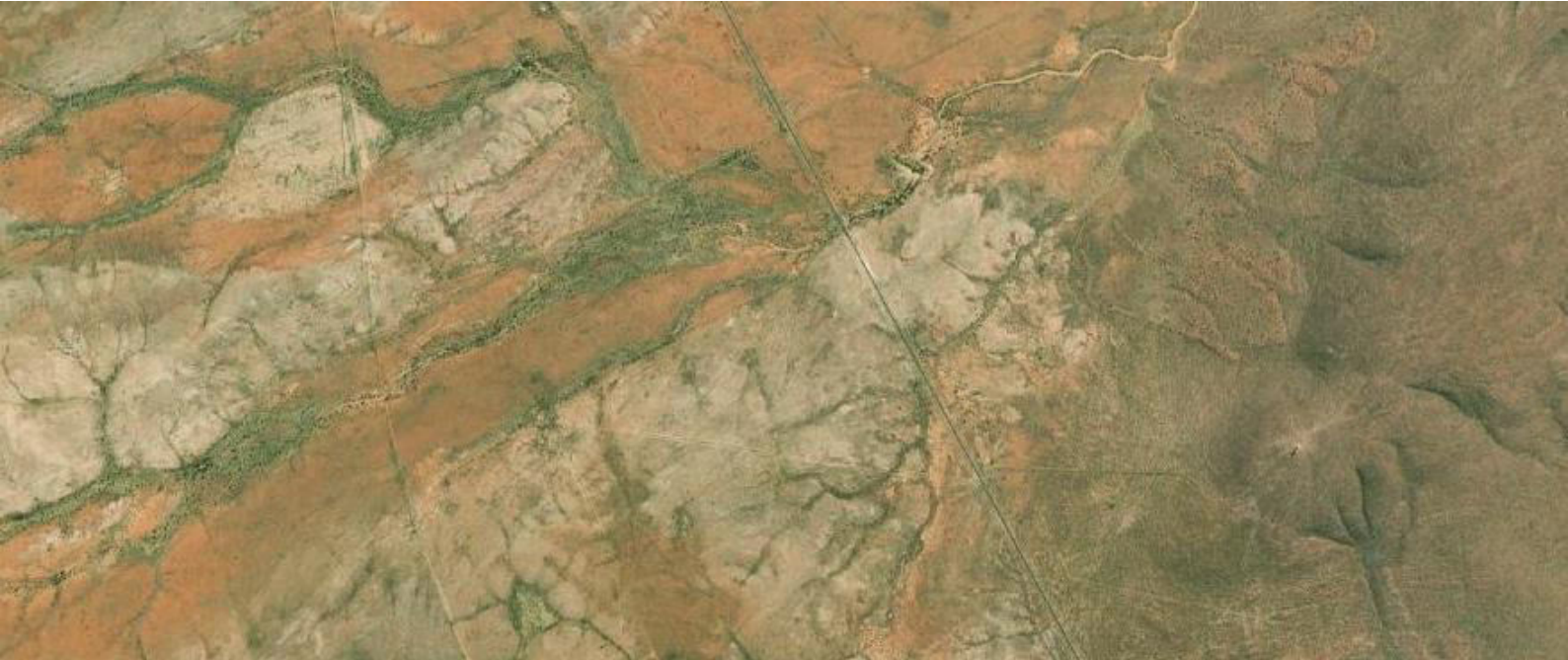


Rainmen Investments (Pty) Ltd **(the Proponent)**

**Environmental Impact Assessment (EIA) to support the
Application for Environmental Clearance Certificate
(ECC) for the Proposed Exploration Activities in the
Exclusive Prospecting License (EPL) No. 7875,
Rehoboth District, Hardap Region**



PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

Proponent

Rainmen Investments (Pty) Ltd

Type of Authorisation Requiring Environmental Clearance Certificate (ECC)

Exploration /Prospecting activities under the
Exclusive Prospecting License (EPL) No. 7875

Competent Authority

Ministry of Mines and Energy (MME)

Project Title / Subject on the ECC

Proposed Minerals Exploration / Prospecting activities in the Exclusive
Prospecting License (EPL) No. 7875, Rehoboth District, Hardap Region

Location of the Project Area

Rehoboth District, Hardap Region
(-23.621389, 17.174444)

Environmental Regulator and National Regulatory Framework

Ministry of Environment, Forestry and Tourism (MEFT),
Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) and
Environmental Impact Assessment (EIA) Regulations No. 30 of 2012

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NON-TECHNICAL SUMMARY

Rainmen Investments (Pty) Ltd (the “**Proponent**”) has applied for mineral rights under the Exclusive Prospecting License (EPL) No. 7875 with respect to Base and Rare Metals, Industrial Minerals, and Precious Metals groups (<http://portals.flexicadastre.com/Namibia>). The license was granted on the 04/08/2020 and will expire on the 03/08/2023.

The EPL 7875 falls within the Rehoboth District, in the Hardap Region. The EPL 7875 has a total area of 19436.8054 Ha and covers the following commercial privately owned farmlands: Awasab No. 333, Nakaeis Nos. 373/2/3 and REM, Naris No. 375 REM, Kojeka Nos. 376/1/2 and REM, Alwynkoppies Nos. 377/1 and REM, Olifantsvloer No. 453/2, Tsumis No. 576 REM, Farm No. 581, Koichas Suid No. 671, Januariesrus No. 672, Farm No. 673, Niemandsdal No. 678, Alwynkoppies No. 686, Diergaards Aub Oos No. 797 and, Nooitgedog No. 898.

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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.

Under an EPL 7875 regime, the Proponent is only authorised by the Ministry of Mines and Energy to conduct prospecting, not mining. Mining is undertaken under a separate authorisation called a Mining License (ML) which is only granted if an applicant has discovered and proved that the discovered minerals deposit is viable and can be developed into a profitable mine. Additionally, such an ML application will still be subject to the provisions of all other applicable legislations such as environmental assessment and management, water, energy, labour and land access.

Hardap Region is located in a semi-arid area, nearby a town known as Tsumispark. The area is classified to have a desert climate. The general area is regarded as low in terrestrial diversity. It is estimated that at least 77 reptile, 9 amphibian, 73 mammal and 209 bird species (breeding residents) are known to or expected to occur in the general EPL area of which a high proportion are endemic species. The vegetation structure is classified as the Namib Desert, characterised by dwarf shrub savanna within the Nama-Karoo basin, dominated by species including: *Acacia hereronsis*, *Combretum apiculatum*, *Acacia reficiens*, *Acacia hebeclada*, *Ziziphus mucronate* and *Rhus* species.

According to the Department of Water Affairs, (2001), the EPL 7875 falls within the area with generally low groundwater potential and groundwater in the areas is associated with secondary hydraulic properties such as discontinuities and carbonate solutions holes.

There are various anthropomorphic activities throughout the general area such as existing roads and tracks, power transmission lines and farms infrastructure. The environmental consequence that the proposed exploration and associated infrastructure such as access and campsite would have on the receiving environment will depend on the extent of the proposed activities over the development area, management of the area and how the proposed mitigations are eventually implemented by the Proponent in consultation with the land owners (surface rights holders). Avoiding sensitive habitats such as Ephemeral River channels, rock heads, track discipline (including no killing/poaching of fauna and unnecessarily cutting down of trees) must be adhered to and/or always enforced. The following is the assessment summary of the likely environmental impacts that the proposed exploration / prospecting activities will have on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) without 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 negligible and no field work will take place.

- (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. Overall significant impacts will be negligible. 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 negligible.
- (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. Overall significant impacts will be negligible. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible.
- (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 without mitigations and low with mitigations, and.
- (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 high without mitigations and low with mitigations for bulk sampling, and field coordination including exploration camp.

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

1. The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.
2. The Proponent shall obtain all other applicable permits such as freshwater abstraction, wastewater discharge as may be required.
3. 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.
4. 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.
5. Before entering any private or protected property/ area such as a private farm, the Proponent must give advance notices and obtain consent to access the EPL area at all times, and.
6. 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.

Once and if economic minerals resources are discovered, 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 mining operations. 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 in an event of a discovery of economic minerals resources and possible development of a mining project within the EPL No. 8221:

1. Groundwater studies including modelling as maybe applicable.
2. Field-based flora and fauna diversity.
3. Dust, noise and sound modelling linked to engineering studies.
4. Archaeological assessment.
5. Socioeconomic assessment, and.
6. Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.

1. BACKGROUND

1.1 Introduction

Rainmen Investments (Pty) Ltd (the “**Proponent**”) has applied for mineral rights under the Exclusive Prospecting License (EPL) No. 7875 with respect to Base and Rare Metals, Industrial Minerals, and Precious Metals groups (<http://portals.flexicadastre.com/Namibia>). The license was granted on the 04/08/2020 and will expire on the 03/08/2023.

1.2 Proposed Scope of Work

The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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 following is the summary of the proposed minerals exploration activities:

- (i) Initial desktop exploration activities covering the review of existing information and all previous prospecting activities undertaken in the general area in order to identify any potential target/s. This initial stage will also include the purchase and interpretation of the existing Government high resolution airborne geophysical data sets. No field-based visit or activities undertaken at this stage.
- (ii) Regional reconnaissance assessment covering field-based activities such as regional mapping and sampling to identify and verify potential targeted areas as delineated during the desktop stage (i) above. This stage is only undertaken if stage (i) has found some potential targets needing further investigation / verification. Alternatively, the licence is abandoned if no potential target is found.
- (iii) Initial local field-based activities such as widely spaced geological mapping, sampling, surveying and possible widely spaced trenching and drilling to test the viability of any delineated local target based on the regional data collected under (ii) above. The level or depth of investigation undertaken at this stage is subject to finding a viable / potential minerals deposit that needs to be defined. Alternatively, the licence is abandoned if the identified target/s proves not viable, and.
- (iv) Detailed local field-based activities such as localised site-specific detailed geological mapping, trenching, bulk sampling, surveying, and detailed drilling to determine the feasibility of the delineated local targets. If the detailed exploration activities lead to positive results, the exploration data collected will then be put together into a prefeasibility report and if the prefeasibility results prove positive, a detailed feasibility study supported by detailed site-specific drilling, bulk sampling and laboratory testing / test mining will be undertaken on the identified site-specific area. A positive feasibility study will be required to support the application for a Mining License (ML) together with a new site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) with specialist site-specific studies such as flora, fauna, socioeconomic, water, traffic, dust, and noise modelling and archaeology being undertaken to support the application for the new ECC for mining and minerals processing operations (opening a mine).

Currently, there are no mineral deposits or targets known to exist within the EPL 7875 area and the Proponent intends to conduct prospecting activities as part of the search for economic mineral deposits based on the testing of the developed theoretical geological and mineral depositional models. There is no guarantee whatsoever that the proposed prospecting activities will find economic mineral resources that could lead to the development of a mine.

To search for possible targets, the company will buy airborne geophysical data (magnetics and radiometric) held by the Ministry of Mines and Energy, and the data will be processed and using this information, the Proponent will look for possible targets. The targets will then be visited to see how the

surface looks like if possible collect surface samples (Geochemical sampling) followed by further field-based assessments such as geological mapping to validating the airborne-based data delineated targets.

Even if the mapping or drilling finds some indications of mineralisation, it takes many years (5 - 10 years or even more) to move an exploration / prospecting project to a mining stage and so many technical inputs including technology, markets, costs environmental liabilities and cost of services such water, roads and energy will need to form part of the project developmental stages, starting with the scoping, prefeasibility and then feasibility phases.

If a project is feasible, then the company will need to apply for a separate Mining License (ML) from the Government and a land owner agreement is required and mandatory before a Mining License is granted by Mining Commissioner. A Mining License application requires separate detailed site-specific studies of the local area of interest to have been conducted as part of the feasibility study.

Environmental Impact Assessment (EIA), Environmental Management Plan (EMP) and specialist studies such as water, fauna, flora, dust, noise for mining operations as well as linear structures such as water, roads and powerline form part of the feasibility study to be conducted before such a project can even be considered for review by the Government.

1.3 Regulatory Requirements

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.

1.4 Location, Land Access, Infrastructure and Services

1.4.1 Location

The EPL 7875 is in the Rehoboth District, Hardap Region (Figs. 1.1-1.3). The EPL 7875 has a total area of 19436.8054 Ha and covers the following commercial privately owned farmlands (Fig. 1.4):

- ❖ Awasab No. 333.
- ❖ Nakaeis Nos. 373/2/3 and REM.
- ❖ Naris No. 375 REM.
- ❖ Kojeka Nos. 376/1/2 and REM.
- ❖ Alwynkoppies Nos. 377/1 and REM.
- ❖ Olifantsvloer No. 453/2.
- ❖ Tsumis No. 576 REM.
- ❖ Farm No. 581.
- ❖ Koichas Suid No. 671.
- ❖ Januariesrus No. 672.
- ❖ Farm No. 673.

- ❖ Niemandsdal No. 678.
- ❖ Alwynkoppies No. 686.
- ❖ Diergaards Aub Oos No. 797 and.
- ❖ Nooitgedog No. 898.

1.4.2 Land Access

Before any site visit, permission will be requested from the land owner/s and an access agreement could be negotiated with the land owner/s if the Proponent want to continue with further field-based activities such as detailed mapping, trenching or drilling activities as may be required.

It is the responsibility of the Proponent to negotiate access agreements with the land owners and to make sure that all security measures to protect the farmland and interests of the land owner/s are always observed and as may be agreed with the individual land owners.

1.4.3 Supporting Infrastructure and Services

The EPL area is accessible along the B1 Road from Rehoboth to Mariental via Kalkrand and the minor road D1262 that comes off the B1 (Figs. 1.2 -1.4). Within the EPL 7875 area, a network of local tracks and private farm roads linked to the B1 and, D1262 gravel roads may be used to access the EPL area.

Private minor roads may require high clearance 4 x 4 vehicles and may only be used with permission from the land owners (Fig. 1.4).

The following supporting infrastructures and services will be required if detailed field-based studies such as geological mapping, trenching, or drilling need to be conducted following the delineation of potential targets requiring field verifications and / or investigations:

- (i) External and internal roads network: The Proponent will use the already existing external and internal road networks during the exploration phase.
- (ii) Water supply: Raw water will be sourced from local groundwater resources. The Proponent will utilise the existing boreholes with permission from the land owners. The exploration activities such as drilling operations will require limited water resources which could also be supplied by a tanker truck.
- (iii) Energy: The proposed exploration operations will use diesels and solar energy as may be required for exploration equipment and lighting, respectively, and.
- (iv) Accommodation and other supporting facilities and services: The exploration team will utilise the exiting accommodation facilities and services in the area. In absence of such facilities and services, the Proponent will provide onsite camping accommodation and supporting portable infrastructures such as chemical toilets as well as other requirements as may be applicable. The establishment of an exploration camp will only be done with the permission of the land owner.

If, required, field-based exploration activities will only be conducted once an Access Agreement has been concluded with the affected land owner/s.



Figure 1.1: Regional location of the EPL No 7875 Area.

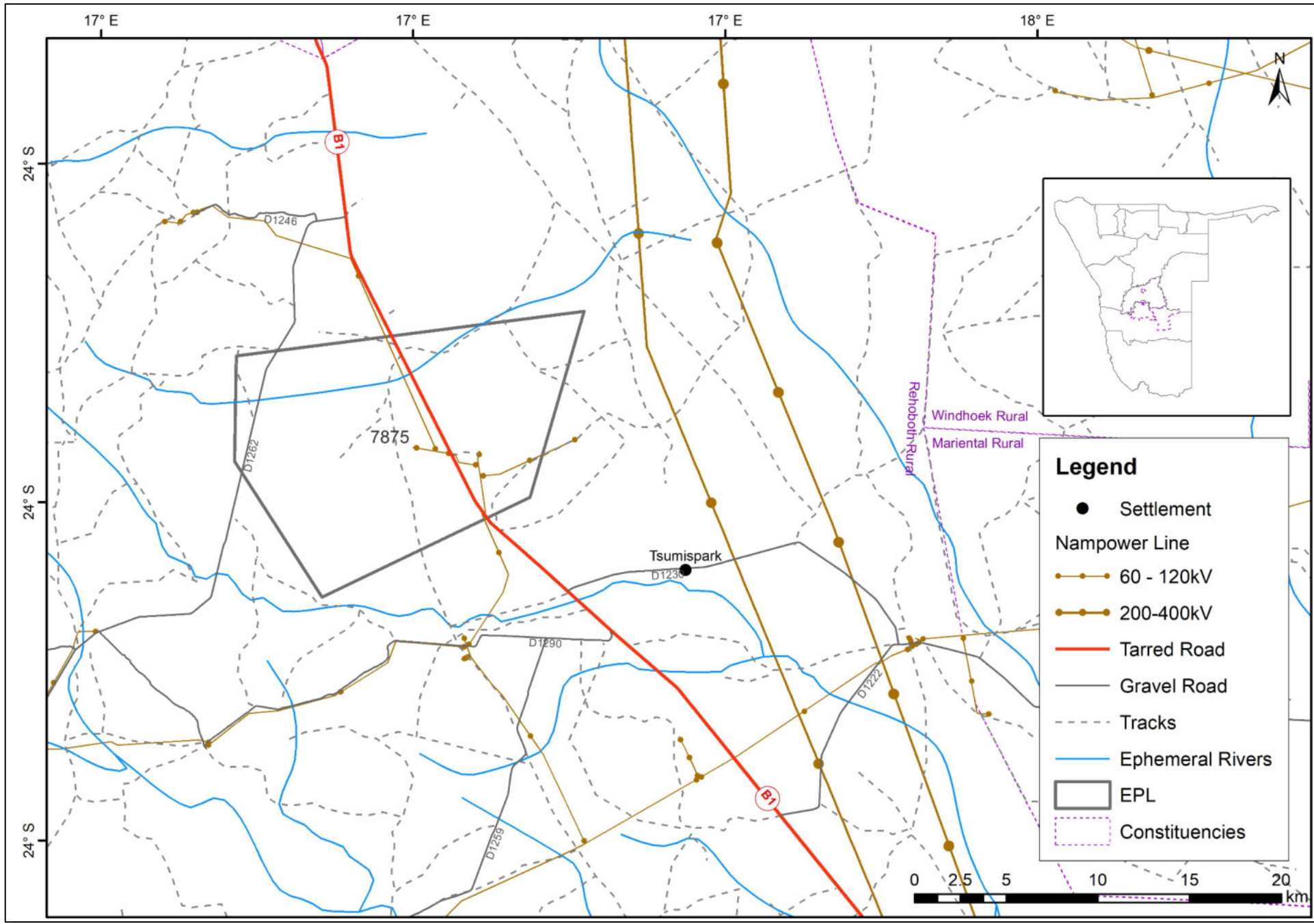


Figure 1.2: Regional location of the EPL No 7875 Area.

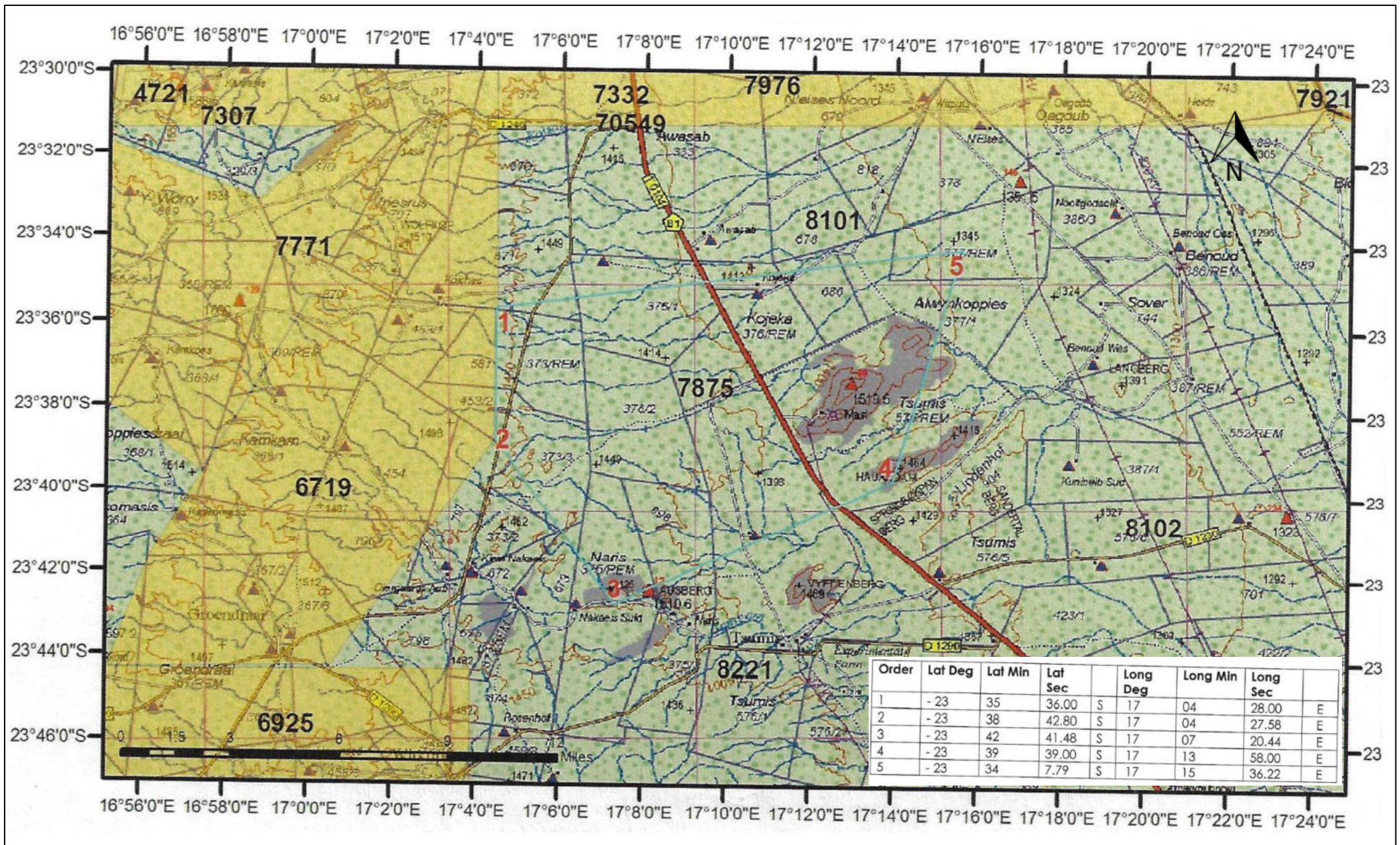


Figure 1.3: Detailed regional location of the EPL 7875 showing all the corner coordinates (Source: MME, 2022).

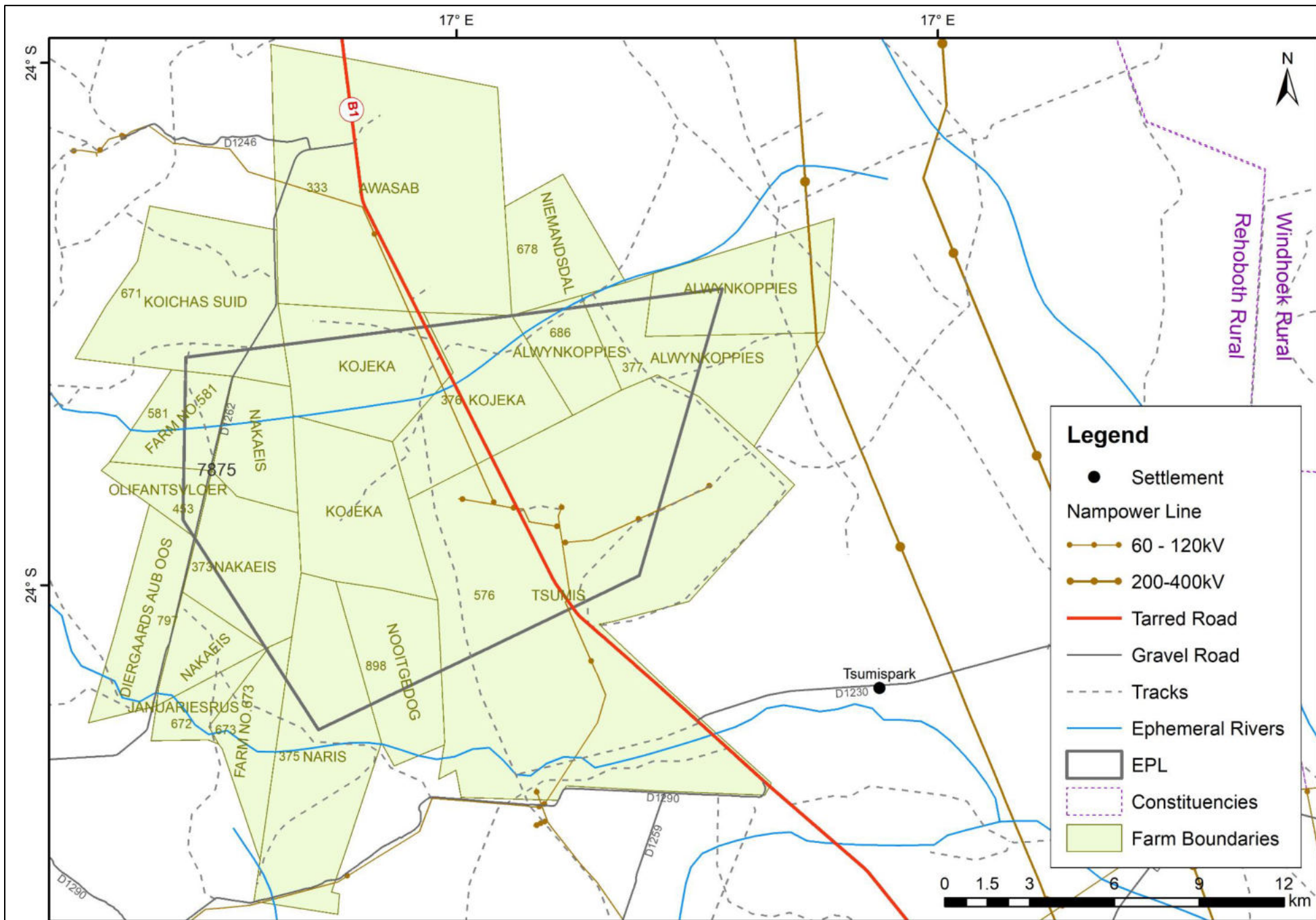


Figure 1.4: Commercial / communal farmland covered by the EPL 7875 and related supporting infrastructure networks.

1.5 Project Motivation

The proposed exploration activities have limited to no local socioeconomic benefits for the local communities. The only tangible benefits of the proposed exploration activities are mainly centred around the payment of the annual license rental fees to the central Government through the Ministry of Mines and Energy (MME), payment of services and land access agreement.

The following is the summary of other likely proposed project benefits.

- ❖ Provisional contractual employment opportunities for specialist services companies involved in minerals explorations during the minerals prospecting process that could take many years and only if potential minerals targets are discovered within the EPL area.
- ❖ Expansion of the subsurface knowledge-base: The exploration data to be generated will be highly useful in the search for future subsurface resources such as minerals, water, geothermal and general geoscience research, and development.
- ❖ Contribution to the subsurface knowledge-base that will promote the coexistence of subsurface operations with surface activities where compatible, and.
- ❖ Contribution to the development of local infrastructures as may be applicable especially in event that potential minerals targets requiring field-based studies to be conducted are identified.

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 EIA and EMP Reports in order to support the application for renewal of the Environmental Clearance Certificate (ECC) for the EPL No. 7875 with respect to the proposed exploration activities.

The EIA process reviewed the receiving environmental settings (physical, biological, socioeconomic and ecosystem services, function, use values and non-use) and proposed exploration activities, identified the impacts and then assessed the likely impacts (positive and negative) on the receiving environment (Table 1.1).

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 report and the completed Application for Environmental Clearance Certificate (ECC) shall be submitted to the client (Proponent) and the Office of the Environmental Commissioner, Department of Environmental Affairs and Forestry (DEAF), 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 EIA and EMP processes have 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 activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering Scoping, EIA and EMP Processes.

PROJECT ACTIVITIES		ALTERNATIVES CONSIDERED	Key Issues to be Evaluated and Assessed with Environmental Management Plan (EMP) / Mitigation Measures Developed	
1. Project Implementation and Initial Desktop Exploration Activities	Review of existing information and all previous activities in order identify any potential target/s in within the EPL Area	(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 EPL 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	Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism and agriculture	
2. Regional Reconnaissance Field-Based	Regional mapping and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (1) above		PHYSICAL ENVIRONMENT	<ul style="list-style-type: none"> • Water Quality • Physical infrastructure and Resources • Air quality, • Noise and dust • Landscape and topography value • Soil quality • Climate Change Influences
3. Initial Local Field-Based Activities	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		BIOLOGICAL ENVIRONMENT	<ul style="list-style-type: none"> • Habitat Protected Areas • Flora • Fauna • Ecosystem functions, services, use values and non-Use or passive use
4. Detailed Local Field-Based Activities on Delineated Targets If Any	Following the delineation of potential target/s, conduct detailed mapping, trenching, sampling, surveying and drilling in order to determine the viability of the project.		SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT	<ul style="list-style-type: none"> • Local, regional and national socioeconomic settings • Commercial Agriculture • Community Protected Areas • Tourism and Recreation • Cultural, Biological and Archaeological Resources
5. Prefeasibility and Feasibility Studies	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 application for Mining License will be undertaken.			

1.6.2 Environmental Assessment Process and Steps

The EIA/ Scoping 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 and covering the following stages / steps.

- (i) Project screening process (**Undertaken in August 2022**).

- (ii) Preparation of the Background Information Document (BID) (**Undertaken in September 2022**).
- (iii) Preparation of the Public Notice to be published in the local newspapers as part of required public consultation process (**Undertaken in September 2022**).
- (iv) Opened the Stakeholder register (**Undertaken on the 2nd September 2022**).
- (v) Publication of the public notice in the local newspapers inviting Interested and Affected Parties (IandAPs) to participate in the environmental assessment booked for the month of **September 2022**.
- (vi) Preparation of the Draft EIA/ Scoping and EMP Reports for client review, public and stakeholder inputs (**September 2022**).
- (vii) Comments and inputs from the client and IandAPs consultations used to finalise the EIA / Scoping and EMP Reports (**September 2022**).
- (viii) The final EIA/ Scoping 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 (**October 2022**).
- (ix) 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 activities direct to the Environmental Commissioner when the application will be made available for additional comments / inputs by the Environmental Commissioner (**October 2022**), and.
- (x) Wait for the Records or Decisions (RDs) from the Environmental Commissioner (**From October 2022**).

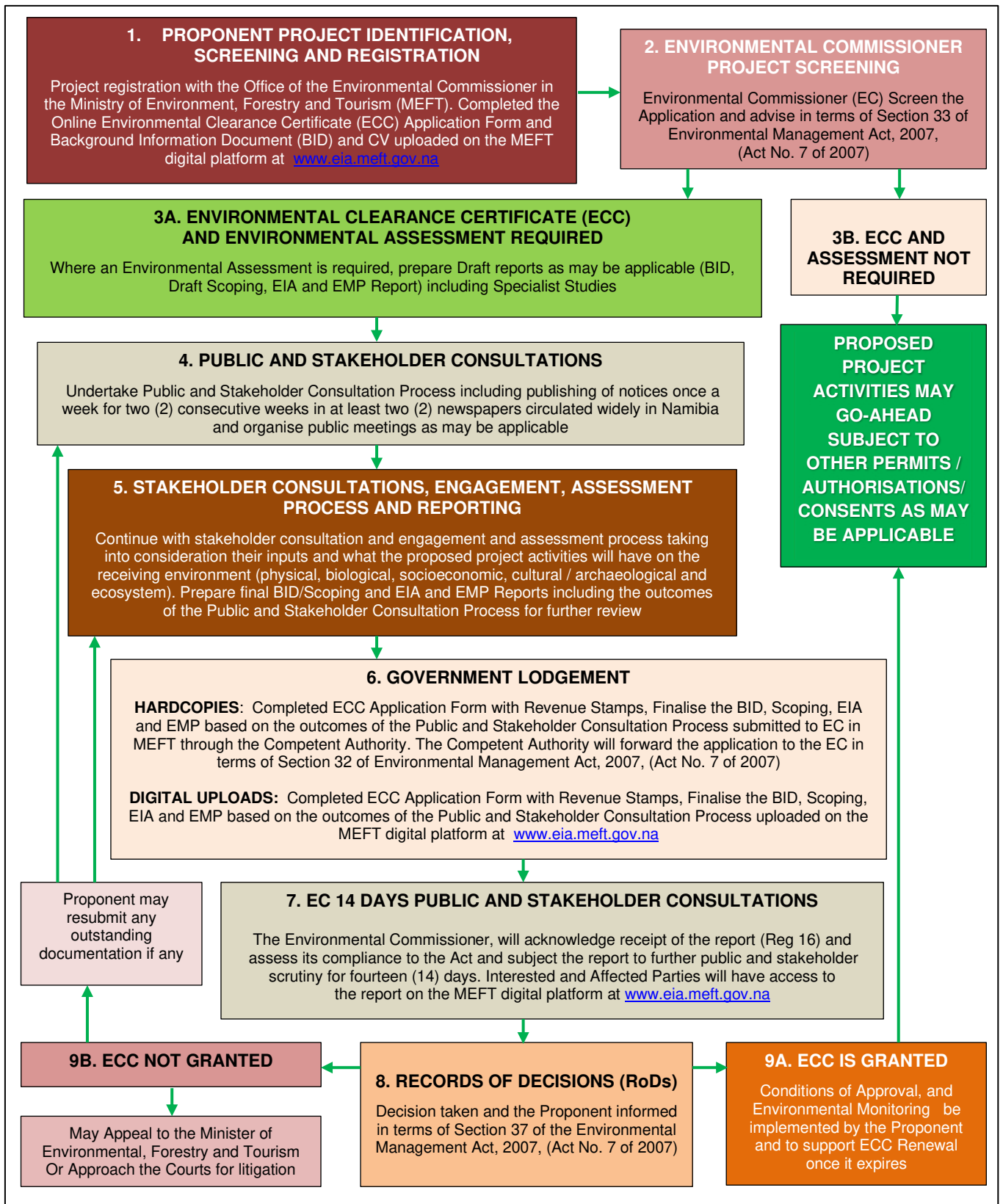


Figure 1.5: RBS Schematic presentation of Namibia's Environmental Assessment Procedure.

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 activities as well as all the plans, maps, EPL 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 / prospecting activities.
- ❖ 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 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 activities (exploration / prospecting programme) is to search for potential economic minerals resources (Base and Rare Metals, Industrial Minerals, and Precious Metals groups) within the EPL area. The scope of the required field-based support and logistical activities will depend on the scale of proposed exploration activities to be undertaken.

The proposed exploration activities will be supported by existing tracks and campsites / farmstead as well as existing accommodation in the area. In the absence of existing tracks, the field team will create such new tracks with the permission of the land owner/s and depending on the scale of exploration. In the absence of existing suitable campsite / farmstead, temporary camp will be setup at suitable locations within the EPL area in line with the EMP provisions. The size of the exploration camp will be of very limited footprints during the exploration phase but may be expanded for the test mining and mine development phases in an event of a discovery of economic minerals resources.

2.2 Logistical Arrangements

Before any site visit, permission will be requested from the land owner/s and an access agreement could be negotiated with the land owner/s if the Proponent want to continue with further field-based activities such as detailed mapping, trenching or drilling activities as may be required. It is the responsibility of the Proponent to negotiate access agreements with the land owners and to make sure that all security measures to protect the farmland and interests of the land owner/s are always observed and as may be agreed with the individual land owners.

Even if the mapping or drilling finds some indications of mineralisation, it takes many years (5 - 10 years or even more) to move an exploration / prospecting project to a mining stage and so many technical inputs including technology, markets, costs environmental liabilities and cost of services such water, roads and energy will need to form part of the project developmental stages, starting with the scoping, prefeasibility and then feasibility phases.

If a project is feasible, then the company will need to apply for a separate Mining License (ML) from the Government and a land owner agreement is required and mandatory before a Mining License is granted by Mining Commissioner. A Mining License application requires separate detailed site-specific studies of the local area of interest to have been conducted as part of the feasibility study. Environmental Impact Assessment (EIA), Environmental Management Plan (EMP) and specialist studies such as water, fauna, flora, dust, noise for mining operations as well as linear structures such as water, roads and powerline form part of the feasibility study to be conducted before such a project can even be considered for review by the Government.

2.3 Initial Exploration (Desktop Work)

Initial desktop exploration activities (without field-work being conducted) lasting for up to six (6) months or more will include the following:

- (i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data.
- (ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data.
- (iii) Purchase and analysis of existing Government aerial hyperspectral, and.
- (iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets.

2.4 Regional Reconnaissance Field-Based Exploration Activities

Regional reconnaissance field-based exploration activities lasting between six (6) months to year will involve the following:

- (i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis.
- (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.
- (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.
- (iv) Limited field-based support and logistical activities lasting between one (1) to two (2) days, and.
- (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.

2.5 Initial Local Field-Based Exploration Activities

Initial local field-based exploration activities lasting between 1 – 2 years will include the following:

- (i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities.
- (ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken.
- (iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above).
- (iv) Possible Trenching (Subject to the outcomes of i - iii above).
- (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), and.
- (vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets.

2.6 Detailed Local Field-Based Exploration Activities

Detailed local field-based exploration activities that can take many years will include the following:

- (i) Access preparation and related logistics to support activities.
- (ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities.
- (iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken.
- (iv) Ground geophysical survey, trenching, drilling, and sampling (Subject to the positive outcomes of i and ii above).

2.7 Prefeasibility and Feasibility Studies

The preparation of the prefeasibility and feasibility studies forms the final stages of the minerals exploration process and can take many years to complete and prove that a specific mineral deposit is viable for developing a mine. A positive feasibility study outcome is required to support an application for a Mining License (ML). The following is summary of the activities that will form part of a prefeasibility and or feasibility study:

- (i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping.
- (ii) Detailed drilling and bulk sampling and testing for ore reserve calculations.
- (iii) Geotechnical studies for mine design.
- (iv) Mine planning and designs including all supporting infrastructures (water, energy, and access) and test mining activities.
- (v) EIA and EMP to support the ECC for mining operations, and.
- (vi) Preparation of feasibility report and application for Mining License if the feasibility study proves positive and supportive to develop a mining project.

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/consents/compliances applicable to the proposed exploration activities 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 authority 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 proposed 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 20,000m³), 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 Forest Regulations and Permit Requirements

All forms of trees and wood harvesting anywhere in Namibia, is governed by the Forest Act, 2001, (Act No. 12 of 2001). and its Regulations, 2015. The Act also governs activities which take place in classified forests, namely State Forests, Forestry Management Areas and Community Forests as well as non-classified forest areas. This Act is administered by the Directorate of Forestry (DoF) in the Ministry of Environment, Forestry and Tourism (MEFT).

3.2.5 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.

3.2.6 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) refers 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.

3.2.7 Other Applicable National Legislations

Other Important legislative instruments applicable to the proposed exploration operations in the EPL 7875 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 proposed exploration in the EPL 7875.

Table 3.1: Legislation relevant to the proposed exploration operations in the EPL 7875.

LAW	SUMMARY DESCRIPTION
<p>Constitution of the Republic of Namibia, 1990</p>	<p>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."</p>
<p>Minerals (Prospecting and Mining) Act, 1992 Ministry of Mines and Energy (MME)</p>	<p>The Minerals Act governs minerals prospecting and mining. The Act <i>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.</i></p>
<p>Environmental Management Act (2007) - Ministry of Environment, Forestry and Tourism (MEFT)</p>	<p>The purpose of the Act is <i>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.</i> 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.</p>
<p>Water Act 54 of 1956 Minister of Agriculture, Water and Land reform (MAWLR)</p>	<p>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 20,000m³), 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.</p> <p>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.</p>
<p><i>Forest Act 12 of 2001</i> - Minister of Environment, Forestry and Tourism (MEFT)</p>	<p>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.</p> <p>Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove:</p> <p>(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</p> <p>(b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse.</p> <p>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.</p>
<p>Hazardous Substance Ordinance 14 of 1974 Ministry of Health and Social Services</p>	<p>Provisions for hazardous waste are amended in this act as it provides "<i>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</i>"</p>

Table 3.1: *Cont.*

<p>Agricultural (Commercial) Land Reform Act, 1995, Act No.6 of 1995 Ministry of Agriculture, Water and Land Reform (MAWLR)</p>	<p>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.</p>
<p>Explosives Act 26 of 1956 (as amended in SA to April 1978) - Ministry Home Affairs, Immigration, Safety and Security (MHAISS)</p>	<p>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.</p>
<p>Atmospheric Pollution Prevention Ordinance 11 of 1976. Ministry of Health and Social Services (MHSS)</p>	<p>This regulation sets out principles for <i>the prevention of the pollution of the atmosphere and for matters incidental thereto</i>. 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.</p>
<p>The Nature Conservation Ordinance, Ordinance 4 of 1975, Ministry of Environment, Forestry and Tourism (MEFT)</p>	<p>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.</p>
<p>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)</p>	<p>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 <i>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</i> under which provisions are made in chapter 4. <i>Chapter 5 of the act improvises on the protection of employees from unfair labour practice.</i></p>
<p>Petroleum Products and Energy Act 13 of 1990 Ministry of Mines and Energy (MME)</p>	<p>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.</p> <p>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.</p> <p>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.</p>
<p>National Heritage Act 27 of 2004 Ministry of Education, Arts and Culture (MEAC)</p>	<p>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</p>

3.3 Key Regulators / Competent Authorities

Government agencies with permits responsibilities over the proposed project activities are shown in Tables 3.2 and 3.3. Table 3.3 shows the relevant permits / licenses required with respect to the proposed minerals exploration activities.

Table 3.2: Government agencies regulating environmental protection in Namibia.

AUTHORITY	TYPE OF AUTHORISATION
Office of the Environmental Commissioner (OEC), Ministry of Environment, Forestry and Tourism	Issue of Environmental Clearance Certificate (ECC) based on the review of the Environmental Assessments (EA) Reports prepared in accordance with the Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012
Directorate of Forestry Ministry of Environment, Forestry and Tourism	<p>Issues the following permits under the Forest Act (Act 12 of 2001) and the Regulations, 2015:</p> <ul style="list-style-type: none"> ❖ A Harvesting Permit is required for any tree cutting and/or harvesting of wood in an area greater than 15 hectares per annum as stated under Section 22 (1), 23 (1), 24 (2and3) and 33 (1and2) of the Forest Act (Act 12 of 2001). The permit is issued by a Licensing officer, and stipulates conditions of the harvesting on the reverse side of the permit. Inspection of an area to be harvested is done before the permit is issued, and when an application for renewal is made every 3 months. ❖ A Transport Permit is required to convey any wood or wood products (e.g., droppers, planks, charcoal, and firewood). It is obtainable from any Forestry Office, and is valid for 7 days. ❖ An Export Permit is required to send any wood or wood products outside Namibia. It is obtainable from any Forestry Office, and is valid for 7 days. ❖ A Marketing permit is required to enable the producer to sell his/her products to any other party. The permit is valid for 3 months in commercial areas while in communal areas the permit is valid for 1 month only. <p>The National Botanical Research Institute's (NBRI) mandate is to study the flora and vegetation of Namibia, to promote the understanding, conservation and sustainable use of Namibia's plants for the benefit of all.</p>
Ministry of Mines and Energy (MME)	Competent Authority overseeing all matters related to petroleum exploration and production activities in Namibia. MME is responsible for issuing of all types of Minerals Licenses / Authorisations.
Ministry of Agriculture, Water and Land Reform	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.
Regional Councils	Overall responsibility of management of regional land resources and communal land surface user rights through the Communal Land Boards as may be required by the proposed project.
Traditional Authorities	Traditional authorities in Namibia are the custodians of State land falling within authority of the respective tribal land. With the approval of the Regional Land Boards, traditional authorities through the local structures of headmen and headwomen as well as Village Development Communities (VDCs) are responsible for allocation of communal land surface user rights to the local communities within a given tribal (Communal Area) jurisdiction.

Table 3.3: Summary of the permit register applicable to the proposed minerals exploration activities.

ACTIVITY	APPLICABLE LEGISLATION	PERMITTING AUTHORITY	ASSESSMENT RESULTS
Exclusive Prospecting License (EPL)	Petroleum (Exploration and Production) Act 1991 (Act 2 of 1991) As Amended	Ministry of Mines and Energy (MME)	Issued by MME
Environmental Clearance Certificate (ECC)	Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012	Ministry of Environment, Forestry and Tourism (MEFT)	Proponent to Apply for ECC for mineral exploration activities
Land rights covering the proposed project location	Agricultural (Commercial) Land Reform Act, Act 6 of 1995	Private Commercial Farmland	Proposed exploration does not require any Lease Agreement. Access Agreements and Consents shall always be concluded with individual land owners as applicable
Abstraction of water	Water Resources Management Act, 2004 (No. 284 of 2004).	Ministry of Agriculture, Water and Land Reform (MAWLR)	Freshwater Abstraction and Waste Water Discharge Permits to be Applied for once required.
Discharge of effluents or construction of effluent facility			
Removal, disturbances, or destruction of bird eggs	Nature Conservation Ordinance 4, 1975.	Ministry of Environment, Forestry and Tourism (MEFT)	No removals of protected species or mature trees anticipated during the early stages of exploration. Land clearance might be required during the trenching and drilling operation that might form part of the prefeasibility and feasibility stages and if economic resources are discovered and the Proponent decide to apply for a Mining License. The creation of new access shall be undertaken with the consent of the land owners and the physical land clearance must always be done in line with the provisions of the Forest Act, 2001, Act No. 12 of 2001 and the Regulations 2015
Removal, disturbance of protected plants.			
Removal, harvesting, destruction of indigenous trees, bushes, or plants	Forest Act, 2001, Act No. 12 of 2001 and Regulations (2015)		

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 3.4) while the drinking water quality comparative guideline values are shown in Table 3.5. 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 3.6). Noise abatement measures must target to achieve either the levels shown in Table 3.7 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

Table 3.4: 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 and 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 3.5: 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 2 nd 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		
Beryllium	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 ₂ S	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 ₂ O 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		
Titanium	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 3.6: 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 3.7: Noise emission levels (MIGA /IFC).

	Maximum Allowable Leq (hourly), in dB(A)	
	Day time (07:00 – 22:00)	Night time (22:00 – 07:00)
Receptor		
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 EPL 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 operations.

4. SUMMARY OF NATURAL ENVIRONMENT

4.1 Regional Climate

Hardap Region is located in a semi-arid area. Throughout the year there is almost no rainfall, however, could vary from 50mm to 300mm decreasing from the east towards the west. The region has vast differences in temperature, which can drop below freezing point in winter and increase to above 40°C in summer. The average annual temperature is 21.8°C. The warmest month of the year is December, with an average of 26.0 °C. The driest month is July and rainfall reaches its peak, with an average of 65mm in February (climate data.org).

In the absence of a weather station in the area climate data of which is the nearest town Tsumispark, has been used. Tsumispark has a desert climate and during the year, there is virtually no rainfall in a year, the rainfall is 242 mm. The average annual temperature is 20.9 °C where the warmest month of the year is December, with an average temperature of 26.0 °C. July is the coldest month of the year (Fig. 4.1 and climate data.org).

The prevailing wind is in the south-eastern direction, with the speed averaging to approximately 1.6 meters per second (mps) as shown in Fig. 4.2.

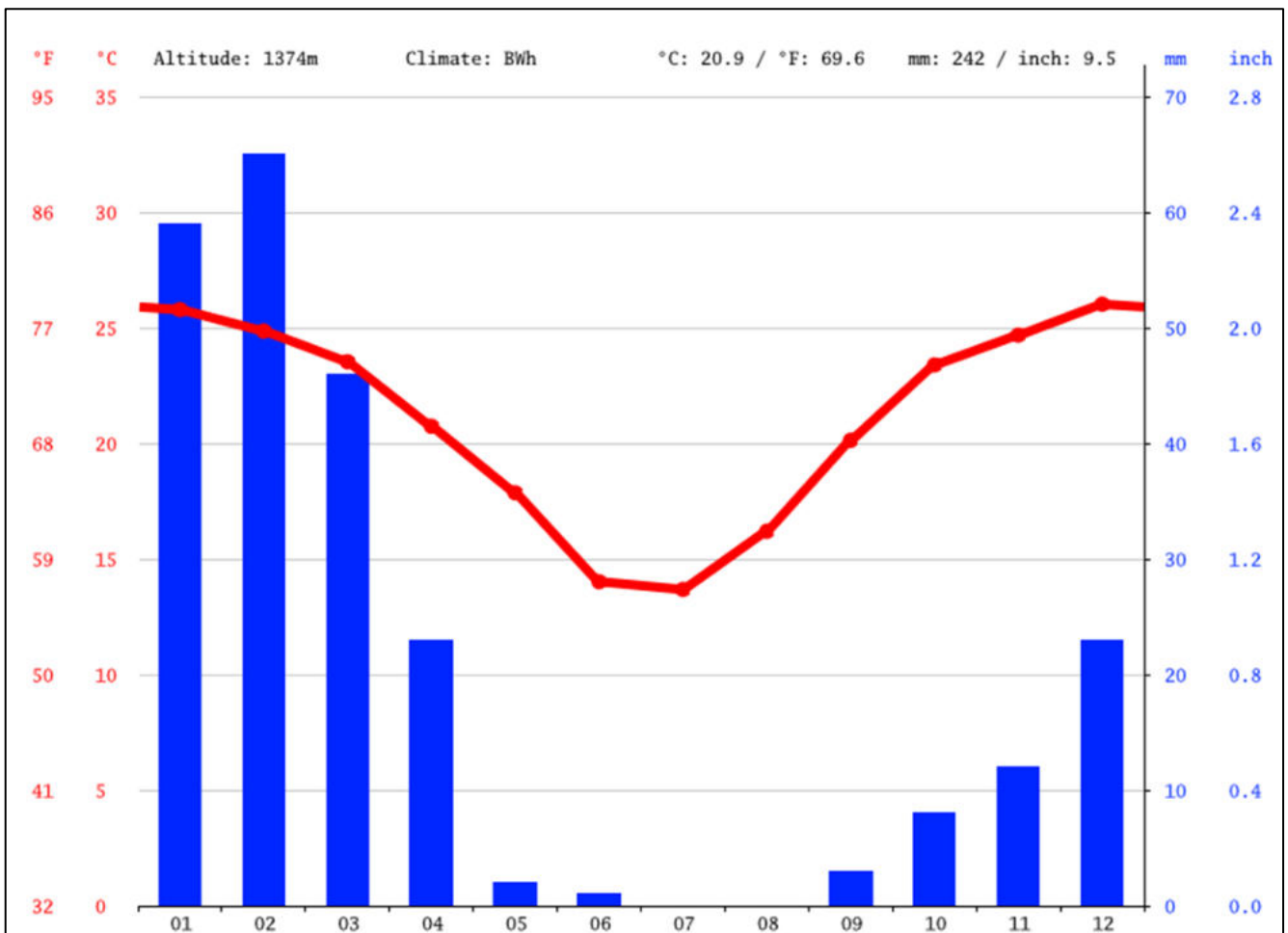


Figure 4.1: Average climate of Tsumispark (Blue bars indicate the average rainfall patterns and red line indicates temperature variation over the year (Source: climate data.org).

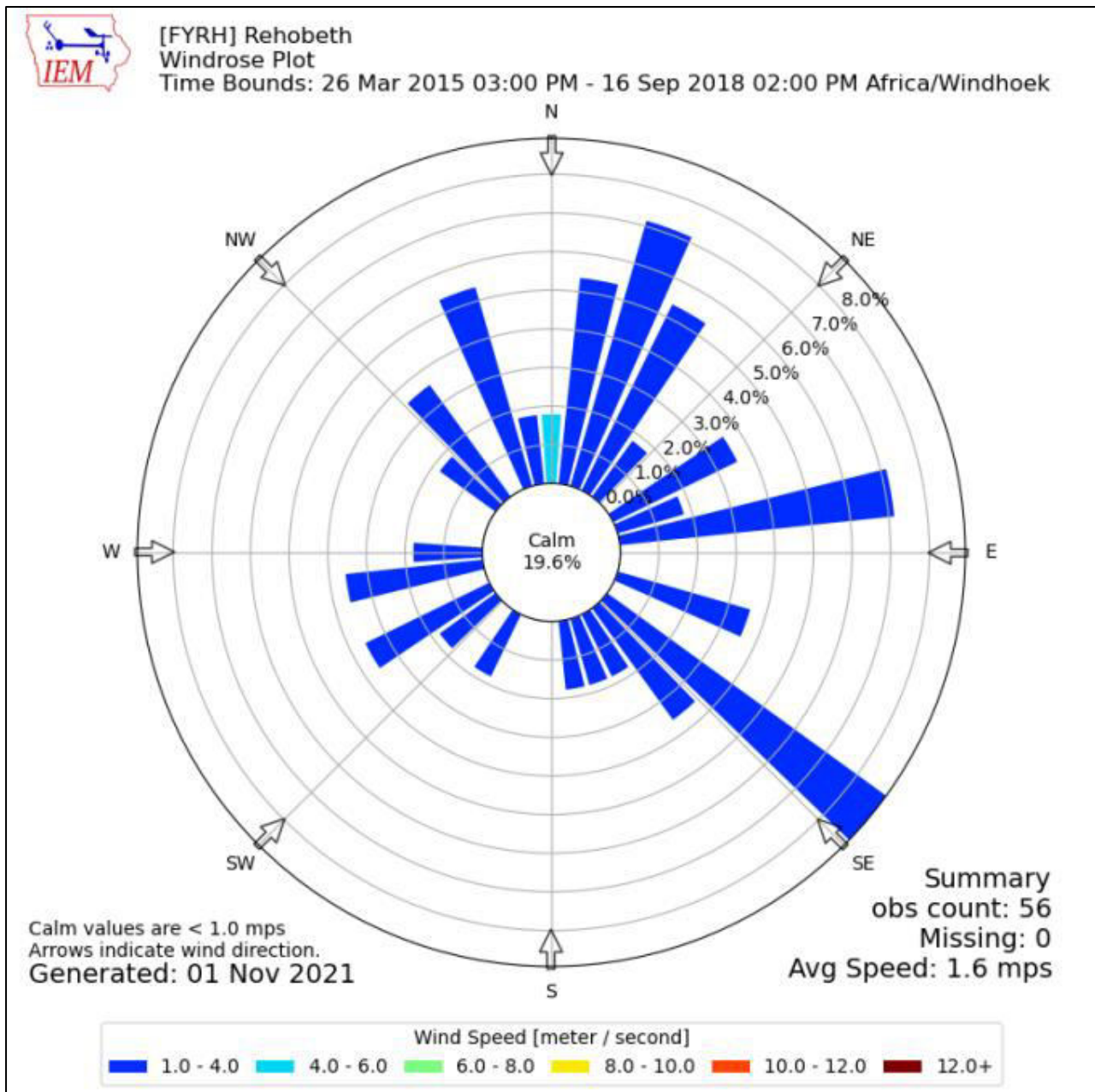


Figure 4.2: Average wind speed in Rehoboth situated, north of the EPL 7875 area (IEM, 2021).

4.2 Topography and Land Use

4.2.1 Topographic Setting

The general topography is very rugged and comprises topographic high areas characterised by dendritic ephemeral rivers network linked to the local major Ephemeral Rivers. Ephemeral Rivers are key habitats and are a vital link to the local ecosystems. Topography around the EPL area average around 1350 mams to 1400 mams (Fig. 4.3).

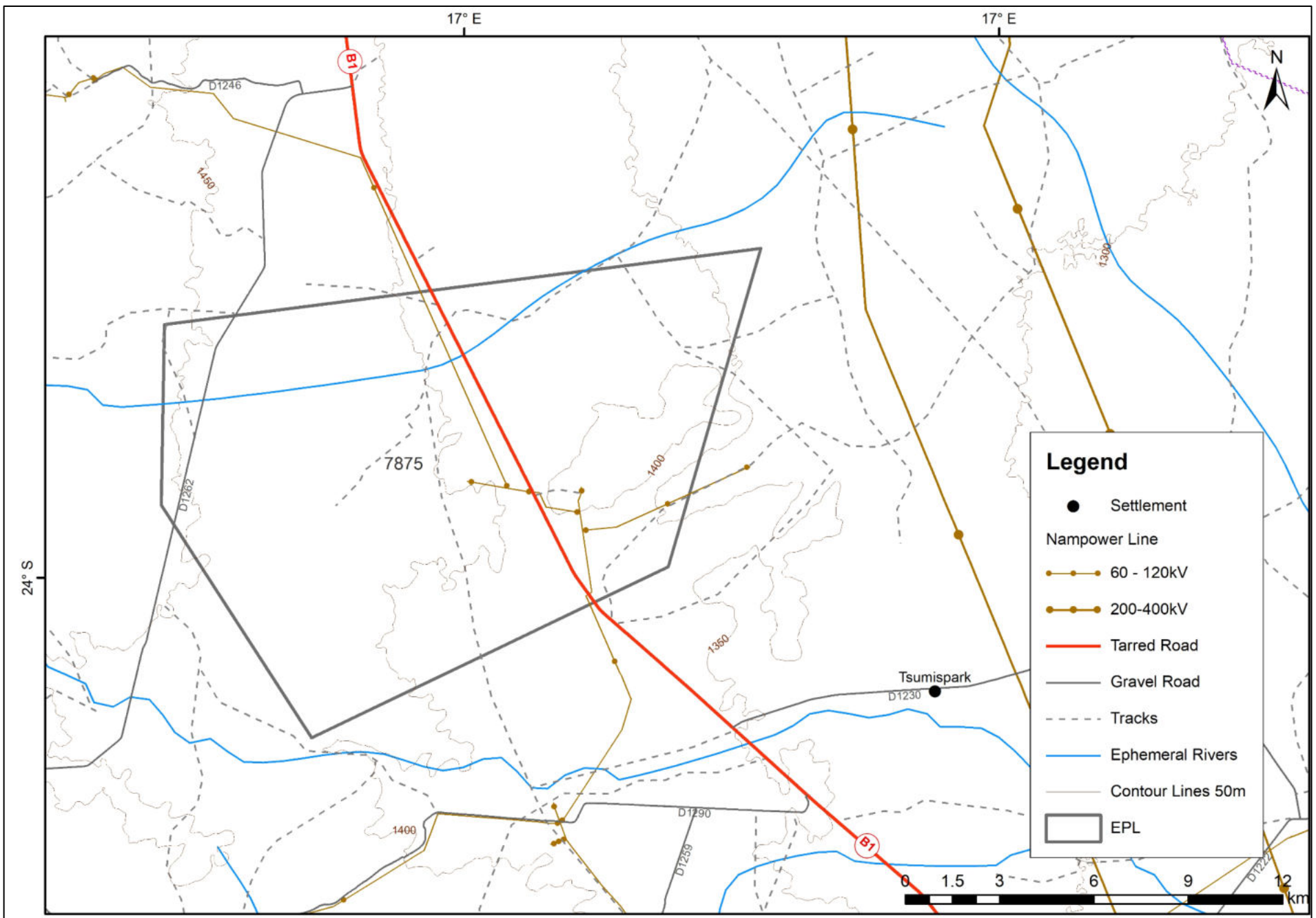


Figure 4.3: General topographic settings around the EPL 7875 area.

4.2.2 Regional and Local Land Use

4.2.2.1 Overview

The land uses of the EPL area and surrounding general area is mainly centred on commercial agriculture including cattle, small stock, and game farming linked to tourism and trophy hunting operations (Fig. 4.4). Other land use activities found in the general surrounding areas includes: agriculture, minerals exploration and growing tourism activities.

Irrigated crop farming operations are also increasingly being adopted despite limited water supply challenges in the local areas. Bush thickening or encroachment is viewed as an economic problem in the general area

4.2.2.2 Agriculture

As an important cattle, game, and small stock (goats and sheep) communal farming area and consequently a source of employment and livelihood as well as renewed interest from a tourism point of view, the importance of the local area is invaluable. The surrounding EPL area falls within the long-established commercial and resettlement farming communities but highly venerable to climate change due to its arid environment, recurrent drought, and desertification.

During prolonged drought periods, the situation has forced pastoral farmers to find temporary homage between these mountains as they still contain grazing grass during drought. The farmers are further even forced to climb between the rocks and hills to harvest grass for their animals if it becomes difficult for the animals to climb the mountains.

The carrying capacity for the general area is 10-20kg/ha (Mendelsohn et al. 2002) or 12-15LAU/ha (van der Merwe 1983) and the risk of farming is viewed as relatively high. Small stock farming is the dominant farming activity in the local area with between 70-80% of stock farmed with being sheep and 20-30% goats and cattle, respectively (van der Merwe 1983). The stock density is estimated at <3sheep/km² (1.5% of total sheep in Namibia) and <1cattle/km² (1.3% of total cattle in Namibia) (van der Merwe 1983).

4.2.2.3 Conservation and Tourism

There are numerous existing tourism ventures in the area with the tourism potential viewed as relatively high (Mendelsohn et al. 2002).

The land use of the local area dominated by commercial cattle and small stock agriculture, conservation, tourism and hospitality centred around game farming, and minerals exploration and mining. The game farms are also important conservation areas for endemic and protected flora and act as sanctuaries for endangered faunal species.

The game farms offer visitors the opportunity to be close to nature with a variety of tailor-made tourism products such game viewing, trails and hunting activities. Bush thickening or encroachment is viewed as an economic problem in the general area. The EPL area is not part of the communal or commercial conservancy system.

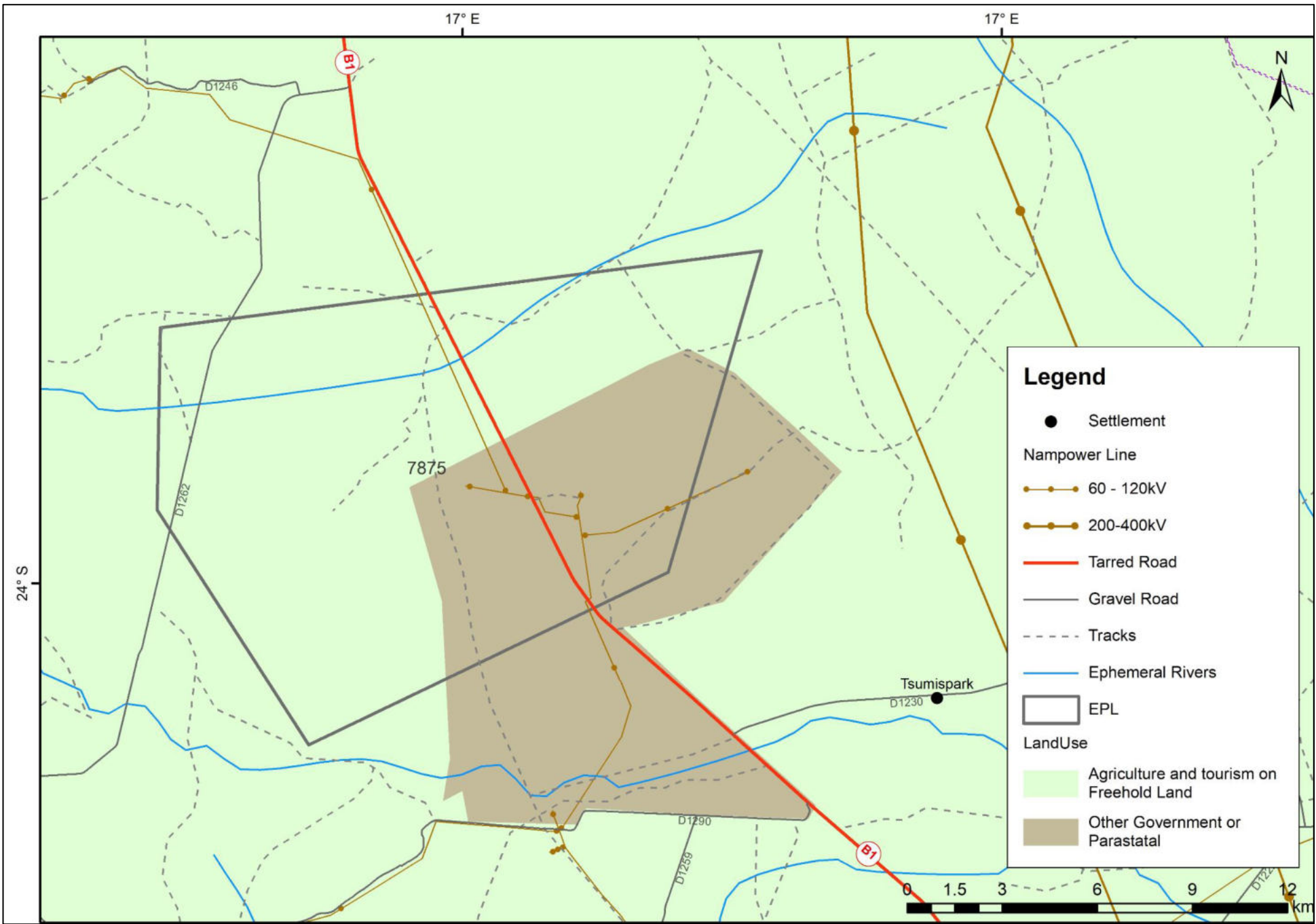


Figure 4.4: Overview of the local land use and ownership.

4.3 Fauna and Flora Diversity

4.3.1 General Biodiversity Overview

It is estimated that at least 77 reptile, 9 amphibian, 73 mammal and 209 bird species (breeding residents) are known to or expected to occur in the general area of which a high proportion are endemics. The EPL area falls within the greater Kalahari Biome characterised by Acacia woodlands and classified by Giess (1971) as Mixed Tree & Shrub Savannah (Southern Kalahari). The local vegetation cover comprises Nama-Karoo and Acacia Hereroensis (Fig. 4.5).

4.3.2 Reptiles

The 77 species expected to occur in the general area consist of at least 34 snakes (3 Blind snakes, 2 Thread snakes, 1 Python, 1 Burrowing Asp, 2 Quill Snouted and 25 typical snakes) of which 9 species (26.5%) are endemic and 1 species vulnerable/protected game, 3 tortoises (100% vulnerable and protected game), 1 terrapin, 2 worm lizard, 18 lizards of which 6 species classified as endemic (33.3% endemic), 2 plated lizards, 1 girdled lizard (endemic), 1 monitor (vulnerable/protected game), 3 agamas (1 endemic), 2 chameleon and 10 geckos of which 8 species classified as endemic (i.e. 80% endemic).

Endemic reptile species known and/or expected to occur in the general area make up 26.5% of the reptiles from the general area and although not as high as endemism elsewhere – for example the western escarpment areas of Namibia – still makes up a large portion of the reptiles. The reptiles of greatest concern are probably the tortoises – *Stigmochelys (Geochelone) pardalis*, *Psammobates oculiferus* and *Psammobates tentorius veroxii* which are often consumed by humans; *Python 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 species. Other important species would be the 3 Blind snakes (*Rhinotyphlops* species of which 2 species are endemic to the area) and 2 Thread snakes (*Leptotyphlops* species of which 1 species is endemic species) which could be associated with the sandier soils.

4.3.3 Amphibians

At least 9 species of amphibians can occur in suitable habitat in the general area. The area is under represented, with 2 toads and 1 species each for kassina, rubber, puddle, caco, bullfrog, sand and platanna known and/or expected (i.e. potentially could be found in the area) to occur in the area. Of these, 2 species are endemic (*Poyntonophrynus (Bufo) hoeschi* and *Phrynomantis annectens*) (Griffin 1998b) and 1 species classified as near threatened due to habitat loss and development (*Pyxicephalus adspersus*) (Du Preez and Carruthers 2009) – i.e. 33.3% of amphibians of conservation value from the general area. *Pyxicephalus adspersus* is more common in northern Namibia where their numbers are also declining due to overutilization as food by humans.

The most important species are the endemic *Poyntonophrynus (Bufo) hoeschi* and *Phrynomantis annectens* although they are widespread in Namibia and not exclusively associated with the area in particular. Temporary pools in the ephemeral local Ephemeral Rivers are viewed as potential amphibian habitat in the general area. The minor ephemeral which flows through the EPL area could also serve as potential habitat after rain showers in the immediate area. Other potential habitats in the area include the local farm reservoirs and earth dams although the latter are also dependant on localised showers and temporary of nature.

Of the 9 species of amphibians expected to occur in the general area, 33.3% (3 species) are of conservation value with 2 species being endemic (*Poyntonophrynus (Bufo) hoeschi* and *Phrynomantis annectens*) (Griffin 1998b) and 1 species (*Pyxicephalus adspersus*) viewed as near threatened (Du Preez and Carruthers 2009). The importance of the local ephemeral Rivers, which falls within the EPL area, for amphibians after localised showers is currently unknown.

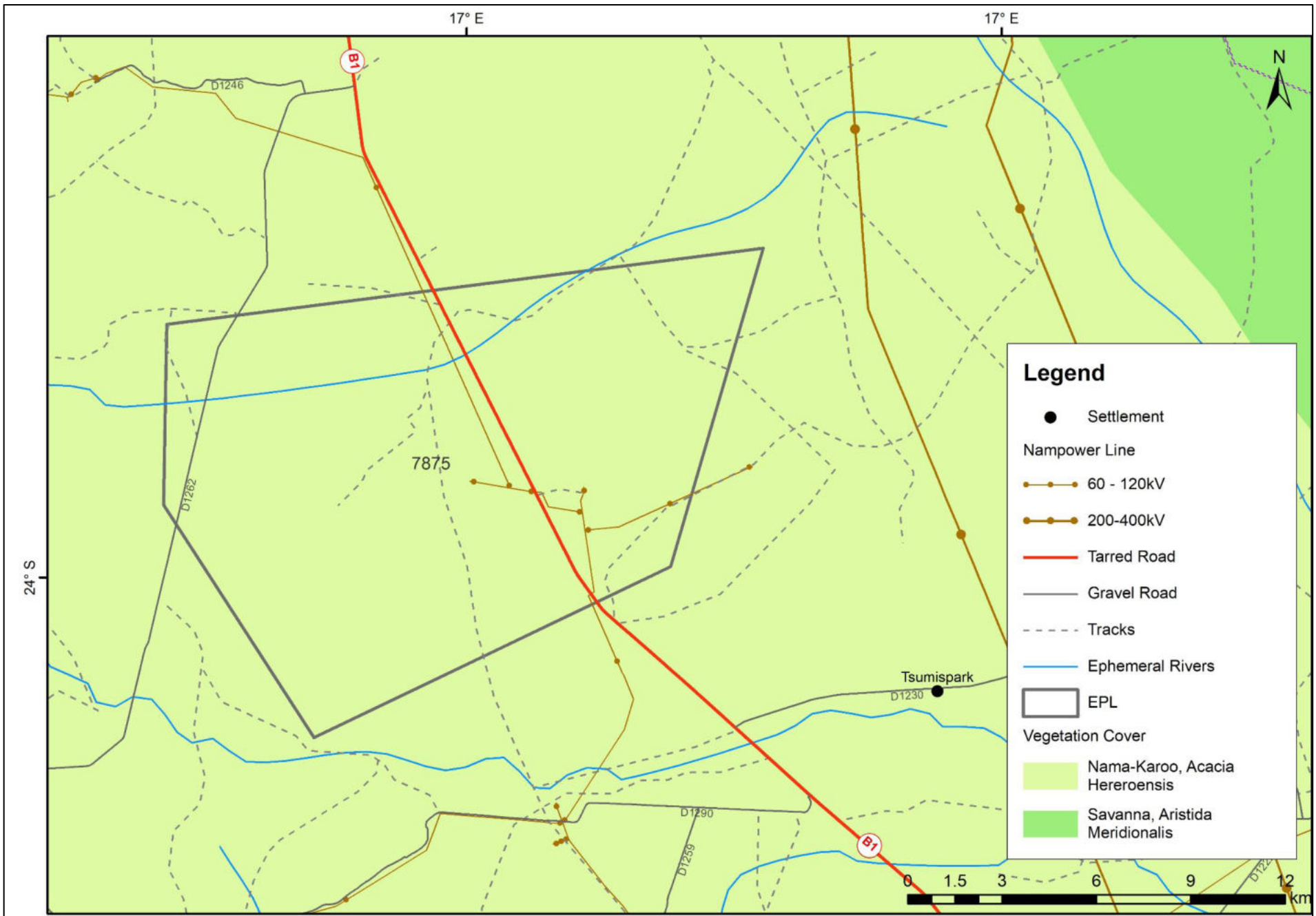


Figure 4.5: General overview of the vegetation map of the EPL area.

4.3.4 Mammals

Of the 73 species of mammals expected to occur in the general surrounding EPL area, 11% are endemic and 38% are classified under international conservation legislation. At most important groups are rodents (34%-16% endemic), carnivores (23%-6% endemic) and bats (15% - 9% endemic). The most important species from the general area, other than the endemic species, are probably all those classified as rare (e.g., Namibian Wing-gland Bat, Hedgehog and Black-footed Cat), endangered (Brown Hyena and Hartmann's Mountain Zebra) and vulnerable (e.g., Pangolin) under international legislation as well as the Black-footed Cat which as a carnivore suffers from indiscriminate persecution throughout its range.

Mammals, especially small mammals (rodents and bats) and carnivores are well represented in the area. The little-known bats are probably underrepresented in the area due to a lack of surveying form the area. Carnivores are often also indiscriminately killed especially in a rural sheep farming community such as that surrounding areas with the Black-footed Cat probably one of the most threatened carnivore species from the area.

4.3.5 Birds

The high proportion of endemics species of about 10 of the 14 endemics to Namibia (i.e., 71% of all endemics species) are expected to occur in the general surrounding EPL area and underscore the importance of this area. Furthermore 21% are classified as southern African endemics bird species (or 6% of all the birds expected) and 79% are classified as southern African near-endemics species (or 23% of all the birds expected). The most important species known/expected, although not exclusively associated with the EPL area are viewed as Monteiros and Damara Hornbills, Rüppells Parrot, Rosy-faced Lovebird and Rockrunner, all of which breed in the general area, but not exclusively associated with the area.

4.3.6 Trees/shrubs

It is estimated that at least 60-82 species of larger trees and shrubs (>1m) – Coats Palgrave 1983 [81 sp.], Curtis and Mannheimer 2005 [65 sp.], Mannheimer and Curtis 2009 [82 sp.], Van Wyk and Van Wyk 1997 [60 sp.] – occur in the general EPL and surrounding areas.

Twenty-six (31.7%) species of larger trees and shrubs have some kind of protected status in the general area. Five species (6.1%) are endemic, 3 species (3.7%) near-endemic, 15 species (18.3%) protected by Forestry laws, 3 species (3.7%) protected by Nature Conservation laws with 3 species (3.7%) classified as CITES II species.

Commiphora dinteri (endemic), *Cyphostemma bainesii* (endemic under the Nature Conservation Ordinance No. 4 of 1975), *Cyphostemma currorii* (Nature Conservation Ordinance No. 4 of 1975) and *Heteromorpha papillosa* (endemic) are probably the trees/shrubs most sensitive that are expected to occur in the general area.

4.3.7 Grass

It is estimated that up to 100 grasses – 10 to 89 species – (Burke 2007 [10 sp.], Van Rooyen 2001 [35 sp.], Müller 2007 [89 sp.], Müller 1984 [38 sp.], Van Oudshoorn 1999 [50 sp.]) occur in the general EPL and surrounding area. Up to 100 grasses are expected in the general area of which 4 species are viewed as endemic (*Eragrostis omahekensis*, *Eragrostis scopelophila*, *Pennisetum foermeranum* and *Setaria finite*). *Pennisetum foermeranum* is associated with rocky mountainous terrain and consequently only expected in such suitable habitat. *Eragrostis omahekensis* is virtually only found on disturbed soils – e.g. close to watering points – while *Eragrostis scopelophila* is associated with mountainous areas under trees and shrubs. The endemic *Setaria finite* is associated with drainage lines in the general area; never very common and probably the grass species most likely to be affected most by development in the area.

4.3.8 Other Flora Species

Aloes are protected throughout Namibia with 2 other aloe species not included in the above-mentioned table, but which also occur in the general area, also viewed as important and include *Aloe hereroensis* and *A. zebrina* (Rothmann 2004).

Many endemic *Commiphora* species are found throughout Namibia with Steyn (2003) indicating that *Commiphora angolensis* and *C. Crenato-serrata* potentially also occurring in the general area.

Other species with commercial potential that could occur in the general area include *Harpagophytum procumbens* (Devil's claw) – harvested for medicinal purposes and often over-exploited – *Citrullus lanatus* (Tsamma melon) – associated with sandy soils and *Terfezia pfeilii* (N'abba or Kalahari truffle) which potentially has a huge economic benefit (Mendelsohn et al. 2002, Mannheimer and Jacobson 1998).

4.3.9 Habitats, Fauna and Flora Conclusions

All developments have potential negative environmental consequences, identifying the most important faunal and flora species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development. The following is the summary of the key habitats that have been identified:

- ❖ **Hills / topographically high areas:** Rocky areas generally have high biodiversity and consequently viewed as important habitat for all vertebrate fauna and flora.
- ❖ **Ephemeral drainage lines:** The various ephemeral drainage lines are important habitat to larger trees, especially *Acacia erioloba* (protected), *Euclea pseudebenus* (protected), *Faidherbia albida* (protected) and *Ziziphus mucronata* (protected), and.
- ❖ **Plains / Topographically low area:** Topographically low areas are also important habitats with *Acacia erioloba*, *Albizia anthelmintica* and *Boscia albitrunca* being found in these areas.

There are various anthropomorphic activities throughout the general EPL area such as existing roads and tracks, land infrastructure and previous excavations activities, etc., and the proposed mineral exploration would have a limited footprint and not be expected to affect the whole EPL area and associated unique amphibians, mammals, reptiles, and flora species negatively. The implementation and monitoring of the mitigation measures as detailed in the EMP Report is likely to lessen the extent of the likely negative impacts.

4.4 Summary of the Socioeconomic Settings

4.4.1 Overview

The Hardap Region comprises the following Constituencies: Aranos, Daweb, Gibeon, Mariental Rural, Mariental Urban, Rehoboth Rural, Rehoboth Urban East and Rehoboth Urban West. The EPL 7875 falls within the Rehoboth Rural Constituency.

Rehoboth Rural constituency had a population of 7,288 in last census undertaken way back in 2011, down from 7,524 compared the census of 2001. Among the settlements in Rehoboth Rural are Klein Aub, Khauxas, and Schlip. As of 2020, the constituency had 4,701 registered voters.

The following is summary of the selected regional and local socioeconomic setting of the Hardap Region, partly covered by the EPL area (National Statistics Agency (NSA) (2016 and 2013):

- ❖ The population of the Hardap Regions is 87186 (2016) with population growth of 1.8 compared to 2011 census data.
- ❖ The exploration area is located in the sparsely populated privately owned commercial farmland.

- ❖ Unemployment rates in Hardap Region is below the national average of 36.9%. Unemployment in Hardap Region stands at 35.2%.
- ❖ The leading main source of income in Hardap Region is wages and salaries (64.2%).
- ❖ The health-care facilities in Hardap Region experience lack of qualified registered nurses and medical doctors.
- ❖ The infrastructure and service provision in the area of proposed project is limited.
- ❖ 17.4% of households in Hardap Region are more than 40km away.
- ❖ About 13% in Hardap Region are more than 50km away to nearest primary school. In comparison to the average in Namibia, there are only 3.6% such households.
- ❖ The crime rates in Hardap are relatively high. Most committed crimes in Hardap Region in 2012/13 were assault, theft, crimen injuria, malicious damage to property.
- ❖ The physical features, characterised by semi-arid adapted biomes, make the land largely unsuitable for agriculture activities and human settlement. People in this area mainly practice small-stock farming with sheep, goats and cattle.
- ❖ The area boasts a well-developed infrastructure base for tourism and has great potential based on the high landscape value linked on the Kalahari Dune Belt.
- ❖ The greatest limiting factors for economic activities are the arid climate and an overall shortage of water, poor soils and rangeland productivity. poor skills base, and.
- ❖ Overall economic growth and development in the project area is slow and thus a capital investment could spin-off the economic development of the surrounding settlements area in the area.

4.4.2 Socioeconomic Conclusions and Recommendations

The development of this project will have very limited socioeconomic contributions to the local area or the Hardap Region. There will be no employment created during the exploration phase. However, if there is a discovery of economic minerals resources that could led to the development of a viable mining project in area this could create limited job opportunities and bring added local benefits and contribute to the national economy through taxes, royalty, and direct investment. The following is the summary of the key actions that the Proponent shall implement as part of enhancing the socioeconomic impacts of the proposed project:

- ❖ Stipulate that local resident should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy. However, due to low skills levels of the local population, it is likely that most skilled positions would be filled with people from outside the area.
- ❖ The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
- ❖ Ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws.
- ❖ The local authorities, community organisations and community leaders shall be informed on final decisions regarding the project and the potential job opportunities for local people.
- ❖ Stipulate a preference for local contractors in the tender policy. The procurement of services and goods from local entrepreneurs and the engagement of local businesses people should be favoured and promoted provided that it is financially and practically feasible.

- ❖ Undertake a skills audit, develop a database of local businesses that qualify as potential service providers and invite them to the tender process.
- ❖ Scrutinise tender proposals to ensure that minimum wages were included in the costing.
- ❖ Project offers experience and on job skills development, particularly for low or semi-skilled workers. This would raise the workers experience and skills to secure jobs in future.
- ❖ Promising employees could be identified and training and skills development programme could be initiated.
- ❖ The project could organise business partnerships with local entrepreneurs or small SMEs.
- ❖ Service providers to provide opportunities for skills transfer, and.
- ❖ Provide opportunities for employees re-skilling beyond the project closure.

4.5 Ground Components

4.5.1 Regional and Local Geology

The regional geology of the EPL Area fall within the Rehoboth and Sinclair Sequences. Rehoboth Sequence is limited to the area along the southern margin of the Damara Orogen. It overlies the Elim Formation unconformably and is intruded by granitic and basic rocks ranging from approximately 1, 670 to 1, 420 million years in age. The Marienhof Formation most likely to be at the base is followed unconformably by the Billstein Formation. The Gaub Valley Formation occurs further west and is not in contact with either of the other units (Schalk, 1988). According to Schalk, (1988), the Marienhof Formation consists of greyish quartzite and sericitic quartzite which alternate with layers and zones of quartz-sericite phyllite, amygdaloidal basic lava, acid volcanic rocks and rudaceous metasediments that range from coarse boulder conglomerate to gravel-bearing quartzite. In the Billstein Formation, grey quartzite and sericitic phyllite are the dominant rock types. Conglomerate is also present as well as numerous layers of basic lava and some quartz porphyry. Much of the Billstein Formation occurs in thrust wedges of Damaran age and in nappes overlying Damaran rocks (Schalk, 1988).

Locally, characteristic brown quartzite is the main rock type in the Guab Valley Formation but with it are intercalated ferruginous quartzite with heavy mineral laminae, phyllite, thick conglomerates, brownish limestone, calcareous phyllite and many layers of sheared acid and basic igneous rocks (Fig. 4.6). The formation is intruded by a conspicuous basic dyke swarm (Schalk, 1988). Both phyllites and basic lavas in the Marienhof Formation show copper staining on bedding-parallel shear planes and probably warrant careful attention (Mineral Resources of Namibia (1992). Gold may also be present in shear zones. Heavy mineral laminae in the Gaub Valley quartzites suggest that the associated basal conglomerates may be loci for placer mineralisation.

Locally, Sinclair intrusive rocks are found within the proposed EPL Area with much of the eastern part of the EPL area covered by extensive Kalahari Group (Fig. 4.6). The Kalahari Group is a stratigraphic group consists of a fairly monotonous sequence of red sandstone which ranges in thickness from less than 50 metres to greater than 275 metres. The thickest development occurs within a broad NE – SW trending pre-Kalahari valley. The base of the Kalahari Group is locally marked by a conglomeratic zone consisting of angular blocks sandstone, siltstone or dolerite in a red sandstone matrix. The Kalahari-Karoo contact is usually well defined except where the underlying Karoo rock is weathered sandstone. Loose Kalahari Desert Sands forming longitudinal dune belt which are vegetated in some place dominate the eastern landscape of the EPL area. Calcretes and gravel with silty-clays sands can be found in topographically low laying areas.

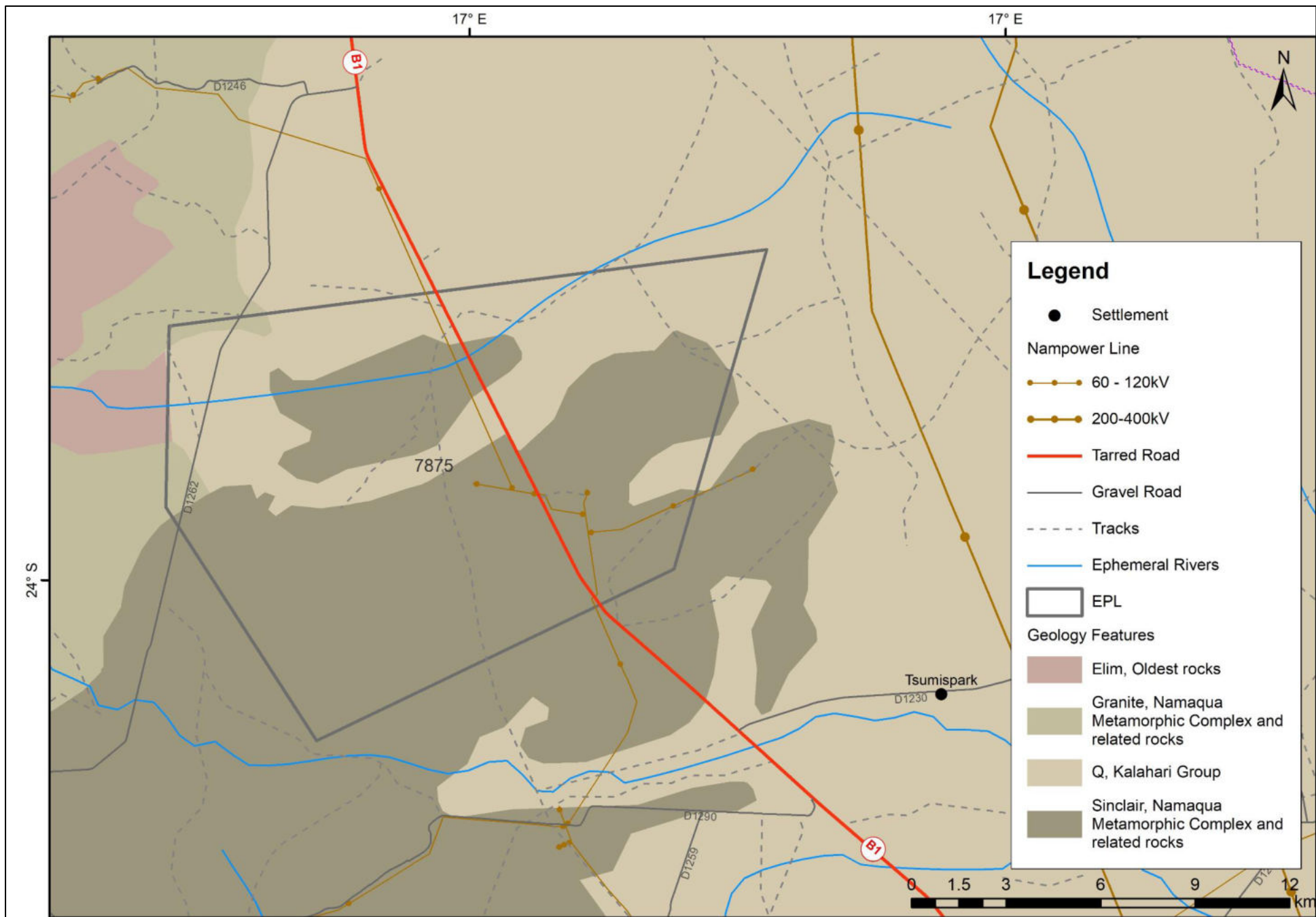


Figure 4.6: General geology of the EPL 7875 area.

4.6 Water

4.6.1 Overview

According to the Department of Water Affairs and Forestry, (2001) and the regional and local geology, the EPL 7875 falls within an area with very limited economic groundwater water resources (aquifers) (Fig. 4.7). 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.

4.6.2 Sources of Water Supply

The source of water supply for the proposed exploration and in particular the proposed 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 programme, 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 EPL 7875.

However, some parts of the EPL area are covered by local fractured, fissured, karstified and porous rocks that seems to have localised moderate groundwater potential.

4.6.3 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 EPL area has limited groundwater resources that are likely to be vulnerable to pollution.

The overall water be vulnerability to pollution as a result of the proposed exploration as well as other existing activities is moderate.

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 EPL area, if economic resources are discovered.

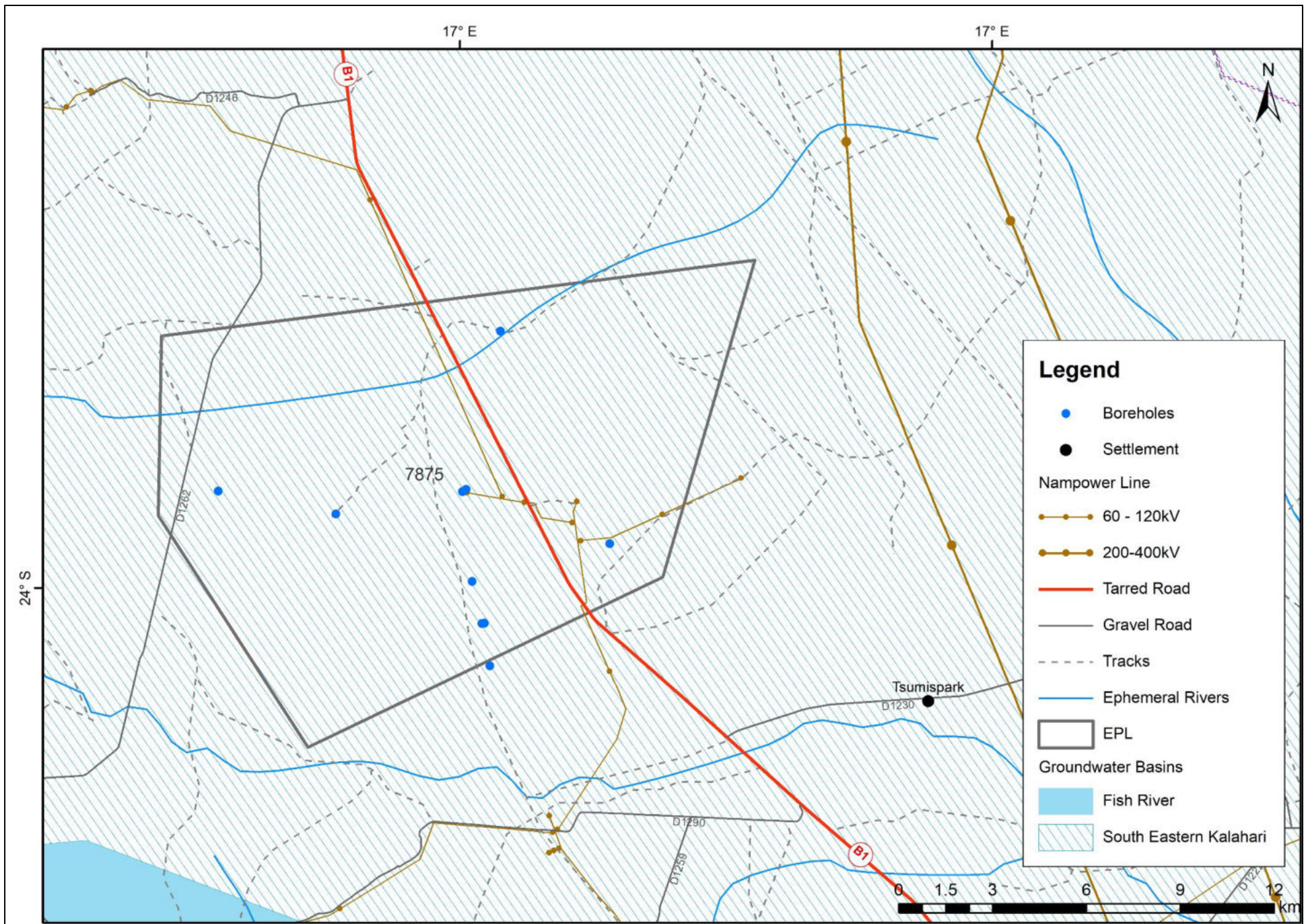


Figure 4.7: Surface and groundwater systems around the EPL 7875 area.

4.7 Archaeology

4.7.1 Regional Archaeological Setting

According to Kinahan (2011), modern humans and their ancestors have lived in Namibia for more than one million years. 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.

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 to our understanding of the African past.

The EPL area falls within a mixture of granitic and surficial (calcrete and sand) terrain areas. The granitic or hard rock terrains has the potential to preserve archaeological remains that could be linked to early human settlements in the area.

4.7.2 Archaeological Conclusions

The central and eastern half of the EPL 7875 area is likely to hold sensitive archaeological sites that may be directly impacted by the proposed exploration activities in the event that archaeological field survey is not carried out.

In the unlikely event that heritage traces are exposed during field-based exploration activities, the expected nature of impact would be in the form of direct physical disturbance or destruction.

4.7.3 Recommendations

It is likely that the area covered by the EPL 7875 holds important archaeological potential as indicated in Fig. 4.2. The expectation for the whole EPL area is therefore:

- (i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite.
- (ii) A high likelihood of late precolonial settlement sites throughout the entire tenement, especially in the vicinity of springs and seepages, and.
- (iii) A high likelihood of early colonial settlement remains relating to the historical occupation of the local areas.

The following is the summary of the recommended actions to be implemented by the Proponent:

- (i) Contractors working on the site should be made aware that under the National Heritage Act any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council.
- (ii) The provisions of the EMP must be implemented and always monitored to protect potential archaeological sites that may occur in the local area, and.
- (iii) Detailed field survey should be carried out when the Proponent / licence holder has identified specific targets for detailed exploration such as trenching or drilling, or before any form of site-specific invasive exploration activities commences.

4.8 Public Consultations

4.8.1 Overview

Public consultation and engagement process are part of the environmental assessment process for this project. According to the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007), a person conducting a public consultation process must give notice to all Interested and Affected Parties (I&AP) of the application which is subjected to public consultation.

The EIA Regulations clearly state that potential interested, and affected parties must be provided with a reasonable opportunity (21 days) to comment on the application under Section 21(6) of the EIA Regulations.

4.8.2 Public Consultation Process

Draft EIA and EMP Reports were made available to the registered stakeholders. In line with the provisions of the regulations, the public notices as shown in Fig 3.1 were published in the local newspapers during the month of **September 2022**. Public Notice were published as follows:

- (i) Public Notice No. 1 published in the Confidante Weekly Newspaper dated 2nd -8th September 2022, and.
- (ii) Public Notice No. 2 published in the New Era daily Newspaper dated Friday 9th September 2022.

The closing date for registration and submission of written objections, comments, inputs to the environmental assessment process was **Friday 22nd September 2022**. The absence of emails and mobile numbers of the land owners, additional efforts were made to contact the land owners via NamPost Letter boxes.

The application for ECC supported by the Final EIA / Scoping and EMP Reports is expected to be submitted to the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism through the Competent Authority, the Mining Commissioner in the Ministry of Mines and Energy during month of **October 2022**.

4.9.3 Stakeholders and Public Inputs


Following the registration of each of the stakeholders shown in Table 4.1, a Background Information Document (BID) was provided. No further inputs were provided by the registered stakeholders. Details of the communications received from the land owners are provided in Annex 3.

Table 4.1: Stakeholder register opened on the 2nd September 2022.

Name of the Stakeholder	Contact Details	Comment / remarks
1. Thomas Rathenam	tirathenam@hotmail.com	None

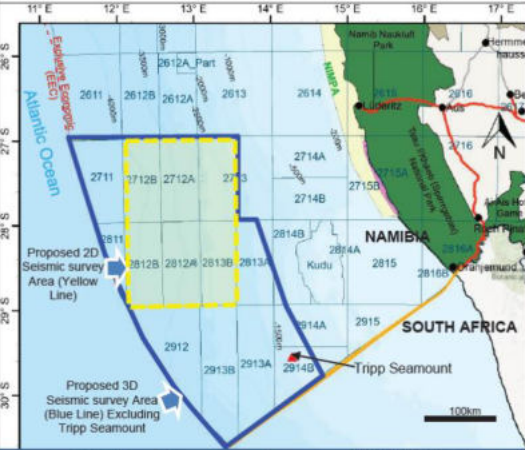
4.9.4 Stakeholders and Public Consultations Recommendations

Overall, in meeting the need for continuous public / stakeholder consultation process, this EIA has recommended that the Proponent shall 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 a on the ECC to be issued.



PUBLIC NOTICE FOR APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC)

TGS Geophysical Company (UK) Limited (the Proponent) - Application for Environmental Clearance Certificate (ECC) for the Proposed Multiclient 3D Seismic Survey Over Blocks 2812A, 2812B, 2813A, 2813B, 2914A, 2814B, 2912, 2913A, 2913B, and, 2914B (Excluding Tripp Seamount) and 2D Seismic Survey Over Blocks 2712A, 2712B, 2713, 2812A, 2812B, and 2813B Orange Basin Offshore Southern Namibia



TGS Geophysical Company (UK) Limited (Proponent) is proposing to conduct 77593km² of 3D Seismic Survey over Blocks 2812A, 2812B, 2813A, 2813B, 2914A, 2814B, 2912, 2913A, 2913B, and, 2914B (Excluding Tripp Seamount) and 32713km² of 2D Seismic Survey over Blocks 2712A, 2712B, 2713, 2812A, 2812B, and 2813B Orange Basin Offshore Southern Namibia. The overall aim of the proposed Multiclient (MC) 3D and 2D seismic surveys is to map the subsurface of the targeted areas as shown on the map and in support of the ongoing petroleum exploration activities in the Orange Basin, following the discovery of oil and gas early this year. Although offshore seismic surveys operations in Namibia began as far back as 1968, a lot more still need to be done to have a full understanding of the petroleum systems of the deep-water offshore Namibia. The datasets from the proposed MC 3D and 2D seismic surveys will provide critical insight into the subsurface geological evolution, offshore basin architecture, depositional, structural history and delineate potential drill-ready subsurface geological structures. Seismic survey data sets are also used in other marine / seafloor related studies and research including Deep Sea Minerals (DSM) exploration and production and the search for natural suitable Carbon Capture and Storage (CCS) terrains as one of the possible options for Climate Change long-term mitigation strategies.

Seismic survey is a key tool that resources companies exploring for hydrocarbons (oil and natural gas) uses to map the rock layers deep into the subsurface. Seismic survey data sets reduce the risk of drilling multiple dry wells, improve the chances for commercial discovery and reduces the environmental impacts of drilling more wells in the search for oil and gas. In offshore environment, the vessel towed airguns (energy source) release compressed air to generate seismic acoustic signals / waves at regular intervals. The controlled generated acoustic waves that travel deep into the earth is reflected by various rock formations of the subsurface below the seafloor, and returns to the surface where it is recorded and measured by receiving devices called hydrophones. By analysing the seismic waves travel times among the various rock formations and the surface, geophysicists, geologists, and petroleum engineers use sophisticated software to create subsurface images/maps showing potential drill-ready subsurface geological structures called reservoirs that may contain commercial hydrocarbons resources. 2D seismic survey is a regional mapping / imaging methodology aimed at de-risking an exploration project by establishing a validated Sedimentary Basin Scale Model of an exploration Area of Interest. 3D Seismic survey on the other hand, is a detailed local mapping / imaging methodology aimed at de-risking an exploration project by establishing a local validated Prospect/ or Lead/s Scale Models of an exploration Area of Interest within a Sedimentary Basin. 3D and 2D Seismic Surveys are acquired on dense and widely spaced survey grids / spacings respectively.

The proposed multiclient 3D and 2D seismic surveys will be conducted using MARPOL / Namibian Maritimes Laws compliant vessels and will adopt international best practices such as seasonality and survey implementation timing, establishment of buffer zones, use of Marine Mammal Observers (MMOs) & Fisheries Liaison Officers (FLOs), use of Passive Acoustic Monitoring (PAM) technology, soft starts and 'pre-firing' observations, termination of firing in the 500m exclusion zone and use of turtle friendly tail buoys. The proposed 3D and 2D seismic survey activities cannot be undertaken without an Environmental Clearance Certificate (ECC) as required by the Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations 30 of 2012. In fulfillment of the 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 EIA and Environmental Management Plan (EMP) Reports to support the application for ECC. All Interested and Affected Parties (I&APs) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed multiclient 3D and 2D seismic surveys covering the deep-water Orange Basin, offshore southern Namibia. A Background Information Document (BID), Final Draft updated EIA and EMP Reports are available for comments upon registration as a stakeholder / Interested and Affected Party (I&AP).

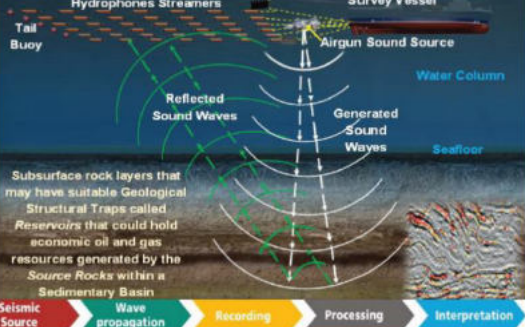
REGISTER BY EMAIL / SMS: Email: frontdesk@rbs.com.na and Mobile: +264 81272546
Attention: Dr Sindila Mwiya (PhD, PG Cert, MPhil, BEng (Hons), Pr Eng),
EAP/Technical Permitting Advisor / International Resources Consultant

Public meetings will be organised in Lüderitz and Oranjemund during the month of September 2022 depending on the public interest / number of registered stakeholders. The Proponent intends to submit the application for ECC to the Environment Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) via the Petroleum Commissioner in the Ministry of Mines and Energy (Competent Authority) during the week starting 19th September 2022.

REGISTRATION & WRITTEN SUBMISSIONS DEADLINE IS: FRIDAY, 16th SEPTEMBER 2022

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources covering
 Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (ESG, SEA, EIA, EMP, EMS)

Find Us @ 10 Schützen Street, Erf No. 7382, Swivela House-Home of RBS, Tel +264-61-306058 / 224780 / 236598

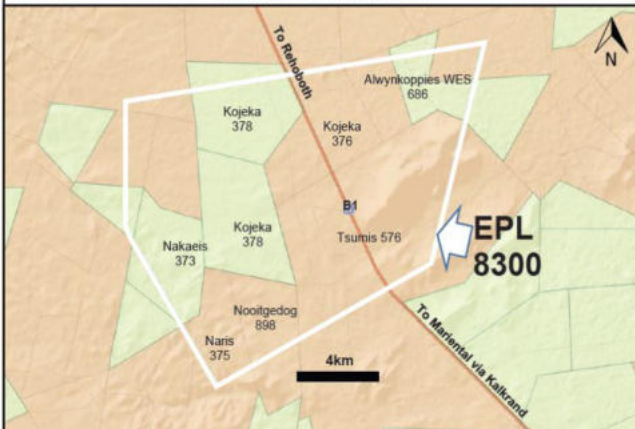


Subsurface rock layers that may have suitable Geological Structural Traps called Reservoirs that could hold economic oil and gas resources generated by the Source Rocks within a Sedimentary Basin

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY RAINMEN INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7875, REHOBOTH DISTRICT, HARDAP REGION

RAINMEN INVESTMENTS (Pty) Ltd (the "PROONENT") holds mineral rights under the Exclusive Prospecting Licenses (EPL) 7875 with respect to Base and Rare Metals, Industrial Minerals, and Precious Metals. The EPL 7875 has a total area of 19436.8064 Ha and covers commercial farmlands as indicated on the map. The license was granted on the 04/08/2020 and will expire on the 03/08/2023. The Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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 fulfillment 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. 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), Draft Environmental Impact Assessment Report (EIA) and Environmental Management Plan (EMP) Reports are available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
 Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
 CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS:
 FRIDAY 22nd SEPTEMBER 2022




EPL 7875

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources covering Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (ESG, SEA, EIA, EMP, EMS)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY JOHANNES CHRISTIAAN KAKE FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8300, SEEFONTEIN DISTRICT, KUNENE REGION

JOHANNES CHRISTIAAN KAKE (the "PROONENT") has the preparedness to grant mineral rights under the Exclusive Prospecting Licenses (EPL) 8300 with respect to Base and Rare Metals, Dimension Stones, Industrial Minerals, and Precious Stones. The EPL 8300 has a total area of 16831.815 Ha and falls in State land as indicated on the map. Once the ECC and the physical EPL are granted by the Government, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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 fulfillment 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. 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), Draft Environmental Impact Assessment Report (EIA) and Environmental Management Plan (EMP) Reports are available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
 Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
 CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS:
 FRIDAY 16th SEPTEMBER 2022



EPL 8300

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources covering Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (ESG, SEA, EIA, EMP, EMS)

Figure 4.8: Copy of the public notice that was published in Confidante newspaper dated 2nd- 8th September 2022.

Rainmen Investments EPL No. 7875 - 41 - EIA Report for Exploration-Sep 2022



Know Your Civil Servant



PETER DU TOIT

Chief Development Planner: Ministry of Agriculture, Water and Land Reform

“WHEN I retire, I want to look back and be proud of myself and what I have accomplished. I want to have a lot of stories to share, I want to leave a customer service legacy.”

This is what Peter Du Toit, a chief development planner at the Ministry of Agriculture, Water and Land Reform had to say – and from the looks of it, that is the principle that he lives by.

Born and bred in Khomasdal, Du Toit is a long-serving government employee at the ministry of agriculture, with a record of 24 years.

He joined the public service in 1998, as a clerk at the then Ministry of Land, Resettlement and Rehabilitation and was later promoted to the position of a chief clerk. He worked his way up the ladder and was promoted to development planner and eventually to chief development planner in the Directorate of Land Reform, in the Division of Land Use Planning and Allocation (LUPA), the position he currently holds.

LUPA is a division responsible for acquiring agricultural (commercial) land that is used to resettle landless Namibians under the National Land Reform Programme.

Du Toit described LUPA as a crucial instrument for the government in its plight to redress the past imbalances and skewed land ownership caused by the colonial regimes.

Getting started

Raised by a single domestic worker mother, Du Toit said it was his dream to work for the government.

“Initially my dream was to be a lawyer, but unfortunately, my mother couldn’t afford to pay for the tertiary institution, hence I decided to find a secure job in government so that I can be able to raise funds for me to be able to pay for my studies as well as to take care of the family,” he said.

Building a legacy



Du Toit holds a National Diploma in Land Management and Registration and a Bachelors Degree in Land Administration from the Namibia University of Science and Technology (NUST).

Expressing his gratitude for the government support, Du Toit said, “government played an important role and supported me financially to get the two qualifications and with the knowledge that I gained; I am currently ploughing it back into the ministry,” he said.

As a chief development planner, Du Toit is responsible for the acquisition of agricultural land from commercial farmers for government resettlement programme.

“My office is responsible for the evaluation and assessments of all applications submitted by the farm owners/agents who wish to sell their farms to the government as per the

willing-buyer, willing-seller policy. This policy makes provision that all the farm owners intended to sell their farms first to offer it to the government who has the preferred right.”

Emphasising the role of his division, he said, “our work is to assess all farms offered. If the ministry finds that a farm is suitable for resettlement purposes, the offer is accepted or a counter offer is issued in respect of that property. If the owner is not happy with the counter offer, a price negotiation is conducted. If negotiations are not successful, the owner can approach the land tribunal for intervention. After a farm is acquired, it is forwarded to the Directorate of Resettlement to advertise the farm to invite all interested Namibians to apply for resettlement on the specific farm. Should a farm not be suitable for resettlement purposes, a certificate of waiver is issued to the farm owner that allows him/her to sell the property in the open market.

Challenges

Every job does not go without its fair share of challenges. When asked to pinpoint some of the challenges his office is faced with, Du Toit was quick to point out the work overload, lack of human capacity as well as the bureaucracy around the acquisition process.

“Handling applications needs concentration, especially with too many fraud cases happening nowadays, one needs to make sure that the farm being sold exists, that it is sold by the rightful owner and that the application is accompanied by the required documents,” he said.

He further noted the bureaucracy of the

whole process and the timeline which is about 90 days for the applicants to get the government response, stating that there are farmers that feel that the process takes too long and that the officials are too slow.

“Some farmers come to this office to express their dissatisfaction with the whole process. However, one needs to understand the application process has to be assessed by different committees and those committees meet only once a month,” he said.

Achievements

Among his work-related accomplishments was his involvement in the decentralisation of the ministry in other parts of the country such as Otjiwarongo, Gobabis, and Swakopmund.

When asked to give his take on a misconception that civil servants are unproductive and inefficient, he said, “it is true that in all employment sectors of life you will find those people who are a little lazy, and those who strive to do their best in the positions that they were appointed to.

Besides, with the introduction of mechanisms like the performance management system, it is near impossible to get away with being unproductive and ineffective. With the right leadership and mindset, such misconception will be a blow in the wind. As public servants and just like any other employee, we must know that we are all gainfully employed.”

When asked how long he will serve the government, Du Toit said, “it has been 24 years and I am still counting. God placed me in the ministry for a purpose which I have to fulfill. I am enjoying my career in government. I am comfortable and feel confident in what I do. I know that one must never say never but I do not see myself leaving the public service in the foreseeable future. I would like to end my good journey in the public service on a high note by the Grace of the Almighty.”

PUBLIC NOTICE
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY RAINMEN INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7875, REHOBOTH DISTRICT, HARDAP REGION

RAINMEN INVESTMENTS (Pty) Ltd (the “PROPONENT”) holds mineral rights under the Exclusive Prospecting Licenses (EPL) No. 7875 with respect to Base and Rare Metals, Industrial Minerals, and Precious Metals. The EPL 7875 has a total area of 19436.8054 Ha and covers commercial farmlands as indicated on the map. The license was granted on the 04/08/2020 and will expire on the 03/08/2023. The PropONENT intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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 fulfillment 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. 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), Draft Environmental Impact Assessment Report (EIA) and Environmental Management Plan (EMP) Reports are available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
 Dr Sindila Mwiya (EAP) Technical Permitting Advisor/Consultant
 CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS:
FRIDAY 22nd SEPTEMBER 2022

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources covering Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (ESG, SEA, EIA, EMP, EMS)
 Find Us @ 10 Schützen Street, Erf No. 7382, SwiEDIA House-Home of RBS, Tel: +264-61-306058 / 224780 / 236598

PUBLIC NOTICE
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY JOHANNES CHRISTIAAN KAKE FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8300, SESEFONTEIN DISTRICT, KUNENE REGION

JOHANNES CHRISTIAAN KAKE (the “PROPONENT”) has the preparedness to grant mineral rights under the Exclusive Prospecting Licenses (EPL) 8300 with respect to Base and Rare Metals, Dimension Stones, Industrial Minerals, and Precious Stones. The EPL 8300 has a total area of 16831.815 Ha and falls in State land as indicated on the map. Once the ECC and the physical EPL are granted by the Government, the PropONENT intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical 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 fulfillment 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. 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), Draft Environmental Impact Assessment Report (EIA) and Environmental Management Plan (EMP) Reports are available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
 Dr Sindila Mwiya (EAP) Technical Permitting Advisor/Consultant
 CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS:
FRIDAY 16th SEPTEMBER 2022

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources covering Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (ESG, SEA, EIA, EMP, EMS)
 Find Us @ 10 Schützen Street, Erf No. 7382, SwiEDIA House-Home of RBS, Tel: +264-61-306058 / 224780 / 236598

Figure 4.9: Copy of the public notice that was published in the New Era Daily Newspaper dated 9th September 2022.

5. IMPACT ASSESSMENT AND RESULTS

5.1 Impact Assessment Procedure

The Environmental Assessment process that has been undertaken with respect to the proposed exploration programme for the EPL No. 7875 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) **EPL Location:** A number of potential economic minerals deposits are known to exist in the general area and linked to the regional geology of the EPL 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 activities do not take place) has been undertake. An assessment of the environmental impacts of a future, in which the proposed exploration and possible discovery of economic minerals resources does 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 EPL area.

The environmental benefits will include:

- ❖ No negative impacts as a result 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 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 and Climate Change.
- ❖ Overgrazing / over stocking beyond the land carrying capacity.
- ❖ Poor land management practices,
- ❖ Wildfires, and.
- ❖ Erosion and overgrazing.

Furthermore, it is important to understand what benefits might be lost if the proposed exploration 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 EPL No. 7875, 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 EPL 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 EPL area. Due to the limited scope of the proposed exploration and the implementation of the EMP, it is likely that the proposed exploration 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 EPL 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 activities will not affect the ecosystem function due to the limited scope of the proposed activities because the ecosystem of this EPL 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 EPL area. However, the proposed exploration 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 EPL area is part of the larger local and regional ecosystems which are all interlinked.
- (vii) **Use Values:** The EPL 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 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 the EMP report, and.
- (viii) **Non-Use or Passive Use:** The EPL area has an existence value that is not linked to the direct use / benefits to current or future generations. The proposed exploration 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 EPL area untouched because the ecosystem of this EPL 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 activities covering initial desktop exploration activities (no field-work undertaken, regional reconnaissance, initial local field-based activities, detailed local field-based

activities, prefeasibility and feasibility studies related activities are the key sources both negative and positive impacts on the receiving environment.

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 5.1).

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

5.4.2 Knowledge-Based Impact Assessment Process

5.4.2.1 Characterisation of the Impact Assessment Inputs Variables

The impact assessment process for the proposed minerals exploration took into consideration the interactions of the proposed activities with respect to the Knowledge-Based System Model Methodology (KBSMM) characterised climatic, environmental, and ground model datasets of the receiving environment (physical, biological, socioeconomic and ecosystem services and functions).

The influence assessment of the characterised components of the environment has been based on a Knowledge-Based System Model Methodology (KBSMM), a PhD research-based and industry tested / validated Artificial Intelligent (AI) framework developed by Dr Sindila Mwiya.

The KBSMM model inputs variables covered characterised climatic, environmental, and ground model datasets. Source-Pathway-Receptor risk assessment approach was used to determine or validate the influence (impact assessment), and ultimate likely harm that may be linked to the various phased activities of each of the various stages of the proposed minerals exploration implementation process (Fig. 5.1).

5.4.2.2 Climatic Data Sets/Components Inputs

The climatic data sets that have been used in the regional and local site-specific assessment process comprised precipitation, temperature, evapotranspiration and wind data sets. The following is summary explanation of the roles that climatic data sets may have on the proposed minerals exploration implementation process (Fig. 5.1):

- ❖ Temperature: Temperature had a direct influence on the fluids that may influence the operation of the site by supporting evapotranspiration. It also has an influence on the planning, operation and implementation of the various project activities.
- ❖ Rainfall: Rainfall is one of the data sets used in the water balance assessments with respect to potential fluid production and flash flood occurrences. The data sets had some influence on mobilisation pollutants that may be associated with the proposed project activities.
- ❖ Evapotranspiration: This combined effect of evaporation and transpiration is important in water balance assessments with direct influences on the implementation of the various project activities, and.
- ❖ Wind Direction and Speed: The direction and speed of the prevailing winds may be critical to the site operations and determination of the optimum operational requirements. The data had a direct influence on the site operations including dust and noise management.

5.4.2.3 Environmental Data Sets/Components Inputs

The regional or local environmental data sets used in this project comprise:

- ❖ Economic activities (Proposed minerals exploration) and coordination support available in the area or area.
- ❖ Types and amounts of waste likely to be generated.
- ❖ Likely contaminants from the activities.
- ❖ Ecological, habitats and ecosystems including fauna and flora.
- ❖ Community considerations such, land ownership, social, health and safety, and.
- ❖ Archaeological, cultural and political issues.

The following is summary explanation of the role of the environmental data sets may have on the proposed minerals exploration implementation process (Fig. 5.2):

- ❖ Economic activities and logistic support: The types of economic activities and logistical support services and infrastructure for the proposed activities are a key source of impact component of the environmental data sets in the determination of the likely impacts on the receptors, and.
- ❖ The likely Types and amount of waste: Understanding the characteristics of the liquid and solid waste streams be handled is vital in the evaluation of the hazard exposure in terms of the overall risk assessment to the receptors.

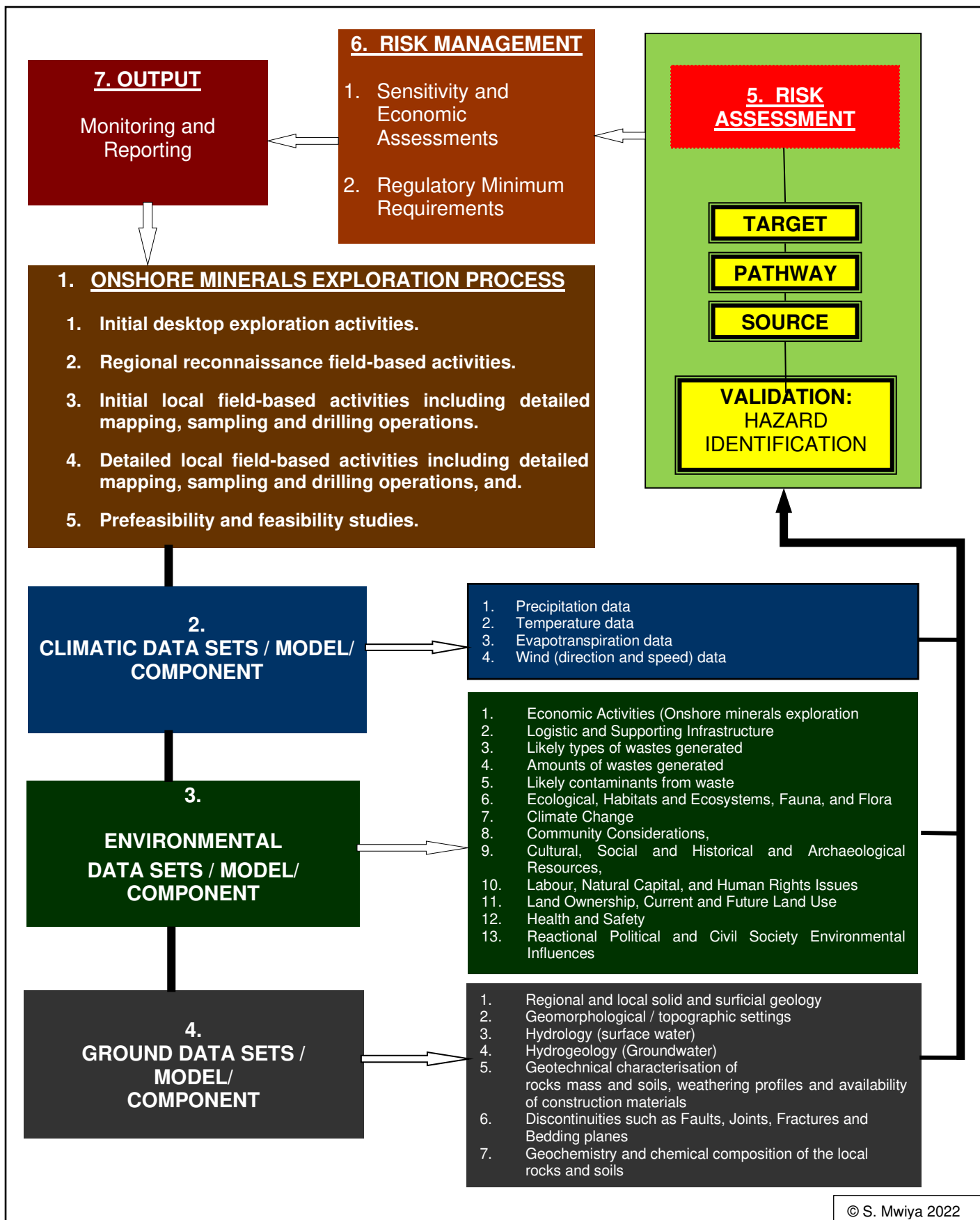


Figure 5.1: Detailed outline of the technical methodology based on a complete looped Knowledge-Based System Model Methodology (KBSMM) used in the impact assessment, risk assessment and determination of the monitoring and reporting strategy. The system model methodology has a built-in looping that allows for the evaluation of a phased onshore minerals exploration process project lifecycle.

- ❖ Likely contaminants: The state (solid, gas, liquid, or vapour) of any likely contaminants that may be associated with the proposed phased onshore minerals exploration activities play a major role in the determination of the likely harm, mitigation, monitoring and reporting strategies.
- ❖ Ecological, habitats, ecosystems, fauna, flora, and local, regional or global Climate Change influences: At national, regional and local levels, there are a number of unique and protected habitats, ecosystems, fauna and flora and highly vital as they support other sectors of the national economy such as tourism, agriculture, food security and services. Understanding the likely level of sensitivity of the regional or local areas is highly important to the successful determination of the likely impacts and harm, development mitigation measures, monitoring and reporting strategy to be implemented for the proposed phased onshore minerals exploration process, and.
- ❖ Community considerations: Local community issues and acceptability of the proposed activities by the local community is of vital importance. Other key components of the community considerations include: Land ownership (State land / Communal or Private), land use, local social settings, labour, natural capital, human rights, public and workers health and safety, archaeological, cultural, political, and civil society influences.

As part of the data collection, evaluation, influence and risk assessment process of the proposed phased onshore minerals exploration, determination of the mitigation measures, monitoring and reporting strategies, specialist assessments conducted as part of the EIA process provided vital recommendations incorporated in this EIA and a prepared EMP Report.

5.4.2.4 Ground Data Sets/Components Inputs

The ground data sets covered regional/local solid and surficial geology, geomorphological / topographic settings, hydrology (surface water), hydrogeology groundwater), geotechnical and geochemical characterisation of rocks and soils, weathering profiles and availability of construction materials, and discontinuities such as faults, joints, fractures, and bedding planes of the drilled sites (Fig. 5.1). The geology (solid and superficial) and water (surface and groundwater resources are all targets that may be influenced (impacted) by the various activities of the proposed phased minerals exploration process implementation. Other ground components which include the local terrain (geomorphology and topographic features), discontinuities, geotechnical as well as geochemical /mineralogy will aid the influence of sources in causing or minimising the impacts to be controlled through mitigations (Fig. 5.1). Regional/local solid and surficial geology, geomorphological and topographic settings also linked directly to the availability of local construction and operational materials in support of the proposed phased minerals exploration process project implementation lifecycle (Fig. 5.1).

5.4.2.5 Source-Pathway-Receptor Risk Assessment, Harm and Monitoring

To evaluate the level of influence (impact), risk, and harm that the proposed onshore phased minerals exploration process implementation, the assessment process was focused on the sources, pathways, and targets / receptor chains (Fig. 5.2). It is important to note that in the absence of any of the interlinked three (3) components (sources, pathways, or targets/ receptor) there is no harm or risk to mitigate, monitor or manage (Figs. 5.2 and 5.3).

The risk source/s refers to knowledge - based identified potential hazards that may be present and can cause harm to the exposed target/s / receptors (Fig. 5.3). The risk pathway refers to the route direct or indirect through which the risk source/s may be transferred and exposed to a target/s of concern. The risk target/s or receptor/s refers to the destination (area point of exposure) at which the source/s may cause harm. The characterisation of source/s, pathway/s and target/s chain has been undertaken for climatic, environmental and ground model data components with respect to the proposed phased onshore minerals exploration process.

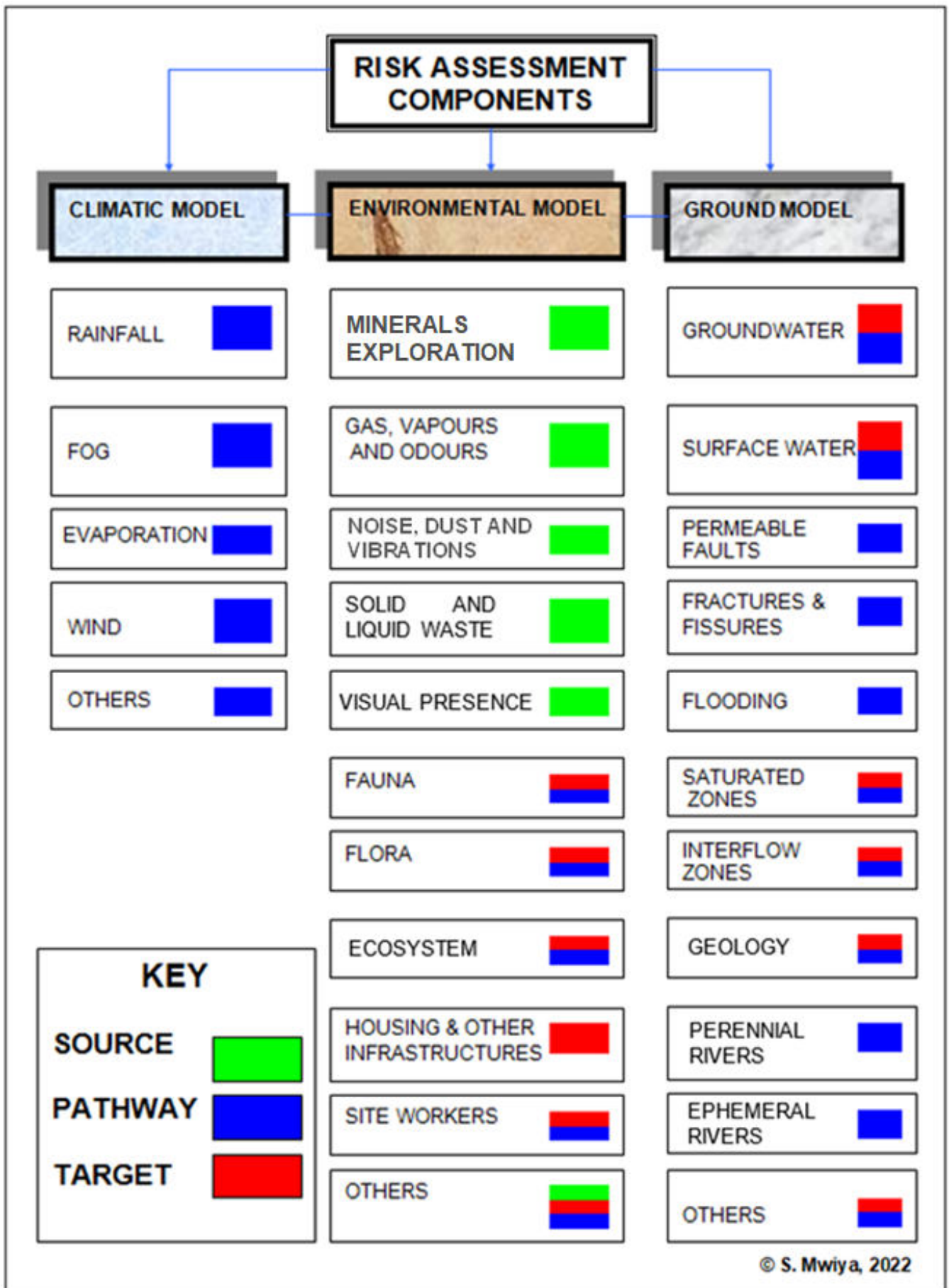


Figure 5.2: A Knowledge-Based System Model Methodology (KBSMM) characterised interactive risk assessment system output field-based and tested / validated Artificial Intelligent (AI) framework windows for onshore phased minerals exploration process implementation project lifecycle.

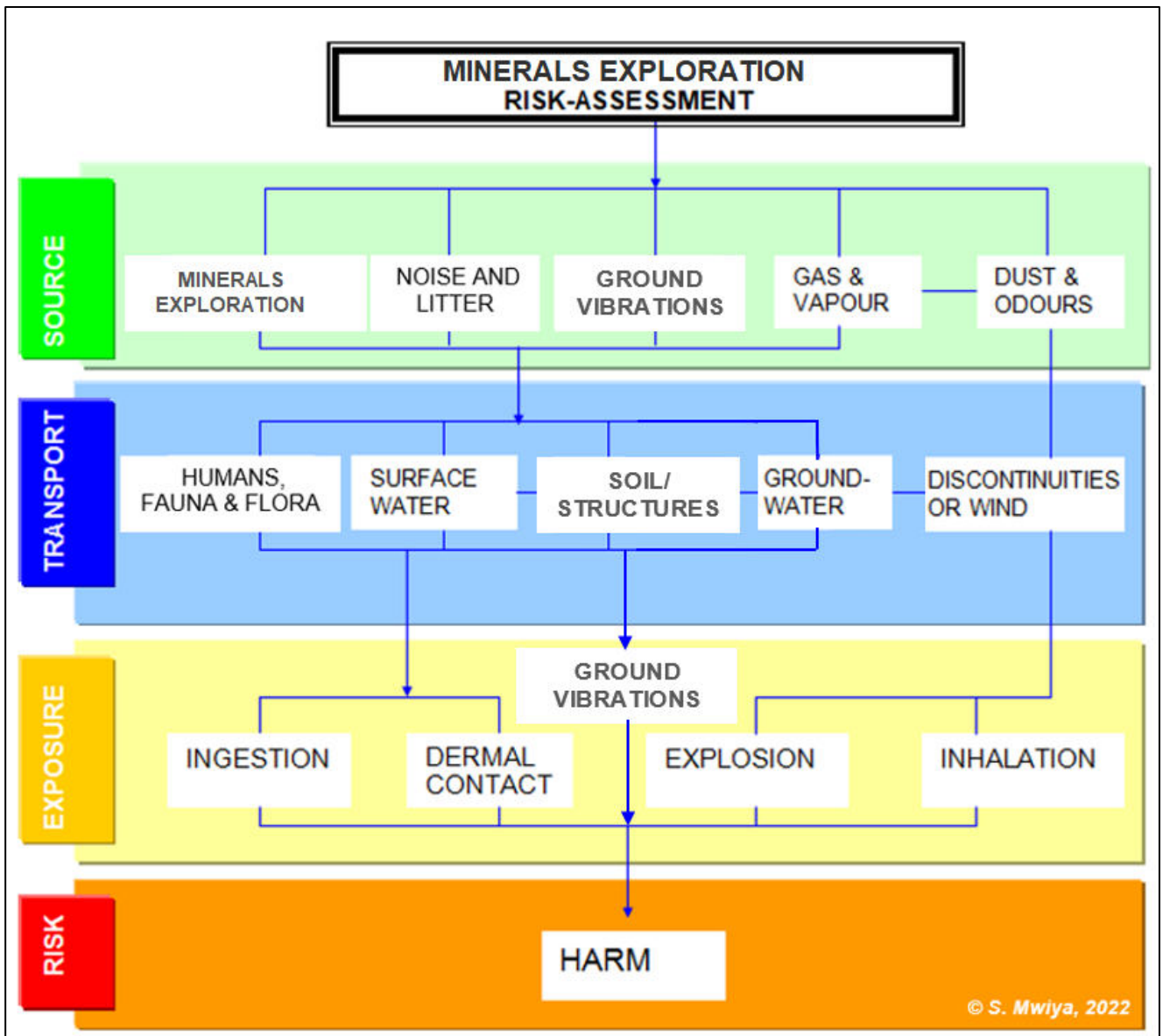


Figure 5.3: A Knowledge-Based System Model Methodology (KBSMM) characterised system output research-based and tested / validated Artificial Intelligent (AI) framework risk consequences (harm) pathways to the receiving target/receptors windows for onshore phased minerals exploration process project implementation lifecycle.

5.4.2.6 Individual Components Impact Assessment Criteria

Based on the Terms of Reference and individual components impact assessment outputs of the KBSMM for the proposed phased minerals exploration process and the lessons learned (created knowledge-base) from the previous phased minerals exploration processes operations undertaken and tested since 1999 when the KBSMM was developed, all key components of the receiving environment were identified and assessed with respect to the overall proposed activities and likely significant impacts on the receiving environment with the aim of developing appropriate mitigation measures as detailed in the EMP Report.

5.4.3 Overall Component and Significant Impact Assessment

5.4.3.1 Overall Component Impact Assessment

The overall component impact assessment and evaluation process has been undertaken by considering the activities of the proposed phased minerals exploration process operations as the

overall source of impact (Figs. 5.1-5.3). As illustrated in Figs. 5.1-5.3, the receiving environment has been considered as the receptor / target that may be impacted positively or negatively by the activities of the proposed phased minerals exploration process.

The characterised components of the receiving environment encompassed the following:

- ❖ Physical Conditions / Natural Environment – Air, noise, water, green space, climate change, built environment – houses, roads, transport systems, buildings, infrastructure, etc.
- ❖ Biological Conditions: fauna, flora, habitats, and ecosystem - services, function, use values and non-use etc., and.
- ❖ Socioeconomic Conditions: Social, economic, labour, gender, human rights, natural and social capital, archaeological, cultural resources, and cultural issues

In evaluating the individual degree of potential negative impacts, the following factors have been taken into consideration:

- ❖ Impact Severity: The severity of an impact is a function of a range of consideration, and.
- ❖ Likelihood of Occurrence (Probability): How likely is the impact to occur?

In evaluating the severity of potential negative environmental impacts, the following factors have been taken into consideration:

- ❖ Receptor/ Resource Characteristics: The nature, importance, and sensitivity to change of the receptors / target or resources that could be affected.
- ❖ Impact Magnitude: The magnitude of the change that is induced.
- ❖ Impact Duration: The time period over which the impact is expected to last.
- ❖ Impact Extent: The geographical extent of the induced change, and.
- ❖ Regulations, Standards and Guidelines: The status of the impact in relation to regulations (eg. discharge limits), standards (eg. environmental quality criteria) and guidelines.

The overall impact severity has been categorised using a subjective scale as shown in Table 5.2 for magnitude, Table 5.3 for duration and Table 5.4 for extent.

Table 5.2: 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 5.3: Scored time over which the impact is expected to last.

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

Table 5.4: 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

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 5.5. Likelihood of an impact occurring is estimated on the basis of experience (existing knowledge-base) and/ or evidence that such an outcome has previously occurred. Impacts resulting from routine/planned events are classified under category (E).

Table 5.5: 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 (e.g., 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 occur several times per year at each location where such works are undertaken)

The overall individual components impact assessment with respect to the impact duration, geographical extent and probability of occurrence have been categorised using a semi quantitative approach as shown in Table 5.6 and the results are presented under Subsection 5.4.4.

5.4.3.2 Overall Significant Impact Assessment

The determination of the significance of the negative impacts / key issues caused by the proposed phase minerals exploration activities as key sources of such impact has been based on the environmental baseline results such as the intensity and duration of the likely negative impact as assessed under individual components likely to be impacted. The assessment focused on the existence of potential pathways, and the degree to which the proposed project activities are likely to result in unwanted consequences on the receptor, covering the receiving environment (natural, built, socioeconomic, flora, fauna, habitat, and ecosystem).

5.4.4 Proposed Project Activities Summary of Impacts Results

The results of the impacts assessment and evaluation has adopted a matrix assessment framework linked to the KBSMM framework. 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 5.6-5.9.

The overall severity of potential environmental impacts of the proposed project activities on the receiving environment will be of low magnitude (Table 5.6), temporally duration (Table 5.7), localised extent (Table 5.8) and low probability of occurrence (Table 5.9) due to the limited scope of the proposed activities and the use of step progression approach in advancing exploration. The step progressional approach will allow the Proponent to evaluate 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 5.6-5.9). It is important to note that the assessment of the likely impacts as shown in Tables 5.6 - 5.9, have been considered without the implementation of mitigation measures as detailed in EMP Report. The need for implementation of the appropriate mitigation measures as presented in the EMP Report has been determined based on the results of the impact assessment (Tables 5.6 - 5.9) and the significant impacts as detailed in Tables 5.10 and 5.11.

Table 5.6: Results of the sensitivity assessment of the receptors (Physical, Socioeconomic and Biological environments) with respect to the proposed exploration / prospecting activities.

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.																
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
	(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
	(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
	(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
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	3	3	4	4
	(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	3	3	4	4
	(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	3	3	4	4
	(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	3	3	4	4
	(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	3	3	4	4

Table 5.6: 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	3	3	4	
	(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	3	3	4
	(iii)	Ground geophysical survey (Subject to the positive outcomes of i and ii above)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	4
	(iv)	Possible Trenching (Subject to the outcomes of i - iii above)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	4
	(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	3	3	4
	(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	3	3	4
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	4
	(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	3	3	4
	(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	3	3	4
	(iv)	Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
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	4
	(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	4
	(iii)	Geotechnical studies for mine design	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
	(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	3	3	4
	(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	3	3	4
	(vi)	Preparation of feasibility report and application for Mining License	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	4

Table 5.7: Results of the scored time period (duration) over which the impact is expected to last.

RECEPTOR 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							
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>Temporary</td> </tr> <tr> <td>P</td> <td>Permanent</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	T	Temporary	P	Permanent																	
SCALE	DESCRIPTION																							
T	Temporary																							
P	Permanent																							
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	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	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	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	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	P						
	(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	P						
	(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	P						
	(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	P						
	(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	P						

Table 5.7: Cont.

DURATION 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
SCALE		DESCRIPTION															
T		Temporary															
P		Permanent															
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	P
	(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	P
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	P
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	P
	(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	P
	(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	P
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	P
	(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	P
	(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	P
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	P
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	P
	(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	P
	(iii) Geotechnical studies for mine design	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	P
	(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	P
	(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	P
	(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	P

Table 5.8: Results of the scored geographical extent of the induced change.

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												
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>limited impact on location</td> </tr> <tr> <td>O</td> <td>impact of importance for municipality</td> </tr> <tr> <td>R</td> <td>impact of regional character</td> </tr> <tr> <td>N</td> <td>impact of national character</td> </tr> <tr> <td>M</td> <td>impact of cross-border character</td> </tr> </tbody> </table>		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																
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																												
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 magnetic 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	N												
	(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	N												
	(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	N												
	(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	N												
	(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	N												

Table 5.8: 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
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																
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	O	R	N
	(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	O	R	N
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N
	(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	O	R	N
	(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	O	R	N
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	O	R	N
	(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	O	R	N
	(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	O	R	N
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N
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	O	R	N
	(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	O	R	N
	(iii) Geotechnical studies for mine design	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N
	(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	O	R	N
	(v) EIA and EMP to support the ECC for mining operations	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N
	(vi) Preparation of feasibility report and application for Mining License	L	L	L	L	L	L	L	L	L	L	L	L	L	O	R	N

Table 5.9: Results of the qualitative scale of probability occurrence.

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												
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Extremely unlikely (e.g. never heard of in the industry)</td> </tr> <tr> <td>B</td> <td>Unlikely (e.g. heard of in the industry but considered unlikely)</td> </tr> <tr> <td>C</td> <td>Low likelihood (egg such incidents/impacts have occurred but are uncommon)</td> </tr> <tr> <td>D</td> <td>Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)</td> </tr> <tr> <td>E</td> <td>High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)</td> </tr> </tbody> </table>		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)																
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)																												
1. 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	E												
	(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	E												
	(iii) Purchase and analysis of existing Government aerial hyperspectral	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E												
	(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	E												
2. 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	D	D	E													
	(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	D	D	E													
	(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	D	D	E													
	(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	D	D	E													
	(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	D	D	E													

Table 5.9: Cont.

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
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)															
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															
	(ii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken															
	(iii)	Ground geophysical survey (Subject to the positive outcomes of i and ii above)															
	(iv)	Possible Trenching (Subject to the outcomes of i - iii above)															
	(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)															
	(vi)	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets															
4. Detailed Local Field-Based Activities	(i)	Access preparation and related logistics to support activities															
	(ii)	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities															
	(iii)	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken															
	(iv)	Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).															
5. Prefeasibility and Feasibility Studies	(i)	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping															
	(ii)	Detailed drilling and bulk sampling and testing for ore reserve calculations															
	(iii)	Geotechnical studies for mine design															
	(iv)	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities															
	(v)	EIA and EMP to support the ECC for mining operations															
	(vi)	Preparation of feasibility report and application for Mining License															

5.5 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 5.10.

5.5.2 Significance Criteria

Significance criteria for negative/adverse impacts (i.e., relative ranking of importance) are defined in Table 5.10. It is important to note that impacts have been considered without the implementation of mitigation measures. The need for appropriate mitigation measures as presented in the EMP report has been determined based on the basis of the impact assessment presented in this report.

Table 5.10: 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 result in unwanted consequences on the receptor covering physical and biological environments (Table 5.11). 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 5.11.

Table 5.11: Significant impact assessment matrix for the proposed exploration activities.

SIGNIFICANT IMPACT						PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT							
IMPACT SEVERITY <small>Magnitude, Duration, Extent, Probability</small>	RECEPTOR CHARACTERISTICS (SENSITIVITY)					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	
	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]																	
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		
	(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		
	(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		
	(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	4/4		
	(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	4/4	
	(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	4/4	
	(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	4/4
	(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	4/4

Table 5.11: Cont.

SENSITIVITY						PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT						
IMPACT SEVERITY <small>Magnitude, Duration, Extent, Probability</small>	RECEPTOR CHARACTERISTICS (SENSITIVITY)					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
	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]																
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	1/1	1/1	4/4	
	(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	1/1	1/1	4/4	
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	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	2/2	2/2	4/4	
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	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	2/2	2/2	4/4	
	(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	2/2	2/2	4/4	
	(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	1/1	1/1	4/4	
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	2/2	2/2	2/2	3/2	3/2	3/2	3/2	3/2	2/2	2/2	3/3	3/3	4/4	
	(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	2/2	3/2	3/2	3/2	3/2	3/2	2/2	2/2	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	
	(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).	2/2	2/2	2/2	2/2	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	3/3	3/3	4/4
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	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	
	(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	3/3	3/3	4/4	

5.6 Assessment of Overall Impacts

5.6.1 Summary of the Results of the Impact Assessment

In accordance with Tables 5.6 - 5.11, the following is the summary of the overall likely negative and significant impacts of the proposed exploration activities on the receiving environment (physical, biological and socioeconomic environments) without:

- (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 negligible **[1/1]** (Table 5.11). 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. Overall significant impacts will be negligible **[1/1]**. 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 negligible **[1/1]** (Table 5.11). 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. Overall significant impacts will be negligible **[2/2]**. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[2/2]** (Table 5.11). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**. Cultural, biological, and archaeological resources will have high significant negative impacts **[4/4]**.
- (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 5.11). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**. Tourism and recreation will have medium significant negative impacts **[3/3]**, and cultural, biological, and archaeological resources will have high significant negative impacts **[4/4]** and.
- (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 medium **[3/3]** without mitigations and low with mitigations for bulk sampling, test mining and field logistics (Table 5.11). Except for the socioeconomic components which carry a **(+)**, all the other likely impacts are negative **(-)**. Tourism and recreation will have medium significant negative impacts **[3/3]**, and cultural, biological, and archaeological resources will have high significant negative impacts **[4/4]**.

From an archaeological perspective, the expected magnitude of impact on the archaeological resource likely to be associated with the local granite hills and other surrounding sites would be medium to high with a regional extent and long-term duration. Archaeological sites are likely to be found in granite terrains and the destruction of such sites is irreversible at regional and local spatial scales. The consequence of the impact would be localised, and its significance would be high due to the possibility of being direct association with the local population. The interpretation of this assessment would indicate medium to low significance, suggesting that the risk of archaeological impact is subject to the existence of such significant archaeological resources which have not been confirmed from this assessment.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Rainmen Investments (Pty) Ltd (**the Proponent**) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 7875 covering Base and Rare Metals, Industrial Minerals, and Precious Metals groups. The exploration activities to be undertaken as assessed in this environmental assessment are as follows:

- (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.

The overall severity of potential 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 low magnitude, temporally duration, localised extent and low probability of occurrence.

6.2 Recommendations

It's hereby recommended that the proposed exploration activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

- (i) Based on the findings of this EIA Report, the Proponent shall prepare an EMP Report with key mitigations measures.
- (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) Rehabilitation must be always undertaken in consultation with the land owners.
- (vi) The Proponent shall adhere to all the applicable national regulations and standards as well as Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles and International Finance Corporation (IFC) environmental management guidelines and frameworks.
- (vii) 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
- (viii) Before entering any private or protected property/ area such as a private farm, the Proponent shall give advance notices and obtain permission to access the EPL area at all times, and.

- (ix) 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.

6.3 Summary ToR for Test Mining and Mining Stages

In an event that economic minerals resources are discovered within the EPL 7875 area and could lead to the development of mining project, a new Environmental Clearance Certificate (ECC) for mining will be required. The ECC being supported by this EIA Report only covers the exploration phase. A separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports supported by specialist studies as maybe applicable must be prepared in order to support the application for the new ECC for mining operations. The EIA and EMP studies shall form part of the prefeasibility and feasibility study with respect to the test mining or possible mining operations. 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 for possible test mining or mining operations in an event of a discovery of economic minerals resources and possible development of a mining project:

- (i) Groundwater studies including modelling as maybe applicable.
- (ii) Field-based flora and fauna diversity.
- (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.

The aims and objectives of the Environmental Assessment (EA) covering EIA and EMP to be implemented as part of the feasibility study if a variable resource is discovered are:

- (i) To assess all the likely positive and negative short- and long-term impacts on the receiving environment (physical, biological and socioeconomic environments) at local (EPL Area), regional, national (Namibia) and Global levels using appropriate assessment guidelines, methods and techniques covering the complete project lifecycle. The EIA and EMP to be undertaken shall be 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 shall conform to the national regulatory requirements, process and specifications in Namibia and in particular as required by the MME, MEFT and MAWLR, and.
- (ii) The development of appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative influences of the negative impacts identified or anticipated. Such mitigation measures shall be contained in a detailed EMP report covering the entire project lifecycle.

7. REFERENCES

1. FURTHER GENERAL READING

Department of Water Affairs and Forestry, 2001. Groundwater in Namibia: An explanation to the hydrogeological map. *MAWRD*, Windhoek, 1, 128 pp.

Geological Survey of Namibia, 1999. Regional geological map of Namibia. Ministry of Mines and Energy, Windhoek, Namibia.

Miller, R.McG. 2008. The geology of Namibia. Geological Survey, Ministry of Mines and Energy, Windhoek, Vol. 3.

Miller, R. McG., 1992. Stratigraphy. *The mineral resource of Namibia, Geological Survey of Namibia, MME*, Windhoek, 1.2 .1 -1.2.13.

Miller, R. McG., 1983a. The Pan – African Damara Orogen of S.W.A. / Namibia, Special Publication of the Geological Society of South Africa, **11**, 431 - 515.

Miller, R. McG., 1983b. Economic implications of plate tectonic models of the Damara Orogen, Special Publication of the Geological Society of South Africa, **11**, 115 -138.

Ministry of Environment, Forestry and Tourism (MEFT), 2002. Atlas of Namibia. Comp. J. Mendelsohn, A. Jarvis, T. Roberts and C. Roberts, David Phillip Publishers, Cape Town.

Müller, M.A.N. 1984. Grasses of South West Africa/Namibia. John Meinert Publishers (Pty) Ltd, Windhoek, Namibia.

National Statistics Agency (NSA) 2011. Hardap Region Census Regional Profiles: 2011 Population and Housing Census, Hardap Region Basic Analysis with Highlights, National Statistics Agency, Windhoek.

Steven, N. M., 1993. A study of epigenetic mineralization in the Central Zone of the Damara Orogen, Namibia, with special reference to gold, tungsten, tin, and rare earth element. *Geological Survey of Namibia, Memoir* 16,166 pp.

World Travel and Tourism Council, 2022, Travel and Tourism Economic impact 2022, Namibia, London, United Kingdom.

South African National Standards (SANS), 2005. South African National Standard, Ambient Air Quality – Limits for Common Pollutants. SANS 1929:2005. Standards South Africa, Pretoria.

2. REFERENCES AND FURTHER READING ON FAUNA AND FLORA

Barnard, P. 1998. Underprotected habitats. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.

Bester, B. 1996. Bush encroachment – A thorny problem. *Namibia Environment* 1: 175-177.

Branch, B. 1998. Field guide to snakes and other reptiles of southern Africa. Struik Publishers, Cape Town, RSA.

Branch, B. 2008. Tortoises, terrapins and turtles of Africa. Struik Publishers, Cape Town, RSA.

Bonin, F., Devaux, B. and Dupré, A. 2006. Turtles of the world. John Hopkins University Press, Baltimore, USA.

- Boycott, R. C. and Bourquin, O. 2000. The Southern African Tortoise Book. O Bourquin, Hilton, RSA.
- Broadley, D.G. 1983. Fitzsimons' Snakes of southern Africa. Jonathan Ball and AD. Donker Publishers, Parklands, RSA.
- Brown, C.J., Jarvis, A., Robertson, T. and Simmons, R. 1998. Bird diversity. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Buys, P.J. and Buys, P.J.C. 1983. Snakes of Namibia. Gamsberg Macmillan Publishers, Windhoek, Namibia.
- Carruthers, V.C. 2001. Frogs and frogging in southern Africa. Struik Publishers, Cape Town, RSA.
- Channing, A. 2001. Amphibians of Central and Southern Africa. Protea Bookhouse, Pretoria, RSA.
- Channing, A. and Griffin, M. 1993. An annotated checklist of the frogs of Namibia. *Madoqua* 18(2): 101-116.
- Coats Palgrave, K. 1983. Trees of Southern Africa. Struik Publishers, Cape Town, RSA, 959pp.
- Cole, D.T. and Cole, N.A. 2005. Lithops Flowering Stones. Cactus and Co. Libri
- Craven, P. 1998. Lichen diversity in Namibia. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Craven, P. (ed.). 1999. A checklist of Namibian plant species. Southern African Botanical Diversity Network Report No. 7, SABONET, Windhoek, 206pp.
- Crouch, N.R., Klopper, R.R., Burrows, J.E. and Burrows, S.M. 2011. Ferns of southern Africa – a comprehensive guide. Struik Nature, Cape Town, RSA.
- Cunningham, P.L. 1998. Potential Wood Biomass Suitable for Charcoal Production in Namibia. *Agri-Info* 4(5): 4-8.
- Cunningham, P.L. 2006. A Guide to the Tortoises of Namibia. Polytechnic of Namibia, Windhoek, 19pp.
- Curtis, B. and Barnard, P. 1998. Sites and species of ecological, economic or archaeological importance. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Curtis, B. and Mannheimer, C. 2005. Tree Atlas of Namibia. National Botanical Research Institute, Windhoek, Namibia.
- De Graaff, G. 1981. The rodents of southern Africa. Buterworths, RSA.
- EIS. www.the-eis.com/tool.php
- Estes, R.D. 1995. The behaviour guide to African mammals. Russel Friedman Books, Halfway House, RSA.
- Giess, W. 1971. A preliminary vegetation map of South West Africa. *Dinteria* 4: 1 – 114.

- Griffin, M. 1998a. Reptile diversity. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Griffin, M. 1998b. Amphibian diversity. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Griffin, M. 1998c. Mammal diversity. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Griffin, M. 2003. Annotated checklist and provisional national conservation status of Namibian reptiles. Ministry of Environment and Tourism, Windhoek.
- Griffin, M. and Coetzee, C.G. 2005. Annotated checklist and provisional national conservation status of Namibian mammals. Ministry of Environment and Tourism, Windhoek.
- Hebbard, S. n.d. A close-up view of the Namib and some of its fascinating reptiles. ST Promotions, Swakopmund, Namibia.
- Hockey, P.A.R, Dean, W.R.J. and Ryan, P.G. (eds). 2005. Roberts – Birds of Southern Africa, VIIth ed. The Trustees of the John Voelker Bird Book Fund, Cape Town.
- IUCN 2020. IUCN Red List of Threatened Species. <www.iucnredlist.org>.
- Joubert, E. and Mostert, P.M.K. 1975. Distribution patterns and status of some mammals in South West Africa. *Madoqua* 9(1): 5-44.
- Komen, L. n.d. The Owls of Namibia – Identification and General Information. NARREC, Windhoek, 16pp.
- Little, R., and Crowe, T. 2011. Gamebirds of southern Africa. Struik, Cape Town, RSA.
- Maclean, G.L. 1985. Robert's birds of southern Africa. John Voelcker Bird Book Fund.
- Marais, J. 1992. A complete guide to the snakes of southern Africa. Southern Book Publishers, Witwatersrand University Press, Johannesburg, RSA.
- Mendelsohn, J., Jarvis, A., Roberts, C. and Robertson, T. 2004. Atlas of Namibia – a portrait of the land and its people. David Philip Publishers, Cape Town.
- Müller, M.A.N. 2007. Grasses of Namibia. John Meinert Publishers (Pty) Ltd, Windhoek, Namibia.
- NACSO, 2006. Namibia's communal conservancies: a review of progress and challenges in 2005. NACSO, Windhoek.
- NACSO, 2010. Namibia's communal conservancies: a review of progress and challenges in 2009. NACSO, Windhoek.
- Passmore, N.I. and Carruthers, V.C. 1995. South African Frogs - A complete guide. Southern Book Publishers, Witwatersrand University Press, Johannesburg, RSA.
- Peacock, F. 2015. The definitive guide to southern Africa's little brown jobs. CTP Book Printers, Cape Town, South Africa.

- Rothmann, S. 2004. Aloes, aristocrats of Namibian flora. ST Promotions, Swakopmund, Namibia.
- SARDB, 2004. CBSG Southern Africa. In: Griffin, M. 2005. Annotated checklist and provisional national conservation status of Namibian mammals. Ministry of Environment and Tourism, Windhoek.
- Schultz, M. and Rambold, G. 2007. Diversity shifts and ecology of soil lichens in central Namibia. Talk, Ecological Society of Germany, Austria and Switzerland (GfÖ), 37th Annual Meeting, Marburg: 12/9/2007 to 15/9/2007.
- Schultz, M., Zedda, L. and Rambold, G. 2009. New records of lichen taxa from Namibia and South Africa. *Bibliotheca Lichenologica* 99: 315-354.
- Scott, A. and Scott, M. n.d. Power line sensitive bird species and associated risk factors/potential impacts. Unpublished report. Nampower and NNF Strategic Partnership, Windhoek.
- Simmons, R. E. 1998a. Important Bird Areas (IBA's) in Namibia. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Simmons, R. E. 1998b. Areas of high species endemism. In: Barnard, P. (ed.). Biological diversity in Namibia: a country study. Windhoek: Namibian National Biodiversity Task Force.
- Simmons R.E., Brown, C.J. and Kemper, J. 2015. Birds to watch in Namibia: red, rare and endemic species. Ministry of Environment and Tourism and Namibia Nature Foundation, Windhoek, Namibia.
- Skinner, J.D. and Smithers, R.H.N. 1990. The mammals of the southern African subregion. University of Pretoria, RSA.
- Skinner, J.D. and Chimimba, C.T. 2005. The mammals of the southern African subregion. Cambridge University Press, Cape Town, RSA.
- Steyn, M. 2003. Southern Africa Commiphora. Polokwane, South Africa.
- Tarboton, W. 2001. A guide to the nests and eggs of southern African birds. Struik Publishers, Cape Town, RSA.
- Taylor, P.J. 2000. Bats of southern Africa. University of Natal Press, RSA.
- Van Oudtshoorn, F. 2012. Guide to grasses of southern Africa. Briza Publications, Pretoria, South Africa.
- Van Rooyen, N. 2001. Flowering plants of the Kalahari dunes. Lynnwood, Pretoria, 216pp.
- Van Rooyen, C. 2003. The management of wildlife interactions with overhead powerlines. Unpublished report, Eskom, South Africa.
- Van Wyk, B. and Van Wyk, P. 1997. Field guide to trees of Southern Africa. Cape Town: Struik Publisher.
- Wirth, V. 2010. Lichens of the Namib Desert. Klaus Hess Verlag, Windhoek/ Göttingen.

8. ANNEXES

1. Copy of the EPL

2. BID / Scoping Report and CV of EAP

3. Consultation Materials