

**ENVIRONMENTAL MANAGEMENT PLAN
FOR THE MINING OPERATION ON
PROPOSED ML 189 AT FARM OTJUA**

HOANIB EXPLORATION (Pty) Ltd

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ACRONYMS AND ABBREVIATIONS

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

Acronyms / Abbreviations	Definition
ASEC	A. Speiser Environmental Consultants cc
DEA	Department of Environmental Affairs
ECC	Environmental Clearance Certificate
EIA	Environmental Impacts Assessment
EMP	Environmental Management Plan
MET	Ministry of Environment and Tourism
ML	Mining Licence
MME	Ministry of mines and Energy

ENVIRONMENTAL MANAGEMENT PLAN FOR THE MINING OPERATION AT FARM OTJUA (ML189)

1 INTRODUCTION

Hoanib Exploration (Pty) Ltd (i.e. Hoanib Exploration) previously held four (4) claims on Farm Otjua No. 37 (Karibib District, Erongo Region), where intrusions of granitic pegmatites have been intermittently mined over the past 50 years, extracting tourmaline and quartz crystals. Hoanib Exploration submitted an application for a Mining Licence (i.e. ML 189) to the Ministry of Mines and Energy (MME) in 2006, which included an 'Environmental Report'. An updated "Environmental Assessment and EMP" with an Application for an Environmental Clearance was submitted to the Ministry of Environment and Tourism (MET) Department of Environmental Affairs (DEA) at the beginning of 2014, after the successful completion of an EIA process.

MET issued an Environmental Clearance Certificate (ECC) to Hoanib Exploration in June 2014, based on the above mentioned reports and EIA. A revised ML application was lodged with MME towards the end of 2014. In May 2019, Hoanib Exploration received a letter from the MME notifying them that MME is prepared to grant ML 189 to Hoanib Exploration.

The "Environmental Assessment and Management Plan for the Operations at Farm Otjua conducted by Hoanib Exploration (Pty) Ltd" (A. Speiser Environmental Consultants cc (ASEC), 2014), included the EMP (in one consolidated report). The activities described and assessed as part of the 2014 EIA (and report) remains relevant and therefore, the management and mitigation measures, provided in the same report (ASEC, 2014) also remain applicable. However, Hoanib Exploration decided to develop a "stand-alone EMP" (i.e. this document), copying the management and mitigation measures from the above mentioned (2014) report.

The reason for this being the following:

- Hoanib Exploration found it more practical to have a stand-alone EMP to ensure affective implementation therefore.
- Minor amendments / additions had to be made to the plan.
- In the above mentioned letter from MME, they requested that an EMP be submitted to their office as part of the ML application.

Minor amendments were made to the management and mitigation measure, to ensure these remain practical. Also, some further additions were made to the plan to include responsibilities, the Mine Closure Strategy, etc. The amendments to the management and mitigation measures (compared to the approved management plan) are highlighted in grey in this report.

The mining operation at the Otjua Farm (i.e. proposed ML 189) lies approximately 40 km south of Karibib, in the Erongo Region. The ML is \pm 29 ha in size. (Refer to Figure 1 for the location of the ML).

The ML area is solely on a portion of Farm Otjua, owned by the Namibia Government. No land-owner compensation agreement is necessary.

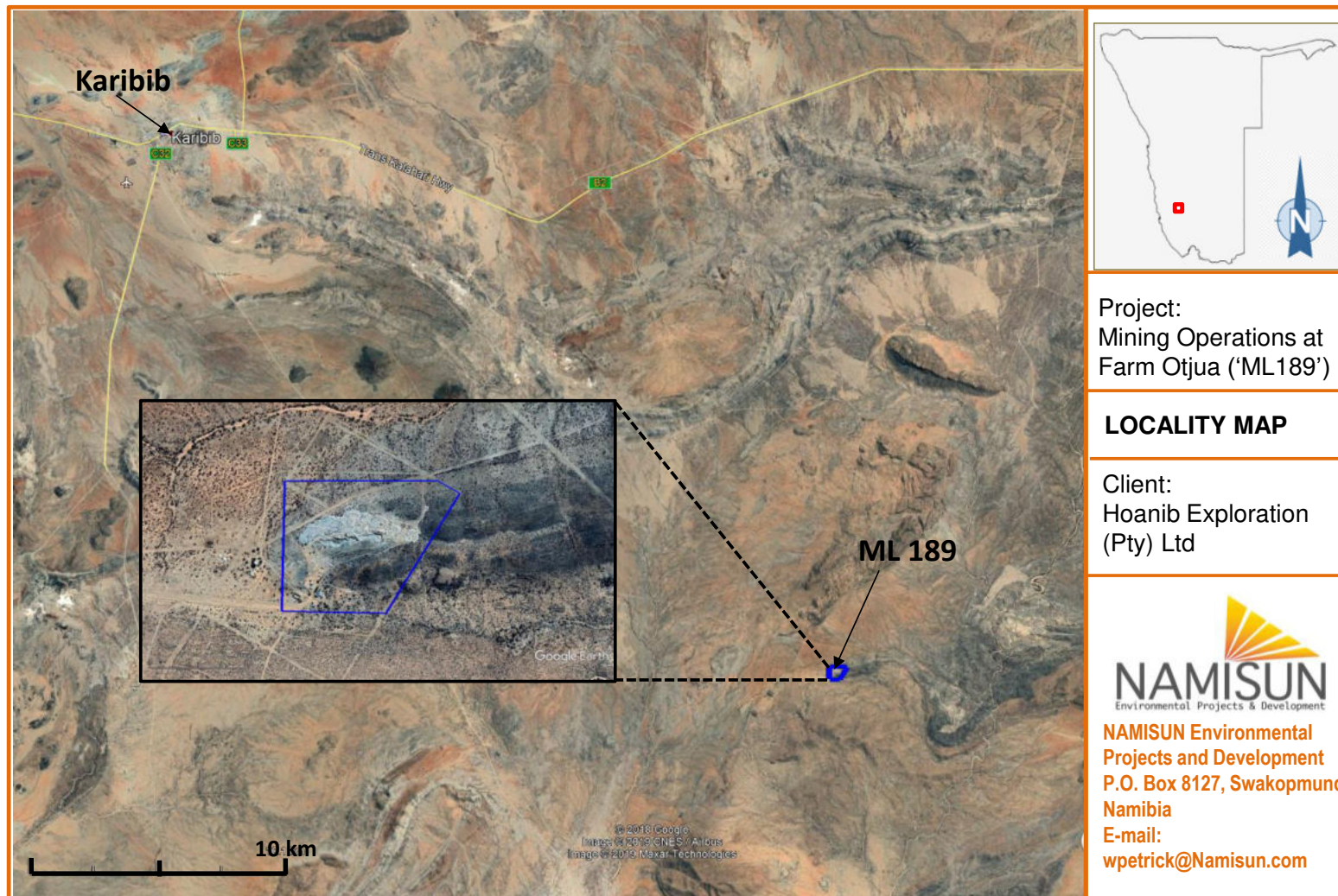


FIGURE 1: LOCATION OF THE MINING OPERATION AT FARM OTJUA (ML 189)

2 KEEPING THE EMP CURRENT

It is the intention that this EMP should be seen as a “living document” which will be amended during Hoanib Exploration’s ongoing mining (and associated) activities, as the activities might change in future or new ones be introduced.

Should a listed activity(s) as defined in the Environmental Impact Assessment Regulations: Environmental Management Act (EMA), 2007 (Government Gazette No. 4878) be triggered, as a result of future modifications/changes at the mine, this EMP will be required to be updated through an EIA amendment process as stipulated in the EMA and its Regulations.

3 DETAILS OF THE PERSON WHO PREPARED THE EMP

With reference to section 1, the original (approved) “Environmental Assessment and Management Plan for the Operations at Farm Otjua conducted by Hoanib Exploration (Pty) Ltd” was prepared by ASEC in 2014.

NAMISUN Environmental Projects and Development (NAMISUN), were appointed by Hoanib Exploration to develop a “stand-alone EMP” by referring to the above mentioned report.

Werner Petrick, the NAMISUN project manager has more than twenty years of relevant experience in conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems. Werner is certified as lead environmental practitioner and reviewer under the Environmental Assessment Professionals Association of Namibia (EAPAN).

4 SCOPE OF THE EMP

Namisun referred to the (approved) report (ASEC, 2014) and extracted all the management and mitigation measures from the 2014 report into the “stand-alone EMP” (this report). Minor amendments / additions to the management and mitigation measure are highlighted in section 8, as explained in section 1.

No further assessments were deemed necessary, due the fact that the future mining and associated activities will remain relevant, as described and assessed in the 2014 EIA report (see section 6 for a description of the mining and associated activities).

The components of the EMP are included in Table 1 below.

TABLE 1: CONTENT OF THE EMP

Component	EMP Reference
General introduction to Hoanib Explorations mining activities at Farm Otjua, EIA completed and authorisations.	Section 1
Keeping the EMP current	Section 2
Details of the persons who prepared the EMP and the expertise of those persons to prepare an environmental management plan.	Section 3
The Scope of the EMP	Section 4
Environmental Legislation relevant to mining and associated activities.	Section 5
Overview of Hoanib Exploration's mining and associated activities.	Section 6
Overall environmental objectives.	Section 7
Management or mitigation measures to address potential environmental impacts.	Section 8
Proposed mechanisms for monitoring compliance with the EMP and reporting on it.	Section 9

5 ENVIRONMENTAL LEGAL FRAMEWORK

Relevant key legislation, standards currently in force in Namibia include:

- The Constitution of the Republic of Namibia of 1990.
- Environmental Management Act (Act 7 of 2007) and Regulations promulgated in terms of the Act.
- Minerals (Prospecting and Mining Act), 1992.
- The Soil Conservation Act (Act 76 of 1969) & the Soil Conservation Amendment Act (Act 38 of 1971).
- The Water Act, No. 54 of 1956 and Water Resources Management Act, No. 11 of 2013.
- Labour Act 11 of 2007.
- Nature Conservation Ordinance of 1975.
- Atmospheric Pollution Prevention Ordinance 11 of 1976.

- Hazardous Substances Ordinance No. 14 of 1974.
- Draft Pollution Control and Waste Management Bill of 2003.
- Petroleum Products and Energy Act No. 13 of 1990, as amended.
- National Heritage Act, 2004 (No. 27 of 2004).

The following Namibian policies are applicable:

- Environmental Assessment Policy of 1994.
- Minerals Policy of Namibia (2004).

5.1 ENVIRONMENTAL PERMITS AND APPROVALS

Table 2 summarises the notification, registration, approval and permits related to environmental aspects, as provided in the original/approved report (ASEC, 2014).

TABLE 2: NOTIFICATION, REGISTRATION, APPROVAL AND PERMITS

Issue	Act/Section	Type of requirement / Ministry
Notification and approval of expansion and/or change to accessory works area	Section 90 (1) (e) & (2) (a)	Notification and approval of expansion and/or change to accessory works area MME
Mining licence	Section 91(f)	Approval of EIA and EMP/MME& MET
Written permission of the MC to erect any accessory works	Section 90 (2) (a)	Written permission from Mining Commissioner (MC) /MME
Permission to sell, discharge of, etc. minerals won	Section 102 (1)	Permission from MC/MME
Water Abstraction permit – WA002	Section 13 (2)	Permit

Issue	Act/Section	Type of requirement / Ministry
Stipulates the purification of waste water and discharge	Section 21 (1) (2) (3) (4) (5)	Permit for industrial waste water and effluent disposal water abstraction / Directorate of Water Affairs in MAWF
Registration, selling, operating, installing of infrastructure related to Group I & III hazardous substances	Hazardous Substance Ordinance, No. 14 of 1974 Section 5 (1)(a)(b)(c)	Hazardous Substance Licence and registration / MET or Drug Law Enforcement Unit (DLEU)
Disturbing or destroying of national heritage sites (archaeological / palaeontological sites)	National Heritage Act, 2004 Section 48 – 52 & 55	Permit National Heritage Council
Consumer installation certificate	<u>Petroleum Product Regulations, 2000</u> Section 18 (5)	Certificate MME, Department of Energy
Actions to be taken after a spill has occurred (major petroleum spill means 200l per spill)	Section 49(1)(4)	Notification / MME, Department of Energy
Storage & use of explosives	Explosive Act, 1956 Section 22	Permit / MME
30 days notification prior to commencement of construction	Labour Act, 1992, Regulations for Labour Act 1992 Section 20	Notification / Ministry of Labour (MoL)
30 days notification prior to commencement of mining operation	Section 21	Notification / MoL
Transport / operating licence to transport goods on public roads	Roads Traffic and Transport Act, 1999 Section 60	Licence / Ministry of Works, Transport and Communication
Approval to work on Sundays, public holidays & continuous operation	Section 33	Approval / Ministry of Labour
VAT registration	Value added Tax Act, 2000	Certification
Tax registration	Income Tax Act, 1981	Certification

Issue	Act/Section	Type of requirement / Ministry
Social Security	Social Security Act, 1994 Section 20	Registration
Valid Affirmative Action compliance certificate	Affirmative Action Act, 1998 Section 42	Certification

6 OVERVIEW OF HOANIB EXPLORATION'S MINING AND ASSOCIATED ACTIVITIES

With reference to section 1, the proposed ML 189 (previously claims) area have been mined over the past decades. The sections below provide a discription of Hoanib Exploration's activities (past and future) at the mining operation, extracted from the approved 2014 EIA report (ASEC, 2014).

6.1 MINING ACTIVITIES

Figure 1 shows the proposed ML 189 area and the current mine. Tourmaline and quartz crystals are mined in an open pit following the tourmaline-bearing zone of the pegmatite.

The following mining methods are used at Otjua:

- Blasting to access the tourmaline-bearing zone. Small-scale conventional drilling is conducted. The boreholes are filled with explosives and the desired rocks are loosened by the blast. The blasts are very small in force to ensure that the crystals are not damaged by the blast.
- The blasted material is cleaned by a front-end loader and deposited at the waste-rock dump to the west of the current mine.

6.2 EQUIPMENT AND MAINTENANCE

The following machinery are typically used on site:

- 1 x front-end loader
- 1 x compressor
- 3 x 1-tonne trucks
- Basic equipment/tools to maintain the vehicles and machinery

It is necessary for the vehicles and machinery to be stored/parked at a designated area to keep to a minimum the disturbance of the area. Fuel is stored on site in a 13 500-litre diesel tank, constructed in a bunded area.

All vehicles used at the mine are serviced in Karibib.

All hazardous material which is taken into the ML area should be collected and taken out of the area. A designated area has to be established in which to store hazardous waste, e.g. grease, lubricants, oil, etc. and a plan should be in place as to when and how to take out this collected waste for appropriate disposal.

6.3 WORKFORCE AND ACCOMMODATION

The workforce comprises a total of 10 staff members. Each family has their own house adjacent to the processing area. Some of the staff members' families live at Karibib, where they are visited once a month. Additionally, two artisans are trained in mining and blasting.

Water is provided to the houses from the farm boreholes. Ablution blocks, including long-drop facilities, have been established adjacent to the houses. Electricity is provided by a Lister generator.

6.4 WATER

A total of 500 m³/month is required for the mining operation and an additional 4 000m³/month for the accommodation of staff members. Water is supplied by NamWater via a pipeline that runs past the mining area.

6.5 BENEFICIATION OF MINED PRODUCTS

All mined tourmalines and quartz crystals are transported to the Kristall Gallery in Swakopmund (part of the family business) for beneficiation with a 1-tonne truck. The Kristall Gallery employs the following staff which carry out the beneficiation:

- 2 people which sort the semi-precious stones regarding their quality;
- 3 people which cut the stones,
- 4 goldsmiths, which handcrafting jewelry by setting the semi-precious stones into precious metal; and
- 3 employees doing beading work (grading and finishing).

The large quartz crystals displayed at the Kristall Gallery in Swakopmund are extracted from the current mine at Otjua.

7 OVERALL ENVIRONMENTAL OBJECTIVES

The following overall environmental objectives have been set by Hoanib Exploration:

- To comply with national legislation and standards for the protection of the environment;
- To ensure all relevant environmental permits are in place and comply with permit conditions;
- To avoid / limit potential impacts on the environment from all activities associated with the mining operation;
- To ensure the legal and appropriate management and disposal of general and hazardous waste and apply the strategy/hierarchy of minimisation, recycling, management, temporary storage and removal & safe disposal of waste;
- To avoid potential impacts on the safety of third parties through appropriate site access control;
- To prevent pollution and clean up if incidents occur;
- To support and encourage environmental awareness and responsibility amongst all employees;
- To keep key stakeholders informed of activities through appropriate communication; and
- To ensure compliance to the EMP.

8 MANAGEMENT AND MITIGATION MEASURES

This section (Table 3) provides management and mitigation measures to address potential environmental impacts associated with Hoanib Exploration's mining (and associated) activities that have been identified through the original EIA process and report (ASEC, 2014).

Please note that (minor) amendments / additions to the (original / approved) management and mitigation measures, are highlighted in grey in the table below.

TABLE 3: MANAGEMENT AND MITIGATION MEASURES (ASEC, 2014)

Activity / facility	Aspect	Impact	Management, mitigation and monitoring actions	Action Plan		
				Frequency / timing	Responsible party(s)	
Open-pit extension	Disturbance of flora	Loss of indigenous vegetation	Keep disturbance to a minimum and carefully plan extension of the pit.	Once-off / prior to further expansion	General Manager	
			Avoid rocky outcrops where possible.	Ongoing	General Manager & Mining Manager	
			Raise awareness at all levels amongst staff.	Ongoing		
	Noise pollution	Potential disturbance to neighbours	Inform neighbours on blasting events.	Prior to blast	Mining Manager	
			Restrict work to daylight hours.	Ongoing		
	Air quality	Dust impacts (nuisance)	Not applicable.			
	Widening of existing open pits	Visual Loss of rocky outcrops	Keep top-soil separate, to be used for rehabilitation of the waste - rock dump.	Ongoing	Mining Manager	
Clearly demarcate the waste-rock dump.						
Avoid rocky outcrops where possible.						

Activity / facility	Aspect	Impact	Management, mitigation and monitoring actions	Action Plan	
				Frequency / timing	Responsible party(s)
			Keep the flanks of the waste-rock dump at the angle of repose to enhance natural plant growth.	Ongoing	Mining Manager
	Widening, extensive extension of existing open pits	Archaeological sites	Conduct an archaeological specialist study prior to extensive pit extension or new pit establishment.	Once-off / prior to further expansion	General Manager
Workshop	Storage and handling of hazardous material	Contamination of soil and surface water Hazard for fauna	Store hazardous material at a designated area.	Ongoing	Mining Manager / all
			Ensure that the area is bunded, i.e. no material should enter the ground.	Once off	General Manager
			Train staff working with hazardous material to avoid spillages.	Ongoing	Mining Manager
			Have emergency procedure in place, e.g. neutralising spilled hazardous material.	Once off	General Manager
	Storage of Explosives	Legal requirements	Ensure that Hoanib Exploration complies with the Explosive Act, 1956 (Section 22) in regard of storage and usage of explosives.	Ongoing	General Manager & Mining Manager

Activity / facility	Aspect	Impact	Management, mitigation and monitoring actions	Action Plan	
				Frequency / timing	Responsible party(s)
	Storage of fuel	Contamination of soil and surface water	Ensure that fuel-storage tank and pump are bunded to contain any accidental spillages.	Once off (and ongoing maintenance to avoid leaks)	General Manager & Mining Manager
			Use a drip tray to contain spillages when refuelling machinery within the pit.	During refuelling	All
Waste management	Contamination of area, e.g. wind-blown plastics	Pollution of area Flora Visual	Try to minimise waste, e.g. leave additional packaging at source.	Ongoing	All
			Ensure that all waste is stored in windproof containers.		
			Separate waste in designated receptacles (i.e. hazardous waste and non-hazardous waste) Non-hazardous waste to be disposed of at nearest registered landfill site and hazardous waste to be disposed of at the Walvis Bay hazardous waste facility.		
			Safe disposal certificates must be obtained and kept on record, where applicable.	During disposal of waste	General Manager
Transport	Increasing degradation of	Tourism Other road-users	At present, trucks do not enter or leave the farm area more often than twice a year.	NA	NA

Activity / facility	Aspect	Impact	Management, mitigation and monitoring actions	Action Plan	
				Frequency / timing	Responsible party(s)
	tracks and roads from Otjua Mine to Karibib		<p>The quantity of semi-precious stones is small.</p> <p>Farm Otjua is not on a major tourism route and thus the potential disturbance of tourism activities is non-existent.</p>		
Workforce	Disturbance of fauna	Potential poaching	Access to the ML area should be carefully managed by Hoanib Exploration.	Ongoing	General Manager & Mining Manager
			Hoanib will implement a zero tolerance policy with regards to the killing of any animals or collecting of any vegetation by any of their mine workers.		General Manager / all
			Have punishment measures in place, if poaching occurs.		General Manager
General to all mining (and associated activities)	Mine pits, rock dumps and associated infrastructure & equipment	Injury/fatality to third parties & animals	Ensure work the entire work area is suitably fenced off and maintain warning sign(s) to keep third parties from entering the site.	Ongoing	General Manager & Mining Manager

<p>Mine Closure</p>	<p>Mine Closure Planning / Strategy</p>	<p>Develop a detailed Mine Closure Plan.</p> <p>In broad terms the main objective must be to remove as much mining related infrastructure/equipment as possible and rehabilitate what remains to resemble the pre project land state as closely as possible.</p> <ul style="list-style-type: none"> • Disturbed areas other than those comprising the open pit and overburden (waste rock dumps), housing and workshop, will be returned to as close to the natural habitat as practicable. • The open pits and overburden (waste rock dumps) will be left in a form that blends with the surrounds and will be made safe for third parties and animals. Where possible, backfill the pits (or sections of the pit with the waste rock). • Socio-economic impacts (including the loss of employment) will be minimised through careful planning and preparation for closure beginning one year before closure takes place. • All structures, old equipment and infrastructure that did not pre-exist (before mining started) and, which will not be further utilised by the landowner, will be broken and 	<p>Prior to closure</p> <p>During Decommissioning and closure</p>	<p>Hoanib Exploration General Manager</p>
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Activity / facility	Aspect	Impact	Management, mitigation and monitoring actions	Action Plan	
				Frequency / timing	Responsible party(s)
			<p>salvageable elements will be decontaminated and sold.</p> <p>The remainder of the infrastructure will be dismantled or broken up and disposed of at a site approved by the relevant authorities. Contaminated soils underlying the structures will be excavated for disposal at a hazardous waste disposal facility or for bio remediation at a designated area on the ML after which the soils will be carted to the open pit.</p> <ul style="list-style-type: none"> Residual excavations will be backfilled and levelled using selected overburden material from open pit mining operations. The soil and vegetation function of the land will be restored. 		

9 MONITORING AND REPORTING REQUIREMENTS

This section provides the mechanisms for monitoring compliance with the EMP and reporting on it.

9.1 MONITORING

9.1.1 WATER USE

Monitor the water consumption and keep record of monthly water consumption.

9.1.2 THIRD PARTY & ANIMAL SAFETY

Monitoring requirement:

- Visually inspect the fence around the work areas and visibility of warning signs on a quarterly basis.
- Visually inspect all mine pits on a daily basis to ensure no animals are trapped in the pits:
 - Rescue all animals trapped in the pits.

9.1.3 WASTE MANAGEMENT

Monitor the effectiveness of the Waste Management mitigation measures through weekly site inspections and continually improve the plan as and where required.

9.1.4 ENVIRONMENTAL PERFORMANCE

Conduct quarterly (internal) inspections to audit the implementation of the commitments in the EMP. Develop corrective actions to address any non-conformances.

It is recommended that an annual external audits be conducted to audit the compliance to the EMP commitments and report on the “Environmental Performance”.

9.2 REPORTING

It is recommended that Hoanib Exploration compiles annual Environmental Performance reports. The objective of these reports would be to summarise the performance of their management actions and various commitments to this EMP and relevant permits.

The reports should be submitted to the MET for their information.