PREVIOUS REF: APP-00360

NEW REF: 230222001027

Environmental Scoping Report

FOR THE EXPLORATION FOR BASE & RARE METALS, DIMENSION STONE, INDUSTRIAL MINERALS & PRECIOUS METALS TARGETING RAW LITHIUM ORE ON EPL; 7248, UIS DISTRICT, DÂURES CONSTITUENCY, ERONGO REGION, NAMIBIA.

MARCH 2023

Prepared by:
Healthy Earth Environmental Consultants CC
P.O. Box 70436,
Windhoek,
Namibia
Contact Person: Tanaka D. Nyatoro
Contact Number: +264 (81) 5 720 258
Email: askheec@gmail.com

Prepared for:
Ms. Tjinouhona Batseba Kavita
Erf 2617 Emmaus Street, Katutura,
P.O. Box 50230, Bachstreet
Windhoek
Namibia
Contact Person: Ms. Tjinouhona Batseba Kavita
Contact Number: +264 81 731 9145
Email: karukiemoses@yahoo.com

HEEC
Sustainable development solutions for life
HEALTHY EARTH ENVIRONMENTAL CONSULTANTS CC

PROJECT DETAILS-230222001027

Title	ENVIRONMENTAL SCOPING REPORT FOR THE EXPLORATION ACTIVITIES FOR BASE & RARE METALS, DIMENSION STONE, INDUSTRIAL MINERALS & PRECIOUS METALS TARGETING RAW LITHIUM ORE ON EPL; 7248, UIS DISTRICT, DÂURES CONSTITUENCY, ERONGO REGION, NAMIBIA.		
Report Status	Final		
HEEC CC Reference	HEEC/032022		
Proponent	Ms. Tjinouhona Batseba Kavita Erf 2617 Emmaus Street, Katutura, P.O. Box 50230, Bachstreet Windhoek Namibia Contact Person: Ms. Tjinouhona Batseba Kavita Contact Number: +264 81 731 9145 Email: karukiemoses@yahoo.com		
Environmental Practitioner	Healthy Earth Environmental Consultants CC P.O. Box 70436, Windhoek, Namibia Contact Person: Tanaka D. Nyatoro Contact Number: +264 (81) 5 720 258 Email: askheec@gmail.com		
Report date	March 2023		
	Name	**Signature**	**Date**
Author	Tanaka D. Nyatoro		

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

Annexure A: Proof of Site Notices/ Posters
Annexure B: Proof of advertisements
Annexure C: Photo Gallery
Annexure D: Public Participation process
1) BID
Annexure E: Consent Letter from the Relevant Ministry
Annexure F: Curriculum vitae of Environmental Assessment Practitioner
Annexure G: Environmental Management Plan

LIST OF ACRONYMS

AIDS	Acquired immune deficiency syndrome
CRR	Comments and response report
dB	Decibels
DEAR	Draft Environmental Assessment Report
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EAR	Environmental Assessment Report
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
FEAR	Final Environmental Assessment Report
GTZ	Gesellschaft für Technische Zusammenarbeit
HEEC	Healthy Earth Environmental Consultants CC
HIV	Human immunodeficiency virus
I&AP	Interested and Affected Party
IUCN	International Union for Conservation of Nature
MET	Ministry of Environment and Tourism
MEFT: DEA	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs
MME	Ministry of Mines and Energy
PPP	Public participation process
PHC	Public health and safety
SADC	Southern African Development Community
USAID	United States Agency for International Development
VMMC	Voluntary Medical Male Circumcision

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The proponent, **Ms. Tjinouhona Batseba Kavita** intends to explore for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region, Namibia. Lithium is a versatile metal, with a wide range of uses. Its applications vary from its use, in the form of lithium carbonate, as a medication to treat mental illness to its use in the manufacture of lightweight alloys for the aeronautics industry. The Ministry of Trade and Industry regulates manufacturing, including mineral beneficiation, cement production, and semiprecious stone processing. Exploration now focuses on industrial minerals such as lithium and uranium. This shows that the mining sector has great potential to grow and continue to develop in the country.

The Government of Namibia recognises that the exploration and development of its mineral wealth could best be undertaken by the private sector. Government therefore focuses on creating an enabling environment through appropriate competitive policy and regulatory frameworks for the promotion of private sector investment coupled with the provision of national geo-scientific data bases essential for attracting competitive exploration and mining (Minerals Policy of Namibia,2003 MME).

It is with this background that Ms. Tjinouhona Batseba Kavita has decided to explore and then mine lithium ore (if viable deposits occur) for commercial value-addition & export purposes and derive the monetary benefits associated with the extraction of these natural resources as the company is a holder of the application for the exclusive prospecting licence (EPL) from the Ministry of Mines and Energy after following all the necessary procedures to satisfy the relevant Authorities enabling them to explore the lithium ore from the allocated portions on the EPL 7248.

However uncontrolled natural resource mining/ excavation has resulted in negative environmental effects in some areas of the country. This has been largely attributed to the fact that people were under no obligation to rehabilitate the affected areas and thus left behind large open pits/quarries that pose a danger to both humans and animals. From the point of view of the environmental impact created, lithium ore mining is a relatively benign industry if it does not include further processing such as smelting on site. There are no emissions besides those of the diesel-powered earthmoving equipment utilised in its extraction and a small amount of blasting gases. Contamination of water resources is only likely in the event of petrochemical spillages from storage facilities and equipment, and these can largely be either prevented or cleaned up effectively. The major environmental impacts are of a visual nature, while in sensitive areas, sense of change of place and habitat destruction may become significant impacts. If the Environmental Management Plan is not adhered to Lithium ore exploration activities can do tremendous damage by destroying habitats. Drainage of water sources may be another serious problem, especially because the EPL 7248 is in an arid/semi-arid area.

Ms. Tjinouhona Batseba Kavita, hereinafter referred to as the proponent intends to carry out the following activity:

- **Environmental Assessment (EA) for the exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region, Namibia.**

The objective of the intended Environmental Assessment is thus needed in order to assess the potential social and environmental impacts associated with the intended exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region, Namibia and to formulate methods of rehabilitation of the quarries once the lithium ore has been excavated.

The above is a listed activity in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the following listed activities in **Table 1** were triggered by the proposed project:

Table 1: List of triggered activities identified in the EIA Regulations that apply to the proposed project

Activity description and No(s):	**Description of relevant Activity**	**The portion of the development as per the project description that relates to the applicable listed activity**
Activity 3.1 (Mining and Quarrying Activities)	The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.	The proposed project includes the exploration for lithium ore for commercial purposes.

Activity description and No(s):	Description of relevant Activity	The portion of the development as per the project description that relates to the applicable listed activity
Activity 3.2 (Mining and Quarrying Activities)	Other forms of mining or extraction of any natural resources whether regulated by law or not.	The proposed project includes the exploration for lithium ore for commercial purposes.
Activity 3.3 (Mining and Quarrying Activities)	Resource extraction, manipulation, conservation and related activities.	The proposed project includes the exploration for lithium ore for commercial purposes.

The above activities will be discussed in more detail in Chapter 4. Healthy Earth Environmental Consultants CC (HEEC) intends to undertake an independent Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activities on behalf of the proponent. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA).

The EA process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) and the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the intended activities. The EA process would also serve to provide an opportunity for the public and key stakeholders to provide comments and participate in the process, i.e., Integrated Environmental Principles will be adhered to.

1.2 PROJECT LOCATION

The proponent, Ms. Tjinouhona Batseba Kavita intends to explore for raw lithium ore as granitic pegmatite on the EPL 7248, located about 24 kilometres south of Uis settlement in the Daureb constituency and about 18 kilometres from the eastern edge of the Brandberg Mountain in the Erongo region. The total area covered is about 21 563.4549 hectares. Refer to the locality map of EPL 7248 in Figure 1.

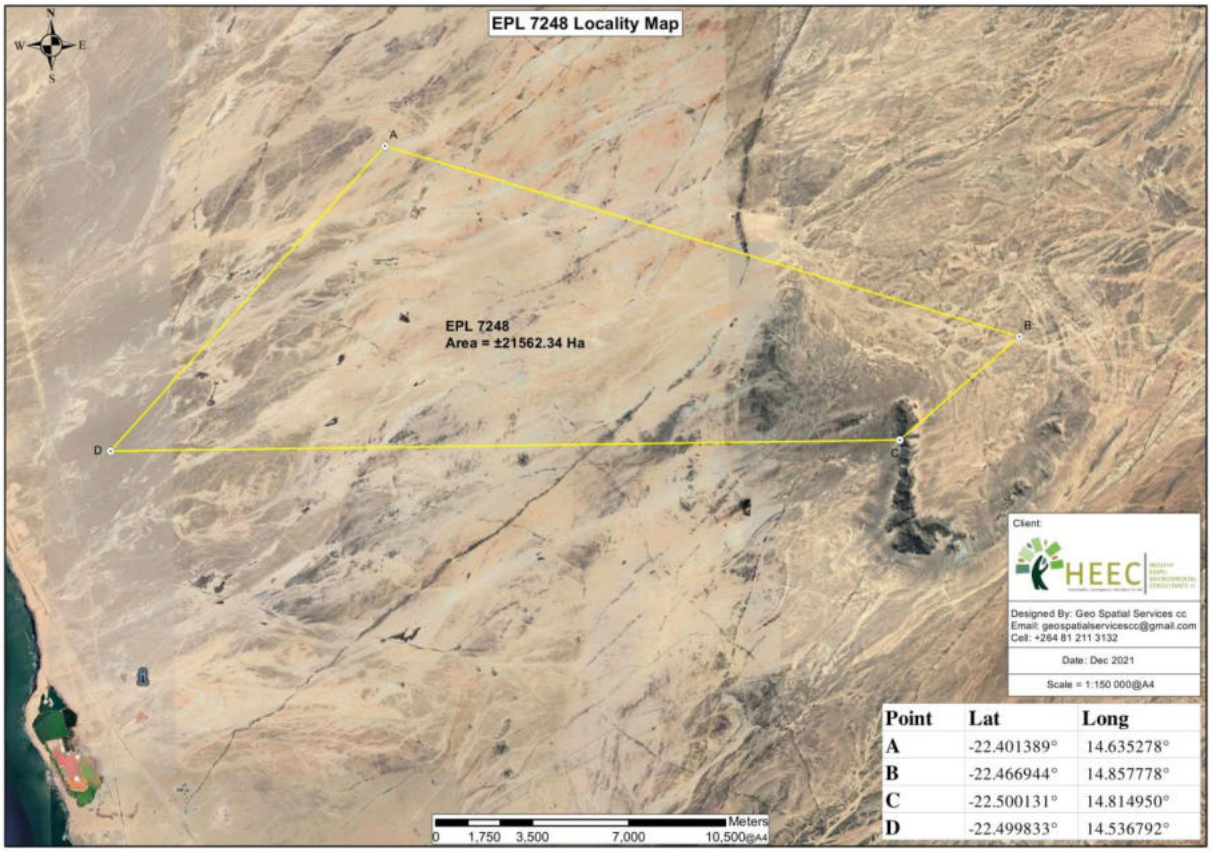

Figure 1: Locality map of EPL 7248(yellow quadrant), Uis, Erongo Region (HEEC, 2022)

1.3 TERMS OF REFERENCE AND SCOPE OF PROJECT

The scope of this project is limited to conducting an Environmental Impact Assessment (EIA) for the exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region and applying for an Environmental Clearance Certificate as indicated in **section 1.1** above.

1.4 ASSUMPTIONS AND LIMITATIONS

In undertaking this investigation and compiling the Environmental Assessment Report, the following assumptions and limitations apply:

- Assumes the information provided by the proponent (Ms. Tjinouhona Batseba Kavita) is accurate and discloses all information available.
- The unique character and appeal of the surrounding area of the EPL 7248 have been taken into consideration with the design & operational perspective for the intended activities. Various layout alternatives have been considered by the proponent, also taking terrain and environmental constraints into account, thus only adopting the most economically feasible & environmentally friendly result.

1.5 CONTENT OF ENVIRONMENTAL ASSESSMENT REPORT

Section 8 of the gazetted EIA Regulations requires specific content to be addressed in a Scoping / Environmental Assessment Report. **Table 2** below is an extract from EMA and highlights the required contents of a Scoping / Environmental Assessment Report whilst assisting the reader to find the relevant section in the report.

Table 2: Contents of the Scoping / Environmental Assessment Report

Section	Description	Section of FESR/ Annexure
8 (a)	The curriculum vitae of the EAPs who prepared the report;	Refer to **Annexure F**
8 (b)	A description of the proposed activity;	Refer to Chapter 4
8 (c)	A description of the site on which the activity is to be undertaken and the location of the activity on the site;	Refer to Chapter 3
8 (d)	A description of the environment that may be affected by the proposed activity and the	Refer to Chapter 3

Section	Description	Section of FESR/ Annexure
	manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	
8 (e)	An identification of laws and guidelines that have been considered in the preparation of the scoping report;	Refer to Chapter 2
8 (f)	Details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including	Refer to Chapter 5
	(i) the steps that were taken to notify potentially interested and affected parties of the proposed application	Refer to Chapter 5
	(ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;	Refer to **Annexures A** and **B** for site notices and advertisements respectively.
	(iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application;	Refer to **Annexure D**
	(iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	Refer to **Annexure D**
8 (g)	A description of the need and desirability of the proposed listed activity and any	Refer to Chapter 4

Section	Description	Section of FESR/ Annexure
	identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	
8 (h)	A description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any mining, construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Refer to Chapter 7
8 (i)	Terms of reference for the detailed assessment;	NA – Assessment of impacts are included in this EA Report
8 (j)	An Environmental Management Plan(EMP)	Refer to **Annexure G**

2 LEGAL FRAMEWORK

There are multiple legal instruments that regulate and have a bearing on good environmental management in Namibia. **Table 3** below provides a summary of the legal instruments considered to be relevant to this development and the environmental assessment process.

Table 3: Legislation applicable to the exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia." Article 95(l) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.	Sustainable development should be at the forefront of management of the intended exploration activities.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principles of Environmental Management	The management of this project should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	**Activity 3.1 (Mining and Quarrying Activities)** The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		Activity 3.2 (Mining and Quarrying Activities) Other forms of mining or extraction of any natural resources whether regulated by law or not. **Activity 3.3 (Mining and Quarrying Activities)** Resource extraction, manipulation, conservation and related activities.
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The Lithium ore exploration activities should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008*)*	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the Lithium ore exploration activities do not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during the Lithium ore exploration activities.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MET has recently developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with similar projects has shown that a significant health risk is created when migrant mine workers/labourers interact with local communities.
Labour Act No. 11 of 2007	Chapter 2 details the fundamental rights and protections.	Given the employment opportunities presented by the

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	Chapter 3 deals with the basic conditions of employment.	Lithium ore exploration activities, compliance with the law is essential.
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually-transmitted infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979).	The Lithium ore exploration activities are to comply with these legal requirements.
Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants.	Indigenous and protected plants have to be managed within the legal confines.
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	This EIA considers this term of Environment.
Minerals (Prospecting and Mining) Act, 1992 (Act 33 1 of 1992)	To provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters	The intended activity involves the exploration for lithium ore for commercial & export purposes if viable deposits are found.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	incidental thereto. "mineral" means any substance, whether in solid, liquid or gaseous form, occurring naturally in, on or under any land and having been formed by, or subjected to, a geological process, excluding -(c) subject to the provisions of subsection (2), soil, sand, clay, gravel or stone (other than rock material specified in Part 2 of Schedule 1) if they are bona fide required for purposes of - (i) agriculture, building works, fencing or road making; (ii) the manufacture of bricks and tiles;	
Soil Conservation Act 6 of 1969 Ministry of Agriculture, Water and Forestry	This Act covers the prevention and combating of soil erosion; the conservation, improvement and manner of use of the soil and vegetation; and the protection of water sources	Quarries left behind after lithium ore mining should not be polluted or left un-rehabilitated.

This EIA process will be undertaken in accordance with the EIA Regulations. A Flow Diagram (refer to **Figure 3**) provides an outline of the EIA process to be followed.

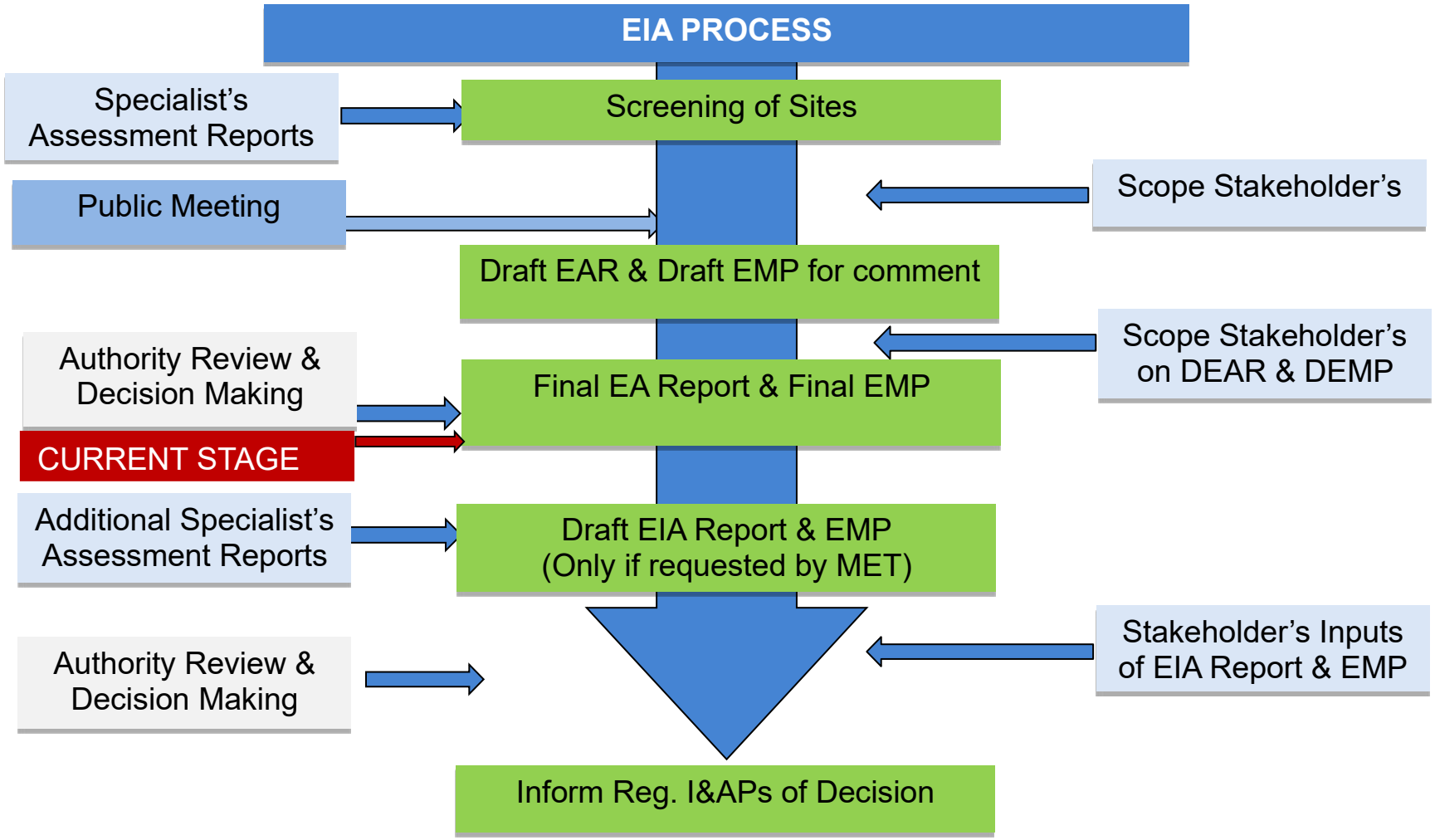

Figure 2: EIA flow Diagram

3 ENVIRONMENTAL BASELINE DESCRIPTION

3.1 SOCIAL ENVIRONMENT

3.1.1 *Socio-Economic Context*

Erongo Region comprises of seven (7) constituencies, namely: Arandis, Daures, Omaruru & Karibib (in which the granite mining claim 71621 is located), Swakopmund, Walvis Bay Rural and Walvis Bay Urban. According to the 2011 Census, the total population enumerated in Erongo Region is estimated at 150,809. Of these, 70,986 are females and 79,823 are males. Approximately 87% of the total population is located in urban parts and 13% in rural parts of the region. The total population of Usakos to be specific is about 3,583. (*NPC, 2011*).

In the Erongo Region the population under 5 years of age is 11%. The population ranging from the age of 5 to 14 years of age comprise 17% of the region's population. The working age population, 15 to 59 years, makes up 69% of the whole population in the region. A relatively low percentage, 6% of the population, was above 60 years of age. For every 100 females in Erongo Region there are 112 males, whereas the Khomas Region supports a 100:98 ratio, females to males, respectively. In Erongo Region the literacy rate of the age group 15 years and up, is 97%. Of the children aged 6 to 15 years, 89% are girls and 86% are boys. 6% of all people above the age of 15 have never attended school, 9% are currently attending school and 83% left school at the time.

The main languages spoken at home in the Erongo Region are the Oshiwambo language at 39%; Afrikaans language at 20%; Nama/Damara at 19% and Otjiherero language at 10% as compared to the Khomas Region where 41% communicates in Oshiwambo language, 19% in Afrikaans, 12% in Nama/Damara and 10% in Otjiherero. Approximately 79% of the population aged 15 years and up belong to the labour force (i.e. economically active) in the Erongo Region. 70% of the population is employed while 30% are unemployed. The inactive group, which consists of homemakers, 11%, students 46% and the severely disabled, retired or old age income recipients 35% makes up of the regions' population.

The main source of income in this region is from wages and salaries at 73%, business and non-farming activities at 9% and farming at 3%. Cash remittance makes up 5% respectively. The older age group makes up 8% of the regions income.

3.1.2 *Archaeological and Heritage Context*

While there are no declared heritage sites by the National Heritage Council of Namibia on the exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region an accidental find procedure at the subject site may be required.

3.2 BIO-PHYSICAL ENVIRONMENT

3.2.1 *Climate*

The climate at EPL 7248 is mostly semi-arid to arid, analogous to a desert climate where annual rainfall rarely exceeds 100 mm. The area barely received any rains this past rainfall season and is drought stricken. The area is characterized by hot dry summers with daytime temperature in excess of 30^{o}C whereas the night time temperatures can go as low as 10^{o}C, due to the desert climate (worldweatheronline, 2022) as indicated in **Figure 5**.

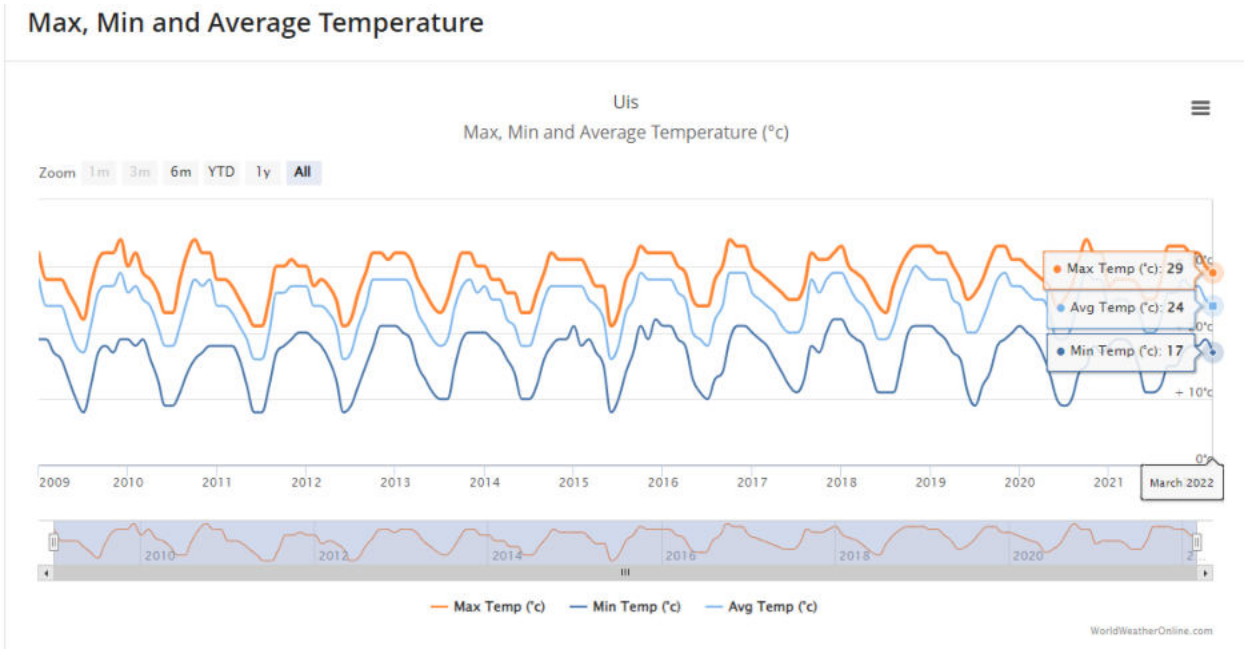

Figure 3: Average Temperature Graph for EPL 7248 which falls in the Uis District (worldweatheronline, 2022).

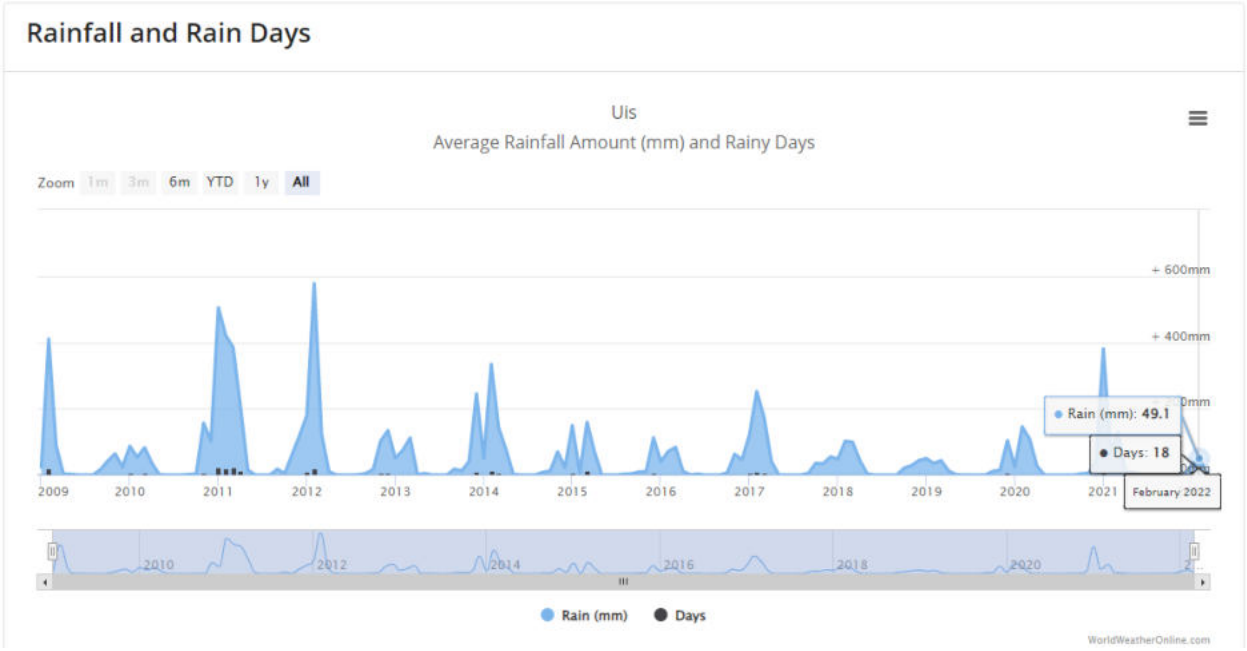

Figure 4: Rainfall Graph for EPL 7248 which falls in the Uis District (worldweatheronline, 2022).

An understanding of climatic conditions, in particular rainfall, is important in determining the risk of flooding of the quarries and erosion, which for this project is mostly of concern during the extraction phase. The area may be subject to summer rains in good years in the months of December to March. The total rainfall during this period rarely exceeds 100 mm. There is little rainfall throughout the year in the area, with the highest rainfall recorded in the current rainy season in February 2022 recording about 49.1 mm over 18 rainy days as depicted in **Figure 6** above.

3.2.2 *Topography, Geology and Hydrogeology*

3.2.2.1 Pegmatites

The oldest rocks occurring are the meta-sedimentary, which include quartzites, phyllites, quartz-schists, quartz-mica-schists and mica schists situated in the northern part of the Central Zone of the Damara Orogen. These rocks strike NE-SW to N-S direction with a south to southeast gentle dip and belonging to the Amis River Formation included in the Swakop Group (Singh, 2007). The post- tectonic pegmatites are complex in nature and contain several rare elements and minerals include quartz, microline to microclinoperthite, albite and muscovite with accessory minerals of cassiterite, columbite-tantalite and zircon and lithium minerals such as amblygonite (Singh, 2007; Haack & Gohn, 1988). The pegmatites of the Damara Orogen occur in five major belts with those in the Southern Tin and Karibib Pegmatite Belts often being large, well zoned Li-Be- gem tourmaline bearing pegmatites belonging to the Lithium

Caesium Tantalite family. The pegmatites on the mining sites on EPL 7248 form part of the Damara Orogen Belt. When processed to its pure form Lithium (Li) is the lightest metal on Earth and is used in batteries to power various electrical and electronic goods including mobile phones and electric cars.

Hydrology

There is no bulk water supply from NamWater to the EPL 7248 area and water for human consumption is to be fetched at a borehole to be drilled for operation purposes of the mine machinery to cool it off when extracting the lithium ore.

3.2.3 *Terrestrial Ecology*

3.2.3.1 Land use patterns and impact on vegetation

An extensive biodiversity assessment at EPL 7248 was carried out in November 2021 with a follow up field reconnaissance in February 2022. EPL 7248 is located west of the Uis in Erongo Region. The area is accessible via the C35 road from Uis to Henties Bay. According to Mendelsohn et al (2002) the EPL 7248 is falling within the area with an average temperature of 18-20 degree Celsius and an average rainfall of 50-100 mm. The area is characterized by the Namib Desert biome and the vegetation type is typical of the desert environment which is dominated by sparse grassland, flat and undulating landscape Mendelsohn et al (2002). The Namib Desert is considered to have a high number of endemic and near-endemic species accompanied by high species diversity. Although they are situated some kilometers away from the EPL, the main river in the vicinity is the Ugab River found north of the EPL 7248 and Omaruru River south of the EPL. The two riparian ecosystem services are the main sources of ecological support in the vicinity. These rivers are ephemeral rivers which means they only flow for a few days each year, however, their subterranean water surface plays an imperative ecological role in the desert environment. The Omaruru and Ugab Rivers are considered to be the most imperative ecological resources in the vicinity due to species richness such as large desert dwelling mammals. Other small catchment found in the area also provide vital services to the functioning of the desert ecosystem.

3.2.4 *Methodology and Approach*

The Field Reconnaissance and Literature Study

A comprehensive biodiversity assessment was carried out in the area during the field reconnaissance and a literatures study on the biodiversity of the area was also undertaken. The literature study was mainly focusing on the flora and fauna in order to gather as much information as possible. Different literatures on the plant and animals which includes mammals, reptiles and avian of Namib Desert were consulted.

Database

To augment the field reconnaissance and literature reviews; the botanical data was extracted from the Botanical Research and Herbarium Management System (BRAHMS) which is housed at the National Botanical Research Institute (NBRI) in Windhoek.

3.2.5 *Results*

3.2.5.1 Mammals

The Namib Desert in which EPL 7248 is found is associated with mammals such as leopards, lion, cheetah, Jackals, hyena, zebra, oryx, springbok, steenbok, duiker and ostriches. The existences of wild animals in the area have been necessitated by the availability of riparian forest and various tributaries and washes founds in the area. The presence of wild-animals has the potential to trigger human-wildlife conflicts, therefore, proper mitigation measures should be in place and relevant human-wildlife policy and other policies and legislation interrelated to promoting conservation should be considered. Moreover, the occurrence of antelope may also lead to potential illegal hunting if stringent measures are not implemented.

3.2.5.2 Monitoring

The proponent should liaise with the line ministry and the conservancy in the area to explore appropriate scientific measures to curb human-wildlife conflict and illegal hunting.

3.2.5.3 Mitigation

The proponent should adopt the value of conservation in the community because nature-based tourism is imperious in the area and can contribute immensely to the socio-economic value of the community. There should be further support in implementing strategies focusing on human wildlife conflict mitigation. Due to the scarcity of water in the area the boreholes found in the area should be rehabilitated to ensure that wild animals have access to drinking water because this will prevent them to be drawn closer to exploration sites to search for water. The proponent should also drill boreholes in the area to ensure that there is reasonable water supply in the area. If possible, existing diesel-powered boreholes in the immediate area of the project should be retrofitted. This will help in ensuring constant water supplies at waterholes in the area and at the same time curbing carbon footprint and reduces climate change. The proponent should discourage workers to walk around at night and workers avoid killing any wild animals they encounter.

3.2.6 *Reptiles*

The Namib Desert has a high diversity of reptile species, and some reptile species are restricted to the desert environment. The following are the likely reptiles to occur in the general area of EPL 7248.

Scientific name	Common name	Occurrence (√)	Conservation Status
Snakes			
Leptotyphlops occidentalis	Namaqua Worm Snake	√	-
Leptotyphlops labialis	Damara Worm Snake	√	Data deficiency
Dasypeltis scabra	Common egg-eater	√	-
Lycophidion namibianum	Namibian Wolf Snake	√	-
Lycophidion capense	Common Wolf Snake	√	-
Philothamnus semivariegatus	Spotted bush Snake	√	-
Prosymna frontalis	South-western Shovel-snout	√	-
Pseudaspis cana	Mole Snake	√	-
Lamprophis capensis	Brown House Snake	√	-
Python anchietae	Anchieta's Dwarf Python	√	Endemic
Python natalensis	Southern African Python	√	-

Xenocalamus bicolor	Binocoloured Quill-snouted Snake	√	-
Telescopus semiannulatus	Damara Tiger Snake	√	-
Pythonodipsas carinata	Western keeled Snake	√	Endemic
Psammophis namibensis	Namib Sand Snake	√	-
Psammophis notostictus	Karoo Whip Snake	√	-
Psammophis leopardinus	Leopard Whip Snake	√	Endemic
Psammophis trigrammus	Western Whip Snake	√	Endemic
Dipsina multimaculata	Dwarf beaked Snake	√	-
Aspidelaps scutatus	Shield-nose Snake	√	-
Nija nigri collis nigricincta	Zebra Cobra	√	Endemic
Bitis caudalis	Horned Adder	√	-
Bitis arietans	Puff Adder	√	-
Tortoises (Geochelone)			
Geochelone paradalis	Leopard Tortoise	√	-
Terrapins (Pelomedusidae)			
Pelomedusa subrufa	Marsh or Helmented Terrapin	√	-
Lizards			
Zygaspis violacea	Kalahari Round Worm Lizard	√	
Heliobolus lugubris	Bushveld Lizard	√	-
Pedioplanis namaquensis	Namaqua Sand Lizards	√	-
Pedioplanis undata	Western Sand Lizard	√	-
Cordylosaurus subtessellatus	Dwarf Plated Lizard	√	-
Skinks (Scincidae)			
Mabuya acutilabris	Wedge-snouted Skink	√	Endemic
Mabuya capensis	Cape Skink	√	-

Mabuya hoeschi	Hoesch's Skink	√	-
Mabuya occidentalis	Western Three-Striped Skink	√	-
Mabuya spilogaster	Kalahari Tree skink	√	-
Mabuya walbergii	Striped Skink	√	-
Mabuya sulcata	Western Rock Skink	√	-
Mabuya variegata	Variegated Skink	√	-
Agamas (Agamidae)			
Agama anchietae	Anchietae Agama	√	-
Agama planiceps	Namibian Rock Agama	√	Endemic
Chameleons (Chamaeleonidae)			
Chamaeleo namaquensis	Namaqua Chameleon	√	-
Chondrodactylus namibensis	Giant Ground Gecko	√	Endemic
Lygodactylus bradfieldi	Bradfield's Dwarf Gecko	√	Near - Endemic
Pachydactylus bicolor	Velvety Thick-toed Gecko	√	Endemic
Pachydactylus capensis	Cape Thick-toed Gecko	√	-
Pachydactylus turneri	Turner's Thick-toed Gecko	√	-
Pachydactylus punctatus	Speckled Thick-toed Gecko	√	-
Pachydactylus scherzi	Schertz's Thick-toed Gecko	√	Endemic
Pachydactylus weberi	Weber's Thick-toed Gecko	√	Near -Endemic
Palmatogecko rangei	Web-footed Gecko	√	Near -Endemic
Ptenopus carpi	Carp's Barking Gecko	√	Endemic
Ptenopus maculatus	Common Barking Gecko	√	Near –Endemic
Rhoptropus afer	Common Namib Day Gecko	√	Endemic
Rhoptropus boultoni	Boullton's Namib Day Gecko	√	Endemic

The Namib Desert is known to have a high species diversity of lizards of which some are endemic to the area particularly the geckos. Among the species expected to occur in the general area of EPL

7248, 12 species are endemic to Namibia while 4 species are Near-endemic. Several reptile's species expected to occur in the area are of no conservation concern.

3.2.7 *Avian-Fauna*

Birdlife is expected to be relatively low in the immediate vicinity of EPL 7248 and it will mainly be associated with washes and tributaries found in the vicinity. The following are the bird's species likely to occur in the area and this was augmented with the use of Kenneth Newman, 2000. Newmans Birds by Colour, Southern Africa Common Birds. Arranged by Colour, Struik New Holland Publishing (Pty) Ltd 2000. Since birds have no trans-boundaries, this list is not exhaustive:

Scientific name	**Common name**	**Status in Namibia**
Coturnix coturnix	Common Quail	-
Coturnix delegorguei	Harlequin Quail	-
Numida meleagris	Helmeted Guineafowl	-
Campethera bennettii	Bennet's Woodpecker	-
Campethera abingoni	Golden-tailed Woodpecker	-
Tockus monteiri	Monteiro's Hornbill	Endemic
Tockus damarensis	Damara Hornbill	Endemic
Tockus leucomelas	Southern yellow-billed Hornbill	-
Tockus nasutus	African Grey Hornbill	-
Upupa africana	African Hoopoe	-
Phoeniculus purpureus	Green Wood-Hoopoe	-
Coracias garrulus	European Roller	Near-Threatened
Coracias naevius	Purple Roller	-
Merops hirundineus	Swallow-tailed Bee-eater	-
Urocolius indicus	Red-faced Mousebird	-
Cypsiurus parvus	African Palm Swift	-
Tachymarptis melba	Alpine Swift	-
Apus bradfieldi	Bradfield's Swift	-

Falco rupicolus	Rock Kestrel	-
Falco rupicoloides	Greater Kestrel	-
Corvus albus	Pied Crow	-
Lanius collaris	Common Fiscal	-
Hirundu albigularis	White-throated Swallow	-
Hirundo dimidiata	Pearl-breasted Swallow	-
Hirundo cucullata	Greater Stiped Swallow	-
Hirundo semirufa	Red-breasted Swallow	-
Pycnonotus nigricans	African Red-eyed Bulbul	-
Achaetps pycnopygius	Rockrunner	Endemic
Cisticola jaridulus	Desert Cisticola	-
Prinia flavicans	Black-chested Prinia	-
Ammomanopsis grayi	Gray's Lark	-
Lamprotornis nitens	Cape Glossy Starling	-
Philetairus socius	Sociable Weaver	-
Ploceus rubiginosus	Chestnut Weaver	-
Estrilda astrild	Common Waxbill	-
Vidua paradisaea	Long-tailed Paradise-Whydah	-
Passer domesticus	House Sparrow	-
Passer motitensis	Great Sparrow	Near-Endemic
Passer melanurus	Cape Sparrow	Near-Endemic
Serinus flaviventris	Yellow Canary	-
Serinus alario	Black-headed Canary	Endemic

The number of bird species in the general area of EPL 7248 can supersede and there is a possibility of having a high number of bird species in the area because birds have no boundaries. The imminent impact on birdlife includes the destruction of the breeding and nesting sites of birds in the area by the drilling equipment that will be used during exploration.

3.2.7.1 Monitoring

Any bird mortality should be recorded by the environmental control officer (s) on-site or the project manager. There should be a proper record on the number of bird nests destroyed or removed and if possible, the bird's species should be identified, and the environmental control officer (s) should be notified. If possible, encountered bird kills and nest removal should be recorded in a data-base and information should be made available to the general public.

3.2.8 *Flora Diversity*

Plant species occurring in the general area of EPL 7248 augmented with data from the Herbarium database (Botanical Research and Herbarium Management System).

Species	**Occurrences**	**Protection Status**	**Conservation Categories**
Trees and Shrubs			
Acacia erioloba	√	-	-
Acacia erubescens	√	LC	-
Acacia karroo	√	LC	-
Acacia mellifera subsp. detinens	√	LC	-
Acacia reficiens	√	-	-
Acacia senegal	√	LC	-
Acacia tortilis	√	LC	-
Adenolobus garipesis	√	-	-
Adenia pechuelii	√	LC	E
Brownanthus kuntzei	√	-	-
Blepharis grossa	√	-	NE
Boscia albitrunca	√	-	-
Boscia foetida	√	LC	-

Cadaba aphylla	√	LC	-
Cadaba schroeppelli	√	LC	-
Calostephane marlothiana	√	-	E
Catophractes alexandri	√	LC	-
Cleome foliosa var. foliosa	√	-	-
Cordia sinensis	√	LC	-
Crotalaria kurtii	√	DD	E
Commiphora dinteri	√	-	E
Commiphora glandulosa	√	LC	-
Commiphora glaucescens	√	LC	NE
Commiphora pyracanthoides	√	-	-
Commiphora saxicola	√	LC	E
Commiphora tenuipetiolata	√	LC	-
Commiphora virgata	√	LC	-
Commiphora wildii	√	LC	-
Ectadium rotundifolium	√	LC	E
Ehretia alba	√	-	-
Engleria africana	√	-	-
Euclea pseudebenus	√	-	-
Euclea undulata	√	-	-
Euphorbia damarana	√	LC	NE
Euphorbia guerichiana	√	LC	-
Euphorbia virosa	√	LC	-
Euphorbia phylloclada	√	LC	-

Elephantorrhiza suffruticosa	√	-	-
Euphorbia phylloclada	√	LC	-
Faidherbia albida	√	LC	-
Felicia clavipilosa subsp. clavipilosa	√	-	-
Forsskaolea viridis	√	LC	-
Frankenia pulverulenta	√	-	-
Gisekia africana var. africana	√	-	-
Gymnosporia senegalensis	√	-	-
Gossypium anomalum	√	-	-
Gossypium triphyllum	√	-	-
Hermbstaedtia spathulifolia	√	-	E
Helichrysum roseo-niveum	√	-	-
Heliotropium tubulosum	√	-	-
Hermannia amabilis	√	LC	E
Hoodia pedicellata	√	-	-
Hypertelis caespitosa	√	-	-
Indigastrum argyroide	√	-	-
Lotononis schreiberi	√	LC	E
Lycium bosciifolium	√	-	DD
Lycium tetrandrum	√	-	-
Manuleopsis dinteri	√	-	E
Maerua gilgii	√	LC	NE
Maerua parvifolia	√	LC	-
Melianthus comosus	√	-	-

Montinia caryophyllacea	√	-	-
Monsonia umbellata	√	-	NE
Myxopappus hereroensis	√	LC	E
Ornithogalum stapffii	√	-	E
Orthanthera albida	√	LC	-
Parkinsonia africana	√	-	-
Phaeoptilum spinosum	√	-	-
Rotheca myricoides	√	-	-
Senecio engleranus	√	-	E
Salvadora persica	√	-	-
Sesamum marlothi	√	-	E
Sesamum triphyllum var. grandiflorum	√	-	-
Steganotaenia araliacea	√	-	-
Salsola spp.	√	-	-
Tamarix usneoides	√	-	-
Tinnea rhodesiana	√	-	-
Tripteris microcarpa subsp. microcarpa	√	-	-
Welwitschia mirabilis	√		
Grass			
Enneapogon desvauxi	√	-	-
Stipagrostis dinteri	√	-	-

Stipagrostis hochstetteriana var. hochstetteriana	√	-	-
Stipagrostis subacaulis	√	-	-
Stipagrostis uniplumis var. uniplumis	√	-	-

KEY: LC – Least Concern; **E**- Endemic; **NE**- Near - Endemic; **P**-Protected, **F** – Forestry protected under Forestry Act (act 12 of 2001).

Although a large section of the EPL has limited vegetation characterised by bare land. Most of the plant species recorded within the area are mainly associated with washes and tributaries. The desert has a high flora endemism; some of the plant species occurring in the general area of EPL 7248 are endemic, while some species in the area are near-endemic. However, it should be noted that the Namib Desert has a rich and diverse flora, about 16% of the total plant species is endemic to Namibia.

Figure 5: The general area of EPL 7248, west of Uis, Dâures Constituency, Erongo Region (HEEC, 2022)

3.2.8.1 Monitoring

Regular monitoring of the general area should be implemented to ensure that there is no destruction pose on the plants. If there are plants that cannot be avoided during the exploration program, they should be translocated, and specialists should be engaged in the translocation and monitoring programs. Cleared vegetation should be compensation by planting more than the cleared plants, the mapping of the plant should be implemented, and their co-ordinates should be recorded to ensure continuous monitoring and ensuring that the plants are in good health. If there will be any translocation of the protected plant species a specialist should be involved to ensure that the correct procedures are followed. If there are any difficulties that will be encountered in the growth of translocated vegetation professional routes should be taken. The local people in Uis and Hentiesbay should be afforded an opportunity to propagate indigenous plants, this can be done by rendering basic

training to the locals and engaging them in all levels of the replacement and translocation programs. The viability of establishing a nursery in the area approximate to the project area should further be explored.

Figure 6: *Commiphora* sp. common in the general area of the EPL 7248 (HEEC, 2022)

Figure 7: Salvadora persica, the micro-habitat for micro-organisms in the desert (HEEC, 2022)

Figure 8: Boscia foetida associated with washes in the general area of the EPL 7248 (HEEC, 2022)

3.2.8.2 Mitigation

The desert environment where the EPL is located has a high endemism of flora, therefore important ecological areas should be avoided, and all protected plant species should not be disturbed at all cost. It's advisable that all the protected plant species in the area should be identified and mapped. If the protected and valuable species are unavoidable a re-placement approach of all protected, endemic and high valuable plants should be enforced. A proper and feasible vegetation management plan should be in place and local nurseries in the region should be approached to source indigenous plants species suitable for the area to replace the cleared vegetation. If possible protected and endemic plant species should be avoided or alternative routes to access targeted exploration sites can be re-considered.

3.2.9 *Conclusion and Recommendation*

The proposed area for the project is a habitat to both fauna and flora, which play a vital ecological role in an arid yet fragile environment. Some of the species including both fauna and flora in the proposed area are endemic while others are protected. The impact of the project on vegetation in the area can be rated moderate and localized to the exclusive prospecting Licence area only. The concern with regards to vegetation in the proposed area is the possible chopping down, clearing and trampling of both protected and endemic plant species. Due to the aridity of the desert existing plant species plays a crucial ecological role in the ecosystem hence they require to be conserved. Although there were no records of alien plant in the proposed area. There should be no alien plants permitted on the site. It is advisable to commission an alien invasive task force team to enforced stringent measure. The proposed exploration project will have a moderate negative impact to the avian fauna population which may include trampling of nests and destruction of breeding sites, therefore, proper measures should be enforced. The killing of species viewed as dangerous such as various snakes should be avoided. In the same vein off road driving should not be allowed and only existing tracks should be used to avoid trampling of intricate organism. Where new tracts must be made appropriate environmental consideration should be taken into consideration and new tracks should be rehabilitated as soon as exploration activities ceases.

The presence of wild animals such as antelope can easily emanate into illegal hunting, therefore the proponent should work closely with the relevant directorates within the Ministry of Environment, Forestry and Tourism (MEFT), law enforcement agencies and conservancy officials to ensure that the exploration team is vested with the correct information pertaining to wildlife conservation.

4 PROJECT DESCRIPTION

4.1 PROJECT COMPONENTS

As previously outlined in Section 1.1, the proposed project involves conducting an EIA for the exploration activities for Base & Rare Metals, Dimension Stone, Industrial Minerals & Precious Metals targeting raw lithium ore on EPL; 7248, Uis District, Dâures Constituency, Erongo Region, Namibia.

The proponent intends to undertake mineral exploration mainly focusing on lithium ore and associated by products. The exploration activities will include optimization of non-invasive and invasive mineral exploration methods. Remote sensing technology will be used to show the distribution of the targeted mineral group. Visual examination using microscopic and video prospecting will also be used to determine mineral occurrences. Other methods such as radiometric, seismic and magnetic will further be applied. Based on the results from the non-invasive exploration core drilling will be carried out in targeted areas using diamond drills to collect samples for the purpose of evaluating the grade and mineral resource estimation. The sample will be collected in geological sample bags and sealed for comprehensive analysis in South Africa.

The proponent is in possession of an approved Exclusive Prospecting Licence 7248 from the Ministry of Mines and Energy (MME) that was granted on 15/10/2020 enabling her company to apply for the Environmental Clearance Certificate (ECC) to necessitate the exploration of base and rare metals, dimension stones, industrial minerals and precious metals. The planned exploration activities are estimated to cost approximately **USD 3 000 000.00** and will provide employment to more than 25 people mainly from Erongo Region particularly from Uis and nearby villages and settlements. The proponent has secured technical and financial partners under Universal Metals Ltd. However, there are interests from some of the major reputable European companies such as Global Atac SL from Spain and Transamine Trading SA from Switzerland. This project will contribute enormously to the local economy of Uis, through employment and the national economy will heavily benefit through royalties and taxes.

4.2 LITHIUM ORE EXPLORATION

4.2.1 *Surface Excavation of base and rare metals- Lithium Ore*

Lithium has the atomic number 29, and it is found between Ni (atomic number 28) and zinc (atomic number 30) on the periodic table. It has a melting point of 1083°C and a boiling point of 2567° C. Lithium is usually found in nature in association with sulphur with which it forms sulphide minerals, the most important being chalcopyrite (CuFeS2), bornite (Cu5Fe4S2) and chalcocite (CuS2). Pure lithium metal is generally produced from a multistage process, beginning with the mining and concentrating of low-grade ores containing lithium sulphide minerals, and followed by smelting and electrolytic refining to produce a pure lithium cathode. However, an increasing share of lithium is produced from acid leaching of oxidized ores containing malachite, azurite and chrysocolla (Dr. Sam Nujoma, 2009).

The procedure of lithium processing involves mining and transporting. The open-pit mining is adapted for mining lithium regarding which a series of stepped benches are dug deeper and deeper into the earth over time. The machinery is then used to drill holes into the hard rock, and explosives are inserted into the drill holes to blast and break the rock to remove the ore. The resulting boulders are then ready for hauling. Most of the ores are then sent through a primary crusher, which reduces the size of the ore from boulder to golf ball-sized rocks after which it becomes easy for the extraction process to take place. Lithium can be obtained by processing its oxide ores or sulfide ores. Oxide and sulfide ores undergo different processes to be purified into 99.99% pure lithium. Lithium processing is a complicated process that begins with mining of the ore (less than 1% lithium) and ends with sheets of 99.99% pure lithium called cathodes, which will ultimately be made into products for everyday use. The most common types of ore, lithium oxide and lithium sulfide, undergo two different processes, hydrometallurgy and pyrometallurgy, respectively, due to the different chemistries of the ore. Lithium oxides are more abundant near the surface, but are considered low-grade ore, with a lower concentration of lithium. Although this requires more ore to be extracted and processed, this process is less expensive, so oxides can still be mined at a profit. The processing of lithium is beyond the scope of this assessment since only the extraction of lithium ore will be carried out at these mining claims. Therefore, there are no significant environmental impacts such as acid mines drainage and other toxic effects associated with many of the metal extraction industries and are therefore not applicable to this type of exploration activities.

This mining operation can be classified as quarrying the open or surface excavation of lithium ore. Quarrying starts from the earth's surface and maintains exposure to the surface throughout the extraction period. For both access and safety, the excavation will have stepped, or benched side slopes as shown in the example in Illustration 1 below.

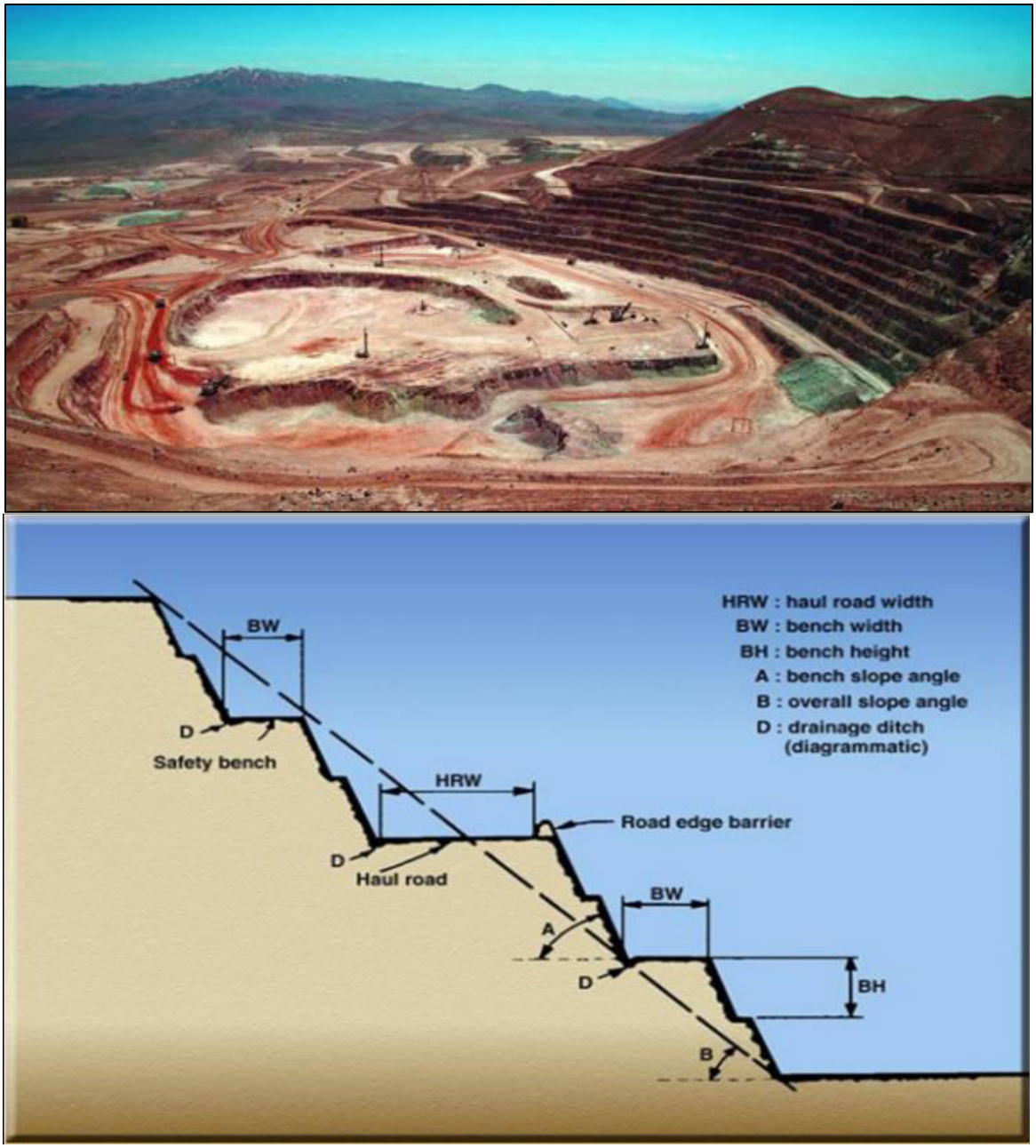

Illustration 1: A simple diagram showing different design parameters for the open pit

The proposed development will provide employment for about 25 people who will be involved in the exploration, milling & on/off-loading of the lithium ore and this will also contribute to the local economy of the Uis area. The Environmental Assessment was thus needed in order to assess the potential social and environmental impacts associated with the intended Lithium ore exploration activities and to provide methods of rehabilitation of the quarries once the lithium ore has been excavated.

The main soil type in the area is arenosol, which is a soil type consisting mainly of sand, with little humus or clay, found typically in deserts and arid tropical regions. Efforts of rehabilitation in terms of the provided Environmental Management Plan must be made to ensure that the ground attains the surrounding topography of contour levels after the activities cease thus reducing these negative impacts.

The proponent is in possession of valid mining registration applications from the Ministry of Mines & Energy enabling them to excavate the natural lithium ore from the allocated portions after obtaining an Environmental Clearance Certificate. Efforts will be made to revegetate these quarries once they are no longer in use and the land can be reclaimed for other purposes, such as small stock farming with goats which is already popular in the Uis area as detailed in the environmental management plan (**Annexure G**).

4.3 ALTERNATIVES

As pointed out in Section 1.4 above various exploration site alternatives were initially considered by the proponent, ultimately resulting in the final development of the most financially viable EPL site.

4.3.1 *No – Go Alternative*

The no-go alternative is the baseline against which all alternatives are assessed. The no-go alternative would essentially entail maintaining the current situation, whereby the Lithium ore exploration activities will not go on. Additionally, the Lithium ore exploration activities may cease to take place which would have a negative social impact as the Uis town would forfeit the economic benefits associated with the development. In addition, if the intended development does not commence, the residents will also not be able to benefit from the employment opportunities created from the exploration activities and they will be no supply of the much-needed lithium ore to the international markets.

4.4 SURROUNDING LAND USE

The EPL 7248 is not near any human settlements and farm homestead, so the surrounding land is made up of vast tracts of flat terrain/land endowed with desert vegetation typical of the Uis area. Livestock grazing occurs in the surrounding land parcels.

Figure 9: Vast tracts of open land on EPL 7248 and surrounding areas (HEEC,2022)

4.5 ENGINEERING SERVICES

The proponent intends to undertake exploration activities of lithium ore on EPL 7248 located approximately 30 Km West of Uis and is accessible via the C35 road from Uis to Henties Bay in Erongo Region. Water for the intended exploration activities and human consumption will be sourced from the borehole yet to be drilled. Electricity on the site will be sourced from the existing infrastructure such as the national grid via the regional distributor ErongoRed. The use of diesel and solar power will be explored if deemed feasible. A reputable contractor with the necessary skills and outstanding track record will be hired to handle the removal of sewage from the site mobile toilets using a sewer removal truck at regular intervals and ultimately dispose it off at Uis sewerage ponds or Henties Bay municipal sewerage ponds.

Prefabricated buildings for personnel accommodation and amenities for the 20 to 25 people staying onsite. Sewage is to be removed from the site mobile toilets by means of an ecologically friendly sewage system (EcoSmart) to be installed that will biodegrade the sewerage and produce non-potable water that can be used for dust suppression around the operational EPL 7248 site.

5 PUBLIC PARTICIPATION PROCESS

5.1 PUBLIC PARTICIPATION REQUIREMENTS

In terms of Section 21 of the EIA Regulations a call for open consultation with all I&APs at defined stages of the EIA process is required. This entails participatory consultation with members of the public by providing an opportunity to comment on the proposed project. Public Participation has thus incorporated the requirements of Namibia's legislation, but also takes account of international guidelines, including Southern African Development Community (SADC) guidelines and the Namibian EIA Regulations. Public participation in this project has been undertaken to meet the specific requirements in accordance with the international best practice. Please see **Table 4** below for the activities undertaken as part of the public participation process. The public was given time to comment from **17 December 2021 to** 2**8 February 2022**.

Table 4: Table of Public Participation Activities

ACTIVITY	REMARKS
Placement of site notices/posters in Uis at the entrance to the Community Hall	See **Annexure A**
Placing advertisements in two newspapers namely the Windhoek Observer & Confidente	See **Annexure B**
Written Background Information Document for interested & affected parties	**See Annexure D**
Written notice to Interested and Affected Parties via Email	See **Annexure D**

5.1.1 *Environmental Assessment Phase 2*

The second phase of the PPP involved the lodging of the Draft Environmental Scoping Report (DESR) to all registered I&AP for comment. Registered and potential I&APs were informed of the DESR availability for public comment *via* a letter/email dated **14th February 2022**. An Executive Summary of the DESR was also included in the communication to the registered I&APs. I&APs had until **28th February 2022** to submit comments or raise any issues or concerns they may have regarding the proposed project.

6 ASSESSMENT METHODOLOGY

The purpose of this chapter is to describe the assessment methodology utilized in determining the significance of the management, location and operational impacts of the lithium ore mining, and where applicable the possible alternatives, on the biophysical and socio-economic environment.

Assessment of predicted significance of impacts for Lithium ore exploration activities that are not yet operational is by its nature, inherently uncertain – environmental assessment is thus an imprecise science. To deal with such uncertainty in a comparable manner, a standardised and internationally recognised methodology has been developed. Such accepted methodology is applied in this study to assess the significance of the potential environmental impacts of the proposed development, outlined as follows in **Table 5**.

Table 5: Impact Assessment Criteria

CRITERIA	CATEGORY
Impact	**Description of the expected impact**
Nature Describe type of effect	**Positive**: The activity will have a social / economical / environmental benefit. **Neutral**: The activity will have no effect **Negative**: The activity will have a social / economical / environmental harmful effect
Extent Describe the scale of the impact	**Site Specific:** Expanding only as far as the activity itself (onsite) **Small:** restricted to the site's immediate environment within 1 km of the site (limited) **Medium:** Within 5 km of the site (local) **Large:** Beyond 5 km of the site (regional)
Duration Predicts the lifetime of the impact.	**Temporary:** < 1 year (not including construction) **Short-term:** 1 – 5 years **Medium term:** 5 – 15 years **Long-term:** >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) **Permanent:** Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary
Intensity Describe the magnitude (scale/size) of the Impact	**Zero:** Social and/or natural functions and/ or processes remain unaltered **Very low:** Affects the environment in such a way that natural and/or social functions/processes are not affected **Low:** Natural and/or social functions/processes are slightly altered **Medium:** Natural and/or social functions/processes are notably altered in a modified way **High:** Natural and/or social functions/processes are severely altered and may temporarily or permanently cease
Probability of occurrence Describe the probability of the Impact actually occurring	**Improbable:** Not at all likely **Probable:** Distinctive possibility **Highly probable:** Most likely to happen **Definite:** Impact will occur regardless of any prevention measures

Degree of Confidence in predictions State the degree of confidence in predictions based on availability of information and specialist knowledge	**Unsure/Low:** Little confidence regarding information available (<40%) **Probable/Med:** Moderate confidence regarding information available (40-80%) **Definite/High:** Great confidence regarding information available (>80%)
Significance Rating The impact on each component is determined by a combination of the above criteria.	**Neutral:** A potential concern which was found to have no impact when evaluated **Very low:** Impacts will be site specific and temporary with no mitigation necessary. **Low:** The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures **Medium:** Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures. **High:** Impacts have a high magnitude and will be experienced regionally for at least the life span of the development or will be irreversible. The impacts could have the no-go proposition on portions of the development despite any mitigation measures that could be implemented.

*NOTE: Where applicable, the magnitude of the impact must be related to the relevant standard (threshold value specified and source referenced). The magnitude of impact is based on specialist knowledge of that field.

For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are described. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The decision as to which combination of alternatives and mitigation measures to apply lies with Ms. Tjinouhona Batseba Kavita as the proponent, and their acceptance and approval ultimately with the relevant environmental authority.

The SIGNIFICANCE of an impact is derived by considering the temporal and spatial scales and magnitude. Such significance is also informed by the context of the impact, i.e., the character and identity of the receptor of the impact.

6.1 MITIGATION MEASURES

There is a mitigation hierarchy of actions that can be undertaken to respond to any proposed project or activity (See **Figure 10** below). These cover avoidance, minimization, restoration and compensation. It is possible and considered sought after to enhance the environment by ensuring that positive gains are included in the proposed activity or project. If negative impacts occur, then the hierarchy indicates further steps.

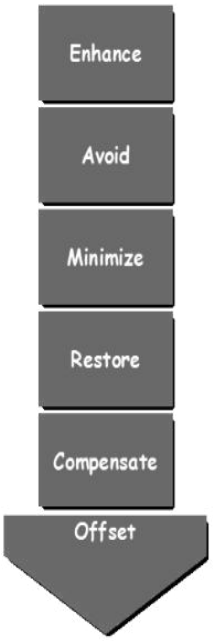

Figure 10: Mitigation Hierarchy

Impact avoidance: This step is most effective when applied at an early stage of project planning. It can be achieved by:

- not undertaking certain projects or elements that could result in adverse impacts.
- avoiding areas that are environmentally sensitive; and
- putting in place preventative measures to stop adverse impacts from occurring.

Impact minimization: This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- scaling down or relocating the proposal.
- redesigning elements of the project; and

taking supplementary measures to manage the impacts.

Restoration: This step is taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised. Restoration tries to return an area to the original ecosystem that occurred before impacts. Restoration is frequently needed towards the end of a project's life cycle but may be possible in some areas during operation.

Impact compensation: This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- **rehabilitation** of the affected site or environment, for example, by habitat enhancement.
- **restoration** of the affected site or environment to its previous state or better; and
- **replacement** of the same resource values at another location (off-set), for example, by wetland engineering to provide an equivalent area to that lost to drainage or infill.
- **offsets** are often complex and expensive; it is therefore preferable to pay attention to earlier steps in the mitigation hierarchy.

7 ASSESSMENT OF POTENTIAL IMPACTS AND POSSIBLE MITIGATION MEASURES

7.1 INTRODUCTION

This Chapter describes the potential impacts on the biophysical and socio-economic environments, which may occur due to the operational activities described in Chapter 4. These include potential impacts, which may arise during the operation of the lithium ore mines (i.e., long-term impacts) as well as the potential related impacts (i.e., short to medium term) during the internal road construction to access the lithium ore with ease on the quarry. The assessment of potential impacts will help to inform and provide a clear picture to MEFT: DEA regarding the management of environmental aspects considered. In turn, MEFT: DEA's decision on the environmental acceptability of the operation of the Lithium ore exploration activities at the EPL 7248 and the setting of conditions of authorisation (should the operation be authorised) will be informed by this chapter, amongst other information contained in this EA Report.

The baseline and potential impacts that could result from the operation of the Lithium ore exploration activities are described and assessed with potential mitigation measures recommended. Finally, comment is provided on the potential cumulative impacts that could result should this mining operation be approved.

7.2 IMPACTS DURING LITHIUM ORE EXPLORATION PHASE

During the lithium ore exploration phase a considerable area of land will be transformed to make way for the exploration operations in the subject area. There is need to prepare waste rock dumping areas, dispatch yards for the excavated lithium ore, accommodation and other logistics areas. As mentioned earlier, there is no processing plant at this site. There is only the exploration of the raw lithium ore that will be further processed offsite after it has been extracted.

Note:

- The waste rock dump area must be an existing disturbed area.
- The dispatch yard/ holding warehouse will require clearing of vegetation.
- Accommodation and logistics will require clearance of vegetation.

7.2.1 *Surface and Ground Water Impacts*

The risk of polluting water resources may be created if excavations are not covered after lithium ore mining has ceased. Open pits that become filled with water from heavy rain may become contaminated or polluted which may seep into the underground water table thus polluting it. Otherwise, these standing water bodies can be death traps for both humans and animals that may fall and drown in the uncovered quarries. These may also be breeding grounds for waterborne disease vectors such as the malaria larvae or if the contaminated water (by human/livestock fecal

matter) is used for consumption it can spread waterborne diseases such as cholera/dysentery to the immediate communities.

7.2.2 *Visual and Sense of Place Impacts*

The creation of large open quarries results when (base and rare metals) - lithium ore is mined in an area. This often leaves the landscape in a visually unpleasant state/compromised aesthetic state. There is thus very likely to be a change in visual characteristics of the site since the site will now have a different landscape due to the lithium ore being excavated. Piles of waste rock and pits where lithium ore has been excavated will result. The extent of this disturbance will depend on how highly the interested and affected parties valued the initial aesthetic quality of the site.

7.2.3 *Noise Impacts*

The operation of various types of machinery utilised during Lithium ore exploration activities will result in associated noise impacts of normally more than the recommended 85dB exposure to employees during working hours for extended periods, therefore employees are to be provided for with ear protecting gear and given sufficient breaks to protect their hearing ability. The loading and off-loading of lithium ore onto the flatbed trucks and operation of machinery such as the jack hammer, heavy duty forklift, excavator, grader and air compressor may result in associated noise being generated.

7.2.4 *Dust and Emission Impacts*

The air quality in the area is fairly good within the EPL 7248 area. Dust may result during the Lithium ore exploration activities when the excavations are dug out with the jack hammer and associated machinery. Additional dust and emissions associated with the Lithium ore exploration activities will mostly be generated by vehicle movement of the excavator and heavy-duty forklift to and from the lithium ore excavation areas on the mining claims. The entire activity needs to be controlled and managed as required by the Public Health Act of 2015 and Atmospheric Pollution Prevention Ordinance (**No. 11 of 1976**).

7.2.5 *Impacts on biodiversity*

The EPL 7248 site has not been disturbed by human activity and therefore this is a greenfield site and thus efforts are to be made to maintain the natural environmental state of the immediately surroundings during exploration activities. However, at the designated spots on EPL 7248 the removal of lithium ore during the operational phase will thus ultimately result in the limited removal of vegetation in the subject area. This in turn will have an impact on the habitats of the fauna located within the subject area. Particularly for birds as the lithium ore exploration operations may result in disturbance of bird nesting.

Quarries that are left open become hazardous sites for animals that frequent the area, especially during the good rainy seasons when these can become filled with water in which they can drown. Thus, there is need to erect a perimeter fence around the active quarries to avoid such risks. Hence it is very necessary for the quarries to be rehabilitated (phytoremediation) once excavation has ceased at a particular exploration site.

7.2.6 *Heritage impacts*

There are no declared heritage sites by the National Heritage Council of Namibia on the subject site. An accidental find procedure should however be provided for.

7.2.7 *Impacts of Flooding*

Groundwater inflow in surface mining operations can flood the lower sections of the pit – provided that the pit has surpassed the depth to the water table. High pore pressures in sidewalls can trigger collapse, leading to catastrophic events. However, lithium minerals and ores are found in both igneous and sedimentary rocks and this situation is therefore highly unlikely especially for lithium ore mining. Flooding may also occur as a result of water accumulating in the quarries after heavy rains in a good season. Thus, it is essential to ensure that the trenches are refilled with soil and rubble after excavation has occurred as the open pits/quarries pose a threat to animals and humans in terms of health and safety.

7.2.8 *Social Impacts*

Unemployment is widely experienced across the country including in the Dâures Constituency and Uis community. There is an increased demand for job opportunities due to the rapid population growth. The Lithium ore exploration activities contribute towards addressing this need, by providing employment to the local people in the area. In total Ms. Tjinouhona Batseba Kavita will employ about 25 people on either permanent or casual basis for the exploration operations. The intended activity also contributes towards the national economy and thereby attracts more investors into the country.

7.3 IMPACTS DURING LITHIUM ORE TRANSPORTATION TO THE VARIOUS MARKETS

7.3.1 *Traffic Impacts*

Traffic is not expected to increase significantly during the lithium ore exploration activities however it may be slightly impacted due to the types of vehicles (i.e., heavy duty trucks) being utilised for the transportation of the lithium ore to the various markets for commercial value-addition & for export. However, if the excavation and transportation is done according to a schedule and the vehicles strictly abide to using the demarcated right of ways the impact is expected to be of very low significance as the loads are done on a scheduled basis which do not conflict with peak periods. Peak periods are to be avoided as the passenger/commercial vehicles bringing supplies to the area also make use of this

district road (C35) leading to Usakos. Impacts on soil may result from vehicle traffic, drilling and materials storage resulting in soil erosion; impacts on soil structure (mainly compaction) and soil chemistry (as a result of petrochemical spills).

7.3.2 *Existing Service Infrastructure Impacts*

The subject area intended for the associated lithium ore exploration activities is remote and therefore will be provided for with underground borehole water from the borehole yet to be drilled and a diesel generator for electricity. Solar panels are an option that the proponent is eager to explore once the mine is operational.

7.3.3 *Surface and Ground Water Impacts*

The heavy vehicles operating at the mining site should be regularly monitored for leaking hydrocarbon fuels (petrol or diesel) and must be fitted with drip trays while they are parked to avoid contamination of surface and groundwater. If a refuel station (fuel containers) is on site, it must either be a tank mounted on stilts so that any leaks are easily detectable and if it is underground it should be lined with heavy duty geomembranes such as polyvinyl chloride (PVC) or high-density polyethylene (HDPE) to prevent groundwater contamination.

7.3.4 *Health, Safety and Security Impacts*

Due to a relatively high demand of employment during the lithium ore exploration activities, this may involve the establishment of a temporary workforce at the EPL7248. Experience with other projects in a developing-world context has shown that, where migrant workers could interact with the local community, a significant risk is created for the development of social conditions and sexual behaviors that contribute to the spread of Covid19, HIV and AIDS.

In response to the threat the pandemic poses, MEFT has recently developed a policy on HIV and AIDS. This policy, which was developed with support from USAID, GTZ and the German Development Fund, provides for a non-discriminatory work environment and for workplace programs managed by a Ministry-wide committee. The MEFT has also recently initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.

In addition, the workers should be provided for with Protective Personal Equipment such as overalls, hard boots, gloves, goggles, dust masks and sun hats to be protected from the weather elements and associated work hazards. A fully stocked first aid kit with unexpired medicines must always be on site.

7.3.5 *Noise Impacts*

The lithium ore exploration activities may result in associated noise impacts. These noise impacts will mainly be associated with use of the jack hammer machine, excavators, graders and noise from the heavy duty forklift transporting the rocks to the nearby (<1.0km) loading site. The residents of the nearby village and those that frequent the existing area will be impacted however only minimally as

the EPL 7248 is located at a distance from any human settlements within the boundaries of Uis District. The impact is very low and is limited to the excavation period only that utilises heavy-duty tools.

7.3.6 *Municipal Service Impacts*

The lithium ore exploration activities will result in additional people on-site, who will require provision of the following services:

- Potable water for domestic (ablution and drinking) purposes.
- Temporary toilets during the mining operations.
- Solid waste management (domestic waste).
-

Workers will be housed on an identified mine camp within the EPL 7248 to be designated by the proponent to build temporary houses and provide the necessary amenities for the employees including a renewable source of energy in the form of solar panels to ensure a reasonable standard of living.

7.3.7 *Storage and Utilisation of Hazardous Substances*

Hazardous substances are regarded by the Hazardous Substance Ordinance (No. 14 of 1974) as those substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. It covers manufacture, sale, use, disposal and dumping as well as import and export. During the mining operations, the use; storage and disposal of these types of hazardous substances, such as explosives, shutter oil, curing compounds, types of solvents, primers and adhesives and diesel, on-site could have negative impacts on the surrounding environment, if these substances spill and enter the environment therefore these should be put in a lockable bunded storeroom.

7.4 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) is contained in **Annexure G** of this report. The purpose of the EMP is to outline the type and range of mitigation measures that should be implemented during the lithium ore exploration activities and decommissioning phases of the project to ensure that negative impacts associated with the lithium ore mining are avoided or mitigated.

7.5 CUMULATIVE IMPACTS

The cumulative impact of the exploration operations of lithium ore are not yet known and therefore are very difficult to rate. If all proposed mitigation measures and suggestions brought forward are

however in place to minimise the overall impacts, then the cumulative impact can be expected to be rated as ***Medium-Low (negative)*** for the operation and management of the exploration activities .

7.6 SUMMARY OF POTENTIAL IMPACTS

A summary of the significance of the potential impacts from the lithium ore exploration activities assessed above is included in **Table 7**. The **Tables 8 – 9** provide a summary of the mitigation measures proposed for the impacts. While some difference in magnitude of the potential impacts would result from the proposed alternatives this difference was not considered to be significant for any of the potential impacts. As such, the table below applies to all proposed alternatives.

Table 6: Summary of the significance of the potential impacts

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
LITHIUM ORE MINING IMPACTS										
1. Surface and Ground Water Impacts	Lithium ore exploration activities	No mitigation	Local	Very High	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Medium-Low
	No go	No mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
2. Visual Sense of Place Impacts	Lithium ore exploration activities	No mitigation	Local	Medium-Low	Medium term	Medium	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Medium term	Medium - Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
3. Noise Impacts	Lithium ore exploration activities	No mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
4. Dust and Emission Impacts	Lithium ore exploration activities	No mitigation	Local	Medium-Low	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
5. Biodiversity (Fauna and Flora)	Lithium ore exploration activities	No mitigation	Local	Low	Short term	High	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Medium-Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
6. Heritage Impacts	Lithium ore exploration activities	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Medium - Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
7. Impacts of Flooding	Lithium ore exploration activities	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium – low (-ve)
		Mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
8. Social Impacts	Lithium ore exploration activities	No mitigation	Local	Very low	Short term	High++	Probable	Certain	Irreversible	Very low(-ve)
		Mitigation	Local	Negligible	Short term	High++	Probable	Certain	Irreversible	Negligible (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	**Probable**	Certain	Reversible	Neutral
TRANSPORTATION & GENERAL OPERATION IMPACTS										
1. Traffic Impacts	Lithium ore exploration activities	No mitigation	Local	Medium-Low	Short term	Low	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Short term	Very Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
2. Existing Service Infrastructure Impacts	Lithium ore exploration activities	No mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Very low	Probable	Certain	Reversible	Very low
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
3. Surface and Ground Water Impacts	Lithium ore exploration activities	No mitigation	Local	Medium	Short term	Medium - low	Probable	Certain	Reversible	Medium - Low (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
4. Health, Safety and Security Impacts	Lithium ore exploration activities	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium - Low (-ve)
		Mitigation	Local	Low	Short term	Medium-Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
5. Noise Impacts	Lithium ore	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	SIGNIFICANCE	Probability	Confidence	Reversibility	Cumulative impact
	exploration activities	Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
6. Municipal Service	Lithium ore exploration activities	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
7. Storage and Utilisation of Hazardous Substances	Lithium ore exploration activities	No mitigation	Local	Low	Short term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral

Table 7: Proposed mitigation measures for the lithium ore exploration activities

LITHIUM ORE EXPLORATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
Surface and Ground Water- Storm water and Erosion Control	• Ensure that surface water accumulating on-site are channelled and captured through a proper storm drainage trench. • Disposal of waste at the target sites on EPL 7248 should be regulated and properly managed. • Regular preventative maintenance should be carried out on the quarry infrastructure. Earth embankments to prevent erosion will be established where appropriate. • The surface water accumulated in the open trenches must be channelled along the natural tributaries of area. • It is recommended that lithium ore mining takes place outside of the rainy season in order to limit flooding on site and surface water pollution. • Storm water Management Plans should be developed for each quarry/claim site and should include the management of storm water during excavation, as well as the installation of storm water and erosion control infrastructure and management thereof after completion of exploration. • Storm water management systems will be installed to prevent storm water from entering or exiting the quarry, which could result in silt laden surface water from draining into any ephemeral river systems that may be in proximity to the EPL site. • Quarry slopes should be profiled to ensure that they are not subjected to excessive erosion but capable of drainage run-off with minimum risk of scour (maximum 1:3 gradient). • If necessary, diversion channels should be constructed ahead of the open cuts as well as above emplacement areas and stockpiles to intercept clean run-off and divert it around disturbed areas into the natural drainage system downstream of the quarry. • All mined areas (where works will take place) will be rehabilitated to control erosion and sedimentation. • Existing vegetation must be retained as far as possible to minimise erosion problems.

LITHIUM ORE EXPLORATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
	• Rehabilitation of quarries shall be planned and completed on a continuous basis in such a way that the run-off water (if any) will not cause erosion. • Visual inspections shall be done on a regular basis regarding the stability of water control structures, erosion and siltation (if required).
Soil Aspects	• Topsoil shall be removed from all areas where physical disturbance of the surface will occur, prior to the disturbance occurring. Topsoil refers to that layer of soil covering the earth, and which provides a suitable environment for the germination of seeds, allows the penetration of water, and is a source of micro-organisms, plant nutrients and in some cases seed. • The topsoil shall be stored so that it can be placed on the exposed subsoil as soon as the mining of the excavation or the relevant section of it has been completed and its slopes have been finished off to the acceptable gradient as part of the rehabilitation process. • Topsoil shall be stockpiled only in the areas dedicated for only that purpose, even if the topsoil is only partially cleared. • The topsoil removed, shall be stored in a bund wall on the high ground side of the quarry and in such a way that it will not cause damming up of water or washaways, or wash / blow away itself. Stockpiles will not exceed a height of **two** meters. • Stockpiles shall be managed to maintain the regrowth potential of the topsoil. Should the stockpiles stand for too long (greater than 12 months) it can be considered barren from a seed bank point of view. In this case reseeding may be required. Stockpiles should ideally be stored for no longer than six months. • The overburden, i.e., that layer of soil immediately beneath the topsoil, will be removed and stored separately from the topsoil. • Transport waste to waste rock dump. • No chemical pollution shall be allowed to contaminate the soils; any plant equipment found to be attributing to this shall be removed from the site and repaired. • In the event of a petrochemical (diesel, oil, fuels, etc.) spill, the Proponent must take suitable measures to contain the pollution and prevent it from spreading or seepage. Once the spill has been

LITHIUM ORE EXPLORATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
	contained, contaminated material (soil, etc.) shall be removed and disposed of at a registered hazardous waste disposal site.
Visual and Sense of Place	• Visual pollutants can further be prevented through mitigations (i.e., keep existing trees, introduce tall indigenous trees). • Quarries should be levelled once Lithium ore exploration activities cease to restore the visual sense of place of the area to its natural state. • The remains of all structures that may have been erected at the quarry shall be demolished and removed on completion of the project. • Care must be taken to ensure that all rehabilitated areas are similar to the immediate environment in terms of visual character, vegetation cover and topography and any negative visual impacts will be rectified to the satisfaction of the environmental consultant (HEEC CC) or MEFT officials. • Overburden will be placed back into excavation as part of the rehabilitation programme
Noise	• Continuous monitoring of noise levels should be conducted to make sure the noise levels at the lithium ore mining site does not exceed acceptable limits. • No activity having a potential noise impact should be allowed after 18:00 hours if possible. • In the event that activities continue outside the stipulated hours the contractor will communicate such occurrences to potentially affected communities prior to commencing such activities.
Dust and Emission	• Vehicles used on site to only use designated roads. • The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used. • During high wind conditions the proponent must make the decision to cease works until the wind has calmed down. • Cover any stockpiles with plastic to minimise windblown dust. • Provide workers with dust masks and other necessary PPE (gloves, work suits, sun hats etc.). • Maintenance of the road leading to the EPL sites to minimise the dust released when heavy trucks are travelling on the road.

LITHIUM ORE EXPLORATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
Fauna and Flora	• Prevent the destruction of protected tree species. • Encourage the regeneration and regrowth of trees with exposed roots in the area. • Do not clear cut the entire EPL sites, but rather keep the few individuals and/or clumps of trees/shrubs as part of the landscaping especially important for shade in the hot climate. • The trees that are to be kept should be clearly marked with "danger tape" to prevent accidental removal. Regular inspection of the marking tool should be carried out. • The very important trees should be "camped off" to prevent the unintended removal or damage to these trees. • Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species and have important ecological functions in terms of carbon sequestration from decomposing materials at the site. • Transplant removed trees where possible, or plant new trees in lieu of those that have been removed. • Prevent contractors who will be doing the mining from collecting wood and veld food such as amphibians, migrating birds, etc. during the lithium ore exploration phase. • Prevent contractors from fishing in the local ephemeral rivers or catching aquatic species. • No workers will be allowed to collect any plant or snare, hunt or otherwise capture any wild animal. All animal life, vegetation, firewood etc., will remain the property of the Ministry of Environment & Tourism or the custodian thereof and will not be disturbed, upset or used without their express consent. • No domestic animals will be permitted on the quarry sites by means of erecting a perimeter fence, small stock should graze at designated areas. • No animals shall be harmed during the course of lithium ore exploration/mining. Should snakes or dangerous wildlife be encountered, an expert must be called out to safely relocate them.
Access roads to the site	• Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction materials that may

LITHIUM ORE EXPLORATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
	hamper regrowth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation. • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the ECO may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation, be corrected and the area be seeded with a seed mix to the suitable specifications.
Heritage	• The project management should be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artifacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials or other categories of heritage resources are found during exploration activities . • In the event of such finds, exploration must stop and the project management or contractors should notify the National Heritage Council of Namibia immediately.
Flooding	• Lithium ore exploration activities should be minimised during the rainy season to reduce the impacts of flooding at the mining site.
Existing Service Infrastructure	• It is recommended that alternative and renewable sources of energy be explored and introduced into the employees' housing development to reduce dependency on the grid. • Solar panels should be considered to provide for general lighting and heating of water and buildings. • Water saving mechanisms should be incorporated within the lithium ore extraction infrastructure design and plans in order to further reduce water demands. • Re-use of treated wastewater should be considered wherever possible to reduce the consumption of potable water.
Social Impacts	No specific mitigation measures are required, only that the local community be consulted in terms of possible job creation opportunities and must be given priority if unspecialised job vacancies are available.

Table 8: Proposed mitigation measures for the transportation and operational phase

TRANSPORTATION & GENERAL OPERATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
Traffic & Equipment	• Limit and control the number of access points to the quarry sites. • Ensure that road junctions have good sightlines. • Vehicles' need to be in a road worthy condition and maintained throughout the lithium ore exploration phase. • Transport the materials in the least amount of trips as possible. • Adhere to the speed limit. • Implement traffic control measures where necessary. • All rotary saws used for the stone cutters must be securely stored on rails when not in use.
Surface and Ground Water Impacts	• No dumping of waste products of any kind in or near surface water bodies. • Heavy mining vehicles should be kept out of any surface water bodies and the movement of vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil/ fuel spillages from vehicles transporting the stones and machinery are minimised and that where these occur, that they are appropriately dealt with. • Drip trays must be placed underneath vehicles when not in use to contain all oil that might be leaking from these vehicles. • Contaminated runoff from the EPL site should be prevented from entering the surface and ground water bodies. • All materials on the site should be properly stored. • Disposal of waste from the sites should be properly managed and taken to the designated spaces for each type. • Workers should be given ablution facilities at the sites that are located at least 30 m away from any surface water and they should be regularly serviced.

TRANSPORTATION & GENERAL OPERATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
	• Washing of personnel or any equipment should not be allowed on the EPL site. Should it be necessary to wash equipment these should be done at an area properly suited and prepared to receive and contain polluted waters.
Health, Safety and Security	• All vehicular equipment operators must have valid licences for that vehicle class. • Personnel should not overnight at the EPL site, except the security personnel. • Ensure that all mining personnel are properly trained depending on the nature of their work. • Provide for a first aid kit and a properly trained person to apply first aid when necessary. • A wellness program should be initiated to raise awareness on health issues, especially the impact of sexually transmitted diseases as described above. • Provide free condoms in the workplace and to local community throughout the lithium ore mining period and promote their usage. • Facilitate access to Antiretroviral (ARV) medication. • Encourage HIV counselling and testing. • Encourage Voluntary Medical Male Circumcision (VMMC). • Provide awareness on the prevention of mother to child HIV Transmission. • Restrict unauthorised access to the EPL site and implement access control measures. • Clearly demarcate the EPL site boundaries along with signage of “no unauthorised access”. • Clearly demarcate dangerous areas and no-go areas on site. • Staff and visitors to the EPL site must be fully aware of all health and safety measures and emergency procedures. • The contractor must comply with all applicable occupational health and safety requirements. The workforce should be provided with all necessary Personal Protective Equipment where appropriate.
Noise	• Install technology such as silencers on the excavation machinery.

TRANSPORTATION & GENERAL OPERATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
	• Do not allow the use of horns as a general communication tool but use it only where necessary as a safety measure. • No amplified music should be allowed on site. • Inform immediate residents of the nearby village/farm/settlement about the exploration activities to commence and provide for continuous communication between the residents and contractor. • Limit mining times to acceptable daylight hours.
Municipal Services	• Poor waste management practices at this stage are particularly extensive due to a lack of established waste disposal facilities, ignorance of how to dispose of certain waste streams and failure to train the mining workforce in appropriate waste disposal. ➢ The types of waste that need to be disposed of at this point are waste rock, packaging material, oils and greases from mining fleet/plant, tyres and domestic refuse (since there will be camps near the EPL sites). • It is recommended that waste from the temporary toilets be pumped out and disposed of at the designated eco- friendly waste treatment site that is to be installed (EcoSmart). • A sufficient number of waste bins should be placed around the quarry site for the soft refuse. • The overburden and waste rock should be deposited at designated spaces at quarry to allow for easy access by people who would want to sell this waste rock to people interested in the other occurring non-target base and rare metals. • Solid waste will be collected and disposed of on a regular basis at the designated spaces.
Hazardous Substances	• Storage of the hazardous substances in a bunded area, with a volume of 120 % of the largest single storage container or 25 % of the total storage containers whichever is greater. • Refuel vehicles at a designated area that has a protective surface covering/geomembrane lining and utilise drip trays for stationary plant.

TRANSPORTATION & GENERAL OPERATION IMPACTS	
IMPACT	**MITIGATION MEASURES**
Social Impacts	No specific mitigation measures are required, only that the local community be consulted in terms of possible job creation opportunities and must be given priority if unspecialised job vacancies are available.

8 CONCLUSION AND RECOMMENDATIONS

The purpose of this Chapter is to briefly summarise and conclude the FESR and describe the way forward.

8.1 LITHIUM ORE EXPLORATION PHASE IMPACTS

With reference to **Table 7**, only one of the negative exploration phase impacts was deemed to have a high significant impact on the environment i.e., impact on biodiversity. This impact was assessed to a ***Medium to Low (negative)*** with mitigation. The cumulative lithium ore exploration impacts were assessed to a ***Medium to Low (negative)*** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the lithium ore exploration phase impacts is likely to be reduced to a ***Low (negative)***.

The most significant impact ***high (positive)*** is the social impact directly associated with the increasing provision of job opportunities and the social upliftment accompanied by economic development through investing in the Uis town through supporting the local shops and businesses since the people will have an increased disposable income and buying power. The intended activity further aims to promote local economic development through attracting more investors that want to import lithium ore for various uses.

8.2 LEVEL OF CONFIDENCE IN ASSESSMENT

With reference to the information available at the project planning cycle, the confidence in the environmental assessment undertaken is regarded as being acceptable for the decision-making, specifically in terms of the environmental impacts and risks. The Environmental Assessment Practitioner believes that the information contained within this FESR is adequate to allow MEFT: DEA to be able to determine the environmental acceptability of the proposed project.

It is acknowledged that the operational details will evolve during the detailed exploration & subsequent mining operations. However, these are unlikely to change the overall environmental acceptability of the operation of the Lithium ore exploration activities and any significant deviation from what was assessed in this FESR should be subject to further assessment. If this were to occur, an amendment to the Environmental Authorisation might be required in which case the prescribed process would be followed.

8.3 MITIGATION MEASURES

With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the lithium ore exploration phase impacts is likely to be reduced to a ***Low (negative)***. **It is further extremely important to include an Environmental Control Officer (ECO) on site during the relevant phases of the intended activity to ensure that all the mitigation measures discussed in this report and the EMP are enforced.**

The lithium ore extraction process is a relatively benign type of mining since no further processing is to be carried out on the exploration site but exported in its raw form. Rehabilitation back to the natural state is a key component and will be undertaken in a phased manner as the exploration activities progress. It is advised that the proponent strictly engages the guidelines outlined within the EMP with regards to the rehabilitation of the quarries once lithium ore excavation at the EPL site has ceased to restore the area to its near natural state and to reduce the associated negative environmental impacts.

It is noted that where appropriate, these mitigation measures and any others identified by MEFT: DEA could be enforced as Conditions of Approval in the Environmental Authorisation, should MEFT: DEA issue a positive Environmental Authorisation.

8.4 OPINION WITH RESPECT TO THE ENVIRONMENTAL AUTHORISATION

Regulation 15(j) of the EMA requires *that the EAP include an opinion as to whether the listed activity must be authorised and is the opinion is that it must be authorised, any condition that must be made in respect of that authorisation*.

It is recommended that the lithium ore exploration activities be authorised, as the activities provide employment for the local people and contribute to local & national economic development through attracting more investors to the Uis town and surrounding settlements/villages and additionally increasing people's livelihoods through job creation.

The significance of the social impact on the residents of Uis was deemed to be ***High (positive).*** The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this Report and the EMP attached in **Annexure G**. If authorised, the implementation of an EMP should be included as a condition of approval.

8.5 WAY FORWARD

The Final Environmental Scoping Report will be submitted to MEFT: DEA for consideration and decision making. If MEFT: DEA approves, or requests additional information / studies all registered I& APs and stakeholders will be kept informed of progress throughout the assessment process.

9 REFERENCES

Branch, B. 1998. Field guide to snakes and other reptiles of Southern Africa. Struik publisher. Cape Town.

Herbarium of Namibia (WIND). 2015. BRAHMS Database. National Herbarium of Namibia (WIND), National Botanical Research Institute, MAWF, Windhoek, Namibia.

Klaassen, E. &Kwembeya, E. 2013.A Checklist of Namibian Indigenous and Naturalised Plants. National Botanical Research Institute: Windhoek.

Mannheimer, C. & Curtis, B. 2018. Le Roux and Muller's Field Guide to Trees and Shrubs of Namibia; 2nd ed. Windhoek. Namibia Publishing House.

Marais, J. 2004. A Complete guide to the snakes of Southern Africa. Struik Nature. Cape Town.

Newman, K. 2000. Newmans Birds by Colour, Southern Africa Common Birds. Arranged by Colour, Struik New Holland Publishing (Pty) Ltd.

Mannheimer, C. & Curtis, B. A. (eds) 2009. Le Roux and Müller's Field Guide to the Trees and Shrubs of Namibia. Windhoek: Macmillan Education Namibia.

Mendelsohn, J., Jarvis, A., Roberts, C. & Robertson, T. 2003.Atlas of Namibia. David Philips Publisher. Cape Town.

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

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

Namibia Statistics Agency (NSA), 2011. Namibia 2011 Population and Housing Census Main Report. Available at: http://nsa.org.na/page/publications.

Nicole Grünert: Namibia Fascination of Geology (2003), Gabi Schneider: The Roadside Geology of Namibia (2004).

"Table 4.2.2 Urban population by Census years (2001 and 2011)" (PDF). Namibia 2011 – Population and Housing Census Main Report. *Namibia Statistics Agency. p. 39. Retrieved 13 June 2019.*

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

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

World Weather online, 2022. Available at: https://www.worldweatheronline.com/uis-weather-averages/erongo/na.aspx [Accessed on 18/03/2022].

https://www.bdo.com.na/en-gb/industries/natural-resources/mining-in-namibia
[Accessed on 18/03/2022].