

Farpoint Investments (Pty) Ltd (The Proponent)

Environmental Management Plan (EMP) to support the
Application for Environmental Clearance Certificate
(ECC) for the Proposed Exploration Activities in the
Exclusive Prospecting License (EPL) 8451, **Berseba
District, //Karas Region**



PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

TYPE OF AUTHORISATIONS REQUIRING ECC

Exclusive Prospecting License (EPL) No. 8451

NAME OF THE PROPONENT

Farpoint Investments (Pty) Ltd

COMPETENT AUTHORITY

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PROPOSED PROJECT

Proposed Minerals Exploration / Prospecting activities
in the Exclusive Prospecting License (EPL)
No. 8451, Berseba District, //Karas Region

PROJECT LOCATION

Berseba District, //Karas Region
(-25.980278, 16.591111)

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MSc Env. Mag, BSc (Hons) Envi Bio)

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NON-TECHNICAL SUMMARY

Farpoint Investments (Pty) Ltd (the “Proponent”) has applied for minerals rights under the Exclusive Prospecting License (EPL) No. 8451 with respect to Dimension Stones and Non- Nuclear Fuels (<http://portals.flexicadastre.com/Namibia>). The EPL is granted for base and rare metals, dimension stone, industrial minerals, non-nuclear fuels minerals, precious metals, and precious stones.

The proposed exploration / prospecting activities as assessed in this updated Scoping and Environmental Management Plan (EMP) Report covers the following phases:

- (i) Initial desktop exploration activities (no fieldwork 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 (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 (iii) above), and.
- (v) Prefeasibility and feasibility studies (Subject to the positive results of (iv) above).

The scope of the field-based support and logistical activities will be dependent on the scale of proposed exploration activities to be undertaken at any given phase / stage. The proposed exploration activities will be supported by existing tracks and campsites / farmstead as well as existing accommodation in the local area as may be applicable. In the absences of existing tracks and depending on the scale of exploration activities being undertaken, the field team will create such new tracks with the permission of the landowner/s and in compliance with the provisions of the EMP and all applicable regulations and standards. In the absences of existing suitable campsite / farmstead, a temporary camp site will be setup at suitable location with the permission of the landowner and in line with the provisions of the EMP. The size of the exploration camp will be of very limited footprint during the initial and detailed field-based exploration phases. In an event of a discovery of economic minerals resources, the exploration campsite may be expanded for the subsequent exploration phases such as prefeasibility and feasibility studies.

The proposed exploration activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC). An application for ECC together with the supporting updated Environmental Scoping and Impact assessment and Environmental Management Plan (EMP) Report was prepared by the Risk-Based Solutions (RBS) CC on behalf of the Proponent and submitted to the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT).

The EPL 8451 is located in Berseba district, //Karas Region approximately 10 km southwest from Helmeringshausen and approximately 50km northeast from Bethanie. The EPL has a total area of 8631.1588 Ha and covers the following commercial privately owned farmlands including: Farm Kunjas, Korais, and Rem of Nagatis, Gomachas, Fresgewaagd, and Lovedale. The land uses of the EPL area and surrounding general area is mainly centred on commercial agriculture and tourism freehold land including small stock, intensive agricultural operations.

The area of the EPL falls within the Nama Karoo. The landscape is extremely barren and rocky with little soil cover. The vegetation consists of dwarf shrubs with some trees in riverbeds. Grass production is highly dependent on rainfall; thus, farming can be a difficult enterprise and livestock densities are low as a result of low vegetation cover and productivity of farmland (Mendelsohn et al. 2002). Generally, the area of the EPL is regarded as “low to very low” in the overall (all terrestrial species) diversity while the overall terrestrial endemism is “moderate” (Mendelsohn et al. 2002).

The environmental consequence that the proposed exploration and associated infrastructure such as access and campsite would have on the receiving environment will depend on the extent of the proposed activities over the development area, management of the area and how the Proponent eventually implements the proposed mitigation measures. Avoiding sensitive habitats such as Ephemeral River channels, rock heads, mountainous terrains, granite features that might hold archaeological resources as well as track discipline (including no killing/poaching of fauna and unnecessarily cutting down of trees) must be adhered to and/or always enforced. The following is the assessment summary of the likely environmental impacts that the proposed exploration prospecting activities will have on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) without mitigations:

- (i) Initial desktop exploration activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible, and no field work will take place.
- (ii) Regional reconnaissance field-based activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible. Some field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible.
- (iii) Initial local field-based activities: Initial field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible.
- (iv) Detailed local field-based activities: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised low impacts with mitigations. Overall significant impacts will be medium without mitigations and low with mitigations, and.
- (v) Prefeasibility and feasibility studies to be implemented on a site-specific area if the local field-based studies prove positive: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be high without mitigations and low with mitigations for bulk sampling, and field coordination including exploration camp.

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. Mitigation measures as detailed in Section 6 of the Updated Scoping and EMP Report attached to this application must be implemented and monitored by the Proponent. The proponent shall obtain permission / consent from landowners (surface rights holders) before exercising their subsurface rights for all areas covered by the EPL 8451.

Based on the findings of the Scoping and EMP Report, it is hereby recommended that the proposed / ongoing exploration activities by the Proponent be issued with a Environmental Clearance Certificate (ECC) with the following key conditions:

- (i) The Proponent shall negotiate Access Agreements with the landowners as may be applicable.
- (ii) In consultation with the landowners and where possible and if key and core conservation, tourism or archaeological resources areas are identified within the EPL area, such areas shall be excluded from the proposed minerals exploration activities.

- (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 legislations and regulations.
- (iv) Before entering any private property such as private farms or communal areas, the Proponent shall give advance notices to the surface land rights holders and always obtain permission to access the land to undertake prospecting activities in any given area.
- (v) Mitigation measures shall be implemented as detailed in Section 6 (EMP) of this updated Scoping and EMP report, and.
- (vi) Where possible, and if good quality freshwater is found during the detailed exploration borehole drilling operations, the Proponent shall support other land users in the area in terms of access to good quality freshwater resources for both human consumption, wildlife management and agricultural uses as may be requested by the local community / landowner/s. With permission from the Department of Water Affairs in the Ministry of Agriculture, Water and Land Reform (MAWLR), 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 economic resources are discovered for possible mining operations, a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) shall be undertaken as part of the prefeasibility and feasibility studies. The site-specific EIA and EMP shall cover the area/s identified to have potential economic minerals resources and the assessment shall include the entire planned mine layout areas such as local land uses, pit / shaft, waste rock, tailings dump, access, office blocks, mechanical workshop, water, and energy infrastructure support areas (water, energy, and road / access).

In addition to the site-specific possible mining EIA and EMP Terms of Reference (ToR) to be developed during the prefeasibility study phase, the following field-based and site-specific specialist studies shall be undertaken in an event of a discovery of economic minerals resources that can support the development of a mining project within the EPL No. 8451 area:

- (i) Groundwater studies including modelling as may be applicable.
- (ii) Field-based flora and fauna assessments.
- (iii) Dusts, noise and sound assessments and modelling linked to engineering studies.
- (iv) Socioeconomic assessment, and.
- (v) Others as may be identified / recommended by the stakeholders/ landowners/ Environmental Commissioner or specialists during the prefeasibility and feasibility phases.

2. Summary of the Proposed Mitigation Measures

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. Mitigation measures shall be implemented as detailed in this EMP report and includes the following:

1. Project planning and implementation.

2. Implementation of the EMP.

3. Public and stakeholders relations.
4. Measures to enhance positive socioeconomic impacts.
5. Environmental awareness briefing and training.
6. Erection of supporting exploration infrastructure.
7. Use of existing access roads, tracks and general vehicle movements.
8. Mitigation measures for preventing flora destruction.
9. Mitigation measures for preventing faunal destruction.
10. Mitigation measures to be implemented with respect to the exploration camps and exploration sites.
11. Mitigation measures for surface and groundwater protection as well as general water usage.
12. Mitigation measures to minimise negative socioeconomic impacts.
13. Mitigation measures to minimise health and safety impacts.
14. Mitigation measures to minimise visual impacts.
15. Mitigation measures to minimise vibration, noise and air quality.
16. Mitigation measures for waste (solid and liquid) management.
17. Rehabilitation plan, and.
18. Environmental data collection.

3. Conclusions and Recommendations of the EMP

Based on the findings of the EIA and the mitigation measures provided in this EMP Report, it is hereby recommended that the proposed exploration activities be issued with an Environmental Clearance Certificate (ECC). The following is the summary of the key conditions that shall be implemented by the Proponent for the proposed project activities:

- (i) The Proponent will undertake to implement the conditions of the land lease agreements to be concluded with the owners of the land as may be required to support the proposed exploration activities.
- (ii) The proponent shall implement and adhere to all the provisions of this EMP report.
- (iii) Mitigation measures shall be implemented as detailed in this EMP report.
- (iv) Rehabilitation must be undertaken at all times.

- (v) The Proponent shall adhere to all the applicable national regulations and standards as well as Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles and International Finance Corporation (IFC) environmental management guidelines and frameworks, and.
- (vi) 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.

The following are the recommended actions (roles and responsibility) to be implemented by the Proponent as a part of the management of the impacts through implementations of this EMP Report:

- (i) Appoint an Environmental Control Officer to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed project.
- (ii) Provide with other support, human and financial resources, for the implementation of the proposed mitigations, rehabilitation plans and effective environmental management during the planned mine project life cycle.
- (iii) Develop a simplified environmental induction and awareness programme for all the workforce, contractors and sub-contractors.
- (iv) Where contracted service providers are likely to cause environmental impacts, these will need to identify and contract agreements need to be developed with costing provisions for environmental liabilities.
- (v) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer and to be submitted to the regulators, and.
- (vi) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA related to the expansion of the current delineated resources or development of completely new mine site within the EPL area.

All the responsibilities to ensure that the recommendations and provisions of this EMP Report are executed accordingly, rest with the Proponent. The Proponent shall provide all appropriate resource requirements for the implementation of this EMP as well as an independently managed (not directly controlled by the company) funding instrument for rehabilitation and associated environmental liabilities.

It is the responsibility of the Proponent to make sure that all members of the workforce including contractors and subcontractors are aware of the provisions of this EMP and its objectives. It is hereby recommended that the Proponent take all the necessary steps to implement all the recommendations of this EMP for the successful execution of the proposed exploration programme.

1. BACKGROUND

1.1 Introduction

Farpoint Investments (Pty) Ltd, the Proponent, holds minerals rights under Exclusive Prospecting License (EPL) No. 8451, and intend to undertake exploration activities covering desktop studies, followed by field-based regional and detailed site-specific explorations activities using techniques such as desktop studies, geophysical surveys, geological mapping, trenching, drilling and bulk sampling. The summary of the EPL is as follows:

❖ Type of License:	Exclusive Prospecting License (EPL) No.8451
❖ EPL Holder and Proponent:	Farpoint Investments (Pty) Ltd
❖ Application Date:	10/11/2020
❖ Commodities:	Dimension Stone, and Non-Nuclear Fuels Minerals
❖ Size of the EPL:	8631.1588 Ha

1.2 Proposed Scope of Work

The Proponent intends undertake exploration activities covering desktop studies: the purchase and interpretation of the existing Government high resolution airborne geophysical data sets, regional reconnaissance assessment covering field-based activities such as regional mapping and sampling to identify and verify potential targeted areas as delineated during the desktop stage, geological mapping, sampling, surveying and possible widely spaced trenching and drilling to test the viability of any delineated local target based on the regional data collected under localised site-specific detailed geological mapping, trenching, bulk sampling, surveying, and detailed drilling to determine the feasibility of the delineated local targets. If the detailed exploration activities lead to positive results, the exploration data collected will then be put together into a prefeasibility report and if the prefeasibility results prove positive, a detailed feasibility study supported by detailed site-specific drilling, bulk sampling and laboratory testing / test mining will be undertaken on the identified site-specific area.

1.3 Regulatory Requirements

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

In fulfilment of the environmental requirements, the Proponent appointed Earth Environmental Services (EES) CC as the Environmental Consultants led by Ms Emerita Ashipala as the Environmental Assessment Practitioner in the preparation of the EIA and EMP Reports in order to support the application for ECC.

1.4 Location, Land Use, Infrastructure and Services

The EPL 8451 is located in Berseba district, //Karas Region approximately 10 km southwest from Helmeringshausen and approximately 50km northeast from Bethanie. The EPL has a total area of 8631.1588 Ha and covers the following commercial privately owned farmlands including: Farm Kunjas, Korais, and Rem of Nagatis, Gomachas, Fresgewaagd, and Lovedale (Figs. 1.1-1.2). The land uses of the EPL area and surrounding general area is mainly centred on commercial agriculture and tourism freehold land including small stock, intensive agricultural operations (Figs. 1.1 - 1.2).

1.5 Supporting Infrastructure and Services

The EPL area is accessible along the M35 and D40 Road from Helmeringhausen and via the D425 from Bethanie (Figs. 1.1 -1.2). Private minor roads may require high clearance 4 x 4 vehicles and may only be used with permission from the landowners (Fig. 1.1-1.2).

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

- (i) External and internal roads network: The Proponent will use the already existing external and internal road networks during the exploration phase (Fig 1.1 and 1.2).
- (ii) Water supply: Raw water will be sourced from local groundwater resources (Fig. 1.6). The Proponent will utilise the existing boreholes with permission from the landowners. The exploration activities such as drilling operations will require limited water resources which could also be supplied by a tanker truck.
- (iii) Energy: The proposed exploration operations will use diesels and solar energy as may be required for exploration equipment and lighting, respectively, and.
- (iv) Accommodation and other supporting facilities and services: The exploration team will utilise the existing accommodation facilities and services in the area. In absence of such facilities and services, the Proponent will provide onsite camping accommodation and supporting portable infrastructures such as chemical toilets as well as other requirements as may be applicable. The establishment of an exploration camp will only be done with the permission of the landowner.

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

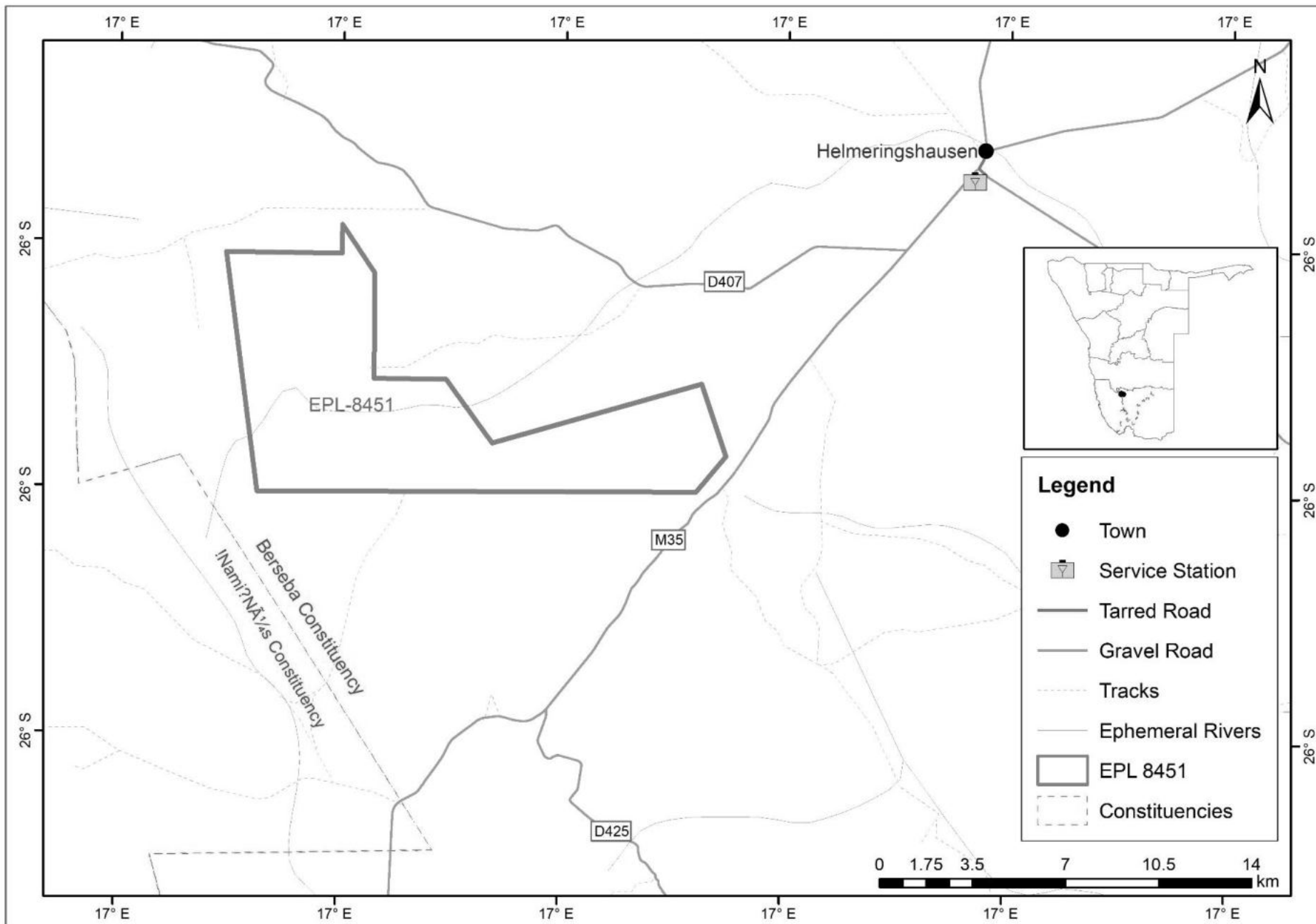


Figure 1.1: Detailed regional location of the EPL 8451 and related infrastructure.

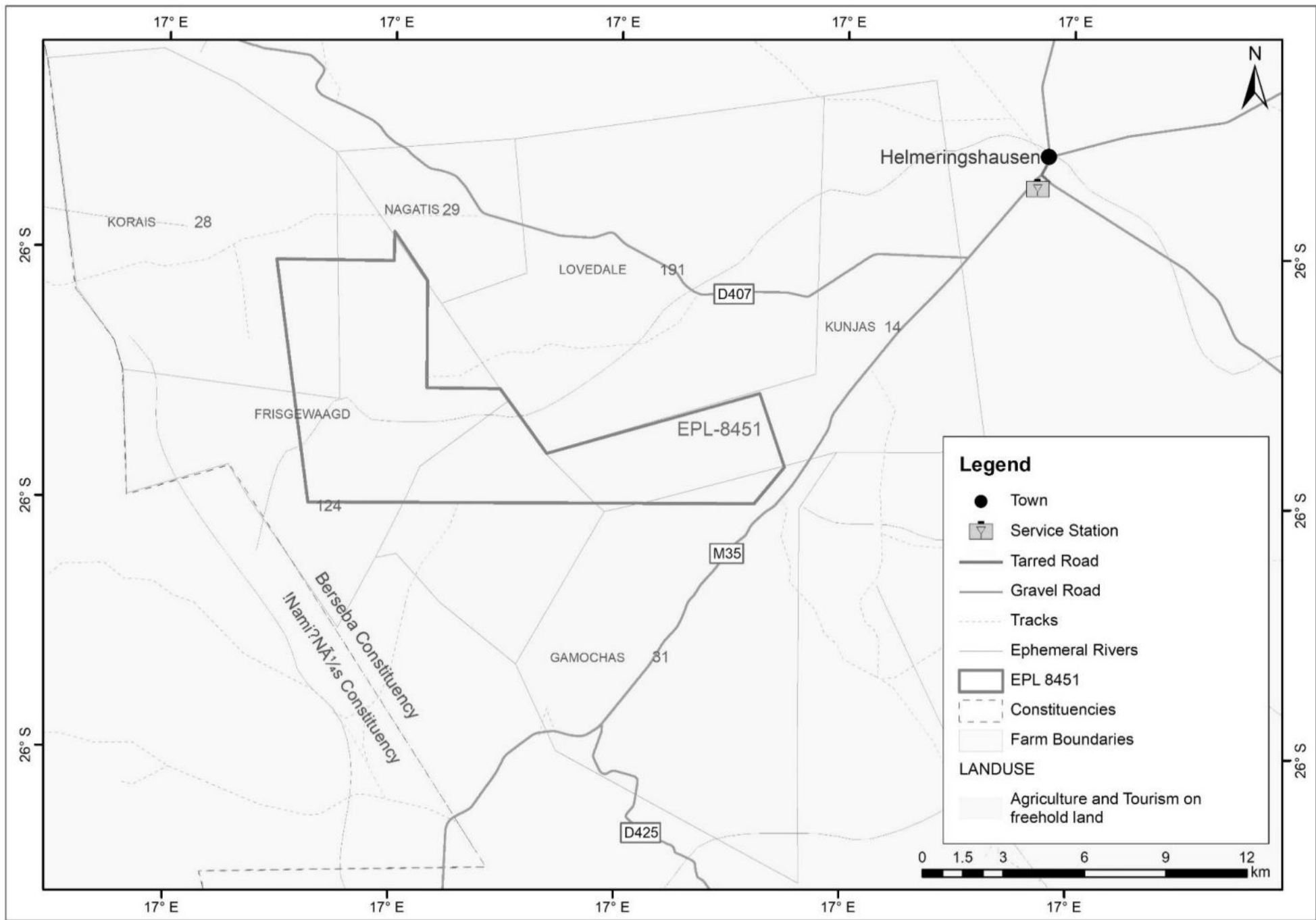


Figure 1.2: Detailed regional location, related infrastructure and commercial farms and land use surrounding EPL 8451

2. Summary of the Receiving Environment

2.1 Climate

The Karas Region is an arid zone with low and erratic rainfall as a result of low rainfall, vegetation is generally sparse and limited (Mendelsohn et al. 2002). The general area of the EPL falls within the subtropical desert climate. Precipitation of the area is characterised by relatively low summer rainfall (average 50-230 mm per year) mainly in February, March, and April, but the extreme south-western areas of Karas receive occasional winter rain. Year to year variability of rainfall is very high, where years without significant rainfall are normal (climatedata.org).

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 southwestern quadrants with an average wind speed of 3.4 meters per second. Locally, the situation may be different due to various influences including topographic effects.

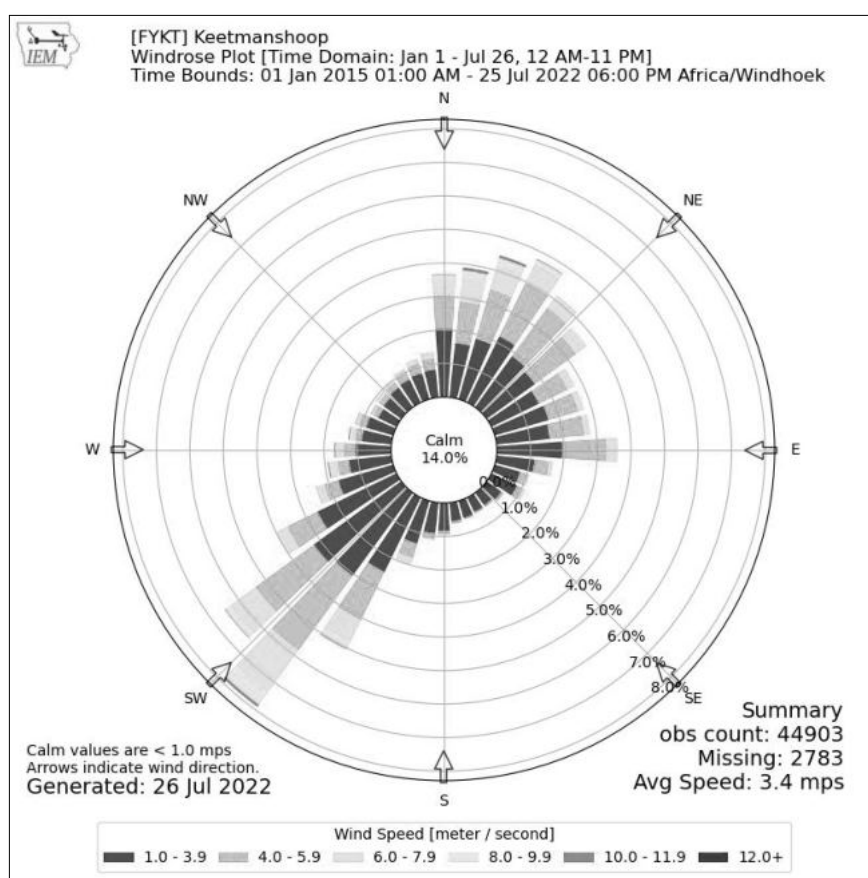


Figure 2.1: Dominant wind speed and direction of the Keetmanshoop (IEM, 2022).

2.2 Flora and Fauna Diversity

2.2.1 Overview

The area of the EPL falls within the Nama Karoo. The landscape is extremely barren and rocky with little soil cover. The vegetation consists of dwarf shrubs with some trees in riverbeds. Grass production is highly dependent on rainfall; thus, farming can be a difficult enterprise and livestock densities are low as a result of low vegetation cover and productivity of farmland (Mendelsohn et al. 2002). Generally, the area of the EPL is regarded as “low to very low” in the overall (all terrestrial species) diversity while the overall terrestrial endemism is “moderate” (Mendelsohn et al. 2002).

2.2.2 Summary of Fauna Diversity

2.2.3 Reptiles

Diversity Approximately 261 species of reptiles are known or expected to occur in Namibia thus supporting approximately 30% of the continent's species diversity (Griffin 1998a). At least 22% or 55 species of Namibian lizards are classified as endemic. The occurrence of reptiles of "conservation concern" includes about 67% of Namibian reptiles (Griffin 1998a).

The high percentage of endemic reptile species (39%) associated with the general south-central part of Namibia underscores the importance of area. The most important reptiles in the area are viewed as those classified as vulnerable and protected game under Namibian legislation – i.e. *Stigmochelys pardalis*, *Psammobates oculiferus*, *Psammobates tentorius verroxii*, *Python natalensis* & *Varanus albigularis*. Tortoises – e.g. *Stigmochelys pardalis*, *Psammobates oculiferus*, *Psammobates tentorius verroxii* – are viewed as the group of reptiles most under threat in Namibia (Griffin 1998a). Reptile species of concern are the burrowing species such as the blind snakes *Rhinotyphlops boylei* and *Rhinotyphlops schinzi* as these species are very difficult to study (and observe) with very little known about their ecological role and actual status in Namibia. However, none of these species are exclusively associated with the proposed development site.

2.2.4 Amphibian Diversity

Amphibians are declining throughout the world due to various factors of which much has been ascribed to habitat destruction. Basic species lists for various habitats are not always available with Namibia being no exception in this regard while the basic ecology of most species is also unknown. Approximately 4,000 species of amphibians are known worldwide with just over 200 species known from southern Africa and at least 57 species expected to occur in Namibia. Griffin (1998b) puts this figure at 50 recorded species and a final species richness of approximately 65 species, 6 of which are endemic to Namibia. This "low" number of amphibians from Namibia is not only as a result of the generally marginal desert habitat, but also due to Namibia being under studied and under collected. Most amphibians require water to breed and are therefore associated with the permanent water bodies, mainly in northeast Namibia. There is no permanent surface water in the study area. Any frog species present would be adapted to opportunistic breeding in ephemeral pools after rains.

2.2.5 Mammal Diversity

Namibia is well endowed with mammal diversity with at least 250 species occurring in the country. These include the well-known big and hairy as well as a legion of smaller and lesser-known species. Currently 14 mammal species are considered endemic to Namibia of which 11 species are rodents and small carnivores of which very little is known. Most endemic mammals are associated with the Namib and escarpment with 60% of these rock dwelling (Griffin 1998c). About 61-75 species of mammals likely occurs in the study area.

2.2.6 Bird Diversity

Although Namibia's avifauna is comparatively sparse compared to the high rainfall equatorial areas elsewhere in Africa, approximately 658 species have already been recorded with a diverse and unique group of arid endemics (Brown et al. 1998, Maclean 1985). Fourteen species of birds are endemic or near endemic to Namibia with the majority of Namibian endemics occurring in the savannas (30%) of which ten species occur in a north-south belt of dry savannah in central Namibia (Brown et al. 1998). The area has relatively low bird diversity with only about 81-110 species of likely occurrence. The only endemic species known/expected to occur in the general Keetmanshoop area are the Rosy-faced Lovebird and Rüppell's Korhaan. Other important species include various raptors (e.g. Martial, Tawny & Verreauxs') which are declining throughout Namibia (declines not always understood, although humans are often the cause thereof – e.g. killed as perceived predators of poultry and lambs or as collateral damage during poisoning episodes against problem animals). Numerous associated power lines and pylon infrastructures are viewed as the biggest threat to species such as bustards and larger raptors. However, none of these species are exclusively associated with the EPL area.

2.2.7 Summary of Fauna Diversity

2.2.8 Trees /shrub species

Important tree and shrub species are the endemic (*Aizoanthemum dinteri*), near endemic (*Euphorbia cibdela*, *Orbea lutea*, and *Pentatrichia petrosa*). Species protected under the Forestry Ordinance No. 37 of 1952 and/or Forest Act No. 72 of 1968 (*Adromischus schuldianus*, *Huernia plowesii* L.C.Leach, *Larryleachia tirasmontana*, *Lithops karasmontana* etc). Endemic, near endemic and protected species of likely occurrence are presented in the Table 2.1. The EPL falls within the Nama Karoo with extremely diverse vegetation cover as indicated in Fig. 2.2.

Table 2.1: Endemic, near endemic and protected species of likely occurrence (National Herbarium of Namibia (WIND). 2020

SPECIES	ENDEMISM	PROTECTED	IUCN2
<i>Adromischus schuldianus</i> (Poelln.) Poelln. subsp. <i>juttae</i> (Poelln.) Toelken	Endemic	Protected	
<i>Blepharis spinifex</i> Merxm.	Endemic		
<i>Euphorbia cibdela</i> N.E.Br.	Near Endemic		
<i>Euphorbia juttae</i> Dinter	Endemic		Near Threatened
<i>Huernia plowesii</i> L.C.Leach	Endemic	Protected	
<i>Jamesbrittenia primuliflora</i> (Thell.) Hilliard	Endemic		
<i>Larryleachia tirasmontana</i> (Plowes) Plowes	Endemic	Protected	
<i>Lithops karasmontana</i> (Dinter & Schwantes) N.E.Br. subsp. <i>bella</i> (N.E.Br.) D.T.Cole	Endemic	Protected	
<i>Manulea dubia</i> (Skan) Overkott ex Roessler	Endemic		
<i>Namaquanula bruynsii</i> Snijman	Endemic		
<i>Orbea lutea</i> (N.E.Br.) Bruyns subsp. <i>vaga</i> (N.E.Br.) Bruyns	Near Endemic	Protected	
<i>Pentatrichia petrosa</i> Klatt ex Range	Near Endemic		
<i>Psilocaulon gessertianum</i> (Dinter & A.Berger) Dinter & Schwantes	Endemic		
<i>Selago amboensis</i> Rolfe	Endemic		Near Threatened
<i>Selago lepida</i> Hilliard	Endemic		
<i>Stapelia schinzii</i> A.Berger & Schltr. var. <i>schinzii</i>	Endemic	Protected	
<i>Tridentea marientalensis</i> (Nel) L.C.Leach subsp. <i>albipilosa</i> (Giess) L.C.Leach	Endemic	Protected	
<i>Vincetoxicum fleckii</i> (Schltr.) Meve & Liede	Endemic		

2.3 Ground Components

2.3.1 Regional and Local Geology

Namibia's varied geology encompasses rocks of Archaean to Cenozoic age, thus covering more than 2 600 million years (Ma) of Earth history (Mendelsohn et al. 2002). Much of the southern part of Namibia is underlain by sedimentary rocks of the Nama Group and thus forms the large hydrogeological unit of the Fish River Basin and the Keetmanshoop-Aroab area. Due to their predominantly horizontal bedding,

rocks of the Nama Group tend to weather and erode in layers, resulting in flat plains, with major drainages forming canyons and gorges. Erosion produces rock fragments or clay-size particles, and rivers accumulate very little sandy alluvium. The western boundary of the Nama Group is clearly defined as the major escarpment adjacent to the Schwarzrand, while to the east, the escarpment of the Weissrand, made up by younger deposits of the Stampriet basin, forms the natural boundary. The geology consists of Dwyka shale and tillite of the Karoo Sequence, which are intruded by dolerite dykes and shale (Nama Group), which is generally a weak aquifer (Groundwater in Namibia, 2001) (Fig 4.2).

2.3.2 Soils

The area of the EPL 8451 is dominated by Leptosols (Fig.4.3), although Regosol, Cambisol, Fluvisol could also be found. Leptosols typically form in actively eroding landscapes, especially in the hilly or undulating areas that cover much of southern and north-western Namibia (Mendelsohn et al. 2002). These coarse-textured soils are characterised by their limited depth caused by the presence of a continuous hard-rock highly calcareous or cemented layer within 30 cm of the surface. The leptosols are, therefore, the shallowest soils to be found in Namibia and they often contain much gravel. As a result, their water-holding capacity is low, and vegetation in areas in which they occur is often subject to drought. Rates of water run-off and water erosion can be high when heavy rains all. At best, these soils can support low densities of livestock and wildlife (Mendelsohn et al. 2002).

2.3.3 Water Sources

Rock types of the Nama Group are inherently impermeable with little or no primary porosity. Groundwater is hosted in secondary features like faults and joints in sedimentary rocks of clastic origin (sandstone, quartzite, and shale) and in solution features in limestones and dolomites. Lack of recharge and poor groundwater quality in most areas further aggravates the situation. In the Karas region water levels are generally shallow in the east, close to the course of the Fish River, but become progressively deeper towards the escarpment in the west, where water levels deeper than 200m are recorded. The EPL falls within the Fish River basin (Fig. 4.4). Drilling targets are mostly tectonic features such as faults and joints. The largest town and regional centre, source water from a surface water scheme fed from Naute Dam whereas smaller towns like Aroab, Maltahöhe, Kalkrand, Gibeon, Berseba, and Bethanien rely on groundwater extracted from aquifers in Nama sediments (Groundwater in Namibia, 2001).

2.4 Socioeconomic

2.4.1 Overview

The //Karas Region has an estimated population of 76000 (CBS, 2011), the average population density being 0.5 persons per square kilometre. The predominant languages in the region are Nama and Damara, Afrikaans, although Otjherero and Oshiwambo are also commonly spoken. The region has been divided into seven constituencies, namely the Nami-#Nus, Berseba, Oranjemund, Karasburg east, Karasburg west, Keetmanshoop Urban and Keetmanshoop Rural. The EPL falls within the Berseba constituency.

2.4.1.1 Regional Socioeconomic Setting

- ❖ According to the Namibia 2001 Population and Housing Census, //Karas had a population of 69,329 (32,346 females and 36,976 males or 114 males for every 100 females) growing at an annual rate of 1.3% (National Statistics Agency (NSA), 2016 and 2013).
- ❖ About 54% lived in urban areas, while 46% lived in rural areas, and with an area of 161,215 km², the population density was 0.4 persons per km².
- ❖ By age, 11% of the population was under 5 years old, 20% between 5 and 14 years, 63% between 15 and 59 years, and 6% 60 years and older.

- ❖ The population was divided into 15,481 households, with an average size of 4.1 persons; 35% of households had a female head of house, while 65% had a male. For those 15 years and older, 69% had never married, 20% married with certificate, 2% married traditionally, 5% married consensually, 1% were divorced or separated, and 2% were widowed.
- ❖ For those 15 years and older, the literacy rate was 87%. Nearly 45% of the population are from coloured and white Namibian groups. In terms of education, 52% of girls and 48% of boys between the ages of 6 and 15 were attending school, and of those 15 years and older, 77% had left school, 7% were currently at school, and 7% had never attended.
- ❖ According to the 2012 Namibia Labour Force Survey, unemployment in the //Karas Region stood at 23.9% (National Statistics Agency (NSA), 2016 and 2013). Among households, 94% had safe water, 26% no toilet facility, 50% electricity for lighting, 81% access to radio, and 35% had wood or charcoal for cooking. In terms of households' main sources of income, 7% derived it from farming, 69% from wages and salaries, 6% cash remittances, 5% from business or nonfarming, and 10% from pension (National Statistics Agency (NSA), 2016 and 2013).
- ❖ For every 1,000 live births, 37 female and 56 male infant deaths occurred. The life expectancy at birth was 61 years for females and 54 for males (National Statistics Agency (NSA), 2016 and 2013). Among children younger than 15, 4% had lost a mother, 6% a father, and 1% were orphaned by both parents. About 3% of the entire population had a disability, of which 22% were deaf, 29% blind, 10% had a speech disability, 13% hand disability, 27% leg disability, and 7% mental disability.
- ❖ There has been a proportional decline in the //Karas Regions population as only 3.66% of the country's population live in the region and the region's population is growing at a slower rate (1.1%) than the national growth rate (1.4%).
- ❖ There is high migration rate from especially the north central regions to the //Karas region.
- ❖ There is only slightly more males than female indicating that either migratory male job seekers had moved away from the region (an possible explanation for the negative growth rate in the Lüderitz!/Nami=nūs constituency) or that more females are being employed by companies which historically employed men.
- ❖ A high proportion (63%) of the population is of working age (between 15 and 59 years);
- ❖ There is a large urban population (54% compared to 43% nationally) and 92.4% of the residents in the Lüderitz!/Nami=nūs constituency live in the town.
- ❖ The main source of income in the region is wages and salaries (72%) and the fishing and mining industries are the largest employers, and.
- ❖ There is a high labour force participation rate of 75.4% for the region.

2.4.1.2 Locally Socioeconomic Setting

The EPL falls within the Berseba constituencies with the following summary:

- ❖ Bersaba has a total population of 10 589 people, of which 4 932 are female and 5 657 are male.
- ❖ Keetmanshoop Urban was the most densely populated among all constituencies, with a density of 37.1 persons per square kilometre. Berseba had a population density of 0.3 persons per square kilometre.
- ❖ The proportion of the population living in urban areas was higher than in rural areas (54.0% and 46.0%, respectively in 2011).

- ❖ The regional adult literacy rate was 96.6 percent with no major difference between males and females. The adult literacy rate in urban areas stood at 98.0 percent compared to 94.9 percent in rural areas. The adult literacy was highest in Oranjemund (99.5%) and lowest in Berseba (90.2%).
- ❖ The labour force participation rates were high in Oranjemund (87.7%) and very low in Berseba constituency (61.2%). The labour force participation rate for females was lower in all the constituencies.
- ❖ A higher proportion of unemployed females than males in all constituencies were actively looking for work. However, the highest proportion of job seekers of both sexes was in Berseba constituency (37.9%).

2.4.2 Local Archaeological Setting and Recommendation

In the absence of field-based assessment being undertaken, it is likely that the general area around the EPL area may have archaeological resources that are protected by the National Heritage Act, 2004 (Act No. 27 of 2004) under the National Heritage Council of Namibia. The EPL area is likely to have evidence from the early colonial period related to a combination of mining, trade, missionary, and indigenous tribes' activities. The expectation is therefore:

- (i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite in the EPL area, and.
- (ii) A high likelihood of late precolonial and colonial settlement sites.

The following are the key recommended actions related to archaeology in the EPL Area:

- (i) The exploration team 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 the prospecting process should be reported to the National Heritage Council.
- (ii) The chance finds procedure as outlined in the EMP must be always implemented, and.
- (iii) Detailed field survey should be carried out if suspected archaeological resources or major natural cavities / shelters have been unearthed during the prospecting process.

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

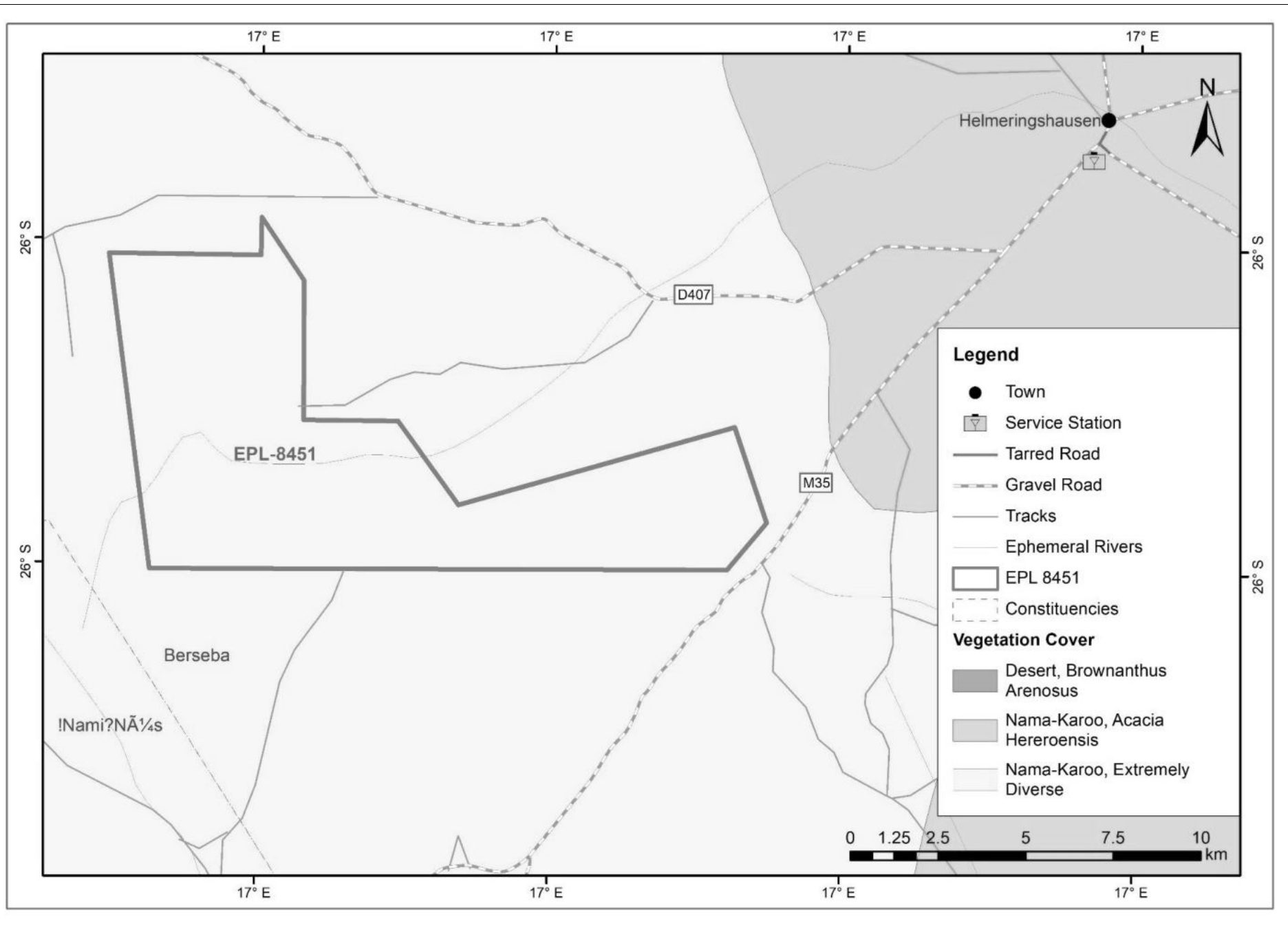


Figure 2.2: Vegetation diversity found within and around the EPL No. 8451 area

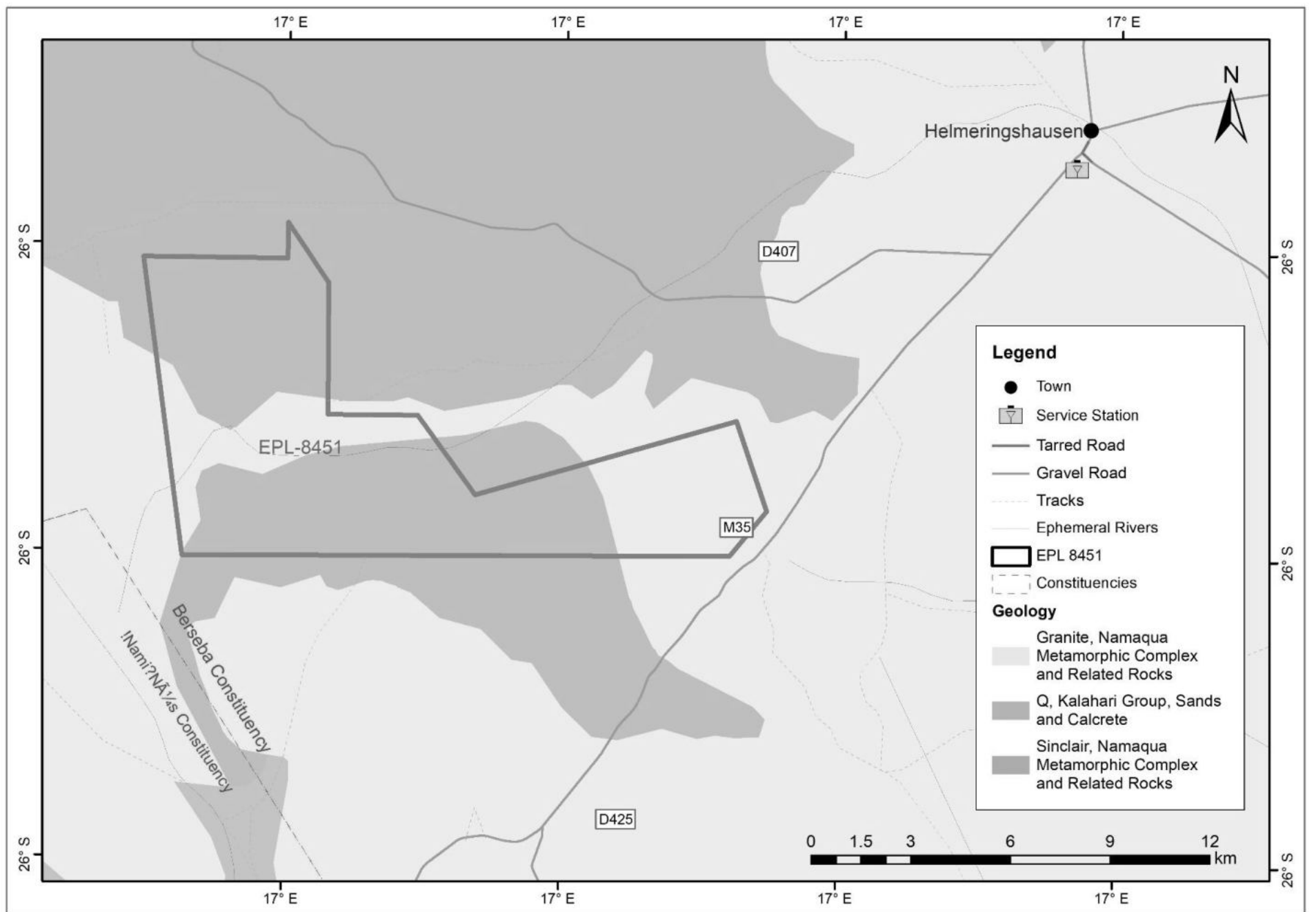


Figure 2.3: Rock types / solid geology found within and around the EPL No. 8451 area

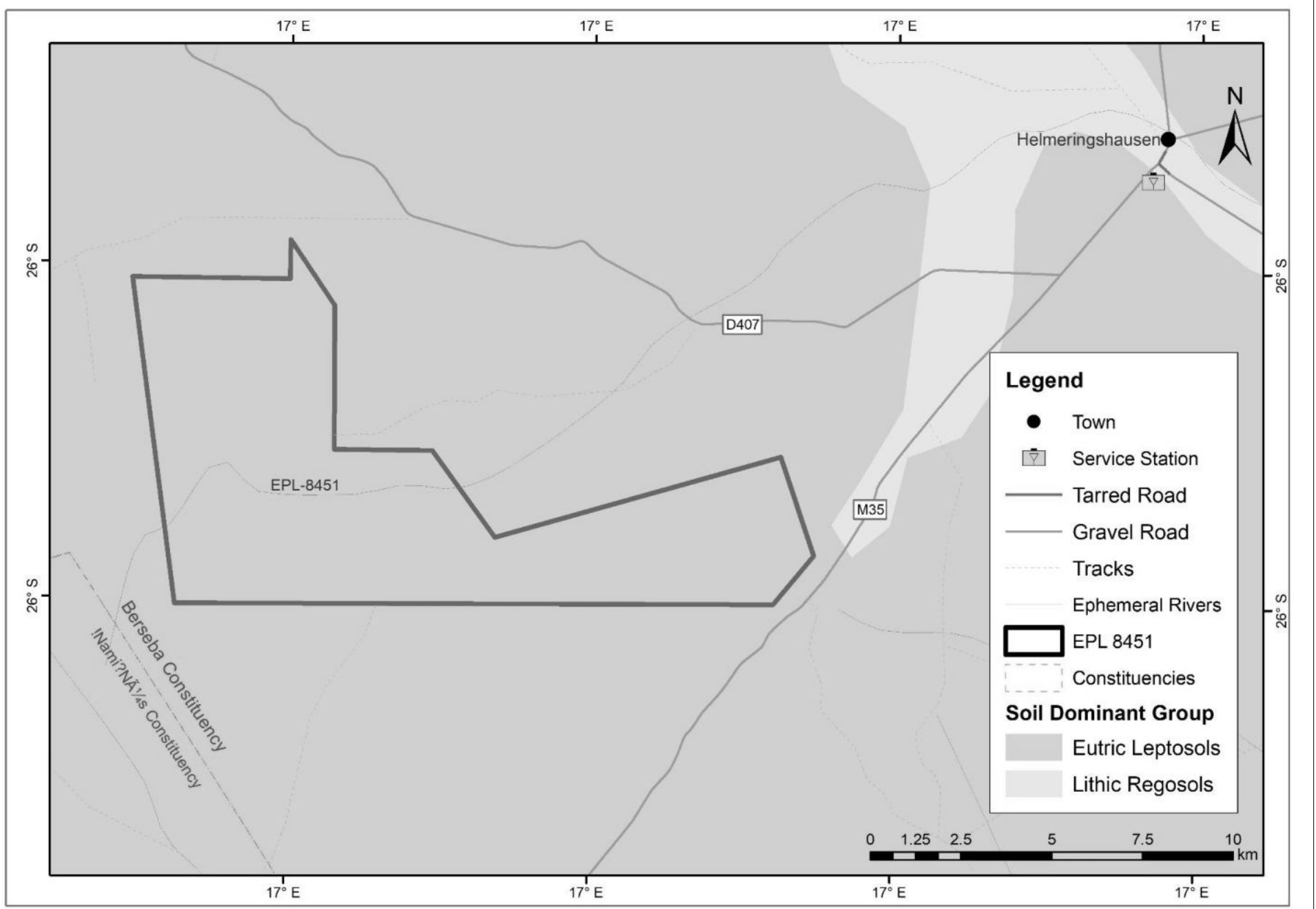


Figure 2.4: Soil types / surficial geology found within and around the EPL No. 8451 area

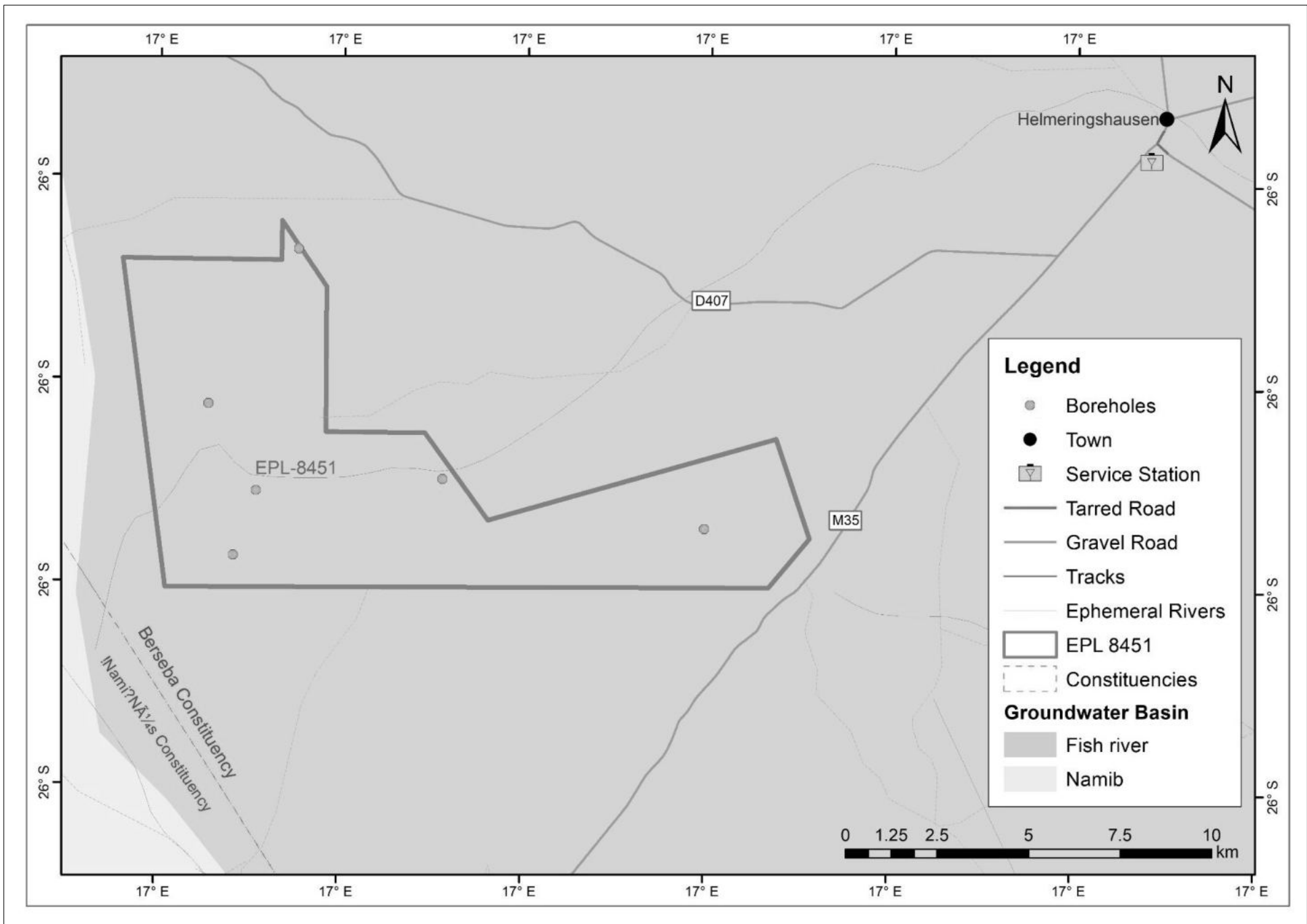


Figure 2.5: Groundwater resources found within and around the EPL No. 8451 area

3. OBJECTIVES OF THE EMP

3.1 Summary Objectives

This EMP provides a detailed plan of actions required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP also provides the management actions with roles and responsibilities requirements for the successful implementation of environmental management strategies by Proponent.

3.2 EMP Management Linkages

The mitigation measures described in this EMP report are based on the impacts assessment results detailed in the EIA Report. The EMP must be continuously updated during the implementation of the proposed project activities and throughout the project lifecycle. This EMP Reports incorporates the provisions of the Namibian Environmental regulations and policies as well as international environmental best practices in mining development, operational, rehabilitation, and closure and aftercare activities.

3.3 Summary of Impact Assessment Results

3.3.1 Summary of Impacts Assessment Methodology

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 Figure 3.1.

The Proponent intends undertake exploration activities covering desktop studies, followed by site-specific activities on targets that may be delineated and using exploration techniques/ methods such as geophysical surveys, geological mapping, trenching, drilling, bulk sampling and test mining. The detailed outline of all the activities associated with each of the exploration stages as sources of potential environmental impacts are outlined in Table 3.1. The impact assessment methodology adopted a two-dimensional matrix approach in predicting the potential impacts of the proposed project on the receiving environment. The two-dimensional matrix consisted of the following cross-referencing (Table 3.3 - Table 3.4):

- ❖ The activities linked to the project that could have an impact on the receiving environment, and.
- ❖ The existing environmental and social conditions that could possibly be affected by the project.

The impact assessment considerations included land disturbance/land use impacts. potential impacts to specially designated areas. impacts to soil, water and air resources. impacts to vegetation, wildlife, wildlife habitat, and sensitive species. Visual, cultural, paleontological, socioeconomic and potential impacts from hazardous materials are provided in the EIA Report.

3.3.2 Summary of Impact Assessment Results

In order to determine the likely environmental impacts as well as the overall significant impacts of individual sources associated with the proposed exploration activities within the EPL area (Table 3.6), an impact identification and assessment process was undertaken as detailed in this report. Details of

the impact assessment results, definitions, methodology as well as the baseline \ receiving environment are provided in the EIA Report.

As detailed in the EIA Report, the significant impact identification and assessment processes focused on the evaluation of the influences of the proposed project activities pathways and the likely targets or receptor (receiving environment). In this process, components of the project activities that are likely to impact the natural environment (physical, biological, and socioeconomic) were broken down into individual development stages and activities.

The summary of the overall impact and significant impact assessment results as detailed in the EIA Report associated with the proposed activities / sources of potential impacts with respect to the receiving environment that could potentially be affected are presented in Table 3.2 -Table 3.5.

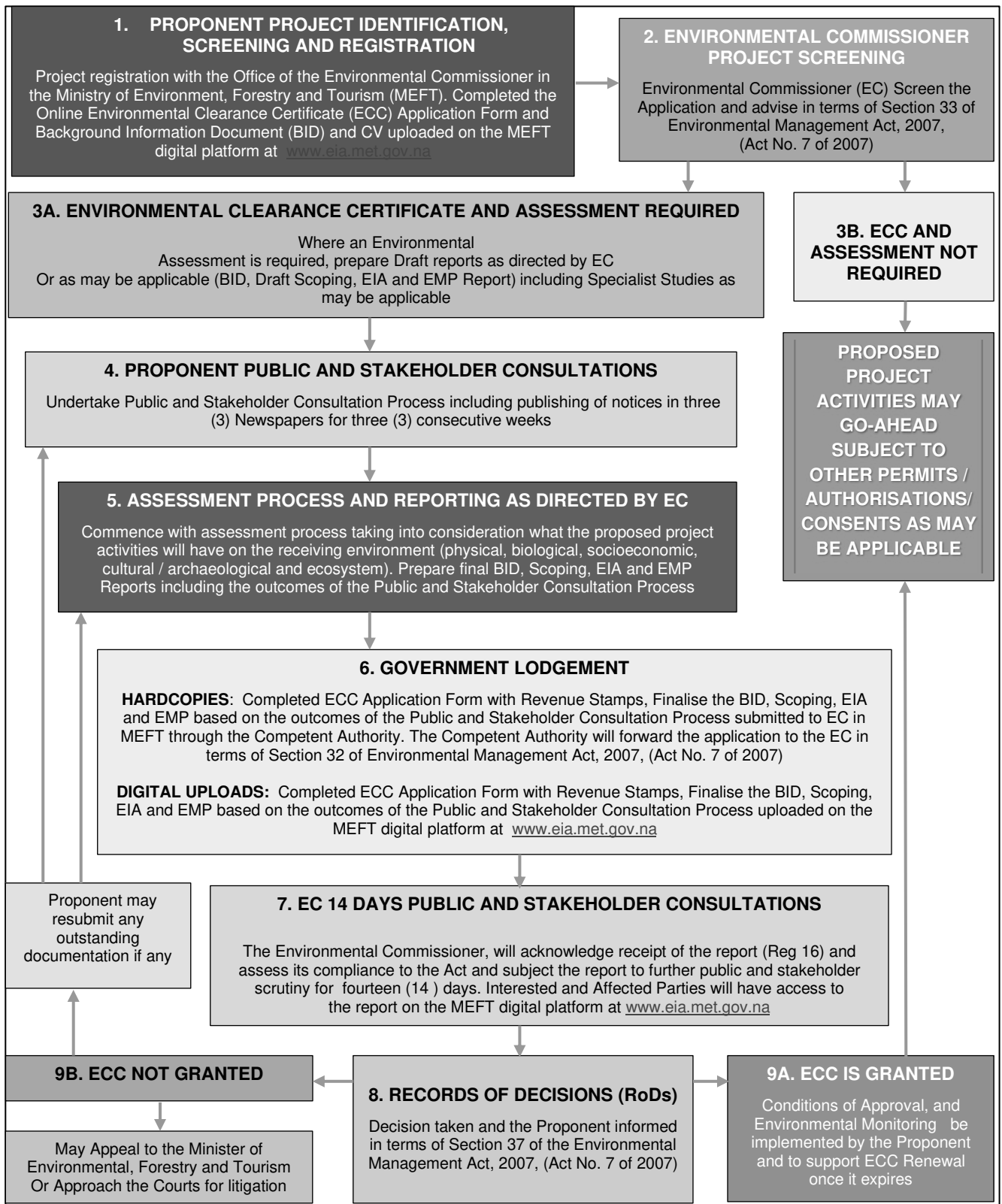


Figure 3.1: RBS Schematic presentation of Namibia’s Environmental Assessment Procedure

Table 3.1: Summary of the proposed activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering Scoping, EIA and EMP Processes.

PROJECT ACTIVITIES		ALTERNATIVES CONSIDERED	Key Issues to be Evaluated and Assessed with Environmental Management Plan (EMP) / Mitigation Measures Developed		
1. Project Implementation and Initial Desktop Exploration Activities	Review of existing information and all previous activities in order identify any potential target/s in within the EPL Area	(i) Location for Minerals Occurrence: A number of economic deposits are known to exist in different parts of Namibia and some have been explored by different companies over the years. The proponent intends to explore / prospect for possible economic minerals occurrence in the EPL area as licensed. Minerals occurrence is linked to the geology or local rock outcrops and site-specific. (ii) Other Alternative Land Uses: Game farming, tourism and agriculture (iii) Ecosystem Function (What the Ecosystem Does. (iv) Ecosystem Services. (v) Use Values. (vi) Non-Use, or Passive Use. (vii) The No-Action Alternative (viii) Others to be identified during the public consultation process and preparation of the EIA and EMP Reports	Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism and agriculture		
	2. Regional Reconnaissance Field-Based		Regional mapping and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (1) above	PHYSICAL ENVIRONMENT	<ul style="list-style-type: none"> Water Quality Physical infrastructure and Resources Air quality, Noise and dust Landscape and topography value Soil quality Climate Change Influences
			3. Initial Local Field-Based Activities		May include: Widely spaced geological mapping, sampling, surveying and possible trenching and drilling in order to determine the viability of any delineated local target/s
	4. Detailed Local Field-Based Activities on Delineated Targets If Any			Following the delineation of potential target/s, conduct detailed mapping, trenching, sampling, surveying and drilling in order to determine the viability of the project.	SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT
			5. Prefeasibility and Feasibility Studies	Assess the viability of any delineated local target/s and more detailed mapping, trenching, bulk sampling, drilling and test mining activities where applicable. If the project proves viable, a feasibility report and application for Mining License will be undertaken.	

Table 3.2: Results of the sensitivity assessment of the receptors (Physical, Socioeconomic and Biological environments) with respect to the proposed exploration / prospecting activities.

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
SENSITIVITY RATING		CRITERIA	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																
2	Low	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.																
3	Medium	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance																
4	High	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.																
5	Very High	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.																
Initial Desktop Exploration Activities	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
	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
	Purchase and analysis of existing Government aerial hyperspectral		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	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
Regional Reconnaissance Field-Based Activities	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
	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
	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
	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
	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

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT						
SENSITIVITY RATING		CRITERIA	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources	
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																	
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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.																	
Initial Local Field-Based Activities	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	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
	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
	Possible Trenching (Subject to the outcomes of i - iii above)		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	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
	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Detailed Local Field-Based Activities	Access preparation and related logistics to support activities		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above).		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Prefeasibility and Feasibility Studies	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	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	
	Geotechnical studies for mine design		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

RECEPTOR SENSITIVITY			PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT					
SENSITIVITY RATING		CRITERIA	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
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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.																
Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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
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

Table 3.3: Results of the scored time period (duration) over which the impact is expected to last.

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT											
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>Temporary</td> </tr> <tr> <td>P</td> <td>Permanent</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	T	Temporary	P	Permanent	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
SCALE	DESCRIPTION																						
T	Temporary																						
P	Permanent																						
Initial Desktop Exploration Activities	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						
	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						
	Purchase and analysis of existing Government aerial hyperspectral	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	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						
Regional Reconnaissance Field-Based Activities	Regional geological, geochemical, topographical and remote sensing mapping and data analysis	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT											
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>Temporary</td> </tr> <tr> <td>P</td> <td>Permanent</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	T	Temporary	P	Permanent	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
SCALE	DESCRIPTION																						
T	Temporary																						
P	Permanent																						
Initial Local Field-Based Activities	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	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	T						
	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	T						
	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
Detailed Local Field-Based Activities	Access preparation and related logistics to support activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	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	T						
Prefeasibility and Feasibility Studies	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Detailed drilling and bulk sampling and testing for ore reserve calculations	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						
	Geotechnical studies for mine design	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T						

RECEPTOR SENSITIVITY		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT										
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SCALE	DESCRIPTION																						
T	Temporary																						
P	Permanent																						
	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							
	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							
	Preparation of feasibility report and application for Mining License	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T							

Table 3.4: Results of the scored geographical extent of the induced change.

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT																
		Water Quality	Physical Infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources												
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>limited impact on location</td> </tr> <tr> <td>O</td> <td>impact of importance for municipality</td> </tr> <tr> <td>R</td> <td>impact of regional character</td> </tr> <tr> <td>N</td> <td>impact of national character</td> </tr> <tr> <td>M</td> <td>impact of cross-border character</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	L	limited impact on location	O	impact of importance for municipality	R	impact of regional character	N	impact of national character	M	impact of cross-border character																
SCALE	DESCRIPTION																												
L	limited impact on location																												
O	impact of importance for municipality																												
R	impact of regional character																												
N	impact of national character																												
M	impact of cross-border character																												
Initial Desktop Exploration Activities	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												
	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												
	Purchase and analysis of existing Government aerial hyperspectral	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	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												
Regional Reconnaissance Field-Based Activities	Regional geological, geochemical, topographical and remote sensing mapping and data analysis	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT																	
<table border="1"> <thead> <tr> <th>SCALE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>limited impact on location</td> </tr> <tr> <td>O</td> <td>impact of importance for municipality</td> </tr> <tr> <td>R</td> <td>impact of regional character</td> </tr> <tr> <td>N</td> <td>impact of national character</td> </tr> <tr> <td>M</td> <td>impact of cross-border character</td> </tr> </tbody> </table>		SCALE	DESCRIPTION	L	limited impact on location	O	impact of importance for municipality	R	impact of regional character	N	impact of national character	M	impact of cross-border character	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional and national socioeconomic settings	Commercial Agriculture	Community Protected Areas	Tourism and Recreation	Cultural, Biological and Archaeological Resources
SCALE	DESCRIPTION																												
L	limited impact on location																												
O	impact of importance for municipality																												
R	impact of regional character																												
N	impact of national character																												
M	impact of cross-border character																												
Initial Local Field-Based Activities	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	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	L	L	L												
	Possible Trenching (Subject to the outcomes of i - iii above)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
Detailed Local Field-Based Activities	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Access preparation and related logistics to support activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
Detailed Local Field-Based Activities	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	L	L	L												
	Access preparation and related logistics to support activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
Detailed Local Field-Based Activities	Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												

GEOGRAPHICAL EXTENT OF IMPACT		PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT																
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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																												
	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	L	L	L												
Prefeasibility and Feasibility Studies	Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Detailed drilling and bulk sampling and testing for ore reserve calculations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Geotechnical studies for mine design	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L												
	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L											
	EIA and EMP to support the ECC for mining operations	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L											
	Preparation of feasibility report and application for Mining License	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L											

Table 3.5: Results of the qualitative scale of probability occurrence.

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)																	
Initial Desktop Exploration Activities	General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Purchase and analysis of existing Government aerial hyperspectral	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Regional Reconnaissance Field-Based Activities	Regional geological, geochemical, topographical and remote sensing mapping and data analysis	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

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)																	
		site-specific exploration if the results are positive and supports further exploration of the delineated targets																	
Initial Local Field-Based Activities		Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		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	B	B	B
		Possible Trenching (Subject to the outcomes of i - iii above)		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Detailed Local Field-Based Activities		Access preparation and related logistics to support activities		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
		Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
		Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
		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	C	C	
Prefeasibility and Feasibility Studies		Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
		Detailed drilling and bulk sampling and testing for ore reserve calculations		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	

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)																	
	Geotechnical studies for mine design	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	EIA and EMP to support the ECC for mining operations	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Preparation of feasibility report and application for Mining License	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

Table 3.6: 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)	High(4)	Medium (3)	Low (2)	Negligible (1)																
Very High (5)	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2 /5]	Minor 1/5																
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]																
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]																
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]																
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]																
1. Initial Desktop Exploration Activities	(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	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	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	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	1/1	1/1	1/1	
2. Regional Reconnaissance Field-Based Activities	(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	

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)	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]																
	(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
3. Initial Local Field-Based Activities	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(iv) Possible Trenching (Subject to the outcomes of i - iii above)	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2
	(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2
	(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	(i) Access preparation and related logistics to support activities	2\2	2\2	2\2	2\2	2\2	2\2	3/2	1/1	3/2	3/2	3/2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities	2\2	2\2	2\2	2\2	2\2	2\2	3/2	1/1	3/2	3/2	3/2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	

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)	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]																
4. Detailed Local Field-Based Activities	(iii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(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	3\2	2\2	2\2	2\2	3\2	3\2			
5. Prefeasibility and Feasibility Studies	(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	
	(iii) Geotechnical studies for mine design	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	2\2	
	(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	
	(v) EIA and EMP to support the ECC for mining operations	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
	(vi) Preparation of feasibility report and application for Mining License	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	

3.4 Implementation of the EMP

3.4.1 Roles and Responsibilities

Management of the environmental elements that may be affected by the different activities of the proposed / ongoing exploration is an important element of the proposed / ongoing exploration activities. The EMP also identifies the activity groups / environmental elements, the aspects / targets, the indicators, the schedule for implementation and who should be responsible for the management to prevent major impacts that the different exploration activities may have on the receiving environment (physical and biological environments).

3.4.2 Proponent's Representative (PR) / Project Manager (PM)

The Proponent is to appoint a **Proponent's Representative (PR) / Project Manager (PM)** with the following responsibilities with respect to the EMP implementation:

- ❖ Act as the site project manager and implementing agent.
- ❖ Ensure that the Proponent's responsibilities are executed in compliance with the relevant legislation.
- ❖ Ensure that all the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the exploration contractor/s in finding environmentally responsible solutions to challenges that may arise.
- ❖ Should the PR be of the opinion that a serious threat to, or impact on the environment may be caused by the exploration activities, he/she may stop work. The Proponent must be informed of the reasons for the stoppage as soon as possible.
- ❖ The PR has the authority to conduct disciplinary proceedings in accordance with the company policies and national legislation requirements and provisions for transgressions of basic conduct rules and/or contravention of the EMP.
- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the PR can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.
- ❖ Maintain open and direct lines of communication between the landowners and Proponent, as well as any other identified Interested and Affected Parties (I&APs) with regards to environmental matters, and.
- ❖ Attend regular site meetings and inspections as may be required for the proposed / ongoing exploration programme.

3.4.3 Project Health, Safety and Environment (Project HSE)

The Proponent is to appoint a Project Health, Safety and Environment (Project HSE) with the following responsibilities with respect to the EMP implementation:

- ❖ Assist the PR in ensuring that the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the PR and Contractor in finding environmentally responsible solutions to challenges that may arise.
- ❖ Conduct environmental monitoring as per EMP requirements.
- ❖ Carry out regular site inspections (on average once per week) of all exploration areas with regards to compliance with the EMP. report any non-compliance(s) to the PR as soon as possible.
- ❖ Organize for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through each field-based exploration activity. audit reports to be submitted to the PR.
- ❖ Continuously review the EMP and recommend additions and/or changes to the EMP document.
- ❖ Monitor the Contractor's environmental awareness training.
- ❖ Keep records of all activities related to environmental control and monitoring. the latter to include a photographic record of the exploration activities, rehabilitation process, and a register of all major incidents, and.
- ❖ Attend regular site meetings.

3.4.4 Contractors and Subcontractors

The responsibilities of the **Contractors and Subcontractors** that may be appointed by the Proponent to undertake certain field-based activities of the proposed / ongoing exploration programme include:

- ❖ Comply with the relevant legislation and the EMP provision.
- ❖ Preparation and submission to the Proponent through the Project HSE of the following Management Plans:
 - Environmental awareness training and inductions.
 - Emergency preparedness and response.
 - Waste management, and.
 - Health and safety.
- ❖ Ensure adequate environmental awareness training for senior site personnel.
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the Project HSE is to provide the course content and the following topics, at least but not limited to, should be covered:
 - The importance of complying with the EMP provisions.
 - Roles and responsibilities, including emergency preparedness.

- Basic rules of conduct (do's and don'ts).
 - EMP: aspects, impacts and mitigation.
 - Conduct disciplinary proceedings in accordance with the company policies and national legislation requirements and provisions for transgressions for failure to adhere to the EMP, and.
 - Health and safety requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and.
 - ❖ Attend regular site meetings and environmental inspections.

4. EMP MITIGATION MEASURES

4.1 Hierarchy of Mitigation Measures Implementation

A hierarchy of methods for mitigating significant adverse effects has been adopted in order of preference and as follows:

- (i) Enhancement, e.g. provision of new habitats.
- (ii) Avoidance, e.g. sensitive design to avoid effects on ecological receptors.
- (iii) Reduction, e.g. limitation of effects on receptors through design changes, and.
- (iv) Compensation, e.g. community benefits.

4.2 Mitigation Measures Implementation

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively.

The EMP also provides the management actions with roles and responsibilities requirements for implementation of environmental management strategies by the Proponent through the Contractors and Subcontractors who will be undertaking the exploration activities.

The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the implementation of the proposed / ongoing exploration programme.

Based on the findings of the EIA, key mitigation measures as detailed in Table 4.1: Key
 areas of the migration measures have been prepared to be implemented by the Proponent with respect to the proposed / ongoing exploration programme activities and in particular for the field-based exploration activities. The following is the summary of the key areas of the migration measures provided in Table 4.1:

1. Project planning and implementation.

2. Implementation of the EMP.
3. Public and stakeholders relations.
4. Measures to enhance positive socioeconomic impacts.
5. Environmental awareness briefing and training.
6. Erection of supporting exploration infrastructure.
7. Use of existing access roads, tracks and general vehicle movements.
8. Mitigation measures for preventing flora destruction.
9. Mitigation measures for preventing faunal destruction.
10. Mitigation measures to be implemented with respect to the exploration camps and exploration sites.
11. Mitigation measures for surface and groundwater protection as well as general water usage.
12. Mitigation measures to minimise negative socioeconomic impacts.
13. Mitigation measures to minimise health and safety impacts.
14. Mitigation measures to minimise visual impacts.
15. Mitigation measures to minimise vibration, noise and air quality.
16. Mitigation measures for waste (solid and liquid) management.
17. Rehabilitation plan, and.
18. Environmental data collection.

Table 4.1: Key areas of the migration measures

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
Project planning and implementation			
<p>Establish a strong environmental awareness protocol from project implementation to final closure in order to ensure the least possible impact to the environment.</p>	<ol style="list-style-type: none"> 1. Resources (Human and Financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings and for internal and external Environmental Monitoring Costs as well as for any rehabilitation costs that may arise. 2. Appointment of senior and experienced persons as Proponent's Representative (PR), Project Manager (PM) and Project HSE to assume responsibility for environmental issues. 3. All individuals including sub-contractors who work on, or visit, the sites are aware of the contents of the Environmental Policy and the EMP. 4. The EMP and Environmental Policy will be included in Tender Documents. 5. Field visit will take place during which main access tracks will be discussed in cooperation with the land owner/s 	<ol style="list-style-type: none"> 1. Regional reconnaissance field-based mapping and sampling activities. 2. Initial local field-based mapping and sampling activities. 3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. 4. Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor Subcontractors
Implementation of the EMP			
<ol style="list-style-type: none"> 1. Define roles and responsibilities in terms of the EMP. To make all personnel, contractors and subcontractors aware of these roles and responsibilities to ensure compliance with the EMP provisions. 2. Implement environmental management that is preventative and proactive. Establish the resources, skills, etc. required for effective environmental management. 	<ol style="list-style-type: none"> 1. Senior staff and senior contractors are aware of, and practice the EMP requirements. These persons shall be expected to know and understand the objectives of the EMP and will, by example, encourage suitable environmentally friendly behaviour to be adopted during the exploration 2. Recognition will be given to appropriate environmentally acceptable behaviour. 3. Inappropriate behaviour will be corrected. An explanation to why the behaviour is unacceptable must be given, and, if necessary, the person will be disciplined. e.g. fees set out for non-compliance 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
Public and stakeholders relations.			
<p>Maintain sound relationships with the Other land users/ land owner/s and another stakeholders / public</p>	<ol style="list-style-type: none"> 1. No littering or any other activity prohibited 2. Permission to utilise water as well as all applicable permits are obtained. 	<ol style="list-style-type: none"> 1. Regional reconnaissance field-based mapping and sampling activities. 2. Initial local field-based mapping and sampling activities. 3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. 4. Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor Subcontractors
Measures to enhance positive socioeconomic impacts.			
<p>Measures to enhance positive socioeconomic impacts in order to:</p> <ol style="list-style-type: none"> 1. Avoid exacerbating the influx of unemployed people to the area. 2. Develop a standardised recruitment method for sub-contractor and field workers. 	<ol style="list-style-type: none"> 1. Stipulate a preference for local contractors in its tender policy. Preference to local contractors should still be based on competitive business principles and salaries and payment to local service providers should still be competitive. 2. Develop a database of local businesses that qualify as potential service providers and invite them to the tender process. 3. Scrutinise tender proposals to ensure that minimum wages were included in the costing. 4. 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. 5. Must ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years. 6. Must ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws. This could be accomplished with a contractual requirement stipulating that monthly proof should be submitted indicating payment of minimum wages to workers, against their ID numbers, 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<p>payment of social security and submission of affirmative action data. Encouraged to cater for the needs of employees to increase the spending of wages locally.</p>		
Environmental awareness briefing and training.			
<p>Implement environmental awareness briefing / training for individuals who visit, or work, on site.</p>	<ol style="list-style-type: none"> 1. Every senior/supervisory member of the team shall familiarise themselves with the contents of the EMP. They shall understand their roles and responsibilities with regard to personnel and project compliance with the EMP. 2. Subject to agreement of the parties, the Environmental Coordinator will hold an Environmental Awareness Briefing meeting, which shall be attended by all contractors before the start of the mineral exploration activities. 3. Briefings on the EMP and Environmental Policy shall discuss the potential dangers to the environment of the following activities: public relations, littering, off-road driving, waste management, poaching and plant theft etc. The need to preserve soil, conserve water and implement water saving measures shall be presented. <p>Individuals can be questioned on the Environmental Philosophy and EMP and can recall contents.</p>	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor Subcontractors
Erection of supporting exploration infrastructure.			
<ol style="list-style-type: none"> 1. Get Environmental Clearance before implementation 2. Establishment of the supporting exploration infrastructure done on an area with the least disturbance to the environment and within the non-sensitive areas 	<ol style="list-style-type: none"> 1. Documented Environmental Clearance from MET. 2. All on site exploration infrastructure (e.g. water tanks, sewage tanks, waste disposal) are not situated on environmental sensitive area and have disturbed as less as possible. <p>No littering.</p>	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
		(iv) Prefeasibility and feasibility studies.	
Use of existing access roads, tracks and general vehicle movements.			
<p>1. Plan a road/track network that considers the environmental sensitivity of the area and a long-term tourism potential, and which is constructed in a technically and environmentally sound manner.</p> <p>2. Stick to the recommended track and sensitivity management zones.</p>	<ol style="list-style-type: none"> 1. Avoid unnecessary affecting areas viewed as important habitat – i.e. Ephemeral River and its network of tributaries of ephemeral rivers. rocky outcrops. clumps of protected tree species. 2. Make use of existing tracks/roads as much as possible throughout the area. 3. Do not drive randomly throughout the area (could cause mortalities to vertebrate fauna and unique flora. accidental fires. erosion related problems, etc.). 4. Avoid off-road driving at night as this increases mortality of nocturnal species. 5. Implement and maintain off-road track discipline with maximum speed limits (e.g.30km/h) as this would result in fewer faunal mortalities and limit dust pollution. 6. Use of "3-point-turns" rather than "U-turns". 7. Where tracks have to be made to potential exploration sites off the main routes, the routes should be selected causing minimal damage to the environment – e.g. use the same tracks. cross drainage lines at right angles. avoid placing tracks within drainage lines. avoid collateral damage (i.e. select routes that do not require the unnecessary removal of trees/shrubs, especially protected species). 8. Leave vehicles on tracks and walk to point of interest, when possible. <p>Rehabilitate all new tracks created.</p>	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors
Mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.			
	<ol style="list-style-type: none"> 1. Limit the development and avoid rocky outcrops throughout the entire area. 2. Avoid development and associated infrastructure in sensitive areas – e.g. Ephemeral River, in/close to drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. 	

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<p>Prevent flora and ecosystem destruction and promote conservation</p>	<p>the local environment especially unique features serving as habitat to various species.</p> <ol style="list-style-type: none"> 3. Avoid placing access routes (roads and tracks) through sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area. 4. Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area. 5. Stick to speed limits of maximum 30km/h as this would result in less dust pollution which could affect certain flora – e.g. lichen species. Speed humps could also be used to ensure the speed limit. 6. Remove unique and sensitive flora (e.g. all Aloe sp.) before commencing with the development activities and relocate to a less sensitive/disturbed site if possible. 7. Prevent and discourage the collecting of firewood as dead wood has an important ecological role – especially during the development phase(s). Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g. chopping down of live and/or protected tree species such as <i>Acacia erioloba</i> which is a good quality wood. 8. Attempt to avoid the removal of bigger trees during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna. 9. Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires causing problems (e.g. loss of grazing and domestic stock mortalities, etc.) for the neighbouring farmers. 10. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and 	<ol style="list-style-type: none"> (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent’s Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<p>associated tracks as well as temporary accommodation sites. Preferably workers should be transported in/out to the EPL area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company's environmental integrity, but also show true local commitment to the environment.</p> <p>11. Implement erosion control. The area(s) towards and adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking any exploration activities including supporting activities such as camping within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna.</p> <p>12. Conduct a thorough investigation on the flora associated with the proposed exploration site(s).</p> <p>13. Prevent the introduction of potentially invasive alien plant species (e.g. <i>Tecoma stans</i>, <i>Pennisetum setaceum</i>, etc.) for ornamental purposes as part of the landscaping should mining activities eventually commence. Alien species often "escape" and become invasive causing further ecological damage.</p> <p>A thorough investigation of water use and ground water extraction should take place before actual mining activities commence as this would affect the local flora, especially the ephemeral riparian vegetation, not only locally, but downstream as well.</p>		
Mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation			
	<p>1. Limit the development and avoid rocky outcrops throughout the entire area.</p> <p>2. Avoid development & associated infrastructure in sensitive areas – e.g. in/close to drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on the local environment especially</p>		

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<p>Prevent faunal and ecosystem destruction and promote conservation</p>	<p>unique features serving as habitat to various species.</p> <ol style="list-style-type: none"> 3. Avoid placing access routes (roads & tracks) through sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area. 4. Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area. 5. Stick to speed limits of maximum 30km/h as this would result in fewer faunal road mortalities. Speed humps could also be used to ensure the speed limit. 6. Remove (e.g. capture) unique fauna and sensitive fauna before commencing with the development activities and relocate to a less sensitive/disturbed site if possible. 7. Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g. tortoises, etc.), indiscriminate killing of perceived dangerous species (e.g. snakes, etc.) and collecting of wood as this would diminish and negatively affect the local fauna – especially during the development phase(s). 8. Attempt to avoid the removal of bigger trees during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna. 9. Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires affecting the local fauna, but also causing problems (e.g. loss of grazing & domestic stock mortalities, etc.) for the neighbouring farmers. 10. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and associated tracks as well as temporary accommodation sites. Preferably workers 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent’s Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<p>should be transported in/out to the EPL area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company's environmental integrity, but also show true local commitment to the environment.</p> <p>11. Implement erosion control. The area(s) towards & adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking exploration activities including supporting activities such as camping within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna.</p> <p>12. Conduct a thorough investigation on the fauna associated with the proposed exploration site(s).</p> <p>13. Prevent the number of domestic pets – e.g. cats & dogs – accompanying the workers during the field-based exploration activities as cats decimate the local fauna and interbreed & transmit diseases to the indigenous African Wildcat found in the area. Dogs often cause problems when bonding on hunting expeditions thus negatively affecting the local fauna. The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all costs.</p>		
Mitigation measures to be implemented with respect to the exploration camps and exploration sites.			
<p>Promotion of conservation through preservation of flora, fauna and</p>	<ol style="list-style-type: none"> 1. Select camp sites and other temporary lay over sites with care – i.e. avoid important habitats. 2. Use portable toilets to avoid faecal pollution around camp and exploration sites. 3. Initiate a suitable and appropriate refuse removal policy as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g. baboon, black-backed jackal, etc.. 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. 	

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
ecosystem around the exploration camps and exploration sites	<ol style="list-style-type: none"> 4. Avoid and/or limit the use of lights during nocturnal exploration activities as this could influence and/or affect various nocturnal species – e.g. bats and owls, etc. Use focused lighting for least effect. 5. Prevent the killing of species viewed as dangerous – e.g. various snakes – when on site. 6. Prevent the setting of snares for ungulates (i.e. poaching) or collection of veld foods (e.g. tortoises) and unique plants (e.g. various Aloe and Lithop) or any form of illegal hunting activities. 7. Avoid introducing dogs and cats as pets to camp sites as these can cause significant mortalities to local fauna (cats) and even stock losses (dogs). 8. Remove and relocate slow moving vertebrate fauna (e.g. tortoises, chameleon, snakes, etc.) to suitable habitat elsewhere on property. 9. Avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. various Aloe, Commiphora and Lithop species. 10. Avoid introducing ornamental plants, especially potential invasive alien species, as part of the landscaping of the camp site, etc., but rather use localised indigenous species, should landscaping be attempted, which would also require less maintenance (e.g. water). 11. Remove all invasive alien species on site, especially Prosopis sp., which is already becoming a major ecological problem along various water courses throughout Central Namibia. This would not only indicate environmental commitment, but actively contribute to a better landscape. 12. Inform contractors/workers regarding the above-mentioned issues prior to exploration activities and monitor for compliance thereof throughout. 	<ol style="list-style-type: none"> (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<p>13. Rehabilitate all areas disturbed by the exploration activities – i.e. camp sites, exploration sites, etc..</p> <p>14. Implement a policy of replacing 2 tree species (preferably the same species) for every 1 protected tree species having to be removed (if necessary).</p> <p>15. Although fires are not expected to be a major issue in the general area due to the overall lack of grass cover, some years it may be necessary to consider fire prevention. Ensure that adequate firefighting equipment (e.g. fire beaters, extinguishers, etc.) is available at camp sites and clear kitchen areas to avoid accidental fires.</p> <p>16. Employ an independent environmental auditor to ensure compliance, especially of the rehabilitation of all the affected areas.</p>		
Mitigation measures to minimise negative socioeconomic impacts.			
<p>Effective management of socioeconomic benefits of the proposed / ongoing project activities</p>	<p>1. The employment of local residents and local companies should be a priority. To ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years.</p> <p>2. Providing information such as the number and types of jobs available, availability of accommodation facilities and rental costs and living expenses, could make potential job seekers wary of moving to the area.</p> <p>3. Addressing unrealistic expectations about large numbers of jobs would be created.</p> <p>4. Exploration camp if required should be established in close consultation with the land owners.</p> <p>5. Exploration camp should consider provision of basic services.</p> <p>6. When the contracts an employee is terminated or not renewed, contractors should transport the employee out of the area to their hometowns within two days of their contracts coming to an end.</p>	<p>(i) Regional reconnaissance field-based mapping and sampling activities.</p> <p>(ii) Initial local field-based mapping and sampling activities.</p> <p>(iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling.</p> <p>(iv) Prefeasibility and feasibility studies.</p>	<p>(i) Proponent's Representative (PR)</p> <p>(ii) Project Manager (PM)</p> <p>(iii) Project HSE</p> <p>(iv) Contractor</p> <p>(v) Subcontractors</p>

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<ol style="list-style-type: none"> 7. Tender documents could stipulate that contractors have HIV/Aids workplace policies and programmes in place and proof of implementation should be submitted with invoicing. 8. Develop strategies in coordination with local health officers and NGO's to protect the local communities, especially young girls. 9. Contract companies could submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the EPL. Disciplinary actions should be in accordance with Namibian legislation. 10. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily. 11. Request that the Roads Authority erect warning signs of heavy exploration vehicles on affected public roads. 12. Ensure that drivers adhere to speed limits and that speed limits are strictly enforced. 13. Ensure that vehicles are road worthy and drivers are qualified. 14. Train drivers in potential safety issues. 		
Mitigation measures to minimise health and safety impacts			
<p>Promotion of health and safe working environment in line with national Labour Laws</p>	<ol style="list-style-type: none"> 1. Physical hazards: Follow national and international regulatory and guidelines provisions, use of correct Personal Proactive Clothing at all times, training programme, as well as the implementation of a fall protection program in accordance with the Labour Act. 2. Some of the public access management measures that may be considered in an event of vandalism occurring are: <ul style="list-style-type: none"> • All exploration equipment must be in good working condition and services accordingly. 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR)

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<ul style="list-style-type: none"> • Control access to the exploration site through using gates on the access road(s) if required. • The entire site, must be fenced off. the type of fencing to be used would, however, be dependent on the impact on the visual resources and/or cost. and. • Notice or information boards relating to public safety hazards and emergency contact details to be put up at the gate(s) to the exploration area. <ol style="list-style-type: none"> 3. There is a comprehensive First Aid Kit on site and that suitable anti-histamine for bee stings / snake bites should be available. 4. Rubber gloves are used in case of an accident to reduce the risk of contracting HIV/AIDS. 5. All individuals have received instructions concerning the dangers of dehydration or hyperthermia. Encourage all to drink plenty of clean water not directly from the surface water bodies. 6. No person under the influence of alcohol or drugs is allowed to work on site. 7. The Exploration Manager ensures compliance with the requirements of the relevant Namibian Labour, Mining and Health and Safety Regulations. 8. Dangerous or protected / sensitive areas are clearly marked and access to these areas is controlled or restricted. 9. Due care must be taken when driving any vehicles on any roads particularly the gravel roads. ALL Drivers must drive with their headlights switched on when travelling on the gravel roads (day and night). 10. Persons driving a vehicle must be in possession of a valid driver's license 11. Awareness on HIV/AIDS among workers is raised 	<ol style="list-style-type: none"> (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors
Mitigation measures to minimise visual impacts.			

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<p>Preserve the landscape character in the development of supporting infrastructure and choice of visual screening</p>	<ol style="list-style-type: none"> 1. Consider the landscape character and the visual impacts of the exploration area including camp site from all relevant viewing angles, particularly from public roads. 2. Use vegetation screening where applicable. Do not cut down vegetation unnecessary around the site and use it for site screening. 3. Avoid the use of very high fencing. 4. Minimise access roads and no off-road that could result in land scarring is allowed. 5. Minimise the presence of secondary structures: remove inoperative support structures. 6. Remove all infrastructure and reclaim, or rehabilitate the project site after exploration activities are completed. 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors
Mitigation measures to minimise vibration, noise and air quality.			
<p>Promote of effective management of vehicle movement, drilling and blasting operations and use of Personal Protective Equipment (PPE) in mitigating air quality and vibrations impacts in line with national laws</p>	<ol style="list-style-type: none"> 1. Limit vehicle movements and adhere to the speed of 60 km/h. 2. Vehicles and all equipment must be properly serviced to minimise noise pollution. 3. Use of Personal Protective Equipment (PPE) to minimise Occupational Health Safety impacts dues to noise pollution around the site. 4. National or international acoustic design standards must be followed. 5. Drilling and blasting operations can major sources of vibration, noise and dust and where required the following mitigation measure shall be implemented. <ul style="list-style-type: none"> • Drilling and blasting operations shall only be done by a qualified person who must at all times adhere to the required blasting protocol. • Prior warning shall be given to all persons, neighbour and visitors before the blasting takes place. 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<ul style="list-style-type: none"> • Careful planning and timing of the blast program to minimise the size of the charge. • Where practicable, use of explosive products with lower detonation velocities, but noting that this would require more explosives to achieve the same blast result. • Use of detonating caps with built-in time delays, as this effectively reduces each detonation into a series of small explosions. • Use of a procedure ("decking the charge") which subdivides the charge in one blast hole into a series of smaller explosions, with drill patterns restricted to a minimum separation from any other loaded hole. • Over-drilling the holes to ensure fracturing of the rock. • Staggering the detonation for each blast hole in order to spread the explosive's total overpressure over time. <p>Matching, to the extent possible, the energy needed in the "work effort" of the borehole to the rock mass to minimise excess energy vented into the receiving environment.</p>		
Mitigation measures for waste (solid and liquid) management.			
<p>Promotion of effective waste (solid and liquid) management through the adoption of sound and hierarchical approach to waste management, which would include waste minimisation, re-use, recovery, recycling, treatment, and proper disposal.</p>	<ol style="list-style-type: none"> 1. Burial of waste on anywhere within the EPL area is not allowed and all generated solid waste must be disposed at the at an approved municipal waste disposal site. 2. Toilet and ablution facilities must be provided on site and should not be located close to Ephemeral Rivers or visible discontinuities (fractures, joints or faults). 3. Provide site information on the difference between the two main types of waste, namely: <ul style="list-style-type: none"> • General Waste. and • Hazardous Waste. 4. Sealed containers, bins, drums or bags for the different types of wastes must be provided. Never dispose of hazardous waste in the bins or skips intended for general waste. 5. All solid and liquid wastes generated from the proposed / ongoing project activities shall be 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	<p>reduced, reused, or recycled to the maximum extent practicable.</p> <ol style="list-style-type: none"> 6. Trash may not be burned or buried, except at approved sites under controlled conditions in accordance with the municipal regulations. 7. Never overfill any waste container, drum, bin or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins or skips are nearly full. 8. Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping. 9. Littering is prohibited. 10. Latrines and French drains built >100m from watercourses or pans to avoid pollution of primary and secondary aquifers. 11. Chemical toilets or suitable waste water management system shall be provided on site and around the camp as may be required. 	<p>of closely spaced boreholes and bulk sampling.</p> <p>(iv) Prefeasibility and feasibility studies.</p>	
Rehabilitation plan			
<p>Contributions toward environmental preservation and sustainability through rehabilitation of disturbed areas such as exploration sites and remove all unwanted part of the fixtures and restore the sites to close an approximation of the pristine state as is technically, financially and reasonably possible.</p>	<ol style="list-style-type: none"> 1. The following rehabilitation actions are practiced: <ul style="list-style-type: none"> • Small samples are preferably removed from site to avoid additional scars in the landscape. • Litter from the site has been taken to the appropriate disposal site. • Debris, scrap metal, etc is removed before moving to a new site or closure of the mine. • Water tanks are dismantled and removed if not need for after use. • Tracks on site and the access road are rehabilitated by smoothing the 'middle mannetjie'(middle ridge between the tracks) and raking the surface. 2. The following should be undertaken at all disturbed areas that require further 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
	rehabilitation: <ul style="list-style-type: none"> • if applicable the stockpiled subsoil to be replaced (spread) and/or the site is neatly contoured to establish effective wind supported landscape patterns. • Replace the stored topsoil seed bank layer. Five (5) years after rehabilitation the sites are not visible from 500 m away.		
Environmental data collection			
<ol style="list-style-type: none"> 1. Collect data that will add value to environmental monitoring and reporting to the regulators 2. Collect data that will add to the general scientific and geographic knowledge of the environment in which the exploration process takes place. 3. Acknowledged that the required skills and knowledge to collect all the suggested data may not be available within the mine /exploration team, however, as much data as is practical should be collected. 	<ol style="list-style-type: none"> 1. Environmental Monitoring Report Compiled and submitted by the Environmental Coordinator to the regulators 2. The following types of information should be gathered: <ul style="list-style-type: none"> • Fauna. What tracks or signs of animal activity have been seen? (photographs and GPS recording) What animals, birds etc were identified? Alternatively provide a description and/ or photo if unidentified. • Unusual weather conditions, e.g. records of the prevailing wind direction and the direction from which storm events come. Was there fog or rain, frost overnight or intense heat? Preferably have a thermometer and rain gauge on site. • Vegetation. Record trees, shrubs, grass, etc. that are found in the vicinity along each of the profiles. Some plants do only occur after rainfall and might not have been seen for decades. • Any archaeological, cultural or historical sites that may be found. GPS coordinates, photograph and plot the position on a 1: 50 000 maps. • other including surface water, spring, large scale geological features etc 	<ol style="list-style-type: none"> (i) Regional reconnaissance field-based mapping and sampling activities. (ii) Initial local field-based mapping and sampling activities. (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling. (iv) Prefeasibility and feasibility studies. 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

5. REHABILITATION COMMITMENTS

5.1 Rehabilitation Process

The following is the summary of key rehabilitation process to be implemented by the proponent:

❖ **Step 1: Backfilling excavated or disturbed areas:**

- Transporting all stockpiled overburden back to the excavated voids.
- Backfilling the trenches, pits and quarries using original excavated and stockpiled materials.
- If applicable, backfill the various layers of overburden in the reverse order in which they were removed, i.e. Last out should be first in as far as possible, and.
- When backfilling, bear in mind that some space must be left for the backfilling of the soil on top of the overburden.

❖ **Step 2: Remove all waste and unwanted materials:**

- Once the drilling slimes ponds have dried sufficiently, scrape out the slimes and transporting back to an exploration excavated voids during the overburden backfilling stage.
- Allow the pollution control dam to evaporate completely, scrape all waste that has collected in the pond and dispose of these and the pond lining at a suitable site.
- Bulldoze the walls of the pollution control pond over and contour.
- Collect remaining domestic waste on site and transport to an approved municipal waste disposal site.
- Clean out the oil traps, collect the waste material in drums and transport to a suitable site for disposal, and.
- Manually remove all weedy species that are present at the site (the entire plant can easily be removed because the plants tend not to root deeply).

❖ **Step 3: Remove all structures:**

- Remove all building materials from the exploration / test mining site and either:
 - Transporting to a new site if it is to be used or stored elsewhere. or
 - Disposing at a suitable approved municipal waste disposal site. or
 - Making them available to the farmer or local persons, or,
 - Selling at an auction.

- Remove all machinery from the site and transport to a new site where it is to be used or stored or sell at an auction.
- Remove all fences that have been constructed and either make the material available to the local persons/farmer, dispose at a suitable site or sell at an auction.
- Remove the generators from the sites from site and either transport to a new site for storage or sell it to the farmer or an Auction.
- Seal all petrol, diesel, oil and grease containers and remove from the site to a storage facility or make it available to the farmer.
- Collect all scrap metal and dispose at a suitable site or sell at an auction, and.
- Break up all concrete slabs and structures on-site and transport the fragments to a suitable site for disposal.

❖ **Step 4: Rehabilitate the excavated voids:**

- Replace the subsoil layer by backfilling the soil on top of the overburden and contour cap the subsoil with a topsoil layer about 10cm deep, and.
- Cap the topsoil containing the seed bank with a layer of gravel by manually spreading the fragments across the surface using a rake.

❖ **Step 5: Rehabilitate site-specific storm-water channel:**

- Remove all the site structures created.
- Dispose of the plastic/wire and use the fill material to backfill the storm-water channel.
- Cap with a layer of topsoil to a depth of about 10cm, and.
- Cap the topsoil containing the seedbank with a gravel layer by manually spreading the fragments across the surface using a rake.

❖ **Step 6: Rehabilitate all adjacent exploration / test mining sites affected:**

- Rip the surfaces to a depth of 40 cm to 50 cm using a multi-toothed ripper and tractor.
- Cover with a layer of topsoil to a depth of about 10 cm, and.
- Cap the topsoil containing the seedbank with a layer of gravel by manually spreading the fragments across the surface using a rake.

❖ **Step 7: Rehabilitate all unwanted access roads created:**

- Rip the road surface to a depth of at least 50 cm using a multi-toothed ripper and tractor.
- Disk the ripped surface to break up the clods.

- Cover with a layer of topsoil to a depth of about 10 cm, and.
- Cap the topsoil containing the seed bank with a gravel layer by manually spreading the fragments across the surface using a rake.

5.2 Monitoring of the Environmental Performance

5.2.1 Rehabilitation Evaluation and Performance Monitoring

The following is the summary of key rehabilitation evaluation and performance monitoring to be implemented by the proponent:

- ❖ **Monitoring:** A monitoring program is instituted to ensure that the requirements of the mining site rehabilitation program are met. A rehabilitation program may be subjected to various natural or man-made forces that can hinder progress and lead to problems or failure of the rehabilitation program. Regular monitoring will ensure that these factors are identified early so they may be resolved through appropriate recommendations.
- ❖ **Frequency:** All rehabilitated areas should be monitored over a three (3) years period from the onset of the rehabilitation procedures. The frequency of monitoring suggested above is dependent on satisfactory performance. If, however, the requirements are not being met, the frequency of monitoring can be increased. It is suggested that the monitoring be conducted once a year around September when the grasses and forbs are flowering.
- ❖ **Methods:** The rehabilitated areas might be monitored by the sampling randomly located 1m² quadrates. Approximately 10 quadrates per hectare (or a minimum of 3) should be sampled per plant community. The factors that will be examined in each quadrate include:
 - Percentage basal cover.
 - Percentage aerial cover.
 - Species composition and diversity.
 - Vigor and health of plants.
 - Presence of and evidence of fauna, and.
 - Nature of the substrate.
- ❖ **Controls:** To enable a comparison, control plots located within the surrounding un-mining areas should also be monitored. This will give an indication of the progress of rehabilitated areas versus the natural vegetation and will set the goals, which ultimately should be achieved. By monitoring the natural vegetation annually, it will also be possible to assess the natural changes that are taking place. These findings can then be applied to the rehabilitated areas so as to account for the changes, which may have resulted from natural events. Approximately 5 to 10 quadrates of 1m² should be sampled per community type to set the controls.
- ❖ **Maintenance:** Maintenance requirements may include seeding (if there is poor germination of the seedbank), fertiliser applications, correcting erosion problems, removing weeds, etc.

Maintenance of the rehabilitated areas will be necessary periodically. The need for and extent of maintenance activities will be determined during the regular monitoring of the site, and.

- ❖ **Qualified Personnel:** The rehabilitation procedures from implementation to monitoring should be overseen by qualified personnel. Any persons involved in the rehabilitation of the mining site should be trained in the techniques involved.

5.2.2 Overall Environmental Performance Monitoring and Reporting

The monitoring of the environmental performances for the proposed / ongoing exploration project can be divided into two (2) parts and these are:

- (i) Routine / ongoing daily monitoring activities to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required, and.
- (ii) Preparation of annual Environmental Monitoring Report and Environmental Closure covering all activities related to the Environmental Management Plan during exploration / prospecting stages and at the closure of the proposed / ongoing exploration to be undertaken by the Project HSE Officer with the support of the external specialist consultants as may be required.

The proponent will be required to report regularly (twice a year or as the case may be) to the Environmental Commissioner in the Ministry of Environment, Forestry, and Tourism (MEFT), the environmental performances as part of the ongoing environmental monitoring programme. An environmental monitoring programme is part of the EMP performance assessments and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of undertaking appropriate monitoring as per specific topics (such as fauna and flora) and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Project HSE Officer.

The second part of the monitoring of the EMP performance will require a report outlining all the activities related to the effectiveness of the EMP at the end of the planned mineral exploration to be undertaken by the Project HSE Officer with the support of the external specialist consultants as may be required. The objective will be to ensure that corrective actions are reviewed, and steps are taken to ensure compliance for future EIA and EMP implementation.

The report shall outline the status of the environment and any likely environmental liability after the completion of the proposed / ongoing project activities. The report shall be submitted to the Environmental Commissioner in the Ministry of Environment and Tourism and will represent the final closure and fulfillment of the conditions of the Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner and the conditions of the Pro-Forma Environmental Contract signed by the Proponent, Environmental Commissioner and the Mining Commissioner.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Farpoint Investment (Pty) Ltd (**the Proponent**) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 8451 covering base and rare metals, dimension stone,

industrial minerals, non-nuclear fuels minerals, precious metals and precious stones. 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 / ongoing project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of low magnitude, temporally duration, localised extent and low probability of occurrence.

6.2 Recommendations

Based on the findings of the EIA, it's hereby recommended that the proposed / ongoing exploration activities be issued with an Environmental Clearance Certificate (ECC). It's hereby recommended that the proposed / ongoing exploration activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall implement precautionary measures / approach to environmental management.

The Proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

- (i) Mitigation measures must be implemented as detailed in this EMP report.
- (ii) Based on the findings of the EIA, it's hereby recommended that the proposed / ongoing exploration activities be issued with an Environmental Clearance Certificate (ECC). It's hereby recommended that the proposed / ongoing exploration activities be issued with an Environmental Clearance Certificate (ECC). The Proponent shall implement precautionary measures / approach to environmental management.
- (iii) The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.
- (iv) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.
- (v) Before entering any private or protected property/ area such as a private farm, the Proponent must give advance notices and obtain permission to access the EPL area at all times, and.

- (vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall support other land uses in the area in terms of access to freshwater supply for both human consumption, wildlife, and agricultural support as may be requested by the local community / landowners/s. The abstraction of the groundwater resources shall include water levels monitoring, sampling, and quality testing on a bi-annual basis, and the affected landowners 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.

The Proponent must take all the necessary steps to implement all the recommendations of the EMP for the successful implementation and completion of the proposed / ongoing exploration programme covering the EPL 8451. Recommended actions to be implemented by the Proponent through implementations of the EMP are:

- (i) The Proponent must implement precautionary measures / approach to environmental management. Once a viable and potential economic resource have been identified, the Proponent must develop and implement a separate EIA and EMP inclusive of the specialist studies such as fauna and flora to be undertaken by specialist consultants as part of the feasibility study stage.
- (ii) Before detailed site-specific exploration activities such as extensive drilling operations and access routes are selected, the Project HSE Officer with the support of the external specialist consultants as may be required, should consider the flora, fauna and archaeological sensitivity of the area and commission a field survey in advance of any site development as may be required based on the assessment undertaken.
- (iii) The Project HSE Officer shall lead, implement, and promote environmental culture through awareness-raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed / ongoing exploration period.
- (iv) The Proponent to provide all the necessary support including human and financial resources, for the implementation of the proposed / ongoing mitigations and effective environmental management during the planned exploration activities for the EPL 8451.
- (v) Project HSE Officer with the support of the external specialist consultants as may be required to develop a simplified environmental induction and awareness programme for all the workforce, contractors, and sub-contractors.
- (vi) Where contracted service providers are likely to cause environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities.
- (vii) Implement monitoring of the actions and management strategies developed during the mineral exploration process. Final Environmental Monitoring report shall be prepared by the Project HSE Officer with the support of the external specialist consultants as maybe required to be submitted to the regulators and to mark the closure of the proposed / ongoing mineral exploration, and.
- (viii) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA for possible mining projects.

6.3 Summary ToR for Test Mining and Mining Stages

In an event that economic minerals resources are discovered within the EPL 8451 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 EMP report only covers the exploration phase. A separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports supported by specialist studies as maybe applicable must be prepared in order to support the application for the new ECC for mining operations. The EIA and EMP studies shall form part of the prefeasibility and feasibility study with respect to the test mining or possible mining operations.

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

- (i) Groundwater studies including modeling as may be applicable.
- (ii) Field-based flora and fauna diversity.
- (iii) Archaeology.
- (iv) Noise and Sound modelling linked to engineering studies.
- (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 the guidelines, methods, and techniques shall conform to the national regulatory requirements, process, and specifications in Namibia and in particular as required by the Ministry of Mines and Energy, Ministry of Environment and Tourism and Ministry of Agriculture, Water Affairs and Forestry, and.
- (ii) The development of appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative influences of the negative impacts identified or anticipated. Such mitigation measures shall be contained in a detailed EMP report covering the entire project lifecycle.

7. REFERENCES

1 FURTHER GENERAL READING

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

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

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

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

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

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

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

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

National Herbarium of Namibia (WIND). 2020. BRAHMS Database. National Herbarium of Namibia (WIND), National Botanical Research Institute, MAWF, Windhoek, Namibia.

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

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

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, Forestry and Tourism (MEFT), Windhoek.
- Griffin, M. and Coetzee, C.G. 2005. Annotated checklist and provisional national conservation status of Namibian mammals. Ministry of Environment, Forestry and Tourism (MEFT), 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, Switzerland.
- 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 Namibia. 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, Forestry and Tourism (MEFT), 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, Forestry and Tourism (MEFT) 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, Forestry and Tourism (MEFT), 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.