
ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED COPPER PROCESSING PLANT IN KUNENE REGION

MEFT APP NO: 00860



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TABLE OF CONTENTS

ABBREVIATIONS.....	4
GLOSSARY.....	5
INTRODUCTION.....	8
1.1 Background.....	8
1.2 Purpose and Scope of the EMP.....	9
1.3 Compliance to the EMP.....	9
1.4 Appointed Environmental Assessment Practitioner	10
1.5 Assumptions and Limitations.....	10
2. REGULATORY FRAMEWORK.....	11
2.1 Environmental Requirement.....	11
2.2 Related National Legislations.....	12
2.3 Related Permits.....	16
3. PROPOSED COPPER PROCESSING PLANT.....	17
3.1 Construction Phase.....	17
3.2 Operational Phase.....	17
3.3 Workforce.....	21
4. IMPACT ASSESSMENT.....	22
5. ROLES AND RESPONSIBILITIES.....	24
5.1 Roles and Responsibilities.....	24
5.2 Employment.....	27
5.3 Contractors.....	27
5.4 Disciplinary Actions.....	27
6. TRAINING AND COMMUNICATIONS.....	28
6.1 Emergency Response Services.....	28
6.2 Communication and Training.....	28
6.3 Inductions.....	28
6.4 Site Inductions.....	28
6.5 Grievance Register.....	30
6.6 Environmental Inspections and Compliance Monitoring.....	30
7. ENVIRONMENTAL MANAGEMENT PLAN.....	31
10. RECOMMENDATION AND CONCLUSION.....	40

List of Figures

Figure 1: Location of the Proposed Copper Processing plant.....	8
Figure 2: Proposed Copper Processing Plant Layout Plan.....	19
Figure 3: Proposed Copper Processing Plant Layout Plan.....	20

List of Tables

Table 1: Related National Legislations.....	12
Table 2: Permits associated with the proposed development.....	16
Table 3: Potential Identified Impacts.....	22
Table 4: Roles and Responsibilities.....	24

Table 5: Environmental Mitigation Measures to be executed.....	30
Table 6: Storage of hazardous chemicals.....	37
Table 7: Groundwater Monitoring.....	38

ABBREVIATIONS

BID	Background Information Document
CC	Close Corporation
DEA	Directorate of Environmental Affairs
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act No.7 Of 2007
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
ESAR	Environmental Scoping Assessment Report
IAPs	Interested and Affected Parties
MC	Mining Claim
MEFT	Ministry Of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NSA	Namibia Statistics Agency
PPP	Public Participatory Process
ToR	Terms of Reference

GLOSSARY

Definitions given below are for descriptive purposes only.

Activity	The physical work that a Proponent intends to construct, operate, change, decommission, or an activity that a Proponent proposes to carry out.
Alternative	A choice limited to one of two or more possibilities, as of things, proposals, or courses of action, the selection of which precludes any other possibility.
Assessment	The process of identifying, predicting, and evaluating the significant effects of activities on the environment; and the risks and consequences of activities and their alternatives and options for mitigation with a view to minimise the effects/impacts of activities on the environment.
Competent Authority	A body or person authorized under the local authorities act or Environmental Management Act to enforce the rule of law.
Contaminated Water	Water polluted by the Contractor's activities, e.g. concrete water, and runoff from plant/personnel wash areas.
Cumulative Impacts	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts from similar or diverse activities or undertakings in the area.
Environment	As defined in the Environmental Assessment Policy and Environmental Management Act - refers to "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".
Environmental Impact Assessment (EIA)	The process of examining the environmental effects of a development as prescribed by the Environmental Impact Assessment Regulations (2012) for activities listed as List of Activities which may not be undertaken without an Environmental Clearance Certificate from the Environmental Commissioner.
Environmental Management Plan (EMP)	A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.
Independent Environmental	A qualified professional independent from the Proponent and Contractor who oversees the construction phase and ensure that all environmental specifications and EMP

Control Officer	requirements are met during the phase. Will also be responsible for the monitoring, revising, and verifying of compliance with the EMP by the Contractor.
Interested & Affected Parties (IAP)	Any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have influence over any aspect of the activity.
Listed Activity	An activity listed in terms of the Environmental Management Act (No. 7 of 2007) and its EIA Regulations (2012) and the List of Activities which may not be carried out without an Environmental Clearance Certificate from the Environmental Commissioner.
Mitigate	Measures to reduce adverse impacts.
Proponent	Defined in the Environmental Management Act (No.7 of 2007), as a person who proposes to undertake a listed activity.
Significant Impact	An impact by its magnitude, duration, intensity or probability of occurrence that may have a prominent effect on one or more
Solar Energy	Radiant light and heat from the sun that is harnessed using a range of technologies such as solar power to generate electricity, solar thermal energy (including solar water heating) and solar architecture.
Solar Panel	An assembly of photovoltaic solar cells mounted in a (usually) rectangular frame.

Since the likely identified impacts can be managed and significantly reduced to acceptable standards or measures, Epic Environmental Consultancy CC recommends that Déjà Vu Investment CC receive the Environmental Clearance Certificate (ECC), provided that:

- The Environmental Management Plan (EMP) is complied/adhered to at all times by the proponent and all employees.
- All permits/licences required are acquired e.g. Abstract water, tree removal or clearing for any new roads, bulk storage of petroleum products, etc.
- The proponent should introduce a monitoring programme to carefully monitor the surface and underground water during construction and operating phases.

This environmental scoping assessment report forms part of the submission to be made to the Directorate of Environmental Affairs office in order to obtain approval for the required Environmental Clearance Certificate (ECC) for the proposed construction and operation of a copper processing plant, in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the Environmental Impact Assessment regulations (GN 30 in GG 4878 of 6 February 2012).

1. INTRODUCTION

1.1 Background

The Proponent, Déjà Vu Investment CC intends to construct and operate a copper processing plant. The potential site was identified and allocated by the traditional/Community Leaders. The proposed Copper processing plant is located between Kamanjab and Omakange. GPS coordinates (-19.216465° & 14.401380°); and the proposed site can be accessed using C35 road from Kamanjab leading to Omakange.



Figure 1: Shows the location of the Proposed Copper Processing Plant.

This proposed project is a listed activity in terms of the Environmental Management Act (EMA). Prior to the anticipated project initiation, approval is required for an Environmental Clearance Certificate (ECC) to be issued by the competent authority to the proponent, in terms of the Environmental Management Act No.7 of 2007 and its regulations of 2012.

Copper processing is the extraction of copper from its ores and the preparation of copper metal or chemical compounds for use in various products

1.2 Purpose and scope of this EMP

Regulation No. 8 of the Environmental Management Act's (EMA) (7 of 2007) and its Environmental Impact Assessment Regulations of 2012 obliges that a draft Environmental Management Plan (EMP) be established as part of the scoping Environmental Assessment (EA) process. A 'management plan' is well-defined as:

"...a plan that describes how activities that may have significant environments effects on the environment are to be mitigated controlled and monitored."

The information enclosed in this EMP is centered on the project description as provided in the environmental scoping report. This EMP provides a reasonable outline, proposed mitigation measures and management approaches for the proposed copper processing plant.

Well-defined in the EMP are the practices, techniques, roles and responsibilities to ensure that the management schedules are efficiently and correctly executed. This EMP report is an supplementary to the environmental scoping report. This Environmental Management Plan shall be updated/revised when there are changes in the scope of works.

The labor force working on this proposed project shall be by law mandatory to comply and adhere to the principles set out in this EMP. The scope of this Environmental Management Plan takes account of all undertakings conducted during the construction, operational and decommissioning phase.

1.3 Compliance to the EMP

This EMP is a legally binding document as stipulated in the Environmental Management Act, 2007 (Act No. 7 of 2007). The Proponent, contractors and employees must therefore obey and comply with the context of this document. Any changes made dependent on the changing environments and new additional information that may be available in the future, must be revised accordingly with the provision of the EMA.

Non-compliance shall be recorded, comprising a short explanation and the cause for the non-compliance, the person responsible, the consequence, and the correct action taken and any follow-up measures compulsory.

1.4 Environmental Assessment Practitioner

Déjà Vu Investment CC appointed Epic Environmental Consultancy CC an independent environmental consultancy, to carry out an environmental assessment of the possible biophysical and socio-economic environmental impacts that may possibly arise from the proposed construction and operation of the copper processing plant. The result of the Environmental Scoping Assessment with the aim to provide the Ministry of Mines and Energy (MME) and the Ministry of Environment, Forestry and Tourism's (MEFT) Department of Environmental Affairs (DEA) with adequate information to make well informed decision on the approval of the Environmental Clearance Certificate (ECC) for the planned development.

1.5 Assumptions and Limitations

- The Safety Management Plan shall be developed by the Proponent. This EMP is established on the project description in the Environmental Scoping Report.
- The mitigation measures commended in this Environmental Management Plan document is centred on the identified impacts in the scoping report were recognized and established on the provided project description, site study and public consultations. Should there be changes in the project scope, the identified risks will have to be reassessed and mitigation measures must be provided respectively.
- This document has been drafted centred on the scoping environmental assessment only; and no specialist studies were comprised as part of the assessment.
- The information enclosed in this report is established on information provided by the Proponent; and is believed or well thought-out to be true. Epic Environmental Consultancy CC shall not be held liable for any false information provided by the proponent.

2. REGULATORY FRAMEWORK

2.1 Environmental Requirement

This proposed project is a listed activity as specified in the Environmental Management Act No. 7 of 2007 and the Environmental Impact Assessment Regulation No. 30 of 2012. As a listed activity an application for an Environmental Clearance Certificate is mandatory. An Environmental Scoping Assessment Report and EMP are compulsory as part of the ECC application to complement the process.

This EMP has been embarked on in accordance with the requirements of the Environmental Management Act, No. 7 of 2007 and its regulations.

The purpose of the EA is to identify, assess and establish likely environmental impacts that may arise from the proposed activity. An Environmental Assessment is a process of identifying, predicting, interpreting and communicating potential impacts to interested and affected parties (I&APs).

Section 7 of the Environmental Impact Assessment (EIA) Regulations (GN notice No. 30 of 2012), stipulates that if an activity is listed, an Environmental Scoping Report and Environmental Management Plan should be submitted to the Environmental Commissioner (EC) as part of the application for an Environmental Clearance Certificate (ECC).

In harmony with the Environmental Management Act (2007) of Namibia (and its EIA regulations of 2012), an Environmental Clearance Certificate is required for:

- *“The construction of facilities for any process or activities which requires a license, right or other form of authorisation, and the renewal of a license, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.”*
- *“Resource extraction, manipulation, conservation and related activities.”*
- *“Other forms of mining or extraction of any natural resources whether regulated by law or not.”*
- *“The construction of facilities for the transmission and supply of electricity”*
- *“The abstraction of ground or surface water for industrial or commercial purposes.”*

The Environmental Management Plan (EMP) is the instrument used to minimize or manage the impacts identified during the environmental assessment process.

The EMA stipulates that for every activity undergoing an Environmental Assessment process, an Environmental Management Plan (EMP) should be established. The EMP summarizes mitigation measures alongside specific periods, stages or processes for the proposed development. The EMP for this specific development will summarize specific roles and responsibilities that the proponent will obey to.

2.2 Related National Legislations and Regulations

Table 1: Related National Legislations and Regulations

Legislation	Applicability	Legislation Objective(s)
The Namibian Constitution	To maintain the ecosystems, ecological processes and biological diversity by conducting Environmental Impact Assessment (EIA).	“The state shall actively promote and maintain the welfare of the people by adopting policies that are aimed at...maintenance of ecosystems, essential ecological processes and the biological diversity of Namibia and utilization of natural resources on a sustainable basis for the benefit of all Namibians, both for present and future”.
Environmental Management Act No.7 of 2007	Legal requirement to carry out an Environmental Impact Assessment (EIA).	The Environmental Management Act No.7 of 2007 promotes the sustainable management of the environment and the use of natural resources and provides for the process of

		assessment and control of activities which may have significant effects on the environment; and provides for incidental matters. The Act ensures that potential impacts are considered, a comprehensive stakeholder's consultation is carried out, all interested and affected parties are given a chance to comment/object on the project. The Act as well provides a list of activities that may not be undertaken without an Environmental Clearance Certificate.
Environmental Impact Assessment (EIA) Regulations (GN notice No. 30 of 2012)	Provides guidelines for Environmental Assessments.	Provides procedures for Environmental Assessments.
Minerals (Prospecting and Mining) Act No.33 of 1992 As amended Minerals (Prospecting and Mining) Amendment Act 8 of 2008	Governs all mining activities in the country.	To provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters incidental thereto.

Public Health Act No. 36 of 1919	Safeguards the public is protected from noise, dust and air pollution.	No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.
Water Resources Management Act No. 11 of 2013	Guarantees that the water systems are not polluted and that pollution control mechanisms are in place.	An Act to provide for the management, protection, development, use and conservation of water resources; to provide for the regulation and monitoring of water services and to provide for incidental matters.
Environmental Policy Framework (1995)	Provides guidelines for EIA.	The Policy ensures that all developmental projects are subjected to environmental assessments so that all potential impacts are taken into consideration and incorporated into the planning and development stages.
Labour Act No. 11 of 2007	Regulates labour in general, remuneration, etc in the country.	The Labour Act regulates labour in general and protects the safety, health and welfare of employees.

		The regulation of 1997 relating to the safety and health of employees at work, sets out the duties of employers, welfare and facilities at the work place.
Soil Conservation Act No. 76 of 1969	Promotes soil conservation.	The Act promotes the conservation of soil and the prevention of soil erosion.
National Heritage Act No. 27 of 2004	Provides protection and conservation of places and objects that has national heritage significance; and the registration of such places or objects.	The Act makes provision for the protection of places and objects of heritage significance and the registration of such places and objects. Section 46 of the Act, further prohibits the removal, damage, alteration, excavation of national sites or remains; and Section 48, sets out the procedure for application and granting permits for exploration activities such as trenching, drilling, etc.
Hazardous substances Ordinance No. 14 of 1974	Controls the handling of hazardous substances such as fuel, fire, etc.	The Ordinance controls the handling of hazardous substances such as manufacturing, imports and exports to ensure human and environmental safety.

2.3 Permits Related with the proposed development project

Permits that may be required and related with the proposed copper processing plant are listed in Table 2.

Table 2: Permits associated with the proposed development

PERMITS/CERTIFICATES	ACTIVITY	VALIDITY
Exclusive Prospecting Licence (EPL)	Mineral rights ownership and prospecting authorization	3 years
Environmental Clearance Certificate	No listed activities are to be conducted without an approved ECC	3 years
Forestry Permits	Controls/regulates the forest species to be cleared.	Temporary/permit dependent
Water abstraction	Regulates groundwater abstraction (MAWLR)	2-5 years
Notice of intention to drill	Should be submitted to MME prior to drilling Permit	Dependent
Fuel Installation Certificate	Regulates the amount of fuel product in control	3 months (temporary)/ permanent

3. PROPOSED COPPER PROCESSING PLANT

3.1 Construction Phase

In terms of the Environmental Management Act No.7 of 2007 and its EIA Regulations of (2012), in order to construct and operate the proposed copper processing plant an Environmental Clearance Certificate (ECC) is required because it is a listed activity.

The equipments needed for the construction of the copper processing plant arrived on site already. Construction and fabrication of the plant will be done elsewhere, then dismantled and transported to the site where it will be re-assembled ready to be used (operational). The main components of the proposed copper processing plant comprises of the crusher, ball mill, spiral classifier, spiral concentrators, shaking table, etc.

Infrastructure and service setting up will include: fitting of clean water pipelines from the water supply, fitting of wastewater disposal pipelines; fitting of power supply cables and building of a bundwall for the mounted diesel tank. The copper processing plant will be designed to limit the operation to roughly about 200 tonnes per month.

3.2 Operational Phase

Copper ore is commonly an aggregate of copper sulphide or oxide and other minerals. The conductivity of copper is second to silver and it is more abundant and cheaper than silver. Copper has extremely high economic value, as one of the core materials required in the high-tech industry.

This type of processing plant is mainly used for copper ore beneficiation which has advantages of high capacity, low price and multiple purposes.

The copper processing will include: the mined copper ore received from the mining claim owners and/or small-scale miners that already signed a contract with DeJa Vu Investment cc and its partners, ensure that it is concentrated first in order to remove gangue or unwanted materials embedded in the ore, this process is called ore beneficiation.

Copper Ore Processing will include:

Copper Ore from mining claim owners/small-scale miners → Crushing and screening → grinding and classification → priority flotation of copper concentrate → activation flotation of further concentrates → concentration and dehydration → Marketable refined copper product

Copper ore beneficiation process is centred on the physical and chemical properties of various minerals in copper ore. After the ore is crushed and ground, either gravity separation, flotation, magnetic separation, electric separation and/or any other ore beneficiation processes can be used. Useful minerals are then separated from the gangue minerals as much as possible. The process of removes or decreases unsafe impurities to get hold of raw materials for smelting or other industries.

The final copper product will be transported to Tsumeb.

No chemicals will be used only water and gravity machines. Waste water will be re-used to make bricks/blocks.

Main Copper Ore Processing process is briefly outlined below:

Crushing Process: The copper ore that needs to be processed has to go through the crushing process, where the large raw one is broken into smaller pieces of ore particles.

Grinding Process: The copper ore processed into granules is screened by a vibrating sieve and sent to the ball mill for grinding and crushing. An auxiliary equipment called a classifier is then used to classify and screen the copper ore; and the copper ore powder that meets the requirements is released.

Screening and Classification Process: Depending on the size of the sieve surface, the material is separated into diverse particle size grades, regularly used to process materials with rougher particle size. Depending on the different settling speediness of particles in the medium (commonly water), the materials are divided into not the same equal-fall grades, called classification, which is then used for materials with smaller particle sizes. Screening and grading is done to separate the materials with appropriate particle size through the crushing procedure, or to split the materials into diverse particle size grades and choice them independently.

Ore Washing: Ore washing is necessary to stop the dirt in the dirt-encompassing mineral raw materials from blockage in the crushing and screening apparatus. Washing can also be done in the screening and grading equipment.

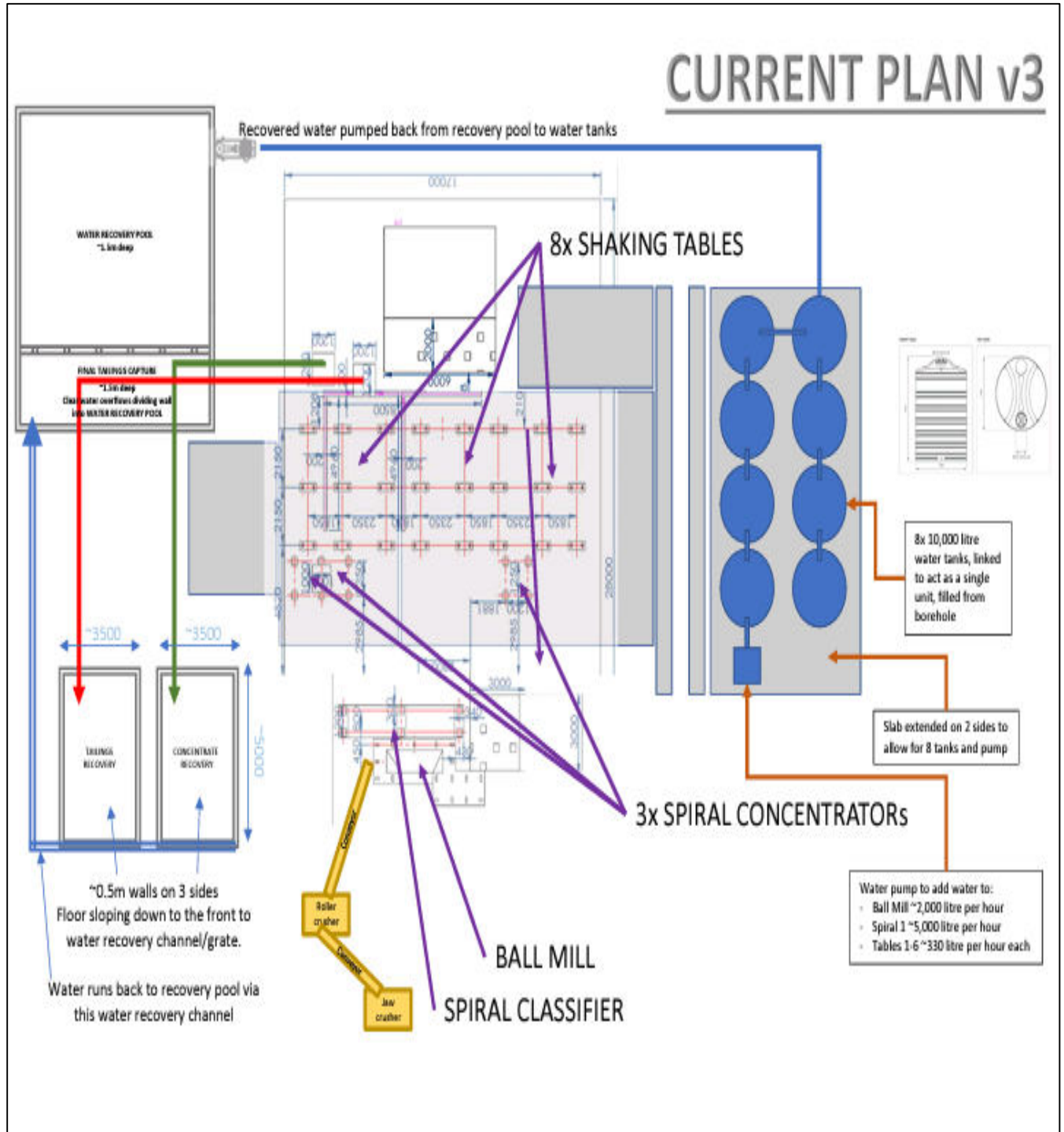


Figure 2: Proposed Copper Processing Plant Layout Plan

It is expected that 10 tonnes of copper ore will be processed per day, depending on the copper ore received from the small-scale miners and the mining claim owners who signed the contract.

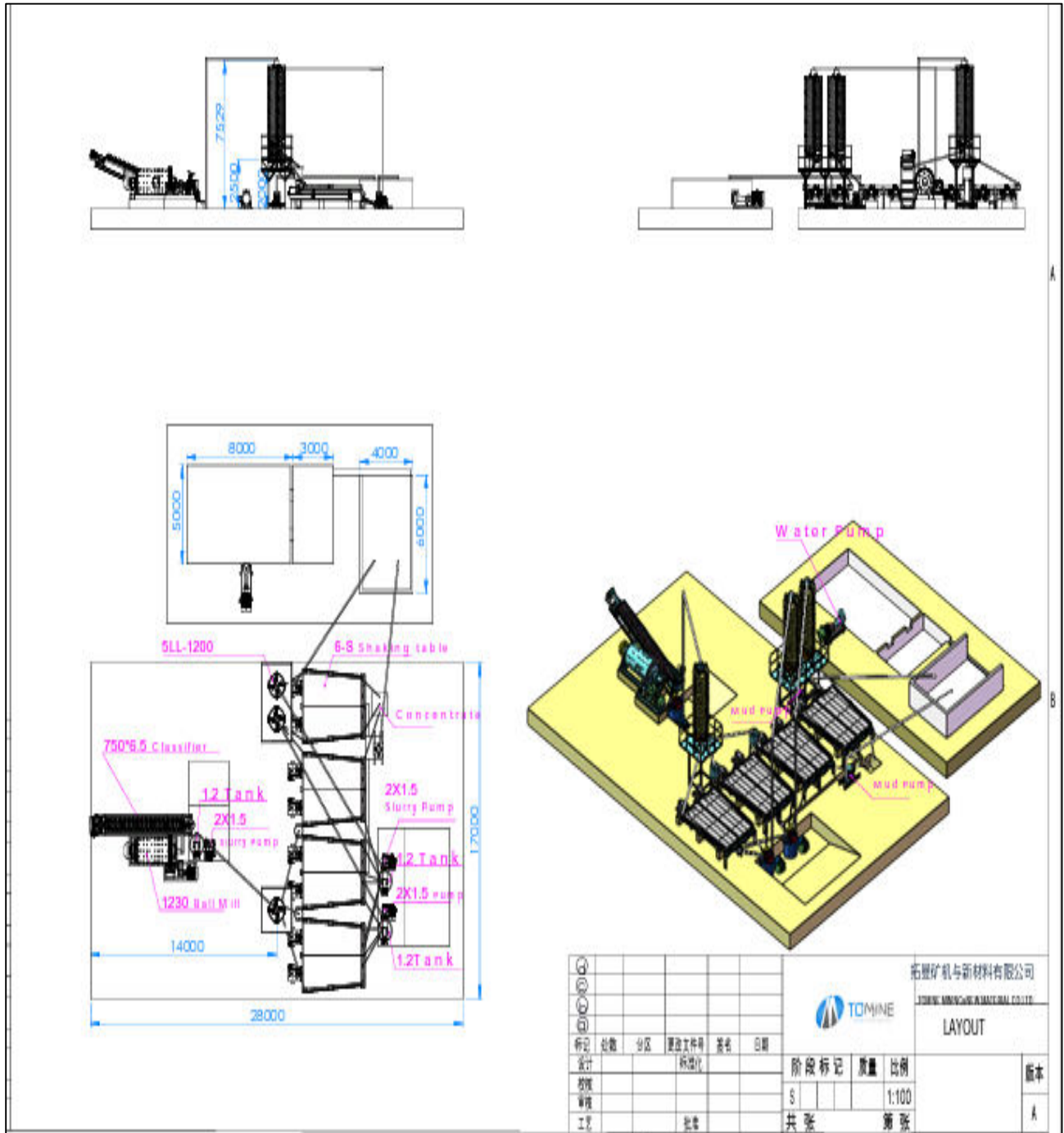


Figure 3: Proposed Copper Processing Plant Layout Plan.

The project is small-scaled development and is projected for a life span of 3 to 5 years dependent on the supply of copper ore. The processing plant operations

may go further than this projected project life span provided that the mining claims continues to provide the plant with adequate ore.

Should there be need for any chemicals to be transported and delivered by road to the copper processing site, a chemical tanker will be used; and then stored in HDPE containers of the same size to limit failure. Chemical levels will be topped-up accordingly as required and monitored at all times.

The community members who are holders/owners of several mining claims will provide copper ore to the copper processing plant. Prior to accepting the ore, the chemical composition of the copper oxide in the rock will be tested to determine whether or not the source is satisfactory. The mining claim holders will be paid a certain percentage for the percent (%) of the copper contained in their ore.

There is no proper market for the mining claim holders and/or small-scale miners to sell their minerals. They usually sell at a lower price than the market value just to have quick money to provide for their families. Small-scale miners on average can produce roughly 1 tonne of copper ore every day. The ore is mined and sold to buyers that are driving and through the area. The ore will be collected from the mining claims by means of a pick-up truck and existing roads network in the area will be used. The decommissioning exercise is not projected at the moment.

3.3 Workforce

Initially, about 20-25 workers will be temporarily employed at the copper processing plant (this number includes unskilled, skilled and professionals). The plant will operate day time only on a 10-hour shift, no night shift.

The objective is to utilize people from the surrounding area as far as possible avoiding the requirement to provide formal housing and additional disturbance to the area. The intention is to avoid relocating people from their residences and families. A sufficient number of people already reside in the surrounding area that can be employed at the facility.

4. IMPACT ASSESSMENT

The main impacts related with the proposed with the construction and operation of the copper processing plant is summarized below.

Table 3: Potential identified impacts

POTENTIAL IMPACT	IMPACT DESCRIPTION
Soils	Oil spills and leakages from vehicles and/or equipment and the inappropriate disposal of hydrocarbons and other likely hazardous contaminants that might be used during construction. Once the plant is operational, the usage of sulphuric acid in the leaching procedure may cause pollution as well.
Loss of biodiversity and vegetation	The likely removal of grass and/or shrubs within the project area.
Surface and underground water contamination	Inappropriate discarding of hydrocarbons and other likely dangerous/harmful contaminants as well as over abstraction may cause pollution/contamination risks. Provide an HDPE liner under the leaching dams or any area where likely contaminants are kept to ensure that proper mitigation measures are in place in case there's spills/leakages.
Air quality	Likely gas and dust emissions from construction machinery and vehicles. The low Rate/occurrence at which these activities will be undertaken, duration and impact intensity will be low. Crushing of the ore may cause dust. Possible emissions from the use of sulphuric acid may cause health problems to the workers and the surrounding community at large.

Wildlife poaching	People/some staff may take advantage of their stay in the project area to hunt wild animals.
Health and Safety	Inappropriate handling of chemicals substances and operating machinery and equipments may compromise the health and safety of the personnel.
Employment Opportunities	The operation of the copper processing plant and its related activities will need the services of unskilled, semi-skilled and skilled personnel.
Skills and knowledge transfer (Local Economic Empowerment)	Unskilled and semi-skilled personnel will be trained before commencing with their duties at the proposed copper processing plant and may receive certification.
Income	The indigenous or the local mining claim holders will be able to sell the ores at a reasonable price/scale at the copper processing plant.

5. ROLES AND RESPONSIBILITIES

The Proponent will be in control of the Environmental Clearance Certificate for this proposed project and shall be liable for the execution and management of this Environmental Management Plan. The implementation, monitoring and management of this EMP shall be carried out on day-to-day accountabilities and monthly reviews. All contractors should be directed by this EMP.

The proponent shall arrange for a project team to manage and carry out the work comprising of the proponent's personnel and contractors. One employee shall be recognized by the Proponent to help assist and support the Proponent at all times for the duration of the project.

The proponent shall be responsible to ensure that the project team, suppliers and/or contractors, obey and comply with the set out measures in this Environmental Management Plan; warranty that all personnel get adequate training and coaching; and that environmental duties are clearly agreed and understood.

5.1 Roles and Responsibilities

The below table shows the roles and responsibilities of the Proponent, contractors and personnel for the proposed project.

Table 4: Roles and Responsibilities

Duties allocated to the below positions during planning and design, construction, operation and maintenance and decommissioning phases:

ROLE	RESPONSIBILITIES
ENVIRONMENTAL COMPLIANCE OFFICER (ECO)	The Ministry of Environment, Forestry and Tourism (MEFT) is the overseer of environmental protection. The ECO shall be an appointed Environmental Officer from the Directorate of Environmental Affairs reliable to carry out compliance. The ECO may carry out inspections and monitoring any time to ensure compliance.

<p>PROPONENT OR PROPONENT'S REPRESENTATIVE</p>	<ul style="list-style-type: none"> ○ Overall responsibility for the execution, administration and management of this EMP; ○ Accountable for providing the required resources (including financial and technical) for all duties; ○ Hire Managers such as a Project Manager and/or a Site Manager; ○ Warranty that all employees, contractors and visitors get inductions on environmental measures as defined in the scoping and EMP reports and safety measures as compiled by the proponent. ○ Ensure the environmental rules are communicated to all personnel and that all staffs, contractors, visitors understand comply with the EMP. ○ Issue fines for breaking EMP requirements.
<p>PROJECT/SITE MANAGER</p>	<ul style="list-style-type: none"> ○ Ensure all employees and contractors take part in a site induction process before they commence with work. ○ Keep community concerns and issues register. ○ Keep records of complaints; ○ Ensure that ultimate environmental practice is carried out during the course of the duration of the project; and report any non-compliance or accidents to the authority. ○ Responsible for compliance with this EMP, oversee all day to day activities during the duration of the development project, including routine and non-routine maintenance works, and decommissioning;

	<ul style="list-style-type: none"> ○ Make sure enough resources are available for the execution of this EMP; ○ Ensure that all employees, contractors and visitors to the site are familiar with the requirements of this EMP, significant to their roles at all times; ○ Responsible for environmental awareness and management training and site inductions for all employees, contractors and visitors; ○ Monitor everyday tasks and ensure devotion by employees to the EMP; ○ Receive, respond to and record complaints; and ○ Report any non-compliance or accidents to the proponent. ○ Liable for management, maintenance and review of the Environmental Management Plan.
Personnel (and contractors and visitors)	<ul style="list-style-type: none"> ○ Accountable for reporting incidents, accidents, tasks and conditions/issues that differ from the EMP or that are not complying immediately to their supervisor; ○ Legally responsible for complying and adhering to this EMP for the duration of the project ○ Attend site inductions when required to do so; and ○ Ensure that adequate information on activities and roles are provided and understood. ○ Ensure to wear personal protective clothing at all time when working;

5.2 Employment

The proponent shall ensure that local people have access to information about employment opportunities; and that the jobless living in the local area are considered first for employment positions; the total number of job opportunities shall be made known together with the related skills and qualifications; the employing process should be clearly explained and communicated; the duration of the employment shall be clearly stated; and employees with no proof of permanent residence shall not be hired.

5.3 Contractors

All contractors that will be appointed during the proposed development must ensure that accurate actions are taken to report all possible environmental hazards and cases/incidents to the Project Manager; carry-out activities according to this EMP and related policies, procedures, management plans, legislative requirements; and implementing appropriate environmental management measures.

5.4 Disciplinary Actions

Non-compliance to the EMP shall result in disciplinary legal action such as:

- Suspension of work;
- Monetary penalties.

The disciplinary action shall be determined as per the provision of EMA and relevant statutory framework. Under Section 27 (4), Any person who contravenes subsection (3) commits an offence and is on conviction liable to a fine not exceeding N\$500 000 or to imprisonment for a period not exceeding 25 years or to both such fine and such imprisonment”.

6. TRAINING AND COMMUNICATIONS

6.1 Emergency Response Services

All personnel will be made aware of the emergency response numbers. These numbers will be posted on site and made accessible in every company vehicle.

6.2 Communication and Training

The Project Manager shall communicate all environmental issues to the project team through audits, site inductions, site inspections; information on incident response actions; and meetings on specific environmental issues.

All Stakeholders should be aware of all likely impacts and how to minimize them. It is vital to ensure that all stakeholders are well informed often; and appropriately trained on functioning measures as required. All employees employed on the project shall be knowledgeable to execute responsibilities that are likely to cause an environmental impact.

All the workers involved in the project must understand why the environment needs to be protected, including the social characteristics involved, how the proposed development can impact the environment and likely mitigation measures.

This EMP should be given/distributed to Staffs and all contractors employed on the site to ensure that the environmental requirements are effectively communicated.

Delicate tasks shall be communicated to workers and contractors. Discussions among the management will take account of any complaints received and actions to resolve them, incidents and responses, assessments, audits and any goal achievements.

6.3 Induction

Induction is defined as *“vital information session that helps to acquaint people with the locations, equipment, materials, procedures and tasks they may come across while working at or visiting a site for the first time”*.

To accomplish the greatest results, inductions need to be custom-made and targeted. They should accommodate all workers (i.e. employees, contractors, trainees).

Personnel shall be obliged to a refresher if:

- They have been absent for some time
- The work environment is different to that normally encountered (e.g. switching to night shift for first time).

6.4 Site inductions

Site inductions shall make sure that employees receive suitable information and, before commencing work and that they can identify the hazards on site that can harm them. Personnel should also understand the control measures in place to safeguard themselves from the hazards/incidents.

Induction requirements shall be determined using information obtained from:

- Statutory requirements
- Site specific capability and training needs analysis
- Standards related to site.

All site inductions shall comprise an assessment to maintain the required awareness that has been retained by employees. It is vital to examine the site induction often to determine if the content is still associated.

Site inductions shall include a formal program that provides workers with an understanding of:

- Site layout comprising emergency assembly points
- Emergency contact numbers
- The responsibilities of the proponent and employees
- Common probable incidents on the site and their control measures
- Basic environmental management principles to lessen negative impacts and apparatuses used on site
- Reporting procedures for incidents; and
- The normal manners anticipated of employees on sites

6.5 Grievance Register

The employees shall be informed about the complaints register, its location and the person responsible for keeping it in order to refer residents or the public who wish to lodge a complaint. The complaints register shall be kept for the entire period of the project; and will be made available for government or public review upon request. It is the responsibility of the Project Manager/Proponent to keep up a complaint register that has particulars of the names of the complainant, date and time of the complaint and actions taken to resolve the issues. The complainant shall be informed in writing of the results of the investigation and actions to be taken to correct or address the matters.

6.6 Environmental Inspections and Compliance Monitoring

The Proponent or the assigned Project Manager shall be accountable to ensure that this EMP is adhered to and complied with at all times throughout their daily roles; and to ensure that contamination control measures are obeyed to. The proponent to ensure that daily, weekly and monthly inspections are carried out.

7. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The general objective of the administration actions of the EMP is to reduce the waste generation, low to zero contamination cases, minimal clearing of vegetation and earthworks, safeguard indigenous flora and fauna; health and safety of the employees and make sure least disturbance to activities in the nearby surroundings.

Table 5: Environmental Mitigation Measures to be executed

POTENTIAL IMPACT	MITIGATION MEASURE	MONITORING REQUIREMENTS	RESPONSIBILITY
BIODIVERSITY LOSS/HABITAT DESTRUCTION	<ul style="list-style-type: none"> *Employees shall not be allowed to cut and collect firewood without permission from land/farm owners. *Employees shall not be allowed to catch fish in the river, if there is any river nearby. * Make available electricity or gas to workforce for cooking and heating to discourage firewood collecting. * Encourage re-vegetation in cleared areas when the project development activities will come to an end. *No animals must be killed unless it poses danger. *No domestic animals shall be permitted at the site. *Avoid the damage of protected species by reducing clearance areas through proper planning of the proposed development. 	DAILY	PROJECT/SITE MANAGER EMPLOYEES, CONTRACTORS

	<p>* Where possible, rescue and put somewhere else plants of importance.</p>		
SOIL EROSION	<p>*Where possible, vegetation will be cut at ground level, leaving the root system intact so as to limit soil erosion.</p> <p>*Land clearing will be conducted in a way that restricts topsoil disturbances.</p> <p>*Land will be reclaimed as soon as possible and when that is done, topsoil will be replaced on cleared areas.</p> <p>* Movement of all vehicles must strictly be within the project site;</p> <p>*Sand and gravel loads from any excavation trenches should be placed in designated areas;</p> <p>*Rehabilitate all sites upon completion of the project;</p> <p>*proposed development should be restricted to potential targeted sites only.</p>	WEEKLY	PROJECT/SITE MANAGER,
NOISE DISTURBANCE	<p>* Employees must NOT be exposed to noise levels above the required 85dB, earmuffs must be provided.</p>	DAILY	PROJECT/SITE MANAGER, EMPLOYEES, CONTRACTOR

	<p>* All vehicles and machinery/equipment to be shut down between periods of use. *Noise irritation shall monitored accordingly. *If possible, use equipment with low noise emission.</p>	<p>OR AS APPROVED BY MANAGEMENT</p> <p>NB: PUBLIC COMPLAINTS MUST BE RECORDED</p>	
<p>EMISSIONS AND DUST</p>	<p>*Specific activities that may generate dust and impact on residents must be avoided during high wind events. *Monitoring phases of dust manufactured by project related with vehicles dust control activities.</p> <p>*Minimum vehicle speeds on site roads to be 30km/h.</p> <p>*During dry periods of the year, when the surface of roads are likely to cause significant dust, The proponent will take effective steps to minimize dust. * Gravel or sand loads must be covered or</p>	<p>DAILY/WEEKLY/MONTHLY</p>	<p>PROJECT/SITE MANAGER, EMPLOYEES, CONTRACTOR</p>

	<p>frequently sprayed with water;</p> <p>*All vehicles and machinery/equipment to be shut down between periods when not in use.</p> <p>*Measures that may be utilized to control dust include: 1) Routine watering of roads and work sites; 2) Submission of dust suppressants as a longer term solution to road dust.</p> <p>*Use existing access roads and paths where possible, to avoid creation of new roads.</p> <p>* Non-toxic human dust exposure levels may not exceed 5mg/m³ for respiratory dust and 15mg/m³ for dust in total as per Labour Act.</p> <p>*Engines must be switched off when vehicles are not in use.</p>	<p>NB: PUBLIC COMPLAINTS MUST BE RECORDED DAILY, WEEKLY</p>	
<p>SURFACE AND GROUNDWATER CONTAMINATION</p>	<p>*Consider other sites when the water table is too high.</p> <p>*Drill structures should be dug to direct any unintended spills into sumps.</p> <p>*Waste water shall be contained.</p> <p>*Water from existing water sources shall be used in agreement with</p>	<p>DAILY/ WEEKLY/ MONTHLY</p>	

	<p>the owners of farms/land in the area, * Heavy drilling equipment should be cautiously checked for leakages; and if refuelling is taking place on site it must either be on a tank mounted on stilts to prevent any leakage and pollution.</p>		PROJECT/SITE MANAGER, EMPLOYEES, CONTRACTOR
SOIL AND WATER CONTAMINATION	<p>* Any spills and leaks, polluted soils must be collected and disposed of at an approved local site.</p> <p>*Still vehicles and equipment must have drip trays to collect leakages of lubricants and oil.</p> <p>*Spills and leaks to be cleaned immediately.</p>	DAILY,WEEKLY	EMPLOYEES, CONTRACTOR ,PROJECT/SITE MANAGER
WASTE GENERATION	<p>*Implement a standard waste management procedure for all types of wastes.</p> <p>*Waste should be disposed of at approved disposal sites only.</p> <p>*Recycle and Re-use where possible.</p> <p>*Wastewater should be contained and not disposed on site.</p> <p>*Provide temporary toilets in the ratio of</p>	DAILY	EMPLOYEES, CONTRACTOR ,PROJECT/SITE MANAGER

	<p>1:15 and 1:30 for females and males; and effluent to be disposed of at the nearest local waste water treatment plant.</p> <p>*Functional toilets shall be on site.</p> <p>*No waste shall be buried on site or in the surrounding areas.</p> <p>*Harmful waste shall not be allowed on site.</p>	<p>Wheelie bins and skip containers must be provided on site.</p> <p>Record effluent disposal</p>	
SAFETY & HEALTH	<p>*Every worker shall be provided with Personal Protective Equipment (PPE), ear smuffs, etc which must be worn at all times during working hours and/or when on site.</p> <p>* A compulsory safety induction training course shall be given to all personnel.</p> <p>*The Proponent shall develop a health and safety</p> <p>*Clear health and safety signs at every selected areas, marked “ENTRANCE, EXIT, ASSEMBLY POINTS, DANGER ZONE, NO ENTRY, STAFF ONLY, etc.</p>	<p>AS CERTIFIED BY THE APPROVED PERSONNEL (VISUAL SIGNS)</p>	<p>MANAGEMENT ,EMPLOYEES & CONTRACTORS</p>
ALIEN INVASIVE	<p>*All alien invasive should be cleared out.</p>		<p>PROJECT/SITE MANAGER/ CONTRACTOR /EMPLOYEES</p>

		AT THE END OF THE PROJECT	
VISUAL AND SENSE OF PLACE	<p>*The proponent to ensure that rehabilitated areas balance in well with the natural environment.</p> <p>*Upon completion of the development, overburdens should be placed in the trenches and excavated areas be levelled as part of the rehabilitation process.</p>	AT THE END OF PROJECT.	PROPONENT/ PROJECT/SITE MANAGER/ CONTRACTOR /EMPLOYEES
WILDLIFE POACHING	*No poaching shall be allowed by any personnel.	DAILY/WEEKLY /MONTHLY	MANAGEMENT ,EMPLOYEES & CONTRACTOR S
WATER ABSTRACTION	<p>*A valid water abstraction permit should be obtained from the MAWLR, when required.</p> <p>* Detect and control water usage and minimise unnecessary use where necessary.</p> <p>*Re-use and Recycle water where possible.</p> <p>*Pollution or any noxious waste should not be allowed to enter the freshwater ecosystem.</p>	OBTAIN A VALID WATER ABSTRACTION PERMIT (where required)	MANAGEMENT
EMPLOYMENT/ SKILLS AND KNOWLEDGE TRANSFER/ INCOME	<p>*Hire local contractors.</p> <p>*Reasonable wages, compensation; and labour practise as per Namibian Labour Laws must be followed.</p> <p>* All general work must be set aside for local people except in</p>		PROPONENT/ PROJECT/SITE MANAGER

	positions requiring specialized skills.		
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Table 6: Storage of hazardous chemicals

Product	Handling	Storage
Diesoline	Diesel shall be handled according to its Material Safety Data Sheet. Where probable, diesel transferrals must take place in the chosen refuelling areas on smooth, impermeable surfaces. Drip trays should be positioned at each machine whilst being refilled. Drip trays shall be drained into appropriate containers. Smaller plant and tyre wheeled equipment shall be re-fuelled at the main storage areas.	Diesoline shall be put in storage in tanks in bunded areas with smooth, impermeable surfaces. Diesoline may be stored on the outside in clean 210 L drums. These drums may only be stored on smooth, impermeable surfaces in facilities that will likely contain spills.
Oil	All oils shall be handled according to the specific Material Safety Data Sheets.	Mild steel or stainless steel drums. The containers shall be stored in bunded facilities that will have the capacity contain all potential spills.

Table 7: Groundwater Monitoring (construction, operational, decommissioning and post closure stage)

Monitoring Position	Sampling Interval	Analysis	Water Quality Standards
All boreholes monitoring	Quarterly: quantifying the depth of groundwater level	N/A	N/A
Monitoring of selected boreholes	Twice-yearly: sampling of water quality analysis	Full analysis every 6 months.	WHO Drinking Water Standards, Namibia Water

		Groundwater level	Quality Guidelines:
Rainfall	Daily	N/A	N/A

7. RECOMMENDATIONS AND CONCLUSION

The planned copper processing plant is needed to bring forth the local economic development in the area, region or the entire country at large, thereby improving the livelihood for the local indigenous community and several small-scale miners working in the region/area. Small-scale miners of several EPLs and Mining Claims within the region are reimbursed or paid least by investors as there is no co-ordination assessing the worth of their quarried elements/copper; and transport costs are mostly high because processing facilities are far.

This ESA will be handed in to the Directorate of Environmental Affairs (DEA) to empower them to deliberate whether or not to grant the required Environmental Clearance Certificate to the proposed development and for the conditions for this development to be well-defined. This aims to ensure that knowledgeable conclusions are made that contributes to an environmentally, socially sound and viable development.

The anticipated plant will empower the surrounding community, create or offer employment opportunities through business, skills training and transfer, recognition of side-lined communities. The anticipated project is a small-scale development; and at its life span depends on the copper ore supply. Continues provision of ore to the processing plant will allow operations to go further than the anticipated project duration.

Continuous engagement with residents and surrounding community shall be carried out at all times by the proponent to identify and address any further concerns or issues and warrant that suitable mitigation and controlling measures are recognised and complied with as per the Environmental Management Plan.

The identified likely impacts associated with the proposed development are manageable; and can be significantly reduced to acceptable standards or measures.

Thus, Epic Environmental Consultancy CC recommends that Déjà Vu Investment CC receive the Environmental Clearance Certificate (ECC) for the proposed construction and operation of the copper processing plant, provided that:

- The Environmental Management Plan (EMP) is complied with/adhered to at all times by the proponent and all employees.

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- All permits/licences required are acquired e.g. Abstract water, tree removal or clearing for any new roads, bulk storage of petroleum products, etc.
 - The proponent should introduce a monitoring programme to carefully monitor the surface and underground water during construction and operating phases.
 - Establish a vibrant water balance model for the copper processing plant to ensure optimum use of limited available water resources.
 - The proponent should identify potential monitoring ideas to measure and record flow capacities as well as feasibly measure water quality especially during rainy season. The approximations would help to have a considerate about the water flow, to address suitable methods against likely impacts to the environment.

This Environmental Management Plan is a legal document, compelling the applicant (proponent) to abide by all mitigation measures, monitoring programmes and/or other strategies/procedures as presented in this document.

As a fragment of the Environmental Management Plan (EMP), thorough monitoring programmes have been delivered to manage and control areas including surface water, groundwater, air quality and soils.