

ENVIRONMENTAL MANAGEMENT AND REHABILITATION PLAN (EMRP)

Prospecting of Dimension Stone Quality Granite and Dolerite on
Exclusive Prospecting License (EPL) 6217 in the Erongo Region,
Namibia

(Final)

MEFT Application No: APP – 002499

Proponent: JTD Mining Group

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DOCUMENT TITLE: ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE PROPOSED PROSPECTING OF DIMENSION STONE QUALITY GRANITE AND DOLERITE ON EPL 6217 IN THE ERONGO REGION, NAMIBIA

Prepared by OMAVI Geotechnical & Geo-Environmental Consultants:


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LIST OF ABBREVIATIONS AND MEANINGS

CFP	Chance Finds Procedure
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EMRP	Environmental Management and Rehabilitation Plan
EPL	Exclusive Prospecting License

Environmental Management Plan: Prospecting for Dimension Stone quality Granite and Dolerite on

EPL 6217

ESA	Environmental Scoping Assessment
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NHC	National Heritage Council of Namibia
OGGC	OMAVI Geotechnical and Geo-environmental Consultants cc
PPE	Personnel Protective Equipment
JTD	JTD Mining Group

1 INTRODUCTION

As part of the proponent's prospecting and possible quarrying authorization under the Environmental Management Act of 2007, the EIA guidelines for Mining Sector in Namibia, and the Best Practice Guide for Environmental Principles for Mining in Namibia of 2019, the proponent is required to submit a project specific Environmental Management Plan (EMP) to the Department of Environmental and Forestry Affairs (DEFA) on a three-yearly basis. The EMP essentially contains commitments of the proponent relating to the proposed prospecting and envisaged quarrying operations in so far as the implementation and performance or effectiveness monitoring of the proposed impact mitigation/ enhancement measures are concerned. Additionally, the EMP includes clear roles and responsibilities of custodians responsible for the effective implementation of various impact management measures. Lastly, the EMP provides a summary of key performance parameters to be measured and monitored for each potential impact.

This EMP covers the following key components as a minimum:

- Brief description of project activities, inputs and outputs
- Scope, purpose and limitations of the EMP
- Roles and responsibilities of management, employees and contractors (as applicable) for the effective implementation of the EMP
- A summary of relevant governing legislation and policy
- Brief outline of potential impacts that have been identified for each relevant issue, and details of the specific mitigation and management measures that will be implemented, including an implementation strategy and performance criteria to be adopted
- Monitoring and reporting requirements, including a process for implementation of corrective actions

1.1 Brief Project Background and Location

To fulfil their operational mission of becoming a major player in the local dimension stone quarrying and semi-processing sector, JTD Mining Group (hereinafter referred to as the *Proponent*) intends to undertake prospecting/ exploration and apply for a Mining License in order to ultimately undertake dimension stone quarrying and cutting activities on Exclusive Prospecting License (EPL) 6217. The planned prospecting activities will cover various geological exposures of granite and dolerite within the EPL area, while the likely mining license area will be confined to certain areas of the EPL where prospecting yields success results in terms of stone quality. The exploration activities and results leading to the preparation of feasibility study for the EPL will include techniques such as detailed geological mapping, rotary core drilling, hand-specimen sampling, trenching and test quarrying to extract 10 m³ sample blocks.

Following the completion of the feasibility study, the proponent intends to apply for a mining license in order to develop granite and dolerite quarries, as well as a supplementary stone cutting factory. The quarrying (mining) phase which does not form part of the scope of this report will involve the quarrying of blocks, sorting, on site storage and cutting, transportation of the blocks to factories in Karibib and Walvis Bay for final processing, and finally exporting of finished products. The concerned EPL is located about 8km north east of Uis in the Daure Constituency, Erongo Region; at approximate coordinates 21°5'05"S and 14°57'24"E, and the area can be accessed via the existing D3714 and D3715 gravel roads as well as via numerous smaller farm car tracks. The total footprint of the license is approximately 18 834 Hectares (Ha) and so the area of disturbance (i.e., the area of direct impact) will be smaller than this.

Granite plutons and dolerite dykes are the primary targets for the proposed prospecting and subsequent quarrying activities. The granites chiefly occur as isolated blobs in the south to south western areas of the EPL, and dominate large portions of the flat terrain in the central part of the EPL. Based on field observations, these granites are generally largely exposed on the surface or covered by a thin, poorly developed layer of sandy gravels. On the other hand, the dolerite dykes tend to occur as isolated elongated patches in the south western and north eastern portions of the EPL, and topographically form higher relief koppies of black stones covered by abundant loose boulders with little to no soil. The granites host a number of semi-precious minerals such as tourmaline, rose quartz, and aquamarine which are exploited by small-scale miners in the area, particularly in the Otjimboyo side of the EPL.

The regional and local locality maps for EPL 6217 are shown in **Figure 1** and **Figure 2** below. The corner coordinates of the EPL area are summarized in Table 1-1.

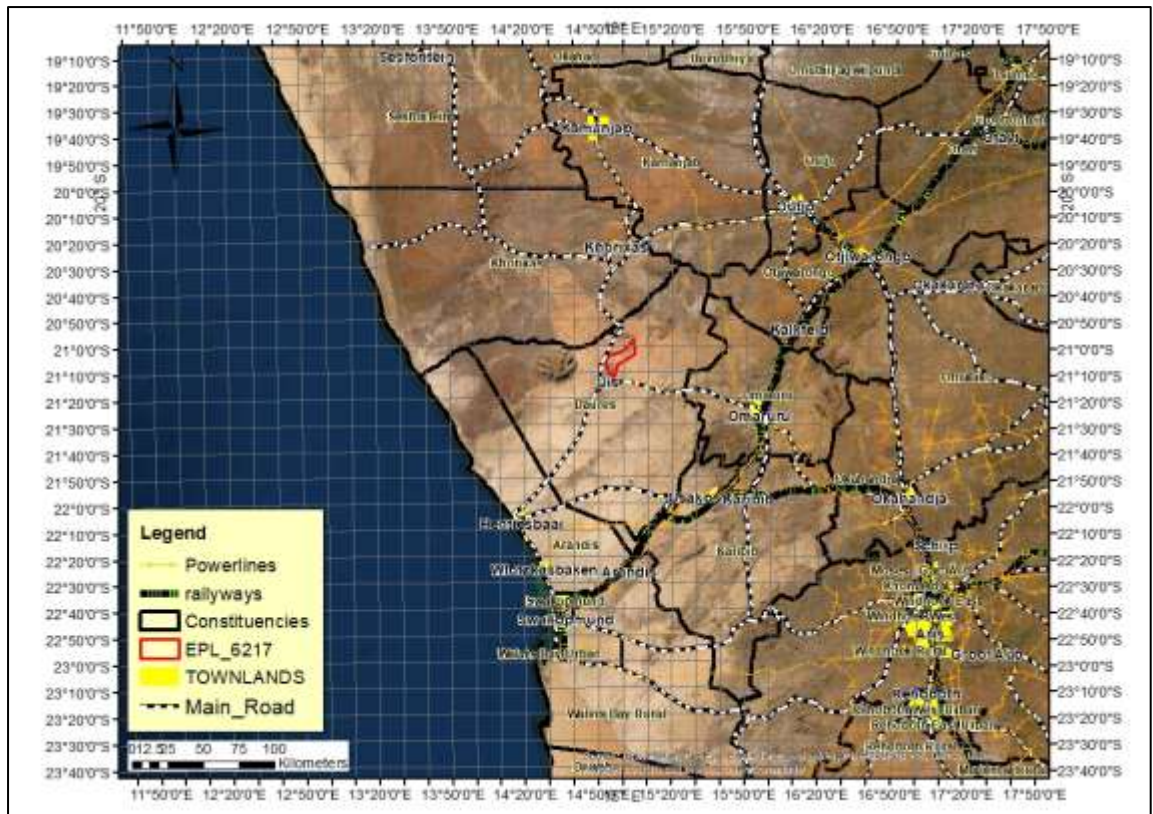


Figure 1: Regional locality map of EPL 6217.

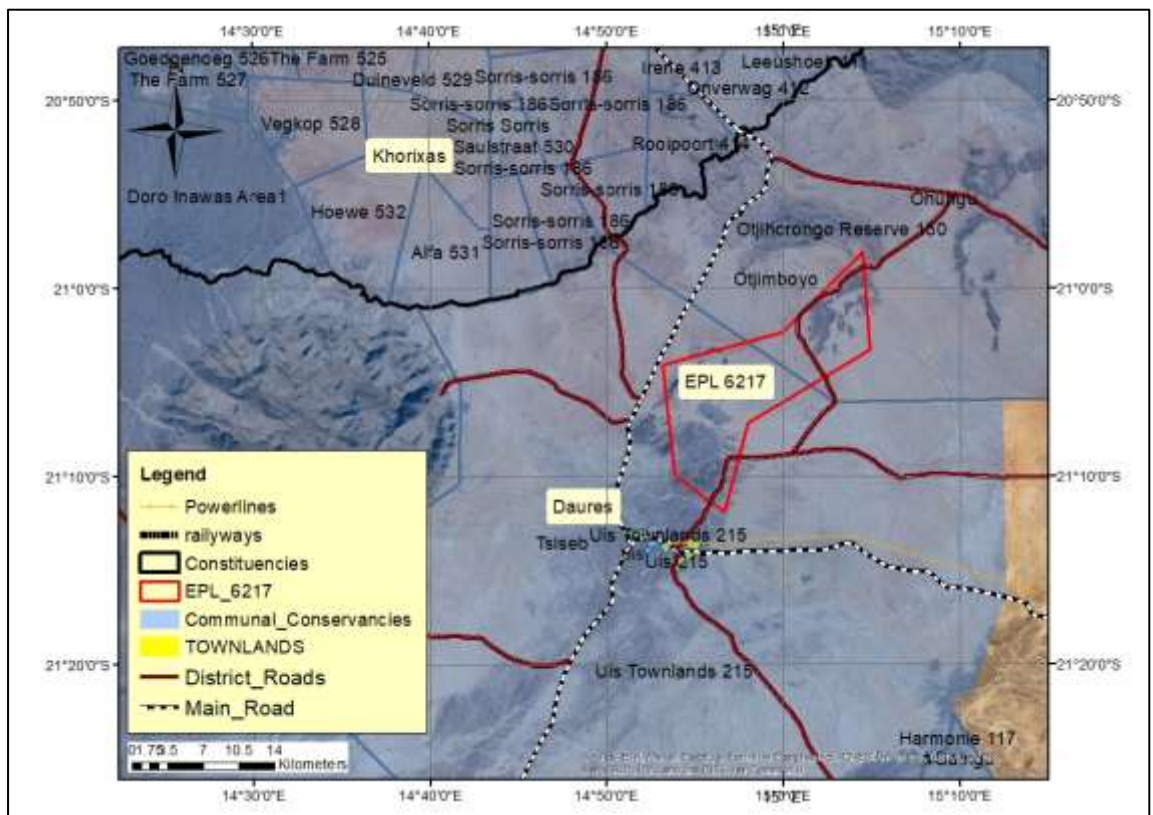


Figure 2: Local map of EPL 6217 with details of overlain constituency, communal conservancies and infrastructure in the area.

Table 1-1: Approximate GPS Coordinates of EPL 6217

GPS Coordinates boundaries
<ul style="list-style-type: none"> • 21°4'06"S/ 14°53'06"E • 21°2'25"S/ 14°59'57"E • 20°57'59"S/ 15°4'24"E • 21°3'13"S/ 15°4'58"E • 21°7'01"S/ 14°58'01"E • 21°11'45"S/ 14°56'34"E • 21°9'54"S/ 14°54'06"E

1.2 Ownership and Land Tenure of the License Area

EPL no. 6217 is wholly owned by JTD Mining Group, and the Tiseb and Otjimboyo Communal Conservancies. The southern portion of the EPL is under the jurisdiction authority of the Daure Daman Traditional Authority while the northern area falls under the Zeraeua Traditional Authority. In terms of the Minerals (Prospecting and Mining) Act of 1992, an EPL gives the holder exclusive systematic prospecting rights to the land for a period of 3 years, after which it may be renewed or upgraded to a mining license for more continuous extraction of the targeted mineral resources.

The current status of EPL 6217 application is reflected on the Namibia Mining Cadastral Portal (upon searching) on this link <https://portals.landfolio.com/namibia/> and as shown in **Figure 3** below.

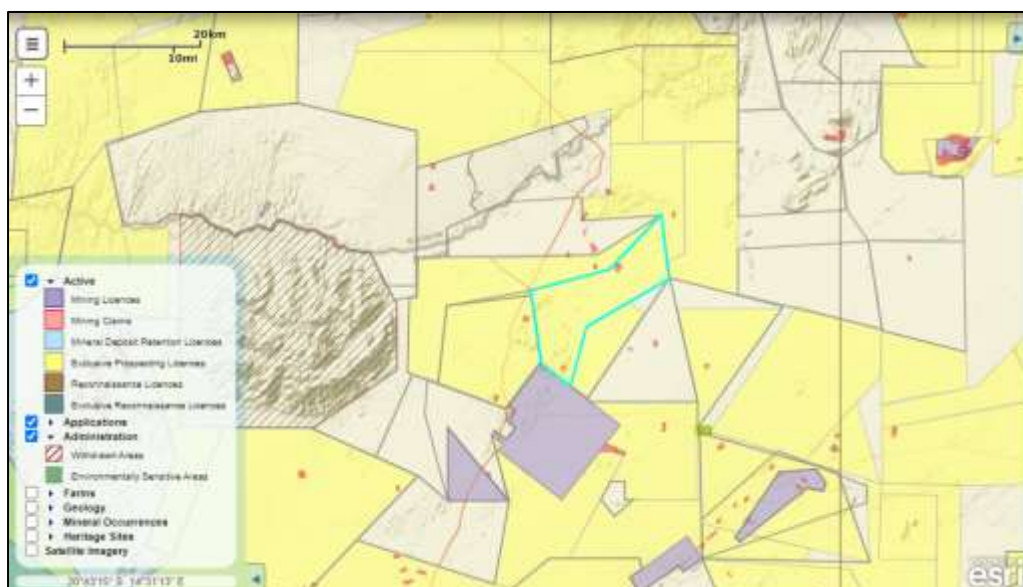


Figure 3: Appearance of EPL 6217 on the MME Portal (source: <https://portals.landfolio.com/namibia/>)

1.3 Purpose of the Environmental Management Plan (EMP)

The Environmental Management Plan (EMP) is one of the most important outputs of the environmental assessment process and documents all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities.

Regulation 8 of the Environmental Management Act's (EMA) (Act no. 7 of 2007) and the 2012 Environmental Impact Assessment Regulations require that a draft Environmental Management Plan (EMP) be included as part of any Environmental Impact Assessment (EIA) process. The term "draft" has context in this regard to emphasize that the document (i.e. the EMP) remains a working document throughout which is to be revised and updated on a continuous basis during the operational phase of a project to account for variations in site conditions, changes in prospecting and quarrying techniques/ technologies and methods used, changes in environmental management standards and policy, changes in market demands, as well as to accommodate feedback or results from recommended monitoring programs. In short a 'management plan' is defined as:

"...a plan that describes how activities that may have significant environments effects on the environment are to be managed, mitigated, controlled and monitored."

The **EMP is a legally binding document to the project proponent** and is one of the most important outputs of the EA process as it synthesises all the proposed impact mitigation, enhancement and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the environmental assessment process and the required environmental management actions to be implemented on the ground during project execution and subsequent operations. **It is important to note that the custodian person or entity who contravenes the provisions of this EMP may face imprisonment and/or a fine.**

In the context of this project, the purpose of the EMP document is therefore to provide environmental management guidance during implementation of the following phases of the proposed project:

- **Site establishment and set up** - the period during which the exploration camp site is cleared and set up; access tracks to targeted sites are cleared and created; and the ground is prepared to pave way for the installation of support infrastructures such as water storage tanks, installation of fences for designated domestic and industrial waste storage, placement of mobile containers for accommodation, ablution facilities, and storage space.

- **Operational phase** – In the context of this project, during this phase of the project the following activities will be executed:
 - overburden stripping;
 - rotary core drilling and recovery of rock core;
 - test quarrying and extraction of sample blocks;
 - logging and storage of rock core;
 - storage, sorting and haulage of sample dimension stone blocks to processing facilities in Walvis Bay and Karibib;
 - processing of sample blocks into finished products to assess furnishing quality; and
 - export to international markets to test pricing and demand

Decommissioning and rehabilitation – the period after prospecting activities have ceased and areas disturbed by prospecting activities are to be either reclaimed, restored and rehabilitated, or are to be fenced off and preserved for more continuous quarrying upon the granting of a valid mining license. Sites to be rehabilitated are to be restored to a state that is as close as possible to the surrounding natural environment.

1.4 The Environmental Consultant

OMAVI Geo-technical & Geo-Environmental consultants (hereinafter referred to as the Consultant) were appointed by JTD Mining Group as independent environmental consultants to conduct the Environmental Assessment for the proposed activities, and submit the required documents in support of the application for an Environmental Clearance Certificate (ECC) to the Environmental Commissioner. The EMP is one of the documents required in applying for an ECC application.

1.5 Limitations of the Draft Environmental Management Plan (EMP)

The following limitations apply to this EMP:

- This report has been compiled at a scoping level with baseline information deduced from a combination of literature research, field observations/ evaluations, and from scientific and indigenous knowledge and experience of the EAP and various I&APs who actively participated in the public participation process for this project. In addition, specialist studies were conducted to better understand and evaluate potential impacts on biodiversity and archaeological/ heritage components of the receiving environment.
- The Consultant assumed that all the project technical information and data provided by the Proponent is correct and accurate and that all necessary information has been disclosed. This information partly formed the basis of this EMP.

- It is also assumed that the relevant information obtained from different local literature consulted as well as that drawn from various engagements with stakeholders is accurate and;
- This EMP has been compiled on the fundamental assumption that there will be no significant changes to the proposed project activities or the affected socio-economic and land use aspects of the environment between the time of compiling this EMP and implementation of the proposed activities that could substantially alter the baseline information and planned impact enhancement or mitigation measures.

2 PROJECT ACTIVITIES, INPUTS AND OUTPUTS

2.1 Project Activities and Inputs

. The proposed prospecting activities will broadly involve the following:

- setting up of an exploration camp at the selected spot within the EPL; creation of small access track roads from the M76 gravel road and exploration camp to selected mountain ranges and rock exposures within the EPL;
- possible surface clearing and stripping of boulders, and vegetation and/ or top soil to access less weathered and less fractured bedrock at depth in areas where bedrock is not well exposed;
- Stockpiling of topsoil close to where such excavations are made for latter usage in rehabilitation earthworks;
- vertical core drilling to establish the thickness, colour consistency and fracture frequency of the targeted rock mass and;
- ultimately cutting out of sample granite and dolerite blocks by means of butterfly blade cutting technology. This will be done to extract sizable blocks that can be cut and polished into slabs, counter tops and or tiles for deployment to target markets to test the market's demand and price.

Where results from core drilling and extraction of sizable sample blocks from butterfly cutting yield positive results (i.e., where the rock mass is found to be of good quality in terms of colour, patterns and fracture frequency), such areas will be demarcated for possible mining at a later stage upon the granting of a mining license. On the other hand, where exploration results suggest that the rock mass is not desirable for good market performance, immediate rehabilitation of any drilled and or test quarried sites by means of butterfly cutting will be implemented to restore the conditions of those sites. Rehabilitation work will largely involve closing off any excavations, covering up the surfaces of such areas with in situ topsoil and boulders, and running rippers along access roads to those sites to loosen up the traffic compacted soils before closing such roads off. It is important to emphasise that immediate and ongoing rehabilitation will be easily achievable, since the evaluation of a rock mass quality would be done instantly on site through visual assessment of core and sample blocks from drilling and test quarrying by the proponent's geologist. This practice will in turn make it possible for immediate and timely decisions to be made on whether a particular site or outcrop should be closed up and rehabilitated, or be preserved from possible quarrying at a later stage.

The above mentioned prospecting activities are expected to carry on for the duration of the validity period of the prospecting license (i.e. 3 years), after which a decision will be made as to whether the proponent shall proceed to mining phase or switch to complete decommissioning based on the prospecting results obtained and economic feasibility of mining. Decommission will entail the dismantling of all infrastructures, landscaping of all disturbed areas and subsequent disbursement of seed rich topsoil over reclaimed areas.

Machinery such as the portable drill and air compressors will be powered by a diesel engine powered generator. Diesel for the power generator and all mobile plant will be stored on site, on a 2500L to 3500L trailer mounted diesel tank. Water supply for both domestic consumption and drilling plus test quarrying operations will be sourced from Uis and carted to site in a water bowser by a designated contractor. Approximately 7 000L to 10 000L of water will be carted to site on a weekly basis during initial exploration (i.e. during the drilling phase). Once exploration ramps up to test quarrying, the weekly water demand is anticipated to increase to approximately 10 000L to 15 000L, depending on the porosity and fracture frequency of the rock masses be drilled or cut, etc. This water will also be carted to site from Uis to support the exploration program. Some of the water used during the drilling and butterfly cutting processes will be recycled and reused for the same purpose, thereby helping to reduce burden on the water supply source.

One (1) 5 000L storage water tank will be installed near the exploration camp for domestic water supply, and will be re-filled as and when the need arises. Another two or three 5 000L tanks will be mounted to trailers and these will be used to supply water at active drilling and or test quarrying sites.

Any sizable (up to 10 m³) blocks extracted from selected sites during test quarrying will be transported on flatbed interlink trucks to processing facilities in Karibib or Walvis Bay for further beneficiation before being dispatched to target markets to permit evaluation of the product's demand and price. In order to minimize the likelihood of unnecessary ground disturbance, intrusive exploration activities such as drilling and test quarrying will be confined to areas with outcrop or shallow bedrock exposures.

Two 10 000L storage water tanks will be installed near the crushing plant to store abstracted water and/ or water harvested during the rainy season for production purposes. The anticipated daily water demand during the operational phase will vary between 1500L and 2500L, depending on numerous factors such as the amount of fines contained in the raw material. Water used during the production process will be recycled to ensure that abstraction from the planned borehole is minimized.

It is anticipated that between 10 and 15 people will work on the site during normal operations

2.2 Project Outputs

The final products from the proposed prospecting program shall include the following:

- A refined geological and layout map with clearly labelled targeted rock units for prospective quarrying
- Core recovered from exploration drill holes
- Sizable sample dimension stone blocks for further processing to help test their market demand
- A feasibility study memorandum stipulating viability for continuous quarrying as informed by exploration results.

3 EMP IMPLEMENTATION AND RESPONSIBILITIES

In accordance with the EIA regulations of 2012 and best practice requirements stipulated under the Environmental Principles for Mining in Namibia (ECC, 2019), the project proponent is required to appoint the following key personnel who would be responsible for implementing and enforcing different aspects of the EMP:

- Project Site Manager;
- Safety, Health and Environment (SHE) Officer;
- Public Relation Officer (PRO)

It should be noted that in practice, however, these roles may be assigned to and performed by one person, especially for small-scale projects such as this one.

In addition to the above key personnel, the following personnel can play a substantial role in ensuring that the EMP is being implemented effectively throughout the project's duration:

- Land owners and Affected Community Members
- Contractors and Technical Consultants
- Staff members of the Project Proponent

A list of specific roles and responsibilities to be fulfilled by each position is provided below. It should also be noted that the above-mentioned roles are only delegated responsibilities, and therefore JTD Mining is still ultimately responsible and legally compelled for implementing the EMP.

3.1 Environmental Inspectors

Environmental inspectors in the Ministry of Environment, Forestry and Tourism shall have the following mandates in so far as this project is concerned:

- Monitor and enforce the implementation of the EMP through regular visits and inspections of the operations
- Stop operations due to non-compliance and promptly advise the proponent on how to self-correct before resuming operations
- Actively evaluate bi-annual environmental reports submitted by the proponent and provide feedback to ensure safe and sustainable operations

3.2 The Site Project Manager (PM)

This Site Project Manager (PM) will be responsible for the following:

- Act as the Employer's (JTD Mining Group) on site overall project manager and implementing agent.
- Appoint a Safety, Health and Environmental Control Officer (SHE Officer)
- Ensure that the Employer's responsibilities are executed in compliance with the relevant legislation and the EMP for the decommissioning and closure stage
- Ensure that all the necessary environmental authorizations and permits have been obtained for the decommissioning and closure stage. This includes any water abstraction and, oil storage permits that may be required
- Ensure that bi-annual environmental audits and reports have been completed and submitted to the relevant authorities
- Assist Contractor(s) in finding environmentally responsible solutions to challenges that may arise (with input from the SHE officer)

- Should the PM be of the opinion that a serious threat to, or impact on the environment may be caused by the decommissioning and closure stage, he/she may stop work; the Employer must be informed of the reasons for the stoppage as soon as possible to prompt any actions required
- Formally disciplining individuals who contravene the EMP provisions and if necessary, removing such individuals from site completely
- Setting up and managing the schedule for the day-to-day activities; taking into account that daily safety briefs are held.
- Ensuring all incidents are recorded, documented and reported to the Employer and relevant authorities.
- Undertaking an annual review of the EMP and amending the document when necessary (with input from the SHE Officer).
- Report to the Employer on the implementation of the EMP on site (with input from the SHE Officer and/or independent environmental auditor)
- Maintain open and direct lines of communication between the Employer, SHE Officer, Contractors and all I&APs with regards to environmental matters
- Stop operations at specific sites and report any archaeological/ heritage chance finds to the National Heritage Council as promptly as possible

3.3 Safety, Health and Environmental (SHE) Officer

The SHE Officer will be mandated to carry out the following responsibilities:

- Assist the PM in ensuring that the necessary environmental authorizations and permits have been obtained for the decommissioning and closure stage
- Planning, conducting and signing off site inductions for workers and visitors on-site.
- Organize for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through the decommissioning and closure stage; audit reports to be submitted to the PM;
- Conduct environmental monitoring as per EMP requirements
- Review the EMP and recommend additions and/or changes to the EMP document on a continuous basis
- Advise the PM on the removal of person(s) and/or equipment not complying with the specifications of the EMP
- Developing area-specific safety, health and environmental procedures for all active sites, as well as quick SHE checklists that workers and visitors/ contractors may use for conducting rapid risk assessments for specific jobs
- Recording and reporting all SHE related incidences on site

- Ensure availability of all relevant PPE on site
- Attend regular site meetings as part of the decommissioning and closure stage

3.4 Public Relation Officer (PRO)

The Public Relation Officer will be responsible for the following tasks:

- Facilitating communication between the local communities, traditional authorities, other land users and visitors of the affected area, and the project proponent. The PRO is to ensure that all communications between these parties are effectively channelled through one communication platform.
- Managing community and public relations and dispute issues
- Preparing and submitting public relations reports, if required
- Collaborating with project personnel and maintaining project-related open communication among personnel
- Ensuring timely communication or notices (to directly affected farmers) of any drilling and test quarrying activities scheduled to take place too close to homesteads

3.5 Contractor(s) and Technical Consultants

Responsibilities of contractors shall include:

- Comply with the relevant legislation and the EMP for the upgrade/construction of access road(s);
- Preparation and submission to JTD Mining Group of the following Management Plans, Procedures and Manuals:
 - Emergency Preparedness and Response
 - Waste Management Procedures
 - Health and Safety Procedures
- Ensure adequate environmental awareness training for senior site personnel
- Attend regular site meetings and environmental inspections

3.6 The affected Community and Conservancies

The leadership of the affected communities and conservancies shall have the following responsibilities:

- Monitor implementation of the EMP
- Actively participate in stakeholder forums
- Make use of the grievances platforms put in place by the proponent to communicate issues to the Proponent and/ or to relevant authorities
- Monitor legal compliance

- Sanction poor performance and non-compliance where appropriate through direct engagements with the PM to rectify non-compliance issues. And if no action is taken raise such issues with the relevant competent authorities.
- Jointly resolve disputes between community members and the proponent

3.7 Technical Staff of Proponent

- To safely and effectively monitor, report and act on various technical parameters related to soil preservation/ protection; ground stability; employee/ contractor health; water resources management; waste management; and mechanical designs of various equipment on site that are deemed unsafe.

3.8 Archaeology: Chance Finds Procedure (CFP) Implementation Roles

The following personnel shall be assigned the following responsibilities as per the Chance Finds Procedure developed by the Namibian National Heritage Council (NHC):

3.8.1 Machine Operator

- Must exercise due caution if archaeological remains or suspects of such are found
- Must immediately stop any earthworks if suspect remains are discovered and immediately report to the SHE Officer and PM

3.8.2 Drilling and Test Quarrying Foreman

- Must secure such a site and advise management (PM) timeously
- Must determine safe working boundary and request inspection from the NHC

3.8.3 Archaeological Specialist from the NHC

- Must inspect, identify, advice management, and recover or preserve any remains.

The Proponent shall assess these commitments in detail and should acknowledge their obligation to the specific management actions detailed in the Tables of the following sections.

4 ENVIRONMENTAL AND SOCIO-ECONOMIC MANAGEMENT FRAMEWORK AND ACTIONS

This chapter first highlights the statutory framework applicable to the proposed mineral prospecting life cycle in terms of permitting for certain project activities. Further on in this chapter emphasis is placed on the proposed impact enhancement and mitigation actions that will be implemented during the operational and decommissioning phase of the project.

The aim of the impact management actions provided in summary Tables later in the latter part of this chapter is to enhance potential benefits and avoid/ prevent/ mitigate potential adverse impacts as far as practical. Where impacts cannot be avoided, measures are provided to reduce or manage the significance of these impacts.

The management actions proposed herein are a "translation" of the impact enhancement and mitigation measures recommended in the Environmental Scoping Report.

4.1 Applicable Legislation: Authorisation (Permits and Licenses)

This section sets the legal framework and obligations (legislations, policies, and guidelines) that govern the mineral prospecting and mining sector in so far as decision-making that affect the environment are concerned. Mineral exploration and mining within the Republic of Namibia is principally governed by the Minerals (Mining and Prospecting) Act of 1992, but several other Acts and Policies exist that are also highly relevant. At the time of compiling this report the Minerals (Mining and Prospecting) Act of 1992 was being amended. **Table 4-1** below summarises Acts and Policies that are paramount to ensuring the following:

- public participation in decision-making that affects the environment;
- the precautionary principle and the principle of preventative action;
- the principle of 'the polluter pays';
- the constitutional principles that promote sustainable development in Namibia; and
- the protection and preservation of the environment for current and future generations

Table 4-1. Applicable legislations in terms of permitting requirements for the proposed activities

Legislation	Relevance to Project	Contact Details for obtaining Permits
Environmental Management Act 2007 Environmental Impact Assessment (EIA) Regulations (EIAR) (GG No. 4878)	Activities listed in Government Notice (GN) No. 29 of GG No. 4878 require an Environmental Clearance Certificate (ECC). The amendment, transfer, or renewal of the ECC (EMA S39-42; EIAR Regs19 & 20). Amendments to this EMP will require an amendment to the terms and conditions of the ECC. Bi-annual environmental monitoring and audit reports shall be submitted to MEFT. The ECC needs to be renewed every 3 years.	Mr Timoteus Mufeti (Ministry of Environment, Forestry and Tourism's Department of Environmental Affairs and Forestry (DEAF) Tel: (061) 284 2739
The Water Act 54 of 1956 The Water Resources Management Act No. 11 of 2013 (unpromulgated)	The Water Act 54 of 1956 was formulated to consolidate and amend the laws relating to the control, conservation and use of water for domestic, agricultural, urban and industrial purposes; to make provision for the control, in certain respects, of the use of sea water for certain purposes; for the control of certain activities on or in water in certain areas.	Mr Franciskus Witbooi (Deputy Director: Water Policy and Water Law Administration. Tel: (061) 208 7158

Legislation	Relevance to Project	Contact Details for obtaining Permits
	<p>Provision of water from Uis for industrial use may require a water use permit from the Department of Water Affairs (DWA): Directorate of Water Resources Management. The Act also includes aspects such as the prevention of water pollution, protection of water resources, and efficient use of water</p>	
<p>Mineral Prospecting & Mining Act (Act No. 33 of 1992)</p>	<p>Section 38 (1): Applications for renewal of registration of EPLs.</p> <p>The Proponent should ensure that all the necessary permits/authorisations/ contracts (e.g. EPL license, Environmental Contract and Pro-forma Forms, etc) for activities to be conducted on the EPL are obtained from the Ministry of Mines & Energy (MME)'s Mine Directorate.</p> <p>Section 48 of this Act stipulates that an EMP is one of the conditions of prospecting license and that a license holder shall apply "good mining practices".</p> <p>Section 54(2): details provisions pertaining to the decommissioning or abandonment of a mine / explored sites because of related activities.</p>	<p>Mr Erasmus Shivolo (Mining Commissioner) Tel: 061 284 8167 E: Erasmus.Shivolo@mme.gov.na</p>
<p>Local Authorities Act No 23 of 1992</p>	<p>The Daure Daman and Zeraeua Traditional Authorities are the responsible Local Authority of the affected project site area. Additionally the Tsiseb and Otjimboyo Communal Conservancies are key local bodies. All these bodies were extensively engaged in compliance with the Act and its Regulations to ensure accountability for rehabilitation at closure; management of the environment on an ongoing basis; and inclusive community engagement.</p>	<p>Contact Persons</p> <ul style="list-style-type: none"> - Mr. Chief Z. Seibeb (Daure Daman TA) E: dauredaman2017@gmail.com - Mr. G. Kuvare (Zeraeua TA) Tel: 0814009118 - Mrs. Vannesa Goses. (Vice Chairperson: Tsiseb Conservancy) E: vannesagoses@gmail.com - Mr. I. Naruseb (Chairperson: Otjimboyo Conservancy) E: theonaruseb932@gmail.com
<p>Road Traffic and Transport Act 52 of 1999 and its 2001 Regulations</p>	<p>Provides for the control of traffic on public roads and the regulations pertaining to road transport, including the licensing of vehicles and drivers.</p> <p>The transportation of sample blocks from the EPL site to processing factories in Karibib and Walvis Bay shall be undertaken in such a manner that traffic loads do not exceed those stipulated under the relevant regulations of the Namibian Roads Authority.</p>	<p>Mr Elina Lumbu (Roads Authority – Specialist Road Legislation) Tel.: (061) 284 7027</p>
<p>Petroleum Products and Energy Act (No. 13 of 1990)</p>	<p>Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority</p>	<p>Carlo Mcleod (Ministry of Mines and Energy: Acting Director –</p>

Legislation	Relevance to Project	Contact Details for obtaining Permits
Regulations (2001)	<p>of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area".</p> <p>If there is fuel stored or is intended to be stored on site, the relevant petroleum products storage licenses/permits should be applied for from the Petroleum Affairs at the Ministry of Mines and Energy.</p> <p>A temporary permit for the storage of petroleum products should be applied for at the Ministry of Mines and Energy</p>	<p>Petroleum Affairs Tel.: (061) 284 8291 E: Carlo.McLeod@mme.gov.na</p> <p>OR</p> <p>Mr. Tupa Iyambo (Chief Petroleum Inspector) Tel: 061 284 8300 Email: Tupa.Iyambo@mme.gov.na</p>
Forestry Act (No. 12 of 2001)	Permits are required for the removal of protected plants species. In the case of EPL 6217 the <i>Moringa ovalifolia</i> species found on the granite and dolerite hills in the area is a protected species, and there a permit should be applied for the removal of such flora	<p>The nearest Forestry and Wildlife conservation Office (Ministry of Environment, Forestry and Tourism)</p> <p>The Director: Tel: (061) 284 2518</p>
Nature Conservation Ordinance No. 4 of 1975 (as amended)	Permits are required for the removal of protected plants species. In the case of EPL 6217 the <i>Moringa ovalifolia</i> species found on the granite and dolerite hills in the area is a protected species, and there a permit should be applied for the removal of such flora	
National Heritage Act (Act No. 27 of 2004)	<p>The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment.</p> <p>The archaeological and heritage study did not find any high-risk heritage aspects with a potential to be disturbed by the exploration activities (Appendix E). It is recommended that a buffer of 50 meters on all the sites observed within the project area.</p>	<p>Mrs. Erica Ndalikokule (Director) – National Heritage Council of Namibia Tel:(061) 301 903</p>
Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN	The Labour Act, Act 6 of 1992 came into operation in 1992, and a comprehensive set of legal rules covering the health and safety of	No permit is required, but adherence to the Act's Relevant Regulations is mandatory on the

Legislation	Relevance to Project	Contact Details for obtaining Permits
156/1997 (GG 1617).	<p>employees at work came into operations in 1997. On the 31st of December 2007, the new Labour Act, Act 11 of 2007, was promulgated in Namibia and came into operation on the 1st of November 2008. The regulations of 1997 remain valid. The Labour Act, Act 11 of 2007 deals with the redundancy of human resources and sets out the procedures to be followed in the event of dismissals for operational reasons or retrenchment, as well as requirements for severance payments and other benefits. These aspects apply also in the case of mine closure.</p> <p>The project proponent must adhere to all applicable provisions of the Labour Act and the Health and Safety regulations in terms of employee benefits, occupational health and safety, dispute resolution measures, retrenchments and employee benefits, etc.</p>	<p>part of the project proponent to avoid labour protests, ensure good working relationships and legal actions related to labour issues.</p>
Waste Management Regulations of Windhoek Municipal Council	<p>In the absence of similar regulations for the town of Uis, the Waste Management Regulations of Windhoek Municipal Council could be adopted.</p> <p>The Proponent should familiarize themselves with the specific City of Windhoek's Regulations with regards to managing waste (both solid and liquid) on the project sites and where to dispose it.</p> <p>This will also entail the process to apply for permission to dispose off waste on designated landfill/waste sites within the nearest municipality</p>	<p>Contact Person: Mr. A. Hommeb (Control Admin. Officer, Uis Municipality) Tel: 064-504006</p>
Biodiversity Related Legislation	<p>The Convention on Biological Diversity aims to pursue the conservation of biological diversity and the sustainable use of its components. Namibia signed the treaty on biological diversity in 1992 and ratified it in 1997. The convention deals with key aspects such as the protection of sensitive habitats; the maintenance of species and ecological processes, such as surface hydrology and groundwater movement; the prevention of secondary impacts and unnecessary collateral damage; monitoring; the avoidance of adverse impacts on biodiversity, wherever possible; and rehabilitation where avoidance is not possible.</p> <p>Plant species are protected by various mechanisms in Namibia, including the Nature</p>	<p>The nearest Forestry and Wildlife conservation Office (Ministry of Environment, Forestry and Tourism)</p> <p>The Director: Tel: (061) 284 2518</p>

Legislation	Relevance to Project	Contact Details for obtaining Permits
	<p>Conservation Ordinance No. 4 of 1975 and the Nature Conservation amendment Act (Act 5 of 1996).</p> <p>The Nature Conservation Ordinance No. 4 of 1975, as amended, provides for the declaration of protected areas and for the specific protection of scheduled species where they occur. A permit from the MET is required for the removal or destruction of protected species. Species and numbers/quantities involved need to be specified. The conservation of terrestrial birds and animals in Namibia is also governed by this legislation.</p>	
<p>Health and safety: Public Health Act (No. 36 of 1919)</p>	<p>Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health." This therefore requires the proponent to ensure that any possible nuisance in the form of noise, dust levels, visual impacts are limited to acceptable levels as provided for under the relevant regulations of this Act</p>	<p>The Proponents and all its employees should ensure compliance with the provisions of these legal instruments.</p> <p>No permit or license required, but adherence to the Act's Relevant Regulations is highly recommended.</p> <p>Relevant contact Details to ensure compliance:</p> <p>- Ms. Aune Mudjanima (Director for Labour Inspectorate) Tel: 061 206 6111</p> <p>- Ms. Petrina Ndhidengwa (Deputy Director for Occupational Safety and Health) Tel: 061 206 6111</p>
<p>Other relevant legislature which may be considered and adopted to ensure compliance to best practice include:</p> <ul style="list-style-type: none"> • Drainage Regulations of Windhoek Municipal Council (Sewerage and Drainage Regulations published under General Notice No. 312 of 11 November 2010) • Noise Control Regulations of Windhoek Municipal Council (General Notice No. 77 of 30 March 2006). 		

4.2 Impact Enhancement/ Mitigation Actions AND Monitoring

The impact management actions are presented in **Table 4-2** below. Since there is quite an overlap in terms of impacts between the operational and decommissioning phases of the project, the impacts have not been separated per phase of the project. The Table comprises the following aspects:

- The environmental aspect impacted and the potential impacts for which management actions are required;
- Proposed impact enhancement/ mitigation measures;
- Key performance indicators for monitoring success levels of management actions;
- Responsible person(s) for implementing the proposed management actions;
- Resources required for implementing management actions and monitoring and;
- Implementation timeframes for the proposed management actions.

Table 4-2. Management Actions for the Operational and Decommissioning Phases of the Project

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
ADVERSE IMPACTS						
Test quarry wall instability	-Slope instability in test quarry after heavy rains	-visual inspection of test quarry walls by a geotechnical engineer on a regular (say upon opening of any quarry) for all test pits or quarries deeper than 5 m to assess stability of quarry slopes or walls, and recommend stabilization measures where necessary	-Presence, frequency, continuity, dip and filling of prominent fractures in the rock mass - Assess if the fractures daylight into cutting -General condition of quarry walls (is there evidence of slumping, loose rocks at base on slope, over-hanging rocks)	-Site Project Manager (holds overall responsibility) -Geotechnical Engineer/ Geotechnical Consultant (2 nd in charge)	Technical Staff (Geotechnical Engineer)	As soon as any test pit or quarry deeper than 5 m has been opened, or and as and when signs of ground instability are detected/ observed
Soils	-Destruction of soil structure through excavation and traffic – induced compaction -Accelerated soil Erosion on access tracks, cleared areas, top soil stockpiles either due to removal of vegetation cover or loosened soil structure	-Top soil overburden should be stockpiled in designated areas during development of exploration camp as well as during test quarrying to avoid uncontrolled erosion and mixing with unfertile subsoils -Use subsoils to backfill worked areas, and place fertile topsoil as cover on top -Minimize disturbed footprint as much as practically possible at any given time by targeting sites with exposed bedrock or sites with little soil cover	-Record any evidence of new traffic tracks outside of designated access and haul roads by means of photographs -Record evidence of new erosion gullies (photographs) -Record evidence of	-Health and Safety Officer -Hired soil scientist	-Technical Staff (Soil Conservation Scientist to offer training and monitor depth profiles as well as contamination levels)	-Throughout the operational phase -Once every 6 months for monitoring depth of soil profile and contamination levels in areas of high runoff and

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	-Soil Contamination and Pollution	<ul style="list-style-type: none"> -Avoid creation of new tracks to minimize soil compaction as much as possible. All traffic should stick to access roads provided and or meant for the project operations -Scoop up polluted or contaminated soils and transport them to designated landfills or waste sites in Uis -Enforce punishment for non-compliance in the form of disciplinary hearing -Soil conservation training to staff and contractors during inductions 	<ul style="list-style-type: none"> soil contamination -Bi-annual site wide evaluation on the effectiveness of erosion control efforts including erosion control structures - Monitor depth of soil profile and contamination levels every 6 months in areas on runoff, as well as near drill and test quarrying sites 			areas of active exploration
Land Use	<ul style="list-style-type: none"> -Changes in land use due to creation of test quarries and erection of exploration camp infrastructure - Conflicts between exploration activities, small stock farming and biodiversity conservation Possible conflict with small scale miners in 	<ul style="list-style-type: none"> -Compensate affected farmers for lost agricultural/ grazing land during to temporary fencing, and if footprint is significant - Close up all test quarries and drillholes in areas where prospecting results are unsuccessful to minimize risk of unwanted trapping of animals or animal fatalities - At sites envisaged for continuous quarrying fence test quarries off to avoid unwanted 	<ul style="list-style-type: none"> -Affected farmers effectively communicated with on any pits or sites of danger (e.g. sites of active drilling and test quarrying) - Farmers or the communal conservancies effectively and timeously compensated for any animal fatalities arising 	<ul style="list-style-type: none"> - Site Project Manager (holds overall responsibility) - PRO (2nd in charge) 	<ul style="list-style-type: none"> -Funds or Equity to compensate affected farmers and communal conservancies, and to acquire fencing material -Labour force to temporarily fence off sites 	<ul style="list-style-type: none"> -Compensation can be once off or throughout the life of the operation -Fencing to be completed soon as a decision on the suitability of the rock mass for continuous quarrying has been made

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	the area	<p>trapping of animals or animal fatalities</p> <p>-Compensate farmers or the communal conservancies for any animal fatalities induced by exploration activities</p> <p>-Maintain a clearance buffer to any sensitive sites of conservation, farming, residence and small scale mining importance</p>	<p>from prospecting activities</p> <p>-Sites envisaged for continuous quarrying temporarily fenced off</p>			
Topography and Landscape	-Changes in topography and landscape due to quarrying	<p>-Test quarrying must be spatially constrained to small footprints so as not to create massive openings in the ground</p> <p>-Backfill and landscape test quarries not meant for continuous quarrying</p> <p>-Minimize disturbed footprint at any given time by limiting cleared or stripped sites to those where drilling and test quarrying shall take place</p> <p>-Have designated stockpile areas for top soils and overburden. Preferably such sites should be concealed from highly active roads</p>	<p>-Annual site wide evaluation on the effectiveness of rehabilitation of test quarry and drilling sites, spoil areas, stockpile areas; and the spatial extent of cleared ground at sites of active exploration.</p> <p>- Recommended that at any given time cleared ground at active prospecting sites must NOT extent beyond 20 to 30m from the edge of the test quarry footprint.</p>	<p>- Site Project Manager (holds overall responsibility)</p> <p>- SHE Officer (2nd in charge)</p>	<p>-Funds for ongoing site reclamation and rehabilitation</p> <p>-Earthmoving plant to backfill worked areas; spread topsoil over worked areas; and grade rehabilitated areas to acceptable natural slopes</p>	-Ongoing throughout the operational phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-Maintain one access road to and from each test quarry or drill site				
Vegetation and Habitats	<p>-Removal of vegetation during site clearing, drilling and test quarrying</p> <p>-Destruction of vegetation/ habitats by uncontrolled veld fires, excessive dust and illegal firewood collection</p> <p>- Potential introduction of alien plant species due to increased flow of external traffic in the area</p> <p>- Possible hindrance of plant growth due to compacted soils, dust cover on plants , etc</p>	<p>-Minimize disturbed footprint as much as practical at any given time</p> <p>-Before clearing each site hire an independent botanist to inspect the area for any protected plant species. If any identified, obtain removal permits from the Directorate of Forestry prior to removal</p> <p>-No smoking should be allowed near refuelling depots or any other area where fuel , oil are used or stored</p> <p>-Restrict movement of vehicle and machinery to existing roads and tracks to prevent unnecessary damage to vegetation</p> <p>-No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for onsite camping workers from authorized firewood producer or sellers</p>	<p>-Keep record of names and photographs of all protected plant species identified by independent biodiversity specialist prior to clearing any site</p> <p>-Monitor the following parameters for all rehabilitated areas: % vegetative cover/ density; vertical structure of vegetation; plant health; richness and abundance of indicator species; type and extent of erosion; presence and extent of invasive alien plants</p> <p>-Record all illegal activities related to destruction of vegetation such as</p>	<p>-Site Proejct Manager (holds overall responsibility)</p> <p>-SHE Officer</p> <p>-Local community and Contractors</p>	<p>-Funds for flora restoration program</p> <p>-Technical Consultants to help with monitoring restoration progress and implementation of flora restoration plan</p>	-Ongoing throughout the operation

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<ul style="list-style-type: none"> -Draft a vegetation restoration plan -Encroacher bush cut during site development may be stockpiled and sold to local charcoal or firewood producers -Minimize dust cover on vegetation proximal to drilling sites by fitting dust filters onto the drill rigs -Rip traffic compacted ground after exploration to encourage flora growth - Avoid unnecessary affecting areas viewed as important habitat – i.e. Ephemeral River and its network of tributaries of ephemeral rivers; clumps of protected tree species - 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) 	illegal cutting of trees			

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		- 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				
Waste Management	<p>-Solid waste pollution due to littering, cut vegetation, and storage of domestic and industrial (scrap metal; empty containers; used tyres, oils, grease and mechanical spares) waste on site</p> <p>-Solid waste pollution due to stockpiling of waste rock, cleared vegetation</p> <p>-Waste pollution due to usage and storage of reagents, fuels and lubricants on site</p>	<p>-A site specific Solid Waste Management procedure should be drafted during site development and updated as the site developed and as drilling and test quarrying progresses</p> <p>-A record of all types of waste generated and disposed from site is to be kept on site</p> <p>-All industrial solid waste should either be disposed off at designated Landfills in Uis, or be sold off to used equipment dealers, or simply given away. The necessary permits should be obtained where necessary. All industrial waste should be stored in secure fenced off areas</p> <p>-Used tyres may be painted and used to mark the edges of roads, bends and</p>	<p>-Site wide evaluation of the general condition of all waste storage sites must be conducted as part of the bi-annual environmental audits</p> <p>-A register of all waste generated on site is kept on site</p> <p>-All waste disposal permits from relevant authorities are available on site</p>	-SHE Officer	<p>-Funds to acquire waste storage bins/drums; and transport all waste from the site</p> <p>-Funds to hire an independent environmental consultant to conduct bi-annual environmental audits</p>	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<p>accidental blind spots</p> <p>-Waste separation at source will be enforced by availing clearly labelled or differently coloured general waste (paper, plastic, organic waste) rubbish bins at all working areas. These must be emptied fortnightly at the nearest registered waste dumping site</p> <p>-All hazardous waste such as oil drums and grease should be stored in secure fenced off and sealed drums. Such areas must also have a concrete floor for spillage containment purposes. Used oils and grease must sold or donated to recycling companies</p> <p>-Poor quality waste rock is to be stockpiled in designated areas away from runoff pathways, and must be used as backfill during rehabilitation</p> <p>-Ensure that sewage from portable sanitation facilities complies with the relevant sewage management regulations highlighted in section 4.1</p>				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Indigenous Fauna	<p>-Forced migration of fauna due to physical disturbance/ destruction of habitats, increased noise levels and increased dust in the area</p> <p>-Impeded free movement of fauna due to physical obstructions (fences, test quarries, camp, etc)</p> <p>-Threats to wildlife from illegal hunting, possible poaching and poisoning from consumption of drilling fluids or oils</p> <p>-Threats to animal life due to risk of collisions with vehicles</p>	<p>-Minimize impact on animal migration by not fencing off large areas</p> <p>-Minimize animal fatalities from collisions with vehicles by limiting speed limits to 50 km/hr</p> <p>-Site personnel shall refrain from killing/poaching or snaring or intentionally disturbing local animals that may be found on and around the working areas.</p> <p>-Personnel are not allowed to kill or in any way disturb local livestock</p> <p>-All wild animals found to be causing trouble at the working areas are to be reported to the relevant directorate at the MEFT, and shall only be removed from site by authorized personnel from such directorates</p> <p>-Limit exposure of reptiles and birds to toxic substances such as oils by ensuring these are stored in sealed containers, and fencing off such storage areas</p>	<p>-Keep records of all illegal hunting activities; vehicle-animal collision incidences; animal poisoning through consumption of hazardous substances</p> <p>-Record all incidences of animal fatalities arising from prospecting activities (e.g. collisions, trapping in fences or open test quarries, etc)</p> <p>-Do animal counts at strategic locations within the EPL area every 6 months as part of the bi-annual environmental audit</p>	- SHE Officer	<p>-Funds to hire an independent environmental consultant to conduct bi-annual environmental audits</p> <p>-Funds to fence off storage areas</p>	Ongoing throughout the prospecting phase
Air Quality	-Dust generated from drilling, stripping and test quarrying operations, and traffic flow on access roads	-Apply a thin layer of crushed aggregates as cover on prominent access roads near homesteads to minimize dust generation	-Monthly dust level monitoring by installing dust fall-out down-wind from prominent access roads, at	- SHE Officer	-Funds to implement the dust and air quality monitoring program, including the bi-annual	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	<p>-Increased emissions of toxic gases from increased traffic flow in the area and other machinery such as diesel generators</p>	<ul style="list-style-type: none"> -Locate stockpiles not in the predominant wind direction of homesteads - Cover vehicles carrying dusty overburden materials to prevent materials being blown from the vehicles -Set speed limits to 50 km/hr to minimize the creation of fugitive dust within the project boundary -Limit vehicle idling and keep vehicles well maintained to minimize particulate and gaseous emissions -All drill rigs to be used must be fitted with dust capture or filters -Reduction in unnecessary traffic volumes; -Use of wet suppression during cutting operations at test quarrying sites -All personnel onsite to wear appropriate PPE 	<p>homesteads and selected test quarrying sites</p> <p>-Continuous monitoring for ambient dust/ particulate (PM10 and PM2.5)</p> <p>-All employees must do a mandatory health check every 6 months to monitor impact on their respiratory systems</p>		<p>personnel health checks</p> <p>-Technical Specialists (Air quality)</p>	

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Noise	<p>-Increased nuisance due to increased noise from drilling, excavation works, test quarrying work, and movement of plant</p> <p>-Increased noise due to increase number of people in the area</p>	<p>- During the operational phase, when noise levels are anticipated to be less variable, the frequency of monitoring will be reduced to annual surveys, with spot-checks of 1 hour's duration during the daytime and night-time at receptors conducted monthly. Additional 24-hour surveys will be conducted should noise complaints be received</p> <p>-Project employees will be trained to operate a sound level meter and how to undertake reliable environmental noise measurements.</p> <p>-A communications plan will be enacted to communicate the results of the monitoring to nearby residents and to record and investigate any noise complaints.</p> <p>-Limit all drilling and test quarrying operations to day time</p>	<p>- Measured levels will be recorded in a log and checked for compliance with the evaluation criteria stipulated under appropriate standards such as SABS or BS 5228</p>	- SHE Officer	<p>-Funds to implement the noise monitoring program, including purchasing of simple equipment</p> <p>-Technical Specialists (noise and ground vibrations)</p>	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Surface Water Resources	<p>-Pollution of surface water resources through hydrocarbon spillages in runoff areas and contamination of small streams in the area as a result of contact with drilling fluids or inadequate sanitation facilities resulting in reduced water quality</p> <p>-Poor recovery and recycling of water from drilling and test quarrying operations can put pressure on the external water source</p> <p>-Creation of test quarries in river streams may impend flow until such depressions are filled, thereby negatively impacting downstream water supply</p>	<p>- The prospecting program activities shall be designed such that test quarrying operations do not encroach on any significant watercourses traversing the project site. Buffers of 100m shall be maintained around main surface water courses, and if the project proceeds to mining phase such buffers must be delineated more accurately using the predicted extent of the 1% annual exceedance probability (i.e., the 1 in 100-year) flood event.</p> <p>- Maximise the recycling and reuse of external water during drilling and test quarrying operations. This will minimise water demand from the external sources</p> <p>-Install and maintain efficient oil and grease traps or sumps at refuelling areas, and making emergency spill scoops readily available</p> <p>-Attenuate surface runoff by using on-site storage and water management infrastructure (e.g. storage sumps, low gradient ditches, clean water diversion</p>	<p>-Implement quarterly surface water quality monitoring. Target levels to comply with the threshold values stipulated for Article 21 Permit from the Ministry of Agriculture, Water and Land Reform. This will primarily involve monitoring of pH, EC and turbidity</p>	<p>- SHE Officer</p> <p>-Contractor (water supply contractor)</p>	<p>-Funds to implement the water quality monitoring program</p> <p>-Technical Specialists to delineate buffers (Water Specialist)</p>	<p>Ongoing throughout the exploration phase</p>

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<p>ditches)</p> <ul style="list-style-type: none"> -Store effluent waste water in designated septic tanks at the exploration site and regularly drain this by hiring a registered waste water management entity -Install adequate toilets fitted with well-sealed septic tanks at the exploration camp - Apply erosion controls such avoiding leaving open excavations in streams and river beds to minimize sediment runoff -Runoff from overburden emplacement areas shall be captured in collection ditches at the toe of those stockpiles 				
Groundwater Resources and use	-Pollution of groundwater resources from seepage of drilling fluids, contact water from test quarries, un-procedural discharge of waste water, and contamination by entrance of external substances through unsealed drill holes	<ul style="list-style-type: none"> -Due to the shallow nature (<30 m) of the planned drilling and test quarrying activities, it is highly unlikely that any groundwater will be intercepted during. Hence the impacts on groundwater resources are perceived to be low. -Seal off unused boreholes <p>Monitor water quality at existing community</p>	-Implement quarterly groundwater water quality monitoring program at existing community boreholes focusing on the following parameters: pH, and electrical conductivity. Compare water	- SHE Officer	-Funds to implement the monitoring program -Technical Specialists (Hydrogeologist)	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		boreholes over a 1 year period and establish any adverse changes in water quality	quality values with baseline values established at start of exploration drilling and test quarrying.			
Occupational Health and Safety	<p>-Short to Long-term safety risks which could result in disabilities or fatalities</p> <p>-Short to Long-term health effects from dust and noise</p> <p>-Increased risk of HIV/AIDS infections to vulnerable women and children due to influx of people to the area</p>	<p>-Proponent must avail adequate and appropriate PPE to all workers and visitors. All active/ working sites should have adequate first aid kits as well as first aid trained personnel</p> <p>-Resources (both human and financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings</p> <p>- Awareness on HIV/AIDS among workers and community members is raised</p> <p>-Timeously recording and reporting of all health and safety incidences, and promptly take necessary actions</p>	<p>-Annual health screening of workers</p> <p>-Bi-annual health and safety audits done</p>	<p>-Production Site Manager (holds overall responsibility)</p> <p>-Contractors</p> <p>- Community Members</p> <p>-SHE Officer</p>	<p>-Funds to acquire PPE, health and safety monitoring equipment; and to pay for employee medical services</p> <p>-First Aid training for at least 2 personnel at each active site</p>	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<p>-A risk assessment must be performed and documented prior to commencement of any drilling, rock cutting, or lifting operation and signed off by the site foreman and SHE Officer</p> <p>-Develop an MOU with Healthcare Centres in Uis for regular medical check-up of workers</p> <p>-Enforcement of speed limits and sanctions for any personnel found in violation of speed limits, including senior staff and contractors' and sub-contractors' employees</p> <p>-Appropriate signalling of moving heavy machinery in the form of flashing lights and reverse sounding alarm</p> <p>-All drivers to be given safety inductions and awareness training focussing on speed and conflicts between pedestrians and animals, dust and gaseous emissions</p>				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<ul style="list-style-type: none"> -Proper screening of appointed security personnel to ensure they are not compromised - As per the Labour Act (Act 6 of 1992) and SABS 10083 (2004) workers will need to be protected against dust and noise in the work place. SABS 10083 (2004) requires that noise levels in the work place (as defined and measured in accordance with that standard) should not exceed 70 to 85 dBA. If this limit is reached, then a noise zone must be declared. A noise zone has special requirements for protective equipment and for training of exposed personnel. - Dust will be released into the air at test quarrying, soil stockpile sites and access roads. SABS 1929 (2005) provides the following standards for PM10 particulate matter - Used tyres that may be generated on site, that could contain pooled water and act as breeding ground for mosquitos, will be 				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<p>transported to designated waste disposal sites in Uis regularly</p> <p>- Implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty</p>				
Farm Security	<p>-Security threats to farmers due to increased farm access and possible influx of unemployed people to the area</p> <p>-Security threats to JTD personnel due to the isolated locality of the exploration camp</p>	<p>-The proponent will work with the farmers and traditional leaders to develop and implement a neighbourhood watch regime</p> <p>-Install solar powered flood lighting at the exploration camp to ensure high visibility during the night</p> <p>-Keep a dog at the exploration site for security reasons</p>	<p>-Record and report (timeously) nature of all theft, security threat injury related incidences</p> <p>- Have a complaints log which is accessible to community members, and must be reviewed monthly by the PM and SHE Officer, and the pertinent issues logged and monitored</p>	<p>-Production Site Manager (holds overall responsibility)</p> <p>-SHE officer</p> <p>- Community members</p> <p>- Site Foreman</p>	<p>-Funds to procure security services and security equipment such as flood lights</p>	Ongoing throughout the exploration phase
	-Adverse visual impact caused by lighting at night	-Progressively rehabilitate test quarries where poor quality rock is encountered.	-	-Site Foreman	-	-

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Visual Damage	<p>-Degradation in natural aesthetic value from close range due to presence of open test quarries, containers, overburden stockpiles, and earth moving machinery</p> <p>- Due to the intervening topography and vegetation between the project site and sensitive receptors (e.g. the C35, D3714 and D3715 gravel roads), the project is not anticipated to be visible from major viewing locations</p>	<p>Rehabilitation must include restoration n of surrounding grassland and bushland</p> <p>-Lighting from flood lights at the exploration camp must be focussed around this site only so as not to cause lighting pollution at night</p>				
Heritage/ Archaeology	<p>-Possible destruction of unforeseen heritage/ religious/ cultural/archaeological sites</p> <p>-Dust caused by stripping and overburden removal may settle on rock arts,</p>	<p>-All known heritage/ cultural/ archaeological sites must be protected and preserved</p> <p>- Prior to stripping the site foreman must conduct a visual inspection of the site for any features of archaeological/ heritage/</p>	-Records of all archaeological/ heritage/ religious sites or features identified	<p>-Production Site Manager (holds overall responsibility)</p> <p>-Site foreman</p> <p>-PRO</p>	-Technical Specialists (Historian/ Archaeologist)	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	and potential conceal such arts; thereby making them highly susceptible to destruction	<p>religious importance.</p> <p>-Two locations of archaeological and cultural importance were identified during the field surveys. These include the late chief's homestead located close to the erected JTD site and some rock paintings plus caves in the southern part of the EPL. The NHC must conduct detailed surveys of these and document them</p> <p>-Apply the chance find procedure documented above to any sites found by chance</p>		-Community Members		
Public Disputes/ Grievances	-Risk of compromised relationships between Project owners, the affected communities and leadership of the communal conservancies due to JTD's non-compliance to recommended environmental practices as set out in the EMP, littering or any other prohibited	<p>-Have a complaints logbook. Monitor community grievances, take necessary actions and provide feedback to complainants</p> <p>- If exploration yields successful results a Community Development Plan must be developed jointly by JTD, the TA, affected community and the communal</p>	<p>- Monitor community grievances and provide feedback on a monthly basis</p> <p>- Conduct community perception surveys annually. This must include questions in relation to local perception of the</p>	<p>-Production Site Manager (holds overall responsibility)</p> <p>-PRO</p> <p>-Site foreman</p>	-	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	activities	conservancies - Exploration camp if required should be established in close consultation with the land owners	proponent's performance in environmental and social management as well as effectiveness of the proponent's communication channels			
POSITIVE IMPACTS						
Stringent implementation of the EMP	-Strick and deliberate implementation of the EMP will ensure that preventative and proactive environmental management measures are implemented -Will help establish an independent and skilled human resource base within the affected communities	- Conditions set out in the EMP are included in all tender specifications for goods and services that need to be procured - Senior staff and senior contractors are aware of, and practice the EMP requirements, thereby giving a positive example to everyone else -Give recognition to environmentally acceptable behaviour	- Conduct bi-annual environmental audits to evaluate extent of implementation and compliance to the EMP, and adopt corrective measures for aspects in the EMP which could not be fully implemented	- PM -SHE Officer -PRO -Contractors	-Resources (financial and independent consultants/ auditors) to implement enhancement measures	Throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-Conduct bi-annual environmental audits to facilitate ease of ECC renewal				
Biophysical and physiographical environment	- Improvement in regulatory measures and their implementation thereof - regulatory measures will help offset adverse impacts, for instance, by restricting activities allowed in sensitive areas (e.g. near archaeological and heritage sites). Such restrictions can also help protect over exploitation of natural resources such as water, wood and animals by, for instance, prohibiting hunting and collection of firewood	- Collective establishment of operational buffers by the affected communities/ conservancies and the proponent to set and maintain specific operating buffer distances to sensitive areas within the EPL boundaries (e.g. areas of settlement, archaeological/ heritage sites, etc.) - Stringent enforcement of such buffers by Environmental Inspectors	- As part of the bi-annual environmental audits evaluate whether such buffers have been maintained	- PM -PRO - SHE Officer - Environmental Inspectors - Leadership of affected communities/ conservancies	- Human resources to jointly establish and demarcate the boundaries of such operational buffers before commencement of operations	- Throughout the exploration phase
Employment and technical skills transfer	-Employment opportunities with associated improvement in livelihoods for youth from Uis and surrounding communities	-Regular and accessible (transparent) dissemination of the human resources and employment policy to affected communities -Encourage complaints of inequality and	-For every key job occupied by a foreign national evaluate skills learned by local under-study at the end of each production year	-Site Project Manager (holds overall responsibility) -SHE Officer - Contractors	-Avail human resources and time to provide on the job training	Ongoing throughout the project duration

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	-Transfer of administrative and technical skills	discrimination in job, and then self-correct -The employment of local residents and local companies should be a priority.	- Job seekers must submit proof of having lived in the area for a minimum of 3 years	- Community members		
Local Empowerment and Procurement Opportunities	- Empowerment of Previously Disadvantaged Persons through procurement of services to local contractors -Opportunities for local companies to procure support services such as cleaning, marketing, cooking, canteen services, security services, and supply of spares	-Procure support services (cleaning, cooking, machinery maintenance, security and product transportation services from local previously disadvantaged contractors) -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 - Develop a database of local businesses that qualify as potential service providers and invite them to the tender process - Stipulate that local residents should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would	-On an annual basis review contracts awarded for support services to assess number of local previously disadvantaged contractors who benefited from such a process	-Site Project Manager (holds overall responsibility) -PRO Officer - Affected community	-	Ongoing throughout the project

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		<p>reinvest in the local economy</p> <p>- 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</p>				
Financial benefits to jurisdiction authorities	-Financial benefits to the traditional authorities through surface lease fees	-Ensure that affected TAs are reasonably compensated either in cash or through equities or through surface rentals	-Evaluate mode and magnitude of compensation during the bi-annual environmental audits	-Project Manager (holds overall responsibility) -PRO - Leadership of affected communities	-Funds for compensation	Once off or ongoing (on monthly basis) throughout the project duration
Awareness raising and environmental education	-Through the inclusive implementation of the EMP the proposed exploration project has the potential to increase public appreciation of environment and sustainable development and to spread awareness of environmental	<p>- The proponent shall incorporate the principles and practices of sustainable development from the project onset by including cleaner production techniques focused at minimizes environmental impacts during the project life cycle</p> <p>- The proponent shall provide environmental information and awareness raising among workers, local community and visitors to the operation of the environmental</p>	- Evaluate evidence of environmental protection training and awareness activities during bi-annual environmental audits	- PM - PRO - SHE Officer - Contractors/ Technical Consultants - Leadership of affected conservancies	- Funds to conduct trainings and awareness raising	Ongoing throughout the project

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	protection and opportunities by bringing people into closer contact with environmental conservanists and inspectors.	consequences of their actions during the project life cycle - The development of the proposed project will help in raising local awareness of the financial value of natural and cultural resources and can stimulate interest (among local communities) to become more and more involved in mineral resource prospecting				
Revenue for Government	-Revenue collection for government through taxes and EPL License levies	-The proponent must pay all relevant taxes applicable under the constitution of the Republic of Namibia	- Evaluate payment of such taxes and levies during the bi-annual environmental audits	-Site Project Manager (holds overall responsibility)	-	Ongoing throughout the duration of project
Proactive Environmental Planning and Management	Proactive planning helps to make choices between conflicting land uses, or to find ways to make them compatible. By planning proactively by, for instance, linking the proposed mine development to the support of local community farming and tourism development as well as identifying and establishing linkages to potential SME business development the proposed project will	- Planning to use of environmentally friendly technologies and methods, designs and activity choices will immensely diminish pressure on natural resources. Other planning measures that could contribute to improved environmental management include: <ul style="list-style-type: none"> • Designing the exploration program to be labour intensive • Making use of solar for lighting • Planning for generation of different waste, thereby helping to plan proactively for waste minimization and management A complete practical Guide on Cleaner Production Strategies is Available at the	- Evaluate evidence of pro-active environmental planning and management during bi-annual environmental audits	- Intellectual capacity to design and plan the exploration program with aspects of environmental protection and management in mind - Funds to implement environmentally friendly designs	- PM - Technical Consultants - SHE officer - Leadership of conservancies - Contractors	Prior to commencement of drilling and test quarrying

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	have a more tangible impact in terms of environmental management, and improved quality of life of the local people	Department of Environmental Affairs, Ministry of Environment, Forestry and Tourism.		and methods		
EMP implementation and training	Lack of EMP awareness and implications thereof	An EMP non-compliance penalty system should be implemented on site. The Proponent should appoint a PM, PRO and SHE Officer to manage the implementation of the EMP and monitoring program.	All required Plans and systems are compiled and in place Safety, Health and Environmental (SHE) Officer is appointed	Proponent	Records of EMP implementation Plans and Systems	Pre-exploration (project activities)

4.3 Rehabilitation Measures during decommissioning

Indications from desktop studies and walk over surveys so far indicate that this project is likely to advance into the continuous quarrying phase. For this reason, one cannot really talk of project closure at this stage but rather "partial" decommissioning at sites where exploration drilling and test quarrying may take place but not necessarily continuous quarrying because of poor exploration results. Sites that would need to be partially decommissioned and rehabilitated include:

- The initial exploration camp if the best sites for possible continuous quarrying of granite and dolerite happen to be too far from the current camp
- Sites where drilling and test quarrying may be conducted but ultimately yield poor exploration results to substantiate continuous quarrying. Access roads to such sites will also have to be decommissioned and rehabilitated.

Table 4-3 provides the rehabilitation and closure measures to be implemented at the above sites to ensure that requirements of the Environmental Management Act are met. It is important to emphasize that for this to happen effectively and efficiently, resources (both human and financial) must be provided to cover rehabilitation costs that may arise.

Table 4-3. Rehabilitation Measures for sites that may be decommissioned prior to continuous quarrying

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
Revegetation	<p>-All surface infrastructure areas affected by the project will be re-vegetated using local plant species. The following revegetation measures will be implemented over such sites:</p> <p>Prepare surface rehabilitation areas for the natural establishment of vegetation by undertaking the following:</p> <ul style="list-style-type: none"> • Rip disturbed footprint to a depth of approximately 500 mm with suitable agricultural equipment to alleviate compaction; • For areas that are heavily compacted (container platforms, access roads), rip with construction equipment to a depth of at least 1 m, and over-rip with agricultural equipment in order to create suitable conditions for vegetation establishment; spread stockpiled topsoil; and ameliorate soils as required. • Allow for natural establishment of a viable self-sustaining vegetation community, in keeping with the surrounding natural environment, or establish pioneer vegetation species as per findings of dedicated rehabilitation trials to be run from the start of the project; and • Undertake vegetation monitoring (including % recovery of vegetation) post decommissioning to quantify site restoration and rehabilitation success 	<p>- Exotic weed species are not observed to be elevated in abundance when compare to the regional setting as reported by a trained independent botanist</p> <p>-Monitoring sites are established on site (1 every 10 ha) and surrounding sites (at least four representative control sites outside the EPL). Flora species diversity in rehabilitated areas must be representative of control sites. Vegetation density of monitoring sites are at least 80% when compared to the average of the control sites.</p>

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
Contaminated Soils	<p>-Undertake a site-wide contaminated soil survey to determine the nature and extent of contamination, the sources of contamination and to identify appropriate remediation measures;</p> <p>-Rehabilitate moderately to severely contaminated (inorganically contaminated) soils as follows:</p> <ul style="list-style-type: none"> • Excavate contaminated material to a depth of 500 mm and remove and dispose off at the Uis waste dump site(s). <p>- Rehabilitate moderately to severely contaminated (organically contaminated) soils as follows:</p> <ul style="list-style-type: none"> • Treat organic contamination by means of biological remediation via the establishment of a bioremediation site and monitor soil quality against a selected control site. 	<p>-Inorganically contaminated soils are safely disposed off at designated waste dump sites in Uis, subject to granting of relevant permits if applicable</p> <p>-Organically contaminated soils are effectively treated and compositions are restored to acceptable levels once compared with control sites</p>
Surface Infrastructure and Equipment	<p><u>Infrastructure for Potential Beneficial re-use</u></p> <ul style="list-style-type: none"> • Compile an inventory of infrastructure and equipment to potentially remain on site while awaiting mining license. These must be aligned to end land use plan; • Obtain legal authorisations from local authority for infrastructure and plant to remain on site while awaiting mining license and; • Relocate exploration camp equipment to final designated site within the EPL as per the results of the exploration program <p><u>Surface infrastructure to be removed</u></p> <ul style="list-style-type: none"> • Remove all assets/equipment that can be profitably removed for salvage or resale; • Dismantle/demolish infrastructure if project will not proceed to quarrying; 	<p>-Formal transfer of exploration camp infrastructure and exploration/ quarrying plant off site, or to the new site that will be utilized during the active quarrying phase</p> <p>-Independent sign-off by a qualified engineer confirming the safe and stable condition of all transferred infrastructure</p> <p>-All other infrastructure decommissioned to ground level and removed from site</p>

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	<ul style="list-style-type: none"> • Decontaminate hazardous waste storage tanks and containers at a dedicated decontamination bay in Uis or any other nearest town; • Demolish and excavate any concrete foundations to 1 m below ground level. Alternatively and in appropriate instances the concrete slabs of “clean” infrastructure (not processing infrastructure) can be covered with a 1 m soil cover as part of site re-profiling and integrated into the surrounding topography; • Backfill excavations of disturbed test quarry footprint areas through a cut to fill action; • Shape and profile the disturbed surface areas to match surrounding topography and to ensure free drainage, thus limiting run-off erosion; • Stabilise disturbed areas to prevent erosion and sediment mobilisation in the short to medium term until a suitable vegetation cover has been established; • Rip disturbed footprint to a depth of approximately 500 mm with suitable equipment to alleviate compaction; and • Establish vegetation species that mimic the surrounding flora by collecting seed from pristine bush, shrub and grass land and actively spreading stockpiled top soil before the next wet season <p><u>Measures relating to support Infrastructure</u></p> <ul style="list-style-type: none"> • Obtain legal authorisations for infrastructure to remain and to be transferred from the local authority; • In addition Identify and donate equipment to affected communities/ conservancies that can be reused and/or recycled • Dismantle any overland pipelines and salvage; 	

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	<ul style="list-style-type: none"> Seal open ends of buried pipelines, drill holes and fully cover with nothing exposed <p><u>Measures relating to transport Infrastructure</u></p> <ul style="list-style-type: none"> Agreements will be put in place between JTD and local communities as well as the relevant authorities as to which of the newly created access roads must remain post decommissioning of certain areas for beneficial use by communities. <p>-Roads that will no longer be used by local communities will be rehabilitated as follows:</p> <ul style="list-style-type: none"> Re-establish natural drainage by removing any water abstraction or diversion structures; Profile to be free draining and emulating the natural surface topography; Rip access roads to a depth of approximately 300 mm with suitable agricultural equipment to alleviate compaction; and Establish vegetation species that mimic the surrounding shrub/ bushland by collecting seeds from pristine surroundings and actively planting before the wet season <p><u>Measures relating to Electrical Infrastructure</u></p> <ul style="list-style-type: none"> Remove or relocate any generators and demolish any concrete bases; Dispose off demolition waste at waste site; Clean up contaminated soils at the generator site, as required <p><u>Measures relating to Mobile Machinery/ Vehicles</u></p> <p><u>Machinery and Vehicles</u></p> <ul style="list-style-type: none"> Identify equipment that can be used for quarrying and/or 	

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	<p>recycled that will not be salvaged;</p> <ul style="list-style-type: none"> • Remove remaining equipment offsite for sale or disposal at a nearby registered waste site; and • Clean-up contaminated soils 	
Above Ground Openings (test quarries, diversion ditches, drill holes)	<ul style="list-style-type: none"> • Backfill test quarries where continuous will not take place; • Place topsoil over backfilled areas; • Shape footprint area to be free-draining (aligned to site-wide routing); • Rip area to alleviate compaction; and • Establish vegetation by spreading top soil over • Seal off drill holes 	
Surface and Groundwater	<p>Surface and groundwater monitoring must resume during continuous quarrying. The following actions are to be undertaken upon resumption of the project at quarrying phase:</p> <p><u>For Surface Water</u></p> <ul style="list-style-type: none"> • Monthly monitoring of surface water sites for quality – for duration of active quarrying; and • Conduct biomonitoring at selected downstream sites duration of active quarrying <p><u>For Groundwater</u></p> <ul style="list-style-type: none"> • Quarterly monitoring of boreholes (water quality and level) for duration of active quarrying 	<p>-Water samples taken from sampling points downstream of the mine are within the National effluent quality specifications for a 12 month period</p> <p>- Water samples taken from representative groundwater monitoring boreholes are within the National effluent quality guidelines for a 12 month period</p>
Petroleum Products	<ul style="list-style-type: none"> • Remove oil drums and petroleum products off site for re-sale/use; • Relocate the storage area and associated tanks in which petroleum products are stored; 	

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	<ul style="list-style-type: none"> • Demolish and excavate concrete foundations to 1 m below ground level; and • Clean up contaminated waste 	
Solid Waste	<ul style="list-style-type: none"> • Sort and screen waste produced from the dismantling and demolition of infrastructure; • Crush decontaminated concrete, if required, to reduce uptake in waste cells; • Recycle waste that can be recycled/salvaged (e.g. steel) after decontamination; and • Dispose of inert demolition waste designated site in nearest towns 	

4.4 Quick Guide on EMP Implementation Monitoring

To ensure that the proposed mitigation measures are effective throughout the project's life cycle, a monitoring plan must be implemented alongside the impact mitigation/ management/ enhancement plan. The environmental monitoring programme will also ensure compliance to the recommended mitigation measures and best practice environmental standards. Collectively, the environmental monitoring plan/ programme will serve the following purposes:

- To establish a baseline, that is, gathering information on the undisturbed conditions of the project area;
- To establish long term trends in disturbed systems;
- To estimate inherent variation within the environment, which can be compared with the variation observed in other similar setting;
- To make comparisons against a recognized standard or threshold

The following monitoring tools/ techniques are recommended:

- **PHOTOGRAPHS** must be used to provide evidence and verify compliance with respect to the following aspects:
 - Test quarry wall or slope stability, e.g. benching, rock nails or bolts, meshing, etc.;
 - Provision for erosion control facilities onsite, e.g. re-vegetation works on exposed areas;
 - Provision for dust and noise control measures and facilities, e.g. conditions of access roads, moving traffic, dust collectors on drill rigs
 - Stockpile areas for overburden and topsoil, highlighting zones with any evidence of erosion or those requiring protection from erosion;
 - Provision of site signboards and demarcations that are erected to indicate areas of active drilling and test quarrying;
 - Changes to the landscape and topography of the area;
 - Proper waste management practice onsite, e.g. provision for waste collection bins, general site conditions at the working areas, site office, storage yard, workshop, sewage facilities, and others;
 - Proper transportation management including compliance to allowable vehicle load and other;
 - Evidence for creation of new tracks due to non-compliance

Additionally, when photographs are submitted for compliance monitoring, they should be geo-referenced or their exact location should be clearly marked on a map together with GPS coordinates, as well as the date and time they were taken.

- **PERIODIC FIELD CHECKS** must be done to ensure compliance with the following mitigation measures:
 - Conditions of drilling and test quarry sites;
 - Validity of all operating permits such as the ECC, etc.;
 - Improved working practices/ management procedures at all work sites;
 - Rehabilitation progress;
 - Acceptable conditions of man-made structures such as slope protection, drainage diversion and collection systems, ablution facilities, and oil storage facilities;
 - Landscaping works post rehabilitation of exploration sites;
 - Compliance to provision of appropriate and adequate PPE;
 - Compliance to recommended safe practice such as holding daily safety meetings and conducting daily inspections on vehicles and plant;
 - Compliance to reporting of all safety, health and environmental incidences through inspection of safety books;
 - Proper waste handling at all working areas;
 - Proper transportation management;
 - Visual inspection for general cleanliness and good management practices within the site;
 - Effectiveness of dust and noise suppression systems
- **RECORDS** of stone quarry activities to ensure compliance with the following mitigation measures:
 - Record of all safety, health and environmental incidences;
 - Maintenance of erosion control facilities, e.g. drainage diversion and containment systems,
 - Daily working hours;
 - Daily inspection logs for all vehicles and mobile plant;
 - Records of any chance finds in so far as archaeological/ heritage sites are concerned;
 - Records of any complains launched to JTD Mining Group concerning the prospecting activities;
 - Whether data records being collected for monitoring purposes are actually being utilized by the proponent to evaluate trends and continuously improve on the recommended impact management/ mitigation/ enhancement measures;

5 RECOMMENDATIONS AND CONCLUSIONS

It is recommended that an Environmental Clearance Certificate (ECC) be issued for the proposed prospecting of dimension stone quality granites and dolerites, subject to the following recommendations:

- All required permits, licenses and approvals for the proposed activities are obtained and are valid as required. These include permits and licenses for land/farm access; removal of protected plant species; and all other necessary documentation for ensuring compliance with the specific legal requirements provided in this document.
- The management actions, monitoring plans and rehabilitation measures in this EMP are implemented and monitoring conducted as provided in sections 4.2 to 4.4 as well as **Appendix 1** of this report.
- A condition is included in the ECC granted that the Proponent must comply with the legal requirements governing this type of project and its associated activities.
- All the necessary environmental and social (occupational health and safety) precautions recommended in the scoping and EMP reports are adhered to.
- The project' SHE Officer shall effectively conduct EMP Compliance Monitoring. An Environmental Audit/Compliance Report shall be compiled annually and must include monitoring data, and ultimately, submitted to the DEAF at the Ministry of Environment, Forestry and Tourism for archiving. This would make the next ECC Renewal easier because of an in-between track record of monitoring progress prior to the expiry date of the ECC.
- An ECC Renewal application should be submitted **at least 3 months** before the expiry date of the valid ECC to allow time for the evaluation of the ECC Renewal report by the DEAF.

In conclusion, the effective implementation of the recommended management and monitoring actions (mitigation measures) will see the significant reduction in significance levels of the different impacts (for those impacts which cannot be avoided) to acceptable levels. It is therefore highly suggested that the Proponent and their contractors/employees effectively implement the recommended management actions (mitigation measures). Furthermore, to maintain low significance of the different impacts, the implementation of measures will need to be continuously monitored by the proponent's project manager, PRO and SHE officer, and these parties should be accountable for non-compliance. Monitoring will not only be carried out to maintain a low rating of impacts' significance but to also ensure that all potential impacts identified in this study and other impacts that might arise during project implementation are properly identified in time and addressed.

APPENDIX 1: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

Areas of proposed development activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The "chance finds" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): "*a person who discovers any archaeological objectmust as soon as practicable report the discovery to the Council*". The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Responsibility:

Proponent:	To exercise due caution if archaeological remains are found
On site Foreman:	To secure site and advise management timeously
Superintendent	To determine safe working boundary and request inspection
Archaeologist	To inspect, identify, advise management, recover remains and delineate clearance buffer

Procedure:

Action by person identifying archaeological or heritage material

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape
- c) Determine GPS position if possible
- d) Report findings to foreman

Action by site foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.