

ENVIRONMENT IMPACT ASSESSMENT STUDY REPORT
FOR PROPOSED UNDERGROUND ARTISANAL GOLD ORE MINING IN ROSTERMAN
SHIRERE WARD KAKAMEGA COUNTY. APRIL 2024
NEMA/ToR /5/2/666



PROPONENT
STONE OF WEALTH LIMITED (S oWL)
PO BOX 970 - 40400
SUNA

PREPARED BY
AYES CONSULTS LIMITED
PO BOX 1498-50100 KAKAMEGA,

LATITUDE 0.255876 N 34° 34'.725258 LONGITUDE

ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDERGROUND
GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY,
KAKAMEGA COUNTY

ACKNOWLEDGEMENT

Ayes Consults Limited is grateful to the proponent Mr. Ahmed Jama Director SoWL for bestowing us the honor of undertaking this Environmental Impact Assessment Study (EIAS) report for the proposed underground gold mining. We appreciate the support of the KAVOREC family particularly the Manager and board of management. We also thank the mine managers Mr. Willis Ogutu Ambalwa and Isaiah Aiti Adero for providing us with all the required information we needed for this report. We sincerely appreciate the entire staff of Department of Mines under the National Government and the CGK through its Ministry of Environment, Water, Natural Resources and Climate Change for their unwavering support while undertaking this EIA study.

We also express our gratitude to the following, Member of County Assembly Hon. Ikunza (*Shirere Ward*) together with his staff, Mrs Phanice Achienza Chief -Shirere Location. In addition, we are grateful to Rosterman Umbrella Community Based Organization(RUCBO) all Kakamega Minerals and Mining Groups and other leaders of various Associations who assisted us in mobilization and ensured that we were well attended to and given all the required cooperation during our site visits. We also thank the wider community of Rosterman for their unwavering support and agreeing to express their views orally and in writing.

We also appreciate Hon: Peninah L. Mukavane CECM Ministry of Environment Natural Resources and Climate Change under the CGK. Further, we acknowledge support from NEMA Headquarters EIA section in Nairobi, NEMA Kakamega office led by the Kakamega C D E, Mr. John Maniafu for their unequivocal support and guidance throughout the process.. We express our sincere gratitude to members of the public drawn from Rosterman, Musumu, Musiolo and Mulombole villages without reservation for having attended the public participation assemblies and giving their submissions either orally or in writing which greatly contributed to the success of this report.

Further, we extend our sincere appreciation to our staff particularly from the Kakamega and Nairobi office, the entire assessment team for their unreserved and indefatigable commitment during the preparation of this EIAS report. In particular, we thank Mr. Jesse Njuguna (Lead Expert,) Mr. Harry Mmbaya (Environmental Journalist) Prof. Charles Lugania (Metrologist/Hydrologist), Elizabeth Nyandia (Sociologist), Mr. David Anampiu Geologist and Dr. Khamati Anthropologist who worked extra hard throughout the entire process of preparing this report to make sure that it is completed professionally.

Finally, we express our unlimited gratitude to all who made this exercise possible but was unable to mention them by name. We acknowledge their invaluable commitment and teamwork throughout the entire process. Thank You and May God bless you all.

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ASGM	Artisanal and Small Scale Gold Mining
Au	Gold
Bgl	Below Ground Level
°C	Degrees Celsius
CaO	Lime
CDE	County Director of Environment
CECM	County Executive Committee Member
CGK	County Government of Kakamega
CN	Cyanide
CSR	Corporate Social Responsibility
dB	Decibels
DOSH	Directorate of Occupational Safety and Health
EA	Environmental Audit
EP's	Environmental Impacts
EIA	Environmental Impact Assessment
EMCA	Environnemental Management and Coordination Act
EMP	Environnemental Management Plan
EMPs	Environmental Management Plans
ERC	Energy Regulatory Commission
HIV	Human Immuno Deficiency Virus
ICT	Information& Communication Technology
KAVOREC	Kakamega Vocational and Rehabilitation Centre
KPPB	Kenya Pharmacy & Poisons Board
KPLC	Kenya Power and Lighting Company
M & E	Monitoring and Evaluation
MEMR	Ministry of Environment and Mineral Resources
MSD	Minimum Safe Distance
NaCN	Sodium cyanide
NCA	National Construction Authority
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NPEP	National Poverty Eradication Plan
O ₂	Oxygen
OSHA (2007)	Occupational Safety & Health Act (2007)
PPA	Pharmacy and Poisons Act cap 244
PH	Acidity or alkalinity of the slurry.

DEFINITION OF OPERATIONAL TERMS

Amalgamation: The heating of the amalgam to separate the gold from impurities

Authority: National Environment Management Authority established under section 7 of the EMCA 1999

Biological diversity :The variability among living organisms from all sources including terrestrial ecosystems, aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species and of ecosystems.

Environment :Physical factors of the surroundings of human beings including land, water, atmosphere, climate, sound, odor, taste, the biological factors of animals and plants and social factor of aesthetics , culture and includes both the natural and the built environment.

Environmental Audit: The Systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in conservation or preservation of the environment.

Environmental Impact Assessment- : A systematic examination conducted to determine whether or not a programme, activity or project will have any adverse impacts on the environment.

“Poison” means a poison included in Part I or Part II of the Poisons List in the Pharmacy and Poisons Act cap 244

Proponent: A person who is proposing or executing a project, programme or an undertaking specified in the Second Schedule of the EMCA 1999.

Project Includes any project, programme or policy that may have an impact on the environment.

Tailings: Remnant low grade ore left behind as waste after gold has been extracted from grade high ore

Treatment: any method and technique or process for altering the biological, chemical or physical characteristics of wastes to reduce the hazards it presents

CERTIFICATION

This Environmental Impact Assessment Report was prepared following a study by an approved firm of experts. This was done following a request by the proponent in accordance with the second schedule of the Act (EMCA 1999) which specifies projects or activities that must be subjected to Environmental Impact Assessment (EIA). It is also in compliance with Environmental Impact Assessment and Audit Regulations (2003). This project report conforms to the environmental (impact assessment and audit) (amendment) regulations, 2016. This project falls under the second schedule of these amendments which indicate the projects that should undergo an EIA study. In this second schedule, mining of precious metals is categorized as among the high risk.

In addition, this study also complies with the EMCA (2015) amendments, waste management regulations (2006), water quality management regulations (2006) and the Legal Notice number 61 of 2009 on noise and excessive vibrations (although noise control is now a function of devolved governments). Further, it was also undertaken in conformity to Kenya mining act (2016) the Pharmacy and Poisons Act Cap 244 and Water act 2016. It was done within the study limitations and resources available. I hereby certify that the information and particulars given in this report are correct and true to the best of my knowledge as at the time the Environmental Impact Assessment was undertaken.

NEMA LEAD EXPERT

NAME: Mr. Jesse Njoroge Njuguna

For Ayes Consults Limited

Tel... 0 725 077 571 / 056 203 1228

P.O Box: 23- 30105.

Soy

KENYA.

E-mail address: jessenjoro@yahoo.com

Signature.....Date.....




Signature:Date:.....

PROPONENT

NAME: Mr. Ahmed Abdi Jama

For Stones of Wealth Limited

Tel: 0723666655

P.O Box 970-40400

SUNA

**ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDERGROUND
GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY,
KAKAMEGA COUNTY**

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS	III
DEFINITION OF OPERATIONAL TERMS	IV
CERTIFICATION	V
TABLE OF CONTENTS.....	VI
LIST OF PLATES	IX
LIST OF TABLES.....	X
LIST OF FIGURES	X
CHAPTER ONE: INTRODUCTION	1
1.0 EXECUTIVE SUMMARY:	1
1.1.1 Brief Background of the underground gold ore mining.....	7
1.1.2 Project Summary	7
1.1.4 The Terms of Reference	8
1.1.5 Objectives of the EIA	8
1.1.7 Assessment Methodology.....	9
2.2 History of the Land Ownership	12
CHAPTER TWO: LITERATURE REVIEW	13
2.0 LITERATURE REVIEW ON ARTISINAL MINING	13
2.1 MINING OF GOLD ORE	13
2.2 PROCEDURES OF THE PROJECT APPROVAL.....	13
2.5 PROJECT ALTERNATIVES.....	14
2.5.1 NO PROJECT ALTERNATIVE	14
2.7 Conclusion on Project Alternatives.....	16
CHAPTER THREE: BASELINE INFORMATION:	17
3.0 BASELINE INFORMATION.....	17
3.1 Physiographic and Natural Conditions Of Kakamega County.....	17
3.1.1 Topography.....	17
3.1.2 Ecological Conditions	17
3.1.3 Climate	18
3.1.5 LAND USES	18
3.2 Population.....	18
3.2.1 POPULATION PROFILE AND PROJECTIONS.....	18
DISTRIBUTION OF POPULATION BY SEX AND SUB-COUNTY	18
3.2.2 Population Density and Distribution	18
3.3 GOLD MINING IN KAKAMEGA COUNTY	19
CHAPTER FOUR: PROJECT DESIGN AND OPERATIONS	22
4.0 DESCRIPTION OF THE PROJECT'S ACTIVITIES AND PROCESSES.	32
ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDERGROUND GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY, KAKAMEGA COUNTY	vi

4.1.1 Mining of the Gold Ore	33
4.1.2 The process of refining gold	33
4.1.2.1 Transporting of gold bearing rock ore (quartz).	33
4.2 Rehabilitation of the de relict land.....	37
4.3 Risk of interferences of Existing Services	37
4.4 Energy Supply	38
4.5 Staff Amenities:	38
4.5.1 First Aid	38
4.5.2 Site workers' Toilets	38
4.6 Hazardous Materials	38
4.7 Project Inputs/Raw Materials	39
4.9 Mitigation Measures.....	40
4.9.1 Accident Prevention and Safety	40
CHAPTER FIVE: INTERNATIONAL AND NATIONAL POLICIES AND LAWS	41
5.0 INTERNATIONAL POLICIES ON ASGM.....	41
5.1 General Overview	41
5.2 Relevant National Legislation & Policies	41
5.2.1 Constitution of Kenya 2010	41
5.2.2 Legal and Regulatory Instruments in Kenya.....	42
5.2.3 The Environment Management and Coordination Act, 1999.....	42
5.2.4 Mining Act 2016 No 12 of 2016	42
5.2.4.1 Mining license	42
5.2.4.2 Important issues to a mining project.....	43
5.2.4.3 Key requirements before a mining license is issued.	44
5.2.4.4 Financial Provisions under the Mining Act 2016	44
5.2.4.5 Health, Safety and Environment.....	45
5.2.4.6 Monitoring, Compliance and Enforcement	45
5.2.4.7 Restoration of Derelict Land after mining as provided Under the Mining Act 2016	47
5.2.4.8 Insurance Cover for Health and Safety of Employees	47
5.3 The Water Act 2016.....	47
5.3.1 Water Resource User Associations (WRUAs)	48
5.3.2 Water Works Development Agencies (WWDAs).....	48
5.3.3 Water Services Providers (WSPs)	48
5.3.4 Water Services Regulatory Board (WASREB).....	49
5.3.5 Water Services Boards	49
5.4. The Environmental Management and Co-ordination (Water Quality) Regulations, 2006.	49
5.5 The County Government Act 2012.....	50
5.6 The Penal Code (Cap. 63)	50
5.7 The Occupational Safety and Health Act, 2007	51
5.8 The Physical and Land Use Planning Act 2019.....	51
6.0 METHODOLOGY.....	54
6.1 THE LEVEL, DEPTH AND SCOPE OF THE EIA.	54
6.2 PRIMARY METHODS.....	54
ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDEGROUND	vii
GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY,	
KAKAMEGA COUNTY	

6.2.1 Field Visits	55
6.2.2 Photography.....	55
6.2.3 Observation	55
6.2.4 Water samples analysis.....	56
6.3 SECONDARY METHODS.....	56
6.4 Public consultation	56
6.4.1 The Purpose of Public Consultation	56
6.4.2 Written Comments	57
6.4.3 Interview of key informants	57
6.4.3.1 Comments by the CGK Ministry of Environment, Water, Natural Resources and Climate Change	57
6.4.3.2 Comments by the MCA.....	58
6.4.3.3 Comments from Rosterman Umbrella community Organization (RUCBO)	58
6.4.3.4 The Senior Chief.....	58
6.4.3.5 The Community elders.....	58
CHAPTER SEVEN: ENVIRONMENTAL & SOCIAL IMPCATS AND RECOMMENDED MITIGATION MEASURES.....	60
7.0 ENVIRONMENTAL & SOCIAL IMPACTS	60
7.2 Potential Negative Impacts of the project and Recommended Mitigation Measures	64
7.2.1.1 Recommended Mitigation measures	64
7.2.2 Risk of Air Pollution from gaseous emissions of machinery and equipment	65
7.2.2.1 Recommended Mitigation measures	65
7.2.3 Air pollution from the running Lorries and vehicles	65
7.2.3.1 Recommended Mitigation Measures.....	65
7.2.5 Noise pollution from the project	65
7.2.5.1 Recommended Mitigation measures	65
• Restrict use of generators only when necessary.	66
• Avoids unnecessary ignition of generators machinery and equipment.....	66
7.2.6 Risks of Asphyxia	66
7.2.6.1 Recommended Mitigation Measures	66
7.2.7 Risks of Collapsing Mines	66
7.2.8 Risks of accidents	67
7.2.8.1 Recommended Mitigation Measures	67
7.2.9 Risks of Fire Accidents.....	68
7.2.9.1. Recommended Action	68
7.2.10 Energy Resource Management	68
7.2.10.1 Recommended Mitigation Measures	68
7.2.11 Water Resource Management	69
7.2.11.1 Recommended Action	69
7.2.12 Liquid waste	70
7.2.12.1 Recommended Mitigation measures	70
7.2.13 .1 Recommended Mitigation Measures.....	70
7.2.14 Sanitation Services	71
7.2.14 .1 Recommended Mitigation Measures.....	71
ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDEGROUND GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY, KAKAMEGA COUNTY	viii

CHAPTER EIGHT: RECORD KEEPING	72
8.0 RECORD KEEPING AND ENVIRONMENTAL POLICY	72
8.1 RECORD KEEPING	72
CHAPTER NINE: ENIRONMENTAL MANAGEMENT PLAN	72
9.0 ENVIRONMENTAL MANAGEMENT PLAN	72
9.1 PURPOSE OF EMP.....	72
9.2 ENVIRONMENTAL MONITORING AND AUDITS	89
CHAPTER 10: DECOMISSIONING, PROJECT CLOSURE & SITE REHABILITATION	89
CHAPTER 11: CONCLUSION.....	92
11.0 CONCLUSION.....	92
REFERENCES.....	93
APPENDIX I: EVIDENCE OF LAND ALLOCATION WHERE THE PROJECT STANDS.....	94
APPENDIX IV: NEMA PRACTISING LICENSE FOR FIRM OF XPERTS.....	98
APPENDIX V: CERTIFICATE OF INCORPORATION FOR STONES OF WEALTH LIMITED	99
APPENDIX VII: ATTENDANCE LIST AND MINUTES DURING PUBLIC PARTICIPATION PROCESS.....	122
.....	122
APPENDIX VIII: WATER QUALITY MANAGEMENT & CO-ORDINATION REGULATIONS 2006	153
STANDARDS FOR EFFLUENT DISCHARGE INTO PUBLIC SEWERS.....	153

LIST OF PLATES

STONE OF WEALTH LIMITED (S oW)	1
PLATE 4.1: THE MAIN ADIT TO SHAFTS CONSTRUCTED BY ROSTERMAN MINING COMPANY.....	34
PLATE 4.2: THE PROJECT SITE SHOWING THE MINE	35
PLATE 4.3: THE VEGETATION NEAR THE MINE.....	35
PLATE 4.5: MEMBERS OF THE PUBLIC DURING PUBLIC PARTICIPATION PROCESS	36
PLATE 4.6: STAKEHOLDER ENGAGEMENT KAVOREC BOARD MEMBERS AND AYES CONSULTANTS PUBLIC DURING PUBLIC PARTICIPATION PROCESS ...	59

LIST OF TABLES

TABLE 4.1: MACHINES AND EQUIPMENT BEING USED DURING OPERATIONAL PHASE.....	40
TABLE 7.1: ASSESSMENT CRITERIA FOR SIGNIFICANT IMPACTS.....	61
TABLE 7.2: ANTICIPATED PROJECT IMPACTS	62
TABLE 7.3: POTENTIAL SOCIO-ECONOMIC IMPACTS	63
TABLE 9.1 ENVIRONMENTAL MANAGEMENT PLAN FOR CONSTRUCTION PHASE	74
TABLE 9.2 ENVIRONMENTAL MANAGEMENT PLAN FOR OPERATIONAL PHASE.....	78
TABLE 10.1 ENVIRONMENTAL MANAGEMENT PLAN FOR DECOMMISSIONING PHASE.....	90

LIST OF FIGURES

FIG 1 .2: MAP OF KAKAMEGA GOLD FIELDS (SOURCE: KAKAMEGA CIDP)	12
TABLE 3.1: KAKAMEGA COUNTY SEX DISAGGREGATED DATA.....	19
FIG 3.1 : POTENTIAL MINERAL DEPOSITS IN KAKAMEGA COUNTY.....	22

CHAPTER ONE: INTRODUCTION

1.0 EXECUTIVE SUMMARY:

This is a critical examination of underground gold mining project. The project aims at mining gold ore in abandoned mine using shovels and mattocks. No sophisticated mining equipment is to be used. The proponent intends to process the mined ore at a gold processing plant that he plans to put up in Shirere approximately 500 meters away from the proposed mine which has been examined in this report. This EIA report is for submission to National Environment Management Authority (NEMA). It is in fulfillment of the requirements of the Environmental Management and Co-ordination Act, EMCA (1999). The project is located in Rosterman Village, Shirere ward, Lurambi sub-county in Kakamega County adjacent to Kakamega Vocational and Rehabilitation Centre. Its just off the Kakamega –Kisumu highway and branched through Sherere stage. It is about 7 Kms from Kakamega town. The proprietor is Stones of Wealth Limited who is hereinafter referred to as “the proponent” has engaged Ayes consults Limited (NEMA experts) as their main environmental consultant to advise on the legal environmental provisions, as well as their responsibilities and obligations. The consultant will also develop EMPs to guide the proponent on the risks and environmental damage likely to occur in the construction, operation and decommissioning phases of the project. This executive summary gives a snapshot of what the project entails. It also gives an overview of the project design.

It is important to note that the mine was part of the wider complex of mines that had been first been excavated and later abandoned by Rosterman Mine Company limited. The Design of this mine, involved accessing gold-bearing quartz veins developed in the Mine and in order of their occurrence from the surface downwards. The five reefs developed from a main three-compartment shaft to the 21st level at 1,940 ft.

Rosterman Gold Mines Company was incorporated in January, 1935, with an authorized capital of Ksh 40,000.000 in five shilling shares. The claims, situated about two miles south-west of Kakamega just north of the Isiukhu ko River, were first worked by the Ross Mining Syndicate which produced, from the outcrop to a depth of fifteen feet, 2,783 oz. of gold from 2,274 tons of ore milled. This, with the tailings, represented a mill-head average of 32 dwts. /ton. Milling was commenced by the new company in the latter half of 1935 and up to June 30th, 1952, when the mine was closed down, about 655,000 tons of ore had been milled, producing 259,142 oz. of fine gold ,i.e. over half the recorded total production from the area. The highest production was

in 1940 when 23,915 02., worth Ksh 20million were produced. A considerable amount of geological work has been carried out on this property, mainly by Hitchen and Pulfrey, the former both as a Government geologist and also as consulting geologists to the company.

Miners will go underneath to extract gold ore using axes, shovels and pixels. The available ore is of low grade type as the high grade ore was initially mined by the Rosterman Mines Company in the 1950s. The proponent intends to light up the shaft, use generators to pump out water to create room for miners to go underground. He also intends to use compressors to pump air underground so that the miners do not suffocate as they go deep into the mine.

After extracting the gold, the proponent intends to grind the low grade gold ore into finer sizes. The gold will be extracted by use of cyanide once the gold bearing ore is crushed and poured into the vat leaching plant that the proponent is planning to put up in Shirere ward, Lurambi sub county, Kakamega county. The proponent is further advised to ensure that the safety of the miners is given priority and is not compromised in any way. The design that was used by Rosterman mines company and other miners was to erect wooden slabs inside the mine tunnels to support weak areas after hacking or blustering the rocks. The goal was to support the roof of the tunnels from collapsing and trapping the miners inside. Unfortunately, the use of wooden slabs may not always be water tight putting the lives of the miners at risk. To ameliorate this risk, the proponent is advised against underground horizontal mining as the ground above can easily collapse trapping miners especially during heavy rains. The main shaft entrance was however reinforced by concrete joining the underneath rock.

The proponent is advised to carry out a feasibility study first before investing in the project. Once he is certain of the feasibility and it is economically viable, then he should consider mechanizing the mining if the returns on investments are guaranteed. He should also consider stronger methods of supporting the tunnels underneath instead of relying on wood planks as is the current position. In addition, to improve safety on the miners, he is greatly discouraged from sending miners underground during heavy downpours as the mine topography and geological stability may weaken and collapse resulting in landslides which may trap or bury miners underneath.

In regard to regulatory issues, the proponent has been advised to cease all operations before getting an EIA license from NEMA. He has also been advised to get approval from the Department of Mines under the National Government as outlined in the Mining act 2016 before proceeding with the project. He is also to get permission from the CGK through its Ministry of Environment, Water, Natural Resources and Climate Change. In addition, under the mining act 2016, the proponent is obligated to keep a record of the amount of gold extracted and give the data to the department of mines under the national government. It is from this data that the Department of Mines under the National Government will calculate the royalties that the proponent will pay. The mining act 2016 further states that at least 10 % of royalties paid should benefit the local community. 20 % of royalties paid to county government and 70% should be paid to national government. The proponent is advised to liaise with the community leadership to

support community projects through CSR with the 10% that is due to the community. Such projects should include schools or health centers or markets. He should not give money to community leaders or groupings.

The proponent is further advised to fence the project area. Women of child bearing age, expectant mothers, young children and babies should not be allowed within the project locality in order to avoid accidents of third parties and livestock.

Although there is no sewerage system nearby, the proponent is advised to make sure no waste water whether treated or not is directed into any water bodies or water ways. He is also advised against washing machinery and equipment in River Isiukhu or any other stream nearby. The proponent has been advised to plant a belt of reeds along the edge of the side facing river Isiukhu. The reeds are known to be natural detoxifiers of contaminated water. The land upon which the mining is to be undertaken is registered as lease hold belonging to Municipal Council of Kakamega under county government of Kakamega. The proponent has leased it for purposes of extracting gold ore. After he is through with the extraction, he is expected to rehabilitate the degraded land.

The site has only a few patches of grass, old and exotic trees. There are no endangered, threatened or protected flora or fauna on the project site. The proponent has been advised not to proceed before issuance of an Environmental Impact Assessment license. He has also been advised to register the project with DOSH as a workplace as per the OSHA 2007. He is also advised to ensure that all employees put on full PPE especially helmets both during operational and decommissioning phases. He should also avail adequate sanitary facilities and first aid kits to his employees.

This report conforms to the EMCA Amendments (2015). The Project falls under projects outlined in the Second Schedule of EMCA. It is also categorized as a medium risk project according to NEMA guidelines issued on August 2016. Further, this EIA project report complies with various instruments and requirements at the International level, national level and county level.

Additionally, the proponent is advised to establish a partnership or working arrangement with entities engaged in provision and training of first aid to have his staff trained. He should also make arrangements with a nearby medical facility where his staff can be accorded the necessary and or required medical attention.

The proponent should also ensure that all safety guidelines are strictly adhered to including adequate safety and emergency plans such as access to provision of a first aid services and

emergency evacuation procedures. The emergency procedures should be tested at regular intervals.

During decommissioning phase, the proponent is advised to contract a qualified geologist who will ensure that the mine is backfilled properly. Effort should be made to ensure that no waste is disposed onto the ground or river as they have the potential to contaminate the environment. No metallic part should be left idle on the ground. Further, the top soil waste should be used to refill the open pits after mining is completed. The site should be fenced after which indigenous trees and shrubs should be planted to stabilize the ground. During rehabilitation only soils from the surrounding land should be used as imported soil may lead to contamination of the land with invasive weeds and pests

Appropriate mitigation measures to ameliorate identified negative impacts on the Environment have been suggested through the respective E M Ps. There is an EMP for operational and decommissioning phases of the project. It is incumbent upon the proponent, the contractor and the mine manager to liaise with other lead agencies and stakeholders in ensuring that the EMPs are adhered to. The EMPs indicate the specific role to be played by various actors and the specific time frames. Additional advice is given in this report.

Solid waste – The proponent and project manager should remove solid wastes from the site and dispose them in designated areas. They should ensure that a proper solid waste management regime is developed and adhered to.

Toilet facilities: The proponent has constructed some pit latrines for the staff and workers. He is advised to construct more. To reach at least 12 VIP latrines. He is also advised to ensure that the latrines are emptied by exhausters before they get completely full. He is also directed to consult a public health officer before constructing another pit latrine to minimize the risk of contaminating the underground water. The proponent has 10 permanent staff and intends to hire 150 casuals. He is advised to provide adequate sanitation facilities. The ratio should be at least one toilet per 10 casuals. This will translate to 12 pit latrines. He should also provide adequate water for hygiene purposes. The latrines should be handed over to the community leadership after the end of the project.

Water supply – The project will depend on water that is pumped from the fresh mines by a diesel powered generator. In order to ensure the miners are able to work with ease, the proponent intends to pump out water using generators. The water will be used to wash equipment. The client has been advised to consult WRA for authorization to abstract water from the mine.

Accident occurrence – The proponent is advised to ensure that all staff are properly briefed on their roles and responsibilities and how to react in case of an accident. There must be a manager

who would ensure that all safety procedures are strictly adhered to in order to minimize risks of accidents. No staff should run machinery under the influence of alcohol. In addition, no employees on medication should run machinery. Employees suffering from epilepsy should be given different tasks away from running machinery. All equipment and machinery should undergo regular checkup and maintenance as per the manufacturer's specifications.

Source of Energy: The main source of power for the underground mining is a generator which is diesel powered. The generator pumps out water. The proponent is encouraged to adopt use of solar energy.

Road traffic and safety implications: The proponent should provide adequate signage provision and parking space during off loading and loading of extracted gold ore and equipment.

Storm water- The proponent has dug water trenches to prevent surface water runoff from flowing into the nearby stream.

Health and Safety - Develop a site safety action plan and workers to be provided with suitable protective gear. Mine manager must ensure equipment is periodically checked by qualified personnel as outlined in OSHA 2007

Security and accessibility: The proponent is advised to fence the site to prevent livestock and unauthorized personnel from intruding into the facility.

Brief overview of construction phase

The project description has been separated into the following phases: construction operation and decommissioning. Environmental Management and Monitoring plans for each of these phases have been discussed in chapter nine.

JUSTIFICATION AND PURPOSE

The need for the gold mining is driven by a number of factors. First is to create job opportunities and generate wealth. The proponent will pay royalties to the national government, county government and also provide various benefits to the community. Under the mining act 2016, the national government should receive 70% of the royalties, county government should receive 20 % while the community is entitled to benefit from the 10% of the royalties. The proponent will also pay mining license fee both to the national government and county government. The land has been left idle since Rosterman ceased operations in 1950s and the proponent in partnership with the county government will initiate programmes that will improve infrastructure spurring economic growth of the community. The land should be rehabilitated after the mining is completed. The proponent is advised not to cause inadvertent harm or destruction to cultural, historical, and archaeological sites and artifacts within the mine.

1.1 INTRODUCTION

1.1.1 Brief Background of the underground gold ore mining

1.1.2 Project Summary

Owner: Stones of Wealth Limited

Nature of Development: The underground horizontal mining of low grade gold ore which is later crushed. The crushed ore will be taken through Vat leaching and elution process in Shirere processing plant.

Size of the Land: 0.5 acre

- Cost of the Project: Approximately Kshs 10,000,000.
- Duration of Lease: 9 years from December 2023
- Ward: Shirere
- Sub county : Lurambi
- County: Kakamega
- Plot No. LR- Plot number – Isukha Shirere 4430
- Land owner on which the project stands: Kakamega Municipal under County government of Kakamega

Water supply: The miners will rely on water that will be pumped from the mine. The water will be used to wash equipment. The proponent has been advised to get a license to pump underground water from WRA. However, the staff will draw drinking water from a nearby borehole at Musaa. The Borehole supplies water to the surrounding community for domestic use.

1.1.3 Environmental Impact Assessment Report Outline for the Project

The project is to be undertaken on plot no: Isukha /Shirere 4430 which was hived from 1202, and is registered under Kakamega Municipal, Kakamega County. The land is 17.6 Ha in size and the Kakamega county Government has completed the part development plan for the whole land, approximately 5.0 ha will leased to Stones of Wealth. See appendix

However, the proponent has been advised to cease all operations until an EIA report has been undertaken and a license issued by NEMA. The project falls under the second schedule of EMCA, 1999.

It has been undertaken according to the NEMA legal notice issued on August 2016 and which considers the project a medium risk project. It is also undertaken in accordance to the mining act 2016.

1.1.4 The Terms of Reference

The following were the specific terms of reference which was arrived at after an in depth consultation between the proponent and the consultants. The ToR were submitted to NEMA and approved in March 2024.

The focus of the EIA study will be to:

- i. Assess the potential impacts of the project on the total environment i.e. biophysical, economic and socio-cultural environment and make appropriate recommendations
- ii. Evaluate project alternatives
- iii. Determine the environmental baseline conditions of the area
- iv. Review available information and data.
- v. Get opinion of all interested and affected parties
- vi. Determine the legal and policy framework which govern the operation of the project
- vii. Determine the waste management system during the operation, construction, operation and decommissioning phase of the project.
- Viii) Advice on compliance to Climate Change Act 2016
- ix) Submit the report to NEMA and provide an acknowledgement letter.
- x) Follow-up on the review process up to the issuance of the EIA license.

1.1.5 Objectives of the EIA

1. Identify the significant impacts of the project on the environment.
2. Evaluate the relative magnitude of the changes likely to occur on the environment as a result of the project.

3. Recommend additional mitigation measures
4. To generate data and standards for monitoring and evaluating the project.
5. Guide stakeholders and policy makers in making informed decisions with regard to the various aspects of the project

1.1.6 Scope of Environmental Impact Assessment Study

According to the third schedule of the legal notice 101 of the Environmental (Impact Assessment and Audit) regulations 2003, An environmental impact assessment study shall be conducted in accordance with the general environmental impact assessment guidelines and administrative procedures issued by the Authority. An environmental impact assessment study shall include the following:

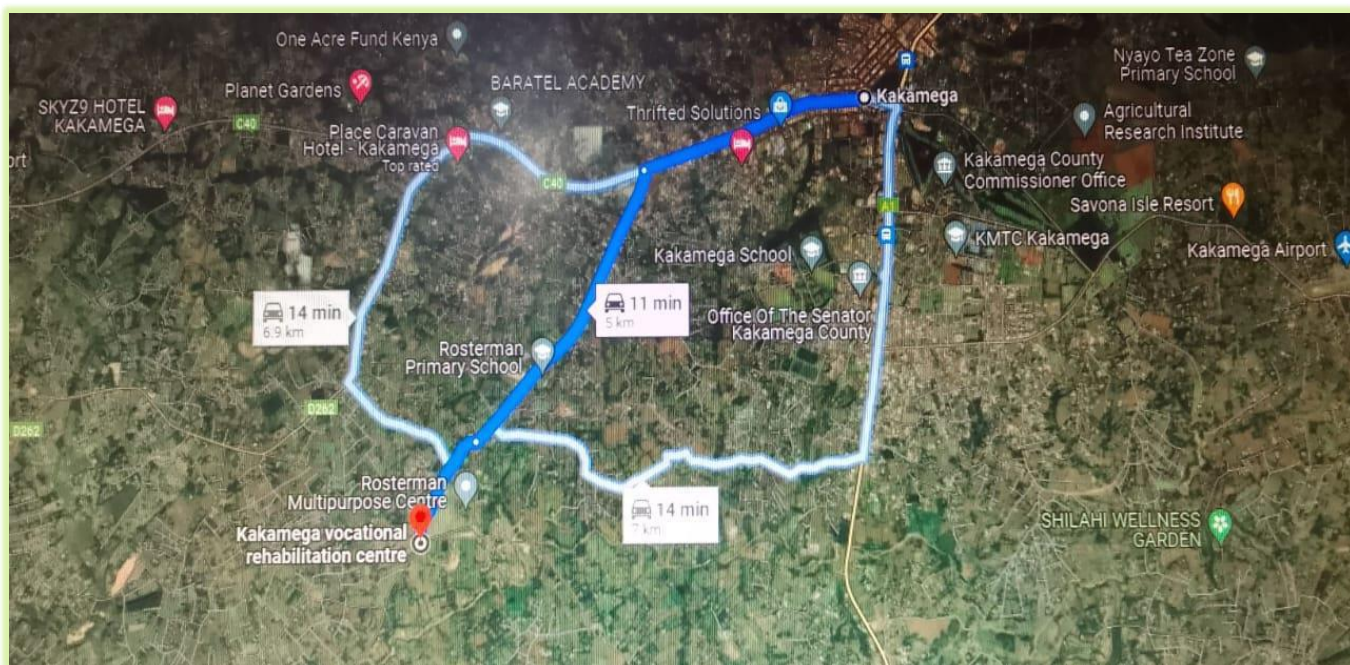
- (i) Sources of Impact
- (ii) Project Inputs
- (iii) Project Activities
- (iv) Areas of Impact on the Natural and Human Environments
- (v) Environmental Impacts (General Impacts on the Natural and human Environment)
- (vi) Environmental Guidelines and Standards (National Legislation, International guidelines. International Conventions and Treaties)
- (vii) Mitigation Measures
- (viii) Environmental Management Plan
- (ix) Environmental Monitoring and Auditing.

1.1.7 Assessment Methodology

This Environmental Impact Assessment Study Report was carried out between April and June 2024 after the approval of the Terms of Reference by the NEMA and strictly adhering to the time schedule provided. It was undertaken in accordance with the procedures and protocols in the Legal Notice No. 101 (Environmental Impact and Audit Regulations, 2003). This project report conforms to the environmental (impact assessment and audit) (amendment) regulations, 2016. In addition, this study also complies with the EMCA (2015) amendments, waste management regulations (2006), water quality management regulations (2006). Further, it was also undertaken in conformity to Kenya mining act (2016), Water Act 2016, Climate, Change Act 2016 and the Pharmacy and Poisons Act Cap 244. Principal activities of the study involved:

**ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED UNDEGROUND
GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD LURAMBISUB-COUNTY,
KAKAMEGA COUNTY**

1. Extensive site tours to physically inspect and document equipment intended for use on the site, natural and socio-economic features of importance through direct observations.
2. Public participation exercise
3. Desktop study
4. Examining Detailed assessment of the Environmental impacts of the project



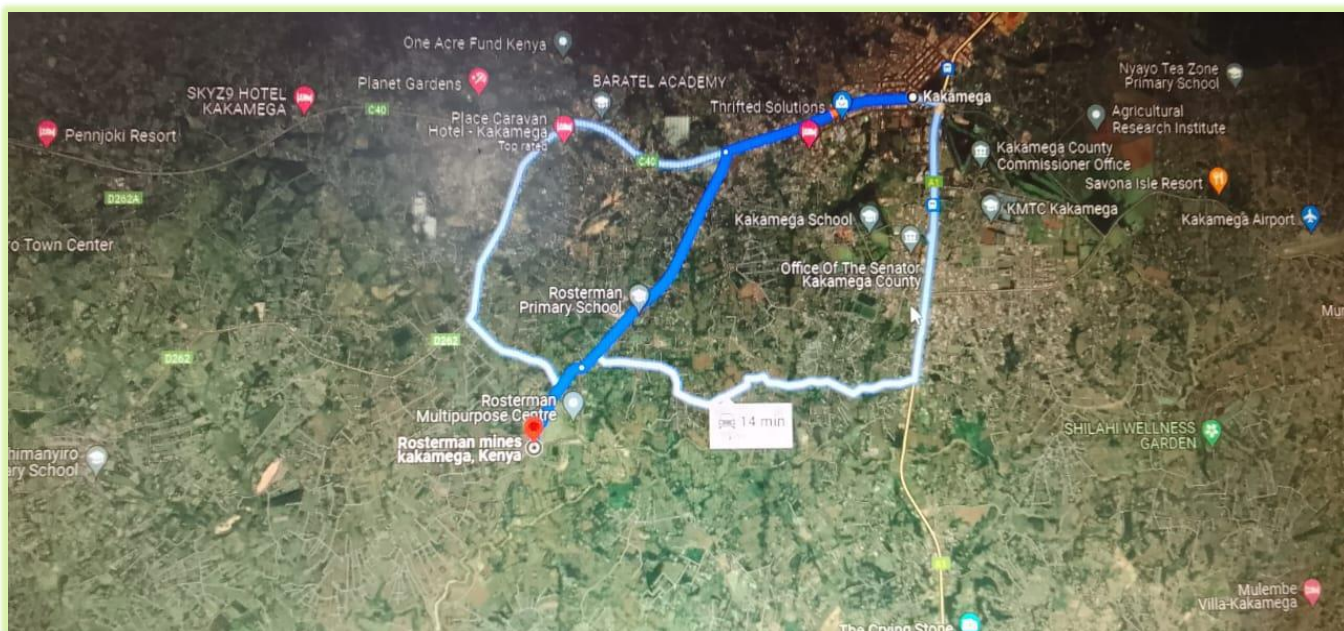


Fig 1.1: Map showing location of the site 0.2541, 34.71824

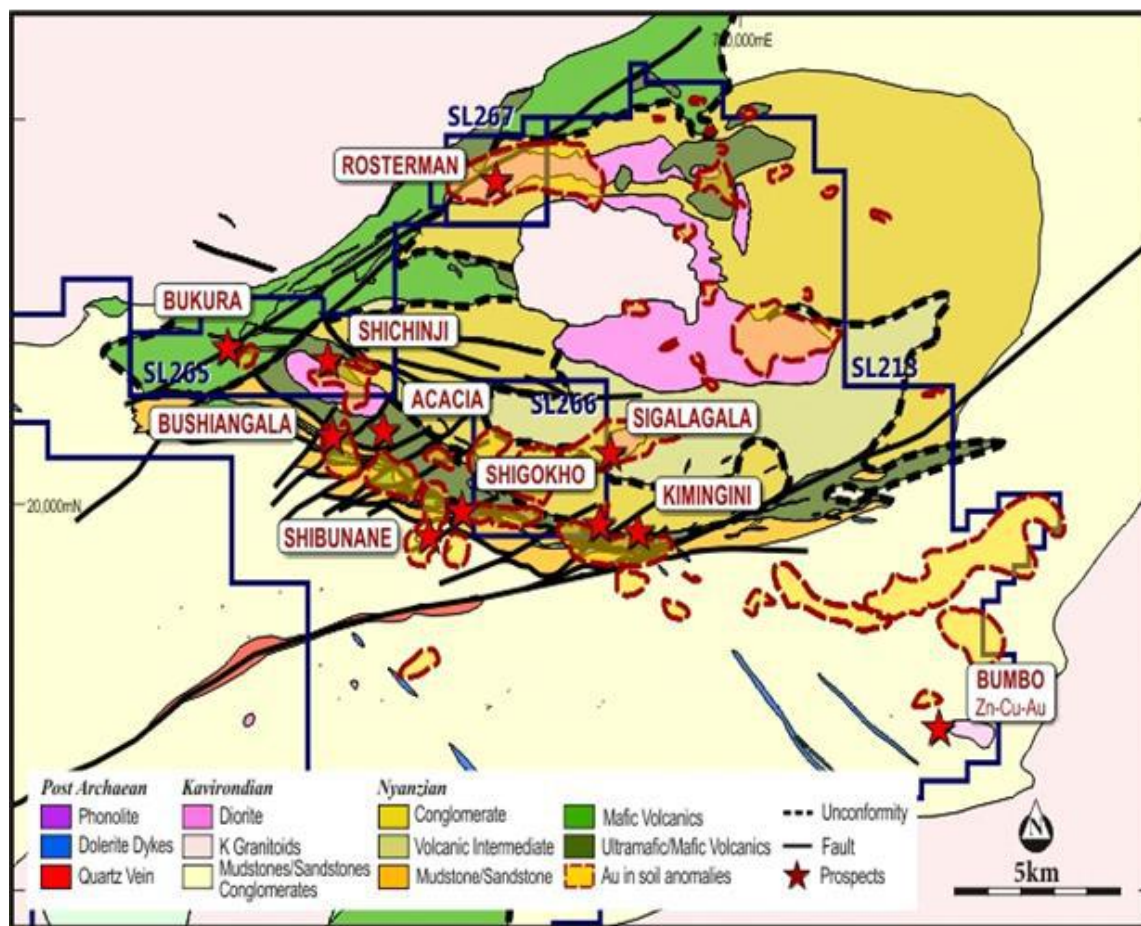


Fig 1 .2: Map of Kakamega gold fields (Source: Kakamega CIDP)

2.2 History of the Land Ownership

Rosterman company leased the land from locals during the colonial period under the custodian of Abamahalya in 1930's, when they ceased operations in 1950's, the land was passed to the then native council North Nyanza ADC to hold in trust, the ADC then took advantage of the available infrastructure and converted part of the developed side into a maintenance, storage and repair center for their transport system.

In 1971, the Kenya Government through the Ministry of labor and social protection established a vocational and rehabilitation training center. The main purpose was to train youth living with disabilities in craft courses like carpentry, tailoring and others. To date the institution admits trainees from the ages of 14 to 42, with or without disability. The institution has occupied the Rosterman campsite using the existing structures as classrooms. The other part of the land that hosts the main entrance to Rosterman mine shaft, has been lying idle for over the years.

The county Government of Kakamega through The physical planning and land use act 2019 has developed part development plan for the land and issued a public notice of completion of the same for the existing site for gold mining in Rosterman.

The County Government of Kakamega intends to lease approximately 5 ha for period of 9 years from December 2023 to SOWL, separating the mining area from KAVOREC. KAVOREC and SOWL signed MoU that will uplift the status of the center. (Check Appendix II indicating the Notice of part of development plan)

CHAPTER TWO: LITERATURE REVIEW

2.0 LITERATURE REVIEW ON ARTISINAL MINING

This chapter reviews relevant literature on mining of gold using simple tools such as pixels, mattocks, shovels etc. Therefore the project has very minimal and localized risks because mining will not be undertaken by use of chemicals and refining would not be done where the mine is located. Finally this chapter will discuss project alternatives.

2.1 Mining of Gold Ore

The Proponent will hire locals and foreigners with expertise to mine the gold ore. The gold ore will be transported to Shirere Gold Plant where VAT leaching will take place for refining. The Proponent will use a compressor to pump air into the mine in order to ensure that the miners are not suffocated for lack of oxygen. The proprietor will also use water pump to pump out underground water from the mine.

2.2 Procedures of the Project Approval

The Processes that will be followed include the following

1. Get approval from the Department of Mines under the National Government
2. Get a license to mine gold from the Ministry of Environment, Water, Natural Resources and Climate Change under the County Government of Kakamega
3. Legal Leasing Agreement with land owners before mining commences.
4. Contracts with the individual miners to dig out the gold ore

2.3 Importance of ASGM

Gold as a mineral is an important income earner in Kenya in terms of value. Counties where ASGM is dominant includes; Migori, Narok, Siaya, Vihiga, and Kakamega. Other counties with ASGM mining activities include Nandi, Kisumu, Turkana, West Pokot, Marsabit, Homa Bay and Kericho. The per-capita income for a mineworker range between KSh.10,000 to 20,000 every month and the sector produces gold estimated at approximately KSh. 29 Billion per year, based

on the international price of USD 42,000/Kg. ASGM therefore forms an integral part as a source of livelihood to many households in Kenya. It is estimated to employ approximately 40,000 miners with a total of 800,000 Kenyan citizens being dependent on the ASGM sector (Source *National Action Planning for ASGM*)

2.4 The importance of grain size

Creating a concentrate typically works best if the particles being concentrated are of similar size. Screens should be used for sieving (sorting) material for this reason. The use of screens is simple and cheap, and can improve gold recovery in many ASGM contexts Grain size of the gold particles must be investigated and understood so that adequate and efficient liberation of the gold particles is accomplished during milling. It is generally effective to mill rock to smaller than 0.5mm (0.02 inches; 35 mesh), but in many ASGM operations rock is only milled to 2mm (0.08 inches; 10 mesh), resulting in poor gold liberation. Running tests on gold liberation and recovery is important and will reveal how to improve gold recovery.

2.5 Project Alternatives

This EIA study report has discussed several project alternatives. The proponent is also advised to use methods that are more efficient and less wasteful. The alternatives discussed are hereby listed as follows:

These include:

- a) No project alternatives
- b) Open cast mining
- c) In situ mining
- d) Underground mining

2.5.1 No project Alternative

The no project alternative provides that the Proponent would not proceed with the project. The end result is that the benefits that would accrue from the project including job opportunities and payment of tax to Government will not be realized. The advantage of No Project alternatives is that there would be minimal negative impacts on the environment.

The proposed underground artisanal gold mining project will have numerous positive impacts as outlined in the report. The proponent has been advised on how to mitigate potential negative impacts of the project.

However, generally the proponent has been advised to change the proposed project design. He needs first to carry out a detailed feasibility study and contract a geologist to advise where the commercially viable gold ore are located and hence justify the investment in establishing the mines. This is in contrast to the current approach where the proponent leases land from willing farmers and landowners in the region without having carried out feasibility study first.

2.5.2 Open Caste Mining

Negative Impacts.

- It covers a large area and hence a wide area of vegetation is cleared.
- It is quite expensive and requires heavy machinery
- It requires a lot of resources while rehabilitating degraded land

2.5.3 Underground tunnel Mining

This is the method that the proponent proposes to use.

Disadvantages

- The Mine tunnels can easily collapse trapping the miners underneath
- Requires compressors to pump air to the mines so that the miners do not suffocate for inadequate oxygen
- Requires generators to pump water outside the mines.
- Requires backfilling of the mines after the mining is completed.

2.5.3 In situ Mining

This is the most preferable where the ore is relatively accessible. It entails mineral extraction by leaving the natural landscape intact, and reduces the need for large-scale excavation and surface disruption, excavation and surface disruption, which can cause significant damage to the local environment.

In situ mining involves leaving the ore where it is in the ground, and recovering the minerals from it by dissolving the minerals from the rock and then pumping the pregnant solution to the surface where the minerals can be extracted.

The advantage of In-Situ recovery is that it minimizes the environmental impact of mineral extraction. However, this approach/method may not be viable because the high grade gold ore were extracted by the Rosterman Company before it exited the region.

2.5 Waste management and contaminated sites

One of the main differences between the large scale formal gold mining sector and the ASGM sector is that ASGM generally does not practice waste management or do so using substandard practices. This creates contaminated sites. Some countries such as Ecuador and Mongolia have begun to address this issue. Generally this involves centralizing waste management (not processing), but retaining the existing individualistic and small scale socio-economic conditions vital to the ASGM community. Waste management systems (tailings disposal systems) that are accessible and affordable for ASGM communities are constructed to meet international standards.

By integrating environmental and social needs, this approach brings the added benefit of further facilitating formalization, legalizations, and generating more wealth through better mining and processing practices. A general framework is:

- (a) centralized waste management
- (b) retention of custom milling - non-centralized processing
- (c) develop community governance structure
- (d) clean up of contaminated sites - reprocess and dispose of existing poorly managed tailings
- (e) Establish environmental monitoring system and measure improvements through environmental assessments.

2.7 Conclusion on Project Alternatives

From the alternatives mentioned above, the proponent is advised to combine the following project alternatives.

However, generally the proponent has been advised to change the proposed project design. He needs first to carry out a detailed feasibility study and contract geologist to advise where the commercially viable gold ore are located and hence justify the investment in establishing the

mines as opposed to the approach where the proponent leases land from willing farmers and landowners in the region without having carried out a feasibility study first.

The proponent is advised to contract a geologist first before proceeding with the project to ensure that he is able to recoup his investments, make profits and also have a positive impact on the community through CSR.

CHAPTER THREE: BASELINE INFORMATION:

3.0 BASELINE INFORMATION

3.1 Physiographic and Natural Conditions Of Kakamega County

The altitudes of the county range from 1,240 meters above sea level to 2,000 meters above sea level. The southern part of the county is hilly and is made up of rugged granites rising in places to 1,950 meters above sea level. The Nandi Escarpment forms a prominent feature on the county's eastern border, with its main scarp rising from the general elevation of 1,700 meters to 2,000 meters. There are also several hills in the county such as *Misango, Imanga, Eregi, Butieri, Sikhokhochole, MaweTatu, Lirhanda, Kiming'ini* hills among others. There are seven main rivers in the county namely, Rivers *Nzoia, Yala, Lusumu, Isiukhu, Sasala, Viratsi* and *Sivilie*.

3.1.1 Topography

Lurambi Sub-County has a varying topography with altitudes ranging from 1,250 meters to 2,000 meters above sea level. Kakamega Town lies on the altitude 1500 meters above sea level. There are two main physiographic units, namely the southern hills made up of rugged granites rising to 1,950 meters above sea level, and the peneplain with remnants of denudation at Kakamega and Kambiri. The Nandi Escarpment forms a prominent feature on the district's eastern border with its main scarp rising from the general elevation of 1,600 to 2,000 metres.

3.1.2 Ecological Conditions

There are two main ecological zones in the county namely; the Upper Medium (UM) and the Lower Medium (LM). The Upper Medium covers the Central and Northern parts of the county such as Lurambi, Malava, Shinyalu and Ikolomani that practice intensive maize, beans and horticultural production mainly on small scale; and Lugari and Likuyani where large scale farming is practiced. The second ecological zone, the Lower Medium (LM), covers a major portion of the southern part of the county which includes Mumias, Matungu and Butere and Khwisero. In this zone, the main economic activity is sugarcane production with some farmers practicing maize, sweet potatoes, tea, ground nuts and cassava production.

3.1.3 Climate

There are two rainy seasons in the district, the long rains and the short rains. The long rains start in March and end in June with the peak in May. The short rains commence in July and end in September and peaks in August. The driest months are December, January and February. Generally rainfall varies from 1,000mm per annum in northern parts of the district to 2,400mm per annum in southern parts. Most rainfall received in the district comes in the form of heavy afternoon showers with occasional thunderstorms.

3.1.4 Flora and Fauna

Kakamega forest is the largest forest resource nearest to the project site. However, the forest will not be directly affected by the project. The forest is a home to many wild animals including monkeys, baboons and bird species such as the snake-eating birds, Black and White Casqued Hornbills, Turacos, Pygmy Kingfisher, Jameson's Wattle-eye, Yellow crested Woodpecker, Red-breasted Owlet, Martial Eagle, Crowned Eagle, Bateleur The forest also has several species of trees Elgon teak, red and white stink woods, varieties of Croton, Anisgeria Altissima and several types of orchids of which some are as old as 100years.

3.1.5 Land Uses

Agriculture is the dominant land uses in the whole county. However, the average land holding size in Kakamega County is 0.57 ha. Generally the Southern and central regions have lower average land holding compared to the northern region. . The land has been sub-divided into small uneconomic portions in the southern and central regions due to the high population. There is need to encourage optimal use of land through diversification of economic activities and also reduce over reliance on land as the main and only source of livelihood. The soil types in this locality are varied and ranges from red loam, sand to black cotton soil.

3.2 Population

3.2.1 Population Profile and Projections

As per 2019 census Kakamega county had a total population of 1,867,579 people, of which 897,133 are males, 970,406 being females and 40 intersex persons. There are 433,207 households with an average size of 4.3 persons per household and a population density of 618 people per square kilometer.

Distribution of Population by Sex and Sub-County

3.2.2 Population Density and Distribution

The county's population density is rapidly increasing. The population density is projected to increase to 761 and 800 persons per Km² in 2015 and 2017 respectively. As shown in table 3.1

Table 3.1: Kakamega County sex disaggregated Data

Sub-county	Male	Female	Intersex	Total
Butere	73,634	80,463	3	154,100
Kakamega Central	92,774	95,432	6	188,212
Kakamega East	80,553	86,784	4	167,641
Kakamega North	115,511	122,814	5	238,330
Kakamega South	53,219	58,524		111,743
Khwisero	53,670	59,803	3	113,476
Likuyani	73,710	78,341	4	152,055
Lugari	59,135	63,593		122,728
Matete	31,749	34,423		66,172
Matungu	78,793	88,143	4	166,940
Mumias East	55,895	60,953	3	116,851
Mumias West	54,915	60,438	1	115,354
Navakholo	73,275	80,695	7	153,977
Total	897,133	970,406	40	1,867,579

Source: Kenya National Bureau of Statistics, 2019

3.3 Gold Mining in Kakamega County

Surface gold mining activities have taken place in Kenya for many years up to the present time but most of the medium to large scale surface gold mining of gold and base metals took place during pre-independence days. The geographical survey and assessment of minerals revealed that the surface gold mining industry in Kenya is quite small. The endowment of mineral is varied. However, surface gold mining is hampered by poor accessibility to deposits, legal set ups, financial and technical requirements, lack of markets and lack of large mineral deposits to warrant major capital investments. In terms of gold mining methods, some open cast surface gold mining happens where stones and quarries are mined which often leave holes that fill with water when it

rains. Many lives have been lost in these collected waters. The other issue with respect to surface gold mining in Kenya is about community participation in making important decisions relating to the surface gold mining activity, for example, whether it ought to go on or not, relocation of people and their socio-economic and cultural activities (Institute for Law and Environmental Governance (ILEG), 2003).

The largest gold mine in the country was located in Rosterman near Kakamega town in Western region, operated from the 1930's till it was closed down in 1952. A medium scale copper mine was also operated at Malcalder in Migori areas of Nyanza region from 1956 until it closed in the late 1960's. Lead ore mines were operated in the Kinangoni and Vitengeni areas of Coast region till the 1970's (GoK, 2010).

The history of gold mining in Kakamega in Western Kenya dates back to 1892 when deposits of the precious metal was discovered along the Nyanza Rift Valley boundary. Kakamega town was began by a British company; Rosterman Gold Mines, which was incorporated and licensed in January 1935, to prospect and mine Gold. By 1952, it had mined 655,000 tons of ore and which had produced 259000 ounces of gold. By then it was one of the largest firms in western region (Machandaria 2011).

In later years, however surface gold mining in Kenya has been dominated by the production of a variety of industrial minerals, among which are Soda ash, fluorspar, diatomite, and limestone. Gold and gemstone production became the main activity of Small-Scale miners who have operated continuously in different parts of the country (GoK, 2010). In Kenya, Artisanal and Small-Scale gold mining is associated with rural areas especially the western part which is said to have potential for gold. These include Kakamega, Vihiga, Migori and Bondo areas (GoK, 2010).

After Rosterman Company limited ceased operations, the entrance to the main shaft remained sealed with a concrete slab to date, the mine fields were left in the hands of the local residents who have been cultivating and grazing animals. The other part of the land is occupied by Kakamega Vocational and Rehabilitation Center. Villagers still scavenge the abandoned mine field in search of the elusive mineral. Experts believe that huge gold deposits remain embedded underneath the rocks in the region (Machandra, 2014).

Rosterman in Kakamega traces back its Artisanal and Small-Scale gold mining to the early 1980's. It had a prospecting license with around 100 registered members involved. The license was supposed to work up to 1992 and since then it was never renewed. The surface gold mining process then became a local dealers' management process. Since then to date there have been no

clear records on the amount of gold mined within the entire location as well as its market availability (Okoth, 2008).

Nonetheless, underground artisanal gold mining can still be a significant employer, particularly to the people of Rosterman in Kakamega in Lurambi Sub-County, once the indirect impacts of job creation by suppliers to mining operations are considered. In addition to their core workforce, all mining operations have significant requirements for suppliers to provide goods and services, for example construction, logistics, raw materials, catering, maintenance, accountancy and legal services.

Rosterman mine has produced an estimated 250,000 ounces of gold at an average grade of approximately 13g/t Au. It yielded the highest amount of gold since gold mining began in the 1930s and 1940s. After 70 years since production ceased at Rosterman, there has been limited exploration in this highly-prospective area until now. However, since this time drilling has confirmed the prospectively of this area, returning large ore grade intercepts. It is believed that the Kakamega Dome Camp has the potential for medium to large size, higher-grade gold deposits which has attracted some mining companies from other countries.

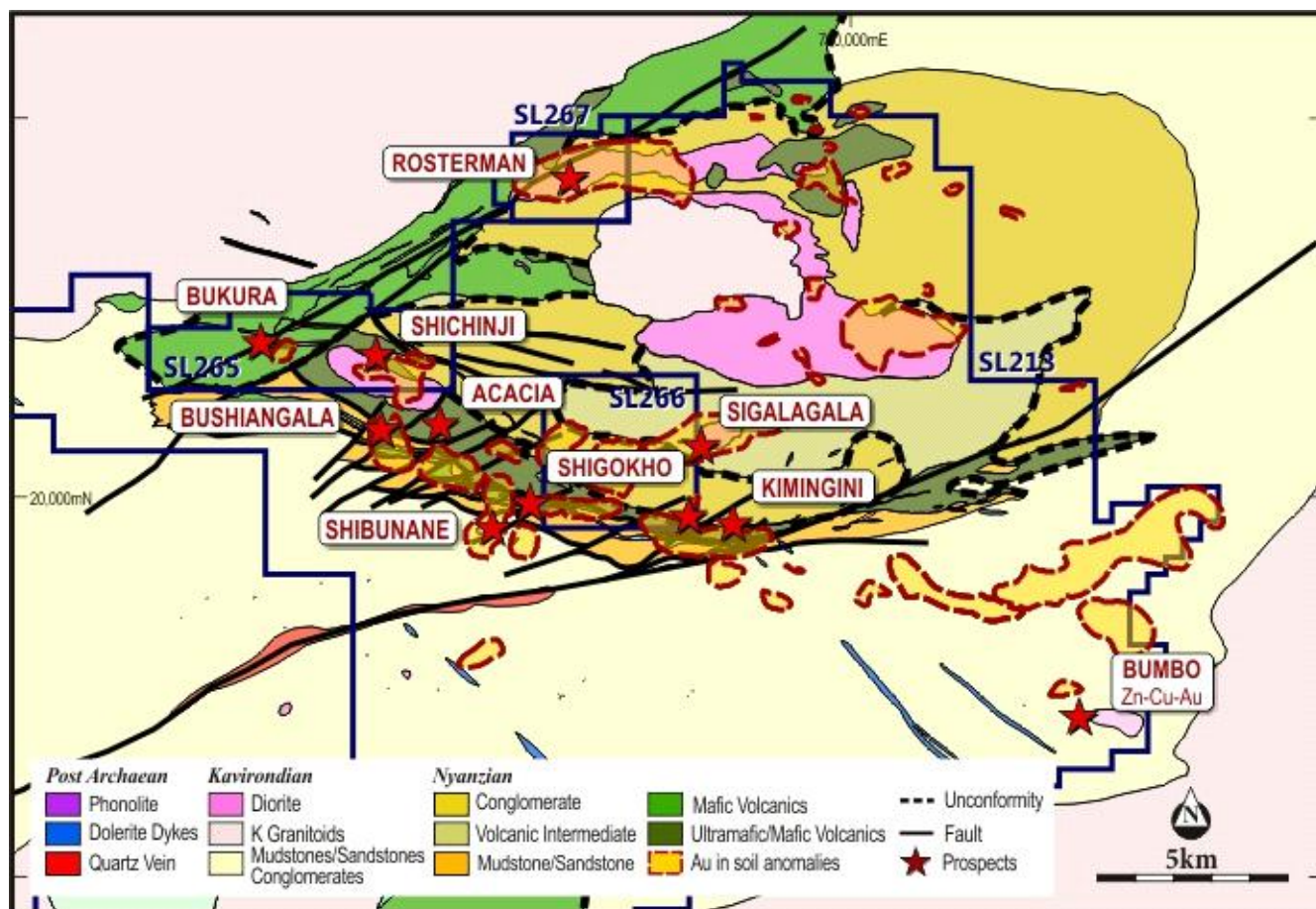


Fig 3.1: Potential Mineral deposits in Kakamega county

(NB: Gold is abbreviated as Au)

CHAPTER FOUR: PROJECT DESIGN AND OPERATIONS

The mining pit is approximately 4 by 4 meters wide and 2040 ft. deep. The four walls of the shaft are reinforced by concrete lining from the main shaft entrance to the bottom joining the hard rock. The shaft has 22 levels that were used to access the reefs. The proponent will in the first phase mine in level 1 up to the 10th level which is 840 feet deep. Stones of Wealth Limited has signed MoU with both the National and County Government of Kakamega authorizing the company to carry out mining activities.

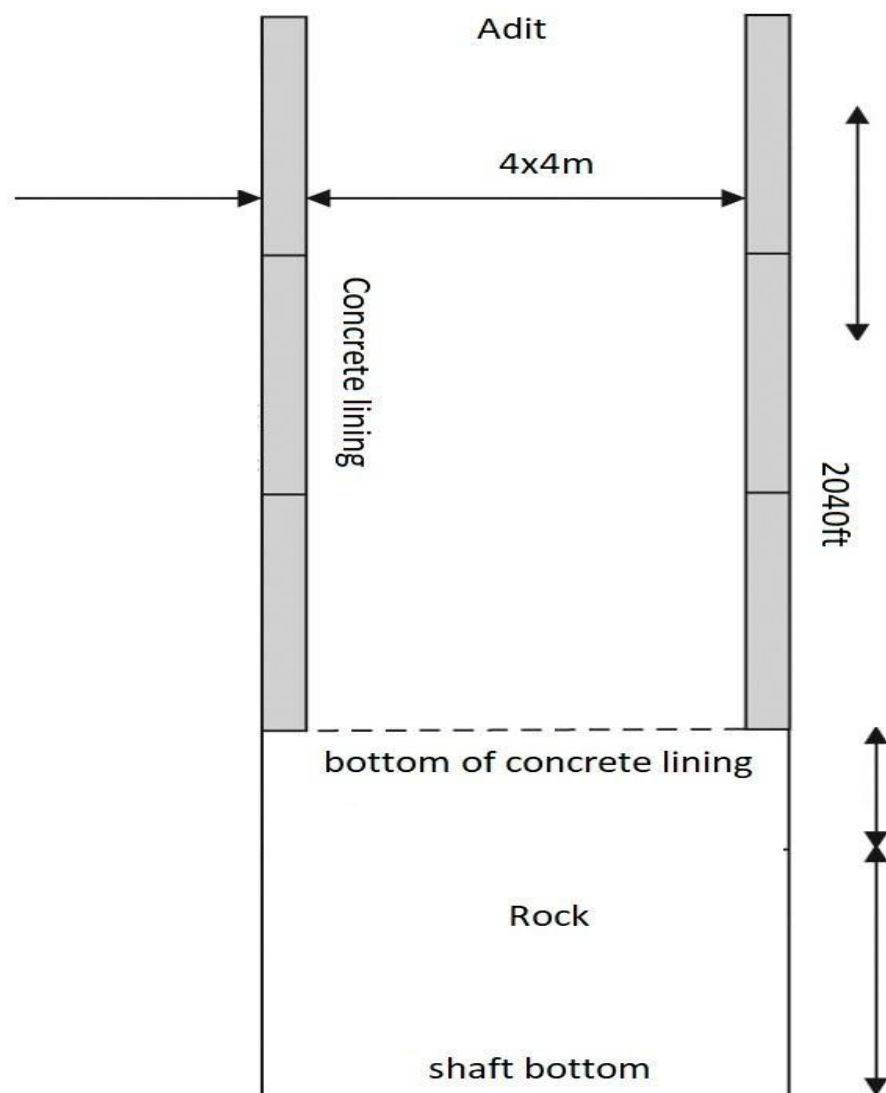
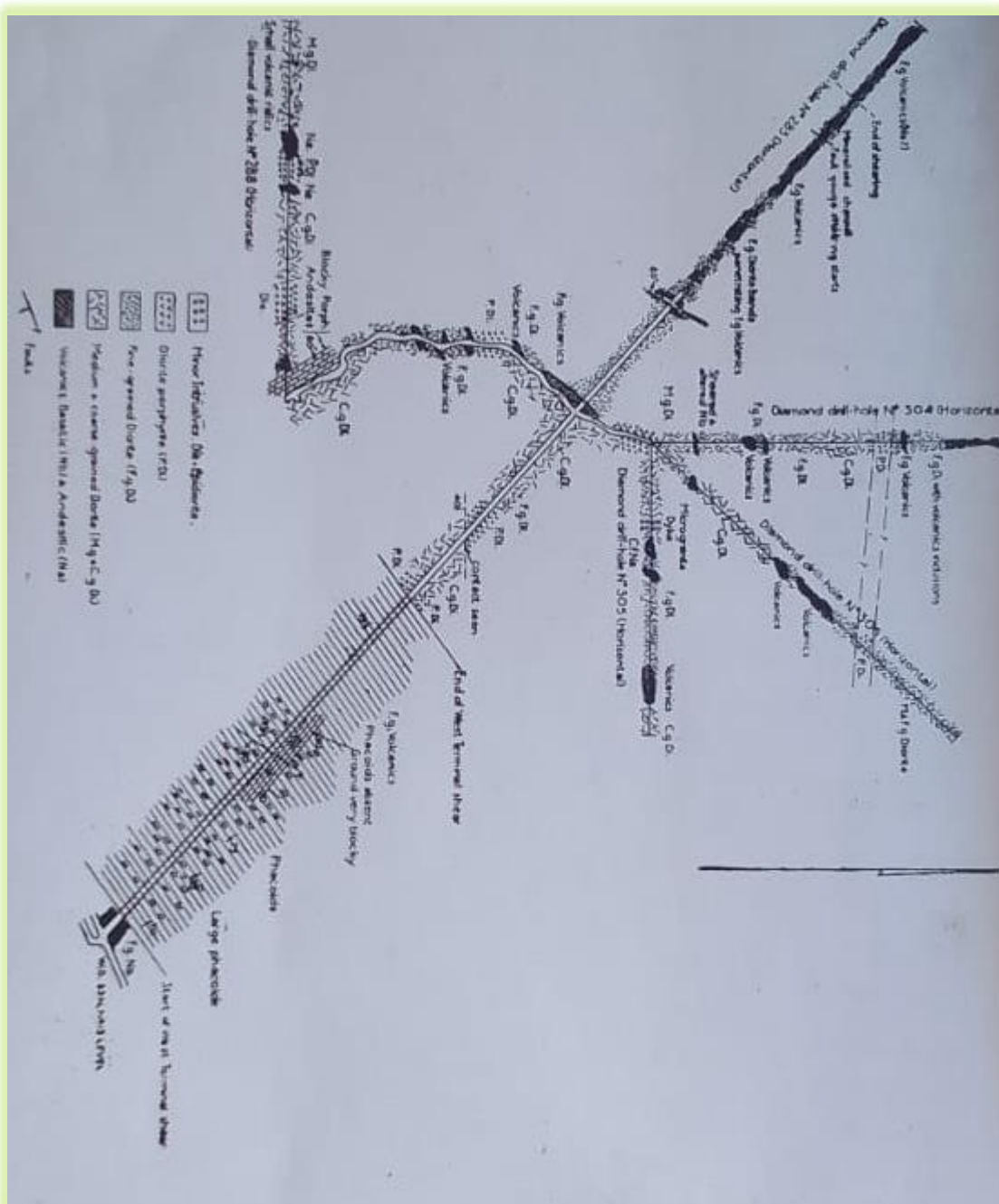


Fig 3.2 : The Main Shaft design



The Geology and the design of the Rosterman mine is complex and large with tunnels spreading mostly to the north. The proponent is advised to conduct environmental risk assessment before reentering this mine. Geologist and other mine specialist should access the mine beforehand.

The underground Geology of Rosterman mine involved gold-bearing quartz veins developed in the Mine from the surface downwards, the five reefs developed from a main three-compartment shaft to the 1st level at 1,940 ft. below the collar, and by winzes to the 24th level and slightly beyond it in 1951. Earlier geological survey indicated Intensive diamond drilling featured during exploratory work from the outset, and has been in no small measure responsible for the discovery of most of the reefs. The veins occurred in a series of marginal tension cracks which strike more or less parallel to the axis of the diorite cupola.

It's important to get details about the history of the mine, designs and geological situation before reopening the mine ,some hazards like gases are more common in some kinds of mines, for example methane and CO in coal mines, CO₂ and H₂S where submerged, rotting wood is present or where there are some thermal vents.

Gas detectors can be useful, but being careful about places where CO₂ can accumulate also helps in any unventilated places deeper than the place where you stand or behind partial cave-ins.

Rotten wooden supports are prone to collapse, can be hazardous even if no rocks follow them, for example when going down in a shaft.

If water on surface of an adit disappears for no reason, you may be standing on a cracked surface of a ceiling of another open space under you.

Natural mine ventilation can change with seasons. Times when outside temperature equals inside temperature are most risky as air ceases on circulating.

A helmet is necessary, it won't help during a large cave-in, but those are rare. It instead protects from all smaller but dangerous wounds like when running into ceiling or falling somewhere. Use a mining or climbing helmet, other types (for example biking helmets) may be less durable or optimized for absorbing different types of damage.

Electric hoist winch machine should be used to lift or lower miners and or loads and a standby generator to be installed at the site. Use of ropes are risky and unreliable, if used then the ropes should be anchored thrice.

Bottoms of shafts can be full of trash, including dead animals, rusty mining equipment and parts or even hazardous waste.

Explorers or miners should wear some reflexive rescue blanket can be carried inside helmet, heating pouch.

Have an independent backup light and another backup light source.

Consider use of a respirator, although it was s not strictly necessary - most respirator-worthy hazards require longer exposure to do something, unless the mine is something like an asbestos mine or there are lots of bat guano.

Maps of the mine should accessed beforehand, from archives of Ministry of Mining, Blue economy and Maritime Affairs or local residents whose families worked for Rosterman Company.

The complexity of this mine is large or complicated with more several levels miners should map themselves, by leaving marks when accessing it to avoid getting lost.

Miners should be careful around old shafts or where an adit enters a side of a shaft or chamber. You may be standing on a wooden, rotten floor only covered with rubble.

Miners or supervisors should have reliable automatic watches suitable for use in underground mining to enable time their working hours.

Taking photographs can distort your perspective and shift focus, be always fully aware of your surroundings when preparing the camera.

There are different types of cave-ins, some of them inactive and harmless like old karstic clay sliding into a corridor after mining operations ceased others possibly active layers of ceiling peeling away. Keep an eye for marks of changes including "knocking" sounds or small rubble or sand beginning to pour.

First aid kits should easily accessed underground and fairly powerful flashlight and a backup headlamp, along with spare batteries.

Even though the Rosterman mine was sealed with concrete slab at the entrance, members of the public and miners will always be attempted to enter abandoned mines, it is incumbent on land managers and land owners to know what hazards are being left exposed to the public, and to take whatever temporary measures are possible and necessary to minimize the hazard.

For this particular mine, it's clear from our survey that the mine is complex and large, miners should be guided through and understand the layout of underground workings and be trained on safety measures to curb disasters before entering this mine. It is wise, therefore, for qualified

specialists to map underground mine workings. They will help in rescue situations and also assist geologists, environmentalists, biologists, and cultural resource specialists in conducting their assessments. The proponent should therefore avail the original designs of the rosterman mine or engage a geologist to resurvey and get the actual design. Rescue situations should be conducted by qualified and an authorized mine rescue team.

Falling hazards

Rosterman mine has Shafts, Winzes and Raises, the shaft is vertical whereas winzes and raises are declined or inclined openings respectively underground inside of the mine. One of the primary dangers of vertical openings is when the collar has deteriorated through weathering and wear. Loose rock around a collar, which slopes gradually into a shaft, creates a slipping hazard that can draw its victim into the shaft. Inside a mine, raises and winzes often connect between different levels. Miners with inadequate lighting and experience could easily walk into a winze left open in the floor. Rotten boards or plywood may also conceal a winze or shaft, and should never be trusted. Miners should always check under any covering in a mined area that looks like it could conceal a vertical opening.

Falls could result in a serious injury or death by the following means: - Impact on the walls or at the bottom of the shaft during a fall - The shaft may be a trap for contaminated or oxygen-deficient air, so that the victim who survives the fall may be asphyxiated. - The shaft may be flooded at depth, which presents the possibility of drowning. - The victim may be unable to climb out, especially if injured. When unaccompanied in a remote situation, a minor injury could be fatal.

Glory Holes

Many underground mines will follow a mineralized area upward near or to the ground's surface. When underground workings reach or collapse to the surface in this manner, a glory hole is the result. Quite often, the caved area underground is much larger than the hole at the surface, causing the glory hole to collapse and enlarge through time. If you are standing at the edge of a glory hole, chances are good that the ground you are standing on is undercut and subject to collapse.

Stopes

Underground stopes are large, often irregular mine openings where an entire zone of mineralization has been excavated. The larger the stope, the less stable it is. Stopes may reach the ground's surface or may connect between levels in a mine. With inadequate lighting inside the

mine, a person may fall into a stope to a lower level. Loose rock may fall from overhead stopes at any time.

Collapse Zones

Shallow underground mines are subject to subsidence or collapse at any time. Be particularly aware of surface depressions around mine sites. Avoid walking in these areas, and see if they may correlate to mapped underground workings in the area

Cave-ins

Unlike caves, mines are artificial, temporary openings designed to last as long as it takes to extract the ore. When a mine is abandoned, there is no longer a maintenance program to address deteriorating rock conditions and weakened ground supports. Caves are formed over thousands of years by relatively stable processes, whereas mines are created by blasting, which destabilizes the rock left in place.

Safety in abandoned and Inactive Mines

The most common shale tend to collapse easily, but often in small pieces. Harder, more massive rock types such as granite, limestone, or sandstone collapse less frequently, but often more catastrophically in large blocks. Keep in mind that mines often follow fault zones, which are inherently unstable. Cave-ins may be the result of unstable rock. The first way to assess rock stability is to look at the floor of the mine. If the floor is covered with loose rock, the mine is most likely unstable. If the floor is clean, rock conditions are most likely but not necessarily stable. Stratified or severely jointed rock types are most prone to collapse under the forces of gravity, or from the force of overburden. An area that is taking weight may make creaking and popping noises, and sometimes rock under stress can be seen to shoot off in splinters. Timbers under stress are also prone to splintering and emitting creaking noises. Other signs of weight stress are crushed timbers and bent steel support beams.

Decayed Timbers

Through time, timbers that once supported the rock above will oxidize and rot. Although they may remain in-place and appear to provide support, they could be totally ineffective. Rosterman mine used wooden planks to support weak areas and as shutters to adits. Ineffective in some mines Rock bolts are used to stabilize weak areas in a mine.

Sometimes an abandoned mine may have entire areas where numerous bolts are found dangling several feet below the roof. In these areas, the rock that these bolts once supported has since collapsed.

Unsafe Structures and Ladders - due to rotting and desiccation, wooden head frames, platforms, ladders, become weak and unstable. They should not be trusted to support mine workers.

Standing water may conceal flooded lower levels of a mine, boards with rusty nails, debris, upon entering an abandoned mine, inspectors should probe any standing water in front of them with a bar or stick before proceeding. Mine water maybe toxic and unsuitable for drinking the proponent is advice to carry water tests and seek authorization from WRA before pumping out water from the mine.

It is not uncommon to find explosives in abandoned mines. Under no circumstances should explosives be handled or touched by anyone other than a certified blaster. When explosives are found, any distinguishing markings or characteristics should be noted, such as the form of the explosive and any printing on cases or on the explosives themselves. In particular, note any dates marked on explosives or their packaging, as age of an explosive is useful in determining its probable composition and stability. If there is any doubt whether the material in question is an explosive, assume that it is and inform authorities should be notified and a certified blaster should be contacted to arrange for safe disposal.

Miners will often store their supply of explosives at the end of an inactive drift, or in a small side room off of a main drift in the mine. Since explosives and blasting caps should be stored separately, there may also be a separate cap magazine. Explosives are also often stored in a separate cache away the rest of the mine. Underground mine development is advanced by drilling specific patterns of holes in the face of a drift, loading these holes with explosives, blasting, and mucking the resulting broken rock. In a surface pit the mine is advanced by drilling and blasting a series of vertical holes in a bench, accounting for the tiered, or stair-step appearance common to all open pit mines.

Some of the Explosives are

Stick Dynamite - Dynamite is produced in various sizes, but basically looks like a Paper-wrapped mixture of packed moist sawdust or powder. It may vary typically from 6 inches to 2 feet in length, from ½ to 1½ inches in diameter, and is usually packed in 50-pound cases. If the sticks appear wet or have clear golden beads of moisture on the surface, this is most likely nitroglycerine which has "bled" out of the dynamite. Bleeding occurs with age or when dynamite is heated.

Nitroglycerines the primary explosive component of dynamite and is highly unstable and dangerous when separated from the matrix of the dynamite stick.

Water Gels - Water gels are similar in shape and packaging to stick dynamite, but have a plastic wrapper enclosing a jelly-like or creamy mixture in any variety of colors.

ANFO-Prill - Prill typically comes in 50-pound bags and looks like fertilizer. It is often white, but may come in a variety of colors depending on the manufacturer. The acronym, "ANFO" stands for ammonium nitrate and fuel oil, its principle components. This combination makes for an extremely effective, yet economical blasting agent, and is more stable than dynamite. It is therefore the blasting agent of Abandoned and `choice in many of today's larger mines. Rather than being placed in blast holes by hand, it is typically blown and compacted into drill holes using compressed air.

Boosters in underground mining typically look like plastic tubing which fits over the end of a blasting cap. In open pit mines where large-diameter holes (often 3 inches to 6 inches) are drilled and blasted, boosters may appear more like a molded plug wrapped in paper or encased in plastic with one or more holes through it to affix it to a detonator. The combination of a detonator connected to a booster is referred to as a primer. Boosters are typically used in conjunction with prill, which requires more energy than dynamite to initiate detonation.

Detonator Cord - "Det cord" is usually a brightly-colored braided hard nylon cord with a white powder core of pentaery thritetra nitrate (PETN). PETN is highly explosive, and consequently, det cord burns at rates of up to 20,000 feet per second.³It is used to connect explosive charges together.

Detonators, or blasting caps, are metallic cylinders about the size of a small cigarette with attached wires like electric caps, plastic tubing, or cord (nonelectric caps). Fresh caps will be marked, usually with a small paper tag bearing a number that refers to the delay time between ignition of the fuse and actual detonation of the cap. Caps are timed so that drill holes can be blasted in a sequence that optimizes the efficiency of breaking and moving the rock. Blasting caps may be found in a storage cache, or, since they are easy to drop or misplace through carelessness, they can often be found laying about a mine site. The blasting agent in older caps was mercury fulminate. Today, the explosive charge in caps is typically PETN. Blasting caps are powerful enough to blow off a hand so they should be treated with the same respect as other explosives.

Fuse with a blasting cap on one end is used in initiating (detonating) a nonelectric blast. One of the more common fuses used is black wick, which looks like a black waxy hollow-core cord. It burns at a rate of 1 foot per minute, so the length of a fuse determines the delay between "spitting"

a round and the actual blast. If a miner needs 5 minutes after spitting a round to clear people out of the area of danger, he may, for instance, select an 8-foot fuse. After spitting the round at the face, he then clears the area (assisted by others if the mine has several branches that

Must be cleared) shouting, "Fire! After clearing, he then posts himself as a guard at a safe distance from the blast, keeping others from entering the blast area. After the blast goes off, no one is allowed back into the blast area for 30 minutes. This allows any defective charges extra time to detonate (although this is not common), and allows time for the ventilation system to clear the air of gases generated by the blast.

A spitter is used to initiate burning of a fuse. It looks like a small cardboard tube with a pull-cord, similar to a "party-popper." The spitter tube fits over the end of a fuse, then its cord is pulled to initiate burning of the fuse. Charge in a spitter is very small, but could burn the skin if the cord is pulled when the end of the spitter is directed toward someone.

Misfires - Misfires are explosive charges that for some reason did not detonate with the rest of a blast. Miners check for misfires after each blast, but may overlook them. One indication of a possible misfire is an irregularity in the typical profile of a drift. For instance, if a given mine typically has an arched roof, but there is a protrusion of rock in the arch of one round, this would be a likely place to find a misfire. This irregular protrusion may, however, just be a bootleg: a drill hole where explosives were not packed tightly, and when detonated, they simply blew out of the hole instead of breaking the surrounding rock. When entering a mine, an

Inspector watches the ribs (sides), back (roof, or ceiling), and faces (ends) of all drifts for irregularities and potential misfires. If wires, tubing, fuse cord, or dynamite can be seen protruding from a drill hole, it should be treated as a misfire. Misfires must be blasted in-place by a certified blaster. No attempt should be made to touch a misfire or to remove it from the hole.

Disorientation - In larger mines, it is easy to become disoriented. This can be quite unsettling and may lead to panic. In a panic situation, all of the other underground hazards become that much more dangerous. Some investigators will use "string line" measuring devices in mapping underground workings or simply to measure distance into the mine.

Remnant string line is very handy for finding one's way back out of a complex mine.

Wildlife - an abandoned mine may be home for many animals such as snakes, rodents, bats, or larger mammals. Animals that are normally reclusive and passive may become aggressive if backed into a corner of an abandoned mine by inquisitive intruders. Animal droppings can harbor

diseases such as Hantavirus or Histoplasmosis. Every effort should be made to avoid disturbing wildlife underground and to avoid stirring up dust in the area of animal droppings. A respirator should be used if dust is generated in an underground survey, particularly if animal droppings are present.

Encounters with wildlife may be equally detrimental to the wildlife. For instance, abandoned mines often provide critical habitat to bats, which have an essential role in the ecosystem. Disturbing an underground maternity roost (a place where female's bats give birth and nurture young) could cause adult bats to abandon their helpless young.

Awakening bats in a hibernaculum could cause them to expend too much energy, leaving inadequate nutrition to sustain life through the remaining winter months when food sources such as insects are unavailable.

Hazardous materials - Drums or other containers of unknown materials are often abandoned on a mine site or inside the mine itself. These containers should not be opened and should only be handled by a hazardous materials specialist. As with abandoned explosives, any distinguishing markings on containers should be noted and reported to the proper authorities.

Mine gases - The composition of clean, dry air at sea level is 78.07% nitrogen, 20.95% oxygen, 0.93% argon, 0.03% carbon dioxide, and 0.01% other gases. Air composition can be altered in underground mines for a number of reasons. The most common mine gases, reasons for their generation, their physical properties, and the effects and symptoms of human exposure are summarized below:

Oxygen (O₂) - Oxygen deficiency (Anoxia) may result from combustion, blasting, oxidization of organic material (e.g., mine timbers, coal), respiration in confined spaces, or replacement by other gases. Oxygen is highly flammable in high concentrations, which are unlikely to be found underground except where leaky oxygen cylinders are stored.

4.0 Description of the Project's Activities and Processes.

The proponent intends to mine the gold ore which will then be transported to Shirere where the gold extraction processes using the Vat leaching process. Therefore, there will be no gold processing alongside the mine.

The proponent will adopt the horizontal tunnel underground method. The proponent will hire the miners from the local community. The miners will not be using sophisticated equipment other than shovels, pickaxes, mattocks among other physical tools. However he will install diesel powered air compressors to pump oxygen inside the mines. He will also use generators to pump out excess water from the mines. The ore will then be transported by road to Shirere where the process of extracting gold from the ore will commence. The proponent is planning to establish the gold processing plant in Shirere. The ToRs have been approved. The EIAS is currently ongoing. .

4.1 The Project activities

4.1.1 Mining of the Gold Ore

The huge rocks will be broken down with a mallet to sizeable pieces. The mined gold ore will then be transported by road to the gold processing plant in Shirere 500 meters from the site. Men will go about the tunnels and will dig out dirt and rock from the ground below in search of a type of rock called quartz. This is the ore that contains the gold. Working in the tunnels is hazardous because of the following reasons:

- Risk of the tunnel roof or walls collapsing.
- Suffocation due to low oxygen levels (Asphyxia) as the miners go deeper into the mine.
- Filling up of the tunnels with water. However, the proponent intends to use generators to pump water from the mine. To prevent collapse, Rosterman Mines Company reinforced weak areas of the roof of the tunnels with wooden beams. The proponent is advised to consider using steel frames or steel bolting to substitute wooden beams.

4.1.2 The process of refining gold

The quartz (gold ore) will be transported by road to Shirere where the extraction process will commence. Therefore, there will be no gold processing on the project site.

4.1.2.1 Transporting of gold bearing rock ore (quartz).

The quartz (gold ore) will be transported by road to Shirere where the extraction process will commence. Therefore, there will be no gold processing on the project site.



PLATE 4.1: THE MAIN SHAFT ENTRENCE (Source: *Harry Mmbaya*)



PLATE 4.2: THE PROJECT SITE SHOWING THE MINE



PLATE 4.3: THE VEGETATION NEAR THE MINE.



Mr. Patrick Ligami (AMC Committee Chairman Kakamega County) addressing the community.



9

PLATE 4.4: MEMBERS OF THE PUBLIC DURING PUBLIC PARTICIPATION PROCESS



PLATE 4.5: MUNICIPAL HOUSING COOPERATIVE SOCIETY PLOTS NEIGHBORS THE PROJECT, SOME OF THE MEMBERS ARE WILLING TO SALE THEIR PLOTS TO THE MINING COMPANY SOWL

4.2 Rehabilitation of the de relict land

The proponent is advised to partner with the CGK to rehabilitate the land at the decommissioning phase. There are many players who are benefiting from the mining activities. The CGK should bring on board all stakeholders including the proponent to rehabilitate the land and consider protecting the mine as a historical site. The proponent is therefore advised to backfill the mine, plant grass and trees on the site. Although the CGK plans to rehabilitate the land for public utility, the proponent is still advised to ensure that grass and trees are planted on the site. This would minimize soil erosion.

4.3 Risk of interferences of Existing Services

The proposed project will not cause any interference of existing ducts or services during the operational phase. The proponent is cautioned against undertaking any works or activities near river Isiukhu and its tributaries as this may affect the quality of the water and the yield of water bodies.

4.4 Energy Supply

The proponent will rely on electricity supply from KPLC .Most equipment and machinery will however be diesel powered. These include generators and compressors. There will be minimal electrical works that involve installation of electrical gadgets and appliances. However, the proponent is advised to install solar powered lighting system to light the facility at night. Solar energy would reduce the amount of money used for energy provision

4.5 Plumbing works.

There are minimal plumbing activities. This is because the project site intends to rely on water supply drawn from the pit using a hose pipe that is 400 meters long for the gold processing activities. However for domestic use the workers will depend on water from a nearby bore hole in Musaa village and also rain harvested and stored in PVC tanks from the nearby by institution currently the area has no piped water supply .

4.5 Staff Amenities:

4.5.1 First Aid

The proponent and project manager are advised to ensure that there is a well-equipped first aid kit and well trained staff on first aid. If resources allow it would a good idea to have standby first aid first Aid paramedics at the site and/ or within easy reach whenever an emergency arises, In addition the proponent should train his staff on use of first aid kit.

4.5.2 Site workers' Toilets

The proponent intends to employ the local community to provide casual labor. The proponent is advised to construct at least 10 VIP latrines for use by the casual staff. He is also advised to put up bathroom for workers and ensure that the VIP latrines are emptied by registered exhausters when the pit latrine gets filled up.

4.6 Hazardous Materials

Hazardous materials shall include:

- Empty container of nitric acid
- oil grease and fuel.
- The store rooms for these materials shall have iron sheet walling and roof and a water proof concrete floor to contain spills.

4.7 Project Inputs/Raw Materials

Main raw materials during the operational phase are as indicated here below

- Tailings which are low grade gold ore
- Fresh water: This is used to wash the resultant product with fresh water in order to dissolve the salts in order to make the gold more pure.

4.8 Machines to be used

The proponent and project manager have a few machinery and equipment to be used for different purposes during the construction phase. The machines and equipment and their respective uses are summarized in the table below.

Table 4.1: Machines and Equipment Being Used During Operational Phase

Type and nature of the machinery	Purposes and the uses of the machinery/equipment
Cranes	
Chisels , shovels and metallic containers	To mine by cutting and break gold ore in the mining pit
Diesel powered Generator	Used to pump out excess water in the pit to allow miners to continue mining. The water is also used to dissolve salts in the last step of gold extraction process
Compressor	Usually pumps air into the deep end of the mine to supply miners with adequate oxygen
Wooden Planks on the roof and walls of underground mines	Aimed at reducing cases of collapsing mine. The mining is done using a horizontal angle.
Vehicles	For transportation of gold ore and other proceeds from the processing facility to the market. Proponent advised to procure security services from police officers when they are transporting huge amounts of gold as it is highly valued and can be an attraction to criminals.
Excavators	For earth moving to dig soil out of the way so that it is easier to extract the ore
Hoist	For lifting and lowering of materials and load i.e. ore

4.9 Mitigation Measures

4.9.1 Accident Prevention and Safety

The project manager should ensure that safety of employees is given priority. No employees should be allowed to operate without proper gear and PPE. This includes: helmet with a headlight, footwear, ear muffling, gloves and overcoat. The mine manager should also ensure that no employee is allowed to operate machinery while drunk or sleepy. Any instances of the employees operating while drunk may lead to serious accidents.

4.9.2 Dust. The workers should put on Personal Protection Equipment (PPE) e.g. cup masks, overalls, helmets and boots. They should also sprinkle some water on the ground wherever possible to minimize the amount of dust.

4.9.3 Noise

Although the facility is expected to have minimal noise pollution the proponent is advised to install silencers on the crushers, the proponent is supposed to ensure that the workers especially those driving machinery are provided with hand gloves to protect their hands from minor injuries and noise mufflers to mitigate injuries to ears by minimizing noise pollution. The proponent is discouraged to use explosives to break the ore underneath.

4.9.4 Disposal of sewerage wastes

The proponent has already constructed eight pit latrines for use by the workers. He should add more VIP latrines to reach about 12. The proponent should make arrangements to contract registered waste exhausters to empty the pit latrines. This is because the site is not covered by any sewerage system.

4.11 Project Approval

The proponent is advised to secure the necessary licenses. These include a license from the CGK and the department of mines under the National government. He is also to get appropriate licenses from WRA to draw underground water.

CHAPTER FIVE: INTERNATIONAL AND NATIONAL POLICIES AND LAWS

5.0 INTERNATIONAL POLICIES ON ASGM

5.1 General Overview

This chapter will review the national regulatory framework and international policies and guidelines in regard to ASGM. This chapter provides a synopsis of the same

5.2 Relevant National Legislation & Policies

5.2.1 Constitution of Kenya 2010

Kenya promulgated a new constitutional on the 27th August 2010 Chapter Five of this Constitution is entirely dedicated to Environmental Conservation Protection and Management

as well as land use planning. Part I addresses issues dealing with land and part II deals with Environment and Natural Resources.

5.2.2 Legal and Regulatory Instruments in Kenya

Applications of national statutes and regulations on environmental conservation suggest that the proponent has a legal duty and responsibility ensuring wastes discharged is of acceptable quality to the receiving environment without compromising public health and safety. This position enhances the importance of an EIA for the project to provide a benchmark for sustainable operation when it is fully operational. The key national laws that govern the management of environmental resources in the country have been briefly discussed in the following paragraphs. Note that wherever any of the laws contradict each other, the Environmental Management and Coordination Act 1999 prevails.

5.2.3 The Environment Management and Coordination Act, 1999

Part II of the Environment Management and Coordination Act, 1999 states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to ensure this is achieved, part VI of the same Act directs that the owner of premises or the operator of a project shall take all reasonable measures to mitigate any undesirable effects not contemplated in the environmental impact assessment study report submitted under section 58(2) and shall prepare and submit an environmental audit report on those measures to the Authority annually or as the Authority may, in writing, require.

Part VIII Section 73 require that operators of projects which discharges effluent or other pollutants to submit to NEMA accurate information about the quantity and quality of the effluent. Section 74 demands that all effluent generated from point sources are discharged only into the existing sewerage system upon issuance of prescribed permit from the local authorities.

5.2.4 Mining Act 2016 No 12 of 2016

The Kenya mining Act 2016 was enacted to replace the mining act cap 306 which was last (revised in 2012). In part III under general principles it states that a person shall not search for, prospect or mine mineral, mineral deposit or tailings in Kenya unless that person has been granted a permit or license in accordance with this Act.

5.2.4.1 Mining license

(1) A person or company may apply for a mining license in the prescribed form and accompanied by the prescribed fee. (2) An application for a mining license under

Subsection (1) shall be in the prescribed form and addressed to the Cabinet Secretary and shall provide the following information -

- i. the mineral or minerals in respect of which the license is sought;
- ii. the area in respect of which the license is sought;
- iii. A proposed programme of mining operations that outlines the mine forecasts and operation plans including the options for minerals beneficiation in the prescribed form;
- iv. A feasibility study;
- v. A statement regarding the mineral or minerals in the area of land over which the license is sought, including details of all known minerals as well as probable mineral reserves;
- vi. A statement of the financial and technical resources available to the applicant to carry out the proposed mining operations and to comply with the conditions of the license;
- vii. a plan giving particulars of the applicant's proposals with respect to the employment and training of Kenyan citizens;
- viii. A plan giving particulars of the applicant's proposals with respect to the procurement of local goods and services;
- ix. Proof of submission and approval of an Environmental and social impact assessment report and environmental management plan for the term of the mining license to the National Environment Management Authority; and
- x. A plan giving particulars of the applicant's proposals with respect to social responsible investments for the local community

102. The Cabinet Secretary shall not grant a mining license in respect of land which is the subject of a prospecting license, reconnaissance license, a retention license or a mining license unless

- i. the applicant is the holder of that license; or
- ii. the applicant, with the consent of the license holder, is applying for a license that would permit
- iii. The applicant to work a mine dump or mine waste and tailings on the land but not to undertake any other mining operation on the land.

The Cabinet Secretary, on recommendation of the Mineral Rights Board, may grant a mining license if satisfied. Where the Cabinet Secretary rejects the application, he has to give the applicant a notice of rejection and grounds for rejecting the application.

5.2.4.2 Important issues to a mining project

This Act further outlines the following important issues that are important to the project. The outlined provisions are as follows:

- Key requirements before a mining license is granted
- Financial provisions
- Occupational Health and safety of workers and mines
- Monitoring , compliance and enforcement

- Restoration of derelict land after the under mining act 2016.

5.2.4.3 Key requirements before a mining license is issued.

The mining act 2016 further states that a mining license shall not be granted to a person under this Act unless the person has obtained the following

- An environmental impact assessment license,
- Social heritage assessment and
- Site mitigation and rehabilitation or mine closure plans
- Environmental management plan has been approved.
- A mineral right or other license or permit granted under this act shall not exempt a person from complying with any law concerning the protection of the environment.

5.2.4.4 Financial Provisions under the Mining Act 2016

In part XII of the mining act, it outlines the required financial provisions

Under article 182. (1) it states that an applicant or a holder of a mineral right, a mineral dealer's license; or a diamond dealer's license, shall pay such fees or charges and at such time as may be prescribed, by notice in the Gazette. The prescribed fees may include -

- application filing fees;
- report filing fees;
- fees for access to geological data; and
- fees for access to public registers.

It also states that the prescribed charges may include annual charges payable upon grant of the relevant mineral right, mineral dealer's permit or diamond dealer's license. Further, the prescribed charges shall be payable annually for the duration of the mineral right, mineral dealer's permit or diamond dealer's license. This article also states that all fees and charges payable under this Act shall be demanded and recovered in the same manner as a civil debt.

Under article 183. (1) the mining act states that the holder of a mineral right shall pay royalty to the State in respect of the various mineral classes won by virtue of the mineral right.

(2) The Cabinet Secretary shall prescribe the rates payable under subsection (1). The Cabinet Secretary may require the holder of a mineral right to make returns relating to any royalties paid in such manner and within a period as may be prescribed. Any mineral samples including core samples, removed for the purposes of testing, shall not be subject to royalty unless they exceed maximum value stipulated in regulations

The royalties' payable under sub-section (1) shall be distributed as follows—

- seventy percent to the National Government;

- twenty percent to the County Government; and
- Ten percent to the community where the mining operations occur.

5.2.4.5 Health, Safety and Environment

In part XI of the mining act, the proponent is reminded that a mineral right or other license or permit granted under this act shall not exempt a person from complying with any law concerning the protection of the environment. The Mining Act 2016 further states that:

- The Cabinet Secretary shall make Regulations for safety and health of persons employed in mines, and the carrying on of prospecting or mining operations in safe, proper, sanitary and effectual manner.
- A provision of this Act and a right or entitlement conferred under a mineral right shall not exempt a person from compliance with the provisions of the Occupational Health and Safety Act, 2007 concerning the safety of workers and mine
- The holder of a permit or license under this Act shall use the land in accordance with the terms of the permit or license and shall ensure the sustainable use of land through restoration of abandoned mines and quarries;
- that the seepage of toxic waste into streams, rivers, lakes and wetlands is avoided
- Disposal any toxic waste is done in the approved areas only
- Blasting and all works that cause massive vibration is properly carried out and muffled to keep such vibrations and blasts to reasonable and permissible levels in conformity with the Environmental Management and Coordination Act
- That upon completion of prospecting or mining, the land in question shall be restored to its original status or to an acceptable and reasonable condition as close as possible to its original state.

Section 180. (1) The Cabinet Secretary shall not grant a prospecting license, a retention license or a mining license to an applicant, unless the applicant has submitted a site mitigation and rehabilitation or mine-closure plans for approval.

5.2.4.6 Monitoring, Compliance and Enforcement

In part XIV of the mining act 2016, it states that the Cabinet Secretary may, by notice in the appointment of gazette, designate duly qualified public officers, to be inspectors of mines for such jurisdictional units as may be specified in the notice. A mines inspector shall monitor compliance and take enforcement action and perform such other functions as may be required under this Act or specified in the notice of appointment. The Cabinet Secretary shall issue a mines inspector with a document of identification.

197. (1) The Cabinet Secretary or a mines inspector authorized by the Cabinet Secretary may without prejudice to all other written laws, at all reasonable times

- Enter, inspect and examine land on which prospecting or mining operations are being conducted or land which is the subject of a mineral right;
- Enter into an area, structure, vehicle, vessel, aircraft or building that, in the opinion of the Cabinet Secretary or the mining inspector has been or is being used for or in connection with prospecting or mining operations;
- Carry out periodic inspections of premises within the jurisdictional limits which have been or are being used for or in connection with prospecting or mining operations;
- Enter, inspect and examine any premises where mineral dealings are being conducted;
- Require the production of, inspect, examine, and take copies of licenses, permits, registers, records of any kind and other documents relating to this Act and the carrying out of operations authorized by a mineral right, or other license or permit granted under this Act;
- Take samples of any article and substances to which this Act relates and submit such samples for testing and analysis in such a manner as may be prescribed;
- seize for a maximum period of seven days any article, vessel, motor vehicle, plant, equipment, substance or any other thing which the inspector reasonably believes has been used in the commission of an offence under this Act or regulations made there under;
- upon giving the holder three months' written notice, install any equipment on any land, premises, vessel or motor vehicle for the purposes of monitoring compliance with the provisions of this Act, or regulations made there under; enter into any premises to ascertain best mining and mineral processing practices including safety and health concerns;
- Enter into any premises to examine and enquire into the condition and ventilation of any mine or any building used in or connected with prospecting, mining or mineral processing operations and all matters relating to safety, welfare and the health of persons employed in any such mine or building, including the inspection of the accident and incidents register;
- Require such changes, as may be necessary in regard to the safety of the operation and protection of employees, to be implemented within a specified time, failing which the license holder will be considered in breach;
- Order the temporary cessation of operations where he considers that the mining or processing activities are so hazardous as to constitute a serious and imminent danger to life;
- Enter into any premises used in or connected with prospecting, mining or mineral processing operations to examine the circumstances surrounding any accidents or incidents affecting the health of employees including the subsequent actions taken by license holder; and

- With an arrest warrant and the assistance of a police officer, arrest any person whom he reasonably believes has committed an offence under this Act.
- In exercising the powers under subsection the inspector of mines shall carry the identification issued under this Act.

5.2.4.7 Restoration of Derelict Land after mining as provided Under the Mining Act 2016

The holder of a permit or license under this Act shall use the land in accordance with the terms of the permit or license and shall ensure the following:

- Sustainable use of land through restoration of abandoned mines and quarries;
- The seepage of toxic waste into streams, rivers, lakes and wetlands is avoided
- Disposal any toxic waste is done in the approved areas only
- Blasting and all works that cause massive vibration is properly carried out and muffled to keep such vibrations and blasts to reasonable and permissible levels in conformity with the Environmental Management and Coordination Act;
- Upon completion of prospecting or mining, the land in question shall be restored to its original status or to an acceptable and reasonable condition as close as possible to its original state.

5.2.4.8 Insurance Cover for Health and Safety of Employees

- In part XV on miscellaneous provisions. The holder of a mineral right or an agent appointed by a holder who is undertaking prospecting or mining operations shall, with respect to those operations, maintain insurance cover in respect of the attached risks especially for health and safety of employees.
- (2) The holder or person mentioned in subsection (1) shall, where required by the Cabinet Secretary, furnish the Cabinet Secretary with certified copies of certificates of Insurance that set out the insurance policy and any other documents that are required to demonstrate that the policy is valid, effective, and appropriate and covers the prescribed risks.

5.3 The Water Act 2016

The Water Act 2016 replaced the Water Act 2002 and was affected so as to conform to the devolution structure of governance. The Act takes cognizance of the fact that provision of water services is a shared function between the National Government and the County Government.

Under these Act several institutions have been established. These include the Water resources Authority which replaced the Water Resources Management Authority which had been established under the previous act water Act 2002. The objective of WRA is to protect, conserve,

control and regulate use of water resources through the establishment of a national water resource strategy. In addition, the WRA is responsible for:

- i. formulation and enforcement of standards, procedures and regulation for the management and use of water resources;
- ii. policy development;
- iii. planning and issuing of water abstraction permits;
- iv. Setting and collecting permits and water use fees

5.3.1 Water Resource User Associations (WRUAs)

The act provides for establishment of WRUAs, which are community based associations for collective management of water resources and resolution of conflicts concerning the use of water resources. The BWRC may contract WRUAs as agents to perform certain duties in water resource management.

5.3.2 Water Works Development Agencies (WWDAs)

The WWDAs are responsible for the following:

- i. development, maintenance and management of national public works
- ii. Operation of the national public waterworks and provision of water services as a water service provider, until the responsibility for the operation and management of the waterworks is handed over to the county government, joint committee or CCA;
- iii. Provision of technical services and capacity building to county governments and water service providers within its region.

5.3.3 Water Services Providers (WSPs)

WSPs are now the responsibility of County Governments who have the mandate to provide water services. WSPs are responsible for provision of water services within the area specified in their licenses and development of county assets. Currently, WSBs sign service level agreements with WSPs and the regulator issues licenses to WSB. Under the new Water Act 2016, WSPs must apply again for new licenses to WASREB.

5.3.4 Water Services Regulatory Board (WASREB)

The constitutionally guaranteed right to water and the need to protect consumers provides a strong basis for the national regulation and monitoring of water and sewerage services. This is critical to protect the interests and rights of consumers from exploitation and to set minimum national standards. As such, the functions of WASREB have been maintained in the 2016 act. WASREB holds the mandate to approve tariffs, monitor and enforce water services standards and issue licenses to Water Service Providers

5.3.5 Water Services Boards

As a result of sector reforms, responsibility for water and sanitation service provision has been devolved to eight regional Water Services Boards (WSBs): Athi (which serves the capital Nairobi), Coast, Tana, Lake Victoria North, Lake Victoria South, Northern, Rift Valley Water Services Board, and since 2008, Tanathi

5.4. The Environmental Management and Co-ordination (Water Quality) Regulations, 2006.

These Regulations were published in the Kenya Gazette Supplement No. 68, Legislative Supplement No. 36, and Legal Notice No. 120 of 29th September, 2006. The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources).

It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment

Regulation No. 14 (1) requires every licensed person generating and discharging effluent into the environment to carry out daily effluent discharge quality and quantity monitoring and to submit quarterly records of such monitoring to the Authority or its designated representatives. The proponent will have to ensure that appropriate measures to prevent pollution of underground and surface water are implemented throughout the project cycle.

These Regulations were published in the Kenya Gazette Supplement No. 68, Legislative Supplement No. 36, and Legal Notice No. 120 of 29th September, 2006. The Regulations

provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources).

It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment

Regulation No. 14 (1) requires every licensed person generating and discharging effluent into the environment to carry out daily effluent discharge quality and quantity monitoring and to submit quarterly records of such monitoring to the Authority or its designated representatives. The proponent will have to ensure that appropriate measures to prevent pollution of underground and surface water are implemented throughout the project cycle.

5.5 The County Government Act 2012

The County Government Act 2012 replaced the Local government Act (cap 245). Under the constitution promulgated in 2010, County Governments have taken over what used to be previously the functions of local authorities. They have been empowered to make by-laws in respect of all such matters as are necessary or desirable for the maintenance of health, safety and wellbeing of the inhabitants of its area. These includes the following ;control or prohibit all businesses, factories and other activities, including the proposed project which, by reason of smoke, fumes, gases, dust, noise or other cause may be or become a source of danger, discomfort or annoyance to the neighborhood, and to prescribe conditions subject to which such business, factories, yards etc shall be carried. The mandate of construction and maintenance of water supply, sewage and solid waste management systems is also conferred upon the County Governments through this act

5.6 The Penal Code (Cap. 63)

Section 191 of the Penal Code states that, any person or institution that voluntarily corrupts or foils water for public springs or a reservoir, rendering it less fit for its ordinary use is guilty of an offence. Sections 192 of the same act says a person who make the atmosphere of any place noxious to health of persons/institutions in dwellings or business premises in the neighborhood or those passing along public way, commits an offence.

5.7 The Occupational Safety and Health Act, 2007

The proponent and project manager are advised to strictly adhere to the provisions of OSHA 2007 especially during the construction phase. The key areas addressed by the Act include but not limited to: They should be strictly observed during construction phase.

- i. General Duties including duties of occupiers, self-employed persons and employees
- ii. Enforcement of the act including powers of an occupational safety and health officer
- iii. Machinery safety including safe handling of transmission machinery, hand held and portable power tools, self-acting machines, hoists and lifts, chains, ropes & lifting tackle, cranes and other lifting machines, steam boilers, air receivers, refrigeration plants and compressed air receiver
- iv. Offences, penalties and legal proceedings under section 6 of this act, every occupier is obliged to ensure safety, health and welfare of all persons working in his workplace. The occupier shall achieve this objective by preparing and as often as may be appropriate, revising a written statement of his general policy with respect to the safety and health at work of his employees and the organization and arrangements for the time being in force for carrying out that policy (Section 7).
- v. Health General Provisions including cleanliness, lighting and sanitary conveniences

5.8 The Physical and Land Use Planning Act 2019

Replaced the Physical Planning Act of 1996 Cap 286 /. This act provides inter alia for the County physical and land use plan for every county. It provides that all development must be executed and be in conformity to the County physical and land use plans

Section 37 outlines the objects a county physical and land use development plan as follows:-

to provide an overall physical and land use development framework for the county;

(b) to guide rural development and settlement;

to provide a basis for infrastructure and services delivery;

to guide the use and management of natural resources;

to enhance environmental protection and conservation;

to identify the proper zones for industrial, commercial, residential and social developments;

5.8.2 Legal Notice 61 of 2009 on Noise pollution and Excessive vibrations

According to the legal notice no 61 on noise pollution and excessive vibrations for any building in an area for residential and one or more of the following purposes: Commerce or small scale production, entertainment or any residential apartment in an area that is used for purposes of industry, commerce or small scale production or any building used for the purposes of industry, commerce or small scale production should not exceed 114 Db. The proponent is advised to apply for a license from the CGK noise control is now a function of the respective county governments

5.9 Climate Change Act No. 11 of 2016

This Act calls for the adoption of eco-friendly technologies in all development activities. In this regard, the proponent is advised to ensure that he adopts energy friendly sources of energy like solar in addition he should focus on energy saving equipment

5.9.1 National Climate Change Council

There is established an unincorporated body to be known as the National Climate Change Council. The Council shall be chaired by the President. The Deputy President who shall be the vice- chairperson to the Council.

The Cabinet Secretary for the time being responsible for environment and climate change affairs shall be the secretary to the Council. The Directorate established under this Act shall serve as the Secretariat of the Council. . The Council shall provide an overarching Function of the national climate change coordination mechanism. The Council shall ensure the following:

- i. The mainstreaming of the climate change function by the national and county governments;
- ii. approve and oversee implementation of the National Climate Change Action Plan;
- iii. advise the national and county governments on legislative, policy and other measures necessary for climate change response and attaining low carbon climate change resilient development;
- iv. approve a national gender and intergenerational responsive public education awareness strategy and implementation programme;
- v. provide policy direction on research and training on climate change including on the collation and dissemination of information relating to climate change to the national and county governments, the public and other stakeholders;

- vi. provide guidance on review, amendment and harmonization of sectoral laws and policies in order to achieve the objectives of this Act;
- vii. Administer the Climate Change Fund established under this Act; and set the targets for the regulation of greenhouse gas emissions.

5.9.2 Climate Change obligations for private entities

The Council may, in consultation with the Cabinet Secretary and relevant State Departments, impose climate change obligations on private entities, including entities constituted under the Public Benefits Organizations

The Council shall make regulations governing the nature and procedure for reporting on performance by private entities, including the authority to monitor and evaluate compliance.

Notwithstanding other provisions in this Act, the Council may—by notice in the Gazette, require a private entity that is subject to climate change obligations to, at any time, prepare reports on the status of its performance of the climate change duties and prescribe the period for reporting; and require any private entity that fails to comply with its climate change obligations to prepare a report within a specified time, on the actions it has taken , is taking or intends to take to secure future performance with those duties.

The Cabinet Secretary shall make regulations to Reporting on guide the reporting and verification of climate change climate change actions.

5.9.3 Right to seek legal redress where there is violation of climate change mitigation or adaptation efforts

Section 23 (1) of the Climate change act 2016 provides that “A person may, pursuant to Article 70 of the Enforcement of Constitution, apply to the Environment and Land Court rights relating to climate change alleging that a person has acted in a manner that has or is likely to adversely affect efforts towards mitigation and adaptation to the effects of climate change.

Whereas Section 23 (2) states that where an application is made under sub-section (1), the Court may make an order or give directions that it considers appropriate to- prevent, stop or discontinue an act or omission that is harmful to the environment by issuing any of the following orders:

- i. Compel a public officer to take measures to prevent or discontinue an act or omission that is harmful to the environment; or provide compensation to a victim of a violation relating to climate change duties.
- ii. For the purposes of this section, an applicant does not have to demonstrate that a person has incurred loss or suffered injury.

CHAPTER SIX: STUDY METHODOLOGY

6.0 METHODOLOGY

6.1 The level, depth and scope of the EIA.

The level, depth and scope covered the following as provided for under the third schedule of the legal notice no. 101, the environmental (impact assessment and audit) regulations, 2003 in

- (i) Sources of Impact
- (ii) Project Inputs
- (iii) Project Activities
- (iv) Areas of Impact on the Natural and Human Environments
- (v) Environmental Impacts (General Impacts on the Natural and human Environment)
- (vi) Environmental Guidelines and Standards (National Legislation, International guidelines. International Conventions and Treaties)
- (vii) Mitigation Measures
- (viii) Environmental Management Plan
- (ix) Environmental Monitoring and Auditing.

6.2 Primary Methods.

Primary methods were used to undertake this EIA. The main primary methods used were

- (i) Field Visits
- (i) Photography
- (ii) Observation

6.2.1 Field Visits

Field visits were meant for physical inspections of the project site in order to gather information on the state of environment. The visit sought to carry out the environmental status of the report. In particular the visits took note of the following:

- Baseline study of the natural and biophysical environment where presence of Endangered, threatened, or protected fauna and flora
- Current state of the mine as it is as of now
- Evaluation of the proposed gold purification processes
- Likely impacts of the project on the natural and human environment.
- Nature of wastes likely to be generated
- Recommend Methods used to dispose liquid and solid wastes
- Proposed disaster response and preparedness strategies put in place by proponent
- Recommend the distance to the nearest locality of residential houses(UNIDO guidelines suggest that the nearest residential houses should be at least 100 meters away)
- Recommend appropriate record keeping of incidents and accidents

6.2.2 Photography

Several photos of the project site were taken for inclusion in this report. The photos of the mine, and other equipment were taken. The photos were taken by digital camera to improve clarity and photo resolution.

6.2.3 Observation

The consulting team made the following observation:

- The project design
- Equipment to be used
- Machinery to be used
- Perimeter wall around the project site
- The site for campsite

6.2.4 Water samples analysis

water samples from the abandoned mine were collected for analysis to detect any form of pollution before being discharged into surface water in addition water samples from river Isiukhu were also collected. Water samples were analyzed by WRA Kakamega office. The samples did not reveal any pollution levels at that stage, the results of the analysis are indicated in appendix xi. The results of the analysis will be compared against the findings that will be undertaken during monitoring and in the environmental audits; any variation in the samples analysis may explain a correlation with the activities of the project. Therefore the analysis will be of great importance in future environmental audit findings on the impact of the project on river Isiukhu and also the quality of the surrounding soil. See appendix

6.3 secondary methods

This involved documentary review of project documents, past EIA of related projects, relevant policy legal and institutional frameworks. Documents containing climatic, demographic and hydrological data for entire sub-county were reviewed. The experts also held discussions with project proponent and residents

6.4 Public consultation

The consultant led by the sociologist sought views from diverse members of the public. These included the following:

- The surrounding community
- Local Administrative officials from the county government
- Local administrative officials from the county government(The Shirere ward Administrator and MCA)
- Mining groups

6.4.1 The Purpose of Public Consultation

- To seek views, concerns and opinions of people in the immediate neighborhood.
- To establish if the local people foresee any positive or negative environmental effects from the project and if so, how they would wish the perceived impacts to be addressed.
- To get views from key opinion leaders

6.4.2 Written Comments

The community members within the immediate neighborhood were requested to freely express their views with reference to the proposed project. A total of 50 short questionnaires were completed alongside written comments. The experts selected 10 that have been attached in this report. (See persons interviewed and selected comments in Appendix V)

6.4.3 Interview of key informants

A number of key informants were interviewed so as to give their opinions of the impacts of the project on the environment and the local community. The project has received overwhelming and unanimous support from those interviewed. Among those interviewed were:

- Officials of the CGK Ministry of Environment, Water, Natural resources & Climate Change officials
- Representatives of the area Member of National Assembly (Lurambi constituency)
- Member of county assembly for Shirere ward
- Rosterman umbrella community based organization
- Kakamega Gold Mining Groups
Kakamega mining central co-operative
- Kakamega development group
- Chairman Artisanal miners Kakamega County
- The Chief Shirere location
- The Community Elders
- KAVOREC board of Management
- Municipal Housing Cooperative Society (Retired Teacher Association)

The stakeholders were invited to submit their comments through a detailed questionnaire and through oral question and answer sessions. The objective of involving the public and other stakeholders was to gauge their reactions to the proposed project and its potential impact on their lives. No project can ever exist in isolation and its acceptance by the local community and stakeholders is crucial to its successful implementation. The study was fully participatory.

6.4.3.1 Comments by the CGK Ministry of Environment, Water, Natural Resources and Climate Change

The ministry encouraged the local investors to get relevant permits to engage into mining businesses and also pay royalties as required by the law.

6.4.3.2 Comments by the MCA

Asked the National and County governments to assist miners with modern technologies to minimize risks associated with the mining activities, he said the project has potential to employ youths in his ward and thus likely to address the issue of insecurity.

6.4.3.3 Comments from Rosterman Umbrella community Organization (RUCBO)

These stakeholders represent the local community and all mining Cooperative societies within Kakamega County. The cooperatives are being formed following the directive by state department for Mining requiring all artisanal mining activities be undertaken through Sacco's. Other Gold Mining Groups which are registered by the department of culture and social services were interviewed. These stakeholders raised the following concerns;

- Need for the proponent to give casual jobs to the local community.
- The proponent to assist the community in construction of social amenities and infrastructure like schools, health centers and access roads.
- Compensation and insurance for the any person or family that suffers any negative effects as a result of the project.
- They also said that it was important to compare the project with similar underground artisanal gold mining projects being undertaken elsewhere in the country in order to adopt the best practices.
- All investors to consult the mining groups before engaging in mining activities
- Investors to avoid child labour.
- To assist training miners including women on how to invest, keep and support their families.
- Both governments to assist in equipping miners

6.4.3.4 The Senior Chief

The area chief stated that the community would welcome the project. However care should be taken when using chemicals. The proponent should also ensure that adequate sanitation facilities are available for the employees both during the construction and operational phases of the project.

6.4.3.5 The Community elders

They suggested that the proponent should give employment opportunities to residents first and also train youth on new methods of mining. The MCAs present asked the proponent to compensate any person from the local community who suffers injuries or losses as a result of the project.

6.5 Reporting.

Both reactive and non-reactive research methods were employed in utilizing various research tools gathering information. The local structures (government department and public service officers) provided very useful information about the project area. During the entire exercise, the proponent and EIA experts contacted each other on the progress of the study and signing of various documents. The proponent will submit five copies of this report alongside a CD to the National Environment Management Authority for review and issuance of an EIA license.



PLATE 4.6: STAKEHOLDER ENGAGEMENT MEETING: KAVOREC BOARD MEMBERS AND AYES CONSULTANTS TEAM LED ELIZABETH NYANDIA (SOCIOLOGIST) DURING PUBLIC PARTICIPATION PROCESS

CHAPTER SEVEN: ENVIRONMENTAL & SOCIAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

7.0 ENVIRONMENTAL & SOCIAL IMPACTS

This chapter identifies analyses and classifies impacts that could arise from the activities of the proposed project, during the construction and operational phases. The mining activities can also be fatal if poorly handled since the proponent intends to have miners go deep in the mine where oxygen levels are quite low. The anticipated impacts will affect the socio-economic environment (health, security, economic activities, finances, etc.) and the biophysical environment (fauna, flora, water, air, soil, energy).

The specific parameters that have been assessed include the techniques that the proponent intends to use:

- Underground horizontal mining of the gold ore about 70 feet deep and can run several meters across under the ground
- Extraction and pumping out of underground water from the pit to create room for the miners using diesel powered generator
- Air compressors that will be used to pump air into the mine to prevent miners suffering from asphyxia (Lack of Oxygen)
- Grinding the low grade gold ore into fine powder using a crusher
- Sieving the crushed ore to remove any impurities
- Using water to dissolve salts from the gold that has been heated
- Disposal of solid waste
- Disposal of sewerage wastes from the campsite
- Provision of vehicular parking for purposes of loading refined gold
- Washing of equipment and machinery
- First aid and treatment
- Use of PPE
- Emergency, disaster mitigation and response strategies put in place
- Keeping of records of incidents and accidents
- Record of licenses and approvals

7.1 Assessment Criteria for Anticipated impacts.

The detected impacts of the proposed project on the environmental elements are both positive and negative. The magnitude of each impact is described in terms of being significant, minor or permanent, short-term or long term, specific (localized) or widespread, reversible or irreversible. The assessment criteria for the significant impacts are as shown in the table below:

TABLE 7.1: ASSESSMENT CRITERIA FOR SIGNIFICANT IMPACTS

Key	Type of Impact	Key	Type of Impact
++	Major positive impact	+	Minor positive impact
--	Major negative impact	-	Minor negative impact
M	Moderate	NC	No Change
0	Negligible/Zero impact		
Sp	Specific/Localized	W	Widespread
R	Reversible	Ir	Irreversible
Sh	Short Term	L	Long Term
T	Temporary	P	Permanent

TABLE 7.2: ANTICIPATED PROJECT IMPACTS

Impacts on or due to	Operational Phase	Remarks/ impacts and mitigation measures
Changes in land use- extent	-/0	Changes expected at the site. Construction of the project is expected to cause permanent visual intrusion
Changes in Hydrology	- W	The impacts of hydrology may be limited because the project relies on water pumped from the mines. The water is needed for dissolving salts in the last stage of gold extraction from the ore. However gold impurities and residues were not detected in the nearby River Isiukhu.
Solid wastes	L	The proponent is advised to ensure that solid waste is properly disposed off during mining. After r the mining, the mines should be backfilled. No polythene paper bags or non-biodegradable wastes should be left on site.
Noise pollution		The project is likely to produce noise during the crushing of the gold ore. This noise can affect the operator and those around them. The proponent is advised to ensure the employees put on PPE, especially dust mask, nose mask, overcoats a head gears and ear muffling.
Air pollution	--L	The risk of localized air pollution is high. This is because of the carbon emissions by the generators. The employees /miners may inhale the fumes if the same are not well directed. However the risk of asphyxiation is minimal since the proponent intends to pump air into the mines using compressors to ensure that the miners do not suffocate. .
Fencing of Project site		Proponent is advised to secure the project site through a ring fence, barbed wire, iron sheets or preferably concrete perimeter wall. A fence would secure the site from risks of children or domestic animals roaming around the site and slipping into the mine.
Site Drainage	-/W	The proponent is advised to ensure the site has proper drainage. The drainage should be directed to a septic tank where the water is cleansed as per the water quality regulations of 2006
Soil Erosion	-L	There is possibility of soil erosion especially during surface water runoff. The dug out materials may be washed down the stream into River Isiukhu. The proponent is therefore advised not to leave mounds of waste tailings in heap form as it will be easily washed into the stream during the surface water runoff to plant trees in consultation with the owner around the project site

Water Resources	--T	Surface water resources can be contaminated through surface water runoff. In addition, the proponent is advised to plant reeds along the project boundaries to help detoxify any surface water runoff before it flow to River Isiukhu. Reeds and papyrus naturally detoxify contaminated water
Fauna	0	Fish and aquatic life is very sensitive to coloration and sedimentation. Hence no sedimentation should be directed to river Isiukhu.
Flora	0	The vegetation and grass around the project site has been cleared in order to access the mine. However, there is no endangered, threatened, or protected flora.

TABLE 7.3: POTENTIAL SOCIO-ECONOMIC IMPACTS

Impacts on or due to	Construction phase	Operational Phase	Remarks
Generation of wealth and businesses	+	++	The surrounding community will benefit due to establishment of various businesses to enable the project employees access various goods and services e.g. Money transfer services .
Employment Opportunities	+	++	The project will create job opportunities for the local community. Job opportunities for the skilled and unskilled staff will be availed. The workers will be expected to mine the ore, & transport the same to Shirere gold processing plant which is owned by the same developer. There will be creation of job opportunities, miners and, drivers etc.
Revenue Collection	--	++	The CGK and the Government through the KRA will raise more revenue from the underground artisanal mining through payment of rates.
Human Health	-	--w	For workers living far from their spouses there is the risk of the increase of HIV/AIDS and other Sexually Transmitted Diseases due to increased income which may entice the workers to engage in promiscuity.
	0	--	There inherent risk of inhaling vapor and dust from the mines which might affect the health of the employees. The proponent has been advised to provide PPE to the workers. He has also been advised against allowing children or women of child bearing age or expectant women working on the project.

Accidents	-	--L	<p>Risk of the accidents on the personnel of the site. At times some miners may choke due to lack of adequate oxygen. In addition, some miners can be trapped underneath since the risk of collapsing tunnels is inherent.</p> <p>The proponent is also advised against mining during heavy downpours to reduce the risk of collapsing tunnels. He is further advised to apply for open cast mining as opposed to the current design of the project which is horizontal underground mining. Proponent and mine manager should ensure that all employees are properly trained to handle equipment. They should also have basic training on Occupational Health and safety. They should also be cautioned against running machinery while drunk.</p>
-----------	---	-----	--

7.2 Potential Negative Impacts of the project and Recommended Mitigation Measures

Some of the potential negative impacts of the project on the Environment may include:

- Air pollution from dust emission
- Air pollution from gaseous emissions of machinery and equipment.
Air pollution from the running Lorries transporting the ore to the project site and also Lorries transporting the refined gold bullions from the site.
- Risk of accidents
- Fire accidents
- Solid Wastes
- Liquid Wastes
- Sanitation services

7.2.1 Risk of Air Pollution from dust

During the operational phase, surrounding air is likely to be polluted. The dust emissions are likely to emanate from the mining activities and from crushing of the gold ore.

7.2.1.1 Recommended Mitigation measures

- Constantly water the site so as to reduce the amount of dust emitted in the air.
Use appropriate machines for scooping tailings
- Ensure all employees put on appropriate PPE. These includes face masks covering nose and mouth, goggles, helmets, gloves and ear muffling
- Sprinkle water before sweeping dust from the floor of the gold ore crushing area.
- The project manager should supervise activities likely to release dust or smoke to the atmosphere e.g. sweeping and burning of wastes.

7.2.2 Risk of Air Pollution from gaseous emissions of machinery and equipment

There is a likelihood of gaseous fumes being emitted from equipment and machinery using diesel. Such equipment include the generators, crushers, compressors and motor vehicles.

7.2.2.1 Recommended Mitigation measures

- Repairs machinery and equipment when they break down
- Maintain Machinery at manufacturer's specifications
- Ensure machinery and equipment undergo regular servicing
- Use appropriate fuel free from adulteration
- Ensure all employees put on appropriate wear. These includes helmets, masks, and ear plugs , goggles and nose & mouth masks

7.2.3 Air pollution from the running Lorries and vehicles

7.2.3.1 Recommended Mitigation Measures

- Maintain Vehicles at manufacturer's specifications
- Ensure all motor vehicles are serviced
- Use appropriate fuel free from adulteration
- Ensure all employees put on appropriate wear. These includes helmets, masks, and ear plugs , goggles and nose & mouth masks

7.2.5 Noise pollution from the project

The project may emit noise pollution. The main sources of noise pollution may include the gold ore crushers, and vehicular engines generators and compressors .For prolonged period of time, noise can cause hearing damage and tinnitus (ringing in the ears). It can also interfere with communication, cause fatigue and tiredness, reduce efficiency, affect morale and produce a severe and permanent loss of hearing, which may persist for several hours. Noise levels must be controlled. There is more noise generation during operational phase than during the construction phase. The noise especially from generators may exceed 114 Db as per the Legal Notice No 61 of 2009 on Noise pollution & Excessive Vibrations. In that case, the proponent should get a license from Kakamega County Government to permit his project to emit noise and excessive vibrations.

7.2.5.1 Recommended Mitigation measures

The following need to be considered during construction and operational phase:

- Restrict use of generators only when necessary.
- Avoids unnecessary ignition of generators machinery and equipment
- Adhere to Kenya Noise Prevention and Control rule which was passed in 1996 under legal notice No. 296, as a subsidiary legislation to the Factories Act. In a gold mining area such as the project site, the Noise levels should not exceed 114 Db.
- Consider the rule which states that ‘No worker shall be exposed to noise level in excess of the continuous equivalent of 90 dBA for more than 8 hours within any 24 hours duration’
- Operation of shorter shift period for workers who come in direct contact with high concentrations of noise or other hazards;
- Provision of ear protective devices to prevent high frequencies noise emitted by the high frequency machines during construction and operational phase by both the proponent and project manager e.g. ear muffling.
- Proponent is advised against use of explosives to mine the gold. As this may cause noise pollution to the surrounding community

7.2.6 Risks of Asphyxia

As the miners go deeper into the mine, the amount of oxygen reduces greatly. This often leads to asphyxia (strangulation for lack of oxygen)

7.2.6.1 Recommended Mitigation Measures

- Use compressors to pump air deep into the mines
- Proponent to ensure he has adequate compressors so that in case of malfunction, there is an alternative

7.2.7 Risks of Collapsing Mines

There is a potential risk of the caving in of the mine. This may occur when the overburden sinks and traps some of the miners underneath, this is may result arise when the roof of the mine weakens due to possible fault lines.

7.2.7.1 Recommended Mitigation Measures.

- Proponent is advised to use stronger metallic or concrete beams because the wooden planks are unreliable and can easily lead to the collapse of the mine tunnels
- Avoid or suspend mining during heavy downpour. Heavy rains may weaken the mine and increase the risks of the mine caving in and trapping the miners

- Institute efficient safety measures to rescue miners in case they are trapped underneath. Such measures should include first aid assistance

7.2.8 Risks of accidents

Such accidents may be due to drunken drivers or employees running machinery. Safety in industrial operations is anchored in the OSHA 2007 ACT and the public health act cap 242. Therefore most of the recommended actions are extracted from OSHA guidelines. Further, the mining act 2016 expressly obligates the proponent to comply with the provisions of the Occupational Health and Safety Act, 2007 concerning the safety of workers and mine operations.

7.2.8.1 Recommended Mitigation Measures

- No employee should be allowed to run machinery while drunk
- Provision of Personal Protective Equipment (PPE)
These include:
 - Gloves
 - Ear Muffling
 - Overcoats
 - Helmets specifically designed for mines
 - Footwear
 - Goggles to protect Eyes from fumes and dust during heating and mining respectively.
- Routine safety mechanisms where the safety of machinery and equipment is regularly checked and serviced.
- Emergency and safety plan
- No employee suffering from epilepsy should run equipment or machinery
- Ensure that all employees get adequate rest before engaging them to run machinery
- Teach employees about first aid.
- First aid equipment should be available at the site at all times, and several individuals among the permanent personnel on the site should have the skills necessary to use the equipment.
- A contract should be signed between the proponent and the nearest dispensary or hospital for taking care of injured employee in case of accident.
- An insurance cover policy cover should be secured for all the personnel during the construction phase, the operational phase as well as the decommission phase.
- Workers should be regularly trained on the use of the equipment as well as on the safety measures and procedures so as to limit the risk of accidents due to the ignorance in the equipment use as well as the importance of the safety procedures.

- All workers to be briefed and trained on causes and risks of fire, and on safe practice within the construction and work sites; as per OSHA 2007
- Border fence the mining facility to prevent children animals and unauthorized persons from intruding into the site.

NB: A typical first aid kit contains a first aid manual, and is equipped with sterile adhesive bandages, safety pins, cleansing agent/soap, latex gloves; sterile gauze pads triangular bandages, non-prescription drugs, scissors, tweezers and antiseptic amongst others.

7.2.9 Risks of Fire Accidents

There is a potential risk of a fire hazard. This is because of the use of diesel and petroleum products to run machinery, generators and crushers.

7.2.9.1. Recommended Action

- The mine manager and proponent should ensure that there is no unnecessary lighting of fire at the site..
- Smoking within the premises of the facility should not be allowed
- All diesel and petroleum products should be well stored away from fire and ignition.
- Plastic containers should not be used to store diesel and petroleum products. Fuel should be stored in metallic containers as plastics can easily melt in case of a fire accident
- Solid wastes should not be burned at the project site
- All machinery and equipment must be maintained at the manufacturer's specifications
- Training of staff on use of fire extinguishers.
- Provision of fire extinguishers (especially Class A and Class B fire extinguishers)

7.2.10 Energy Resource Management

Most machinery and equipment will be powered by diesel. The site is not connected to Kenya power supply.

7.2.10.1 Recommended Mitigation Measures

The proponent is advised to adopt more energy efficient measures to reduce on power consumption. This translates to cost saving and less burden on the insufficient power supply system in the county and these include:

- Switch off equipment and machinery when not in use.

- Get diesel products from qualified suppliers to avoid purchasing adulterated diesel products.
- Install solar panels to tap solar energy
- Use energy efficient gadgets
- All energy using equipment used in lighting and heating should be switched off when not in use.
- Weather proof fittings for all lighting and power points to be used.

7.2.11 Water Resource Management

The proponent, intends to rely on water pumped from the mines for cleaning purposes. However, he has been advised to get a permit from WRA. The water will also be used to wash machinery and equipment. The proponent will not draw water from River Isiukhu. However, for consumption by the staff, the proponent has made arrangements for the employees to draw water from a nearby institution KAVOREC by stalling more PVC tanks to harvest rainwater. During dry season, the employees will depend on a borehole at Musaa village for domestic use. The proponent has been advised to consider drilling his own borehole to sever the growing work force at the site.

The Survey Act of 1989, and Water Quality Regulations (2006) and Water Resources Management Rules (2007) define riparian land as being a minimum of 6 meters up to a maximum of 30 meters on either side of its banks from the highest water mark. This distance is based on the width of the river and the water volume at any given time. Riparian land plays a crucial role as a buffer zone for wetlands in terms of preventing soil erosion, and other causes of degradation. NEMA regards wetlands as some of the most endangered ecosystems (NEMA 2006; NEMA 2007; GoK 1989).

7.2.11.1 Recommended Action

Opportunities for reducing water wastage during operational phase include:

- Proponent should not draw water unless he gets approval from WRA to abstract underground water.
- Avoid undertaking any activities within the riparian parts of River Isiukhu. The riparian land is within 30 meters of either side of the river.
- The Proponent should not wash equipment and machinery in the river
- The proponent should not direct any liquid, solid or chemical wastes into river Isiukhu stream
- Maximize on other sources of water for some uses e.g., rainwater harvesting and storage in larger tanks.

- The project manager and proponent are advised not to use asbestos for roofing in the campsite since water tapped through asbestos is known to be carcinogenic (have a tendency to trigger onset of cancer) if ingested/consumed by humans.
- There is the risk of surface water runoff and contaminated water from abandoned mines transporting mine into River Isiukhu. In this regard, the proponent is advised to plant reeds or papyrus between the river and the project site. Papyrus and reeds are known to naturally cleanse water passing through them

7.2.12 Liquid waste

Liquid waste will arise from washing machinery and equipment. If not properly addressed such waste can pollute water bodies. The proponent should direct liquid waste into septic tanks.

7.2.12.1 Recommended Mitigation measures

- Direct liquid wastes into septic tanks. Where the wastes can later be carried by exhausters to be disposed in designated cesspits
- Where oil, grease, petroleum or diesel spills by mistake, the proponent to use saw dust to cover such spillage. The saw dust should then be removed and disposed in designed waste disposal areas by the CGK.

7.2.13 Solid Waste management

Solid waste will also be generated from the campsite. Various solid wastes will include empty cooking oil cans, polythene paper, clothing and food remains. In addition cans, worn out metallic parts of machinery and equipment will also constitute part of the solid wastes.

7.2.13 .1 Recommended Mitigation Measures

- Re use empty containers used to buy diesel and petroleum products. Reuse them to store similar products but cans and containers used for chemicals should not be used to store food, drinking water, medicine or drinks.
- Excavated soil can be used for landscaping during the rehabilitation phase.
- Paper wastes that cannot be recycled should be removed from the site to minimize the risk of fire explosion and spread in case of a fire accident or disaster
- Recycle metallic parts by selling to scrap metal companies for recycling

7.2.14 Sanitation Services

The proponent is advised to construct pit latrines for the employees and water supply to maintain the hygiene. He is advised to construct about 10 VIP latrines. He should also provide about 5 tap water pipes for use by the employees after visiting the latrines.

7.2.14 .1 Recommended Mitigation Measures

The Proponent is advised to contract a registered exhauster to empty the pit latrines when it reaches 70% full. He is advised to ensure that the latrines are maintained in a hygienic manner

The proponent and project manager are encouraged to design the roofing of the pit latrines in a manner that rain water can be harnessed and stored. The harnessed rain water should be used to by the workers to wash their hands after visiting the toilet and also for washing the pit latrines.

The contractor and project manager are advised to the Ventilated Improved Pit (VIP) type of latrine.

These improved types of pit latrines help to remove odors and prevent flies from breeding and escaping. Excreta are collected in a pit which has a vent pipe covered with a fly proof screen at the top. In these latrines, air circulates down the squat hole into the pit and up through the vent pipe. This reduces smells in the shelter. It is important that there is free throughflow of air into the shelter and into the pit, therefore no cover should be placed over the squat hole or seat. In order to ensure an unhindered flow of air, the top of the vent pipe must be at least 0.5 meters above the top of the shelter and the latrine must be well away from high buildings or trees.

These latrines cost more to build and require more maintenance than a simple pit latrine. They are more pleasant to use than simple pit latrines because there is less smell and they are more hygienic.

When the pit remains with 0.5 meters before it gets filled up, it should cease to be used. The project manager and proponent should contract an exhauster to empty the pit latrines as often as is necessary.

Points to consider during construction of VIPs

- Minimum Safe Distance (MSD) of 30 feet from the nearest water source.
- Downhill
- Down wind of the project area
- Not too close to trees which might interfere with the flow of air circulation across the top of the vent pipe
- On slightly raised ground so that rain water can easily drain away

The proponent is advised to hand over the toilets to the community after the end of the project as part of his contribution to the local community's welfare.

CHAPTER EIGHT: RECORD KEEPING

8.0 Record Keeping and Environmental Policy

8.1 Record Keeping

Proper record keeping at the facility is necessary for accounting and administrative reasons. For efficient management of the facility; to facilitate future audits and to comply with the law, it is recommended that the following records must be prepared and kept available

- Such records include licenses, operational permits, site plans and land ownership documents etc in accordance with the EMCA (1999) Act, OSHA 2007, and Public Health Act, the mining act 2016 and the PPA cap244
- In addition to the pertinent documents above, the project owner is required to keep records on events of environmental significance that include inspection records, training/workshops/seminars records, waste disposal records, discharge monitoring reports, hazardous materials amongst others where applicable.
- Documented emergency management procedures
- Diary detailing incidents and accidents at the site.
- Inventory of materials at the site according to approved classification schedule.
- All inflammable materials should be kept safe and away from ignition of flame and an inventory of the same developed
- The mining act 2016 obligates the proponent to keep a record of the quantities of extracted gold and communicate the same to the department of mines and geology
- A record of the amount of water drawn
- A report on how wastes are managed (both solid and liquid wastes)
- The proponent is advised that in case of an accident leading to the death of an employee or any other person such information should be communicated to the DOSH office within a period of 24 hours and the National police Service Immediately. In case of normal injury the same should be communicated to DOSH within seven weeks as per the OSHA 2007.

CHAPTER NINE: ENVIRONMENTAL MANAGEMENT PLAN

9.0 ENVIRONMENTAL MANAGEMENT PLAN

9.1 PURPOSE OF EMP

The purpose of the Environmental Management Plan (EMP) is to ensure environmental impacts are identified and mitigated during all the phases of a project. The EMP also offers recommendations on how to mitigate possible negative impacts of the project activities.

The EMPs cover the construction, operational as well as decommissioning phases of the projects. The EMP has been developed with project knowledge and information available to date. As project proceeds and scheduling plans are developed, components of the EMP might require amending. This is therefore a working document, which can be updated whenever new information is received or site conditions change. However, it gives a general guideline. The EMPs specifies the possible impact of project activities and how they are to be mitigated. It also apportions roles and responsibilities of various actors and the timeframe.

The EMP for decommissioning is outlined in Chapter 10 Table 9.1 presents the EMP for construction phase while Table 9.2 is the EMP for operational phase.

TABLE 9.1 ENVIRONMENTAL MANAGEMENT PLAN FOR CONSTRUCTION PHASE

Project activity	Anticipated impact	Management and Mitigation	Monitoring Timeframe	Actors	Monitoring indicators
Intent to Re –initiate mining activities	Possible impacts on the natural and human environment	Get appropriate licenses from -Department of mines -WRA -NEMA	As urgently as possible	Proponent	-No initiation of mining activities without necessary licenses
	Intrusion by unauthorized persons and livestock	Fence the project site to keep off unauthorized persons and livestock	Throughout construction and operational phase	Proponent	A visible permanent fence around the project area
Constructing the camp site	Pollution of River Isiukhu through surface water runoff of excavated soils	Construct the project at least 100 meters from River Isiukhu.	The project should be located not less than 100 meters from River Isiukhu.	Proponent	No increase in river turbidity No significant increase in river coloration
Excavation and removal of top soil before the excavation of rock	Risk of increased loosening of soil leading to erosion.	Confine removal of top soil to project site and Reduce unnecessary truck movement.	Throughout during construction and operational phase	Proponent	No deposit of top soil on earth surface.
Solid waste management	Disposal of empty fuel cans polythene paper bags.	-No dumping of solid wastes in the open. Solid wastes e.g. empty jerry cans, polythene paper bags metallic rods should be removed and recycled. However, through a legal notice,	Throughout the entire contract period	Proponent	No waste at work sites except in approved sites. Wastes should then be recycled

		use of polythene papers has been banned in Kenya			
		Wherever possible, Solid waste should be recycled, re-used and utilized in an environmentally acceptable manner. e.g. empty oil cans	Weekly Inspections and recording	Proponent	Lack of solid wastes loads at the site area
		A Waste Management Plan to be developed to handle temporary storage, transport and disposal of hazardous waste that may potentially pollute water resources. E.g. petroleum and oil products used by the machinery	Throughout the construction period	Proponent To liaise with CGK	No poor disposal of oil and petroleum products
		Wetting of unpaved areas and the entire work place	Daily inspection and reporting	Proponent	Lack of complaints Reports / log book entries
Use of Machinery and bulldozers to clear the grass vegetation.	Nuisance to the cool ambient. Noise pollution and excessive vibrations	Use equipment that has low noise emissions as Proper use of machinery & equipment as stated by manufacturers & as indicated in user manuals. -get license to emit noise	Throughout	Proponent	Lack of complaints by neighboring community Reports / log book entries -get license to emit noise
		Use equipment that is properly fitted with noise reduction devices such as mufflers.	Daily inspection of the machinery	Proponent	Lack of complaints Reports / log book entries Get license to emit noise

		-get license to emit noise			
		workers operating equipment that generate noise should be equipped with noise protection equipment e.g. ear mufflers	Monthly	Proponent	Lack of medical complications by the workers
Staff Bathing and washing of equipment	Waste water generation. Direct waste water to pit latrines.	Provide pit latrines for workers. . Pour sparingly waste water site area to reduce dust.	Daily inspection and reporting	Proponent	Maintenance of good quality of water down stream
Transportation equipment , to the project site	Possible cases of accidents	Adequate and approved road signs and bumps should be erected to warn road users of the project activities to reduce speed near the entrance roads	Daily inspection and supervision	Proponent	Lack of public complains Minimal Number of accidents recorded in the area
		The movement of equipment (trucks) during the construction on the site should be limited to the working hours, 8:00 am - 4:30 pm per day.	Daily inspection and supervision	Proponent	Lack of public complains
Occupational health and safety	Impact on health of the workers	Ensures workers health and safety through awareness campaign and provision of appropriate PPE(Helmets, Nose and Mouths masks, Overalls, earplugs, if welding will be undertaken, protective goggles, industrial footwear, first Aid Kit, Fire extinguishers and	Weekly inspection of safety kits	Proponent	Minimal cases of health related complications Minimal incidents of Public complains Lack of accidents at work place

		training of workers to use them. Gloves for those painting.			
	Injuries on workers	Avail first aid Box. Train staff in administration of first aid	Throughout	Proponent	No cases of unattended employees in case of injuries
		Insure staff for compensation in case of injuries leading to incapacitation.	Throughout	proponent	No cases of employees lacking medical care in case of accidents or sickness
		Training of all workers in Safety Health and Environment (SHE)	Holding workshops and seminars for workers		
Obnoxious gases: SO _x , NO _x , CH ₄ , CO ₂ Dust	Breathing & chest problems to workers	Maintaining machineries at manufacturers specifications , provide workers with PPE	Weekly	Proponent	Lack of complaints Reports / log
Spillage of oil & petroleum products	Contamination of soils	Use of saw dust to soak spilt oil & removal of same to designed disposal sites	Weekly	Proponent	Minimal incidents of polluted soils & water bodies

TABLE 9.2 ENVIRONMENTAL MANAGEMENT PLAN FOR OPERATIONAL PHASE

Project activity	Anticipated impact	Recommended Mitigation Measures	Monitoring Timeframe	Actors	Monitoring indicators
Underground horizontal mining	Risk of collapsing mining tunnels	Explore possibility of adopting Reinforce the Mines by supporting the tunnels using concrete stands or metal rods instead of wooden planks •	Throughout	-Proponent -Project manager	Minimal or no cases of collapsing underground mines
	Reduced oxygen levels as miners go deeper into the mine. This may lead to asphyxia	The Proponent should pump oxygen using compressors so that miners don't suffer from lack of oxygen (asphyxia)	Throughout	-Proponent -Project Manager	No cases of miners getting choked for lack of oxygen
Prevention of intrusion by unauthorized persons or livestock	Intrusion by unauthorized persons and livestock	Fence the project site to keep off unauthorized persons and livestock	Throughout construction and operational phase	-Proponent -Project manager	A visible permanent fence around the project area
Project activity	Potential or existing negative impacts	Recommended Mitigation Measures	Monitoring Timeframe	Actors	Monitoring indicators
Solid waste management	Disposal of empty fuel cans	-No dumping of solid wastes in the open. Solid wastes e.g. empty jerry cans	Throughout the entire	1-Proponent	No waste at work sites except in

	polythene paper bags.	,polythene paper bags metallic rods should be removed and recycled	contract period	2 project manager	approved sites. Wastes should then be recycled
		solid wastes should be disposed of in bins. Liaise with CGK to have the wastes disposed of in designated areas. Wherever possible, Solid waste should be recycled, re-used and utilized in an environmentally acceptable manner. E.g. empty oil cans	Weekly Inspections and recording	1-Proponent 2 -project -Manager	Lack of solid wastes loads at the site area
		A Waste Management Plan to be developed to handle temporary storage, transport and disposal of hazardous waste that may potentially pollute water resources. E.g. petroleum and oil products arising from use of generators and lorries transporting the gold ore from the mine to the proposed Gold Vat processing plant.	Throughout the construction period	1-Proponent Project Manager	No poor disposal of oil and petroleum products
Noise pollution from use of generators , compressors and Crusher	Nuisance to the cool ambient. Noise pollution and excessive vibrations	Use equipment that has low noise emissions as Proper use of machinery & equipment as stated by manufacturers & as indicated in user manuals. -get license to emit noise -Limit use of blasts and explosives	Throughout	1-Proponent 2 –project Manager	Lack of complaints by neighboring community Reports / log book entries -get license to emit noise

		Use equipment that is properly fitted with noise reduction devices. -get license to emit noise from the CGK	Daily inspection of the machinery	1-Proponent 2 –project - Manager	Lack of complaints Reports / log book entries Get license to emit noise
		workers operating equipment that generates noise should be equipped with noise protection equipment	Monthly	1-Proponent 2 –project - Manager	Lack of medical complications by the workers
Sanitary facilities for workers		Provide VIP pit latrines for workers at a ratio of 1:10. .	throughout	-Proponent –project - Manager	No cases of poor disposal of human waste
Staff Bathing and washing of equipment	Waste water generation. Direct waste water to pit latrines. Or	Provide adequate bathrooms for employees	Daily inspection and reporting	1-Proponent 2 –project - Manager	Maintenance of good quality of water down stream
Transportation equipment , materials, tailings to the project site and also of extracted gold bullions	Possible cases of accidents	Provide adequate and approved road signs and bumps should be erected to warn road users of the construction activities to reduce speed near the entrance roads	Daily inspection and supervision	1-Proponent 2 –project - Manager	Lack of public complains Minimal Number of accidents recorded in the area
		The movement of equipment (trucks) during the construction on the site should	Daily inspection	1-Proponent	Lack of public complains

		be limited to the working hours, 8:00 am - 4:30 pm per day.	and supervision	2 project - Manager	
Occupational health and safety	Impact on health of the workers	Ensures workers health and safety through awareness campaign and provision of appropriate PPE(Helmets, Nose and Mouths masks, Overalls, earplugs, protective goggles, industrial footwear, first Aid Kit, Fire extinguishers and training of workers to use them. Gloves for those painting.	Weekly inspection of safety kits	1- Proponent 2 –project - Manager	Minimal cases of health related complications Minimal incidents of Public complains Lack of accidents at work place
	Injuries on workers	Avail first aid Box. Train staff in administration of first aid Have at least three first aid kits which are well stocked	throughout	proponent project manager	No cases of unattended employees in case of injuries
		Insure staff for compensation in case of injuries leading to incapacitation. This is as per the mining act 2016	throughout	Project manager proponent	No cases of employees lacking medical care in case of accidents or sickness
		Training of all workers in Safety Health and Environment (SHE)	Holding workshops and seminars for workers	Proponent Project manager	No cases of workers who have not been trained

Obnoxious gases: SO _x , NO _x , CH ₄ , CO ₂ Dust	Breathing & chest problems to workers	Maintaining machineries at manufacturers specifications , provide workers with PPE Repairs and services machinery when breakdown occurs	Weekly	1-Proponent 2 –project manager	Lack of complaints Reports / log
Spillage of oil & petroleum products	Contamination of soils	Use of saw dust to soak spilt oil & removal of same to designed disposal sites	Weekly	1-Proponent 2 –project manager	Minimal incidents of polluted soils & water bodies
Total					

Project activity	Main Anticipated impact	Recommended mitigation measures	Monitoring timeframe	Responsible Actors	Monitoring indicators
Operating gold ore crushing machinery	Increase in the risk of hearing impairment because of the noise pollution from the crusher machine	Maintain machinery at Manufacturer's specification Equip personnel with ear plugs/muffles	Throughout the operational phase.	- 1-Proponent project - Manager	No machine operator without ear muffler and/or ear plugs -No production of unspecified/unusual excess noise by machinery
	Dust emission during gold ore crushing	Use PPE for the employees. These include overcoats, head gear, nose mask gloves and goggles	Throughout operational phase	-Proponent -Project manager	No cases of employees/workers operating machinery without PPE
Running of generators and equipment to provide energy and equipment	Noise pollution and vibrations & Nuisance to the cool ambient. Likelihood of injuries to livestock and the local community caused by explosives	Get permit for Noise generation from CGK and Use equipment that has low noise emissions. Maintain equipment to manufacturer's specifications	Throughout Throughout	-Proponent -project manager -Proponent -Project manager	Lack of complaints by neighboring community Reports / log book entries
Solid Waste Disposal	Soil and Water Contamination	Solid waste e.g. oil containers, polythene paper bags and metallic rods should be recycled, re-used and utilized in an environmentally acceptable	Weekly Inspections and recording	-Proponent -Project manager	No waste at work sites except in approved and marked locations

		Manner			
Surface water runoff	Washing of gold mined underground ore by surface water runoff into River Isiukhu	Proponent to plant a belt of reeds between the river and the leaching facility. Reeds are known to naturally detoxify wastes	Throughout the operational phase	-Proponent	No serious cases of surface water runoff into River Isiukhu in case of heavy downpour. No cases of dying aquatic life. No significant change in river water coloration, odor or taste.
Sewerage and Human waste disposal	Disposal of human waste	Provide proper and hygienic pit latrines should be constructed. The pit latrines should be emptied by approved exhaust service providers Construct 12 VIP latrines. Provide adequate water for hygiene	When 70% full Throughout operational phase	1-Proponent 2- project Manager	No poor disposal of human wastes -No human waste odor or stench
	Accumulation of recyclable wastes	Proponent encouraged to recycle, reuse and reduce usage of non-recyclable wastes. He should also ensure careful disposal of non-	Weekly inspection and reporting	-Proponent Project manager	No careless disposal of recyclable and non-recyclable waste

		recycled wastes into a designated municipal waste collection areas			
Solid Waste Generation	Impact on Ecology	Waste bins should be strategically placed within the gold ore crushing area and camp site.	Weekly inspection	.-Proponent Project manager	Waste disposal documentation and tracking
	Filled up waste bins	Waste bins should be emptied regularly to prevent overfilling.	Weekly inspection and reporting	-Proponent Project manager	No poor disposal of waste except in approved and marked locations.
Transportation of purified gold from the site to the warehouse or market	Potential for road accidents through speeding	Adequate and appropriate road signage should be erected before reaching the project site to warn road users of livestock and wildlife prevalence in the area. Bumps should also be erected along this road to minimize speeding trucks which may cause accidents. This should be done in with the approval and technical input from the Ministry of housing and infrastructure development	Daily inspection and supervision	1-Proponent 2 -CGK Project manager	Lack of public complaints and Road Accidents. Reduced Number of accidents recorded in the area
		Induct new workers on Occupational Safety and Health	Regularly	Proponent	

		Holding workshops and seminars for workers Training of all workers on -Occupational Safety ,Health and Environment (SHE)		project manager DOSH	
Control of storm waster	Rainwater run off washing excavated materials and solid wastes downstream into River Isiukhu	Proponent to dig out trenches to trap surface water runoff . Proponent to plant a belt of reeds between the river and the mine. Reeds are known to naturally detoxify wastes	Throughout the operational phase	-Proponent	No cases of surface contamination of River Isiukhu. No cases of dying aquatic life. No significant change in river water coloration, odor or taste.
	Fire accidents	Training of all employees and on Firefighting drills and use of Fire Extinguishers & evacuation procedures in addition to ensuring that there are adequate emergency fire exits and conducting fire drills.	Once a year	1-Proponent 2 -project Manager	Minimal number fire accident victims & incidents
	Fires accidents either due to generators failure or ignition of fuel	Ensure proper maintenance of generators and machinery. No smoking or cooking allowed at the work place.	Monthly	1-Proponent 2 - project - Manager	Minimal Incidents of fire accidents due to electric faults.

Enforcement of Safety Guidelines and Regulations	All safety guidelines to be followed	All Workers must be sensitized on safety guidelines Ensure that health and safety is ensured at all times Ensure all safety guidelines are followed	- throughout	Project Manager -Inspectors from DOSH -Inspectors from directorate of mines and geology	Minimal or no incidents of accidents
	Accidental Ingestion of chemical residues by staff	No eating of food or consuming alcohol while operating machinery on site	throughout	Proponent project manager	No cases of 1 food contamination due dust and wastes generated from the mining activities
Record keeping	Lack of proper record keeping	Proponent to keep a proper record of accidents and incidents. A record of estimated amount of ore extracted A record of Estimated amount of water pumped out from the mine.	Throughout the operational phase	Proponent project manager -Department of mines and geology CGK through its ministry of Environment	Availability of a record of quantity of gold extracted. Sharing of this information between the proponent, department of mines and geology and CGK

		Ensure that a proper record of extracted and purified gold is kept. The record should be shared between the proponent and the department of mines and geology. The proponent should pay royalties calculated by the Department of mines and geology from the extracted gold granules. 10% of royalties to be surrendered to support community projects. While 20% of royalties to be remitted to the CGK. Finally, the 70% of all royalties forwarded to the National government. All these remittances are as established by the mining act 2016.		-Local community leaders	
Approval of licenses	Has applied for requisite licenses	Registration of the Mine with the directorate of Occupational Safety & Health as a work place and annual renewal Renew mining license every six months	Renew License every year	Yearly and as necessary	

9.2 Environmental Monitoring and Audits

Environmental monitoring and audits are essential in a Project's life span as they are conducted to establish if project implementation has complied with set environmental management standards for Kenya as spelt out in EMCA 1999 and the Environmental (Impact Assessment and Audit) Regulations 2003. Environmental monitoring and audit are to be conducted to ensure that identified potential negative impacts are mitigated during the project's life span. Reports are to be made based on the outlined EMP plan. The Environmental audits should be submitted to NEMA annually.

CHAPTER 10: DECOMMISSIONING, PROJECT CLOSURE & SITE REHABILITATION

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. In such a case a proper process of project closure and rehabilitation of the derelict environment needs to be executed. This is expected to occur after all the gold ore has been exhausted from the mine. The proponent is advised to inform the surrounding community that he is about to close the project.

If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning from the site. The following should be undertaken to restore the environment.

- Get the advice of a geologist on how to backfill the mine hole and ensure stability of the ground. .
- Fence and sign post the mine until stabilization occurs.
- The site should be well landscaped by flattening the mounds of soil and planting indigenous trees and shrubs
- All the equipment and metallic parts should be removed from the site
- Fence and signpost unsafe areas until natural stabilization occurs

He should also involve the community in rehabilitating the environment. In doing this he is advised to take soil and water samples for testing to see the extent to which the soil and water may have been contaminated by the chemicals that he used in the project. Testing can be done by KALRO. He will be advised on how to neutralize any such chemical residues.

TABLE 10.1 ENVIRONMENTAL MANAGEMENT PLAN FOR DECOMMISSIONING PHASE

Legal Framework Guiding Decommissioning	Expected Negative Impacts	Recommended Measures	Responsible Party
Occupational Health & Safety Act 2007.	All employees undertaking decommissioning must be provided with PPE	Decommissioning should be undertaken with minimal destruction of building materials for re-use elsewhere. E.g. stone, iron sheets, timber- -Use of an integrated solid waste management system i.e. through a hierarchy of options.-Wastes generated as a result of facility decommissioning activities will be disposed of	Proponent 2 - Mine -Manager 3 decommissioning engineer
County Government Act 2012 Public Health Act		-in compliance with standard waste management procedures. -The contractor will select disposal locations and the local council based on the properties of the particular waste generated.	Proponent 3 decommissioning engineer.
EMCA 1999 Mining act 2016	Vegetation disturbance Land deformation: soil erosion, drainage problems	-Backfill the open mine using the technical expertise of a geologist to ensure that the ground is fully stable -Implement an appropriate re-vegetation programme to restore the site to its original status. Unless land is to be utilized for another activity subject to fulfilling all other requirements. All open pits should be refilled with soil and indigenous vegetation planted. -During the vegetation period, appropriate surface water runoff controls will be taken to prevent surface erosion; -Monitoring and inspection of the area for indications of erosion will be conducted and appropriate measures taken to correct any occurrences;	Proponent 3 decommissioning engineer

		-Fencing and signs restricting access will be posted to minimize disturbance to newly-vegetated areas;	
Public Health Act	Removal of Septic Tank and filling up of Pit latrine. If poorly handled can lead to underground water contamination	-Ensure the Public health department is involved in decommissioning of the septic tank.	Proponent 2 - Mine -Manager 3 decommissioning engineer
Total Environmental and Logistical costs for Decommissioning			
Legal Instruments guiding Decommissioning	Expected Negative Impacts	Recommended Measures	Responsible Party
Occupational Health & Safety Act 2007	Physical injuries and disabilities	The safety of the workers should surpass all other objectives in the decommissioning of the project. They should be provided with PPE	Proponent
NSSF Act.	Loss of income	-Give gratuity where possible and recommend the workers to get employment opportunities elsewhere or start income generating activities. .Encourage those to join SACCOs while in employment to save enough to initiate income generating projects. -Contribution to NHIF/SHIF for those permanently employed	1 Proponent 2 - Mine -Manager 3 decommissioning engineer
	Loss of livelihood for members of the local community employed	-Establish an alternative source of livelihood for the community around. E.g the excavated pits can be developed for aquaculture.	1. Proponent 2 - Mine -Manager 3 decommissioning engineer

CHAPTER 11: CONCLUSION

11.0 CONCLUSION

The proposed underground artisanal gold mining project will have numerous positive impacts as it has been outlined in the report. The proponent has been advised on how to mitigate potential negative impacts of the project.

However, generally the proponent has been advised to change the proposed project design. He needs first to carry out a detailed feasibility study and contract geologist to advice where the commercially viable gold ore are located and hence justify the investment in establishing the mines. The proponent is advised to use more durable and reliable iron beams to support the roofs and walls of the mines instead of using wooden planks.

He is also advised to keep a proper record of accidents and incidents. A record of all artifacts from the mine should also be kept and the same stored. Further all documentations concerning licensing, and technical capacity of its staff to undertake the project should be well kept. The rest of the recommendations have been exhaustively discussed in the body of this report.

The neighboring community is in support of the project because they will derive social economic benefits from the project through employment and leasing of land Overall, the negative environmental impacts of this project can be better mitigated. This report therefore recommends that this project be granted an Environmental Impact Assessment license by NEMA subject to fulfilling all other relevant legal and regulatory obligations. The proponent is also reminded to carry out an Environmental Audit every 12 months after the Environmental Impact Assessment license has been granted. This EIA report thus recommends that the proponent be granted permission to proceed.

REFERENCES

- Altman, K., Schaffner, M., & McTavish, S.. D. J. Barrat; H. N. Doug; A. L. Mular, eds. (2002) *Mineral Processing Plant Design, Practice and Control*. Littleton, Colorado, USA: Society for Mining, Metallurgy, and Exploration, Inc. (SME). pp. 1631–1643
- Canada, Environment Canada. *Summary Review of Performance of Metal Mines Subject to the Metal Mining Effluent Regulations*. 2012 [cited 2012 May 25, 2012]; Available from: <http://www.ec.gc.ca/pollution/default.asp?lang=En&n=C6A98427-1>.
- Canada, Canadian Food Inspection Agency (2012) *Natural Toxins in Fresh Fruit and Vegetables*. [cited 2012 June 14]; Available from: <http://www.inspection.gc.ca/food/consumer-centre/food-safety-tips/specific-products-and-risks/natural-toxins/eng/1332276569292/1332276685336>.
- The Abandoned and Inactive Mine Underground Mine Hazards
National Park Service Geologic Resources Division – June 2010
- Eunice Naigaga (2014) *An Examination of the Sustainability of Gold Mining Processes in Uganda*
- Gerald K. Rukunga, Editor, “Environmental Health for East Africa” African Medical and Research Foundation (AMREF). Nairobi, Kenya.
- Wamukoya G.M and F.D.P. Situma. “Environment Management in Kenya: A Guide to the Environment Management and Coordination Act (EMCA) 1999”.
- GoK (2013) *Kakamega (County Integrated Development Plan 2013 to 2017)*
- GoK (2016) *Kenya Gazette Supplement No. 137* LEGAL NOTICE NO. 149 on the Environmental management and coordination act (no. 8 of 1999)
- GoK (2016) *Mining Act 2016*
- GoK (2012) *County Government Act*
- GOK (2011) *National Construction Authority Act 2011*
- GOK 2005: *Manual on Safety Standards in mining*
- GOK 2010: *The Proposed New Constitution*. Government Printer
- GOK 2007 *Occupational Safety & Health Act 2007*
- GOK (2006) *The Environmental Management and Co-ordination (water quality) regulations, 2006*
- GOK (2006) *The Environmental Management and Co-ordination Act (no. 8 of 1999)*
- GOK 2002: *water Act Law of Kenya*. Kenya Gazette supplements no. 107 (Acts No 9) Nairobi October 2002
- GOK 1978: *Local Government Act (cap 265) laws of Kenya*
- GOK 1999: *sessional paper No 6 of 1999 on Environmental and Development*
- GoK (1989) *The Survey Act of 1989*
- Hinton, J.J., M.M. Veiga, and A.T.C. Veiga (2003). Clean artisanal gold mining: a Utopian approach? *Journal of Cleaner Production*.

Hussein Abaza, - DTIE-ETB, UNEP: Iron Biset-BTM Cordah Limited. Bastry Sadler –

UNEP Adviser, “Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrating Approach.”

Ophardt, C.E.(2003) Conversion of Gold Ore to Gold Metal. Virtual Chembook: Gold Processing. 2003 [cited 2012 July 30]; Available from: <http://www.elmhurst.edu/~chm/vchembook/327gold.html>.

Republic of Kenya “Environmental Impact Assessment (EIA) Guidelines and Administrative Procedure.” National Environment Management Authority (NEMA). P.o. Box 30120, Nairobi, Kenya, November 2004.

Republic of Kenya – UNDP – UNEP Poverty and Environment Initiative “Making the Connection: Economic Growth, Poverty and the Environment” 2007.

Republic of Kenya-----“Sub-County Environment Action Plan 2006 to 2013 Shinyalu Sub-County”

Goodland R, Mercier J R and Shimwayi M (EdS) 1995: Environmental assessment in Africa.

A World Bank commitment.

APPENDIX I: EVIDENCE OF LAND ALLOCATION WHERE THE PROJECT STANDS



NOTICE

THE PHYSICAL PLANNING AND LAND USE ACT 2019 NOTICE OF COMPLETION OF PART DEVELOPMENT PLAN PDP No. W314/2024/01 – EXISTING SITE FOR GOLD MINNING

NOTICE is hereby given that preparation of the above Part Development Plan is complete.

The Part Development Plan relates to land situated within Kakamega Municipality, Kakamega County.

Copies of the plan have been deposited for public inspection at the office of the County Director of Physical Planning, Kakamega and Municipal Manager's Office Mumias Municipality.

The copies so deposited are available for inspection free of charge by all persons interested at the above-mentioned offices between the hours of 8.00 am and 5.00 pm Monday to Friday.

Any interested person(s) who wishes to make any representation in connection with or objection to the above Part Development Plan may send such representations or objections in writing to be received by the **DEPARTMENT OF LANDS, HOUSING, URBAN AREAS AND PHYSICAL PLANNING, P.O. BOX 36-50100, Kakamega** within sixty days (60) from the date of this notice and any such representation or objection shall state the grounds on which they are made.

Dated: 25th June 2024

HON. DR MARIAM B. O. BARASA

CECM

**Department of Lands, Housing, Urban Areas and Physical Planning
Kakamega County**

APPENDIX II: CONSENT FROM THE MINISTRY OF LABOUR & SOCIAL
PROTECTION AND COUNTY GOVERNMENT OF KAKAMEGA GRANTING

**ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED
UNDEGROUND GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD
LURAMBISUB-COUNTY, KAKAMEGA COUNTY**

PERMISSION TO PROPONENT TO UNDERTAKE MINING ON THE LAND

HEREBY WITNESSED BY:

2. COUNTY ATTORNEY

I certify that I was present and witnessed the above duly appointed officers of **THE COUNTY GOVERNMENT OF KAKAMEGA** having been duly authorized, sign this MOU.

Name: Vivianne Mwangi Komwoto

Signature: [Signature] Date: 25/10/23 Stamp/Seal: [Stamp]

B. SIGNED FOR AND ON BEHALF OF SOW

STONES OF WEALTH LIMITED (DIRECTORS)

1. Name: Amr Abd Jama

Signature: [Signature] Date: 25/10/2023 Stamp/Seal: _____

Designation: **DIRECTOR**

2. Name: _____

Signature: _____ Date: _____ Stamp/Seal: _____

Designation: **DIRECTOR**

HEREBY WITNESSED BY:

3. ADVOCATE OF THE HIGH COURT OF KENYA

I certify that I was present and witnessed the above *bona fide* directors of Stones of Wealth Limited having been duly authorized, sign this MOU.

Name: HELLEN MASAKHWE

Signature: [Signature] Date: 25/10/2023 Stamp/Seal: _____

HELLEN MASAKHWE
ADVOCATE
P.O. Box 1762-40100,
KISUMU

9

Memorandum of Understanding between the
County Government of Kakamega and Stones of Wealth Limited

APPENDIX III: NEMA EIA/ EA PRACTISING LICENSE FOR LEAD EXPERT

ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED
UNDEGROUND GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD
LURAMBISUB-COUNTY, KAKAMEGA COUNTY



nema
mazingira yetu | uhai wetu | wajibu wetu

FORM 7

(r.15(2))

**NATIONAL ENVIRONMENT MANAGEMENT
AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING
LICENSE**

License No : NEMA/EIA/ERPL/19196

Application Reference No: NEMA/EIA/EL/25305

M/S **JESSEE NJOROGE NJUGUNA**
(individual or firm) of address
P.O. Box 30818 - 00100 NAIROBI

is licensed to practice in the
capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
General

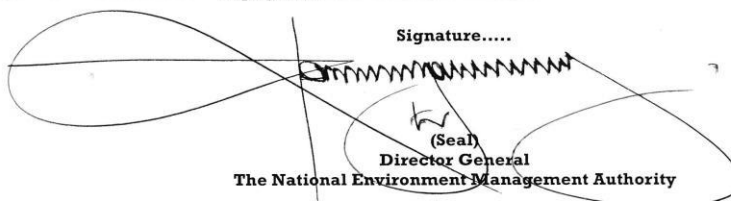
registration number **0395**

in accordance with the provision of the Environmental Management and Coordination
Act Cap 387.

Issued Date: 3/27/2023

Expiry Date: 12/31/2023

Signature.....



(Seal)

Director General

The National Environment Management Authority

P.T.O.



APPENDIX IV: NEMA PRACTISING LICENSE FOR FIRM OF XPERTS

FORM 7 (r.18(2))


nema
mazingira yetu | uhai wetu | wajibu wetu

**NATIONAL ENVIRONMENT MANAGEMENT
AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING
LICENSE**

License No : NEMA/EIA/ERPL/20069
Application Reference No: NEMA/EIA/EL/26465

M/S **AYES COSULTANTS LTD.**
(individual or firm) of address
P.O Box 79999 - 00100 **NAIROBI.**

is licensed to practice in the
capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts.**
registration number **6604.**

in accordance with the provision of the Environmental Management and Coordination
Act Cap 387.

Issued Date: 9/12/2023 Expiry Date: 12/31/2023



Signature.....


(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified

APPENDIX V: CERTIFICATE OF INCORPORATION FOR STONES OF WEALTH LIMITED


No. **PVT-BEUXRVAZ**


CERTIFICATE OF INCORPORATION

I hereby **CERTIFY** that,

STONES OF WEALTH LIMITED


is on this date 16 Aug 2023 incorporated under the Companies Act, 2015 and that the Company is a **PRIVATE LIMITED COMPANY**.




.....
Registrar Of Companies

This is a system generated certificate. To validate this document send the word **BRS** to **21546**

**APPENDIX VI: APPROVED TERMS OF REFERENCE FOR
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE
PROPOSED NDERGROUND ARTISINAL MINING IN ROSTERMAN,
KAKAMEGA COUNTY REF: NEMA/TOR/5/2/666**



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Telcom Wireless: 020-2183718, 020-2101370
Mobile Line: 0724 253 398, 0723 363 010, 0735 013 046
Incident Line: 0786 101 100, 0741 101 100

P.O. Box 67839 - 00200
Papo Road, Nairobi, Kenya
Email: dgnema@nema.go.ke
Website: www.nema.go.ke

REF: NEMA/TOR/5/2/666

DATE: 12th March, 2024

THE DIRECTOR
Stones of Wealth Limited (SoW).
P.O Box 970-40400
SUNA

**RE: TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL AND SOCIAL IMPACT
ASSESSMENT FOR THE PROPOSED UNDERGROUND ARTISANAL GOLD ORE
MINING IN ROSTEMAN, KAKAMEGA COUNTY.**

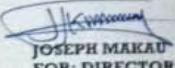
We acknowledge the receipt of TOR for the above subject.

Pursuant to the Environmental Management and Coordination Act, 1999 the second schedule and the Environmental (Impact Assessment and Audit) Regulations 31 and 35, your terms of reference for the Environmental Impact Assessment (EIA) for the proposed **UNDERGROUND ARTISANAL GOLD ORE MINING IN ROSTEMAN, KAKAMEGA COUNTY**, has been approved with the following conditions:


1. Inclusion of a mining expert and sociologist in the team of experts to lead assessments of mining impacts and stakeholder engagement/ public participation.

You shall submit ten (10) copies of the study report, upon payment of the applicable EIA processing and monitoring fees being 0.1% of the total project cost, a soft copy of the summarised ESMP in **WORD** format for preparation of public notice and one electronic copy of the report prepared by the team of experts to the Authority.

Thank you for your willingness to comply


JOSEPH MAKAU
FOR: DIRECTOR GENERAL

Our Environment, Our Life, Our Responsibility



**APENDIX VI: SOME OF THE COMMENTS DURING PUBLIC
PARTICIPATION**

**ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED
UNDEGROUND GOLD ORE MINING IN ROSTERMAN VILLAGE, SHIRERE WARD
LURAMBISUB-COUNTY, KAKAMEGA COUNTY**



SPECIALIZATION: General Environmental Consultancy in Medium & High Risk Projects, Property Management
Experts: Utalii House Nairobi, EMISSIONS HOUSE 1ST FLOOR CANON AVORI STREET KAKAMEGA.
Email: ayesconsultsltd@yahoo.com, PO BOX 79999-00200 Nairobi, 1498-50100 Kakamega.

Dear participant,

STONES OF WEALTH LTD has contracted Ayes Consults LTD (*environmental experts*) to carry out Environmental and Social Impact Assessment study for the proposed underground gold ore mining in Rosterman village in Shirere ward in Kakamega County.

You are therefore, kindly, invited to participate in a research study being conducted by **Ayes Consults (Environmental Experts)**. The purpose of the research is to ensure safe sustainable environmental Management for the proposed project. National Environmental Management Authority (NEMA) works in consultation with the stakeholders to make informed decision in either approving or recommending remedial measures in assessment of the said project. Community consultation and participation ensures that communities and stakeholders are part and parcel of the developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process acquires high level of acceptance and accrue benefits to a wider section of the society.

Your participation is completely voluntary. You are encouraged to give your views to enable proper decisions as pertaining its operations. Your responses may be included in the EIA report, which will be made public and some may directly be forwarded to the Proponent to make proper decisions before its commencement.

If you agree to participate, please complete the questionnaire below.

Interviewee's bio data

Name HENRY LUNYUMBA ID NO. 5632172
Phone No. 0727349523
Occupation RETIRED MEDICAL LABORATORY OFFICER
Village/Estate ROSTERMAN Ward SHIRERE
County KAKAMEGA Residence ROSTERMAN

1. a) What is your opinion regarding the proposed project at the KAVOREC center in Rosterman.

I have no objection because it will be of positive economic impact if conducted properly.

a. In your opinion, are there some negative effects on public (sociological/ecological effects of the project brought about by this development.

☒ YES ☐ NO

Briefly give an account of such effects

- i. Socially the project will cause adjustment by the collapse of the structures that were used
- ii. Reduction of the agricultural surface
- iii. land by the collapse for farming.
- iv. Continuous underground water draining and its disposal
- v. Waste products from the site and its disposal.

c. What do you think should be done to combat the negative effects of this project?

To set up a committee or board to be monitoring and evaluating development of the project.

2. a) What are most likely effects of the proposed project on the immediate neighbors

Improve their livelihood economically in business
Increase in communal diseases
It not checked.

i. Effects on water resources?

Contamination of water for consuming by the byproducts from the mining activities

ii. Effects on traffic?

iii. Effects on recreational sites?

High chances of infiltration of drugs

iv. Effects on animals, birds, mammals and reptiles?

Environmental contamination leading to poor habitat for survival.

3. a) Effects on soil

Erosion is likely to take place if the soil left exposed.

b) Effects on -

a) Agricultural

likely to come down due to soil infiltration with chemicals and soil erosion.

b) Housing
Use of Explosives could weaken the structure (houses).

c) Infrastructure
Heavy machinery movement could cause collapse of structure.

d) Security
Increase in population in the area without increase of security personnel could lead to insecurity.

e) Aviation

f) Vegetation
- Use of Chemical causing Condensation.
- Excavation clearing the Surface vegetation.

C) What should the proponent do to minimize the said effects on the land?
Encourage tree planting with purifying plants.
Form a special team committee for the same.

4. What should the relevant government authorities do to alleviate adverse effects on the locality pertaining this project?
To seek and collaborate with the community for the best desired resolutions.

5. Are there any sites of significance such as Shrines, places of worship ceremonial sites which will be affected by the proposed project?

YES ☐ NO ☒

If yes give an account of such sites.
Mugemu tree at the centre
The former historical Rosterman store of gold mine
Company structures.

What should the proponent do to protect the sites?
A committee to advise on how the history of the mines should be kept for future reference.

6. Which social amenities e.g. school sites, health services, recreational, gave recent area & community development sites are likely to be affected?

a. Rehabilitation Centre (Kavavac) Training
b.
c.
d.

How will each be affected?

a. Industrial activities from the Project
b.

c.

d.

7. What benefits do you think the proposed development will bring?


1. Support the trans butie infrastructure, for payment on road
2. Put in place Corporate Social Projects in the community: clean water supply churches etc

8. Are you in anyway opposed to the development of this project?

NO.
I'm in support for the Project.

For inquiries about this project, feel free to contact Ayes Consults LTD on 0720468952 or email us at avesconsultsltd@yahoo.com. We thank you for your assistance in this important endeavor.

Any other general Comments(s) ask for extra sheet.

Interviewee's Signature: 

Certified by

SPECIALIZATION: General Environmental Consultancy in Medium & High Risk Projects, Property Management
Experts, Utalii House Nairobi, EMISSIONS HOUSE 1ST FLOOR CANON AWORI STREET KAKAMEGA,
Email: ayesconsultsltd@yahoo.com, PO BOX 79999-00200 Nairobi, 1498-50100 Kakamega.

Dear participant,

STONES OF WEALTH LTD has contracted Ayes Consults LTD (*environmental experts*) to carry out Environmental and Social Impact Assessment study for the proposed underground gold ore mining in Rosterman village in Shirere ward in Kakamega County.

You are therefore, kindly, invited to participate in a research study being conducted by **Ayes Consults (Environmental Experts)**. The purpose of the research is to ensure safe sustainable environmental Management for the proposed project. National Environmental Management Authority (NEMA) works in consultation with the stakeholders to make informed decision in either approving or recommending remedial measures in assessment of the said project. Community consultation and participation ensures that communities and stakeholders are part and parcel of the developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process acquires high level of acceptance and accrue benefits to a wider section of the society.

Your participation is completely voluntary. You are encouraged to give your views to enable proper decisions as pertaining its operations. Your responses may be included in the EIA report, which will be made public and some may directly be forwarded to the Proponent to make proper decisions before its commencement.

If you agree to participate, please complete the questionnaire below.

Interviewee's bio data

Name: Lumumba Santino ID NO. 41354826
Phone No. 0707907412
Occupation: Student (Sigalagala Polytechnic)
Village/Estate: Rosterman Ward: Shirere
County: Kakamega Residence: Rosterman

1. a) What is your opinion regarding the proposed project at the KAVOREC center in Rosterman.

H. The Company (Investor) will not interfere with the Kavorec. Has and have Corporate Project
a. In your opinion, are there some negative effects on public (sociological/ecological effects of the project brought about by this development. to Community

YES

NO

Briefly give an account of such effects

- i. Yes it may create employment to the community
- ii. Interference with the disabled person on the institution.
- iii. Clear social corporate project to be done.
- iv. Security may be at stake because of strangers.

c. What do you think should be done to combat the negative effects of this project?

The current institution should not be interfered with

2. a) What are most likely effects of the proposed project on the immediate neighbors

Damage to vegetation, farming activities, Deforestation, Weakening of structure houses

i. Effects on water resources?

Chemical contamination of water sources

ii. Effects on traffic?

Trucks carrying heavy load heavy plants (Machinery, Movement)

iii. Effects on recreational sites?

Noise pollution

iv. Effects on animals, birds, mammals and reptiles?

Disturbance of their habitats Machinery noises Contamination the grazing areas

3. a) Effects on soil

machanical erosion by mining activities

b) Effects on: -

a) Agricultural

Low production due to chemical in the soil.

b) Housing

Explosive used weakening of House by cracking

c) Infrastructure

Destruction of roads by the heavy machineries

d) Security

Stranger with unknown background

e) Aviation

f) Vegetation

Excavation and poor deposit of byproducts will reduce vegetation

C) What should the proponent do to minimize the said effects on the land?

Have put in place community based committee at the expense of the investor to oversee the land utility

4. What should the relevant government authorities do to alleviate adverse effects on the locality pertaining this project?

Do do rightfully what they are suppose to in collaboration with the community

5. Are there any sites of significance such as Shrines, places of worship ceremonial sites which will be affected by the proposed project?

YES

NO

If yes give an account of such sites

Preserve if possible the old colonial Infrastructure for historical purposes

What should the proponent do to protect the sites?

Formation of a caretaker committee from the community which should ensure the repairment under the sponsorship of the investor

6. Which social amenities e.g. school sites, health services, recreational, gave recent area & community development sites are likely to be affected?

a.

b.

c.

d.

How will each be affected?

a.

b.

c.

d.

c.

d.

7. What benefits do you think the proposed development will bring?

Social Corporate projects, Sponsorship
of scholar, construction of churches
playground water projects

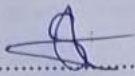
8. Are you in anyway opposed to the development of this project?

No.

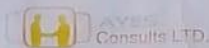
For inquiries about this project, feel free to contact Ayes Consults LTD on **0720468952** or email us at ayesconsultsltd@yahoo.com. We thank you for your assistance in this important endeavor.

Any other general Comments(s) ask for extra sheet.

Interviewee's Signature.....



Certified by



SPECIALIZATION: General Environmental Consultancy in Medium & High Risk Projects, Property Management
Experts: Utalii House Nairobi EMISSIONS HOUSE 1ST FLOOR CANON AWORI STREET KAKAMEGA,
Email: ayesconsultsld@yahoo.com, PO BOX 79999-00200 Nairobi, 1498-50100 Kakamega.

Dear participant,

STONES OF WEALTH LTD has contracted Ayes Consults LTD (*environmental experts*) to carry out Environmental and Social Impact Assessment study for the proposed underground gold ore mining in Rosterman village in Shirere ward in Kakamega County.

You are therefore, kindly, invited to participate in a research study being conducted by **Ayes Consults (Environmental Experts)**. The purpose of the research is to ensure safe sustainable environmental Management for the proposed project. National Environmental Management Authority (NEMA) works in consultation with the stakeholders to make informed decision in either approving or recommending remedial measures in assessment of the said project. Community consultation and participation ensures that communities and stakeholders are part and parcel of the developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process acquires high level of acceptance and accrue benefits to a wider section of the society.

Your participation is completely voluntary. You are encouraged to give your views to enable proper decisions as pertaining its operations. Your responses may be included in the EIA report, which will be made public and some may directly be forwarded to the Proponent to make proper decisions before its commencement.

If you agree to participate, please complete the questionnaire below.

Interviewee's bio data

Name: AMUKAMWA CADRYNE ID NO: 2012006
Phone No: 0726802721
Occupation: TEACHER
Village/Estate: ROSTERMAN Ward: SHIRERE
County: KAKAMEGA Residence: ROSTERMAN

1. a) What is your opinion regarding the proposed project at the KAVOREC center in Rosterman.

As long as the investor gives back to the society in matters education, and social cooperate projects like churches

- a. In your opinion, are there some negative effects on public (sociological/ecological effects of the project brought about by this development.

YES ✓

NO

Briefly give an account of such effects

- i. Pollution: Noise and drainage of unfit water to our rivers.
 - ii. Weakening of the ground posing danger to the surrounding.
 - iii. Security is at stake due to some strangers pretending to have come for mining.
 - iv. Loss of life through accidents at the mines and injuries to the participants.
 - v. The students in the Rehabilitation centre are directly affected in various ways.
- c. What do you think should be done to combat the negative effects of this project?
1. The institution be relocated for better learning.
 2. Safety measures be taken for the protection of the participants, including the surrounding.
 3. Compensation and N.H.F. for those affected.
 4. A clean water supply be put in place.
2. a) What are most likely effects of the proposed project on the immediate neighbors?
1. Noise pollution.
 2. Handling of mercury with bare hands is risky.
- i. Effects on water resources?
Contamination.
- ii. Effects on traffic?
Improvement seen as many people are driven in and out boosting the economy.
- iii. Effects on recreational sites?
The youth have gone into too much drinking because they have money.
- iv. Effects on animals, birds, mammals and reptiles?
Discharge of chemicals through the water has an effect on all of them.
3. a) Effects on soil
Chemicals discharged directly affects the soil.
- b) Effects on: -
- a) Agricultural
- Both negative and positive in that some parts of the land have been turned to mining grounds hence no farming.
 - Some people can now manage their farms using the money they get from mining.

b) Housing

Most people have settled in better houses due to their earnings.

c) Infrastructure

Most structures are weavering due to a lot of dwelling.

d) Security

Still an issue to be firmly addressed

e) Aviation

N/A

f) Vegetation

Interference through land usage and chemicals

C) What should the proponent do to minimize the said effects on the land?

Proper machinery and not to deposit poisonous chemicals in the environs.

4. What should the relevant government authorities do to alleviate adverse effects on the locality pertaining this project?

To come up with protective measures to control accidents and pollution.

5. Are there any sites of significance such as Shrines, places of worship ceremonial sites which will be affected by the proposed project?

☒ YES ☐ NO

If yes give an account of such sites.

Worship places are affected by the noise and some have been displaced

What should the proponent do to protect the sites?

Build new ones in a different place for the people affected

6. Which social amenities e.g. school sites, health services, recreational, gave recent area & community development sites are likely to be affected?

a. Rosterman Rehabilitation centre

b. Musaa west P.A.G

c.

d.

How will each be affected?

a. Weavering of the buildings

b. Noise

- c.
d.

7. What benefits do you think the proposed development will bring?

1. Sponsorship should be considered in terms of renovations.

2. A source of income for the community members.

8. Are you in anyway opposed to the development of this project?

I have no objection as long as safety measures are put in place.

For inquiries about this project, feel free to contact Ayes Consults LTD on 0720468952 or email us at ayesconsultsltd@yahoo.com. We thank you for your assistance in this important endeavor.

Any other general Comments(s) ask for extra sheet.

Interviewee's Signature.....*ASA*.....

Certified by

APPENDIX VII: MOU BETWEEN CGK AND SOW TO UNDERTAKE THE UNDERGROUND GOLD ARTISANAL MINING PROJECTS

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING is made the..... day
of..... 2023

BETWEEN

THE COUNTY GOVERNMENT OF KAKAMEGA, a county government established under Article 176 of the Constitution of Kenya, 2010 and the First Schedule thereof, through its Department of Water, Environment, Natural Resources and Climate Change, having its registered offices in Kakamega town in the County of Kakamega and of Post Office Box Number 36-50100, Kakamega (hereinafter referred to as "*the County*") which expression shall where the context so admits include its successors in title and assigns of the first part;

AND

STONES OF WEALTH LIMITED, a limited liability company duly registered under the Laws of Kenya, of P.O. Box 105072-00101, Nairobi which expression shall where the context so admits include its successors in title and assigns of the other part (hereinafter referred to as "*SOW*") which expression shall where the context so admits include its successors in title and assigns of the other part.

Both parties herein referred to as "*the Parties*".

WHEREAS:

- A. The County has as one of its main objectives the achievement of effective service delivery to its people within the territorial jurisdiction of the County of Kakamega as established under the Constitution of the Republic of Kenya and to ensure this, is mandated to enter into partnerships with other organizations;
- B. SOW deals in provision of specialist mining services to the mining industry throughout Kenya, East Africa and the rest of the world;
- C. The County and SOW are desirous of setting up a training center for artisanal and small scale miners focusing on empowering the communities in Rosterman, Ikolomani and Shinyalu in processing of mineral products, formation of artisanal mining cooperatives and enhancing miner's capacity to increase efficiency of mining activities in a sustainable manner; (hereinafter also referred to as the "*the Project*")

1

Memorandum of Understanding between the
County Government of Kakamega and Stones of Wealth Limited

D. The County has provided land for the project site

NOW THEREFORE, in recognition of the mutual covenants contained herein, the Parties agree as follows: –

ARTICLE 1: UMBRELLA PROVISION

The Parties shall make every effort to ensure the achievement of the objectives of this MOU through implementation of their respective roles on the basis of mutual cooperation.

ARTICLE 2: PURPOSE AND OBJECTIVES OF THE MOU

2.1 The purpose of this MOU is to create a framework for the establishment of a training center for artisanal and small scale miners in Ikolomani and Shinyalu Sub-Counties, Kakamega County.

2.2 Parties hereby agree on the following as the main objectives for this MOU –

- a) empowering the communities in processing of mineral products;
- b) formation of artisanal mining cooperatives; and
- c) enhancing miner's capacity to increase efficiency of mining activities in a sustainable manner.

ARTICLE 3: TERM

3.1 This MOU shall come into effect from the date of execution by the last party signing and shall remain in force for nine (9) years from the effective date.

3.2 This MOU may be extended for a further period as may be agreed upon in writing by the Parties to this MOU.

ARTICLE 4: OBLIGATIONS OF THE PARTIES

The roles and responsibilities of both parties are laid out below: -

4.1 The County shall –

- a) provide land for the establishment of the training centre and ensure grant of leases over the project land;

Memorandum of Understanding between the
County Government of Kakamega and Stones of Wealth Limited

2

MEMORANDUM OF UNDERSTANDING

DATED THE 25TH..... DAY OF OCTOBER..... 2023

BETWEEN:

THE COUNTY GOVERNMENT OF KAKAMEGA



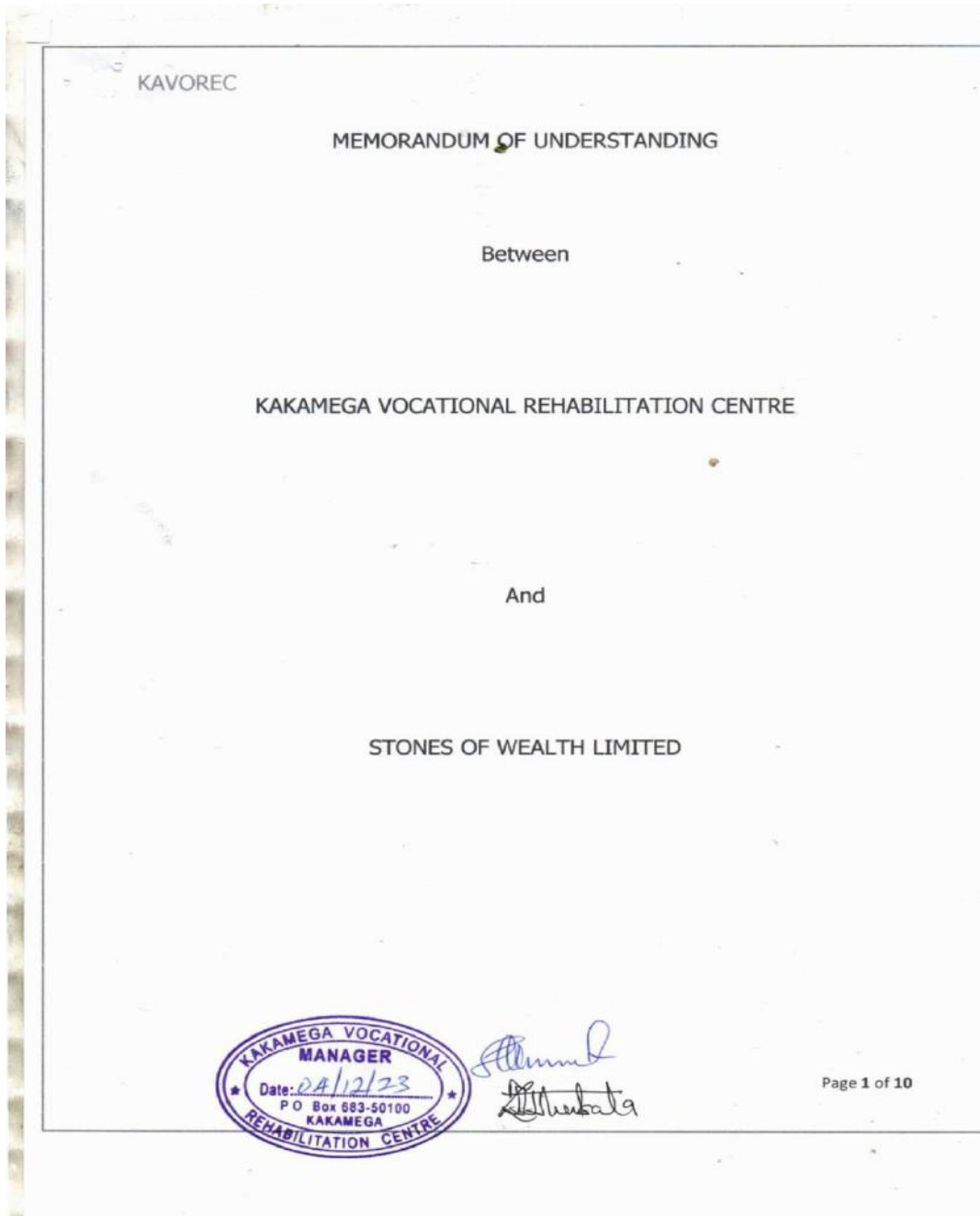
- AND -

STONES OF WEALTH LIMITED

Memorandum of Understanding between the
County Government of Kakamega and Stones of Wealth Limited

Page 0

APPENDIX VIII: MOU BETWEEN KAVOREC (MINISTRY OF LABOUR AND SOCIAL PROTECTION) AND SOWL TO UNDERTAKE THE UNDERGROUND GOLD ARTISANAL MINING PROJECTS



KAVOREC

Abbreviations

MOU-Memorandum of Understanding

KAVOREC – KAKAMEGA VOCATIONAL REHABILITATION CENTRE

SOWL –STONES OF WEALTH LIMITED

BOM– Board of Management

PS – Principal Secretary, State Department of Social Protection and Senior Citizens Affairs

1.0 Introduction:

KAVOREC and SOWL wish to enter into this Memorandum of Understanding, ("MOU") to collaborate in the mining of gold that will run in the KAVOREC compound.

This memorandum provides an overview of the program and the respective roles and responsibilities of each of the Partners.




Page 2 of 10

KAVOREC

2.0 Objectives:

The objectives of the project are:

1. To allow SOWL to do mining of gold activities in areas that have been agreed upon between the Parties.
2. SOWL to support KAVOREC in its day to day activities, both materially and financially.
3. SOWL to provide KAVOREC with state of the art vocational training tools, equipment and machineries, taking care of the disabilities mainstreaming.
4. SOWL to construct for KAVOREC, modern model state of the art training complex or workshops.
5. SOWL to refurbish for KAVOREC, infrastructures which needs to be repaired.

2.1 Mining

SOWL will carry out mining activities without any interference from KAVOREC at the mining area that they deem suitable for their activities and not the physical Centre of the institution where the office, hostels and stores are located. SOWL will ensure that there is minimal interference with the activities of KAVOREC. SOWL will create access to the site other than the main gate of the institution. They will also ensure; they provide additional security personnel so as to improve on the Centre. The institution will be bound with this MOU for the said period of the project of 9 years. During the period of the MOU, KAVOREC will not engage with any other entity for doing similar activities covered under this MOU.



Page 3 of 10

APPENDIX VIII: WATER ANALYSIS

WATER QUALITY REPORT ON THE DISCHARGE OF WASTEWATER FROM AN ABANDONED GOLD PIT.

Gold mining activities are widespread in Kakamega County and dates back to the colonial days. There are numerous mines especially in Bushungala, Shikoye, Bushumuli, Mirembe and Sigalagala amongst others. Rosterman in Kakamega town is another known point where the activities have been going on for many years.

Gold containing rocks are mined through deep pits. The pits are owned by influential people who are not staying in those places. Initially the pits were owned by the Europeans and when some of them left the country it is alleged that they sealed some pits even though Gold was still there. There is a growing interests by some investors who are now reopening the abandoned mines with intention of continuing with gold mining activities.

One such mine has been opened in Rosterman and the first activity is to pump out water from the abandoned mine to pave way for the subsequent activities. The water from the pit is being channelled into River Isiukhu.

Underground gold mining is associated with water pollution from heavy metals. Water pollution from heavy metals (Mercury, Arsenic, Cadmium, Copper, Nickel, Chromium and Lead) can occur due to geological formation or due to human activities. All the above metals have adverse human health effects both in short and long term basis.

It is due to the above that WRA undertook water quality assessments of the discharges from the reopened abandoned mine on 30th November, 2023 with a view to establish the quality of water being discharged into the water-resource. A part from the normal water quality parameters, sampling was also done for heavy metal analysis.

RESULTS

	METAL	DISCHARGE FROM THE PIT	DISCHARGE INTO THE RIVER	DISCHARGE STDs (WRR 2021*)	COMMENTS
1	Iron (Fe)	0.210	2.10	Not provided	
2	Lead (Pb)	0.001	0.12	< 0.01	Discharge to the river is high
3	Cadmium (Cd)	0.001	BDL	10	
4	Chromium (Cr)	BDL	0.058	< 0.01	Discharge to the

					river is high
5	Arsenic (As)	BDL	0.001	0.1	
6	Nickel (Ni)	BDL	0.15	< 2.0	
7	Zinc (Zn)	0.23	BDL		
8	Mercury (Hg)	BDL	BDL	< 0.01	
9	Manganese (Mn)	0.0054	0.543	0.1	
10	pH	7.2	8.9	5.5-9.5	
11	EC(Us cm ⁻¹)	100	540	2500	
12	Turbidity (NTU)	0.00	0.00	25	
11	TDS	64	404	1500	

- Sixth Schedule, Water Resources Regulations 2021

BDL- Below Detectable Limit

Observations/discussions

The concentrations of Heavy metals, Chromium, Arsenic, Nickel and Mercury from the pit discharges were below detection limit. The other metals Iron, Lead, Cadmium and Zinc registered very low concentrations, below the recommended standards for discharge into the surface water.

There was an increase in concentrations of Iron, Lead, Chromium, Arsenic and Nickel in the discharge into the river, however a part from those of Lead and Chromium, the increase was insignificant since they are within the recommended standards. The increase could be as a result of other factors outside the pit like surface run off and others acquired during flow to the river.

CONCLUSIONS

Three heavy metals were detected from the discharges from the abandoned pit. These are Lead, Cadmium and Zinc. However after the lab analysis the results show that concentrations are within the acceptable standards for discharge into surface water. As the discharges flow from the pit to the river, it acquired some secondary characteristics.

RECOMMENDATIONS

The water from the discharge is suitable for disposal to the environment or to the water body.

APPENDIX VII: ATTENDANCE LIST AND MINUTES DURING PUBLIC PARTICIPATION PROCESS

ROSTERMAN UMBRELLA COMMUNITY BASED ORGANIZATION(RUCBO)
PUBLIC PARTICIPATION ON MINING HELD ON 23 NOVEMBER 2023 AT 10.40 A.M
AT ROSTERMAN TAILLINGS FIELD.

ATTENDANCE.

A) GROUP MEMBERS ROSTERMAN UMBRELLA COMMUNITY BASED ORGANIZATION(RUCBO)

NO	NAME	TITLE
1	GEORGE MBWABI	CHAIRPERSON
2	SOLOMON OTSUKU	VICE CHAIRPERSON
4	DERRICK MMBWABI	VICE SECRETARY
5	GODFREY MANYONYI	ORGANIZING SECRETARY
6	VINNY LIKOKO	MEMBER
7	BENARD HINGA	MEMBER (HEALTH)
8	PAUL VICTOR	MEMBER (COUNTY REP)MINES
9	WILLIS OGUTU	ADVISOR
10	GODFREY MUTAKHA	MEMBER (SECURITY)
11	ELIPHAS ASHIVENDE	MEMBER
12	KANIRA IMBALI	MEMBER
13	ESTER KADOGO	MEMBER
14	CALEB MUNAYI	MEMBER
15	PROTUS JAMUHURI	MEMBER
16	ENOS MWILITSA	MEMBER
17	ERICK BUYAKANE	MEMBER
18	HENRY LUMUMBA	SECRETARY
19	WYCLIFFE MILIMU	ADVISOR
20	VIOLET KHAMALISHI	TREASURER
21	SUSSY MUKAISI	MEMBER
23	REV.PETER LIKHAYA	ADVISOR



B) LINE MINISTRIES.

1. Madam Phanice Achieyenza – Chief Shirere Location
2. Mr. Patrick Ligami - AMC Chairman, County Representative Mines
3. Mr. Benedict Mmbolo – County Community Administrator Shisasari Area.
3. Mr. Paul Victor Artisanal Mines representative Lurambi
4. Mr. Makhule Patrick Artisanal Mines representative Shinyalu
5. Mr. Clay Moses Artisanal Mines representative Ikolomanis

C) INVESTOR STONES OF WEALTH.

Mr. Sala Ahmed Ochieng'

D). ATTACHED ARE LISTS OF COMMUNITY MEMBERS.**AGENDA ITEMS**

1. PRAYER / OPENING REMARKS/INTRODUCTION.
2. SPEECHES.
3. PUBLIC VIEWS.
4. STONES OF WEALTH (INVESTOR).
5. Public Resolution
6. Vote of thanks.
7. A.O.B

MIN: 01/23/11/2023. PRAYER / OPENING REMARKS/INTRODUCTION.

The meeting was called to order by acting master of ceremony Benard Hinga who thereafter called upon Pastor Enons Mwilitsa to open with a word of prayer. Chairperson introduced present leaders and his committee members.

3



AMC IKOLOMAN SUB COUNTY MR.PATRICK MAKHULE.

- Support the deal of Investor towards community and should be trustful to community.
Should not divide community.

AMC SHINYALU SUB COUNTY MR.MOSES CLAY.

Workers to be given identification cards and enroll workers on NHIF.

MIN: 03/23/11/2023.PUBLIC VIEWS.

Mr. David Ingutia request Mr. Sala to support his Legend team. To level playing ground at Khusumu.

Mr. Rodgers Mukhaya request Investor to support Rosterman Tournament. Any team support should done through group Accounts.

Mr. Timothy Mukoshi (Dei)

- Women to be provided with vitimbwi.
- Youth to be supported with a Shaft.
- Those who died in mining their children to be educated.
- Discrimination should be avoided.
- Leaders should not take advantage of monopolizing community members through frauding them money towards services.

Mr. Benjamin Isindu.

Thanked the Investor and request him to give women stones not tope (Soil).The investor should tell the truth not sweet words and go against what promised.

Mr.Achesa

Said people with disability are weak and should be considered, working site to be fenced and education to be supported.



6



MIN: 04/23/11/2023.STONES OF WEALTH MR.SALA.

- Mr. Sala greeted in Kiluyha and Kijaluo, spoke briefly and thanked community members for welcoming him in Rosterman.
- Thanks all leaders for accepting him to work in Rosterman community.
- Have leaching plant at Musiolo village which support 200 youth.
- Training college will be at Rosterman to train all miners. ✓
- Will start with 50 crushers to support women with no payments. ✓
- Had meeting with disabilities at Rehabilitation and have supported food and water tank. ✓
- Agreed with youth to be given stones not cash. Distribution mode was agreed. ✓
- Will prepared duties on how work will be done rotationally. ✓
- Will consider security and health.
- Conflict team will be in place for women. ✓
- Promise women to be given stones mix with tope morning time. ✓
- Widows will be supported during Christmass.Chief to provide list. ✓
- Old age women will be given Ksh.2000/= every month. ✓
- People with disabilities will be given stones every day. ✓
- Wazee will have way forward with him on how to support them.
- Have EIA report from NEMA and company Profile will be shared to with community and give copy of documents.
- Community to provide site where to drill water for community (Borehole). ✓
- Will walk with community, community to be rich same to him.
- Thanked MCA David Ikunza, Administration, Rosterman Umbrella CBO, Youth and women for unity.
- Electricity 3 phase will be dropped to rehabilitation centre.

MIN: 05/23/11/2023.RESOLUTION.

1. Artisanal miners will be supported through Cooperatives.
2. Widows will be supported with and old age will be supported with Ksh.2000/= monthly.
3. Mining to be done according to mining act.
4. EIA report and company profiles to be shared to community.

7




5. More Shafts will be opened in Rosterman community.
6. All keys line ministries concerning mining to be involved for technical support (NEMA, Mines and geologist office, WASH, Health and others).
7. Women give land for their Shaft.
8. Stones of wealth should not engage other Investors in community without consent of community members through public participation.
9. Playing ground to be leveled within one week.
10. Resolved that women to be given TOPE free.
11. Agreement between Mr. Sala and community through Rosterman Umbrella CBO to be prepared and signed. This will be bidding documents. Oral agreement should be avoided.
12. Workers 70% to be from community.

NOTE:

ALL MAJORITY MEMBERS PRESENT UNANIMOUSLY AGREED STONES OF WEALTH (MR.SALA) TO WORK IN ROSTERMAN COMMUNITY AND AS AGREED.

MIN: 06/23/11/2023.VOTE OF THANKS.

Chairman Mr. George Mbwabi moved to the podium on behalf of Rosterman Umbrella CBO gave vote of thanks to all protocols present, Stones of wealth and community members towards their presence and making the day successful and thanked for accepting the Investor Stone of Wealth.

MIN: 07/23/11/2023.A.O.B AND ADJOURNMENT.

There being no other business the meeting ended by a word of prayer from Pastor Enos Mwilitisa at 2.30 pm.

CONFIRMED BY:

CHAIRPERSON:

SIGN.....DATE.....

PREPARED BY: **BENARD HINGA**

SIGN.....DATE.....





Mr. Patrick Ligami (AMC Committee Chairman Kakamega County) addressing the community.



9

[Handwritten signature]



Stones of wealth (Mr. Sala) addressing the community



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER 2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	SALOMON 12 KALEHA	41449058	0709570353	MURUBUE	Sab
2	SOLOMON MUTONPO	5394471	0718186130	MUKTONJE	Mutondo
3	VIOLET KHAMALISHI	11146963	0721851612	ROSTERMAN	Violet
4	Henry humumba	5632272	0722347523	ROSTERMAN	Henry
5	MUR VICTOR MUKOGA	29174792	0795985933	ROSTERMAN	Victor
6	DHAMILE SENTENZA	14678515	0712506259	CHIEF	Dhamile
7	JACKSON ASHIVE NDE				Jackson
8	LIAM KENYUA	27184927	0740285873	ROSTERMAN	Liam
9	CLAUDE SHIRE	33224994	0793276480	ROSTERMAN	Claude
10	KEVIN Mutsumi				Kevin
11	MACARIO S LONWA		0715071586		Macario
12	Lillian paul				Lillian
13	Edwin Makakura	245760216	0724538553	ROSTERMAN	Edwin
14	RIZABETH MONTONGA	31427805	0704088341	ROSTERMAN	Rizabith
15	MARINE INDASHI	33871580	0768480282	ROSTERMAN	Marine
16	DELPHINE DADISA	30421844	0790002757	ROSTERMAN	Delphine
17	Lilian KIWAMBANA	24991088	0791823920	ROSTERMAN	Lilian
18	Beatrice NANTAKA	07968857	0721175289	ROSTERMAN	Beatrice
19	Mediatra Mambaye	21979912	0718850824	SHIRERE	Mediatra
20	Alice Nekesa	20962150	0741387491	SHIRERE	Alice
21	MARINE MUYATI	21998928	0726517393	ROSTERMAN	Marine
22	JOHN CHINDO	25516493	079005339	Joyland	John
23	Geoffrey Azisano	13349125	0714140961		Geoffrey
24	Antony Winyema	31155867	0703425987	ROSTERMAN	Antony
25	BONFAT SHYACHI				Bonfat
26	ELIZABETH SHINGU	4153605	0759748151	MATOPETHI	Elizabeth
27	HESBOY MOKAYA	33375001	0799827808	Joyland	Hesboy
28	ALPHONCE KIMAN	1321561	0721619574	ROSTERMAN	Alphonse
29	Ragab Masheti	39046929	015593779	ROSTERMAN	Ragab
30	YUSON MURGOVI	32940601	0740870733	ROSTERMAN	Yuson



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	
1	Edwin Ingosi	24091171	0716330170	Shina	OT
2	Felix Serele	37165653	070113274499	Rosterman	Shina
3	Lugard Obwar		0726743923	Rosterman	Shina
4	Liameel Muiari	25436314	0799333860	Rosterman	Shina
5	Felix Muiari	29564722	071264151	Rosterman	Shina
6	SALOME NAWIRIYU	14660044	0725921211	Rosterman	Shina
7	Intolator Mutekili	32732430	0746020405	Bushidola	Shina
8	Wycliffe Alango	OT	0725276539	Rosterman	Shina
9	Charles Mutekili	30	0728729040	Rosterman	Shina
10	Rajah Ambaci	29031188	0794690907	RMA	Shina
11	Enock Kisala	25011856	0702895452	RMA	Shina
12	Elvis Lipya	25032186	0700501627	RMA	Shina
13	Dennis Wape	37481801	0743953349	Musya	Shina
14	Raphael Lijaya	37265658	0759390679	RMA	Shina
15	Sammy Mutekili	28794169	0705807241	RMA	Shina
16	Cosmas Lukhuma	22997038	0768394669	RMA	Shina
17	Duncan Likani	31827840	0757323952	RMA	Shina
18	Rodger Mutekili	13633074	0723767598	RMA	Shina
19	Laurent Chyambo	41159439	0752328553	RMA	Shina
20	Simon Kanyo	28382039	0754326139	RMA	Shina
21	MIKE CHILALI	41820302	0790006661	RMA	Shina
22	SHELDON BOY	32058199	015127775	RMA	Shina
23	Pachesq Shitankane	0566196	0710249259	RMA	Shina
24	TERENCE ASAVA	22166410	0723160654	RMA	Shina
25	ANTHONY MUIARI	2053842	0713489115	RMA	Shina
26	PETER INGIHA	23857958	0711815068	Rosterman	Shina
27	KEVIN Opono	32337577	0700179621	Rosterman	Shina
28	Bernard Kisala	5275091	0725221270	Shina	Shina
29	Michael Kisala	5767899	0720518495	Shina	Shina
30	Richard Shukwe	9258983	0703451336	RMA	Shina

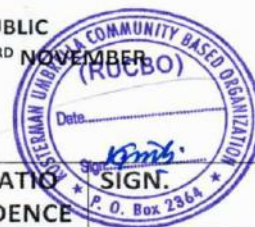


ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST

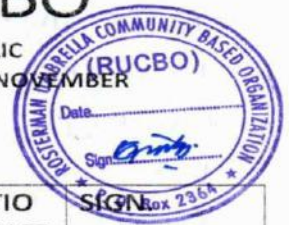
NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	AMINAH JUMA	25733248	0769062532	ROSTERMAN	
2	Rose K Wiliam		072634464	Litungu	
3	JESSEIN KHAYAYI		5723170197	SINAH	
4	PANTIA IHAYI				
5	EUNICE HATAMBA	26045244	0713838151	SINAH	
6	GLADYS OMURONBI	26635652	0742670944	ELWESERO	
7	LEONIDAH MUSUMBI		0740948580	ELWESERO	
8	LOICE MBALI	2795302	0740344773	ROSTERMAN	
9	SERPHER MURINDA	1258475	071		
10	EDWIGHT KHAMASI		0726223191	ROSTERMAN	
11	CYRILINE KHATIBABA				
12	FELISTAS AMIRUWA			ELWESERO	
13	LILIAN AYUMA	10216408	0711943146	Lilian	
14	Hellen Shichehi	21253532	0716565590	Shichehi	
15	Susan Shetimba		0744919231		
16	WIMBROTA MAKWALA	23774536	0710869112		
17	TABITHA WISEKE	0436700	0723463383		
18	MAGRET WAMALWA		0726335619		
19	ANGELIN MASIONGO		0726397480		
20	Cristine Scelastika	6374063	07448386	Rosterman	
21	Imbulabala Vindels	31646112	0729001431	Rosterman	
22	Wychke Milimu	0277185	0725801667	Rosterman	
23	BENARI HINGA	13351441	0720874702	ROSTERMAN	
24	ANDIS KWEYU	7939660	0712017914	Rosterman	
25	JORDAN HUYA	5632199	0768062283	MUSIBATO	
26	JUSTUS KHAMABO	23626219	0701129557	Mwesero	
27	ALFRED KRAMITI	21979882	0746462113	Mwesero	
28	DERRICK MURUMBI	2521476	072972035	Mukhosi	
29	MESHACK MHEVO	20752720	0711926563	Mukhosi	
30	Steve Ayayi		0716737808	Mukhosi	



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER 2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGNATURE
1	MARINE MINTIKHA M.	37731235	0740728283	ROSTERMAN	MA
2	RABECCA LUMUMBA	11479221	07102330921	ROSTERMAN	RA
3	WILFRIDA SIMKATIKA	20750738	0711227647	ROSTERMAN	RA
4	Patricia Lusinde	39565696	07152711289	Rosterman	RA
5	Philis Akulungu		075719508	Rosterman	RA
6	LONITA MUTOZI	10235819	07		
7	VIOLET INGESI	21328815	0711871229	Rosterman	RA
8	Imelda Khatenje	78380120	0746762850	Rosterman	RA
9	Marrion MUSESHI	3411838	0702237348	Rosterman	RA
10	Phenny Edumambo	34362004	075711593	Rosterman	RA
11	Acluy Natty	38230881	0711077219	Rosterman	RA
12	Colubatorata Khayurshi	07996218	0718394511	Roster	RA
13	SHEKAT Butokwa	282391165	07656915110	Roster	RA
14	Nyckus Shukwasa	26907857	0713433219	Roster	RA
15	Consolata Uthavi	209270671	0797566779	Roster	RA
16	RUTH MUTOLO	9890362	0704150478	Rosterman	RA
17	Leonita Khateshe	31326745	0716720902	Rosterman	RA
18	Mary Sandlele	28361677	07723357709	Rosterman	RA
19	Irene FELLA	28081175	0714823718	Rosterman	RA
20	Julia Maraka	1323982	0708069383	Rosterman	RA
21	Adelaide Khamasi		07191262331	Rosterman	RA
22	Annah Muzungu	9891095	0713481466	Rosterman	RA
23	Rozalish QUEEN			Rosterman	RA
24	Faith Bututsa	37384024	0717284366	Rosterman	RA
25	RABECCA TARACHA	35648871	0790882213	Rosterman	RA
26	SELLAH NEKESA	29678828	0704859272	Rosterman	RA
27	Marine Auma	22790397	0791506148	Rosterman	RA
28	Sharon ISOJI	33002560	0790692726	Rosterman	RA
29	JAMET ISIJ	22019153	0700410591	Rosterman	RA
30	PHILIS mmbone	23194976	0708924390	Rosterman	RA
	VICTORIA KHAYESI	33603019	0796240506	Rosterman	RA

FRANCINE

Francine mmbone

20341283

0723012248

ROSTERMAN UMBRELLA COMMUNITY BASED ORGANIZATION

NAME	ID	
VICTORIA KHAYESI	33603019	0796240506
Orthavina KHAMETE		
Ca Leonidah KHASIALA	4154872	0790423649
ANSELINA MUBHONGO	6234031	0706062637
Fastina LUNYULU		
EVALINNY ZIMI	13260322	0798106412
TERESA MWAHANI	11145621	0758637707
LINET AYUMA	24578894	0786663354
Rosilina Kbagghi		0715597327
Christina Inggir	26935286	0715597327
EVALINNY INZANI		0700118232
Cedrick Ligina	33606711	0725608653
Francisca Shipulu	26558883	0706565015
Kerin Musinye	30350231	0718296900
Linet Achieng	25439311	0790577429
Caroline Muyuka		0722706132
PHILICE OBIR	2045	0702414859
PAMELA SHUKOLI	20654832	0706240768
HELEN ISICHI	31012430	0797660880
ROSELINE MASITSA	11094093	0708354072
EZINA KAYOLE	1318759	0724834652
PRECIOUS QUEEN	1140791	074026081
MARGRET MBONE	1321333	0797518462

ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATIO N/RESIDENCE	SIGN.
1	DARAL KHEKONI	29173615	0702474995		
2	CARD LINE WANJIKU	30065617	0705154955		C.L.W
3	ALICE SHIHAFU	13347702	0714766585		#to
4	PAMELLA BUCHETE		0717033804		P.B
5	BEATRICE KHALAYI	69998462	0701632243		BK
6	ALICE ACHIENG	27140428	0707217137		AA
7	FLORENCE MUDI	4032351	0746899886		AM
8	BILHA MAFOYA	2655971	0715281459		Bh
9	MALSONI MUNIAI	38731124	0711885640		MM
10	SILVIA ELIOS	29403240	0704702945		ELIOS
11	EMILY IKAMWANTYA	21047424	0720756345		EM
12	VIOLET ISHUKA	22167497	0715071579		ISHUKA
13	FLORENCE IMBOSA	11742227	0769557671		IMBOSA
14	CHRISTINE INZERA	22127268	0717425099		CI
15	ROSELIDA MACHU	13304799	0727557142		RM
16	SYLVIA MUKAYI	28905210	0706647627		S
17	MARGARET AWINJA	25929123	0762901452		MA
18	NOEMI ILIDIA	2677381	0759574227		NO
19	CAROLYN LEAH		0715653391		LEAH
20	MAUREEN MUKDISHI	29412758	0799144684		MA
21	EUNICE MUNTJELISA	26299128	0707227206		EUNICE
22	JACKYLIN MAGESI	36449846	0745592926		JM
23	SABETI ITEMBO				SABETI
24	DORINE LUKIYI	20274714	0718692295		DORINE
25	JULIET KUTEMBU	24660558	0705547553		JULIET
26	ABRAHAM IMILIZA	38361202	0712004527		AB
27	LINET INJETA	3364556	0114830250		LINET
28	RACHAEL NAMWATA	42066766	0791376030		RACHAEL
29	Nadomi Khayesi	38603208	0712705315		Nadomi
30	ILICIN MACHESO	35203559	0112705345		ILICIN



Edwin Khayumbi 38280028 0740075897
 Hadijah Robai → 0720756345
 SISI LIA IGHA To - 3300-2537 07955872
 Millicent Mukhaya 12696629 0722338896
 Makulata Katmanga 10478232 0712817854
 MELVIN VUGUZA - 29203002 - 0769283303-
 RESLA KHASIANI 9216413 070033058-
 Agripino Muhotig 33604239 0762864561-
 Mildred Ichavele - 25548436 0701578689-
 Margret Muryasa - 749859140 - 0726672217-
 Ester ALIONA - 22392125 - 0726970159-
 Cynthia Khamusali 34569911 - 0717865749-
 SERAPHINE LUCY 27586489 0791156583-
 LOICE OSIKO 37743084 0748238395

ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	STANLEY L. LIKHTA	11469244	0724 646 777	SELF EMP.	[Signature]
2	ELIAS ROCHESA	37380714	0742105537	"	[Signature]
3	BONOMO SHITSHUKAME	22191623	N/A	JOBLESS	[Signature]
4	EMANUE MUTATI	2690529	0757624613	CADDENARY	[Signature]
5	Wycliffe M. Ngure	29201507	0799506561	R/man	[Signature]
6	Kevin Mhambiro	27456183	0743061963	R/man	[Signature]
7	William Immingi	24845176	0769629042	R/man	[Signature]
8	BRIAN TOSI	32935576	0729019898	R/man	[Signature]
9	GRACE ITENKO	40756801	"	"	[Signature]
10	Vincent Nangeli	20486828	0794315790	"	[Signature]
11	Wycliffe Khambo	29180486	0714101136	R/man	[Signature]
12	ALAN XAVIER MACHATO	42325188	0794428890	Rosterman	[Signature]
13	Brian Muli	40580681	0716914775	Rosterman	[Signature]
14	Timothy LIAVO	28579330	0724892190	Rosterman	[Signature]
15	Tobias Shisali	23532351	0723800904	Rosterman	[Signature]
16	James Mubati	"	0708776416	Rosterman	[Signature]
17	Nelson Nandwa	0768690477	071830603833	Rosterman	[Signature]
18	Eric Ashimo	9622773	0727252611	Rosterman	[Signature]
19	Eric Magai	27199611	0790957538	Rosterman	[Signature]
20	Nashon Muijalo	38015164	0711123815	Rosterman	[Signature]
21	Magnus Amaji	37446231	0748461541	Rosterman	[Signature]
22	CHRISTOPHER METIKA	0830699	0754543050	Rosterman	[Signature]
23	Telex Alukhwa	23001741	0748835310	Rosterman	[Signature]
24	EUGENE BUKH PHA	38342566	0110232561	Rosterman	[Signature]
25	Daniel Mucanya	22081424	0721865067	Rosterman	[Signature]
26	BRIAN MUKOYA	22161970	0794396	[Signature]	[Signature]
27	ELIAS Mibeso	3749666	0793002675	Rosterman	[Signature]
28	Lewis Mwangi	29201108	0703922923	R	[Signature]
29	Wagston Matelawa	32932313	0757223874	R	[Signature]
30	Sebastian Kwayimbo	39720733	0706635701	R	[Signature]



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	Richard Mwachiti	11144155	0748449204	Rosterman	Dumb
2	POLYCARP MUHANDA	27716556	0728567271	HURUMBI	PH
3	ENRIQUE SHUKWA	22008319	0728305242	MUSIN	PH
4	WILBERFORCE MUYOMA	25727709	0713562201	TUMBU	PH
5	JOHN ACHESA	1173591	071028733	ROSTERMAN	PH
6	Kizito Peter	27720	0795300010	Rosterman	PH
7	John Itemele	6615340	070171700	Rosterman	PH
8	Kennedy Isutemilimu	332728	07040604	Rosterman	PH
9	CARLOS ANIDHA	373344	079591144	Rosterman	PH
10	Benedict MUTOKA	13586017	0717538224	SHISASATI	PH
11	Johnstone Nankwaga	38731228	0759461279	Rosterman	PH
12	Mack Donald Mutekwa	27361012	07843418	SHIKI	PH
13	Jashua Mankwa	2874400	071572288	Rosterman	PH
14	CASPER AMPALIWA	27361012	07181379	SHIKI	PH
15	Emmanuel Mbakia	40030051	0746983358	Rosterman	PH
16	ERICK MUKHONJE	04546343	0702300364	Mukhonge	PH
17	Gale Mwakia	38205649	0797707752	Mukhonge	PH
18	VITALIS ISABA	2887242	7704487352	Rosterman	PH
19	BRIAN LINESO	39922781	0791732357	Mukhonge	PH
20	Polycarp Mwilita	3446809	0700596910	Mukhonge	PH
21	Silvester Ayekha	22764711	0719195402	Rosterman	PH
22	Wycliffe ACHESA	118977	07227145	Rosterman	PH
23	JOHNS LUKHWA	23446320	0717996829	Rosterman	PH
24	Reuben Ruvaka	20501233	0746180330	PH	PH
25	CHRIS PINUSANZIMU	37320928	0113351790	PH	PH
26	Ferdinand Shumeka	38730904	0705122636	PH	PH
27	LIVINGSTONE Manyonyi	29372901	0740078157	PH	PH
28	PHILIP Inyite	2829267	0796931044	Rosterman	PH
29	ERICK KHAMISI	26374600	015980582	Rosterman	PH
30	Mohamed Mawimbo	5656060	0722678463	Rosterman	PH

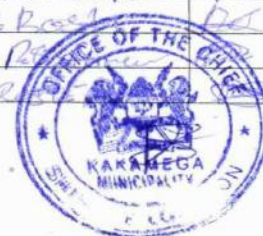


ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER 2023 FROM 10:00 AM.

ATTENDANCE LIST

NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGNATURE
1	IGNATIUS MURRAY	1320098	0110678240	ELWESERO	
2	Benedict Ingabi	13672605	0724761415	ELWESERO	
3	Isaac Harambe	9624364	0703971850	71	T.H
4	Bernard Khasani	2028346	0727005167	Rosterman	
5	Abraham Kweyda	26017818	0701493868	17	K. Kweyda
6	BENEDICT ISHAKA	14728078	0746102027	ELWESERO	
7	Atanasius Khasani	1320095	0728353933	Rosterman	
8	ALISTUS SHIMOMBO	22550170	0712449734	Rosterman	
9	FELIX SHILOTO	32377343	0768016956	Rosterman	
10	Victor Matoya	29008513	071801314	Shisasa	
11	Titus Kanga	23924135	0762864616	Shisasa	
12	Wingate Atsena	14463795	0792191553	Shisasa	
13	HANWILTON Mphahlele	33861657	0795489321	Matapan	
14	Chispa alhamba	32039424	0702637033	Shisasa	
15	Mag Khasani	23026889	0790974437	ELWESERO	
16	TAKESAN ASTHORA	22526332	0701648414	Shisasa	
17	Arnold Shilisa	9890072	0722281105	Rosterman	
18	JOSEPH LISILO	33550299	0716475745	Rosterman	
19	VINCENT LISEHE	12704112	0723488060	Rosterman	
20	CLEOPHAS SHIVOGA	21929303	0729648264	Rosterman	
21	Augustus MACHISI	11144155	0748449201	Shisasa	
22	Mphahlele Nkhomo	25608380	0700182490	Shisasa	
23	JEROME A. Mphahlele	2570552	0713845467	Rosterman	
24	Johna Hamba	20720856	072076345	Rosterman	
25	ABUSOLUM HUMONGO	2314803	0799691113	Rosterman	
26	MARK MUKATIA	6982951	0745651828	Rosterman	
27	MATHEW MURAI	107797	0714019352	Rosterman	
28	BONFACE ASHOKA	14462699	0715205266	Rosterman	
29	Bonface Shikwanya	255898	0724210614	Rosterman	
30	MILTON MURAI	20730765	0114513443	Rosterman	



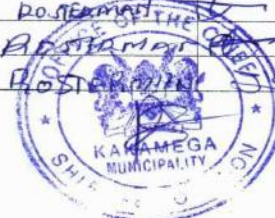
ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	SUSAN DINAUNGA	26553318	0718008759	Rosterman	Susan
2	EUPHEMIA ANDALO	38752756	0799920421	Rosterman	EL
3	Yvonne mirayo	40413038	0757223874	Rosterman	Yvonne
4	NANCY LUAYO	21333646	072268370	Rosterman	Nancy
5	Everline Ingosi	25938500	0726818741	Rosterman	Everline
6	MILDRED Khasiani	34538315	0711686952	Rosterman	Mildred
7	MIRIAM mukavi	21083107	0701497245	Rosterman	Miriam
8	MARY Aminda	5628720	0713384982	Rosterman	Mary
9	PAMELA MUKOLA		705981500		PAMELA
10	Loice musanga	23279428	0728874510	Rosterman	Loice
11	Dilector Mukara	42366580	074253250	Rosterman	Dilector
12	Herisha Akingi	27685515	0700909463	Rosterman	Herisha
13	Sylumena Khasetsa	35517518	0706471032	Rosterman	S.K
14	Phyllis Akula	29264520	0716676641	Rosterman	A.K
15	Edith Khasai	10801279	0790503496	Rosterman	E.K
16	Rose Vicheti			Rosterman	R.V
17	ALICE KHAVUCHI	30603376	0716822804	Rosterman	Alice
18	Rosaliah Asuka		0729775987	Rosterman	Rosaliah
19	Mercy Lukema	30603440	0769629043	Rosterman	Mercy
20	Florence okwako	22506943	0725049379	Rosterman	Florence
21	Sheila Shatoti	29201060	0759134328	malimili	Sheila
22	MAUREEN KHAVAI	36605748	0799443745	HURUMBI	M.K
23	Mildred Masidza	28379936	0790503724	Rosterman	Mildred
24	CHRISTINE NIOLENSE	23933253	0708274504	ROSTERMAN	Christine
25	CAROLINE SHIGOND	35555956	0799848327	ROSTERMAN	Caroline
26	MEABET MMBONE	31236125		ROSTERMAN	Meabet
27	ANN NJUGUNA	36625101	0700669674	ROSTERMAN	Ann
28	VIOLET OKUTOH	28004654	0758835386	ROSTERMAN	Violet
29	CHRISTINE WUDATI	29022761	0768183986	ROSTERMAN	Christine
30	JUDITH SHINAFU	26888900	0715069462	ROSTERMAN	Judith



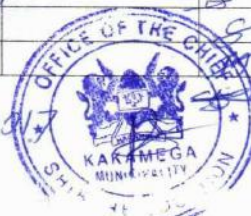
ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	JANET AYAKALWA	26758190	0706862379	ROSTERMAN	X
2	TRUFOSA MIDEVA	1174327	0792244481	ROSTERMAN	TRUFOSA
3	ASMIN AMBUNYA	25028910	0721255859	ROSTERMAN	ASMIN
4	BEWICE AGHIAMBO	21505591	0769699418	ROSTERMAN	BEWICE
5	JULIA KHAMOLE	34569911	0746518041	Rosterman	JB
6	PUNTY KHARAYI	40930695	0756908391	Rosterman	PK
7	ROSE CHUMALI	41577692	015589636	Rosterman	ROSE
8	EMERICAR SHILAKU	28199692	0757628612	Rosterman	EMERICAR
9	OLIPHER INGOSHE	33406473	0701681377	Rosterman	OLIPHER
10	ROSE ATSEMBO	12568640	0721595124	Rosterman	ROSE
11	ELIZABETH OKUDO	38046403	0792164046	Rosterman	ELIZABETH
12	SILVIA KHASANDI	07039004			
13	VALLARY AMANGA	39417494	0741159806	Rosterman	VALLARY
14	SILVIA KHASANDI	39068611	0703806911	Rosterman	SILVIA
15	DAPHINE NDOGO	39381114	0112910586	Rosterman	DAPHINE
16	DAISY KHARAYI	39034315	0706062637	Rosterman	DAISY
17	SARAH BUSILO	07603324	071718204	Rosterman	SARAH
18	GRACE TUDAYA	1321361	0714735740	Rosterman	GRACE
19	SUSAN AMUNZE	10070737	0702778969	Rosterman	SUSAN
20	MARY AWIJA		0729207620	Rosterman	MARY
21	REATHI MATENDACHO	25610559	074393660		
22	RUTH WERENDE	31054973	0705137907	Rosterman	RUTH
23	LILIAN ANDENYE	31103119	0796074083	Rosterman	LILIAN
24	JEDANA IMBASA		0728988867		JEDANA
25	GRACE KASEHA	13579305	0112616277		GRACE
26	JUDITH INGAJISI	22149810	0712262307		JUDITH
27	EDINA MUKOSHI		0796283546		EDINA
28	JACKLINE MUKIZE		0722624260		JACKLINE
29	CHRISTINE AWIJA	41660771	0114361395		CHRISTINE
30	WILFRIDA MASITSA	3242377	0701561091		WILFRIDA
31	JESCAR KHALWALE	25886759	0792904517		JESCAR



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER 2023 FROM 10:00 AM.

ATTENDANCE LIST

NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGNATURE
1	LILIAN SHISIALI	21505775	0707964323	MUSAA	
2	CHRISTINE LUHOMBU	23450889	0712279979	Rosterman	CM
3	KELVIN MUREHU	08435612	0797780905	Rosterman	MA
4	Harriet Khasubi	29405816	0728772233	Rosterman	JA
5	Jane Ikambili	6973767	072032179	Rosterman	JA
6	Solome Andun	8019625	072923927	Rosterman	JA
7	Juliet Kasisa	4152956	0792914033	Rosterman	JA
8	Benet Bukhwa	1320100		Rosterman	JA
9	Felicitas Atam	10920144	0704329328	Rosterman	JA
10	Mahamudikavi	0	0716459646	Rosterman	JA
11	Selifu Munyore	27239282	0707957413	Rosterman	JA
12	BETH ANYANGE	23891221	0739637654	Rosterman	JA
13	ELEMINA MASITA	1320350	0708197267	Rosterman	JA
14	Andrew Musanga	34837394	0757456085	Rosterman	A.M
15	Juliet KUSDID	4151002	0757091013	Rosterman	J.V
16	Pofuli Kusioka	33641605	0704833444	Rosterman	P.b
17	Agripin Katafi		0715695071	Rosterman	A.H
18	Victoria Kuyesi	29554630	0729545264	Rosterman	JA
19	Eveline Mushi	32939581		Rosterman	JA
20	Pamela Achuba		0740411550	Rosterman	
21	Beatrice Mushi	5449751	07111831337	Rosterman	JA
22	Melwiana Dendwa	1321707	0794680497	Rosterman	JA
23	Selfa Ayera			Rosterman	
24	Mepo AZUCHA BETI	1444758	0710262261	Rosterman	JA
25	MARY MAMATI	36467246	0759561565	Rosterman	JA
26	IONAH NYANGGHE	1173050	0722613461	Rosterman	JA
27	EVALLYN SHIMBO	2174086	0701481962	Rosterman	JA
28	PRISACK KADENJE	184471	0799634109	Rosterman	JA
29	MICHAEL KHACHI	3192934	0792198799	Rosterman	JA
30	TERESA PANYAGO	1319313	0718401160	Rosterman	JA



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN
1	VICTOR DUMA	22214372	0712298826	ROSIAMAN	[Signature]
2	Ben MUDIDA	21326274	-	ROSIAMAN	[Signature]
3	Douglas Muthami	26281455	0710326177	Rostaman	[Signature]
4	Mike MUSAHA	39542628	0757156167	Rostaman	[Signature]
5	ELON SHISITHI	2294314	0769485344	Rostaman	[Signature]
6	WISMAN NMBWABU	27028066	0759526369	Rostaman	[Signature]
7	Fedhand LIHANDA	32385442	0702004417	HIRUMBI	[Signature]
8	FRANKLINE MBWABU	3073901	0706134167	Rosterman	[Signature]
9	Ali Makhwasa	33569835	0114140750	Shipale	[Signature]
10	ANDNY KHAMAPI	-	07281819	Shigaba	[Signature]
11	Aggrey MURANGI	5133270	072842737	Rosterman	[Signature]
12	IPLEX MATPKULA	-	0715690067	Rosterman	[Signature]
13	Philip Imbachie	39547570	0798523449	Rosterman	[Signature]
14	Edward Swalala	38922741	0741911421	Rosterman	[Signature]
15	Aggrey Shimonyo	21143252	0714722259	"	[Signature]
16	Kevin Shutsu Kane	14661271	0723810781	"	[Signature]
17	Fredrick Inga bi	127041001	0797824008	"	[Signature]
18	Mudi Akabaka	20382666	0742574471	"	[Signature]
19	Mukuu Lameck	38014163	0710622134	Rosterman	[Signature]
20	Finson Mudayi	23981918	0728249075	Rosterman	[Signature]
21	Stephen Mubda	25042340	0715655192	Rostaman	[Signature]
22	HEDRICK MUKASA	34577795	0737672254	Rostaman	[Signature]
23	CHRISTOPHER ACH	1256938	0111267386	Rostama	[Signature]
24	BANTONS WOLEMBU	2546356	0746685194	-	[Signature]
25	AGGREY MURAY	30744125	0715454535	"	[Signature]
26	CCOPTHAN SHIGI	2192973	0729648264	-	[Signature]
27	Linus Anduku	25788797	0768967925	Rosterman	[Signature]
28	Willang Elisha	2957210	0710963008	-	[Signature]
29	DAVID KHAMURDA	2757986	071579656	-	[Signature]
30	Evans KUSIJIRU	13300134	0714494045	-	[Signature]

Refer



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATIO N/RESIDENCE	SIGN
1	MARGARET LICHINA	22505653	0728254524	ISESE	M
2	MWANAISHA ASHIONO	16111396	0729512053	"	Sis
3	FENIKEI RUNYAGI	0222969	0725887923	"	P
4	PHILISTER MUSANGA		0701219061	"	IV
5	EDITH VIENDA	20972850	0708770326	"	
6	URSULA SHAMWANA	14660739	0726666997	MULIMBOLE	U
7	ANGELIAH KHASDA		0716356931	ISESE	Ag
8	ROSE BUSIEKA	6670878	0727115829	SHIBUTSE	R
9	LUCIA KHALENYA	1175962	0717284328	ISESE	E
10	EVERLYNE MBWAB	5657671	0710897293	"	E
11	ROSE SHIBUTSE	6994363	0794374028	MULIMBOLE	
12	PERRY OTSUKU	995285	071553217	SHIPALO	t
13	DAMELA KHATIALA	21692266	0726797792	ROSTERMAN	R
14	ROSE GAROLE	12300386	0705650327	Rosterman	R
15	Fridah Machayo	0567491	0720258092	Rosterman	Frida
16	EVACINE MWACH	26827599	0700089987	LWESERO	M
17	EUNICE AMOS	2345679	070708760	LWESERO	M
18	SKILLER YUGUTSA	35720538	0743427370	ROSTERMAN	S.V
19	PETROMILA NERESA		072696708	SHIMA	h
20	RITA AZIZA PASCAL	13199595	0718972334	SHIPALO	Aziza
21	PAMPHILLAH NGULUCHI	28039926	0711536290	SHIPALO	P
22	REDEMPTA S. MUSANGA	12646538	0710526866	ROSTERMAN	R
23	LADNIDTA T. MUDESI	34566952	0702815433	ROSTERMAN	R
24	JOSEPHINE QUEEN				
25	ROSEMARY AWINJA	1044360	0114277332	ROSTERMAN	R
26	JOSEPHINE INDUKO	29557442	0112073062	ROSTERMAN	R
27	ESTHER J. KATILA	37641939		ROSTERMAN	R
28	SHEILA CHIBUUSO	32952085	0790100423	ROSTERMAN	R
29	TERESA MUSHENI		0708888954	ROSTERMAN	R
30	SEVENZIA MURSHI	13023638	0713684645	ROSTERMAN	R



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST

NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGNATURE
1	SUSY MUKAISI	5656963	0113473997	ROSTERMAN	
2	JETRIX NIFA MADEDE	30224103	0700491498	ROSTERMAN	
3	CATHERINE MWIMALI	03230290	0126441997	EMUKHOJE	
4	AMJELINA MUCHELE	5656776	0712134685	ROSTERMAN	
5	ESTHER KADDOGO	20299843	0710622134	ROSTERMAN	
6	MODESTAH AHZIRAH	23757653	0758089473	ROSTERMAN	
7	ELORAH MUCHELE	6615610	0725704061	ROSTERMAN	
8	STEFROSE KILUKA	1322032	6757553741	ROSTERMAN	
9	VALARY KHAVATA	35646437	0718923727	ROSTERMAN	
10	CLAUDIA SHIVOKO	23965807	0757629319	ROSTERMAN	
11	MILDRED ICHELA	6530066	0715676541	ROSTERMAN	
12	MARY KAVERE	6227575	0768014560	ROSTERMAN	
13	AGHETA ATOI	5126542	0723453412	MUKHONJE	
14	CATHERINE KADENYKA	11838180	0710697136	ROSTERMAN	
15	JANET SHIVOKO	6884290	0729892729	ROSTERMAN	
16	Rhodah Masitsa	30603358	0727892729	ROSTERMAN	
17	CONZOKATA LISHATI	32795952	0705405246	ROSTERMAN	
18	BETTRICE SHANYISA	38964481	0759388053	ROSTERMAN	
19	KILIAN SAKALI	29407838	0704467579	ROSTERMAN	
20	JULIET MUMBAGA	29861406	0719251745	ROSTERMAN	
21	Deborah SYRUSAH	40233983	0746575244	ROSTERMAN	
22	MAXIMILLA ANDATA		0748632422	ROSTERMAN	
23	PETRONILLA KESHE	121030179	0715716328	ROSTERMAN	
24	LOICE ASINGWA	32952049	0790427896	ROSTERMAN	
25	SHARON KHAKASA	38560228	0792914033	ROSTERMAN	
26	Elipice Oside	26971735	0721788559	ROSTERMAN	
27	MELISA ANYONA	30603421	0703103044	ROSTERMAN	
28	JULIET ACHUENG	33602358	0740057020	ROSTERMAN	
29	Ruth Andia	28360154	0705542732	ROSTERMAN	
30	Joylyne Masinde	29539849	0791427692	ROSTERMAN	



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	CALEB MUNAI	20109555	0723058167	ROSTERMAN	
2	SOLOMON OBUSENA	1045689	0726120282	Vis. Chairman	
3	ALOIS LUSEKA	7902881	0727445268	SHILASARI	
4	ERIC ALUSIONA	22312499	0724094278	ROSTERMAN	
5	ELPHAS ASHVENDE	2303029	0722282159	ROSTERMAN	
6	LIMISI Alfred	8319135	0700360662	Rosterman	
7	HENRY M. LUSIMBA	4151454	0716463306	Rosterman	
8	GEORGE MURRAY	21219565	0729375154	CHIEF CHIEF	
9	WILLS OCHIAI	0721132025	0721366000	CHIEFMAN	
10	FRANK LUKO	8666771	0743615914	CHIEF CHIEF	
11	Benedict Ingabi	13672605	0724761415	Member	
12	Wycliffe M. NAGARA	29201507	0799806561	R. Man	
13	FREDERICK ALUSIONA	6340175	0726793529	ROSTERMAN	
14	BEDY ALUSIONA	24023670	0725742021	ROSTERMAN	
15	KENNEDY LANDI	5792471	0713752382	ROSTERMAN	
16	Kevin Mupenga	28435612	0797980925	ROSTERMAN	
17	Francis Shikokoti	-	0727359797	ROSTERMAN	
18	Wilson Primiyu	13300501	0711356534	ROSTERMAN	
19	Godfrey Ingoi	10006431	0722195512	Chairman	
20	WILSON L. KHAYUNGA	1220181	0722860496	Member	
21	ALEX IVAYO	12568097	0115886243	ORGANISING SEC	
22	Elphas Mochi	22904749	0745530406	Manager disposal	
23	Clay Mose	2945458	0714066861	ANIC	
24	PATRICK MAKHULE	22944961	0721442652	ANIC	
25	DAVID Mpayia	23940707	0701803211	Inspector	
26	ENG S. M. M. M. M. M.	11095671	0745243930	AOC	
27	ESTER KADOGO	20299843	0710622134	V. CHAIRMAN	
28	REV. PETRO L. MBWAZI	1319015	0713860754	Health Expert	
29	KANIRA D. H. IMRAZI	6982060	0718995386	ROSTERMAN	
30	FRANKAN M. M. B. M. M.	3431119	0726102257	ROSTERMAN	



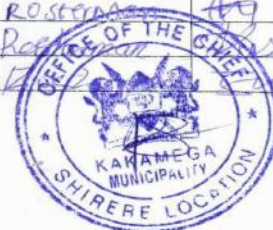
ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	ISAIA SHIGHUYU	33811825	0704856482	ROSTERMAN	ISAIA
2	ADRIANO SHIGATO	0831534	0748169769	SHIGATO	ADRIANO
3	JOHN MURRAY	0831161	0726427221	ROSTERMAN	JOHN
4	STEPHER OMOTEBE	14530877	0715787237	KAK VRC	STEPHER
5	PETER MBWABI SHIMONYO	6285092	0714942355	ROSTERMAN	P.M.S.
6	MOSES LUGANIA	38446037	0727117859	ROSTERMAN	MOSES
7	PHRICK AMALI	1323955	0700292064	ROSTERMAN	PHRICK
8	WIDIO MARKO	20478011	0117702791	ROSTERMAN	WIDIO
9	FRANCIS MASHEI	20014582	0724368657	ROSTERMAN	FRANCIS
10	Paul RAMA	0360431	0705627834	Rosterman	P. Rama
11	Agree MUBATI	2544821	- - -	Rosterman	Agree
12	Robinson Amareta	36607101	0716810809	Rosterman	Robinson
13	ELIAS BUKHALA	5656004	0717255267	Rosterman	ELIAS
14	CEDIC LOTI	30556506	0743128421	Rosterman	CEDIC
15	Dennis Ogulu	36719177	07113566610	Rosterman	Dennis
16	Boaz Ogulu	110932197	0710992797	Rosterman	Boaz
17	DIOS ACHESA	6285297	0700754620	Rosterman	DIOS
18	Rodgers M. Aher	29002295	0729052257	Rosterman	Rodgers
19	Isaac Aher	6615340	0706730667	Rosterman	Isaac
20	TOM MUSE KAYI	35931257	0715557217	Rosterman	TOM
21	ALFRED KHAMUNG	11834820	0717812170	Rosterman	ALFRED
22	Valasha BEN	28110619	0757256463	Rosterman	Valasha
23	ALFRED MIHESO	14461144	0720743937	Rosterman	ALFRED
24	DAVID ORODAM	29339697	0703139745	Rosterman	DAVID
25	Kelson Makwanyi	37480402	0795912010	Rosterman	Kelson
26	IAN OMWEREMA	32653117	0705905582	Rosterman	IAN
27	EUDON I MABALI	21607629	0740327198	Rosterman	EUDON
28	JUSTUS LIYATI	39119068	0716233572	Rosterman	JUSTUS
29	Kevin Kungu	30603533	0746585687	Rosterman	Kevin
30	JACKSON IVEHIN	20487986	0762025016	Rosterman	JACKSON



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	JERRY ATILI	33666732	0724763078	Rosterman	JF
2	ADRIANA LIPPA SINDA	0272604	0712434350	Lwasaga	Lm
3	DICKSON KAMU	26132416	0713972937	Bunoo	DF
4	GRACE ALESSIENS	6984167	0789729316	Buterema	Grace
5	Marion Anind	340715498	070292759	Rosterman	MA
6	ESTER Khamaga	32410609	0712132391	Rosterman	EST
7	Noel Olavi	20222416	0725236589	Rosterman	NO
8	Cristine Khamurari	10560486	0799629362	Rosterman	CR
9	Emice Mureke	26006237	0701299791	Rosterman	EM
10	Godfrey Manyangi	20813320	0799433430	Rosterman	God
11	Elias Shilangwa	23406271	0700809893	Buterema	EL
12	Tom Mufungu	5656002	0722761304	Buterema	TM
13	Jacqueline Lutsili	26414677	0714139777	Buterema	JA
14	Jolan Wamunga	066284371	0796509774	Rosterman	JW
15	Judith Mmbaga	31161630	0757063760	Buterema	JUDITH
16	Phyllis Mubaka	11471861	075112842	Rosterman	PH
17	Christine Anieru	22941152	0726686639	Shinga	CR
18	Hellen Shichugi	24253632	0716565590	Buterema	HE
19	Candace Angango	92490349	073835664	Rosterman	CABY
20	Emmaculate Ngunya	27467438	0722722795	Rosterman	LN
21	Flecius Khamaga	33731495	0708418347	Shinga	FL
22	Tabita Mukulu	939665	0703926106	Chicagari	CI
23	Boni Kosiyo	0660184	0726091649	Rosterman	BO
24	Claudia Khamukwi	284910204	0791447730	Rosterman	CA
25	Rose Khamai	5448031	0716292552	China	RT
26	Washingtone Juma	36996237	0746003640	Khamaga	WJ
27	Vincent Mawika	92227775	0714299941	Buterema	VIN
28	Caleb Karole	—	—	Rosterman	CK
29	Silas Mluseka	24584211	0702923099	Shinga	SL
30	Priscilla Janyang	11040771	0713546422	Shinga	PR



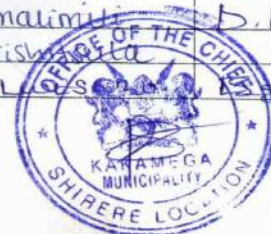
ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	CATHERINE MUSINYI	27365157	0705379612	MALIMILI	CS
2	BEATRICE MUKILILA		0740362800	MALIMILI	B
3	LEONIDA KHATORO		0768998944	MALIMILI	L.S
4	BEATRICE ANYOLA	0932056	0715245988	MATOPENI	
5	PETRONILA MUSULA	29173752	0705571420	SHIPALO	
6	Selpher Busieka	38163733	0797932022	Bushitsula	SPT
7	ESTHER ZAKAYO		0114943506	Bushitsula	SPT
8	PAMELA NDIRA	3559919	078687294	ROSTERMAN	B
9	LINET SOKONI	2099762	0792804702	ROSTERMAN	G
10	Antonina landi		0707029111	ROSTERMAN	A
11	Lydia Nanzila	31415744	0717233148	ROSTERMAN	A
12	Glodyc musanga	31031423	0717295840	ROSTERMAN	in
13	Judith Matala	7350956	0720862290	Molombole	
14	Christine Wanyama	29022761	0705849635	Molombole	
15	Margaret Melima	9686389	0717428765	Molombole	MR
16	Mary Munai				Ma
17	Petronila Khakayi	13053592	0799909234	matende	
18	Jackline Oman	0720461033	0707560945	matende	
19	Clara matekwa				
20	WUVEST ACHATO	21920038	0701718093	Iwesero	W
21	LYDIA KHAVETHG		0759507913	Iwesero	W
22	EVALYNE ASINDIMA	36805313	0717279635	ISHINA	EM
23	GIADYS AKAMATOTA	28380161	0797203561	Iwesero	CC
24	ROSE AICH				
25	Petronila Indoshi	22647622	0114369638	ISHINA	PR
26	Scholastica chimoli		0114668744	malimili	S.C
27	Caroline Lydia		0728625549	ISHINA	CR
28	DORICE Kingondo	13348383	0723705045	malimili	D.R
29	Linet Khakayi			ISHINA	
30	ESTHER SHUMBISI	12997178	0718579976	ISHINA	



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER 2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	SIGN.
1	Dmar mweng	33007646	0714335538	Rosterman	[Signature]
2	PATRICK AKHONYA	29173451	0793049712	Rosterman	[Signature]
3	EVANS LUKUYANI	26491389	0717179541	Rosterman	[Signature]
4	Enck James	28379883	07015980682	Rosterman	[Signature]
5	ELON SHIMONZO	294039	07269624	Rosterman	[Signature]
6	EDDY SHAVOLA	21674607	0727719787	ROSTERMAN	[Signature]
7	TEDDY KHASIAN	40209191	011496431	ROSTERMAN	[Signature]
8	PELIX MUITANJI	42333763	0112778722	Rosterman	[Signature]
9	Agostine Mukanda		0729255930	Rosterman	[Signature]
10	Emanuel Kabera	28142326	0743338317	Rosterman	[Signature]
11	Patrick Isasani	332403939	0742935720	Shicasani	[Signature]
12	RUFUSI BAKARI	2094382			[Signature]
13	EMMANUEL KWOLO	2078318	0719584177	Rosterman	[Signature]
14	Victor Ikhanya	32518938	0713516110	Rosterman	[Signature]
15	Murwen Kikonyo	32952232	0717322159	Rosterman	[Signature]
16	MARSON KAMO	37990593	0797731340	Rosterman	[Signature]
17	KyChife Makiwaga	22128112	0727059499	Rosterman	[Signature]
18	max ngara	25374001	0796306499	Rosterman	[Signature]
19	Antony Mulemizani	25963556	0796625194	Shina	[Signature]
20	Nelson Mwayi	30731124	0794960107	Rosterman	[Signature]
21	Solias Shimagora	2541153	0727278257	Shina	[Signature]
22	Titus Kweye	2040601	0705660613	Rosterman	[Signature]
23	Denil Akira	24064706	0717393792	Rosterman	[Signature]
24	Elphas Arokhaya	10165311	0713344347	Rosterman	[Signature]
25	Stanly Likani	3694117	0718372312	Shina	[Signature]
26	Christopher Ayako	31222637	0717735032	Shisani	[Signature]
27	Shaban Amisani	1172544	0712437717	Rosterman	[Signature]
28	Edn Mokocho	20473443	0704527966	Bushitila	[Signature]
29	Christopher Lumumba	2157446	07136417007	Rosterman	[Signature]
30	Francis Andika	2253235	0703710350	Shina	[Signature]



ROSTERMAN UMBRELLA CBO

STONES OF WEALTH MINING COMPANY AND ROSTERMAN COMMUNITY PUBLIC
PARTICIPATION MEETING HELD AT KHUSUMU GROUNDS ON THURSDAY 23RD NOVEMBER
2023 FROM 10:00 AM.

ATTENDANCE LIST



NO.	NAME	ID NO.	PHONE NO.	DESIGNATION/RESIDENCE	
1	Moses Matika	14631862	0723334762	Rosterman	
2	Cchibwera Major mmbayi				
3	Parcel Amboso	24979014	0741596011	Shisazari	
4	Mercy Anani	26932174	0712936740	Mukagga	
5	Kincent Lumumba	5792427	0759392096	Rosterman	
6	Wilfridah Namusembe	1320497	0721225272	Rosterman	
7	Jackline Kharza		0759748751	Makopu	
8	Olivia Shisari	21053917	0706092035	Rosterman	
9	Felix Imbari	24860205	0711233136	Mukhoj	
10	Edith achuma	1175698	0726997485	Rosterman	
11	Simiti mukaga	28379524	0704483764	Rosterman	
12	Alfred mbari	22383139	0791519941	Rosterman	
13	Brian Khalumba	33104836	0707931707	Rosterman	
14	Willgrace Lusaka	30349915	0725281203	Rosterman	
15	Abony musari	25248655	0703755802	Rosterman	
16	Vivian mukho	38978475	0758577966	Rosterman	
17	Shirley SCORIA IKOMOL	33362271	0701143929	Rosterman	
18	Bilha mabyia	2658971	0715281459	Rosterman	
19	Colinle wichege	37062788	0706490209	Shisiana	
20	Tringa musari	25034318	0729644570	Shina	
21	Franklin Muzali	35524015	0759451697	Rosterman	
22	John Kiyumba	23094565	0710777973	mabry	
23	Juliet Kitemba	90941200	0716894457	Imbry	
24	Bibiana Shilile	4155965	0728874225	Shisazari	
25	Agrey manyang	23249820	0724348157	Shisazari	
26	Joseph musang	169449	0725715563	Isazari	
27	Agastine Vilumba	31535914	0792457861	Musaa	
28	Brian mukaka	35646245	0702824433	Rosterman	
29	Bunard wira	5275691	0725221270	Shina	
30	Joseph nanzushi	2086591	0729200344	Shisazari	





Mr. Patrick Ligami (AMC Committee Chairman Kakamega County) addressing the community.



Stones of wealth (Mr. Sala) addressing the community



**APPENDIX VIII: WATER QUALITY MANAGEMENT & CO-ORDINATION
REGULATIONS 2006
STANDARDS FOR EFFLUENT DISCHARGE INTO PUBLIC SEWERS
(FIFTH SCHEDULE(r.13))**

PARAMETER	Maximum levels permissible
Suspended solids (mg/L)	250
Total dissolved solids (mg/L)	2000
Temperature °C	20 - 35
Ph	6-9
Oil and Grease (mg/L) -where conventional treatment shall be used	10
Oil and Grease (mg/L)- where ponds is a final treatment method	5
Ammonia Nitrogen (mg/L)	20
Substances with an obnoxious smell	Shall not be discharged into the sewers
Biological Oxygen Demand BOD ₅ days at 20 °C (mg/L)	500
Chemical Oxygen Demand COD (mg/L)	1000
Arsenic (mg/L)	0.02
Mercury (mg/L)	0.05
Lead (mg/L)	1.0
Cadmium (mg/L)	0.5
Chromium VI (mg/L)	0.05
Chromium (Total) (mg/L)	2.0
Copper (mg/L)	1.0
Zinc (mg/L)	5.0
Selenium (mg/L)	0.2
Nickel (mg/L)	3.0
Nitrates (mg/L)	20
Phosphates (mg/L)	30
Cyanide Total (mg/L)	2
Sulphide (mg/L)	2
Phenols (mg/L)	10
Detergents (mg/L)	15
Color	Less than 40 Hazen units
Alkyl Mercury	Not Detectable (nd)
Free and saline Ammonia as N (mg/L)	4.0
Calcium Carbide	Nil
Chloroform	Nil
Inflammable solvents	Nil
Radioactive residues	Nil
Degreasing solvents of mono-di-trichloroethylene type	Nil

