Maamba Collieries Limited

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12th July, 2024

The Principal Inspector

Zambia Environment Management Agency

P.O. Box 60195

LIVINGSTONE.

Dear Madam,

Re: Submission of Statutory Returns for the period January to June, 2024

With reference to the Environmental Management Act of 2011 and the Licensing Regulations of 2013, Maamba Collieries Limited submits the statutory returns for the period January to June, 2024 on the attached documents.

Yours faithfully,

Yotham M. Phiri
Snr. SHEQ Manager

BI-ANNUAL STATUTORY RETURNS FOR JANUARY TO JUNE 2024

1. AIR AND SOUND PERMITS

Table A: Sound - Noise Monitoring

	NOISE LEVEL (dB) FROM MONITORED AREAS						
MONTH	**SIPUUMINA**	**MONTE LEV**	**WEIGH**	**AERODROME AREA**	**MCL HEAD**	**CHPP**	**KAZINZE**
January 2024	49.6	48.1	57.8	41.3	44.3	68.8	44.3
February 2024	41.5	41.9	44.2	45.5	48.8	53.9	42.5
March 2024	51.6	48.4	55.6	41.9	53.3	51.7	46.7
April 2024	50.2	56.1	45.6	44.2	51.3	57.2	45.3
May 2024	49.4	40.6	57.2	41.9	52.2	56.6	41.8
June 2024	53.3	42.9	57	46.8	47	60.8	35.4
IFC Guidelines	**55dB**	**55dB**	**85dB** (industrial)	**85dB** (industrial)	**85dB** (industrial)	**85dB**	**85dB**

A sound level meter was used to measure noise during the monitoring periods.

Table B: Air Monitoring –Respirable particulate matter (PM_{10})

	24 HRS REFERENCE TIME RESPIRABLE PARTICULATE MATTER (PM_{10}) $\mu g/m^3$						
MONTH	**SIPUUMINA VILLAGE**	**MONTE LEV**	**WEIGH BRIDGE**	**AERODROME AREA (WEST**	**MCL HEAD**	**CHPP**	**KANZINZE**
January 2024	*	*	*	*	*	*	*
February 2024	38.1	19.3	9.1	13.9	34.3	98.3	9.6
March 2024	30.5	27.8	22.6	148.6	19.8	39.8	16.2
April 2024	15.2	24.0	38.0	31.6	24.7	21.3	29.4
May 2024	21.9	45.5	66.4	26.4	22.4	38.0	26.5
June 2024	40.9	68.6	52.6	53.4	40.9	57.5	43.9
ZEMA LIMIT	**70µg/m³**	**70µg/m³**	**70µg/m³**	**70µg/m³**	**70µg/m³**	**70µg/m³**	**70µg/m³**

NB. The high PM_{10} value at AERODROME and CHPP, in the months of February and March was due to Coal transportation activities and windy weather during the monitoring period.

Note: * No Monitoring was conducted in January 2024 as the Instrument (dustmate) was sent for calibration.

2. EFFLUENT DISCHARGE – UNDERGROUND

IZUMA A

Monthly analysis of the underground water pumped out of Block A Pit Sump into Izuma Stream for the period January to June 2024 is as follows: -

Table C: Izuma pit A effluent quality

Month	pH	Conductivity (uS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Sulphates (mg/l)	Chlorides (mg/l)	Iron (mg/l)	Manganese (mg/l)
January 2024	3.77	1886	1813	<10	1137.5	5.3	0.905	2.366
February 2024	8.13	1911	1576	<10	934.8	8.8	0.02	1.509
March 2024	8.15	1415	1092	<10	452.8	8.3	0.02	0.843
April 2024	4.82	2322	2119	<10	1204.9	6.6	3.885	2.354
May 2024	8.21	1467	117	<10	513.7	8	0.02	0.596
June 2024	8.29	1340	976	<10	471.4	7.7	0.02	0.443
ZEMA EFFLUENT LIMITS	**6.0-9.0**	**4300**	**3000**	**100**	**1500**	**800**	**2**	**1**

Note: # Means no dewatering was taking place during the month under review.

A monthly grab sample is taken and sent for analysis at an external/independent laboratory in the United Kingdom (Element Materials Technology Lab U.K).
Spikes of Iron and Manganese above guidelines were recorded in January, February and April 2024.

The volume of the effluent pumped out from Izuma A pit and discharged into the aquatic environment was estimated to be **1,090,466.67 cubic meters** during the period January to June 2024.

IZUMA B

There was no underground water pumped out of Izuma Block B Pit Sump during the period January to June 2024.

Table E: Central Monitoring Basin Emergency Discharge effluent quality

Month	pH	Conductivity (uS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Sulphates (mg/l)	Chlorides (mg/l)	Iron (mg/l)	Manganese (mg/l)
January 2024	7.06	767	602	<10	225.5	88.4	0.042	0.091
February 2024	7.23	1051	824	<10	258.1	117.4	0.122	0.013
March 2024	7.02	928	782	<10	205.4	103.2	0.141	0.045
April 2024	6.71	826	584	<10	189	98.3	0.02	0.463
May 2024	7.26	847	689	<10	189.1	106.1	0.124	0.054
June 2024	6.98	895	722	<10	191.3	102.2	0.024	0.032
ZEMA EFFLUENT LIMITS	**6.0-9.0**	**4300**	**3000**	**100**	**1500**	**800**	**2**	**1**

Note: ***There was no discharge to the environment during the period under review.***

IZUMA OVERBURDEN DUMP WASTE

The quarterly analysis of the ground water from the two monitoring wells around the Izuma B overburden dump for the period January to June 2024 is as follows: -

Table F-I: Monitoring Boreholes around waste dumps P2

Month	pH	Conductivity (uS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Sulphates (mg/l)	Chlorides (mg/l)	Iron (mg/l)	Manganese (mg/l)
Q1'24	10.13	2627	1510	13	362	41.6	0.02	0.002
Q2'24	10.06	2569	1603	12	361.4	41.9	0.02	0.002
WHO GUIDELINES FOR DRINKING WATER (1993)	**6.5-8.5**	**4000**	**1000**	**N/G**	**250**	**200**	**0.3**	**0.01**

Table F-II: Monitoring Boreholes around waste dumps P3

Month	pH	Conductivity (uS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Sulphates (mg/l)	Chlorides (mg/l)	Iron (mg/l)	Manganese (mg/l)
Q1'24	8	429	327	<10	24.9	1.5	0.02	0.05
Q2'24	8.1	481	320	<10	20.2	1.1	0.02	0.007
WHO GUIDELINES FOR DRINKING WATER (1993)	**6.5-8.5**	**4000**	**1000**	**N/G**	**250**	**200**	**0.3**	**0.01**

Note: N/G means Not Given or Specified.

Note: NDP Means No Determination Possible.

A quarterly grab sample is taken and sent for analysis at an external/independent laboratory in the United Kingdom (Element Materials Technology Lab U.K). An alkaline pH of above 10 and Total Dissolved Solids in Q1 and Q2 above 1000mg/l were recorded at P2 behind the overburden dumps. Sulphates was above 250 for P2 in Q1 and Q2. Manganese exceeded WHO guidelines for P3 in Q1.

3. DUMP SITES

Table G: Waste on the Dumps

Month	Overburden Waste (Tons)									
	Izuma-A waste Dump	Infill Dump-Izuma-A	Infill Dump-Izuma-B	Overburden Dump (OB1)	Overburden Dump (OB2)	Overburden Dump (OB3)	Overburden Dump (OB4)	Kanzinze waste Dump	Kanzinze infill Dump	REJECTS (Tons)
Jan'2024			318,151.29					159,222.05	---	8,825.96
Feb'2024			446,507.27					---	230,028.66	9,191.85
Mar'2024			426,809.74					---	209,179.02	9,205.97
Apr'2024			375,747.04					---	215,330.20	5,342.32
May'2024			368,746.63					---	205,761.45	4,984.47
Jun'2024			528,072.02					---	166,168.34	6,016.64

Note: *Overburden means earth layer on top of coal body.*

-Rejects means coal grade and quality rejected from the coal washing plant. This coal is currently being used as feed to the Thermal Power Plant.

Table H: Thermal Power Plant ASH

Month	Ash generated (MT)	Ash Sold (MT)	Ash Dumped (MT)
Jan-24	64,433	118	64,315
Feb-24	43,917	119	43,798
Mar-24	47,368	61	47,307
Apr-24	52,094	58	52,036
May-24	58,888	90	58,798
Jun-24	50,729	90	50,639
Total	**317,429**	**536**	**316,892**

4. HAZARDOUS WASTE

4.1 USED OILS

Table I: Used oil storage

	USED OIL GENERATION AND MANAGEMENT				
	USED OILS GENERATED			USED OILS	Used Oil Sold (Liters)
MONTHS 2024	MCL (Liters)	Power Plant (Liters)	Suncrest (Liters)	Total	
Jan-24	846	0	2,824	3670	23,355.5
Feb-24	769	0	3,374	4143	0
Mar-24	570	1,293	1,572	3435	0
Apr-24	653	674	3,096	4423	0
May-24	526	715	5,015	6256	10,925
Jun-24	630	452	3,809	4891	8,592
Sub Total	3,994	3,134	19,690	26,818	42,872.5
Opening Stock (January 2024)				63,146.18	
Total				89.964.18	
Grand Total (Site Stock Level)				47,091.68	

Used oil at Maamba Collieries is generated from; servicing of Heavy Machines, Trucks, Light vehicles and Thermal power plant. Used oil generated from different areas is then transported to the licensed storage yard for temporal storage before selling to a licensed dealer who does recycling.

4.2 USED LEAD ACID BATTERIES

Table J: Used Lead Acid Batteries Storage

Month	GENERATED NUMBER OF BATTERIES (SIZES/QUANTITY)									
	MCL (KG)					SUNCREST (KGS)			Total	Sold (kg)
	Heavy Duty Batteries		Light Duty Batteries			Heavy Duty batteries	Light Duty Batteries			
	Large	Medium	Large	Medium	Small	Large	Medium	Small		
Jan-24	0	301	0	252.1	143	132.3	0	0	828	0
Feb-24	117.2	243	91.2	335.5	228	88.2	0	0	1103.1	0
Mar-24	167.4	234	182.3	304	124.2	0	26.7	0	1038.4	0
Apr-24	55.8	200	182	346	161	46.2	0	0	991.4	0
May-24	54	296	365	309.8	178.1	0	80.26	0	1283.16	0
Jun-24	52	348	0	314	112.7	92.4	0	0	919.2	1,804.8
Total (Kg)									**6,163.26**	**1,804.8**
Total Opening Stock									**9,165.20**	
Grand Total									**15,328.46**	
Closing Stock									**13,523.66**	

A total of combined weight of **6,163.26 kilograms** of batteries were generated and **1,804.8** kilograms batteries were sold during the review period. Thus, a combined weight of **13,523.66 kilograms** batteries is still on site as at 30th June, 2024.

4.3 SEWER WASTE

Table K: Health Care Waste

Month	Sewer waste generated and transported	
	Mine Site	Township facilities
January 2024	172,000	92,000
February 2024	92,000	124,000
March 2024	104,000	84,000
April 2024	92,000	128,000
May 2024	232,000	104,000
June 2024	236,000	116,000
Total	**928,000**	**648,000**
Grand Total	**1,576,000 L**	

4.4 HEALTH CARE WASTE

Table L: Health Care Waste

Month	Health Care Waste Generated and
January 2024	1.0
February 2024	0.8
March 2024	0.5
April 2024	1.0
May 2024	1.5
June 2024	1.4
Total	**7.2kgs**

NB: Generated health care waste is weighed using a digital scale before transportation.

4.5 PERSONNEL INVOLVED IN MANAGEMENT OF HAZARDOUS WASTE

Personnel involved in Management of hazardous waste underwent medical tests in the period under review. The names are presented in **Table M** below.

Table M: Personnel involved in the management of hazardous waste and Pesticides and Toxic Substances

S/N	Name	Designation	Hazardous Waste Type	Date Examined	Medical Centre
1	Eric Mukando	Mechanic	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
2	Osward Malama	Auto Electrical	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
3	Adupe kalabila	Vacuum Tanker	Sewer	12-Jan-24	Maamba Hospital High Cost
4	Bwendo Simasiku	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
5	Busiwa Libakeni	Mechanic	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
6	Costain Maguswi	Mechanic	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
7	Dickson Phiri	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
8	Disai syakachoko	Vacuum Tanker	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
9	Hillary Mayabe	Mechanic	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
10	Hillary Simalambo	Mechanic	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
11	Jonathan Kunda	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
12	Kabamba Kalunga	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
13	Kingsley Mweemba	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
14	Lushomo Siabukoko	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
15	Jendo Nyeleti	Vacuum Tanker	Fuel/Oil	12-Jan-24	Maamba Hospital High Cost
16	Brown Jere	Mechanic	Fuel/Oil	13-Jan-24	Maamba Hospital High Cost
17	Joshua Chilete	Mechanic	Fuel/Oil	15-Jan-24	Maamba Hospital High Cost
18	Mcshane Muchiya	Mechanic	Fuel/Oil	15-Jan-24	Maamba Hospital High Cost
Pesticides and Toxic Substances Handlers					
21	Boyd Kaleke	Assistant Chemist	DM Plant	21-Feb-24	Maamba Hospital High Cost
21	Gurusamy Mookkiah	Chemical Handler	Water System	19-Feb-24	Maamba Hospital High Cost
22	Haggai Siachibweka	Chemical Handler	DM Plant	26-Feb-24	Maamba Hospital High Cost
23	Isaac Bbalele	Chemical Handler	Water System	19-Feb-24	Maamba Hospital High Cost

24	Jairon Manyanina	Chemical Handler	Water System	28-Feb-24	Maamba Hospital High Cost
24	Obrian Mabole	Assistant Chemist	DM Plant	24-Feb-24	Maamba Hospital High Cost
26	Press Haneya	Assistant Chemist	Water System	19-Feb-24	Maamba Hospital High Cost
27	Royd Kakene	Chemical Handler	Raw Water	21-Feb-24	Maamba Hospital High Cost
28	Tickley Muchiya	Chemical Handler	Water System	27-Feb-24	Maamba Hospital High Cost
29	Tolla Wanki	Chemical Handler	Water System	21-Feb-24	Maamba Hospital High Cost
30	Venkateswara Rao	Chemical Handler	Water System	27-Feb-24	Maamba Hospital High Cost

5. OZONE DEPLETING SUBSTANCES

Table M: Ozone Depleting Substances Usage

Month	Type of Refrigerant (Kg)					
	R22	R134a	R410a	R600a	R290	R407C
Jan-24	1.8	4	6.18	0.4	NIL	NIL
Feb-24	2.6	7.8	2.4	NIL	0.8	NIL
Mar-24	4.15	8.5	3.03	NIL	0.2	NIL
Apr-24	1.2	0.05	7.78	NIL	NIL	NIL
May-24	8	1.5	8.16	1.1	NIL	NIL
Jun-24	1.1	6	NIL	0.3	NIL	NIL

6. THERMAL POWER PLANT

6.1 Resource consumption (Coal consumption)

Table N: Coal Consumption.

MONTH	BOILER 1-COAL CONSUMPTION (METRIC TONS)	BOILER 2-COAL CONSUMPTION (METRIC
Jan-24	70,995	69,868
Feb-24	32,851	64,456
Mar-24	68,995	37,172
Apr-24	62,087	61,831
May-24	66,401	65,835
Jun-24	59,070	59,680
Total	**360,399**	**358,842**

6.2 Air Emissions

Table O: Boiler 1 Emissions

Month	SO_2 (mg/Nm_3)	NO_X (mg/Nm_3)	Dust (mg/m^3)
Jan-24	431.25	60.13	44.40
Feb-24	429.15	63.42	69.83
Mar-24	305.98	100.28	67.45
Apr-24	441.82	134.47	44.70
May-24	433.61	108.92	44.82
Jun-24	424.30	132.54	44.36

Note: Spikes of dust emission from February and March, 2024 are attributed to plant startups and stabilization after shut down. The rest of the parameters complied with the emission guide lines.

Table P: Boiler 2 Emissions

Month	SO2 (mg/Nm_3)	NOX (mg/Nm_3)	Dust (mg/m3)
Jan-24	413.91	54.90	45.57
Feb-24	404.29	47.27	43.43
Mar-24	393.37	60.81	78.51
Apr-24	422.07	95.67	45.64
May-24	419.90	80.94	46.92
Jun-24	419.08	93.29	45.66

Spike of dust emission in March 2024 are attributed to plant startups and stabilization process after shut down.

The Chimney of the boilers is fitted with an online analyzer. Analysis for air emissions is done hourly. Daily and monthly averages are thus calculated from hourly readings.

6.3. PTS Returns

Table Q: PTS Returns – Reservoir Mini-storage

No.	Product Name	Stock Movement				
		Opening stock at beginning of January, 2024	Receipts	Consumed	Closing stock at 30th June, 2024	Unit (tons)
1	Poly Aluminum chloride (PAC)	89.6	45.200	44.075	90.725	tons
2	Cationic polyacrylamide (CPAM)	3.975	0.000	1.255	2.720	tons
3	Chlorine (Cl_2)	2.000	8.000	7.000	3.000	each

Table R: PTS Returns-Thermal Power Plant Main Storage

No.	Product Name	Stock Movement				
		Opening stock at beginning of January, 2024	Receipts	Consumed	Closing stock at 30th June, 2024	Unit (tons)
1	Poly Aluminum chloride (PAC)	0.225	**4.8**	**4.6**	**0.425**	tons
2	Cationic polyacrylamide (CPAM)	0.05	**0.075**	**0.07**	**0.055**	tons
3	Hydrochloric Acid (HCL)	31.881	**12.1**	**18.681**	**25.3**	tons
4	Sodium Hydroxide (NaOH)	48.33	**0**	**22.05**	**26.28**	tons
5	Hydrazine (N2H4)	38.5	**0**	**0.85**	**37.65**	tons
6	Ammonia (NH3)	1.782	**1.495**	**0.971**	**2.306**	tons
7	Tri sodium Phosphate (TSP)	0.275	**0**	**0.1**	**0.175**	tons
8	Sulphuric Acid (H2SO4)	47.699	**59.34**	**58.199**	**48.84**	tons
9	Chlorine (CL2)	15	**20**	**30**	**5**	each
10	INDION 9025	3.8	**13.6**	**5.2**	**12.2**	tons
11	INDION 9062	4.2	**13.6**	**5.8**	**12**	tons
12	INDION 9077	0	**0**	**0**	**0**	tons
13	INDION 9079	1.075	**2.400**	**0.875**	**2.600**	tons
14	INDION 9042	1.000	**4.800**	**2.400**	**3.400**	tons
15	INDION 9210	1.150	**2.400**	**0.950**	**2.600**	tons

6.4 PERSONNEL INVOLVED IN MANAGEMENT OF PTS

Personnel involved in Chemical Management of PTS underwent medical tests in the period under review. Results and medical certificates are yet to be out.

COMPLAINTS REGISTER: There were no complaints received during the period under review. The complaints register is available.