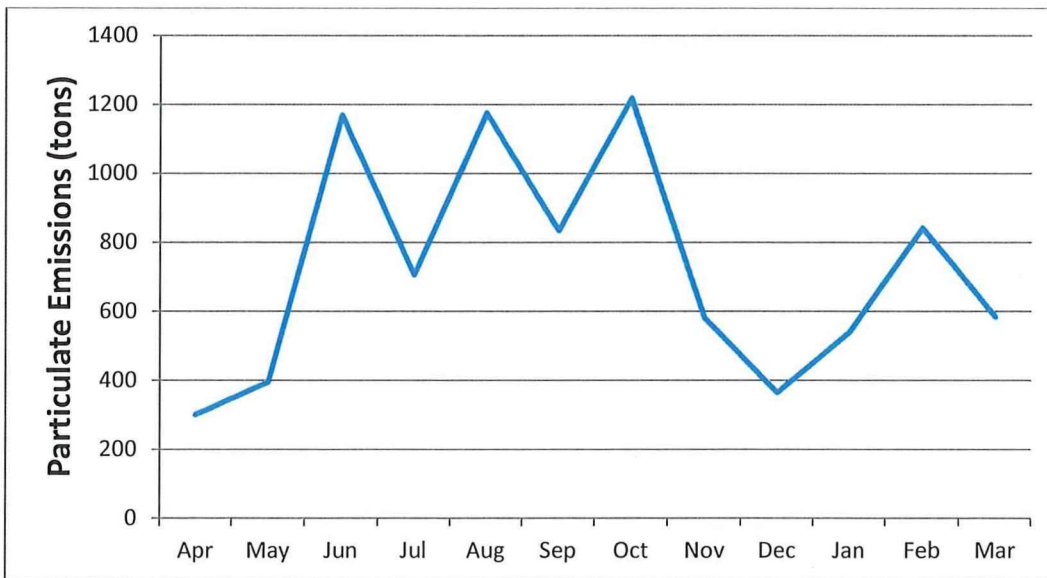


Figure 1. Monthly Particulate Emissions in tons from Kendal Power Station 2021/2022

Please note: Gaseous emissions, in particular, are largely dependent on the power generated by the power station, and thus the amount of coal burnt. Eskom Research and Technology Division (RT&D) calculated emissions data for CO₂, N₂O, SO₂ & NO₂ was used.

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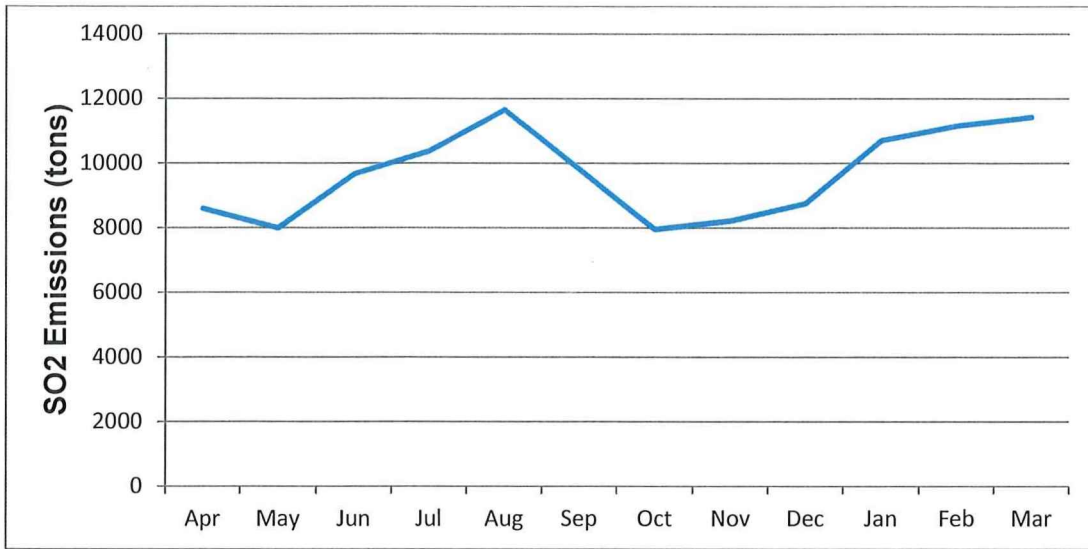


Figure 2. Monthly SO₂ Emissions in tons from Kendal Power Station 2021/2022

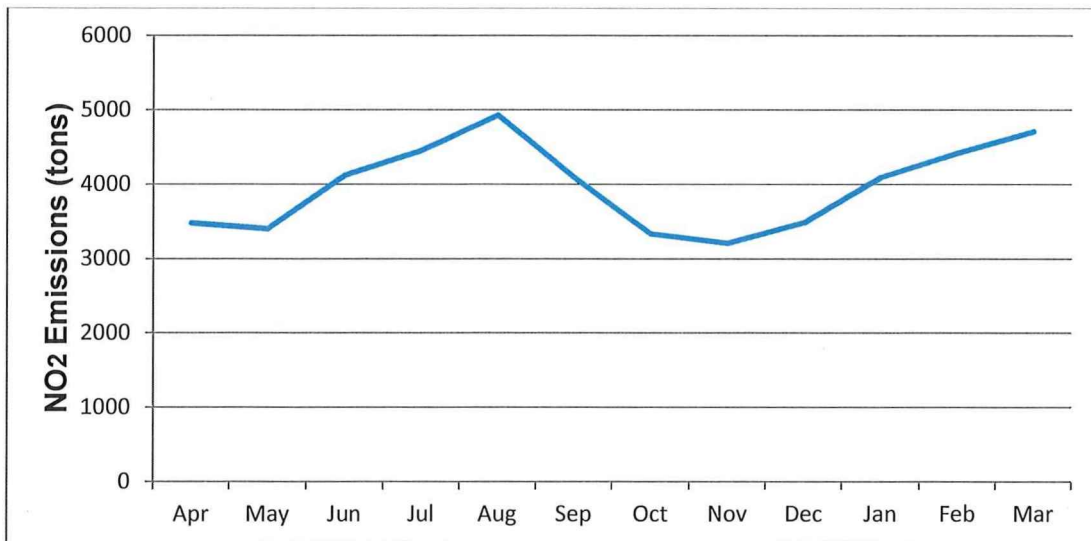


Figure 3. Monthly NO₂ Emissions in tons for Kendal Power Station 2021/2022

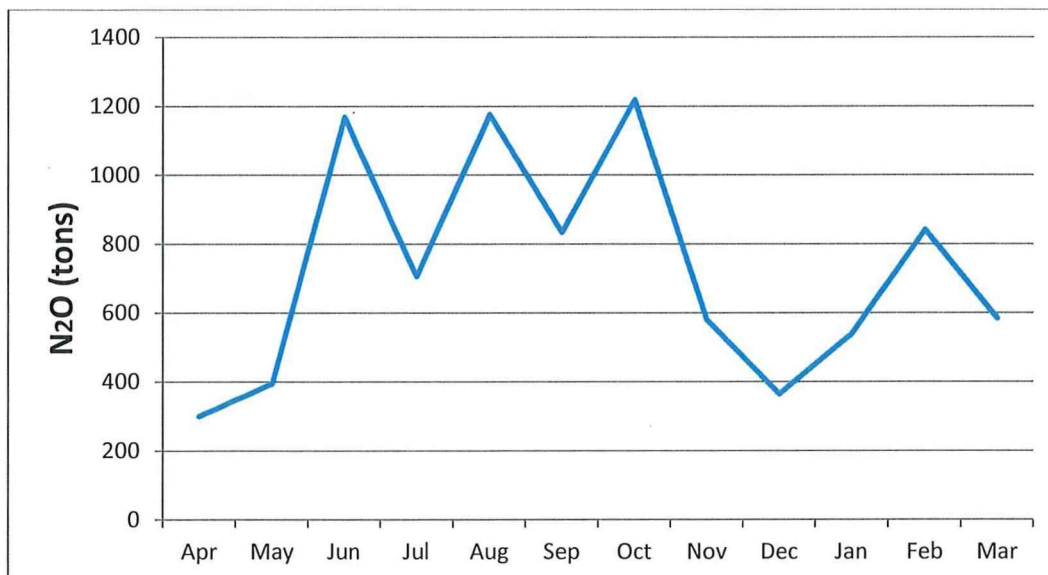
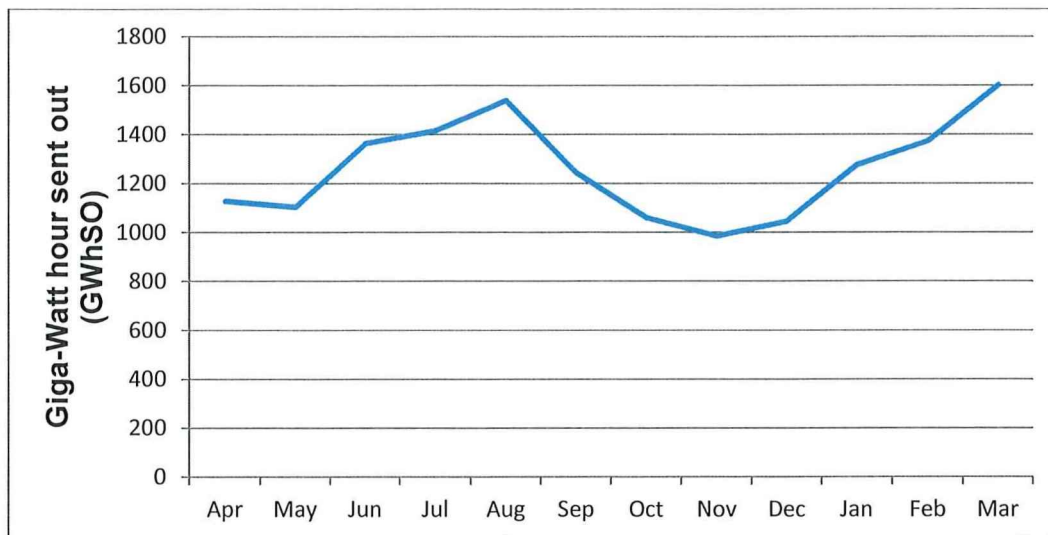


Figure 4. Monthly Energy sent out in GWh at Kendal Power Station 2021/2022

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.

2. Monitoring data reliability

Table 2. General oversight of average monitoring data availability in percentage for Kendal Power Station 2021/2022 in terms of the number of full hours per annum that valid result were obtained for the CEMS in question

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
PM	97.7	90.7	99.7	93.8	80.0	83.5
SO ₂	79.7	88.3	92.8	78.8	98.7	20.0
NO _x	76.7	78.8	83.1	78.8	96.5	26.2

Note: SO₂ and NO_x for units 1, 2, 4 and 6 was below 80% because of the poor availability of the Kendal Gaseous CEMS monitors and as a results the QAL2 tests reports data were used to report the emission on the monthly reports and not the actual CEMS measured tonnages.

3. Compliance Audit Report(s):

The Eskom Generation Air Quality Centre of Excellence (AQ CoE) conducted an Atmospheric Emissions License (AEL) No 17/4/AEL/MP312/11/15 compliance Review audit for Kendal Power Station on 18 January 2021

Summary of the findings were as follows

- Two requirements under one section (condition 4.1), one relates to the maintenance of the unit process which did not meet the objective to ensure emissions are reduced. The second requirement, the station could not indicate any nomination of a representative to attend the air quality meetings held by the local authorities
- The station could not produce enough evidence to demonstrate compliance with condition 4.4, relating to training or awareness of the AEL conditions to persons rendering a service at Kendal in relation to emissions
- Under the sub-conditions in 7.3 a non-compliance with the emission limit after 48 hours and 72 hours during start-ups, maintenance and/or upset conditions
- At the time of the review Unit 4 was operating with invalid correlation curves which is a non-compliance to Condition 7.4

An action plan with root causes and corrective and preventative measures was also developed internally to address the findings

4. Major upgrades projects:

- 1 High frequency transformers retrofit- Target completion date of this project is outage dependant- Progress Unit 1, 5 & 6 High frequency power supply transformers installation completed. Other units will follow as per major outage maintenance schedule
- 2 Refurbishment of the sulphur storage tank- Replacement & Installation of the new Sulphur 80T storage tanks were completed, the second pump was completed, and refurbishment of spare pump and motor are complete. Commissioning of the tank is completed, and the tank is in service
- 3 Major refurbishment of ESP units 1 to 6- also outage dependant, unit 5 and 6 are completed, last unit (Unit 4) is scheduled for 23/12/2022 to 31/05/2023

4. Greenhouse gas emissions:

Greenhouse gas emissions as CO₂ and N₂O have been reported on in table 1 above. These have been calculated

5. Results of spot measurements or correlation tests:

Table 3 Overview of dates of last conducted CEMS verification tests for PM, SO₂ and NO_x

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Stack/ Unit	PM	SO ₂	NO _x
1	09 th and the 19 th of June 2021	25 th and the 28 th of February 2021	25 th and the 28 th of February 2021
2	04 th to the 08 th of November 2020	22 nd and the 25 th of February 2021	22 nd and the 25 th of February 2021
3	08 th and the 13 th of December 2021	26 th to 29 th October 2020	26 th to 29 th October 2020
4	07 th and the 11 th of November 2021	15 th to the 18 th of February 2021	15 th to the 18 th of February 2021
5	15 th and the 23 rd of September 2021	07 th and the 11 th of September 2021	07 th and the 11 th of September 2021
6	20 th to 24 th May 2020	15 th to the 18 th of January 2019	15 th to the 18 th of January 2019

Please see attached appendices 1 to 12 for the recent parallel tests and correlation tests Conducted at Kendal Power Station

6. An explanation of all instances where minimum emission standards were exceeded:

All of the exceedances within the grace period and those that exceeded the grace period are reported in monthly reports as submitted to your Office on a monthly basis. During the financial year of 2021/2022 Kendal power station reported four (4) section 30 incidents to the Licencing Authority for units 1, 3, 4 & 5.

The incidents were investigated and Emergency Incident Reports were submitted to the Licencing Authority within the stipulated 14 days calendar day's period.

Emission monitoring and reporting will continue on these units and the monthly reports will be submitted to the Licencing Authorities as required and in instances where the emission performance has improved or not improved, such will be displayed in the reports as submitted.

Summary of PM Emission Exceedance per month per unit during 2021/2022 year:

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
April	0	2	4	1	Unit off	Unit off
May	0	3	1	6	Unit off	Unit off
June	0	5	12	11	12	Unit off
July	0	7	6	15	9	Unit off
August	0	2	14	3	23	Unit off
September	0	2	6	16	0	Unit off
October	Unit off	2	3	20	5	5
November	Unit off	5	7	4	0	Unit off
December	Unit off	14	10	3	8	8
January	13	2	1	5	12	12
February	2	Unit off	0	4	17	17
March	0	Unit off	0	3	8	8
Total	15	44	64	91	94	50

7. NAEIS reporting:

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Kendal Power Station submitted its annual report on the NAEIS system by 31 March 2022

The rest of the information demonstrating compliance with the emission license conditions is supplied in the monthly emission reports sent to your office

Hoping the above will meet your satisfaction

Compiled by:



Tshilidzi Vilane
ENVIRONMENTAL OFFICER- KENDAL

Date: 19-05-2022

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2021/2022

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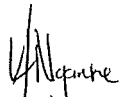
Supported by:



Solly Chokoe
ENVIRONMENTAL MANAGER- KENDAL

Date: 19/05/2022

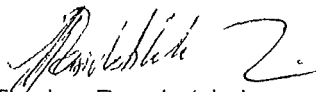
Verified by:



Fulufhelo Nganke
BOILER ENGINEERING SYSTEM ENGINEER -KENDAL

Date 30/05/2022

Validated by:



Tendani Rasivhetshela
ACTING BOILER ENGINEERING MANAGER-KENDAL

Date 20/05/2021

Supported by:



Malibongwe Mabizela
ENGINEERING MANAGER-KENDAL

Date 31/05/2022

Approved by:



Lukhanyo Ndube
GENERAL MANAGER-KENDAL

Date 31/05/2022