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Dear Mr Hlanyane

**MAJUBA POWER STATION ANNUAL EMISSIONS REPORT FOR THE 2023/2024 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/0014/2021/F04). The emissions data reported is for Majuba's (hereafter referred to as "the station") 2023/2024 Financial Year (FY), from 1 April 2023 to 31 March 2024 and includes verified emissions figures (in tons) of particulate matter (PM), SO<sub>2</sub> and NO<sub>x</sub> (as NO<sub>2</sub>). CO<sub>2</sub> and O<sub>2</sub> are excluded as per the agreement between Eskom and DFFE.

**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 Mines Health and Safety Act 29/1996.

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

The emissions in the table below are for the 2023/2024 financial year.

**Table 2: Summary of total emissions at Majuba Power Station 2023/2024 FY**

Power Station	Coal-fired emissions (tons/annum)	Fuel-oil emissions (tons/annum)	Total (tons/annum)
Majuba Power Station	PM: 3048.46 SO <sub>2</sub> : 255 479 NO <sub>x</sub> : 129 236	PM: - SO <sub>2</sub> : NO <sub>x</sub> : -	PM: 3048.46 SO <sub>2</sub> : 255 479 NO <sub>x</sub> : 129 236

**Table 3: Pollutant Emission Trends for 2023/2024 FY**

Month	PM (tons)	SO <sub>2</sub> (Tons)	NO <sub>x</sub> (Tons)
April 2023	322.65	23 823	12 251
May 2023	248.45	21 516	11 557
June 2023	255.22	22 804	11 479
July 2023	270.78	25 191	11 688
August 2023	233.53	24 553	10 719
September 2023	201.13	24 354	10 432
October 2023	205.66	22 966	10 505
November 2023	332.69	25 713	10 496
December 2023	332.07	22 291	10 437
January 2024	165.50	18 376	9 410
February 2024	235.36	22 490	10 230
March 2024	286.56	24 334	10 875

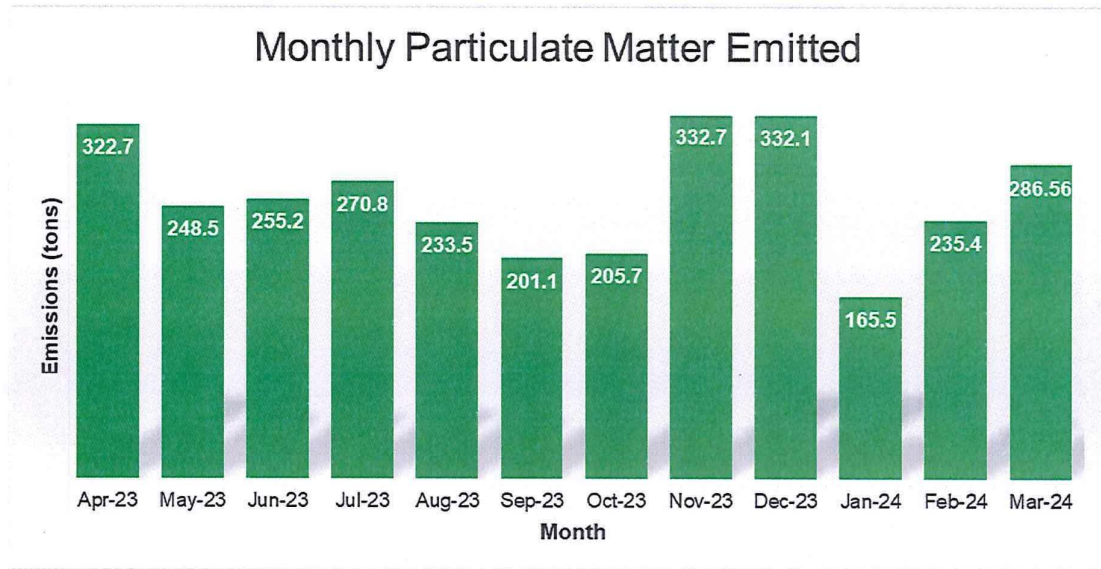


Figure 1: Monthly Particulate Emissions in tons from Majuba Power Station Financial Year 2023/2024

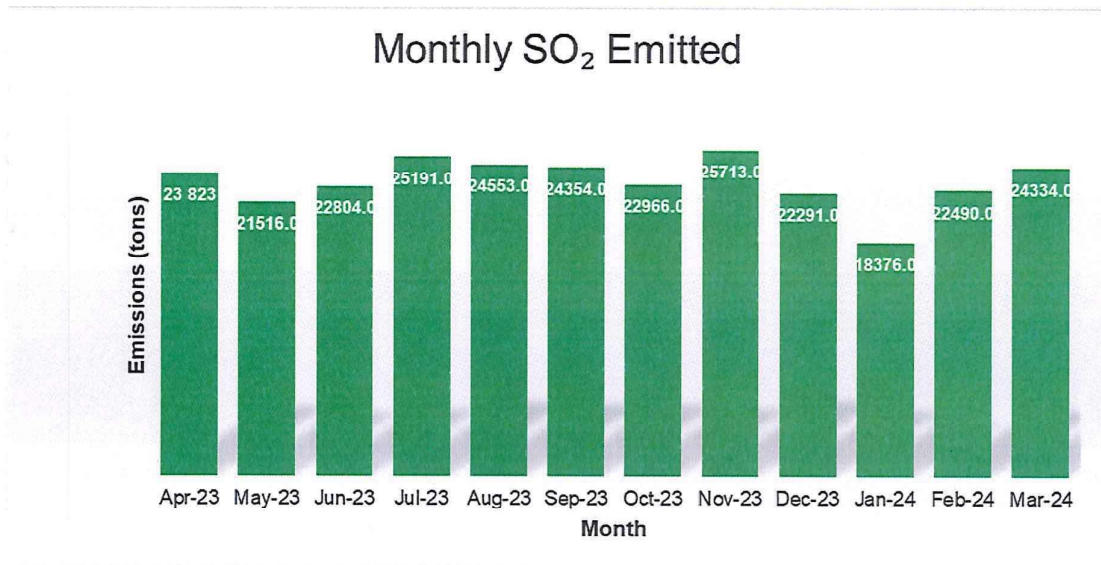
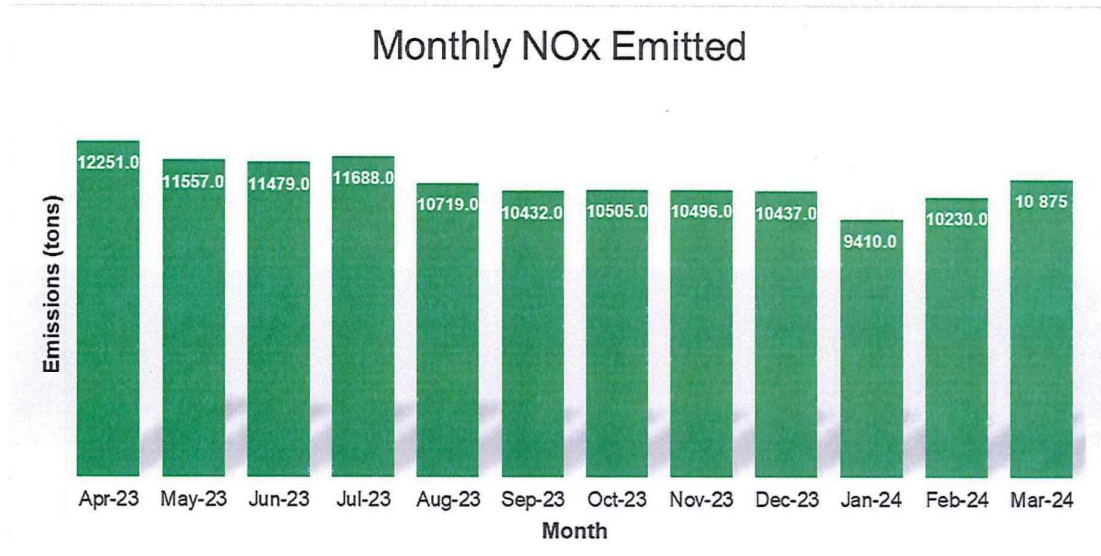
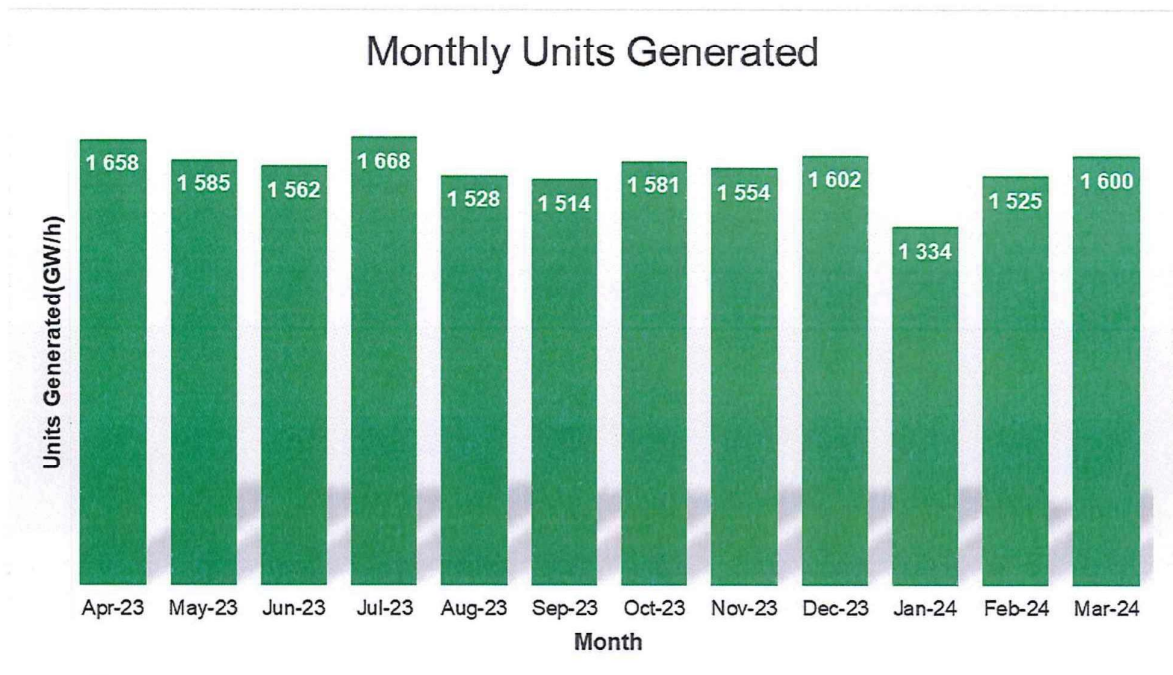


Figure 2: Monthly SO<sub>2</sub> Emissions in tons from Majuba Power Station Financial Year 2023/2024





**Figure 3: Monthly NOx Emissions in tons from Majuba Power Station Financial Year 2023/2024**



**Figure 4: Monthly MWh Generated at Majuba Power Station Financial Year 2023/2024**

#### Monitor Reliability

Table 4 indicates monitor reliability throughout the 2023/24 monitoring period. These values indicate partial 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).

The Station experienced challenges with the O<sub>2</sub> monitor which impacted the CO<sub>2</sub> monitor. This led to the availability of the monitor being below the 80% minimum requirement for the month of October, November, and December.

**Table 4: Monitor Reliability per/month**

Monthly AVG	PM	SOx	NOx	CO2
April 2023	99.92	99.98	99.97	96.68
May 2023	99.88	97.63	99.90	97.09
June 2023	99.70	93.32	97.25	96.02
July 2023	99.27	99.07	99.92	92.45
August 2023	100.00	99.80	99.97	83.15
September 2023	90.98	99.75	99.88	85.33
October 2023	88.68	99.57	99.77	57.37
November 2023	88.68	96.80	98.28	72.37
December 2023	99.87	98.53	98.32	78.70
January 2024	90.95	98.77	98.45	80.77
February 2024	91.90	97.32	99.12	89.32
March 2024	89.64	99.26	99.98	99.72
Annual Averages	94.96	98.32	99.23	85.75

#### **National Atmospheric Emissions Inventory System**

Majuba Power Station has reported, in terms of pollutants and greenhouse emissions for the 2023 calendar year, following the SAAELIP manual reporting process as per GN 50284.

#### **Status of stratification, parallel and correlation tests**

The results of the most recent stratification, parallel and correlation tests will be attached as annexures to this report. All correlation and parallel tests have been conducted. The new curves have been implemented and backfitting has been completed. Subsequently, the Station will re-compile monthly reports and re-submit to the licensing authority.

**Table 5: Parallel and Correlation Test Dates and Validity**

Unit	Current Correlation test completion date	Correlation Curve expiry date	Planned correlation test date	Current validity
1	12 December 2023	12 December 2025	12 September 2025	Valid
2	11 December 2023	11 December 2025	11 September 2025	Valid
3	25 February 2024	25 February 2026	25 November 2025	Valid
4	30 January 2023	30 January 2025	30 October 2024	Valid

5	28 January 2024	28 January 2026	28 October 2025	Valid
6	15 November 2023	15 November 2025	15 August 2025	Valid
<b>Gaseous Parallel Test</b>				
1	12 June 2023	12 June 2025	12 March 2025	Valid
2	11 December 2023	11 December 2025	11 September 2025	Valid
3	28 February 2024	28 February 2026	28 November 2025	Valid
4	29 June 2023	29 June 2025	29 February 2025	Valid
5	30 May 2023	30 May 2025	30 February 2025	Valid
6	15 November 2023	15 November 2025	15 August 2025	Valid

#### Sampling 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
<b>Combustion gases</b>	Using the Horiba PG 250 Portable gas analyzer (SRM)	
O <sub>2</sub>	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 <sub>2</sub>		NDIR measuring principle
CO	Based on USEPA Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources	NDIR measuring principle
SO <sub>2</sub>	Based on USEPA Method 6C - Determination of Sulphur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)	NDIR measuring principle
NO <sub>x</sub>	Based on USEPA Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)	Chemiluminescence measuring principle
Moisture (H <sub>2</sub> O)	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

Eskom Holdings SOC Ltd Reg No 2002/015527/30



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 October 2022 and there were no findings related to emissions.

**C. MAJOR UPGRADES PROJECTS:**

No major upgrades were conducted at Majuba during the 2023/2024 financial year. However, a total filter bag replacement was undertaken on Unit 3, 4, 5, and 6. The replacements for the remainder of the units (Unit 1 & 2) will take place in FY 2024/2025 as outlined in Table 8 below.

**Table 8: Fabric Filter Bag Replacement Start and End Dates**

Unit	Start Date	End Date
1	July 2024	September 2024
2	September 2024	November 2024

The Low NO<sub>x</sub> Burner Replacement Project has been deferred to FY 2026.

**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.

**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**

The Highveld Priority Air Quality Management Plan was submitted in 2017 as the first generation AQMP, its progress is being tracked by head office. The second generation AQMP is currently under review and has not yet been finalised. The Fugitive Emission Management Plan was revised in November 2023 and the updated version was submitted to the authorities. A progress report on the Offset Project was submitted to the Licensing Authority on the 27<sup>th</sup> of March 2024 detailing progress made on the offset 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 09 and 10 below:

**Table 9: Compliance to Statutory Obligations**

<b>Act</b>	<b>Act Number</b>	<b>Act Year</b>	<b>Chapters (where applicable)</b>	<b>Compliance Status</b>	<b>Comment</b>
National Environmental Management: Air Quality Act	39	2004	5	Mostly Compliant	National Environmental Management Act 39 of 2004; National Dust Control Regulations- Details of dust exceedances are described in Table 10 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		Compliant	
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 10: Compliance to other Issued Authorisations**

<b>Issuing Authority</b>	<b>Licence Number</b>	<b>Date Issued</b>	<b>Comment</b>	<b>Total number of compliant conditions</b>



Gert Sibande DM	Dr Seme/Eskom HSOC Ltd/MPS/ 0014/2021/F03	PKI 25-Apr-19	<ul style="list-style-type: none"> <li>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) consecutively four times at Site EM03a and three times at Site EM11 during this financial year. The Fugitive Emission Management Plan was revised as per the requirement of the National Dust Control Regulations; and submitted to the authorities. Monthly fugitive dust emissions reports are submitted monthly to the Licensing Authority.</li> <li>An AEL renewal application has been submitted to the licensing authority.</li> </ul>	<b>44 of 46</b>
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 November 2023 and the overall compliance score was 97.2%, a total of 1 non-compliance and 2 partial compliances were identified.	<b>105 of 108</b>
Department of Environment, Forestry and Fisheries	12/9/11/ L181015175955/6	13-Sep-19	Majuba General Waste Site Decommissioning Licence was audited in September 2022 and the overall compliance score was 91.2%.	<b>52 of 57</b>

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



Johan Swanepoel

**ENGINEERING MANAGER: MAJUBA POWER STATION**