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# ENVIRONMENTAL SCOPING ASSESSMENT REPORT FOR THE PROPOSED COPPER PROCESSING PLANT IN KUNENE REGION

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MEFT APP NO: 00860

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## REPORT DETAILS

<b>PROJECT TITLE</b>	ENVIRONMENTAL SCOPING ASSESSMENT REPORT (ESAR) FOR THE PROPOSED COPPER PROCESSING PLANT IN KUNENE REGION.
<b>PURPOSE OF THIS REPORT</b>	<p>In accordance with the Environmental Management Act No.7 of 2007 and the EIA Regulations (2012), the purpose of this Scoping Report is to:</p> <ul style="list-style-type: none"><li>○ Provide a representation of the anticipated project by confirming that adequate data is provided to all Interested and Affected Parties to establish issues and concerns of importance;</li><li>○ Summarize the environmental and socio-economic context of the anticipated proposed project, to offer all Interested and Affected Parties a chance to share their views/suggestions/concerns regarding the proposed project.</li><li>○ Provide a summary of the Public Participation Process, a map and locality of the anticipated project.</li><li>○ Classify environmental impacts of the development (negative and positive impacts), and evaluate the importance of the recognized impacts.</li><li>○ Manage and mitigate measures that will be summarized more in the Environmental Management Plan (EMP) to reduce possibly negative impacts, which cannot be avoided.</li></ul>
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<b>LOCATION</b>	KUNENE REGION

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## TABLE OF CONTENTS

ABBREVIATIONS.....	5
GLOSSARY.....	6
EXECUTIVE SUMMARY.....	8
<b>INTRODUCTION.....</b>	<b>10</b>
1.1 Background.....	10
1.2 Needs and Desirability.....	11
1.3 Terms of Reference.....	12
1.4 Appointed Environmental Assessment Practitioner .....	13
<b>2. PROJECT DESCRIPTION.....</b>	<b>14</b>
2.1 Locality.....	14
<b>3. INFRASTRUCTURE AND SERVICES.....</b>	<b>15</b>
3.1 Existing Staff Housing.....	15
3.2 Water.....	17
3.3 Solar Energy.....	18
3.4 Electricity.....	19
3.5 Lubricants and Fuel Storage.....	19
3.6 Waste.....	19
3.7 Roads.....	19
3.8 Security.....	19
3.9 Telecommunication and Internet.....	19
<b>4. PROJECT ALTERNATIVES.....</b>	<b>18</b>
<b>5. REGULATORY FRAMEWORK.....</b>	<b>22</b>
5.1 Environmental Requirement.....	22
5.2 Related National Legislations.....	23
5.3 Related Permits.....	27
<b>6. PROPOSED COPPER PROCESSING PLANT.....</b>	<b>28</b>
6.1 Construction Phase.....	28
6.2 Operational Phase.....	28
6.3 Workforce.....	32
6.4 Water Requirement.....	33
<b>7. RECEIVING ENVIRONMENT: BIOPHYSICAL.....</b>	<b>34</b>
7.1 Regional Profile.....	34
7.2 Climatic Conditions.....	34
7.3 Topography, Vegetation, Geology and Soils.....	34
7.4 Common Land Uses in the Surrounding Area.....	37
7.5. Fauna and Flora Divesity.....	37
7.6 Surface and Groundwater.....	37
<b>8. IMPACT ASSESSMENT.....</b>	<b>38</b>
8.1 Cumulative Impacts.....	39
<b>9. PUBLIC CONSULTATION.....</b>	<b>41</b>
<b>10. RECOMMENDATION AND CONCLUSION.....</b>	<b>42</b>
<b>11. REFERENCES.....</b>	<b>44</b>

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## List of Figures

Figure 1: Location of the Proposed Copper Processing plant.....	14
Figure 2: Shows a block of the existing staff accommodation on site.....	15
Figure 3: Another block of staff accommodation on site.....	16
Figure 4: Water tanks on site.....	17
Figure 5: Fenced off stands where the 28 solar panels will be mounted.....	18
Figure 6: Layout of the proposed Copper Processing Plant.....	30
Figure 7: Proposed Copper Processing Plant Layout Plan.....	31
Figure 8: Major Soils in the study and surrounding area.....	35
Figure 9: Geology type in the study and surrounding areas.....	36

## List of Tables

Table 1: Related National Legislations.....	23
Table 2: Permits associated with the proposed development.....	27
Table 3: Potential Identified Impacts.....	38

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## 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

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## 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

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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.

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## EXECUTIVE SUMMARY

Déjà Vu Investment CC proposes to construct a copper processing plant, the site is located about 90 km from Kamanjab leading to Omakange within the largest concentration of mining claims. The processing plant will comprise of a crusher, ball mill, spiral classifier, spiral concentrator, etc. The waste water will be reused for brickmaking purposes.

In its clean form or as an alloy, copper (Cu) is one of the most vital metals in civilization. The pure metal has a face-fixed cubic crystal structure and there is no precarious temperature at which this crystal structure changes.

Kunene Region is a bliss of geological formations dating back to 250 million years, with exciting remarkable rock formations that are visible in landscapes of valleys, escarpments, mountains and open plains (Kunene Regional Profile, 2015).

Boreholes drilled in bedrock nearby ephemeral rivers continue to recharge by alluvial groundwater and their yield is likely to be higher. There is a sustainable and reliable borehole within 1-2km from the site where the copper processing plant will be constructed.

Kunene Region comprises of countless opportunities for mineral exploration because of its rock and mountainous formations, which are essential for regional economic growth and development. Exploration and findings of mineral resources is at a progressive phase, if found it becomes economically feasible and could contribute meaningfully to the economic growth of the region.

Below are the main possible impacts that were identified and assessed considering the likely risk areas related with the receiving social and biophysical environment:

1. Impact on the air quality
2. Impact on soils
3. Impact on groundwater and surface water
4. Impact on fauna and flora
5. Impact on the socio-economic environment
6. Cumulative impacts related to the project activities.



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A careful conclusion was made centred on the recommendations and guidelines by the Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs (DEA) EIA guidelines in order to evaluate the significant and less significant environmental impacts associated with the proposed development.

The positive significance in the social impact has been recognized to prospective of direct and indirect jobs associated with the project and the opportunity of the project contributing to the national economy through royalties, taxes and foreign currency earnings.

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).

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## 1. INTRODUCTION

### 1.1 Background

Kunene Region comprises of countless opportunities for mineral exploration because of its rock and mountainous formations, which are essential for regional economic growth and development. Exploration and findings of mineral resources is at a progressive phase, if found it becomes economically feasible and could contribute meaningfully to the economic growth of the region.

According to Nujoma (2009), Namibia has in the historical years operated mostly as an exporter of copper metal relatively than as industrialist of complete copper produces.

According to the Kunene Regional profile (2015), the region is a host to great reserves of mineral deposits and resources because of prehistoric geological formations. General mineral exploration activities are on-going in and around hilly areas in the region and initial outcomes show the following mineral deposits as predominant in the region:

- Iron ore - Orumana, Otjondeka
- Copper - Otuani and Ohamaremba
- Diamonds - Kunene Mouth and coastal area
- Gemstones - Otjinungwa, Swartbooi Drift
- Semi-precious stone - Khorixas area
- Rare Earth - Khorixas area

Déjà Vu Investment CC intends to construct a copper processing plant, the site is located about 90 km from Kamanjab on the road leading to Omakange within few kilometres of the largest concentration of mining claims in Kunene region. The processing plant will comprise of a crusher, ball mill, spiral classifier, spiral concentrator, etc. The waste water and sand will be reused for brickmaking purposes on site.

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

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In its clean form or as an alloy, copper (Cu) is one of the most vital metals in civilization. The pure metal has a face-fixed cubic crystal structure and there is no precarious temperature at which this crystal structure changes.

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.

The land on which the proposed facility was identified and allocated by the Traditional/Community leaders in the area due to its location, suitability and availability.

## 1.2 Need and Desirability

Mineral processing is cherished in the National Development Plan National Development Plan (NDP V) Vision 2030 and the Harambee Prosperity Plan II (Pillar 2).

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 usually high due to the fact that processing facilities are far.

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.

Development projects that enable the downstream processing of natural resources increases trade performance and speed ups the national economy.

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### 1.3 Terms of Reference

Below are the ToR for this environmental scoping assessment report:

- i. Summarize the need and desirability of the intended development activity.
- ii. Legislation and regulations that have been taken into consideration in the preparation of BID.
- iii. Provide a depiction of the proposed development and its location.
- iv. Provide information of the public consultation/involvement process.
- v. Provide details of the consequences/impacts (both positive and negative); and the significance of the proposed project activity to all stakeholders/participants involved in this process.

The procedure as recommended by the Environmental Impact Assessment Regulations (2012) enclosed the following phases:

- The need and desirability of the anticipated project;
- Project description - Anticipated Copper Processing Plant;
- Preferred Alternatives/options considered for the proposed development such as the No-go alternative, design and project location;
- Applicable regulations and guidelines relating to the development;
- The public participation process, as referred in the EIA Regulations, where interested and affected parties and relevant stakeholders are identified, informed and offered the opportunity to have their suggestions and concerns of the anticipated Copper Processing Plant incorporated;
- Significant likely impacts related to the development are identified and evaluated; and recommendation of mitigation measures are defined in the Environmental Management Plan to avoid and reduce the identified impacts.

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#### 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.

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## 2. PROJECT DESCRIPTION

### 2.1 Location

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. 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.

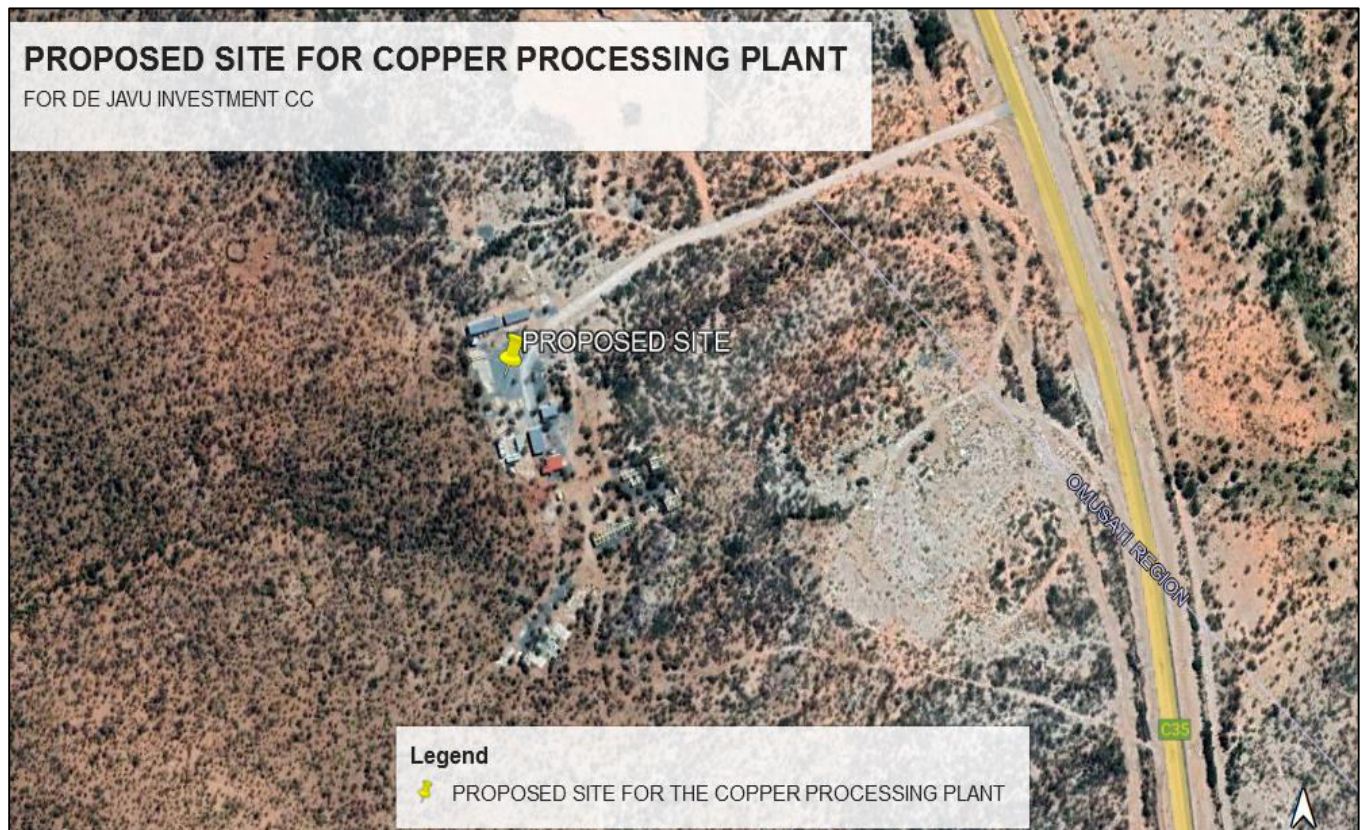


Figure 1: Shows the location of the Proposed Copper Processing Plant.

Heavy construction equipment and vehicle movement will likely be expected on the allocated site. In some parts of the site, earth work have already commenced to connect water to existing staff accommodation and ablution facilities that is already on site. Depending on availability, additional building materials that will be required will be sourced locally.

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### 3. INFRESTRUCTURE AND SERVICES

#### 3.1 Existing Staff Accommodation

The identified and allocated site has existing old staff accommodation that is currently under renovation. At the moment, there won't be need to build any new staff accommodation for the potential workers.



Figure 2: Shows a block of one of the existing staff accommodation on site.



**Figure 3: Another block of Staff housing on site**



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### 3.2 Water

Below are eight (8) x 10 000 litres water tanks currently at the site that will be linked together to act as a single unit for storing water from the borehole. Water pipe connections have already been installed in the existing staff housing/accommodation and in the ablution facilities.



Figure 4: 8x10 000 litres water tanks on site.

Should there be need for water abstraction, a permit will be applied for at the Ministry of Agriculture, Water and Land Reform. Water will be used sparingly and (re-used where possible). Waste water and sand will be used to make bricks.

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### 3.3 Solar Energy

Solar energy will be used on site. Below shows the fenced off area where atleast 28 solar panels will be mounted.



Figure 5: Shows the fenced off stands where 28 solar panels will be mounted.

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### 3.4 Electricity

Power supply is essential as well; and will be sourced from existing NAMPOWER lines available about 400 metres away from the site.

### 3.5 Lubricants and Fuel Storage

A 2000 litres diesel tank will be mounted on site. The proponent will involve the suppliers of grease and other lubricants to collect and dispose of such waste in an environmentally friendly way.

### 3.6 Waste

Waste generated will be disposed of at the local dumpsite/landfill used by all local residents/community in the study and the surrounding area. Sewerage will be disposed in a way that does not pollute the environment.

There are flushing toilets on site (for both male and female) connected to a septic tank. The proponent will involve the suppliers of grease and other lubricants to collect and dispose of such waste in an environmentally friendly manner.

### 3.7 Roads

Existing road from the site will be used connecting to the C35 tarred road. New roads to and from site will only be made when required.

### 3.8 Security

Employees will guard the site on a shift change basis. CCTV cameras will be put up.

### 3.9 Telecommunication and Internet

A provision for a two-way radio will be made available as an alternative, in case network is a problem on site to ensure the staff communicate efficiently at all times. Internet will be made available on site.

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#### 4. PROJECT ALTERNATIVES

According to the Environmental Management Act, No. 7 of 2007 and its EIA Regulations of 2012, alternatives to be considered should be analysed to ensure that the project progress and decision-making process, probable environmental impacts, expenses, and practical viability have been well-thought-out leading to the ultimate preference being recognized.

The alternatives of the proposed development were assessed and weighed. The alternatives were assessed in terms of project need and desirability, location, workers accommodation and processing method. The following conclusions were made:

i. The No-go alternative vs. anticipated project continuation

The no-go alternative would definitely mean there will be no employment or opportunities for the local people/community members living near the anticipated copper processing plant during the construction and operational phases.

Continuation of this development will most definitely benefit the local community, since there is limited tourism undertakings in the region. Owners of Mining claims in the surrounding areas or regions will be able to make income from selling copper ore to Déjà Vu Investment CC and its partners, this will tremendously contribute to the local, regional and national economic development in our country.

Farmers who take part in livestock farming in Kunene region only benefit when they sell their livestock.

**Continuation of the proposed development is the preferred alternative that will benefit both the local community and contribute to the national economy in the country.**

ii. Transport for the employees

Everyday transportation of the personnel to and from site over long distances will not be needed at this moment maybe in future when more employees are hired, as there is already existing staff accommodation on site. Most of the employees that will be hired will be from the local

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community. The advantage of employing the local inhabitants means that employees can stay with their families at their homesteads and still come to work in case more employees are hired; and possibly when accommodation becomes a problem in future.

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## 5. REGULATORY FRAMEWORK

### 5.1 Environmental Requirement

The Environmental Management Act (also referred to as the EMA) No 7 of 2007, requires that for every activity which is listed under the EIA regulations, an Environmental Clearance Certificate obtained. The purpose of the EIA is to identify, assess and ascertain potential environmental impacts that may arise from the proposed activity. An Environmental Impact 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.

5.2 Related National Acts, Policies, Legislations and Regulations

Table 1: Related National Acts, Policies, 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.

5.3 Permits Associated 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

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## **6. THE PROPOSED COPPER PROCESSING PLANT**

### **6.1 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. 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.

### **6.2 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.

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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.

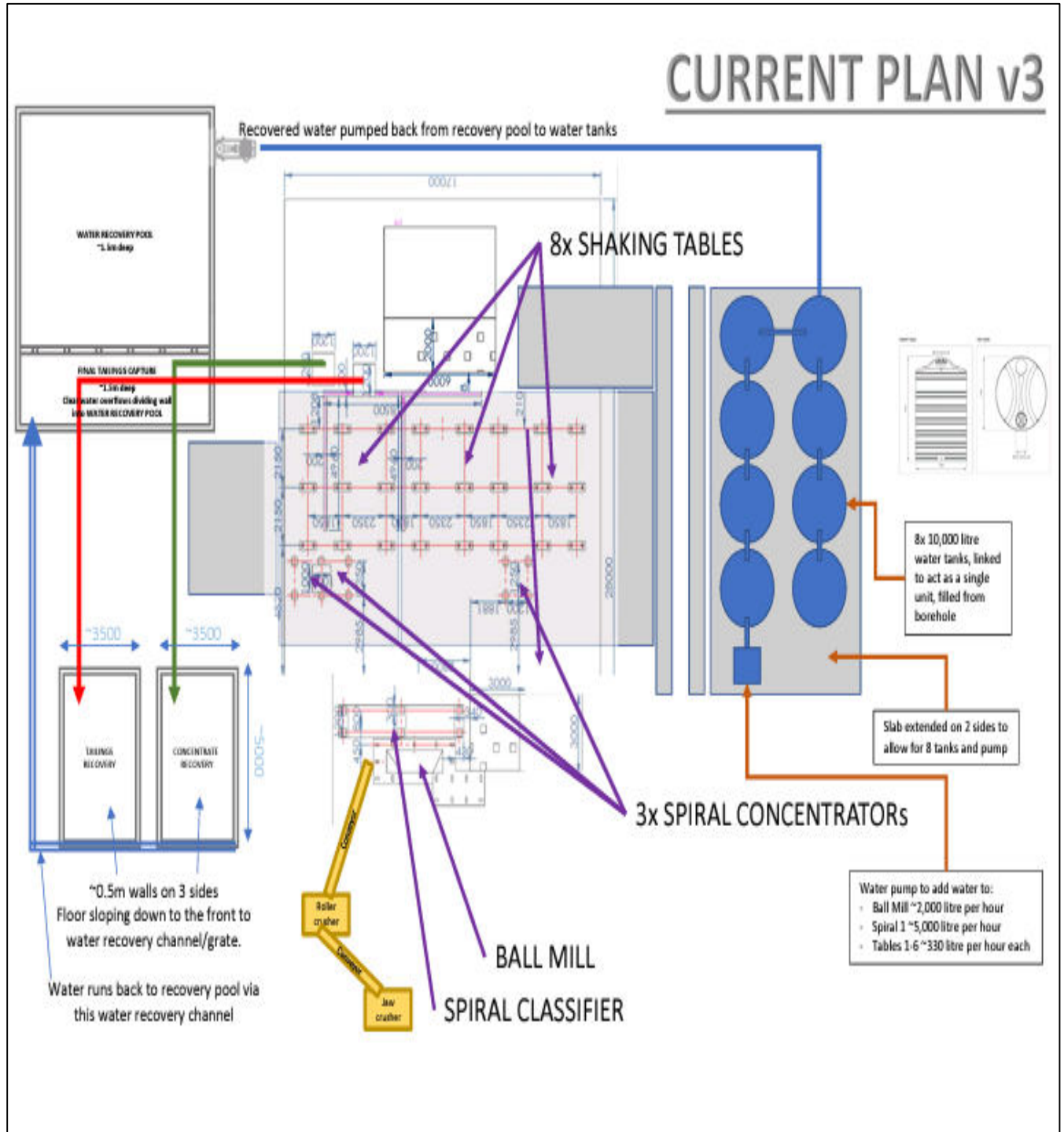


Figure 6: Proposed Copper Processing Plant Layout Plan

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.

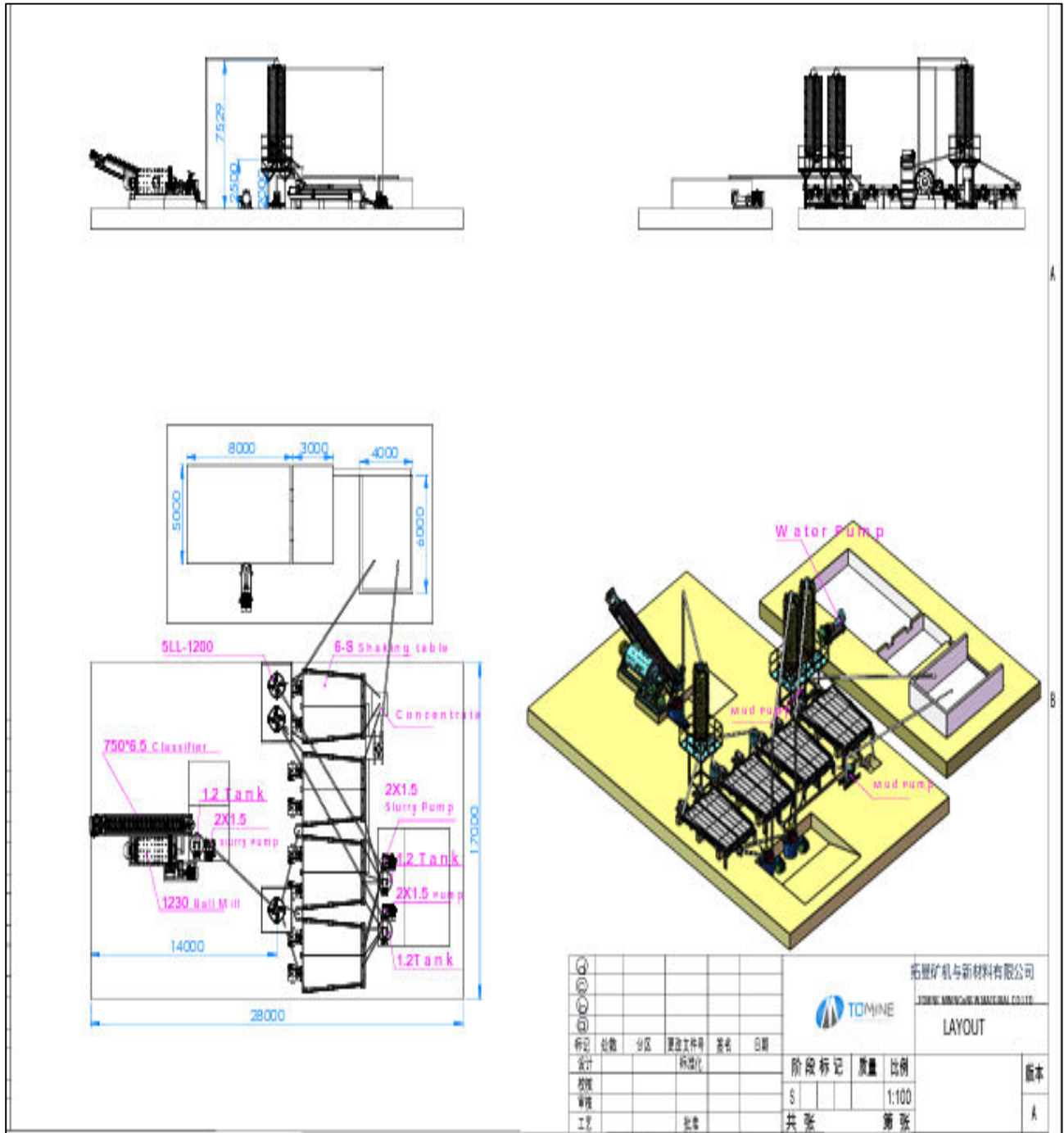


Figure 7: Proposed Copper Processing Plant Layout Plan.

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

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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.

### 6.3 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.

Déjà Vu Investment CC will work in combination with the community leaders to guide and control the hiring/employment process. Where skilled work is required, training will be provided to ensure that locals are equipped.



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## 6.4 Water requirement

At the moment, the borehole capacity that supplies water at the proposed development site/area and existing staff accommodation will only be increased when required.

Processing Process: Primarily, roughly 20 000 litres will be needed per month  
Ablution facility: Amount is centred on the least possible condition of 50 litres of water per person daily (Huys, 2015).

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## **7. THE RECEIVING ENVIRONMENT: BIOPHYSICAL**

### **7.1 Regional Profile**

According to the NSA Census report (2011), the overall total population in the Kunene region was projected to be 86 856 with equal numbers of males and females. The projected number of households was 9,693 with 6.3 persons per household on average. The projected population division between the age group (15-59 years) was 51% of the population. The residents of the region comprise of the Dhemba, Himba, Herero (majority), Damara and Ovambo people. The Himba, Dhemba and the San community are categorized as the less privileged.

The majority of the population in the region live in rural areas. The literateness rate in rural areas of Kunene are very low. About 50.8 % of households in Kunene depend on on wood as the key source of energy for cooking and only 4 percent (%) of households in rural areas use electricity from the main grid for cooking (NSA 2011).

Kunene Region is the 2nd biggest region in Namibia after //Karas Region and covers an area of 115, 293 KM<sup>2</sup>. Water is one of the main limiting factor as the area/region depend on utterly on decreasing underground water sources accessed through deep boreholes (excluding the Epupa constituency where the Kunene River is a source of water).

### **7.2 Climatic Conditions**

The climate of the region is dry throughout most of the year, and the temperatures throughout the summer season rise up to about 35 degrees Celsius on average.

Rainfall in the study area is mainly characterized by low and particularly inconstant meaning that years of abundant rain are regularly followed by extreme dry settings. The yearly average rainfall ranges from 0-340mm (along the coast to the west).

### **7.3 Topography, Vegetation, Geology and Soils**

Scenery or landscape in Kunene region is alienated into the inner high ground and the pro-Namib plains. The study area is communal land, under the

management of the traditional Authorities. The region has about six agro-ecological areas or zones specifically the Mountainous areas, Plateaus, Riverine, Lacustrine and Karst areas, Coastal desert and Etosha area. Soils in the area/region are commonly categorized by low organic matter content and a shortage of Phosphorus. Their complexity deepness differs from low or shallow to deep and primarily defined as sandy to loamy sand.

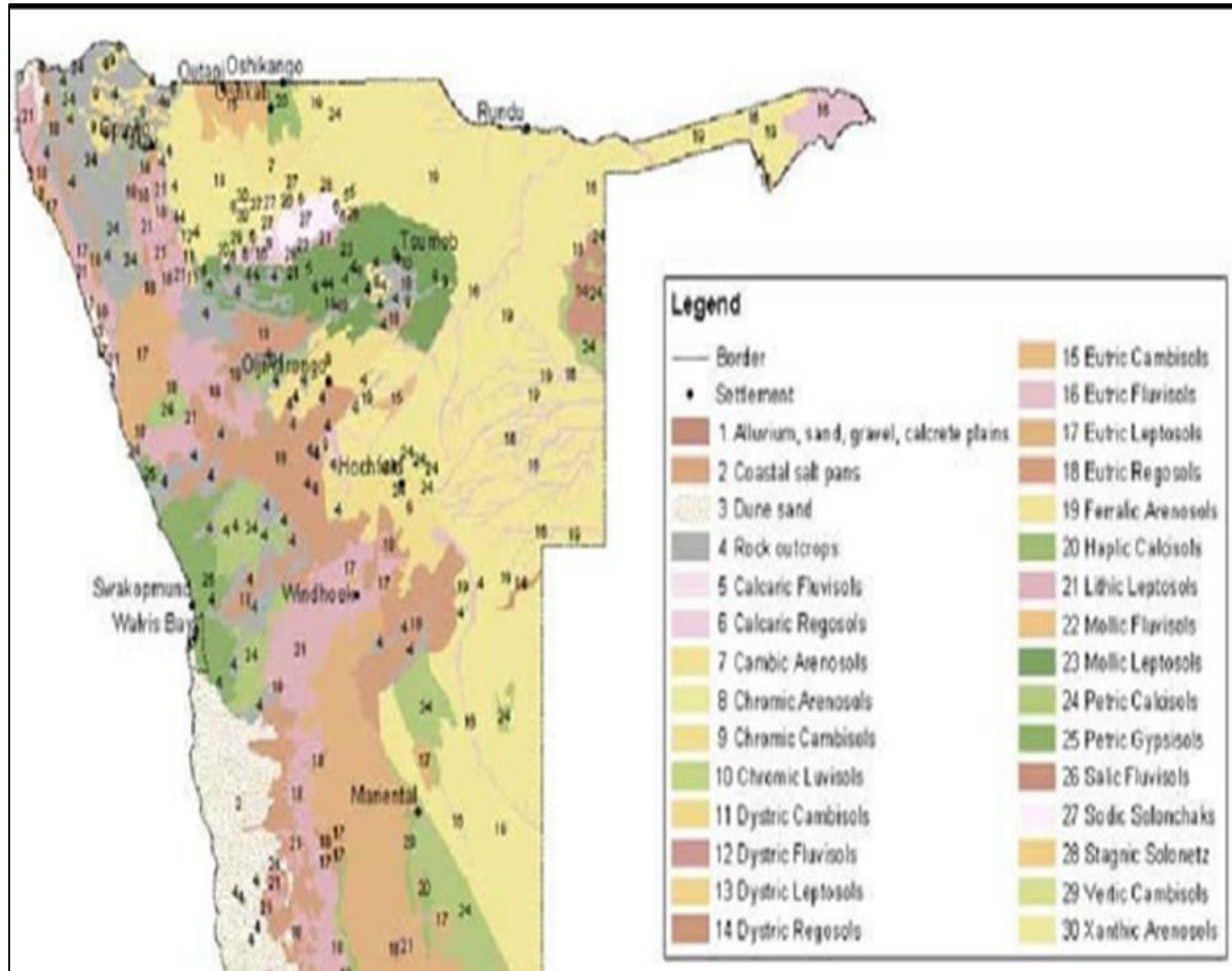


Figure 8: Major soils in Namibia (Source: [https://www.researchgate.net/figure/Major-soil-types-of-Namibia-The-northern-part-of-the-country-is-dominated-by-fluvisols\\_fig1\\_284283213](https://www.researchgate.net/figure/Major-soil-types-of-Namibia-The-northern-part-of-the-country-is-dominated-by-fluvisols_fig1_284283213))

The western side of the region, the soils are marginal comprising of a thin layer of soil, spread with stones covering rock layers in the course of withering; and are insignificant (poorly established). Northern areas of Kunene region are mostly mountainous with limited road access and some flat plains towards the Namib Desert.

Kunene Region is a heaven of geological formations dating back to 250 million years, with interesting spectacular rock formations that are clearly exposed. The region comprising of a great variety of rock formations, most of them exposed in landscapes of valleys, escarpments, mountains and open plains (Kunene Regional Profile, 2015). Below shows the geological map in the study area in red outline.

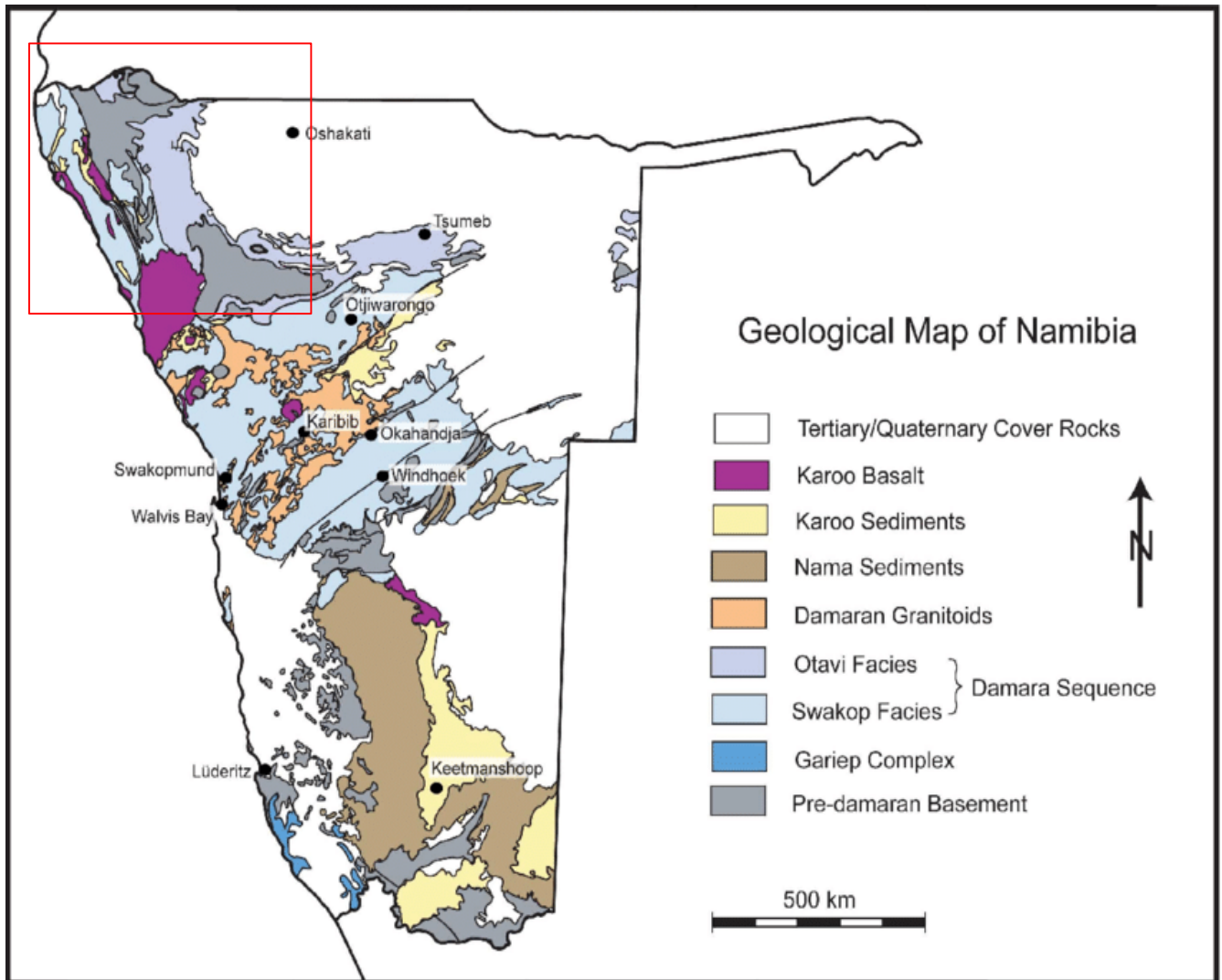


Figure 9: Shows the geology in the study area (Red outline) as the Otavi, Swakop Facies (Damara Sequence), Karoo Basalt and Pre-damaran Basement. Source: <https://www.mme.gov.na/gsn>

The proposed development area is categorized by an average order of Nosib Group sandstone covered by siltstone and shale of the Omivero Formation. The Omivero formation is enclosed by limestone, dolostone, mudstone and siltstone. The vegetation in the region is mainly Mopane Savanna (*colophospermum mopane*), varied woodlands with numerous species of *Acacia*, *Cammiphora* and

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*Terminalia*. Furthermore, the grass species mostly found the study area is the Bushman grass and *Stipagrostis spp.*

#### 7.4 Common Land Uses in the surrounding area

Livestock production is one of the main sources of livelihood to many rural households. One of the growing sector in the region is tourism, due to its diversity of scenery and wildlife. Eco-tourism in shared operations with community-based natural resource management is possible to be one of the region's main economic driver. The establishment of conservancies has enhanced straight economic benefit to the communities region-wide, in specific to the communal areas of Kunene Region. Kunene region boasts the existence of the big four, that is the Leopard, Elephant, Rhino and the Lion, which can be found wandering freely in their natural surroundings. The mining sector is also growing significantly (Kunene Regional Profile, 2015).

#### 7.5 Fauna and Flora Diversity

Elephants, the mountain zebra, springbok, kudu, gemsbok, klipspringer, and steenbok are some of the species that occur or could be seen during the site visit in the surrounding area. Bird species that occur in the area consists of endemic Ruppels-korhaan, Ruppel-parrot, Monteiros hornbill.

The vegetation in the region is mainly Mopane Savanna (*colophospermum mopane*), varied woodlands with numerous species of *Acacia*, *Cammiphora* and *Terminalia*. Furthermore, the grass species mostly found the study area is the Bushman grass and *Stipagrostis spp.*

#### 7.6 Surface and groundwater

The Kunene Region has a number of westward flowing ephemeral rivers that are particularly imperative to the natural ecology of the region. These rivers from north to south are the Nadas, Sechomib, Khumib, Hoarisib, Hoanib, Uniab, Koigab, Huab and Ugab River Systems. Approximately, 1.8 % of Namibia's land surface forms part of the Kunene catchment basin (Christelis and Struckmeier, 2001). Boreholes drilled in bedrock nearby ephemeral rivers continue to recharge by alluvial groundwater and their yield is likely to be higher. There is a sustainable and reliable borehole within 1-2km from the site where the copper processing plant will be constructed

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## 8. IMPACT ASSESSMENT

The main impacts associated with the anticipated 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.

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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.

### 8.1 Cumulative Impacts

Cumulative impacts are refers to as *“those impacts that result from the sequential, incremental or combined effects of an action, project, or activity (collectively referred to in this document as developments) when added to other existing, planned, and/or reasonably projected future ones”*.

From this scoping assessment conducted, the below cumulative impacts are defined below:

- Loss of vegetation and habitant;
- Decreased visual impact and sense of place;
- Improved benefits to the mining claim owners and local community; and
- Employment opportunities, skills and knowledge transfer.

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The consequences of the identified impacts has been mark off in terms of the receiving social and environment, scale, chance and duration.

Déjà Vu Investment CC is not directly involved with the mining procedure/process; and consequently the impacts related with mining do not form the basis of the environmental assessment. It is on the other hand vital to recognize the related cumulative risks that the proposed development holds.



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## 9. PUBLIC CONSULTATION

As specified in the Environmental Impact Assessment (EIA) Regulations (paragraphs 7 and 21), public participation/involvement/consultation is a requirement and an important component in the environmental assessment. Comments or suggestions made during the PPP were noted; and addressed in both the Environmental Scoping Assessment Report and Environmental Management Plan (EMP).

Engaging with interested and affected parties (IAPs) in the planned development allowed all parties involved to be better informed and offer all interested and affected parties the chance to share their concerns, comments and/or ideas.

The public consultation procedure was guided by the tasks below:

**Stakeholders Identification:** Main stakeholders and record Interested and Affected Parties (I&Aps) were identified.

**Authority Consultation:** Considerations of the proposed development with the relevant authorities was done.

**Newspaper adverts:** Newspaper notices were put in the newspapers appearing twice a week in two (2) local newspapers to inform the public about the proposed project and where stakeholders are required to register as I&APs.

**BID and public Notices:** Circulation of the BID was done.

**The community and/or Traditional Leaders already identified and allocated the site for the planned Copper Processing Plant. The suitable site has already existing staff accommodation and ablution facilities that is currently under renovation.**

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## 10. 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 the conditions for this development to be 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.

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## 11. REFERENCES

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