

# Jointmen Investments CC (the Proponent)

MEFT ECC APPLICATION REFERENCE No. APP-003256

Final Environmental Management Plan (EMP) Report to  
Support the Application for Environmental Clearance  
Certificate (ECC) for the Proposed Exploration / Prospecting  
and Possible Small-Scale Quarrying / Mining Activities in the  
Mining Claims (MCs) Nos. 72287, 72288, 72584 and 72585  
**REHOBOTH DISTRICT, HARDAP REGION**

November 2021

P. O Box 26826  
6 Amasoniet Street  
WINDHOEK, NAMIBIA

# PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

## TYPE OF AUTHORISATIONS REQUIRING ECC

Mining Claims (MCs) Nos. 72287, 72288, 72584 and 72585 for  
Exploration, Small Scale Quarrying / Mining

## MEFT ECC APPLICATION REFERENCE No.

APP-003256

## NAME OF THE PROPONENT

Jointmen Investments CC

## COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

## ADDRESS OF THE PROPONENT AND CONTACT PERSON

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## PROPOSED PROJECT

Proposed Minerals Exploration / Prospecting and Possible Small-Scale  
Quarrying / Mining activities in the Mining Claims (MCs) Nos. 72287,  
72288, 72584 and 72585, Rehoboth District,  
**Hardap Region, Southern Namibia**

## PROJECT LOCATION

Rehoboth District, Hardap Region, Southern Namibia  
(Latitude: -23.437778, Longitude: 17.030833)

## ENVIRONMENTAL CONSULTANTS



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## ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr. Sindila Mwiya

*PhD, PG Cert, MPhil, BEng (Hons), Pr Eng*

## Summary Profile and Qualifications of the Environmental Assessment Practitioner (EAP) / International Resources Consultant – Dr Sindila Mwiya

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining, energy and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. He continues to work internationally in the resources (mining and petroleum) and energy sectors, from permitting through to exploration and production. From the frontier regions (high risk hydrocarbons exploration zones) of South Africa and Namibia, to the prolific oil and gas fields of the Middle East, Angola and the West African Gulf of Guinea, Dr Mwiya has been directly involved in field-based aerial, ground and marine geophysical (gravity, magnetics and seismic) surveys, been onboard exploration drilling rigs, onboard production platforms, conducted public and stakeholder consultations and engagements, and worked with highly technical and well organised and committed clients and third-party teams from emerging and well established global resources and energy companies from many countries such as the UK, France, USA, Russia, Canada, Croatia, Norway, the Netherlands, Spain, Brazil, China, South Africa, Equatorial Guinea, Angola and Nigeria. He is fully aware of all the competing interests and niche donation-based business environmental advocacy opportunism that exists in the resources sector from the local, regional, and international perspectives.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd which he founded, he has undertaken more than 200 projects for Local (Namibia), Continental (Africa) and International (Global) based clients. He has worked and continue to work for Global, Continental and Namibian based reputable resources (petroleum and mining / minerals) and energy companies such as Dundee Precious Metals (Namibia / Canada), Headspring Investment (Namibia/ Russia), Green Energy (Namibia/UK/Russia), EMGS (UK/ Norway), Lepidico (Australia / UK), Best Sheer / Bohale (Namibia / China), CGG Services UK Limited (UK/ France/Namibia), BW Offshore (Norway/Singapore /Namibia), Shell Namibia B. V. Limited (Namibia/ the Netherlands), Tullow Oil (UK/Namibia), Debrmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Osino Resource Corporation (Canada/USA/Namibia), Petrobras Oil and Gas (Brazil) / BP (UK)/ Namibia, REPSOL (Spain/ Namibia), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA/ Namibia), Chariot Oil and Gas Exploration (UK/ Namibia), NABIRM (USA/ Namibia), Serica Energy (UK/ Namibia), Eco (Atlantic) Oil and Gas (Canada / USA/ Namibia), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-NOPEC (UK), Maurel & Prom (France/ Namibia), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea/ Namibia), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia Ltd (Russia/ Namibia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia/ Namibia), Namibia Underwater Technologies (NUTAM) (South Africa/Namibia), InnoSun Holdings (Pty) Ltd and all its subsidiary renewable energy companies and projects in Namibia (Namibia / France), HopSol (Namibia/Switzerland), Momentous Solar One (Pty) Ltd (Namibia / Canada), OLC Northern Sun Energy (Pty) Ltd (Namibia) and more than 100 local companies. Dr Sindila Mwiya is highly qualified with extensive practical field-based experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non-Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management, and monitoring (Scoping, EIA, EMP, EMP, EMS) and overall industry specific HSE, cleaner production programmes, Geoenvironmental, geological and geotechnical engineering specialist fields.

Dr Sindila Mwiya has undertaken and continue to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals, and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. He continue to worked as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment, Forestry and Tourism / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and Namibian development partners. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), Strategic Environmental Assessment (SEA) Regulations, Environmental Impact Assessment (EIA) Regulations as well as the SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia. Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD within the broader fields of Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence with a research thesis titled Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

**WINDHOEK NOVEMBER 2021**

# Contents List

<b>NON-TECHNICAL SUMMARY</b> .....	<b>VI</b>
<b>1. BACKGROUND</b> .....	<b>- 1 -</b>
1.1 INTRODUCTION .....	- 1 -
1.2 REGULATORY REQUIREMENTS .....	- 1 -
1.3 LOCATION, LAND USE, INFRASTRUCTURE AND SERVICES.....	- 1 -
1.3.1 <i>Location and Land Use</i> .....	- 1 -
1.3.2 <i>Supporting Infrastructure and Services</i> .....	- 1 -
<b>2. THE EMP</b> .....	<b>- 8 -</b>
2.1 SUMMARY OF THE EMP OBJECTIVES.....	- 8 -
2.2 IMPLEMENTATION OF THE EMP .....	- 8 -
2.2.1 <i>Roles and Responsibilities</i> .....	- 8 -
2.2.2 <i>Proponent's Representative (PR) / Project Manager (PM)</i> .....	- 8 -
2.2.3 <i>Project Health, Safety and Environment (Project HSE)</i> .....	- 9 -
2.2.4 <i>Contractors and Subcontractors</i> .....	- 9 -
<b>3. SPECIFIC MITIGATION MEASURES</b> .....	<b>- 11 -</b>
3.1 SUMMARY OF THE SOURCES OF IMPACTS.....	- 11 -
3.2 HIERARCHY OF MITIGATION MEASURES IMPLEMENTATION .....	- 11 -
3.3 MITIGATION MEASURES IMPLEMENTATION.....	- 11 -
<b>4. REHABILITATION AND MONITORING COMMITMENTS</b> .....	<b>- 28 -</b>
4.1 REHABILITATION PROCESS.....	- 28 -
4.2 MONITORING OF THE ENVIRONMENTAL PERFORMANCE.....	- 30 -
4.2.1 <i>Rehabilitation Evaluation and Performance Monitoring</i> .....	- 30 -
4.2.2 <i>Overall Environmental Performance Monitoring and Reporting</i> .....	- 31 -
<b>5. CONCLUSION AND RECOMMENDATION</b> .....	<b>- 32 -</b>
5.1 CONCLUSIONS.....	- 32 -
5.2 RECOMMENDATIONS.....	- 32 -

## List of Figures

Figure 1.1:	Regional location of the MCs 72287, 72288, 72584 and 72585 Area .....	- 3 -
Figure 1.2:	Detailed regional location of the MCs 72287, 72288, 72584 and 72585 Area .....	- 4 -
Figure 1.3:	Detailed regional location of the MCs Nos. 72287, 72288, 72584 and 72585 areas, local farms, and surrounding land uses. ....	- 5 -
Figure 1.4:	Detailed location of the Mining Claims (MCs) Nos. 72287 and 72288 .....	- 6 -
Figure 1.5:	Detailed location of the Mining Claims (MCs) Nos. 72585 and 72584 .....	- 7 -

## List of Tables

Table 3.1:	Project planning and implementation. ....	- 13 -
Table 3.2:	Implementation of the EMP.....	- 13 -
Table 3.3:	Public and stakeholders relations.....	- 14 -
Table 3.4:	Measures to enhance positive socioeconomic impacts. ....	- 14 -
Table 3.5:	Environmental awareness briefing and training.....	- 15 -
Table 3.6:	Erection of supporting exploration and possible small-scale quarrying / mining infrastructures. ....	- 15 -
Table 3.7:	Use of existing access roads, tracks, and general vehicle movements. ....	- 16 -
Table 3.8:	Mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.....	- 17 -
Table 3.9:	Mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation.....	- 18 -
Table 3.10:	Mitigation measures to be implemented with respect to the exploration temporary lay and exploration and possible mining sites. ....	- 19 -
Table 3.11:	Mitigation measures for surface and groundwater protection as well as general water usage. ....	- 20 -
Table 3.12:	Mitigation measures to minimise negative socioeconomic impacts. ....	- 21 -
Table 3.13:	Mitigation measures to minimise health and safety impacts. ....	- 22 -
Table 3.14:	Mitigation measures to minimise visual impacts. ....	- 23 -
Table 3.15:	Mitigation measures to minimise vibration, noise and air quality. ....	- 24 -
Table 3.16:	Mitigation measures for waste (solid and liquid) management. ....	- 25 -
Table 3.17:	Rehabilitation plan. ....	- 26 -
Table 3.18:	Environmental data collection. ....	- 27 -

## NON-TECHNICAL SUMMARY

**Jointmen Investments CC (the Proponent)** has applied for mineral rights under the Mining Claims (MCs) Nos. 72287, 72288, 72584 and 72585. The Proponent intends to undertake exploration and possible small-scale quarrying / mining activities for dimension stones group and in particular granite and marble as well as other associated intrusive and sedimentary rocks in the area. The granting of the MCs Nos. 72287, 72288, 72584 and 72585 by the Competent Authority (Ministry of Mines and Energy) is subject to the Proponent being granted Environmental Clearance Certificate (ECC) by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT).

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities over key site-specific localities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. If the feasibility is positive, test mining and mining operations with a stone processing facility will be implemented covering construction, operation (mining and processing) and rehabilitation, decommissioning and final rehabilitation and aftercare.

The proposed exploration and possible mining activities are listed in the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC).

This Environmental Impact Assessment (EIA) report has been prepared by Risk-Based Solutions (RBS) CC in order to support the application for ECC. Public consultation process was undertaken during the months October and November 2021. In line with the provisions of the EIA Regulations, 2012 and in order to identify the key Interested and Affected Parties (I&APs), public notices were published in the Allgemeine Zeitung (Namibian German), Republikein and Namibian Sun Newspapers dated 7<sup>th</sup> October 2021, Confidante newspaper dated 22<sup>nd</sup> - 29<sup>th</sup> October 2021 and Windhoek Observer newspaper multiple editions dated 22<sup>nd</sup> and 25 – 28<sup>th</sup> October 2021. A stakeholder register was opened on 7<sup>th</sup> October 2021. The closing date for registration and submission of written objections, comments or inputs to the environmental assessment process was Friday, 5<sup>th</sup> November 2021. During the public / stakeholder consultation period, a local community written objection to the proposed project activities were received by Environmental Assessment Practitioner (EAP). Key objections were centred on the management of any likely impacts, land use conflict and impacts of the proposed activities on the carrying capacity of the local land and water resources. Issues raised have been addressed in the both the EIA and this EMP Report.

It is estimated that at least 77 reptile, 9 amphibian, 73 mammal and 209 bird species (breeding residents) are known to or expected to occur in the general Rehoboth area of which a high proportion are endemics species. The impacts that the proposed exploration and possible mining activities will have on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will depend on the extent of the proposed exploration and possible mining activities over the development area, management of the area and how the mitigations as detailed in the EMP report are eventually implemented and monitored by the Proponent to the satisfaction of the landowners and the Government regulators.

Mitigation measures shall be implemented as detailed in this EMP report and includes the following:

1. Project planning and implementation.
2. Implementation of the EMP.
3. Public and stakeholders relations.
4. Measures to enhance positive socioeconomic impacts.
5. Environmental awareness briefing and training.
6. Erection of supporting exploration infrastructure.

7. Use of existing access roads, tracks and general vehicle movements.
8. Mitigation measures for preventing flora destruction.
9. Mitigation measures for preventing faunal destruction.
10. Mitigation measures to be implemented with respect to the temporary lay and exploration sites.
11. Mitigation measures for surface and groundwater protection as well as general water usage.
12. Mitigation measures to minimise negative socioeconomic impacts.
13. Mitigation measures to minimise health and safety impacts.
14. Mitigation measures to minimise visual impacts.
15. Mitigation measures to minimise vibration, noise and air quality.
16. Mitigation measures for waste (solid and liquid) management.
17. Rehabilitation plan, and.
18. Environmental data collection.

Based on the findings of the EIA and the mitigation measures provided in this EMP Report, it is hereby recommended that the proposed exploration and possible small-scale quarrying or mining activities be issued with an Environmental Clearance Certificate (ECC). The following is the summary of the key conditions that shall be implemented by the Proponent for the proposed project activities:

- (i) The Proponent will undertake to implement the conditions of the Access Agreements to be concluded with the owners of the land as may be required to support the proposed exploration activities.
- (ii) The proponent shall implement and adhere to all the provisions of this EMP report.
- (iii) Mitigation measures shall be implemented as detailed in this EMP report.
- (iv) Rehabilitation must be always undertaken in consultation with the land owners.
- (v) The Proponent shall adhere to all the applicable national regulations and standards as well as Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles and International Finance Corporation (IFC) environmental management guidelines and frameworks, and.
- (vi) The Proponent shall adopt the precautionary approach / principles in instances where baseline information, national or international guidelines or mitigation measures have not been provided or do not sufficiently address the site-specific project impact.

The following are the recommended actions (roles and responsibility) to be implemented by the Proponent as a part of the management of the impacts through implementations of this EMP Report:

- (i) Appoint an Environmental Control Officer to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed project.

- (ii) Provide with other support, human and financial resources, for the implementation of the proposed mitigations, rehabilitation plans and effective environmental management during the planned mine project life cycle.
- (iii) Develop a simplified environmental induction and awareness programme for all the workforce, contractors and sub-contractors.
- (iv) Where contracted service providers are likely to cause environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities.
- (v) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer and to be submitted to the regulators, and.
- (vi) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA related to the expansion of the current delineated resources or development of completely new mine site within the EPL area.

All the responsibilities to ensure that the recommendations and provisions of this EMP Report are executed accordingly, rest with the Proponent. The Proponent shall provide all appropriate resource requirements for the implementation of this EMP as well as an independently managed (not directly controlled by the Proponent) funding instrument for rehabilitation and associated environmental liabilities.

It is the responsibility of the Proponent to make sure that all members of the workforce including contractors and subcontractors are aware of the provisions of this EMP and its objectives. It is hereby recommended that the Proponent take all the necessary steps to implement all the recommendations of this EMP for the successful execution of the proposed exploration programme.

All the liabilities for environmental damage or damage to any existing public or private property or infrastructure rests with the Proponent.



# 1. BACKGROUND

## 1.1 Introduction

**Jointmen Investments CC** (the **Proponent**) has applied for mineral rights under the Mining Claims (MCs) Nos. 72287, 72288, 72584 and 72585. The Proponent intends to undertake exploration and possible small-scale quarrying / mining activities for dimension stones group and in particular granite and marble as well as other associated intrusive and sedimentary rocks in the area. The granting of the MCs Nos. 72287, 72288, 72584 and 72585 by the Competent Authority (Ministry of Mines and Energy) is subject to the Proponent being granted Environmental Clearance Certificate (ECC) by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT).

Jointmen Investment CC is a Namibian locally registered company involved in various sectors as per the founding statement. In the mining industry, the company has interest in the mining and processing of dimension stone with special focused on granite and marble for the global and regional export and local markets.

Mining Claims (MCs) are granted to Namibian citizens or to companies owned by Namibian citizens. However, a mining claim holder may choose to contract a foreigner or a company owned by foreigners to prospect and mine. The MCs allows the holder to undertake exploration and mining activities without applying for Mining License (ML). Once granted, the MCs are valid for three (3) years and two (2) year extension periods are possible provided that the claims are being developed or worked. Up to a maximum of ten (10) claims can be held at any one time.

## 1.2 Regulatory Requirements

The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations, 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

The Proponent is required to have undertaken Environmental Assessment comprising this Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports for the proposed minerals prospecting activities in order to support the application for ECC.

In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultants led by Dr Sindila Mwiya as the Environmental Assessment Practitioner in the preparation of the EIA and EMP Reports in order to support the application for ECC.

## 1.3 Location, Land Use, Infrastructure and Services

### 1.3.1 Location and Land Use

The MCs Nos. 72287, 72288, 72584 and 72585 are in the Rehoboth District of the Hardap Region, in the south-central Namibia (Figs 1.1 -1.3). Locally, the MCs falls within Farms Neuras and Kamasis, located south of the town of Rehoboth and Swartmodder Copper Mine (Fig. 1.2). The four (4) MCs Nos. 72287, 72288, 72584 and 72585 area totalling around 71.1759 Ha (Fig. 1.3).

The general land use of the area is mainly dominated by subsistence agriculture (cattle and small stock minerals prospecting, quarrying and copper mining operations). The local MCs area has no community tourism, hospitality, and conservation initiatives.

### 1.3.2 Supporting Infrastructure and Services

Access to the MCs area is through some minor local tracks that comes off the B1 Road linking Mariental to Rehoboth and C24 gravel roads from Rehoboth to Klein Aub (Fig. and 1.3). The project area is located approximately 15 km south of Rehoboth, 108 km to Windhoek, with the deep-water port of Walvis Bay located approximately 350 km to the south west of the MCs Nos. 72287, 72288, 72584 and 72585 (Figs. 1.1 -1.3).

Several minor local community tracks cut across the MCs Area and with permissions from the local community may be used to access exploration area/s of interest that may be delineated within the MCs Area (Figs. 1.3 – 1.5).

The creation of any new access if really required shall only be done with the strict permission from the local community and in accordance with the provisions of the EMP in terms of environmental protection.

The MCs Area has mobile services, national or local water and electricity infrastructure networks. However, the proposed minerals exploration and possible mining activities will not require major water and energy supplies.

Sources of water supply for exploration especially drilling will be obtained from local boreholes if available or supplied by a water tanker truck collecting water from nearby reliable supply in the Town of Rehoboth.

The local area has very low and limited groundwater resources due to the presence of non-porous granitic terrains (Fig. 1.4). Electricity supply will be provided by diesel generators and solar as may be required.



Figure 1.1: Regional location of the MCs 72287, 72288, 72584 and 72585 Area.

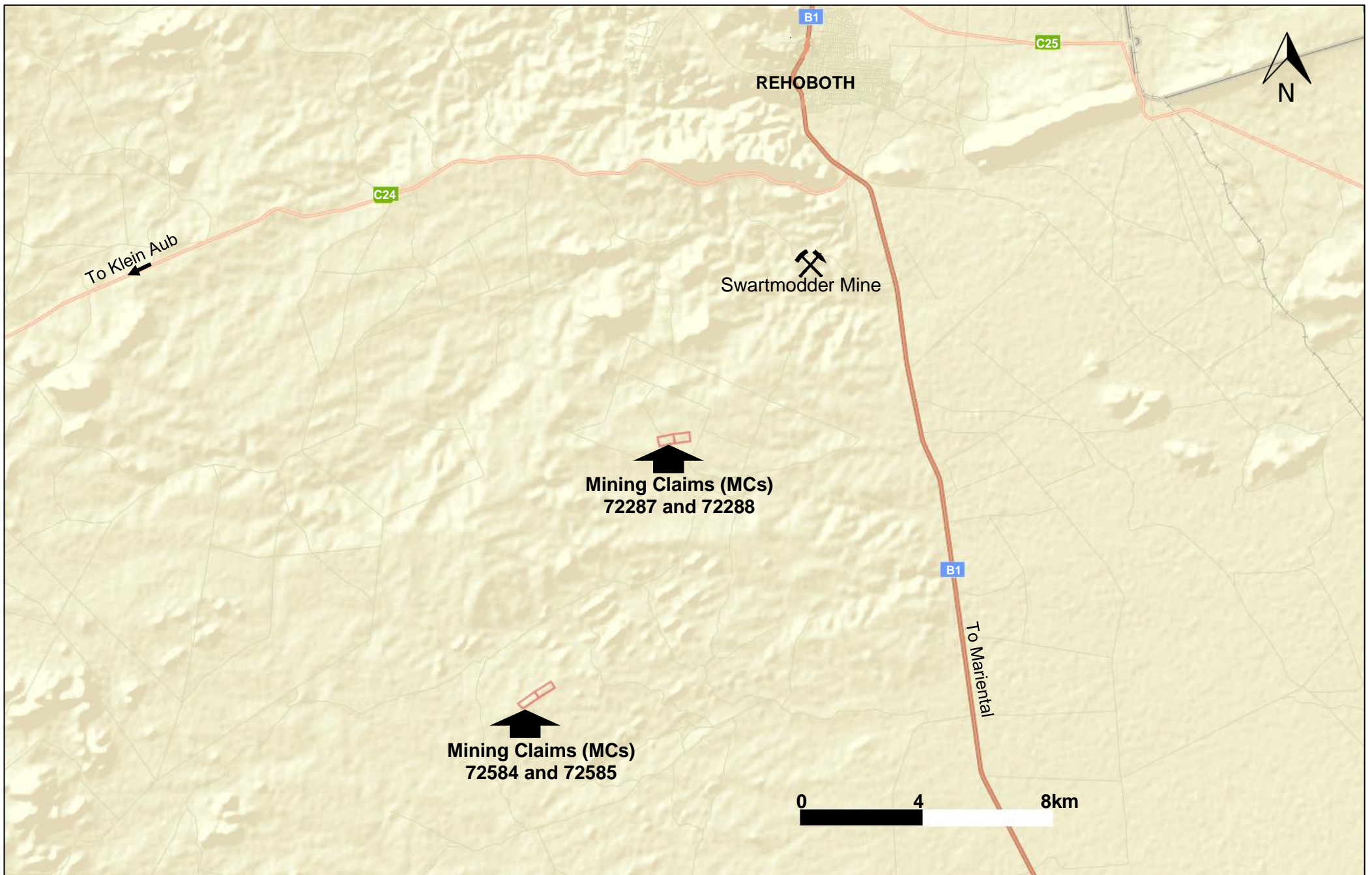


Figure 1.2: Detailed regional location of the MCs 72287, 72288, 72584 and 72585 Area (Source: <http://portals.flexicadastre.com/Namibia>).



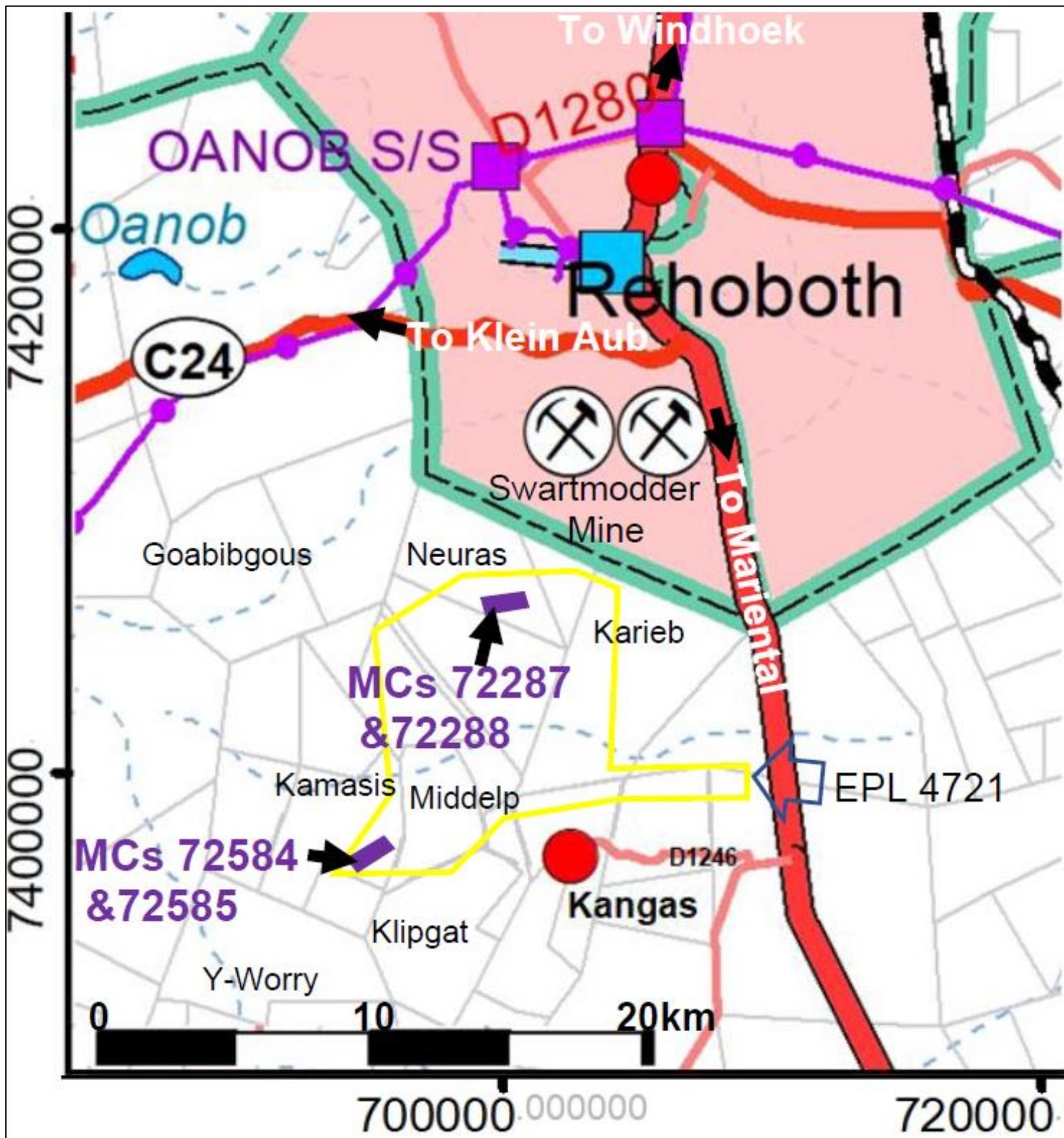


Figure 1.3: Detailed regional location of the MCs Nos. 72287, 72288, 72584 and 72585 areas, local farms, and surrounding land uses.



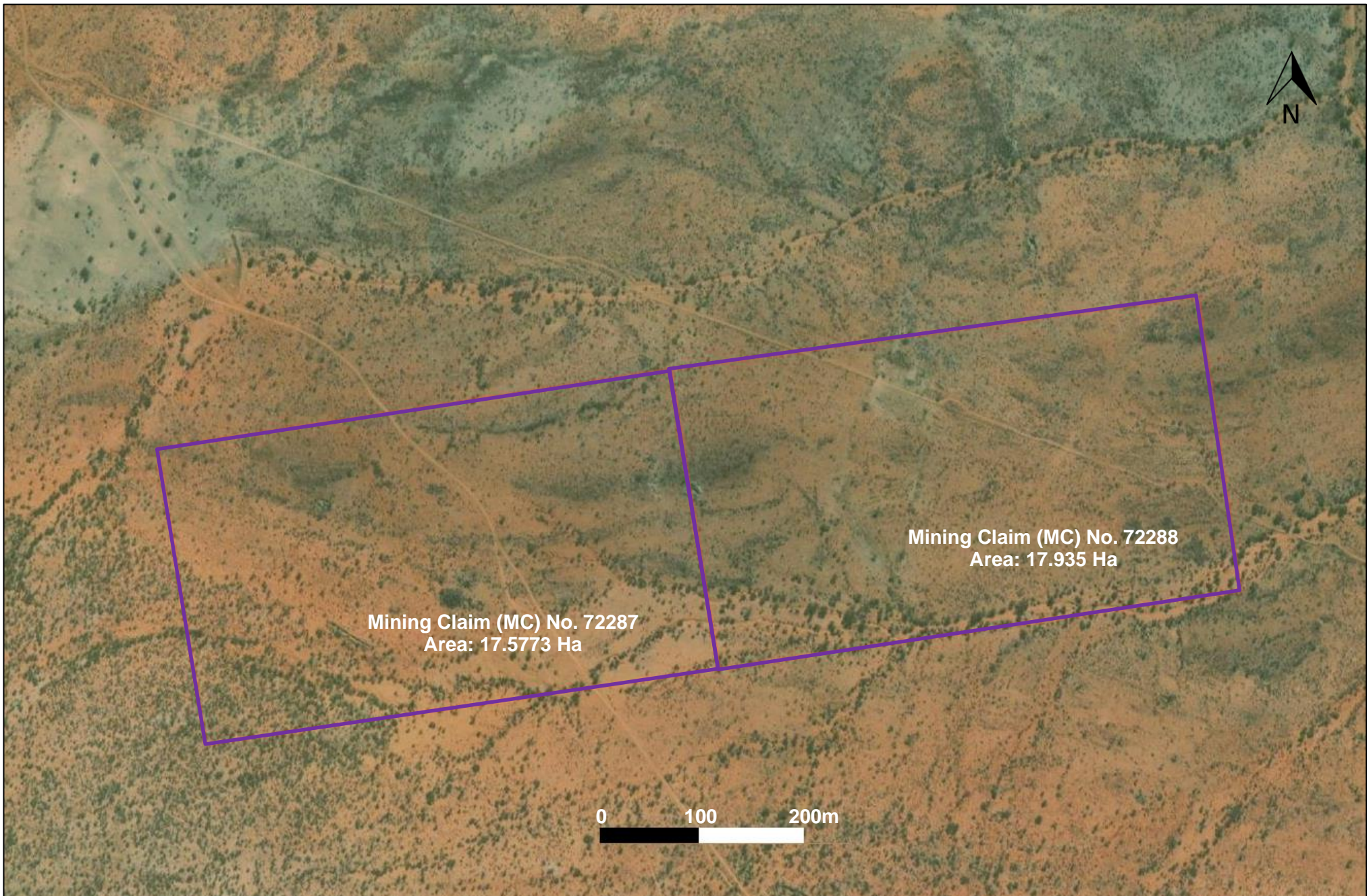


Figure 1.4: Detailed location of the Mining Claims (MCs) Nos. 72287 and 72288 (Source: <http://portals.flexicadastre.com/Namibia>).



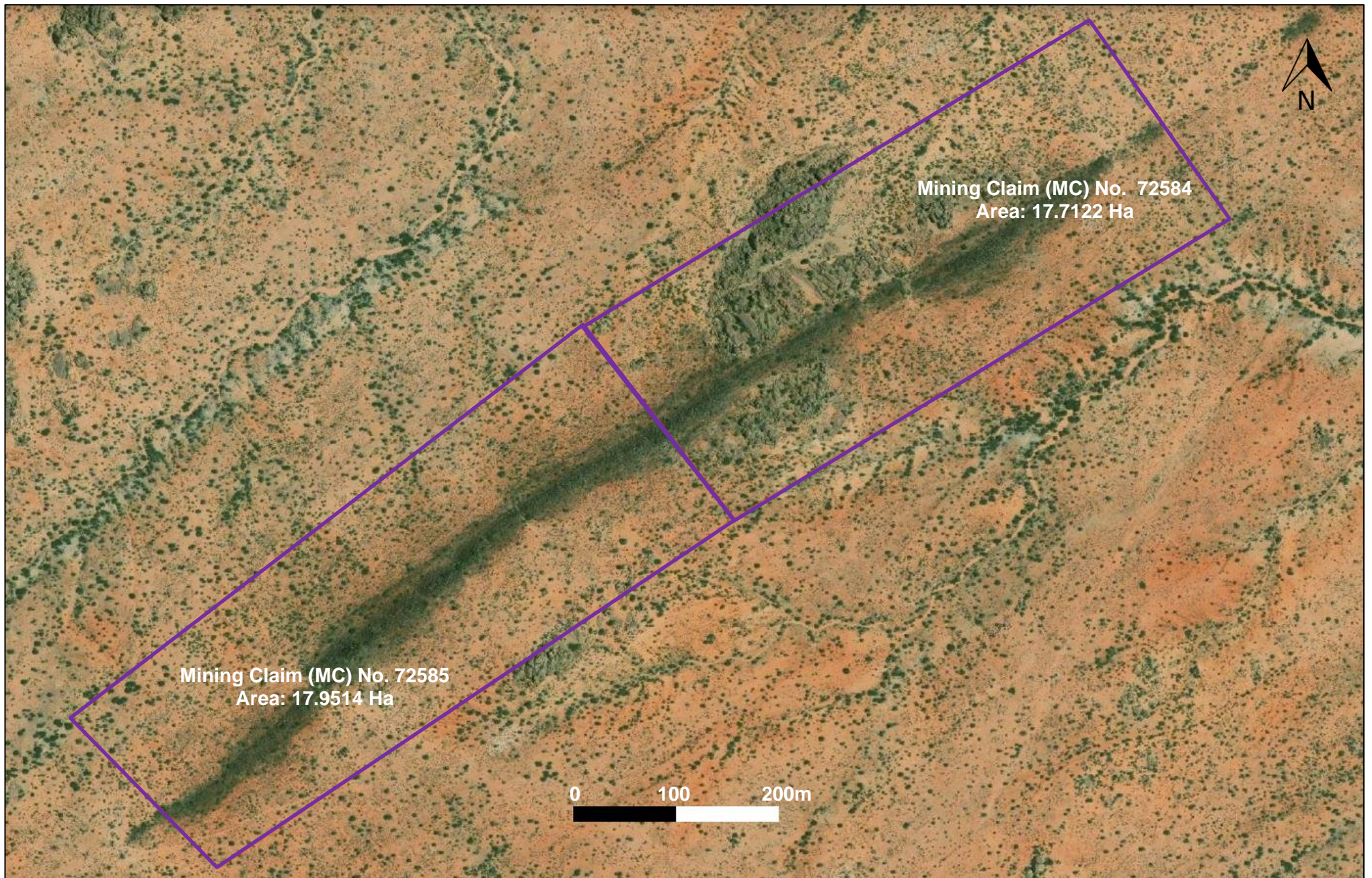


Figure 1.5: Detailed location of the Mining Claims (MCs) Nos. 72585 and 72584 (Source: <http://portals.flexicadastre.com/Namibia>).



## 2. THE EMP

### 2.1 Summary of the EMP Objectives

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the exploration. Regular assessments and evaluation of the environmental liabilities during the exploration will need to be undertaken and will ensure adequate provision of the necessary resources towards good environmental management at various stages of the project development.

### 2.2 Implementation of the EMP

#### 2.2.1 Roles and Responsibilities

Management of the environmental elements that may be affected by the different activities of the proposed / ongoing exploration is an important element of the proposed exploration and possible mining activities. The EMP also identifies the activity groups / environmental elements, the aspects / targets, the indicators, the schedule for implementation and who should be responsible for the management to prevent major impacts that the different exploration activities may have on the receiving environment (physical and biological environments).

#### 2.2.2 Proponent's Representative (PR) / Project Manager (PM)

The Proponent is to appoint a **Proponent's Representative (PR) / Project Manager (PM)** with the following responsibilities with respect to the EMP implementation:

- ❖ Act as the site project manager and implementing agent.
- ❖ Ensure that the Proponent's responsibilities are executed in compliance with the relevant legislation.
- ❖ Ensure that all the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the exploration contractor/s in finding environmentally responsible solutions to challenges that may arise.
- ❖ Should the PR be of the opinion that a serious threat to, or impact on the environment may be caused by the exploration activities, he/she may stop work. The Proponent must be informed of the reasons for the stoppage as soon as possible.
- ❖ The PR has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the PR can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.
- ❖ Maintain open and direct lines of communication between the landowners and Proponent, as well as any other identified Interested and Affected Parties (I&APs) with regards to environmental matters, and.
- ❖ Attend regular site meetings and inspections as may be required for the proposed / ongoing exploration programme.



### 2.2.3 Project Health, Safety and Environment (Project HSE)

The Proponent is to appoint a Project Health, Safety and Environment (Project HSE) with the following responsibilities with respect to the EMP implementation:

- ❖ Assist the PR in ensuring that the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the PR and Contractor in finding environmentally responsible solutions to challenges that may arise.
- ❖ Conduct environmental monitoring as per EMP requirements.
- ❖ Carry out regular site inspections (on average once per week) of all exploration areas with regards to compliance with the EMP. report any non-compliance(s) to the PR as soon as possible.
- ❖ Organize for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through each field-based exploration activity. audit reports to be submitted to the PR.
- ❖ Continuously review the EMP and recommend additions and/or changes to the EMP document.
- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site.
- ❖ Keep records of all activities related to environmental control and monitoring. the latter to include a photographic record of the exploration activities, rehabilitation process, and a register of all major incidents, and.
- ❖ Attend regular site meetings.

### 2.2.4 Contractors and Subcontractors

The responsibilities of the **Contractors and Subcontractors** that may be appointed by the Proponent to undertake certain field-based activities of the proposed / ongoing exploration programme include:

- ❖ Comply with the relevant legislation and the EMP provision.
- ❖ Preparation and submission to the Proponent through the Project HSE of the following Management Plans:
  - Environmental Awareness Training and Inductions.
  - Emergency Preparedness and Response.
  - Waste Management, and.
  - Health and Safety.
- ❖ Ensure adequate environmental awareness training for senior site personnel.
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the Project HSE is to provide the course content and the following topics, at least but not limited to, should be covered:
  - The importance of complying with the EMP provisions.

- Roles and Responsibilities, including emergency preparedness.
  - Basic Rules of Conduct (Do's and Don'ts).
  - EMP: aspects, impacts and mitigation.
  - Fines for Failure to Adhere to the EMP, and.
  - Health and Safety Requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and.
  - ❖ Attend regular site meetings and environmental inspections.

### **3. SPECIFIC MITIGATION MEASURES**

#### **3.1 Summary of the Sources of Impacts**

The following is the summary of the key sources of impacts as assessed in the EIA Report and mitigation measures provided in this EMP under this section:

- (i) Regional reconnaissance field-based mapping and sampling activities.
- (ii) Initial local field-based mapping and sampling activities.
- (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling, and.
- (iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare.

#### **3.2 Hierarchy of Mitigation Measures Implementation**

A hierarchy of methods for mitigating significant adverse effects has been adopted in order of preference and as follows:

- (i) Enhancement, e.g. provision of new habitats.
- (ii) Avoidance, e.g. sensitive design to avoid effects on ecological receptors.
- (iii) Reduction, e.g. limitation of effects on receptors through design changes, and.
- (iv) Compensation, e.g. community benefits.

#### **3.3 Mitigation Measures Implementation**

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively.

The EMP also provides the management actions with roles and responsibilities requirements for implementation of environmental management strategies by the Proponent through the Contractors and Subcontractors who will be undertaking the exploration activities.

The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the implementation of the proposed / ongoing exploration programme.

Based on the findings of the EIA, key mitigation measures as detailed in Tables 3.1 – 3.18 have been prepared to be implemented by the Proponent with respect to the proposed / ongoing exploration programme activities and in particular for the field-based exploration activities. The following is the summary of the key areas of the migration measures provided in Tables 3.1-3.18:

1. Project planning and implementation.
2. Implementation of the EMP.
3. Public and stakeholders relations.
4. Measures to enhance positive socioeconomic impacts.

5. Environmental awareness briefing and training.
6. Erection of supporting exploration infrastructure.
7. Use of existing access roads, tracks and general vehicle movements.
8. Mitigation measures for preventing flora destruction.
9. Mitigation measures for preventing faunal destruction.
10. Mitigation measures to be implemented with respect to the temporary lay and exploration sites.
11. Mitigation measures for surface and groundwater protection as well as general water usage.
12. Mitigation measures to minimise negative socioeconomic impacts.
13. Mitigation measures to minimise health and safety impacts.
14. Mitigation measures to minimise visual impacts.
15. Mitigation measures to minimise vibration, noise and air quality.
16. Mitigation measures for waste (solid and liquid) management.
17. Rehabilitation plan, and.
18. Environmental data collection.

Table 3.1: Project planning and implementation.

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<p>Establish a strong environmental awareness protocol from project implementation to final closure in order to ensure the least possible impact to the environment.</p>	<ol style="list-style-type: none"> <li>1. Resources (Human and Financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings and for internal and external Environmental Monitoring Costs as well as for any rehabilitation costs that may arise.</li> <li>2. Appointment of a senior and experienced persons as Proponent's Representative (PR), Project Manager (PM) and Project HSE to assume responsibility for environmental issues.</li> <li>3. All individuals including sub-contractors who work on, or visit, the sites are aware of the contents of the Environmental Policy and the EMP.</li> <li>4. The EMP and Environmental Policy will be included in Tender Documents.</li> <li>5. Field visit will take place during which main access tracks will be discussed in cooperation with the land owner/s</li> </ol>	<ol style="list-style-type: none"> <li>1. Regional reconnaissance field-based mapping and sampling activities.</li> <li>2. Initial local field-based mapping and sampling activities.</li> <li>3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>4. Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.2: Implementation of the EMP.

IMPLEMENTATION STRATEGY	INDICATOR	SCHEDULE	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Define roles and responsibilities in terms of the EMP. To make all personnel, contractors and subcontractors aware of these roles and responsibilities to ensure compliance with the EMP provisions.</li> <li>2. Implement environmental management that is preventative and proactive.</li> <li>3. Establish the resources, skills, etc. required for effective environmental management.</li> </ol>	<ol style="list-style-type: none"> <li>1. Senior staff and senior contractors are aware of, and practice the EMP requirements. These persons shall be expected to know and understand the objectives of the EMP and will, by example, encourage suitable environmentally friendly behaviour to be adopted during the exploration</li> <li>2. Recognition will be given to appropriate environmentally acceptable behaviour.</li> <li>3. Inappropriate behaviour will be corrected. An explanation to why the behaviour is unacceptable must be given, and, if necessary, the person will be disciplined. e.g. fees set out for non-compliance</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.3: Public and stakeholders relations.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Maintain sound relationships with the other land users/ land owner/s and another stakeholders / public	<ol style="list-style-type: none"> <li>1. No littering or any other activity prohibited</li> <li>2. Permission to utilise water as well as all applicable permits are obtained.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regional reconnaissance field-based mapping and sampling activities.</li> <li>2. Initial local field-based mapping and sampling activities.</li> <li>3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>4. Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.4: Measures to enhance positive socioeconomic impacts.

IMPLEMENTATION STRATEGY	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Measures to enhance positive socioeconomic impacts in order to:</p> <ol style="list-style-type: none"> <li>1. Avoid exacerbating the influx of unemployed people to the area.</li> <li>2. Develop a standardised recruitment method for sub-contractor and field workers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Stipulate a preference for local contractors in its tender policy. Preference to local contractors should still be based on competitive business principles and salaries and payment to local service providers should still be competitive.</li> <li>2. Develop a database of local businesses that qualify as potential service providers and invite them to the tender process.</li> <li>3. Scrutinise tender proposals to ensure that minimum wages were included in the costing.</li> <li>4. Stipulate that local residents should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy.</li> <li>5. Must ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years.</li> <li>6. Must ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws. This could be accomplished with a contractual requirement stipulating that monthly proof should be submitted indicating payment of minimum wages to workers, against their ID numbers, payment of social security and submission of affirmative action data.</li> <li>7. Encouraged to cater for the needs of employees to increase the spending of wages locally.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.5: Environmental awareness briefing and training.

IMPLEMENTATION STRATEGY	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Implement environmental awareness briefing / training for individuals who visit, or work, on site.</p>	<ol style="list-style-type: none"> <li>1. Every senior/supervisory member of the team shall familiarise themselves with the contents of the EMP. They shall understand their roles and responsibilities with regard to personnel and project compliance with the EMP.</li> <li>2. Subject to agreement of the parties, the Environmental Coordinator will hold an Environmental Awareness Briefing meeting, which shall be attended by all contractors before the start of the mineral exploration activities.</li> <li>3. Briefings on the EMP and Environmental Policy shall discuss the potential dangers to the environment of the following activities: public relations, littering, off-road driving, waste management, poaching and plant theft etc. The need to preserve soil, conserve water and implement water saving measures shall be presented.</li> <li>4. Individuals can be questioned on the Environmental Philosophy and EMP and can recall contents.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.6: Erection of supporting exploration and possible small-scale quarrying / mining infrastructures.

IMPLEMENTATION STRATEGY	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Get Environmental Clearance before implementation</li> <li>2. Concluded a Land Lease Agreement during project planning stage (feasibility stage)</li> <li>3. Establishment of the supporting exploration infrastructure done on an area with the least disturbance to the environment and within the non-sensitive areas in consultation with the land owners</li> </ol>	<ol style="list-style-type: none"> <li>1. Documented Environmental Clearance from MET.</li> <li>2. All on site exploration infrastructure (e.g. water tanks, sewage tanks, waste disposal) are not situated on environmental sensitive area and have disturbed as less as possible.</li> <li>3. No littering.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.7: Use of existing access roads, tracks, and general vehicle movements.

IMPLEMENTATION STRATEGY	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>1. Obtain permission / consent from the land / consult local community before using a private access / road</p> <p>2. Plan a road/track network that considers the environmental sensitivity of the area and a long-term tourism potential, and which is constructed in a technically and environmentally sound manner.</p> <p>3. Stick to the recommended track and sensitivity management zones.</p>	<p>1. Avoid unnecessary affecting areas viewed as important habitat – i.e. Ephemeral River and its network of tributaries of ephemeral rivers. rocky outcrops. clumps of protected tree species.</p> <p>2. Make use of existing tracks/roads as much as possible throughout the area.</p> <p>3. Do not drive randomly throughout the area (could cause mortalities to vertebrate fauna and unique flora. accidental fires. erosion related problems, etc.).</p> <p>4. Avoid off-road driving at night as this increase in mortalities of nocturnal species.</p> <p>5. Implement and maintain off-road track discipline with maximum speed limits (e.g.30km/h) as this would result in fewer faunal mortalities and limit dust pollution.</p> <p>6. Use of "3-point-turns" rather than "U-turns".</p> <p>7. Where tracks have to be made to potential exploration sites off the main routes, the routes should be selected causing minimal damage to the environment – e.g. use the same tracks. cross drainage lines at right angles. avoid placing tracks within drainage lines. avoid collateral damage (i.e. select routes that do not require the unnecessary removal of trees/shrubs, especially protected species).</p> <p>8. Leave vehicles on tracks and walk to point of interest, when possible.</p> <p>9. Rehabilitate all new tracks created.</p>	<p>(i) Regional reconnaissance field-based mapping and sampling activities.</p> <p>(ii) Initial local field-based mapping and sampling activities.</p> <p>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</p> <p>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</p>	<p>(i) Proponent's Representative (PR)</p> <p>(ii) Project Manager (PM)</p> <p>(iii) Project HSE</p> <p>(iv) Contractor</p> <p>(v) Subcontractors</p>



Table 3.8: Mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Prevent flora and ecosystem destruction and promote biodiversity conservation	<ol style="list-style-type: none"> <li>1. Limit the development and avoid rocky outcrops throughout the entire area.</li> <li>2. Avoid development and associated infrastructure in sensitive areas – e.g. Ephemeral River, in/close to drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species.</li> <li>3. Avoid placing access routes (roads and tracks) through sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area.</li> <li>4. Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area.</li> <li>5. Stick to speed limits of maximum 30km/h as this would result in less dust pollution which could affect certain flora – e.g. lichen species. Speed humps could also be used to ensure the speed limit.</li> <li>6. Remove unique and sensitive flora (e.g. all Aloe sp.) before commencing with the development activities and relocate to a less sensitive/disturbed site if possible.</li> <li>7. Prevent and discourage the collecting of firewood as dead wood has an important ecological role – especially during the development phase(s). Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g. chopping down of live and/or protected tree species such as Acacia erioloba which is a good quality wood.</li> <li>8. Attempt to avoid the removal of bigger trees during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna.</li> <li>9. Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires causing problems (e.g. loss of grazing and domestic stock mortalities, etc.) for the neighbouring farmers.</li> <li>10. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and associated tracks as well as temporary accommodation sites. Preferably workers should be transported in/out to the MCs Area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company’s environmental integrity, but also show true local commitment to the environment.</li> <li>11. Implement erosion control. The area(s) towards and adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking any exploration activities including supporting activities within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna.</li> <li>12. Conduct a thorough investigation on the flora associated with the proposed exploration site(s).</li> <li>13. Prevent the introduction of potentially invasive alien plant species (e.g. Tecoma stans, Pennisetum setaceum, etc.) for ornamental purposes as part of the landscaping should mining activities eventually commence. Alien species often “escape” and become invasive causing further ecological damage.</li> <li>14. A thorough investigation of water use and ground water extraction should take place before actual mining activities commence as this would affect the local flora, especially the ephemeral riparian vegetation, not only locally, but downstream as well.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.9: Mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Prevent faunal and ecosystem destruction and promote biodiversity conservation	<ol style="list-style-type: none"> <li>1. Limit the development and avoid rocky outcrops throughout the entire area.</li> <li>2. Avoid development &amp; associated infrastructure in sensitive areas – e.g. in/close to drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species.</li> <li>3. Avoid placing access routes (roads &amp; tracks) through sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area.</li> <li>4. Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area.</li> <li>5. Stick to speed limits of maximum 30km/h as this would result in fewer faunal road mortalities. Speed humps could also be used to ensure the speed limit.</li> <li>6. Remove (e.g. capture) unique fauna and sensitive fauna before commencing with the development activities and relocate to a less sensitive/disturbed site if possible.</li> <li>7. Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g. tortoises, etc.), indiscriminate killing of perceived dangerous species (e.g. snakes, etc.) and collecting of wood as this would diminish and negatively affect the local fauna – especially during the development phase(s).</li> <li>8. Attempt to avoid the removal of bigger trees during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna.</li> <li>9. Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires affecting the local fauna, but also causing problems (e.g. loss of grazing &amp; domestic stock mortalities, etc.) for the neighbouring farmers.</li> <li>10. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and associated tracks as well as temporary accommodation sites. Preferably workers should be transported in/out to the MCs Area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company’s environmental integrity, but also show true local commitment to the environment.</li> <li>11. Implement erosion control. The area(s) towards &amp; adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking exploration activities including supporting activities within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna.</li> <li>12. Conduct a thorough investigation on the fauna associated with the proposed exploration site(s).</li> <li>13. Prevent the number of domestic pets – e.g. cats &amp; dogs – accompanying the workers during the field-based exploration activities as cats decimate the local fauna and interbreed &amp; transmit diseases to the indigenous African Wildcat found in the area. Dogs often cause problems when bonding on hunting expeditions thus negatively affecting the local fauna. The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all costs.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent’s Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.10: Mitigation measures to be implemented with respect to the exploration temporary lay and exploration and possible mining sites.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of conservation through preservation of flora, fauna and ecosystem around the temporary lay and exploration sites</p>	<ol style="list-style-type: none"> <li>1. No camping is allowed within the MCs Area.</li> <li>2. Select temporary lay over sites with care – i.e. avoid important habitats.</li> <li>3. Use portable toilets to avoid faecal pollution around temporary lay and exploration sites.</li> <li>4. Initiate a suitable and appropriate refuse removal policy as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g. baboon, black-backed jackal, etc..</li> <li>5. Prevent the killing of species viewed as dangerous – e.g. various snakes – when on site.</li> <li>6. Prevent the setting of snares for ungulates (i.e. poaching) or collection of veld foods (e.g. tortoises) and unique plants (e.g. various Aloe and Lithop) or any form of illegal hunting activities.</li> <li>7. Avoid introducing dogs and cats as pets to the MCs Area as these can cause significant mortalities to local fauna (cats) and even stock losses (dogs).</li> <li>8. Remove and relocate slow moving vertebrate fauna (e.g. tortoises, chameleon, snakes, etc.) to suitable habitat elsewhere on property.</li> <li>9. Avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. various Aloe, Commiphora and Lithop species.</li> <li>10. Remove all invasive alien species on site, especially Prosopis sp., which is already becoming a major ecological problem along various water courses throughout Central Namibia. This would not only indicate environmental commitment, but actively contribute to a better landscape.</li> <li>11. Inform contractors/workers regarding the above-mentioned issues prior to exploration activities and monitor for compliance thereof throughout.</li> <li>12. Rehabilitate all areas disturbed by the exploration activities – i.e. temporary lay and exploration sites, etc..</li> <li>13. Implement a policy of replacing 2 tree species (preferably the same species) for every 1 protected tree species having to be removed (if necessary).</li> <li>14. Although fires are not expected to be a major issue in the general area due to the overall lack of grass cover, some years it may be necessary to consider fire prevention. Ensure that adequate firefighting equipment (e.g. fire beaters, extinguishers, etc.) is available on sites, and.</li> <li>15. Employ an independent environmental auditor to ensure compliance, especially of the rehabilitation of all the affected areas.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.11: Mitigation measures for surface and groundwater protection as well as general water usage.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Effective management / protection of surface and groundwater resources and general water resources usage</p>	<ol style="list-style-type: none"> <li>1. Always use as little water as possible. Reduce, reuse and re-cycle water where possible.</li> <li>2. All leaking pipes / taps must be repaired immediately they are noticed.</li> <li>3. Never leave taps running. Close taps after you have finished using them.</li> <li>4. Never allow any hazardous substance to soak into the soil.</li> <li>5. Immediately tell your Contractor or Environmental Control Officer / Site Manager when you spill, or notice any hazardous substance being spilled during the field-based exploration activities or around the temporary lay site.</li> <li>6. Report to your Contractor or Environmental Control Officer / Site Manager when you notice any container, which may hold a hazardous substance, overflow, leak or drip.</li> <li>7. Immediately report to your Contractor or Environmental Control Officer / Site Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities.</li> <li>8. No washing of vehicles, equipment and machinery, containers and other surfaces.</li> <li>9. Limit the operation to a specific site and avoid sensitive areas and in particular the Ephemeral River Channel. This would sacrifice the actual area for other adjacent Ephemeral River areas and thus minimise any likely negative effect on water resources.</li> <li>10. Disposal of wastewater into any public stream is prohibited.</li> <li>11. The Proponent must obtain permission of the land owners before utilising any water resources or any associated infrastructure.</li> <li>12. If there is a need to drilling a water borehole to support the exploration programme the Proponent must obtain permission form the land owner and Department of Water Affairs in the Ministry of Agriculture and Forestry. In an event of discovery of economic minerals resources, the sources of water supply for the mining related operations will be supplied by NamWater.</li> <li>13. If there are any further (larger scale) exploration/drilling activities and/or mining activities to follow from the initial planned drill holes, groundwater monitoring must be implemented to include water level monitoring and also water sampling on a bi-annual basis. In order to have greater transparency on the water monitoring activities, the affected landowners / farmers must be given full access to the results of the water monitoring analyses.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.12: Mitigation measures to minimise negative socioeconomic impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Effective management of socioeconomic benefits of the proposed / ongoing project activities</p>	<ol style="list-style-type: none"> <li>1. The employment of local residents and local companies should be a priority. To ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years.</li> <li>2. Providing information such as the number and types of jobs available, availability of accommodation facilities and rental costs and living expenses, could make potential job seekers wary of moving to the area.</li> <li>3. Addressing unrealistic expectations about large numbers of jobs would be created.</li> <li>4. Exploration temporary lay site if required should be established in close consultation with the land owners.</li> <li>5. When employees contracts are terminated or not renewed, contractors should transport the employees out of the area to their hometowns within two days of their contracts coming to an end.</li> <li>6. Tender documents could stipulate that contractors have HIV/Aids workplace policies and programmes in place and proof of implementation should be submitted with invoicing.</li> <li>7. Develop strategies in coordination with local health officers and NGO's to protect the local communities, especially young girls.</li> <li>8. Contract companies could submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the MCs Area. Disciplinary actions should be in accordance with Namibian legislation.</li> <li>9. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily.</li> <li>10. Request that the Roads Authority erect warning signs of heavy exploration vehicles on affected public roads.</li> <li>11. Ensure that drivers adhere to speed limits and that speed limits are strictly enforced.</li> <li>12. Ensure that vehicles are road worthy and drivers are qualified.</li> <li>13. Train drivers in potential safety issues.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.13: Mitigation measures to minimise health and safety impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of health and safe working environment in line with national Labour Laws</p>	<ol style="list-style-type: none"> <li>1. Physical hazards: Follow national and international regulatory and guidelines provisions, use of correct Personal Proactive Clothing at all times, training programme, as well as the implementation of a fall protection program in accordance with the Labour Act.</li> <li>2. Some of the public access management measures that may be considered in an event of vandalism occurring are: <ul style="list-style-type: none"> <li>• All exploration equipment must be in good working condition and services accordingly.</li> <li>• Control access to the exploration site through using gates on the access road(s) if required.</li> <li>• The entire site, must be fenced off. the type of fencing to be used would, however, be dependent on the impact on the visual resources and/or cost. and.</li> <li>• Notice or information boards relating to public safety hazards and emergency contact details to be put up at the gate(s) to the exploration area.</li> </ul> </li> <li>3. There is a comprehensive First Aid Kit on site and that suitable anti-histamine for bee stings / snake bites should be available.</li> <li>4. Rubber gloves are used in case of an accident to reduce the risk of contracting HIV/AIDS.</li> <li>5. All individuals have received instructions concerning the dangers of dehydration or hyperthermia. Encourage all to drink plenty of clean water not directly from the surface water bodies.</li> <li>6. No person under the influence of alcohol or drugs is allowed to work on site.</li> <li>7. The Exploration Manager ensures compliance with the requirements of the relevant Namibian Labour, Mining and Health and Safety Regulations.</li> <li>8. Dangerous or protected / sensitive areas are clearly marked and access to these areas is controlled or restricted.</li> <li>9. Due care must be taken when driving any vehicles on any roads particularly the gravel roads. ALL Drivers must drive with their headlights switched on when travelling on the gravel roads (day and night).</li> <li>10. Persons driving a vehicle must be in possession of a valid driver's license</li> <li>11. Awareness on HIV/AIDS among workers is raised</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>



Table 3.14: Mitigation measures to minimise visual impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Preserve the landscape character in the development of supporting infrastructure and choice of visual screening</p>	<ol style="list-style-type: none"> <li>1. Consider the landscape character and the visual impacts of the exploration area including temporary lay site from all relevant viewing angles, particularly from public roads.</li> <li>2. Use vegetation screening where applicable. Do not cut down vegetation unnecessary around the site and use it for site screening.</li> <li>3. Avoid the use of very high fencing.</li> <li>4. Minimise access roads and no off-road that could result in land scarring is allowed.</li> <li>5. Minimise the presence of secondary structures: remove inoperative support structures.</li> <li>6. Remove all infrastructure and reclaim, or rehabilitate the project site after exploration activities are completed.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.15: Mitigation measures to minimise vibration, noise and air quality.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promote of effective management of vehicle movement, drilling and blasting operations and use of Personal Protective Equipment (PPE) in mitigating air quality and vibrations impacts in line with national laws</p>	<ol style="list-style-type: none"> <li>1. Limit vehicle movements and adhere to the speed of 60 km/h.</li> <li>2. Vehicles and all equipment must be properly serviced to minimise noise pollution.</li> <li>3. Use of Personal Protective Equipment (PPE) to minimise Occupational Health Safety impacts dues to noise pollution around the site.</li> <li>4. National or international acoustic design standards must be followed.</li> <li>5. Drilling and blasting operations can major sources of vibration, noise and dust and where required the following mitigation measure shall be implemented. <ul style="list-style-type: none"> <li>• Drilling and blasting operations shall only be done by a qualified person who must at all times adhere to the required blasting protocol.</li> <li>• Prior warning shall be given to all persons, neighbour and visitors before the blasting takes place.</li> <li>• Careful planning and timing of the blast program to minimise the size of the charge.</li> <li>• Where practicable, use of explosive products with lower detonation velocities, but noting that this would require more explosives to achieve the same blast result.</li> <li>• Use of detonating caps with built-in time delays, as this effectively reduces each detonation into a series of small explosions.</li> <li>• Use of a procedure ("decking the charge") which subdivides the charge in one blast hole into a series of smaller explosions, with drill patterns restricted to a minimum separation from any other loaded hole.</li> <li>• Over-drilling the holes to ensure fracturing of the rock.</li> <li>• Staggering the detonation for each blast hole in order to spread the explosive's total overpressure over time.</li> <li>• Matching, to the extent possible, the energy needed in the "work effort" of the borehole to the rock mass to minimise excess energy vented into the receiving environment.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>



Table 3.16: Mitigation measures for waste (solid and liquid) management.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of effective waste (solid and liquid) management through the adoption of sound and hierarchical approach to waste management, which would include waste minimisation, re-use, recovery, recycling, treatment, and proper disposal.</p>	<ol style="list-style-type: none"> <li>1. Burial of waste on anywhere within the MCs Area is not allowed and all generated solid waste must be disposed at the at an approved municipal waste disposal site.</li> <li>2. Toilet and ablution facilities must be provided on site and should not be located close to Ephemeral Rivers or visible discontinuities (fractures, joints or faults).</li> <li>3. Provide site information on the difference between the two main types of waste, namely: <ul style="list-style-type: none"> <li>• General Waste. and</li> <li>• Hazardous Waste.</li> </ul> </li> <li>4. Sealed containers, bins, drums or bags for the different types of wastes must be provided. Never dispose of hazardous waste in the bins or skips intended for general waste.</li> <li>5. All solid and liquid wastes generated from the proposed / ongoing project activities shall be reduced, reused, or recycled to the maximum extent practicable.</li> <li>6. Trash may not be burned or buried, except at approved sites under controlled conditions in accordance with the municipal regulations.</li> <li>7. Never overfill any waste container, drum, bin or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins or skips are nearly full.</li> <li>8. Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping.</li> <li>9. Littering is prohibited.</li> <li>10. Chemical toilets or suitable waste water management system shall be provided on temporary lay and exploration sites at all times.</li> <li>11. Chemical toilets or suitable waste water management system shall be located &gt;100m from watercourses or pans to avoid pollution of primary and secondary aquifers.</li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.17: Rehabilitation plan.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Contributions toward environmental preservation and sustainability through rehabilitation of disturbed areas such as exploration sites and remove all unwanted part of the fixtures and restore the sites to close an approximation of the pristine state as is technically, financially and reasonably possible.</p>	<ol style="list-style-type: none"> <li>1. The following rehabilitation actions are practiced: <ul style="list-style-type: none"> <li>• Small samples are preferably removed from site to avoid additional scars in the landscape.</li> <li>• Litter from the site has been taken to the appropriate disposal site.</li> <li>• Debris, scrap metal, etc is removed before moving to a new site or closure of the mine.</li> <li>• Water tanks are dismantled and removed if not need for after use.</li> <li>• Tracks on site and the access road are rehabilitated by smoothing the 'middle mannetjie'(middle ridge between the tracks) and raking the surface.</li> </ul> </li> <li>2. The following should be undertaken at all disturbed areas that require further rehabilitation: <ul style="list-style-type: none"> <li>• if applicable the stockpiled subsoil to be replaced (spread) and/or the site is neatly contoured to establish effective wind supported landscape patterns.</li> <li>• Replace the stored topsoil seed bank layer.</li> <li>• Five (5) years after rehabilitation the sites are not visible from 500 m away.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>(i) Regional reconnaissance field-based mapping and sampling activities.</li> <li>(ii) Initial local field-based mapping and sampling activities.</li> <li>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</li> <li>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</li> </ol>	<ol style="list-style-type: none"> <li>(i) Proponent's Representative (PR)</li> <li>(ii) Project Manager (PM)</li> <li>(iii) Project HSE</li> <li>(iv) Contractor</li> <li>(v) Subcontractors</li> </ol>

Table 3.18: Environmental data collection.

IMPLEMENTATION STRATEGY	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>1. Collect data that will add value to environmental monitoring and reporting to the regulators</p> <p>2. Collect data that will add to the general scientific and geographic knowledge of the environment in which the exploration process takes place.</p> <p>3. Acknowledged that the required skills and knowledge to collect all the suggested data may not be available within the mine /exploration team, however, as much data as is practical should be collected.</p>	<p>1. Environmental Monitoring Report Compiled and submitted by the Environmental Coordinator to the regulators</p> <p>2. The following types of information should be gathered:</p> <ul style="list-style-type: none"> <li>• Fauna. What tracks or signs of animal activity have been seen? (photographs and GPS recording) What animals, birds etc were identified? Alternatively provide a description and/ or photo if unidentified.</li> <li>• Unusual weather conditions, e.g. records of the prevailing wind direction and the direction from which storm events come. Was there fog or rain, frost overnight or intense heat? Preferably have a thermometer and rain gauge on site.</li> <li>• Vegetation. Record trees, shrubs, grass, etc. that are found in the vicinity along each of the profiles. Some plants do only occur after rainfall and might not have been seen for decades.</li> <li>• Any archaeological, cultural or historical sites that may be found. GPS coordinates, photograph and plot the position on a 1: 50 000 maps.</li> <li>• other including surface water, spring, large scale geological features etc</li> </ul>	<p>(i) Regional reconnaissance field-based mapping and sampling activities.</p> <p>(ii) Initial local field-based mapping and sampling activities.</p> <p>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</p> <p>(iv) Feasibility report and if positive start mine operations: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare</p>	<p>(i) Proponent's Representative (PR)</p> <p>(ii) Project Manager (PM)</p> <p>(iii) Project HSE</p> <p>(iv) Contractor</p> <p>(v) Subcontractors</p>

## 4. REHABILITATION AND MONITORING COMMITMENTS

### 4.1 Rehabilitation Process

The following is the summary of key rehabilitation process to be implemented by the proponent:

#### ❖ **Step 1: Backfilling the mining void:**

- Transporting all stockpiled overburden back to the excavated voids.
- Backfilling the trenches, pits and quarries using original excavated and stockpiled materials.
- If applicable, backfill the various layers of overburden in the reverse order in which they were removed, i.e. Last out should be first in as far as possible, and.
- When backfilling, bear in mind that some space must be left for the backfilling of the soil on top of the overburden.

#### ❖ **Step 2: Remove all waste and unwanted materials:**

- Once the drilling slimes ponds have dried sufficiently, scrape out the slimes and transporting back to an exploration excavated voids during the overburden backfilling stage.
- Allow the pollution control dam to evaporate completely, scrape all waste that has collected in the pond and dispose of these and the pond lining at a suitable site.
- Bulldoze the walls of the pollution control pond over and contour.
- Collect remaining domestic waste on site and transport to an approved municipal waste disposal site.
- Clean out the oil traps, collect the waste material in drums and transport to a suitable site for disposal, and.
- Manually remove all weedy species that are present at the site (the entire plant can easily be removed because the plants tend not to root deeply).

#### ❖ **Step 3: Remove all structures:**

- Sell all structures such as houses to the farmer or another private person for using as a tourist camp.
- Disassemble all structures including the washing plant structures and pre-fabricated buildings and transport them to a new exploration /mining test site or storage facility or sell by auction.
- Remove all building materials from the exploration / test mining site and either:
  - Transporting to a new site if it is to be used or stored elsewhere. or
  - Disposing at a suitable approved municipal waste disposal site. or
  - Making them available to the farmer or local persons. or
  - Selling at an auction.
- Remove all machinery from the site and transport to a new site where it is to be used or stored or sell at an Auction.

- Remove all fences that have been constructed and either make the material available to the local persons/farmer, dispose at a suitable site or sell at an Auction.
- Remove the generators from the sites from site and either transport to a new site for storage or sell it to the farmer or an Auction.
- Seal all petrol, diesel, oil and grease containers and remove from the site to a storage facility or make it available to the farmer.
- Collect all scrap metal and dispose at a suitable site or sell at an Auction.
- Break up all concrete slabs and structures on site and transport the fragments to a suitable site for disposal.
- The concrete reservoirs can probably remain intact provided that the farmer wishes to utilize them at some stage - this will need to be negotiated.
- The future of the water pipeline can be negotiated with the farmer or a new owner/lender of the site, because if he chooses to use the pipeline it will not be necessary to remove it and rehabilitate the route, and.
- If the pipeline is to be removed, disassemble and transport the component parts to a storage site or sell at an Auction.

❖ **Step 4: Rehabilitate the excavated voids:**

- Replace the subsoil layer by backfilling the soil on top of the overburden and contour cap the subsoil with a topsoil layer about 10cm deep, and.
- Cap the topsoil containing the seedbank with a layer of gravel by manually spreading the fragments across the surface using a rake.

❖ **Step 5: Rehabilitate site-specific storm-water channel:**

- Remove the Hyson cells or gabions.
- Dispose of the plastic/wire and use the fill material to backfill the storm-water channel.
- Cap with a layer of topsoil to a depth of about 10cm, and.
- Cap the topsoil containing the seedbank with a gravel layer by manually spreading the fragments across the surface using a rake.

❖ **Step 6: Rehabilitate all adjacent exploration / test mining sites affected:**

- Compaction of the substrate will result from utilisation of these areas or the pressure of overlying structures.
- Rip the surfaces to a depth of 40 cm to 50 cm using a multi-toothed ripper and tractor.
- Cover with a layer of topsoil to a depth of about 10 cm, and.
- Cap the topsoil containing the seedbank with a layer of gravel by manually spreading the fragments across the surface using a rake.

### ❖ **Step 7: Rehabilitate all unwanted access roads created:**

- Compaction of the road will result from the continuous passage of heavy vehicles so it will be necessary to break up the road surface.
- Rip the road surface to a depth of at least 50 cm using a multi-toothed ripper and tractor.
- Disk the ripped surface to break up the clods.
- Cover with a layer of topsoil to a depth of about 10 cm, and.
- Cap the topsoil containing the seedbank with a gravel layer by manually spreading the fragments across the surface using a rake.

## **4.2 Monitoring of the Environmental Performance**

### **4.2.1 Rehabilitation Evaluation and Performance Monitoring**

The following is the summary of key rehabilitation evaluation and performance monitoring to be implemented by the proponent:

- ❖ **Monitoring:** Monitoring program is instituted to ensure that the requirements of the mining site rehabilitation program are met. Rehabilitation program may be subjected to various natural or man-made forces that can hinder the progress and lead to problems or failure or the rehabilitation program. Regular monitoring will ensure that these factors are identified early so they may be resolved through appropriate recommendations.
- ❖ **Frequency:** All rehabilitated areas should be monitored over a three (3) years period from the onset of the rehabilitation procedures. The frequency of monitoring suggested above is dependent on satisfactory performance. If, however, the requirements are not being met, the frequency of monitoring can be increased. It is suggested that the monitoring be conducted once a year around September when the grasses and forbs are flowering.
- ❖ **Methods:** The rehabilitated areas might be monitored by the sampling randomly located 1m<sup>2</sup> quadrates. Approximately 10 quadrates per hectare (or a minimum of 3) should be sampled per plant community. The factors that will be examined in each quadrate include:
  - Percentage basal cover.
  - Percentage aerial cover.
  - Species composition and diversity.
  - Vigor and health of plants.
  - Presence of and evidence of fauna, and.
  - Nature of the substrate.
- ❖ **Controls:** To enable a comparison, control plots located within the surrounding un-mining areas should also be monitored. This will give an indication of the progress of rehabilitated areas versus the natural vegetation and will set the goals, which ultimately should be achieved. By monitoring the natural vegetation annually, it will also be possible to assess the natural changes that are taking place. These findings can then be applied to the rehabilitated areas so as to account for the changes, which may have resulted from natural events. Approximately 5 to 10 quadrates of 1m<sup>2</sup> should be sampled per community type to set the controls.

- ❖ Maintenance: Maintenance requirements may include seeding (if there is poor germination of the seedbank), fertiliser applications, correcting erosion problems, removing weeds, etc. Maintenance of the rehabilitated areas will be necessary periodically. The need for and extent of maintenance activities will be determined during the regular monitoring of the site, and.
- ❖ Qualified Personnel: The rehabilitation procedures from implementation to monitoring should be overseen by qualified personnel. Any persons involved in the rehabilitation of the mining site should be trained in the techniques involved.

#### **4.2.2 Overall Environmental Performance Monitoring and Reporting**

The monitoring of the environmental performances for the proposed / ongoing exploration project can be divided into two (2) parts and these are:

- (i) Routine / ongoing daily monitoring activities to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required, and.
- (ii) Preparation of annual Environmental Monitoring Report and Environmental Closure covering all activities related to the Environmental Management Plan during exploration / prospecting stages and at closure of the proposed / ongoing exploration to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required.

The proponent will be required to report regularly (twice in a year or as the case maybe) to the Environmental Commissioner in the Ministry of Environment and Tourism (MET), the environmental performances as part of the ongoing environmental monitoring programme. Environmental monitoring programme is part of the EMP performances assessments and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of undertaking appropriate monitoring as per specific topic (such as fauna and flora) and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Project HSE Officer.

The second part of the monitoring of the EMP performance will require a report outlining all the activities related to effectiveness of the EMP at the end of the planned mineral exploration to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required. The objective will be to ensure that corrective actions are reviewed and steps are taken to ensure compliance for future EIA and EMP implementation.

The report shall outline the status of the environment and any likely environmental liability after the completion of the proposed / ongoing project activities. The report shall be submitted to the Environmental Commissioner in the Ministry of Environment and Tourism and will represent the final closure and fulfilment of the conditions of the Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner and the conditions of the Pro-Forma Environmental Contract signed by the Proponent, Environmental Commissioner and the Mining Commissioner.

## 5. CONCLUSION AND RECOMMENDATION

### 5.1 Conclusions

Jointmen Investments CC (**the Proponent**) intends to undertake exploration activities in the Mining Claims (MCs) No. 72287, 72288, 72584 and 72585 covering dimension stones groups. The Proponent intends to conduct exploration / prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities over key site-specific localities using techniques such as geological mapping, geophysical surveys, trenching, drilling, sampling for laboratory tests and preparation of prefeasibility and feasibility reports.

If the feasibility study proves positive, the Proponent will implement mining operations covering: Construction, operation (mining and stone processing) and rehabilitation, decommissioning and final rehabilitation and aftercare.

The overall severity of potential environmental impacts of the proposed exploration and possible mining activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will depend on the scale and type of activities (exploration or mining) to be undertaken.

### 5.2 Recommendations

Based on the findings of the EIA, it is hereby recommended that the proposed exploration and possible mining activities be issued with an Environmental Clearance Certificate (ECC). It is hereby recommended that the proposed exploration and possible mining activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall implement precautionary measures / approach to environmental management.

The Proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

- (i) The Proponent shall undertake thematic mapping to fully understand the land use plans of the local area and identify areas of possible coexistence and no-go zones.
- (ii) The Proponent shall notify and obtained permission from the land owners before any field-based activities are undertaken in the area.
- (iii) The land owners, local community and stakeholders shall be kept updated on progress and outcomes of the proposed exploration and possible small-scale quarrying / mining activities.
- (iv) Before a site-specific detailed exploration, such as activities trenching, drilling, quarrying or mining are undertaken, an archaeological assessment of the local area shall be undertaken by an archaeologist. Precautionary principle / approach must always be exercised.
- (v) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.
- (vi) The community tourism, wildlife breeding and transit areas shall be excluded from site-specific detailed exploration activity such as trenching or drilling or any future quarrying/ mining activities as requested by the local community.
- (vii) If resources allow, the Proponent shall consider Corporate Social Responsibilities by supporting broader community initiatives such as improving water supply, education or health related projects in the surrounding area.
- (viii) All exploration sites must be rehabilitated.



- (ix) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall support other land uses in the area in terms of access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owner/s. The abstraction of fresh groundwater resources shall include water levels monitoring, sampling and quality testing on a bi-annual basis, and that the affected landowners must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable, and.
- (x) Based on the findings of this EIA Report, the Proponent shall prepare an EMP Report with key mitigations measures covering the lifecycle of the proposed exploration activities.

The Proponent must take all the necessary steps to implement all the recommendations of the EMP for the successful implementation and completion of the proposed / ongoing exploration programme covering the MCs 72287, 72288, 72584 and 72585. Recommended actions to be implemented by the Proponent through implementations of the EMP are:

- (i) The Proponent must implement precautionary measures / approach to environmental management. Once a viable and potential economic resource have been identified, the Proponent must develop and implement a separate EIA and EMP inclusive of the specialist studies such as fauna and flora to be undertaken by specialist consultants as part of the feasibility study stage.
- (ii) Before detailed site-specific exploration activities such as extensive drilling operations and access routes are selected, the Project HSE Officer with the support of the external specialist consultants as maybe required, should consider the flora, fauna and archaeological sensitivity of the area and commission a field survey in advance of any site development as may be required based on the assessment undertaken.
- (iii) The Project HSE Officer shall lead, implement, and promote environmental culture through awareness raising of the workforce, contractors, and sub-contractors in the field during the whole duration of the proposed / ongoing exploration period.
- (iv) The Proponent to provide all the necessary support including human and financial resources, for the implementation of the proposed / ongoing mitigations and effective environmental management during the planned exploration activities for the MCs 72287, 72288, 72584 and 72585.
- (v) Project HSE Officer with the support of the external specialist consultants as maybe required to develop a simplified environmental induction and awareness programme for all the workforce, contractors, and sub-contractors.
- (vi) Where contracted service providers are likely to cause environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities.
- (vii) Implement monitoring of the actions and management strategies developed during the mineral exploration process. Final Environmental Monitoring report shall be prepared by the Project HSE Officer with the support of the external specialist consultants as maybe required to be submitted to the regulators and to mark the closure of the proposed / ongoing mineral exploration, and.
- (viii) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA for possible large-scale mining operations.