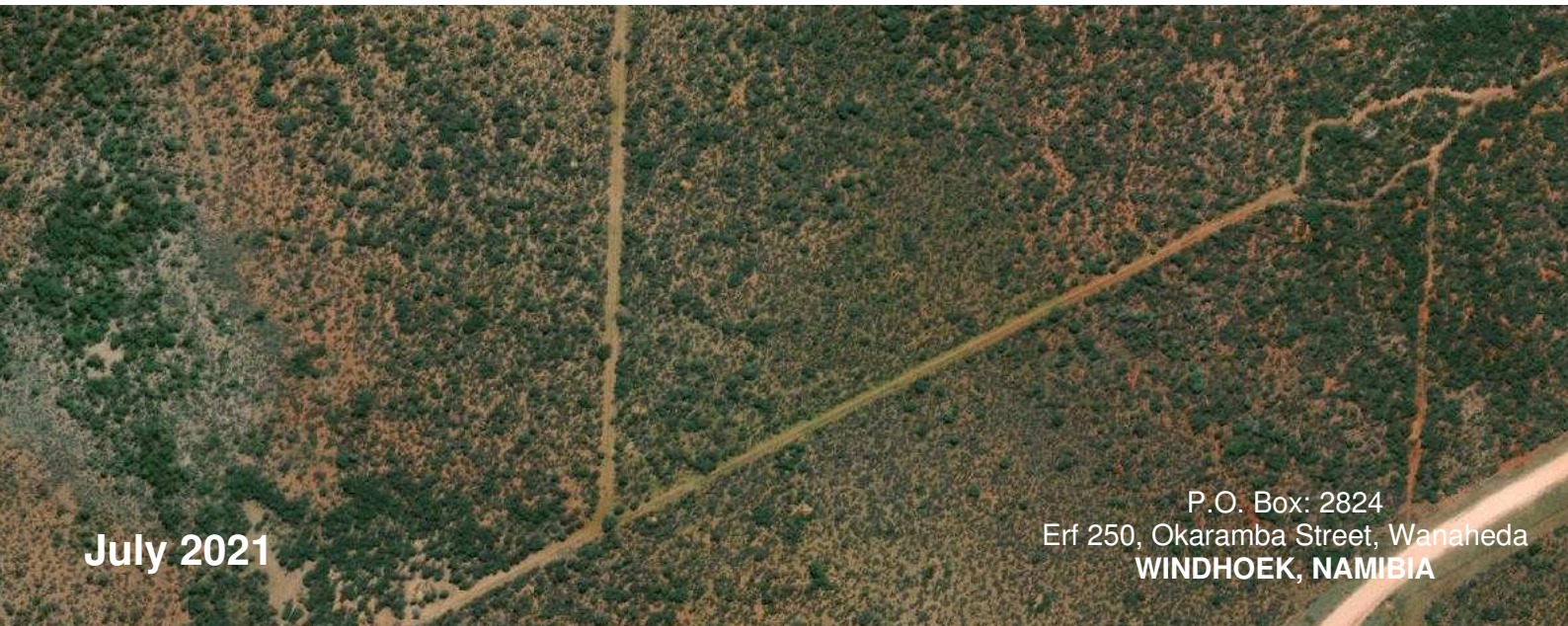
Justus Stanley Veii
MCs Nos. 72254-72263

MEFT ECC APPLICATION REFERENCE No.
APP-002855

Final Environmental Impact Assessment (EIA) to support the Application for Environmental Clearance Certificate (ECC) for the Mining Claims (MCs) Nos. 72254-72263 for Justus Stanley Veii, Farm Maitland No. 273, Okahandja District, **Otjozondjupa Region, North Central Namibia**



July 2021

P.O. Box: 2824
Erf 250, Okaramba Street, Wanaheda
WINDHOEK, NAMIBIA

PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

MEFT ECC APPLICATION REFERENCE No.
APP-002855

TYPE OF AUTHORISATIONS REQUIRING ECC
Mining Claims (MCs) Nos. 72254-72263

NAME OF THE PROPONENT
Justus Stanley Veii

COMPETENT AUTHORITY
Ministry of Mines and Energy (MME)

ADDRESS OF THE PROPONENT AND CONTACT PERSON

P.O. Box: 2824
Erf 250, Okaramba Street, Wanaheda
WINDHOEK, NAMIBIA

CONTACT PERSON:
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Email: veiinatobias@iway.na

PROPOSED PROJECT
Proposed Small-Scale Mining Operations and Ongoing Exploration
Mining Claims (MCs) Nos. 72254-72263, for Justus Stanley Veii,
Farm Maitland No. 273, Okahandja District,
Otjozondjupa Region, North Central Namibia

PROJECT LOCATION
Farm Maitland No. 273, Okahandja District, Otjozondjupa Region, North Central Namibia
(Latitude: -21.309167, Longitude: 17.825278)

ENVIRONMENTAL CONSULTANTS

Risk-Based Solutions (RBS) CC
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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr. Sindila Mwiya
PhD, PG Cert, MPhil, BEng (Hons), Pr Eng

Summary Profile and Qualification of the Environmental Assessment Practitioner (EAP) / International Consultant Projects Director – Dr Sindila Mwiya

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. The great array of highly technical specialist knowledge and field-based practical experiences of Dr Sindila Mwiya has now been extended to supporting the development of Environmentally Sustainable, automated / smart and Climate Change resilient homes, towns, and cities.

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

Dr Sindila Mwiya has undertaken and continue to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. Currently, Dr Sindila Mwiya is developing a 16 Ha commercial and residential Mwale Mwiya Park in the Town of Katima Mulilo, Zambezi Region, Namibia as one of first advanced Environmentally Sustainable, automated / smart and Climate Change resilient development in Namibia. He continue to worked as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment and Tourism / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment and Tourism (MET) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD (Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

Windhoek, Namibia July 2021

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NON-TECHNICAL SUMMARY

Justus Stanley Veii, the Proponent, have applied for Mining Claims (MCs) Nos. 72254-72263 for base and rare metals with special focus on manganese exploration and small-scale mining. The 180 Ha MCs area covering ten (10) MCs were applied on 13/11/2020. MCs falls in privately owned commercial farmland, Farm Maitland No. 273 situated in the Okahandja District, Otjozondjupa Region. The MCs area is surrounded by well-established commercial cattle farming area supported by game farming, tourism, and hospitality services as well as conservancies.

The Proponent intends undertake exploration activities using exploration techniques/ methods such as geophysical surveys, geological mapping, trenching, drilling, bulk sampling, and laboratory tests followed by small scale manganese test mining and mining operations. The implementation of the site-specific field-based small scale manganese mining activities will be subject to the discovery of potential economic minerals deposits within the MCs area. The following is the summary of the project developmental stages that may be implemented: Preconstruction, construction, operation, ongoing monitoring and rehabilitation, decommissioning, closure, and aftercare stages.

The proposed exploration and small-scale mining activities are listed in the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC). This Environmental Impact Assessment (EIA) report has been prepared by Risk-Based Solutions (RBS) CC to support the application for the ECC for the proposed exploration and small-scale mining activities in the MCs Nos. 72254-72263.

According to Risk-Based Solutions (2014), it is estimated that at least 77 reptile, 9 amphibian, 84 mammal, 208 bird species (breeding residents), at least 79-110 larger trees and shrubs and up to 111 grasses are known to or expected to occur in the general area of which a high proportion (e.g., 35.1% endemic reptiles) are endemic species. The socioeconomic activities and household main income in the area is from farming, wages and salaries, cash remittance business, non-farming, and pension.

The impacts that the proposed exploration and small-scale mining activities and associated infrastructure such as access and supporting facilities will have on the receiving environment (physical, biological and socioeconomic) will depend on the extent of the proposed activities over the development area/s, management of the affected area/s and how the mitigations as detailed in the EMP Report are eventually implemented and monitored by the Proponent. The overall severity of potential negative environmental impacts of the proposed project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of high magnitude, permanent duration, localised extent, and high probability of occurrence of occurrence especially around the 180Ha MCs areas targeted for possible manganese exploration and small-scale mining operations. The immediate surrounding areas bordering the targeted exploration and mining operations area will also likely to be low-to moderately negatively affected.

Based on the findings of this EIA Report, it is hereby recommended that the proposed exploration and small-scale mining activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall take into consideration the following key requirements in implementing the proposed exploration and small-scale mining operations:

(i) This EIA Report has been undertaken on assumption that the Proponent will be undertaking small-scale exploration and mining operations. In an event of a discovery of a large-scale minerals deposit that will require the operation of a large-scale exploration and mining operations, the Proponent shall apply for a Mining License (ML) and prepare appropriate EIA and EMP reports to support the application for a new ECC for mining and ongoing exploration operations under a ML regime instead of the current MCs.

(ii) The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.

(iii) The Proponent shall obtain all other applicable permits such as freshwater abstraction, wastewater discharge as may be required.

(iv) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.

(v) The Proponent shall adopt the precautionary approach / principles in instances where baseline information, national or international guidelines or mitigation measures have not been provided or do not sufficiently address the site-specific project impact.

(vi) Before entering any private or protected property/ area such as a private farm, the Proponent must give advance notices and obtain consent to always access the MCs area, and.

(vii) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s or as may be needed for environmental protection including wildlife management. The abstraction of the groundwater resources shall include water levels monitoring, sampling, and quality testing on a bi-annual basis, and that the affected landowner/s must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable.

When applying for ML, a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports shall be prepared as part of the feasibility study for possible large-scale mining operations under a ML. The site-specific EIA and EMP reports shall cover the area identified to have potential economic minerals resources including the pit / shaft area/s, waste rock, tailings dump, access, office blocks, water, and external infrastructure support areas such as water pipeline, powerline, and main road/s.

In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for any possible mining operations, the following field-based and site-specific specialist studies shall be considered in the TOR for the EIA and EMP studies to be undertaken in an event of a discovery of large-scale economic minerals resources and possible development of a large-scale mining project within under ML regime instead of the current planned small-scale exploration and mining operations under the MCs:

(i) Groundwater studies including modelling as maybe applicable.

(ii) Field-based flora and fauna diversity.

(iii) Dust, noise, and sound modelling linked to engineering studies.

(iv) Archaeological assessment.

(v) Socioeconomic assessment, and.

(vi) Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.

1. BACKGROUND

1.1 Introduction

Justus Stanley Veii, the Proponent, holds mineral rights under the Mining Claims (MCs) Nos. 72254-72263. The following is the summary of the MCs Nos. 72254-72263:

- **Type of License:** Mining Claims (MCs) which allows for small scale exploration and mining operations.
- **MCs Holder and Proponent:** Justus Stanley Veii.
- **Date Applied:** 13/11/2020.
- **Commodities:** Base and rare metals with special focus on manganese, and.
- **Size of the MCs:** Approximately 180 Ha.

1.2 Proposed Scope of Work

The Proponent intends undertake exploration activities using exploration techniques/ methods such as geophysical surveys, geological mapping, trenching, drilling, bulk sampling, and laboratory tests followed by small-scale manganese test mining and mining operations. If economic manganese deposits are discovered within the MCs area, the Proponent will implement small-scale manganese mining operations. The following is the summary of the envisaged multi-phased project development process that will be implemented if the proposed and ongoing exploration is successful:

(i) Feasibility, planning and permitting.

(ii) Preconstruction and site clearing for the open pit mining areas and supporting infrastructure area such as onsite and offsite workers accommodation, administration block, processing plant area, storage, tailings and rock waste dumps, external and internal access/ transportation system, and all related services points for water and energy supplies.

(iii) Construction of the proposed mine and all the supporting infrastructure.

(iv) Mine operation, processing, stockpiling, transportation via road or new rail link to Walvis Bay through Okahandja for manganese export. The mining operations will be supported by ongoing monitoring and rehabilitation, and.

(v) Decommissioning, final rehabilitation, closure, and aftercare.

The proposed exploration and small-scale mining activities will be implemented as soon as all the required regulatory permits such as the Environmental Clearance Certificate (ECC) have been granted by the Government as well as all key agreements have been concluded with the land owners, contractors and services providers.

1.3 Regulatory Requirements

The proposed prospecting and small-scale mining activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations, 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). The Proponent is required to have undertaken Environmental Assessment comprising this Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports for the proposed minerals prospecting activities.

In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultants led by Dr Sindila Mwiya as the Environmental Assessment Practitioner in the preparation of the EIA and EMP Reports to support the application for ECC (Annex 1).

1.4 Location, Land Use, Infrastructure and Services

1.4.1 Location and Land Use

The MCs Nos. 72254-72263 are located in the located in the Okahandja District in the Otjozondjupa Region, Central Namibia (Fig. 1.2 - 1.3). The MCs Nos. 72254-72263 combined area has a total area coverage of 180 Ha and falls within Farm Maitland No. 273 (Fig. 1.4).

The land use of the minerals licence area is mainly dominated by commercial cattle and small stock agriculture. Bush thickening or encroachment is viewed as an economic problem in the general area with an estimated 4,000 to 12,000 plants/ha – mainly Acacia mellifera being the dominant problematic species (Bester 2001, Cunningham 1998, Mendelsohn *et al*., 2002).

The area is not part of the communal conservancy system in Namibia with no protected area nearby the MCs area.

1.4.2 Supporting Infrastructure and Services

The project area is 132 km from Okahandja and accessible through 30 km tarred road from Okahandja and 100 km of gravel road along the C31 and M59 (Figs. 1.2 and 1.3). The MCs Nos. 72254-72263 area is serviced by several internal local tracks and farm roads coming off the M59 and some of the minor roads require high clearance 4 x 4 vehicles that may need to be upgraded as required.

The following supporting infrastructures and services will be required:

(i) External and internal roads network: The Proponent will use the already existing external and internal roads. However, additional internal roads also likely to be created with the permission of the land owner.

(ii) Water supply: The Proponent will utilise the existing boreholes with permission from the land owner/s. The exploration such as drilling operations will require limited water resources which will be supplied by a tanker. However, possible small-scale mining activities will need more water that will be sourced from groundwater resources. If new water supply boreholes will need to be drilled, the Proponent will be required to apply for freshwater abstraction permit from the Department of Water Affairs in the Ministry of Agriculture, Water and Land Reform (MAWLR).

(iii) Energy: The proposed exploration and small-scale mining operations will use diesels and solar energy as may be required for exploration equipment and lighting, respectively. The small-scale mining operations may require reliable power supply to be supplied by NamPower. A new high voltage power line may be required, and.

(iv) Accommodation and other supporting facilities and services: The exploration and possible small-scale mining team will utilise the exiting accommodation facilities and services in the area. In absence of such suitable facilities and services, the Proponent will provide onsite site prefabricated temporary accommodation and supporting portable infrastructures such as chemical toilets as well as other requirements as may be applicable.

Figure 1.1: Regional location of the MCs Nos. 72254-72263 Area.

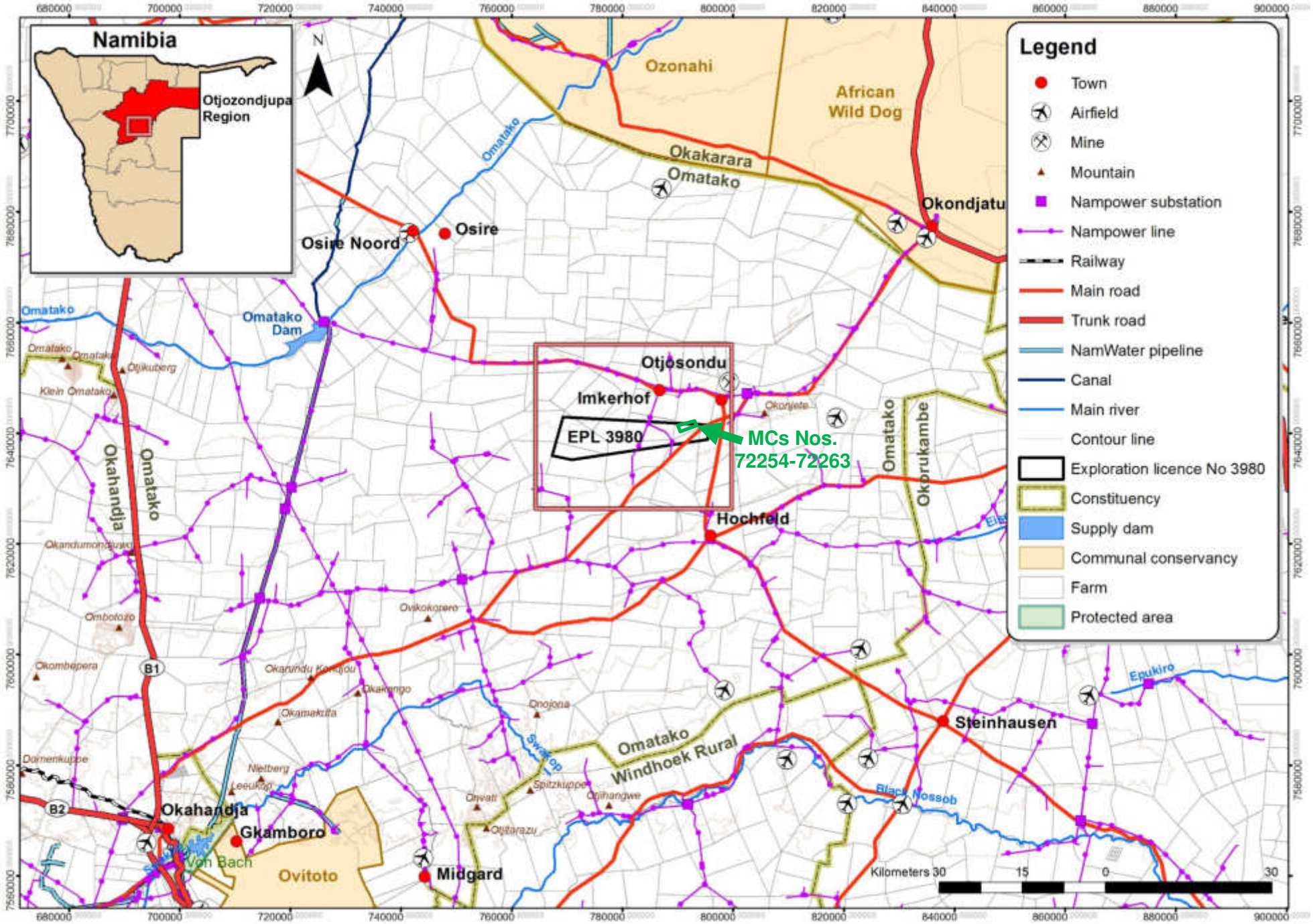


Figure 1.2: Regional location of the MCs Nos. 72254-72263 falling within the EPL No. 3980.

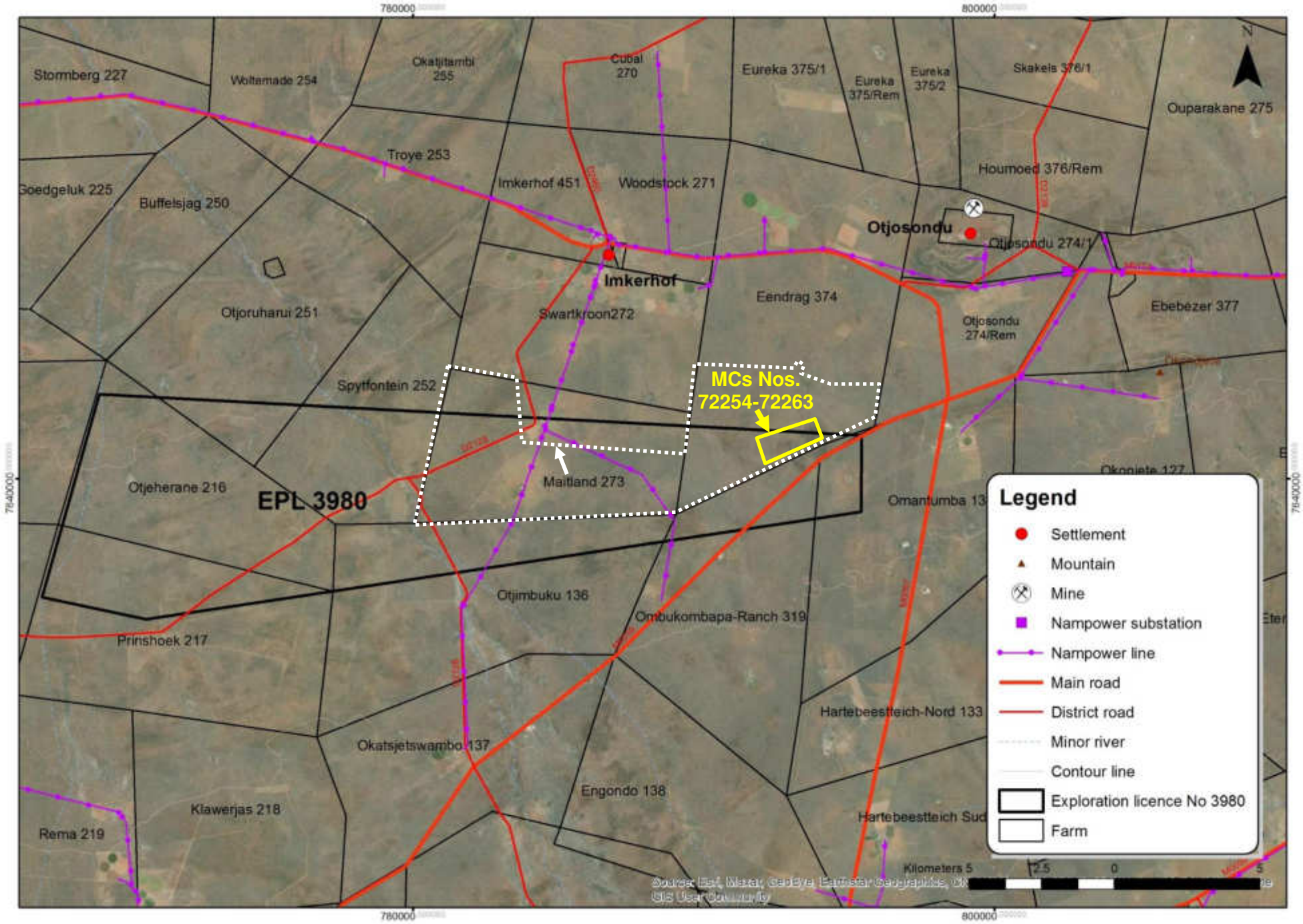
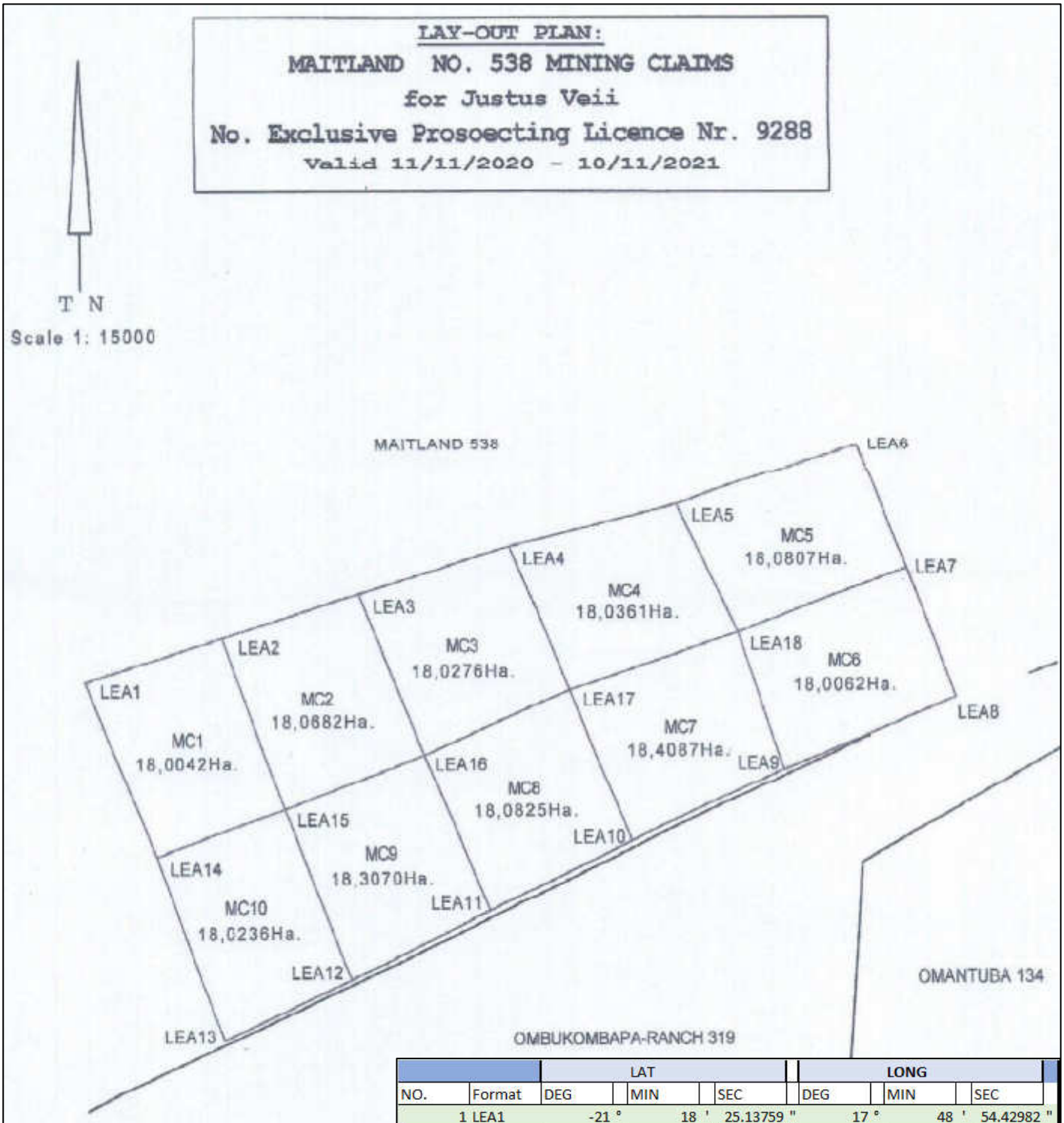


Figure 1.3: Detailed regional location of the MCs Nos. 72254-72263 within Farm Maitland No. 273 inside the EPL 3980 with key access.



		LAT				LONG			
NO.	Format	DEG		MIN		DEG		MIN	
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2	LEA2	-21	°	18	'	21.42001	"	17 °	49 '	6.85896 "
3	LEA3	-21	°	18	'	17.57348	"	17 °	49 '	19.19787 "
4	LEA4	-21	°	18	'	13.32866	"	17 °	49 '	32.7838 "
5	LEA5	-21	°	18	'	9.62621	"	17 °	49 '	47.86287 "
6	LEA6	-21	°	18	'	4.12032	"	17 °	50 '	4.10358 "
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18	LEA18	-21	°	18	'	20.88388	"	17 °	49 '	53.36015 "

Figure 1.4: Detailed local location of the MCs No. Nos. 72254-72263 with coordinates.

1.5 Project Motivation

The MCs Nos. 72254-72263 falls within the well-known Otjosondu manganese field. The Otjosondu manganese deposits inclusive of the MCs Nos. 72254-72263 area is only deposits that has been mined in Namibia and is still being mined by different companies within Otjosondu area. The manganese deposits of Otjosondu have been known since 1904 (Roper, 1959), with the first exploration activities involving sampling was undertaken in 1939. Geological Survey of the Union of South Africa only sampled the area in 1940, and the first claim was pegged in 1941 (Dickson, 1940 and Schneider, 1992). In 1949, prospector J. Paulsen claimed that he had discovered the largest manganese deposit in Southern Africa (Buhn, 1991).

He subsequently sold his claims to the South African Minerals Corporation Ltd, which obtained large concessions over the entire area around Otjosondu. Its these claims that were later converted into mining areas named Ann, Cheri, Dale, Eric, Cathy, Lucy, Hettie, Furman, Gauntlett and Jeppe and were eventually consolidated into the two large eastern and central mining areas (Vermaak, 1969). Open-pit mining started in October 1950, utilising the removal of overburden materials. The mine was originally opened from surface to exploit steeply dipping manganese rich deposits. The surface workings were late extended underground in some places and number of vertical hoist shaft were also sunk.

Based on the historical exploration activities undertaken around the MCs area, base and rare metals and industrial minerals are historically known to occur in the general area. More so, however, is that the deposit is in an area with good road network connecting the proposed exploration and small-scale mining activities under the MCs Nos. 72254-72263 to the national road network.

The proposed exploration and small-scale mining activities has some limited socioeconomic benefits which are mainly centred around the payment of the annual license rental fees to the Central Government through the Ministry of Mines and Energy (MME) and value addition to the potential underground mineral resources in the area which otherwise would not have been known if the proposed exploration and small-scale mining operations in the MCs Nos. 72254-72263 did not take place.

Additional socioeconomic benefits will also be realised at regional and national socioeconomic benefits in terms of capital investments, license rental fees, royalties payable to Government, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments and various taxes payable to the Government.

1.6 Approach, Alternatives, Key Issues and Methodology

1.6.1 Terms of Reference (ToR) and Approach

Risk-Based Solutions (RBS) was appointed by the Proponent to prepare the environmental reports to support the application for renewal of the Environmental Clearance Certificate (ECC) for the MCs Nos. 72254-72263 with respect to the proposed exploration and small-scale mining activities. The environmental assessment process reviewed the receiving environmental settings (physical, biological, socioeconomic and ecosystem services, function, use values and non-use) and proposed exploration and small-scale mining activities, identified the impacts and then assessed the likely impacts (positive and negative) on the receiving environment. Tables 1.1 and 1.2 summarises the proposed exploration and small-scale mining activities respectively, alternatives and key issues considered during the environmental assessment for the MCs Nos. 72254-72263.

The key deliverable comprised this EIA Report and a separate Environmental Management Plan (EMP) report detailing appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative impacts identified. The EIA and EMP reports and the completed application from for Environmental Clearance Certificate (ECC) shall be submitted to the client (Proponent) and the Office of the Environmental Commissioner, Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through the Ministry of Mines and Energy (the Competent Authority) for review and issue of the Records of Decisions (RDs).

The environmental assessment process has been performed with reasonable skill, care, and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques that have been applied are all in conformity to the national regulatory requirements, process and specifications in Namibia as required by MME, MEFT and Ministry of Agriculture, Water and Land Reform (MAWLR). Both the EIA and EMP Reports have been prepared in line with the January 2015 MET Environmental Assessment Reporting Guideline.

Table 1.1: Summary of the proposed exploration activities, alternatives and key issues considered during the environmental assessment process.

<table>
<tr><th colspan="2">PROJECT ACTIVITIES</th><th>ALTERNATIVES CONSIDERED</th><th colspan="2">Key Issues to be Evaluated and Assessed with Environmental Management Plan (EMP) / Mitigation Measures Developed</th></tr>
<tr><td>1. Project Implementation and Initial Desktop Exploration Activities</td><td>Review of existing information and all previous activities in order identify any potential target/s in within the MCs Area</td><td rowspan="6">(i) Location for Minerals Occurrence: A number of economic deposits are known to exist in different parts of Namibia and some have been explored by different companies over the years. The proponent intends to explore / prospect for possible economic minerals occurrence in the MCs area as licensed. Minerals occurrence is linked to the geology or local rock outcrops and site-specific.
(ii) Other Alternative Land Uses: Game farming, tourism and agriculture
(iii) Ecosystem Function (What the Ecosystem Does.
(iv) Ecosystem Services.
(v) Use Values.
(vi) Non-Use, or Passive Use.
(vii) The No-Action Alternative
(viii) Others to be identified during the public consultation process and preparation of the EIA and EMP Reports</td><td colspan="2">Potential land use conflicts / opportunities for coexistence between the proposed exploration operations and other existing land uses such as conservation, tourism and agriculture</td></tr>
<tr><td>2. Regional Reconnaissance Field-Based</td><td>Reginal mapping and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (1) above</td><td>PHYSICAL ENVIRONMENT</td><td>• Water Quality
• Physical infrastructure and Resources
• Air quality,
• Noise and dust
• Landscape and topography value
• Soil quality
• Climate Change Influences</td></tr>
<tr><td>3. Initial Local Field-Based Activities</td><td>May include: Widely spaced geological mapping, sampling, surveying and possible trenching and drilling in order to determine the viability of any delineated local target/s</td><td>BIOLOGICAL ENVIRONMENT</td><td>• Habitat Protected Areas
• Flora
• Fauna
• Ecosystem functions, services, use values and non-Use or passive use</td></tr>
<tr><td>4. Detailed Local Field-Based Activities on Delineated Targets If Any</td><td>Following the delineation of potential target/s, conduct detailed mapping, trenching, sampling, surveying and drilling in order to determine the viability of the project.</td><td rowspan="2">SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</td><td rowspan="2">• Local, regional and national socioeconomic settings
• Commercial Agriculture
• Community Protected Areas
• Tourism and Recreation
• Cultural, Biological and Archaeological Resources</td></tr>
<tr><td>5. Prefeasibility and Feasibility Studies</td><td>Assess the viability of any delineated local target/s and more detailed mapping, trenching, bulk sampling, drilling and test mining activities where applicable. If the project proves viable, a feasibility report and implementation of the</td></tr>
</table>

Table 1.2: Summary of the proposed small-scale mining activities, alternatives and key issues considered during the environmental assessment process.

<table>
<tr><th colspan="2">ACTIVITIES</th><th>ALTERNATIVES TO BE CONSIDERED</th><th colspan="2">KEY ISSUES EVALUATED AND ASSESSED WITH EMP / MITIGATION MEASURES DEVELOPED</th></tr>
<tr><td rowspan="8">MINING WITH ONGOING PROSPECTING / EXPLORATION</td><td rowspan="8">The following is the summary of the proposed possible small-scale mine developmental stages that has been assessed in this environmental assessment process covering the EIA and the development of the EMP:
(i) Preconstruction.
(ii) Construction.
(iii) Operation, ongoing exploration, monitoring and rehabilitation, and.
(iv) Closure, decommissioning, and aftercare.</td><td rowspan="8">(i) Location for Minerals Occurrence.
(ii) Other Alternative Land Uses: Game Farming, other types of Agricultural activities, Tourism and minerals and mining operations.
(iii) Ecosystem Function (What the Ecosystem Does.
(iv) Ecosystem Services.
(v) Use Values.
(vi) Non-Use, or Passive Use.
(vii) The No-Action Alternative
(viii) Others to be identified during the public consultation process and preparation of the Scoping and EMP Report</td><td colspan="2">Potential land use conflicts / opportunities for coexistence between proposed small-scale mining and other existing land uses such as conservation, tourism, and agriculture</td></tr>
<tr><td rowspan="3">Impacts on the Physical Environment</td><td>Natural Environment such as air, noise, water, dust etc.</td></tr>
<tr><td>Built Environment such as existing houses, roads, transport systems, Buildings, energy and water and other supporting infrastructure</td></tr>
<tr><td>Socioeconomic, Archaeological and Cultural impacts on the local societies and communities</td></tr>
<tr><td rowspan="4">Impacts on the Biological Environment</td><td>Flora</td></tr>
<tr><td>Fauna</td></tr>
<tr><td>Habitat</td></tr>
<tr><td>Ecosystem functions, services, use values and non-Use or passive use</td></tr>
</table>

1.6.2 Environmental Assessment Process and Steps

The EIA and EMP process used for this project took into considerations the provisions of the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act (EMA), 2007, (Act No. 7 of 2007) as outlined in Fig. 1.5.

The environmental assessment steps undertaken or still to be taken are summarised as follows (Fig. 1.5):

(i) Project screening process (**Undertaken in January 2021**).

(ii) Preparation of the Draft BID/Draft Scoping Report with Terms of Reference (ToR) for review by the Proponent (**Undertaken in February 2021**).

(iii) Preparation of the Public Notice to be published in the local newspapers as part of required public consultation process (**Undertaken in March 2021**).

(iv) Project registration / notification through the completion of the online formal registration / notification form on the MEFT online Portal (www.eia.met.gov.na), together with the hardcopies of the Draft BID/Scoping Report with ToR submitted to the Environmental Commissioner in the MEFT through the Ministry of Mines and Energy (MME) Director of Energy (Competent Authority) for review (**Undertaken in July 2021**).

(v) Opened the Stakeholder register (**Undertaken in March 2021**).

(vi) Invitation / notices to stakeholders and the general public to participate in environmental assessment process issued through the local newspaper advertisements as well as via direct emails communications to key stakeholders institutions such as Line Ministries, Regional and Local Governments as may be applicable (**Undertaken in March 2021 for a period of 21 days from the 1st advert published on Friday 12th March 2021**).

(vii) Preparation of the Draft EIA and EMP Reports for client review (**Undertaken in May- June 2021**).

(viii) Comments and inputs from the client and stakeholder consultations used to finalise the EIA and EMP Reports (**Undertaken in June – July 2021**).

(ix) The final EIA and EMP reports to be submitted to the Environmental Commissioner in MEFT through the MME (Competent Authority) in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project (**Undertaken in July 2021**).

(x) Following the submission of the application for ECC to the Environmental Commissioner, the public and stakeholders who are interested or affected by the proposed project will have additional **fourteen (14) days** to submit comments / inputs about the proposed project direct to the Environmental Commissioner when the application will be made available for additional comments / inputs by the Environmental Commissioner on the MEFT digital Portal www.eia.met.gov.na, and.

(xi) Wait for the Records or Decisions (RDs) from the Environmental Commissioner (**From July 2021**).

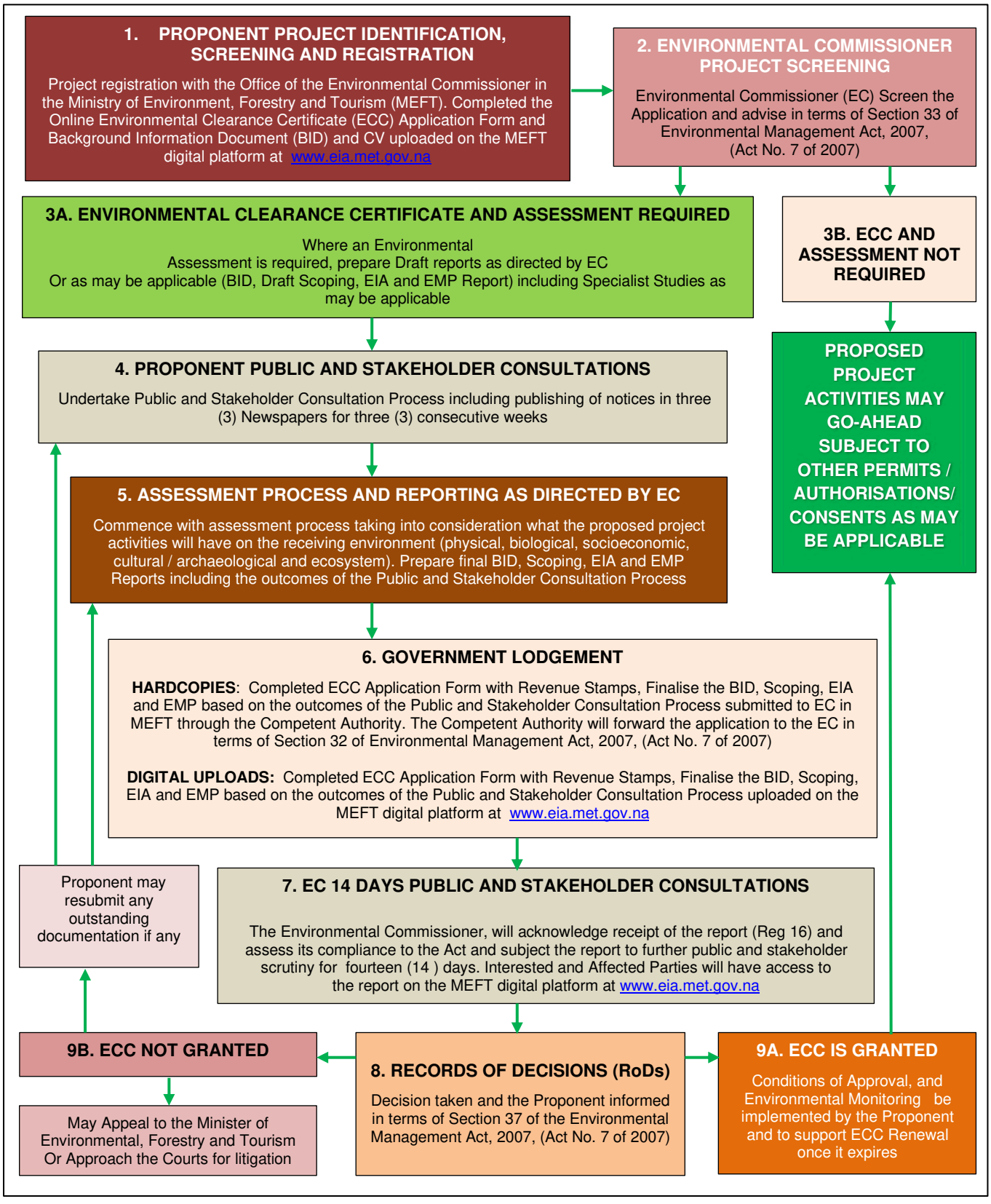


Figure 1.5: RBS Schematic presentation of Namibia's Environmental Assessment Procedure.

1.6.3 Assumptions and Limitations

The following assumptions and limitations underpin the approach adopted, overall outcomes and recommendations for this study:

- The proposed exploration and small-scale mining activities as well as all the plans, maps, MCs Boundary / coordinates and appropriate data sets received from the Proponent, project partners,

regulators, Competent Authorities and specialist assessments are assumed to be current and valid at the time of conducting the studies and compilation of this environmental report.

- The impact assessment outcomes, mitigation measures and recommendations provided in this report are valid for the entire duration of the proposed exploration and small-scale mining operations.

- A precautionary approach has been adopted in instances where baseline information was insufficient or unavailable or site-specific locations of the proposed project activities is not yet available, and.

- Mandatory timeframes as provided for in the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) have been observed and will apply to the review and decision of this report by the Competent Authority and the Environmental Commissioner.

1.7 Structure of the Report

The following is the summary structure outline of this EIA report.

1. **Section 1: Background** covering the proposed project location with available infrastructure and services.

2. **Section 2: Project Description** covering the summary of the proposed project exploration activities.

3. **Section 3: Regulatory Framework** covering the proposed exploration and small-scale mining operations with respect to relevant legislation, regulations and permitting requirements.

4. **Section 4: Receiving Environment** covering physical, biological and socioeconomic environments of the proposed project area.

5. **Section 5: Impact Assessment** covering the likely positive and negative impacts the proposed project activities are likely to have on the receiving environment.

6. **Section 6: Conclusions and Recommendations**- Summary of the findings and way forward.

7. **Section 7: Annexes**

2. DESCRIPTION OF THE EXPLORATION

2.1 General Overview

The overall aim of the proposed project is to search for potential economic minerals resources base and rare metals with special focus on manganese within the MCs area and if successful conduct a small-scale manganese mining operation.

2.2 Proposed Detailed Local Field-Based Activities

A number of regional reconnaissance field-based mapping and sampling activities as well as initial local field-based mapping and sampling activities have already been undertaken within the MCs area but will still be extended to other parts of the MCs Area where potential minerals occurrences are expected.

Other activities to be undertaken as part of the detailed local field-based activities include the following:

(i) Surface and subsurface geological mapping including boreholes drilling and logging, sampling and laboratory analyses / assessments.

(ii) Trenching, logging, sampling and laboratory analyses of shallow targets.

(iii) Baseline studies such as fauna and flora diversity spanning across the seasons in twelve (12) months and hydrogeological assessments including boreholes drilling and possible groundwater modelling, and.

(iv) Logistical support such as access preparation, exploration and camp sites management.

2.3 Prefeasibility and Feasibility Study

Prefeasibility and feasibility studies will be implemented on site-specific area and is subject to the positive outcomes of the detailed local field-based exploration activities. The activities to be undertaken as part of the prefeasibility and feasibility will include the following:

(i) Detailed site-specific surveys.

(ii) Detailed geological mapping.

(iii) Bulk sampling and testing.

(iv) Ore reserve calculations.

(v) Geotechnical studies for mine design.

(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial.

(vii) Mine planning and designs including all supporting infrastructures (water, energy and access).

(viii) Environmental Impact Assessment for mining.

(ix) Environmental Management Plan for mining.

(x) Test mining activities, and.

(xi) Preparation of feasibility report and application for Mining License.

Field-based support and logistical activities will be very extensive because the local field-based activities will be undertaken on a specific area for a very long time (up to one year or more in some

instances). The activities will be supported by existing tracks and campsites / lodging facilities available in the area.

2.4 Small-Scale Manganese Mining Operations

2.4.1 Overview

The following is the summary of the key activities to be undertaken as part of the preconstruction stage of the proposed small-scale mining and ongoing exploration activities the MCs Nos. 72254-72263.

1. General site clearing of the access, pits, accommodation, administration block, waste rock, and all supporting infrastructure (Office blocks, storage, water, and electricity other site infrastructure).

2. Open pit geotechnical drilling and site investigations to inform the mine design and layout.

3. Engineering design of the pit areas and the support facilities including water and energy supplies, storage areas, workshops and containerised administration block.

4. Access roads upgrading of existing tracks / creation of new routes as may be required.

5. Human resources planning, development of community and social programs and development of environmental and social management programs for the operational phase of the project.

6. Top soil removal and storage.

7. Development of the temporary construction facilities, and.

8. Installation of containerised construction facilities such as offices, workshops, storage facilities.

The development and operation of a solid waste disposal site for municipal related solid waste is not allowed within the MCs Area. The Proponent shall only operate a transfer faciality / station. All solid waste shall be stored in a closed container and disposed off at the Okahandja or Okakarara municipal waste disposal facility. All liquid waste such as sewage shall be managed through a French Drain System or chemical toilets during the preconstruction and construction phases.

An onsite waste water treatment faciality approved by the Department of Water Affirms in the Ministry of Agriculture, Water and Land Reform (MAWLR) must be installed for the operational phase of the proposed mine. Discharge of waste water in public stream (dry Ephemeral River Channels) or in the natural environment without treatment is prohibited.

2.4.2 Construction of Mine Supporting Infrastructure and Mine Workings

The mining techniques to be employed for the proposed project will be an open pit mining method using conventional diesel-powered equipment and a drill and blast, load and haul operation. The following is the summary of the key activities of the construction of the mine supporting infrastructure and mine workings:

1. Transportation facilities, including access roads to the site and on-site roads.

2. Production plant and ore handling infrastructure including foundation and the entire structures.

3. Tailing disposal facilities.

4. Waste rock stockpiles.

5. Water supply systems.

6. Power infrastructure, including power distribution systems.

7. Administration blocks and warehouses.
8. Fuel supply and storage.
9. Workshop and equipment maintenance facilities.
10. Explosives storage facility / bunker.
11. Wastewater treatment systems.
12. Solid waste disposal.
13. Storm water management around the plant, waste rock and tailings.
14. Testing the ore handling and processing facilities.
15. Geotechnical engineering drilling to create direct access to the ore body.
16. Blasting to create direct access to the ore body.
17. Pit engineering to create direct access to the ore body.
18. Ore production for test mining operations, and.
19. Test mining and mine commissioning.

2.4.3 Mine Operations

The mine operational phase will involve the extraction of the manganese from the open pits using drilling and blasting techniques. The ongoing and proposed mining operation will mine both the alluvial and reef ore bodies using shallow opencast excavations. The mining process will be undertaken in parallel to the exploration activities and existing stockpiles and discard heaps will also be reworked following extensive sampling. The mined materials will be transported to the field auxiliary plants, for crushing and screening before being transported to the main processing plant for gravity separation (Fig. 2.1).

The recovery of manganese ore will take place at the main processing plant. Based on the experience of the EAP (Dr Sindila Mwiya) (Fig. 2.1), it is likely that raw manganese ore arriving at the processing plant by truck will be fed into a jaw or cone crusher. The 60 mm fraction of the mobile screened materials will also fed be into one of the crushers. A conveyor belt transports the crushed ore to a fixed screen for treatment. The resulting 20 mm fraction of the mobile screen will be sent to the fixed screen. The 60 mm and 20 mm fractions will be swapped for 50 mm and 9.5 mm fractions in the future. The 20 mm fraction of the screening process is sent by a conveyor belt to the jig for gravimetric separation with water. The resulting 10 mm and 5 mm fractions are stockpiled separately and will be treated by a new jig.

The products of the gravimetric separation are high-grade manganese ore, “middlings” and waste, which are stockpiled. The waste is supposed to be used for later backfilling in the mine workings. The “middlings” on a conveyor belt could also be hand-sorted after previous cleaning by sprayed water. The sorted high-grade manganese ores will be stockpile and later loaded into trucks, weighted and transported to Okahandja where the manganese is then transported by rail or road to Walvis Bay for export. The following is the overall summary of the activities to be undertaken during the mining stage:

1. Mining operations (actual mining operations including drilling, blasting etc.).
2. Material processing plant (crushers and sorting).
3. Disposal of waste rock materials.

4. Disposal of tailings materials.

5. Expansion of the tailing dump facility.

6. Expansion of the waste rock facility.

7. Management of industrial and domestic waste water.

8. Storage and management of hazardous materials.

9. Storage and management of recovered manganese concentrate and other by-products at the production plant, and.

10. Ongoing exploration support delineating additional resources.

The ongoing rehabilitation will be undertaken during the operational phase of the mine and will be funded from the annual ongoing operational budget. The Proponent will undertake ongoing rehabilitation activities as soon as possible on land that is no longer needed for current or future operational requirements inclusive of all excavation and ongoing exploration footprints/ scars.

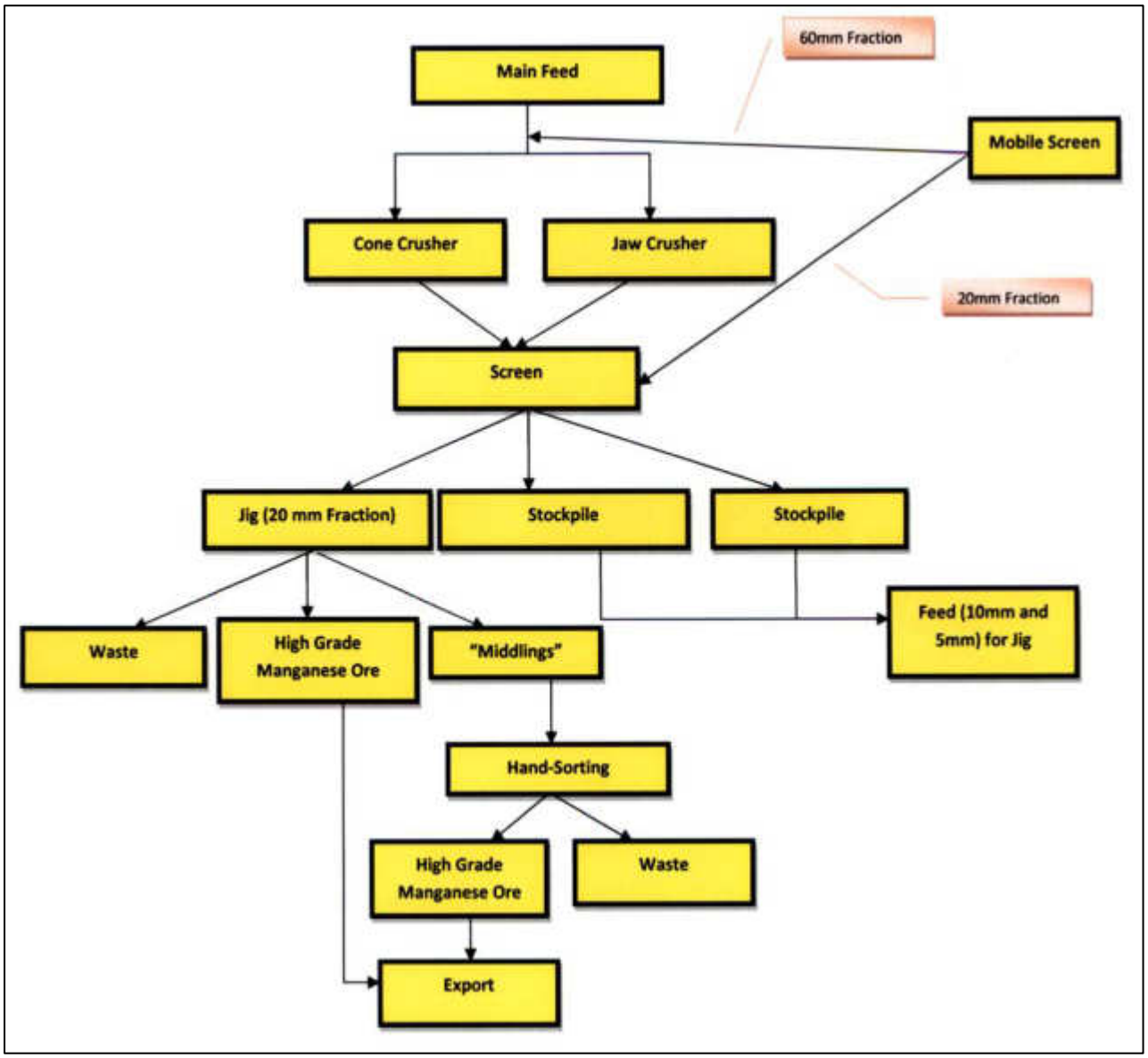


Figure 2.1: Idealised and envisaged manganese processing flowchart for the proposed project based on Dr Sindila Mwiya' s extensive experience of working on Otjosondu manganese deposits (Mwiya, 2020).

2.4.4 Mine Closure, Decommissioning, Rehabilitation and Aftercare

In line with the new regulatory requirements by the Ministry of Mines and Energy (MME), a Mine Closure Plan will be required to be submitted together with the Mining License Application. The Mine Closure will provide a detailed plan of actions and commitments including financial and human resources for effective management of the likely environmental liabilities at mine closure and aftercare stages of the proposed mining and ongoing activities in the MCs Nos. 72254-72263. Regular assessments and evaluation of the environmental liabilities during the mining stage shall be undertaken to ensure that adequate provision of the necessary resources towards good environmental management at mine closure and aftercare stages. The following is the summary of the activities to be associated with the mine closure and aftercare stages

1. Closure and rehabilitation of pits and all excavated areas operations.
2. Closure of solid waste piles.
3. Backfill waste dump sites.
4. Closure of storage sites.
5. Closure of water and electricity sources.
6. Overall land reclamation.
7. Restoration of mine site and internal roads, and.
8. Revegetation and site handover to the land owners as may be required.

2.3.5 Mine Closure Plan

The Mine Closure Plan activities consist of following five (5) steps that will be implemented by Proponent and where applicable in consultation with the key stakeholders and to be included in the Mine Closure Plan to be prepared by the Proponent:

(i) Ongoing rehabilitation: This will be implemented during the exploration phase and from day one (1) of the mine starting to produce coupled with the recruitment of a new workforce. Unwanted exploration and mine sites excavated or disturbed during the mine operation phase will not wait the final mine closure rehabilitation but will be attended to as ongoing activities and financed within an ongoing annual mine operational budget allocation to be detailed in the Mine Closure Plan Report.

(ii) Mine closure: Once production stops, the number of workers will be reduced and a small labour force will be retained to permanently shut down the mine. The mining company may have to provide re-training or early retirement options to their workers before the mine is closed. The cost of the re-skilling, early retirement and retrenchments will be funded from the final Mine Closure Plan budget allocations to be detailed in the Mine Closure Plan Report.

(iii) Decommissioning: Will be undertaken by a small crews or contractors who will be responsible for decommissioning or taking apart the mining supporting infrastructure and equipment. Pipelines will be drained, equipment and valuable parts will be cleaned and may be sold, buildings will be repurposed or demolished, warehouse materials will be recovered, and waste will be disposed of. The cost of the decommissioning will be funded from the final Mine Closure Plan budget allocations to be detailed in the Mine Closure Plan Report.

(iv) Final rehabilitation\Remediation\reclamation: The objective of reclamation will be to return the MCs area to an acceptable standard of socioeconomic use, ensuring that any landforms and structures are stable, and any watercourses are of acceptable water quality. Reclamation will involve a number of activities such as removal of any hazardous materials, reshaping the land, restoring topsoil, and planting native grasses, trees, or ground cover as may be applicable.

The cost of the remediation/reclamation will be funded from the final Mine Closure Plan budget allocations to be detailed in the Mine Closure Plan Report, and.

(v) Post-closure and aftercare including monitoring: Monitoring programmes will be used to assess the effectiveness of the reclamation measures and to identify any corrective action that may be needed during the post closure and aftercare stage. In addition, the project area MCs Nos. 72254-72263 will also require long-term care and maintenance after mine closure such as periodic monitoring and maintenance of waste rock containment structures and secured hazardous areas, and monitoring any ongoing remediation technologies that have been implemented. The aftercare period will run for period of between two (2) to five (5) years or as may be agreed with the stakeholders especially the land owners and relevant Government regulators such as MME, MEFT and MAWLR. The cost for post-closure and aftercare will be funded from the final Mine Closure Plan budget allocations to be detailed in the Mine Closure Plan Report.

2.5 Manganese Occurrence and Toxicological Profile

2.5.1 Overview

Manganese is the eighth most abundant metal in nature, and occurs in a number of ores. In aquatic ecosystems, manganese does not occur naturally as a metal but is found in various salts and minerals, frequently in association with iron compounds (Röllin, 2011)[1]. According to the South African Water Quality Guidelines, (1996)[2], the uptake of manganese by humans mainly takes place through inhalation and ingestion. Manganese may exist in the soluble manganous (Mn^{2+}) form, but is readily oxidised to the insoluble manganic (Mn^{4+}) form. The Mn^{2+} ion occurs at low redox potentials and low pH. Permanganates (Mn^{7+}) do not persist in the environment. They rapidly oxidise organic materials and are therefore reduced. Nitrate, sulphate and chloride salts of manganese are fairly soluble in water, whereas oxides, carbonates, phosphates, sulphides and hydroxides are less soluble.

Manganese minerals are widely distributed and oxides, silicates, and carbonates are the most common (Röllin, 2011). Manganese is one out of three toxic essential trace elements, which means that it is not only necessary for humans to survive, but it is also toxic when too high concentrations are present in a human body. Manganese (Mn) is essential to iron and steel production by virtue of its sulphur-fixing, deoxidising, and alloying properties. Steelmaking, including its ironmaking component, accounts for most domestic manganese demand, presently in the range of 85% to 90% of the total. Manganese ferroalloys, consisting of various grades of ferromanganese and silicomanganese, are used to provide most of this key ingredient to steelmaking. Products for construction, machinery, and transportation are leading end uses of manganese. Manganese also is a key component of certain widely used aluminium alloys and, in oxide form, dry cell batteries. As ore, additional quantities of manganese are used for such nonmetallurgical purposes as plant fertilizers, animal feed, and colorants for brick.

2.5.2 Manganese Toxicological Profile

The manganese toxicological profile presented in this section is based on the retrieval and scientific interpretation of ecotoxicological information publication by van Niekerk, (2019)[3] expert opinion that was provided with respect to the project on export of Manganese from South Africa through the Port of Lüderitz. According to van Niekerk, (2019), the major concern about environmental exposure to manganese relates to its neurotoxicity. Manganese is subject to many homeostatic controls, but overload or breakdown of these mechanisms at high exposure levels leads to increased delivery to the brain. There is conclusive evidence that long-term occupational exposure to manganese at high levels can lead to progressive neurological dysfunction, which can produce a disabling syndrome known as manganism. Evidence of these effects has been observed from studies of humans exposed to excessive levels of manganese dusts in mines and factories.

[1] Röllin HB, Nogueira CMCA, 2011. Manganese: environmental pollution and health effects. Encycl Environ Health 617–629.

[2] South African Water Quality Guidelines, 1996. Aquatic Ecosystems First Edition, Vol. 7, Department of Water Affairs & Forestry, Pretoria, South Africa.

[3] Van Niekerk W., 2019. Report No 002-2019 Rev 1.0: Manganese Toxicological Profile. INFOTOX (Pty) Ltd, Retrieval and scientific interpretation of ecotoxicological information, Waterkloof Heights 0065 South Africa.

According to van Niekerk, (2019), human exposure to manganese in dust generated from stockpiles of manganese ore is not comparable to occupational exposures, and should also be viewed in terms of bio-accessibility. Manganese does not exist in elemental form in the ore, but mainly as oxides, carbonates, and silicates, present in more than 100 minerals. Manganese must be released from these mineralogical structures to exert its toxic effects, i.e., it must become bio-accessible in the alveolar fluid. Alveolar fluid covers the inside lining of sac-like alveoli, the sections of the lungs where gas exchange takes place. The potential for exposure to manganese in particulates in manganese ore dust under storage conditions is much lower than in mines, and the risks are more severe when exposure is to manganese as fumes in manganese smelters. It is thus not surprising that the issue of manganism is associated exclusively with occupational exposures, generally at very high concentrations. Environmental levels in air are too low to trigger the sequence of neurological effects that leads to manganism.

According to van Niekerk, (2019), inhalation of particulate manganese compounds such as manganese dioxide or manganese tetroxide by humans can lead to an inflammatory response in the lung. However, it must be noted that inflammatory response of this type is not unique to manganese-containing particles, but is characteristic of nearly all inhalable particulate matter. According to ATSDR (2012)[4], this suggests that it is not the manganese per se that causes this adverse response, but more likely the particulate matter itself. Dust control is thus critical in all transport and storage scenarios, not only for manganese ore, and is generally regulated by legislation.

According to Finley, (2004)[5], dietary studies demonstrated that daily ingestion of relatively high doses of manganese can be safely tolerated by healthy adults. High dietary manganese levels are compensated for by adaptive changes, amongst others by reduction in the gastrointestinal absorption as well as enhanced biliary and pancreatic excretion of manganese, in order to maintain physiologically-relevant concentrations. There is evidence, however, that ingestion of high concentrations of manganese in drinking water and inhalation exposure near manganese smelters may cause adverse health effects in infants and children (O'Neal and Zheng, 2015)[6], but this is not relevant to exposure to airborne manganese in the vicinity of stockpiles of manganese ore.

This toxicological profile does not suggest that manganese does not have toxic properties (van Niekerk, 2019). The important aspect in the evaluation is to recognise that the manifestation of health risks does not depend only on the toxicity of a substance, but exposure levels must be sufficient to trigger health effects. Exposure levels refer to exposure concentrations and duration of exposure. Even if a substance is toxic, if exposure levels are below a certain threshold, health risks would be too low to be of any significance.

In the case of handling manganese ore, it must be recognised that it is a low-temperature process, other than in smelters, and health risks associated with manganese are thus not of concern. Appropriate management of fine dust particulates is the only matter of importance in terms of potential environmental health risks (van Niekerk, 2019).

2.6 Likely Emissions, Effluents and Solid Wastes

2.6.1 Activities of the Proposed Development

The environmental issues related to the ongoing and proposed mining project activities in the MCs Nos. 72254-72263 are both of local and regional influences. These issues include dust, increased sediment loads to local streams, noise, and ground vibrations from excavations and vehicles movements as well as mineral processing related activities. The mining process and associated activities are as follows:

[4] ATSDR. 2012. Toxicological Profile for Manganese. US Agency for Toxic Substances and Disease Registry.

[5] Finley JW. 2004. Does environmental exposure to manganese pose a health risk to healthy adults?
Nutr Rev, 62:148–153

[6] O'Neal SL and Zheng W. 2015. Manganese Toxicity Upon Overexposure: a Decade in Review. Curr Environ Health Rep. 2(3):315-328.

(i) Removal of the overburden and excavations of open pit and underground workings will result in localised loss of flora as well as any other fauna that maybe depended on the such specific flora, and.

(ii) Excavation and possible blasting may be used in loosening the hard rock resulting in noise, vibrations and dust and the blasted materials will be loaded into trucks (or a conveyor system may be used on shorter distances) and transported to the processing plant.

Other activities of the ongoing and proposed development, construction and operational phases will include:

- Continual detailed mapping, including the use of geophysical techniques, excavations, trenching and drilling, and.

- Bulk sampling as part of the ongoing and future exploration programme.

Some of the proposed mining project activities, such as the creation of infrastructure around the various properties covered by the MCs Nos. 72254-72263, drilling and bulk sampling are likely to have limited temporal impacts on the natural environment because the proposed development will try to utilise the already existing infrastructure where possible.

2.6.2 Service Units and Potential Pollution Sources

2.6.2.1 Overview

The following are the service and auxiliary units that will be associated with the proposed mine development. These units can be pollution sources and therefore must be monitored continuously:

1. Earthmoving equipments will be used in the both the exploration and mining processes and are a source of mainly noise and dust as well emissions associated with the burning of fuels such as diesel.

2. Noise, vibrations, and dust is and will be associated with the mining, processing and transportation process.

3. Air compressors are used for raw material pneumatic transporting. Compressors consume considerable quantities of lube oils for lubricating and cooling purposes, in addition to electricity. The major likely environmental impacts are noise-affecting workers and as well as the spent oils.

4. The laboratory section has an important role in the proposed exploration and mining activities in the MCs Nos. 72254-72263. The role of the laboratory facility includes:

    - Testing raw materials, chemicals, water, wastewater.

    - Quality control of the products and comparing the findings with the standard specifications for raw materials and final products.

    - The measured parameters are physical properties, chemical composition, and.

    - Assists in setting targets for environmental monitoring and compliance.

Chemicals used for testing could be hazardous. Proper handling and storage will be required for compliance with the environmental regulations including the Labour Act, 2007 (Act No. 11 of 2007) and the Water Act 54 of 1956 and the R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962, as well as various occupational health and safety regulations.

2.6.2.2 Workshops and Garage

The ongoing and proposed exploration and mine development project activities requires facilities for electrical and mechanical workshops for maintenance and repair purposes. Such a workshop is currently situated within the main processing plant and this is likely to remain the same for the proposed mine extension beyond 2014. Likely pollution sources from such facilities will include:

- Noise.
- Rinse water contaminated with lube oil, and.
- Scrap metal.

Pollution in the garage area depends upon the services offered. The presence of a gasoline or diesel station implies fuel storage in underground or aboveground tanks that require fire, leak and spill control plans and engineering mitigations. Replacing lube oil directly links to the likely production of spent oil, which will require proper management such as recycling or disposal on approved sites. There will be the need for compliances with the Environmental Management Act, 2007, Act No. 7 of 2007, Water Act 54 of 1956 and the R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962, the Minerals (Prospecting and Mining) Act, 1992, (No. 33 of 1992) and Petroleum (Exploration and Production) Act, 1991 (No. 2 of 1991) and all the associated amendments and regulations.

2.6.2.3 Storages and Stockpiles Facilities and Areas

Various storage facilities covered to minimise wind influences where applicable will form part of the ongoing and proposed development. The specifications for the storage facilities will depend on the material to be stored and different types of materials include:

- Chemicals will be used as additives for the processing. These chemicals require special handling, storage and management procedure as required by law and factory specifications as per Material Data Sheet.
- Fuel is used for the vehicles and delivery trucks. Only diesel is stored in an aboveground tank situated in the main processing plant. The types of fuel to be used are oil, petrol, diesel or natural gas and lubricants, and.
- Scrap metals are currently stored in the main processing plant area and occasionally collected by scrap metal dealers for recycling, reuse, and safe disposal.

2.6.2.4 Wastewater Treatment Plants

The proposed mine development including the mineral processing facility will discharge wastewater high in Total Dissolved Solid (TDS), Total Suspended Solid (TSS), alkalinity, potassium salts and sulphates etc. The potential pollution sources are:

- Sludge which represents a solid waste problem, and.
- Treated water, which could represent a water pollution problem if containing pollutants that exceed the limits set by relevant guidelines and international best practices.

The Water Act 54 of 1956 makes special provisions for waste management and strict compliance are highly recommended because the enforcement and compliance is part of the permitting and renewal process.

2.6.2.5 Restaurants, Washrooms, Hostel and Housing Complex

These facilities will generate domestic wastewater as well as domestic solid waste. The Water Act 54 of 1956 makes special provisions for waste water management as well as recommendations on the various types of waste water management systems. Strict compliance is highly recommended because the enforcement and compliance is part of the permitting and renewal process.

2.6.3 Likely Pollution Sources

2.6.3.1 Particulate (PM_{10}) and CO_2 Emissions

Overall, the main sources are:

- Removal of the overburden such as soil, gravels, and loose rock during the mining operations.
- Opencast mining, blasting and excavations.
- Loading and transporting the excavated materials to the processing plant.
- Actual processing of manganese, and.
- Transportation process.

2.6.3.2 Likely Effluent Sources

The likely higher levels of water pollution may occur when water is allowed to get in contact with the spilled oil or water in the pit. Three most significant sources where this contact may occur are:

(i) Spent lube oil from garage and workshops if discharged to sewer will give oily wastewater.

(ii) Domestic wastewater, and.

(iii) Industrial waste water (surface and underground pollution).

The likely polluting parameters are TDS, TSS and heavy metals.

2.6.3.3 Likely Solid Waste Sources

Sources of solid wastes include plastic and paper, sacks from packaging process and from the workshops and garage. Scrap metals will be produced.

2.6.3.4 Occupational Health and Safety

Noise is likely to arise from blasting, crushing, screening and washing mined materials. Noise may reach as high as 100-110 dB. Just like many other heat generating industries workers in a various mineral processing area will be exposed to heat.

2.6.3.5 Pollution Prevention and Control

Drop distances shall be minimised by the use of adjustable conveyors. Dusty areas such as roads around the mine and processing plant shall be wetted down to reduce dust generation with the use of appropriate breathing equipment highly encouraged. Appropriate stormwater and runoff control systems shall be provided to minimise the quantities of suspended material carried off site. SOx emissions shall best be controlled by using low sulphur fuels and raw materials. When solid wastes

such as coal waste, appropriate steps shall be taken to avoid environmental problems from contaminants or trace elements. Stormwater systems and storage areas shall be designed to minimise wash off of solids.

2.6.3.6 Liquid Effluents

In accordance with all the requirements of the Water Act 54 of 1956 and the R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962, all effluent shall be treated. All effluents requiring treatment is likely to originate from domestic and industrial processes. Treated effluent discharges shall have a pH as recommended by the Water Act 54 of 1956 and the R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962. Due to the scarcity of water in Namibia, water may be recycled where possible and appropriate. If quantities of suspended solids in the effluent are high in relation to receiving waters, treatment may be required to reduce levels in the effluent to the levels recommended in the Water Act 54 of 1956 and the R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

2.6.3.7 Ambient Noise

Noise abatement measures shall be achieved either the levels given below or a maximum increase in background levels of 3 decibels (measured on the A scale) [dB(A)]. Measurements are to be taken at noise targets located outside the proposed project property boundary. In accordance with the World Bank Group (WBG), (1998)[7] and World Health Organization (WHO), (1999)[8] the following are the recommended maximum allowable log equivalent (hourly measurements), in dB (A):

(i) Residential, institutional, educational (day from 07:00 to 22:00 is **55 dB (A))** and (night from 22:00 to 07:00 is 45 dB (A)).

(ii) Industrial and commercial (day from 07:00 to 22:00 is **70 dB (A))** and (night from 22:00 to 07:00 is **70 dB (A))**.

2.6.3.8 Cleaner Production (CP) Opportunities

Transportation, crushing and washing operations are notoriously energy inefficient. Typical systems routinely run at 6% to 25% on-site energy efficiency. Although these systems do not account for a large portion of the on-site energy consumption profile for a typical mining operation, they do offer significant opportunities for energy improvement.

Air flow, and material and heat balances should be measured and evaluated. Optimisation of these systems may include:

- Re-use and recycling of water.
- Studies of circulating loads, and.
- Energy auditing.

[7] World Health Organization (WHO), 1999. World Health Organization Guidelines for community noise, Edited by Birgitta Berglund, Thomas Lindvall, and Dietrich Schwela. Geneva.

[8] World Bank Group (WBG), 1998. World Bank Group hand book on pollution prevention and abatement: General Environmental Guideline, (1998).

3. LEGISLATIVE FRAMEWORK

3.1 Overview

There are four sources of law in Namibia: (1) statutes (2) common law (3) customary law and (4) international law. These four kinds of law are explained in more detail in the other factsheets in this series. The constitution is the supreme law of Namibia. All other laws must be in line with it. The most important legislative instruments and associated permits\licenses\authorisations\concerts\ compliances applicable to the ongoing exploration activities and possible test mining include: Minerals exploration and mining, environmental management, land rights, water, atmospheric pollution prevention and labour as well as other indirect laws linked to the accessory services of exploration and possible test mining operations.

3.2 Key Applicable Legislation

3.2.1 Minerals Exploration and Mining Legislation

The national legislation governing minerals prospecting and mining activities in Namibia fall within the jurisdiction of the Ministry of Mines and Energy (MME) as the Competent Authority (CA) responsible for granting authorisations. The Minerals (Prospecting and Mining) Act (No 33 of 1992) is the most important legal instrument governing minerals prospecting and mining activities in Namibia. A new Bill, to replace the Minerals (Prospecting and Mining) Act (No 33 of 1992) is being prepared and puts more emphasis on good environmental management practices, local participation in the mining industry and promotes value addition as prescribed in the Minerals Policy of 2003.

The Minerals (Prospecting and Mining) Act (No 33 of 1992) regulates reconnaissance, prospecting (exploration) and mining activities. The Mining Commissioner, appointed by the Minister, is responsible for implementing the provisions of this Act including reporting requirements, environmental obligations as well as the associated regulations such as the Health and Safety Regulations.

3.2.2 Environmental Management Legislation

The Environmental Assessment (EA) process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) in the Ministry of Environment, Forestry and Tourism (MEFT). The objectives of the Act and the Regulations are, among others, to promote the sustainable management of the environment and the use of natural resources to provide for a process of assessment and control of activities which may have significant effects on the environment. The Minister of Environment, Forestry and Tourism (is authorised to list activities which may only be undertaken if an environmental clearance certificate has been issued by the environmental commissioner, which activities include those relating to exploration and mining operations.

In addition to the requirements for undertaking Environmental Assessment prior to the project implementation, the Environmental Management Act and the EIA Regulations also provide for obligations of a license holder to provide for project rehabilitation and closure plan. In the regulations, the definition of “rehabilitation and closure plan” is a plan which describes the process of rehabilitation of an activity at any stage of that activity up to and including closure stage.

3.2.3 Water Legislation

Water Act 54 of 1956 under the Minister of Agriculture, Water and Land Reform (MAWLR) provides for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the ongoing exploration must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater as well as for “water works”. The broad definition of water works will include the reservoir on site (as this is greater than 20,000m^3), water treatment facilities and pipelines. Due to the

water scarcity of the area, all water will be recycled (including domestic wastewater). The Act requires the license holder to have a wastewater discharge permit for discharge of effluent.

The Water Act 54 of 1956 is due to be replaced by the Water Resources Management Act 24 of 2004 which is currently being revised. The Water Resource Management Act 2004 *provides for the management, development, protection, conservation and use of water resources.*

3.2.4 Atmospheric Pollution Prevention Legislation

The Atmospheric Pollution Prevention Ordinance, 11 of 1976 falling under the Ministry of Health and Social Services (MHSS) provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.

3.2.5 Labour, Health and Safety Legislations

The Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007), falling under the Ministry of Labour, Industrial Relations and Employment Creation (MLIREC) makes reference to severance allowances for employees on termination of a contract of employment in certain circumstances and health, safety and welfare of employees.

In terms of the Health Safety and Environment (HSE), the Labour Act, 2007 protects employees and every employer shall, among other things: provide a working environment that is safe, without risk to the health of employees, and that has adequate facilities and arrangements for the welfare of employees, provide and maintain plant, machinery and systems of work, and work processes, that are safe and without risk to the health of employees, and ensure that the use, handling, storage or transportation of hazardous materials or substances is safe and without risk to the health of employees.

All hazardous substances shall have clear exposure limits and the employer shall provide medical surveillance, first-aid and emergency arrangements as fit for the operation.

3.2.6 Other Applicable National Legislations

Other Important legislative instruments applicable to the ongoing exploration operations in the MCs Nos. 72254-72263 include the following (Table 3.1):

- Explosives Act 26 of 1956 (as amended in SA to April 1978) – Ministry of Home Affairs, Immigration, Safety and Security (MHAISS).
- National Heritage Act 27 of 2004 – Ministry of Education, Arts and Culture (MEAC).
- Petroleum Products and Energy Act 13 of 1990 – Ministry of Mines and Energy (MME).
- Nature Conservation Ordinance, No. 4 of 1975 – Ministry of Environment, Forestry and Tourism (MEFT).
- Forest Act 12 of 2001 – Ministry of Environment, Forestry and Tourism (MEFT).
- Hazardous Substances Ordinance 14 of 1974 – Ministry of Health and Social Services (MHSS), and.
- Public Health Act 36 of 1919 – Ministry of Health and Social Services (MHSS).

Table 3.1 summarises the key selected legislations relevant applicable to the ongoing exploration in the MCs Nos. 72254-72263.

Table 3.1: Legislation relevant to the ongoing exploration operations in the MCs Nos. 72254-72263.

LAW	SUMMARY DESCRIPTION
Constitution of the Republic of Namibia, 1990	The Constitution is the supreme law in Namibia, providing for the establishment of the main organs of state (the Executive, the Legislature, and the Judiciary) as well as guaranteeing various fundamental rights and freedoms. Provisions relating to the environment are contained in Chapter 11, article 95, which is entitled "promotion of the Welfare of the People". This article states that the Republic of Namibia shall – "actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at … maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for all Namibians, both present and future. The Government shall provide measures against the dumping or recycling of foreign nuclear waste on Namibian territory."
Minerals (Prospecting and Mining) Act, 1992 ***Ministry of Mines and Energy (MME)***	The Minerals Act governs minerals prospecting and mining. The Act *provides for the reconnaissance, prospecting, and mining for, and disposal of, and the exercise of control over minerals in Namibia. and to provide for matters incidental thereto. A new Minerals Bills is currently under preparation.*
Environmental Management Act (2007) - ***Ministry of Environment, Forestry and Tourism*** **(MEFT)**	The purpose of the Act is *to give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources. to promote the co-ordinated and integrated management of the environment. to give statutory effect to Namibia's Environmental Assessment Policy. to enable the Minister of Environment and Tourism to give effect to Namibia's obligations under international conventions*. In terms of the legislation it will be possible to exercise control over certain listed development activities and activities within defined sensitive areas. The listed activities in sensitive areas require an Environmental Assessment to be completed before a decision to permit development can be taken. The legislation describes the circumstances requiring Environmental Assessments. Activities listed as per the provisions of the Act will require Environmental Assessment unless the Ministry of Environment, Forestry and Tourism, in consultation with the relevant Competent Authority, determines otherwise and approves the exception.
Water Act 54 of 1956 **Minister of Agriculture, Water and Land reform (MAWLR)**	This Act provides for the control, conservation and use of water for domestic, agricultural, urban, and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the proposed project must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater (already obtained) as well as for "water works". The broad definition of water works will include the reservoir on Site (as this is greater than 20,000m^3), water treatment facilities and pipelines. Due to the water scarcity of the area, all water will be recycled (including domestic wastewater) and the Mine will be operated on a zero-discharge philosophy. It will, therefore, not be necessary to obtain permits for discharge of effluent. Section 23 of the Act requires environment rehabilitation after closure of the Mine, particularly, in this instance to obviate groundwater pollution and potential pollution resulting from run-off. This Act is due to be replaced by the Water Resources Management Act 24 of 2004.
Forest Act 12 of 2001 - **Minister of Environment, Forestry and Tourism (MEFT)**	The Act provide for the establishment of a Forestry Council and the appointment of certain officials. to consolidate the laws relating to the management and use of forests and forest produce. to provide for the protection of the environment and the control and management of forest fires. Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove: (a) any vegetation which is on a sand dune or drifting sand or in a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully or (b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse. Should either of the above be unavoidable, it will be necessary to obtain a permit from the Ministry. Protected tree species as listed in the Regulations shall not be cut, destroyed, or removed.
Hazardous Substance Ordinance 14 of 1974 ***Ministry of Health and Social Services***	Provisions for hazardous waste are amended in this act as it provides "*for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance. and to provide for matters connected therewith"*

Table 3.1: *Cont.*

Agricultural (Commercial) Land Reform Act, 1995, Act No.6 of 1995 ***Ministry of Agriculture, Water and Land Reform*** **(MAWLR)**	This Act provide for the acquisition of agricultural land by the State for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or otherwise have the use of any or of adequate agricultural land, and foremost to those Namibian citizens who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices. to vest in the State a preferent right to purchase agricultural land for the purposes of the Act. to provide for the compulsory acquisition of certain agricultural land by the State for the purposes of the Act. to regulate the acquisition of agricultural land by foreign nationals. to establish a Lands Tribunal and determine its jurisdiction. and to provide for matters connected therewith.
Explosives Act 26 of 1956 (as amended in SA to April 1978) - ***Ministry Home Affairs, Immigration, Safety and Security (MHAISS)***	All explosive magazines are to be registered with the Ministry of Mines and Energy as accessory works. In addition, the magazines must be licensed as required by Section 22. The quantity of explosives and the way it is stored must be approved by an inspector. The inspector has powers to enter the premises at any time to conduct inspections regarding the nature of explosive, quantity and the way it is stored. At closure, all explosives are to be disposed of accordingly.
Atmospheric Pollution Prevention Ordinance 11 of 1976. ***Ministry of Health and Social Services (MHSS)***	This regulation sets out principles for *the prevention of the pollution of the atmosphere and for matters incidental thereto.* Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.
The Nature Conservation Ordinance, Ordinance 4 of 1975, ***Ministry of Environment, Forestry and Tourism*** **(MEFT)**	During the Mine's activities, care must be taken to ensure that protected plant species and the eggs of protected and game bird species are not disturbed or destroyed. If such destruction or disturbance is inevitable, a permit must be obtained in this regard from the Minister of Environment, Forestry and Tourism. Should the Proponent operate a nursery to propagate indigenous plant species for rehabilitation purposes, a permit will be required. At this stage, however, it is envisaged that this type of activity will be contracted out to encourage small business development.
Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007 **Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)**	The labour Act gives effect to the constitutional commitment of Article 95 (11), to promote and maintain the welfare of the people. This Act is aimed at establishing *a comprehensive labour law for all employees. to entrench fundamental labour rights and protections. to regulate basic terms and conditions of employment. to ensure the health, safety and welfare of employees* under which provisions are made in chapter 4*. Chapter* 5 of the act improvises on the *protection of employees from unfair labour practice.*
Petroleum Products and Energy Act 13 of 1990 ***Ministry of Mines and Energy (MME)***	Any consumer installation as envisaged in this Act must be licensed. Appropriate consumer installation certificate will need to be obtained from the Ministry for each fuel installation. The construction of the installation must be designed in such a manner as to prevent environmental contamination. Any certificate holder or other person in control of activities related to any petroleum product is obliged to report any major petroleum product spill (defined as a spill of more than 200ℓ per spill) to the Minister. Such person is also obliged to take all steps as may be necessary in accordance with good petroleum industry practices to clean up the spill. Should this obligation not be met, the Minister is empowered to take steps to clean up the spill and to recover the costs thereof from the person. General conditions apply to all certificates issued. These include conditions relating to petroleum spills and the abandonment of the Site. The regulation further provides that the Minister may impose special conditions relating to the preparation and assessment of environmental assessments and the safe disposal of petroleum products.
National Heritage Act 27 of 2004 ***Ministry of Education, Arts and Culture (MEAC)***	This Act provides provisions for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The proposed activities will ensure that if any archaeological or paleontological objects, as described in the Act, are found during the implementation of the activities, such a find shall be reported to the Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage

3.3 Key Regulators / Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed project including their role in regulating environmental protection are listed in Table 3.2.

Table 3.2: Government agencies regulating environmental protection in Namibia.

AGENCY	RESPONSIBILITY
Ministry of Environment, Forestry and Tourism (MEFT)	Issue of Environmental Clearance Certificate (ECC) based on the review and approval of the Environmental Assessments (EA) reports comprising Environmental Scoping, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) prepared in accordance with the Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012
Ministry of Mines and Energy (MME)	The competent authority for minerals prospecting and mining activities in Namibia. Issues Exclusive prospecting License (MCs), Mining Licenses (ML) and Mining Claims (license) as well as all other minerals related permits for processing, trading and export of minerals resources
Ministry of Agriculture, Water and Land Reform (MAWLR)	The Directorate of Resource Management within the Department of Water Affairs (DWA) at the MAWLR is currently the lead agency responsible for management of surface and groundwater utilisation through the issuing of abstraction permits and waste water disposal permits. DWA is also the Government agency responsible for water quality monitoring and reporting. The National Botanical Research Institute's (NBRI) mandate is to study the flora and vegetation of Namibia, in order to promote the understanding, conservation and sustainable use of Namibia's plants for the benefit of all. The Directorate of Forestry (DOF) is responsible for issuing of forestry permits with respect to harvest, transport, and export or market forest resources.

3.4 International and Regional Treaties and Protocols

Article 144 of the Namibian Constitution provides for the enabling mechanism to ensure that all international treaties and protocols are ratified. All ratified treaties and protocols are enforceable within Namibia by the Namibian courts and these include the following:

- The Paris Agreement, 2016.
- Convention on Biological Diversity, 1992.
- Vienna Convention for the Protection of the Ozone Layer, 1985.
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987.
- United Nations Framework Convention on Climate Change, 1992.
- Kyoto Protocol on the Framework Convention on Climate Change, 1998.
- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, 1989.
- World Heritage Convention, 1972.
- Convention to Combat Desertification, 1994. and
- Stockholm Convention of Persistent Organic Pollutants, 2001.
- Southern Africa Development Community (SADC) Protocol on Mining, and.

- ❖ Southern Africa Development Community (SADC) Protocol on Energy.

3.5 Standards and Guidelines

Industrial effluent likely to be generated by the proposed activities must comply with provisions of the Government Gazette No 217 dated 5 April 1962 (Table 3.3) while the drinking water quality comparative guideline values are shown in Table 3.4.

The only key missing components to the regulatory frameworks in Namibia are the standards, and guidelines with respect to gaseous, liquid, and solid emissions. However, in the absence of national gaseous, liquid, and solid emission limits for Namibia, the proposed project shall target the Multilateral Investment Guarantee Agency (MIGA) gaseous effluent emission level and liquid effluent emission levels (Table 3.5).

Noise abatement measures must target to achieve either the levels shown in Table 3.6 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

Table 3.3: R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

Colour, odour and taste	The effluent shall contain no substance in concentrations capable of producing colour, odour or taste	
pH	Between 5.5 and 9.5	
Dissolved oxygen	At least 75% saturation	
Typical faecal coli	No typical faecal coli per 100 ml	
Temperature	Not to exceed 35 °C	
Chemical demand oxygen	Not to exceed 75 mg/l after applying a correction for chloride in the method	
Oxygen absorbed	Not to exceed 10 mg/l	
Total dissolved solids (TDS)	The TDS shall not have been increased by more than 500 mg/l above that of the intake water	
Suspended solids	Not to exceed 25 mg/l	
Sodium (Na)	The Na level shall not have been increased by more than 50 mg/l above that of the intake water	
Soap, oil and grease	Not to exceed 2.5 mg/l	
Other constituents	Residual chlorine	0,1 mg/l as Cl
	Free & saline ammonia	10 mg/l as N
	Arsenic	0,5 mg/l as As
	Boron	1,0 mg/l as B
	Hexavalent Cr	0,05 mg/l as Cr
	Total chromium	0,5 mg/l as Cr
	Copper	1,0 mg/l as Cu
	Phenolic compounds	0,1 mg/l as phenol
	Lead	1,0 mg/l as Pb
	Cyanide and related compounds	0,5 mg/l as CN
	Sulphides	1,0 mg/l as S
	Fluorine	1,0 mg/l as F
	Zinc	5,0 mg/l as Zn

Table 3.4: Comparison of selected guideline values for drinking water quality (after Department of Water Affairs, 2001).

Parameter and Expression of the results			WHO Guidelines for Drinking-Water Quality 2nd edition 1993		Proposed Council Directive of 28 April 1995 (95/C/13-1/03) EEC	Council Directive of 15 July 1980 relating to the quality intended for human consumption 80/778/EEC		U.S. EPA Drinking water Standards and Health Advisories Table December 1995		Namibia, Department of Water Affairs Guidelines for the evaluation of drinking-water for human consumption with reference to chemical, physical and bacteriological quality July 1991			
			Guideline Value (GV)		Proposed Parameter Value	Guide Level (GL)	Maximum Admissible Concentration (MAC)	Maximum Contaminant Level (MCL)		Group A Excellent Quality	Group B Good Quality	Group C Low Health Risk	Group D Unsuitable
Temperature	t	°C		-	-	12	25		-	-	-	-	-
Hydrogen ion concentration	pH, 25° C	-	R	<8.0	6.5 to 9.5	6.5 to 8.5	10		-	6.0 to 9.0	5.5 to 9.5	4.0 to 11.0	<4.0 to >11.0
Electronic conductivity	EC, 25° C	mS/m		-	280	45	-		-	150	300	400	>400
Total dissolved solids	TDS	mg/l	R	1000	-	-	1500		-	-	-	-	-
Total Hardness	$CaCO_3$	mg/l		-	-	-	-		-	300	650	1300	>1300
Aluminium	Al	µ g/l	R	200	200	50	200	S	50-200	150	500	1000	>1000
Ammonia	NH_4^+	mg/l	R	1.5	0.5	0.05	0.5		-	1.5	2.5	5.0	>5.0
	N	mg/l		1.0		0.04	0.4		-	1.0	2.0	4.0	>4.0
Antimony	Sb	µ g/l	P	5	3	-	10	C	6	50	100	200	>200
Arsenic	As	µ g/l		10	10	-	50	C	50	100	300	600	>600
Barium	Ba	µ g/l	P	700	-	100	-	C	2000	500	1000	2000	>2000
Berylium	Be	µ g/l		-	-	-	-	C	4	2	5	10	>10
Bismuth	Bi	µ g/l		-	-	-	-		-	250	500	1000	>1000
Boron	B	µ g/l		300	300	1000	-		-	500	2000	4000	>4000
Bromate	BrO_3^-	µ g/l		-	10	-	-	P	10	-	-	-	-
Bromine	Br	µ g/l		-	-	-	-		-	1000	3000	6000	>6000
Cadmium	Cd	µ g/l		3	5	-	5	C	5	10	20	40	>40
Calcium	Ca	mg/l		-	-	100	-		-	150	200	400	>400
	$CaCO_3$	mg/l		-	-	250	-		-	375	500	1000	>1000
Cerium	Ce	µ g/l		-	-	-	-		-	1000	2000	4000	>4000
Chloride	Cl^-	mg/l	R	250	-	25	-	S	250	250	600	1200	>1200
Chromium	Cr	µ g/l	P	50	50	-	50	C	100	100	200	400	>400
Cobalt		µ g/l		-	-	-	-		-	250	500	1000	>1000
Copper after 12 hours in pipe	Cu	µ g/l	P	2000	2	100	-	C	TT##	500	1000	2000	>2000
		µ g/l		-	-	3000[1]	-	S	1000	-	-	-	-
Cyanide	CN^-	µ g/l		70	50	-	50	C	200	200	300	600	>600
Fluoride	F^-	mg/l		1.5	1.5	-	at 8 to 12 °C: 1.5	C	4	1.5	2.0	3.0	>3.0
		mg/l		-	-	-	at 25 to 30 °C: 0.7	P,S	2	-	-	-	-
Gold	Au	µ g/l		-	-	-	-		-	2	5	10	>10
Hydrogen sulphide	H_2S	µ g/l	R	50	-	-	undetectable		-	100	300	600	>600
Iodine	I	µ g/l		-	-	-	-		-	500	1000	2000	>2000
Iron	Fe	µ g/l	R	300	200	50	200	S	300	100	1000	2000	>2000
Lead	Pb	µ g/l		10	10	-	50	C	TT#	50	100	200	>200
Lithium	Li	µ g/l		-	-	-	-		-	2500	5000	10000	>10000
Magnesium	Mg	mg/l		-	-	30	50		-	70	100	200	>200
	$CaCO_3$	mg/l		-	-	7	12		-	290	420	840	>840
Manganese	Mn	µ g/l	P	500	50	20	50	S	50	50	1000	2000	>2000
Mercury	Hg	µ g/l		1	1	-	1	C	2	5	10	20	>20
Molybdenum	Mo	µ g/l		70	-	-	-		-	50	100	200	>200
Nickel	Ni	µ g/l		20	20	-	50		-	250	500	1000	>1000
Nitrate*	NO_3^-	mg/l	P	50	50	25	50		45	45	90	180	>180
	N	mg/l		-	-	5	11	C	10	10	20	40	>40
Nitrite*	NO_2^-	mg/l		3	0.1	-	0.1		3	-	-	-	-
	N	mg/l		-	-	-		C	1	-	-	-	-
Oxygen, dissolved	O_2	% sat.		-	50	-	-		-	-	-	-	-
Phosphorus	P_2O_5	µ g/l		-	-	400	5000		-	-	-	-	-
	PO_4^{3-}	µ g/l		-	-	300	3350		-	-	-	-	-
Potassium	K	mg/l		-	-	10	12		-	200	400	800	>800
Selenium	Se	µ g/l		10	10	-	10	C	50	20	50	100	>100
Silver	Ag	µ g/l		-	-	-	10	S	100	20	50	100	>100
Sodium	Na	mg/l	R	200	-	20	175		-	100	400	800	>800
Sulphate	SO_4^{2-}	mg/l	R	250	250	25	250	S	250	200	600	1200	>1200
Tellurium	Te	µ g/l		-	-	-	-		-	2	5	10	>10
Thallium	Tl	µ g/l		-	-	-	-	C	2	5	10	20	>20
Tin	Sn	µ g/l		-	-	-	-		-	100	200	400	>400
Titanum	Ti	µ g/l		-	-	-	-		-	100	500	1000	>1000
Tungsten	W	µ g/l		-	-	-	-		-	100	500	1000	>1000
Uranium	U	µ g/l		-	-	-	-	P	20	1000	4000	8000	>8000
Vanadium	V	µ g/l		-	-	-	-		-	250	500	1000	>1000
Zinc after 12 hours in pipe	Zn	µ g/l	R	3000	-	100	-	S	5000	1000	5000	10000	>10000
		µ g/l		-	-	5000	-		-	-	-	-	-
			P: Provisional R: May give reason to complaints from consumers					C: Current. P: Proposed. S: Secondary. T#: Treatment technique in lieu of numeric MCL. TT##: treatment technique triggered at action level of 1300 µ g/l					

Table 3.5: Liquid effluent emission levels (MIGA /IFC).

Pollutant	**Max. Value**
pH	6-9
Total suspended solids	50 mg/l
Total metals	10 mg/l
Phosphorous (P)	5 mg/l
Fluoride (F)	20 mg/l
Cadmium (Cd)	0.1 mg/l

Table 3.6: Noise emission levels (MIGA /IFC).

	Maximum Allowable Leq (hourly), in dB(A)	
Receptor	Day time (07:00 – 22:00)	Night time (22:00 – 07:00)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

3.6 Recommendations on Permitting Requirements

It is hereby recommended that the Proponent must follow the provisions of all relevant national regulatory throughout the proposed project lifecycle and must obtain the following permits/ authorisations as maybe applicable / required as the proposed project develops:

(i) Valid MCs as may be applicable from Department of Mines in the MME.

(ii) Valid ECC from the Department of Environmental Affairs in the MEFT.

(iii) The Proponent shall apply for a fresh water abstraction and waste water discharge permits from the Department of Water Affairs (DWA) in the MAWLR before drilling a water borehole and discharge wastewater into the environment respectively, and.

(iv) All other permits as may be applicable for the proposed exploration and small-scale mining operations and test mining activities.

4. SUMMARY OF NATURAL ENVIRONMENT

4.1 Climate

The MCs area receives summer rainfall which is brought by northeast winds, generally from October to April. The average rainfall varies considerably and ranges between 380 mm and 450 mm. The mean annual gross evaporation is between 3000 mm - 3200 mm. The numbers of rainfall events expressed as an annual average in days as determined from the regional data is 10-30 days. The sun shines for an annual average of 10 hours a day.

The annual mean temperature for Otjiwarongo area is around 24°C with the mean monthly temperatures ranging between 23°C to 14°C throughout the year. Based on regional data sets, temperatures at 08h00, 14h00 and 20h00 are estimated to be around 14°C, 24°C and 18°C respectively. Seasonal variations in the wind fields are presented by the average wind data for January, April, July, and October. An increase in the north to north-easterly winds during summer (January) and autumn (April) is likely.

4.2 Topography

The local landscape is characterised by general flat topography with minor valleys created by tributaries of the Otjikwara and Maramba Ephemeral River cutting the MCs area at the western edge and central part respectively (Fig. 4.1). The river channels of these three (3) Ephemeral Rivers are key habitats and are a vital link to the local ecosystems. Other land use activities found in the general surrounding areas includes: agriculture, minerals exploration and growing tourism activities. Topography around the MCs area average around 1500mams (Fig. 4.1).

4.3 Likely Fauna Diversity

4.3.1 Reptiles

According to Alexander and Marais (2007), Branch (1998), Branch (2008), Boycott and Bourquin 2000, Broadley (1983), Buys and Buys (1983), Cunningham (2006), Griffin (2003), Hebbard (n.d.), Marais (1992), Tolley and Burger (2007), at least 77 endemic reptile species known and/or expected to occur in the general license area make up 35.1% of the reptiles from the general area and although not as high as endemism elsewhere for example the western escarpment areas of Namibia but still makes up a large portion of the reptiles.

Reptiles of greatest concern are probably the tortoises – Stigmochelys pardalis and Psammobates oculiferus which are often consumed by humans. Python anchietae and P. natalensis which are indiscriminately killed throughout their range and Varanus albigularis as well as the various Pachydactylus species geckos of which 80% are viewed as endemic. Other important species would be the 3 Blind snakes (Rhinotyphlops species of which 2 species are endemic) and 2 Thread snakes (Leptotyphlops species of which 1 species is endemic) which could be associated with the sandier soils in the area.

4.3.2 Amphibians

According to Carruthers (2001), Channing (2001), Channing and Griffin (1993), Du Preez and Carruthers (2009), Passmore and Carruthers (1995), of the 9 species of amphibians are likely to occur in the general license area, 33.3% (3 species) are of conservation value with 2 species being endemic (Poyntonophrynus hoeschi and Phrynomantis annectens) (Griffin 1998b) and 1 species (Pyxicephalus adspersus) viewed as near threatened (Du Preez and Carruthers 2009).

However, the area does not have unique amphibian habitat with potential habits being associated with the various ephemeral drainage lines associated (Fig. 4.1).

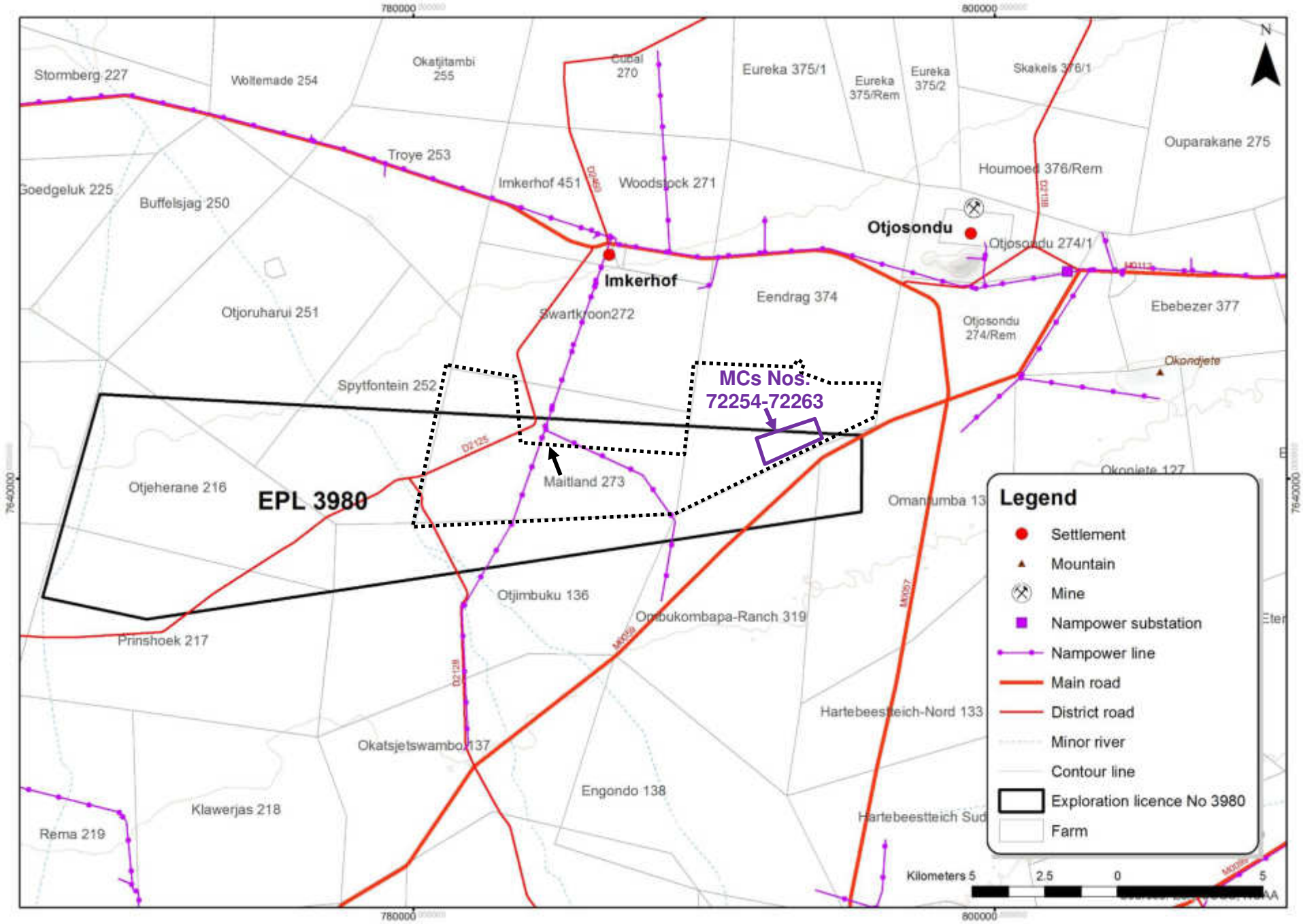


Figure 4.1: Topographic features associated with the MCs Nos. 72254-72263.

4.3.3 Mammals

According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), of the 84 species of mammals expected to occur in the general license area, 4.8% are endemic and 35.7% are classified under international conservation legislation. The most important groups are rodents (29.8% - 12% endemic), bats (26.2% - 4.5% endemic) and carnivores (20.2% - 5.9% endemic).

According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), the most important species from the general area are probably all those classified as near threatened (*Eidolon helvum*, *Hipposideros vittatus*, *Rhinolophus blasii*, *Hyaena brunnea* and *Panthera pardus*) and vulnerable (*Acinonyx jubatus* and *Felis nigripes*) by the IUCN (2014) and rare (*Cistugo seabrai*, *Atelerix frontalis angolae* and *Felis nigripes*) under Namibian legislation.

4.3.4 Birds

The high proportion of endemics – 10 of the 14 endemics to Namibia (i.e., 71% of all endemics) – expected to occur in the general license area underscore the importance of this area. Furthermore 21.3% are classified as southern African endemics (or 6.3% of all the birds expected) and 78.7% are classified as southern African near-endemics (or 23.1% of all the birds expected).

According to Brown *et al.* (1998), Brown et al. (2006), Hockey et al. (2006), Komen (n.d.), Maclean (1985), Simmons and Brown (In press) and Tarboton (2001), the most important "endemic" species known/expected to occur in the general area are viewed as Monteiro's Hornbill (*Tockus monteiri*), Damara Hornbill (*Tockus damarensis*), *Ammomanopsis grayi* (Gray's Lark), *Namibornis herero* (Herero Chat), *Eupodotis rueppellii* (Rüppell's Korhaan) and *Poicephalus rueppellii* (Rüppell's Parrot).

The species listed by the IUCN (2014) as endangered are: (Ludwig's bustard and white-backed vulture), near threatened (kori bustard) and vulnerable (martial eagle and secretary bird) and are viewed as the most important.

4.3.5 Sensitive Areas – Vertebrate Fauna

The general MCs area is regarded as "moderate to high" in overall (all terrestrial species) diversity and endemism (Mendelsohn *et al.* 2002). According to Simmons (1998b) central Namibia has between 161-200 endemic vertebrates (all vertebrates included).

The overall diversity and abundance of large herbivorous mammals (big game) is viewed as "high" with 7-8 species while the overall diversity of large carnivorous mammals (large predators) is determined at 4 species with leopard and cheetah being the most important with "high" densities followed by brown hyena with "medium" densities (Mendelsohn *et al.* 2002).

The following sensitive areas are of most concern within the MCs area:

(i) Drainage lines, albeit ephemeral, are the lifelines in the drier parts of Namibia with a variety of vertebrate fauna attracted and/or associated with such features. Although not as important as perennial rivers, well vegetated ephemeral drainage lines are still viewed as important habitat for a variety of vertebrate fauna in the general area. It is recommended that development attempt to avoid these drainage lines as far as possible linked to the local Ephemeral River channels, and.

4.4 Likely Flora Diversity

4.4.1 Trees/shrubs

The MCs 3980 falls within the Thornbush shrubland dominated by Acacia mellifera, Acacia reficiens, Acacia fleckii, Boscia albitrunca, Lonchocarpus nelsii and Acacia erioloba (Fig. 4.2). It is estimated that at least 79-110 species of larger trees and shrubs (>1m) – Coats Palgrave 1983 [81 sp.], Curtis and Mannheimer 2005 [79 sp.], Mannheimer and Curtis 2009 [110 sp], Van Wyk and Van Wyk 1997 [60 sp.]), are found in the general area.

The most important tree/shrub species occurring in the general area are probably *Cyphostemma bainesii* (endemic, NC), *Cyphostemma currorii* (NC), *Cyphostemma juttae* (endemic, NC), *Erythrina decora* (Forestry*, endemic), *Heteromorpha papillosa* (endemic) and *Manuleopsis dinteri* (endemic species) (Craven, 1999. Curtis and Mannheimer, 2005 and Mannheimer and Curtis, 2009).

The protected species are viewed as the most important tree/shrubs occurring in the area include: Acacia erioloba and *Boscia albitrunca*. However, these species are widespread throughout large parts of Namibia and are not exclusively associated with the ongoing / proposed development area, which minimises the overall effect on trees/shrubs.

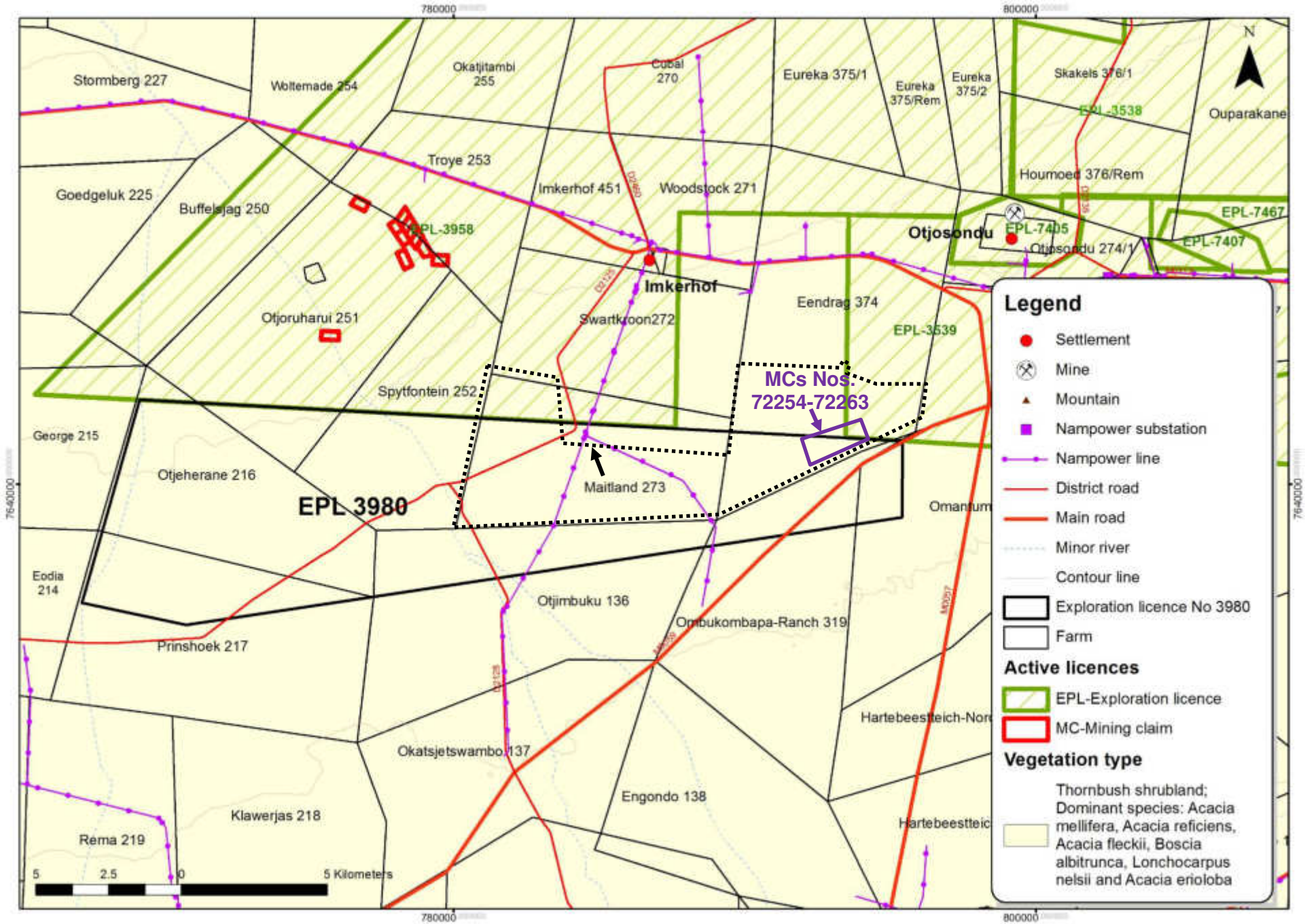


Figure 4.2: Vegetation map of the MCs Nos. 72254-72263, other existing minerals licenses and infrastructures in the surrounding areas.

4.4.2 Grass

It is estimated that up to 111 grasses – 73 to 88 species – (Müller 2007 [88 sp.], Müller 1984 [73 sp.], Van Oudshoorn 1999 [73 sp.]) occur in the general area. The most important grass expected in the area is the endemic *Setaria finite* associated with ephemeral drainage lines. Although the season (end of dry and beginning of wet) made the identification of grasses difficult, none off the grasses are exclusively associated with the proposed developments area nor protected species, which minimises the overall effect on grasses.

4.4.3 Other

Aloe litoralis – scattered individuals – are viewed as another species of concern although occurs widespread throughout Namibia and not exclusively associated with the proposed development area.

4.4.4 Protected Species and Sensitive Habitats

It is estimated that at least 77 reptile, 9 amphibian, 84 mammal, 208 bird species (breeding residents), at least 79-110 larger trees and shrubs and up to 111 grasses are known to or expected to occur in the general Otjiwarongo area of which a high proportion (e.g. 35.1% endemic reptiles) are endemics. The following are the key likely protected species / sensitive areas that maybe found within the MCs area:

(i) **Protected species**: The protected tree species – *Acacia erioloba, Albizia anthelmintica*, *Aloe litoralis*, *Boscia albitrunca* and *Ziziphus mucronata* – are viewed as the most important if found within the MCs particularly around any targeted site-specific development area (Figs. 4.1 and 4.2), and.

(ii) **Drainage lines**: Comprising the ephemeral drainage lines in the immediate vicinity of any targeted site-specific development area. These are viewed as important for flora as most of the larger specimens are often associated with such areas and serve as habitat for various vertebrate fauna.

4.5 Summary of the Socioeconomic Settings

4.5.1 Regional Profiles

The MCs Nos. 72254-72263 falls within the Otjozondjupa Region (Fig. 4.3). According to the NSA, (2011), the following is the summary of the regional and local socioeconomic environment of the area linked to the population and housing census, basic analysis with highlights about the Otjozondjupa Region (Fig. 4.3):

- The Project area is situated in Otjozondjupa Region with a population of 143 903 people and an area of 105 295.1 km^2.

- The Otjozondjupa Region had a relatively young population with 36.2% of the population being less than 15 years of age. The medial age of Otjozondjupa Region was 22 years, and was therefore intermediate.

- The urbanization rate in Otjozondjupa Region stands at 54% which is above the national average of 42.8%. Thus, the urbanisations are more progressive in Otjozondjupa Region that the average for Namibia. The urbanization of Otjozondjupa Region has gained momentum between the last two Censuses, 2001 and 2011, from 41% of population living in urban areas in 2001 to 54% in 2011.

- Literacy rate for Otjozondjupa Region was 83% with no major difference between males and females (female 82.9 % and males 83.4%). The literacy rate in urban areas stood at 90.9 %, while in rural areas it stood at 73%. It is the 3rd least literate region in Namibia after Kunene and Omaheke Regions.

- The 2011 Census revealed that 17.6 % of the population aged 6 years and above never attended school in Otjozondjupa Region.

- Otjozondjupa Region has relatively high labour force participation rate (71.5%) in comparison to the national average of 66% with substantially higher rates for males than females (66.5% and 76.2% respectively).

- Otjiwarongo is a large town and the biggest business centre for the Otjozondjupa Region and regional capital.

- The main industries in Otjozondjupa Region are agriculture and forestry followed by social security, then administrative and support service activities. Wages and salaries are the highest main source of income in Otjozondjupa (59.6%).

- The most common source of energy for lighting in Otjozondjupa Region was electricity from the main grid, used by 55.2 percent of the households. Solar energy was not widely used, but played a more important role in rural areas (2.8%) than in urban areas (0.3%).

- Otjozondjupa has 72 schools with a total of 36,284 pupils.

- In terms of communication technology, the constituencies have relatively poor network coverage due to its remoteness and vastness of the constituencies coupled with low population. However, radio and digital television coverage exists in most parts of the constituencies, particularly within the settlements and their nearby places are connected to national grid.

- Limited economic activities are available within the project area. The agriculture, hunting and forestry sectors employ most of the region's economically active population, and.

- The availability of elements such as lime, fluorspar, manganese and copper offer a number of processing opportunities, such as the manufacturing of cement and industrial lime.

4.5.2 Local Profile

Locally, the MCs Nos. 72254-72263 falls within Omatako Constituency with population of 17, 619. The Omatako Constituency has a relatively low population density of 0.7/km^2 and is the least populated constituency in Otjozondjupa Region.

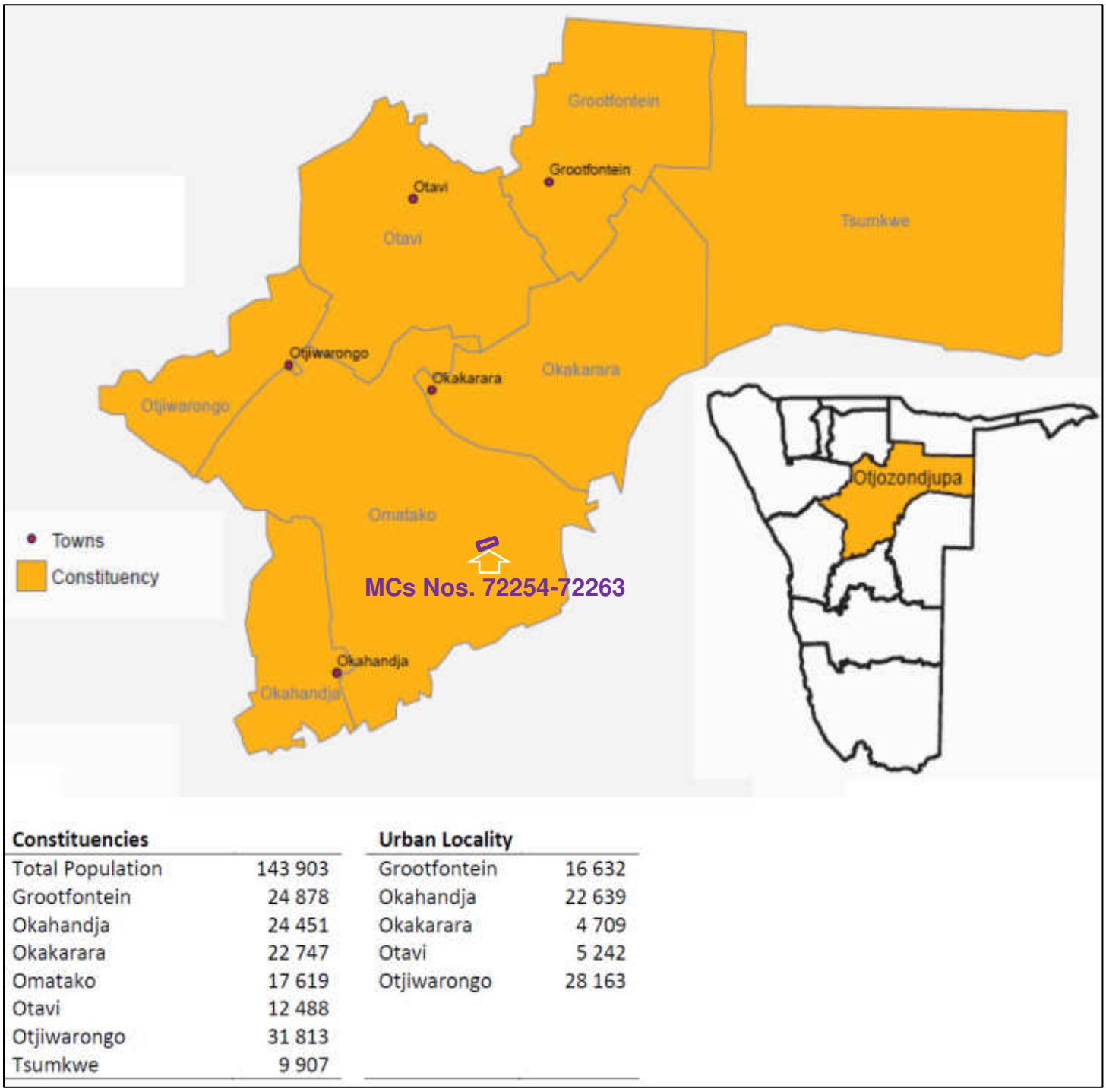
The household main income in Omatako constituency is: Farming, wages and salaries, cash remittance business, non-farming, and pension (Table 4.1).

The overall local socioeconomic profiles of Omatako constituency are shown in Table 4.1.

4.5.3 Socioeconomic Conclusions

The proposed exploration and small-scale mining activities in the MCs Nos. 72254-72263 are likely to coexists with the current and future land uses such as the commercial agriculture. Socioeconomic impacts at the exploration stage are likely to be minimal and tend to be positive in an event of a discovery of economic minerals resources. A clear understanding of these impacts may help local communities especially local land owners understand and anticipate the effects of the proposed exploration and small-scale mining operations.

One of the major possible impacts of the proposed / ongoing exploration activities include employment and unrealistic expectations about the development of a mine and coexistence opportunity / conflicts associated with the current land uses. It is important for local communities to bear in mind that 99.9% of the exploration projects will not advance to a mine development.



Constituencies	
Total Population	143 903
Grootfontein	24 878
Okahandja	24 451
Okakarara	22 747
Omatako	17 619
Otavi	12 488
Otjiwarongo	31 813
Tsumkwe	9 907

Urban Locality	
Grootfontein	16 632
Okahandja	22 639
Okakarara	4 709
Otavi	5 242
Otjiwarongo	28 163

Figure 4.3: Constituencies and population of Otjozondjupa Region (Source: National Statistics Agency (NSA), 2011).

Table 4.1: Omatako Constituency – Census selected indicators, 2011 and 2001 (Source: National Statistics Agency (NSA), 2011).

	2011	2001			2011	2001
Population Size				Labour force, 15+ years, %		
Total	17 619	26 908		In labour force	70	50
Females	7 664	12 537		Employed	78	64
Males	9 955	14 371		Unemployed	22	36
				Outside labour force	15	38
Sex ratio: Males per 100 females	130	115		Student	61	41
				Homemaker	9	44
Age composition, %				Retired, too old, etc.	25	9
Under 5 years	14	17				
5 – 14 years	24	29		Housing conditions, %		
15 – 59 years	57	50		Households with		
60+ years	5	4		Safe water	91	90
				No toilet facility	34	48
Marital status: 15+ years, %				Electricity for lighting	43	44
Never married	59	52		Wood/charcoal for cooking	69	74
Married with certificate	16	13				
Married traditionally	9	16		Main source of income, %		
Married consensually	13	12		Household main income		
Divorced/Separated	2	3		Farming	13	17
Widowed	2	3		Wages & Salaries	57	71
				Cash remittance	4	1
Private households				Business, non-farming	7	3
Number	4 017	2 827		Pension	6	5
Average size	4.0	4.2				
				Disability, %		
Head of household, %				With disability	4	5
Females	27	21				
Males	73	79				
Literacy rate, 15+ years, %	84	60				
Education, 15+ years, %						
Never attended school	17	26				
Currently at school	28	17				
Left school	49	45				

4.6 Ground Components

4.6.1 Regional and Local Geology

The MCs Nos. 72254-72263 Area falls within the eastern part of the southern Central Zone of the north-easterly trending intracontinental branch of the Pan-African Damara orogenic belt, just north of the Okahandja lineament (Fig. 4.4, Roesener, et *al*, 2004 and Miller 2008).

The MCs area covers part of the well-known Otjosondu Manganese field comprising Neoproterozoic ferromanganese rocks that occur in an area of poor exposure in the eastern part of the southern Central Zone of the Damara Orogen and has been studied mined around Otjosondu (De Villiers, 1951, Vermass, 1952, Roper, 1959, Miller, 1983, Miller, 1992, Bühn *et al.*, 1992, Bühn and Stanistreet, 1992/93, Steven, 1993, Bühn *et al.*, 1995, Bühn and Stanistreet, 1997, Geological Survey of Namibia, 1999, Miller, 2008, Cabral, *et al.*, 2011). The stratigraphy of the Otjosondu area defined by Roper (1959) consists of, from the base:

1. Granulitic gneiss and schist.

2. A lower unit of quartzites and feldspathic quartzites.

3. Banded hematite quartzites with marginal manganiferous layers.

4. An upper unit of feldspathic quartzites.

5. Marbles and lesser calc-silicate rocks, and.

6. Biotite schists and gneisses.

According to Cabral, at al., (2011), these units have been correlated respectively with:

1. Pre-Damara basement.

2. Rössing Formation.

3. and 4. Chuos Formation.

4. Karibib Formation, and.

5. Kuiseb Formation by Bühn and Stanistreet (1992/93).

This latter interpretation is problematical in that the type Rössing and Chuos formations are not known to persist further east than the Usakos and Karibib districts, respectively (Miller, 2008), in excess of 200 km to the west (Cabral, *at al.,* 2011). According to Miller, (1983), the Okahandja lineament also marks the southern boundary of the Central Zone, which is the high-temperature/low-pressure metamorphic zone of the orogen.

According to Miller, (1992), the Damara rocks were deposited during successive phases of rifting, spreading, subduction and continental collision. Much of the basal succession (Nosib Group), laid down in or marginal to intracontinental rifts, consists of quartzite, arkose, conglomerate, phyllite, calc-silicate and subordinate limestone and evaporitic rocks. Local alkaline ignimbrite with associated subvolcanic intrusions range from 840 to 720 million years in age.

Widespread carbonate deposition followed and overlapped far beyond early rift shoulders (Kudis, Ugab and basal Khomas Subgroups). interbedded mica and graphitic schist, quartzite (some ferruginous), massflow deposits, iron-formation and local within-plate basic lava point to fairly variable depositional conditions south of a stable platform where only carbonates with very minor clastics occur (Otavi Group) (Geological Survey of Namibia, 1999 and Miller, 2008, 1992, 1983a and 1983b).

The Kalahari cover consisting of thin sand/silt/calcrete deposits; hence they are not major source of water supply in the area (Miller, 2008). Some of these deposits, such as the gravels, clays and calcretes, are also potential local materials that can be used in the various construction activities associated with different infrastructure development at various stages of the mine life cycle.

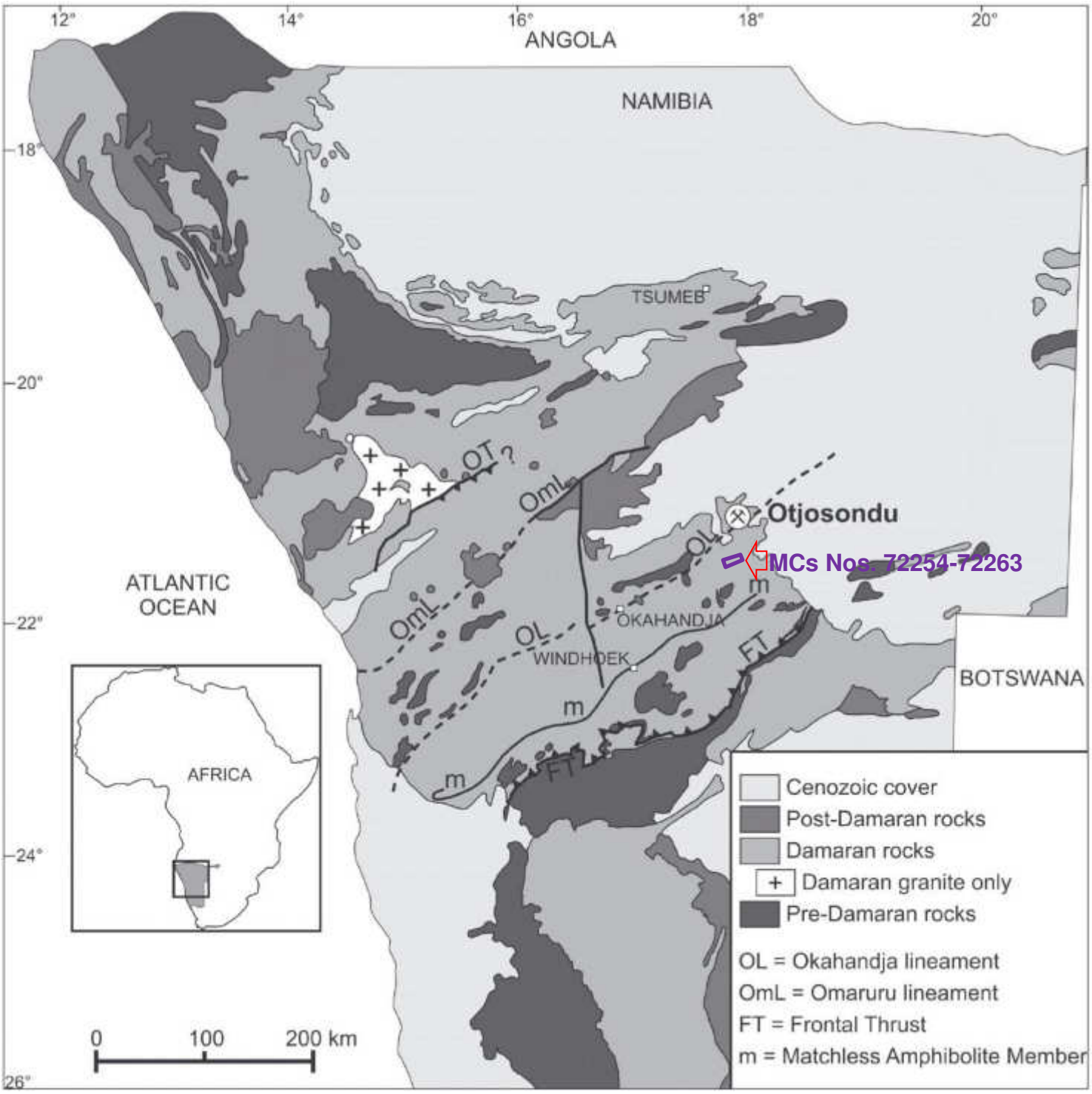


Figure 4.4: Simplified geological map of the Pan-African Damara orogenic belt of Namibia (Miller, 2008), with the Otjosondu ferromanganese deposit located just north of the Okahandja lineament.

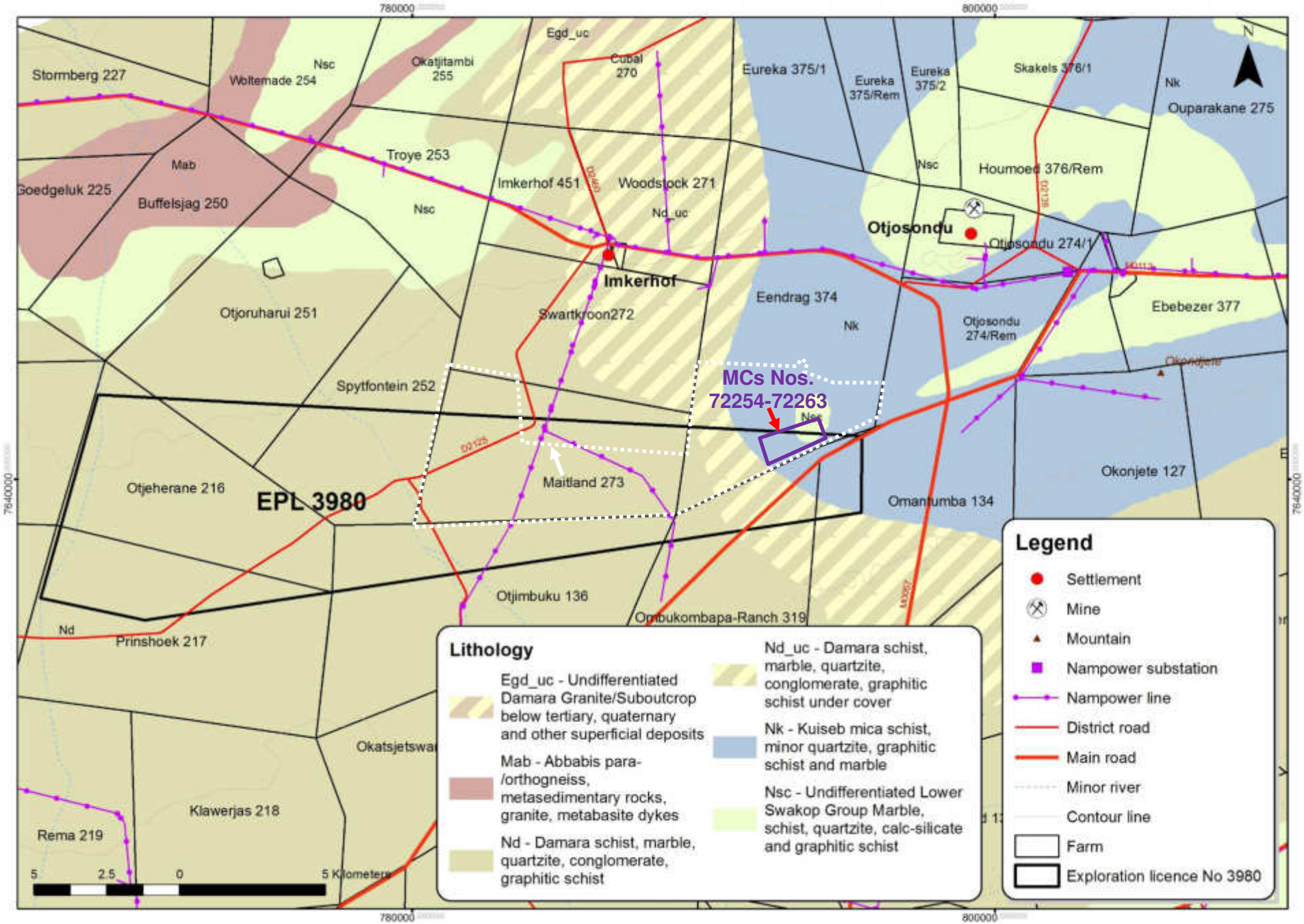


Figure 4.5: Simplified geological map of the MCs Nos. 72254-72263.

4.7 Water

4.7.1 Overview

According to the Department of Water Affairs and Forestry, (2001) and the regional and local geology, the MCs Nos. 72254-72263 falls within an area with very limited economic groundwater water resources (aquifers) (Fig. 4.6). Water supply in the general area is from local groundwater resources (Department of Water Affairs, 2001).

The proposed project activities (exploration programme) will utilise local groundwater resources. No site-specific hydrogeological specialist study, groundwater modelling or water sampling and testing activities have been undertaken for this study.

4.7.2 Sources of Water Supply

The source of water supply for the proposed exploration and small-scale mining operations and in particular the drilling of exploration boreholes if need arises to drill, will be from existing groundwater resources. The Proponent must obtain permission from the land owner before using water from any existing local boreholes and infrastructures.

If there is a need to drilling a water borehole to support the proposed exploration and small-scale mining operations, the Proponent must obtain permission from the land owner and Department of Water Affairs in the MAWLR.

In an event of discovery of economic minerals resources, the sources of water supply for the mining related operations will be supplied from groundwater resources if proven to be available following a detailed hydrogeological and groundwater modelling study that must be undertaken as part of the EIA supporting the feasibility study. Currently, potential available groundwater resources in the area will not be sufficient to support any new larger-scale mining related operation within the MCs Nos. 72254-72263.

However, some parts of the MCs area are covered by local fractured, fissured, karstified and porous rocks that seems to have localised moderate groundwater potential (Figs. 4.5 and 4.6).

4.7.3 Water Vulnerability Assessments and Recommendations

Possible pathways that will aid groundwater vulnerability in this area are mainly fractured zones and faults that outcrop on the surface without impermeable infillings as well as unconfined shallow aquifers. The general MCs area has limited groundwater resources that are likely to be vulnerable to pollution (Fig. 4.6). The overall water be vulnerability to pollution as a result of the proposed exploration and small-scale mining operations as well as other existing activities is moderate (Fig. 4.6).

The general area has a number of Ephemeral River Channels which could be potential pathways for pollution migration especially during the rainy season from November to March. Discharge of liquid or solid wastes including waste water, chemical, fuels, or oils into any public stream is prohibited and the Proponent must implement the provisions of the EMP on water and waste management as detailed in EMP Report.

It is hereby recommended that a detailed site-specific hydrogeological specialist study including groundwater modelling, water sampling and testing must be undertaken as part of the EIA and EMP that may be implemented to support the feasibility study for any viable mining project that may be development within the MCs area, if economic resources are discovered.

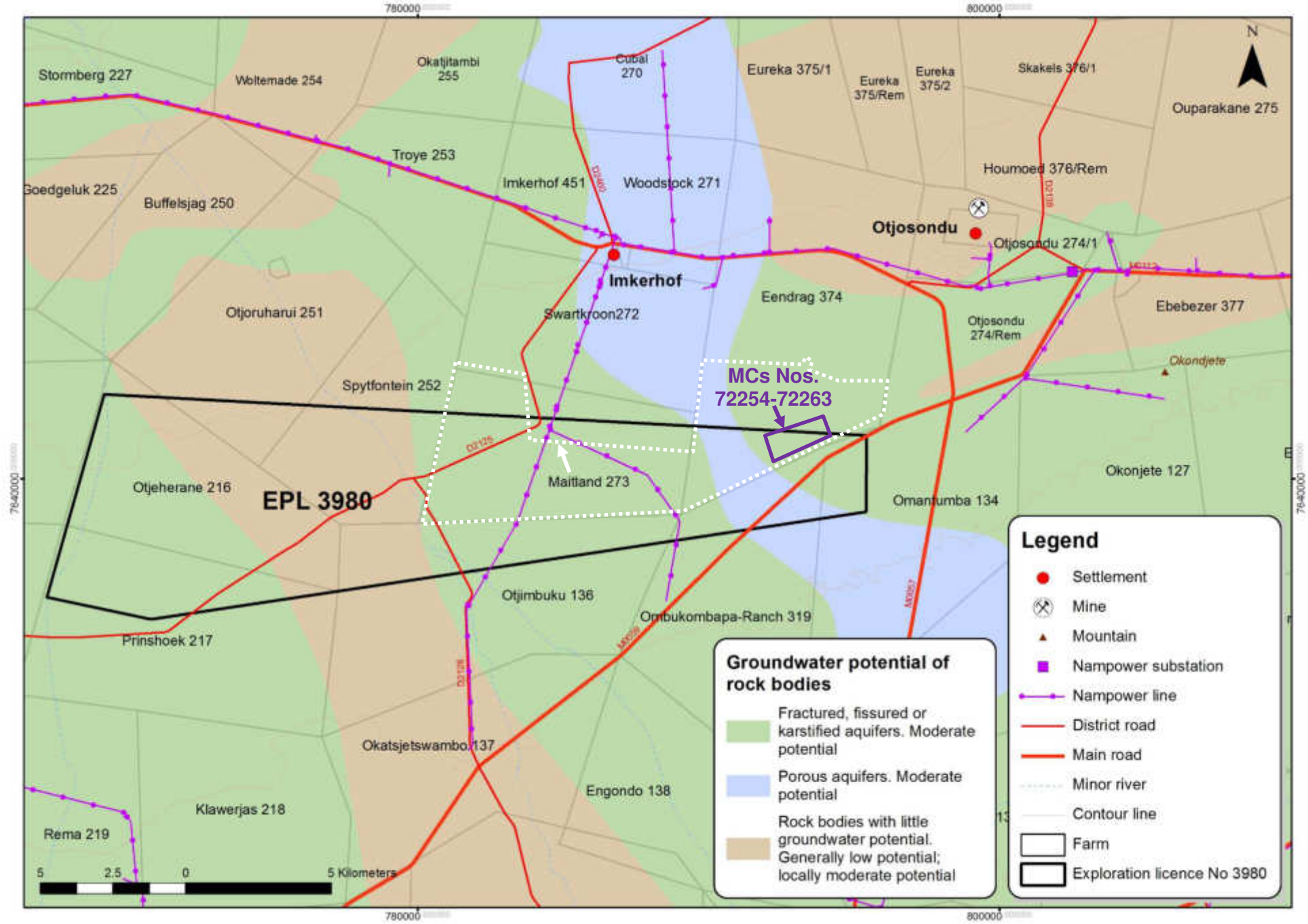


Figure 4.6: Simplified hydrogeological map of the MCs Nos. 72254-72263.

4.8 Archaeology

4.8.1 Regional Archaeological Setting

Modern humans and their ancestors have lived in Namibia for more than one million years, and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch (Kinahan, 2017). Namibia has a relatively complete sequence covering the mid-Pleistocene to Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment and Namib Desert.

According to Kinahan, (2017), the Recent Holocene archaeological sequence in Namibia, i.e. the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era.

Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance.

4.8.2 Local Likely Archaeological Setting

The MCs area is likely to have evidence from the early colonial period relates to iron and manganese mining in the general area and a combination of trade, missionary activity and indigenous tribes use of iron for various applications.

The Proponent must not disturb major natural shelters or cavities that may be unearthed because they could hold some highly significant historical or cultural sites that would require detailed documentation and possibly mitigation measures to be adopted in the event of encroachment by the proposed exploration and small-scale mining operations.

The MCs area does not have a known heritage site (https://maps.landfolio.com/Namibia).

4.8.4 Archaeological Conclusions and Recommendations

The area of interest for the proposed exploration and small-scale mining operations probably has archaeological potential, although no archaeological sites have been recorded so far from within the area itself. The following are the key recommended actions related to archaeology in the MCs Area:

(i) Contractors working on the site should be made aware that under the National Heritage Act, 2004 (Act No. 27 of 2004) any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council.

(ii) The chance finds procedure as outlined in the EMP must be implemented at all times, and.

(iii) Detailed field survey should be carried out if suspected archaeological resources or major natural cavities / shelters have been unearthed during the mining operations

4.9 Public Consultations

4.9.1 Overview

Public consultation and engagement process have been part of the environmental assessment process for this project. Opportunity for stakeholders and the public to submit written comments / inputs / objections with respect to the proposed exploration and small-scale mining activities in the MCs Nos. 72254-72263 were provided from Friday 12th March 2021 to Friday, 2nd April 2021 (Figs. 4.7- 4.9).

4.9.2 Public Consultation Process

Public consultation process was undertaken through emails contact and the newspaper advertisements as shown in Figs. 4.7- 4.9. The project was extensively advertised as follows:

- Windhoek Observer newspaper dated Friday 12th March 2021 (Fig. 4.7).
- Confidente newspaper dated 18 - 23 March 2021 (Fig. 4.8), and.
- New Era newspaper dated Wednesday, 31st March 2021 (Fig. 4.9).

Public notices were published in the local newspapers from Friday 12th March 2021 to Wednesday 31st March 2021 (Figs. 4.7 - 4.9).

4.9.3 Stakeholders and Public Discussions

A stakeholder register was opened on the 12th March 2021 and one (1) written objection was received on the 1st April 2021 from Mr. Sidney W Martin of Farm Ombukombapa Ranch (Annex 2).

4.9.4 Stakeholders and Public Consolations Recommendations

The submission that was made by Mr. Sidney W Martin of Farm Ombukombapa Ranch on the 1st April 2021 was mainly focused on lack of information regarding the proposed activities and access. However, due to the fact the project is still at exploration stage, it was difficulty for the EAP provide any further solid information about the project.

The shareholders were supposed to share some information with the neighbouring land owners but it seems the initially scheduled meeting did not take place at the time of making the submission by the land owner.

The misunderstanding between the Proponent and Mr. Sidney W Martin of Farm Ombukombapa Ranch was referred to the Minerals Ancillary Rights Commission (MARC) in the Ministry of Mines and Energy (MME) where the issue has been handled.

Overall, in meeting the need for continuous public / stakeholder consultation process, this EIA has recommended that the Proponent shall further notify the land owners on the implementation of the proposed project once the ECC has been granted and negotiate access agreements as may be applicable.

Such communications shall be maintained throughout the lifecycle of the proposed project.

This recommendation may be included as condition on the ECC to be issued.

PUBLIC NOTICE

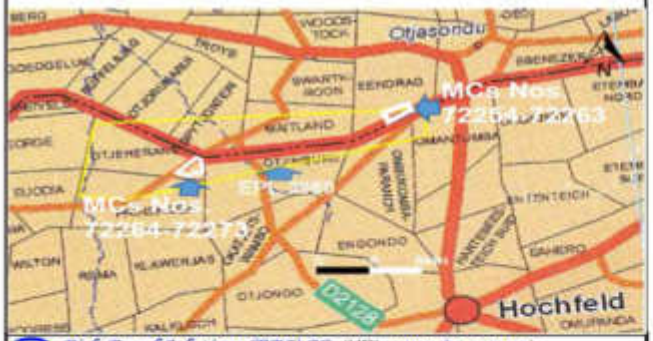
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATES (ECCs) BY FOR MINING CLAIMS (MCs) Nos. 72254-72263 AND 72264-72273 FOR JUSTUS STANLEY VEII AND MARIA NANDELILA VEII RESPECTIVELY OKAHANDJA DISTRICT, OTJOZONDJUPA REGION

Justus Stanley Veii and **Maria Nandelila Veii**, the **Proponents**, have applied for Mining Claims (MCs) Nos. 72254-72263 and 72264-72273, respectively, for base and rare metals. The MCs were applied on 13/11/2020 and falls within the Exclusive Prospecting License (EPL) No. 3980 for Imprint Investments (Pty) Ltd. The MCs Nos. 72254-72263 and 72264-72273 falls in privately owned commercial farmlands, Eendrag374 and Otjeherane 216, respectively.

The Proponents intends to conduct prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests before starting with the small-scale mining operations specifically targeting manganese. The proposed prospecting and small-scale mining activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificates (ECCs) for each proposed project.

In fulfilment of these environmental requirements, the Proponents have appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Reports to support the applications for ECCs. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available upon registration.

REGISTER BY EMAIL: frontdesk@rbs.com.na and more information contact
Dr Sindila Mwiya (EAP/ International Resources Technical Specialist Consultant, Email: smwiya@rbs.com.na, **Mobile**: 0811413229
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: THURSDAY 11TH MARCH 2021 to FRIDAY 2ND APRIL 2020



Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
International Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATES (ECCs) BY GREEN MINING (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING IN THE EXCLUSIVE PROSPECTING LICENSES (EPLs) Nos. 7812, 7814-7818, 7822-7830 AND 7836 IN KHOMAS, OMAHEKE, HARDAP AND //KARAS REGIONS

Green Mining (Pty) Ltd (the "**Proponent**") holds mineral rights under the Exclusive Prospecting Licenses (EPLs) Nos. 7812, 7814-7818, 7822-7830 and 7836 for precious metals and nuclear fuels. The EPLs were granted on the 28/07/2020 and will expire on the 27/07/2023.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

In fulfilment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

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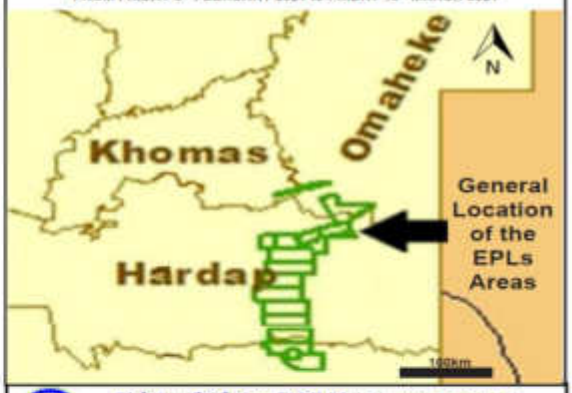
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FROM FRIDAY 5TH FEBRUARY 2021 to FRIDAY 19TH MARCH 2021



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International Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUESTATE INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS EXPLORATIONS / PROSPECTING IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7272, EPUKIRO CONSTITUENCY, OMAHEKE REGION

Bluestate Investments (Pty) Ltd (the "**Proponent**") holds mineral rights under the Exclusive Prospecting License (EPL) No. 7272 for base and rare metals, dimension stones, industrial minerals, precious metals, precious stones, and semi-precious stones. The EPL 7272 was granted on the 23/05/2019 and will expire on the 22/05/2022. The EPL 7272 has a total area of 14774 Ha and covers the communal land around Otjimanangombe area in the Epukiro Constituency.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

In fulfilment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

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Dr Sindila Mwiya (EAP/ International Resources Technical Specialist Consultant, Email: smwiya@rbs.com.na, **Mobile**: 0811413229
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FROM MONDAY 8TH FEBRUARY 2021 to FRIDAY 19TH MARCH 2021

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
International Specialist Consultancy (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUESTATE INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS EXPLORATIONS / PROSPECTING IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8020, KARIBIB DISTRICT, ERONGO REGION

Bluestate Investments (Pty) Ltd (the "**Proponent**") holds mineral rights under the Exclusive Prospecting License (EPL) No. 8020 for base and rare metals, dimension stones, industrial minerals, and precious metals. The EPL 8020 was granted on the 16/11/2020 and will expire on the 15/11/2023. The EPL 8020 has a total area of 16836Ha and covers the communal land around Otjimbingwe and portions of Farms Neu-Schwaben, Goas, Kubes and Anawood South.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC).

In fulfilment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

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Figure 4.7: Copy of the public notice that was published in the Windhoek Observer newspaper dated Friday 12th March 2021.

Late northern tycoon in child custody fiasco

… business mogul accused of claiming child after 21 years

By Marx Itamalo

ONGWEDIVA resident Lukas Nasimane Victor claims the late well-known northern businessman, Johannes 'Nambango' Shiyukifeni snatched his daughter from him, claiming her as his own.

The daughter in question, now a woman aged 23 (and who has a three-month old baby) had been cared for by Victor as his own daughter from birth until 2019, when the businessman took her away much to the distraught of Victor.

Speaking exclusively to *Confidente* this week, Victor said that in 1998, he was alerted to a pregnancy by the mother of the woman in question. "I accepted responsibility because opondali- I was there," he stated. According to him, the baby was named, baptised and stayed with her mother until grade 3 when he (Victor) went to fetch the child to live with him at his parent's house at Ohaingu village in Ohangwena region.

"All that time I was supporting her and in 2016 she failed grade 10 and the following year I brought her to Ongwediva to start Namcol at Gabriel Taapopi secondary school," he narrated, adding that the girl's mother passed on in 2017.

After finishing Namcol she was enrolled at Oshakati secondary school to do her grade 11 and 12 studies. It was while she was in grade 12 at Oshakati secondary school, that tables started turning upside down for Victor.

"In August 2019, one of her uncles informed me that there are rumours making the rounds that the child was not mine. He informed me the rumours originated from the school. I went there and was shocked to hear from my daughter's friends that I was not the father and that I should not dare visit her or the school again," he adds. He later gathered that Shiyukifeni had gone to the school and spoke to the child and convinced her he was her real father and banned her from going to Victor's house.

Victor said that the girl was at his home for the August 2019 school holidays, but never returned after leaving for school afterwards. "I heard she was at her new father's home."

Victor stressed he was baffled as to why Shiyukifeni had to wait until the child was 21 to come and claim her. "If he knew he was the real father, he could have said it right from the beginning. How can you wait until somebody is in grade 12 to go and claim them? It's very unfair," he fumed adding that all the necessary documents such as school reports, baptism certificate and birth certificate bore his surname. He further alleged that Shiyukifeni took the young woman for DNA tests without the knowledge of her relatives. Victor alleges the young woman's relatives were not tough on Shiyukifeni as he was powerful.

The matter was referred to the Oukwanyama Traditional Authority (OTA) for resolution. "He (Shiyukifeni) presented what he said was DNA results showing he was the father. They wanted me to check but I refused. I told them I cannot fight over a child, but that if he wants his so called child, he should compensate me for everything I had spent on her upbringing," Victor further said.

The traditional court ordered him to write a letter indicating how much he wanted as compensation. On November 26 2019 Victor took his demands to the traditional authority. All parties were present. He had asked Shiyukifeni to pay him N$500 000. However, the traditional authority, believed the amount was exorbitant and halved it to N$250 000. Shiyukifeni is said to have rejected the order to pay saying, "If you are to be paid, it should be by the family of the child who gave you the child. Not me." That meeting ended in a deadlock.

Unfortunately, Shiyukifeni passed away 11 months later in October 2020 without the dust having settled on the matter.

Last week, Victor received a call from home affairs Ondangwa to make a declaration that he was not the woman's real father so that she could have all her documents changed so she assumes Shiyukifeni's surname. "Apparently some of Shiyukifeni's relatives took the daughter there at home affairs to change her documents. They won't be able to do that without my approval and I will only make a declaration when they pay me the N$250 000, for the damage I have suffered."

Shiyukifeni's younger brother Abner Shiyukifeni told *Confidente* this week that the disputed young woman is indeed his late brother's daughter. "What you should know is that the child is ours. We knew it from the beginning even before she was born. The problem is that there were complications with my late brother that time," he said explaining that his late brother got married in mid-1995 and around 1997-1998 he had an affair with the mother of the young woman whom Victor was allegedly also seeing.

When his brother impregnated the woman, and fearing to face the ire of his wife, the pregnancy was blamed on Victor. "Victor also knows about that. He knows the child is not his," he stated. Quizzed on why his brother claimed the child after many years, Abner said: "You see, Johannes was a traditional and principled man. Perhaps he assessed his health and realised he did not have enough time to live and wanted to leave all his children with something."

The late businessman has 14 other children and they all had insurance policies enabling them to inherit around N$1,5 million each upon his death. "He did not want to exclude that child. That's why he was fighting tooth and nail to have everything sorted before he dies," he explained.

He also said Victor was responsible for his own failure to be compensated by the late business mogul. "My brother wanted to give him something at least for having looked after the child, but his demands were unrealistic."

The chairperson of the Oukwanyama Traditional Authority George Nefulu confirmed on Monday that the matter indeed was heard in 2019. "Yes I am aware of the matter. Victor brought the matter to the traditional authority and the parties were summoned to present their arguments. Nambango told us he wanted his child. We then advised Victor to write a letter outlining how he wanted to be compensated."

Sanitation a far cry for Kilimanjaro residents

By Hertta-Maria Amutenja

RESIDENTS living in the Kilimanjaro informal settlement in Windhoek have raised concern over communal toilets that have not been working for almost four years. The area has 10 toilets which have been defective, posing serious health risks in the residential area.

Speaking to *Confidente*, fuming residents said they have reported the toilet situation to the neighbourhood committee on numerous occasions but nothing has been done yet. The committee is the residents' representative tasked to take up the resident's issues with the municipality.

One of the residents, Daniel Ndongi who has lived in the area for 25 years, said he recently used his own money to repair one of the toilets as he has young girls who need to use it on a daily basis.

"The reason why you see a lock on the door is because it is one of the only toilets working. I had to buy new materials to fix it with my own money because I have children that are girls, and we can't live like this. If we live it open, everyone is going to run there and live it dirty or even steal the toilet pot," he said.

"All those toilets are not working, when you flush the toilet the faeces spill over the entire toilet and the water with all its dirt runs down into peoples' shacks. But, what do we do, we just need to keep cleaning the toilet?" added Ndongi.

He added that, what makes matters even worse is the fact that they have not had electricity and have been living in the dark for more than 20 years now.

"We go to people's houses to go beg them to just charge our phones so that my children areable to use the phone light to study. But, until when do we have to beg? I had to take one of my children out of school and told her to rather just stay at home because it's tough," said Ndongi.

He went on to say that many promises have been made by Windhoek city council over the years but nothing has been done yet except making water accessible.

Another resident Veronica Mweya alleged that the committee members that are expected to represent them as a community are biased and are not taking their complaints to the relevant offices.

"The tap that we collect water from has also been dysfunctional for a very long time. We have reported these issues to the committee members that are representing us but we don't see them doing anything. The committee members are only their own benefit. We have houses with more than three people from the same household all forming part of the committee which is not right. We don't even vote for these people we are just told who they are," complained Mweya.

Last year it was reported that residents in nearby Havana informal settlement were sharing fewer than 10 toilets. The informal settlement is home to 50 110 persons, according to 2011 estimates as reported by the Namibian StatisticsAgency.

Confidente reported in 2019 that residents of subserviced areas in the informal settlements around Windhoek were using the bush and plastic bags to relieve themselves due to lack of ablution facilities.

Last month the Ministry of Health situation report indicated that the country had recorded 8 045 cumulative hepatitise (HEV) cases since the outbreak in December 2017, and majority of the cases have been reported from informal settlements in Windhoek due to lack of appropriate sanitation in the areas .

Hepatitis E is spread by contaminated water within endemic areas or through the consumption of uncooked or undercooked meat.

By the time of going to print questions sent City of Windhoek's spokesperson Harold Akwenye, had not been responded to.

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATES (ECCs) BY FOR MINING CLAIMS (MCs) Nos. 72254-72263 AND 72264-72273 FOR JUSTUS STANLEY VEII AND MARIA NANDELILA VEII RESPECTIVELY OKAHANDJA DISTRICT, OTJOZONDJUPA REGION

Justus Stanley Veii and **Maria Nandelila Veii**, the **Proponents**, have applied for Mining Claims (MCs) Nos. 72254-72263 and 72264-72273, respectively, for base and rare metals. The MCs were applied on 13/11/2020 and falls within the Exclusive Prospecting License (EPL) No. 3980 for Imprint Investments (Pty) Ltd. The MCs Nos. 72254-72263 and 72264-72273 falls in privately owned commercial farmlands, Eendrag374 and Otjeherane 216, respectively.

The Proponents intends to conduct prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests before starting with the small-scale mining operations specifically targeting manganese. The proposed prospecting and small-scale mining activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificates (ECCs) for each proposed project.

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CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: THURSDAY 11TH MARCH 2021 to FRIDAY 2ND APRIL 2020

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
International Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS)

Figure 4.8: Copy of the public notice that was published in the Confidente newspaper dated 18 - 23 March 2021.

4 | NEWS

Wednesday 31 March 2021 | NEW ERA

LPM, cops clash over parly dressing code

Landless People's Movement (LPM) have threatened to bring to parliament their own security personnel 'complete with all commensurate personal protective wear and ammunition' following an altercation between the party's second in command Henny Seibeb and one of the police officers at parliament.

The altercation was allegedly over an LPM employee who was dropping off boxes of paper but was wearing sandals which is contrary to the parliament dressing code. This allegedly led to one of the officers guarding the parliament entrance to refuse the said employee entrance into parliament leading to a scuffle between the officer and Seibeb.

In a press statement issued on Monday, LPM accused the police officers stationed at parliament of "protecting their Swapo Party ministers and Swapo Party government against criticism by unleashing their personal vendetta against LPM thereby inventing opportunities to engage in verbal and physical confrontation with the party".

Upset... LPM MP Henny Seibeb. Photo: Nampa

"This situation is becoming grave, especially when the police officers begin to hurl insults to members of parliament," the party stated adding that they have on a separate occasion asked for members of the public who run errands for political parties to be exempted from the parliament dressing code which requires every person entering the premises to dress official or semi-official.

"We shall not stand and observe how those Swapo deployed police officers and intelligence officers belittle us and intimidate our party personnel and invited guests," the party wrote.

LPM also called for the officer involved to be redeployed to a different workstation.

"The reality is that we shall never obey to fake security measures that parliament has imposed. We have been always offering our assistance and obeyed the rules, but from now on, please rest assured that we shall not comply with security measures nor listen to those police officers," it said.

Parliament spokesperson David Nahogandja told *Nampa* that the matter was brought to the attention of the secretary to the National Assembly to ascertain and it is receiving the National Assembly attention.

"I also confirm that the speaker has received a complaint letter about the incident from Seibeb," Nahogandja said, adding that National Assembly management are set to meet with the LPM and the involved officer to try and resolve the incident. -*Nampa*

Man denied bail

... after assaulting wife with hoe handle

■ John Muyamba

RUNDU – The Rundu Magistrate's Court has denied a 38-year-old man bail following his appearance on charges of assault and attempted murder.

Willem Hamatwi was denied bail by Rundu magistrate Barry Mufana on Monday for allegedly hitting his wife with a hoe handle on the head. The incident happened on Thursday evening at the Murayi village in Kavango West region.

The victim was transported to Rundu state hospital with serious injuries. Hamatwi appeared on a charge of attempted murder read with the Domestic Violence Act 4 of 2003.

After his rights to legal representation were made clear to him, the accused opted to conduct his own defence. Public prosecutor Rauna Shihwandu objected to bail. The case was remanded to 10 June for further police investigations.

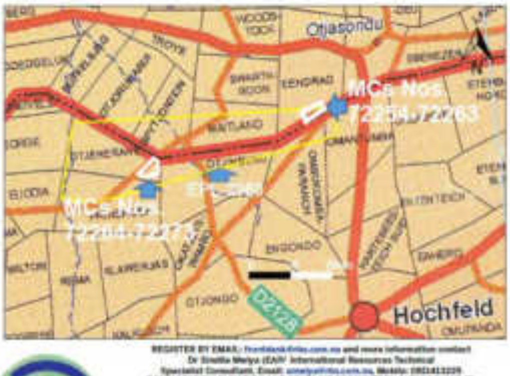
- *jmuyamba@nepc.com.na*

No bail... The Rundu Magistrate's Court.

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATES (ECCs) BY FOR MINING CLAIMS (MCs) Nos. 72254-72263 AND 72264-72273 FOR JUSTUS STANLEY VEII AND MARIA NANDELILA VEII RESPECTIVELY OKAHANDJA DISTRICT, OTJOZONDJUPA REGION

Justus Stanley Veii and **Maria Nandelila Veii**, the **Proponents**, have applied for Mining Claims (MCs) Nos. 72254-72263 and 72264-72273, respectively, for base and rare metals. The MCs were applied on 13/12/2020 and falls within the Exclusive Prospecting License (EPL) No. 3980 for Imprint Investments (Pty) Ltd. The MCs Nos. 72254-72263 and 72264-72273 falls in privately owned commercial farmlands Eendrag 374 and Otjekeraee 236, respectively. The Proponents intends to conduct prospecting activities starting with desktop studies and aerial surveys, followed by regional field-based reconnaissance work and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests before starting with the small-scale mining operations specifically targeting manganese. The proposed prospecting and small-scale mining activities are listed in the Environmental Management Act, 2007 (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificates (ECCs) for each proposed project. In fulfilment of these environmental requirements, the Proponents have appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Reports to support the applications for ECCs. All Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available upon registration.



REGISTER BY EMAIL: ... and more information contact Dr Sindila Mwiya (EAP) ...

CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: THURSDAY 11th MARCH 2021 to FRIDAY 2nd APRIL 2021

Risk-Based Solutions (RBS) CC

URL: www.rbs.com.na

Figure 4.9: Copy of the public notice that was published in the New Era newspaper dated Wednesday, 31st March 2021.

5. IMPACT ASSESSMENT AND RESULTS

5.1 Impact Assessment Procedure

The Environmental Assessment process that has been undertaken with respect to the proposed exploration and small-scale mining operations in the MCs Nos. 72254-72263 has been conducted in accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

5.2 Alternatives and Ecosystem Assessments

The following alternatives have been considered:

(i) **MCs Location:** Several potential economic minerals deposits are known to exist in the general area and linked to the regional geology of the MCs area. The Proponent intend to explore / prospect for all the licensed minerals groups likely to be associated with the regional and local geology. The minerals occurrences are site-specific and related to the regional and local geology of a specific area to which there are no alternatives sites to consider with respect to the license location. The only other alternative is the no-action option (no exploration activities are implemented in a specific area).

(ii) **The No-Action Alternative** - A comparative assessment of the environmental impacts of the 'no-action' alternative (a future in which the proposed exploration and small-scale mining activities do not take place) has been undertake. An assessment of the environmental impacts of a future, in which the proposed exploration and small-scale mining operations do not take place, may be good for the receiving environment because there will be no negative environmental impacts due to the proposed minerals exploration or possible mining operation that may take place in the MCs area.

The environmental benefits will include:

- ❖ No negative impacts because of no mineral exploration taking place, and.
- ❖ Potential future mining related negative environmental impact on the receiving environment.

However, it is important to understand that even if the proposed exploration and small-scale mining activities do not take place, to which the likely negative environmental impacts are likely to be low and localised, the other current and future land uses such as agriculture and tourism will still have some negative impacts on the receiving environment. The likely negative environmental impacts of the other current and future land use that may still happen in the absence of the proposed minerals exploration activities includes:

- ❖ Land degradation due to drought.
- ❖ Overgrazing / over stocking beyond the land carrying capacity.
- ❖ Poor land management practices, and.
- ❖ Erosion and overgrazing.

Furthermore, it is also important to understand what benefits might be lost if the proposed exploration and small-scale mining activities do not take place. Key loses that may never be realised if the proposed project activities do not go-ahead include: Loss of potential added value to the unknown underground minerals resources that maybe found within the MCs Nos. 72254-72263, socioeconomic benefits derived from current and future exploration, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments, license rental fees, royalties, and various other taxes payable to the Government.

(iii) **Other Alternative Land Uses:** The MCs area fall within the well-known commercial agricultural land uses area dominated by cattle, game, and small stock farming activities. The growing game farming is also making tourism a vital socioeconomic opportunity in the general area. Minerals exploration and mining activities are well known land use options in Namibia and the surrounding MCs area. Due to the limited scope of the proposed exploration and possible small-scale mining operations and the implementation of the EMP, it is likely that the proposed exploration and small-scale mining operations can coexist with the current and potential future land uses within the general area.

(iv) **Potential Land Use Conflicts:** Considering the current land use practices (agriculture and tourism) as well as potential other land uses including minerals exploration, it is likely that potential economic derivatives from any positive exploration outcomes leading to the development of a mine in the general area can still co-exist with the existing and potential future land use options of the general area. However, much more detailed assessments of any likely visual and other socioeconomic impacts will need to be included in the EIA that must be undertaken as part of the prefeasibility and feasibility studies if economic minerals resources are discovered. The use of thematic mapping and delineation of various land use zones for specific uses such as agriculture, conservation, mining or tourism etc, within the MCs area will greatly improve the multiple land use practices and promote coexistence for all the possible land use options.

(v) **Ecosystem Function** (**What the Ecosystem Does**)**:** Ecosystem functions such as wildlife habitats, carbon cycling or the trapping of nutrients and characterised by the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of an ecosystem in this area are vital components of the receiving environment. However, the proposed exploration and small-scale mining activities will not affect the ecosystem function due to the limited scope of the proposed activities because the ecosystem of this MCs area is part of the larger local and regional ecosystems which are all interlinked.

(vi) **Ecosystem Services:** Food chain, harvesting of animals or plants, and the provision of clean water or scenic views are some of the local ecosystem services associated with the MCs area. However, the proposed exploration and small-scale mining activities will not affect the ecosystem services due to the limited scope and area of coverage of the proposed activities because the ecosystem of this MCs area is part of the larger local and regional ecosystems which are all interlinked.

(vii) **Use Values**: The MCs area has direct values for other land uses such as agriculture, conservation, and tourism as well as indirect values which includes: Watching a television show about the general area and its wildlife, food chain linkages that sustains the complex life within this area and bequest value for future generations to enjoy. The proposed exploration and small-scale mining activities will not destroy the current use values due to the limited scope of the proposed activities as well as the adherence to the provisions of the EMP as detailed in Chapter 6 of this report, and.

(viii) **Non-Use or Passive Use**: The MCs area has an existence value that is not linked to the direct use / benefits to current or future generations. The proposed exploration and small-scale mining activities will not affect the ecosystem current or future none or passive uses due to the limited scope of the proposed activities that will leave much of the MCs area untouched because the ecosystem of this MCs area is part of the larger local and regional ecosystems which are all interlinked.

5.3 Key Issues Considered in the Assessment Process

5.3.1 Sources of Impacts (Proposed Project Activities)

The proposed exploration and small-scale mining activities being undertaken in the MCs Nos. 72254-72263 and as assessed in this EIA Report with mitigation measures provided in the EMP Report are as follows:

(i) Initial desktop exploration activities (no field-work undertaken).

(ii) Regional reconnaissance field-based mapping and sampling activities.

(iii) Initial local field-based mapping and sampling activities.

(iv) Detailed local field-based activities such as local geological mapping, geochemical mapping, and sampling, trenching, and drilling of closely spaced boreholes and bulk sampling.

(v) Prefeasibility and feasibility studies leading to test mining and mining if proves positive, and.

(vi) Small-scale mining covering planning and permitting, preconstruction, construction of the proposed mine and all the supporting infrastructure, mine operation, processing, stockpiling, transportation via road or new rail link to Walvis Bay through Okahandja for manganese, decommissioning, final rehabilitation, closure, and aftercare.

5.3.2 Summary of Receptors Likely to be Negative Impacted

Based on the finding of this EIA Report, the following is the summary of the key environmental receptors that are may be negatively impacted by the proposed activities:

- **Physical environment:** Water quality, physical infrastructure and resources, air quality, noise and dust, landscape and topography, soil quality and, Climate change influences.

- **Biological environment:** Habitat, protected areas and resources, flora, fauna, and ecosystem functions, services, use values and non-use or passive use, and.

- **Socioeconomic, cultural and archaeological environment:** Local, regional and national socioeconomic settings, commercial and subsistence agriculture, community protection areas tourism and recreation cultural, biological and archaeological resources.

5.4 Impact Assessment Methodology

5.4.1 Impact Definition

In this EIA Report, a natural and/or human environmental impact is defined as: “Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s environmental aspects.” (ISO 14001).

All proposed project activities (routine and non-routine) were considered during the Scoping, EIA and EMP Phases in terms of their potential to:

- Interact with the existing environment (physical, biological and social elements), and.

- Breach relevant national legislation, relevant international legislation, standards and guidelines, and corporate environmental policy and management systems.

Where a project activity and receptor were considered to have the potential to interact, the impact has been defined and ranked according to its significance. Table 5.1 provides the definition of different categories of impacts identified and used in this report.

This EIA Report has assessed the potential impacts resulting from routine Project activities, assuming that the Project activities that may cause an impact that will occur but the impact itself will be dependent on the likelihood (Probability) (Table 5.2).

Correct control measures through the implementation of the EMP and monitoring thereof, often reduce any negative significant impacts on the receiving environment as the results of the project activities. The assessment therefore, has focussed on the measures aimed at preventing the occurrence of an impact as well as mitigation measures that may be employed.

Table 5.1: Definition of impact categories used in this report.

Nature of Impact	Adverse	Considered to represent an adverse change from the baseline, or to introduce a new undesirable factor.
	Beneficial	Considered to represent an improvement to the baseline or to introduce a new desirable factor.
Type of Impact	Direct	Results from a direct interaction between a planned or unplanned Project activity and the receiving environment.
	Indirect	Results from the Project but at a later time or at a removed distance or which may occur as a secondary effect of a direct impact.
	Cumulative	Results from (i) interactions between separate Project-related residual impacts. and (ii) interactions between Project-related residual impacts in combination with impacts from other projects and their associated activities. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Duration of Impact	Short-term	Predicted to last only for a limited period but will cease on completion of the activity, or as a result of mitigation/reinstatement measures and natural recovery typically within a year of the project completion.
	Medium-	Predicted to last only for a medium period after the Project finishing, typically one to five years.
	Long-term	Continues over an extended period, typically more than five years after the Project's completion.
	Permanent	Occurs during the development of the Project and causes a permanent change in the affected receptor or resource that endures substantially beyond the Project lifetime.
Scale of Impact	Local	Affects locally important environmental resources or is restricted to a single habitat/biotope, a single community.
	Regional	Affects nationally important environmental resources, or an area that is nationally important/protected or has macro-economic consequences.
	National	Affects nationally important environmental resources, or an area that is nationally important/protected or has macro-economic consequences.
	International	Affects internationally important resources such as areas protected by international Conventions
	Transboundary	Impacts experienced in one country as a result of activities in another.
Probability	Negligible	Possibility negligible
	Improbable	Possibility very low
	Probable	Distinct possibility
	Highly Probable	Most likely
	Definite	Impact will occur regardless of preventive measures

The overall impact severity has been categorised using a semi-quantitative subjective scale as shown in Table 5.2 for sensitivity of receptors, Table 5.3 for magnitude, Table 5.4 for duration, Table 5.5 for extent and Table 5.6 showing probability.

Table 5.2: Definitions used for determining the sensitivity of receptors.

SENSITIVITY RATING		CRITERIA
1	**Negligible**	The receptor or resource is resistant to change or is of little environmental value.
2	**Low**	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.
3	**Medium**	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance
4	**High**	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.
5	**Very High**	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.

Table 5.3: Scored on a scale from 0 to 5 for impact magnitude.

SCALE (-) or (+)		DESCRIPTION
0		no observable effect
1		low effect
2		tolerable effect
3		medium high effect
4		high effect
5		very high effect (devastation)

Table 5.4: Scored time period (duration) over which the impact is expected to last.

SCALE (-) or (+)		DESCRIPTION
T		Temporary
P		Permanent

Table 5.5: Scored geographical extent of the induced change.

SCALE (-) or (+)		DESCRIPTION
L		limited impact on location
O		impact of importance for municipality.
R		impact of regional character
N		impact of national character
M		impact of cross-border character

5.4.2 Likelihood (Probability) of Occurrence

The likelihood (probability) of the pre-identified events occurring has been ascribed using a qualitative scale of probability categories (in increasing order of likelihood) as shown in Table 5.6. Likelihood is estimated on the basis of experience and/ or evidence that such an outcome has previously occurred. Impacts resulting from routine/planned events under normal operations are classified under category (E).

Table 5.6: Summary of the qualitative scale of probability categories (in increasing order of likelihood).

SCALE (-) or (+)		DESCRIPTION
A		Extremely unlikely (e.g. never heard of in the industry)
B		Unlikely (e.g. heard of in the industry but considered unlikely)
C		Low likelihood (egg such incidents/impacts have occurred but are uncommon)
D		Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)
E		High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)

5.4.3 Project Activities Summary of Impacts Results

The results of the impacts assessment and evaluation has adopted a matrix framework like the Leopold matrix. Assessment results of the magnitude, duration, extent, and probability of the potential impacts due to the proposed project activities interacting with the receiving environment are presented in form of a matrix table as shown in Tables 5.7-5.10.

The overall severity of potential environmental impacts of the proposed project activities on the receiving environment will be of low magnitude (Table 5.7), temporally duration (Table 5.8), localised extent (Table 5.9) and low probability of occurrence (Table 5.10) due to the limited scope of the proposed activities and the use of step progression approach in advancing exploration activities into a small-scale mining operation.

The step progressional approach will allow the Proponent to the results of exploration success and the implementation of the next stage of exploration will be subject to the positive outcomes of previous activities as graded (Tables 5.7-5.10).

It is important to note that the assessment of the likely impacts as shown in Tables 5.7 - 5.10, have been considered without the implementation of mitigation measures detailed in the EMP Report.

The need for implementation of the appropriate mitigation measures as presented in the EMP Report has be determined on the results of the impact assessment (Tables 5.7 - 5.10) and the significant impacts as detailed in Tables 5.11 and 5.12.

Table 5.7: Results of the sensitivity assessment of the receptors (Physical, Socioeconomic and Biological environments) with respect to the proposed exploration small-scale mining operations without mitigations.

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SENSITIVITY RATING / CRITERIA: 1 Negligible – The receptor or resource is resistant to change or is of little environmental value. 2 Low – The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance. 3 Medium – The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance 4 High – The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance. 5 Very High – The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iii) Purchase and analysis of existing Government aerial hyperspectral	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical, and remote sensing mapping and data analysis	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 5.7: Cont.

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SENSITIVITY RATING		CRITERIA	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																
2	Low	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.																
3	Medium	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance																
4	High	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.																
5	Very High	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.																
3. Initial Local Field-Based Activities	(i)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(ii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(iii)	Ground geophysical survey	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(iv)	Possible Trenching	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(v)	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(vi)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
4. Detailed Local Field-Based Activities	(i)	Access preparation and related logistics to support activities	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	+3	-3	-3	-3	-3
	(ii)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(iii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	+2	-2	-2	-2	-2
	(iv)	Ground geophysical survey, trenching, drilling and sampling	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	+3	-3	-3	-3	-3
5. Prefeasibility and Feasibility Studies	(i)	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	+3	-3	-3	-3	-3
	(ii)	Detailed drilling and bulk sampling and testing for ore reserve calculations	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	+3	-3	-3	-3	-3
	(iii)	Geotechnical studies for mine design	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	+3	-3	-3	-3	-3
	(iv)	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	1	1	1	1	1	1	1	1	1	1	1	+1	1	1	1	1
	(v)	EIA and EMP to support the ECC for mining operations	1	1	1	1	1	1	1	1	1	1	1	+1	1	1	1	1
	(vi)	Preparation of feasibility report and application for Mining License	1	1	1	1	1	1	1	1	1	1	1	+1	1	1	1	1
6. Small-Scale Mining Operations	(i)	Preconstruction and construction stages	-4	-4	-4	-4	-4	-4	-3	-3	-3	-3	-3	+4	-3	-3	-3	-3
	(ii)	Small-scale mining operations	-4	-4	-4	-4	-4	-4	-3	-3	-3	-3	-3	+4	-3	-3	-3	-3
	(iii)	Decommissioning, final rehabilitation, closure, and aftercare	-4	-4	-4	-4	-4	-4	-3	-3	-3	-3	-3	+4	-3	-3	-3	-3

Table 5.8: Results of the scored time (duration) over which the impact is expected to last during the exploration and small-scale mining operations without mitigations.

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SCALE / DESCRIPTION: T = Temporary; P = Permanent		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Purchase and analysis of existing Government aerial hyperspectral	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical, and remote sensing mapping and data analysis	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

Table 5.8: *Cont.*

DURATION OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SCALE / DESCRIPTION: T = Temporary; P = Permanent		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Ground geophysical survey	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Possible Trenching	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
4. Detailed Local Field-Based Activities	(i) Access preparation and related logistics to support activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Ground geophysical survey, trenching, drilling and sampling	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
5. Prefeasibility and Feasibility Studies	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Geotechnical studies for mine design	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(v) EIA and EMP to support the ECC for mining operations	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(vi) Preparation of feasibility report and application for Mining License	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
6. Small-Scale Mining Operations	(i) Preconstruction and construction stages	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	(ii) Small-scale mining operations	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	(iii) Decommissioning, final rehabilitation, closure, and aftercare	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Table 5.9: Results of the scored geographical extent of the induced change during the exploration and small-scale mining operations without mitigations.

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Purchase and analysis of existing Government aerial hyperspectral	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical, and remote sensing mapping and data analysis	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

SCALE		DESCRIPTION
L		limited impact on location
O		impact of importance for municipality
R		impact of regional character
N		impact of national character
M		impact of cross-border character

Table 5.9: *Conti.*

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Ground geophysical survey	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Possible Trenching	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
4. Detailed Local Field-Based Activities	(i) Access preparation and related logistics to support activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Ground geophysical survey, trenching, drilling and sampling	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
5. Prefeasibility and Feasibility Studies	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Geotechnical studies for mine design	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv) Mine planning and designs including all supporting infrastructures (water, energy, and access) and test mining activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(v) EIA and EMP to support the ECC for mining operations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(vi) Preparation of feasibility report and application for Mining License	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
6. Small-Scale Mining Operations	(i) Preconstruction and construction stages	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(ii) Small-scale mining operations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii) Decommissioning, final rehabilitation, closure, and aftercare	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

SCALE		DESCRIPTION
L		limited impact on location
O		impact of importance for municipality
R		impact of regional character
N		impact of national character
M		impact of cross-border character

Table 5.10: Results of the qualitative scale of probability occurrence during the exploration and small-scale mining operations without mitigations.

SCALE		DESCRIPTION
A		Extremely unlikely (e.g. never heard of in the industry)
B		Unlikely (e.g. heard of in the industry but considered unlikely)
C		Low likelihood (egg such incidents/impacts have occurred but are uncommon)
D		Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)
E		High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)

IMPACT PROBABILITY OCCURRENCE		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
(i) Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(iii) Purchase and analysis of existing Government aerial hyperspectral	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
(ii) Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical, and remote sensing mapping and data analysis	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

Table 5.10: *Cont.*

IMPACT PROBABILITY OCCURRENCE			PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SCALE	**DESCRIPTION**		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
A	Extremely unlikely (e.g. never heard of in the industry)																	
B	Unlikely (e.g. heard of in the industry but considered unlikely)																	
C	Low likelihood (egg such incidents/impacts have occurred but are uncommon)																	
D	Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)																	
E	High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)																	
3. Initial Local Field-Based Activities	(i)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(ii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	(iii)	Ground geophysical survey	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	(iv)	Possible Trenching	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	(v)	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	(vi)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
4. Detailed Local Field-Based Activities	(i)	Access preparation and related logistics to support activities	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(ii)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(iii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(iv)	Ground geophysical survey, trenching, drilling, and sampling	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5. Prefeasibility and Feasibility Studies	(i)	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(ii)	Detailed drilling and bulk sampling and testing for ore reserve calculations	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(iii)	Geotechnical studies for mine design	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(iv)	Mine planning and designs including all supporting infrastructures (water, energy, and access) and test mining activities	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	(v)	EIA and EMP to support the ECC for mining operations	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	(vi)	Preparation of feasibility report and application for Mining License	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
6. Small-Scale Mining Operations	(i)	Preconstruction and construction stages	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**
	(ii)	Small-scale mining operations	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**
	(iii)	Decommissioning, final rehabilitation, closure, and aftercare	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**

6.5 Evaluation of Significant Impacts

5.5.1 Overview

The significance of each impact has been determined by assessing the impact severity against the likelihood (probability) of the impact occurring as summarised in the impact significance assessment matrix provided in Table 5.11.

5.5.2 Significance Criteria

Significance criteria for negative/adverse impacts (i.e., relative ranking of importance) are defined in Table 5.11. It is important to note that impacts have been considered without the implementation of mitigation measures. The need for and appropriate mitigation measures as presented in the EMP report have be determined based on the impact assessment presented in this report.

Table 5.11: Scored impact significance criteria.

IMPACT SEVERITY (Magnitude, Duration, Extent, Probability)	**RECEPTOR CHARACTERISTICS (SENSITIVITY)**				
	Very High (5)	**High (4)**	**Medium (3)**	**Low (2)**	**Negligible (1)**
Very High (5)	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2/5]	Minor 1/5
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor [1/4]
Medium (3)	Major [5/3]	Moderate [4/3]	Moderate [3/3]	Minor [2/3]	None [1/3]
Low (2)	Moderate [5/2]	Moderate [4/2]	Minor [3/2]	None [2/2]	None [1/2]
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]

5.5.3 Assessment Likely Significant Impacts

The assessment of significant impacts depended upon the degree to which the proposed project activities are likely to results in unwanted consequences on the receptor covering physical and biological environments (Table 5.12). Overall, the assessment of significant impacts has focused on the ecosystem-based approach that considers potential impacts to the ecosystem. The main key sources of impacts that have been used in the determination of significant impacts posed by the proposed minerals exploration comprised activities. Each of the main areas of impact have been identified and assessed as follows:

- Positive Impacts are classified under a single category. they are then evaluated qualitatively with a view to their enhancement, if practical.
- Negligible or Low Impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity).
- Medium or High Impacts require the adoption of management or mitigation measures.
- High Impacts always require further management or mitigation measures to limit or reduce the impact to an acceptable level.

Overall, the results of the significant impact assessment matrix for the proposed minerals exploration activities on the physical and biological environments are shown in Tables 5.12.

Table 5.12: Significant impact assessment matrix for the proposed exploration and small-scale manganese mining activities without mitigations.

SIGNIFICANT IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(iii) Purchase and analysis of existing Government aerial hyperspectral	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical, and remote sensing mapping and data analysis	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical, and remote sensing mapping and analysis undertaken	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1

IMPACT SEVERITY (Magnitude, Duration, Extent, Probability)	RECEPTOR CHARACTERISTICS (SENSITIVITY)				
	Very High (5)	High(4)	Medium (3)	Low (2)	Negligible (1)
Very High (5)	Major [5/5]	Major [4/5[	Moderate [3/5]	Moderate [2 /5]	Minor 1/5
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]

Table 5.12: *Cont.*

SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(iii) Ground geophysical survey	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(iv) Possible Trenching	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
4. Detailed Local Field-Based Activities	(i) Access preparation and related logistics to support activities	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-3/2	-3/2	-3/2	-3/2	-3/2	+2\2	-2\2	-2\2	-2\2	-2\2
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-3/2	-3/2	-3/2	-3/2	-3/2	+2\2	-2\2	-2\2	-2\2	-2\2
	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(iv) Ground geophysical survey, trenching, drilling, and sampling	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-3/2	-3/2	-3/2	-3/2	-3/2	+2\2	-2\2	-2\2	-2\2	-2\2
5. Prefeasibility and Feasibility Studies	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3
	(iii) Geotechnical studies for mine design	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	-2\2	+2\2	-2\2	-2\2	-2\2	-2\2
	(iv) Mine planning and designs including all supporting infrastructures (water, energy, and access) and test mining activities	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	-3/3	+3/3	-3/3	-3/3	-3/3	-3/3
	(v) EIA and EMP to support the ECC for mining operations	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
	(vi) Preparation of feasibility report and application for Mining License	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	-1/1	+1/1	-1/1	-1/1	-1/1	-1/1
6. Small-Scale Mining Operations	(i) Preconstruction and construction stages	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	+4/4	-4/4	-4/4	-4/4	-4/4
	(ii) Small-scale mining operations	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	+4/4	-4/4	-4/4	-4/4	-4/4
	(iii) Decommissioning, final rehabilitation, closure, and aftercare	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	-4/4	+4/4	-4/4	-4/4	-4/4	-4/4

IMPACT SEVERITY (Magnitude, Duration, Extent, Probability)	RECEPTOR CHARACTERISTICS (SENSITIVITY)				
	Very High (5)	High(4)	Medium (3)	Low (2)	Negligible (1)
Very High (5)	Major [5/5]	Major [4/5[	Moderate [3/5]	Moderate [2 /5]	Minor 1/5
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]

5.6 Assessment of Overall Impacts

5.6.1 Summary of the Results of the Impact Assessment

In accordance with Tables 5.7 - 5.12, the following is the summary of the overall likely negative and significant impacts of the proposed exploration and small-scale mining activities on the receiving environment (physical, biological, and socioeconomic environments) without and with mitigations:

(i) Initial desktop exploration activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be none **[1/1]** (Table 5.12). Except for the socioeconomic components which carry a **(+)**, the rest of the likely impacts are negative **(-)**.

(ii) Regional reconnaissance field-based activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Some field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be none **[1/1]** (Table 5.12). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**.

(iii) Initial local field-based activities: Initial field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be none **[2/2]** (Table 5.12). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**.

(iv) Detailed local field-based activities: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised low impacts with mitigations. Overall significant impacts will be medium **[2/2]** without mitigations and low with mitigations (Table 5.12). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**.

(v) Prefeasibility and feasibility studies to be implemented on a site-specific area if the local field-based studies prove positive: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be moderate **[3/3]** without mitigations and minor with mitigations for bulk sampling, test mining and field logistics (Table 5.12). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**, and.

(vi) Planning and permitting, preconstruction, construction of the proposed mine and all the supporting infrastructure, mine operation, processing, stockpiling, transportation via road or new rail link to Walvis Bay through Okahandja for manganese, decommissioning, final rehabilitation, closure, and aftercare: Overall likely negative impact on the receiving environment will be very high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be major [**4/4**] without mitigations and moderate [**4/2**] with mitigations (Table 5.12). Except for the socioeconomic components which carry a (+), all the other likely impacts are negative (-),

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Justus Stanley Veii (**the Proponent**) intends to undertake exploration and small-scale mining activities in the MCs Nos. 72254-72263 covering base and rare metals with special focus on manganese. The exploration activities to be undertaken as assessed in this environmental assessment covers the following:

(i) Initial desktop exploration activities.

(ii) Regional reconnaissance field-based activities.

(iii) Initial local field-based activities including detailed mapping, sampling, and drilling operations.

(iv) Detailed local field-based activities including detailed mapping, sampling, and drilling operations, and.

(v) Prefeasibility and feasibility studies including possible test mining.

The following is the summary of the envisaged multi-phased small-scale mining project development process that will be implemented if the proposed above exploration is successful:

(i) Feasibility, planning and permitting.

(ii) Preconstruction and site clearing for the open pit mining areas and supporting infrastructure area such as onsite and offsite workers accommodation, administration block, processing plant area, storage, tailings and rock waste dumps, external and internal access/ transportation system, and all related services points for water and energy supplies.

(iii) Construction of the proposed mine and all the supporting infrastructure.

(iv) Mine operation, processing, stockpiling, transportation via road or new rail link to Walvis Bay through Okahandja for manganese export. The mining operations will be supported by ongoing monitoring and rehabilitation, and.

(v) Decommissioning, final rehabilitation, closure, and aftercare.

The proposed exploration and small-scale mining activities will be implemented as soon as all the required regulatory permits such as the Environmental Clearance Certificate (ECC) have been granted by the Government as well as all key agreements have been concluded with the land owners, contractors, and services providers.

The overall severity of potential negative environmental impacts of the proposed project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of high magnitude, permanent duration, localised extent, and high probability of occurrence of occurrence especially around the 180Ha MCs areas targeted for possible manganese exploration and small-scale mining operations. The immediate surrounding areas bordering the targeted exploration and mining operations area will also likely to be low-to moderately negatively affected.

6.2 Recommendations

It is hereby recommended that the proposed exploration and small-scale mining activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall take into consideration the following key requirements for implementing the proposed exploration and small-scale mining operations:

(i) Based on the findings of this EIA Report, the Proponent shall prepare an EMP Report with key mitigations measures covering the entire exploration and possible small-scale mining operations.

(ii) Mitigation measures shall be implemented as detailed in the EMP report.

(iii) The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.

(iv) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.

(v) Before entering any private or protected property/ area such as a private farm, the Proponent must give advance notices and obtain permission to always access the MCs area, and.

(vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s or as may be needed for environmental protection including wildlife management. The abstraction of the groundwater resources shall include water levels monitoring, sampling, and quality testing on a bi-annual basis, and that the affected landowner/s must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable.

In an even that large-scale economic manganese resources are discovered within the MCs Nos. 72254-72263 area and could lead to the development of a larger mining project, the Proponent is encouraged to apply for a Mining License (ML) and new Environmental Clearance Certificate (ECC). The ECC being supported by this EIA Report only covers the exploration and small-scale mining activities under MCs.

A separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports supported by specialist studies as may be applicable must be prepared to support the application for the new ECC for the ML.

The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources as well as all areas to be used for infrastructural support areas such as pit / shaft area/s, waste rock, tailings dump, access, office blocks, water, and energy infrastructure support areas (water, energy, and road / access). In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for the test mining / mining stages, the following field-based and site-specific specialist studies shall be undertaken as part of the EIA and EMP in an event of a discovery of large-scale economic manganese resources:

(i) Groundwater studies including modelling as may be applicable.

(ii) Field-based flora and fauna diversity of the key ML areas.

(iii) Noise and sound modelling linked to engineering studies.

(iv) Archaeological assessments.

(v) Socioeconomic assessment, and.

(vi) Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.

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8. ANNEXES

1. CV of EAP, BID and MCs Reg. Copy

2. Public Consultation Materials