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Environmental Management Plan for the proposed amendment of additional exploration activities on Haib Minerals (Pty) Ltd EPL 3140

SLR Project No.: 734.08012.00001

Report No.: 1

August 2020

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ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED AMENDMENT OF ADDITIONAL EXPLORATION ACTIVITIES ON HAIB MINERALS (PTY) LTD EPL 3140

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	**Definition**
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
DSM	Deep South Mining (Pty) Ltd
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
GFM	Great Fitzroy Mines NL
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
PG	Project Geologist
DCS	Drilling Contractor Supervisor
RTZ	Rio Tinto Zinc

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED AMENDMENT OF ADDITIONAL EXPLORATION ACTIVITIES ON HAIB MINERALS (PTY) LTD EPL 3140

1 INTRODUCTION TO THE EXPLORATION ACTIVITIES

1.1 BACKGROUND TO THE PROPOSED EXPLORATION ACTIVITIES

Exploration and small scale mining activities of the "Haib copper deposit" commenced as early as the late 1800's and early 1900's. After World War II, the prospect owner at the time carried out small scale mining and tank leaching operations. Various prospecting companies continued to show an interest in the deposit and furthered prospecting activities towards the mid 1900's.

Rio Tinto Zinc (RTZ) conducted the first extensive and systematic investigation of the Haib deposit during the 1970's. The exploration programme focused largely in an area of the EPL located in and around the dry river bed of the Volstruis River. (Refer to

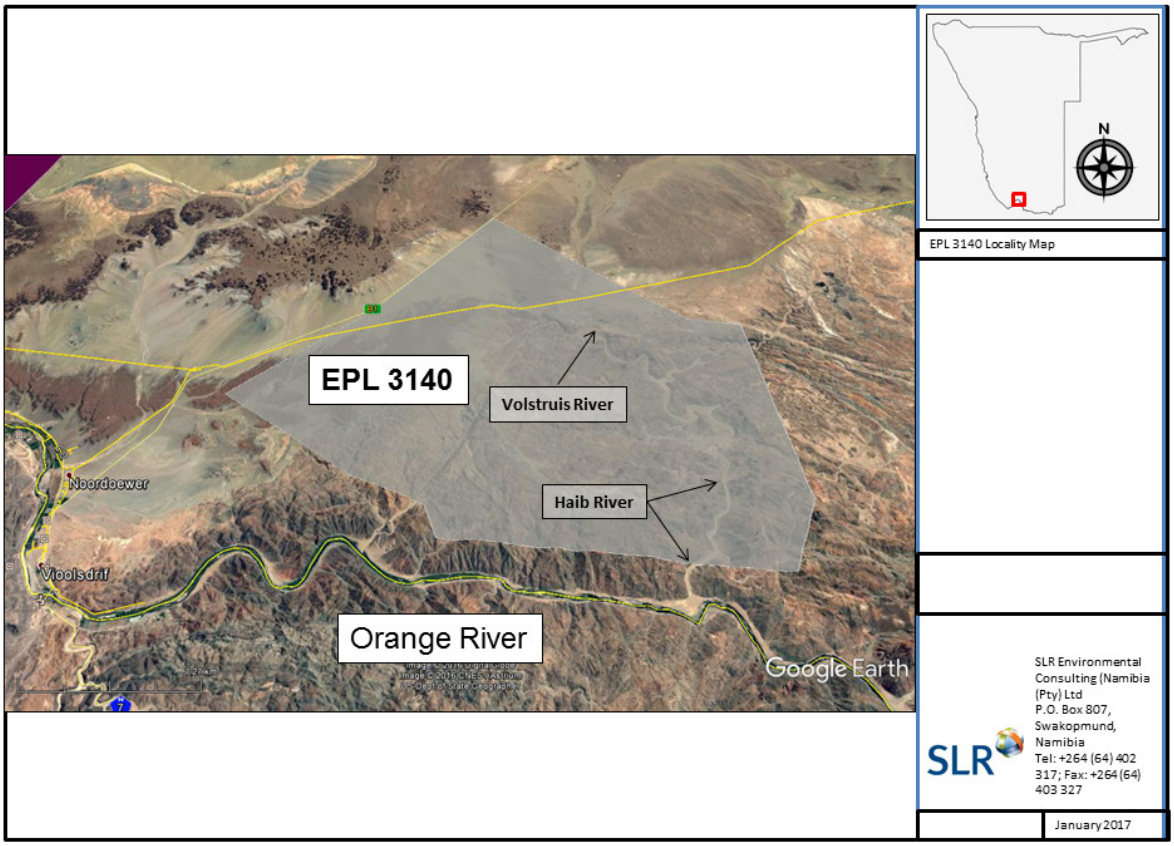


Figure 1-1 and Figure 1-2). RTZ drilled a total of 120 holes. They conducted various sampling programmes including geochemical and geophysical prospecting. During this time RTZ also erected two camp sites on the EPL, indicated in Figure 1-2 and Figure 1-3.

After RTZ relinquished their prospecting rights in 1975, more companies showed interest in the Haib deposit and in the 1990's Great Fitzroy Mines NL (GFM) acquired the deposit and continued with exploration activities until late 1990's.

In 2003, 100% of the mineral rights were vested in the Namibian Government. In 2004 the Exclusive Prospecting Licence (EPL) 3140, inclusive of the entire Haib deposit and a large surrounding area was granted to Deep South Mining (Pty) Ltd (DSM), subsequently renewed in 2007, 2009 and 2011.

From about 2008, Teck Namibia Limited (Teck) has managed the exploration activities under a joint venture agreement with DSM. In 2013 the mineral licence was transferred to the holding company Haib Minerals (Pty) Ltd. Haib Minerals has conducted a comprehensive exploration programme at the Haib and immediate surroundings which includes the following:

- Recon mapping and logging of the historic core;
- large geophysical (gradient array IP) surveys;
- drilling a total of 32 holes spread over four different target areas (Refer to Figures 1-2 and 1-3);
- re-sampling of 14 holes of historic core;
- soil and stream sediment sampling; and
- re-evaluating the geological model of the deposit.

In 2014, an EMP for Haib Minerals Namibia's exploration activities in the current EPL 3140 was prepared and approved by the Ministry of Environment and Tourism (MET), and implemented. Haib Minerals proposes now to continue with additional, similar, exploration activities at about 10 identified sites within the perimeter of the already disturbed areas/ target areas in the EPL 3140 (Figure 1-3).

During a meeting with MET (attended by SLR and Haib Minerals representatives) on the 31st of October 2016, MET indicated that the original (2014) EMP has to be amended to incorporate the proposed additional exploration activities. This was the only requirement from MET, as part of the Environmental Clearance Certificate (ECC) amendment application process, for them to consider issuing an Environmental Clearance for the proposed new activities.

This amended EMP has therefore been revised to include the proposed additional exploration activities that will involve:

- Drilling 20 holes for both metallurgical tests and geo-tech holes on three target area (Target Area 1, 2,and 3) with identified 10 sites (refer to Figure 1-3)
- Excavation of 4 representative trenches, ±20 meters long and ±1 meter deep in the above mentioned target areas.
- Extraction of water from the Orange River for drilling purposes (as per previous EMP).

SLR Consulting (Africa) (Pty) Ltd (SLR) has been appointed by Haib Minerals as the independent environmental assessment practitioners to undertake the EMP amendment process and submit the updated EMP to MET for their review and approval.

This EMP will only present additional information specific to the proposed exploration sites and provide where necessary the additional mitigation measures required to be implemented as part of the overall EMP. All the requirements raised in the original 2014 EMP remain valid.

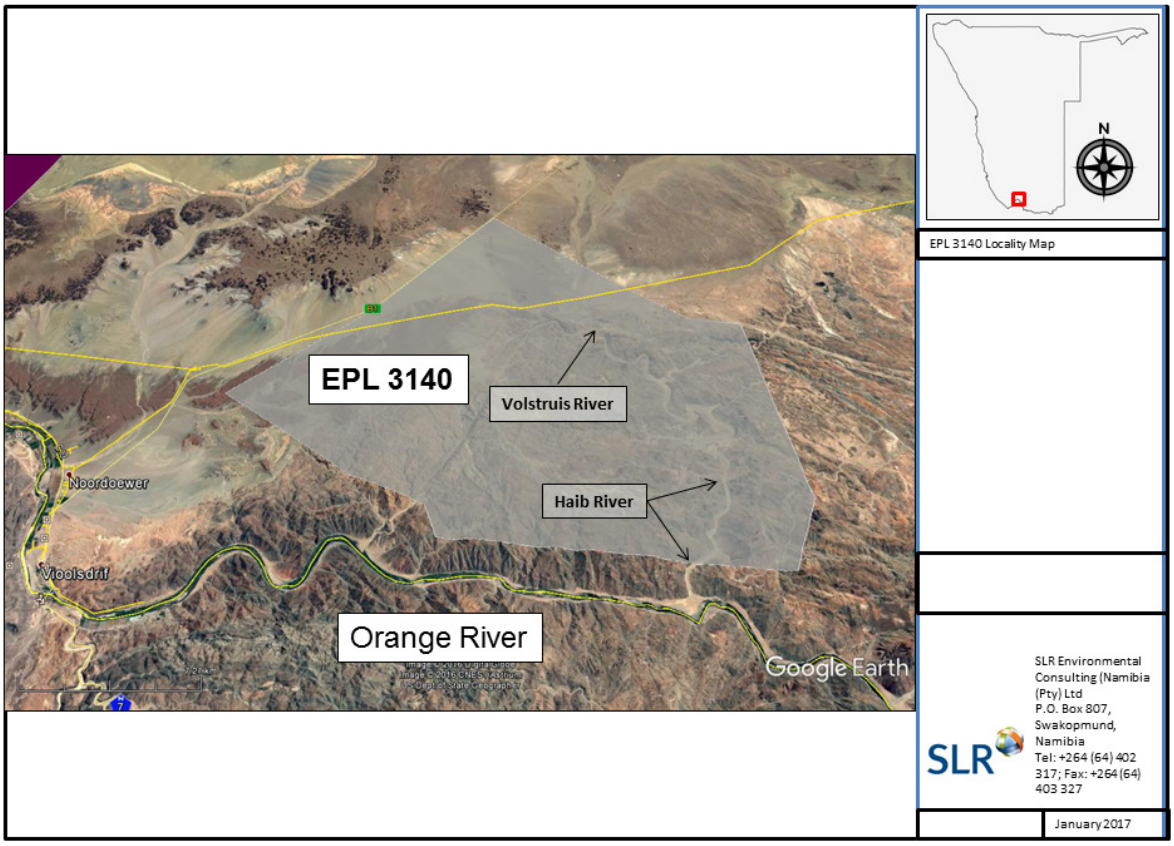


Figure 1-1: EPL 3140 Locality Map

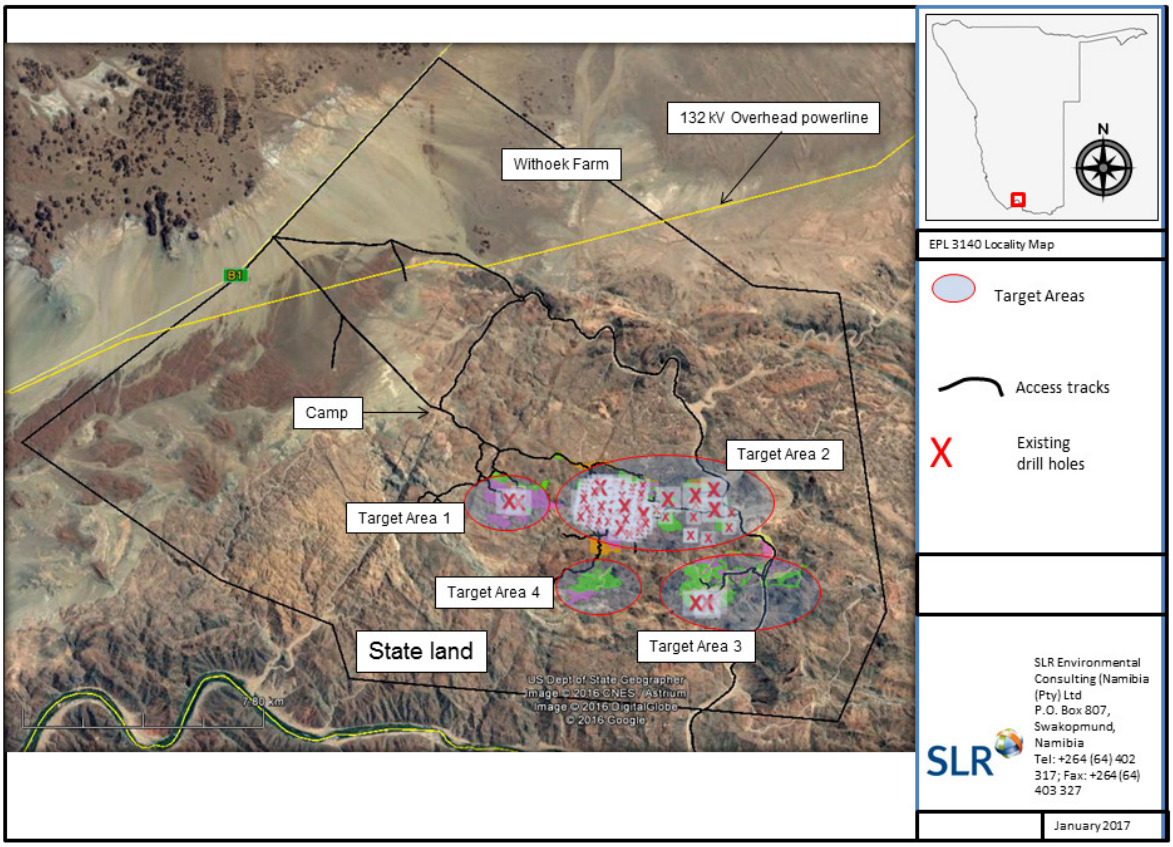


FIGURE 1-2: LOCAL SETTING AND INFRASTRUCTURE ON EPL 3140

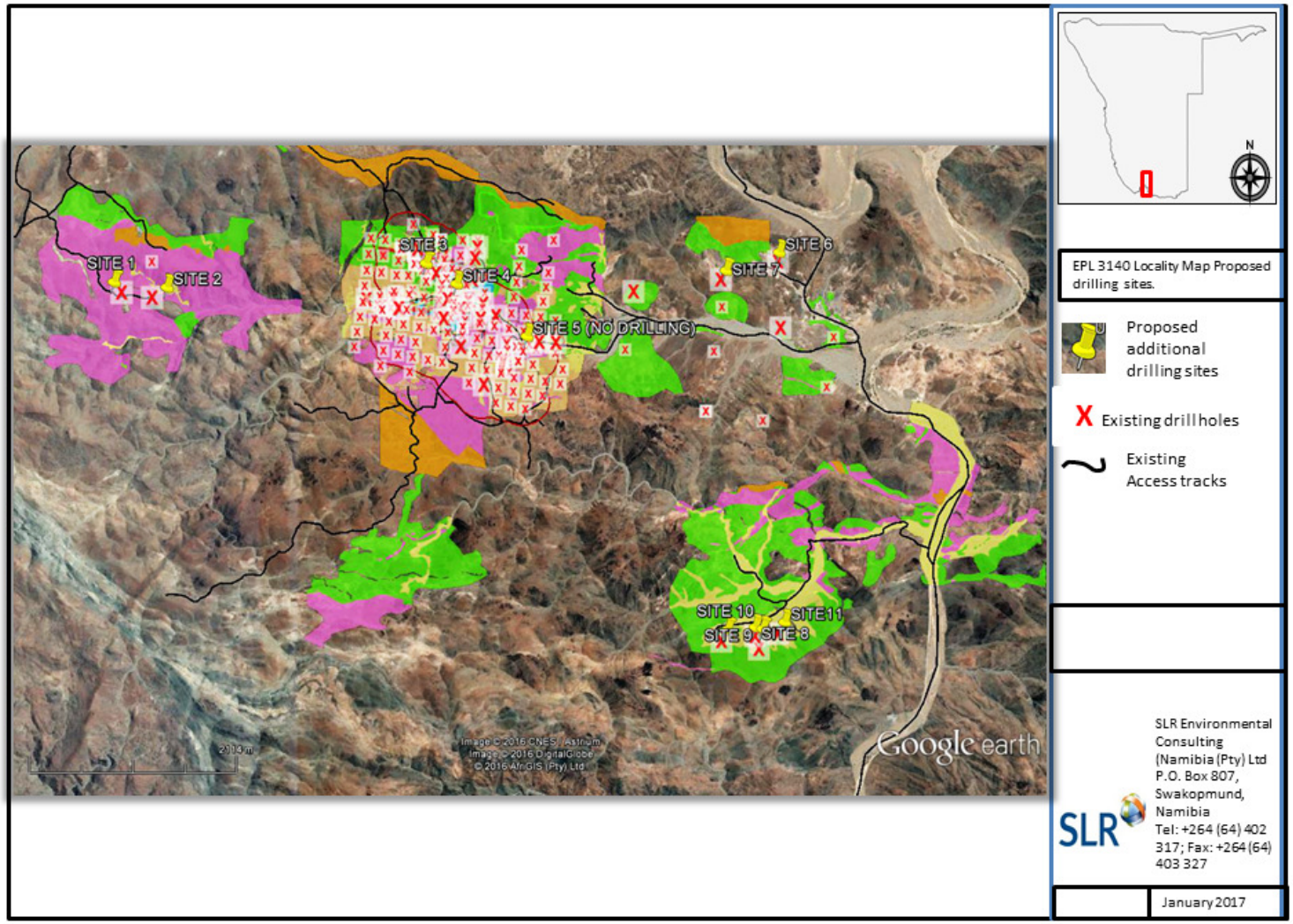


FIGURE 1-3: CLOSE-UP OF THE TARGET AREAS ON EPL 3140

1.2 BASELINE ENVIRONMENT AFFECTED BY THE PROPOSED ACTIVITY

The baseline information provided in this section is aimed at giving the reader perspective on the existing status of the biophysical environment of the proposed exploration sites. Information provided in this section is based on the site visit undertaken by the Environmental Practitioner on the 29th of November 2016 to the 1st of December 2016 at the target sites for the proposed additional exploration activities. The implementation of the additional exploration activities and related infrastructure may impact on the environment. To understand the basis of these potential impacts, the current baseline (taking previous exploration activities into consideration) is described below.

1.2.1 LOCATION, ENVIRONMENTAL SETTING AND TOPOGRAPHY

EPL 3140 covers an area of approximately 36 656 ha and is located in the south of Namibia, approximately 9 km (from the south-western boundary) from the town Noordoewer. The B1 Road forms the north-western boundary of the EPL. The Orange River runs immediately to the south of the EPL and a number of farms surround the EPL. (Refer to

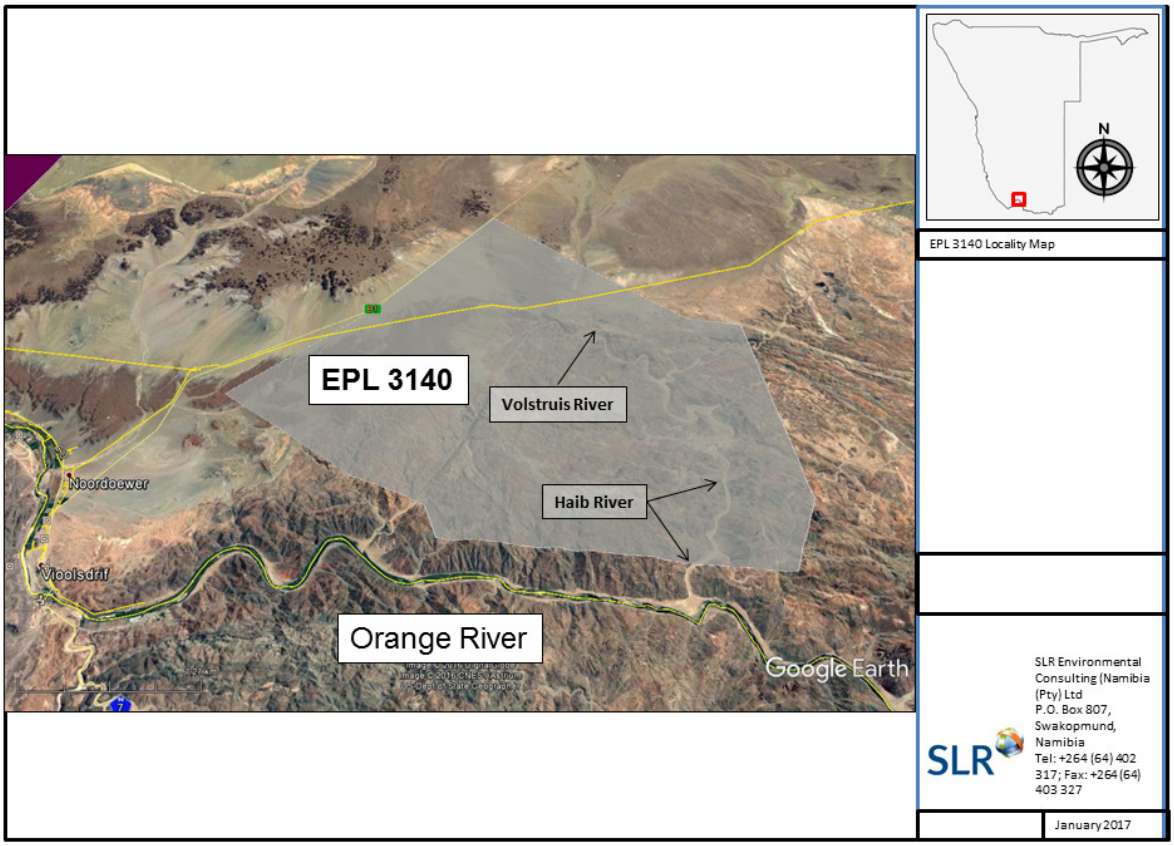


Figure 1-1). The EPL 3140 is within an area dissected by rolling hills with prominent dolerite sills in the Gomkab Basin with elevations varying from 200m to 700m mean sea level (msl). The topography for most of the proposed exploration drilling sites is rocky with undulating hills that has gentle rises and dips. The biggest portion of EPL 3140 lies on state land. The eastern part of the EPL is located

on an abandoned farm (Tsams). Withoek Farm is located on the north-eastern boundary of the EPL (Refer to Figure 1-2).

The three active target areas (indicated as target areas 1, 2 and 3 on Figure 1-2) are located towards the south-eastern side of the EPL, with the focus mostly in and around the dry river bed of the Volstruis River. A fourth target area (not drilled yet) lies to the south of target area 2. The proposed additional exploration drilling and trenching activities will be undertaken in the same target areas (target areas 1, 2 and 3) but adjacent to the previously drilled holes sites that have been capped as indicated in (Figure 1-2 and Figure 1-3)

1.2.2 BIODIVERSITY

The establishment of infrastructure as well as certain supporting activities have the potential to result in the loss of vegetation, habitat and related ecosystem functionality through physical disturbance and/or contamination of soil and/or water resources.

As a baseline, this section provides an outline of the type of vegetation occurring on each proposed site for exploration purposes and the status of the vegetation and highlights the occurrence of sensitive ecological environments including sensitive/ endangered species (if present) that require protection. It further provides information on the animals that occur/might occur in the area.

The EPL falls within the vegetation biome of the Nama Karoo with vegetation type consisting of the Karas dwarf shrubland. During the site visit, plant species were observed in the surrounding areas that have been left undisturbed and those already rehabilitated. The disturbed areas are related to previous exploration activities and limited to:

- The access tracks/ routes relating to the previously drilled site areas with capped holes,
- Access routes to the drill rig laydown areas with a footprint of 25m^2 (target sites)
- Access tracks to the historic holes
- Access tracks to the camp site.

Plant species were observed in the surrounding rocky outcrops, hill slopes, and dry river courses of all proposed additional 10 drilling sites in the 3 target areas. The observed plant species can be listed and their conservation status highlighted as below as referenced from the (Tree Atlas of Namibia) with site photos of the surrounding areas and identified plant species within the targeted sites for the proposed additional drilling (**TABLE 6-1**).

- *Aloe dichotoma:* Protected by the Nature Conservation Ordinance and listed as a CITES Appendix ll species
- *Hoodia gordonii:* Listed as a CITES Appendix ll species
- *Euphorbia gregaria:* Endermic to the Southern Namibia and listed as a CITES Appendix ll species

- *Euphorbia virosa:* Listed as a CITES Appendix II species
- *Cadaba aphylla swartstorm:* Not regarded as a protected specie.

Plant species observed in the relevant surrounding areas, during the site visit between 29 November and 1 December 2016, are presented in Appendix B. Site coordinates and a short description of the current environment are also provided (linked to the photos at the relevant sites).

The following animals have been spotted by the Haib Minerals personnel in the past: Klipspringer; Blackback Jackal; snakes (Cobras), various scorpions; Kudu; Porcupine; Leopard and various bird species. Evidence of some of these was also noted during the site visit by SLR.

1.2.3 ROADS AND OTHER INFRASTRUCTURE

(Refer to Figure 1-2and Figure 1-3).

The remains of the old, dilapidated Tsams Farm house is still present on the banks of the Haib River. Within the Volstruis River channel is also the remains of the old mine infrastructure and leach tanks as described in section 1.1 (Refer to photos in Appendix A).

Various tracks were established on the EPL over the years. The main access to the site is off the B1 Road approximately 19 km north-east of Noordoewer. Existing tracks that were created over the years of exploration in the area connect the four target areas and the various drill pads. Figure 1-2 indicates the various tracks and the dates they were created.

Most of the infrastructure relating to the main camp site established by RTZ in the 1970's is still in place and owned by the former owner of the Haib Mine and claims. (Refer to photos in Appendix A). These include:

- Various small buildings/houses
- Air strip
- Tennis court (dilapidated)
- Store rooms (samples)
- Toilets and sewerage tanks
- Redundant buried gasoline/diesel fuel tanks and remains of the former filling station
- Etc.

The second camp has largely been broken down with only a few concrete slabs remaining.

As part of their exploration program, Haib Minerals and their drilling contractors have used some of the above-mentioned infrastructure for their own accommodation and laydown of equipment and erected additional water tanks.

Access to the proposed exploration activities sites will use the same already established routes to the three target areas as indicated in Figure 1-3. Development of additional routes will be avoided as far as possible and where required, the recommendations and mitigation measures to establishing an access route will be followed.

1.2.4 ENVIRONMENT AND LAND-USE

The information presented in the section below was derived from the following sources:

- Visual observations during a site visit by SLR to the EPL and specifically the three active target areas.
- Discussions with Haib Minerals employees
- Atlas of Namibia
- Google Earth

The target areas are located within mountainous terrain, and are very hilly in nature. This area is unsuitable for farming and the current land-use (other than the exploration) is wilderness. Some very small scale, informal, subsistence farming with some small livestock is taking place in the north-western side of the EPL, which falls outside the mountainous terrain. The predominant land-use surrounding the EPL is subsistence farming with small livestock and further away some cattle.

The Haib River cuts through the EPL running from a north-westerly to south-easterly direction and then turning south where it feeds into the Orange River south of the EPL boundary. The smaller Volstruis River runs from the west to the east through the EPL into the Haib River with a number of other smaller washes feeding into these two Rivers. All of the above-mentioned rivers and washes are ephemeral.

Other than the old mining infrastructure and the redundant Tsams Farm house, which might have some heritage value, no visible signs of any cultural or archaeological sites within the target areas of the EPL were found during the site visit by SLR. No reported heritage sites were, or have been, reported within the specific target areas in the past (pers comms Neil Grumbley, Haib Minerals (2014).

1.3 DETAILS OF PERSONS WHO PREPARED THE EMP

SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) is an independent firm of consultants who was appointed to compile this EMP. Werner Petrick, the Project Manager and Reviewer has over nineteen years of relevant experience in environmental management, conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems. Marvin Sanzila, the project assistant has six years of experience in the environmental management discipline with four years' experience in the mining industry dealing with environmental management systems

implementation (ISO14001), Coordination and implementation of EMPs, legal compliance and two year with EIAs.

2 PLANNED ACTIVITIES AND ASSOCIATED INFRASTRUCTURE

2.1 EXPLORATION ACTIVITIES

Haib Minerals is planning to continue with their exploration activities on the three active target areas indicated in Figure 1-2 and Figure 1-3 (Target Areas 1 to 3). The activities will entail the drilling of an additional 20 holes; excavation of 4 representative trenches (±20 meters long and ±1 meter deep): extraction of water from the Orange River for drilling purposes; further mapping; refining the resource model; etc.

Haib Minerals will use diamond core drilling to drill the holes to an average depth of approximately 400 m. Diamond core drilling uses an annular diamond-impregnated drill bit attached to the end of hollow drill rods to cut a cylindrical core of solid rock. Holes within the bit allow water to be delivered to the cutting face. This provides three essential functions — lubrication, cooling, and removal of drill cuttings from the hole.

As far as possible, already existing drilling pads/ area will be used. A typical drilling pad/area will consist of a drill-rig, an area where the drill core and geological samples can be stored and a storage area for drill equipment, fuel and lubricants. This area is cordoned off and off-limits to those not part of the exploration team. The drilling pad/area is usually cleared and levelled and is approximately 10 m x 10 m. All drill-water will be collected in drill-sumps, which will be managed to prevent overflows. The drill-mud is discarded to the municipal waste dump (Noordoewer) when the drill-site is rehabilitated.

2.2 EMPLOYMENT AND HOUSING

A well-qualified and registered local Namibian drilling contractor will be utilized to conduct the drilling programme, supervised by Haib Minerals employees. Two drilling rigs should be used with each having their own drilling team, consisting of approximately 15 employees including operators, Haib Minerals Staff and a chef. The contractor will have one supervisor overseeing the activities on both rigs.

The Haib Minerals employees that will oversee the exploration activities will consist of the Project Geologist (overall responsible for the activities on EPL 3140), two junior geologists, three field technicians and a camp cook/cleaner.

The Haib Minerals personnel will be housed in the existing main camp site (previously established by RTZ). The contractors will set up their own camp at the secondary camp site (also established by RTZ) on the existing concrete slabs.

2.3 WASTE MANAGEMENT

The following types of waste will be generated during the exploration activities, in relatively small volumes:

Domestic waste (non hazardous) will be separated into recyclable and non-recyclable waste and stored in a manner that there can be no discharge of contamination to the environment. The recyclable material will be brought back to Windhoek for recycling and the non-recyclable material will be disposed of at the Noordoewer waste landfill site.

Potential hydrocarbon spills from vehicles and drilling equipment might lead to soil contamination and needs to be treated as a hazardous waste if not bio-remediated.

2.4 SANITATION

Haib Minerals employees will make use of the existing toilet/ablutions facilities at the main camp site. All sewerage and grey water is collected in tanks, which is pumped out by a contractor as required. Potable (chemical) toilets will be used at the contractor's camp as well as at the drilling sites.

Due to health and safety concerns, personnel may not relieve themselves in the surrounding environment.

2.5 WATER SUPPLY

Water for domestic purposes is bought in Noordoewer from NamWater and gets trucked in. Approximately 30 000 litres of water is utilised over a three week period.

The water for the drilling will be abstracted from the Orange River and trucked to the drilling rigs. Approximately 20 000 litres of water will be required for the drilling operations on a daily basis. A water abstraction license for abstracting water from the Orange River will be obtained, in line with the Promulgation of Water Resource Management Act, 2013 (Act No. 11 of 2013). Abstraction of water will be limited to permit specifications.

2.6 POWER SUPPLY

Power to the camp is provided through an on-site diesel generator. Diesel will be bought in Noordoewer and brought to site via a diesel bowser.

2.7 ACCESS ROADS

The existing access roads (refer to section 1.2.1 and Figure 1-2) will be used as far as possible. No new access roads are anticipated to be constructed and where required, mitigation measures will apply.

3 LEGAL FRAMEWORK

TABLE 3-1: RELEVANT LEGISLATION AND POLICIES FOR THE EXPLORATION ACTIVITIES

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Vibrations	Impact on Land use	Impact on biodiversity	Impact on Archeology	Emergency situations	Socio-economic	Safety & Health
1990	The Constitution of the Republic of Namibia of 1990	X	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
1997	Namibian Water Corporation Act, 12 of 1997	**X**											**X**	
1992	The Minerals (Prospecting and Mining) Act 33 of 1992	**X**	**X**	**X**	**X**					**X**				
2001	The Forestry Act 12 of 2001	**X**							**X**	**X**				
2013	Water Resources Management Act, 11 of 2013	**X**			**X**								**X**	
2004	National Heritage Act, 27 of 2004										**X**			**X**
2007	Environmental Management Act, 7 of 2007	X	X	X	X	X	X	X	X	X	X		X	X
2012	Regulations promulgated in terms of the Environmental													

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Vibrations	Impact on Land use	Impact on biodiversity	Impact on Archeology	Emergency situations	Socio-economic	Safety & Health
	Management Act, 7 of 2007													
1975	Nature Conservation Ordinance 14 of 1975	X			X					X	X			
1976	Atmospheric Pollution Prevention Ordinance, 11 of 1976		X											
1995	Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	X	X	X	X	X	X	X	X	X	X	X		X

4 ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS

Environmental aspects and potential impacts associated with Haib Minerals's explorations activities are summarised below:

4.1.1 HYDROCARBON SPILLS

Diesel and other hydrocarbons stored on site as well as vehicles and machinery used for the exploration purposes and road-making and clearing activities, pose an environmental risk due to potential hydrocarbon spills. Soil, groundwater and surface water (i.e. Volstruis River and the Haib River) could become contaminated, however the small scale of activities and relatively small volumes of hydrocarbons that could be spilled makes this potential impact less significant. Exploration activities will only be limited to the footprint of the proposed target sites for drilling activities.

4.1.2 WASTE MANAGEMENT

Waste generated on site (i.e. domestic waste and hydrocarbon contaminated material, empty lubrication bottles, etc.) has the potential to pollute the environment, cause environmental degradation and impact negatively on wildlife, if not properly managed.

4.1.3 BIODIVERSITY

The road making activities, trenching and clearing activities for the drill pads, and other associated activities could result in the general disturbance and/or physical destruction of vegetation and/or fauna.

Excavations (i.e. trenches) may create a hazard to fauna. Large fauna could fall into excavations and become hurt and smaller fauna may fall in and become trapped. All excavation will be opened and closed on the same day, or temporarily fenced off in order to limit this risk.

Drilling contractors and Haib Minerals employees could impact on the biodiversity through illegal collection of firewood, poaching, road kills etc.

4.1.4 ARCHAEOLOGY

The old mining infrastructure and the redundant Tsams Farm house, as discussed in section 1.2.3, might have some heritage value. This was however not confirmed by a heritage specialist. These sites will not be impacted by the proposed exploration activities. No visible signs of any (other) cultural or archaeological sites within the target areas of the EPL were found. Shall the need arise to undertake

exploration activities in the area, an archaeological specialist should be contacted to confirm the site's significance value.
However, a chance find procedure has been included in this EMP.

4.1.5 WATER QUALITY & QUANTITY

Groundwater and surface water quality and quantity can be affected through associated activities, i.e. waste management, hydrocarbon spillages, sewerage management and water usage during drilling activities and for domestic purposes at the camp site. Due to the relatively small scale of activities these aspects are unlikely to cause significant impacts.

4.1.6 AIR QUALITY & NOISE

The road making activities; clearing and levelling of drill pad/areas; and movement of vehicles and machinery on the gravel roads will generate some dust. Gaseous emissions associated with vehicles and machinery also has the potential to impact on air quality.

Noise will be generated by exploration activities, i.e. drilling, movement of vehicles, etc.

Due to the remoteness of the target areas, i.e. the distance from closest sensitive receptors from an air quality and noise point of view, no impacts are foreseen and no mitigation required.

4.1.7 SOCIAL ASPECTS

A number of Haib Minerals employees and contractors will stay on site (camp sites) which can lead to interaction with third parties and related social impacts. However, there are no communities near the camp site. Refer to Table 5-6 in the EMP for the management actions required to avoid potential social impacts.

5 ENVIRONMENTAL ACTION PLANS

The management measures proposed to mitigate the potential impacts are detailed in the action plans below.

5.1 ACTION PLANS TO ACHIEVE OBJECTIVES AND GOALS

Action plans to achieve relevant objectives/goals are listed in tabular format together with timeframes for each action. The action plans include the timeframes and frequency for implementing the mitigation measures as well as identifying the responsible party.

TABLE 5-1: ACTION PLAN – HYDROCARBON AND ASSOCIATED SPILLS MANAGEMENT

Objective:

The objective of the mitigation measures is to handle and store hydrocarbons in such a way as to prevent spills. Where spills do occur, to ensure the spill is contained and the contamination cleaned-up and contaminated material disposed of responsibly.

Activities / facilities	Management and mitigation measures	Action plan	
		Frequency / target date	Responsible parties
Storage of hydrocarbons (i.e. diesel bowser, oil drums, etc.)	• In all areas where there is storage of hydrocarbons, there will be containment of spillages on impermeable floors and bund walls that can contain 110% of the volume of the hazardous substances. • Regular inspection of hazardous storage area is required • Regular environmental awareness should include potential risks associated with hydrocarbons	Throughout the exploration period	Project Geologist (PG) & Drilling contractor supervisor (DCS)
Vehicles, machinery, generators and equipment	• Establish and maintain impermeable bunded areas around diesel generators. • Vehicles, machinery and equipment shall be kept in good working condition to ensure they do not leak oil/diesel. • Vehicles and machinery will be serviced off site as far as possible. However, in the event where machinery needs to be repaired/serviced on site all care shall be taken to prevent spillage of oil/diesel by performing the work on impermeable surfaces or proper placement of drip trays. • All used parts from vehicles and machinery (which may include, but not limited to, oil filter, pipes, rags, cans) will be collected and removed from site and disposed of in an appropriate manner. • All refueling of vehicles will take place on impermeable surfaces • Pollution will be prevented through basic infrastructure design and through maintenance of equipment.	Throughout the exploration period	PG & DCS
General (spills)	• Any spills will be contained and cleaned up immediately • Spill kits will be readily available on site. Employees and/or contractors will be shown how to use the spill kits to enable containment and remediation of pollution incidents. • Haib Minerals will establish environmental awareness in employees and contractors • Soil contaminated with hydrocarbons shall be excavated and stored in a safe place at the camp site, until such time when it shall be disposed of at the Hazardous waste disposal facility in Windhoek.	Once off Start of exploration As and when required	PG & DCS PG PG & DCS

TABLE 5-2: ACTION PLAN – WASTE MANAGEMENT

Objective:

The objective of the management measures is to ensure proper storage, removal, transportation and disposal/recycling of hazardous and non-hazardous (i.e. domestic) waste

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
General	• Waste shall be separated and recycled / re-used where possible.	Throughout the exploration period	PG & DCS
	• No burning or burying of waste material will be allowed on site.	Throughout the exploration period	PG
	• Employees and contractors will be shown the importance of correct waste disposal as well as waste minimisation and recycling.	Start of exploration	PG
Collection and storage of waste	• Suitable receptacles with lids for waste disposal will be provided at appropriate locations on site. These receptacles will be clearly marked for different waste types.		PG & DCS
Disposal of non-hazardous (domestic) waste	• Dispose of waste at the Noordoewer landfill site	Throughout the exploration period	PG & DCS
Recyclables	• Recyclable material shall be taken to Windhoek for recycling at an identified recycling company.	Throughout the exploration period	PG
Disposal Hazardous Waste	• Hazardous waste (including hydrocarbon contaminated material/soil) will be disposed of at the Windhoek hazardous waste disposal facility.	Throughout the exploration period	PG
Medical waste	• Medical waste shall be disposed of at the Noordoewer medical waste facility.	Throughout the exploration period	PG
Disposal records (domestic and industrial)	• Written evidence of safe disposal of waste will be kept.	Each time waste gets disposed	PG

TABLE 5-3: ACTION PLAN – BIODIVERSITY & LAND USE

Objective:

The objective of the mitigation measures is to limit the destruction and general disturbance of biodiversity.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Vehicles and machinery	• Earth moving machinery and vehicles will follow designated paths and roads. •	Throughout the exploration period	PG & DCS
Clearing new areas and develop drill pads, new access tracks	• The footprint of the area to be disturbed will be minimised as far as is practically possible. In this regard, use existing access roads and previously disturbed areas (i.e. drill pads, etc.) as far as practically possible. (Minimize the creation of new access tracks). • Strip topsoil from new areas to be cleared (depending on availability). Temporarily stockpile the topsoil for the duration of activities and replace once the excavations have been filled.	Before clearing of new areas Ongoing	PG & DCS

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
	• No Quiver trees or other indigenous or protected trees/vegetation will be harmed (or removed) in any way. Permits will be required for the removal of protected tree species.		
Drilling	• All drill holes shall have suitable casing to prevent collapse and secure capping to prevent small mammals or insects falling into the drill hole. • Open water should be fenced off and preferably covered during night to avoid attraction of bees and wildlife. • Implement prevention and mitigation measures according to the standard Haib Minerals drilling procedures, following international drill-regulations to prevent and mitigate the spillage of drill-mud.	After drilling each hole Daily	PG & DCS PG & DCS
Trenching	• Backfill the trenches as soon as possible after sampling is completed, preferably all excavations will be opened and closed on the same day, or temporary fence off in order to limit this risk of animals falling into trenches. • Create ramps on the edges of the trenches for smaller animas to get out. • The footprint of the area to be disturbed will be minimized as far as is practically possible. • Position the trenches in such a way to avoid harming/removing Quiver trees or other indigenous or protected trees/vegetation. • Strip topsoil from trenches to be excavated (depending on availability). Temporarily stockpile for the duration of activities and replace once the excavations have been filled.	Throughout the exploration period	PG & DCS
General	• All vehicles and moving machinery will follow designated routes • Haib Minerals will implement a zero tolerance policy with regards to the killing or collecting of any biodiversity. This applies to people directly employed by Haib Minerals as well as any contractors working on their behalf. • Employees and contractors will be shown the value of biodiversity and the need to conserve the species and systems that occur within the project area. • No open fires will be permitted on site. • Appropriate ablution facilities will be provided for employees. These facilities must be maintained. • Speed limits will be enforced to promote road safety, and prevent corrugation and road kills. • Include these rules in the environmental awareness programme	Throughout the exploration period Start of exploration Ongoing Throughout the exploration period	PG & DCS PG PG PG & DCS PG

TABLE 5-4: ACTION PLAN – ARCHAEOLOGY

Objective:

The objective of the mitigation measures is to prevent the disturbance/loss of heritage resources that may be caused by the exploration activities.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Old mining infrastructure and the redundant Tsams Farm house	• The old mining infrastructure in the Volstruis River and the redundant Tsams Farm house shall be left undisturbed. • No Haib Minerals Employee or contractor shall be allowed to move/remove any of the above mentioned infrastructures. • Employees and contractors will be educated on the possible heritage value of the said structures and the need to conserve this.	Throughout the exploration period	PG PG & DCS PG
General (Clearing new areas and trenching)	• The area of disturbance will be limited as far as practically possible • Avoid disturbance to areas outside the approved mining and construction area • Limit employee access to operation/ exploration areas only • Limit vehicle access to designated routes only •	Throughout the exploration period	PG & DCS
Chance Find procedure	• The contractors and employees should look out for the following types of archeological features/items, as part of a 'chance find' requirements: o Site and artifacts relating to colonial era military activities o Unmarked burial grounds o Structural remains (storage pits, wells, foundations etc) o Rock paintings and artifacts o Miscellaneous archaeological finds • In the event that new heritage and/or cultural and/or paleontological resources are discovered, the following process needs to be followed: o work at the find will be stopped to prevent damage o an appropriate heritage specialist will be appointed to assess the find and related impacts o permitting applications will be made to the relevant authority, if required. • In the event that any graves are discovered during operations, prior to damaging or destroying any identified graves, permission for the exhumation and relocation of graves must be obtained from the relevant descendants (if known) and the relevant local and provincial authorities.	Throughout the exploration period	PG & DCS

TABLE 5-5: **ACTION PLAN – WATER QUALITY AND USE**

Objective:

The objective of the mitigation measures is to prevent negative impacts associated with water quality.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Ablution facilities	• Ensure that sewerage tanks at the main camp are managed properly. • Provide chemical toilets for contractor's camp site and each drilling site. • Ensure that toilets are working properly and are cleaned at least weekly, so they do not pollute the surrounding environment or create hygiene problems. • All sewerage from the chemical toilets and tanks will be pumped out by a contractor when required. • Personnel may not relieve themselves in the surrounding bush	On-going Start of exploration Weekly As required Ongoing	PG PG & DCS PG & DCS PG PG & DCS

Activities / facilities	**Technical and management options**	**Action plan**	
		Frequency / target date	**Responsible parties**
Water usage and control	• Check for water spills and ensure repairs are made immediately to prevent water spillages. • Obtain a water abstraction license for abstracting water from the Orange River in line with the Promulgation of Water Resource Management Act, 2013 (Act No. 11 of 2013). • All drill-water will be collected in PVC lined drill-sumps, which will be managed to prevent overflows. • Any spills will be contained and cleaned up immediately.	Ongoing Prior to abstracting water	PG PG
Contamination of groundwater/ surface water	• Refer to "Hydrocarbon and associated spills Management Action plan". • Non-toxic and biodegradable drilling lubricant shall be used. • Implement prevention and mitigation measures according to the standard Haib Minerals drilling procedures, following international drill-regulations to prevent and mitigate the spillage of drill-mud. • The drill-mud is discarded to the municipal waste dump (Noordoewer) when the drill-site is rehabilitated.	Throughout the exploration period	PG & DCS

TABLE 5-6: **ACTION PLAN – SOCIAL ISSUES & TRAINING**

Objective:

The objective of the mitigation measures is to prevent negative social impacts associated with people staying in the hostel on site.

Activities / facilities	**Technical and management options**	**Action plan**	
		Frequency / target date	**Responsible parties**
Employees – social issues	• Have zero tolerance to alcohol in the workplace. • Establish a HIV / AIDS / TB workplace policy and wellness programme. • Only People working for Haib Minerals or their contractors will be allowed to stay at the on-site accommodation. • A paramedic and ambulance will be on site during the drilling phase to supply First Aid in case of an accident.	On-going Start of exploration Ongoing	PG
Training & Awareness	• All individuals who work on, or visit, the sites are aware of the contents of the EMP.	Start of exploration	PG

TABLE 5-7: **ACTION PLAN – REHABILITATION**

Objective:

The objective of the measures is to rehabilitate the drill sites, camp site and tracks to as close an approximation of the pristine state as is technically, financially and reasonably possible.

Activities / facilities	**Technical and management options**	**Action plan**	
		Frequency / target date	**Responsible parties**

Rehabilitation	• All drill sites, trenches and new (unlikely) access tracks should be photographed (1) before commencement, (2) after completion and (3) after rehabilitation
	• At completion of the exploration programme, and in consultation with MME, the following rehabilitation works is recommended:
	  • All drill mud and cores will be removed from site;
	  • All litter from the site will be taken to an appropriate disposal site.
	  • All debris, scrap metal, etc. will be removed.
	  • All camp infrastructure will be dismantled and removed and either sold as scrap metal or disposed of at appropriate waste disposal site
	  • All water tanks and sewerage tanks will be dismantled and removed.
	  • All sumps and trenches will be covered and contoured. Rehabilitate all pit and trench sites by infilling and topsoil replacement.
	  • All the tracks to and at the sites will be rehabilitated.
	  • Various trials will be conducted on one or more sections of roads that will not be used.
	  • These trials should include at least the following: leave one section of the road as is; one section to be ripped; and one section to be covered with loose rock from the surrounding environment.
	• Monitor the rehabilitation success over time on all the trial sections for future implementation. The old mining infrastructure in the Volstruis River and the redundant Tsams Farm house shall be left undisturbed.
		As indicated
		
		After completion of exploration programme and consultation with MME.
			PG
			
			Haib Minerals Country Manager and PG

6 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the different parts of the environmental management plan (EMP).

6.1 HAIB MINERALS – COUNTRY (NAMIBIA) MANAGER

The Haib Minerals Country Manager has overall responsibility for environmental management on the exploration activities and all related activities and for ensuring this EMP is implemented.

In addition to the above, the Haib Minerals Country Manager is responsible for ensuring that all persons involved with the exploration activities comply with this EMP.

6.2 PROJECT GEOLOGIST

The Project Geologist (Haib Minerals Site Supervisor) will be responsible for assisting the Head of Exploration in all environmental issues, and specifically to ensure that the commitments as set out in this EMP are implemented for the duration of the exploration and rehabilitation activities.

Responsibilities related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g. licenses, authorisations, etc...
- Include environmental awareness during induction and on an ad hoc basis thereafter.
- Ensure compliance to this EMP and permits and authorisations issued to Haib Minerals by relevant authorities. Ensure responsibilities and target dates are developed for each one of the commitments in this EMP.
- Carefully manage the storage and handling of hydrocarbons and other materials.
- Monitor for biodiversity losses and implement control measures if necessary.
- Implement a waste management strategy.
- Monitoring and maintenance of equipment and machinery.
- Ensure the provision of adequate sanitation facilities.
- Implement an environmental awareness plan.

6.3 DRILLING CONTRACTOR SUPERVISOR

The Drilling Contractor Supervisor (DCS) will be contractually required to comply with the various commitments in this EMP.

The Haib Minerals PG (Site Supervisor) and the DCS will conduct daily informal inspections at contractor areas. Non-compliances will be recorded and action plans developed in conjunction with the contractor that contravened the commitment(s) of the EMP.

Contractors will be formally audited on a monthly basis through internal or external parties in order to determine compliance with the EMP. In the event of non-conformances, the contractor will be required to take corrective action according to the requirements of Haib Minerals and the EMP commitments.

Werner Petrick
(Project Manager and Reviewer)

Marvin Sanzila
(Project Assistant)

APPENDIX A: PHOTOS

Photos 1 & 2: Established camp site

Photo 3: The remains of the old, dilapidated Tsams Farm house on the banks of the Haib River.

Photo 4: Remains of the old mine infrastructure and leach tanks within the Volstruis River

APPENDIX B: PLANT SPECIES OBSERVED AT THE PROPOSED EXPLORATION SITE

TABLE 6-1 OBSERVED PLANT SPECIES AT THE PROPOSED ADDITIONAL EXPLORATION SITES

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Haib West	Site 1: S 28˚ 41. 326' E17˚ 50. 751'	• Disturbance is as per footprint area of the previous exploration activities, this includes access route to the site and laydown area for drill rig (25m^2) • Capped drill holes • Natural Vegetation in the surrounding undisturbed area	 Capped drill hole

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 *Aloe dichotoma*- Kokerboom  *Hoodia gordonii*

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Access route
	Site 2: S 28˚ 41. 350' E17˚ 50. 937'		 Capped Drill hole

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Drill Rig laydown area
			 Surrounding area with Karas Euphorbia, hoodia and Euphorbia plant specie

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 *Euphorbia gregaria* Karas Euphorbia 

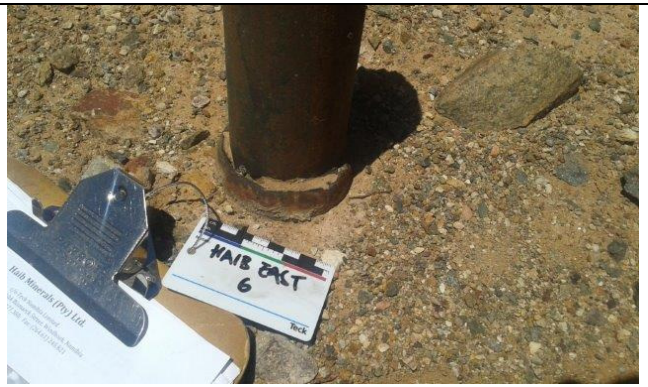
Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 *Euphorbia virosa* – Candelabra Euphorbia  Surrounding hills terrains and access routes

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Haib Main	Site 3: S 28˚ 41. 209' E17˚ 52. 663'		 Capped Drill hole Site 3  Surrounding area and access route around Site 3

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 *Cadaba aphylla* swartstorm  Surrounding area site 3

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
	Site 4: S 28˚ 41. 335' E17˚ 52. 738'		 Site 4 Haib Main  Surrounding area- drill rig laydown area

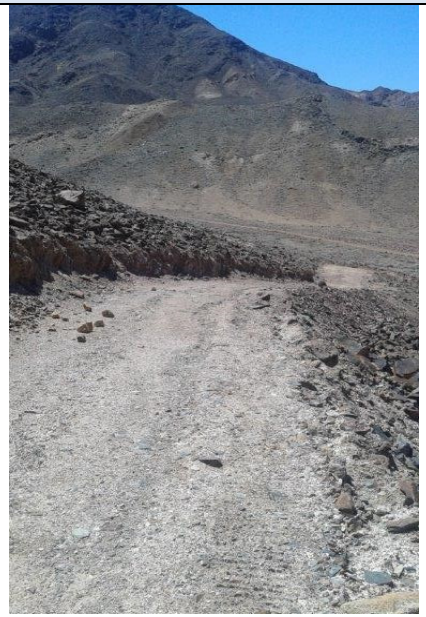
Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 *Hoodia gordonii*
	Site 5: Historic site S 28˚ 41. 586' E17˚ 53. 281'	• No drilling activities are anticipated at the historic site. • No activities have been undertaken at the historic site	 Leach pads

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			
	Site 6: Haib East. S 28˚ 41. 129' E17˚ 54. 806'		 Site 6: Haib East Capped drill hole

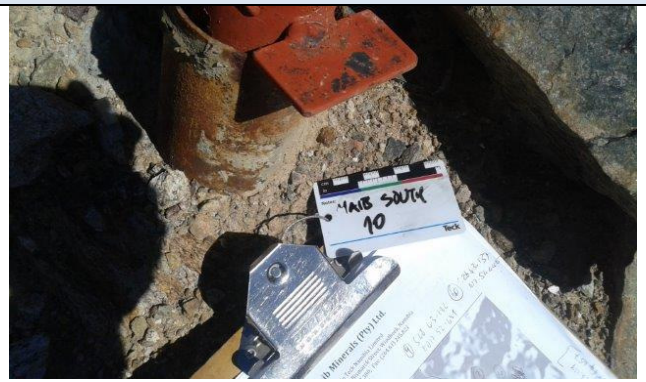
Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Surrounding proposed drilling site with *Cadaba aphylla* (Swartstorm) species in the area.
Site 7:	28˚ 41`22.8"S 17˚ 54`45.6"E		 Surrounding area – less vegetated

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Surrounding area at site 7, less vegetated
Site 8- Haib South	S28˚ 43. 119’ E17˚ 54. 657’ 41°24'12.2"N 2°10'26.5"E		 Site 8: Haib South

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Surrounding area and access route

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Site 8 Surrounding Area and access route

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Site 9: Haib South	S 28˚ 43. 182' E17˚ 54. 681'		 Site 9: Haib South- capped drill hole  Surrounding area- less vegetated

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Site 10 Haib South	S 28˚ 43. 137’ E17˚ 54. 440’		 Site 10: Haib South  Surrounding area and access route to site 10

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Euphorbia virosa
Site 11: Haib South	S 28˚ 43. 102' E17˚ 54. 795'		 Ste 11: Haib South

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 Site 11: Surrounding area- less vegetated

RECORD OF REPORT DISTRIBUTION

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