Ya Otto Mining and Exploration (Pty) Ltd

Final Updated Environmental Scoping and Environmental Management Plan (EMP) Report to Support the Applications for Renewal of the Environmental Clearance Certificate (ECC) for Ongoing and Proposed Exploration / Prospecting in the Exclusive Prospecting License (EPL) No. 5517, Khorixas District, Kunene Region,

WEST CENTRAL NAMIBIA

May 2022

Ya Otto Mining and Exploration (Pty) Ltd
P. O. Box 90001
Klein Windhoek
WINDHOEK NAMIBIA

PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

TYPE OF AUTHORISATIONS REQUIRING ECC

Exclusive Prospecting License (EPL) No. 5517

NAME OF THE PROPONENT

Ya Otto Mining and Exploration (Pty) Ltd

COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

ADDRESS OF THE PROPONENT AND CONTACT PERSON

Ya Otto Mining and Exploration (Pty) Ltd
P. O. Box 90001
Klein Windhoek
WINDHOEK NAMIBIA

PROPOSED PROJECT

Ongoing and Proposed Minerals Exploration / Prospecting in the Exclusive Prospecting License (EPL) No. 5517

ECC APPLICATION LOCATION COORDINATES

Khorixas District, Kunene Region,
Coordinates: -20.690000, 13.378889

ENVIRONMENTAL CONSULTANTS

Risk-Based Solutions (RBS) CC
(Consulting arm of Sivieda Group Namibia)
10 Schützen Street, Erf No. 7382, Sivieda House
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Email: smwiya@rbs.com.na
Global Office / URL: www.rbs.com.na

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

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

Summary Profile and Qualifications of the Environmental Assessment Practitioner (EAP) / International Resources Consultant – Dr Sindila Mwiya

Dr Sindila Mwiya has more than twenty (20) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining, energy and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. He continues to work internationally in the resources (mining and petroleum) and energy sectors, from permitting through to exploration and production. From the frontier regions (high risk hydrocarbons exploration zones) of South Africa and Namibia, to the prolific oil and gas fields of the Middle East, Angola and the West African Gulf of Guinea, Dr Mwiya has been directly involved in field-based aerial, ground and marine geophysical (gravity, magnetics and seismic) surveys, been onboard exploration drilling rigs, onboard production platforms, conducted public and stakeholder consultations and engagements, and worked with highly technical and well organised and committed clients and third-party teams from emerging and well established global resources and energy companies from many countries such as the UK, France, USA, Russia, Canada, Croatia, Norway, the Netherland, Spain, Brazil, China, South Africa, Equatorial Guinea, Angola and Nigeria. He is fully aware of all the competing interests and niche donation-based business environmental advocacy opportunism that exists in the resources sector from the local, regional, and international perspectives.

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

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

He has supervised and continues to support several MScs and PhDs research programmes / projects and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors, and Namibian development partners. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), Strategic Environmental Assessment (SEA) Regulations, Environmental Impact Assessment (EIA) Regulations as well as the SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia. Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD within the broader fields of Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence with a research thesis titled Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

WINDHOEK MAY 2022

Disclaimer

The EAP or any of the consultants of Risk-Based Solutions (RBS) CC have not been directly or indirectly involved in the field-based environmental performance monitoring or verifications of the exploration activities, implementation of the Environmental Management Plan (EMP), conditions of the Environmental Clearance Certificate (ECC) and all other related certificates, permits, authorisations or consents. This Environmental Monitoring Report has been prepared based on the information and data provided by the Proponent. All the environmental monitoring and reporting liabilities rest with the Proponent.

CONTENT LIST

LIST OF FIGURES

LIST OF TABLES

NON-TECHNICAL SUMMARY

Ya Otto Mining and Exploration (Pty) Ltd was issued with an Exclusive Prospecting License (EPL), EPL 5517, located in the Skeleton Coast Park of Namibia in the Toscanini area and approximately 155km to the north of Henties Bay and just north of the Huab River Mouth, extending for some 50 km northwards to just south of the Koigab River Mouth as well as some 5km into the interior from the coast. Following the various renewal phases, the EPL 5517 was granted on the 22/062015 and will expire on the 30/05/2023. The EPL 5517 cover a total area of 20132.8598 Ha and is granted for base and rare metals, industrial minerals, precious metals, and precious stones group.

The proponent intends to continue with exploration activities within the EPL area covering desktop studies, followed by site-specific activities using techniques such as aerial and ground geophysical surveys, geological mapping, geochemical sampling, trenching, drilling and bulk sampling and test mining.

The proposed / ongoing minerals exploration activities are listed in the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC).

This updated Scoping and EMP report has been prepared in order to support the applications for the renewal and transfer of the ECC granted on 3rd September 2015 to Ya Otto Investment Holdings (Pty) Ltd now been renamed Ya Otto Mining and Exploration (Pty) Ltd .

Portions of the EPL 5517 area have been impacted by previous prospecting activities during the 1970's and mid 2000's and only some degree of rehabilitation measures to prospecting trenches and pits were applied. The present state of the environment before renewed prospecting activities are carried out is therefore documented in this report (Chapter 4).

The climate is arid with coastal fog and strong southerly and south-westerly winds throughout the year. The terrestrial habitats include coastal and inland dunes, salt pans, rocky outcrops and gravel plains. The marine habitats include sandy beaches and rocky headlands which occur along this high energy coastline. Biota of conservation importance includes seals, seabirds, brown hyena, and a great diversity of endemic northern Namib plants. The natural resources of economic importance include tourism, fish, salt- and diamond mining.

The population of the Kunene region is amongst the lowest density of the regions in Namibia. There are no permanent settlements near the mining sites. Access to the area is restricted because of National Park security regulations.

The coastal economy of Namibia is dependent on tourism the fishing industry and small-scale salt mining, as well as the accompanying infrastructure which provide the bulk of employment in the region. Land and marine use include mining, seasonal rock lobster and other fishing and tourism. Shell middens of early to late Stone Age form part of the interesting archaeological record of the area. Historical mine sites and shipwrecks are evidence of man's attempts to mine the diamonds along this coastline.

The area is considered sensitive as it is located in the Northern Namib Desert coastal zone, one of the biodiversity hotspots of the world. The scenic landscapes and presence of rare plants, archaeological, historical and cultural sites, seabirds and seal colonies make it an asset to Namibia for conservation and future tourism opportunities.

The area covered by EPL 5517 is of significance and importance to tourism. The EPL traverses the main road through the Skeleton Coast National Park. All the potential impacts to the environment as well as the effects such impacts may have on the tourism potential of this area are detailed in Chapter 6 of this report.

The regulatory framework against which Ya Otto Investment Holdings needs to comply is detailed in Chapter 5 of this report. Proposed mitigatory steps to be taken in order to prevent or minimise any negative effect to the environment as a result of exploration (sampling) operations are also provided and summarized in Chapter 8 of this report. Upon screening, rehabilitation will also commenced (concurrent rehabilitation), as detailed in Chapter 7 of this report.

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

Based on the findings of this Environmental Scoping and Environmental Management Assessment (EMP), it is hereby recommended that the proposed / ongoing exploration activities be issued with an Environmental Clearance Certificate (ECC). The proponent shall take into consideration the following key requirements for implementing the proposed exploration programme:

(i) The proponent shall negotiate Access Agreements with the land owner/s;

(ii) The proponent shall obtain park permits from the Ministry of Environment and Tourism (MET) to enter the portion of the EPL falling within the Skeleton Coast Park;

(iii) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the proponent and MET in line with all applicable national regulations, and;

(iv) Where possible, and if water is found during the detailed exploration boreholes drilling operations, or if the desalination plant is built in the area, the proponent shall support other land uses in the area in terms of access to freshwater supply for both human consumption and wildlife as may be requested by the local community / land owners/s. The abstraction of the groundwater resources or seawater for desalination including discharge of wastewater shall include continuous monitoring, sampling and quality testing on a bi-annual basis, and that the affected stakeholders must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as maybe applicable.

Once a viable project has been defined for mining operations (economic resources are delineated), a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports shall be prepared as part of the feasibility study with respect to the test mining or possible mining operations. The site-specific EIA and EMP shall cover the area identified to have potential economic minerals resources including the pit / shaft area/s, waste rock, tailings dump, access, office blocks, water and energy infrastructure support areas (water, energy and road / access).

In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for the test mining / mining stages, the following field-based and site-specific specialist studies shall be undertaken as prat of the EIA and EMP for possible test mining or mining operations in an event of a discovery of economic minerals resources and possible development of a mining project:

(i) Assessment of all linear structures such as roads, powerline and water supply including assessment of the desalination plant covering the abstraction of sweater and discharge of wastewater;

(ii) Groundwater studies including modelling as maybe applicable;

(iii) Site-specific field-based flora and fauna diversity;

(iv) Archaeology;

(v) Dust, noise and sound modelling linked to engineering studies;

(vi) Socioeconomic assessment, and;

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

1. BACKGROUND

1.1 Introduction

Ya Otto Mining and Exploration (Pty) Ltd hold minerals rights for base and rare metals, industrial minerals, precious metals, and precious stones group under the Exclusive Prospecting License (EPL) 5517. The EPL 5517 was granted on the 22/062015 and will expire on the 30/05/2023 and cover a total area of 20132.8598 Ha.

The proponent intends to continue with exploration activities within the EPL area covering desktop studies, followed by site-specific activities using techniques such as aerial and ground geophysical surveys, geological mapping, geochemical sampling, trenching, drilling and bulk sampling and test mining.

1.2 Regulatory Requirements

The proposed / ongoing minerals exploration / prospecting activities in the EPL 5517 falls under the activities that are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC). To obtain the ECC for the listed activities, the proponent is required to have undertaken Environmental Assessment comprising Environmental Scoping and Environmental Management Plan (EMP) for the proposed minerals prospecting programme.

In fulfilment of the environmental requirements, the proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultants, led by Dr Sindila Mwiya (Annex 2) as the Environmental Assessment Practitioner (EAP) to undertake the Scoping and EMP in order to support the application for Environmental Clearance Certificate (ECC).

This updated Scoping and EMP report has been prepared by Risk-Based Solutions (RBS) CC in order to support the applications for the renewal and transfer of the ECC granted to the Proponent on the 17th April 2019.

1.3 Location, Site Description, Land Use and Infrastructure

1.3.1 Location and Site Description

The EPL 5517 is located in the Khorixas District of the Kunene region and fall within the Skeleton Coast Park (Figs. 1.2 -1.5). Locally, he EPL 5517 is located around Toscanini area and approximately 155 km to the north of Henties Bay and just north of the Huab River Mouth, extending for some 50km northwards to just south of the Koigab River Mouth as well as some 5km into the interior from the coast (Figs. 1.3 and 1.4).

Locally, the EPL 5517 area is wedged within an area bordering the Atlantic Ocean to the west, strict nature reserve Skeleton Coast Park zonation of the Northern Namib Desert to the east and the Huab and Koigab Ephemeral Rivers to the south and north respectively (Figs. 1.3 and 1.4).

1.3.2 Current Land Uses

The entire Toscanini EPL falls within the Skeleton Coast National Park with conservation and tourism as main activities.

1.3.3 Supporting Infrastructure and Services

The main access road to the Skeleton Coast Park passes directly through the EPL area. The surface infrastructure is limited to the current access road to Toscanini, the C34 road from Swakopmund via Henties Bay and Toscanini north to Torra Bay and beyond (Fig. 1.3). An extensive network of rudimentary roads and tracks associated previous exploration and diamond mining operations exist in the project area.

The EPL area has no mobile services with no nearby national or local water and electricity infrastructure network. However, the proposed exploration programme will not require major water and energy supplies. Fresh water will be delivered by truck from Henties Bay and stored in a 500 litter container while the water for the exploration and test mining washing plant associated with diamond prospecting will be obtained from the sea.

Electricity will be provided by means of 2 x 100kVA diesel generators and solar as may be required. Diesel fuel is to be stored in a diesel tank with a storage capacity of 500 litters and will be located on an impervious surface with an impervious surrounding wall capable of holding 110% of tank capacity. Diesel generators will be provided with drip trays to prevent spillages.

However, in an event of a discovery of economic minerals deposit that could be developed into a mining project, the sources of water supply will be provided by NamWater from possible pipeline from any nearby NamWater Scheme or construction of a new desalination plant in Joint Venture with the investors.

Electricity supply will be provided by NamPower from already existing regional infrastructure within the Erongo Region.

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

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16 April 2019

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

The Managing Director
Ya Otto Mining and Exploration (Pty) Ltd
P.O. Box 90001
Klein Windhoek
Namibia

Dear Sir/Madam

SUBJECT: ENVIRONMENTAL CLEARANCE CERTIFICATE FOR THE EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENSE (EPL) 5517 SITUATED IN KHORIXAS, KUNENE REGION

The Environmental Management Plan submitted is sufficient as it made provisions of the environmental management concerning the proposed activities. From this perspective, regular environmental monitoring and evaluations on environmental performance should be conducted. Targets for improvements should be established and monitored throughout this process.

This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project. From that perspective, I issue this environmental clearance certificate with the following condition (s); (a) contours and coordinates currently applied for should be within two (2) kilometers north of Toscanini (Huab River) up to Springbok River, before Torra Bay and (b) attached conditions applicable to projects in proclaimed protected areas in **Annexure 1**.

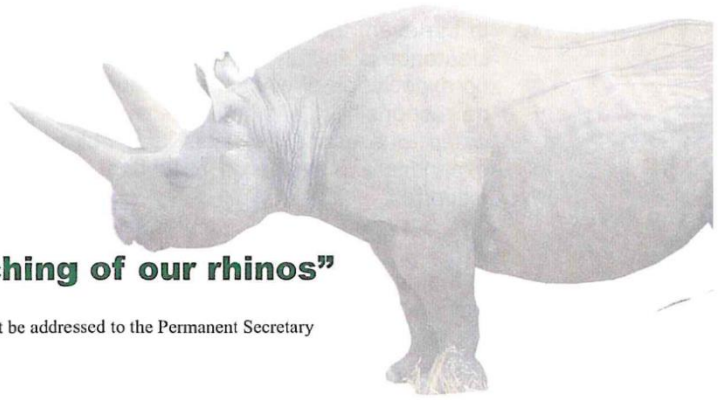
On the basis of the above, this letter serves as an environmental clearance certificate for the project to continue. However, this clearance letter does not in any way hold the Ministry of Environment and Tourism accountable for any misleading information, nor any adverse effects that may arise from this project's activities. Instead, full accountability rests with Ya Otto Mining and Exploration (Pty) Ltd.

This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office.

Yours sincerely,

Fredrick Mupoti Sikabongo
DEPUTY ENVIRONMENTAL COMMISSIONER

MINISTRY OF ENVIRONMENT AND TOURISM
P/Bag 13306
Windhoek, Namibia
2019 -04- 17
Office of the
Deputy Environmental Commissioner



"Stop the poaching of our rhinos"

All official correspondence must be addressed to the Permanent Secretary

Figure 1.1: Copy of the ECC granted on 17th April 2019 to be renewed.

Figure 1.2: Regional location of the EPL 5517.

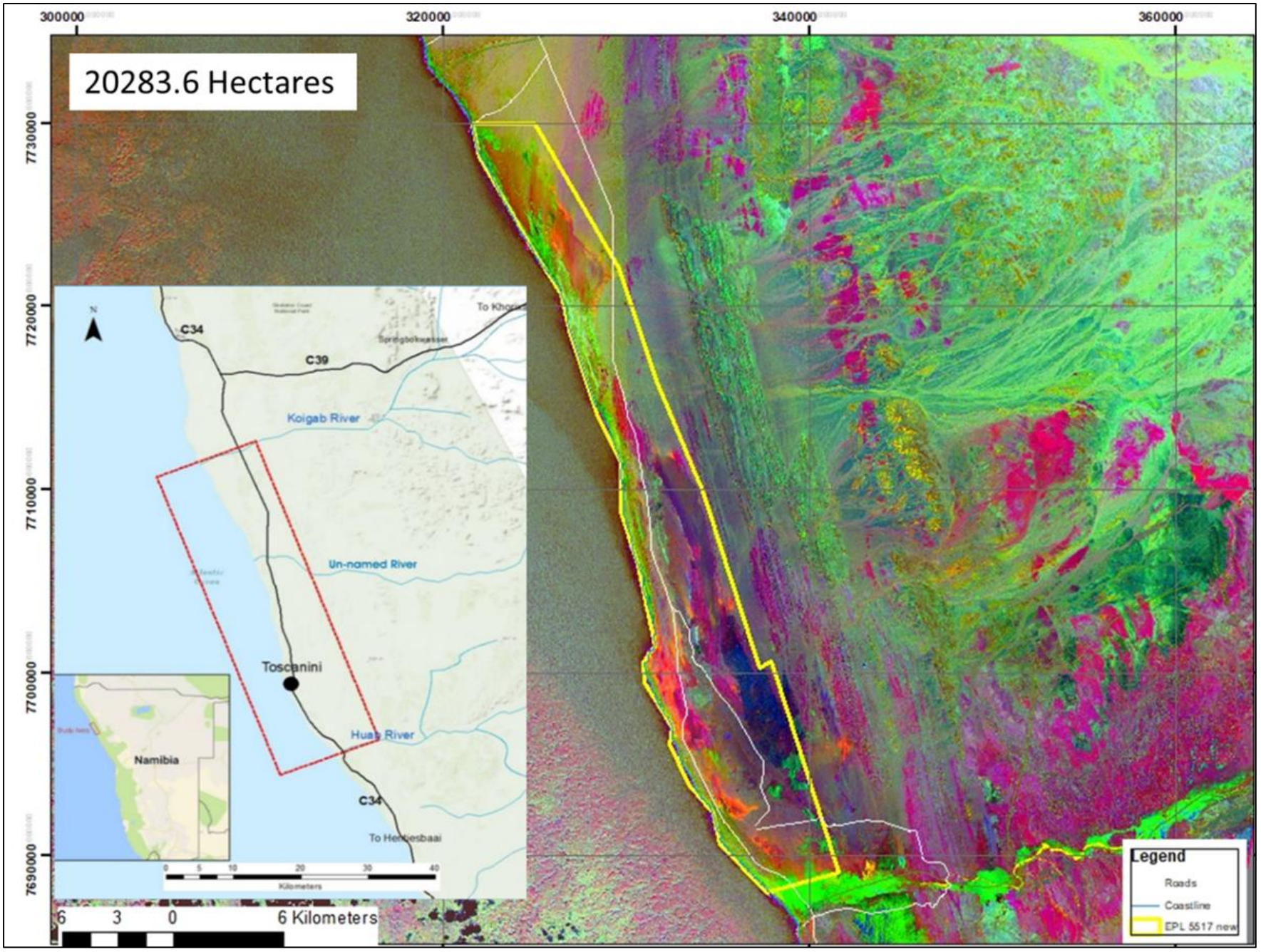


Figure 1.3: Detailed regional location of the EPL 5517.

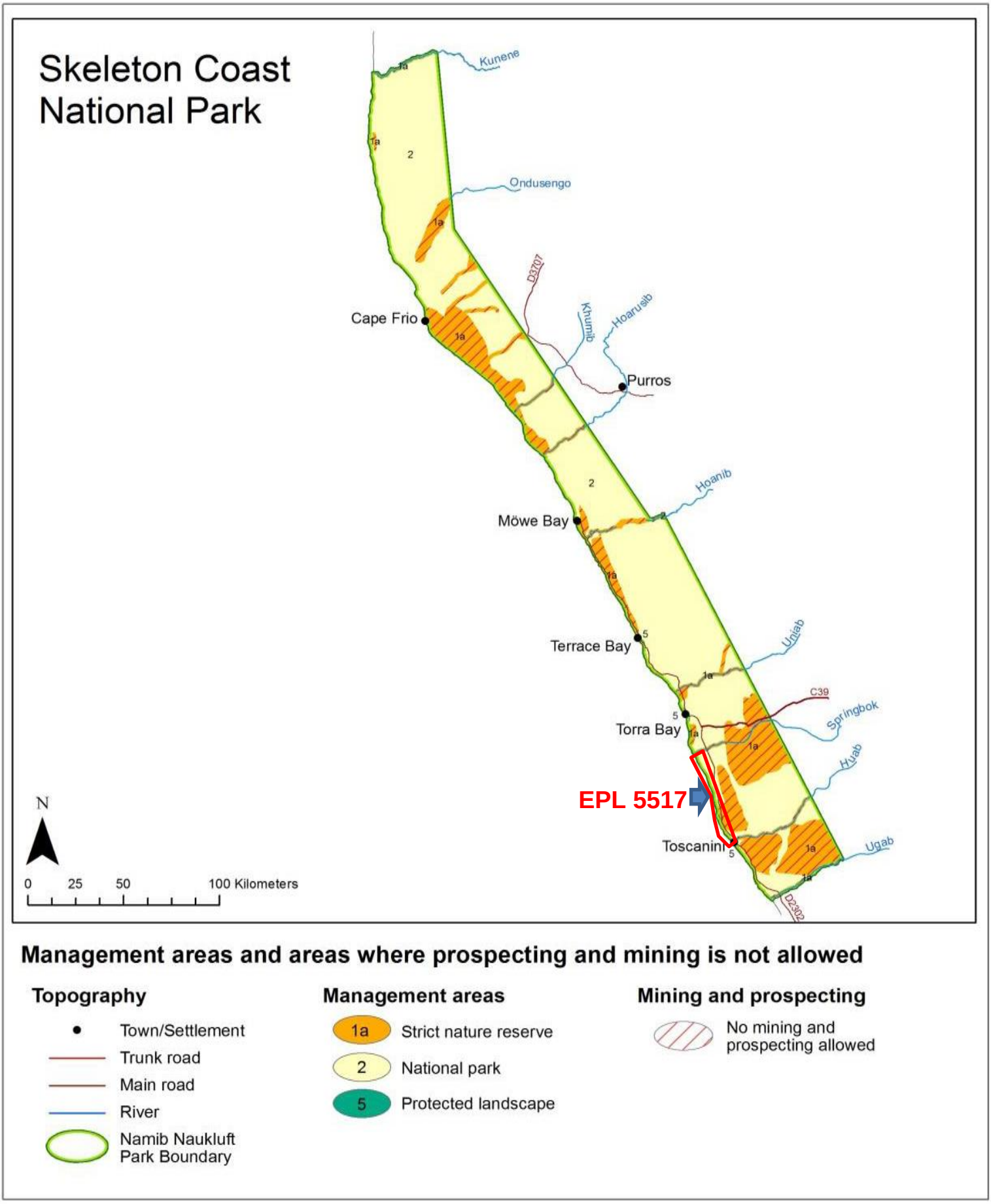
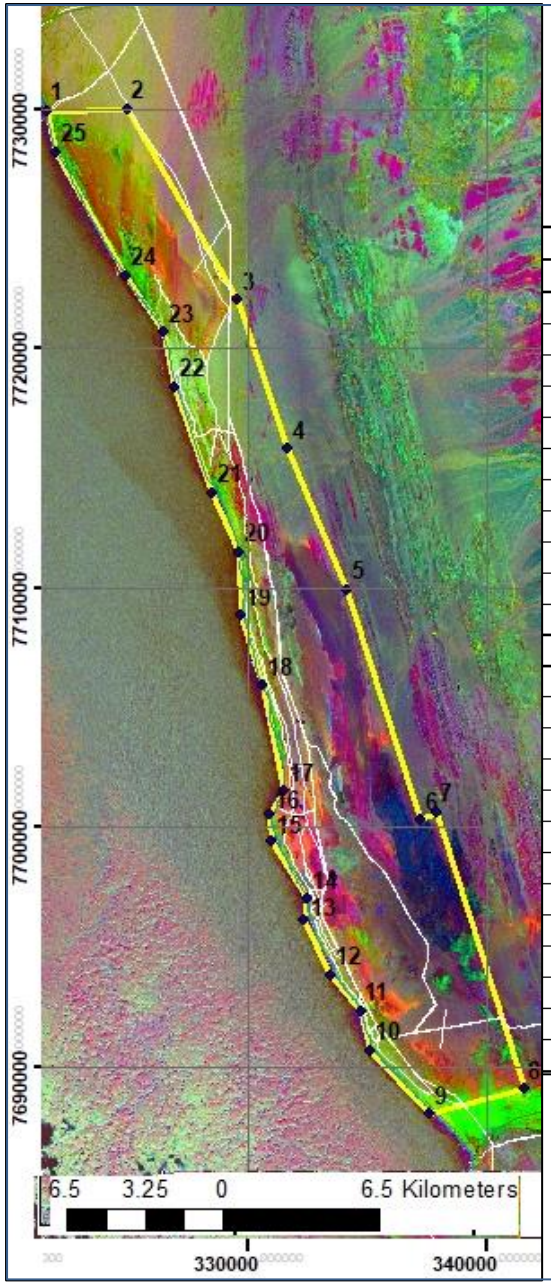


Figure 1.4: The Skeleton Coast Park showing the location of the EPL 5517 wedged within an area bordering the Atlantic Ocean to the west, strict nature reserve zonation of the Northern Namib Desert to the east and the Ugab and Springbok Ephemeral Rivers to the south and north respectively.



Ya Otto Mining and Exploration (Pty) Ltd Coordinate Conversions								
Name	Easting UTM 33S	Northing UTM 33S	Latitude (DD) South	Longitude (DD) East	Latitude (DMS)		Longitude (DMS)	
1	321609	7729965	-20.520677	13.289123	-20° 31' 14.4366"	S	13° 17' 20.8428"	E
2	324970	7730024	-20.520459	13.321352	-20° 31' 13.6518"	S	13° 19' 16.8666"	E
3	329605	7722033	-20.593061	13.365023	-20° 35' 35.019"	S	13° 21' 54.0828"	E
4	331685	7715799	-20.649557	13.384381	-20° 38' 58.4052"	S	13° 23' 3.771"	E
5	334178	7709936	-20.702737	13.407751	-20° 42' 9.8526"	S	13° 24' 27.903"	E
6	337236	7700266	-20.790350	13.436209	-20° 47' 25.26"	S	13° 26' 10.3518"	E
7	337891	7700592	-20.787463	13.442530	-20° 47' 14.8662"	S	13° 26' 33.1074"	E
8	341580	7689013	-20.892369	13.476911	-20° 53' 32.5278"	S	13° 28' 36.879"	E
9	337629	7687974	-20.901411	13.438838	-20° 54' 5.079"	S	13° 26' 19.8168"	E
10	335101	7690622	-20.877270	13.414790	-20° 52' 38.1714"	S	13° 24' 53.2434"	E
11	334732	7692297	-20.862108	13.411403	-20° 51' 43.5882"	S	13° 24' 41.0502"	E
12	333473	7693789	-20.848519	13.399448	-20° 50' 54.6678"	S	13° 23' 58.0122"	E
13	332386	7696079	-20.827737	13.389223	-20° 49' 39.8526"	S	13° 23' 21.2022"	E
14	332468	7696965	-20.819742	13.390096	-20° 49' 11.0712"	S	13° 23' 24.345"	E
15	331021	7699433	-20.797320	13.376434	-20° 47' 50.3514"	S	13° 22' 35.1618"	E
16	330924	7700495	-20.787719	13.375605	-20° 47' 15.7878"	S	13° 22' 32.178"	E
17	331541	7701475	-20.778923	13.381625	-20° 46' 44.1222"	S	13° 22' 53.8494"	E
18	330613	7705905	-20.738826	13.373141	-20° 44' 19.773"	S	13° 22' 23.3076"	E
19	329695	7708831	-20.712314	13.364611	-20° 42' 44.3298"	S	13° 21' 52.5996"	E
20	329674	7711501	-20.688196	13.364668	-20° 41' 17.5056"	S	13° 21' 52.8042"	E
21	328489	7713987	-20.665633	13.353536	-20° 39' 56.2782"	S	13° 21' 12.7296"	E
22	326936	7718410	-20.625541	13.339066	-20° 37' 31.947"	S	13° 20' 20.6376"	E
23	326468	7720667	-20.605112	13.334798	-20° 36' 18.4026"	S	13° 20' 5.2722"	E
24	324888	7723037	-20.583559	13.319876	-20° 35' 0.8124"	S	13° 19' 11.5536"	E
25	321973	7728212	-20.536544	13.292437	-20° 32' 11.5578"	S	13° 17' 32.7726"	E

Figure 1.5: Detailed location of the EPL 5517 showing the coordinates.

1.4 Project Motivation

The raised beach areas north of the Huab River at Toscanini were identified as a target that can be developed to sustain diamond and heavy mineral production for the foreseeable time, thereby enabling Ya Otto Mining and Exploration (Pty) Ltd to continue making a significant contribution to Namibia's social and economic sectors. The raised beach areas are located in the Skeleton Coast National Park have not been mined in past because access has been restricted for more than 30 years because of conservation regulations.

The proposed / ongoing exploration activities has some limited socioeconomic benefits which are mainly centred around the payment of the annual license rental fees to the Central Government through the Ministry of Mines and Energy (MME) and value addition to the potential minerals resources in the area which otherwise would not have been known if the exploration in the EPL 5517 did not take place.

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

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

1.5 Environmental Assessment Process and Steps

The environmental assessment process used for the this project took into considerations the provisions of the Environmental Impact Assessment (EIA) Regulations, 2012 and the Environmental Management Act (EMA), 2007, (Act No. 7 of 2007) as outlined in Fig. 1.5. The steps to be taken are summarised as follows:

(i) Project screening process was undertaken in 2015;

(ii) A Draft Scoping/ BID Report prepared 2015;

(iii) Public \ stakeholders consultation undertaken as part of the assessment completed in July 2015;

(iv) The finalised EIA and EMP reports used to support the applications for Environmental Clearance Certificate (ECC) for the proposed minerals exploration activities in EPL 5517. The ECC application was submitted to the Office Environmental Commissioner in 2015;

(v) An Environmental Clearance Certificate (ECC) was issued by the Environmental Commissioner in MET dated 3rd September 2015 (Fig. 1.1), and;

(vi) This updated Scoping and EMP reports dated March 2019 has been prepared by Risk-Based Solutions (RBS) CC in order to support the applications for renewal and transfer of the Environmental Clearance Certificate (ECC) dated 3rd September 2015 (Fig. 1.1). The renewal and transfer of ECC applications will be submitted to the Office Environmental Commissioner through the Ministry of Mines and Energy (Competent Authority) on **Monday, 19th March 2019**.

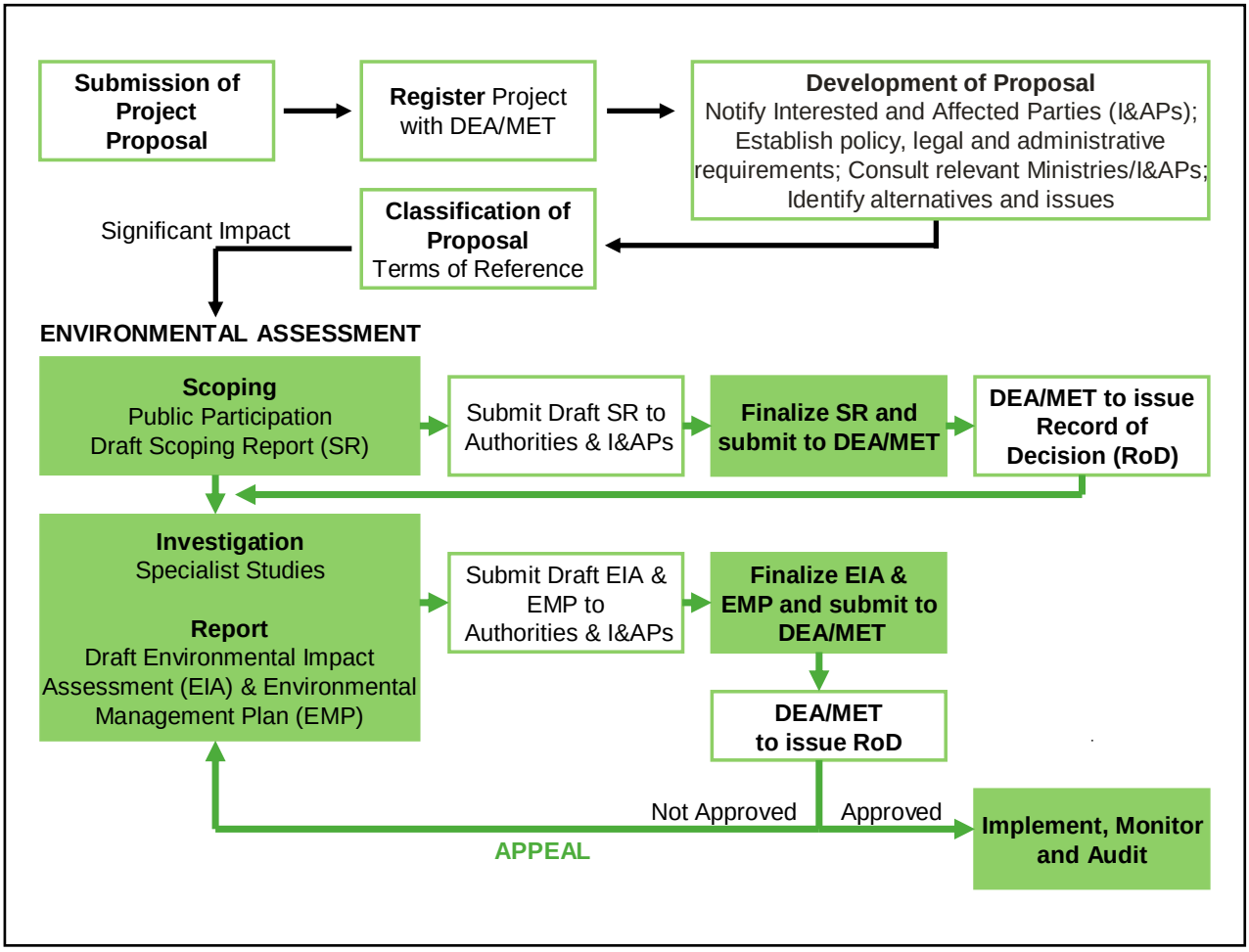


Figure 1.5: Schematic presentation of Namibia's Environmental Assessment Procedure.

1.6 Assumptions and Limitations

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

- The proposed exploration activities as well as all the plans, maps, EPL Boundary / coordinates and appropriate data sets received from the proponent, project partners, regulators, Competent Authorities and specialist assessments are assumed to be current and valid at the time of conducting the studies and compilation of this environmental report;

- The impact assessment outcomes, mitigation measures and recommendations provided in this report are valid for the entire duration of the proposed exploration / prospecting activities;

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

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

1.7 Structure of the Report

The following is the summary structure outline of this scoping and EMP report.

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

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

3. **Section 3: Regulatory Framework** covering the proposed / ongoing exploration with respect to relevant legislation, regulations and permitting requirements;

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

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

6. **Section 6: Environmental Management Plan (EMP)** describing the detailed mitigation measures with respect to the identified likely impacts;

7. **Section 7: Conclusions and Recommendations**- Summary of the findings and way forward.

8. **SECTION 8: Annexes**

2. DESCRIPTION OF THE EXPLORATION

2.1 General Overview

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

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

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

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

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

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

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

The following earth moving and mineral processing equipment will be used at various stages of the proposed exploration and test mining operation in the EPL 5517:

(i) Earthmoving Equipment:

- 1 x Hitachi 2 450 LCH;
- 1 x Hitachi Lx210 3,1m³;
- 2 x Diesel Bouser 500L;
- 1 x Toyota SRX 4x4;
- Samil 100 with Crane;
- 1 x 25 ton Class ADT, and;
- Schrumm RC drill and compressor.

(ii) Processing Equipment:

- ❖ Trommel screen with grizzly;
- ❖ 30 ton/h Explorer/Jig system;
- ❖ 50 ton/h jet pump system, and;
- ❖ Pleitz jig final recovery.

An important component of this Scoping and EMP is the minimisation of further vehicle tracks on the sensitive desert pavement. Maximum use of existing haulage roads and tracks is therefore vital and a detailed mining plan indicating proposed haulage routes is required and mitigation measures are provided in Section 6.

2.2 Proposed Detailed Local Field-Based Activities

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

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

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

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

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

2.3 Prefeasibility and Feasibility Study

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

(i) Detailed site-specific surveys;

(ii) Detailed geological mapping;

(iii) Bulk sampling and testing;

(iv) Ore reserve calculations;

(v) Geotechnical studies for mine design;

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

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

(viii) Environmental Impact Assessment for mining;

(ix) Environmental Management Plan for mining;

(x) Test mining activities, and;

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

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

3. REGULATORY FRAMEWORK

3.1 Minerals Exploration Legislation and Regulations

The Ministry of Mines and Energy (MME) is the competent authority with respect to minerals prospecting and mining activities in Namibia. The Minerals (Prospecting and Mining) Act (No 33 of 1992) is the most important legal instrument governing minerals prospecting / exploration and mining activities. Several explicit references to the environment and its protection are contained in the Minerals Act, which provides for environmental impact assessments, rehabilitation of prospecting and mining areas and minimising or preventing pollution.

3.2 Environmental Regulations

3.2.1 Environmental Assessment Requirements and Procedures

Environmental Assessment (EA) process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). The proposed / ongoing field –based exploration activities falls within the categories of listed activities that cannot be undertaken without an Environmental Clearance.

3.2.2 Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed / ongoing project including their role in regulating environmental protection are listed in Table 3.1.

Table 3.1: Government agencies regulating environmental protection in Namibia.

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

3.2.3 Other Regulatory Permits

Industrial effluent likely to be generated by the proposed / ongoing minerals exploration activities must comply with provisions of the Government Gazette No 217 dated 5 April 1962 (Table 3.2).

Table 3.2: R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

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

3.3 Recommendations on Regulatory Framework

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

(i) Exclusive Prospecting License (EPL) or Mining Licenses (ML) (license) as maybe applicable from Department of Mines in the Ministry of Mines and Energy;

(ii) Environmental Clearance Certificate (ECC) from the Department of Environmental Affairs in the Ministry of Environment and Tourism (MET);

(iii) Fresh Water Abstraction permits and Waste Water Disposal permits from the Department of Water Affairs in the Ministry of Agriculture, Water and Forestry, and;

(iv) All other permits as maybe become applicable during the proposed exploration operations including permits to enter the park and involvement in protected resources such as diamonds.

4. RECEIVING ENVIRONMENT

4.1 Physical Geography and Visual Impacts

The Namib Desert borders the Namibian coastline with Atlantic Ocean and stretching inwards to about 120-150 km. The Topography of Land rises steadily from sea level to about 1000 m across the Namib Desert. Most of the land is flat to undulating gravel plains, with occasional ridges and isolated inselberg hills and mountains.

4.2 Climate Components

4.2.1 Rainfall and Temperature

The EPL 5517 falls within a very arid area with temperatures influence by the coastal Atlantic Ocean's Benguela Current and the Namib Desert. Hot conditions can occur towards inland during the day and cooler at night. The Region has temperatures ranging from 5°C to 45°C with an annual average temperature of 24°C. Evaporation rates may be less than 2400 mm per year. The Kunene Region climate is characterised by the following:

- Very low rainfall, averaging about 300 mm in the north-eastern parts and less than 15 mm at the coast. The rain falls within The EPL 5517 is within an annual rainfall pattern of less than 50 mm.;

- Coastal fog that brings moisture in frequent but small amounts, which moderates the heat and moisture extremes on the western side;

- A steep rainfall gradient across the short breadth of the Namib and relatively wetter areas in the eastern part of the region. The rain and fog gradients run in opposite directions, with the zone of low precipitation from both sources in the middle zone;

- The wind regime which includes prominent southerly and south-westerly winds during the summer, and north-easterly winds in the winter that sometimes reach gale force and mobiles the entire desert surface (including tailings), and;

- The Kunene Region has different climate zones running parallel to the coastline four coastal climatic zone including The Coastal Foggy Zone, Middle Desert Zone, Eastern Desert Zone, Pro-Namibian Zone, the escarpment and the Namibian Highlands.

4.2.2 Wind Patterns

4.2.2.1 Overview

The cold Banguel Current on the Namibian coastline influences the South-westerly winds. The Stronger winds experienced in the coastal towns and surroundings are mainly north-easterly or east winds. These winds are usually dry and hot with a wind speed of about 27km/hour. This influence is experience to up to 50 days annually between the months of April to September.

4.2.2.2 Air Quality

Although likely to be very limited, the proposed filed-based exploration activities will contribute to the existing dust fallout in the general area. The threshold wind speed is dependent on the erosion potential of the exposed surface, which is expressed in terms of availability of erodible

material per unit area. Any factor that binds the erodible material will significantly reduce the availability of erodible material on the surface, thus reducing the erosion potential of the surface. Namibia does not have air quality standards. Nonetheless, the proponent must aim at reducing hazardous air pollutant (HAPs) emissions to levels that comply with long-term regional (SADC) and international standards air quality guidelines. Detailed site –specific air quality assessment and modelling must form part of the key specialist studies that may be undertaken as part of the EIA and EMP to be implemented if a viable mining project is developed within the EPL area.

4.3 Fauna and Flora

4.3.1 Fauna

The project area has a relatively low species richness of mammals. The endangered Brown Hyena (Hyena brunnea) occurs in this area and numerous tracks were observed during the site visit. Special care is needed to maintain the tenuous population of this species in the region. Oryx and springbok occur within the surrounds of the Huab river bed.

Fourteen terrestrial birds in western Erongo are Namibian endemic, and of these, four are endemic to the Namib Desert. These include the Rüppel's korhaan, Dune lark, Gray's lark and Damara tern (Seely, 1992). Most of these endemic bird species occur on gravel and inter-dunal plains.

Of particular relevance to this EIA study, is the Damara Tern, which is classified in the Red Data Book as "rare and near-threatened". This seabird nests on land, but forages in and behind the surf zone. According to Simmons (1992), dried saltpans are the preferred habitat for nesting Damara Terns, and evidence suggests that breeding pairs are more successful in such areas.

Other important breeding habitats include flat to undulating smooth gravel plains, particularly lightly covered gravel plains. Areas falling within this EPL may therefore represent important breeding areas for this bird species. Endangered birds that also occur in the EPL area include the White Pelican, Cape Gannet, Crowned Cormorant as well as the Greater and Lesser Flamingo.

Many of these birds were observed at the Huab River mouth tidal lagoon. Birds listed as vulnerable that may also occur in the project area, include the African Black Oystercatcher, Hartlaub's Gull and the Caspian and Swift Terns. Gravel plains are a dominant landform in the area. The gravel plains of the Skeleton Coast are particularly fragile and off-road driving leaves vehicle tracks that degrade the habitat through compaction, results in erosion and leaves tire tracks that last for up to 50 years.

4.3.2 Flora

The composition of plant communities within the Namib depends on numerous factors including soil types, climate, and habitat. The seven major habitats in the region are gravel plains, coastal hummocks, sand dunes, washes, river beds, rocky ridges, and inselbergs.

The uniqueness and sense of place of the region derives from the richness of all these habitats; all should be treated as extremely valuable and conserved to the greatest degree possible. The coastal zone within the boundaries of EPL 5517 is comprised of at least three of the seven vegetation types, namely gravel plains, coastal hummocks and riverbeds. Within the coastal zone of this EPL area, vegetation is dominated by coastal hummocks, which comprises

vegetation such as the succulent shrubs Arthraerua leubnitziae and Salsola nollothensis constituting the great diversity of endemic northern Namib plants.

Coastal hummock vegetation is important in that this vegetation provides shelter for a wide variety of invertebrates and other coastal flora. For example, Namibia's endemic lizards may occur on course coastal dune sand and coastal hummocks.

Coastal hummocks are therefore important "islands" of biodiversity in an otherwise sparsely vegetated habitat. Such areas are therefore worthy of conservation (Seely, 1992). No lichen are known to occur, or was observed in the EPL area. Since all prospecting activities will take place on land and not on the beaches or shallow water the vegetation mentioned could be negatively affected. Vehicular traffic will only be along routes that will be approved by the Park Warden.

4.4 Summary of the Socioeconomic Information

The regional (Kunene Region) socioeconomic information provided indicates the following:

- ❖ No infrastructure and facilities are available to support any major development. The EPL are is located in an area with no formal road access;
- ❖ There is a shortage of skills which hampers development projects;
- ❖ Educational and health facilities not available;
- ❖ Within the Kunene Region, a high level of inequality exists even among rural communities;
- ❖ The main health concerns in the Kunene Region are HIV/Aids, tuberculosis (TB), substance abuse, other respiratory system diseases and children in need of care. Mobility and migration increases vulnerability to HIV infection;
- ❖ Alcohol use increases with the increase in income and is a contributing factor to the HIV/Aids epidemic;
- ❖ Crime is on the increase and in rural areas poaching and stock theft is a concern and high levels of unemployment, alcohol abuse and population density contributes to higher crime rates, and;
- ❖ The economy of Region is mostly dependent on the tourism industry, despite efforts of continual promotion of alternative economic activities.

One of the major possible impacts of exploration may be unrealistic expectations about the development of a mine. It's important for local communities to bear in mind that 98% exploration projects will not advance to a mine development. Due to the limited scope of the exploration project, the remoteness of area, the sparsely populated area and the limited skills base the social and economic impact s of the proposed exploration activities will most probably be very limited.

4.5 Archaeology

The EPL area falls within the northern Namib Desert, which according to the archaeological studies undertaken for various projects as required under the provisions of the National

Heritage Act (27 of 2004), holds significant archaeological resources (Risk-Based Solutions, 2011).

Archaeological sites are protected by law and include shell middens, ancient whale bones, and ship wrecks. A shipwreck was observed in this area. Whale bones were observed in the EPL area, as were shell middens. Shell middens of early to late Stone Age form part of the interesting archaeological record of the area. Historical mine sites and shipwrecks are evidence of man's attempts to mine the diamonds along this coastline.

No archaeological specialist study was commissioned for the proposed exploration activities because no specific area / target/s have so been delineated for possible detailed field-based exploration activities. However, future development planning should include detailed archaeological assessment if economic minerals resources re discovered.

4.7 Ground Components

4.7.1 Geology

Relief along the coast is generally low, the result of plantation by repeated transgressions of the sea up to 10km inland and extreme wind erosion. Low hills (~100 m above mean sea level) and fault-controlled ridge systems of Damara and Karoo rocks have survived this levelling process, acting as obstacles to wind-blown sand transport. Wind deflation in flatter, more open terrain results in denudation of surficial material leaving flat expanses of pebbles (deflation gravels).

Ephemeral drainages from the hinterland have deeply incised valleys (100's of meters) from escarpment towards the coast. At the coast, this is much less, in the order of 10’s of meters. These modern courses are often accompanied by ancient meanders and abandoned deltas filled with cemented alluvial gravels. These are more resistant to erosion and cause terrain inversion, visible as benches or terraces (~10m above mean sea level) overlying older rocks. Transgression and regression of the sea has deposited ancient beaches up to 10km inland on wave-cut benches of Karoo volcanics and Damaran meta-sediments. These have been cemented and terrain inversion has left them standing as cliff-faced terraces due to relatively faster erosion of the adjacent country rock. Deflation and selective aeolian deposition has further reworked these materials into extensive gravel plains on the flatter areas.

The modern storm beaches are generally steep (15°), composed of pebbles and cobbles or sand with high-energy storm deposits up to 20m behind the high-tide mark.

4.7.2 Water

4.7.2.1 Overview

According to the Department of Water Affairs and Forestry, (2001) and the geology of the EPL area, the EPL 5517 falls within an area that does not have economic groundwater water resources (aquifer). Water supply in the general is from existing NamWater infrastructure that supply the surrounding mines. No major dams are found within the EPL area. In the absence of economic water resources and the type and scale of the proposed field-based exploration activities, there will no negative impacts on the local water resources.

Groundwater of generally poor quality is found in large parts of the EPL area and is mostly not suitable for human consumption because it falls into the Group D category (Department of

Water Affairs, 2001 and Table 4.1). No site-specific water sampling and testing was undertaken.

Table 4.1: Namibia drinking water standard (Source Department of Water Affair, 2001).

DETERMINANT	NAMIBIAN DRINKING WATER GUIDELINE				
	UNIT	GROUP A	GROUP B	GROUP C	GROUP D
		EXCELLENT	GOOD	LOW RISK OF HEALTH	HIGH RISK OF HEALTH
CONDUCTIVITY	mS/m	150	300	400	>400
SULPHATE	mg/l SO_4	200	600	1 200	>1 200
NITRATE	mg/l N	10	20	40	>40
FLUORIDE	mg/l F	1,5	2,0	3,0	>3,0

4.7.2.2 Water Assessments and Recommendations

Due to the extreme aridity of this area, no economic surface or groundwater resources excepting for the Huab River that has a number of springs upstream of the coastal reach. Water from these springs flow all year round and feed the tidal lagoon at the Huab river mouth. Possible targets for water resources in this area are mainly Ephemeral River Mouths, fractured zones and faults that outcrop on the surface without impermeable infillings.

Nevertheless, the chance of finding good groundwater yields is generally low with poor water quality of Group D expected due to likely seawater intrusion (Table 4.1).

A detailed water specialist water supply study inclusive of the use of a desalination plant, is highly recommended as part of the EIA and EMP that may be implemented as part of the feasibility study for any viable mining project development within the EPL area if economic minerals deposits are discovered.

5. IMPACT ASSESSMENT AND RESULTS

5.1 Impact Assessment Procedure

The Environmental Assessment process that has been undertaken with respect to the proposed exploration programme for the EPL No. 5517 has been conducted in accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

5.2 Approach, Alternatives, Key Issues and Methodology

5.2.1 Terms of Reference (ToR) and Approach

Risk-Based Solutions (RBS) was appointed by the proponent to prepare the Environmental Scoping and Environmental Management Plan (EMP) report in order to support the Application for Environmental Clearance Certificate (ECC) for the EPL No. 5517 with respect to the proposed exploration activities. The following is summary of the key guiding principles and objectives of this Environmental Scoping and Environmental Management Plan (EMP)

- Inform the public about the proposed / ongoing exploration / prospecting programme;
- Identify the main stakeholders and their concerns and values;
- Define the reasonable and practical alternatives to the proposed / ongoing project activities;
- Identify the important issues and significant impacts to be addressed in the Scoping and EMP Sections of the Report, and;
- Define the boundaries for Scoping and EMP in time, space and subject matter.

The Scoping desktop study reviewed the receiving environmental settings (physical, biological, socioeconomic and ecosystem services, function, use values and non-use) and proposed / ongoing exploration activities and then assessed the likely impacts (positive and negative) on the receiving environment (Table 5.1). The key deliverable comprised this Environmental Scoping and Environmental Management Plan (EMP) detailing appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative impacts identified.

The Final Environmental Scoping and Environmental Management Plan (EMP) report and the completed Application for Environmental Clearance Certificate (ECC) shall be submitted to the client (Proponent) and the Office of the Environmental Commissioner, Department of Environmental Affairs (DEA), Ministry of Environment and Tourism (MET) through the Ministry of Mines and Energy (the Competent Authority) for review and final decision. The Environmental Scoping and EMP has been performed with reasonable skill, care and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques that have been applied are all in conformity to the national regulatory requirements, process and specifications in Namibia as required by Ministry of Mines and Energy (MME), Ministry of Environment and Tourism (MET) and the client (Proponent). The Scoping and EMP has been prepared in line with the January 2015 MET Environmental Assessment Reporting Guideline.

Table 5.1: Summary of the proposed / ongoing activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering Scoping and Environmental Management Plan (EMP).

<table>
<tr><th>PROPOSED / ONGOING PROJECT ACTIVITIES</th><th>ALTERNATIVES TO BE CONSIDERED</th><th colspan="2">KEY ISSUES TO BE EVALUATED AND ASSESSED WITH ENVIRONMENTAL MANAGEMENT PLAN (EMP) / MITIGATION MEASURES DEVELOPED</th></tr>
<tr><td rowspan="8">(i) Initial desktop exploration activities (review of existing information and all previous activities in order identify any potential target/s)

(ii) Regional reconnaissance field-based activities such mapping and sampling to identify areas with potential targets based on the recommendations of the desktop work

(iii) Initial local field-based activities such as widely spaced mapping, sampling, surveying and possible drilling in order to determine the viability of any delineated local target

(iv) Detailed local field-based activities such very detailed mapping, sampling, surveying and possible drilling in order to determine the feasibility of any delineated local target

(v) Prefeasibility and feasibility studies to be implemented on a site specific area if the local field-based studies proves positive</td><td rowspan="8">(i) Location for Minerals Occurrence: A number of economic deposits are known to exist in different parts of Namibia and some have been explored by different companies over the years. The proponent intend to explore / prospect for possible economic minerals occurrence in the EPL area;

(ii) Other Alternative Land Uses: Game Farming, Tourism and Agriculture

(iii) Ecosystem Function (What the Ecosystem Does;

(iv) Ecosystem Services;

(v) Use Values;

(vi) Non-Use, or Passive Use;

(vii) The No-Action Alternative</td><td colspan="2">Potential land use conflicts / opportunities for coexistence between proposed / ongoing exploration and other existing land uses such as conservation, tourism and agriculture</td></tr>
<tr><td rowspan="3">Impacts on the Physical Environment</td><td>Natural Environment such as air, noise, water, dust etc.</td></tr>
<tr><td>Built Environment such as existing houses, roads, transport systems, Buildings, energy and water and other supporting infrastructure</td></tr>
<tr><td>Socioeconomic, Archaeological and Cultural impacts on the local societies and communities</td></tr>
<tr><td rowspan="4">Impacts on the Biological Environment</td><td>Flora</td></tr>
<tr><td>Fauna</td></tr>
<tr><td>Habitat</td></tr>
<tr><td>Ecosystem functions, services, use values and non-Use or passive use</td></tr>
<tr><td colspan="2">Others to be identified during the public consultation process and preparation of the Scoping and EMP Report</td></tr>
</table>

5.2.2 Alternatives and Ecosystem Assessments

The following alternatives have been considered:

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

(ii) **The No-Action Alternative** - A comparative assessment of the environmental impacts of the 'no-action' alternative (a future in which the proposed / ongoing exploration activities do not take place) has been undertake. An assessment of the environmental impacts of a future, in which the proposed / ongoing exploration and possible discovery of economic minerals resources does not take place, may be good for the receiving environment because there will be no negative environmental impacts due to the proposed minerals exploration or possible mining operation that may take place in the EPL area. The environmental benefits will include: no mineral

exploration or potential future mining related negative environmental impact on the receiving environment. However, it is important to understand that even if the proposed / ongoing exploration activities do not take place, to which the likely negative environmental impacts is likely to be low and localised, the other current and future land uses such as agriculture and tourism will still have some negative impacts on the receiving environment. The likely negative environmental impacts of the other current and future land uses that may still happen in the absence of the proposed / ongoing minerals exploration activities includes: Land degradation due to drought, poor land management practices, erosion and overgrazing. Furthermore, it's also important to understand what benefits might be lost if the proposed / ongoing exploration activities do not take place. Key loses that may never be realised if the proposed / ongoing project activities do not go-ahead include: Loss of potential added value to the unknown underground minerals resources that maybe found within the EPL No. 5517, socioeconomic benefits derived from current and future exploration, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments, license rental fees, royalties and various other taxes payable to the Government;

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

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

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

(vi) **Ecosystem Services:** Food chain, harvesting of animals or plants, and the provision of clean water or scenic views are some of the local ecosystem services associated with the EPL area. However, the proposed / ongoing exploration activities will not affect the ecosystem services due to the limited scope and area of

coverage of the proposed / ongoing activities because the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked;

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

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

5.2.3 Key Issues Considered in the Assessment Process

5.2.3.1 Sources of Impacts (Proposed / Ongoing Project Activities)

The ongoing exploration activities being undertaken in the EPL 5517 and as assessed in this environmental assessment covering Environmental Scoping and Environmental Management Plan (EMP) are as follows:

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

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

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

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

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

5.2.3.2 Likely Environmental Impacts

The likely negative impacts that the proposed / ongoing project activities (exploration / prospecting) would have on the receiving environment would depend on the extent of the proposed / ongoing exploration, management of the area and how the proposed mitigations are eventually implemented by the proponent. The following is the summary of the likely key components of the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) that have been assessed in this report and are likely to be impacted by the proposed / ongoing exploration / prospecting activities:

(i) Impacts on the Physical Environment such as the following:

- ❖ Natural Environment such as air quality, surface water, groundwater, dust noise, waste water management and solid waste management etc;
- ❖ Built Environment such as Land Use and User Conflicts (Agriculture, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure, and;
- ❖ Socioeconomic and Cultural / Archaeological–Characteristics of the local societies and communities matters.

(ii) Impacts on the Biological Environment such as the following:

- ❖ Flora and fauna;
- ❖ Habitat, and;
- ❖ Ecosystem functions, services, use values and non-use or passive use.

5.3 Impact Assessment Criteria

5.3.1 Impact Assessment Methodology

The impact assessment methodology adapted for this EPL are in line with the Terms of Reference (ToR) and the national environmental regulatory requirements. The overall impact assessment approach has adopted the Leopold matrix framework which is one of the internationally best known matrix assessment methodology available for predicting the impact of a project on the receiving environment (Table 5.2).

Table 5.2: The impact matrix for the proposed / ongoing exploration in the EPL No. 5517.

ENVIRONMENTAL IMPACT KEY Likely Impact No Impacts			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	Land Use (Agriculture, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic and Cultural / Archaeological– Characteristics of the local societies and communities matters	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use and Non Use Values
	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment							
		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data							
		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available							
		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated							
	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis							
		(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken							
		(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken							
		(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days							
		(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets							

Table 5.2: *Cont.*

ENVIRONMENTAL IMPACT KEY Likely Impact (-) Negative and (+) Positive No Impacts			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
EXPLORATION STAGES		ACTIVITIES	Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic Characteristics of the local societies and communities matters	Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**3. INITIAL LOCAL FIELD-BASED ACTIVITIES**	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets							

Table 5.2: *Cont.*

ENVIRONMENTAL IMPACT KEY Likely Impact (-) Negative and (+) Positive No Impacts			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure)	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic–Characteristics of the local societies and communities matters	Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(v) Drilling of boreholes (Subject to the outcomes of i - vi above)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(vi) Sampling (Subject to the outcomes of i -vi above)	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(vii) Access preparation and related logistics to support activities	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(viii) Laboratory analysis's of collected samples							

Table 5.2: *Cont.*

ENVIRONMENTAL IMPACT KEY Likely Impact (-) Negative and (+) Positive No Impacts			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
EXPLORATION STAGES		ACTIVITIES	Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic– Characteristics of the local societies and communities matters	Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	5. PREFEASIBILITY AND FEASIBILITY STUDIES	(i) Detailed site-specific surveys	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(ii) Detailed geological mapping	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iii) Additional detailed drilling and bulk sampling and testing	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(iv) Ore reserve calculations							
		(v) Geotechnical studies for mine design							
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial							
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access							
		(viii) Environmental Impact Assessment for mining							
		(ix) Environmental Management Plan for mining							
		(x) Test mining activities	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(xi) Preparation of feasibility report and application for Mining License	(-)	(-)	(+)	(-)	(-)	(-)	(-)
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	(-)	(-)	(+)	(-)	(-)	(-)	(-)

5.4 Evaluation of Impacts

5.4.1 Impact Factors (Project Activities)

The proposed / ongoing exploration activities have been characterised as sources of impact and have been classified into impact factors resulting in key issues in order to assess the likely impacts of the proposed / ongoing individual project activities on the natural, built, socioeconomic, cultural, flora, fauna, habitat and ecosystem services, function, use and non-use values components of the receiving environment. Impact factors (proposed / ongoing exploration activities) have been evaluated separately for each environmental component relevant for the scope of this study.

5.4.2 Evaluation of Project Activities Impacts

5.4.2.1 Summary Overview

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

(i) Impact Severity: The severity of an impact is a function of a range of considerations, and;

(ii) Likelihood of Occurrence (Probability): How likely is the impact to occur?

5.4.2.2 Severity Criteria for Environmental Impacts

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

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

The overall impact severity has been categorised using a subjective scale as shown in Table 5.3 for magnitude, Table 5.4 for duration and Table 5.5 for extent.

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

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

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

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

Table 5.5: Scored geographical extent of the induced change.

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

5.4.2.3 Likelihood (Probability) of Occurrence

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

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

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

5.4.3 Project Activities Summary of Impacts Results

The results of the impacts assessment and evaluation has adopted a matrix framework similar to the Leopold matrix. Assessment results of the magnitude, duration, extent and probability of the potential impacts due to the proposed / ongoing project activities interacting with the receiving environment are presented in form of a matrix table as shown in Tables 5.7-5.10. The overall severity of potential environmental impacts of the proposed / ongoing project activities on the receiving environment will be of low magnitude (Table 5.7), temporally duration (Table 5.8), localised extent (Table 5.9) and low probability of occurrence (Table 5.10) due to the limited scope of the proposed activities and the use of step progression approach in advancing exploration.

The step progressional approach will allow the proponent to the results of exploration success and the implementation of the next stage of exploration will be subject to the positive outcomes of previous activities as graded (Tables 5.7-5.10). It is important to note that the assessment of the likely impacts as shown in Tables 5.7 - 5.10, have been considered without the implementation of mitigation measures detailed in Section 6 of this Report. The need for implementation of the appropriate mitigation measures as presented in the Section 6 of this report have be determined on the results of the impact assessment (Tables 5.7 - 5.10) and the significant impacts as detailed in Tables 5.11 and 5.12.

Table 5.7: Results of the scored on a scale from 0 to 5 for negative impact magnitude.

ENVIRONMENTAL IMPACT KEY

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

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Fauna	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment	-0	-0	+0	-0	-0	-0	-0
		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	-0	-0	+0	-0	-0	-0	-0
		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available	-0	-0	+0	-0	-0	-0	-0
		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated	-0	-0	+0	-0	-0	-0	-0
	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis	-0	-0	+0	-0	-0	-0	-0
		(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-0	-0	+0	-0	-0	-0	-0
		(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-0	-0	+0	-0	-0	-0	-0
		(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	-2	-2	+2	-2	-2	-2	-2
		(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-0	-0	+0	-0	-0	-0	-0

Table 5.7: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**3. INITIAL LOCAL FIELD-BASED ACTIVITIES**	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-2	-0	+0	-2	-2	-2	-2
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-0	-0	+0	-0	-0	-0	-0
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	-2	-2	+2	-2	-2	-2	-2
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-2	-2	+2	-2	-2	-2	-2
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	-2	-2	+2	-2	-2	-2	-2
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-0	-0	+0	-0	-0	-0	-0

Table 5.7: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment –Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-1	-1	+1	-1	-1	-1	-1
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-0	-0	+0	-0	-0	-0	-0
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	-2	-2	+2	-2	-2	-2	-2
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-2	-2	+2	-2	-2	-2	-2
		(v) Drilling of boreholes (Subject to the outcomes of i - vi above)	-3	-3	+3	-3	-3	-3	-3
		(vi) Sampling (Subject to the outcomes of i -vi above)	-3	-3	+3	-3	-3	-3	-3
		(vii) Access preparation and related logistics to support activities	-3	-3	+3	-3	-3	-3	-3
		(viii) Laboratory analysis's of collected samples	-0	-0	+0	-0	-0	-0	-0

Table 5.7: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment –Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic - Characteristics of the local societies and communities matters	PHYSICAL ENVIRONMENT: Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	5. PREFEASIBILITY AND FEASIBILITY STUDIES	(i) Detailed site-specific surveys	-0	-0	+0	-0	-0	-0	-0
		(ii) Detailed geological mapping	-0	-0	+0	-0	-0	-0	-0
		(iii) Additional detailed drilling and bulk sampling and testing	-2	-0	+3	-3	-3	-3	-3
		(iv) Ore reserve calculations	-0	-0	+0	-0	-0	-0	-0
		(v) Geotechnical studies for mine design	-0	-0	+0	-0	-0	-0	-0
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial	-0	-0	+0	-0	-0	-0	-0
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access	-0	-0	+0	-0	-0	-0	-0
		(viii) Environmental Impact Assessment for mining	-0	-0	+0	-0	-0	-0	-0
		(ix) Environmental Management Plan for mining	-0	-0	+0	-0	-0	-0	-0
		(x) Test mining activities	-4	-4	+4	-4	-4	-4	-4
		(xi) Preparation of feasibility report and application for Mining License	-0	-0	+0	-0	-0	-0	-0
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	-3	-3	+3	-3	-3	-3	-3

Table 5.8: Results of the scored time period over which the impact is expected to last.

ENVIRONMENTAL IMPACT KEY											
SCALE		DESCRIPTION									
T		Temporary									
P		Permanent									
			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)								
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT					
SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic Characteristics of the local societies and communities matters	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use and Non Use Values		
	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment	-T	-T	+T	-T	-T	-T	-T		
		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	-T	-T	+T	-T	-T	-T	-T		
		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available	-T	-T	+T	-T	-T	-T	-T		
		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated	-T	-T	+T	-T	-T	-T	-T		
	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis	-T	-T	+T	-T	-T	-T	-T		
		(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-T	-T	+T	-T	-T	-T	-T		
		(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-T	-T	+T	-T	-T	-T	-T		
		(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	-T	-T	+T	-T	-T	-T	-T		
		(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-T	-T	+T	-T	-T	-T	-T		

Table 5.8: *Cont.*

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SCALE		DESCRIPTION							
T		Temporary							
P		Permanent							
EXPLORATION STAGES	ACTIVITIES		Land Use (Agriculture, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic Characteristics of the local societies and communities matters	Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	3. INITIAL LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-T	-T	+T	-T	-T	-T	-T
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-T	-T	+T	-T	-T	-T	-T
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	-T	-T	+T	-T	-T	-T	-T
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-T	-T	+T	-T	-T	-T	-T
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	-T	-T	+T	-T	-T	-T	-T
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-T	-T	+T	-T	-T	-T	-T

Table 5.8: *Cont.*

ENVIRONMENTAL IMPACT KEY

SCALE		DESCRIPTION
T		Temporary
P		Permanent

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-T	-T	+T	-T	-T	-T	-T
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-T	-T	+T	-T	-T	-T	-T
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	-T	-T	+T	-T	-T	-T	-T
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-T	-T	+T	-T	-T	-T	-T
		(v) Drilling boreholes (Subject to the outcomes of i - vi above)	-T	-T	+T	-T	-T	-T	-T
		(vi) Bulk Sampling (Subject to the outcomes of i -vi above)	-P	-P	+P	-P	-P	-P	-P
		(vii) Access preparation and related logistics to support activities	-T	-T	+T	-T	-T	-T	-T
		(viii) Laboratory analysis's of collected samples	-T	-T	+T	-T	-T	-T	-T

Table 5.8: *Cont.*

ENVIRONMENTAL IMPACT KEY		
SCALE		DESCRIPTION
T		Temporary
P		Permanent

	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	PHYSICAL ENVIRONMENT: Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	5. PREFEASIBILITY AND FEASIBILITY STUDIES	(i) Detailed site-specific surveys	-T	-T	+T	-T	-T	-T	-T
		(ii) Detailed geological mapping	-T	-T	+T	-T	-T	-T	-T
		(iii) Additional detailed drilling and bulk sampling and testing	-T	-T	+T	-T	-T	-T	-T
		(iv) Ore reserve calculations	-T	-T	+T	-T	-T	-T	-T
		(v) Geotechnical studies for mine design	-T	-T	+T	-T	-T	-T	-T
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial	-T	-T	+T	-T	-T	-T	-T
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access	-T	-T	+T	-T	-T	-T	-T
		(viii) Environmental Impact Assessment for mining	-T	-T	+T	-T	-T	-T	-T
		(ix) Environmental Management Plan for mining	-T	-T	+T	-T	-T	-T	-T
		(x) Test mining activities	-P	-P	+P	-P	-P	-P	-P
		(xi) Preparation of feasibility report and application for Mining License	-T	-T	+T	-T	-T	-T	-T
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	-T	-T	+T	-T	-T	-T	-T

Table 5.9: Results of the scored geographical extent of the induced change.

ENVIRONMENTAL IMPACT KEY			SOURCES OF POTENTIAL IMPACT		RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
					PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SCALE		DESCRIPTION	EXPLORATION STAGES	ACTIVITIES	Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	Socioeconomic Characteristics of the local societies and communities matters	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use and Non Use Values
L		limited impact on location	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment	-L	-L	+L	-L	-L	-L	-L
O		impact of importance for municipality		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	-L	-L	+L	-L	-L	-L	-L
R		impact of regional character		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available	-L	-L	+L	-L	-L	-L	-L
N		impact of national character		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated	-L	-L	+L	-L	-L	-L	-L
M		impact of cross-border character	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis	-L	-L	+L	-L	-L	-L	-L
				(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
				(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
				(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	-L	-L	+L	-L	-L	-L	-L
				(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-L	-L	+L	-L	-L	-L	-L

Table 5.9: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, , Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**3. INITIAL LOCAL FIELD-BASED ACTIVITIES**	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	-L	-L	+L	-L	-L	-L	-L
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-L	-L	+L	-L	-L	-L	-L
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	-L	-L	+L	-L	-L	-L	-L
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-L	-L	+L	-L	-L	-L	-L

Table 5.9: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-L	-L	+L	-L	-L	-L	-L
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	-L	-L	+L	-L	-L	-L	-L
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-L	-L	+L	-L	-L	-L	-L
		(v) Drilling boreholes (Subject to the outcomes of i - vi above)	-L	-L	+L	-L	-L	-L	-L
		(vi) Bulk Sampling (Subject to the outcomes of i -vi above)	-L	-L	+L	-L	-L	-L	-L
		(vii) Access preparation and related logistics to support activities	-L	-L	+L	-L	-L	-L	-L
		(viii) Laboratory analysis's of collected samples	-L	-L	+L	-L	-L	-L	-L

Table 5.9: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	PHYSICAL ENVIRONMENT: Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**5. PREFEASIBILITY AND FEASIBILITY STUDIES**	(i) Detailed site-specific surveys	-L	-L	+L	-L	-L	-L	-L
		(ii) Detailed geological mapping	-L	-L	+L	-L	-L	-L	-L
		(iii) Additional detailed drilling and bulk sampling and testing	-L	-L	+L	-L	-L	-L	-L
		(iv) Ore reserve calculations	-L	-L	+L	-L	-L	-L	-L
		(v) Geotechnical studies for mine design	-L	-L	+L	-L	-L	-L	-L
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial	-L	-L	+L	-L	-L	-L	-L
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access	-L	-L	+L	-L	-L	-L	-L
		(viii) Environmental Impact Assessment for mining	-L	-L	+L	-L	-L	-L	-L
		(ix) Environmental Management Plan for mining	-L	-L	+L	-L	-L	-L	-L
		(x) Test mining activities	-L	-L	+L	-L	-L	-L	-L
		(xi) Preparation of feasibility report and application for Mining License	-L	-L	+L	-L	-L	-L	-L
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	-L	-L	+L	-L	-L	-L	-L

Table 5.10: Results of the qualitative scale of probability occurrence.

ENVIRONMENTAL IMPACT KEY

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

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Fauna	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment	-A	-A	+A	-A	-A	-A	-A
		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	-A	-A	+A	-A	-A	-A	-A
		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available	-A	-A	+A	-A	-A	-A	-A
		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated	-A	-A	+A	-A	-A	-A	-A
	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis	-A	-A	+A	-A	-A	-A	-A
		(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-A	-A	+A	-A	-A	-A	-A
		(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	-A	-A	+A	-A	-A	-A	-A
		(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	-A	-A	+A	-A	-A	-A	-A
		(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-A	-A	+A	-A	-A	-A	-A

Table 5.10: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**3. INITIAL LOCAL FIELD-BASED ACTIVITIES**	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-C	-C	+C	-C	-C	-C	-C
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-A	-A	+A	-A	-A	-A	-A
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	-C	-C	+C	-C	-C	-C	-C
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-C	-C	+C	-C	-C	-C	-C
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	-C	-C	+C	-C	-C	-C	-C
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	-A	-A	+A	-A	-A	-A	-A

Table 5.10: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	-C	-C	+C	-C	-C	-C	-C
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	-A	-A	+A	-A	-A	-A	-A
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	-C	-C	+C	-C	-C	-C	-C
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	-C	-C	+C	-C	-C	-C	-C
		(v) Drilling boreholes (Subject to the outcomes of i - vi above)	-C	-C	+C	-C	-C	-C	-C
		(vi) Bulk Sampling (Subject to the outcomes of i -vi above)	-C	-C	+C	-C	-C	-C	-C
		(vii) Access preparation and related logistics to support activities	-C	-C	+C	-C	-C	-C	-C
		(viii) Laboratory analysis's of collected samples	-A	-A	+A	-A	-A	-A	-A

Table 5.10: *Cont.*

ENVIRONMENTAL IMPACT KEY

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

	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	5. PREFEASIBILITY AND FEASIBILITY STUDIES	(i) Detailed site-specific surveys	-B	-B	+B	-B	-B	-B	-B
		(ii) Detailed geological	-A	-A	+A	-A	-A	-A	-A
		(iii) Additional detailed drilling and bulk sampling and testing	D	D	+D	D	D	D	D
		(iv) Ore reserve calculations	-A	-A	+A	-A	-A	-A	-A
		(v) Geotechnical studies for mine design	-A	-A	+A	-A	-A	-A	-A
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial	-A	-A	+A	-A	-A	-A	-A
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access	-A	-A	+A	-A	-A	-A	-A
		(viii) Environmental Impact Assessment for mining	-A	-A	+A	-A	-A	-A	-A
		(ix) Environmental Management Plan for mining	-A	-A	+A	-A	-A	-A	-A
		(x) Test mining activities	-D	-D	+D	-D	-D	-D	-D
		(xi) Preparation of feasibility report and application for Mining License	-A	-A	+A	-A	-A	-A	-A
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	-D	-D	+D	-D	-D	-D	-D

5.5 Evaluation of Significant Impacts

5.5.1 Overview

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

5.5.2 Significance Criteria

Significance criteria for negative/adverse impacts (i.e., relative ranking of importance) are defined in Table 5.11. It is important to note that impacts have been considered without the implementation of mitigation measures. The need for and appropriate mitigation measures as presented in the EMP Section 6 of this report have be determined on the basis of the impact assessment presented in this report.

Table 5.11: Scored impact significance criteria.

	IMPACT LIKELIHOOD				
IMPACT SEVERITY	Extremely Unlikely **(-) or (+)** **[0]**	Unlikely (-) or (+) **[1]**	Low Likelihood (-) or (+) **[2]**	Medium Likelihood (-) or (+) **[3]**	High Likelihood **(-) or (+)** **[4]**
Negligible (-) or (+) **[A]**	Negligible Impact **[A0]**	Negligible Impact **[A1]**	Negligible Impact **[A2]**	Negligible Impact **[A3]**	Negligible Impact **[A4]**
Low **(-) or (+)** **[B]**	Negligible Impact **[B0]**	Negligible Impact **[B1]**	Negligible Impact **[B2]**	Negligible to Low Impact **[B3]**	Low Impact **[B4]**
Medium (-) or (+) **[C]**	Negligible Impact **[C0]**	Negligible Impact **[C1]**	Low Impact **[C2]**	Low to Medium Impact **[C3]**	Medium Impact **[C4]**
High (-) or (+) **[D]**	Negligible to Low Impact **[D0]**	Low Impact **[D1]**	Medium Impact **[D2]**	High Impact **[D3]**	High to Unacceptable Impact **[D4]**

5.5.3 Assessment Likely Significant Impacts

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

- ❖ Positive Impacts are classified under a single category; they are then evaluated qualitatively with a view to their enhancement, if practical;

- ❖ Negligible or Low Impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity);

- ❖ Medium or High Impacts require the adoption of management or mitigation measures;

- ❖ High Impacts always require further management or mitigation measures to limit or reduce the impact to an acceptable level.

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

Table 5.12: Significant impact assessment matrix for the proposed / ongoing exploration activities.

ENVIRONMENTAL IMPACT KEY

IMPACT SEVERITY	IMPACT LIKELIHOOD: Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) — PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Fauna	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	1. INITIAL DESKTOP EXPLORATION ACTIVITIES	(i) General evaluation of the EPL area covering satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iii) Purchase and analysis of existing Government aerial hyperspectral data if available	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iv) Interpretation of the results and delineating of potential targets for future reconnaissance regional field-based activities if potential targets have been delineated	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
	2. REGIONAL RECONNAISSANCE FIELD-BASED ACTIVITIES	(i) Regional geological, topographical and remote sensing mapping and data analysis	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]

Table 5.12: *Cont.*

ENVIRONMENTAL IMPACT KEY

IMPACT SEVERITY	IMPACT LIKELIHOOD: Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**3. INITIAL LOCAL FIELD-BASED ACTIVITIES**	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	[-B2]	[-B2]	[+B2]	[-B2]	[-B2]	[-B2]	[-B2]
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)	[-B2]	[-B2]	[+B2]	[-B2]	[-B2]	[-B2]	[-B2]
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	[-B2]	[-B2]	[+B2]	[-B2]	[-B2]	[-B2]	[-B2]
		(v) Field-based support and logistical activities will be very limited because the local field-based activities will only focus on a site-specific area for a very short time (maximum five (5) days)	[-B2]	[-B2]	[+B2]	[-B2]	[-B2]	[-B2]	[-B2]
		(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]

Table 5.12: *Cont.*

ENVIRONMENTAL IMPACT KEY

IMPACT SEVERITY	IMPACT LIKELIHOOD: Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

SOURCES OF POTENTIAL IMPACT	EXPLORATION STAGES	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) — PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment –Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem [Services, Function, Use and Non Use Values
	4. DETAILED LOCAL FIELD-BASED ACTIVITIES	(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional geochemical sampling and analysis undertaken	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above);	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(iv) Possible Trenching (Subject to the outcomes of i - iii above)	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(v) Drilling boreholes (Subject to the outcomes of i - vi above)	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(vi) Bulk Sampling (Subject to the outcomes of i -vi above)	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(vii) Access preparation and related logistics to support activities	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]	[+D2]
		(viii) Laboratory analysis's of collected samples	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]

Table 5.12: *Cont.*

ENVIRONMENTAL IMPACT KEY

IMPACT SEVERITY	IMPACT LIKELIHOOD: Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

EXPLORATION STAGES		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES) – PHYSICAL ENVIRONMENT: Land Use (Exploration and Mining, Tourism, Conservation) and Built Environment (Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL ENVIRONMENT: Natural Environment – Air Quality, Surface Water, Groundwater, Dust Noise, Waste Water Management, Solid Waste Management etc	PHYSICAL ENVIRONMENT: Socioeconomic Characteristics of the local societies and communities matters	PHYSICAL ENVIRONMENT: Flora	Flora	Habitat	Ecosystem [Services, Function, Use and Non Use Values
SOURCES OF POTENTIAL IMPACT	**5. PREFEASIBILITY AND FEASIBILITY STUDIES**	(i) Detailed site-specific surveys	[-B2]	[-B2]	[+B2]	[-B2]	[-B2]	[-B2]	[-B2]
		(ii) Detailed geological	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(iii) Additional detailed drilling and bulk sampling and testing	[-D3]	[-D3]	[+D3]	[-D3]	[-D3]	[-D3]	[-D3]
		(iv) Ore reserve calculations	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(v) Geotechnical studies for mine design	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(vii) Mine planning and designs including all supporting infrastructures (water, energy and access	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(viii) Environmental Impact Assessment for mining	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(ix) Environmental Management Plan for mining	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(x) Test mining activities	-[D3]	-[D3]	+[D3]	-[D3]	-[D3]	-[D3]	-[D3]
		(xi) Preparation of feasibility report and application for Mining License	[-A0]	[-A0]	[+A0]	[-A0]	[-A0]	[-A0]	[-A0]
		(xii) Field-based support and logistical activities will be very extensive because the local field-based activities will on a specific area for a very long time (up to one year or more in some instances)	[-D3]	[-D3]	[+D3]	[-D3]	[-D3]	[-D3]	[-D3]

5.6 Assessment of Overall Impacts

5.6.1 Summary of the Results of the Impact Assessment

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

(i) Initial desktop exploration activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[A0]** (Table 5.12). Except for the socioeconomic components which carries a **(+)**, all the other likely impacts are negative **(-)**;

(ii) Regional reconnaissance field-based activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[A0]**. Some field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible **[B2]** (Table 5.12). Except for the socioeconomic components which carries a **(+)**, all the other likely impacts are negative **(-)**;

(iii) Initial local field-based activities: Initial field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations**.** Overall significant impacts will be negligible **[B2]**. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible **[A0]** (Table 5.12). Except for the socioeconomic components which carries a **(+)**, all the other likely impacts are negative **(-)**;

(iv) Detailed local field-based activities: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised low impacts with mitigations. Overall significant impacts will be medium **[D2]** without mitigations and low with mitigations (Table 5.12). Except for the socioeconomic components which carries a **(+)**, all the other likely impacts are negative **(-)**;

(v) Prefeasibility and feasibility studies to be implemented on a site specific area if the local field-based studies proves positive: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be high **[D3]** without mitigations and low with mitigations for bulk sampling, test mining and field logistics (Table 5.12). Except for the socioeconomic components which carries a **(+)**, all the other likely impacts are negative **(-)**.

6. THE EMP

6.1 Summary of the EMP Objectives

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the exploration. Regular assessments and evaluation of the environmental liabilities during the exploration will need to be undertaken and will ensure adequate provision of the necessary resources towards good environmental management at various stages of the project development.

6.2 Implementation of the EMP

6.2.1 Roles and Responsibilities

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

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

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

- Act as the site project manager and implementing agent;
- Ensure that the proponent's responsibilities are executed in compliance with the relevant legislation;
- Ensure that all the necessary environmental authorizations and permits have been obtained;
- Assist the exploration contractor/s in finding environmentally responsible solutions to challenges that may arise;
- Should the PR be of the opinion that a serious threat to, or impact on the environment may be caused by the exploration activities, he/she may stop work; the proponent must be informed of the reasons for the stoppage as soon as possible;
- The PR has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP;
- Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the PR can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied;

- ❖ Maintain open and direct lines of communication between the landowners and proponent, as well as any other identified Interested and Affected Parties (I&APs) with regards to environmental matters, and;

- ❖ Attend regular site meetings and inspections as may be required for the proposed / ongoing exploration programme.

6.2.3 Project Health, Safety and Environment (Project HSE)

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

- ❖ Assist the PR in ensuring that the necessary environmental authorizations and permits have been obtained;

- ❖ Assist the PR and Contractor in finding environmentally responsible solutions to challenges that may arise;

- ❖ Conduct environmental monitoring as per EMP requirements;

- ❖ Carry out regular site inspections (on average once per week) of all exploration areas with regards to compliance with the EMP; report any non-compliance(s) to the PR as soon as possible;

- ❖ Organize for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through each field-based exploration activity; audit reports to be submitted to the PR;

- ❖ Continuously review the EMP and recommend additions and/or changes to the EMP document;

- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site;

- ❖ Keep records of all activities related to environmental control and monitoring; the latter to include a photographic records of the exploration activities, rehabilitation process, and a register of all major incidents, and;

- ❖ Attend regular site meetings.

6.2.4 Contractors and Subcontractors

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

- ❖ Comply with the relevant legislation and the EMP provision;

- ❖ Preparation and submission to the proponent through the Project HSE of the following Management Plans:

    - o Environmental Awareness Training and Inductions;

    - o Emergency Preparedness and Response;

- Waste Management, and;
- Health and Safety.

- ❖ Ensure adequate environmental awareness training for senior site personnel;
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement; the Project HSE is to provide the course content and the following topics, at least but not limited to, should be covered:
  - The importance of complying with the EMP provisions;
  - Roles and Responsibilities, including emergency preparedness;
  - Basic Rules of Conduct (Do's and Don'ts);
  - EMP: aspects, impacts and mitigation;
  - Fines for Failure to Adhere to the EMP, and;
  - Health and Safety Requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations,; and;
- ❖ Attend regular site meetings and environmental inspections.

6.3 Specific Mitigation Measures

6.3.1 Hierarchy of Mitigation Measures Implementation

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

(i) Enhancement, e.g. provision of new habitats;

(ii) Avoidance, e.g. sensitive design to avoid effects on ecological receptors;

(iii) Reduction, e.g. limitation of effects on receptors through design changes, and;

(iv) Compensation, e.g. community benefits.

6.3.2 Mitigation Measures Implementation

The Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP also provides the management actions with roles and responsibilities requirements for implementation of environmental management strategies by the proponent through the Contractors and Subcontractors who will be undertaking the exploration activities. The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the implementation of the proposed / ongoing exploration programme.

Based on the findings of the Scoping work, Table 6.1 – 6.18 provides the detailed specific mitigations measures to be implemented by the proponent with respect to the proposed / ongoing exploration programme activities and in particular for the field-based exploration activities. The following is the summary of the key areas of the migration measures provided in Tables 6.1-6.18:

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

Table 6.1: Project planning and implementation.

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
Establish a strong environmental awareness protocol from project implementation to final closure in order to ensure the least possible impact to the environment.	1. Resources (Human and Financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings and for internal and external Environmental Monitoring Costs as well as for any rehabilitation costs that may arise. 2. Appointment of a senior and experienced persons as Proponent's Representative (PR), Project Manager (PM) and Project HSE to assume responsibility for environmental issues. 3. All individuals including sub-contractors who work on, or visit, the sites are aware of the contents of the Environmental Policy and the EMP. 4. The EMP and Environmental Policy will be included in Tender Documents. 5. Field visit will take place during which main access tracks will be discussed in cooperation with the land owner/s	1. Regional reconnaissance field-based mapping and sampling activities; 2. Initial local field-based mapping and sampling activities; 3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; 4. Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.2: Implementation of the EMP.

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
1. Define roles and responsibilities in terms of the EMP. To make all personnel, contractors and subcontractors aware of these roles and responsibilities to ensure compliance with the EMP provisions. 2. Implement environmental management that is preventative and proactive. 3. Establish the resources, skills, etc. required for effective environmental management.	1. Senior staff and senior contractors are aware of, and practice the EMP requirements. These persons shall be expected to know and understand the objectives of the EMP and will, by example, encourage suitable environmentally friendly behaviour to be adopted during the exploration 2. Recognition will be given to appropriate environmentally acceptable behaviour. 3. Inappropriate behaviour will be corrected. An explanation to why the behaviour is unacceptable must be given, and, if necessary, the person will be disciplined. e.g. fees set out for non-compliance	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.3: Public and stakeholders relations.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Maintain sound relationships with the Other land users/ land owner/s and other stakeholders / public	1. No littering or any other activity prohibited 2. Permission to utilise water as well as all applicable permits are obtained.	1. Regional reconnaissance field-based mapping and sampling activities; 2. Initial local field-based mapping and sampling activities; 3. Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; 4. Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.4: Measures to enhance positive socioeconomic impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Measures to enhance positive socioeconomic impacts in order to: 1. Avoid exacerbating the influx of unemployed people to the area. 2. Develop a standardised recruitment method for sub-contractor and field workers.	1. Stipulate a preference for local contractors in its tender policy. Preference to local contractors should still be based on competitive business principles and salaries and payment to local service providers should still be competitive; 2. Develop a database of local businesses that qualify as potential service providers and invite them to the tender process; 3. Scrutinise tender proposals to ensure that minimum wages were included in the costing; 4. Stipulate that local residents should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy; 5. Must ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years; 6. Must ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws. This could be accomplished with a contractual requirement stipulating that monthly proof should be submitted indicating payment of minimum wages to workers, against their ID numbers, payment of social security and submission of affirmative action data; 7. Encouraged to cater for the needs of employees to increase the spending of wages locally.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.5: Environmental awareness briefing and training.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Implement environmental awareness briefing / training for individuals who visit, or work, on site.	1. Every senior/supervisory member of the team shall familiarise themselves with the contents of the EMP. They shall understand their roles and responsibilities with regard to personnel and project compliance with the EMP. 2. Subject to agreement of the parties, the Environmental Coordinator will hold an Environmental Awareness Briefing meeting, which shall be attended by all contractors before the start of the mineral exploration activities. 3. Briefings on the EMP and Environmental Policy shall discuss the potential dangers to the environment of the following activities: public relations, littering, off-road driving, waste management, poaching and plant theft etc. The need to preserve soil, conserve water and implement water saving measures shall be presented. 4. Individuals can be questioned on the Environmental Philosophy and EMP and can recall contents.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.6: Erection of supporting exploration infrastructure.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
1. Get Environmental Clearance before implementation 2. Establishment of the supporting exploration infrastructure done on an area with the least disturbance to the environment and within the non-sensitive areas	1. Documented Environmental Clearance from MET. 2. All on site exploration infrastructure (e.g. water tanks, sewage tanks, waste disposal) are not situated on environmental sensitive area and have disturbed as less as possible. 3. No littering.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.7: Use of existing access roads, tracks and general vehicle movements.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
1. Plan a road/track network that considers the environmental sensitivity of the area and a long-term tourism potential, and which is constructed in a technically and environmentally sound manner. 2. Stick to the recommended track and sensitivity management zones.	1. Avoid unnecessary affecting areas viewed as important habitat – i.e. Ephemeral River and its network of tributaries of ephemeral rivers; rocky outcrops; clumps of protected tree species; 2. Make use of existing tracks/roads as much as possible throughout the area; 3. Do not drive randomly throughout the area (could cause mortalities to vertebrate fauna and unique flora; accidental fires; erosion related problems, etc.); 4. Avoid off-road driving at night as this increases mortalities of nocturnal species; 5. Implement and maintain off-road track discipline with maximum speed limits (e.g.30km/h) as this would result in fewer faunal mortalities and limit dust pollution; 6. Use of "3-point-turns" rather than "U-turns"; 7. Where tracks have to be made to potential exploration sites off the main routes, the routes should be selected causing minimal damage to the environment – e.g. use the same tracks; cross drainage lines at right angles; avoid placing tracks within drainage lines; avoid collateral damage (i.e. select routes that do not require the unnecessary removal of trees/shrubs, especially protected species); 8. Leave vehicles on tracks and walk to point of interest, when possible; 9. Rehabilitate all new tracks created.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.8: Mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
1. Prevent flora and ecosystem destruction and promote conservation	1. Limit the development and avoid rocky / ridges outcrops throughout the entire area; 2. Avoid development and associated infrastructure in sensitive areas – e.g. hammock / vegetated dune/Ephemeral River, in/close to drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species; 3. Avoid placing access routes (roads and tracks) trough sensitive areas – e.g. over rocky outcrops/ridges and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area; 4. Avoid driving randomly through the area (i.e. "track discipline"), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area; 5. Stick to speed limits of maximum 30km/h as this would result in less dust pollution which could affect certain flora – e.g. lichen species. Speed humps could also be used to ensure the speed limit; 6. Remove unique and sensitive flora (e.g. various lichens, Aloe and Lithop) before commencing with the development activities and relocate to a less sensitive/disturbed site if possible; 7. Attempt to avoid the removal of hammock / vegetated dunes during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna; 8. Rehabilitation of the disturbed areas – i.e. initial development access route "scars" and associated tracks as well as temporary accommodation sites. Preferably workers should be transported in/out to the EPL area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company's environmental integrity, but also show true local commitment to the environment; 9. Implement erosion control. The area(s) towards and adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking any exploration activities including supporting activities such as camping within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna; 10. Conduct a thorough investigation on the flora associated with the proposed exploration site(s); 11. Prevent the introduction of potentially invasive alien plant species (e.g. Tecoma stans, Pennisetum setaceum, etc.) for ornamental purposes as part of the landscaping should mining activities eventually commence. Alien species often "escape" and become invasive causing further ecological damage; 12. A thorough investigation of water use and ground water extraction should take place before actual mining activities commence as this would affect the local flora, especially the ephemeral riparian vegetation, not only locally, but downstream as well.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.9: Mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Prevent faunal and ecosystem destruction and promote conservation	1. Limit the development and avoid rocky outcrops throughout the entire area; 2. Avoid development & associated infrastructure in sensitive areas – e.g. in/close to vegetated dunes, hammock landscapes, drainage lines, cliffs, boulder and rocky outcrops in the area, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species; 3. Avoid placing access routes (roads & tracks) trough sensitive areas – e.g. over rocky outcrops/ridges / hammocks, vegetated dunes and along drainage lines. This would minimise the effect on localised potentially sensitive habitats in the area; 4. Avoid driving randomly through the area (i.e. "track discipline"), but rather stick to permanently placed roads/tracks – especially during the detailed field-based exploration phase. This would minimise the effect on localised potentially sensitive habitats in the area; 5. Stick to speed limits of maximum 30km/h as this would result in fewer faunal road mortalities. Speed humps could also be used to ensure the speed limit; 6. Remove (e.g. capture) unique fauna and sensitive fauna before commencing with the development activities and relocate to a less sensitive/disturbed site if possible; 7. Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g. tortoises, etc.), indiscriminate killing of perceived dangerous species (e.g. snakes, etc.) and collecting of wood as this would diminish and negatively affect the local fauna – especially during the development phase(s); 8. Attempt to avoid the removal of hammock / vegetated dunes during the development phase(s) – especially with the development of access routes – as these serve as habitat for a myriad of fauna; 9. Rehabilitation of the disturbed areas – i.e. initial development access route "scars" and associated tracks as well as temporary accommodation sites. Preferably workers should be transported in/out to the EPL area on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company's environmental integrity, but also show true local commitment to the environment; 10. Implement erosion control. The area(s) towards & adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid undertaking exploration activities including supporting activities such as camping within 20m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated fauna; 11. Conduct a thorough investigation on the fauna associated with the proposed exploration site(s); 12. Prevent the number of domestic pets – e.g. cats and dogs – accompanying the workers during the field-based exploration activities as cats decimate the local fauna and interbreed & transmit diseases to the indigenous African Wildcat found in the area. Dogs often cause problems when bonding on hunting expeditions thus negatively affecting the local fauna. The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all costs.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.10: Mitigation measures to be implemented with respect to the exploration camps and exploration sites.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Promotion of conservation through preservation of flora, fauna and ecosystem around the exploration camps and exploration sites	1. Select camp sites and other temporary lay over sites with care – i.e. avoid important habitats; 2. Use portable toilets to avoid faecal pollution around camp and exploration sites; 3. Initiate a suitable and appropriate refuse removal policy as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g. baboon, black-backed jackal, etc.; 4. Avoid and/or limit the use of lights during nocturnal exploration activities as this could influence and/or affect various nocturnal species – e.g. bats and owls, etc. Use focused lighting for least effect; 5. Prevent the killing of species viewed as dangerous – e.g. various snakes – when on site; 6. Prevent the setting of snares for ungulates (i.e. poaching) or collection of veld foods (e.g. tortoises) and unique plants (e.g. various lichens, Aloe and Lithop) or any form of illegal hunting activities; 7. Avoid introducing dogs and cats as pets to camp sites as these can cause significant mortalities to local fauna (cats) and even stock losses (dogs); 8. Remove and relocate slow moving vertebrate fauna (e.g. tortoises, chameleon, snakes, etc.) to suitable habitat elsewhere on property; 9. Avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. various Aloe, Commiphora and Lithop species; 10. Avoid introducing ornamental plants, especially potential invasive alien species, as part of the landscaping of the camp site, etc., but rather use localised indigenous species, should landscaping be attempted, which would also require less maintenance (e.g. water); 11. Remove all invasive alien species on site, especially Prosopis sp., which is already becoming a major ecological problem along various water courses throughout Central Namibia. This would not only indicate environmental commitment, but actively contribute to a better landscape; 12. Inform contractors/workers regarding the above mentioned issues prior to exploration activities and monitor for compliance thereof throughout; 13. Rehabilitate all areas disturbed by the exploration activities – i.e. camp sites, exploration sites, etc.; 14. Implement a policy of replacing 2 tree species (preferably the same species) for every 1 protected tree species having to be removed (if necessary); 15. Although fires are not expected to be a major issue in the general area due to the overall lack of grass cover, some years it may be necessary to consider fire prevention. Ensure that adequate firefighting equipment (e.g. fire beaters; extinguishers, etc.) is available at camp sites and clear kitchen areas to avoid accidental fires; 16. Employ an independent environmental auditor to ensure compliance, especially of the rehabilitation of all the affected areas.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.11: Mitigation measures for surface and groundwater protection as well as general water usage.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Effective management / protection of surface and groundwater resources and general water resources usage	1. Always use as little water as possible. Reduce, reuse and re-cycle water where possible; 2. All leaking pipes / taps must be repaired immediately they are noticed; 3. Never leave taps running. Close taps after you have finished using them. 4. Never allow any hazardous substance to soak into the soil; 5. Immediately tell your Contractor or Environmental Control Officer / Site Manager when you spill, or notice any hazardous substance being spilled during the field-based exploration activities or around the camp site; 6. Report to your Contractor or Environmental Control Officer / Site Manager when you notice any container, which may hold a hazardous substance, overflow, leak or drip; 7. Immediately report to your Contractor or Environmental Control Officer / Site Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities; 8. No washing of vehicles, equipment and machinery, containers and other surfaces; 9. Limit the operation to a specific site and avoid sensitive areas and in particular the Ephemeral River Channel. This would sacrifice the actual area for other adjacent Ephemeral River areas and thus minimise any likely negative effect on water resources; 10. Disposal of wastewater into any public stream is prohibited; 11. The Proponent must obtained permission of the land owners before utilising any water resources or any associated infrastructure; 12. If there is a need to drilling a water borehole to support the exploration programme the proponent (Proponent) must obtain permission form the land owner and Department of Water Affairs in the Ministry of Agriculture and Forestry. In an event of discovery of economic minerals resources, the sources of water supply for the mining related operations will be supplied by NamWater; 13. If there are any further (larger scale) exploration/drilling activities and/or mining activities to follow from the initial planned drill holes, groundwater monitoring must be implemented to include water level monitoring and also water sampling on a bi-annual basis. In order to have greater transparency on the water monitoring activities, the affected landowners / farmers must be given full access to the results of the water monitoring analyses.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.12: Mitigation measures to minimise negative socioeconomic impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Effective management of socioeconomic benefits of the proposed / ongoing project activities	1. The employment of local residents and local companies should be a priority. To ensure that potential employees are from the area, they need submit proof of having lived in the area for a minimum of 5 years; 2. Providing information such as the number and types of jobs available, availability of accommodation facilities and rental costs and living expenses, could make potential job seekers wary of moving to the area; 3. Addressing unrealistic expectations about large numbers of jobs would be created; 4. Exploration camp if required should be established in close consultation with the land owners; 5. Exploration camp should consider provision of basic services; 6. When employees contracts are terminated or not renewed, contractors should transport the employees out of the area to their hometowns within two days of their contracts coming to an end; 7. Tender documents could stipulate that contractors have HIV/Aids workplace policies and programmes in place and proof of implementation should be submitted with invoicing; 8. Develop strategies in coordination with local health officers and NGO's to protect the local communities, especially young girls. 9. Contract companies could submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the EPL. Disciplinary actions should be in accordance with Namibian legislation; 10. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily; 11. Request that the Roads Authority erect warning signs of heavy exploration vehicles on affected public roads; 12. Ensure that drivers adhere to speed limits and that speed limits are strictly enforced; 13. Ensure that vehicles are road worthy and drivers are qualified; 14. Train drivers in potential safety issues.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.13: Mitigation measures to minimise health and safety impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Promotion of health and safe working environment in line with national Labour Laws	1. Physical hazards: Follow national and international regulatory and guidelines provisions, use of correct Personal Proactive Clothing at all times, training programme, as well as the implementation of a fall protection program in accordance with the Labour Act; 2. Some of the public access management measures that may be considered in an event of vandalism occurring are: • All exploration equipment must be in good working condition and services accordingly; • Control access to the exploration site through using gates on the access road(s) if required; • The entire site, must be fenced off; the type of fencing to be used would, however, be dependent on the impact on the visual resources and/or cost; and; • Notice or information boards relating to public safety hazards and emergency contact details to be put up at the gate(s) to the exploration area. 3. There is a comprehensive First Aid Kit on site and that suitable anti-histamine for bee stings / snake bites should be available. 4. Rubber gloves are used in case of an accident to reduce the risk of contracting HIV/AIDS; 5. All individuals have received instructions concerning the dangers of dehydration or hyperthermia. Encourage all to drink plenty of clean water not directly from the surface water bodies. 6. No person under the influence of alcohol or drugs is allowed to work on site. 7. The Exploration Manager ensures compliance with the requirements of the relevant Namibian Labour, Mining and Health and Safety Regulations. 8. Dangerous or protected / sensitive areas are clearly marked and access to these areas is controlled or restricted. 9. Due care must be taken when driving any vehicles on any roads particularly the gravel roads. ALL Drivers must drive with their headlights switched on when travelling on the gravel roads (day and night). 10. Persons driving a vehicle must be in possession of a valid driver's license 11. Awareness on HIV/AIDS among workers is raised	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.14: Mitigation measures to minimise visual impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Preserve the landscape character in the development of supporting infrastructure and choice of visual screening	1. Consider the landscape character and the visual impacts of the exploration area including camp site from all relevant viewing angles, particularly from public roads; 2. Use vegetation screening where applicable. Do not cut down vegetation unnecessary around the site and use it for site screening; 3. Avoid the use of very high fencing; 4. Minimise access roads and no off-road that could results in land scarring is allowed; 5. Minimise the presence of secondary structures: remove inoperative support structures; 6. Remove all infrastructure and reclaim, or rehabilitate the project site after exploration activities are completed.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.15: Mitigation measures to minimise vibration, noise and air quality.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Promote of effective management of vehicle movement, drilling and blasting operations and use of Personal Protective Equipment (PPE) in mitigating air quality and vibrations impacts in line with national laws	1. Limit vehicle movements and adhere to the speed of 60 km/h; 2. Vehicles and all equipment must be properly serviced to minimise noise pollution; 3. Use of Personal Protective Equipment (PPE) to minimise Occupational Health Safety impacts dues to noise pollution around the site; 4. National or international acoustic design standards must be followed. 5. Drilling and blasting operations can major sources of vibration, noise and dust and where required the following mitigation measure shall be implemented; • Drilling and blasting operations shall only be done by a qualified person who must at all times adhere to the required blasting protocol; • Prior warning shall be given to all persons, neighbour and visitors before the blasting takes place; • Careful planning and timing of the blast program to minimise the size of the charge; • Where practicable, use of explosive products with lower detonation velocities, but noting that this would require more explosives to achieve the same blast result; • Use of detonating caps with built-in time delays, as this effectively reduces each detonation into a series of small explosions; • Use of a procedure ("decking the charge") which subdivides the charge in one blast hole into a series of smaller explosions, with drill patterns restricted to a minimum separation from any other loaded hole; • Over-drilling the holes to ensure fracturing of the rock; • Staggering the detonation for each blast hole in order to spread the explosive's total overpressure over time; • Matching, to the extent possible, the energy needed in the “work effort” of the borehole to the rock mass to minimise excess energy vented into the receiving environment.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent’s Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.16: Mitigation measures for waste (solid and liquid) management.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Promotion of effective waste (solid and liquid) management through the adoption of sound and hierarchical approach to waste management, which would include waste minimisation, re-use, recovery, recycling, treatment, and proper disposal.	1. Burial of waste on anywhere within the EPL area is not allowed and all generated solid waste must be disposed at the at an approved municipal waste disposal site; 2. Toilet and ablution facilities must be provided on site and should not be located close to Ephemeral Rivers or visible discontinuities (fractures, joints or faults); 3. Provide site information on the difference between the two main types of waste, namely: • General Waste; and • Hazardous Waste. 4. Sealed containers, bins, drums or bags for the different types of wastes must be provided. Never dispose of hazardous waste in the bins or skips intended for general waste; 5. All solid and liquid wastes generated from the proposed / ongoing project activities shall be reduced, reused, or recycled to the maximum extent practicable; 6. Trash may not be burned or buried, except at approved sites under controlled conditions in accordance with the municipal regulations; 7. Never overfill any waste container, drum, bin or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins or skips are nearly full; 8. Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping; 9. Littering is prohibited. 10. Latrines and French drains built >100m from watercourses or pans to avoid pollution of primary and secondary aquifers. 11. Chemical toilets or suitable waste water management system shall be provided on site and around the camp as may be required.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.17: Rehabilitation plan.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Contributions toward environmental preservation and sustainability through rehabilitation of disturbed areas such as exploration sites and remove all unwanted part of the fixtures and restore the sites to close an approximation of the pristine state as is technically, financially and reasonably possible.	1. The following rehabilitation actions are practiced: • Small samples are preferably removed from site to avoid additional scars in the landscape; • Litter from the site has been taken to the appropriate disposal site. • Debris, scrap metal, etc is removed before moving to a new site or closure of the mine. • Water tanks are dismantled and removed if not need for after use. • Tracks on site and the access road are rehabilitated by smoothing the 'middle mannetjie'(middle ridge between the tracks) and raking the surface. 2. The following should be undertaken at all disturbed areas that require further rehabilitation: • if applicable the stockpiled subsoil to be replaced (spread) and/or the site is neatly contoured to establish effective wind supported landscape patterns; • Replace the stored topsoil seed bank layer. • Five (5) years after rehabilitation the sites are not visible from 500 m away.	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 6.18: Environmental data collection.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
1. Collect data that will add value to environmental monitoring and reporting to the regulators 2. Collect data that will add to the general scientific and geographic knowledge of the environment in which the exploration process takes place. 3. Acknowledged that the required skills and knowledge to collect all the suggested data may not be available within the mine /exploration team, however, as much data as is practical should be collected.	1. Environmental Monitoring Report Compiled and submitted by the Environmental Coordinator to the regulators 2. The following types of information should be gathered: • Fauna. What tracks or signs of animal activity have been seen? (photographs and GPS recording) What animals, birds etc were identified? Alternatively provide a description and/ or photo if unidentified. • Unusual weather conditions, e.g. records of the prevailing wind direction and the direction from which storm events come. Was there fog or rain, frost overnight or intense heat? Preferably have a thermometer and rain gauge on site. • Vegetation. Record trees, shrubs, grass, etc. that are found in the vicinity along each of the profiles. Some plants do only occur after rainfall and might not have been seen for decades. • Any archaeological, cultural or historical sites that may be found. GPS coordinates, photograph and plot the position on a 1: 50 000 map. • other including surface water, spring, large scale geological features etc	(i) Regional reconnaissance field-based mapping and sampling activities; (ii) Initial local field-based mapping and sampling activities; (iii) Detailed local field-based activities such as local geological mapping, geochemical mapping and sampling, trenching and drilling of closely spaced boreholes and bulk sampling; (iv) Prefeasibility and feasibility studies.	(i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

6.4 Monitoring of the Environmental Performance

6.4.1 Overview

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

(i) Routine / ongoing daily monitoring activities to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required, and;

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

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

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

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

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusions

Ya Otto Mining and Exploration (Pty) Ltd (**the Proponent**) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 5517, with special focus on diamonds and rare earth metals. The exploration activities to be undertaken as assessed in this report covers desktop studies, followed by site-specific activities using techniques such as aerial and ground geophysical surveys, geological mapping, geochemical sampling, trenching, drilling and bulk sampling and test mining.

The overall severity of potential environmental impacts of the proposed / ongoing project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of low magnitude, temporally duration, localised extent and low probability of occurrence. Mitigation measures must be implemented as detailed in Section 6 (EMP) of this report. The proponent must obtain permission of the land owner (surface rights holder) before exercising the subsurface rights with respect to the EPL 5517.

7.2 Recommendations

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

(i) Mitigation measures must be implemented as detailed in Section 6 (EMP) of this Scoping and EMP report;

(ii) The proponent shall negotiate Access Agreement with the land owner Ministry of Environment and Tourism (MET);

(iii) The proponent shall obtain park permits from the Ministry of Environment and Tourism (MET) in order to enter the portion of the EPL falling within the Skeleton Coast National Park;

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

(v) Before entering protected area the proponent must give advance notices and obtain permission to access the EPL area at all times, and;

(vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the proponent shall support other land uses in the area in terms of access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s. The abstraction and discharge of wastewater shall include water levels monitoring, sampling and quality testing on a bi-annual basis, and that the Interest and Affected Parties (I&AP) must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as maybe applicable.

The proponent must take all the necessary steps to implement all the recommendations of the EMP for the successful implementation and completion of the proposed / ongoing exploration programme covering the EPL 5517. Recommended actions to be implemented by the proponent through implementations of the EMP are:

(i) The proponent must implement precautionary measures / approach to environmental management. Once a viable and potential economic resources have been identified, the proponent must develop and implement a separate EIA and EMP inclusive of the specialist studies such as fauna and flora to be undertaken by specialist consultants as part of the feasibility study stage;

(ii) Before detailed site-specific exploration activities such as extensive drilling operations and access routes are selected, the Project HSE Officer with the support of the external specialist consultants as maybe required, should consider the flora, fauna and archaeological sensitivity of the area and commission a field survey in advance of any site development as may be required based on the assessment undertaken;

(iii) The Project HSE Officer shall lead, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed / ongoing exploration period;

(iv) The proponent to provide all the necessary support including human and financial resources, for the implementation of the proposed / ongoing mitigations and effective environmental management during the planned exploration activities for the EPL 5517;

(v) Project HSE Officer with the support of the external specialist consultants as maybe required to develop a simplified environmental induction and awareness programme for all the workforce, contractors and sub-contractors;

(vi) Where contracted service providers are likely to cause environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities;

(vii) Implement monitoring of the actions and management strategies developed during the mineral exploration process. Final Environmental Monitoring report shall be prepared by the Project HSE Officer with the support of the external specialist consultants as maybe required to be submitted to the regulators and to mark the closure of the proposed / ongoing mineral exploration, and;

(viii) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA for possible mining projects.

7.3 Summary ToR for Test Mining and Mining Stages

In an even that economic minerals resources are discovered within the EPL 5517 area and could lead to the development of mining project, a new Environmental Clearance Certificate (ECC) for mining will be required. The ECC being supported by this Scoping and EMP report only covers the exploration phase. A separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports supported by

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

(i) Assessment of all linear structures such as roads, powerline and water supply including assessment of the desalination plant covering the abstraction of sweater and discharge of wastewater;

(ii) Groundwater studies including modelling as maybe applicable;

(iii) Site-specific field-based flora and fauna diversity;

(iv) Archaeology;

(v) Dust, noise and sound modelling linked to engineering studies;

(vi) Socioeconomic assessment, and;

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

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

(i) To assess all the likely positive and negative short- and long-term impacts on the receiving environment (physical, biological and socioeconomic environments) at local (EPL Area), regional, national (Namibia) and Global levels using appropriate assessment guidelines, methods and techniques covering the complete project lifecycle. The EIA and EMP to be undertaken shall be performed with reasonable skill, care and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques shall conform to the national regulatory requirements, process and specifications in Namibia and in particular as required by the Ministry of Mines and Energy, Ministry of Environment and Tourism and Ministry of Agriculture, Water Affairs and Forestry, and;

(ii) The development of appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative influences of the negative impacts identified or anticipated. Such mitigation measures shall be contained in a detailed EMP report covering the entire project lifecycle.

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