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UPDATED/ AMENDED ENVIRONMENTAL MANAGEMENT AND REHABILITATION PLAN (EMRP)

TO

Support the addition of Industrial Minerals to the already approved and ongoing prospecting program for dimension stone quality rocks within Exclusive Prospecting License (EPL) 6217 in the Erongo Region, Namibia

MEFT APPLICATION NO.:	**APP-001314**
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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
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

EPL 6217 was granted to the JTD Mining Group (Pty) Ltd in June 2020, after which an environmental and social impact study was undertaken for the envisaged prospecting of dimension stone quality rocks. Upon completion of the Environmental impact studies, an Environmental Clearance Certificate (ECC-01746) was granted in November 2021 for the prospecting activities to commence. The prospecting of dimension stone quality rocks as permitted by this ECC primarily targeted doleritic and granitoidal intrusions in the license area. Prior to commencing the actual exploration work JTD set up a containerized exploration camp on farm Nudanab in the western portion of the license area, and approximately 1.4km south of the main homesteads and community borehole on this farm. The exploration camp is self-contained, is enclosed in a sand/ waste rock boundary embankment to the north and west to control access, and comprises of the following structures (refer to Appendix B, attached):

- A containerized office, accommodation with shower and toilet facilities, kitchen and galley, spares warehouse sections with a roof top solar system for power supply of the entire site
- A containerized accommodation section with ablution facilities, and kitchen and galley for the general workers
- The site containers are generally placed on a 1m high platform which serves as a flooding risk mitigation structure
- A 9m long by 3m wide by 3m deep concrete lined sewage drain which has been compartmentalized into 3 sections for toilet sewage, kitchen waste water and shower waste water. The drain is emptied by pumping out the sewage by a dedicated contractor as and when the facility is about to get full
- A designated parking area for all earth moving plant such as tipper trucks, front end loader, excavators and other sampling equipment such as diamond drill machines, blade cutters, wire saw cutters and their respective spares
- A 23 000L stationary diesel tank with a steel containment for leakage control plus a disperser. This is used for onsite storage of diesel for all diesel-powered machinery on site.
- A 500L trailer mounted. During test quarrying and drilling this trailer is towed around on a bakkie to distribute diesel to working plant.
- Numerous 5 000L water tanks for storage of water which is used for domestic consumption excluding drinking. The water is sourced from the local community borehole on farm Nudanab at a rate of 5000L for every 5 days. This water is used in exploration drilling and sample block cutting operations. The water is recycled and reused during such operations.

After the exploration camp was been set up an initial phase of exploration commenced in early 2021. This included an EPL-wide detailed reconnaissance survey and geological mapping of the abundant granite and dolerite intrusions in the license area. After these had been well delineated through mapping and surface chirp sampling, 3 target areas were identified for test quarrying and bulk sampling within the dolerite dykes (refer to map 1 of **Appendix A**). After these target areas had been demarcated for test quarrying access roads leading from the exploration camp to these sites where then created using both the front-end loader and excavator (these are shown in Appendix B, attached). As is the case with conventional prospecting, these target areas were first diamond drilled to determine the colour and thickness of the dolerite rock. The core recovered is currently stored at the exploration camp. A single 14m deep diamond drill borehole was also drilled in the Omihana area within the dolerite rock unit to help assess the rock mass quality.

Thereafter, test quarries (ranging in aerial extent from 800m^2 to about 3500m^2) were opened up to help expose the targeted bedrock for rock mass quality assessment and to recover sizeable sample blocks. All 3 test quarries were opened up on farm Nudanab due to their close proximity to the exploration camp which serves as a support base. The 3 test quarries are referred to as follows in the attached maps provided in **Appendix A**):

- the eastern test quarry (i.e., this is the one located to the east of the exploration camp)
- the western quarry (i.e., generally located west of the exploration camp) and
- the north western test quarry

As the appointed Environmental Assessment Practitioner for this project, we have been tasked to launch an amendment to the current Environmental Clearance Certificate, ECC-01746, which was issued by the Environmental Commissioner to allow JTD Mining Group (Pty) Ltd to solely undertake prospecting/ exploration of granites and dolerite rocks for dimension stone production purposes. In order to comply with the regulations of the Environmental Management Act of 2007 and to ensure good mining practice, the first Environmental Performance Monitoring Report for this license was submitted to the Department of Environmental Affairs and Forestry between late November and early December 2022. During the ongoing exploration for dimension stone quality rocks, however, the proponent encountered **industrial minerals** of economic value within the same license which they would like to explore, subject to the successful amendment of this Exclusive Prospecting License (EPL) by the Directorate of Mines to include Industrial Minerals under its scope. The various industrial minerals encountered which the proponent intends to prospect further include industrial feldspar, rose quartz, lithium minerals, fluorspar and greywacke plus dolerite boulders from which the proponent would like to produce crushed stone.

This **updated** EMRP therefore provides a summary of the following aspects:

- the additional exploration program which the proponent intends to undertake to better understand the quality of the various industrial minerals of economic value.
- the key impacts and associated impact mitigation/ enhancement measures as well as impact performance parameters to be measured and monitored for each potential impact to ensure good environmental management practice.

The above aspects are contained in this report in addition to the content of the original EMRP report submitted in 2021. For ease of reference, the new or updated content has been highlighted in blue.

1.1 About the Project Proponent

The JTD Mining Group (Pty) Ltd is the sole holder of EPL 6217 and is undertaking all current and future exploration activiites solely to develop and unlock the potential resources for both dimension stone and industrial minerals on the concerned license.

1.2 About the Environmental Consultant

OMAVI Geotechnical & Environmental Services was appointed by the license holder to undertake an Environmental Impact Assessment (EIA) and prepare the project-specific Environmental Management and Rehabilitation Plan (EMRP) for the proposed prospecting activities. The EIA is to be undertaken in accordance with the Environmental Management Act of 2007 and its 2012 EIA regulations. OMAVI is a specialist environmental management consulting entity, with considerable industry experience in environmental compliance and environmental management of exploration and mining projects, both onshore and offshore. Our team of scientists possesses the right set of project management, business optimization, technical, and analytical skills which holistically ensure that we understand, in an integrated manner, how a set of planned activities would interact with the biophysical, socio-economic, and political landscape within which such activities are envisioned to take place.

OMAVI has sound and robust experience and understanding of the local mining sector from a permitting, compliance and operational point of view, and therefore, it understands the dynamic interactions of such operations with the bio-physical and socio-economic environment. At OMAVI we are grounded in the idea that a balance between socio-economic development and environmental protection is vital and can be achieved through proactive and integrated planning whereby project activities are designed, planned, and implemented with due consideration to minimize adverse environmental and socio-economic impacts, as well as with closure and rehabilitation requirements in mind.

1.3 Project Location

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.

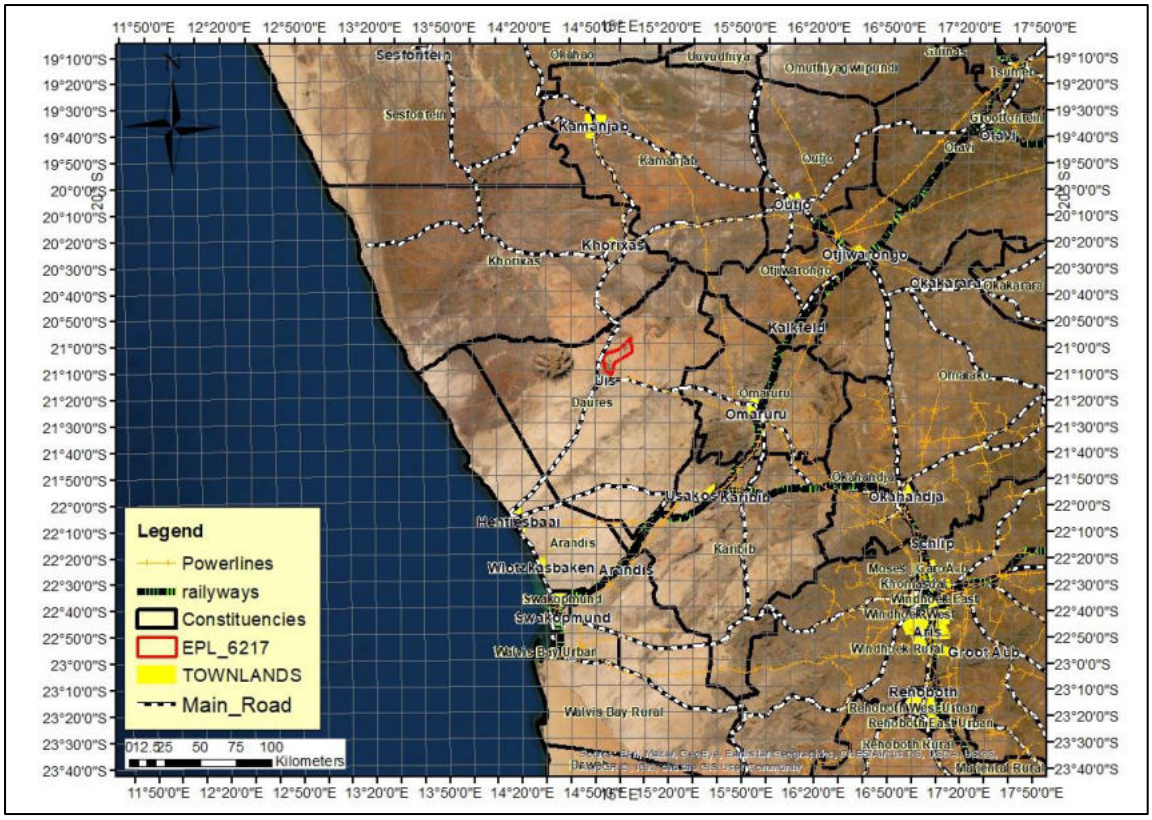


Figure 1: Regional locality map of EPL 6217.

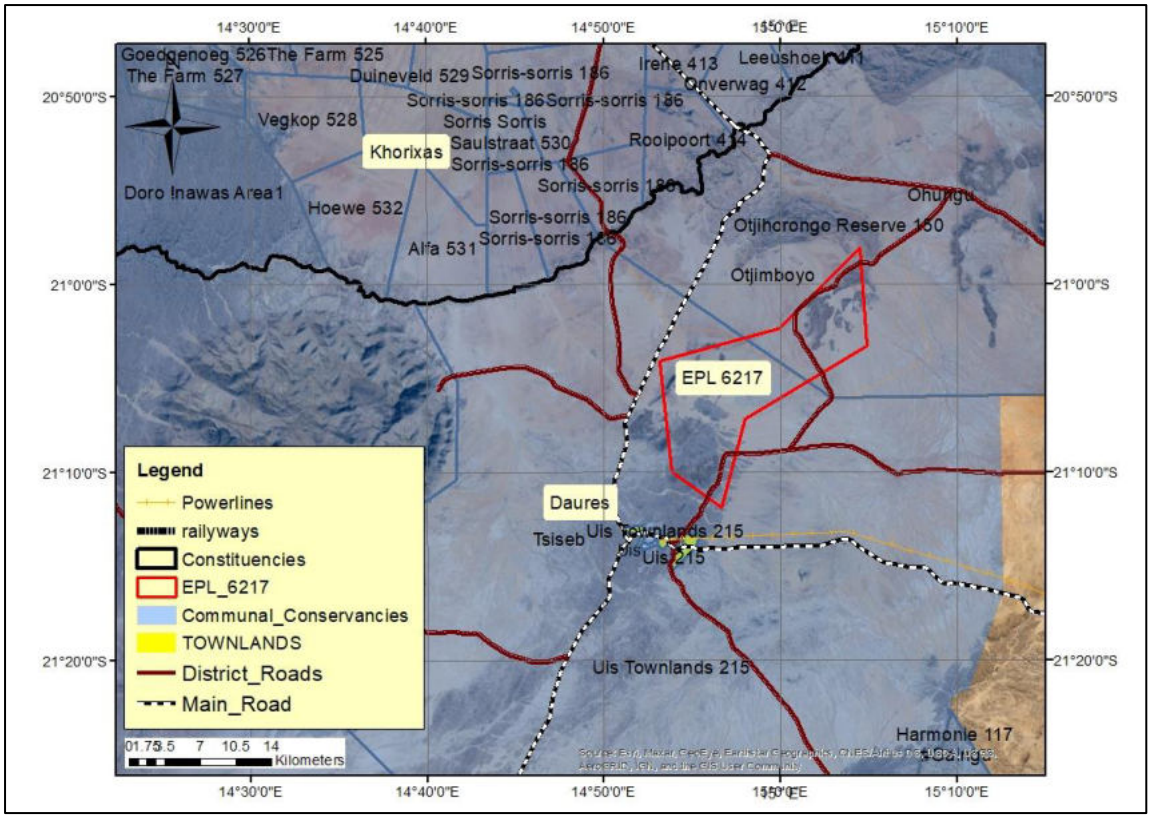


Figure 2: Local map of EPL 6217 with details of overlain constituency, communal conservancies and infrastructure in the area.

Table 1-1: Approximate GPS Coordinates of EPL 6217

GPS Coordinates boundaries
• 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

1.4 Brief Project Background and Location

To fulfil their operational mission of becoming a major player the local dimension stone quarrying and semi-processing sector, JTD Mining Group (hereinafter referred to as the *Proponent*) initially only intended to undertake prospecting/ exploration of dimension stone quality rock units with the ultimate objective of setting up a primary cutting diesel and solar powered plant on site provided that exploration results turned out to be positive in terms of both the quality and magnitude of the resources, and subject to the successful application and hopefully granting of a Mining License. As highlighted in the preceding section, 3 target areas (as highlighted in attached APPENDIX A) have thus far been successfully prospected for dimension stone quality rocks, and this primarily focussed on doleritic units using a combination of rotary core drilling and test quarrying techniques. At all the 3 sites prospected for dimension stone thus far test quarrying was undertaken in the form of butterfly and lateral cuts into the dolerite rock mass. Some of the loose surficial boulders overlying the dolerite intrusions were removed from the 3 sites explored and were subsequently hauled to an active crusher plant of JTD Mining at Trekkopje farm, where they were crushed into construction aggregates of differing grading (e.g., 37.5 mm, 19 mm, 13 mm and 9mm stones) to help assess the suitability of the dolerite for the possible production of construction aggregates. In addition, granitic boulders from selected areas of the EPL were also hauled to the same crusher plant for crushing and to help evaluate their suitability for possible usage in the production of crushed aggregates.

Simultaneously, surface mapping coupled with surface rock chirp sampling of the various granitic outcrops in the license was undertaken and this has led to the preliminary discovery of potential mineralization zones characterized by some industrial minerals of economic value such as fluorite, lithium-bearing minerals, rose quartz, tourmaline and some greywackes to mention a few of the obvious ones. To help understand and develop these potential deposits, the proponent would like to amend the scope of its current exploration ECC to incorporate the prospecting of industrial minerals. This new proposed exploration program with primarily focus on the doleritic, granitic and the meta-greywacke areas as portrayed in APPENDIX B, attached, and will stringently exclude the archaeological/ heritage buffer zones defined from the previous assessment. It is envisaged that all the upcoming/ planned prospecting activities will cover various geological exposures of granite, dolerite and greywacke within the EPL area, while any post exploration mining license will be confined to certain areas of the EPL where prospecting yields positive results. The upcoming exploration activities for industrial minerals which is expected to support the development of a feasibility study for the EPL will include techniques such as detailed geological mapping, rotary core drilling, hand-specimen sampling, coupled trenching and bulk sampling, and primary crushing and screening of potential ore to gradings not finer than 37.5mm. Subsequent to crushing, bulk samples of crushed industrial minerals from the various sites will then be bagged and transported to local and overseas laboratories for geochemical and geotechnical essaying to help assess the quality of these potential deposits, prior to finalization of the license area's feasibility study and application of a mining license.

In so far as dimension stone is concerned, granite plutons and dolerite dykes are the primary targets for the proposed prospecting and subsequent quarrying activities. it is envisaged that 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 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 dolerete 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 proposed new or updated exploration program which will focus on unlocking the economic potential of the industrial minerals in this license will include the activities outlined below:

- **Field Evaluation**: The field evaluation is to be carried out by a qualified geologist and will entail field mapping and rock chirp sampling. Overall, this will be aimed at locating suitable rock outcrops and shallow deposits in the field from where aspects such as lithological associations and field relationships; spatial extent of potential mineralization; any geological structural controls to the mineralization of industrial minerals. Collectively, field evaluation and detailed geological mapping will result in the production of a refined and detailed geological map of the potential deposit host rocks.
- **Drilling, trenching and test pitting/ quarrying**: The refined geological and mineralization map would then assist in target generation for subsequent detailed exploration in the form of trenching, reverse circulation and rotary core drilling, and the development of test pits or quarries for bulk sampling purposes. It is envisaged that trenching and test pitting will be undertaken by means of focussed bulk excavation on selected target areas. The excavated material will then be stockpiled and primary crushed and screened (by means of small diesel-powered mobile crushers and screens) adjacent to their respective source areas to gradings not finer than 37.5mm for ease of hauling and subsequent geochemical and geotechnical testing for ore concentrate grade and quality assessment purposes.

- **Bulk sampling, primary crushing and quality testing**: A limited quantity of the primary crushed and screened industrial minerals from the various selected sites will then be bagged and subsequently transported to dedicated geotechnical (mainly applicable to stones intended for construction aggregates) and geochemical laboratories locally, and abroad where testing services do not exist locally. Upon completion of the test work, areas where sampled material yield positive or acceptable quality results will be drilled and trenched further to help better delineate the potential deposits, and such areas will subsequently feature prominently in the feasibility study and possible mining license application. Conversely, areas where unfavourable test results are obtained will be rehabilitated fully and closed off for any further access.

1.5 Ownership and Land Tenure of the License Area

EPL no. 6217 is wholly owned by JTD Mining Group, and the Tsiseb 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.

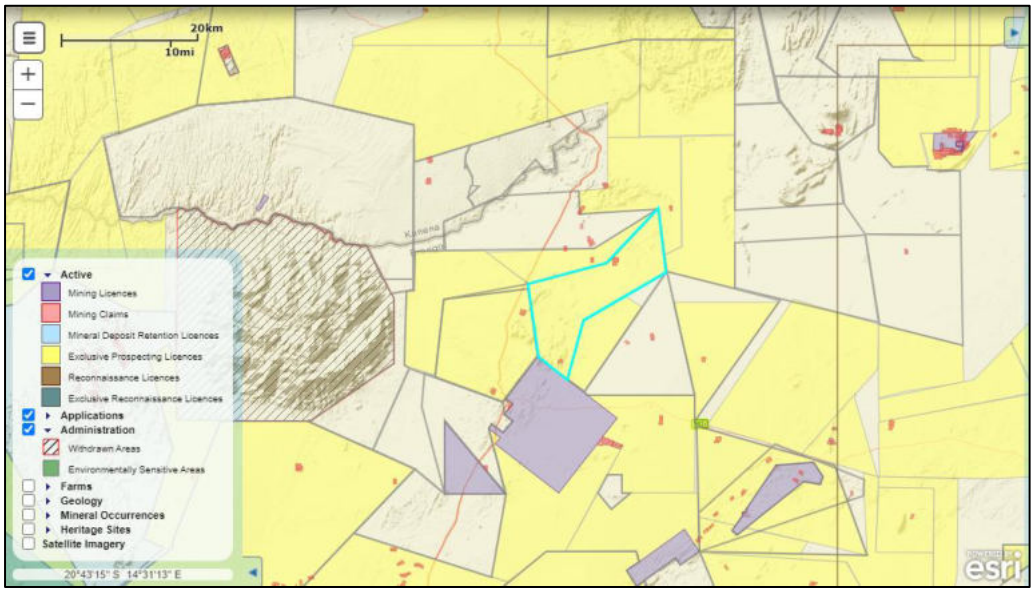


Figure 3: Appearance of EPL 6217 on the MME Portal (source: https://portals.landfolio.com/namibia/)

1.6 Purpose of updating the Environmental Management Plan (EMP)

In alignment with regulation no. 8 of the Environmental Management Act's (EMA) (Act no. 7 of 2007) and the 2012 Environmental Impact Assessment Regulations, it is required that a live and up-to-date Environmental Management Plan (EMP) must be maintained throughout the lifespan of any project which involves a listed activity. In this context the terms "live and up-to-date" aim to emphasize that the document (i.e. the EMP/ EMRP) shall remain a working document which must be revised and updated during the operational phase of a project as and when any variations in site conditions, changes to the prospecting program, changes in prospecting and quarrying techniques/ technologies and methods used, changes in environmental management standards and policy, and changes in market demands occur. This update therefore bares relevance to this project because the project proponent proposes to add the exploration of industrial minerals in the license area to the already approved and ongoing exploration for dimension stone quality rock units, which, collectively require additional equipment, infrastructure and equipment to be set up and/ or used in the license area.

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 the revised exploration program, the purpose of this updated version of the EMRP/EMP document is therefore to provide environmental management guidance during implementation of the following various phases of the proposed project:

- **Site establishment and set up** – Generally, this stage includes the period during which the exploration camp site is cleared and set up; access tracks to targeted drilling/ trenching/ test pitting sites are cleared and created; installation of sewage and waste management systems; creation of parking bays; mobilization and installation of mobile crushing plants on designated earth platforms; 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. On-site material borrowing is likely to take place during this stage of the project to source suitable construction material for roads, platforms, etc.

- **Operational phase** – In the context of this project, during this phase of the project the following activities will be implemented:
  - overburden stripping;
  - rotary core drilling, recovery and storage of rock core;
  - trenching and test pitting/ quarrying and extraction of bulk rock boulder samples for subsequent crushing and sample blocks;
  - on-site storage, sorting and haulage of sample dimension stone blocks to processing facilities in Walvis Bay and Karibib;
  - on-site primary crushing and screening of industrial mineral rocks to gradings greater than 37.5mm for bulk sampling and subsequent rock/ ore concentrate quality assessment purposes.
  - Extraction of sample blocks to evaluate and assess furnishing quality and export to local and international markets to test pricing and demand for those specific rock units.
  - Haulage of crushed and bagged bulk samples of industrial minerals to local, regional and over-seas laboratories for testing purposes.

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 mining or 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.

1.7 Limitations of this Draft Environmental Management Plan (EMP)

The following limitations apply to this EMP:

- 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 and from the various site visits undertaken during the initial public consultations and subsequent bi-annual compliance audits is accurate and;

- This EMP has been compiled on the fundamental assumption that apart from the proposed addition of industrial minerals there will be no other significant changes to the planned 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 current and proposed prospecting activities broadly entail 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 which are targeted for exploration purposes;
- 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;
- Reverse circulation and rotary core drilling to establish the thickness, colour consistency and fracture frequency of the targeted rock mass for dimension production purposes;
- extraction 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;
- Drilling (primarily reverse circulation) of meta-greywackes, dolerite and granites to probe the thickness of targeted zones for certain industrial minerals such as lithium-bearing minerals and fluorspar identified from mapping and trenching
- primary crushing and subsequent bulk sampling of crushed rock and possible for ore material of industrial minerals for geotechnical and geochemical essay purposes.

In so far as dimension stone prospecting is concerned, 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. Similarly, where trenching and subsequent bulk sampling of crushed ore or minerals produces positive results, the concerned areas will be delineated for possible development of mining quarries.

On the other hand, where exploration results suggest that the rock mass is not desirable for good market performance, immediate rehabilitation of any trenched, drilled and or test quarried sites 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 in the case of dimension stone 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. In the case of industrial minerals this may not be easily achievable as the one would have to wait for laboratory test results which can sometimes take months.

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 rigs, air compressors and mobile crushers with conveyors will be powered by a heavy-duty diesel engine powered generator.

The current project activities, services and infrastructure developed or being developed by JTD Mining Group within EPL 6217 are summarised in the Table below. Layout maps of the current project components are provided in Appendix A, while Appendix C provides a photographic summary of the site observations from the site visit undertaken during the bi-annual environmental performance and compliance audit in November/ December 2022.

Table 2-1. Project components considered in the Nov-Dec 2022 bi-annual Environmental Compliance Audit (ECA)

PROJECT COMPONENT	DESCRIPTION

Access Roads	
Road improvements and widening	The previous main site access track leading from the C35 gravel road to the Nudanab farm homesteads has been widened and improved. Similar improvements plus widening have been carried out on the previous access track leading from the Nudanab community borehole to the exploration camp. Some sections of these access roads where thick loose sand occur have been improved by placing a thin layer of borrowed gravelly material.
New access tracks	Numerous new tracks have been observed in the area, particularly leading from the exploration camp to the western test quarries and southwards towards the dolerite koppie located south of the exploration camp. It is highly advisable that exploration vehicles keep to existing tracks and roads to the extent practical over the duration of the exploration phase.
River crossings	Where the access roads cross over a major drainage channel, some backfilling work has been carried out using granular soils sourced from the surroundings. The backfill at these crossings is however not too substantial to limit water flow or cause flow diversion. Such backfilling work was observed at 2 river crossings to the north of the camp along the road leading to the community borehole as well as at a few drainage channels located west of the camp on the way to the way to the western test quarry
Test quarries and associated structures	
Test quarries	Three (3) test quarries have been created within a 3km radius from the exploration camp. The actual test quarries observed at the time of this assessment generally range in size between 800m^2 and 3500m^2, with the deepest one being about 2.5m to 3m deep. In this report these test quarries are referred to as: • The eastern test quarry • The Western test quarry and • The north western test quarry

	Each of these test quarries comprise a wider area where overburden soils and loose dolerite boulders have been stripped off in order to access the bedrock which is then cut using a combination of blade cutters and wire saw cutters to recover sample blocks. At the time of this assessment the north western test quarry area had only been stripped but no cutting of the bedrock had taken place yet. The overburden and waste rock stripped from the footprint of each test quarry are stock piled near the quarry in the form of an isolated overburden/ waste rock dump. The larger dolerite boulders recovered during the stripping exercise are generally stockpiled separately as it is envisaged that they may be used at a later stage to feed crushers for aggregate production. These overburden/ waste rock dumps are generally located within 100m - 200m of the test quarry as the same material will be used during the rehabilitation phase to backfill the pits. All rock cutting operations at the current test quarries are diesel-powered.
Water sources	
Water supply borehole	Currently, all water for drilling and rock cutting operations is sourced from the community borehole on farm Nudanab. Concerns have been raised by both the Tsiseb conservancy and community members on farm Nudanab that sustainable water supply from the borehole is not guaranteed as the borehole's yield is not adequate enough to continue servicing both the domestic farming activities and the prospecting activities. On these grounds it is therefore recommended that JTD Mining Group drills and develops a separate borehole to service the ongoing prospecting activities. In the immediate to long term this would not only guarantee sustainable water supply to the Nudanab community but will also strengthern working relationships between the community and JTD.
Supporting facilities	
Containerized exploration camp	This consists of accommodation facilities with ablution facilities, a roof top solar system for the camp's power supply, kitchen/ galley facilities, and other facilities such as a container for spare parts (unfenced), parking lot for earth moving plant and exploration bakkies. The camp site is partially bounded by overburden and waste rock embankment to help control access.
Sewage and waste water drain	All sewage and waste water from exploration drains to a designated concrete lined drain on site. According to JTD personnel the drain is drained regularly by a designated contractor from Uis as and when the need arises.

Oil storage facilities	A 23 000L diesel tank in a self-contained steel bund is kept on site for storage of diesel. A disperser is mounted to this tank, and at the time of this assessment it was observed that some minor diesel spillage has occurred around the disperser causing localized soil contamination. A 500L trailer mounted steel tank is also kept on site and is used to distribute diesel to working earth moving machinery working within the license area. At the time of this assessment this trailer was parked at the camp over soil with no emergency spillage/ leakage skip.
Runoff diversion trenches	Approximately 1m deep diversion trenches have been excavated on either sides of the sewage drain to help divert runoff from the sewage drain, thereby preventing possible surface water contamination.
Other project equipment	Key project equipment observed at the site at the time of this assessment include: • X1 tipper truck for moving and hauling overburden and waste rock • X1 front end loader • X1 excavator • Blade saw cutting gear • Wire line saw rock cutting gear • Mechanical spares • Wooden waste skips for domestic litter • Gas bottles for cooking power source • Plastic water tanks for camp water supply. Drinking water is sourced from Uis • Solid industrial waste (used oils, scrap metals, scrap wire line saws, waste wood, etc.)

For the proposed exploration of industrial minerals, the following activities and infrastructure are generally planned in addition to those already existing:

- Surface clearing and stripping of the drilling, trenching and quarry sites, and associated working areas (e.g. processing plant area, stockpile bays, site office, emergency assembly bays, and a small workshop) as well as stripping of overburden.
- Establishment of mobile crushing plants in selected areas comprising a combination of jaw and cone crushers, primary screens, and conveyor belt systems to produce approximately 180 tons/ hour of construction rock from which bagged bulk samples can be taken.

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 for both dimension stone and industrial minerals with economic value.
- RC drilling rock chirps and Core recovered from exploration drill holes
- Sizable sample dimension stone blocks for further processing to help test their market demand
- Bulk sampled of crushed rock or of potential ore of industrial minerals with geotechnical and geochemical essay test results
- A feasibility study memorandum stipulating viability for continuous quarrying for dimension stone and/ or industrial minerals 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

Specific to this project, some of the key project participants and players who are expected to implement the EMP are outlined in Table 3-1.

Table 3-1. Summary of key project participants

Name of participant	Role in project
JTD Mining Group (Pty) Ltd	Project owner, sponsor and prospector responsible for the execution of all prospecting activities including recruitment of project staff

Tsiseb Communal Conservancy	Oversee and implement all conservation efforts within the Tsiseb conservancy
Daure Daman Traditional Authority	Effectively represent and manage the interests of all community members from within the Daure Daman traditional authority
Zeraeua Traditional Authority	Effectively represent and manage the interests of all community members from within the Zeraeua traditional authority
Otjimboyo Communal Conservancy	Oversee and implement all conservation efforts within the Otjimboyo conservancy
Nudanab farm inhabitants	Community most affected by current and future prospecting activities

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, rehabilitation 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 such as the Department of Environmental Affairs and the National Heritage Council
- 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 safely 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
- Effectively ensure that the processes and necessary permits are issued before any activities takes place such as access road construction to prevent possible fines, inconvenience, time delays and costs

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
- Ensure that the road that has been constructed within or near the affected site be abandoned; and that no further construction of road or infrastructure within the 1 km NO GO buffer zones takes place
- 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
- Notify the NHC of any newly discovered sites in so far as archaeological and heritage features and aspects are concerned

3.5 Contractor(s) and Technical Consultants (those appointed during operations)

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:
    - Site rehabilitation and restoration procedures

    - Emergency Preparedness and Response
    - Waste Management Procedures
    - Health and Safety Procedures
- Ensure adequate environmental awareness training for site personnel
- Attend regular site meetings and environmental inspections
- Ensure that the NO-GO archaeological/ heritage buffer zones stipulated are strictly adhered to

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
- Notify and confirm locality of any newly discovered archaeological sites to the National Heritage Council (NHC)
- 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 Operators and Spotters

- Must exercise due caution and immediately cease any excavation (or any work involving ground disturbance) if archaeological/ heritage remains or suspects of such nature are found
- Must immediately stop any earthworks if suspect remains are discovered and immediately report to the SHE Officer and PM

- Stay away from the NO GO buffer zones defined in the accompanying Environmental Scoping Assessment Report
- All excavation works near the NO GO buffer zones shall be carried out in the presence of a spotter, whose key responsibility will be to keep a close eye our for suspect archaeological/ heritage resources during excavation works.
- Pre-scan all test quarrying sites for suspect archaeological resources before commencement of excavation works

3.8.2 Trenching, Drilling and Test Quarrying Foremen

- Must secure sites of suspect archaeological/ heritage significance and advise management (PM) timeously on actions to be taken going forward
- Must determine safe working boundary and request inspection from the NHC at the frequency stipulated in the NHC Consent letter
- Ensure that all sites targeted for drilling and/ or test quarrying are pre-scanned and cleared (or documented by suitably qualified and experienced personnel) of suspect archaeological resources before commencement of drilling and excavation works

3.8.3 Archaeological Specialist from the NHC

- Must inspect, identify, advice management, and recover or preserve any remains of archaeological/ heritage resources.
- Conduct bi-annual inspections, and survey as well as document any new discoveries.

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:

- Effective and inclusive 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. **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**	**Mr Franciskus Witbooi (Deputy Director: Water Policy and Water Law Administration.** **Tel: (061) 208 7158**
Mineral Prospecting & Mining Act (Act No. 33 of 1992)	Section 38 (1): Applications for renewal of registration of EPLs.	**Mr Erasmus Shivolo (Mining Commissioner)**

Legislation	Relevance to Project	Contact Details for obtaining Permits
	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. 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". Section 54(2): details provisions pertaining to the decommissioning or abandonment of a mine / explored sites because of related activities.	**Tel: 061 284 8167** **E:** Erasmus.Shivolo@mme.gov.na
Local Authorities Act No 23 of 1992	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.	**Contact Persons** **- 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**
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority 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". 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. A temporary permit for the storage of petroleum products should be applied for at the Ministry of Mines and Energy	**Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs** **Tel.: (061) 284 8291** **E: Carlo.McLeod@mme.gov.na** **OR** **Mr. Tupa Iyambo (Chief Petroleum Inspector)** **Tel: 061 284 8300** **Email:** **Tupa.Iyambo@mme.gov.na**
Forestry Act (No. 12 of 2001)	Permits are required for the removal of protected plants species. **In the case of EPL 6217 the *Moringa ovalifolia* 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**	**The nearest Forestry and Wildlife conservation Office (Ministry of Environment, Forestry and Tourism)** **The Director:**

Legislation	Relevance to Project	Contact Details for obtaining Permits
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 *Moringa ovalifolia* 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**	**Tel: (061) 284 2518**
National Heritage Act (Act No. 27 of 2004)	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. The archaeological and heritage study identified 5 sensitive sites which must be buffered during all current and future prospecting activities. These are shown clearly in APPENDICE A and B.	**Mrs. Erica Ndalikokule (Director) – National Heritage Council of Namibia** **Tel:(061) 301 903**
Labour Act 11 of 2007Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	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 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. 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.	**No permit is required, but adherence to the Act's Relevant Regulations is mandatory on the part of the project proponent to avoid labour protests, ensure good working relationships and legal actions related to labour issues.**

Legislation	Relevance to Project	Contact Details for obtaining Permits
Waste Management Regulations of Windhoek Municipal Council	In the absence of similar regulations for the town of Uis, the Waste Management Regulations of Windhoek Municipal Council could be adopted. 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. This will also entail the process to apply for permission to dispose off waste on designated landfill/waste sites within the nearest municipality	**Contact Person: Mr. A. Hommeb (Control Admin. Officer, Uis Municipality)** **Tel: 064-504006**
Biodiversity Related Legislation	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. Plant species are protected by various mechanisms in Namibia, including the Nature Conservation Ordinance No. 4 of 1975 and the Nature Conservation amendment Act (Act 5 of 1996). 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.	**The nearest Forestry and Wildlife conservation Office (Ministry of Environment, Forestry and Tourism)** **The Director:** **Tel: (061) 284 2518**

Legislation	Relevance to Project	Contact Details for obtaining Permits
Health and safety: Public Health Act (No. 36 of 1919)	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	The Proponents and all its employees should ensure compliance with the provisions of these legal instruments. **No permit or license required, but adherence to the Act's Relevant Regulations is highly recommended.** **Relevant contact Details to ensure compliance:** **- Ms. Aune Mudjanima** **(Director for Labour Inspectorate)** **Tel: 061 206 6111** **- Ms. Petrina Ndhidengwa** **(Deputy Director for Occupational Safety and Health)** **Tel: 061 206 6111**
Other relevant legislature which may be considered and adopted to ensure compliance to best local practice include: • 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 recommended impact management actions are presented in **Table 4-2** below for both ongoing and future prospecting activities. 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 summary table comprises the following aspects:

- The environmental receptor or 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						
Instability of trench and test pit walls	-Slope instability in test quarry and trenches 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/ trenches 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 (2nd 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 trenching and 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	-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)	-Health and Safety Officer -Independent 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	targeting sites with exposed bedrock or sites with little soil cover -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	-Record evidence of 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	-Changes in land use due to creation of test quarries and erection of exploration camp infrastructure - Conflicts in land use between exploration activities, small stock farming and biodiversity conservation	-Compensate affected farmers for lost agricultural/ grazing land during to temporary fencing, and if footprint is significant - Close up all trenches, test quarries and drillholes in areas where prospecting results are unsuccessful to minimize risk of unwanted trapping of animals or animal fatalities	-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	- Site Project Manager (holds overall responsibility) - PRO (2nd in charge)	-Funds or Equity to compensate affected farmers and communal conservancies, and to acquire fencing material -Labour force to temporarily fence off sites	-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

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

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		should be concealed from highly active roads -Maintain one access road to and from each drilling, trenching and test quarry site	from the edge of the test quarry footprint.			
Vegetation and Habitats	-Removal of vegetation during site clearing, drilling and test quarrying -Destruction of vegetation/ habitats by uncontrolled veld fires, excessive dust from test quarrying and crushing operations, and illegal firewood collection - Potential introduction of alien plant species due to increased flow of external traffic in the area - Possible hindrance of plant growth due to compacted soils, dust cover on plants , etc	-Minimize disturbed footprint as much as practical at any given time -Before clearing each site, especially those at the toes of mountains, 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 -No smoking should be allowed near refuelling depots or any other area where fuel , oil are used or stored -Restrict movement of vehicle and machinery to existing roads and tracks to prevent unnecessary damage to vegetation -No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide	-Keep record of names and photographs of all protected plant species identified by independent biodiversity specialist prior to clearing any site -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	-Site Proejct Manager (holds overall responsibility) -SHE Officer -Local community (affected conservancies and traditional authorities) and Contractors	-Funds for flora restoration program -Technical Consultants to help with monitoring restoration progress and implementation of flora restoration plan	-Ongoing throughout the operation

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	- Disruption and fragmentation of habitats through surface clearing, noise pollution and generation of excess dust	firewood for onsite camping workers from authorized firewood producer or sellers -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	-Record all illegal activities related to destruction of vegetation such as illegal cutting of trees			

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		collateral damage (i.e. select routes that do not require the unnecessary removal of trees/shrubs, especially protected species) - 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	-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 -Solid waste pollution due to stockpiling of overburden and waste rock, cleared vegetation	-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 -A record of all types of waste generated and disposed from site is to be kept on site -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 neccessary. All industrial waste should be stored in secure fenced off areas	-Site wide evaluation of the general condition of all waste storage sites must be conducted as part of the bi-annual environmental audits -A register of all waste generated on site is kept on site -All waste disposal permits from relevant authorities are available on site	-SHE Officer	-Funds to acquire waste storage bins/ drums; and transport all waste from the site -Funds to hire an independent environmental consultant to conduct bi-annual environmental audits	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	-Waste pollution due to usage and storage of reagents, fuels and lubricants on site - All sewage and waste water from exploration drains to a designated concrete lined drain on site. According to JTD personnel the drain is drained regularly by a designated contractor from Uis as and when the need arises	-Used tyres may be painted and used to mark the edges of roads, bends and accidental blind spots -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 -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. Such containment should be concrete lined. Used oils and grease must sold or donated to recycling companies -Poor quality waste rock is to be stockpiled in designated areas away from runoff pathways, and must be used as backfill during rehabilitation				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-Ensure that sewage from portable sanitation facilities complies with the relevant sewage management regulations highlighted in section 4.1				
Indigenous Fauna	-Forced migration of fauna due to physical disturbance/ destruction of habitats, increased noise and possibly vibration levels and increased dust in the area from trenching, test pitting and drilling operations -Impended free movement of fauna due to physical obstructions (fences, test quarries, camp, etc) -Threats to wildlife from illegal hunting, possible poaching and poisoning from consumption of drilling fluids or oils	-Minimize impact on animal migration by not fencing off large areas -Minimize animal fatalities from collisions with vehicles by limiting speed limits to 50 km/hr - Mobile crushers to be used must be fitted with noise suppression canopies. -Site personnel shall refrain from killing/poaching or snaring or intentionally disturbing local animals that may be found on and around the working areas. -Personnel are not allowed to kill or in any way disturb local livestock -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 -Limit exposure of reptiles and birds to toxic substances such as oils by ensuring these	-Keep records of all illegal hunting activities; vehicle-animal collision incidences; animal poisoning through consumption of hazardous substances -Record all incidences of animal fatalities arising from prospecting activities (e.g. collisions, trapping in fences or open test quarries, etc) -Do animal counts at strategic locations within the EPL area every 6 months as part of the bi-annual environmental audit	- SHE Officer	-Funds to hire an independent environmental consultant to conduct bi-annual environmental audits -Funds to fence off storage areas	Ongoing throughout the prospecting phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	-Threats to animal life due to risk of collisions with vehicles	are stored in sealed containers, and fencing off such storage areas				
Air Quality	-Dust generated from trenching, drilling, stripping, test quarrying and crushing operations, and traffic flow on access roads -Increased emissions of toxic gases from increased traffic flow in the area and other machinery such as diesel generators	-Apply a thin layer of crushed aggregates as cover on prominent access roads near homesteads to minimize dust generation -Locate stockpiles not up-wind of the predominant wind direction relative to the 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 and crushers to be used must be fitted with dust capture canopies or filters -Reduction in unnecessary traffic volumes; -Use of wet suppression during cutting operations at test quarrying sites	-Monthly dust level monitoring by installing dust fall-out down-wind from prominent access roads, at homesteads and selected test quarrying sites -Continuous monitoring for ambient dust/ particulate (PM10 and PM2.5) -All employees must do a mandatory health check every 6 months to monitor impact on their respiratory systems	- SHE Officer	-Funds to implement the dust and air quality monitoring program, including the bi-annual personnel health checks -Technical Specialists (Air quality)	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-All personnel onsite to wear appropriate PPE				
Noise	-Increased nuisance due to increased noise from drilling, excavation works, test quarrying work, crushing operations and movement of plant -Increased noise due to increase number of people and traffic volumes in the area	- 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 -Project employees will be trained to operate a sound level meter and how to undertake reliable environmental noise measurements. -A communications plan will be	- 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	- SHE Officer	-Funds to implement the noise monitoring program, including purchasing of simple equipment -Technical Specialists (noise and ground vibrations)	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		enacted to communicate the results of the monitoring to nearby residents and to record and investigate any noise complaints. All noise complains should be recorded and issues raised must be addressed promptly. -Limit all drilling, crushing and test quarrying operations to day time.				
Surface Water Resources	-Potential 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 -Poor recovery and recycling of water from drilling and test quarrying operations can put pressure on the external water source	- 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. - A 23 000L diesel tank in a self-contained steel bund is kept on site for storage of diesel. A disperser is mounted to this tank,	-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	- SHE Officer -Contractor (water supply contractor)	-Funds to implement the water quality monitoring program -Technical Specialists to delineate buffers (Water Specialist)	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	-Creation of test quarries in river streams may impend flow until such depressions are filled, thereby negatively impacting downstream water supply - Possible ingress of runoff into the sewage management system on site.	and at the time of this assessment it was observed that some minor diesel spillage has occurred around the disperser causing localized soil contamination but it was raised during the bi-annual visit to erect a concrete containment around the dispenser. - Maximise the recycling and reuse of external water during drilling and test quarrying operations. This will minimise water demand from the external sources - Create surface flow diversion ditches around the sewage management system on site to divert runoff from the sewage drains -Install and maintain efficient oil and grease traps or sumps at refuelling areas, and making emergency spill scoops readily available -Attenuate surface runoff by using on-site storage and water management infrastructure (e.g. storage sumps, low				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		gradient ditches, clean water diversion ditches) -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				
	-Pollution of groundwater resources from seepage of drilling fluids, contact water from test quarries, un-procedural discharge of waste water, through seepage of sewage water via cracks in the sewage system on site,	-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	-Implement quarterly groundwater water quality monitoring program at existing community boreholes focusing on the following parameters: pH, and electrical	- SHE Officer - MEFT inspectors	-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)
Groundwater Resources and use	and contamination by entrance of external substances through unsealed drill holes	Monitor water quality at existing community boreholes over a 1 year period and establish any adverse changes in water quality	conductivity. Compare water quality values with baseline values established at start of exploration drilling and test quarrying.			
Occupational Health and Safety	-Short to Long-term safety risks which could result in disabilities or fatalities -Short to Long-term health effects from dust and noise -Increased risk of HIV/ AIDS infections to vulnerable women and children due to influx of people to the area	-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 -Resources (both human and financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings - Awareness on HIV/AIDS among workers and community members is raised	-Annual health screening of workers -Bi-annual health and safety audits done	-Production Site Manager (holds overall responsibility) -Contractors - Community Members -SHE Officer - MEFT inspectors	-Funds to acquire PPE, health and safety monitoring equipment; and to pay for employee medical services -First Aid training for at least 2 personnel at each active site	Ongoing throughout the exploration phase

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-Timeously recording and reporting of all health and safety incidences, and promptly take necessary actions -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 -Develop an MOU with Healthcare Centres in Uis for regular medical check-up of workers -Enforcement of speed limits and sanctions for any personnel found in violation of speed limits, including senior staff and contractors' and sub-contractors' employees -Appropriate signalling of moving heavy machinery in the form of flashing lights and reverse sounding alarm				

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
		-All drivers to be given safety inductions and awareness training focussing on speed and conflicts between pedestrians and animals, dust and gaseous emissions -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				

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

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
			pertinent issues logged and monitored			
Visual Damage	-Adverse visual impact caused by lighting at night -Degradation in natural aesthetic value from close range due to presence of open test quarries, containers, overburden stockpiles, and earth moving machinery - 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	-Progressively rehabilitate test quarries where poor quality rock is encountered. Rehabilitation must include restoration n of surrounding grassland and bushland -Lighting from flood lights at the exploration camp must be focussed around this site only so as not to cause lighting pollution at night - The project is believed to be at its infancy stage where exploration targets are still be opened up either for exploration drilling or test quarrying. Accordingly, most if not all the new access tracks and roads are still under usage and can therefore not be closed off and rehabilitated yet. Similarly, all 3 test quarry sites are still being probed and can only rehabilitated once a decision to not proceed with prospecting or mining in that particular site has been made	-	-Site Project Manager and Site Foreman - SHE Officer - Local community - MEFT Inspectors	-	-

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Heritage/ Archaeology	-Possible destruction of unforeseen and unknown heritage/ religious/ cultural/archaeological sites -Dust caused by stripping and overburden removal may settle on rock arts, and potentially conceal such arts; thereby making them invisible and highly susceptible to destruction/ disturbance - Possible encroachment of the NO GO buffer zones and consequent disturbance of such sites by new, untrained personnel, or old personnel who do not know where the boundaries of these buffer zones are located.	-All known heritage/ cultural/ archaeological sites have been documented. No-Go 150m buffer zones have been delineated and must strictly be adhered to - Prior to stripping the site foreman must conduct a visual inspection of the site for any features of archaeological/ heritage/ religious importance. -Sites of archaeological and cultural importance marked under section 5.1.5 of the ESA report must be protected and preserved by adhering to the no go buffer zones, closing off new access roads within such zones and adopting the Chance Find Procedure strictly -Apply the chance find procedure documented above to any sites found by chance	-Records of all archaeological/ heritage/ religious sites or features identified. Evidence of disturbance of known sites	-Production Site Manager (holds overall responsibility) -Site foreman -PRO -Community Members	-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)
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 activities	-Have a complaints logbook. Monitor community grievances, take necessary actions and provide feedback to complainants - If exploration yields successful results a Community Development Plan must be developed jointly by JTD, the TA, affected community and the communal conservancies	- Monitor community grievances and provide feedback on a monthly basis - Conduct community perception surveys annually. This must include questions in relation to local perception of the proponent's performance in environmental and social management as well as effectiveness of the proponent's communication channels	- Site Manager (holds overall responsibility) -PRO -Site foreman - Community Leadership	-	Ongoing throughout the exploration phase
POSITIVE IMPACTS						

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
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 facilitate ease of ECC renewal	- 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	- Site Project Manager -SHE Officer -PRO -Contractors	-Resources (financial and independent consultants/ auditors) to implement enhancement measures	Throughout the exploration phase
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	- 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.)	- 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

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
	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	- Stringent enforcement of such buffers by Environmental Inspectors				
Employment and technical skills transfer	-Employment opportunities with associated improvement in livelihoods for youth from Uis and surrounding communities -Transfer of administrative and technical skills by ensuring that for every key job occupied by a foreign national evaluate skills learned by local under-study at the end of each production year	-Regular and accessible (transparent) dissemination of the human resources and employment policy to affected communities -Encourage complaints of inequality and discrimination in job, and then self-correct -The employment of local residents and local companies should be a priority.	-For every key job occupied by a foreign national evaluate skills learned by local under-study at the end of each production year - Job seekers must submit proof of having lived in the area for a minimum of 3 years	-Site Project Manager (holds overall responsibility) -SHE Officer - Contractors - Community members	-Avail human resources and time to provide on the job training	Ongoing throughout the project duration
	- Empowerment of Previously Disadvantaged Persons through procurement	-Procure support services (cleaning, cooking, machinery maintenance, security and product transportation services from	-On an annual basis review contracts awarded for support services to assess	-Site Project Manager (holds overall responsibility)	-	Ongoing throughout the project

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
Local Empowerment and Procurement Opportunities	of services to local contractors -Opportunities for local companies to procure support services such as cleaning, marketing, cooking, canteen services, security services, mechanical services, and supply of spares	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 reinvest in the local economy - 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	number of local previously disadvantaged contractors who benefited from such a process	-PRO Officer - Affected community		

Aspect	Impact	Mitigation / Enhancement Measure(s)	Key Performance Indicator (KPI)	Responsible Party	Resources	Timeframe of management action(s)
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 protection and opportunities by bringing people into closer contact with environmental conservanists and inspectors.	- 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 - The proponent shall provide environmental information and awareness raising among workers, local community and visitors to the operation of the environmental 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	- 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)
		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 have a more tangible impact in terms of environmental management, and improved quality of life of the local people	- 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: • 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 Department of Environmental Affairs, Ministry of Environment, Forestry and Tourism.	- 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 and methods	- Site Project Manager - Technical Consultants - SHE officer - Leadership of conservancies and communities affected - 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)
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 analysis and walk over surveys so far indicate that this project is likely to advance into the continuous quarrying phase for both dimension stone and industrial minerals. This argument largely stems from the fact that test quarries for dimension stone have thus far yielded positive exploration results. For industrial minerals, there occurrence of key industrial minerals such as fluorspar in the area is proven from ongoing small-scale mining operations within the license area. For this reason, one cannot really talk of project closure at this stage but rather "partial" decommissioning and rehabilitation at selected sites where exploration drilling and test quarrying has taken place without much success.

Table 4-3 provides the rehabilitation and closure measures to be implemented during site decommissioning and rehabilitation 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) would have to be mobilized 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	-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: Prepare surface rehabilitation areas for the natural establishment of vegetation by undertaking the following: • 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	- Exotic weed species are not observed to be elevated in abundance when compare to the regional setting as reported by a trained independent botanist -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.
	-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;	-Inorganically contaminated soils are safely disposed off at designated waste dump sites in Uis, subject to granting of relevant permits if applicable

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
Contaminated Soils	-Rehabilitate moderately to severely contaminated (inorganically contaminated) soils as follows: • Excavate contaminated material to a depth of 500 mm and remove and dispose off at the Uis waste dump site(s). - Rehabilitate moderately to severely contaminated (organically contaminated) soils as follows: • Treat organic contamination by means of biological remediation via the establishment of a bioremediation site and monitor soil quality against a selected control site.	-Organically contaminated soils are effectively treated and compositions are restored to acceptable levels once compared with control sites
Surface Infrastructure and Equipment	**Infrastructure for Potential Beneficial re-use** • 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 **Surface infrastructure to be removed** • Remove all assets/equipment that can be profitably removed for salvage or resale; • Dismantle/demolish infrastructure if project will not proceed to quarrying; • Decontaminate hazardous waste storage tanks and containers at a dedicated decontamination bay in Uis or any other nearest town;	-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 -Independent sign-off by a qualified engineer confirming the safe and stable condition of all transferred infrastructure -All other infrastructure decommissioned to ground level and removed from site

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	• 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 **Measures relating to support Infrastructure** • 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
	• Seal open ends of buried pipelines, drill holes and fully cover with nothing exposed **Measures relating to transport Infrastructure** • 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. -Roads that will no longer be used by local communities will be rehabilitated as follows: • 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 **Measures relating to Electrical Infrastructure** • 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 **Measures relating to Mobile Machinery/ Vehicles** Machinery and Vehicles	

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	• Identify equipment that can be used for quarrying and/or recycled that will not be salvaged; • 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)	• 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	Surface and groundwater monitoring must resume during continuous quarrying. The following actions are to be undertaken upon resumption of the project at quarrying phase: <u>For Surface Water</u> • Monthly monitoring of surface water sites for quality – for duration of active quarrying; and • Conduct bio-monitoring at selected downstream sites duration of active quarrying <u>For Groundwater</u> • Quarterly monitoring of boreholes (water quality and level) for duration of active quarrying	-Water samples taken from sampling points downstream of the mine are within the National effluent quality specifications for a 12 month period - Water samples taken from representative groundwater monitoring boreholes are within the National effluent quality guidelines for a 12 month period
Petroleum Products	• Remove oil drums and petroleum products off site for re-sale/use;	

ENVIRONMENTAL ASPECT	REHABILITATION ACTIONS	COMPLETION CRITERIA
	• Relocate the storage area and associated tanks in which petroleum products are stored; • Demolish and excavate concrete foundations to 1 m below ground level; and • Clean up contaminated waste	
Solid Waste	• 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 Monitoring Implementation of the EMP

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 thrreshold

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, topsoil and crushed rock, 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 coordintes, 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) can be issued for the proposed prospecting of dimension stone quality granites and dolerites as well as the exploration and quality testing of potential industrial minerals, subject to the following conditions and 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. Currently, it is highly recommended to drill and develop a new water supply borehole which would largely be utilized to support the ongoing exploration activities. A water abstraction permit would be required from the Department of Water Affairs (DWA) in the Ministry of Agriculture, Water and Land Reform (MAWLR). Contact information of the relevant personnel are as follows:
    - Mr. Franciskus Witbooi
      Division: Water Policy and Water Law Administration
      Tel: 061 208 7158
- Similarly, a permit to harvest/ dam surface run off during rainy seasons for use in exploration drilling and test quarrying would be required as the end use is classified as industrial. For this permit the above-mentioned contact person can be engaged.
- The management actions, monitoring plans and rehabilitation measures in this EMP are implemented and monitoring conducted as outlined in the above sections.
- A condition must be included in the updated ECC that the Proponent must comply with the legal requirements governing this type of project and its associated activities, as well as with all conditions and restrictions outlined in the NHC consent letter issued for this project.
- 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 bi-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 contained herein (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 the directly affected communities. 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 …. object ……must 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:

<u>Action by person identifying archaeological or heritage material</u>

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

<u>Action by site foreman</u>

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

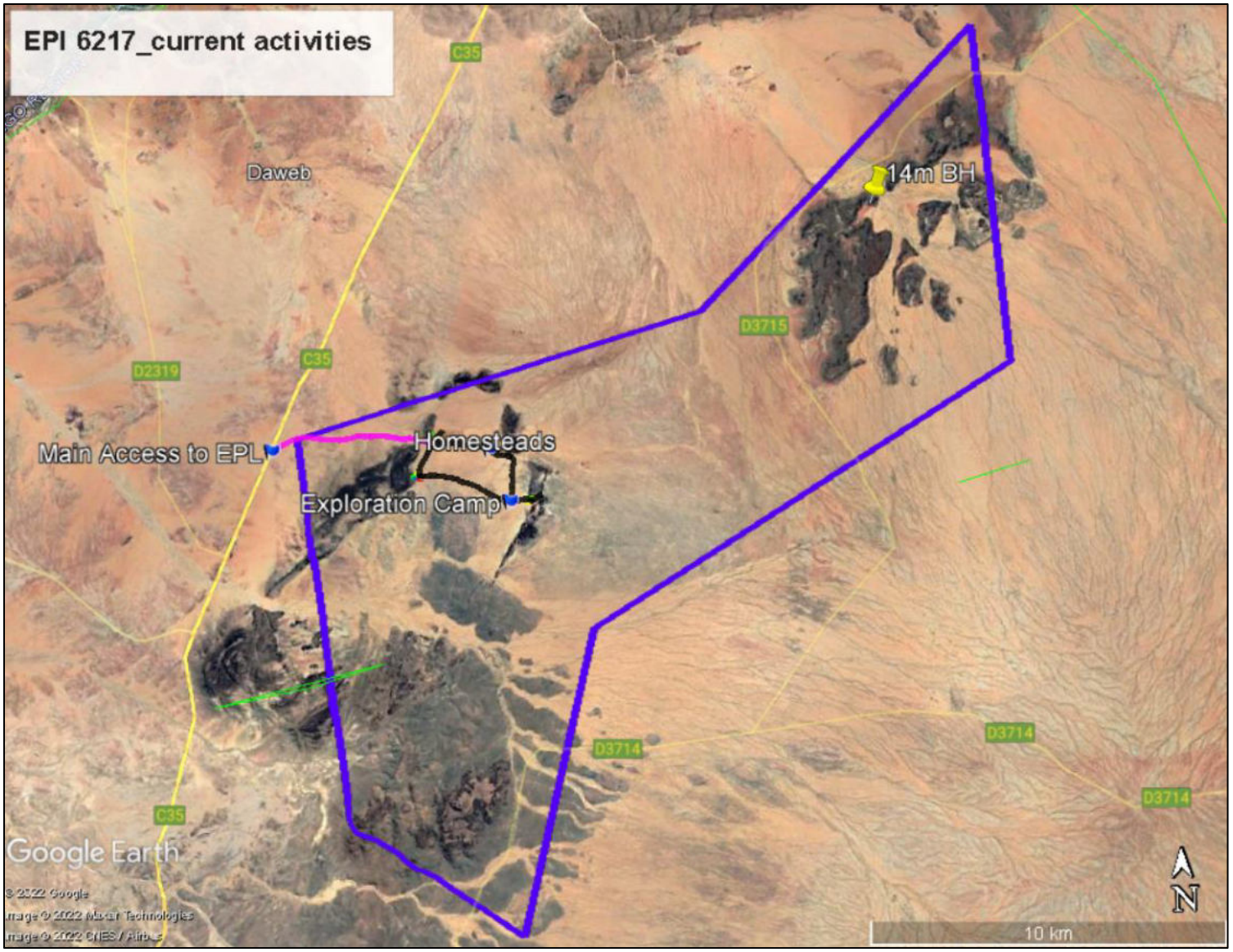
b) Field inspection by archaeologist to confirm that remains are human

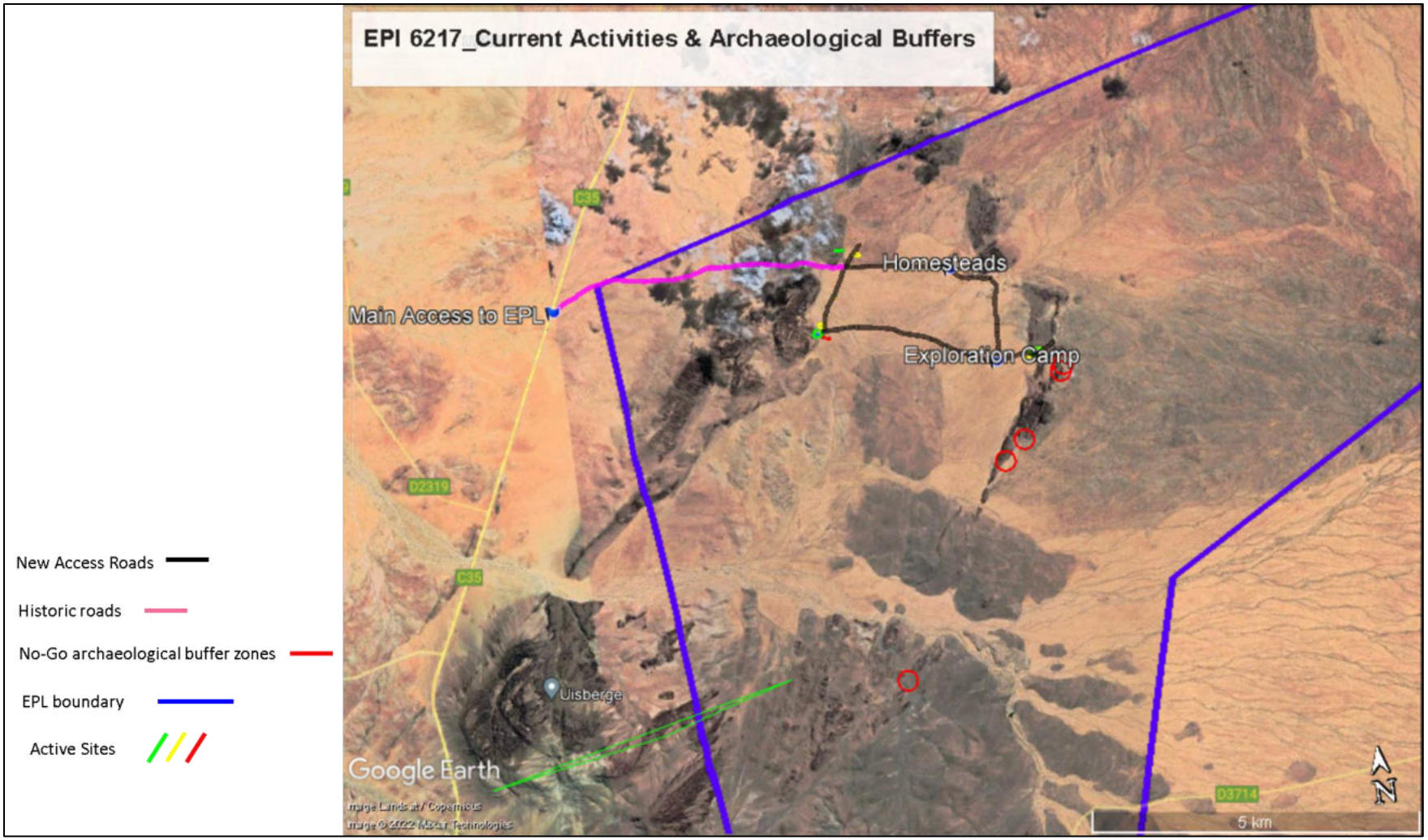
c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.

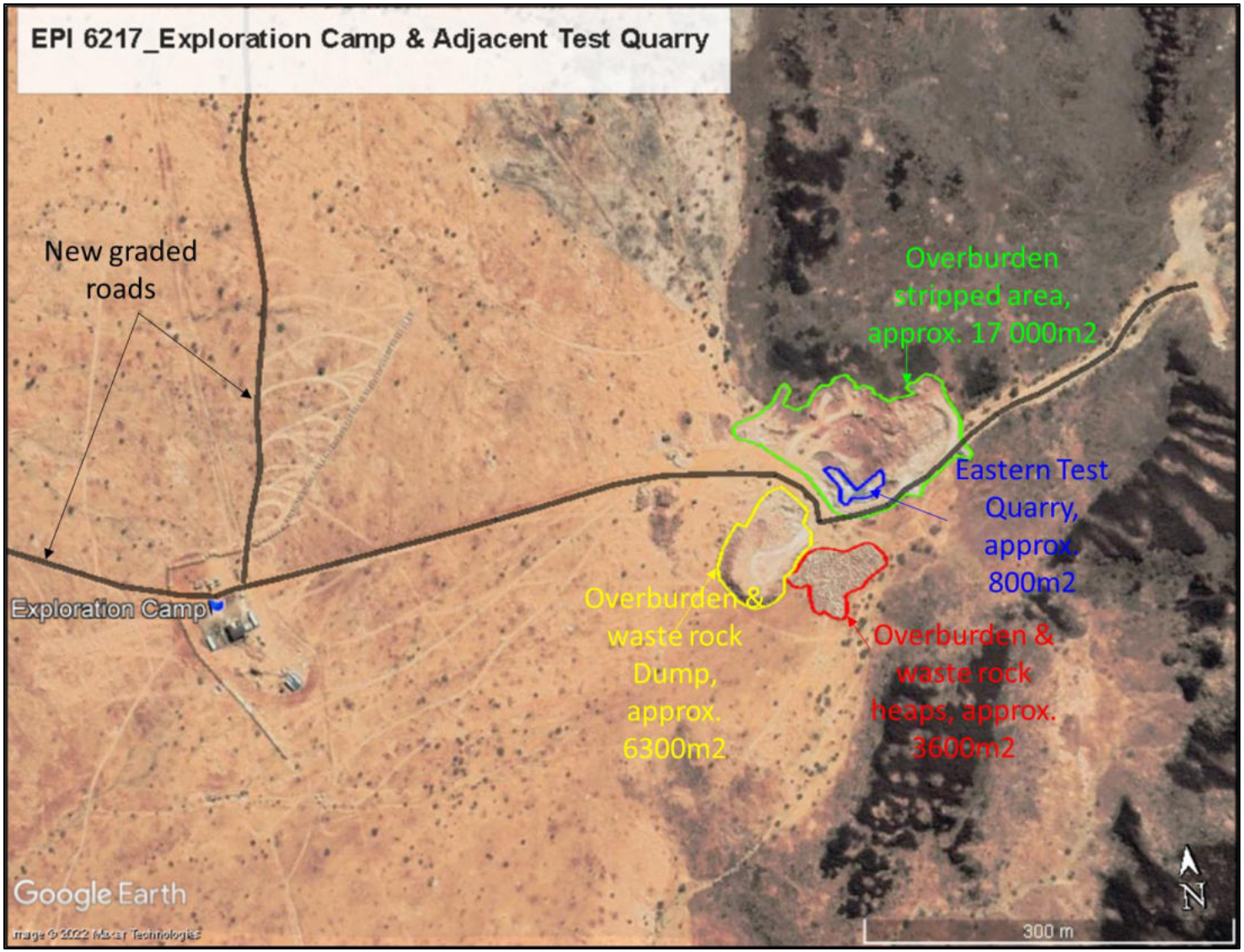
APPENDIX A – PROJECT SITE LAYOUT MAPS

OVERALL SITE MAP OF CURRENT ACTIVITIES ***(MAP 1)***

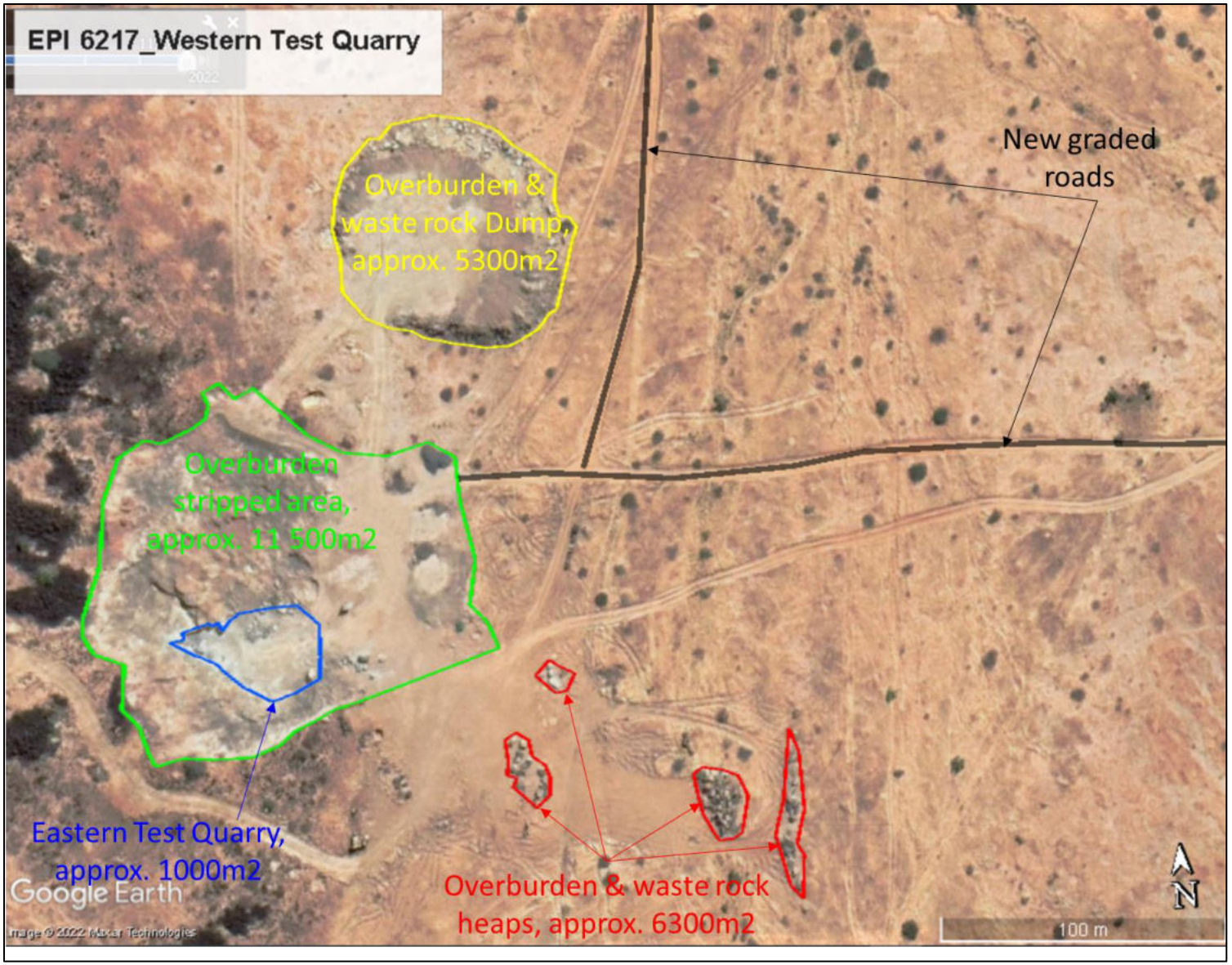



EPI 6217_Current Activities & Archaeological Buffers
Homesteads
Main Access to EPL
Exploration Camp
C35
D2319
C35
Uisberge
D3714
Google Earth
5 km
N
New Access Roads
Historic roads
No-Go archaeological buffer zones
EPL boundary
Active Sites

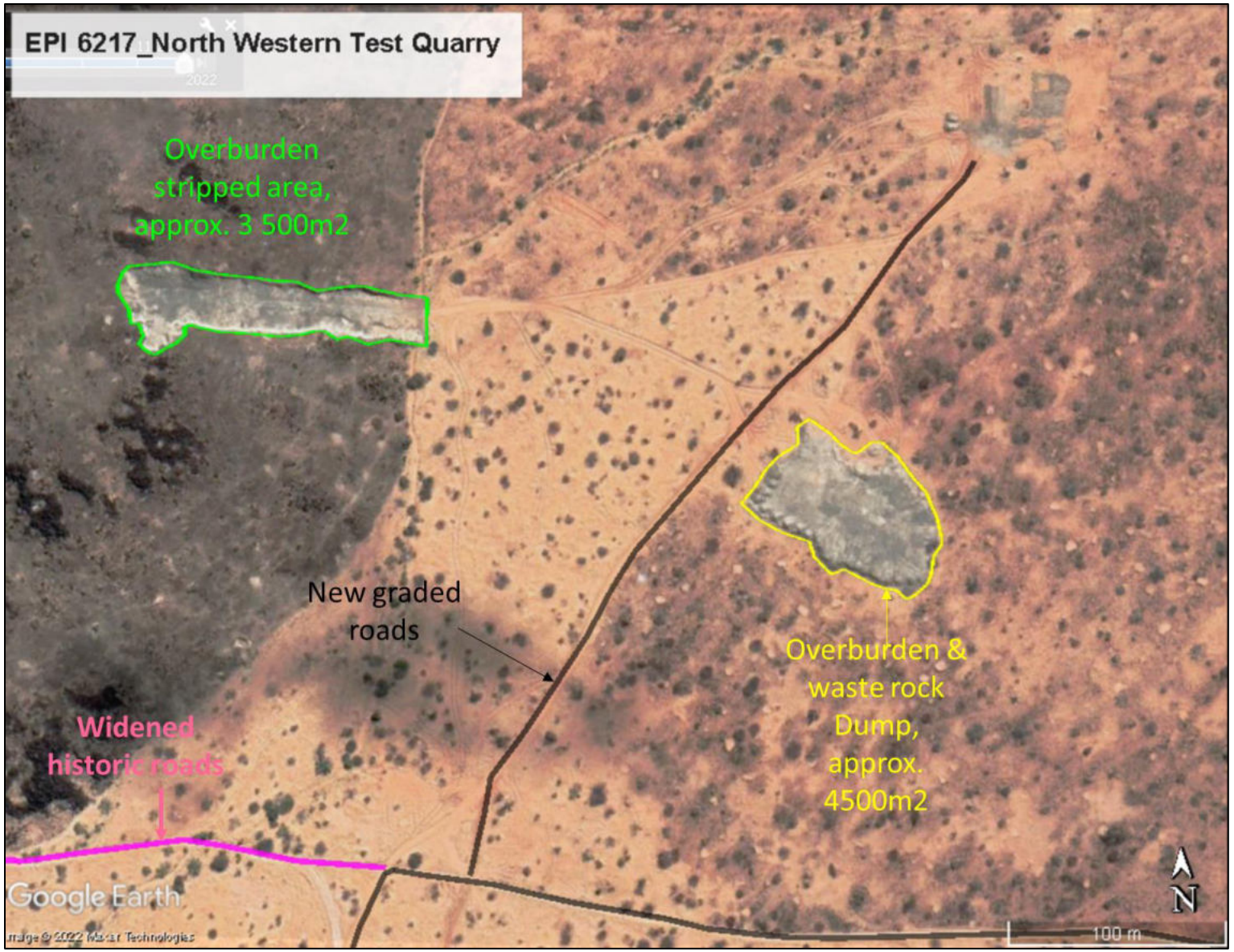
LAYOUT MAP OF EXPLORATION CAMP AND ADJACENT EASTERN TEST QUARRY *(MAP 2)*



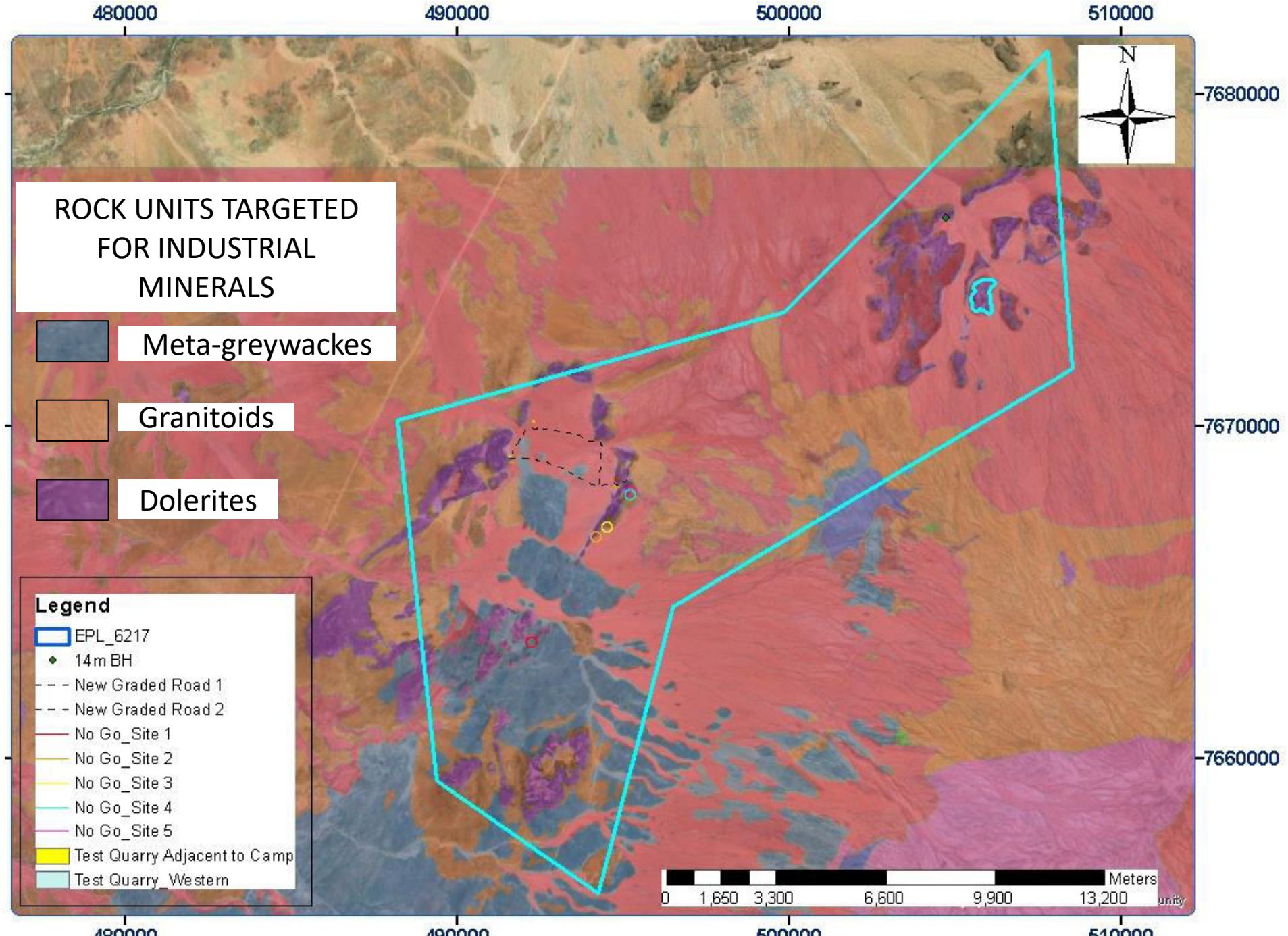
LAYOUT MAP OF WESTERN TEST QUARRY *(MAP 3)*



LAYOUT MAP OFNORTH - WESTERN TEST QUARRY *(MAP 4)*



APPENDIX B


480000
490000
500000
510000
7680000
7670000
7660000
N
ROCK UNITS TARGETED FOR INDUSTRIAL MINERALS
Meta-greywackes
Granitoids
Dolerites
Legend
EPL_6217
14m BH
New Graded Road 1
New Graded Road 2
No Go_Site 1
No Go_Site 2
No Go_Site 3
No Go_Site 4
No Go_Site 5
Test Quarry Adjacent to Camp
Test Quarry_Western
Meters
0 1,650 3,300 6,600 9,900 13,200

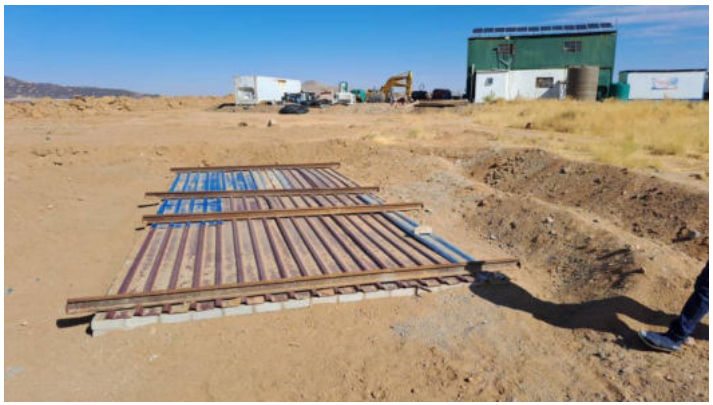
APPENDIX B – 15/ 16 NOVEMBER 2022 OBSERVATION PHOTOGRAPHS

SITE OBSERVATION PHOTOGRPHS *(EXPLORATION CAMP)*

View of main exploration camp structures including containerized offices, accommodation, water supply tanks

View of exploration camp structures with roof top solar installations for power supply

Main gate to the exploration camp site. Note the site boundary embankments for access control

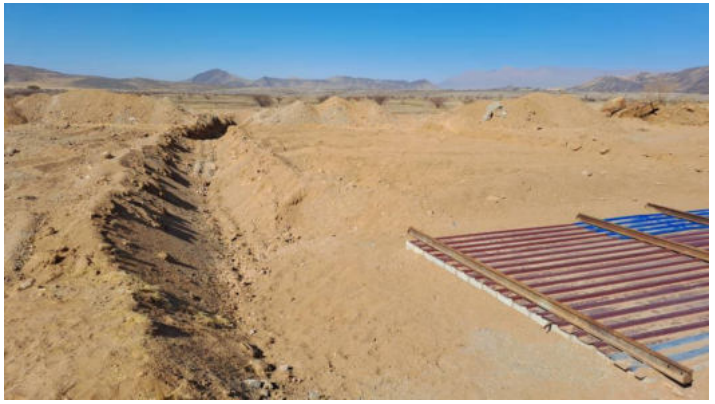


9m by 3m by 3m (depth) concrete lined drain for site sewage and waste water. The drain is compartmentalized into 3 sections: one for sewage, one for kitchen waste water and one for shower waste water

Diamond drill core storage area at the exploration camp. Core largely retrieved from drill holes drilled to facilitate wire saw cutting

Waste skip for domestic waste at the workers quarters

23000L diesel storage tank with dispenser for fuel supply to site machinery. Note that the tank is contained in a steel bund to prevent leakages to ground



Diversion trenches around the compartmentalized sewer drain. These are made to divert surface runoff from the sewer drain

General field equipment behind the container equipment warehouse. Note that generators and drilling fluid containers are placed on the floor

Spares container and equipment spares outside the spare container. Note that there is no concrete lining/ bund

General field equipment behind the container equipment warehouse. Note that generators and drilling fluid containers are placed on the floor directly

Used oils and grease stored in sealed containers inside the spares container warehouse

SITE OBSERVATION PHOTOGRPHS ***(TEST QUARRY EAST OF THE EXPLORATION CAMP)***

View of north-eastern access ramp into eastern test quarry and area stripped for overburden and loose dolerite boulders

View of eastern test quarry and area stripped for overburden and loose dolerite boulders

View of eastern test quarry and associated dolerite waste rock. The black hills in the background are untouched ground where sites of archaeological significance were discovered during the impact assessment

View of blade saw used in developing the eastern test quarry. The test quarry is currently about 2.5m – 3m deep

View of the western face of the eastern test quarry

View of loose dolerite boulders stripped off from area where the eastern test quarry has been developed

View of waste rock dump near the eastern test quarry

View of area which was affected by the recent accidental veld fire. Photograph taken from the waste rock dump, looking westward

Contrast between area affected by the recent wild fire (on the right) and the area which was not affected by this fire (on the left)

View of area which was affected by the recent accidental veld fire. Photograph taken from the western boundary embankment of the exploration camp

SITE OBSERVATION PHOTOGRPHS *(WESTERN TEST QUARRY)*

View of 3m deep butterfly cut in dolerite at the western test quarry

View of stripped area near the western test quarry

Loose boulders and exposed dolerite bedrock near the western test quarry site

Unrehabilitated small (about 10m wide) borrow pit near the western test quarry. This was used to source material for the adjacent access road

SITE OBSERVATION PHOTOGRPHS *(COMMUNITY BOREHOLE AREA)*

View of the community borehole site where water for exploration and domestic consumption (with exception for drinking water) is sourced from. The borehole two 10 000L and one 5000L plastic water tanks, and a concrete dam. The borehole pump is solar powered.

View of the community borehole site where water for exploration and domestic consumption (with exception for drinking water) is sourced from.

SITE OBSERVATION PHOTOGRPHS *(CONSULTATION WITH TSISEB COMMUNAL CONSERVANCY OFFICE)*

Consultative meeting held with the Conservancy Manager (Mr. Eric Xaweb) and Administrative Officer (Mr. Edmund Uwuseb) of the Tsiseb Communal Conservancy. Key areas of concern as well as positive highlights of the project were discussed.