Primary Resources Namibia CC

Final Environmental Impact Assessment (EIA) Report to Support the Application for Environmental Clearance Certificate (ECC) for the Proposed Exploration Activities by Primary Resources Namibia CC in the Exclusive Prospecting License (EPL) No. 8947, **KARIBIB / OMARURU DISTRICTS, ERONGO REGION**

January 2024

10 Schutzen Street,
Central Business District (CBD)
P. O. Box 1839,
WINDHOEK, NAMIBIA

PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

TYPE OF AUTHORISATIONS REQUIRING ECC

Exclusive Prospecting License (EPL) No. 8947
for ECC for Exploration /Prospecting

MEFT APPLICATION REFERENCE No.

APP-002562

ECC TITLE

Proposed Minerals Exploration Activities on the Exclusive Prospecting License (EPL) No. 8947, Karibib / Omaruru Districts, Erongo Region

NAME OF THE PROPONENT

Primary Resources Namibia CC

COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

ADDRESS OF THE PROPONENT AND CONTACT PERSON

10 Schutzen Street,
Central Business District (CBD)
P. O. Box 1839,
WINDHOEK, NAMIBIA

PROPOSED PROJECT

Proposed Minerals Exploration / Prospecting activities in the Exclusive Prospecting License (EPL) No. 8947, Karibib / Omaruru Districts, Erongo Region

PROJECT LOCATION

Karibib / Omaruru Districts, Erongo Region
EPL Centre Coordinates:
Latitude: -21.844309
Longitude: 14.743136

ENVIRONMENTAL CONSULTANTS

Permitting / De-Risking Advisors / Environmental Consultants
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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr Sindila Mwiya
Email: frontdesk@rbs.com.na

CITATION: ***Risk-Based Solutions (RBS), 2024****. Environmental Impact Assessment (EIA) Report to Support the Application for Environmental Clearance Certificate (ECC) for the Proposed Exploration Activities by Primary Resources Namibia CC in the Exclusive Prospecting License (EPL) No. 8947, Karibib / Omaruru Districts, Erongo Region.*

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NON-TECHNICAL SUMMARY

Primary Resources Namibia CC (the "Proponent") has been granted the preparedness to grant the application for Exclusive Prospecting Licenses (EPL) No. 8947 with respect to dimension stone, base and rare metals, industrial minerals, precious metals and nuclear fuels group of minerals. The physical license will only be granted by the Mining Commissioner if the Proponent is issued with an Environmental Clearance Certificate (ECC) by the Environmental Commissioner. The EPL No. 8947 is located in the Karibib / Omaruru District of the Erongo Region, in the west-central Namibia.

If the ECC is granted, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical minerals exploration datasets, followed by regional field-based reconnaissance activities. If the initial exploration results are positive, the Proponent will implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests.

The proposed minerals exploration activities are listed in the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC). The Proponent is required to have undertaken Environmental Assessment comprising the preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Reports for the proposed minerals prospecting programme to support the application for ECC. In fulfilment of these environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the EIA and EMP Reports to support the application for ECC.

As part of the environmental assessment process and as provided in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012, the public were consulted through the publication of notices in the local newspapers undertaken during the October 2023. A stakeholder register was opened on the Thursday 5th October 2023, the same date the first advert was published in the New Era daily Newspaper. Subsequent public notices were published for five (5) consecutive working days in Windhoek Observer Daily Newspaper from Friday 13th to Thursday, 19th October 2023. The deadline for written submissions and input to the environmental assessment process was Friday 27th October 2023. One written registration / submission was received during the consultation period that started from the 5th – 27th October 2023. The information was provided to the registered stakeholder.

The effect that the proposed / ongoing exploration and associated infrastructure such as access and campsite would have on the receiving environment would depend on the extent of the proposed / ongoing activities over the development area, management of the area and how the proposed mitigations are eventually implemented by the Proponent. Avoiding sensitive habitats such as Ephemeral River channels, rock heads and mountainous terrains as well as track discipline (including not killing/poaching of fauna and unnecessarily cutting down of trees) must be adhered to and/or enforced at all times.

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:

(i) The Proponent shall negotiate Access Agreements with the landowner/s as may be applicable.

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

(iii) 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 landowner/s in line with all applicable national regulations.

(iv) 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.

(v) Before entering any private or protected property/ area such as a private farm or leased land, the Proponent shall give advance notices and obtain consent to access the EPL area as may be required, and.

(vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / landowners/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. 8947:

(i) Groundwater studies including modelling as maybe applicable.

(ii) Field-based flora and fauna diversity.

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

(iv) Archaeological assessment.

(v) Socioeconomic assessment, and.

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

1. BACKGROUND

1.1 Introduction

Primary Resources Namibia CC (**the Proponent**) hold minerals rights under the Exclusive Prospecting License (EPL) No. 8947. The following is the summary information about the EPL 8947:

- **Type of License:** Exclusive Prospecting License (EPL) No. 8947.
- **EPL Holder:** Primary Resources Namibia CC.
- **Granted Date:** Pending ECC.
- **Expiry Date:** Pending ECC.
- **Commodities:** Dimension stone, base and rare metals, industrial minerals, precious metals and nuclear fuels group of minerals, and.
- **Size of the EPL:** 20873.4747 Ha.

Primary Resources Namibia CC intend to undertake exploration activities covering desktop studies, followed by site-specific activities using techniques such as geophysical surveys, geological mapping, trenching, drilling and bulk sampling for small scale test mining. Small-scale test mining operations for dimensions stone will be undertaken targeting areas already disturbed by previous dimension stone operators within the area of interest in the EPL 8947.

1.2 Regulatory Requirements

The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations, 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant led by Dr Sindila Mwiya as the Environmental Assessment Practitioner to prepare EIA Report to support the application for ECC (Annex 1).

The Proponent is required to have undertaken Environmental Assessment comprising the preparation of an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Reports for the proposed minerals prospecting activities in order to support the application for ECC as provided for in the confirmation of screening notice dated 13th December 2023 and received through email from the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) in terms of assessment procedures (Section 35 (1)(a)(b) of the Environmental Management Act, No 7 of 2007) (Annex 2).

1.3 Location, Land Use, Infrastructure and Services

1.3.1 Location and Land Use

The Exclusive Prospecting Licence (EPL) No. 8947 is located in the Karibib / Omaruru District of the Erongo Region, in the west-central Namibia (Figs. 1.1 - 1.4). The general topography is dominated by flat landscape with topographic high area characterised by dendritic ephemeral minor river channels linked to the Omaruru Ephemeral River.

The EPL 8947 fall within the ≠Gaingu Communal Conservancy and the communal land controlled by the !Oe-≠Gân Traditional Authority (area: 7,731 km²) while no freehold (commercial) conservancies are within the immediate area (Figs. 1.3 and 1.4).

The key important features of the ≠Gaingu Communal Conservancy but not related or close to the to the EPL area are the Spitzkoppe National Monument Area, and Rössing Mountain found along the routes to Walvis Bay and Swakopmund towns (Figs. 1.3 and 1.4). Around the Spitzkoppe Mountains

situated to the east of the EPL area, the ≠Gaingu Communal Conservancy is involved in enterprises such as Spitzkoppe Community Camp (community rest camp), trophy hunting, and semi-precious stone market. Within the ≠Gaingu Communal Conservancy close to the northern boundary of the EPL area, there is the Omaruru Game Park that seem to covering the Omaruru River delta (OMDEL). However, no records could be found on the formal proclamation of Omaruru Game Park (Figs. 1.3 and 1.4).

The general land uses of the regional area are mainly dominated by conservation, agriculture (small stock), minerals prospecting and small-scale mining operations. Game (wildlife) farming, tourism and hospitality are among the fast-growing land uses options in the region especial to the east of the EPL area around Spitzkoppe, Omaruru, Karibib and Usakos areas.

The EPL area has seen extensive exploration activities and small-scale dimensions stone mining operations. There are several excavations, paths / tracks, old dimensions stone quarry, waste rocks stockpiles as well as abonnement equipment from previous operations (Plates 1.1 - 1.3).

1.3.2 Supporting Infrastructure and Services

The EPL area is well connected to the national supporting road infrastructure and is accessible by road using the B2 road leading to Swakopmund and branching of on the D1918 or the C34 road leading to Henties Bay (Figs. 1.1 and 1.2).

A number of minor gravel roads cut across these EPL area and will be used to access the area of interest within the EPL 8947.

There is no mobile / fixed telecommunication services, local water and electricity infrastructure networks within the EPL area. However, the proposed exploration and small-scale test mining activities programme will not require major water and energy supplies.

Sources of water supply for exploration and small-scale test mining will be obtained from local boreholes to be drilled based on the results of the groundwater exploration activities that will be undertaken as part of the geological mapping and drilling operations.

Alternatively, a water tanker collecting water from the Town of Usakos / Henties Bay be considered as another means of supply water for the proposed exploration and small-scale test mining operations.

Electricity supply will be provided by diesel generators and solar as maybe required.

However, in an event of a discovery of economic minerals deposit that could be developed into a mining project, the sources of water supply will be provided by NamWater from possible limited local borehole to be drilled in the short-term and from pipeline from any nearby NamWater Scheme.

Electricity supply will be provided by NamPower from already existing infrastructure in the region in addition to use of renewable energies sources such as solar and possible wind.

Figure 1.1: Regional location of the EPL No. 8947.

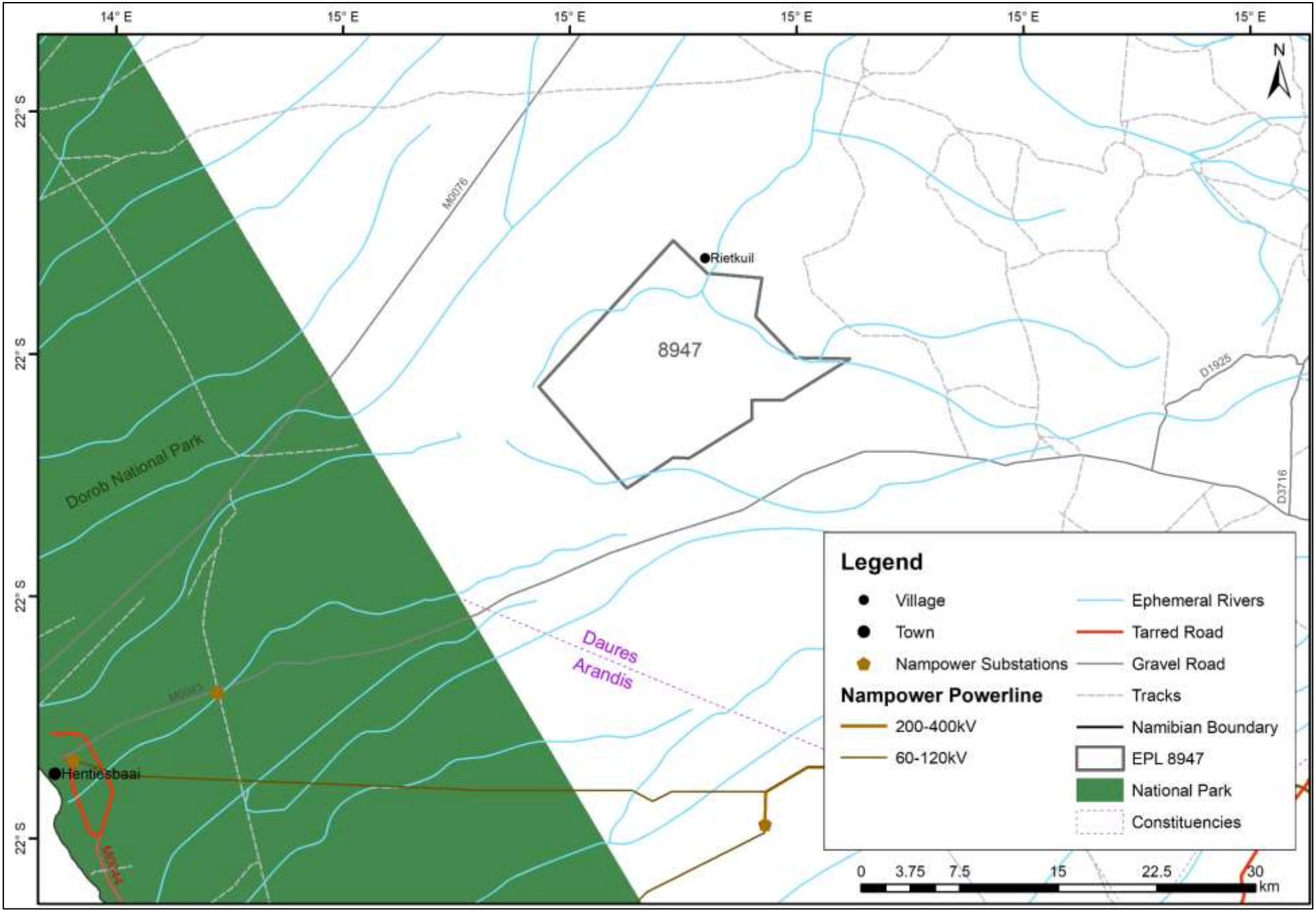

Figure 1.2: Detailed regional location of the EPL 8947.

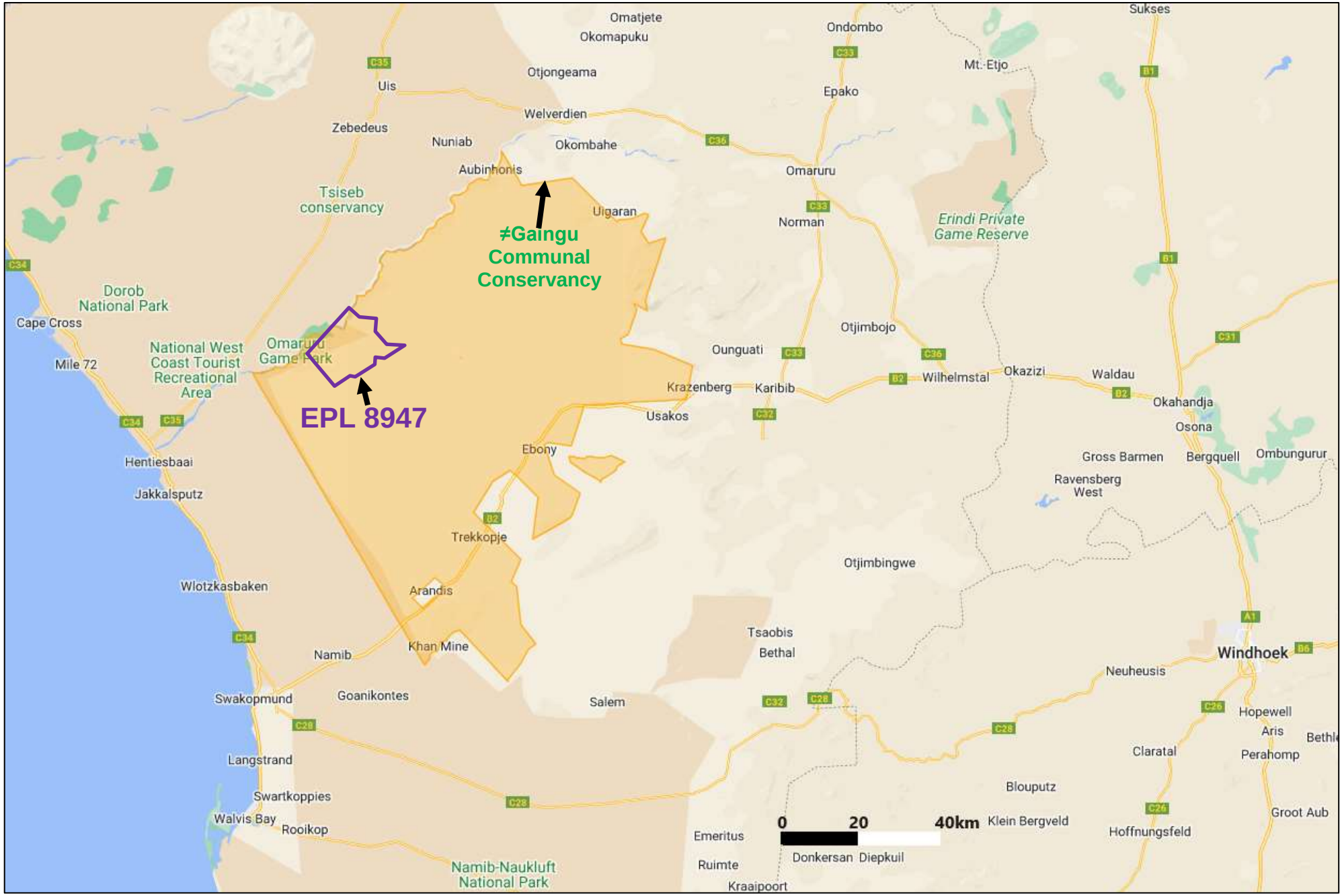

Figure 1.3: Detailed regional location of the EPL 8947 with respect to the≠Gaingu Communal Conservancy (Source: www.nacso.org.na/).

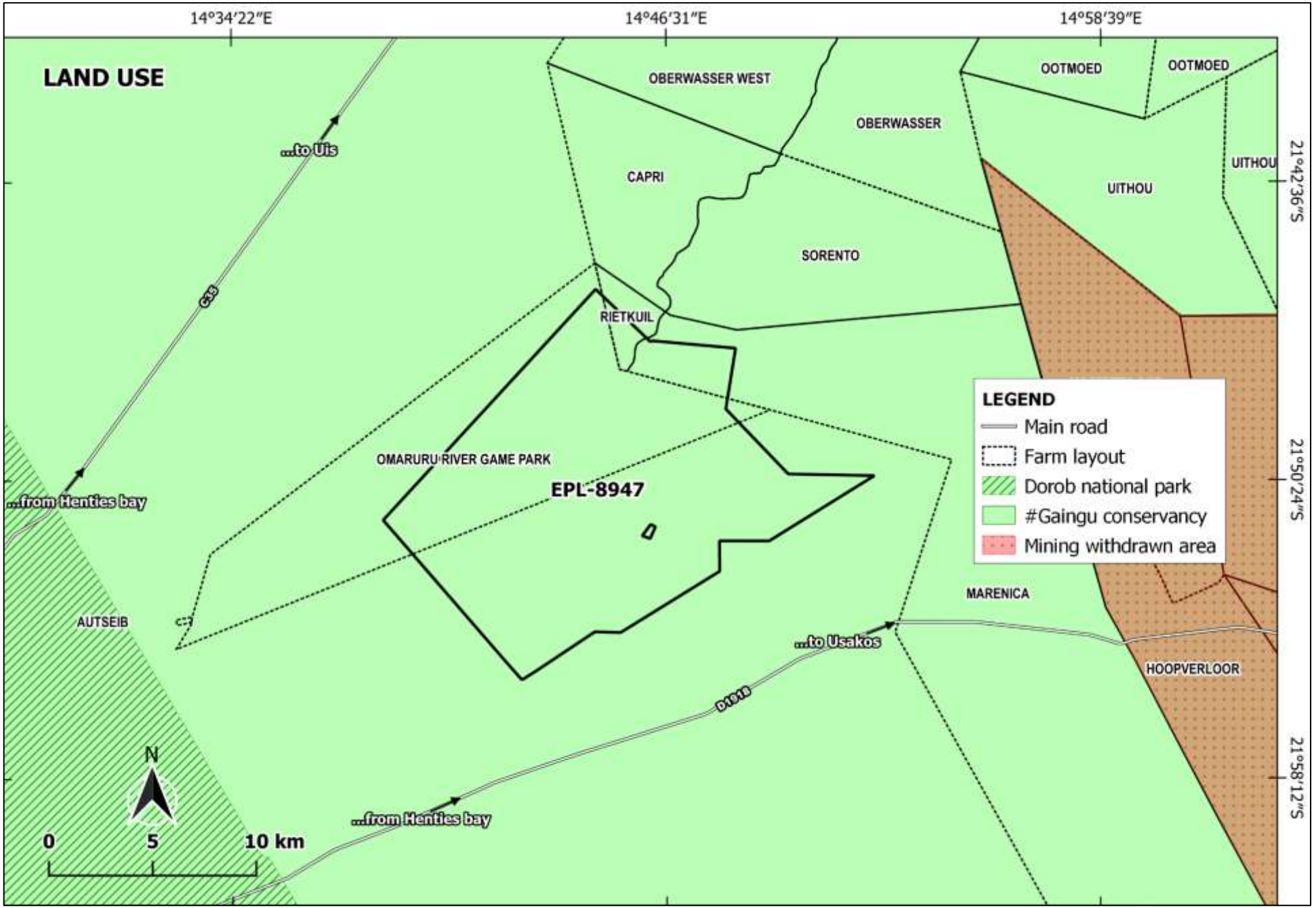

Figure 1.4: Land use around the EPL 8947 and surrounding area.

Plate 1.1: Existing disturbances and excavations, old dimension stone quarry found within the EPL Area.

Plate 1.2: Existing disturbances waste rock and access roads associated with old dimension stone quarry and other previous exploration activities found within the EPL Area.

Plate 1.3: Existing disturbances, old excavations, rock wastes and abandoned equipment found within the EPL Area.

1.4 Project Motivation

The EPL 8947 falls within the central Damara Belt which is regarded one of the highly prospective for dimension stone, base and rare metals, industrial minerals, precious metals and nuclear fuels group of minerals in Namibia.

The proposed / ongoing exploration activities has some limited socioeconomic benefits which are mainly centred around the payment of the annual license rental fees to the Central Government through the Ministry of Mines and Energy (MME) and value addition to the potential underground mineral resources in the area which otherwise would not have been known if the exploration in the EPL 8947 did not take place.

The potential discovery of additional economic minerals resources and the development of new mining project in the area will have much greater and positive socioeconomic benefits to the local and regional communities as well as Namibia as a whole.

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

1.5 Approach, Alternatives, Key Issues and Methodology

1.5.1 Terms of Reference (ToR) and Approach

Risk-Based Solutions (RBS) was appointed by the Proponent to prepare the EIA and EMP Reports to support the application for renewal of the Environmental Clearance Certificate (ECC) for the EPL No. 8947 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 Final EIA and EMP Reports 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 (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through the Ministry of Mines and Energy (the Competent Authority) for review and issue of the Records of Decisions (RDs).

The 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 the preparation of the BI/Scoping, EIA and EMP Reports.

<table>
<tr><th colspan="2">PROJECT ACTIVITIES</th><th>ALTERNATIVES CONSIDERED</th><th colspan="2">Key Issues to be Evaluated and Assessed with Environmental Management Plan (EMP) / Mitigation Measures Developed</th></tr>
<tr><td>1. Project Implementation and Initial Desktop Exploration Activities</td><td>Review of existing information and all previous activities in order identify any potential target/s in within the EPL Area</td><td rowspan="6">(i) Location for Minerals Occurrence: Several 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</td><td colspan="2">Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism, and agriculture</td></tr>
<tr><td>2. Regional Reconnaissance Field-Based</td><td>Reginal mapping and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (1) above</td><td rowspan="2">PHYSICAL ENVIRONMENT</td><td rowspan="2">• Water Quality
• Physical infrastructure and Resources
• Air quality,
• Noise and dust
• Landscape and topography value
• Soil quality
• Climate Change Influences</td></tr>
<tr><td>3. Initial Local Field-Based Activities</td><td>May include Widely spaced geological mapping, sampling, surveying and possible trenching and drilling to determine the viability of any delineated local target/s</td></tr>
<tr><td>4. Detailed Local Field-Based Activities on Delineated Targets If Any</td><td>Following the delineation of potential target/s, conduct detailed mapping, trenching, sampling, surveying, and drilling in order to determine the viability of the project.</td><td>BIOLOGICAL ENVIRONMENT</td><td>• Habitat Protected Areas
• Flora
• Fauna
• Ecosystem functions, services, use values and non-Use or passive use</td></tr>
<tr><td>5. Prefeasibility and Feasibility Studies</td><td>Assess the viability of any delineated local target/s and more detailed mapping, trenching, bulk sampling, drilling, and test mining activities where applicable. If the project proves viable, a feasibility report and application for Mining License will be undertaken.</td><td>SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT</td><td>• Local, regional, and national socioeconomic settings
• Commercial Agriculture
• Community Protected Areas
• Tourism and Recreation
• Cultural, Biological and Archaeological Resources</td></tr>
</table>

1.5.2 Environmental Assessment Process and Steps

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

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

(i) Project screening process (**Undertaken in September 2023**).

(ii) Preparation of the Draft BID/Draft Scoping Report with Terms of Reference (ToR) for review by the Proponent (**Undertaken in October 2023**).

(iii) Preparation of the Public Notice to be published in the local newspapers as part of required public consultation process (**Undertaken in in October 2023**).

(iv) Opened the Stakeholder register (**Undertaken in October 2023**).

(v) Project registration / notification through the completion of the online formal registration / notification form on the MEFT online Portal (www.eia.meft.gov.na), together with the hardcopies of the Draft BID/Scoping Report with ToR submitted to the Environmental Commissioner in the MEFT through the Ministry of Mines and Energy (MME) Director of Energy (Competent Authority) for review (**Undertaken in November 2023**).

(vi) Published public notices inviting stakeholders and the public to participate in environmental assessment process. Notices were published in the local newspapers (**Undertaken in October 2023 from the 5th – 27th October 2023 and run for a period of 21 days from the 1st publication**).

(vii) Preparation of the Draft EIA and EMP Reports for client review (**Undertaken in October and November 2023**).

(viii) Comments and inputs from the client and stakeholder consultations used to finalise the EIA and EMP Reports (**Undertaken in November 2023**).

(ix) The final EIA and EMP reports to be submitted to the Environmental Commissioner in MEFT through the MME (Competent Authority) in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project (**Undertaken in December 2023 and January 2024**).

(x) Following the submission of the application for ECC to the Environmental Commissioner, the public and stakeholders who are interested or affected by the proposed project will have additional **fourteen (14) days** to submit comments / inputs about the proposed project direct to the Environmental Commissioner when the application will be made available for additional comments / inputs by the Environmental Commissioner on the MEFT digital Portal www.eia.meft.gov.na, (**To be Undertaken in January 2024**), and.

(xi) Wait for the Records or Decisions (RDs) from the Environmental Commissioner (**From January 2024**).

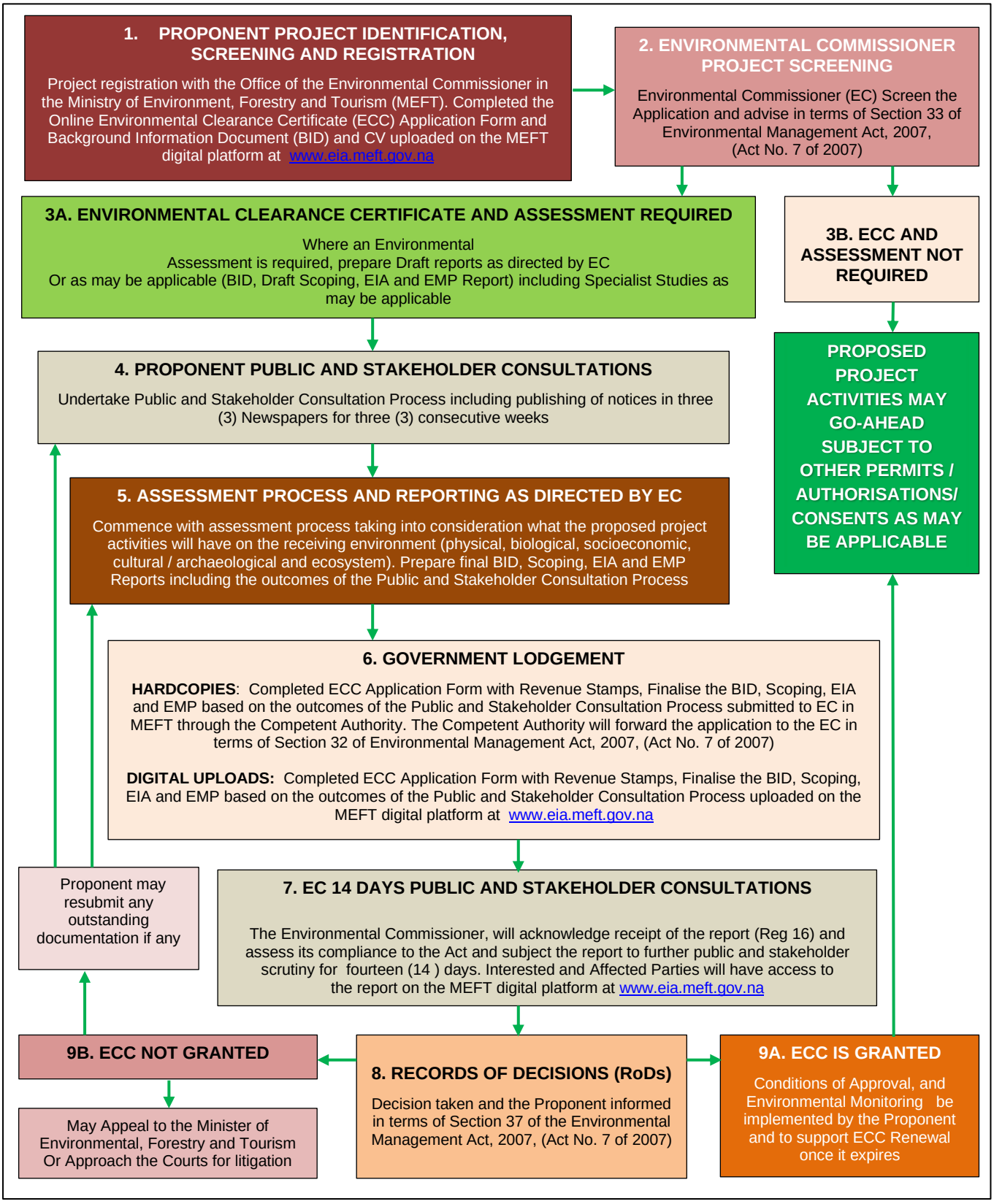

Figure 1.5: RBS Schematic presentation of Namibia's Environmental Assessment Procedure.

1.5.3 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.

1.6 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 / ongoing project activities (exploration / prospecting programme) is to search for potential economic minerals resources within the EPL area. The exploration activities to be undertaken as assessed in this environmental assessment are as follows:

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

(ii) Regional reconnaissance field-based mapping and sampling activities (Subject to the positive results of (i).

(iii) Initial local field-based mapping and sampling activities (Subject to the positive results of (i) and (ii) above),

(iv) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling (Subject to the positive results of (i) - (iii) above), and.

(v) Prefeasibility and feasibility studies (Subject to the positive results of (i) - (iv) above).

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 in the area. In the absences 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 absences 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 Proposed Detailed Local Field-Based Activities

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

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

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

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

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

2.3 Prefeasibility and Feasibility Study

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

(i) Detailed site-specific surveys.

(ii) Detailed geological mapping.

(iii) Bulk sampling and testing.

(iv) Ore reserve calculations.

(v) Geotechnical studies for mine design.

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

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

(viii) Environmental Impact Assessment for mining.

(ix) Environmental Management Plan for mining.

(x) Test mining activities, and.

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

Field-based support and logistical activities will be very extensive because the local field-based activities will be undertaken on a specific area for a very long time (up to one year or more in some instances). The activities will be supported by existing tracks and campsites / lodging facilities available in the area.

3. LEGISLATIVE FRAMEWORK

3.1 Overview

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

3.2 Key Applicable Legislation

3.2.1 Minerals Exploration and Mining Legislation

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

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

3.2.2 Environmental Management Legislation

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

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

3.2.3 Water Legislation

The Water Act 54 of 1956 has now been replaced by the Water Resources Management Act, 2013 (Act No. 11 of 2013), which commenced in August 2023 following the Gazetting of the Water Resources Management Regulations, 2023. The Water Resource Management Act 2013 and the Regulations provides for the management, development, protection, conservation, and use of water resources. The Water Resources Management Regulations, 2023, comprising the following fourteen (14) parts:

1. Preliminary.

2. Pricing policy for services in water sector.
3. Basin management committees.
4. Water management standards and licensed laboratories.
5. Water services, abstraction and use licenses.
6. Procedures and conditions for artificial recharge of aquifers.
7. Driller's licences.
8. Water pollution control.
9. Dams, dam safety and flood management.
10. Control of activities affecting wetlands, water resources and resource quality.
11. Removal of rocks, sand, or gravel from watercourse for sale or commercial exploitation.
12. Control of aquatic invasive species.
13. Protection of riparian zones, and.
14. Water services provided by State.

The Proponent shall take not of all the provisions of the Water Resources Management Regulations, 2023 including licensing requirements related to the proposed minerals explorations. In accordance with the Act, the ongoing exploration must ensure that mechanisms are implemented to prevent water pollution.

Certain permits will also be required to abstract groundwater as well as for "water works". The broad definition of water works will include the reservoir on site, 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.

3.2.4 Atmospheric Pollution Prevention Legislation

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

3.2.5 Labour, Health, and Safety Legislations

The Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007), falling under the Ministry of Labour, Industrial Relations, and Employment Creation (MLIREC) 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.

3.2.6 Other Applicable National Legislations

Other Important legislative instruments applicable to the ongoing exploration operations in the EPL 8947 include the following (Table 3.1):

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

Table 3.1 summarises the key selected legislations relevant applicable to the ongoing exploration in the EPL 8947.

3.3 Standards and Guidelines

Industrial effluent likely to be generated by the proposed activities must comply with provisions of the provisions of the Water Resources Management Regulations, 2023. 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 3.2).

Noise abatement measures must target to achieve either the levels shown in Table 3.3 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

Table 3.1: Legislation relevant to the ongoing exploration operations in the EPL 8947.

LAW	SUMMARY DESCRIPTION
Constitution of the Republic of Namibia, 1990	The Constitution is the supreme law in Namibia, providing for the establishment of the main organs of state (the Executive, the Legislature, and the Judiciary) as well as guaranteeing various fundamental rights and freedoms. Provisions relating to the environment are contained in Chapter 11, article 95, which is entitled "promotion of the Welfare of the People". This article states that the Republic of Namibia shall – "Actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at … maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for all Namibians, both present and future. The Government shall provide measures against the dumping or recycling of foreign nuclear waste on Namibian territory."
Minerals (Prospecting and Mining) Act, 1992 ***Ministry of Mines and Energy (MME)***	The Minerals Act governs minerals prospecting and mining. The Act *provides for the reconnaissance, prospecting, and mining for, and disposal of, and the exercise of control over minerals in Namibia. and to provide for matters incidental thereto. A new Minerals Bills is currently under preparation.*
Environmental Management Act (2007) - ***Ministry of Environment, Forestry and Tourism*** **(MEFT)**	The purpose of the Act is *to give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources. to promote the co-ordinated and integrated management of the environment. to give statutory effect to Namibia's Environmental Assessment Policy. to enable the Minister of Environment and Tourism to give effect to Namibia's obligations under international conventions*. In terms of the legislation, it will be possible to exercise control over certain listed development activities and activities within defined sensitive areas. The listed activities in sensitive areas require an Environmental Assessment to be completed before a decision to permit development can be taken. The legislation describes the circumstances requiring Environmental Assessments. Activities listed as per the provisions of the Act will require Environmental Assessment unless the Ministry of Environment, Forestry and Tourism, in consultation with the relevant Competent Authority, determines otherwise and approves the exception.
Water Resources Management Act, 2013 (Act No. 11 of 2013) and the Regulations, 2023 **Minister of Agriculture, Water and Land reform (MAWLR)**	This Act provide for the management, protection, development, use and conservation of water resources; to provide for the regulation and monitoring of water services and to provide for incidental matters. The Act provides for no rights 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, 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.
Forest Act 12 of 2001 - **Minister of Environment, Forestry and Tourism (MEFT)**	The Act provide for the establishment of a Forestry Council and the appointment of certain officials. to consolidate the laws relating to the management and use of forests and forest produce. to provide for the protection of the environment and the control and management of forest fires. Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove: (a) any vegetation which is on a sand dune or drifting sand or in a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully or (b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse. Should either of the above be unavoidable, it will be necessary to obtain a permit from the Ministry. Protected tree species as listed in the Regulations shall not be cut, destroyed, or removed.
Hazardous Substance Ordinance 14 of 1974 ***Ministry of Health and Social Services***	Provisions for hazardous waste are amended in this act as it provides "*for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance. and to provide for matters connected therewith".*

Table 3.1: *Cont.*

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

Table 3.2: 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 3.3: Noise emission levels (MIGA /IFC).

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

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 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 all the applicable permits as provided in the Water Resources Management Regulations, 2023 including freshwater abstraction and wastewater 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 and test mining activities.

4. RECEIVING ENVIRONMENT

4.1 Climatic Settings

The EPL 8947 area is located in the Karibib District, Erongo Region in central Namibia with daytime warm to hot temperatures throughout the year, while the nights are mild to cool in winter. The mean annual rainfall is highly variable and may range between 200 - 300 mm in some parts of the EPL area (Fig. 4.1). The distribution of rainfall is extremely seasonal with almost all the rain falling in summer - from November to April with occasional with mean annual gross evaporation of about 3300 mm (Fig. 4.1). The local project area has the following three distinct seasons:

- A dry and relatively cool season from April to August with average daytime highs of 23°C and virtually no rainfall during this period.

- A hot and dry season from September to December with minimal and variable rainfall falling (<20mm per month) and average daytime highs of 30°C, which regularly exceed 40°C, and.

- A hot and rainy season from January through to March with >50mm per month falling during this period (although this is extremely variable) and average high temperatures of 29°C.

The project area does not have a weather station with reliable wind records. However, based on the regional wind patterns, the prevailing wind in the area seems to be dominated by winds from the north eastern and southwest quadrants. Locally, the situation may be different dues various influences including topographic effects.

The Namib Desert is heavily influenced by high pressure systems, the sub continental high and the South Atlantic high. The coastal winds are driven by the South Atlantic high-pressure systems, resulting in strong winds prevailing from the south or south-west (Figs. 4.2 and 4.3). The cold Banguel Current on the Namibian coastline influences the South-westerly winds.

The stronger winds experienced in the coastal towns and surroundings are mainly north-easterly or east winds. These winds are usually dry and hot with a wind speed of about 27km/hour. This influence is experience to up to 50 days annually between the months of April to September. Within the project area, stronger winds are dominated by the south-westerly or a north-easterly component (Figs. 4.2 and 4.3). The wind is stronger in winter due to high pressure system of inland regions.

The general air quality ranged from 16.61 to 101.88 (mg/m^{2}day) while the noise levels ranged from 59.8 - 76.2 (dBA). The study has found that the existing air quality and noise pollution are below acceptable limit hence following or adopting the proposed recommendations will help to improve compliance during mining.

Based on the regional climatic data sets, it is likely that very limited proportion of windblown dust will be generated during the proposed project lifecycle covering the various stages of the proposed exploration, and possible test mining. Due to the proximity of other mines and quarries in the area, there will be potential for cumulative impacts on the air quality occurring. This is likely to occur when the threshold wind speed of 4.5 m/s is exceeded.

The threshold wind speed is dependent on the erosion potential of the exposed surface, which is expressed in terms of availability of erodible material per unit area. Any factor that binds the erodible material will significantly reduce the availability of erodible material on the surface, thus reducing the erosion potential of the surface. Namibia does not have air quality standards. Nonetheless, the Proponent, must aim at reducing hazardous air pollutant (HAPs) emissions to levels that comply with long-term regional (SADC) and international standards air quality guidelines.

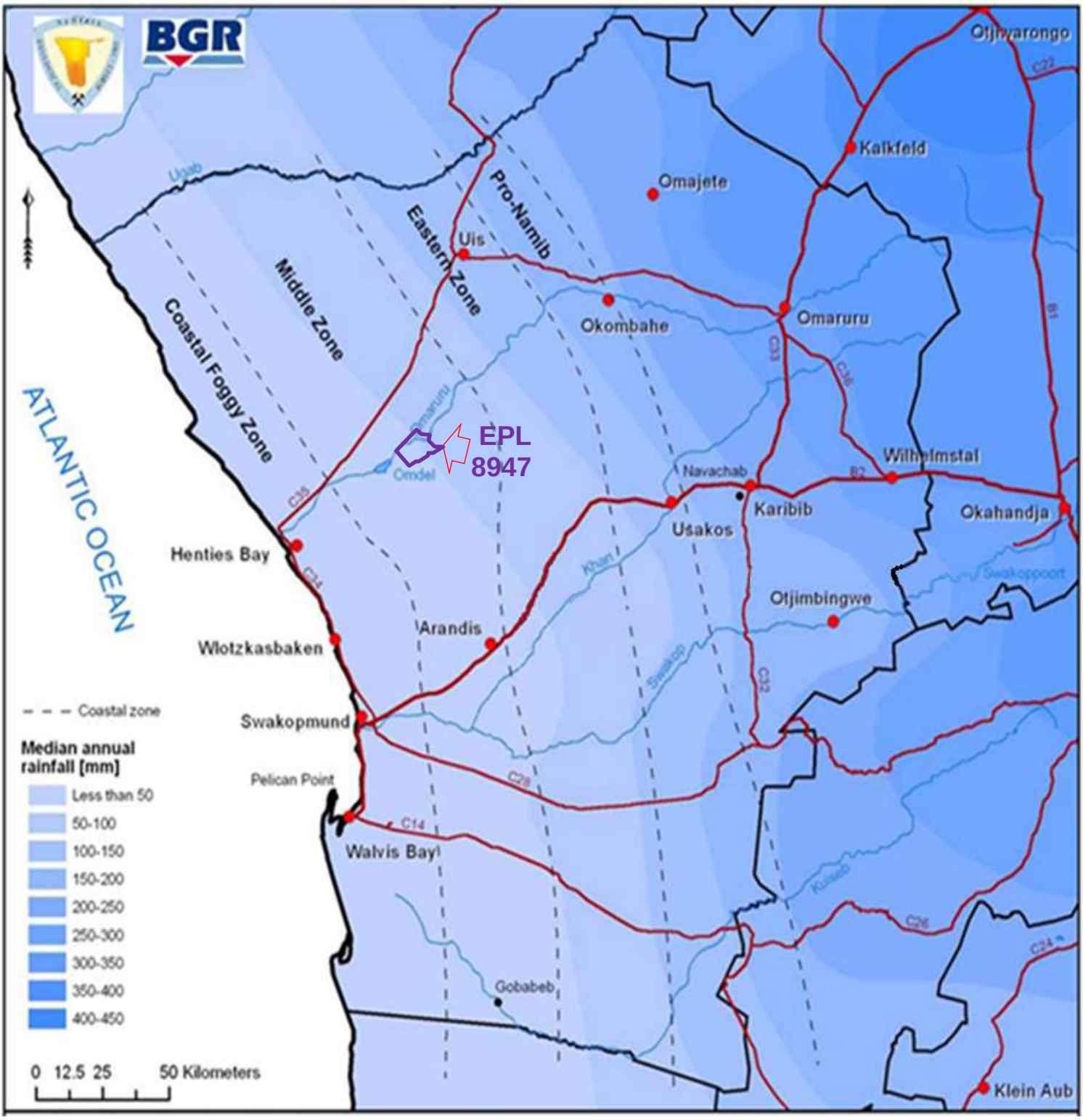

Figure 4.1: Median annual rainfall of central Namib Desert showing the location of the project area, EPL 8947 (Source: Ministry of Mines and Energy (MME), 2010).

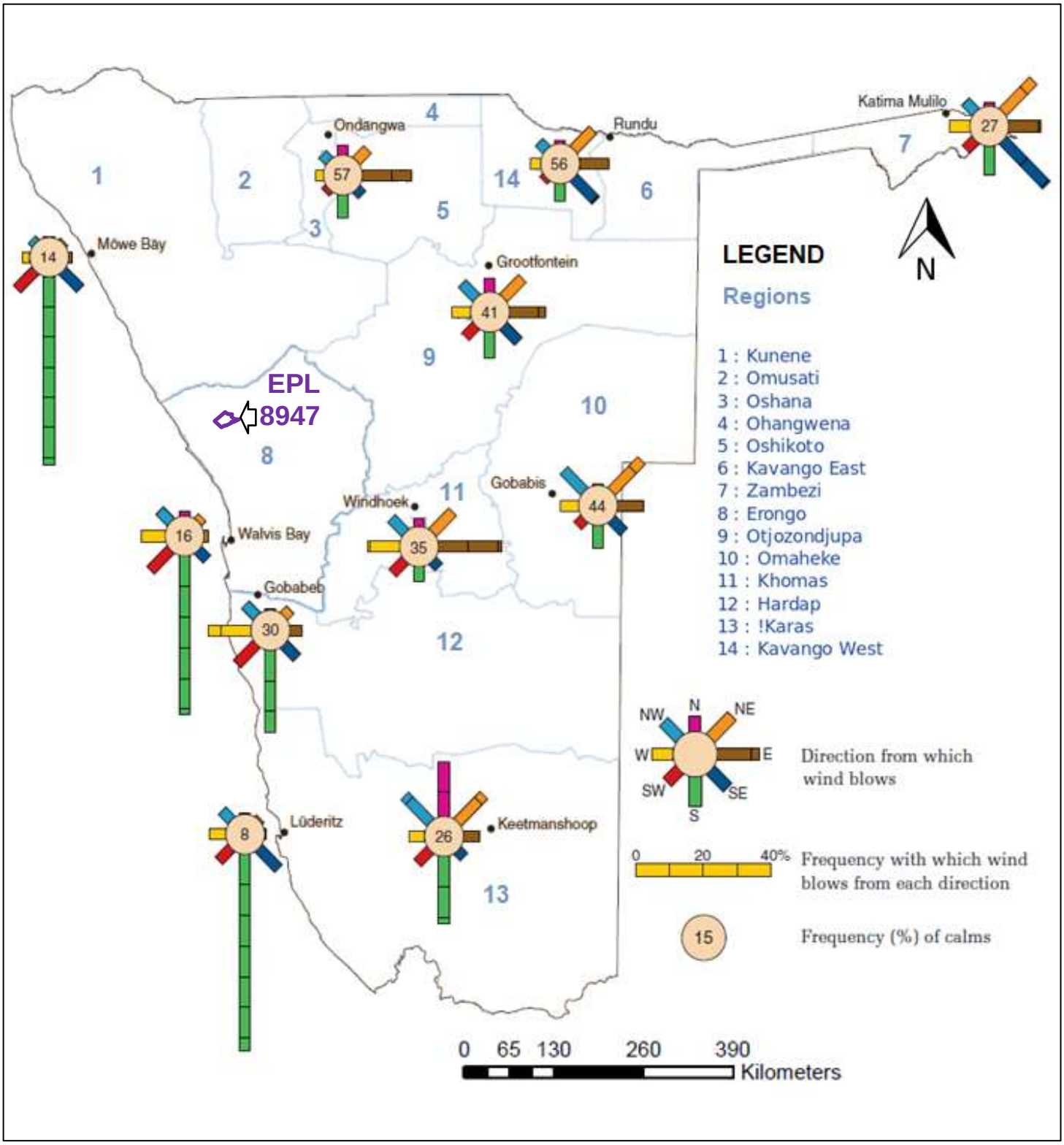

Figure 4.2: Regional wind patterns (Data Source: Directorate of Environmental Affairs, 2002).

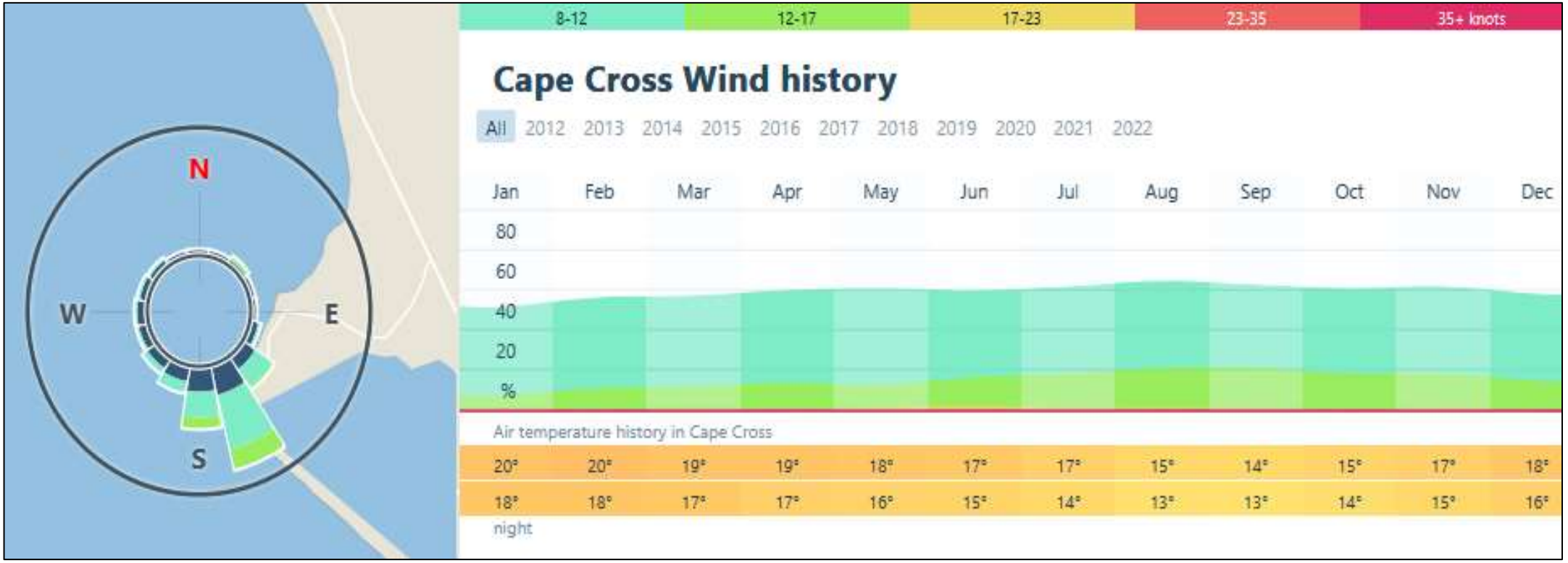

Figure 4.3: Cape Cross wind and air temperature history, key climatic parameters that support solar sea salt mining operations (Source: https://windy.app/forecast2/spot/80905/Cape+Cross/statistics).

4.2 Regional Physical Geography

The proposed project area falls within the Erongo Region in the central western part of Namibia. On the Western part of the region is the Atlantic Ocean with Ugab River in the North and Kuiseb River as the southern boundary (Ministry of Mines and Energy (MME), 2010). The Namib Desert borders the Namibian coastline with Atlantic Ocean and stretching inwards to about 120-150 km. The topography of land rises steadily from sea level to about 1000m across the Namib Desert. Most of the land within Namib Desert is flat to undulating gravel plains, with occasional ridges and isolated inselberg hills and mountains. In the far north of the Erongo Region lies the Brandberg at a highest peak of 2579 m, making it the country's highest mountain.

Ephemeral rivers in Erongo region run through from their inland catchment to seawards direction. These rivers include the Swakop River with its main tributary the Khan River, the Omaruru River, Kuiseb and Ugab River. The surface flows of the ephemeral rivers in the region are short-lived and only their alluvial aquifers provide a source of groundwater. Paleochannels in the Omaruru River form the underground Omaruru delta also providing a significant source of surface water for the central Namib.

The EPL area falls within the western edge Great Escarpment. The area is characterised by relatively flat topography, with the exception of local ridges and hills where more competent rocks occur, forming conspicuous topographic elevated surface expressions. Small, ephemeral rivers linked to the Omaruru Ephemeral River and all flow only when it rains and dry most of the year dominate the general drainage (Figs. 4.4 and 4.5). The elevation above mean sea level (amsl) ranges from 400 m to 650 m in the northwestern and southeastern portions of the EPL area respectively (Figs. 4.4 and 4.5).

4.3 Habitat and Ecosystem

4.3.1 Overview

The EPL 8947 fall in the general area commonly referred to as the Central Namib (Giess 1971) or the Central Desert (Mendelsohn et al. 2002). Locally, the EPL area falls within the edge of the central western escarpment and inselbergs and west highlands boundary (Fig. 4.4). The vegetation structure is classified as sparse shrubs and grasses with most grasses being annuals (Mendelsohn et al. 2002) with the plains being "normally" bare, but covered with scattered clumps of Mesembryanthemun cryptanthum, Sporobolus nebulosus and Stipagrostis species after rains (Fig. 4.5). The EPL 8947 fall within the ≠Gaingu Communal Conservancy and the communal land controlled by the !Oe-≠Gân Traditional Authority (area: 7,731 km²) while no freehold (commercial) conservancies are within the immediate area (Mendelsohn et al. 2002, NACSO 2010). The major wildlife resources of the ≠Gaingu Communal Conservancy are viewed as kudu, gemsbok, springbok and leopard while the most important features are the Spitzkoppe National Monument Area and Rössing Mountain (Figs. 4.5 and 4.6).

The general EPL area is regarded as "low" in overall (all terrestrial species) diversity while the overall terrestrial endemism on the other hand is "moderate to high" (Mendelsohn et al. 2002). The overall diversity and abundance of large herbivorous mammals (big game) is viewed as "low" with 1-2 species while the overall diversity of large carnivorous mammals (large predators) is viewed as "average to high" with 4 species important of which brown hyena have "medium" densities (Mendelsohn et al. 2002).

Often deserts and plants associated with this marginal area may look "dead" although are not, and thus not viewed as important. All desert vegetation serves as a source of habitat and/or food for desert dwelling fauna – e.g., arthropods and reptiles. Although the focus during this literature survey was on the more visible trees, shrubs, grasses and more important other species potentially occurring in the general area, many more species occur throughout the area and are viewed as important.

Overall, it is estimated that at least 54 reptile, 5 amphibian, 45 mammal, 129 bird species (breeding residents), at least 20-47 species of larger trees and shrubs (>1m) and up to 50 grasses are known to or expected to occur in the general EPL area of which a high proportion – especially reptiles (53.7%) – are endemics species.

Figure 4.4: Topographic map showing the EPL 8947 boundary and surrounding area landscape characteristics.

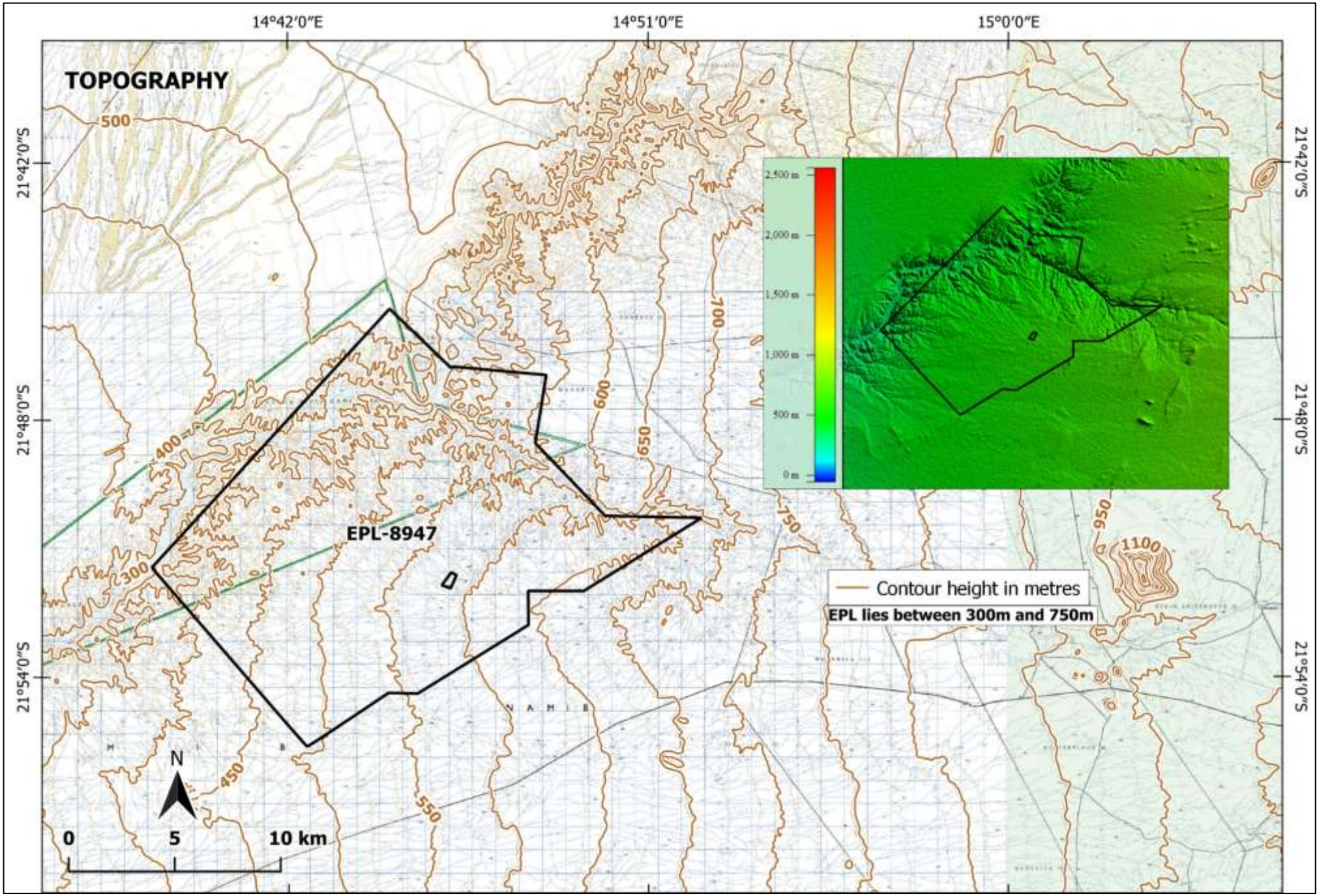

Figure 4.5: Detailed topographic map of the EPL 8947 and surrounding areas.

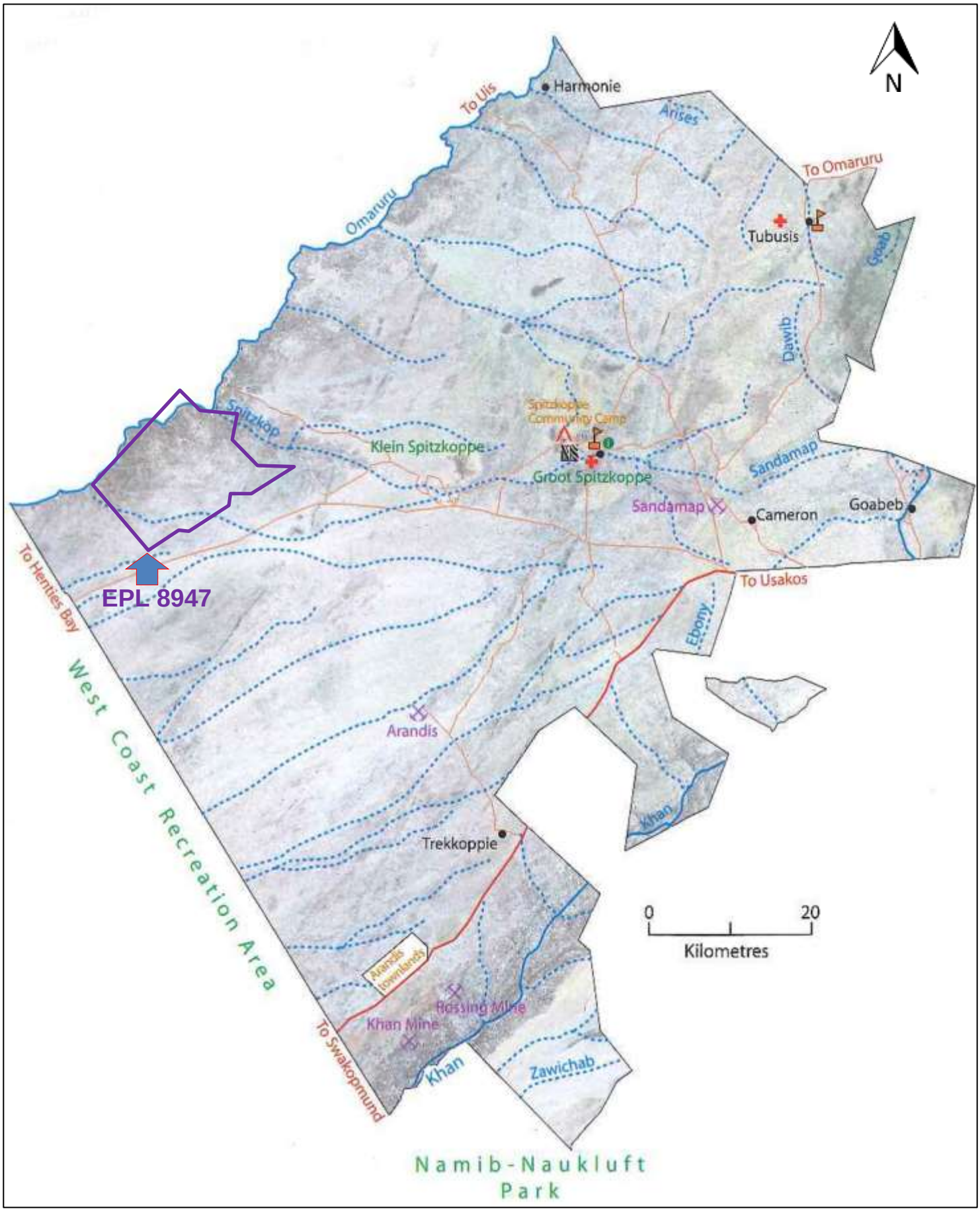

Figure 4.6: Location of the 8947 falling within the ǂGaingu Communal Conservancy area used for communal conservation, tourism and agriculture comprising cattle and small stock commercial / subsistence communal farming (Source: www.nacso.org.na).

4.3.2 Flora

4.3.2.1 Trees/Shrubs and Grasses

The Namib Desert is an important area in Namibia with numerous endemics and near-endemic species as well as a host of other plant species classified with some kind of formal protection. Adenia pechuelii (protected Forestry, endemic and least concern – IUCN 2020), Capparis hereroensis (endemic), Commiphora dinteri, C. saxicola, C. virgata (protected and endemic) as well as Welwitschia mirabilis (protected Forestry and Nature Conservation, near-endemic, CITES Appendix 2) are probably the most important larger trees/shrubs that occur in the general area (Figs. 4.7 and 4.8).

Threats include unscrupulous collectors (e.g., Adenia pechuelii, Aloe and Lithop species) and off-road desert driving (Welwitschia mirabilis). The most important grasses expected in the area are the endemics (Eragrostis omahekensis, Pennisetum foermeranum and Stipagrostis sabulicola) although they probably do not make up a large proportion of the grass biomass which is usually dominated by Stipagrostis obtusa in the general area and this only after rains (Figs. 4.7 and 4.8).

4.3.2.2 Other Species

Other species of great importance likely to occur in and around the EPL 8947 are (Figs. 4.7 and 4.8):

(i) **Aloes**: All the aloes are protected in Namibia (See Nature Conservation Ordinance No. 4 of 1975). Other than *Aloe dichotoma* listed in Table 14, *Aloe asperifolia*, *A. hereroensis* and *A. namibensis* probably also occur in the general area (Rothmann 2004).

(ii) **Commiphora**: Many endemic Commiphora species are found throughout Namibia (Steyn 2003) with other important and endemic *Commiphora* species from the area are *Commiphora dinteri*, *C. saxicola*, *C. virgata* and *C. wildii*. Furthermore, *C. wildii* is also known to have an economic potential – i.e., resin properties used in the perfume industry (Knott and Curtis 2006).

(iii) **Ferns**: At least 64 species of ferns, of which 13 species being endemic, occur throughout Namibia. Ferns in the general EPL area include at least 2 endemic species (*Cheilanthes nielsii*, *Isoetes giessii*,) and 9 indigenous species (*Actiniopteris radiata*, *Asplenium cordatum*, *Cheilanthes dinteri, C. inaequalis*, *C. marlothii*, *C. parviloba*, *Isoetes aequinoctialis*, *Ophioglossum polyphyllum, Pellaea calomelanos*) (Crouch *et al.* 2011). Although the EPL area is marginal habitat for ferns the general area is under collected with more species probably occurring than presented above.

(iv) **Lithop**: Are known to occur in the general area and often difficult to observed, especially during the dry season when their aboveground structures wither. Lithop species known to occur in the general EPL area include *Lithops ruschiorum* var. *ruschiorum* and *L. gracilidelineata* var. *gracilidelineata* (Cole and Cole 2005, Loots 2005), and.

(v) **Lichens**: The overall diversity of lichens is poorly known from Namibia, especially the coastal areas and statistics on endemicity is even sparser (Craven 1998). More than 100 species are expected to occur in the Namib Desert with the majority being uniquely related to the coastal fog belt. Lichen diversity is related to air humidity and generally decreases inland form the Namibian coast (Schults and Rambold 2007). Off road driving is the biggest threat to these lichens which are often rare and unique to Namibia, and.

(vi) To indicate how poorly known lichens are from Namibia, the recent publication by Schultz *et al.* (2009) indicating that 37 of the 39 lichen species collected during BIOTA surveys in the early/mid 2000's was new to science (i.e., new species), is a case in point. Lichens are expected to occur in the general EPL area, but what and how many species in currently unknown.

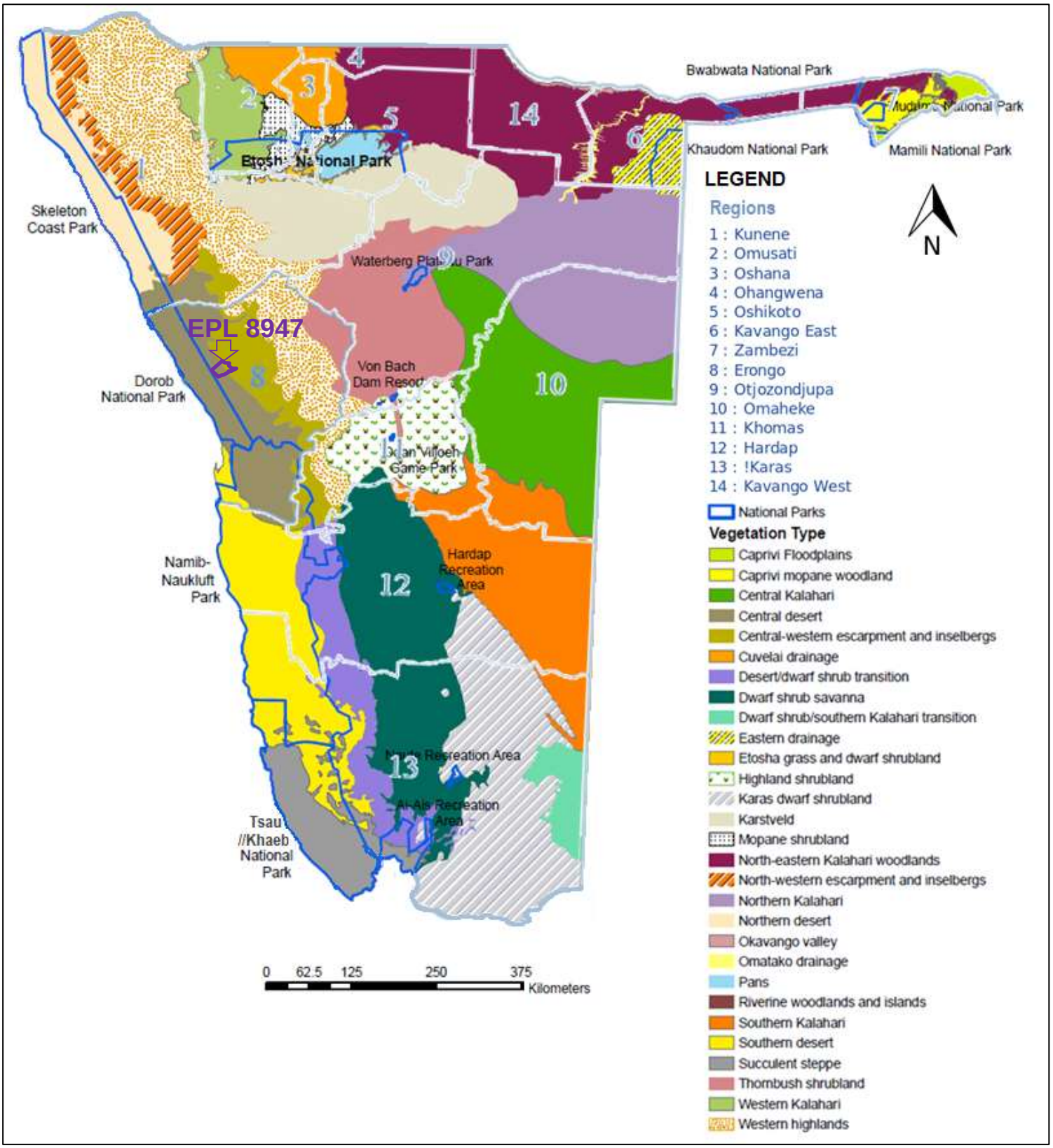

Figure 4.7: Regional vegetation map of Namibia showing the location of the EPL 8947 falling at the edge of the central western escarpment and inselbergs and west highlands boundary (Directorate of Environmental Affairs, 2002).

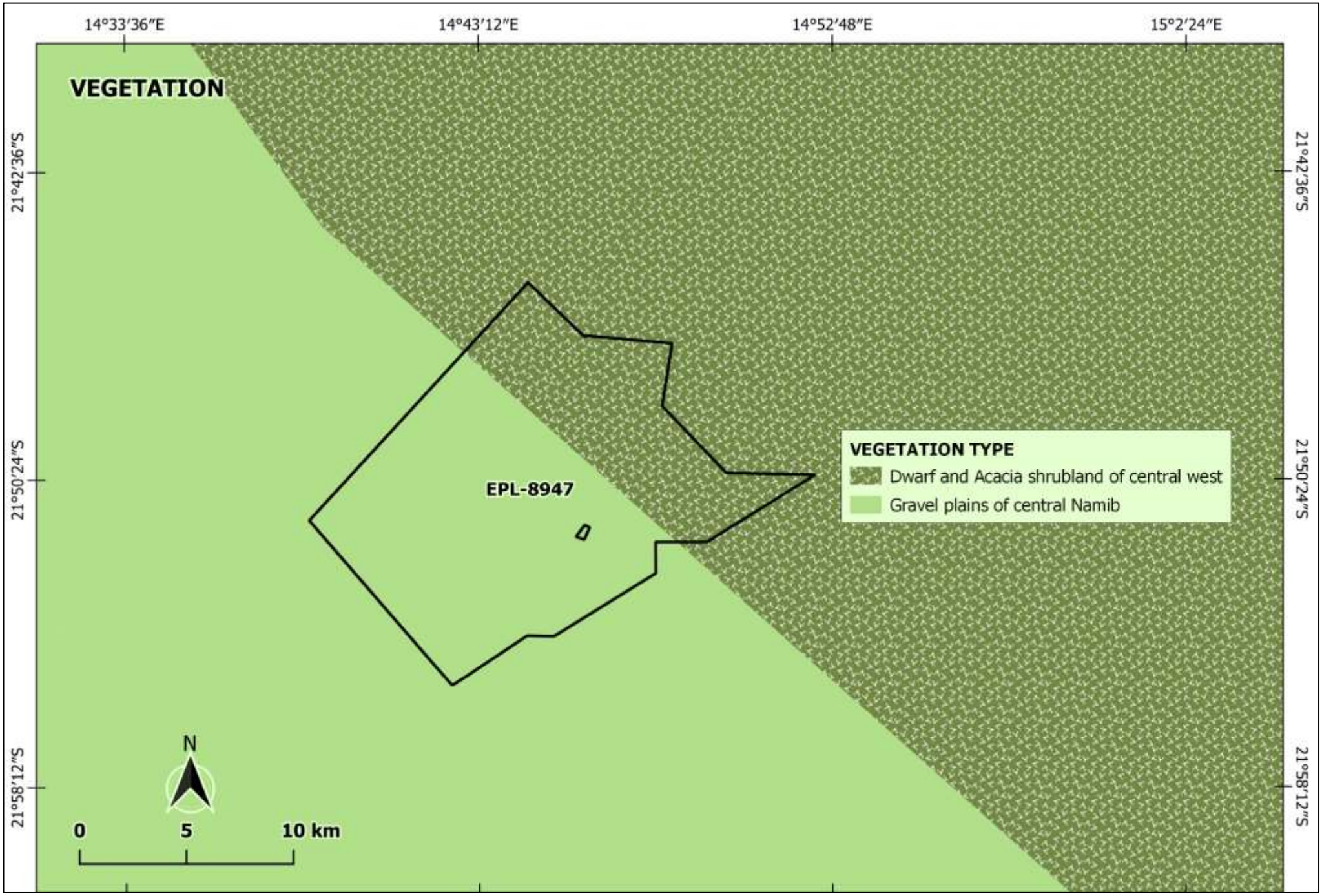

Figure 4.8: Vegetation map of the EPL 8947 boundary and surrounding areas.

4.3.3 Fauna

4.3.3.1 Reptiles

The high percentage of endemic reptile species (54%) known and/or expected to occur in the general EPL area underscores the importance of this area for reptiles. Geckos, with 13 of the 15 species expected to occur in the general area being endemic, are the group of reptiles viewed as most important.

The reptile species of greatest concern and expected to occur in the general area, are probably the endemic Afroedura africana africana (African flat gecko), Pedioplanis husabensis (Husab sand lizard), Leptotyphlops occidentalis (western thread snake) and Lycophidion namibianum (Namibian wolf snake).

4.3.3.2 Amphibians

Of the 5 species of amphibians expected to occur in the general EPL area, 40% (2 species) are of conservation value – i.e., Poyntonophrynus hoeschi and Phrynomantis annectens. However, with the exception of the temporary pools after rains, the general area is viewed as marginal for amphibians.

4.3.3.3 Mammals

Of the 45 species of mammals expected to occur in the general EPL area, 7 species (15.6%) are endemic and 12 species (26.7%) are classified under international conservation legislation. The most important species from the general area are the Namibian wing-gland bat (Cistugo seabrai) listed as endemic and rare; Littledale's whistling rat (Protomys littledalei namibensis) – of which the subspecies "namibensis" is known to occur in the ephemeral river courses and listed as endemic; brown hyena (Hyaena brunnea) and leopard (Parthera pardus) listed as near threatened and vulnerable (population trends decreasing), respectively by the IUCN (2020).

However, brown hyena and leopard are only expected to occasionally pass through the general area not viewed as favoured habitat.

4.3.3.4 Birds

The high proportion of endemics – 7 of the 14 endemics to Namibia (i.e., 50% of all endemics) – expected to occur in the general EPL area underscore the importance of this area. Furthermore, 43 species have a southern African conservation rating with 9 species classified as endemic (20.1% of southern African endemics or 7% of all the birds expected) and 34 species classified as near endemic (79.1% of southern African endemics or 26.4% of all the birds expected) (Hockey et al. 2006).

The most important birds known/expected to occur in the general EPL area are all the endemics species such as the Rüppels korhaan, Gray's lark and Herero chat. Gray's lark one of the species with the most restricted range in Namibia (Simmons 1998a).

Other important species are the birds listed as endangered (Ludwig's bustard, white-backed vulture, black harrier, martial eagle, tawny eagle, booted eagle, black stork), vulnerable (Lappet-faced vulture, secretarybird) and near threatened (Rüppell's parrot, Cape eagle owl, kori bustard, Verreaux's eagle and peregrine falcon) by Simmons et al. (2015) and the species classified as critically endangered (white-backed vulture), endangered (Ludwig's bustard, lappet-faced vulture, black harrier), vulnerable (martial eagle, tawny eagle, secretary bird) and near threatened (kori bustard) by the IUCN (2020).

4.3.4 Important Habitat Areas and Conclusions

The most important areas in the general EPL 8947 area are (Figs. 4.6-4.8):

(i) **Rocky area – e.g., Dolerite hills/ridges and marble outcrops:** Rocky areas including the targeted marble resources generally have high biodiversity and consequently viewed as

important habitat for all vertebrate fauna and flora. Escarpments, mountains and inselbergs are generally considered as sites of special ecological importance with granite domes (e.g., Karibib and Omaruru districts) high in biotic richness and endemism (Curtis and Barnard 1998). Dolerite hills/ridges in particular have unique fauna – e.g., *Pachydactylus* and *Rhoptropus* species – and flora – e.g., *Aloe asperifolia*, *A. namibensis*, various *Commiphora* species, etc. Marble outcrops (white geology) have unique fauna – e.g., the endemic and range restricted *Pedioplanis husabensis*.

(ii) **Ephemeral drainage lines**: Ephemeral drainage lines usually support larger trees and consequently viewed as important habitat for all vertebrate fauna and flora. Ephemeral rivers are viewed as sites of special ecological importance mainly for its biotic richness; large desert-dwelling mammals; high value for human subsistence and tourism (Curtis and Barnard 1998). Such vegetated rivers in an otherwise extreme arid environment are unique habitat and a virtual lifeline to many desert dwelling faunas. Temporary rainwater pools and seeps are also known to occur in some of the major Ephemeral Rivers making these habitats a virtual lifeline to various desert dwelling fauna, and.

(iii) **Gravel plains**: Gravel plains in the area are known to host a variety of important lichen species as well as patches of *Aloe asperifolia*, while quartz dominated areas are known habitat for Lithop species.

As all developments have potential negative environmental consequences, identifying the most important faunal species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development.

Vertebrate fauna species most likely to be adversely affected by the proposed exploration and possible test mining activities in the EPL 8947 would be sedentary reptile species associated with specific geology such as the marble ridges/hills/outcrop targeted for exploration and possible test mining activities– e.g., Pedioplanis husabensis and various *Pachydactylus* and *Rhoptropus* species. Important flora potentially adversely affected would be *Aloe asperifolia*, *A. namibensis*, various *Commiphora* species and *Lithops ruschiorum* var. *ruschiorum* and *L. gracilidelineata* var. *gracilidelineata*.

There are various anthropomorphic activities throughout the general EPL area such as existing roads and tracks, and previous exploration and mining activities, etc.) and the proposed exploration activities would have a limited footprint and not be expected to affect the whole EPL 8947 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 Ground Component

4.4.1 Regional Geology

The regional geology of the EPL area falls within the Northern Zone of the Damara Sequence which underlies most of Namibia (Miller, 1992). The top of the Northern Zone of the Damara Sequence comprise the Mulden Group consists mainly of quartzite and conglomerate but also contains substantial intercalations of shale, marl and phyllite (Fig. 4.9).

The Nosib Complex can be encountered in the Chuos Mountains south-east of Usakos and in the eastern parts of the Kaokoveld (Table 4.1). The regional geology of the EPL falls within an extremely complex layered intrusions and contain rhyolite, grano phyre, granite, syenite, foyaite, gabbro, dunite, pyroxenite and carbonatite (Figs. 4.9 and 4.10).

The surficial geology of the area comprises the recent deposits of the Central Namib Desert. The central part of the Namib Desert is characterised by gravel plains and rocky outcrops (Fig. 4.11).

4.4.2 Local Geology

The EPL area is dominated by granites rock types with dolerites cutting across the granites in some places (Figs. 4.9 and 4.10). A marble outcrop trending NE was observed during the site visit. Light brown with a rough texture on the exposed part and mainly consisting of quartzite and the unit form a circular structure trending NE.

With the surrounding areas mainly flat and the outcropping nature of the marble indicates its high degree to resist erosion. Calc-silicate lenses and quartzite veins are visible within marble unit as well as iron lenses.

Topographically low laying area are covered by alluvial sediments (gravel, sand, clay) and river terraces (calcrete) (Fig. 4.11).

Table 4.1: Partial Lithostratigraphy of the Damara Sequence in Central Namibia (Karibib-Swakopmund Area) (Source: Venmyn Deloitte, 2014).

GROUP	SUB-GROUP	FORMATION	THICKNESS (m)	LITHOLOGICAL DESCRIPTION
Swakop	Khomas	Kuiseb	3,000	Biotite-rich quartzo-feldspathic schist, biotite-garnet-cordierite schist, minor amphibolite schist, quartzite, calc-silicate rock and marble.
		Karibib	700	Marble, biotite schist, quartz schist and calc-silicate rock.
		Chuos	700	Diamictite, pebble- and boulder-bearing schist and minor quartzite
	Discordance			
	Ugab	Rössing	200	Very variable marble, quartzite, conglomerate, biotite schist, biotite cordierite schist and gneiss, aluminous gneiss, biotite-hornblende schist and calc-silicate schist.
Unconformity or conformable transition				
Nosib		Khan	1,100	Various gneisses, quartzite, schist, conglomerate, minor marble, amphibolite and calc-silicate rock.
		Etusis	3,500	Layered light-red to greyish-brown quartzites with high feldspar content. In-between para-gneisses, biotite schists and conglomerates occur.

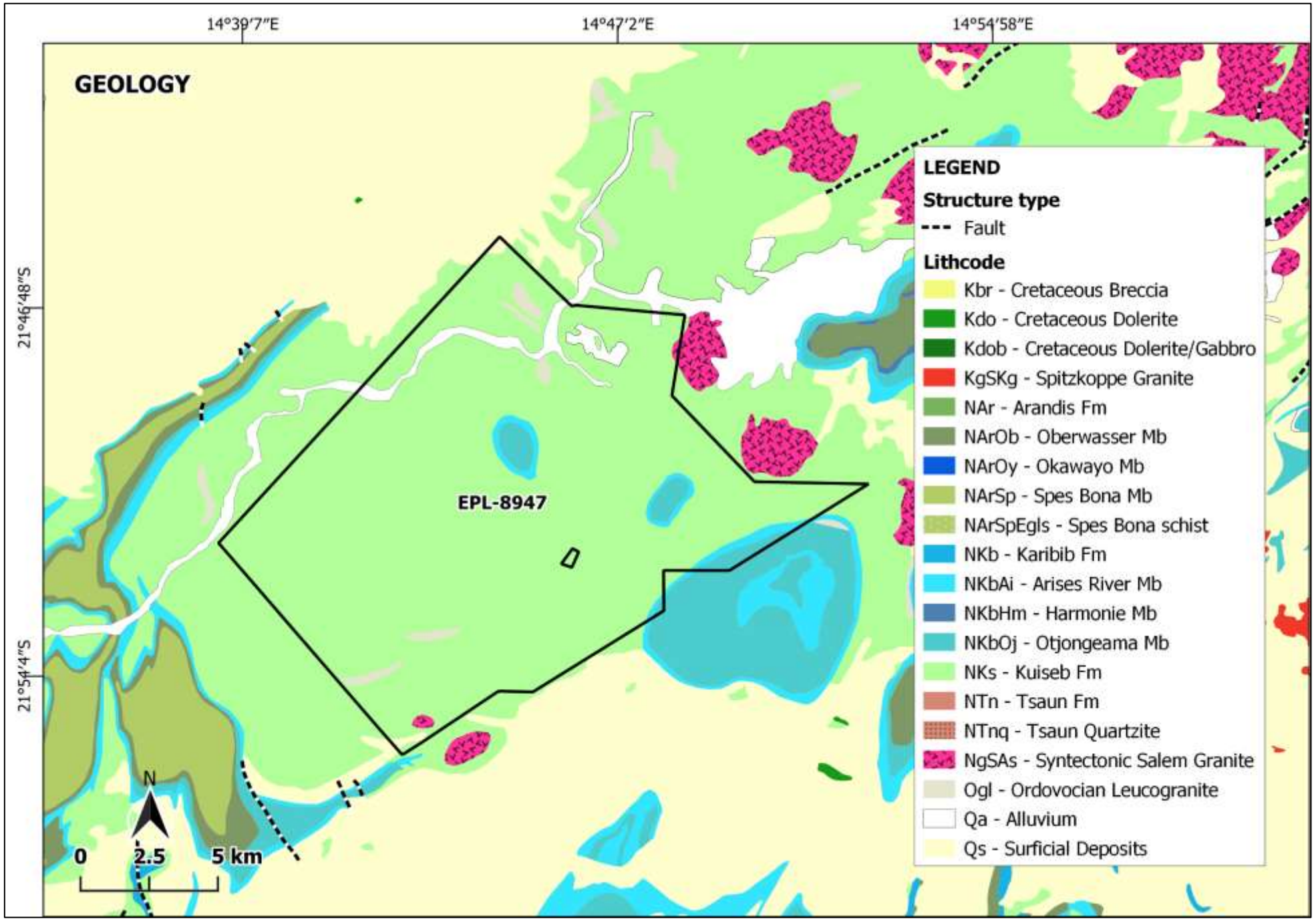

Figure 4.9: Simplified lithological groupings of the EPL 8947.

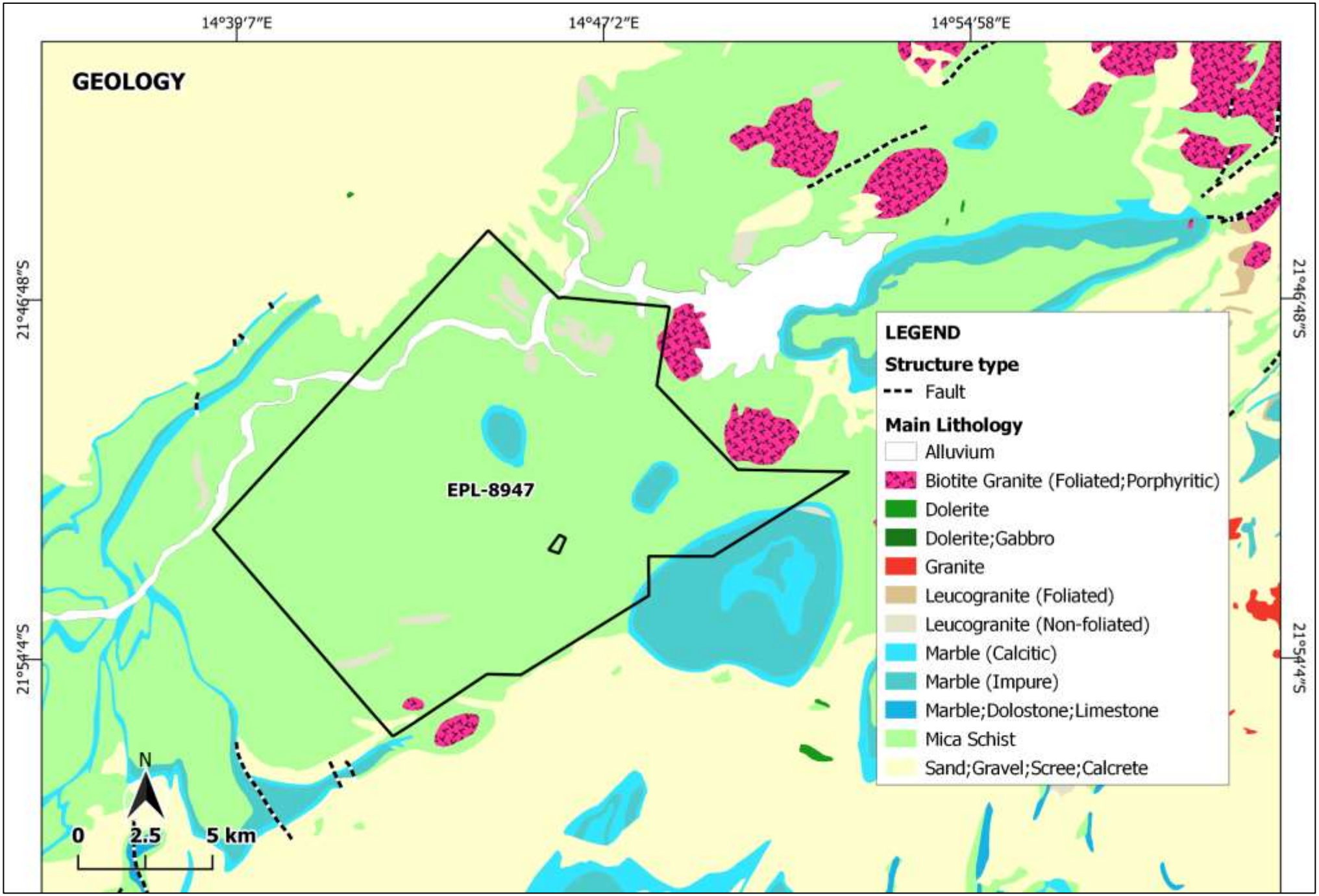

Figure 4.10: Main rock types found in and around the EPL 8947.

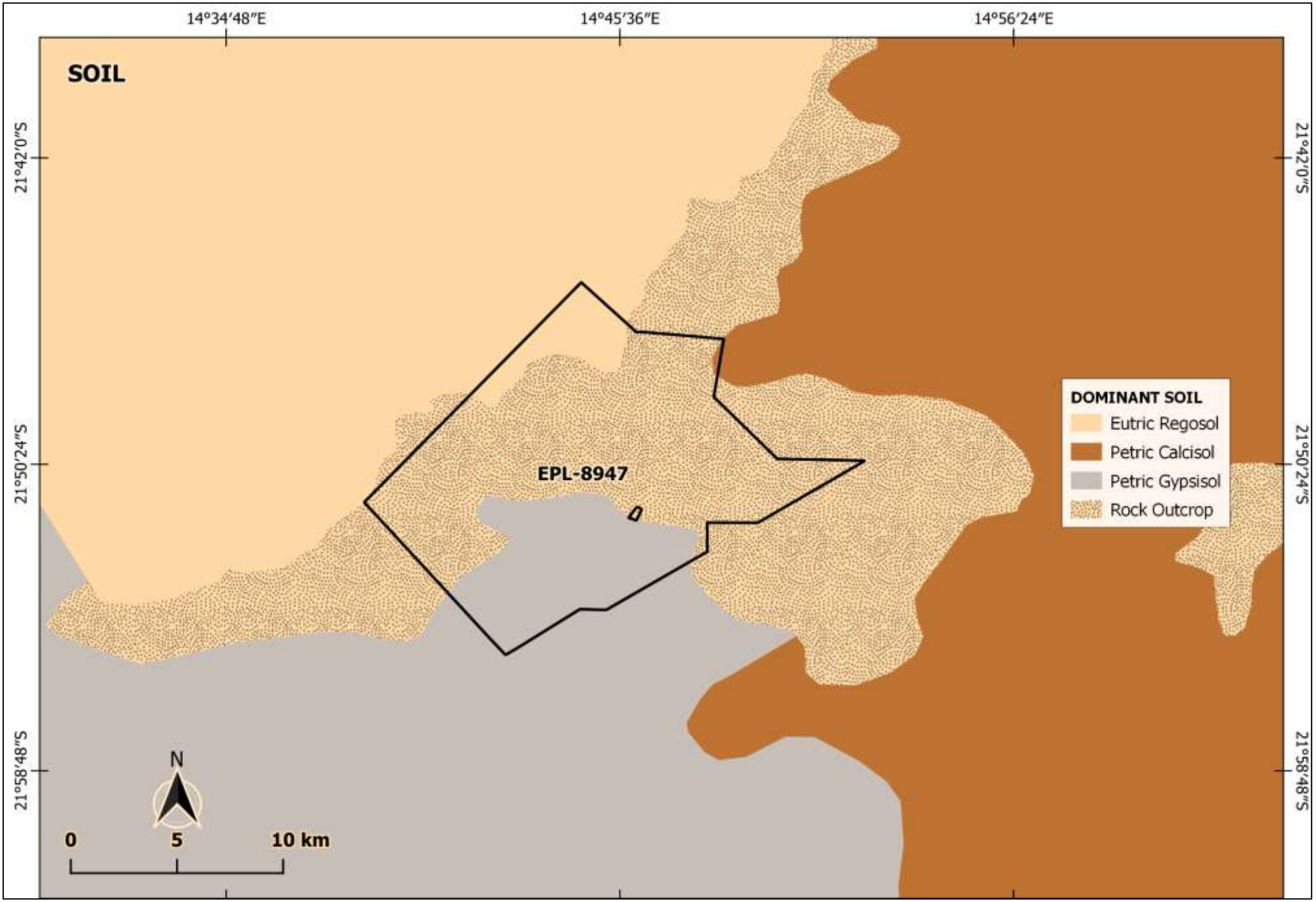

Figure 4.11: Simplified surficial geology around the EPL 8947 area.

4.4.3 Geotechnical Engineering Considerations

Rocks of varying geotechnical characteristics are expected within the EPL area. Table 4.2 outlines an indicative classification of the various discontinuities that are likely to be found in the area including the targeted marble outcrop. Both low and high order discontinuities are likely to be found around the targeted EPL area. The local carbonates found within the EPL 8947 area is good for dimension stone mining and depending on the dip and intersections of the various discontinuities, can withstand near vertical steep slopes required for mining operations.

Table 4.2: General rock structure scheme (Source: Mwiya *at el.,*2004).

GEOMETRY				CHARACTERISTIC				
DISCONTINUITY	LENGTH m	SPACING m	WIDTH m	TRANSMISSIVITY m^2/s	HYDRAULIC CONDUCTIVITY m/s	INFILLING THICKNESS m	EXAMPLE	INFLUENCE INDICATOR
LOW ORDER DISCONTINUITIES. ZONES OUTCROPS								
1^{ST} ORDER	$>10^4$	$>10^3$	$>10^2$	10^{-5} - 10^{-2}	10^{-7}- 10^{-5} AV. [10^{-6}]	10^0	Regional major fault systems	4 V. High
2^{ND} ORDER	10^3 - 10^4	10^2- 10^3	10^1 – 10^2	10^{-7} - 10^{-4}	10^{-8} – 10^{-6} AV. [10^{-7}]	10^{-1}	Local major fault zones	
3^{RD} ORDER	10^2 – 10^3	10^1 – 10^2	10^0 - 10^1	10^{-9} – 10^{-6}	10^{-9} – 10^{-7} AV. [10^{-8}]	$\leq 10^{-2}$	Local minor fault zones	
HIGH ORDER DISCONTINUITIES: INDEPENDENT OUTCROPS								
4^{TH} ORDER	10^1 – 10^2	10^0- 10^1	-	-	10^{-11}-10^{-9} AV.[10^{-10}]	-	Local major joint set or bedding	3 High
5^{TH} ORDER	10^0 - 10^1	10^{-1} - 10^0	-	-	10^{-12}-10^{-10} AV. [10^{-11}]	-	Local minor joints/ fractures	
6^{TH} ORDER	10^{-1} - 10^0	10^{-2} – 10^{-1}	-	-	10^{-13}-10^{-11} AV. [10^{-12}]	-	Local minor fissures / schistosity	2 Low
7^{TH} ORDER	$<10^{-1}$	$<10^{-2}$	-	-	$<10^{-13}$	-	Crystalline voids	1 V. Low

4.4.4 Water Resources and Sources of Water Supply

Groundwater as well as surface water (only during the rainy season) from ephemeral river channels is the sources of water supply in the area as well as much of the Erongo Region. According to the Department of Water Affairs, (2001), the Erongo Region and in particular the EPL area generally has a low groundwater potential (Fig. 4.12).

The area with aquifer potential, more or less reflects the rainfall distribution, decreasing westwards. Knowledge of the aquifers in this area is sparse, due to the low number of boreholes and few on groundwater. Recharge from rainfall is an important parameter determining the groundwater potential as well as the degree of metamorphism of local rocks. The groundwater potential of rocks decreases, as the degree of metamorphism increases.

Crystalline rocks normally exhibit a very low tendency to store water, typical of the pegmatite zones and the alternating bands within the banded dolomitic marble and biotite-quartz schist found within the project area. The groundwater potential of these rock units is generally low, to locally moderate. Possible targets for water resources in this area are mainly fractured zones and faults that outcrop on the surface without impermeable infillings. But the success rate and yields for these rock types are generally low.

The area along major ephemeral rivers may be more promising due to well developed fractures and faults that give rise to good recharge potential during the rainy season, typical of the local ephemeral spring found within the EPL area. The possible water sources for the proposed exploration and possible

test mining activities will be obtained from available groundwater and surface water resources from the Omaruru water schemes run by NamWater.

The Omdel Dam was completed in 1996 and was designed and constructed specifically for enhancing recharge of the Omdel Aquifer after flood events in the Omaruru River. Since construction, the dam has been operated accordingly. The dam has a capacity of 41.3 Mm^3 with an assumed dead storage volume of 2.0 Mm^3. The embankment consists of a core of compacted earth fill of low permeability (clay). Both upstream and downstream shoulders are constructed from sandy soil.

The NamWater Central Namib Water Scheme supplies Swakopmund, Walvis Bay, Rössing, Arandis as well as a number of smaller towns. It draws its water from underground sources in the Kuiseb River and the Omaruru River delta (OMDEL). The recharge of these sources is from intermittent flooding of the rivers. Abstraction from the OMDEL is currently 8.5 Mm^3 per year but the estimated recharge before the dam was built was only 3.5 Mm^3 per year.

The Omdel Aquifer is situated along the lower Omaruru riverbed and is one of the major water sources of the Central Namib Area (CNA). Water is abstracted from the aquifer by boreholes situated downstream of the dam and conveyed to a reservoir from where it gravitates to various coastal clients. The safe yield of the aquifer is estimated at 8.9 Mm^3 /a.

According to NamWater, the well field at Omdel consists of an Eastern Omdel section with 14 boreholes and Western Omdel section with 18 boreholes respectively. Additional ten (10) production boreholes were drilled in 2006 to intercept 1.3 Mm^3/a of the enhanced recharge at Site II and 1.7 Mm^3/a of the outflow to the sea. The combined recommended yield of the 10 boreholes is 655 m^3/h. The 14 eastern (upstream) boreholes have a recommended production of 566 m3 /h and the 28 western (downstream) ones of 960 m3 /h. The combined recommended abstraction rate from these boreholes amounts to 30 520 m3 /day or 11.1 Mm3 /a.

4.4.5 Evaluation of Water Vulnerability

Vulnerability assessment of surface water covered possible runoff, the presence of source factors and major flow routes such as ephemeral river channels, valleys and gullies as pathways and the presence of surface water body as a target. The groundwater assessments covered hydraulic properties and thickness of the unsaturated and saturated zones derived from geological and hydrogeological data. The assessment of the unsaturated characteristics was based on the ability for source factors to influence the system through known pathway factors such as discontinuities. However, groundwater or surface water will only be vulnerable to contamination if there are contaminant sources, if there are pathways for contaminant migration and there are targets (surface water or groundwater) present within the project area.

Overall, the local groundwater resources found in the area form part of the unconfined Omdel Aquifer system of the Omaruru Ephemeral River that is highly vulnerable to any sources of pollution that may be associated with the proposed exploration and possible test mining activities (Fig. 4.12). During the rainy season, surface water bodies can be found along the ephemeral rivers linked to the Omdel Aquifer system of the Omaruru Ephemeral River. This surface water often recharges the local groundwater resources along the faults, solutions holes and other discontinuities along the ephemeral rivers in the area.

Therefore, surface water in the area could be vulnerable to pollution sources from the proposed exploration and possible test mining activities. It is important that all polluting activities such as waste rock stockpile, dirty water pond and ore stockpile must not be placed or undertaken in areas with high discontinuities, valleys or gullies connected to major ephemeral rivers systems in the area (Fig. 4.12).

Management of wastewater from the onsite administration blocks and related infrastructures will utilise French Drains. Effective monitoring will need to be put in place to avoid under designing of the facilities that may results in overflow of waste water into the surrounding receiving environment.

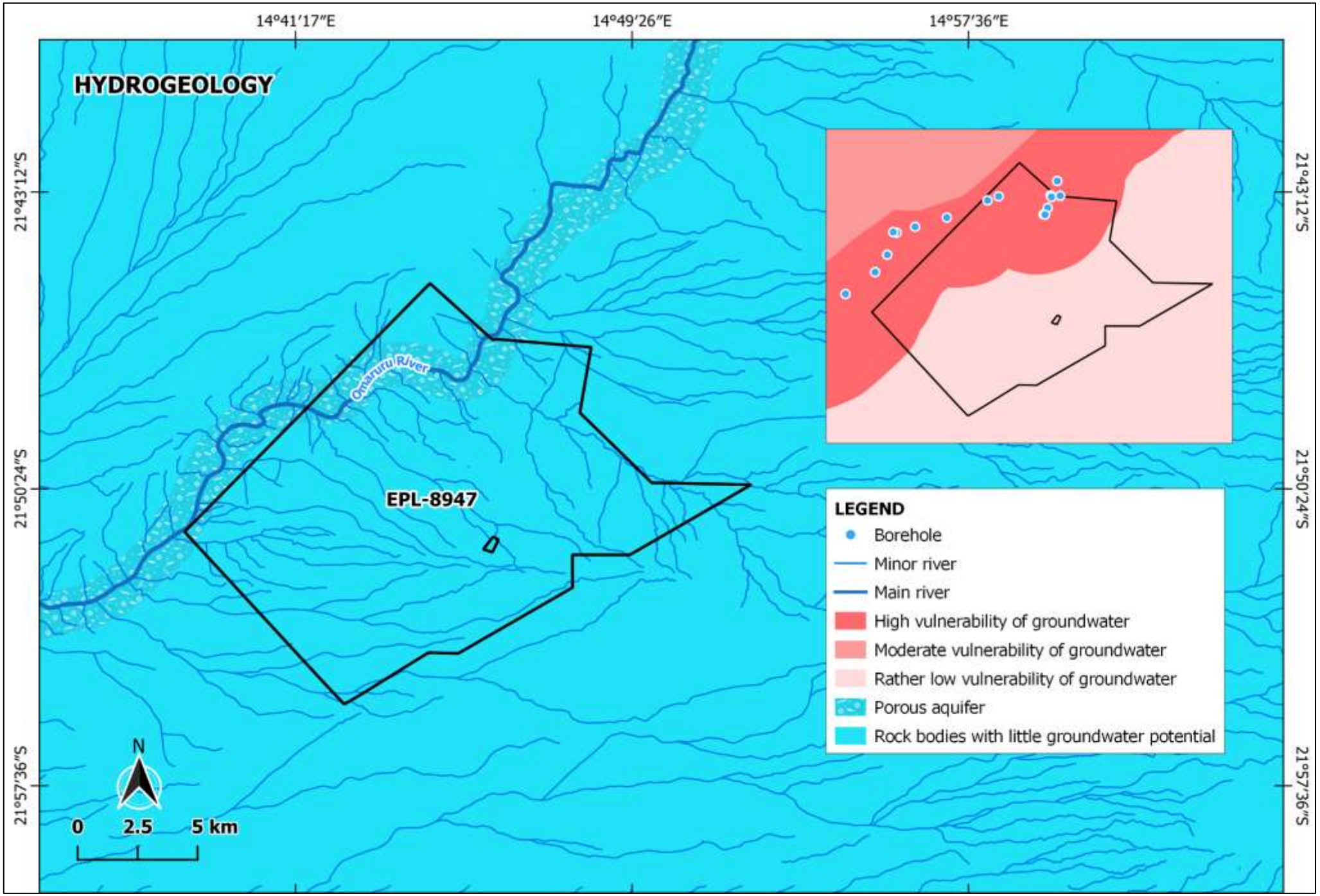

Figure 4.12: Simplified local hydrogeological map of the EPL 8947 showing groundwater vulnerability.

4.5 Socioeconomic Environment of EPL area

4.5.1 Overview

The EPL 8947 falls within the Dâures Constituency, Erongo Region in Namibia (Fig. 4.13). Dâures Constituency is bordered by the Omaruru Constituency in the east, Karibib Constituency in the southwest, and Arandis Constituency in the west (Fig. 4.13). The Dâures Constituency is the largest constituency in the Erongo Region with an area of 13,490 km^2.

It has a population of approximately 12000 of which the majority depend on communal subsistence farming for their livelihood. The name Dâures is derived from the Khoe Khoegowab name of the Brandberg mountain which is the highest in Namibia. The constituency office is in Okombahe, with additional settlement offices in Uis and Okombahe. Omatjete, Tubusis and Okongue are other rural residential clusters in the Arandis.

4.5.2 Socioeconomic Baseline Summary

The Erongo Region extending over 63,720 km^2 and the majority of the population lives in urban settlements, principally Swakopmund and Walvis Bay (Fig. 4.13). The surge in uranium exploration and mining operations has seen significant growth in various downstream industries in the coastal towns. The region has the second highest income per capita in the country after Khomas Region, and its relative prosperity is derived from fishing, mining and tourism.

Major mining activities in the region are Rössing Uranium, the Navachab gold mine, Langer Heinrich Uranium, Husab Uranium and the coastal salt operations. Other uranium projects that are also expected to advance further are those of Bannerman, Reptile Uranium and Swakop Uranium, but these do not exhaust the list of potential uranium operations in Erongo Region. The main commodities mined are uranium and gold. Extensive salt mining occurs along the coast at Walvis Bay and smaller companies operate at Cape Cross and Ugab.

Within the Erongo Region, access to economic opportunities and resources in the region is highly variable especially to rural communities. This is usually due to the isolation and underdeveloped infrastructures within these rural communities and is a situation experienced across all regional parts of the country. The uneven pattern to development, benefits and economic opportunity significantly has results in a regional Gini co-efficient of 0.60, with 19.7% of the population being poor and 7.1% being extremely poor (National Planning Commission, 2006, 2007 and 2012).

The Erongo Regional Council has adopted developed strategies to address poverty reduction and economic development, with primarily focus on rural areas by initiating measures to insure sound management of the region's natural resources (www.erc.com.na). The Region's main focal areas for development include water resources, the environment, and tourism, fishing and marine resources.

The Regional Development Plans recognises the objectives adopted in the NDPs and Vision 2030, ultimately stressing the need for an increased contribution to development by the minerals sector (National Planning Commission, 2006, 2007 and 2012). Large parts of the Erongo Region fall within protected areas under conservation management; these include the Dorob National Park, Namib-Naukluft Park (NNP) in the south and central area, and the Skeleton Coast National Park in the north. The Ministry of Environment, Forestry and Tourism (MEFT) carries responsibility for management of these protected areas. Government land around proclaimed Townlands is presently under the control of the Ministry of Urban and Rural Development.

Communal land makes up about one third of the region and lies to the east of the NWCRA. East of the above conservancies, the land is under freehold title (another third of the region) and is mostly used for commercial cattle ranching. The arid nature of the landscape means that very little of the area has agricultural potential.

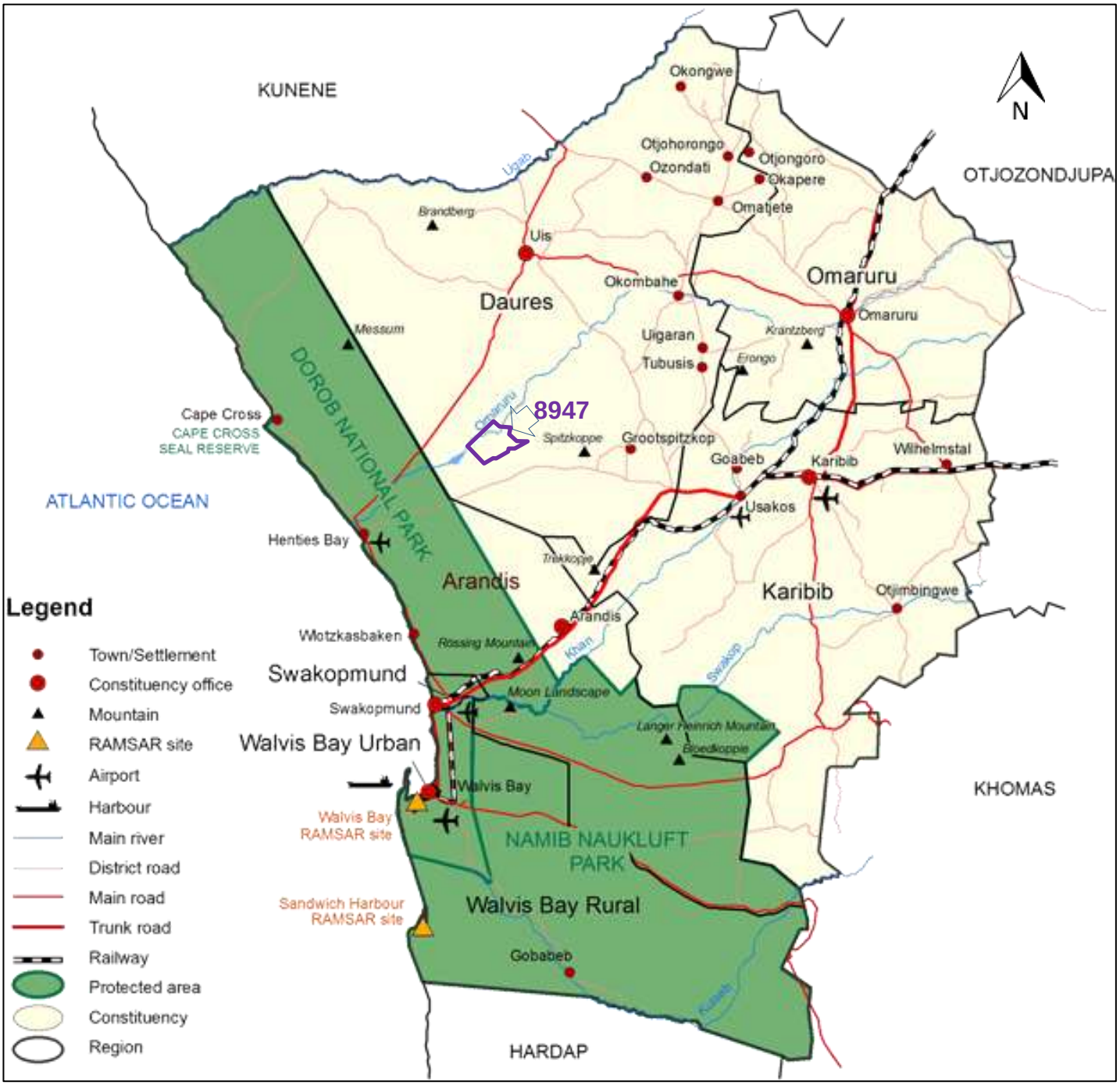

Figure 4.13 Map of the Erongo Region (Source: www.erc.com.na).

4.5.3 Conclusions on the Socioeconomic Assessment

The proposed exploration and possible test mining activities action in the EPL 8947 will have a positive contribution to economic development and employment opportunities of the ≠Gaingu Communal Conservancy and the communal land controlled by the !Oe-≠Gân Traditional Authority, the Dâures Constituency and the Erongo Region.

The proposed development will coexist with the other current and future land uses in area including conservation, tourism, farming and other planned minerals exploration and mining projects in the general area. 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 residents 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 the majority of 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 mine closure.

4.6 Archaeology

4.6.1 Regional Archaeological Setting

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

According to Kinahan, (2017), the Recent Holocene archaeological sequence in Namibia, i.e., the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era. Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance.

4.6.2 Local Archaeological Setting

The general area around the ML is well known for extensive rock-art sites linked to various granite rock outcrop shelters such as those found around the Spitzkoppe. These sites hold significance historical, cultural and spiritual value and all-important heritage area for all Namibians and are protected by the National Heritage Act, 2004 (Act No. 27 of 2004) under the National Heritage Council of Namibia.

It is unlikely that the targeted marble will hold any of the archaeological rock-art resources because most of these rock arts are associated with the granite which are more resistant to weathering compared to the marble.

Other potential archaeological resources found in the general area include colonial evidence points to impermanent settlement by groups of probably Khoe pastoralists (Kinahan, 2017). These people formed part of a regional-scale network with links to the Atlantic coast and inland sites where copper was produced. However, there are a large assemblage of ceramic vessels associated with the general area of and represent an important addition to the regional archaeological picture.

Evidence from the early colonial period relates to mining in the general area and a combination of trade, missionary activity and wagon repair. Today, most settlements the Dâures Constituency historical importance and have a number of National Monument sites recognised under the National Heritage Act, 2004 (Act No. 27 of 2004).

4.6.3 Archaeological Desk Assessment

Early colonial remains are expected to be relatively abundant on EPL 8947, although it is likely that if these are related to historical mining activity, they will form part of the general area of mining interest in the vicinity. It is expected that the area of mining interest will be extensively disturbed and that little might remain of either pre-colonial or early colonial sites in the near vicinity.

The targeted marble rocky outcrop areas in the EPL 8947 will not have rock shelters containing stratified archaeological deposits. The Proponent must not disturb major natural cavities that may be unearthed because they could hold some highly significant historical or cultural sites that would require detailed documentation and possibly mitigation measures to be adopted in the event of encroachment by mining activity.

4.6.4 Archaeological Conclusions and Recommendations

The area of interest for mining operations probably has archaeological potential, although no archaeological sites have been recorded so far from within the area itself. The expectation is therefore:

(i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite in the northeast of the EPL 8947.

(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 area that may be unknown or not recorded.

The following are the key recommended actions related to archelogy in the EPL area:

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

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

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

4.7 Public Consultations

4.7.1 Overview

As part of the environmental assessment process and as provided in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012, the public were consulted though the publication of notices in the local newspapers undertaken during the October 2023.

A stakeholder register was opened on the Thursday 5th October 2023, the same date the first advert was published in the New Era daily Newspaper (Fig. 4.14).

Subsequent public notices were published in the for five (5) consecutive working days in Windhoek Observer Daily Newspaper from Friday 13th – Thursday, 19th October 2023 (Figs. 4.14-4.19). The deadline for written submissions and input to the environmental assessment process was Friday 27th October 2023. Two (2) submissions in one, was received during the consultation period that started from the 5th – 27th October 2023 (Table 4.3).

4.7.2 Stakeholders and Public Discussions

A Stakeholder register is shown Table 4.3. The two (2) registered stakeholders were provided with the BID document but no further written inputs were received during the consultation period.

Table 4.3: Stakeholders registered during the consultation process for the EPL 8947.

Name	Contact Details
Ms. K. Shikongo Erongo Regional Council / Karibib Town Council	Email: kshikongo@mweb.com.na kshikongo@erongorc.gov.na and Mobile: 0812690519
Bianca Foelscher (Small Scale Mining)	P O Box 67, KARIBIB Tel. (064) 550109, Email address: leandre.jf@gmail.com

4.7.3 Stakeholders and Public Discussions

No inputs were received from Ms. K. Shikongo (Erongo Regional Council / Karibib Town Council). Bianca Foelscher (Small Scale Mining) requested for a public meeting to held in Karibib. However, due to the lack of interest in terms of the number of stakeholders who have registered (Table 4.3) and despite the extensive advertisement drive that was conducted, it did not make any sense to organise a public meeting for only one person.

A BID was provided and the detailed of Bianca Foelscher have been included in the Stakeholder Register for this EPL.

4.7.3 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 landowners on the implementation of the proposed project once the ECC has been granted and negotiate access agreements as may be applicable. Such communications shall be maintained throughout the lifecycle of the proposed project. This recommendation may be included as condition on the ECC to be issued.

Hearing impaired feel secluded

Creating awareness... A group of people with hearing impairment who were in attendance to raise awareness. Photo: Taimi Haihambo

■ Taimi Haihambo

ONGWEDIVA - An abundant number of people with hearing impairment feel neglected and left out due to their condition.

According to Lina Mweyakulya, a board member of the Namibian National Association of the Deaf (NNAD), people with hearing impairment feel neglected due to that a lot of people in different institutional services are not trained on how to communicate using sign language.

This is despite Oshana region having over 500 people with hearing challenges.

Mweyakulya gave an example of health institutions, stating that when hearing impaired people visit hospitals, they end up getting wrong medications because nurses and doctors do not understand what they are trying to communicate.

She said those with hearing impairment and are convicted of crime find themselves being kept in custody for a very long period due to communications barriers.

"If the court does not have a sign language interpreter, the suspect will remain in custody for a very long time and until the court officials get interpreters to help do the job," said Mweyakulya.

She was speaking at the ministry of gender equality hall in Ongwediva, where masses gathered to raise awareness on hearing impairment last week.

Festus Hangula (27) who has a hearing impairment said that he is capable of doing different tasks, but when people hear about his condition, they turn him away.

He said they miss out on job opportunities because some interviews are oral while others are written but, in most cases, they do not understand questions. At times, he said, they get phone calls from companies where they applied for a job, but end up not getting it because they are unable to hear what is communicated over the phone.

"We are asking the government to start offering sign language training to everyone for communication purposes," said Hangula.

-taimihaihambo2000@gmail.com

Drought, unemployment fuel livestock theft

ETANGA - The Kunene region has seen the worst dry spells in the past decade, resulting in more than 90% of livestock losses, farmers are now hit by livestock theft.

The farmers say there is a spike in livestock theft despite their attempts to recover their herd numbers after it was ravaged by climatic shocks.

As a result of these losses, most farmers are now at the mercy of the government's food and drought assistance programmes.

During a recent interview with Nampa, Namibian Police community affairs officer in Kunene, Inspector Vehangaiza Candy Ruiter revealed that the majority of stock theft cases involve farmers who have lost livestock as a result of the current climatic crisis and are now attempting to recoup and replace.

According to Ruiter, most young people are involved in livestock thievery due to the fact they are unemployed, and as a result, they turn to crime.

"Many of the suspects steal because they have lost their livestock and want to restart farming. Many young people desire contemporary stuff, yet they are unemployed, therefore, they commit crimes. Others steal to sell biltong or dried meat to street vendors, particularly in Outjo and Kamanjab," said Ruiter.

Since the very beginning, livestock has been the economic backbone of most Kunene farmers. Nevertheless, authorities in the region have reported an increase in livestock theft, which is now threatening community livelihoods on top of the recurring drought.

Some farmers who spoke to Nampa in Etanga, approximately 100 kilometres north of Opuwo, said stock theft has had a detrimental influence on their lives as the cattle are their sole means of existence.

Chief Vemuii Tjamburu of the Kakurukouje Traditional Authority was amongst many who decried livestock theft, stating that it is impossible to police stock theft since most of the region lacks borderlines to prevent the free movement of livestock from one constituency to another.

He, too, supported Ruiter's comment that the lack of formal education and the high unemployment rate among young people are factors in stock theft.

The region's police have been under growing pressure to tighten security and reduce the increase in stock theft, which includes outsiders from other regions.

The most prominent areas for stock theft, according to Ruiter, are Omakange, Outjo, Okonjota, Okorosave, Okapembapu, and Ohandungu, where goats, donkeys, and cattle have been reported stolen.

He said the police were able to apprehend a large number of these culprits, as well as retrieve some of the stolen livestock.

According to police records, 172 incidences of theft of livestock have been reported to the Kunene police in the last eight months. The region itself has reported over 1 600 cases across the board. *-Nampa*

Figure 4.14: Copy of the public notice that was published in the New Era newspaper daily dated Thursday, 5th October 2023.

OBSERVER MONEY

New platform to power Africa's energy transition

In its 30th year of existence, leading African upstream oil-and-gas event Africa Oil Week (AOW) has launched a bold new brand and mission, with a broader energy focus in line with the global energy transition and Africa's evolving role.

The event is evolving into a new platform, to be known as AOW: Investing in African Energy. It will provide a single, inclusive forum for investing in African energy, addressing the continent's immediate energy needs, while driving dialogue to accelerate the clean-energy transition.

"This is the perfect time to launch a bold new brand and mission," says Yemi Ibidunni, Event Director of AOW. "The continent's diverse energy landscape, from its hydrocarbon reserves to its renewables potential, makes Africa a critical player in shaping a sustainable energy future. The platform is evolving to reflect that."

The new evolution of the event will bring together two existing events: the long-established Africa Oil Week, and the two-year-old Green Energy Africa Summit, previously run as parallel events from the same venue in Cape Town.

> The continent's diverse energy landscape, from its hydrocarbon reserves to its renewables potential, makes Africa a critical player in shaping a sustainable energy future.

The new format will have a broader focus, to reflect the global move to a diversified energy mix, while ensuring Africa has the resources to power the next phase of its development.

The Energy Investment Village for clean-tech start-ups will sit at the heart of the exhibition, and the event will also feature an advanced government meetings programme and new networking lounges where delegates can connect.

AOW 2024 is scheduled to run over five days from October 7–11, 2024, with a comprehensive onsite and evening networking programme.

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CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 27th OCTOBER 2023

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Figure 4.15: Copy of the public notice that was published in the Observer daily newspaper dated Friday, 13th October 2023.

WORLD & AFRICA

North Korea sending Russia military equipment, US claims

MATT MURPHY

US officials have accused North Korea of supplying vast amounts of military hardware to Russia for use in Ukraine.

Pyongyang has supplied up to 1,000 containers of "equipment and munitions" in "recent weeks", National Security Council Spokesperson John Kirby said.

Officials also released photos of what they said were 300 containers assembled for transport in Najin, North Korea.

Last month, North Korean leader Kim Jong Un visited Russia to discuss potential military cooperation.

Moscow's military is believed to be burning through huge amounts of artillery shells and missiles in its ongoing invasion of Ukraine, and has been seeking to replenish its supplies from some of its isolated allies.

Some analysts believe that Mr Kim's regime could be sitting on huge stores of arms, but could be reluctant to hand over too much given its relative lack of resources.

US intelligence agencies tracked the deliveries, which officials said took place between 7 September and 1 October.

Speaking at a news conference on Friday, Mr Kirby said the equipment was exported via sea and rail to a supply depot in southwestern Russia, near Tikhoretsk, about 180 miles (290km) from the Ukrainian border.

Mr Kirby did not specify the nature of the munitions he says were supplied by Mr Kim's regime, but the US has previously accused Moscow of purchasing rockets and artillery shells from Pyongyang.

Since Russia launched its invasion of Ukraine in February 2022, US officials have consistently voiced concerns that North Korea has supplied munitions to Russia.

"We condemn [North Korea] for providing Russia with this military equipment, which will be used to attack Ukrainian cities, kill Ukrainian civilians and further Russia's illegitimate war," Mr Kirby told reporters.

He said the deliveries by North Korea violate UN Security Council resolutions "which is why we will continue to aggressively raise these arms deals at the UN alongside with our allies and partners".

In July, Russian Defence Minister Sergei Shoigu visited the country with a military delegation and met with Mr Kim, who displayed a number of weapons systems - including the Hwasong intercontinental ballistic missile (ICBM).

And in September, Mr Kim met with Russian President Vladimir Putin at the Vostochny space centre in Russia's far east.

Observers say that North Korean weapons would only give a short-term boost to Russia's war effort. They point to how Moscow, with hugely depleted ammunition, is relying on older, more unreliable artillery shell stocks.

And speaking recently at a ceremony to mark his retirement as chairman of the US Joint Chiefs of Staff, Gen Mark Milley said he was "sceptical" that any such deliveries would play a decisive role in the conflict. But it comes as the US has been forced to pause plans to send an additional $6bn in military aid to Kyiv, amid an ongoing budget row in the House of Representatives.

President Biden said earlier this week that the temporary agreement between House Democrats and Republicans may force him to find alternative ways to fund Ukraine's war effort.

-BBC NEWS

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Figure 4.16: Copy of the public notice that was published in the Observer daily newspaper dated Monday, 16th October 2023.

WORLD & AFRICA

Israeli strikes on Gaza intensify as humanitarian crisis deepens

Israeli forces kept up their bombardment of Gaza on Monday after diplomatic efforts to arrange a ceasefire to allow foreign passport holders to leave and aid to be brought into the besieged Palestinian enclave failed.

Residents of Hamas-ruled Gaza said overnight air strikes were the heaviest yet as the conflict entered its 10th day with an Israeli ground offensive believed to be imminent.

Bombing carried on through the day, they said, and many buildings were flattened, trapping yet more people under the rubble. Israeli officials issued multiple warnings of Hamas rocket fire into Israel.

Diplomatic efforts have been under way to get aid into the enclave, which has endured unrelenting Israeli bombing since the October 7 attack on Israel by Hamas that killed 1 300 people, the bloodiest single day in the state's 75-year history.

But Israel's chief military spokesperson, Rear Admiral Daniel Hagari said there was no Gaza ceasefire and that Israel was continuing its operations.

"There are no such efforts under way at this time. If anything changes, we will inform the public. We are continuing our fight against Hamas, this murderous organisation that carried this (the assaults) out."

Israel has imposed a full blockade and is preparing a ground invasion to enter Gaza and destroy Hamas, which has continued to fire rockets at Israel since its brief cross-border assault. On Monday, rocket-warning sirens sounded in several towns in southern Israel, the Israeli military said.

Israeli troops and tanks are already massed on the border.

Authorities in Gaza said at least 2 750 people had so far been killed by the Israeli strikes, a quarter of them children and nearly 10 000 wounded. A further 1 000 people were missing and believed to be under rubble.

With food, fuel and water running short, hundreds of tons of aid from several countries have been held up in Egypt pending a deal for its safe delivery to Gaza and the evacuation of some foreign passport holders through the Rafah border crossing.

Earlier on Monday, Egyptian security sources had told Reuters that an agreement had been reached to open the crossing to allow aid into the enclave. But Israeli Prime Minister Benjamin Netanyahu's office said in a statement, "There is currently no truce and humanitarian aid in Gaza in exchange for getting foreigners out."

Hamas official Izzat El Reshiq told Reuters there was "no truth" to the reports about the crossing opening or a temporary ceasefire.

Egypt has said the crossing was rendered inoperable due to Israeli bombardments on the Palestinian side.

Egyptian Foreign Minister Sameh Shoukry said on Monday the Israeli government had yet to take a stance that allowed the crossing to open.

-SABC NEWS

Smoke billows following Israeli strikes in Gaza City, 11 October 2023.-Image Credits :Reuters

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Figure 4.17: Copy of the public notice that was published in the Observer daily newspaper dated Tuesday, 17th October 2023.

WORLD & AFRICA

Iran's Khamenei demands Israel stop bombardment of Gaza

Iran's Supreme Leader Ayatollah Ali Khamenei has accused Israel of carrying out a genocide against Palestinians in Gaza and warned Israel that it must pull back from its attacks on the besieged territory.

Speaking on Tuesday Khamenei said Israeli officials should face trial for their actions in Gaza and warned that "no one can stop" forces opposed to Israel if it continues its assault.

"If the crimes of the Zionist [Israeli] regime continue, Muslims and resistance forces will become impatient, and no one can stop them," Khamenei said. "The bombardment of Gaza must stop immediately."

"Regarding the situation in Gaza, we all have a responsibility to react; we must react," he said.

Iranian officials often use the term "axis of resistance" to refer to a network of Iran-backed armed groups throughout the region that includes Hezbollah in Lebanon.

Iran's Fars News Agency also reported that Islamic Revolutionary Guard Corps (IRGC) Deputy Commander-in-Chief Ali Fadavi warned of further action by Iran-backed groups across the region.

"The resistance front's shocks against the Zionist regime will continue," he said.

> If the crimes of the Zionist [Israeli] regime continue, Muslims and resistance forces will become impatient, and no one can stop them

Israel has pounded Gaza from the air since Hamas launched a surprise attack from Gaza on southern Israel on October 7, when hundreds of Hamas fighters breached the Israeli fence that surrounds Gaza and killed at least 1,400 people, mostly civilians, according to Israeli authorities.

After the attack, Israel cut off food, water, and electricity to the more than 2.3 million residents of Gaza and launched an aerial assault that has destroyed entire neighbourhoods, killed more than 3,000 people and wounded 12,500 others, according to Palestinian authorities.

Iran's Supreme Leader Ayatollah Ali Khamenei speaks in a meeting in Tehran, Iran, on Tuesday, October 17 [Office of the Iranian Supreme Leader via AP]

The question of potential expansion of the fighting to include not just Hamas, the Palestinian group that governs Gaza and receives some support from Iran, but more formidable Iran-backed groups such as Hezbollah in southern Lebanon, has loomed over the 11-day war.

Iranian President Ebrahim Raisi said on Monday that supporting the Palestinians was Iran's foreign policy priority but that the armed groups make their own independent decisions.

Israel has said it intends to destroy Hamas and has mobilised hundreds of thousands of military reservists ahead of an expected ground offensive on Gaza. Military experts have warned that any ground offensive into densely populated areas of Gaza would be extremely challenging and could potentially lead to heavy losses on both sides.

The Israeli military suggested on Tuesday that it was considering other options as it prepares for "the next stages of the war" against Hamas.

"Everyone is talking about a ground offensive, but it could be something else," Israeli army spokesperson Richard Hecht said on Tuesday without providing further details.

"Any ground operation [by Israel into Gaza], starting such an operation, that could be a trigger" for other armed groups to join the war, Mahjoob Zweiri, a professor at Qatar University, told Al Jazeera.

The United States has sought to deter Iran-backed groups from joining the war, moving two aircraft carriers to the eastern Mediterranean and putting 2,000 of its troops on deployment alert. Israel has warned that any party that joins the fighting will pay a heavy price.

But a widening of the conflict could also cause considerable problems for Israel, which would be faced with the prospect of barrages of missiles from Hezbollah's considerable arsenal and a two-front war that could stretch the capacity of its forces.-AL JAZEERA

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REGISTER BY EMAIL: frontdesk@rbs.com.na
Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 27th OCTOBER 2023

Risk-Based Solutions (RBS) CC –URL: www.rbs.com.na

Figure 4.18: Copy of the public notice that was published in the Observer daily newspaper dated Wednesday, 18th October 2023.

WORLD & AFRICA

Guinea-Bissau capital without power over unpaid bill to Turkey's Karpowership

GLORIA ARADI & YUSUF AKİNPELÜ

A Turkish firm has cut power supplies to Guinea-Bissau's capital over an unpaid bill of at least $15m (£12m), plunging the city into darkness.

It has severely disrupted daily life, with hospitals affected and radio stations off-air.

Economy Minister Suleimane Seidi acknowledged the arrears, saying most of the bill would be paid in 15 days.

Karpowership is one of the world's biggest floating power plant operators, supplying several African states.

But it has taken a tough line over non-payment. Last month, it cut power to Sierra Leone's capital, Freetown, over an unpaid bill of $40m.

The Turkish company has also signed a deal to supply power to South Africa, saying it will cover more than 5% of the country's total electricity needs.

South Africa has been hit by a wave of power cuts with people going without electricity for up to 10 hours a day.

Power was cut in Bissau, a city with a population of more than 400,000, in the early hours of Tuesday and has not been restored, a resident told the BBC. Some public hospitals are now using generators to carry out surgery, local journalist Assana Sambu told the BBC. But they don't have running water because there is not enough electricity, and hospital directors have appealed for power in order to cook food for their patients.

Another journalist, Alberto Dabo, said he was drinking water from a well because water supplies had been cut amid the sweltering heat which reaches 40C.

"Our houses are very hot. Most families stay outside till 4am before entering their houses to spend the rest of the night. You can't stay indoors because of the heat."

State-run Rádio Nacional is among media outlets that have stopped broadcasting, while the private radio station where Sambu works is only partially operating, he added.

Karpowership says it has been supplying 100% of Guinea-Bissau's electricity since signing a five-year agreement with the state-owned electricity and water utility company in 2019.

The country is one of the poorest in the world and has been beset by instability since independence.

"Unfortunately, following a protracted period of non-payment, our [floating power plant] is now unable to continue operating," a Karpowership spokesperson was quoted by the Reuters news agency as saying.

"We are working around the clock with officials to resolve this issue and we aim to have generation back online as soon as possible," the spokesperson added.

Energy Minister Issuf Baldé said $6m of the $15m bill had been paid.

"In a small and poor country like Guinea-Bissau, carrying out a transfer operation of this level, $10m, takes time," he said.

He added that the contract with Karpowership needed to be renegotiated because costs had almost doubled since it began, to a level Guinea-Bissau could no longer afford.

The company also supplies electricity to six other African countries - Ghana, The Gambia, Ivory Coast, Mozambique, Senegal and Sierra Leone.

The company prides itself as "the owner, operator and builder of the world's only Powership (floating power plant)".

Its involvement in the electricity sector is the latest example of Tukey's growing influence in Africa.

Although access to electricity has increased in sub-Saharan Africa in recent years, it still remains low, with more than 50% of the region's population having no grid connection, according to the United Nations Conference on Trade and Development (Unctad).

-BBC NEWS

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY MITTEN MINERALS EXPLORATION (Pty) Ltd FOR PROPOSED MINERALS EXPLORATION ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8997, GROOTFONTEIN DISTRICT, OTJOZONDJUPA REGION

Mitten Minerals Exploration (Pty) Ltd (the "**PROPONENT**") has been granted the preparedness to grant application for Exclusive Prospecting Licenses (EPL) No. 8997 with respect to Dimension Stone, Base and Rare Metals, Industrial Minerals, and Precious Metals group of minerals.The physical license will only be granted by the Mining Commissioner if the Proponent is issued with an Environmental Clearance Certificate (ECC) by the Environmental Commissioner. The EPL 8997 has a total area of 47430.1076 Ha and covers the commercial farmlands as indicated on the map. If the ECC is granted, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical minerals exploration datasets, followed by regional field-based reconnaissance activities. If the initial exploration results are positive, the Proponent will 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. Interested and Affected Parties (I&APS) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

REGISTER BY EMAIL: frontdesk@rbs.com.na

Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant

CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 27th OCTOBER 2023

Risk-Based Solutions (RBS) CC- (URL: www.rbs.com.na)

Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources in Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (EIA, SEA, EIA, EMP, EMS)

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY PRIMARY RESOURCES NAMIBIA CC FOR PROPOSED MINERALS EXPLORATION ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 8947, KARIBIB \ OMARURU DISTRICTS, ERONGO REGION

PRIMARY RESOURCES NAMIBIA CC (the "**PROPONENT**") has been granted the preparedness to grant application for Exclusive Prospecting Licenses (EPL) No. 8947 with respect to Dimension Stone, Base and Rare Metals, Industrial Minerals, Precious Metals and Nuclear Fuels group of minerals. The physical license will only be granted by the Mining Commissioner if the Proponent is issued with an Environmental Clearance Certificate (ECC) by the Environmental Commissioner. The EPL No. 8947 has a total area of 26873.4747 Ha and falls within the State land as indicated on the map. If the ECC is granted, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical minerals exploration datasets, followed by regional field-based reconnaissance activities. If the initial exploration results are positive, the Proponent will 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. Interested and Affected Parties (I&APS) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

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Your Technical Specialist Consultants, Permitting & De-Risking Advisors in Natural Resources in Petroleum Exploration & Production/ Minerals Exploration & Mining / Energy / Water / Environmental Assessments & Management (EIA, SEA, EIA, EMP, EMS)

Figure 4.19: Copy of the public notice that was published in the Observer daily newspaper dated Wednesday, 19th October 2023.

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. 8947has 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:** Several 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 because of no mineral exploration taking place, and.
- ❖ Potential future mining related negative environmental impact on the receiving environment.

However, it is important to understand that even if the proposed exploration 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. 8997, 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 fieldwork 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 findings of this 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 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 report has assessed the potential impacts resulting from routine Project activities, if 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.

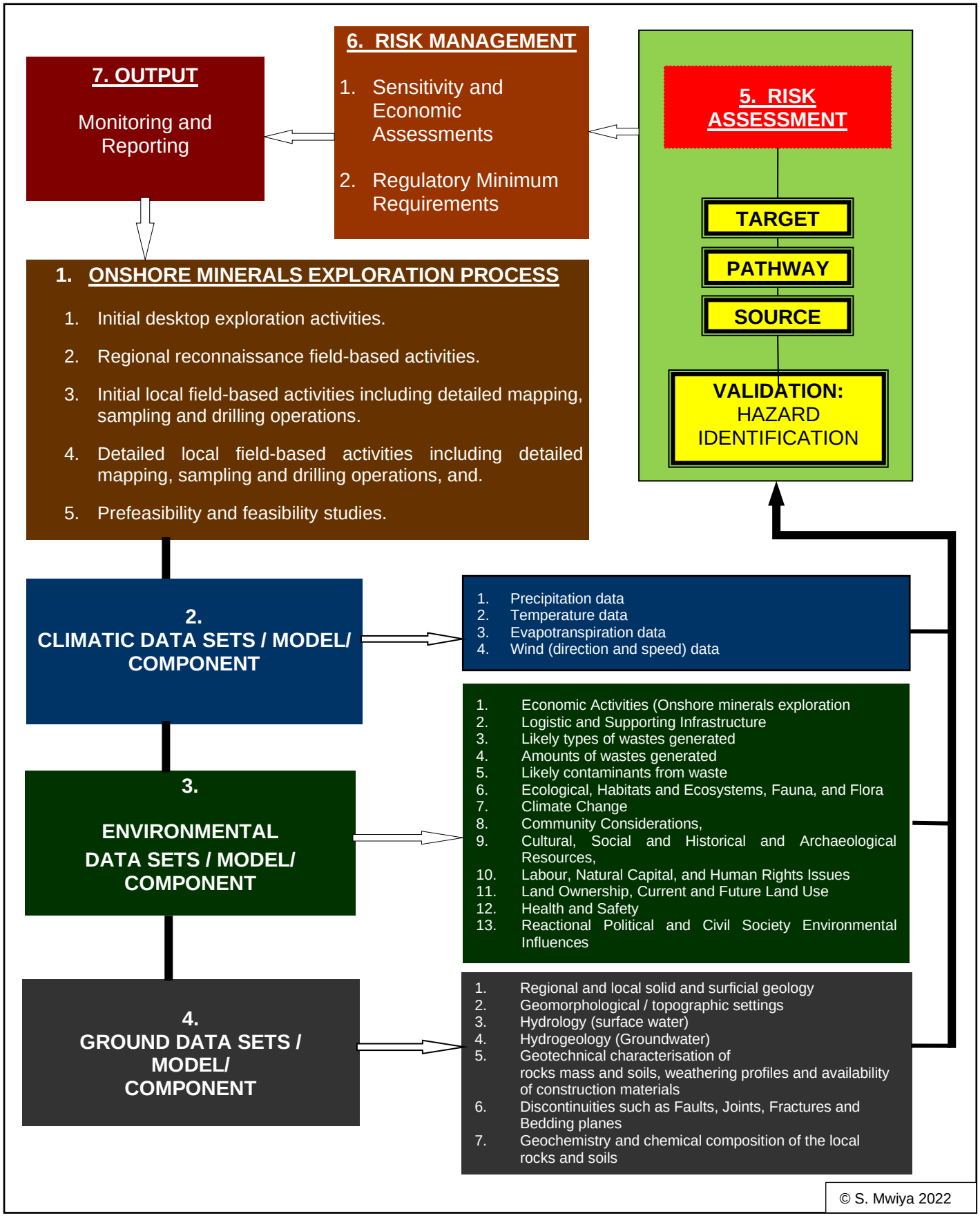

Figure 5.1: Detailed outline of the technical methodology based on a complete looped Knowledge-Based System Model Methodology (KBSMM) used in the impact assessment, risk assessment and determination of the monitoring and reporting strategy. The system model methodology has a built-in looping that allows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

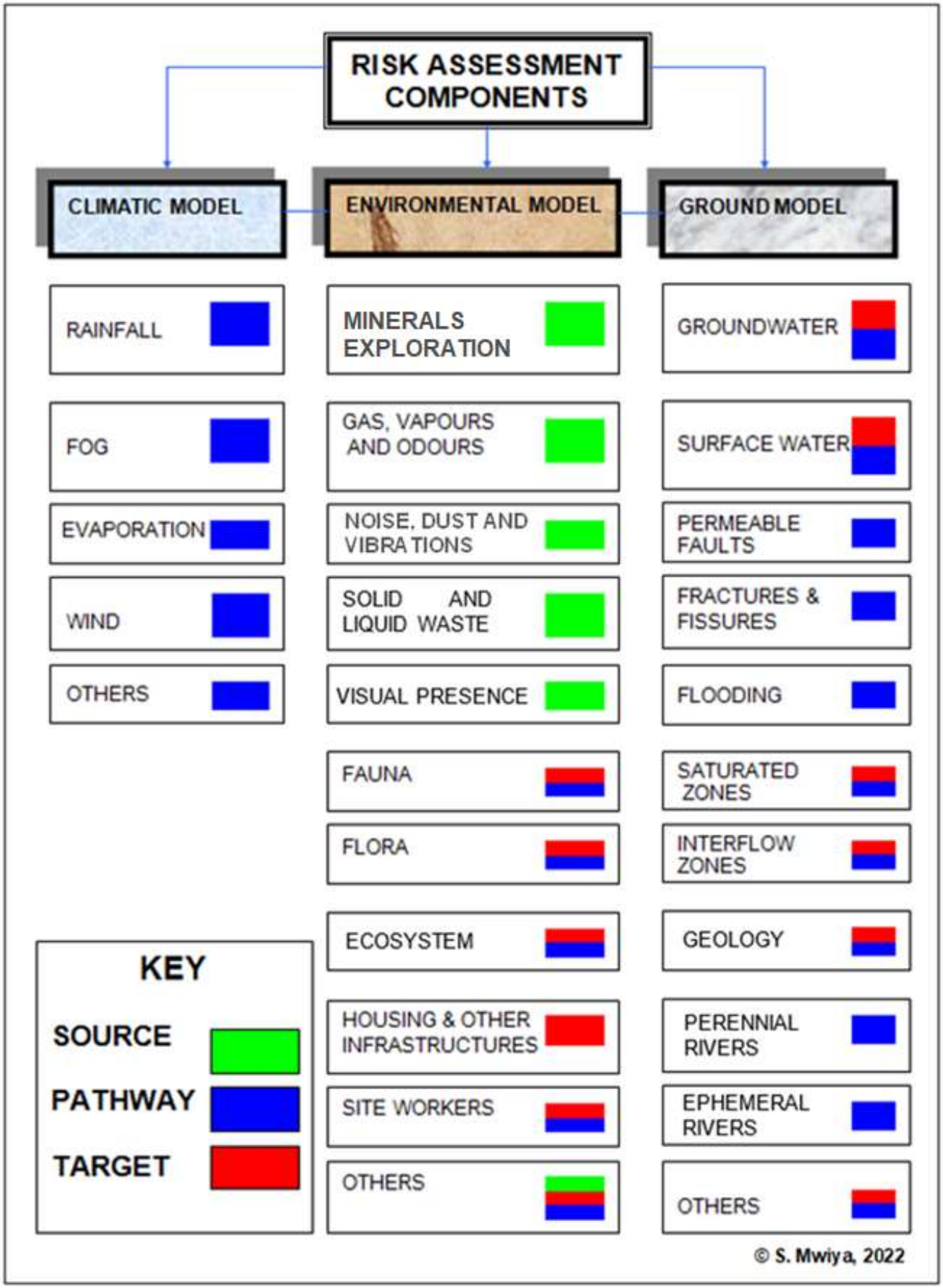

Figure 5.2: A Knowledge-Based System Model Methodology (KBSMM) characterised interactive risk assessment system output field-based and tested / validated Artificial Intelligent (AI) framework windows for onshore phased minerals exploration process implementation project lifecycle.

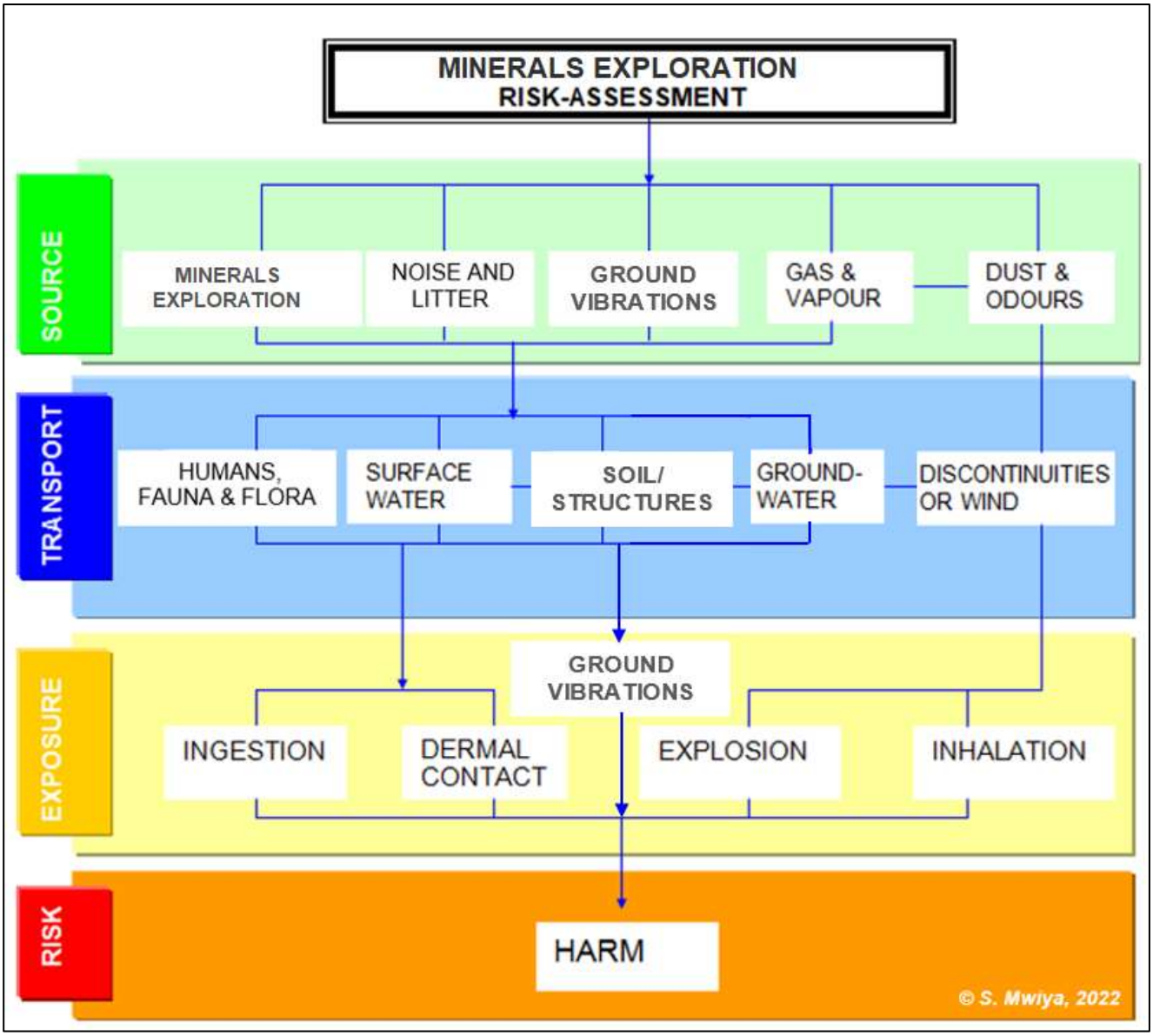

Figure 5.3: A Knowledge-Based System Model Methodology (KBSMM) characterised system output research-based and tested / validated Artificial Intelligent (AI) framework risk consequences (harm) pathways to the receiving target/receptors windows for onshore phased minerals exploration process project implementation 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 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 based on experience (existing knowledgebase) 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				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iii) Purchase and analysis of existing Government aerial hyperspectral	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	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
	(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
	(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
	(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

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

Table 5.6: Cont.

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
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	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	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	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	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	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	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	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	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	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	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	4
	(iii)	Geotechnical studies for mine design	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	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	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	3	3	4

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

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

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT				
SCALE / DESCRIPTION: T = Temporary; P = Permanent		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iii) Purchase and analysis of existing Government aerial hyperspectral	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	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	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	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	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	P

Table 5.7: *Cont.*

DURATION OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT				
SCALE / DESCRIPTION: T = Temporary; P = Permanent		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	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				
SCALE	DESCRIPTION		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
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 magnetics and radiometric geophysical data	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iii)	Purchase and analysis of existing Government aerial hyperspectral	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	(iv)	Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
2. Regional Reconnaissance Field-Based Activities	(i)	Regional geological, geochemical, topographical and remote sensing mapping and data analysis	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	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				
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		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	L	L	L	L	L	L	L	L	L	L	L	L	L	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
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	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	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	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	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	A	D	D	E

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)

Table 5.9: *Cont.*

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

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 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 results 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 (Magnitude, Duration, Extent, Probability)	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)	Major [5/5]																
High (4)	Major [5/4]																
Medium (3)	Major [5/3]																
Low (2)	Moderate [5/2]																
Negligible (1)	Minor [5/1]																
Very High (5)	Major [4/5[																
High (4)	Major [4/4]																
Medium (3)	Moderate[4/3]																
Low (2)	Moderate[4/2]																
Negligible (1)	Minor [4/1]																
Very High (5)	Moderate [3/5]																
High (4)	Moderate [3/4]																
Medium (3)	Moderate[3/3]																
Low (2)	Minor[3/2]																
Negligible (1)	None [3/1]																
Very High (5)	Moderate [2 /5]																
High (4)	Moderate [2/4]																
Medium (3)	Minor[2/3]																
Low (2)	None[2/2]																
Negligible (1)	None[2/1]																
Very High (5)	Minor 1/5																
High (4)	Minor[1/4]																
Medium (3)	None[1/3]																
Low (2)	None[1/2]																
Negligible (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	1/1
	(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	(iii) Purchase and analysis of existing Government aerial hyperspectral	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	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	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	4/4

Table 5.11: *Cont.*

SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT				
		Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	3\3	3\3	4/4

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

5.6 Assessment of Overall Impacts

5.6.1 Summary of the Results of the Impact Assessment

In accordance with Tables 5.6 - 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]**.

6. CONCLUSION AND RECOMMENDATION

6.1 EIA Conclusions

Mitten Minerals Exploration (Pty) Ltd (**the Proponent**) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 8947 covering base and rare metals, dimension stones, industrial minerals, and precious metals. 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 including possible test mining.

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 EIA Recommendations

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 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 landowner/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 landowner/s in line with all applicable national regulations.

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

(vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / landowners/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 even that economic minerals resources are discovered within the EPL 8947 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 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/ landowners/ 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.

8. BIBLIOGRAPHY / 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.

Günzel, A. 2000. Personal communication during the discussion on the geology of Tsumeb area, Tsumeb.

Lombaard, A.F., Günzel, A., Innes, J. and Krüger, T.L. 1986. The Tsumeb-lead-copper-zinc-silver deposits, South West Africa/Namibia. In: Anhaeusser, C.R. and Maske, S. (eds), Mineral deposits of Southern Africa vol. 2, Geol. Soc. S.Afr., Johannesburg, 1761-1787.

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 od 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 and Tourism, 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.

Mwiya, S. 2003. Development of a knowledge-based system methodology for design of solid waste disposal sites in arid and semiarid environments. Unpublished PhD thesis, University of Portsmouth, UK, 348 pp.

Mwiya and Giles, 2004. A knowledge-based approach to Municipal Solid Waste Disposal Site Development in the Karstified Dolomitic Terrain around the town of Tsumeb in North-Central Namibia Communications, Geological Survey of Namibia, 13 (2004), 9-22, Windhoek, Namibia.

National Planning Commission (NPC) (2013). Policy Brief: Trends and Impacts of Internal Migration in Namibia. National Planning Commission: Windhoek.

National Statistic Agency (NSA) (2012). Poverty Dynamics in Namibia: A Comparative Study Using the 1993/94, 2003/04 and the 2009/2010 NHIES Surveys. National Statistics Agency: Windhoek.

National Statistics Agency (NSA) (2013). Profile of Namibia: Facts, Figures and other Fundamental Information. National Statistics Agency: Windhoek.

National Statistics Agency (NSA) (2014a). Namibia 2011 Population and Housing Census Main Report. National Statistics Agency: Windhoek.

National Statistics Agency (NSA) (2014b). 2011 Population and Housing Census: Oshikoto Regional Profile. National Statistics Agency: Windhoek.

National Statistics Agency (NSA) (2014c). Namibia 2011 Census Atlas. National Statistics Agency: Windhoek.

National Statistics Agency (NSA) (2014d). The Namibia Labour Force Survey 2013 Report. National Statistics Agency: Windhoek

National Statistics Agency (NSA) (2014e). Gross Domestic Product: First Quarter 2014. National Statistics Agency: Windhoek

Roesener, H., Schneider, G., and Petzel, V., 2004. Okahandja – Otjiwarongo –Tsumeb – Tsumeb: The Roadside Geology of Namibia, (G. Schneider ed.), Gebruder Borntraeger, Berlin, 9.19: 214 – 219.

Schneider, G.I.C. and Seeger, K.G. 1992. Copper, 2.3,118 pp. In: The Mineral Resources of Namibia, Geological Survey of Namibia, Windhoek.

Seeger, K.G. 1990. An evaluation of the groundwater resources of the Grootfontein karst area. Department of Water Affairs, Windhoek, Namibia.

Stankevica, V., 2015. Development of mining settlements in Namibia: an investigation into prospects for Rosh Pinah, Klein Aub and Tsumeb., PhD Thesis, University of Namibia, 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.

Van Wyk, B. and Van Wyk, P. 1997. Field guide to trees of Southern Africa. Cape Town: Struik Publishers.

Van Oudtshoorn, F. 1999. Guide to grasses of southern Africa. Briza Publications, Pretoria, South Africa.

World Travel and Tourism Council, 2013, Travel and Tourism Economic impact 2013, 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

Alexander, G. and Marais, J. 2007. A guide to the reptiles of southern Africa. Struik Publishers, Cape Town, RSA.

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.

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.

Brown, I, Cunningham, P.L. and De Klerk, M. 2006. A comparative study of wetland birds at two dams in central Namibia. *Lanioturdus* 39(1): 2-9.

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.

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.

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, Namibia.

Curtis, B. and Barnard, P. 1998. Sites and species of biological, 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.

Du Preez, L. and Carruthers, V. 2009. A complete guide to the frogs of southern Africa. Struik Publishers, Cape Town, RSA.

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. 2006. Roberts Birds of Southern Africa VII Edition. John Voelcker Bird Book Fund.

IUCN, 2015. IUCN red list of threatened animals, IUCN, Gland, Switserland.

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.

Maclean, G.L. 1985. Robert's birds of southern Africa. John Voelcker Bird Book Fund.

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

Mannheimer, C. and Curtis, B. (eds) 2009. Le Roux and Müller's field guide to the trees and shrubs of N amibia. Macmillan Education Namibia, Windhoek.

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, A. and Robertson, T. 2002. Atlas of Namibia. A portrait of the land and its people. David Philip Publishers, Cape Town, RSA.

Monadjem, A., Taylor, P.J., F.P.D. Cotterill and M.C. Schoeman. 2010. Bats of southern and central Africa. Wits University press, Johannesburg, RSA.

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

Müller, M.A.N. 2007. Grasses of Namibia. John Meinert Publishers (Pty) Ltd, Windhoek, Namibia.

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.

Rothmann, S. 2004. Aloes, aristocrats of Namibian flora. ST promotions, Swakopmund.

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.

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.

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.

Stander, P. and Hanssen, L. 2003. Namibia large carnivore atlas. Unpublished Report, Ministry of Environment and Tourism, Windhoek.

Steyn, M. 2003. Southern African Commiphora. United Litho, Arcadia.

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.

Tolley, K. and Burger, M. 2007. Chameleons of southern Africa. Struik Nature, Cape Town, RSA.

Van Oudtshoorn, F. 1999. Guide to grasses of southern Africa. Briza Publications, Pretoria, South Africa.

Van Wyk, B. and Van Wyk, P. 1997. Field guide to trees of Southern Africa. Cape Town: Struik Publishers.

9. ANNEXES

1. **CV Dr Sindila Mwiya- EAP**

2. **Confirmation of Screening Notice Received (through email) in terms of assessment procedures (Section 35 (1)(a)(b) of the Environmental Management Act, No 7 of 2007)**

3. **BID and Proof of Consultations Undertaken**