Eskom

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Dear Mr Hlanyane

MAJUBA POWER STATION ANNUAL EMISSIONS REPORT FOR THE 2021/2022 FINANCIAL YEAR

This serves as the annual report which is required in terms of Section 7.6 of Majuba Power Station's Atmospheric Emission License (AEL License No. Dr PKI Seme/Eskom H SOC Ltd/ MPS/0014/2020/F03). The emissions data reported is for Majuba's (hereafter referred to as "the station") 2021/2021 Financial Year (FY), from 1 April 2021 to 31 March 2022 and includes verified emissions figures (in tons) of particulate matter (PM), SO_2 and NO_x (as NO_2). CO_2 and N_2O are excluded as per the agreement between Eskom and DEFF.

Table 1: Listed activities as per the station's AEL

Category of Listed Activity	Sub-category of the Listed Activity	Listed Activity Name	Description of the Listed Activity
Category 1	Sub-category 1.1	Solid Fuel Combustion Installations	Solid fuel combustion installations used primarily for steam raising or electricity generation
Category 1	Sub-category 1.4	Gas Combustion Installation	Gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation
Category 2	Sub-category 2.4	Storage of Petroleum Products	Petroleum products storage tanks and product transfer facilities, except those used for liquefied petroleum gas
Category 5	Sub-category 5.1	Storage and handling of ore and coal	Storage and handling of ore and coal not situated on a premises of a mine or works as defined in the

A. NEM: AQA SECTION 21 POLLUTANT EMISSION TREND FOR LISTED ACTIVITY

The emissions in the table below are for the 2021/2022 financial year.

Table 2: Summary of total emissions at Majuba Power Station 2021/2022 FY

Power Station	Coal-fired emissions (tons/annum)	Fuel-oil emissions (tons/annum)	Total (tons/annum)
Majuba Power Station	**PM:** 1261.7 **SO_2:** 223 226 **NO_2:** 111 567	**PM:** - **SO_2:** 4708,97 **NO_2:** -	**PM**: 1261.7 **SO_2:** 227 934.97 **NO_2:** 111 567

Table 3: Pollutant Emission Trends for 2021/2022 FY

Month	PM (tons)	SO_2 (Tons)	NO_x (Tons)
April 2021	127.2	21 443	9 988
May 2021	108.8	20 879	9 498
June 2021	98.2	17 116	8 805
July 2021	119.8	19 112	10 074
August 2021	98.1	16 753	8 180
September 2021	94.8	18 215	8 275
October 2021	107.6	19 595	9 760
November 2021	102.3	18 150	9 045
December 2021	102.4	17 365	8 260
January 2022	84.4	18 850	8 700
February 2022	104.0	17 204	9 830
March 2022	114.1	18 544	11 152

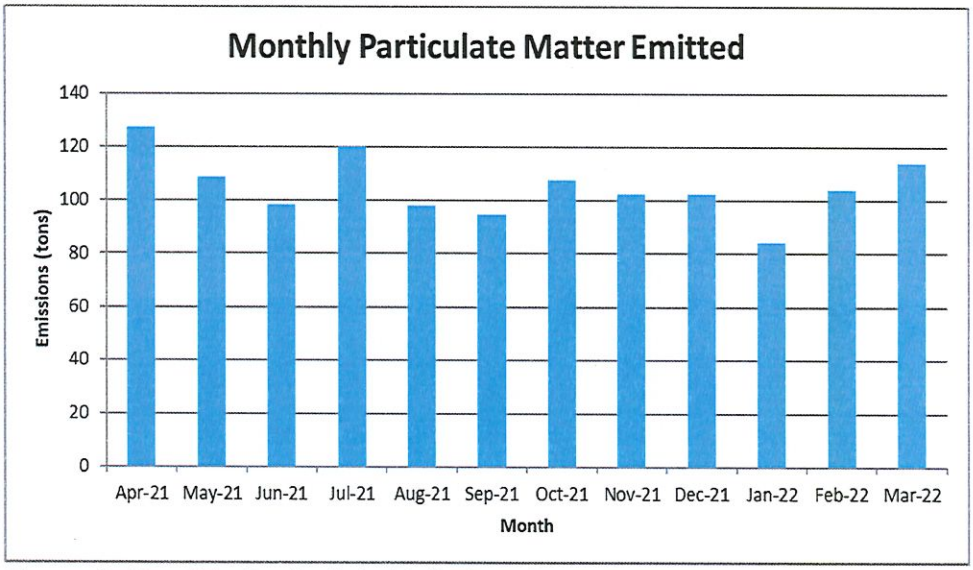

Figure 1: Monthly Particulate Emissions in tons from Majuba Power Station Financial Year 2021/2022

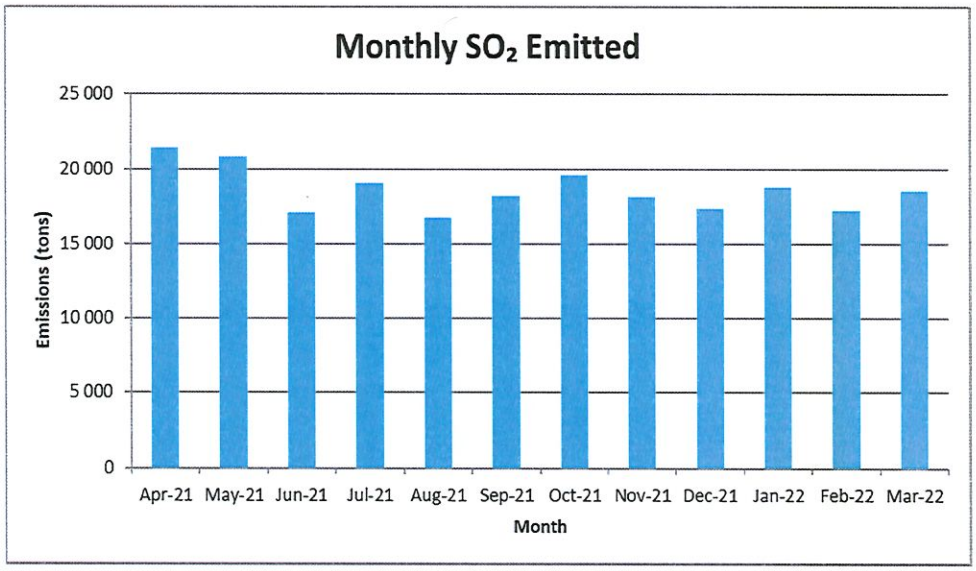

Figure 2: Monthly SO_2 Emissions in tons from Majuba Power Station Financial Year 2021/2022

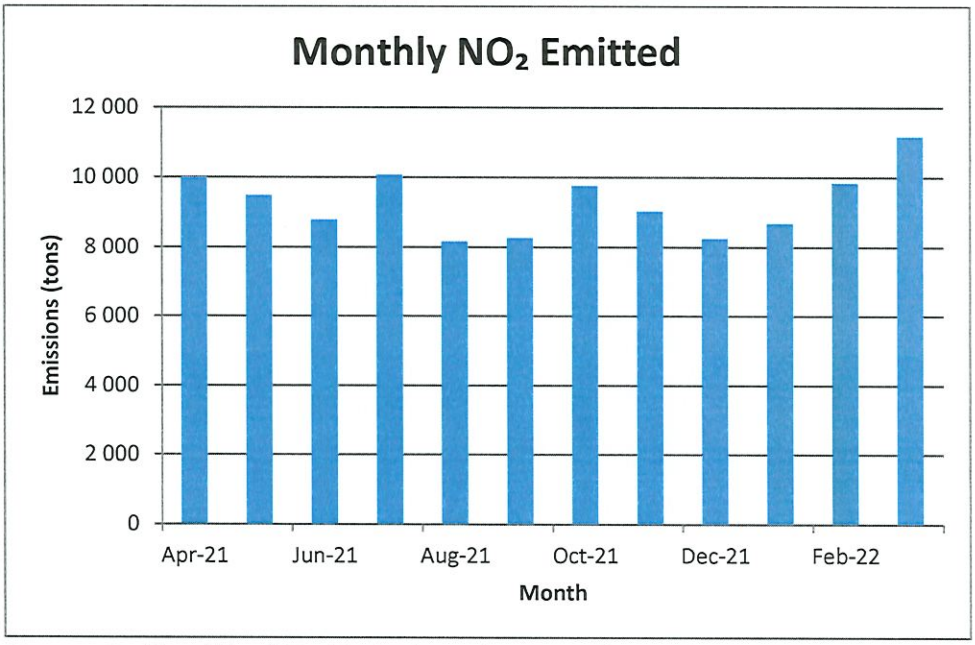

Figure 3: Monthly NO_2 Emissions in tons from Majuba Power Station Financial Year 2021/2022

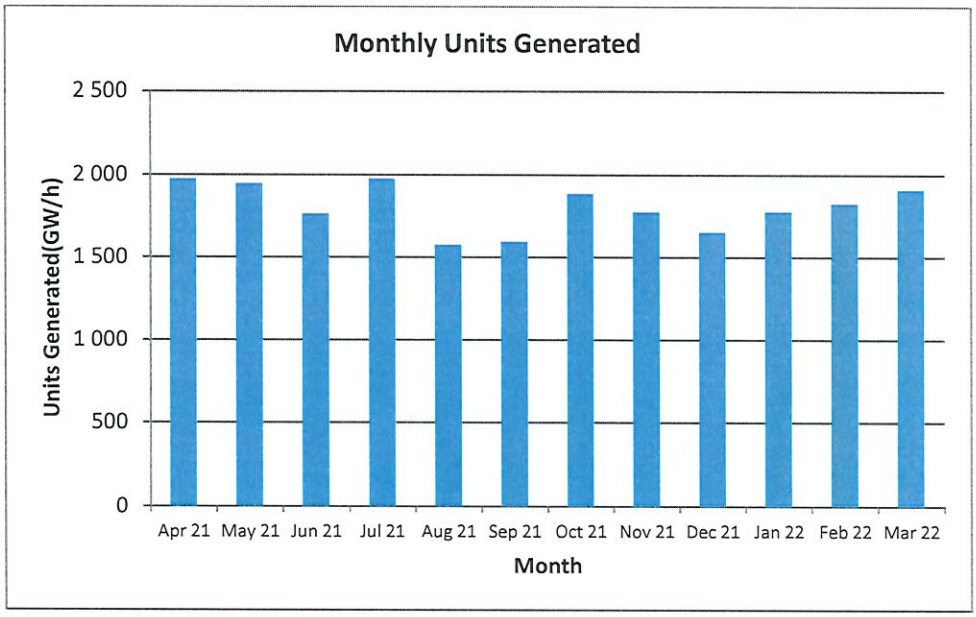

Figure 4: Monthly MWh Generated at Majuba Power Station Financial Year 2021/2022

Monitor Reliability

Table 7 indicates monitor reliability throughout the 2021/22 monitoring period. These values indicate full compliance to the requirement of a minimum of 80% valid hourly average values during the reporting period, as stipulated within the National Environmental Management: Air Quality Act, 39 of 2004 - GN 893 - Listed Activities and Associated Minimum Emission Standards Identified In Terms Of Section 21 Of The National Environmental Management: Air Quality Act, 2004 (Act No. 39 Of 2004).

Table 4: Monitor Reliability per/month

Monthly AVG	PM	SOx	NOx	CO2
April 2021	99,99	96,13	99,10	99,89
May 2021	99.99	94.64	97.54	99.86
June 2021	98,53	96,21	96,83	97,83
July 2021	97,56	80,44	79,31	96,82
August 2021	99,98	95,56	96,92	99,60
September 2021	98,73	81,61	81,35	97,15
October 2021	99,97	95,27	95,83	99,18
November 2021	99.74	96,53	98,14	93,16
December 2021	98.83	97,75	98,19	98,14
January 2022	97.54	96,74	96,33	98,95
February 2022	99.73	99.96	99.85	99.28
March 2022	100,00	99.57	100,00	98.94
Annual Averages	**99,23**	**92,65**	**93,48**	**97,96**

National Atmospheric Emissions Inventory System

Majuba Power Station has reported, in terms of pollutants and greenhouse emissions, on the NAEIS portal for the 2021 calendar year.

Status of stratification, parallel and correlation tests

The results of the most recent stratification, parallel and correlation tests will be attached with this report. The following serves as a summary:

- Gaseous Parallel test curves for all the units are still valid and tests are planned from April 2022.
- Unit 4, 5 and 6 correlation rests were conducted however the reports are still outstanding. After receipt of the reports, the curves will be backfitted from September 2021 and the monthly emissions reports will be resubmitted to the Licencing Authority.

Table 5: Parallel and Correlation Test Dates and Validity

Unit	Current Correlation test completion date	Correlation Curve expiry date	Future correlation test date	Current validity
1	Re-bagged 2021	Re-bagged 2021		Valid
2	Re-bagged 2021	Re-bagged 2021		Valid
3	26 January 2020	26 January 2022		Expired (test done, report outstanding)
4	28 September 2019	28 September2021		Expired (test done, report outstanding)
5	21 January 2020	21 January 2022		Expired (test done, report outstanding)
6	28 October 2019	28 October 2021		Expired (test done, report outstanding)
Gaseous Parallel Test				
1	01 July 2020	01 July 2022	01 April 2022 (Due)	Valid
2	30 June 2021	30 June 2023	30 March 2023	Valid
3	03 July 2021	03 July 2023	03 April 2023	Valid
4	08 June 2021	08 June 2023	03 March 2023	Valid
5	16 April 2021	16 April 2023	16 January 2023	Valid
6	03 September 2020	03 September 2022	03 June 2022	Valid

Methods used: Parallel Tests

The following sampling methods were used in accordance with Annexure 2 of the NEM: AQA Listed Activities (GN 893 of 2013):

Table 6: Sampling methods used in parallel tests

Compound	Method	Comment
Combustion gases	Using the Horiba PG 250 Portable gas analyzer (SRM)	
O_2	Based on USEPA Method 3A - Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)	Zirconium cell measuring principle
CO_2		NDIR measuring principle
CO	Based on USEPA Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources	NDIR measuring principle
SO_2	Based on USEPA Method 6C - Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)	NDIR measuring principle
NOx	Based on USEPA Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)	Chemiluminescence measuring principle
Moisture (H_2O)	Base on USEPA Method 4- Determination of moisture content in stack gases	-
Report format	BS EN 15259:2007 - Air quality. Measurement of stationary source emissions. Measurement strategy, measurement planning, reporting and design of measurement sites	-
Variability test	Based on BS EN 14181: 2014	CEMS Review Template V16.2018
Calibration functions		

Sampling Methods used: Correlation tests

The following sampling methods were used in accordance with Annexure 2 of the NEM:AQA Listed Activities (GN 893 of 2013):

Table 7: Sampling methods used in correlation tests

Compound	Method	Comment
Particulate Matter	Based on ISO 9096: 2003 Stationary source emissions - Manual determination of mass concentration of particulate matter.	-
Low mass concentrations	Based on BS EN 13284-1:2002 Stationary source emissions — Determination of low range mass concentration of dust — Part 1: Manual gravimetric method	Based on ISO 9096 with additional requirements on the filter preparation and procedures before and after the tests.
Velocity	Based on USEPA Method 2 - Velocity - Pitot tube	Std-type Pitot.
Correlation function	VDI 2066, Part 4	In particular giving the 75% Tolerance and 95% Confidence bands.

B. EXTERNAL COMPLIANCE AUDIT REPORT(S):

External Legal compliance audit was conducted in June 2020 and there was one finding related to air quality which was the lack of adequate rehabilitation on the ash dump and short term measures to control dust. A rehabilitation plan has been compiled to ensure completion of the rehabilitation of the ash dump.

C. MAJOR UPGRADES PROJECTS:

No major upgrades were conducted at Majuba during the 2021/2022 financial year. A re-bag project is planned for Unit 3, 4, 5 and 6 in 2023.

The Low NO_x Burner Replacement Project is currently on hold due to funding constrains.

D. GREENHOUSE GAS EMISSIONS ANNUAL REPORT IN LINE WITH THE NATIONAL GREENHOUSE GAS EMISSION REPORTING REGULATIONS NO. 40762 GOVERNMENT GAZETTE 03 APRIL 2017

Greenhouse gases are reported as per the agreement between DEFF and Eskom, attached in Appendix A.

E. ACTIONS TAKEN TO ADDRESS COMPLAINTS RECEIVED

No air quality related complaints were received for this reporting period.

F. ANNUAL REPORT ON IMPLEMENTATION OF HIGHVELD PRIORITY AIR QUALITY MANAGEMENT PLAN AND OFFSET PROGRAM / PROJECTS

Progress on the Highveld Priority Air Quality Management Plan is contained in Section C of this report. Furthermore, an updated revision of the Fugitive Emissions Management Plan was submitted to the Licensing Authority in April 2022. A progress report on the Offset Project was submitted to the Licensing Authority on the 30th of March 2021 detailing progress made on the project.

G. COMPLIANCE STATUS TO STATUTORY OBLIGATION INCLUDING ANY OTHER ISSUED AUTHORISATIONS

The current compliance to the statutory obligations as per Section 4.5 of the AEL is shown in Tables 10 and 11 below:

Table 10: Compliance to Statutory Obligations

Act	Act Number	Act Year	Chapters (where applicable)	Compliance Status	Comment
National Environmental Management: Air Quality Act	39	2004	5	Non-Compliant	National Environmental Management Act 39 of 2004; National Dust Control Regulations- Details of dust exceedances are described in Table 11 below
National Health Act	61	2003	10 & 11	Compliant	
National Environmental Management Act	107	1998		Compliant	
National Water Act	36	1998		Compliant	
National Environmental Management: Waste Act	59	2008		Compliant	
Gert Sibande District Municipality: Air Quality Management By-law	n/a	2014		Mostly Compliant	Non-compliance to Section 36. Details of dust exceedances are described in Table 11 below
Gert Sibande District Municipality: Municipal Health By-law	n/a	2014		Compliant	
Gert Sibande District Municipality: Noise Control By-law	n/a	2014		Compliant	
Gert Sibande District Municipality: Waste By-laws	n/a	2016		Compliant	

Table 11: Compliance to Other Issued Authorisations

Issuing Authority	Licence Number	Date Issued	Comment	Total number of compliant conditions
Gert Sibande DM	Dr PKI Seme/Eskom HSOC Ltd/MPS/ 0014/2021/F03	25-Apr-19	Majuba Power Station experienced exceedances of allowed dust fallout limits for industrial areas in terms of the NEM: AQA National Dust Control Regulations (No 827 of 2013) two times at monitoring point (EM02) on sequential months, two times at EM 05 on sequential months, two times at EM10 on sequential months, wo times at EM15 on sequential months, twice at EM11 but not in sequential months, once at EM12a, EM13b, EM22 and EM23. The Fugitive Emission Management Plan was compiled as per the requirement of the National Dust Control Regulations; an updated version was submitted to the Licensing Authority in April 2022. Monthly fugitive emissions reports are submitted monthly to the Licensing Authority.	**41 of 42**
Department of Water and Sanitation	08/ C11J/ BGCI/ 9097	26-Jun-19	Majuba received its new licence in June 2019. An external audit was conducted in October 2021 and the overall compliance score was 97.4%, a total of 4 non compliances were identified.	**91 of 95**
Department of Environment, Forestry and Fisheries	12/9/11/ L181015175955/6	13-Sep-19	Majuba General Waste Site Decomissioning Licence was reviewed in March 2022, with a total number of 7 non-compliances identified. The overall compliance score was 75%.	**21 of 28**

Additional information demonstrating compliance to the station's atmospheric emissions license conditions is supplied in the monthly emission reports sent to Gert Sibande District Municipality.

Hoping the above will meet your satisfaction.

Yours sincerely

Yangaphe Ngqashi
GENERAL MANAGER: MAJUBA POWER STATION