

APPENDIX B: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

ENVIRONMENTAL MANAGEMENT PLAN REPORT FOR:

**THE PROPOSED INDUSTRIAL MINERALS AND PRECIOUS MINERALS
EXPLORATION ON EPL NO.8228**

KARASBURG DISTRICT KARAS REGION

APP-002315

2023

COMPILED BY



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LIST OF ACRONYMS

DEA – Department of Environmental Affairs

EMP - Environmental Management Plan

EA - Environmental assessment

ECC – Environmental Clearance Certificate

EIA – Environmental Impact Assessments

EMA – Environmental Management Act No. 7 of 2007

ESA - Environmental Scoping Assessment

I&AP – interested and affected parties.

METF – Ministry of Environment, Tourism and Forestry

MME – Ministry of Mines and Energy

ECO - Environmental Control Officer

MFO - Manager Field Operations

M –Meters

ASL - above sea level

NDP5 – National Development Plan

GDP – Gross Domestic Product

HPPs – Harambee Prosperity Plan

LAC - Legal Assistance Centre

MOL - Ministry of Labour

NHC - National Heritage Council

PPE Personal Protective Equipment

NNMP - Namaqua Natal Metamorphic Province

EAP - Environmental Assessment Practitioner

EMS - Environmental Management Systems

1 INTRODUCTION

1.1 Background

The Environmental Management Plan (EMP) detailed in this section outlines the comprehensive strategy the Proponent intends to adopt for the management of exploration, potential mining, and processing operations within the Exclusive Prospecting License (EPL) area. This approach is particularly geared towards activities that have a substantial impact on the receiving environment or possess the potential for long-term high-risk implications. The overarching goal is to minimize adverse effects while maximizing positive outcomes associated with the operations in the EPL area.

- **Commitment to Environmental Responsibility:**

Aligned with the company's Environmental Policy, the Proponent commits to upholding responsible and sound environmental management throughout all stages of exploration, test mining, and processing activities within the EPL area. This commitment underscores the importance of integrating environmental considerations into every facet of the company's operations.

- **Integration into Environmental Management Systems (EMS):**

The impacts discussed in this section of the report will be seamlessly integrated into the company's overarching Environmental Management Systems (EMS). This integration ensures a holistic and systematic approach to environmental management, emphasizing a proactive stance in addressing potential challenges and leveraging opportunities for positive environmental contributions.

- **Auditing for Compliance:**

In adherence to the company's commitment to environmental stewardship, the EMP and EMS will undergo both internal and external audits annually. These audits serve as a rigorous mechanism to verify and ensure compliance with environmental standards and regulations. The commitment to regular audits reflects the Proponent's dedication to continuous improvement and transparency in environmental management practices.

- **Project Location and Land Use:**

EPL 8228 is situated 69 km northeast of Karasburg town in the Karas Region, covering an extensive area of 19,794.6478 hectares. The project is demarcated by ten corner coordinates, as illustrated in Figure 1-2. Notably, the predominant land use within and outside the EPL is private land, primarily utilized for goat, sheep, and cattle farming. Additionally, the EPL intersects with eight commercial farms, namely Fettkluft North (farm No. 33), Hudap North (farm No. 38), Hudab South (farm No. 39), Tigerberg (farm No. 62), Nabas (farm No. 61), Helder (farm No. 40).

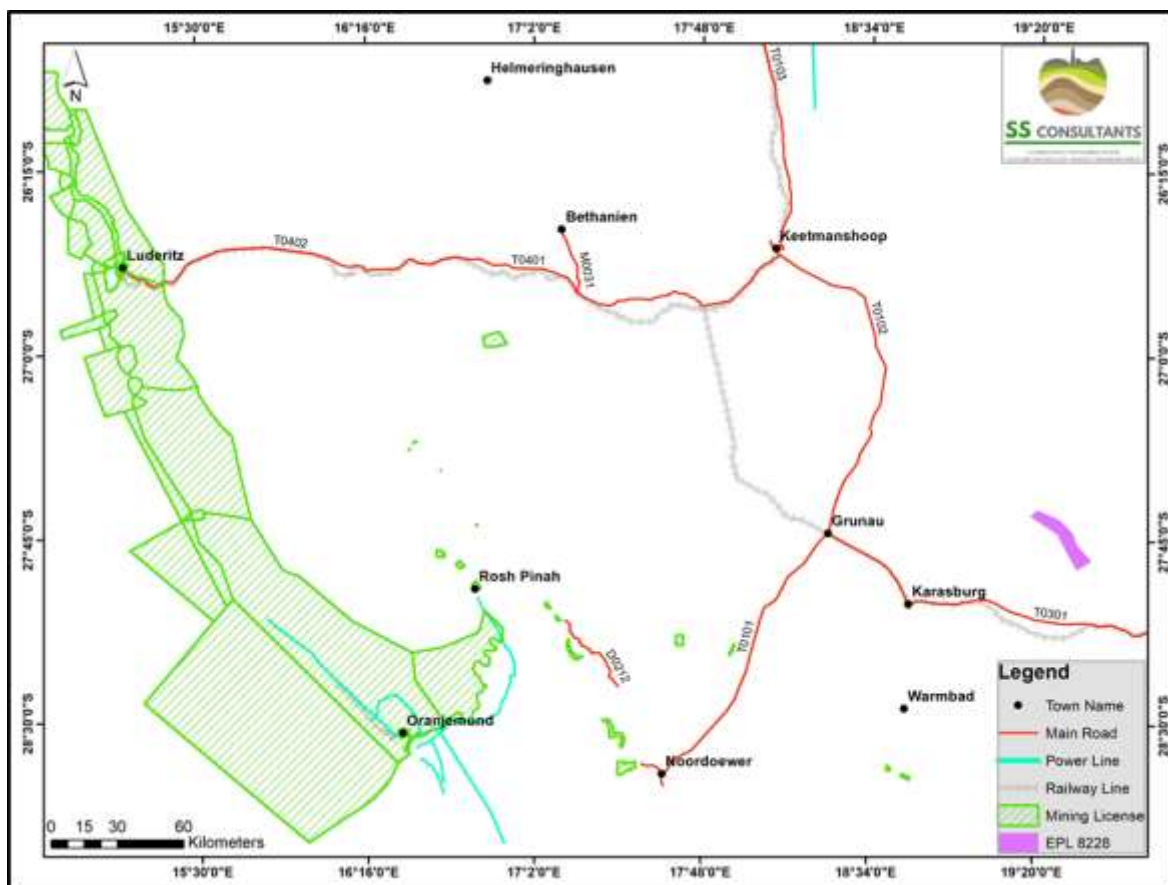


Figure 1-1: Map showing the location of EPL 8228 in relation to existing Mining Licenses in the area.

- **Consideration of Existing Land Uses:**

Given the prevalence of farming activities in the area, the EMP acknowledges the need to harmonize exploration and mining activities with existing land uses. This recognition underscores the importance of balancing economic development with environmental sustainability, minimizing conflicts, and fostering coexistence between mining operations and agricultural practices.

In essence, the EMP outlines a proactive and responsible approach to environmental management, demonstrating a commitment to compliance, transparency, and the integration of environmental considerations into the core of the company's operations in the specified EPL Area.

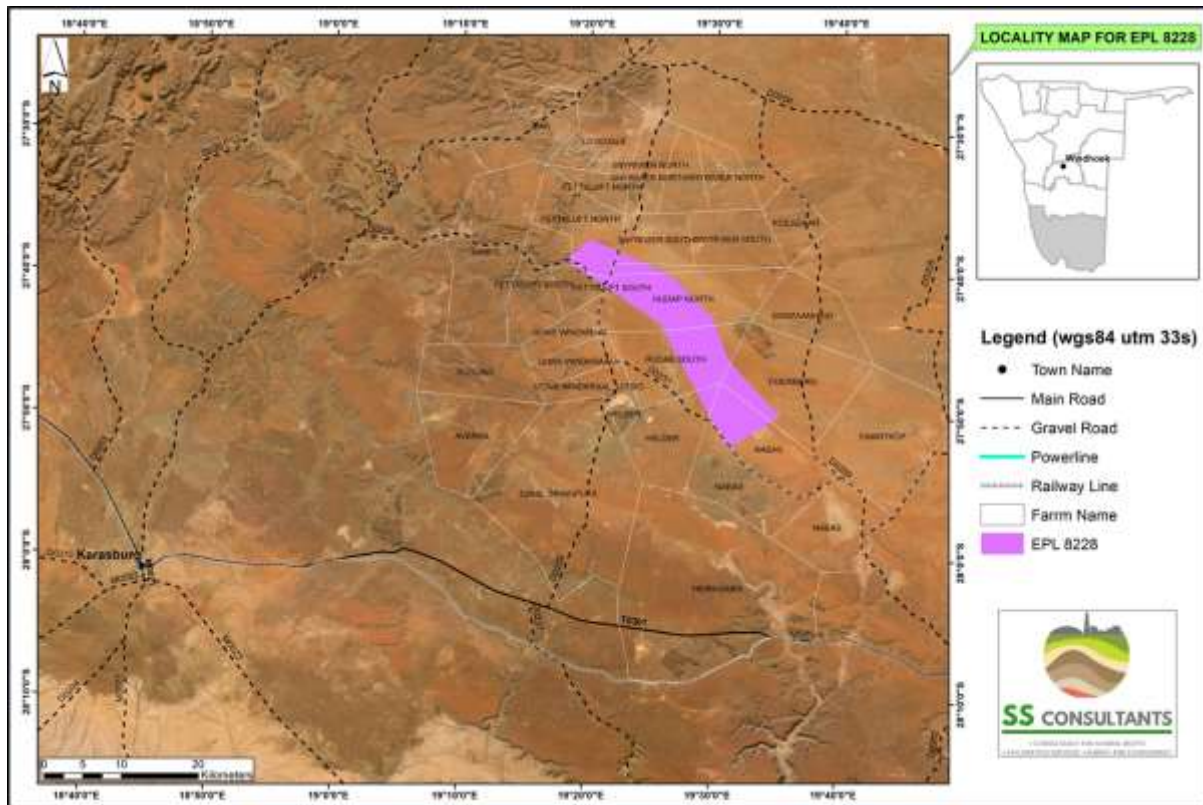


Figure 1-2: Locality map showing the location of EPL 8228.

1.2 Purpose of the document

This document is prepared as part of the Environmental Scoping and Impact Assessment for the Proposed Exploration which was conducted in terms of the Environmental Management Act, 2007 (Act No 7 of 2007). It is designed to function as a dynamic Environmental Management Plan (EMP), responding to the environmental effects discerned during the assessment. This EMP should be regarded as a living document, complementing the Environmental Scoping and Impact Assessment Report. The EMP serves as a crucial component in the environmental regulatory process, outlining measures to address identified environmental effects and providing a framework for responsible and sustainable practices.

- i. **Purpose:** The primary purpose of this EMP is to delineate management measures aimed at addressing the identified environmental effects detailed in the

Environmental Scoping and Impact Assessment Report. Additionally, it provides mitigation measures and recommendations to counteract these effects. It is imperative for all personnel involved in the project to familiarize themselves with the potential environmental issues and the strategies outlined herein to prevent or minimize adverse impacts on the site.

- ii. **Legal Compliance:** The proponent will acknowledge full compliance with legal and policy requirements as the holder of the Environmental Clearance Certificate (ECC). The impacts identified in the Environmental Impact Assessment (EIA) serve as the foundation for a set of environmental specifications that will be enforced on-site. These specifications constitute a binding agreement between the company and the Ministry of Environment, Forestry, and Tourism (MEFT).

2 PROJECT ACTIVITIES

2.1. Mineral Exploration Activities

- i. **Exploration Data Review:** Exploration activities commence with a comprehensive review of existing data and past research through a desktop analysis. This involves acquiring high-resolution data from the Ministry of Mines and Energy (MME), interpreting it, and determining potential targets in the EPL area. This initial stage serves as a foundational step in exploration.
- ii. **Reconnaissance Assessment:** Following the data review, a reconnaissance assessment is conducted, involving field-based activities like regional mapping and sampling. This phase aims to identify and validate prospective areas pinpointed during the first stage. Reconnaissance activities are only initiated if potential targets are identified in the initial data review.
- iii. **Initial Field-Based Operations:** Subsequent to reconnaissance, preliminary field-based activities take place. These activities include widely distributed geological mapping, sampling, surveying, and possibly spaced trenching and drilling. The goal is to verify the feasibility of potential targets based on regional data acquired in the previous stage. The extent of exploration depends on the discovery of viable mineral resources. In the event that the specified target proves non-viable, the license is revoked.

- iv. Detailed Local Field-Based Operations:** To assess the viability of delineated local targets, detailed local field-based operations are conducted. This involves site-specific geology mapping, trenching, bulk sampling, surveying, and detailed drilling. The depth of exploration at this stage is contingent on the discovery of prospective mineral resources. If positive results are obtained from detailed exploration, the data is compiled into a pre-feasibility report.
- v. Detailed Feasibility Study:** If the pre-feasibility results are favourable, a comprehensive feasibility study is undertaken for the identified site-specific area. This includes detailed site-specific drilling, bulk sampling, and laboratory testing/test mining. The detailed feasibility study aims to provide a thorough understanding of the economic viability and technical feasibility of the mineral resources identified during the exploration process.

2.2. Access And Transport

The EPL is conveniently accessible via the D0209 gravel road that branches off the main Karasburg – Ariamsvlei (Namibia, South African border) road. Within the EPL, there are several smaller track roads (Figure 2-1). To minimize environmental impact during geological mapping, sampling, and geophysical surveys, motorized access will be limited to the existing tracks. However, if new access routes are needed for drilling, they will be identified, marked, and assessed for environmental sensitivity before drilling commences.

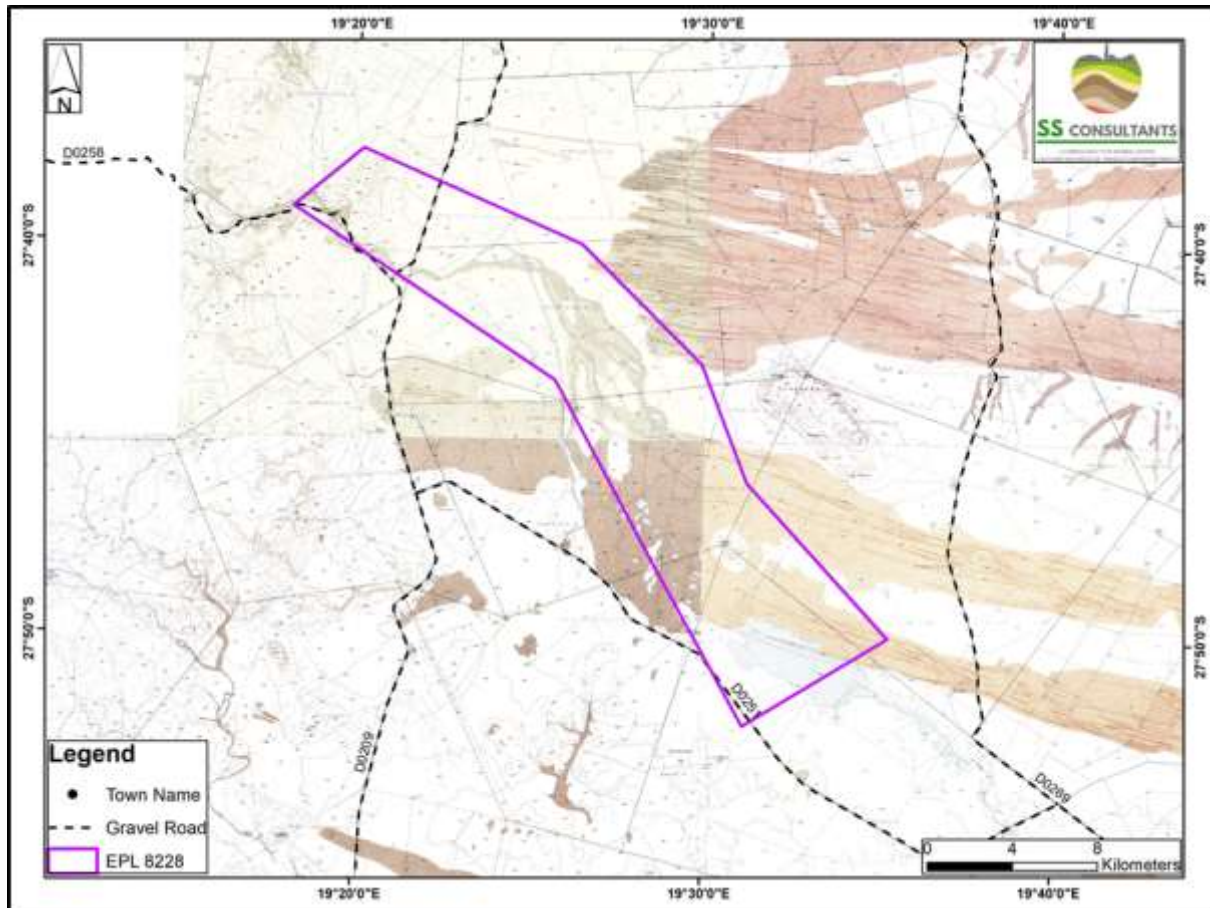


Figure 2-1 Topographic map showing existing road network within the EPL area

2.3. Resources (water and electricity)

Exploration activities will need a limited supply of water which will be brought to the site. A diesel-powered generator will be used as needed for operating machinery.

2.4. Accommodation and supporting infrastructure

- The exploration team is anticipated to comprise less than ten (10) skilled workers, who will commute daily to the site, eliminating the need for camp setups.
- To facilitate the team's daily operations, two portable toilets will be installed on-site and diligently serviced to ensure hygiene and compliance with environmental standards.
- Essential equipment for day-to-day activities will include an excavator, loader, screening plant, and one (1) bakkie, all crucial for efficient exploration tasks.

- Waste generated during exploration activities will be systematically collected and responsibly deposited at the Karasburg municipal dumpsite, aligning with waste management regulations.
- Hydrocarbon storage on-site will involve the presence of petrol (100 liters) and diesel (1000 liters) tanks. These tanks will be appropriately stored and bunded, with bunds designed to hold 110% of the tanks' capacity. The proponent will diligently apply for all necessary permits, as mandated by the Ministry of Mines and Energy (MME), to ensure compliance with regulatory standards.

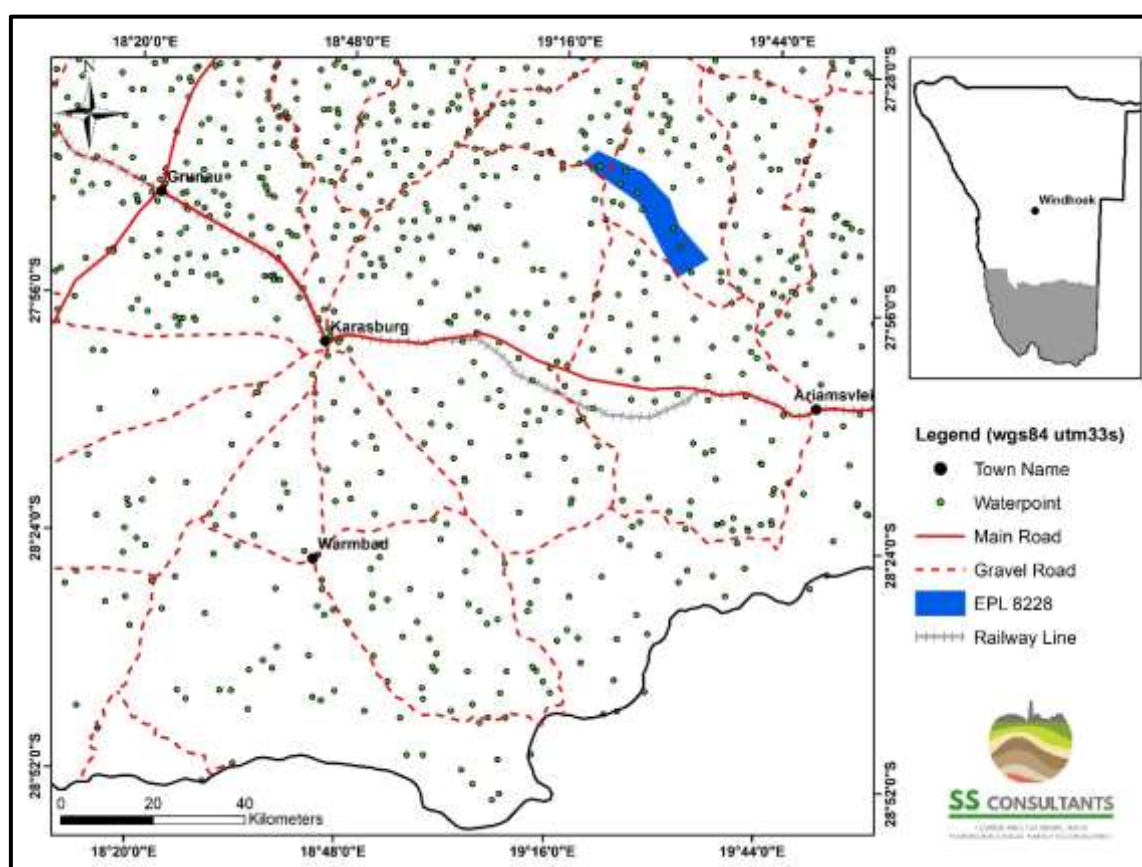


Figure 2-2: Map showing the outline of EPL 8228 and infrastructures surrounding the EPL area.

3. SUMMARY OF THE RECEIVING ENVIRONMENT

i. Regional Geology

The regional geology encompassing EPL 8228 is characterized by three primary tectonostratigraphic units: the Palaeo- to Mesoproterozoic Namaqua Province, late Proterozoic to Palaeozoic cover sequences of the Nama Group, and the Karoo Supergroup.

The Namaqua Province consists of distinct NE-SE trending domains with diverse stratigraphy and structural histories. NNMP rocks, exposed in various directions around EPL 8228, date back to 1200 million years. Overlying these are sedimentary cover sequences, including the Neoproterozoic to Cambrian Nama Group and Palaeozoic Karoo Supergroup, intruded by later igneous provinces and extensively impacted by Jurassic dolerite sills and dykes.

ii. Local Geology

The local geology under EPL 8228 involves lithostratigraphic units from the Nama Group, Karoo Supergroup (Dwyka Group), and post-Karoo dolerite dykes. Notable formations include the Nababis Formation, dominated by cross-bedded, feldspathic sandstones, and the Dwyka Formation, forming the base of the Karoo Supergroup. Post-Karoo dolerite dykes and sills, accompanied by faulting and gentle folding, have influenced the local geology, creating distinctive trends in faulting and dolerite emplacement.

iii. Landscape and Topography

The EPL is situated in the southeastern region of Namibia within the Karas Region. The topography of the Karas Region is characterized by diverse topography, featuring a mix of desert landscape, mountainous areas, and expansive plains. The EPL itself is characterized by a relatively flat topography with undulating hills and sits at an elevation of 1004 meters (3294.61942) above sea level.

iv. Climate

The Karasburg area, where the EPL is located, experiences a warm desert climate (Köppen-Geiger classification: BWh). The area has distinct wet (May to November) and dry (January to May) seasons. Temperature variations are noticeable, with the coldest months in June and July, and the highest temperatures in January to March and October to December. Temperature variations are observed between summer and winter, influencing exploration activity scheduling and hazard avoidance. Wind speed undergoes seasonal shifts, with December having the highest average speed (14.3 km/h). Humidity is generally low, with June being the most humid month (48% relative humidity), and November the least humid (29% relative humidity). Namibia's arid climate, characterized by low humidity, influences cloud cover, precipitation, and evaporation rates in the area.

v. Water Resources: Surface and Groundwater

EPL 8228 is situated in south-eastern Namibia within the Orange Basin, characterized by predominantly rocky terrain with limited ground water potential. The rock bodies in the area function as aquifers with generally low water potential, occasionally exhibiting moderate potential locally. The northeastern section of EPL features rocks with moderate water potential, marked by fractured, fissured, or karstified rock formations. Given these geological attributes, the EPL falls within an ecoregion where water potential is low, necessitating careful water usage of ground water to prevent depletion. The project will primarily use water for general purposes, cleaning, drilling activities, and dust suppression. The water will be sourced from existing boreholes or new ones based on agreements with landowners and the community. Individual agreements with landowners and community members will determine the use of water from existing boreholes. All necessary permits for water drilling should be obtained from relevant authorities. Water used for drilling will be recycled for efficiency, and if needed, water can be obtained from the Karasburg Municipality/Town Council.

vi. Flora

EPL 8228 occurs within the Nama Karoo biome and falls within the Karas Dwarf Shrubland Vegetation Type. The predominant landscape features grasslands and low shrubs, with plant endemism ranging from 2 to 9 species (Mendelsohn et al, 2002). Quiver trees (*Aloe dichotoma*), notable for their succulent nature and efficient water storage, are a key species in the area, particularly adapted to arid conditions. Hillsides are characterized by *Euphorbia*, *Aloe*, and *Boscia* species, while plains exhibit *Rhigozum trichotomum*, *Parkinsonia africana*, and dominant *Stipagrostis* species in grasslands. Larger drainage lines host a diverse array of vegetation, including *Acacia erioloba*, *A. karroo*, *Tamarix usneoides*, *Euclea pseudebenus*, *Rhus lancea*, as well as succulent shrubs like *Euphorbia gregaria* and *Ficus cordata*. Types of vegetation observed within the EPL is shown in figure 3-1.



Figure 3-1: Dry Desert shrubs within the EPL area

vii. Fauna

EPL 8228 is located in an ecological region with relatively low terrestrial species diversity. Mammal diversity ranges from 16 to 30 species, carnivores exhibit 10 to 13 species, bird diversity is below 51, reptile diversity falls between 41 to 50, and amphibians range from 1 to 4 species. Common mammals in the area include gemsboks, steenboks, springboks, baboons, and porcupines. Reptiles, including snakes like puff adders, cobras, dwarf adder, and whip snakes, as well as various lizards and geckoes, also inhabit the area.

Avifauna

The most common bird species on-site are Sociable Weavers with several nest sites being located in the dry riverbeds across the site. These riverbeds appear to be higher in species density, abundance, and diversity than the adjacent plains which are relatively unproductive in terms of bird density and diversity. This habitat type is dominated by Spikeheeld Lark, Fawncoloured Lark, and Anteating Chats. The six globally threatened bird species which have a distribution range which overlaps with the study area may not always be observed on site, it is possible for them to occur within the study area at some stage. These include the Secretarybird, Kori Bustard, Ludwig's Bustard, Lanner Falcon, Martial Eagle, and Sclater's Lark. Larger bodied species, such as the Martial Eagle, have extremely large home ranges and could very well be found on occasion within the study area. Ostriches are the common raptites observed within the license area.

4. ENVIRONMENTAL MANAGEMENT PRINCIPLES

The Proponent commits to ensuring that all project participants uphold the following principles:

i. Ecological and Social Responsibility

All employees, including consultants, workers, contractors, subcontractors, transporters, visitors, and others entering the premises, are obligated to conduct activities in an ecologically and socially responsible manner.

ii. Health and Safety

Safeguarding the health and safety of project personnel and the public is paramount. This includes addressing road safety, on-site dangers, and potential hazards associated with the project.

iii. Community Relations

Foster positive relationships with surrounding settlements, farm owners and stakeholders, emphasizing open communication and collaboration.

iv. Wise Use and Conservation of Environmental Resources

Ensure the wise use and conservation of environmental resources, with consideration for both present and future generations. Prevent or minimize environmental impacts associated with project activities. Take measures to minimize air, water, and soil pollution resulting from project operations. Actively contribute to the conservation of biodiversity in the project area.

These principles underscore the Proponent's commitment to responsible and sustainable practices, promoting not only the success of the project but also the well-being of the environment, communities, and future generations.

4.2. Roles and responsibilities for environmental management

The environmental aspects which may be affected by the proposed project have been categorized into negative and positive impacts as an extension of the preceding sections. This section summarizes the objectives, indicators to be observed, schedules to be adhered to and roles and responsibilities of various stakeholders to the EMP.

4.2.1. Communication between Parties:

Emphasis on open communication among all parties to proactively address potential environmental issues. Prioritization of a proactive approach to anticipate and prevent/minimize environmental impacts. Recognition of the irreversibility of certain impacts, such as damage to protected and endemic species.

4.2.2. The Exploration Operating Company:

Ultimate responsibility lies with the company, led by the Environmental Control Officer (ECO) and Managing Director. Inclusion of Environmental Management Plan (EMP) and its specifications in contractual documents. Compliance with Namibian legislation, policies, and international conventions. Daily enforcement of environmental specifications and periodic environmental audits. Allocation of a sufficient budget for measures with cost implications. Early commissioning of tree surveys before road construction to secure necessary permits. Maintenance of open and effective communication on environmental management.

4.2.3. Site Managers:

Day-to-day environmental management responsibility assigned to the ECO and Manager Field Operations (MFO). Familiarity with EMP and relevant sections of the Environmental Impact Assessment (EIA). Daily monitoring and enforcement of environmental compliance on-site. Consultation with the ECO in case of infringements leading to environmental damage. Documentation of "before-and-after" site conditions. Facilitation of communication among all stakeholders for effective environmental management.

4.2.4. Environmental Control Officer (ECO):

Appointment of a qualified ECO responsible for environmental audits and reporting. Submission of site inspection reports to the Managing Director and MFO. Advising the MFO on interpretation and implementation of environmental specifications. Recommending remedial action in cases of non-compliance. Periodic submission of reports to the Ministry of Environment, Forestry, and Tourism (MEFT) as required by law.

4.2.5. Contractors:

Contractors' responsibilities include familiarity with EMP, compliance with environmental specifications, and timely notification of actions with potential negative impacts. Conducting or arranging environmental training for employees and subcontractors. Progressive implementation of rehabilitation measures when required, avoiding deferral until the project's end.

5. ENVIRONMENTAL SPECIFICATIONS

These are detailed and specific requirements, standards, and guidelines that are set to govern and ensure the environmental performance of exploration. These specifications are designed to minimize or mitigate any potential negative impacts on the environment resulting from the activities associated with the exploration. These specifications cover a range of aspects and practices to promote responsible and sustainable environmental management. The environmental specifications are:

5.2. Compliance with Environmental Specifications

- Conducting activities in an environmentally and socially responsible manner.
- Strict adherence to environmental specifications by the contractor and on-site personnel.

5.3. Training and Awareness

- Provision of training for all site personnel and contractors to ensure compliance with environmental specifications.
- Oversight by the Manager Field Operations (MFO) to guarantee appropriate training levels at all personnel tiers.

5.4. Stakeholder Relations

- Maintenance of positive relations with landowners and the public by all site personnel.
- Addressing and resolving any complaints received by the Environmental Control Officer (ECO).

5.5. Permits

- Obtaining all necessary permits from relevant authorities.

- Conservation and relocation of rare and endangered plants require permits from the Directorate of Forestry.

5.6. Road Safety

- Implementation of precautions for safe access road usage, considering visibility, animal presence, and road conditions.
- Adherence to speed limits, cautious driving, and strict control of vehicle movements.

5.7. Access Tracks

- No new tracks unless essential, with approval from the Municipality and landowners.
- Clear marking of selected access and site roads, avoiding damage to plants.
- Foot access to elevated or trackless sites where possible.

5.8. Conservation of Biodiversity

- Strict avoidance of damage to protected species.

5.9. Wildlife Poaching

- Prohibition of capturing, killing, or harming animals or birds.
- Strict consequences for violations, including potential suspension from the project and prosecution.

5.10. Soil Management and Erosion Control

- Careful excavation to minimize topsoil removal.
- Separation and stockpiling of subsoil for backfilling.
- Prevention of soil erosion with suitable measures in sensitive areas.

5.11. Pollution Control

- Immediate reporting and containment of spills by workers.
- Mitigation of pollution incidents by the contractor.

5.12. Air Pollution/Dust Emission

- Timely activities during permissible weather conditions.
- Sheltered location for soil and sand stockpiles.

- Vegetation retention to reduce dust, re-vegetation of exposed surfaces, and controlled vehicle movement.
- Adherence to speed limits and dust monitoring practices.

5.13. **Noise Pollution**

- Keeping noise levels within acceptable limits, following appropriate noise mitigation specifications.
- Limiting noisy activities to specific times and avoiding weekends and public holidays.

5.14. **Waste Management**

- Maintaining cleanliness with provided bins and responsible waste disposal.
- No on-site burial of waste; removal to approved facilities.

5.15. **Hazardous Substances**

- Proper labelling and sealing of containers holding hazardous substances.
- Bunding of tanks to contain spills, immediate clean-up, and disposal of spills.

5.16. **Fire Prevention**

- Emergency Response Plan establishment.
- Controlled burning of charcoal with precautions and supervision.

5.17. **Archaeological Sites**

- Protection of archaeological remains, reporting of any finds to the Heritage Council.

5.18. **Health and Safety**

- Detailed induction for all personnel, including measures for dust, bees, snakes, and scorpions.
- Emphasis on good personal hygiene, including handwashing before eating.
- Provision of personal protective equipment and first aid supplies.
- **Dust Management**
Staff provided with dust masks and proper Personal Protective Equipment (PPE) during charcoal processing to prevent inhalation.
- **Ingestion Prevention**

Prohibition of eating, drinking, or smoking while working with potentially hazardous materials to avoid ingestion

- **Emergency Measures**

Availability of Aspidon (suction syringe) at all workstations for first aid in case of snake bites, scorpion stings, or bee stings.

5.19. **Work Stoppage**

- Authority of the MFO to halt work in case of environmental specification infringements.
- No entitlement to claims for delays during work stoppages.

5.20. **Compliance Monitoring**

- Monthly site compliance inspections by the company ECO.
- Compilation of EMP compliance reports submitted regularly to the MFO and biannually to the MEFT.

6. IMPACTS IDENTIFICATION, DESCRIPTION AND ASSESSMENT

6.2. **Impact Assessment**

The purpose of this section is to assess and identify the most pertinent environmental impacts by describing certain quantifiable aspects of these impacts and to provide possible mitigation measures to minimize the magnitude of the impacts that would be expected from the various activities that constitute the proposed minerals exploration on EPL 8228.

The following potential impacts on the environment during exploration activities have been identified:

- Socio economic impact
- Impacts on soil
- Impacts on the flora and fauna
- Air quality (generation of dust) and noise pollution
- Groundwater and surface water impacts

- Disturbance to Archaeological & Heritage Resources
- Health, safety, and welfare impact
- Land use

6.3. **Assessment methodology for evaluating potential impacts.**

The impact screening criteria are summarized in the following table.

Table 6-1: Impact Screening Criteria

Aspect	Description
Nature	Focuses on the type of effect that the project will have on environmental components. Addresses questions related to “what will be affected and how?”
Extent	Spatial extend of the project and anticipated spatial extend of impacts indicating whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15km of the area); regional (limited to ~100km radius); national (extending beyond Namibia’s borders).
Duration	This looks at the temporal issues pertaining to time frames e.g., whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.
Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).

Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a “no-go” implication regardless of any possible mitigation (an alternative route should be used).
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The application of the above criteria will be used to determine the significance of potential impacts using a combination of duration, extent, and intensity/magnitude, augmented by probability, cumulative effects, and confidence.

6.4. Impact Rating Criteria

The impact rating criteria are summarised in the following table

Table 6-2 Impact Rating Criteria

Significance Rating	Criteria
Low	Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given development description. This would be allocated to impacts of any severity/ magnitude, if at a local scale/ extent and of temporary duration/time.
Moderate	Where the impact could have an influence on the environment, which will require modification of the development design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term.

High	Where the impact could have a significant influence on the environment and, in the event of a negative impact the activity(ies) causing it, should not be permitted (i.e. there could be a 'no-go' implication for the development, regardless of any possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond.
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7. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The purpose of the Environmental Management Plan is to provide a detailed plan to mitigate the negative and positive impacts identified in the environmental assessment report. Furthermore, it aims to provide actions with roles and responsibilities to implement the environmental specifications provided for to the proponent, contractors, subcontractors who will undertake exploration activities.

The following table provides a large-scale summary overview of all the major environmental management aspects. The EIA submitted with this EMP also provide mitigation measures for impacts identified therein.

Table 7-1 Environmental impacts and mitigation

ENVIRONMENTAL IMPACTS	PROPOSED MITIGATION MEASURES	RESPONSIBILITY	MONITORING PLAN
Air pollution	<ul style="list-style-type: none"> Regular maintenance of vehicles and equipment's. Brief workers and contractors. 	Personnel on duty, Foreman on duty and Environmental Officer	<ul style="list-style-type: none"> Amount of dust produced. Level of landscaping executed.

	<ul style="list-style-type: none"> • Control speed and operation of construction vehicles. • Regular maintenance of vehicles, construction equipment's and heavy machineries. • Provide workers with dust masks. 		
<p>Noise pollution</p>	<ul style="list-style-type: none"> • All noise should be kept within reasonable levels. • Employees and neighbors should be notified of any scheduled unusual noise. • Regular maintenance of vehicles, equipment's and heavy machinery. • Workers should be provided with personal hearing protection if 	<p>Foreman on duty, Environmental Officer, Safety Health and Environment Manager.</p>	<ul style="list-style-type: none"> • Amount of noise produced

	working in a noisy environment.		
Solid waste	<ul style="list-style-type: none"> • Littering should be discouraged by having strategically placed bins and refuse skips on site. • Recycling plastic, paper and cans should be encouraged on site • The bins should be emptied on a regular basis by the proponent or an independent contractor. • The site should have containers with bulk storage facilities at convenient points to prevent littering. 	Personnel on duty, Environmental Officer and Safety Health and Environment Manager	<ul style="list-style-type: none"> • Presence of dust bins/waste collection points.
Oil leaks and spills	<ul style="list-style-type: none"> • Contactor should have a sealed designated area where 	Personnel on duty, Foreman on duty Environmental	<ul style="list-style-type: none"> • Absence of oil spills and leaks on site.

	<p>maintenance is carried out to prevent percolation of contaminants.</p> <ul style="list-style-type: none"> • Oil products should be handled carefully on bounded surfaces; in case it leaks. • Vehicles and equipment should be well maintained to prevent oil leaks. 	<p>Officer and Safety Health and Environment Manager</p>	
First aid	<ul style="list-style-type: none"> • A well-stocked first aid kit shall be maintained by qualified personnel. 	<p>Safety Health and Environment Manager, Safety and Health Officer.</p>	<ul style="list-style-type: none"> • Contents of the first aid kits.
Visual	<ul style="list-style-type: none"> • Environmental considerations will always be adhered to before clearing roads, trenching and excavation. 	<p>Safety Health and Environment Manager, Environmental Officer</p>	<ul style="list-style-type: none"> • Employees to be trained on how to minimize impacts that can easily be identified with the eye.

<p>Archaeological sites</p>	<ul style="list-style-type: none"> • Buffer zones will be created around the sites. • Adhere to practical guidelines provided by the responsible archaeologist to reduce archaeological impacts of quarrying activities. • All archaeological sites to be identified and protected before development commences. 	<p>All personnel on duty, Environmental officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Register of all archaeological sites identified.
<p>Occupational health and safety</p>	<ul style="list-style-type: none"> • Provide personal protective equipment's, train workers on personal safety, and how to handle equipment's and machines. • A well-stocked first aid box shall be maintained by 	<p>Safety and Health Officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Workers using personal protective equipment. • Availability of a well-stocked first aid box.

	<p>qualified personnel.</p> <ul style="list-style-type: none"> • Report any accidents/incidences and treat and compensate affected workers. • Provide sufficient and suitable sanitary conveniences which should be kept clean. • Clean sanitary facilities. 		
<p>Fauna</p>	<ul style="list-style-type: none"> • Some habitat areas such as the river and tunnel outcrops will be avoided wherever possible. • A fauna survey will be conducted to determine the effect of fragmented 	<p>Personnel on duty, Environmental Officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Regular monitoring of any unusual signs of animal habitat.

	<p>habitat to game species should the need arise.</p> <ul style="list-style-type: none"> • No animals shall be killed, capture or harmed in any way. • No food stuff shall be left lying around as this will attract animals which may result in human-animal conflict. 		
<p>Alien invasive plants</p>	<ul style="list-style-type: none"> • Ensure vehicles and equipment are clean of invasive plants and seeds. • Eradicating alien plants using area management plan. • Contain neighboring infestations and restrict movement of invasive plants from adjacent lands • Educating everyone on site 	<p>Environmental Officer, Environmental Manager</p>	<ul style="list-style-type: none"> • Regular monitoring of any signs of alien plants.

	on types of invasive plants.		
Loss of vegetation	<ul style="list-style-type: none"> • Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating. • The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive area will be avoided. 	Environmental Officer, Safety Health and Environment Manager	<ul style="list-style-type: none"> • Warning signs on site • Restored vegetation
Socio Economic	<ul style="list-style-type: none"> • The population change can be mitigated by employing people from the local community and encouraging the contractors to employ local individuals. 	Environmental Officer, Safety Health and Environment Manager.	<ul style="list-style-type: none"> • The perception of risks will be mitigated by putting up safety signs wherever possible and ensuring that all employees and visitors to the site undergo a safety induction course.

8. MONITORING PLAN

The project monitoring conducted under the EMP includes:

The monitoring plan includes:

i. **Project Readiness Monitoring:**

- Purpose: To assess the progress of project readiness and address deficiencies through corrective actions.

ii. **Environmental Quality Monitoring:**

- Responsible party: competent authority or proponent-appointed personnel.
- Parameters: Air quality, noise, and water quality.
- Method: Collection and analysis of data at designated monitoring locations.
- Objective: Evaluate compliance with applicable environmental quality and emission standards.

iii. **EMP Compliance Monitoring:**

- Responsible Party: Project Management Consultants.
- Purpose: Verify adherence to the Environmental Management Plan (EMP) during project implementation.

iv. **Operational Monitoring:**

- Responsible Party: Relevant government department or nominated private sector operator.
- Scope: Part of subproject operations.
- Objective: Ensure ongoing compliance with environmental standards during the operational phase.
- Auditing plan

9. ENVIRONMENTAL CODE OF CONDUCT

The Environmental Code of Conduct outlined in this section of the Environmental Management Plan (EMP) is applicable to all individuals involved in the project, including sub-

contractors, visitors, permanent and temporary workers. It is mandatory for anyone within the project site boundaries to adhere to the Environmental Code of Conduct as specified in this section of the EMP.

The on-site implementation of environmental guidelines will be overseen by the Environmental Coordinator (ENC), who holds the authority to issue warnings and take disciplinary actions against individuals violating environmental rules and procedures. In cases of persistent transgressions, a disciplinary hearing will be conducted. Continued noncompliance may lead to permanent removal from the construction sites. This Code of Conduct serves as a comprehensive framework to ensure that all project participants contribute to maintaining environmentally responsible practices throughout the project's duration.

9.2. Site closure and rehabilitation

Rehabilitation is the process of repairing the damage done by exploration activities. Rehabilitation plan has been developed with a main aim of returning disturbed environment close to its pre exploration state. It is also planned to cater for the access road, vehicle tracks around the site, removal, and restoration of areas covered by stockpile and rock piles. The closure vision for the proposed project is to establish a safe, stable and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy.

9.2.1. Site closure and rehabilitation activities

All waste (such as hazardous and domestic) waste will be transported offsite for disposal in licensed landfills in Karasburg or surrounding towns. Disturbed or/and contaminated areas will be cleaned up, treated where necessary and restored to its pristine state.

- Demolition of camping structures.
- Removing of equipment on site.
- Removal of associated infrastructures such as storage tanks, solar panels and heavy-duty generators.

- Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions in consultation with landowners.
- Existing secondary roads in the area should be used to prevent damages of the main road.
- The recovered topsoil and subsoil should be utilized to reconstruct the original soil profile

10. RECOMMENDATIONS

Based on the results of this Environmental Management Plan (EMP) report, SS Consultants hereby recommended that the proponent be issued with an Environmental Clearance Certificate for proposed exploration on the EPL 8228. Once a viable project has been identified (economic resources are discovered) and a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) must be implemented as part of the prefeasibility and feasibility study with respect to the possible mining operations. The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources.

11. CONCLUSION

In conclusion, this EMP signifies a commitment to environmental stewardship and regulatory compliance, providing a detailed roadmap for managing and mitigating potential environmental impacts during the exploration phase. It establishes a clear framework for responsible practices and serves as a contractual agreement between the company and the regulatory authorities. The implementation of the EMP as provided in this report will minimize the negative effects and maximize the positive effects thereby enhance the overall ecosystem services / value of the EPL 8228 and surrounding areas.

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LIST OF ACRONYMS

DEA – Department of Environmental Affairs

EMP - Environmental Management Plan

EA - Environmental assessment

ECC – Environmental Clearance Certificate

EIA – Environmental Impact Assessments

EMA – Environmental Management Act No. 7 of 2007

ESA - Environmental Scoping Assessment

I&AP – interested and affected parties.

METF – Ministry of Environment, Tourism and Forestry

MME – Ministry of Mines and Energy

ECO - Environmental Control Officer

MFO - Manager Field Operations

M –Meters

ASL - above sea level

NDP5 – National Development Plan

GDP – Gross Domestic Product

HPPs – Harambee Prosperity Plan

LAC - Legal Assistance Centre

MOL - Ministry of Labour

NHC - National Heritage Council

PPE Personal Protective Equipment

NNMP - Namaqua Natal Metamorphic Province

EAP - Environmental Assessment Practitioner

EMS - Environmental Management Systems

1 INTRODUCTION

1.1 Background

The Environmental Management Plan (EMP) detailed in this section outlines the comprehensive strategy the Proponent intends to adopt for the management of exploration, potential mining, and processing operations within the Exclusive Prospecting License (EPL) area. This approach is particularly geared towards activities that have a substantial impact on the receiving environment or possess the potential for long-term high-risk implications. The overarching goal is to minimize adverse effects while maximizing positive outcomes associated with the operations in the EPL area.

- **Commitment to Environmental Responsibility:**

Aligned with the company's Environmental Policy, the Proponent commits to upholding responsible and sound environmental management throughout all stages of exploration, test mining, and processing activities within the EPL area. This commitment underscores the importance of integrating environmental considerations into every facet of the company's operations.

- **Integration into Environmental Management Systems (EMS):**

The impacts discussed in this section of the report will be seamlessly integrated into the company's overarching Environmental Management Systems (EMS). This integration ensures a holistic and systematic approach to environmental management, emphasizing a proactive stance in addressing potential challenges and leveraging opportunities for positive environmental contributions.

- **Auditing for Compliance:**

In adherence to the company's commitment to environmental stewardship, the EMP and EMS will undergo both internal and external audits annually. These audits serve as a rigorous mechanism to verify and ensure compliance with environmental standards and regulations. The commitment to regular audits reflects the Proponent's dedication to continuous improvement and transparency in environmental management practices.

- **Project Location and Land Use:**

EPL 8228 is situated 69 km northeast of Karasburg town in the Karas Region, covering an extensive area of 19,794.6478 hectares. The project is demarcated by ten corner coordinates, as illustrated in Figure 1-2. Notably, the predominant land use within and outside the EPL is private land, primarily utilized for goat, sheep, and cattle farming. Additionally, the EPL intersects with eight commercial farms, namely Fettkluft North (farm No. 33), Hudap North (farm No. 38), Hudab South (farm No. 39), Tigerberg (farm No. 62), Nabas (farm No. 61), Helder (farm No. 40).

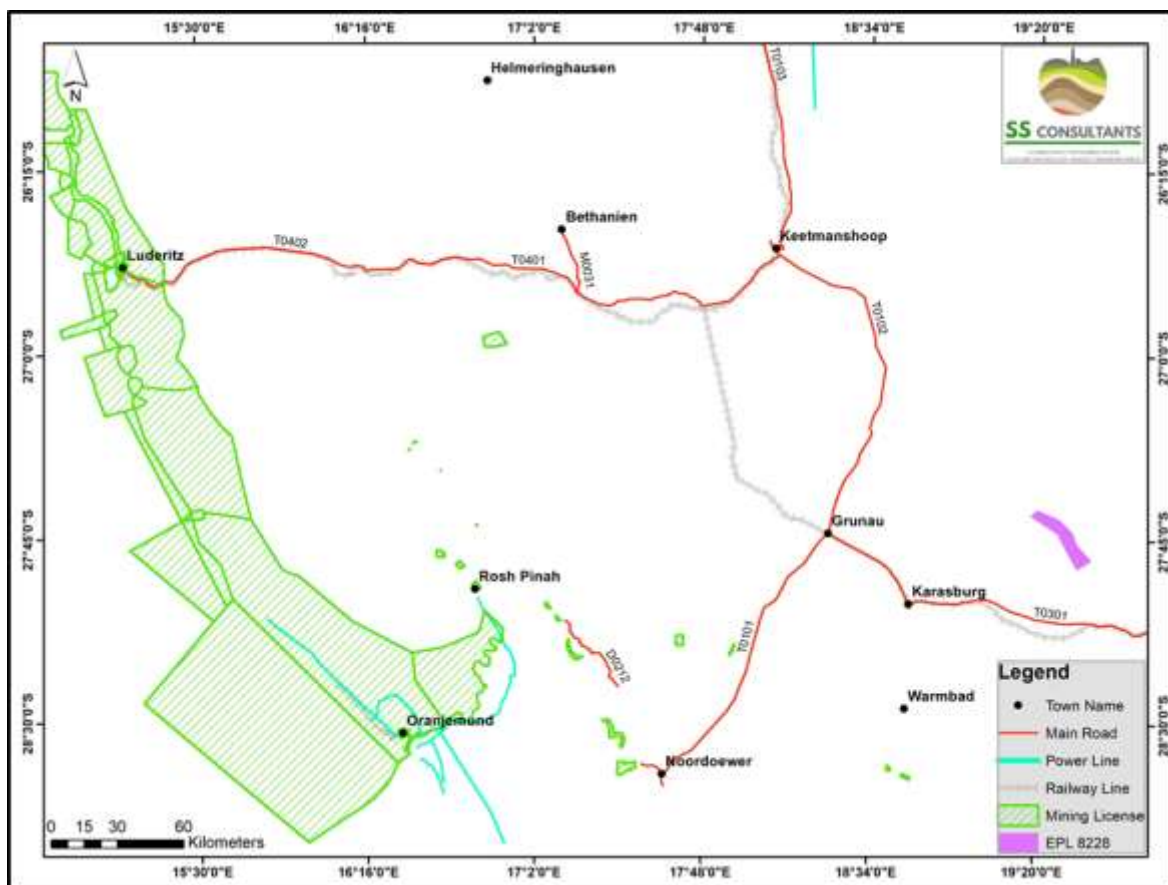


Figure 1-1: Map showing the location of EPL 8228 in relation to existing Mining Licenses in the area.

- **Consideration of Existing Land Uses:**

Given the prevalence of farming activities in the area, the EMP acknowledges the need to harmonize exploration and mining activities with existing land uses. This recognition underscores the importance of balancing economic development with environmental sustainability, minimizing conflicts, and fostering coexistence between mining operations and agricultural practices.

In essence, the EMP outlines a proactive and responsible approach to environmental management, demonstrating a commitment to compliance, transparency, and the integration of environmental considerations into the core of the company's operations in the specified EPL Area.

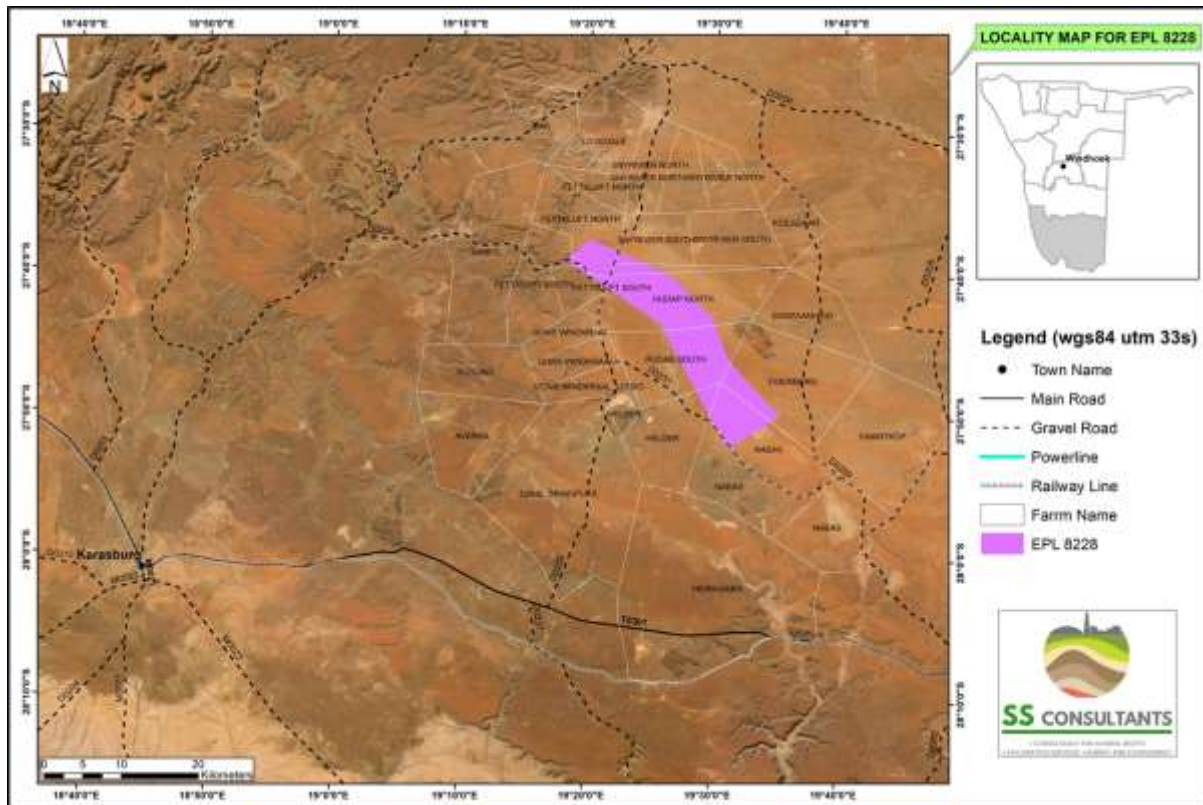


Figure 1-2: Locality map showing the location of EPL 8228.

1.2 Purpose of the document

This document is prepared as part of the Environmental Scoping and Impact Assessment for the Proposed Exploration which was conducted in terms of the Environmental Management Act, 2007 (Act No 7 of 2007). It is designed to function as a dynamic Environmental Management Plan (EMP), responding to the environmental effects discerned during the assessment. This EMP should be regarded as a living document, complementing the Environmental Scoping and Impact Assessment Report. The EMP serves as a crucial component in the environmental regulatory process, outlining measures to address identified environmental effects and providing a framework for responsible and sustainable practices.

- i. **Purpose:** The primary purpose of this EMP is to delineate management measures aimed at addressing the identified environmental effects detailed in the

Environmental Scoping and Impact Assessment Report. Additionally, it provides mitigation measures and recommendations to counteract these effects. It is imperative for all personnel involved in the project to familiarize themselves with the potential environmental issues and the strategies outlined herein to prevent or minimize adverse impacts on the site.

- ii. **Legal Compliance:** The proponent will acknowledge full compliance with legal and policy requirements as the holder of the Environmental Clearance Certificate (ECC). The impacts identified in the Environmental Impact Assessment (EIA) serve as the foundation for a set of environmental specifications that will be enforced on-site. These specifications constitute a binding agreement between the company and the Ministry of Environment, Forestry, and Tourism (MEFT).

2 PROJECT ACTIVITIES

2.1. Mineral Exploration Activities

- i. **Exploration Data Review:** Exploration activities commence with a comprehensive review of existing data and past research through a desktop analysis. This involves acquiring high-resolution data from the Ministry of Mines and Energy (MME), interpreting it, and determining potential targets in the EPL area. This initial stage serves as a foundational step in exploration.
- ii. **Reconnaissance Assessment:** Following the data review, a reconnaissance assessment is conducted, involving field-based activities like regional mapping and sampling. This phase aims to identify and validate prospective areas pinpointed during the first stage. Reconnaissance activities are only initiated if potential targets are identified in the initial data review.
- iii. **Initial Field-Based Operations:** Subsequent to reconnaissance, preliminary field-based activities take place. These activities include widely distributed geological mapping, sampling, surveying, and possibly spaced trenching and drilling. The goal is to verify the feasibility of potential targets based on regional data acquired in the previous stage. The extent of exploration depends on the discovery of viable mineral resources. In the event that the specified target proves non-viable, the license is revoked.

- iv. Detailed Local Field-Based Operations:** To assess the viability of delineated local targets, detailed local field-based operations are conducted. This involves site-specific geology mapping, trenching, bulk sampling, surveying, and detailed drilling. The depth of exploration at this stage is contingent on the discovery of prospective mineral resources. If positive results are obtained from detailed exploration, the data is compiled into a pre-feasibility report.
- v. Detailed Feasibility Study:** If the pre-feasibility results are favourable, a comprehensive feasibility study is undertaken for the identified site-specific area. This includes detailed site-specific drilling, bulk sampling, and laboratory testing/test mining. The detailed feasibility study aims to provide a thorough understanding of the economic viability and technical feasibility of the mineral resources identified during the exploration process.

2.2. Access And Transport

The EPL is conveniently accessible via the D0209 gravel road that branches off the main Karasburg – Ariamsvlei (Namibia, South African border) road. Within the EPL, there are several smaller track roads (Figure 2-1). To minimize environmental impact during geological mapping, sampling, and geophysical surveys, motorized access will be limited to the existing tracks. However, if new access routes are needed for drilling, they will be identified, marked, and assessed for environmental sensitivity before drilling commences.

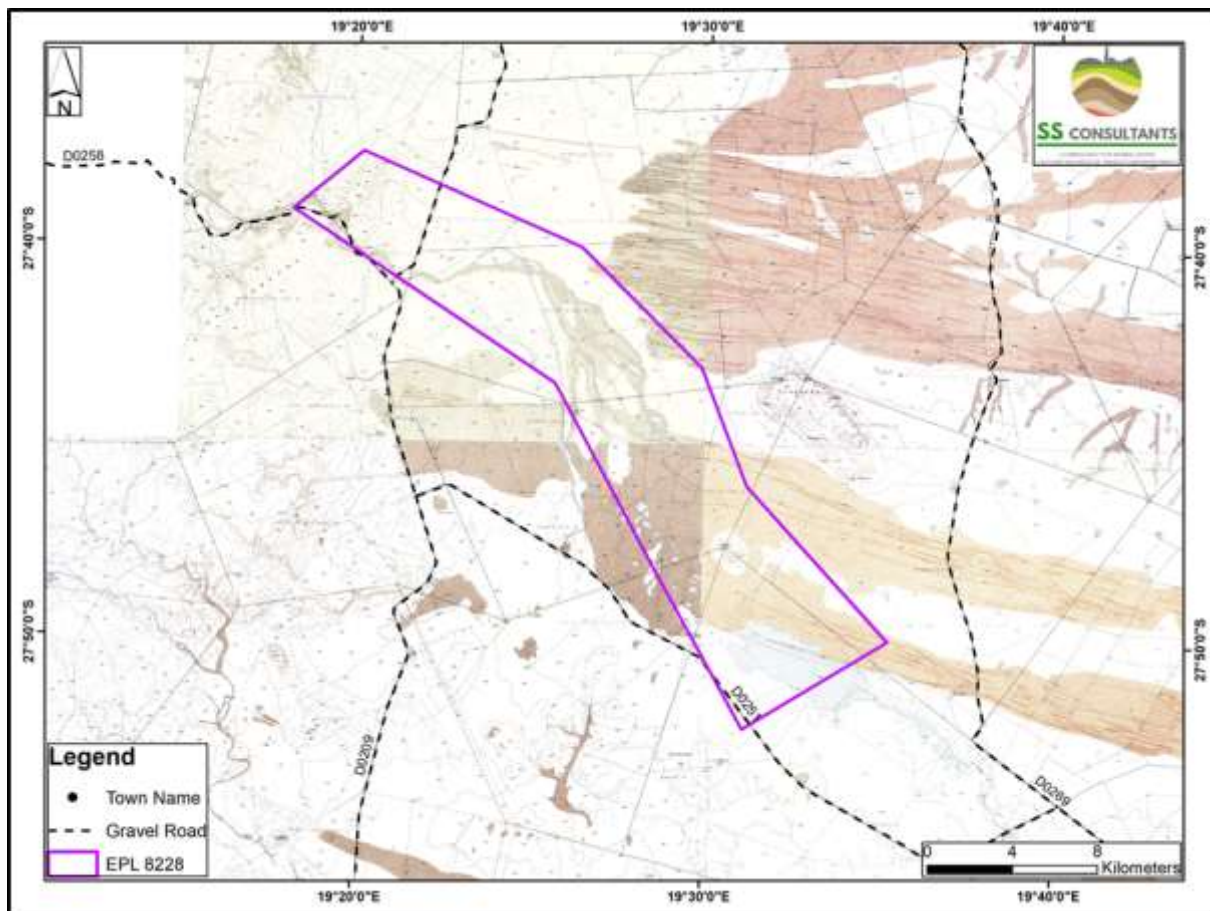


Figure 2-1 Topographic map showing existing road network within the EPL area

2.3. Resources (water and electricity)

Exploration activities will need a limited supply of water which will be brought to the site. A diesel-powered generator will be used as needed for operating machinery.

2.4. Accommodation and supporting infrastructure

- The exploration team is anticipated to comprise less than ten (10) skilled workers, who will commute daily to the site, eliminating the need for camp setups.
- To facilitate the team's daily operations, two portable toilets will be installed on-site and diligently serviced to ensure hygiene and compliance with environmental standards.
- Essential equipment for day-to-day activities will include an excavator, loader, screening plant, and one (1) bakkie, all crucial for efficient exploration tasks.

- Waste generated during exploration activities will be systematically collected and responsibly deposited at the Karasburg municipal dumpsite, aligning with waste management regulations.
- Hydrocarbon storage on-site will involve the presence of petrol (100 liters) and diesel (1000 liters) tanks. These tanks will be appropriately stored and bunded, with bunds designed to hold 110% of the tanks' capacity. The proponent will diligently apply for all necessary permits, as mandated by the Ministry of Mines and Energy (MME), to ensure compliance with regulatory standards.

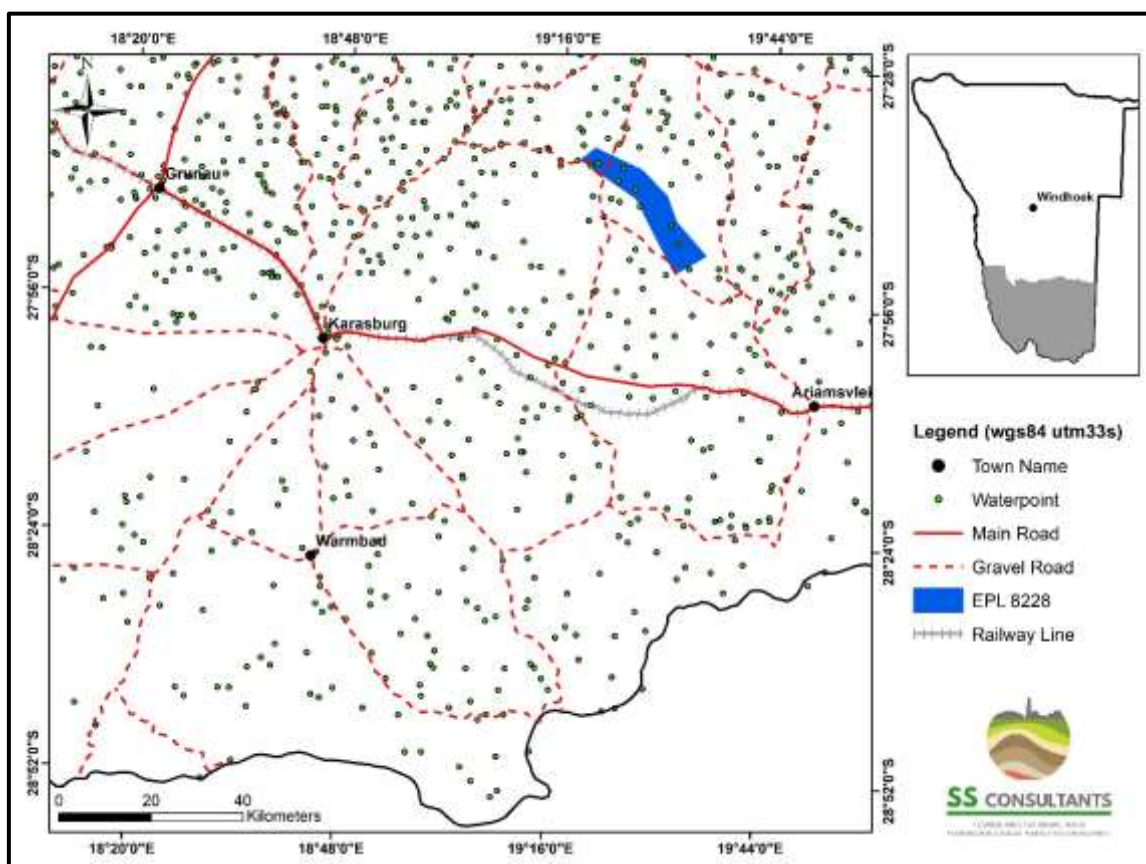


Figure 2-2: Map showing the outline of EPL 8228 and infrastructures surrounding the EPL area.

3. SUMMARY OF THE RECEIVING ENVIRONMENT

i. Regional Geology

The regional geology encompassing EPL 8228 is characterized by three primary tectonostratigraphic units: the Palaeo- to Mesoproterozoic Namaqua Province, late Proterozoic to Palaeozoic cover sequences of the Nama Group, and the Karoo Supergroup.

The Namaqua Province consists of distinct NE-SE trending domains with diverse stratigraphy and structural histories. NNMP rocks, exposed in various directions around EPL 8228, date back to 1200 million years. Overlying these are sedimentary cover sequences, including the Neoproterozoic to Cambrian Nama Group and Palaeozoic Karoo Supergroup, intruded by later igneous provinces and extensively impacted by Jurassic dolerite sills and dykes.

ii. Local Geology

The local geology under EPL 8228 involves lithostratigraphic units from the Nama Group, Karoo Supergroup (Dwyka Group), and post-Karoo dolerite dykes. Notable formations include the Nababis Formation, dominated by cross-bedded, feldspathic sandstones, and the Dwyka Formation, forming the base of the Karoo Supergroup. Post-Karoo dolerite dykes and sills, accompanied by faulting and gentle folding, have influenced the local geology, creating distinctive trends in faulting and dolerite emplacement.

iii. Landscape and Topography

The EPL is situated in the southeastern region of Namibia within the Karas Region. The topography of the Karas Region is characterized by diverse topography, featuring a mix of desert landscape, mountainous areas, and expansive plains. The EPL itself is characterized by a relatively flat topography with undulating hills and sits at an elevation of 1004 meters (3294.61942) above sea level.

iv. Climate

The Karasburg area, where the EPL is located, experiences a warm desert climate (Köppen-Geiger classification: BWh). The area has distinct wet (May to November) and dry (January to May) seasons. Temperature variations are noticeable, with the coldest months in June and July, and the highest temperatures in January to March and October to December. Temperature variations are observed between summer and winter, influencing exploration activity scheduling and hazard avoidance. Wind speed undergoes seasonal shifts, with December having the highest average speed (14.3 km/h). Humidity is generally low, with June being the most humid month (48% relative humidity), and November the least humid (29% relative humidity). Namibia's arid climate, characterized by low humidity, influences cloud cover, precipitation, and evaporation rates in the area.

v. Water Resources: Surface and Groundwater

EPL 8228 is situated in south-eastern Namibia within the Orange Basin, characterized by predominantly rocky terrain with limited ground water potential. The rock bodies in the area function as aquifers with generally low water potential, occasionally exhibiting moderate potential locally. The northeastern section of EPL features rocks with moderate water potential, marked by fractured, fissured, or karstified rock formations. Given these geological attributes, the EPL falls within an ecoregion where water potential is low, necessitating careful water usage of ground water to prevent depletion. The project will primarily use water for general purposes, cleaning, drilling activities, and dust suppression. The water will be sourced from existing boreholes or new ones based on agreements with landowners and the community. Individual agreements with landowners and community members will determine the use of water from existing boreholes. All necessary permits for water drilling should be obtained from relevant authorities. Water used for drilling will be recycled for efficiency, and if needed, water can be obtained from the Karasburg Municipality/Town Council.

vi. Flora

EPL 8228 occurs within the Nama Karoo biome and falls within the Karas Dwarf Shrubland Vegetation Type. The predominant landscape features grasslands and low shrubs, with plant endemism ranging from 2 to 9 species (Mendelsohn et al, 2002). Quiver trees (*Aloe dichotoma*), notable for their succulent nature and efficient water storage, are a key species in the area, particularly adapted to arid conditions. Hillsides are characterized by *Euphorbia*, *Aloe*, and *Boscia* species, while plains exhibit *Rhigozum trichotomum*, *Parkinsonia africana*, and dominant *Stipagrostis* species in grasslands. Larger drainage lines host a diverse array of vegetation, including *Acacia erioloba*, *A. karroo*, *Tamarix usneoides*, *Euclea pseudebenus*, *Rhus lancea*, as well as succulent shrubs like *Euphorbia gregaria* and *Ficus cordata*. Types of vegetation observed within the EPL is shown in figure 3-1.



Figure 3-1: Dry Desert shrubs within the EPL area

vii. Fauna

EPL 8228 is located in an ecological region with relatively low terrestrial species diversity. Mammal diversity ranges from 16 to 30 species, carnivores exhibit 10 to 13 species, bird diversity is below 51, reptile diversity falls between 41 to 50, and amphibians range from 1 to 4 species. Common mammals in the area include gemsboks, steenboks, springboks, baboons, and porcupines. Reptiles, including snakes like puff adders, cobras, dwarf adder, and whip snakes, as well as various lizards and geckoes, also inhabit the area.

Avifauna

The most common bird species on-site are Sociable Weavers with several nest sites being located in the dry riverbeds across the site. These riverbeds appear to be higher in species density, abundance, and diversity than the adjacent plains which are relatively unproductive in terms of bird density and diversity. This habitat type is dominated by Spikeheeld Lark, Fawncoloured Lark, and Anteating Chats. The six globally threatened bird species which have a distribution range which overlaps with the study area may not always be observed on site, it is possible for them to occur within the study area at some stage. These include the Secretarybird, Kori Bustard, Ludwig's Bustard, Lanner Falcon, Martial Eagle, and Sclater's Lark. Larger bodied species, such as the Martial Eagle, have extremely large home ranges and could very well be found on occasion within the study area. Ostriches are the common raptites observed within the license area.

4. ENVIRONMENTAL MANAGEMENT PRINCIPLES

The Proponent commits to ensuring that all project participants uphold the following principles:

i. Ecological and Social Responsibility

All employees, including consultants, workers, contractors, subcontractors, transporters, visitors, and others entering the premises, are obligated to conduct activities in an ecologically and socially responsible manner.

ii. Health and Safety

Safeguarding the health and safety of project personnel and the public is paramount. This includes addressing road safety, on-site dangers, and potential hazards associated with the project.

iii. Community Relations

Foster positive relationships with surrounding settlements, farm owners and stakeholders, emphasizing open communication and collaboration.

iv. Wise Use and Conservation of Environmental Resources

Ensure the wise use and conservation of environmental resources, with consideration for both present and future generations. Prevent or minimize environmental impacts associated with project activities. Take measures to minimize air, water, and soil pollution resulting from project operations. Actively contribute to the conservation of biodiversity in the project area.

These principles underscore the Proponent's commitment to responsible and sustainable practices, promoting not only the success of the project but also the well-being of the environment, communities, and future generations.

4.2. Roles and responsibilities for environmental management

The environmental aspects which may be affected by the proposed project have been categorized into negative and positive impacts as an extension of the preceding sections. This section summarizes the objectives, indicators to be observed, schedules to be adhered to and roles and responsibilities of various stakeholders to the EMP.

4.2.1. Communication between Parties:

Emphasis on open communication among all parties to proactively address potential environmental issues. Prioritization of a proactive approach to anticipate and prevent/minimize environmental impacts. Recognition of the irreversibility of certain impacts, such as damage to protected and endemic species.

4.2.2. The Exploration Operating Company:

Ultimate responsibility lies with the company, led by the Environmental Control Officer (ECO) and Managing Director. Inclusion of Environmental Management Plan (EMP) and its specifications in contractual documents. Compliance with Namibian legislation, policies, and international conventions. Daily enforcement of environmental specifications and periodic environmental audits. Allocation of a sufficient budget for measures with cost implications. Early commissioning of tree surveys before road construction to secure necessary permits. Maintenance of open and effective communication on environmental management.

4.2.3. Site Managers:

Day-to-day environmental management responsibility assigned to the ECO and Manager Field Operations (MFO). Familiarity with EMP and relevant sections of the Environmental Impact Assessment (EIA). Daily monitoring and enforcement of environmental compliance on-site. Consultation with the ECO in case of infringements leading to environmental damage. Documentation of "before-and-after" site conditions. Facilitation of communication among all stakeholders for effective environmental management.

4.2.4. Environmental Control Officer (ECO):

Appointment of a qualified ECO responsible for environmental audits and reporting. Submission of site inspection reports to the Managing Director and MFO. Advising the MFO on interpretation and implementation of environmental specifications. Recommending remedial action in cases of non-compliance. Periodic submission of reports to the Ministry of Environment, Forestry, and Tourism (MEFT) as required by law.

4.2.5. Contractors:

Contractors' responsibilities include familiarity with EMP, compliance with environmental specifications, and timely notification of actions with potential negative impacts. Conducting or arranging environmental training for employees and subcontractors. Progressive implementation of rehabilitation measures when required, avoiding deferral until the project's end.

5. ENVIRONMENTAL SPECIFICATIONS

These are detailed and specific requirements, standards, and guidelines that are set to govern and ensure the environmental performance of exploration. These specifications are designed to minimize or mitigate any potential negative impacts on the environment resulting from the activities associated with the exploration. These specifications cover a range of aspects and practices to promote responsible and sustainable environmental management. The environmental specifications are:

5.2. Compliance with Environmental Specifications

- Conducting activities in an environmentally and socially responsible manner.
- Strict adherence to environmental specifications by the contractor and on-site personnel.

5.3. Training and Awareness

- Provision of training for all site personnel and contractors to ensure compliance with environmental specifications.
- Oversight by the Manager Field Operations (MFO) to guarantee appropriate training levels at all personnel tiers.

5.4. Stakeholder Relations

- Maintenance of positive relations with landowners and the public by all site personnel.
- Addressing and resolving any complaints received by the Environmental Control Officer (ECO).

5.5. Permits

- Obtaining all necessary permits from relevant authorities.

- Conservation and relocation of rare and endangered plants require permits from the Directorate of Forestry.

5.6. Road Safety

- Implementation of precautions for safe access road usage, considering visibility, animal presence, and road conditions.
- Adherence to speed limits, cautious driving, and strict control of vehicle movements.

5.7. Access Tracks

- No new tracks unless essential, with approval from the Municipality and landowners.
- Clear marking of selected access and site roads, avoiding damage to plants.
- Foot access to elevated or trackless sites where possible.

5.8. Conservation of Biodiversity

- Strict avoidance of damage to protected species.

5.9. Wildlife Poaching

- Prohibition of capturing, killing, or harming animals or birds.
- Strict consequences for violations, including potential suspension from the project and prosecution.

5.10. Soil Management and Erosion Control

- Careful excavation to minimize topsoil removal.
- Separation and stockpiling of subsoil for backfilling.
- Prevention of soil erosion with suitable measures in sensitive areas.

5.11. Pollution Control

- Immediate reporting and containment of spills by workers.
- Mitigation of pollution incidents by the contractor.

5.12. Air Pollution/Dust Emission

- Timely activities during permissible weather conditions.
- Sheltered location for soil and sand stockpiles.

- Vegetation retention to reduce dust, re-vegetation of exposed surfaces, and controlled vehicle movement.
- Adherence to speed limits and dust monitoring practices.

5.13. **Noise Pollution**

- Keeping noise levels within acceptable limits, following appropriate noise mitigation specifications.
- Limiting noisy activities to specific times and avoiding weekends and public holidays.

5.14. **Waste Management**

- Maintaining cleanliness with provided bins and responsible waste disposal.
- No on-site burial of waste; removal to approved facilities.

5.15. **Hazardous Substances**

- Proper labelling and sealing of containers holding hazardous substances.
- Bunding of tanks to contain spills, immediate clean-up, and disposal of spills.

5.16. **Fire Prevention**

- Emergency Response Plan establishment.
- Controlled burning of charcoal with precautions and supervision.

5.17. **Archaeological Sites**

- Protection of archaeological remains, reporting of any finds to the Heritage Council.

5.18. **Health and Safety**

- Detailed induction for all personnel, including measures for dust, bees, snakes, and scorpions.
- Emphasis on good personal hygiene, including handwashing before eating.
- Provision of personal protective equipment and first aid supplies.
- **Dust Management**
Staff provided with dust masks and proper Personal Protective Equipment (PPE) during charcoal processing to prevent inhalation.
- **Ingestion Prevention**

Prohibition of eating, drinking, or smoking while working with potentially hazardous materials to avoid ingestion

- **Emergency Measures**

Availability of Aspidon (suction syringe) at all workstations for first aid in case of snake bites, scorpion stings, or bee stings.

5.19. **Work Stoppage**

- Authority of the MFO to halt work in case of environmental specification infringements.
- No entitlement to claims for delays during work stoppages.

5.20. **Compliance Monitoring**

- Monthly site compliance inspections by the company ECO.
- Compilation of EMP compliance reports submitted regularly to the MFO and biannually to the MEFT.

6. IMPACTS IDENTIFICATION, DESCRIPTION AND ASSESSMENT

6.2. **Impact Assessment**

The purpose of this section is to assess and identify the most pertinent environmental impacts by describing certain quantifiable aspects of these impacts and to provide possible mitigation measures to minimize the magnitude of the impacts that would be expected from the various activities that constitute the proposed minerals exploration on EPL 8228.

The following potential impacts on the environment during exploration activities have been identified:

- Socio economic impact
- Impacts on soil
- Impacts on the flora and fauna
- Air quality (generation of dust) and noise pollution
- Groundwater and surface water impacts

- Disturbance to Archaeological & Heritage Resources
- Health, safety, and welfare impact
- Land use

6.3. **Assessment methodology for evaluating potential impacts.**

The impact screening criteria are summarized in the following table.

Table 6-1: Impact Screening Criteria

Aspect	Description
Nature	Focuses on the type of effect that the project will have on environmental components. Addresses questions related to “what will be affected and how?”
Extent	Spatial extend of the project and anticipated spatial extend of impacts indicating whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15km of the area); regional (limited to ~100km radius); national (extending beyond Namibia’s borders).
Duration	This looks at the temporal issues pertaining to time frames e.g., whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.
Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).

Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a “no-go” implication regardless of any possible mitigation (an alternative route should be used).
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The application of the above criteria will be used to determine the significance of potential impacts using a combination of duration, extent, and intensity/magnitude, augmented by probability, cumulative effects, and confidence.

6.4. Impact Rating Criteria

The impact rating criteria are summarised in the following table

Table 6-2 Impact Rating Criteria

Significance Rating	Criteria
Low	Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given development description. This would be allocated to impacts of any severity/ magnitude, if at a local scale/ extent and of temporary duration/time.
Moderate	Where the impact could have an influence on the environment, which will require modification of the development design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term.

High	Where the impact could have a significant influence on the environment and, in the event of a negative impact the activity(ies) causing it, should not be permitted (i.e. there could be a 'no-go' implication for the development, regardless of any possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond.
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7. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The purpose of the Environmental Management Plan is to provide a detailed plan to mitigate the negative and positive impacts identified in the environmental assessment report. Furthermore, it aims to provide actions with roles and responsibilities to implement the environmental specifications provided for to the proponent, contractors, subcontractors who will undertake exploration activities.

The following table provides a large-scale summary overview of all the major environmental management aspects. The EIA submitted with this EMP also provide mitigation measures for impacts identified therein.

Table 7-1 Environmental impacts and mitigation

ENVIRONMENTAL IMPACTS	PROPOSED MITIGATION MEASURES	RESPONSIBILITY	MONITORING PLAN
Air pollution	<ul style="list-style-type: none"> Regular maintenance of vehicles and equipment's. Brief workers and contractors. 	Personnel on duty, Foreman on duty and Environmental Officer	<ul style="list-style-type: none"> Amount of dust produced. Level of landscaping executed.

	<ul style="list-style-type: none"> • Control speed and operation of construction vehicles. • Regular maintenance of vehicles, construction equipment's and heavy machineries. • Provide workers with dust masks. 		
<p>Noise pollution</p>	<ul style="list-style-type: none"> • All noise should be kept within reasonable levels. • Employees and neighbors should be notified of any scheduled unusual noise. • Regular maintenance of vehicles, equipment's and heavy machinery. • Workers should be provided with personal hearing protection if 	<p>Foreman on duty, Environmental Officer, Safety Health and Environment Manager.</p>	<ul style="list-style-type: none"> • Amount of noise produced

	working in a noisy environment.		
Solid waste	<ul style="list-style-type: none"> • Littering should be discouraged by having strategically placed bins and refuse skips on site. • Recycling plastic, paper and cans should be encouraged on site • The bins should be emptied on a regular basis by the proponent or an independent contractor. • The site should have containers with bulk storage facilities at convenient points to prevent littering. 	Personnel on duty, Environmental Officer and Safety Health and Environment Manager	<ul style="list-style-type: none"> • Presence of dust bins/waste collection points.
Oil leaks and spills	<ul style="list-style-type: none"> • Contactor should have a sealed designated area where 	Personnel on duty, Foreman on duty Environmental	<ul style="list-style-type: none"> • Absence of oil spills and leaks on site.

	<p>maintenance is carried out to prevent percolation of contaminants.</p> <ul style="list-style-type: none"> • Oil products should be handled carefully on bounded surfaces; in case it leaks. • Vehicles and equipment should be well maintained to prevent oil leaks. 	<p>Officer and Safety Health and Environment Manager</p>	
First aid	<ul style="list-style-type: none"> • A well-stocked first aid kit shall be maintained by qualified personnel. 	<p>Safety Health and Environment Manager, Safety and Health Officer.</p>	<ul style="list-style-type: none"> • Contents of the first aid kits.
Visual	<ul style="list-style-type: none"> • Environmental considerations will always be adhered to before clearing roads, trenching and excavation. 	<p>Safety Health and Environment Manager, Environmental Officer</p>	<ul style="list-style-type: none"> • Employees to be trained on how to minimize impacts that can easily be identified with the eye.

<p>Archaeological sites</p>	<ul style="list-style-type: none"> • Buffer zones will be created around the sites. • Adhere to practical guidelines provided by the responsible archaeologist to reduce archaeological impacts of quarrying activities. • All archaeological sites to be identified and protected before development commences. 	<p>All personnel on duty, Environmental officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Register of all archaeological sites identified.
<p>Occupational health and safety</p>	<ul style="list-style-type: none"> • Provide personal protective equipment's, train workers on personal safety, and how to handle equipment's and machines. • A well-stocked first aid box shall be maintained by 	<p>Safety and Health Officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Workers using personal protective equipment. • Availability of a well-stocked first aid box.

	<p>qualified personnel.</p> <ul style="list-style-type: none"> • Report any accidents/incidences and treat and compensate affected workers. • Provide sufficient and suitable sanitary conveniences which should be kept clean. • Clean sanitary facilities. 		
<p>Fauna</p>	<ul style="list-style-type: none"> • Some habitat areas such as the river and tunnel outcrops will be avoided wherever possible. • A fauna survey will be conducted to determine the effect of fragmented 	<p>Personnel on duty, Environmental Officer, Safety Health and Environment Manager</p>	<ul style="list-style-type: none"> • Regular monitoring of any unusual signs of animal habitat.

	<p>habitat to game species should the need arise.</p> <ul style="list-style-type: none"> • No animals shall be killed, capture or harmed in any way. • No food stuff shall be left lying around as this will attract animals which may result in human-animal conflict. 		
<p>Alien invasive plants</p>	<ul style="list-style-type: none"> • Ensure vehicles and equipment are clean of invasive plants and seeds. • Eradicating alien plants using area management plan. • Contain neighboring infestations and restrict movement of invasive plants from adjacent lands • Educating everyone on site 	<p>Environmental Officer, Environmental Manager</p>	<ul style="list-style-type: none"> • Regular monitoring of any signs of alien plants.

	on types of invasive plants.		
Loss of vegetation	<ul style="list-style-type: none"> • Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating. • The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive area will be avoided. 	Environmental Officer, Safety Health and Environment Manager	<ul style="list-style-type: none"> • Warning signs on site • Restored vegetation
Socio Economic	<ul style="list-style-type: none"> • The population change can be mitigated by employing people from the local community and encouraging the contractors to employ local individuals. 	Environmental Officer, Safety Health and Environment Manager.	<ul style="list-style-type: none"> • The perception of risks will be mitigated by putting up safety signs wherever possible and ensuring that all employees and visitors to the site undergo a safety induction course.

8. MONITORING PLAN

The project monitoring conducted under the EMP includes:

The monitoring plan includes:

i. **Project Readiness Monitoring:**

- Purpose: To assess the progress of project readiness and address deficiencies through corrective actions.

ii. **Environmental Quality Monitoring:**

- Responsible party: competent authority or proponent-appointed personnel.
- Parameters: Air quality, noise, and water quality.
- Method: Collection and analysis of data at designated monitoring locations.
- Objective: Evaluate compliance with applicable environmental quality and emission standards.

iii. **EMP Compliance Monitoring:**

- Responsible Party: Project Management Consultants.
- Purpose: Verify adherence to the Environmental Management Plan (EMP) during project implementation.

iv. **Operational Monitoring:**

- Responsible Party: Relevant government department or nominated private sector operator.
- Scope: Part of subproject operations.
- Objective: Ensure ongoing compliance with environmental standards during the operational phase.
- Auditing plan

9. ENVIRONMENTAL CODE OF CONDUCT

The Environmental Code of Conduct outlined in this section of the Environmental Management Plan (EMP) is applicable to all individuals involved in the project, including sub-

contractors, visitors, permanent and temporary workers. It is mandatory for anyone within the project site boundaries to adhere to the Environmental Code of Conduct as specified in this section of the EMP.

The on-site implementation of environmental guidelines will be overseen by the Environmental Coordinator (ENC), who holds the authority to issue warnings and take disciplinary actions against individuals violating environmental rules and procedures. In cases of persistent transgressions, a disciplinary hearing will be conducted. Continued noncompliance may lead to permanent removal from the construction sites. This Code of Conduct serves as a comprehensive framework to ensure that all project participants contribute to maintaining environmentally responsible practices throughout the project's duration.

9.2. Site closure and rehabilitation

Rehabilitation is the process of repairing the damage done by exploration activities. Rehabilitation plan has been developed with a main aim of returning disturbed environment close to its pre exploration state. It is also planned to cater for the access road, vehicle tracks around the site, removal, and restoration of areas covered by stockpile and rock piles. The closure vision for the proposed project is to establish a safe, stable and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy.

9.2.1. Site closure and rehabilitation activities

All waste (such as hazardous and domestic) waste will be transported offsite for disposal in licensed landfills in Karasburg or surrounding towns. Disturbed or/and contaminated areas will be cleaned up, treated where necessary and restored to its pristine state.

- Demolition of camping structures.
- Removing of equipment on site.
- Removal of associated infrastructures such as storage tanks, solar panels and heavy-duty generators.

- Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions in consultation with landowners.
- Existing secondary roads in the area should be used to prevent damages of the main road.
- The recovered topsoil and subsoil should be utilized to reconstruct the original soil profile

10. RECOMMENDATIONS

Based on the results of this Environmental Management Plan (EMP) report, SS Consultants hereby recommended that the proponent be issued with an Environmental Clearance Certificate for proposed exploration on the EPL 8228. Once a viable project has been identified (economic resources are discovered) and a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) must be implemented as part of the prefeasibility and feasibility study with respect to the possible mining operations. The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources.

11. CONCLUSION

In conclusion, this EMP signifies a commitment to environmental stewardship and regulatory compliance, providing a detailed roadmap for managing and mitigating potential environmental impacts during the exploration phase. It establishes a clear framework for responsible practices and serves as a contractual agreement between the company and the regulatory authorities. The implementation of the EMP as provided in this report will minimize the negative effects and maximize the positive effects thereby enhance the overall ecosystem services / value of the EPL 8228 and surrounding areas.

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