Final Environmental Impact Assessment (EIA) Report for the Proposed Minerals Exploration and Test Mining Activities in the Exclusive Prospecting License (EPL) No. 6688, Otjiwarongo District, Otjozondjupa Region, North-Central Namibia
PROPONENT, LISTED ACTIVITIES
AND RELATED INFORMATION SUMMARY

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM (MEFT)
ECC APPLICATION REFERENCE No.
APP-001644

TYPE OF AUTHORISATIONS REQUIRING ECC
Exclusive Prospecting License (EPL) No. 6688
for ECC for Exploration

NAME OF THE PROPONENT
Broadmind Mining (Pty) Ltd

COMPETENT AUTHORITY
Ministry of Mines and Energy (MME)

ADDRESS OF THE PROPONENT AND CONTACT PERSON
Broadmind Mining (Pty) Ltd
P. O Box 1756
WINDHOEK, NAMIBIA

PROPOSER CONTACT PERSON:
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Email: clintd@broadmindmining@co.na
Phone: 24 61 223089

PROPOSED PROJECT
Proposed Minerals Exploration / Prospecting activities in the Exclusive
Prospecting License (EPL) No. 6688,
Otjiwarongo District, Otjozondjupa Region

PROJECT LOCATION
Otjiwarongo District, Otjozondjupa Region, Central Namibia
(Latitude: -20.823333, Longitude: 16.128611)

ENVIRONMENTAL CONSULTANTS
Risk-Based Solutions (RBS) CC
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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)
Dr. Sindila Mwiya
PhD, PG Cert, MPhil, BEng (Hons), Pr Eng
Dr Sindila Mwiya has more than eighteen (18) 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, engineering geology, geotechnical 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 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. The great array of highly technical specialist knowledge and field-based practical experiences of Dr Sindila Mwiya has now been extended to supporting the development of Environmentally Sustainable, automated / smart and Climate Change resilient homes, towns and cities.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd 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 EMGS (UK/Norway), CGG (UK/ France/Namibia), BW Offshore (Norwegian/Singapore/Namibia), Shell Namibia B. V. Limited (Namibia/the Netherlands), Tullow Oil (UK/Namibia), Debmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Rosco Resource Corporation (Canada/Germany/Namibia), Desert Lion Energy Corporation (Canada/Australasia/Namibia), Petrosas Oil and Gas (Brazil), BP (UK/Namibia), NEPSOL (Spain/Namibia), ACRON (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), GeopPartners (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, 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. Currently, Dr Sindila Mwiya is developing a 16 Ha commercial and residential Mwale Mwiya Park in the Town of Katima Mulilo, Zambezi Region, Namibia as one of first advanced Environmentally Sustainable, automated / smart and Climate Change resilient development in Namibia. He continues to work as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), 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 (MEFT) / DANIIDA – 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 Geosciences 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 a number of MScs and PhDs research programmes 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 donor organisations. From 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIS in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new 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 (Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semi-arid 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, Namibia July 2020
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NON-TECHNICAL SUMMARY

Broadmind Mining (Pty) Ltd (the Proponent) holds mineral rights under the Exclusive Prospecting License (EPL) No. 6688 for base and rare metals, dimension stones, industrial minerals and precious metals. The EPL 6688 was granted on the 25/03/2019 and will expire on the 24/03/2022. Broadmind Mining (Pty) Ltd is locally owned Namibian company focused on the acquisition and development of mining projects in Namibia.

The Exclusive Prospecting Licence (EPL) No. 6688 is located in the located in the Otjiwarongo District and cover the settlement of Kalkfeld in the Otjozondjupa Region, Central Namibia. Locally, the EPL area totalling 46712 Ha and covers part of the Kalkfeld Settlement land as well as the whole or part of the following private commercial farmlands: Maywood, Niederungsfelde, Humburg, Sandputz Nord, Evergreen, Sandputz, Hedwigstal, Cehmputz, Eisenberg, Quelldam, Otjimbonde, Wilhelm-Abrechstal, Osongombo Sud, Okarumue, Osongombo and Eberhardshohe. The general local topographic setting of the area ranges between 1350 – 1600 meters above mean sea-level (mamsl).

The Proponent intends undertake exploration activities covering desktop studies, followed by site-specific activities on targets that may be delineated and using exploration techniques/ methods such as geophysical surveys, geological mapping, trenching, drilling, bulk sampling and test mining.

The proposed exploration and test mining 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 Environmental Impact Assessment (EIA) report has been prepared by Risk-Based Solutions (RBS) CC to support the application for the ECC for the proposed exploration and test mining activities in the EPL 6688.

The impacts that the proposed exploration activities and associated infrastructure such as access and exploration supporting facilities will have on the receiving environment (physical, biological and socioeconomic) will depend on the extent of the proposed activities over the development area, management of the area and how the mitigations as detailed in the EMP Report are eventually implemented and monitored by the Proponent.

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

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

(ii) 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.

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

(iv) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s or as may be needed for environmental protection including wildlife management. The abstraction of the groundwater resources shall include water levels monitoring, sampling and quality testing on a bi-annual basis, and that the affected landowner/s must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable.

Once and if economic minerals resources are discovered, a separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports shall be
prepared as part of the feasibility study for possible mining operations. The site-specific EIA and EMP reports shall cover the area identified to have potential economic minerals resources including the pit / shaft area/s, waste rock, tailings dump, access, office blocks, water and external infrastructure support areas such as water pipeline, powerline and main road/s.

In addition to the Terms of Reference (ToR) to be developed during the Environmental Scoping study phase for the mining operations, the following field-based and site-specific specialist studies shall be considered in the TOR for the EIA and EMP studies for possible mining operations in an event of a discovery of economic minerals resources and possible development of a mining project within the EPL No. 6688:

(i) Groundwater studies including modelling as maybe applicable.

(ii) Field-based flora and fauna diversity.

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

(iv) Socioeconomic assessment, and.

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

1.1 Introduction

Broadmind Mining (Pty) Ltd, the Proponent, holds mineral rights under Exclusive Prospecting License (EPL) No. 6688. The following is the summary of the EPL 6688:

❖ Type of License: Exclusive Prospecting License (EPL) No. 6688.
❖ EPL Holder and Proponent: Broadmind Mining (Pty) Ltd.
❖ Granted Date: 25/03/2019.
❖ Expiry Date: 24/03/2022.
❖ Commodities: Base and rare metals, dimension stones, industrial minerals and precious metals, and.
❖ Size of the EPL: 46712 Ha.

Broadmind Mining (Pty) Ltd is locally owned Namibian company focused on the acquisition and development of mining projects in Namibia.

1.2 Proposed Scope of Work

The Proponent intends undertake exploration activities covering desktop studies, followed by site-specific activities on targets that may be delineated and using exploration techniques/methods such as geophysical surveys, geological mapping, trenching, drilling, bulk sampling and test mining. If the proposed exploration activities lead to positive results, the exploration data collected will then be put together into a prefeasibility report and if the prefeasibility result proves positive then a detailed feasibility study supported by detailed site-specific drilling, bulk sampling, laboratory tests and conduct test mining activities on the discovered mineralised locality will be undertaken.

A positive feasibility study will be required to support the application for a Mining License (ML) together with a new site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) with specialist studies such as flora, fauna, socioeconomic, water, traffic, dust and noise modelling and archaeology to be undertaken to support the application for the new ECC for mining and minerals process.

1.3 Regulatory Requirements

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

In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultants led by Dr Sindila Mwiya as the Environmental Assessment Practitioner in the preparation of the EIA and EMP Reports in order to support the application for ECC (Annex 1).

1.4 Location, Land Use, Infrastructure and Services

1.4.1 Location and Land Use

The Exclusive Prospecting Licence (EPL) No. 6688 is located in the located in the Otjiwarongo District and cover the settlement of Kalkfeld in the Otjozondjupa Region, Central Namibia (Fig. 1.2 - 1.3).
The EPL 6688 has a total area of 46712 Ha and covers part of the Kalkfeld Settlement land as well as the whole or part of the following private commercial farmlands (Fig 1.3) Maywood, Niederungsfelde, Humburg, Sandputz Nord, Evergreen, Sandputz, Hedwigstal, Cehmputz, Eisenberg, Quellidam, Otjimbonde, Wilhelm-Abrechstal, Osongombo Sud, Okarumue, Osongombo and Eberhardshohe: The general local topographic setting of the area ranges between 1350 – 1550 meters above mean sea-level (mamsl) (Fig. 1.3).

The EPL area is dominated by private commercial farmland (Fig. 1.3). The land use of the minerals licence area is mainly dominated by commercial cattle and small stock agriculture. Bush thickening or encroachment is viewed as an economic problem in the general area with an estimated 4,000 to 12,000 plants/ha – mainly Acacia mellifera being the dominant problematic species (Bester 2001, Cunningham 1998, Mendelsohn et al. 2002).

The area is not part of the communal conservancy system in Namibia with no protected area nearby the minerals licenses. The minerals license areas cover the only iron ore deposit in Namibia that has been mined in the past and associated with the Cretaceous Kalkfeld Alkaline Complex on the farm Eisenberg 78 (Fig. 1.3). Other current land use activities around the area include minerals explorations.

1.4.2 Supporting Infrastructure and Services

The settlement of Kalkfeld is the nearest settlement covered by the EPL area. Kalkfeld is situated halfway between the Towns of Omaruru and Otjiwarongo on the national road C33 and falls within the Otjiwarongo Electoral Constituency. The minerals licenses area falls in an area with roads and railway line supporting infrastructure.

Access to the license area is though the C33 road linking Omaruru to Otjiwarongo via Kalkfeld (Figs. 1.2 -1.3). Within the minerals licenses areas, a number of minor gravel farm roads already exists and are linked to the D2418, D2403 and C33 (Figs. 1.2 -1.3). The EPL area has mobile services and fixed telecommunication infrastructure particularly around Kalkfeld.

The proposed / ongoing exploration programme will not require major water and energy supply services. However, the development on a major mining project in the area will require reliable energy and water supply sources. Sources of water supply will be provided by NamWater from possible local and regional groundwater resources still to be determined.
Figure 1.1: Regional location of the EPL No 6688 Area.
Figure 1.2: Detailed regional location of the EPL 6688 (RBS Map Prepared by Katharina Dierkes, 2020).
Figure 1.3: Commercial farmland covered by the EPL 6688 and access (RBS Map Prepared by Katharina Dierkes, 2020).
1.5 Project Motivation

The EPL 6688 is situated in a highly perspective area for Base and rare metals, dimension stones, industrial minerals and precious metals associated with local rock outcrops comprising rhyolite, basalt, amphibolite, phyllite, limestone and gneiss. Based on the historical exploration activities undertaken around the EPL area, iron ore is historically known to occur in the EPL area. The EPL area holds the only iron ore deposit in Namibia that has been mined and associated with the Cretaceous Kalkfeld Alkaline Complex on the farm Eisenberg 78 in the Otjiwarongo District.

The complex is slightly oval in plan and measures about 5 km in diameter. The iron ore forms the core of a carbonatite hill, situated in the central part of a crater which consists of syenite, foyaltite, carbonatite, fenite and granite (Roesener and Schreuder, 1992) Massive red and brown iron ore outcrops cover an area of about 350 by 275 m. The ore consists mainly of limonite and hematite and contains variable amounts of magnetite, siderite, goethite and pyrolusite. The iron content of the ore decreases with increasing potassium. The ore is low in titanium and was found to possess ideal fluxing properties.

According to Roesener and Schreuder, (1992), the ore reserves were estimated at several million tons. The Otavi Minen und Eisenbahngesellschaft (OMEG) commenced mining at Kalkfeld in 1908 and worked intermittently until 1939, when the outbreak of World War II brought all mining operations to a standstill. During this time some 218 000 t of iron ore were produced and used as flux for the company’s copper smelter at Tsumeb. Tsumeb Corporation Ltd operated the mine for the same purpose from 1963 to 1970 (Roesener and Schreuder, 1992). Potential for more deposits in the surrounding areas may exist and the developers are interested to explore the area. Based on the regional geology and limited exploration activities undertaken, there is good probability for discovering additional economic minerals resources within the EPL 6688.

The proposed / ongoing exploration activities has some limited socioeconomic benefits which are mainly centred around the payment of the annual license rental fees to the Central Government through the Ministry of Mines and Energy (MME) and value addition to the potential underground minerals resources in the area which otherwise would not have been known if the exploration in EPL 6688 did not take place. The potential discovery of additional economic minerals resources and the development of new mining project in the area will have much greater socioeconomic benefits to the small desolate settlement of Kalkfeld. Additional socioeconomic benefits will also be realised at regional and national socioeconomic benefits in terms of capital investments, license rental fees, royalties payable to Government, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments and various taxes payable to the Government.

1.6 Approach, Alternatives, Key Issues and Methodology

1.6.1 Terms of Reference (ToR) and Approach

Risk-Based Solutions (RBS) was appointed by the Proponent to prepare the EIA and EMP Reports in order to support the application for renewal of the Environmental Clearance Certificate (ECC) for the EPL No. 6688 with respect to the proposed exploration activities. The EIA process reviewed the receiving environmental settings (physical, biological, socioeconomic and ecosystem services, function, use values and non-use) and proposed exploration activities, identified the impacts and then assessed the likely impacts (positive and negative) on the receiving environment (Table 1.1).

The key deliverable comprised this EIA Report and a separate Environmental Management Plan (EMP) report detailing appropriate mitigation measures that will enhance the positive impacts and reduce the likely negative impacts identified. The EIA and EMP report and the completed Application for Environmental Clearance Certificate (ECC) shall be submitted to the client (Proponent) and the Office of the Environmental Commissioner, Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through the Ministry of Mines and Energy (the Competent Authority) for review and issue of the Records of Decisions (RDs).

The EIA and EMP processes have been performed with reasonable skill, care and diligence in accordance with professional standards and practices existing at the date of performance of the assessment and that the guidelines, methods and techniques that have been applied are all in
conformity to the national regulatory requirements, process and specifications in Namibia as required by MME, MEFT and Ministry of Agriculture, Water and Land Reform (MAWLR). Both the EIA and EMP Reports have been prepared in line with the January 2015 MET Environmental Assessment Reporting Guideline.

Table 1.1: Summary of the proposed activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering Scoping, EIA and EMP Processes.

<table>
<thead>
<tr>
<th>PROPOSED PROJECT ACTIVITIES</th>
<th>ALTERNATIVES TO BE CONSIDERED</th>
<th>KEY ISSUES TO BE EVALUATED AND ASSESSED WITH ENVIRONMENTAL MANAGEMENT PLAN (EMP) / MITIGATION MEASURES DEVELOPED</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Initial desktop exploration activities (review of existing information and all previous activities in order identify any potential target/s)</td>
<td>(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.</td>
<td>Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism and agriculture.</td>
</tr>
<tr>
<td>(ii) Regional reconnaissance field-based activities such mapping and sampling to identify areas with potential targets</td>
<td>(ii) Other Alternative Land Uses: Game Farming, Tourism and Agriculture</td>
<td></td>
</tr>
<tr>
<td>(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 targets</td>
<td>(iii) Ecosystem Function (What the Ecosystem Does.</td>
<td></td>
</tr>
<tr>
<td>(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</td>
<td>(iv) Ecosystem Services.</td>
<td></td>
</tr>
<tr>
<td>(v) Prefeasibility and feasibility studies to be implemented on a site-specific area if the local field-based studies prove positive</td>
<td>(v) Use Values.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vi) Non-Use, or Passive Use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vii) The No-Action Alternative</td>
<td></td>
</tr>
</tbody>
</table>

1.6.2 Environmental Assessment Process and Steps

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

❖ Screened the project against the applicable legislation and regulations undertaken in June 2020.

❖ In June 2020, prepared the Draft BID / Scoping Report (Annex 1) for public and stakeholder consultations process and for registration of the proposed project on the MEFT digital platform.

❖ In June 2020 prepared the public consultation materials including public notice for publication in the local newspapers.

❖ Registered the project on the MEFT digital platform in June 2020 (APP-001644);
- Opened a stakeholder register and published the public notice in the local newspapers Invited the public and stakeholders to participate in environmental assessment process. The consultation period ran between Thursday 25th June 2020 to Friday 17th July 2020 (Annex 3).

- On receipt of the acknowledgment of the ECC notification from MEFT, finalised the BID /Scoping Report and prepared Draft EIA and EMP Reports for further stakeholder consultations / inputs in June and July 2020, and.

- Based on the stakeholders inputs, finalised the EIA and EMP reports for submission to the Environmental Commissioner through the Mining Commissioner in the MME (Competent Authority) in support of the application for Environmental Clearance Certificate (ECC) for the proposed project. The finalisation of the EIA and EMP reports was undertaken in July 2020.

1.6.3 Assumptions and Limitations

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

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

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

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

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

1.7 Structure of the Report

The following is the summary structure outline of this EIA report.

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

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

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

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

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

6. **Section 6:** Conclusions and Recommendations - Summary of the findings and way forward.

7. **SECTION 7:** Annexes
2. DESCRIPTION OF THE EXPLORATION

2.1 General Overview

The overall aim of the proposed project activities (exploration / prospecting programme) is to search for potential economic minerals resources (Base and rare metals, dimension stones, industrial minerals and precious metals) within the EPL area.

The following is the detailed overview of the proposed activities:

(i) Initial desktop exploration activities (review of existing information and all previous activities in order identify any potential target/s in the EPL Area);

(ii) Regional reconnaissance field-based activities such as reginal mapping, aerial survey and existing data analysis and sampling to identify and verify potential targeted areas based on the recommendations of the desktop work undertaken under (i) above;

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

(iv) Detailed local field-based activities such very detailed geological mapping, trenching, bulk sampling, surveying and detailed drilling in order to determine the feasibility of any delineated local targets and conduct test mining activities.

The scope of the required field-based support and logistical activities will depend on the scale of proposed exploration activities to be undertaken.

The proposed exploration activities will be supported by existing tracks and campsites / farmstead as well as existing accommodation in in the area. In the absences of existing tracks, the field team will create such new tracks with the permission of the land owner/s and depending on the scale of exploration.

In the absences of existing suitable campsite / farmstead, temporary camp will be setup at suitable locations within the EPL area in line with the EMP provisions. The size of the exploration camp will be of very limited footprints during the exploration phase but may be expanded for the test mining and mine development phases in an event of a discovery of economic minerals resources.

2.2 Proposed Detailed Local Field-Based Activities

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

Other activities to be undertaken as part of the detailed local field-based activities include the following:

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

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

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

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

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

(i) Detailed site-specific surveys.
(ii) Detailed geological mapping.
(iii) Bulk sampling and testing.
(iv) Ore reserve calculations.
(v) Geotechnical studies for mine design.
(vi) Detailing technical viability studies including forecasts of estimated expenditure and financial.
(vii) Mine planning and designs including all supporting infrastructures (water, energy and access).
(viii) Environmental Impact Assessment for mining.
(ix) Environmental Management Plan for mining.
(x) Test mining activities, and.
(xi) Preparation of feasibility report and application for Mining License.

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

3.1 Overview

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

3.2 Key Applicable Legislation

3.2.1 Minerals Exploration and Mining Legislation

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

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

3.2.2 Environmental Management Legislation

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

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

3.2.3 Water Legislation

Water Act 54 of 1956 under the Minister of Agriculture, Water and Land Reform (MAWLR) provides for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the ongoing exploration must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater as well as for “water works”. The broad definition of water works will include the reservoir on site (as this is greater than 20,000m³), water treatment facilities and pipelines. Due to the
water scarcity of the area, all water will be recycled (including domestic wastewater). The Act requires the license holder to have a wastewater discharge permit for discharge of effluent.

The Water Act 54 of 1956 is due to be replaced by the Water Resources Management Act 24 of 2004 which is currently being revised. The Water Resource Management Act 2004 provides for the management, development, protection, conservation and use of water resources.

3.2.4 Atmospheric Pollution Prevention Legislation

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

3.2.5 Labour, Health and Safety Legislations


In terms of the Health Safety and Environment (HSE), the Labour Act, 2007 protects employees and every employer shall, among other things: provide a working environment that is safe, without risk to the health of employees, and that has adequate facilities and arrangements for the welfare of employees, provide and maintain plant, machinery and systems of work, and work processes, that are safe and without risk to the health of employees, and ensure that the use, handling, storage or transportation of hazardous materials or substances is safe and without risk to the health of employees. All hazardous substances shall have clear exposure limits and the employer shall provide medical surveillance, first-aid and emergency arrangements as fit for the operation.

3.2.6 Other Applicable National Legislations

Other Important legislative instruments applicable to the ongoing exploration operations in the EPL 6688 include the following (Table 3.1):

- Nature Conservation Ordinance, No. 4 of 1975 – Ministry of Environment, Forestry and Tourism (MEFT).
- Hazardous Substances Ordinance 14 of 1974 – Ministry of Health and Social Services (MHSS), and.
- Public Health Act 36 of 1919 – Ministry of Health and Social Services (MHSS).

Table 3.1 summarises the key selected legislations relevant applicable to the ongoing exploration in the EPL 6688.
**Table 3.1: Legislation relevant to the ongoing exploration operations in the EPL 6688.**

<table>
<thead>
<tr>
<th>LAW</th>
<th>SUMMARY DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constitution of the Republic of Namibia, 1990</strong></td>
<td>The Constitution is the supreme law in Namibia, providing for the establishment of the main organs of state (the Executive, the Legislature, and the Judiciary) as well as guaranteeing various fundamental rights and freedoms. Provisions relating to the environment are contained in Chapter 11, article 95, which is entitled “promotion of the Welfare of the People”. This article states that the Republic of Namibia shall – “actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at … maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for all Namibians, both present and future. The Government shall provide measures against the dumping or recycling of foreign nuclear waste on Namibian territory.”</td>
</tr>
<tr>
<td><strong>Minerals (Prospecting and Mining) Act, 1992</strong></td>
<td>The Minerals Act governs minerals prospecting and mining. The Act provides for the reconnaissance, prospecting, and mining for, and disposal of, and the exercise of control over minerals in Namibia, and to provide for matters incidental thereto. A new Minerals Bills is currently under preparation.</td>
</tr>
<tr>
<td><strong>Environmental Management Act (2007) - Ministry of Environment, Forestry and Tourism (MEFT)</strong></td>
<td>The purpose of the Act is to give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources. to promote the co-ordinated and integrated management of the environment, to give statutory effect to Namibia’s Environmental Assessment Policy. to enable the Minister of Environment and Tourism to give effect to Namibia’s obligations under international conventions. In terms of the legislation it will be possible to exercise control over certain listed development activities and activities within defined sensitive areas. the listed activities in sensitive areas require an Environmental Assessment to be completed before a decision to permit development can be taken. The legislation describes the circumstances requiring Environmental Assessments. Activities listed as per the provisions of the Act will require Environmental Assessment unless the Ministry of Environment, Forestry and Tourism, in consultation with the relevant Competent Authority, determines otherwise and approves the exception.</td>
</tr>
<tr>
<td><strong>Water Act 54 of 1956</strong></td>
<td>This Act provides for the control, conservation and use of water for domestic, agricultural, urban, and industrial purposes. In terms of Section 6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the proposed project must ensure that mechanisms are implemented to prevent water pollution. Certain permits will also be required to abstract groundwater (already obtained) as well as for “water works”. The broad definition of water works will include the reservoir on Site (as this is greater than 20,000m³), water treatment facilities and pipelines. Due to the water scarcity of the area, all water will be recycled (including domestic wastewater) and the Mine will be operated on a zero-discharge philosophy. It will, therefore, not be necessary to obtain permits for discharge of effluent. Section 23 of the Act requires environment rehabilitation after closure of the Mine, particularly, in this instance to obviate groundwater pollution and potential pollution resulting from run-off. This Act is due to be replaced by the Water Resources Management Act 24 of 2004.</td>
</tr>
<tr>
<td><strong>Forest Act 12 of 2001 - Minister of Environment, Forestry and Tourism (MEFT)</strong></td>
<td>The Act provide for the establishment of a Forestry Council and the appointment of certain officials. to consolidate the laws relating to the management and use of forests and forest produce. to provide for the protection of the environment and the control and management of forest fires. Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove: (a) any vegetation which is on a sand dune or drifting sand or in a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully or (b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse. Should either of the above be unavoidable, it will be necessary to obtain a permit from the Ministry. Protected tree species as listed in the Regulations shall not be cut, destroyed, or removed.</td>
</tr>
<tr>
<td><strong>Hazardous Substance Ordinance 14 of 1974</strong></td>
<td>Provisions for hazardous waste are amended in this act as it provides “for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance. and to provide for matters connected therewith”</td>
</tr>
<tr>
<td>Table 3.1:</td>
<td>Cont.</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Agricultural (Commercial) Land Reform Act, 1995, Act No.6 of 1995 Ministry of Agriculture, Water and Land Reform (MAWLR)</strong></td>
<td>This Act provides for the acquisition of agricultural land by the State for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or otherwise have the use of any or of adequate agricultural land, and foremost to those Namibian citizens who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices. To vest in the State a preferent right to purchase agricultural land for the purposes of the Act, to provide for the compulsory acquisition of certain agricultural land by the State for the purposes of the Act, to regulate the acquisition of agricultural land by foreign nationals, to establish a Lands Tribunal and determine its jurisdiction, and to provide for matters connected therewith.</td>
</tr>
<tr>
<td><strong>Explosives Act 26 of 1956 (as amended in SA to April 1978) - Ministry of Home Affairs, Immigration, Safety and Security (MHAISS)</strong></td>
<td>All explosive magazines are to be registered with the Ministry of Mines and Energy as accessory works. In addition, the magazines must be licensed as required by Section 22. The quantity of explosives and the way it is stored must be approved by an inspector. The inspector has powers to enter the premises at any time to conduct inspections regarding the nature of explosive, quantity and the way it is stored. At closure, all explosives are to be disposed of accordingly.</td>
</tr>
<tr>
<td><strong>Atmospheric Pollution Prevention Ordinance 11 of 1976. Ministry of Health and Social Services (MHSS)</strong></td>
<td>This regulation sets out principles for the prevention of the pollution of the atmosphere and for matters incidental thereto. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.</td>
</tr>
<tr>
<td><strong>The Nature Conservation Ordinance, Ordinance 4 of 1975, Ministry of Environment, Forestry and Tourism (MEFT)</strong></td>
<td>During the Mine’s activities, care must be taken to ensure that protected plant species and the eggs of protected and game bird species are not disturbed or destroyed. If such destruction or disturbance is inevitable, a permit must be obtained in this regard from the Minister of Environment, Forestry and Tourism. The regulation further provides that the Minister may impose special conditions to prevent environmental contamination.</td>
</tr>
<tr>
<td><strong>Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007) - Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)</strong></td>
<td>The labour Act gives effect to the constitutional commitment of Article 95 (11), to promote and maintain the welfare of the people. This Act is aimed at establishing a comprehensive labour law for all employees, to entrench fundamental labour rights and protections, to regulate basic terms and conditions of employment, to ensure the health, safety and welfare of employees under which provisions are made in chapter 4. Chapter 5 of the act imprisons on the protection of employees from unfair labour practice.</td>
</tr>
<tr>
<td><strong>Petroleum Products and Energy Act 13 of 1990 Ministry of Mines and Energy (MME)</strong></td>
<td>Any consumer installation as envisaged in this Act must be licensed. Appropriate consumer installation certificate will need to be obtained from the Ministry for each fuel installation. The construction of the installation must be designed in such a manner as to prevent environmental contamination. Any certificate holder or other person in control of activities related to any petroleum product is obliged to report any major petroleum product spill (defined as a spill of more than 200ℓ per spill) to the Minister. Such person is also obliged to take all steps as may be necessary in accordance with good petroleum industry practices to clean up the spill. Should this obligation not be met, the Minister is empowered to take steps to clean up the spill and to recover the costs thereof from the person. General conditions apply to all certificates issued. These include conditions relating to petroleum spills and the abandonment of the Site. The regulation further provides that the Minister may impose special conditions relating to the preparation and assessment of environmental assessments and the safe disposal of petroleum products.</td>
</tr>
<tr>
<td><strong>National Heritage Act 27 of 2004 Ministry of Education, Arts and Culture (MEAC)</strong></td>
<td>This Act provides provisions for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The proposed activities will ensure that if any archaeological or palaeontological objects, as described in the Act, are found during the implementation of the activities, such a find shall be reported to the Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage.</td>
</tr>
</tbody>
</table>
3.3 Key Regulators / Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed project including their role in regulating environmental protection are listed in Table 3.2.

Table 3.2: Government agencies regulating environmental protection in Namibia.

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Environment, Forestry and Tourism (MEFT)</td>
<td>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</td>
</tr>
<tr>
<td>Ministry of Mines and Energy (MME)</td>
<td>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</td>
</tr>
<tr>
<td>Ministry of Agriculture, Water and Land Reform (MAWLR)</td>
<td>The Directorate of Resource Management within the Department of Water Affairs (DWA) at the MAWLR is currently the lead agency responsible for management of surface and groundwater utilisation through the issuing of abstraction permits and waste water disposal permits. DWA is also the Government agency responsible for water quality monitoring and reporting. 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.</td>
</tr>
</tbody>
</table>

3.4 International and Regional Treaties and Protocols

Article 144 of the Namibian Constitution provides for the enabling mechanism to ensure that all international treaties and protocols are ratified. All ratified treaties and protocols are enforceable within Namibia by the Namibian courts and these include the following:

- The Paris Agreement, 2016.
- Convention to Combat Desertification, 1994. and
- Southern Africa Development Community (SADC) Protocol on Mining, and.

### 3.5 Standards and Guidelines

Industrial effluent likely to be generated by the proposed activities must comply with provisions of the Government Gazette No 217 dated 5 April 1962 (Table 3.3) while the drinking water quality comparative guideline values are shown in Table 3.4.

The only key missing components to the regulatory frameworks in Namibia are the standards, and guidelines with respect to gaseous, liquid, and solid emissions. However, in the absence of national gaseous, liquid, and solid emission limits for Namibia, the proposed project shall target the Multilateral Investment Guarantee Agency (MIGA) gaseous effluent emission level and liquid effluent emission levels (Table 3.5).

Noise abatement measures must target to achieve either the levels shown in Table 3.6 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

#### Table 3.3: R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

<table>
<thead>
<tr>
<th>Colour, odour and taste</th>
<th>The effluent shall contain no substance in concentrations capable of producing colour, odour or taste</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Between 5.5 and 9.5</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>At least 75% saturation</td>
</tr>
<tr>
<td>Typical faecal coli</td>
<td>No typical faecal coli per 100 ml</td>
</tr>
<tr>
<td>Temperature</td>
<td>Not to exceed 35 °C</td>
</tr>
<tr>
<td>Chemical demand oxygen</td>
<td>Not to exceed 75 mg/l after applying a correction for chloride in the method</td>
</tr>
<tr>
<td>Oxygen absorbed</td>
<td>Not to exceed 10 mg/l</td>
</tr>
<tr>
<td>Total dissolved solids (TDS)</td>
<td>The TDS shall not have been increased by more than 500 mg/l above that of the intake water</td>
</tr>
<tr>
<td>Suspended solids</td>
<td>Not to exceed 25 mg/l</td>
</tr>
<tr>
<td>Sodium (Na)</td>
<td>The Na level shall not have been increased by more than 50 mg/l above that of the intake water</td>
</tr>
<tr>
<td>Soap, oil and grease</td>
<td>Not to exceed 2.5 mg/l</td>
</tr>
<tr>
<td>Other constituents</td>
<td></td>
</tr>
<tr>
<td>Residual chlorine</td>
<td>0.1 mg/l as Cl</td>
</tr>
<tr>
<td>Free &amp; saline ammonia</td>
<td>10 mg/l as N</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.5 mg/l as As</td>
</tr>
<tr>
<td>Boron</td>
<td>1.0 mg/l as B</td>
</tr>
<tr>
<td>Hexavalent Cr</td>
<td>0.05 mg/l as Cr</td>
</tr>
<tr>
<td>Total chromium</td>
<td>0.5 mg/l as Cr</td>
</tr>
<tr>
<td>Copper</td>
<td>1.0 mg/l as Cu</td>
</tr>
<tr>
<td>Phenolic compounds</td>
<td>0.1 mg/l as phenol</td>
</tr>
<tr>
<td>Lead</td>
<td>1.0 mg/l as Pb</td>
</tr>
<tr>
<td>Cyanide and related compounds</td>
<td>0.5 mg/l as CN</td>
</tr>
<tr>
<td>Sulphides</td>
<td>1.0 mg/l as S</td>
</tr>
<tr>
<td>Fluorine</td>
<td>1.0 mg/l as F</td>
</tr>
<tr>
<td>Zinc</td>
<td>5.0 mg/l as Zn</td>
</tr>
</tbody>
</table>
Table 3.4: Comparison of selected guideline values for drinking water quality (after Department of Water Affairs, 2001).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>-</td>
<td>12 25</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydrogen ion concentration pH, 25°C</td>
<td>R &lt;8.0 6.5 to 9.5 8.5 to 8.5 10 6.0 to 9.0 5.5 to 9.5 4.0 to 11.0</td>
<td>- 4&lt;10.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Electronic conductivity EC, 25°C mS/m</td>
<td>-</td>
<td>280 45</td>
<td>- 150 300 400 &gt;400</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total dissolved solids TDS (mg/l)</td>
<td>R 1000</td>
<td>- 1500</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Hardness CaCO₃ (mg/l)</td>
<td>-</td>
<td>- 300</td>
<td>- 600 1300 &gt;1300</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aluminum Al μ g/l</td>
<td>R 200 200 50 200 S 50-200</td>
<td>150 500 1000 &gt;100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ammonia NH₄+ mg/l</td>
<td>R 1.5 0.5 0.05 0.5 - 1.5 2.5 5.0 &gt;5.0</td>
<td>- 2 5 10 &gt;10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Antimony Sb μ g/l</td>
<td>P 3 3 10 10 C 6 50 100 200 &gt;200</td>
<td>- 600 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arsenic As μ g/l</td>
<td>R 10 10 50 C 50 100 300 600 &gt;600</td>
<td>- 400 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Barium Ba μ g/l</td>
<td>P 700 - 100 - S 2000 1000 &gt;2000</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Beryllium Be μ g/l</td>
<td>- - - - - - -</td>
<td>- - -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bismuth Bi μ g/l</td>
<td>- - - - - - -</td>
<td>- - -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Boron B μ g/l</td>
<td>R 300 300 1000 - 500 2000 4000 &gt;400</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bromate BrO₃ μ g/l</td>
<td>- 10 - P 10</td>
<td>- 600 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bromine Br μ g/l</td>
<td>- - - - - - -</td>
<td>- 1000 3000 6000 &gt;6000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cadmium Cd μ g/l</td>
<td>R 3 5 5 C 5 10 20 &gt;40</td>
<td>- 400 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calcium Ca mg/l</td>
<td>- - 100 - - - -</td>
<td>- 400 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chloride Cl⁻ mg/l</td>
<td>R 250 - 25 C 25 S 250 600 1200 &gt;1200</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chromium Cr μ g/l</td>
<td>P 50 - 50 C 100 200 400 &gt;400</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cobalt Co μ g/l</td>
<td>- - - - - - -</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Copper after 12 hours in pipe Cu μ g/l</td>
<td>R 2000 2 - 100 C 500 S 1000 TII#</td>
<td>- 2000 1000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cyanide CN⁻ mg/l</td>
<td>R 70 50 50 C 200 300 600 &gt;600</td>
<td>- 600 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fluoride F⁻ mg/l</td>
<td>R - 1.5 1.5 - S - 2000 1000 &gt;2000</td>
<td>- 2000 1000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gold Au μ g/l</td>
<td>- - - - - - -</td>
<td>- 10 &gt;10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydrogen sulfide H₂S μ g/l</td>
<td>R 50 - - - - - -</td>
<td>- 300 600 &gt;600</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iodine I μ g/l</td>
<td>- - - - - - -</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iron Fe μ g/l</td>
<td>R 300 200 50 200 S 300 1000 2000 &gt;2000</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lead Pb μ g/l</td>
<td>R 10 - 10 C TT#</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lithium Li μ g/l</td>
<td>- - - - - - -</td>
<td>- 2500 5000 10000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Magnesium Mg mg/l</td>
<td>- - 30 70 - - -</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cyanide Mo μ g/l</td>
<td>R 50 50 50 C 200 300 600 &gt;600</td>
<td>- 2000 1000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nickel Ni μ g/l</td>
<td>R 20 - 50 - - -</td>
<td>- 2000 1000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nitrate NO₃ mg/l</td>
<td>R 50 50 50 C 50 10 20 40 &gt;40</td>
<td>- 400 800 &gt;800</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oxygen, dissolved</td>
<td>% sat.</td>
<td>- 50 - - - - -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phosphorus PO₄³⁻ μ g/l</td>
<td>- - 400 5000 - - -</td>
<td>- - - - - - -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potassium K mg/l</td>
<td>R 10 10 10 C 50 50 100 200 &gt;200</td>
<td>- 800 &gt;800</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Selenium Se μ g/l</td>
<td>R 10 - 10 C 50 50 100 200 &gt;200</td>
<td>- 1000 2000 &gt;2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Silver Ag μ g/l</td>
<td>- - - - - - -</td>
<td>- 50 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sodium Na mg/l</td>
<td>R 200 20 175 - - -</td>
<td>- 800 &gt;800</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sulphate SO₄²⁻ mg/l</td>
<td>R 250 250 25 250 S 250 200 600 &gt;1200</td>
<td>- 1200 &gt;1200</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thorium Th μ g/l</td>
<td>- - - - - - -</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tin Sn μ g/l</td>
<td>- - - - - - -</td>
<td>- 200 400 &gt;400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Titanium Ti μ g/l</td>
<td>- - - - - - -</td>
<td>- 500 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uranium U μ g/l</td>
<td>- - - - - - -</td>
<td>- 500 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vanadium V μ g/l</td>
<td>- - - - - - -</td>
<td>- 500 1000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zinc after 12 hours in pipe Zn μ g/l</td>
<td>R 3000 - 100 - S 5000 1000 &gt;1000</td>
<td>- 1000 2000 &gt;1000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

P: Provisional  R: May give reason to complaints from consumers  C: Current  P: Proposed  S: Secondary  TII#: Treatment technique in lieu of numeric MCL  TT##: treatment technique triggered at action level of 1300 μ g/l
Table 3.5: Liquid effluent emission levels (MIGA /IFC).

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Max. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6.9</td>
</tr>
<tr>
<td>Total suspended solids</td>
<td>50 mg/l</td>
</tr>
<tr>
<td>Total metals</td>
<td>10 mg/l</td>
</tr>
<tr>
<td>Phosphorous (P)</td>
<td>5 mg/l</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>20 mg/l</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>0.1 mg/l</td>
</tr>
</tbody>
</table>

Table 3.6: Noise emission levels (MIGA /IFC).

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Maximum Allowable Leq (hourly), in dB(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day time (07:00 – 22:00)</td>
<td>Night time (22:00 – 07:00)</td>
</tr>
<tr>
<td>Residential, institutional, educational</td>
<td>55</td>
</tr>
<tr>
<td>Industrial, commercial</td>
<td>70</td>
</tr>
</tbody>
</table>

3.6 Recommendations on Permitting Requirements

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

(i) Valid EPL as maybe applicable from Department of Mines in the MME.

(ii) Valid ECC from the Department of Environmental Affairs in the MEFT.

(iii) The Proponent shall apply for a fresh water abstraction and waste water discharge permits from the Department of Water Affairs (DWA) in the MAWLR before drilling a water borehole and discharge wastewater into the environment respectively, and.

(iv) All other permits as may be applicable for the proposed exploration operations and test mining activities.
4. SUMMARY OF NATURAL ENVIRONMENT

4.1 Climate

Summer rainfall is brought by northeast winds, generally from October to April. The average rainfall varies considerably and ranges between 380 mm and 450 mm. The mean annual gross evaporation is between 3000 mm – 3200 mm. The numbers of rainfall events expressed as an annual average in days as determined from the regional data is 10-30 days. The sun shines for an annual average of 10 hours a day. The annual mean temperature for Otjiwarongo area is around 24°C with the mean monthly temperatures ranging between 23°C to 14°C throughout the year. Based on regional data sets, temperatures at 08h00, 14h00 and 20h00 are estimated to be around 14°C, 24°C and 18°C respectively. Sitrusdal weather station indicates an average wind speed ranging between 1.5 and 7 m/s. Seasonal variations in the wind fields are presented by the average wind data for January, April, July and October. An increase in the north to north-easterly winds during summer (January) and autumn (April) is likely.

4.2 Topography

The local landscape is characterised by undulating topography with step valleys created by a number of Ephemeral Rivers networks originating around the Eisenberg mountains within the EPL area (Fig. 4.1). The river channels of these three (3) Ephemeral Rivers are key habitats and are a vital link to the local ecosystems. Other land use activities found in the general surrounding areas includes: agriculture, minerals exploration and growing tourism activities. Topography around the EPL area range from over 1600mams around the Eisenberg mountains situated on centre of the EPL to 1300mams in the general surrounding areas (Fig. 4.1).

4.3 Likely Fauna Diversity

4.3.1 Reptiles

According to Alexander and Marais (2007), Branch (1998), Branch (2008), Boycott and Bourquin 2000, Broadley (1983), Buys and Buys (1983), Cunningham (2006), Griffin (2003), Hebbard (n.d.), Marais (1992), Tolley and Burger (2007), at least 77 endemic reptile species known and/or expected to occur in the general license area make up 35.1% of the reptiles from the general area and although not as high as endemism elsewhere for example the western escarpment areas of Namibia but still makes up a large portion of the reptiles.

Reptiles of greatest concern are probably the tortoises – Stigmochelys pardalis and Psammobates oculiferus which are often consumed by humans. Python anchitae and P. natalensis which are indiscriminately killed throughout their range and Varanus albigerans as well as the various Pachydactylus species geckos of which 80% are viewed as endemic. Other important species would be the 3 Blind snakes (Rhinotyphlops species of which 2 species are endemic) and 2 Thread snakes (Leptotyphlops species of which 1 species is endemic) which could be associated with the sandier soils in the area.

4.3.2 Amphibians

According to Carruthers (2001), Channing (2001), Channing and Griffin (1993), Du Preez and Carruthers (2009), Passmore and Carruthers (1995), of the 9 species of amphibians are likely to occur in the general license area, 33.3% (3 species) are of conservation value with 2 species being endemic (Poyntonophrynus hoeschi and Phrynomantis annectens) (Griffin 1998b) and 1 species (Pyxicephalus adspersus) viewed as near threatened (Du Preez and Carruthers 2009).

However, the area does not have unique amphibian habitat with potential habits being associated with the various ephemeral drainage lines associated (Fig. 4.1).
Figure 4.1: Topographic features associated with the EPL 6688 (RBS Map Prepared by Katharina Dierkes, 2020).
4.3.3 Mammals

According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), of the 84 species of mammals expected to occur in the general license area, 4.8% are endemic and 35.7% are classified under international conservation legislation. The most important groups are rodents (29.8% - 12% endemic), bats (26.2% - 4.5% endemic) and carnivores (20.2% - 5.9% endemic).

According to De Graaff (1981), Griffin and Coetzee (2005), Estes (1995), Joubert and Mostert (1975), Monadjem et al. (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005), Stander and Hanssen (2003) and Taylor (2000), the most important species from the general area are probably all those classified as near threatened (Eidolon helvum, Hipposideros vittatus, Rhinolophus blasii, Hyaena brunnea and Panthera pardus) and vulnerable (African wild cat and Felis nigripes) by the IUCN (2014) and rare (Cistugo seabrai, Atelerix frontalis angolae and Felis nigripes) under Namibian legislation.

4.3.4 Birds

The high proportion of endemics – 10 of the 14 endemics to Namibia (i.e. 71% of all endemics) – expected to occur in the general license area underscore the importance of this area. Furthermore 21.3% are classified as southern African endemics (or 6.3% of all the birds expected) and 78.7% are classified as southern African near-endemics (or 23.1% of all the birds expected).

According to Brown et al. (1998), Brown et al. (2006), Hockey et al. (2006), Komen (n.d.), Maclean (1985), Simmons and Brown (In press) and Tarboton (2001), the most important “endemic” species known/expected to occur in the general area are viewed as Monteiro’s Hornbill (Tockus monteiri), Damara Hornbill (Tockus damarensis), Ammomanopsis grayi (Gray’s Lark), Namibornis herero (Herero Chat), Eupodotis rueppellii (Rüpell’s Korhaan) and Poicephalus rueppellii (Rüpell’s Parrot).

The species listed by the IUCN (2014) as endangered are: (Ludwig’s bustard and white-backed vulture), near threatened (kori bustard) and vulnerable (marial eagle and secretary bird) and are viewed as the most important.

4.3.5 Sensitive Areas – Vertebrate Fauna

The general EPL area is regarded as “moderate to high” in overall (all terrestrial species) diversity and endemism (Mendelsohn et al. 2002). According to Simmons (1998b) central Namibia has between 161-200 endemic vertebrates (all vertebrates included).

The overall diversity and abundance of large herbivorous mammals (big game) is viewed as “high” with 7-8 species while the overall diversity of large carnivorous mammals (large predators) is determined at 4 species with leopard and cheetah being the most important with “high” densities followed by brown hyena with “medium” densities (Mendelsohn et al. 2002). The following sensitive areas are of most concern within the EPL area:

(i) Drainage lines, albeit ephemeral, are the lifelines in the drier parts of Namibia with a variety of vertebrate fauna attracted and/or associated with such features. Although not as important as perennial rivers, well vegetated ephemeral drainage lines are still viewed as important habitat for a variety of vertebrate fauna in the general area. It is recommended that development attempt to avoid these drainage lines as far as possible linked to the local Ephemeral River channels, and.

(ii) Mountainous and rocky areas: May be biotic richness and endemism.
4.4 Likely Flora Diversity

4.4.1 Trees/shrubs

The EPL 6688 falls within the Thornbush shrubland dominated by Acacia mellifera, Acacia reficiens, Acacia fleckii, Boscia albitrunca, Lonchocarpus nelsii and Acacia erioloba (Fig. 4.2). It is estimated that at least 79-110 species of larger trees and shrubs (>1m) – Coats Palgrave 1983 [81 sp.], Curtis and Mannheimer 2005 [79 sp.], Mannheimer and Curtis 2009 [110 sp], Van Wyk and Van Wyk 1997 [60 sp.], are found in the general area.

The most important tree/shrub species occurring in the general area are probably Cyphostemma bainesii (endemic, NC), Cyphostemma currorii (NC), Cyphostemma juttae (endemic, NC), Erythrina decora (Forestry*, endemic), Heteromorpha papillosa (endemic) and Manuleopsis dinteri (endemic species) (Craven, 1999. Curtis and Mannheimer, 2005 and Mannheimer and Curtis, 2009).

The protected species are viewed as the most important tree/shrubs occurring in the area include: Acacia erioloba and Boscia albitrunca. However, these species are widespread throughout large parts of Namibia and are not exclusively associated with the ongoing / proposed development area, which minimises the overall effect on trees/shrubs.
Figure 4.2: Vegetation map of the EPL 6688 and surrounding areas (RBS Map Prepared by Katharina Dierkes, 2020).

Legend
- Town
- Airfield
- Mountain
- Nampower substation
- Nampower line
- Railway
- District road
- Main road
- Trunk road
- NamWater pipeline
- Minor river
- Contour line

Active licences
- Exploration licence No 6688
- Constituency
- Farm

Vegetation type
- Thornbush shrubland;
  Dominant species: Acacia mellifera, Acacia reficiens, Acacia fockii, Boscia albitrunca, Lonchocarpus neillii and Acacia eriobapha.
4.4.2 Grass

It is estimated that up to 111 grasses – 73 to 88 species – (Müller 2007 [88 sp.], Müller 1984 [73 sp.], Van Oudshoorn 1999 [73 sp.]) occur in the general area. The most important grass expected in the area is the endemic Setaria finite associated with ephemeral drainage lines. Although the season (end of dry and beginning of wet) made the identification of grasses difficult, none off the grasses are exclusively associated with the proposed developments area nor protected species, which minimises the overall effect on grasses.

4.4.3 Other

Aloe litoralis – scattered individuals – are viewed as another species of concern although occurs widespread throughout Namibia and not exclusively associated with the proposed development area.

4.4.4 Protected Species and Sensitive Habitats

It is estimated that at least 77 reptile, 9 amphibian, 84 mammal, 208 bird species (breeding residents), at least 79-110 larger trees and shrubs and up to 111 grasses are known to or expected to occur in the general Otjiwarongo area of which a high proportion (e.g. 35.1% endemic reptiles) are endemics. The following are the key likely protected species / sensitive areas that maybe found within the EPL area:

(i) Protected species: The protected tree species – Acacia erioloba, Albizia anthelmintica, Aloe litoralis, Boscia albitrunca and Ziziphus mucronata – are viewed as the most important if found within the EPL particularly around any targeted site-specific development area (Figs. 4.1 and 4.2), and.

(ii) Drainage lines: Comprising the ephemeral drainage lines in the immediate vicinity of any targeted site-specific development area. These are viewed as important for flora as most of the larger specimens are often associated with such areas and serve as habitat for various vertebrate fauna.

4.5 Summary of the Socioeconomic Settings

4.5.1 Regional Profiles

The EPL 6688 falls within the Otjozondjupa Region (Fig. 4.3). According to the NSA, (2011), the following is the summary of the regional and local socioeconomic environment of the area linked to the population and housing census, basic analysis with highlights about the Otjozondjupa Region (Fig. 4.3):

❖ The Project area is situated in Otjozondjupa Region with a population of 143 903 people and an area of 105 295.1 km².

❖ The Otjozondjupa Region had a relatively young population with 36.2% of the population being less than 15 years of age. The medial age of Otjozondjupa Region was 22 years, and was therefore intermediate.

❖ The urbanization rate in Otjozondjupa Region stands at 54% which is above the national average of 42.8%. Thus, the urbanisations are more progressive in Otjozondjupa Region that the average for Namibia. The urbanization of Otjozondjupa Region has gained momentum between the last two Censuses, 2001 and 2011, from 41% of population living in urban areas in 2001 to 54% in 2011.

❖ Literacy rate for Otjozondjupa Region was 83% with no major difference between males and females (female 82.9 % and males 83.4%). The literacy rate in urban areas stood at 90.9 %, while in rural areas it stood at 73%. It is the 3rd least literate region in Namibia after Kunene and Omaheke Regions.
❖ The 2011 Census revealed that 17.6% of the population aged 6 years and above never attended school in Otjozondjupa Region.

❖ Otjozondjupa Region has relatively high labour force participation rate (71.5%) in comparison to the national average of 66% with substantially higher rates for males than females (66.5% and 76.2% respectively).

❖ Otjiwarongo is a large town and the biggest business centre for the Otjozondjupa Region and regional capital.

❖ The main industries in Otjozondjupa Region are agriculture and forestry followed by social security, then administrative and support service activities. Wages and salaries are the highest main source of income in Otjozondjupa (59.6%).

❖ The most common source of energy for lighting in Otjozondjupa Region was electricity from the main grid, used by 55.2 percent of the households. Solar energy was not widely used, but played a more important role in rural areas (2.8%) than in urban areas (0.3%).

❖ Otjozondjupa has 72 schools with a total of 36,284 pupils.

❖ In terms of communication technology, the constituencies have relatively poor network coverage due to its remoteness and vastness of the constituencies coupled with low population. However, radio and digital television coverage exists in most parts of the constituencies, particularly within the settlements and their nearby places are connected to national grid.

❖ Limited economic activities are available within the project area. The agriculture, hunting and forestry sectors employ most of the region’s economically active population, and.

❖ The availability of elements such as lime, fluorspar, manganese and copper offer a number of processing opportunities, such as the manufacturing of cement and industrial lime.

4.5.2 Local Profile

Locally, the EPL 6688 falls near the settlement of Kalkfeld and the project area falls within Otjiwarongo Rural Constituency (Fig. 4.3). The Otjiwarongo Rural Constituency has a population of 31,813 and has the highest population density of 5.4 persons per km² in the Otjozondjupa Region.

The household main income in constituency are farming, wages and salaries, cash remittance business, non-farming and pension (Table 4.1). The overall local socioeconomic profiles of Otjiwarongo Rural Constituency are shown in Table 4.1.

4.5.3 Socioeconomic Conclusions

The proposed exploration activities in the EPL 6688 are likely to coexists with the current and future land uses such as the commercial agriculture. Socioeconomic impacts at the exploration stage are likely to be minimal and tend to be positive in an event of a discovery of economic minerals resources. A clear understanding of these impacts may help communities understand and anticipate the effects of exploration.

One of the major possible impacts of the proposed / ongoing exploration activities include employment expectations and unrealistic expectations about the development of a mine and coexistence opportunity / conflicts associated with the current land uses (conservation and tourism operations). It is important for local communities to bear in mind that 99.9% of the exploration projects will not advance to a mine development.
Figure 4.3: Constituencies and population of Otjozondjupa Region (Source: National Statistics Agency (NSA), 2011).
Table 4.1: Otjiwarongo Rural Constituency – Census selected indicators, 2011 and 2001 (Source: National Statistics Agency (NSA), 2011).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>31,813</td>
<td>23,412</td>
<td>72</td>
<td>67</td>
</tr>
<tr>
<td>Females</td>
<td>16,275</td>
<td>12,119</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>Males</td>
<td>15,538</td>
<td>11,293</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Sex ratio: Males per 100 females</td>
<td>95</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age composition, %</td>
<td></td>
<td></td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>13</td>
<td>12</td>
<td>46</td>
<td>35</td>
</tr>
<tr>
<td>5 – 14 years</td>
<td>21</td>
<td>21</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>15 – 59 years</td>
<td>61</td>
<td>60</td>
<td>73</td>
<td>51</td>
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<td>60+ years</td>
<td>5</td>
<td>6</td>
<td>43</td>
<td>47</td>
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<td>Marital status: 15+ years, %</td>
<td></td>
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<tr>
<td>Never married</td>
<td>58</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married with certificate</td>
<td>22</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married traditionally</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married consensually</td>
<td>14</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>Private households</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Number</td>
<td>7,959</td>
<td>5,556</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average size</td>
<td>3.8</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head of household, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>44</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>56</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy rate, 15+ years, %</td>
<td>90</td>
<td>86</td>
<td></td>
<td></td>
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<tr>
<td>Education, 15+ years, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never attended school</td>
<td>11</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently at school</td>
<td>28</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left school</td>
<td>58</td>
<td>72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.6 Ground Components

4.6.1 Regional Geology

The EPL 6688 Area falls within the metasedimentary rocks of the Damaraland complexes (Fig. 4.4; Geological Survey of Namibia, 1999 and Miller, 2008, 1992, 1983a and 1983b). The regional geology of the EPL area form part of the Mesozoic Damaraland complexes of north western igneous complex. These Mesozoic alkaline igneous rocks consist of a suite of over twenty anorogenic ring complexes stretching in the north-easterly direction. The complexes are exposed in a zone which is about 350 km long and 130 km wide, extending from the Atlantic coast inland.

The rock types range from basalts and gabbroic (and ultrabasic) rocks to granites and alkaline syenites, and from essexites to nepheline syenites. In the central and eastern part of the province, the igneous
complexes are frequently composed of silica-undersaturated rocks and carbonatites (e.g., Okorusu, the Kalkfeld Group with Etaneno and Ondurakorume complexes).

### 4.6.2 Local Geology

Schists and quartzites, together of iron ore lenses form the lower units of the stratigraphy of the EPL 6688. According to Miller, (1983), the Kalkfeld and Ondurakorume carbonatite complexes intruded Pan-African sediments and granites of the Damara Sequence Fig. 4.4.

Locally, the geology of the EPL area comprises some of the following rock units as shown in detail in Fig. 4.4:

- Foyaite in central part of the EPL area around the Eisenberg mountains.
- Carbonatite plugs and dykes in central part of the EPL area around the Eisenberg mountains and southwestern edge of the license area.
- Marble, schist, quartzite, calc-silicate, graphite schist
- Granites in the south-eastern corner of the EPL area, and.
- Others as shown in Fig. 4.4.

The Kalkfeld Alkaline Complex on Farm Eisenberg is one of the key areas of interest with respect to the proposed exploration programme in the EPL 6688 (Fig. 4.4). According to Roesener and Schreuder (1992), the Cretaceous Kalkfeld Alkaline Complex on the farm Eisenberg 78 in the Otjiwarongo District is the only iron ore deposit in Namibia that has been mined in the past. The complex is slightly oval in plan and measures about 5 km in diameter (Fig. 4.4).

The iron ore forms the core of a carbonatite hill, situated in the central part of a crater which consists of syenite, foyaite, carbonatite, fenite and granite (Roesener and Schreuder, 1992). Massive red and brown iron ore outcrops cover an area of about 350 by 275 m. The ore consists mainly of limonite and hematite and contains variable amounts of magnetite, siderite, goethite and pyrolusite.
Figure 4.4: Simplified geological map of the EPL 6688 (RBS Map Prepared by Katharina Dierkes, 2020).
4.7 Water

4.7.1 Overview

According to the Department of Water Affairs and Forestry, (2001) and the regional and local geology, the EPL 6688 falls within an area with very limited economic groundwater water resources (aquifers) (Fig. 4.5). Water supply in the general area is from local groundwater resources (Department of Water Affairs, 2001). The proposed project activities (exploration programme) will utilise local groundwater resources. No site-specific hydrogeological specialist study, groundwater modelling or water sampling and testing activities have been undertaken for this study.

4.7.2 Sources of Water Supply

The source of water supply for the proposed exploration and in particular the proposed drilling of exploration boreholes if need arises to drill, will be from existing groundwater resources. The Proponent must obtain permission from the land owner before using water from any existing local boreholes and infrastructures. If there is a need to drilling a water borehole to support the proposed exploration programme, the Proponent must obtain permission from the land owner and Department of Water Affairs in the MAWLR.

In an event of discovery of economic minerals resources, the sources of water supply for the mining related operations will be supplied from groundwater resources if proven to be available following a detailed hydrogeological and groundwater modelling study that must be undertaken as part of the EIA supporting the feasibility study. Currently, potential available groundwater resources in the area will not be sufficient to support any new larger-scale mining related operation within the EPL 6688.

However, some parts of the EPL area are covered by local carbonates (calcrete, limestone and dolomites) that seems to have limited and localised groundwater potential (Figs. 4.4 and 4.5).

4.7.3 Water Vulnerability Assessments and Recommendations

Possible pathways that will aid groundwater vulnerability in this area are mainly fractured zones and faults that outcrop on the surface without impermeable infillings as well as unconfined shallow aquifers. The general EPL area has limited groundwater resources that are likely to be vulnerable to pollution (Fig. 4.5). The overall water be vulnerability to pollution as a result of the proposed exploration as well as other existing activities is moderate (Fig. 4.5).

The general area has a number of Ephemeral River Channels which could be potential pathways for pollution migration especially during the rainy season from November to March. Discharge of liquid or solid wastes including waste water, chemical, fuels or oils into any public stream is prohibited and the Proponent must implement the provisions of the EMP on water and waste management as detailed in EMP Report.

It is hereby recommended that a detailed site-specific hydrogeological specialist study including groundwater modelling, water sampling and testing must be undertaken as part of the EIA and EMP that may be implemented to support the feasibility study for any viable mining project that may be development within the EPL area, if economic resources are discovered.
Figure 4.5: Simplified hydrogeological map of the EPL 6688 (RBS Map Prepared by Katharina Dierkes, 2020).
4.8 **Archaeology**

### 4.8.1 Regional Archaeological Setting

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

According to Kinahan, (2017), the Recent Holocene archaeological sequence in Namibia, i.e. the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era.

Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance.

### 4.8.2 Local Archaeological Setting

The general area around the EPL area is well known for dinosaur tracks from the Jurassic which are protected by the National Heritage Act, 2004 (Act No. 27 of 2004) under the National Heritage Council of Namibia.

The EPL area is likely to evidence from the early colonial period relates to mining in the general area and a combination of trade, missionary activity and indigenous tribes use of iron for various applications.

At the farm Otjihaenamaparero 25 km to the southwest of Kalkfeld, dinosaur tracks from the Jurassic period occur. Since 1951, the site is a national monument. The three-toed dinosaurs have left traces of a few tens of meters in the originally soft clay. The dinosaurs walked on their hind legs.

### 4.8.3 Archaeological Desk Assessment

Early colonial remains are expected to be relatively abundant on EPL 6688, although it is likely that if these are related to historical mining activity, they will form part of the general area of mining interest in the vicinity.

It is expected that the area of interest will be extensively disturbed and that little might remain of either pre-colonial or early colonial sites in the near vicinity.

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

### 4.8.4 Archaeological Conclusions and Recommendations

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

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

(ii) A high likelihood of late precolonial settlement sites throughout the entire tenement, especially in the vicinity of Kalkfeld settlement, springs and seepages, and.

(iii) A high likelihood of early colonial settlement remains relating to the historical occupation of area that may be unknown or not recorded.
The following are the key recommended actions related to archaeology in the EPL Area:

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

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

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

4.9 Public Consultations

4.9.1 Overview

Public consultation and engagement process have been part of the environmental assessment process for this project. Opportunity for stakeholders and the public to submit written comments / inputs / objections with respect to the proposed exploration and possible test mining activities in the EPL 6688 were provided from the Thursday 25th June 2020 to Friday 17th July 2020 (Figs. 4.6- 4.12 and Annex 2).

4.9.2 Public Consultation Process

Public consultation process was undertaken through emails contact and the newspaper advertisements as shown in Figs. 4.6- 4.12. The project was extensively advertised as follows (Annex 2):

❖ Confidente newspapers dated 25th June 2020 (Fig. 4.6).
❖ New Era newspaper dated 3rd July 2020 (Fig. 4.7).
❖ Windhoek Observer newspaper dated 8th July 2020 (Fig. 4.8).
❖ Windhoek Observer newspaper dated 10th July 2020 (Fig. 4.9).
❖ Windhoek Observer newspaper dated 13th July 2020 (Fig. 4.10)
❖ Windhoek Observer newspaper dated 14th July 2020 (Fig. 4.11), and.
❖ Windhoek Observer newspaper dated 15th July 2020 (Fig. 4.12).

Public notices were published in the local newspapers from the Thursday 25th June 2020 to Friday 17th July 2020 (Figs. 4.6 - 4.12 and Annex 2). A stakeholder register was opened and despite telephonic inquiries with respect to contracts and employment opportunities, no written objection was received.

4.9.3 Stakeholders and Public Discussions

No inputs/ comments / objections have been received during the consultation period that was provided from the Thursday 25th June 2020 to Friday 17th July 2020.

4.9.4 Stakeholders and Public Consolations Recommendations

Overall, in meeting the need for continuous public / stakeholder consultation process, this EIA has recommended that the Proponent shall notify the local community through the local Councillor/s on the implementation of the proposed project once the ECC has been granted. Such communications shall be maintained throughout the lifecycle of the proposed project.

This recommendation may be included as condition on the ECC to be issued.
Walvis prison hit by staff shortage

By Maria Kandjungu

The Walvis Bay correctional facility has experienced a shortage of staff after 34 of its workers, including the two who were tested positive for Covid-19, were placed in quarantine.

Last week two correctional facility officials tested positive for Covid-19. Both were placed in the facility, and two others tested positive for Covid-19 at the facility. Consequently, the health centre was placed in quarantine. The hospital where the patient was placed also included 32 staff members in quarantine.

Head of the Namibian Correctional Services Central Staff Directorate, Commissioner Sam Shaikunz, said officials are becoming stressed for the lack of staff being placed in quarantine.

“Shaikunz added that they are trying to explore all possible measures to ensure that security is not compromised at the facility while trying to deal with the pandemic.

According to him, measures they are taking include ensuring that staff do not leave while calling back those who are already on leave. Testing is still ongoing and everything is very much in the hands of the Ministry of Health.

Shaikunz said that the staff are still trying to explore all possible measures to ensure that security is not compromised at the facility while trying to deal with the pandemic.

Results are coming in everyday and we are monitoring those that we are monitoring.

It is a bit of a difficult situation for everyone. We are doing our best to ensure that we have enough officers on duty when offences are cut and violence is on the increase.

There is higher security risk during the day because the facility is open to the road when they lock them up. They are not cutting down the security measures and we are not getting all the staff we need.

The facility is being used by the Ministry of Health, the police and the prison service.

Shaikunz added that they have been using the facility for various purposes, including medical and security services. The facility is currently being used by the police, the prison service and the Ministry of Health.

Figure 4.6: Copy of the public notice that was published in the Confidente newspapers dated 25th June 2020.
Figure 4.7: Copy of the public notice that was published in the New Era newspaper dated 3rd July 2020.
Figure 4.8: Copy of the public notice that was published in the Windhoek Observer newspaper dated 8th July 2020.
Champions League: Man City get green light to host Real Madrid at Etihad Stadium

Manchester City’s Champions League last-eight second leg against Real Madrid will be played at Etihad Stadium.

Chairman Khaldoon Al Mubarak has confirmed all outstanding second-leg ties in the Champions League and Europa League will be played at home grounds.

City will host either 7 or 8 August, while Chelsea face Bayern Munich on 11 August.

In the Europa League, Wolves will host Olympiakos and Manchester United will welcome LA Galaxy on 5 or 6 August.

Both competitions were suspended in March due to the coronavirus pandemic, after the majority of first-leg ties had been played.

City lost 1-0 at the Etihad to Bayern Munich in the first leg, while Wolves beat Liverpool 1-0 at Molineux in the first leg of their Europa League tie.

City had been due to host Real Madrid in the Champions League last-eight second leg at Old Trafford on 10 or 11 August, while Wolves were due to host Sevilla in the Europa League last-eight second leg at Molineux on 11 August.

The Premier League has been played behind closed doors since June, with fewer than 200 fans allowed at games.

The FA Cup semi-finals and final are due to be played at Wembley on 15 and 17 August.

The Premier League season was due to end on 21 June, but was postponed in March.

The English Football League has also been extended until 27 August, with play-offs scheduled for 1 September.
A 12-year-old boy has been arrested by police investigating racist messages sent to Crystal Palace forward Wilfried Zaha on social media.

Zaha revealed he had received several abusive messages on social media before Sunday’s game at Arsenal.

His manager Roy Hodgson called the abuse ‘completely unfounded’. The Premier League called the abuse ‘the abuse of a 12-year-old boy’.

West Ham United Football Club said on Twitter: ‘We are aware of a series of racist messages sent to a player for today and after looking into them and conducting checks, we have arrested a boy on suspicion of racism.

"The 12-year-old from Southgate has been taken into custody. Thanks to everyone who reported it. Racism won’t be tolerated.’

Speaking to Sky Sports before the match, Hodgson said: ‘It’s very important that we don’t underestimate the impact that this has on anyone with the Black Lives Matter movement. It’s very important that we don’t minimize such an event to grab media attention.

‘It’s very sad that, on the day of a game, a player wakes up to this sort of thing and ordeal. It’s sad that the right of football has made people aware of it and I don’t think this is something that should be kicked about.

‘It’s a want to put off the end of one of our most famous players playing well today, and to do it in the way it is being done is totally indefensible.’

The Premier League said: ‘This behaviour is completely unacceptable and the Premier League stands alongside Wilfried Zaha in opposing this, and discrimination in any form.

‘We will continue to support players, managers, coaches and their families, and will consider serious disciplinary action on any player.’

Players in England’s top flight have been known in support of the Black Lives Matter movement following many events over the last month despite the season resuming in June.

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Figure 4.10: Copy of the public notice that was published in the Windhoek Observer - 13th July 2020.
Manchester City Manager Pep Guardiola said his team deserved an apology from the UEFA president after their two-year UEFA ban for European football was overturned by the Court of Arbitration for Sport (CAS) – a verdict he called a “good day for football”.

Guardiola said the club’s reputation had been damaged by the false allegations that they broke Financial Fair Play (FFP) rules and faced a series of warnings from former Manchester United manager Jose Mourinho.

"Now all the managers should know that we were damaged. We should be apologised to. Because, like I said many times, if we did something wrong, we will accept absolutely the decisions by UEFA and CAS because we did something wrong,” he said in a news conference on Tuesday.

"We have the right to defend ourselves, but we believe what we have done is correct, it is right. Three independent judges said this,” he added.

Guardiola praised Vernard Klop, who had been the club’s medical director at the time.

"Yesterday was a good day for football because we play with the same rules of FFP as all the clubs in Europe. All of them. If they break this FFP we will be banned,” he said.

"He is an incredible legal expert from what I see, no next time we will ask in which court, which judges we have to go. He has to be a little bit more careful or concerned about La Liga, he should focus on Serie A.

"Normally these kinds of people, when the sentence is good for him it’s perfect, like happened many times in Spain right now, but when the sentence is against, the problem is for the other one,” added Guardiola.

"We will be in the Champions League next season, I’m happy, because we did it perfectly,” he said.
Zidane urges Madrid to finish the job with title in their grasp

Timeline Zidane has warned his players not to be too far behind LaLiga is already won on Real Madrid chase the last victory they need against Villarreal on Sunday.

With a four-point cushion ahead of Barca and with two games left to play, Madrid will be unstoppable if they win the Atlético de Madrid Stadium, regardless of Barca's results at home to Osasuna.

It means a third league title in eight years is now firmly within their grasp, following a relentless run of form that has seen Madrid win nine games out of 10 since the restart of their coronavirus lockdown.

Madrid could even afford to lose to Villarreal if they beat Leganes on Sunday but Zidane is wary of complicity.

"There is a lot of noise about celebrations and holidays and all that but tomorrow we have a game, period," said Zidane in a press conference on Wednesday.

"We have to focus on our energy on tomorrow, nothing else. There is a lot of talk but all the players, everyone who works without the club is only thinking about the game.

"Nobody knows what will happen until it happens."

While Barca's ageing squad has struggled with the frequenzy of matches since the suspension, Madrid appear to have reviled in the intensity of a compressed calendar.

"It was something quite particular that when we started to work again after lockdown and after those months at home, the players had this desire to do something great," said Zidane.

"I saw the players and they wanted something more, they were waiting after training to do extra. That says everything you need to know about this team."

Luis Suarez said in an interview with Mario Spano this week that winning LaLiga is not "almost impossible" for Barca, who play Osasuna hoping to take the title to the Real Madrid.

"That's his opinion," said Barca coach Quique Setien. "The truth is that we are not yet in front because anything can happen but we know it is difficult."

"Not as much because of our feelings, that we have had some threats, but Madrid's success. They have done things better but we will continue fighting until the end."

Barcelona president Joan Laporta said on Sunday that Setien will continue in charge of the Champions League but doubts remain about next season.

When Bartra sacked Ernesto Valverde in January, Barca were top of the table.

"It's not a coincidence, but Setien insists he is not about to blame."

"I take responsibility but not all of it," said Setien. "When people look for a scapegoat they always look at the coach but I don't feel like that old things are so ridiculous."

"I would more give credit to Madrid, who have won all their games."

Setien said Fermin de la Giia has recovered from a calf injury and said he will play in the Barcelona against Osasuna, while Zidane reported Eden Hazard is new "likely fully fit."

Hazard has not started any of Madrid's last four games after feeling pain in his right ankle and had surgery on May 8. "He's better and he's with us," Zidane said.

Zidane also praised with frustration a week after it would be the best if Gareth Bale left.

"Bale's future is again open but the subject of debate after his rate with his face mask over his eyes during the recent abuse on Friday.

"This question again. You try to put things behind you so that you no't think about it," said Zidane. "We recalled Gareth, James (Rodriguez), everyone, alone

Figure 4.12: Copy of the public notice that was published in the Windhoek Observer newspaper dated 15th July 2020.
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. 6688 has been conducted in accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

5.2 Alternatives and Ecosystem Assessments

The following alternatives have been considered:

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

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

The environmental benefits will include:

- No negative impacts as a result of no mineral exploration taking place, and.
- Potential future mining related negative environmental impact on the receiving environment.

However, it is important to understand that even if the proposed exploration activities do not take place, to which the likely negative environmental impacts are likely to be low and localised, the other current and future land uses such as agriculture and tourism will still have some negative impacts on the receiving environment. The likely negative environmental impacts of the other current and future land use that may still happen in the absence of the proposed minerals exploration activities includes:

- Land degradation due to drought.
- Overgrazing / over stocking beyond the land carrying capacity.
- Poor land management practices, and.
- Erosion and overgrazing.

Furthermore, it’s also important to understand what benefits might be lost if the proposed exploration activities do not take place. Key loses that may never be realised if the proposed project activities do not go-ahead include: Loss of potential added value to the unknown underground minerals resources that maybe found within the EPL No. 6688, socioeconomic benefits derived from current and future exploration, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments, license rental fees, royalties and various other taxes payable to the Government.
(iii) **Other Alternative Land Uses:** The EPL area fall within the well-known commercial agricultural land uses area dominated by cattle, game and small stock farming activities. The growing game farming is also making tourism a vital socioeconomic opportunity in the general area. Minerals exploration and mining activities are well known land use options in Namibia and the surrounding EPL area. Due to the limited scope of the proposed exploration and the implementation of the EMP, it’s likely that the proposed exploration can coexist with the current and potential future land uses within the general area.

(iv) **Potential Land Use Conflicts:** Considering the current land use practices (agriculture and tourism) as well as potential other land uses including minerals exploration, it’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 exploration activities will not affect the ecosystem function due to the limited scope of the proposed activities because the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked.

(vi) **Ecosystem Services:** Food chain, harvesting of animals or plants, and the provision of clean water or scenic views are some of the local ecosystem services associated with the EPL area. However, the proposed exploration activities will not affect the ecosystem services due to the limited scope and area of coverage of the proposed activities because the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked.

(vii) **Use Values:** The EPL area has direct values for other land uses such as agriculture, conservation and tourism as well as indirect values which includes: Watching a television show about the general area and its wildlife, food chain linkages that sustains the complex life within this area and bequest value for future generations to enjoy. The proposed exploration activities will not destroy the current use values due to the limited scope of the proposed activities as well as the adherence to the provisions of the EMP as detailed in 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 exploration activities will not affect the ecosystem current or future none or passive uses due to the limited scope of the proposed activities that will leave much of the EPL area untouched because the ecosystem of this EPL area is part of the larger local and regional ecosystems which are all interlinked.

5.3 **Key Issues Considered in the Assessment Process**

5.3.1 **Sources of Impacts (Proposed Project Activities)**

The ongoing exploration activities being undertaken in the EPL 6688 and as assessed in this EIA Report with mitigation measures provided in the EMP Report 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.

5.3.2 Summary of Receptors Likely to be Negative Impacted

Based on the finding of this EIA Report, the following is the summary of the key environmental receptors that are may be negatively impacted by the proposed activities:

❖ Physical environment: Water quality, physical infrastructure and resources, air quality, noise and dust, landscape and topography, soil quality and, Climate change influences.

❖ Biological environment: Habitat, protected areas and resources, flora, fauna, and ecosystem functions, services, use values and non-use or passive use, and.

❖ Socioeconomic, cultural and archaeological environment: Local, regional and national socioeconomic settings, commercial and subsistence agriculture, community protection areas tourism and recreation cultural, biological and archaeological resources.

5.4 Impact Assessment Methodology

5.4.1 Impact Definition

In this EIA Report, a natural and/or human environmental impact is defined as: “Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s environmental aspects.” (ISO 14001).

All proposed project activities (routine and non-routine) were considered during the Scoping, EIA and EMP Phases in terms of their potential to:

❖ Interact with the existing environment (physical, biological and social elements), and.

❖ Breach relevant national legislation, relevant international legislation, standards and guidelines, and corporate environmental policy and management systems.

Where a project activity and receptor were considered to have the potential to interact, the impact has been defined and ranked according to its significance. Table 5.1 provides the definition of different categories of impacts identified and used in this report.

This EIA Report has assessed the potential impacts resulting from routine Project activities, assuming that the Project activities that may cause an impact that will occur but the impact itself will be dependent on the likelihood (Probability) (Table 5.2).

Correct control measures through the implementation of the EMP and monitoring thereof, often reduce any negative significant impacts on the receiving environment as the results of the project activities. The assessment therefore, has focussed on the measures aimed at preventing the occurrence of an impact as well as mitigation measures that may be employed.
Table 5.1: Definition of impact categories used in this report.

<table>
<thead>
<tr>
<th>Nature of Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse</td>
<td>Considered to represent an adverse change from the baseline, or to introduce a new undesirable factor.</td>
</tr>
<tr>
<td>Beneficial</td>
<td>Considered to represent an improvement to the baseline or to introduce a new desirable factor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Results from a direct interaction between a planned or unplanned Project activity and the receiving environment.</td>
</tr>
<tr>
<td>Indirect</td>
<td>Results from the Project but at a later time or at a removed distance or which may occur as a secondary effect of a direct impact.</td>
</tr>
<tr>
<td>Cumulative</td>
<td>Results from (i) interactions between separate Project-related residual impacts, and (ii) interactions between Project-related residual impacts in combination with impacts from other projects and their associated activities. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term</td>
<td>Predicted to last only for a limited period but will cease on completion of the activity, or as a result of mitigation/reinstatement measures and natural recovery typically within a year of the project completion.</td>
</tr>
<tr>
<td>Medium-term</td>
<td>Predicted to last only for a medium period after the Project finishing, typically one to five years.</td>
</tr>
<tr>
<td>Long-term</td>
<td>Continues over an extended period, typically more than five years after the Project’s completion.</td>
</tr>
<tr>
<td>Permanent</td>
<td>Occurs during the development of the Project and causes a permanent change in the affected receptor or resource that endures substantially beyond the Project lifetime.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale of Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Affects locally important environmental resources or is restricted to a single habitat/biotope, a single community.</td>
</tr>
<tr>
<td>Regional</td>
<td>Affects nationally important environmental resources, or an area that is nationally important/protected or has macro-economic consequences.</td>
</tr>
<tr>
<td>National</td>
<td>Affects nationally important environmental resources, or an area that is nationally important/protected or has macro-economic consequences.</td>
</tr>
<tr>
<td>International</td>
<td>Affects internationally important resources such as areas protected by international Conventions</td>
</tr>
<tr>
<td>Transboundary</td>
<td>Impacts experienced in one country as a result of activities in another.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Probability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>Possibility negligible</td>
</tr>
<tr>
<td>Improbable</td>
<td>Possibility very low</td>
</tr>
<tr>
<td>Probable</td>
<td>Distinct possibility</td>
</tr>
<tr>
<td>Highly Probable</td>
<td>Most likely</td>
</tr>
<tr>
<td>Definite</td>
<td>Impact will occur regardless of preventive measures</td>
</tr>
</tbody>
</table>

The overall impact severity has been categorised using a semi-quantitative subjective scale as shown in Table 5.2 for sensitivity of receptors, Table 5.3 for magnitude, Table 5.4 for duration, Table 5.5 for extent and Table 5.6 showing probability.

Table 5.2: Definitions used for determining the sensitivity of receptors.

<table>
<thead>
<tr>
<th>SENSITIVITY RATING</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Negligible</td>
</tr>
<tr>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>Very High</td>
</tr>
</tbody>
</table>
Table 5.3: Scored on a scale from 0 to 5 for impact magnitude.

<table>
<thead>
<tr>
<th>SCALE (-) or (+)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no observable effect</td>
</tr>
<tr>
<td>1</td>
<td>low effect</td>
</tr>
<tr>
<td>2</td>
<td>tolerable effect</td>
</tr>
<tr>
<td>3</td>
<td>medium high effect</td>
</tr>
<tr>
<td>4</td>
<td>high effect</td>
</tr>
<tr>
<td>5</td>
<td>very high effect (devastation)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SCALE (-) or (+)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Temporary</td>
</tr>
<tr>
<td>P</td>
<td>Permanent</td>
</tr>
</tbody>
</table>

Table 5.5: Scored geographical extent of the induced change.

<table>
<thead>
<tr>
<th>SCALE (-) or (+)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>limited impact on location</td>
</tr>
<tr>
<td>O</td>
<td>impact of importance for municipality.</td>
</tr>
<tr>
<td>R</td>
<td>impact of regional character</td>
</tr>
<tr>
<td>N</td>
<td>impact of national character</td>
</tr>
<tr>
<td>M</td>
<td>impact of cross-border character</td>
</tr>
</tbody>
</table>

5.4.3 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).

<table>
<thead>
<tr>
<th>SCALE (-) or (+)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Extremely unlikely (e.g. never heard of in the industry)</td>
</tr>
<tr>
<td>B</td>
<td>Unlikely (e.g. heard of in the industry but considered unlikely)</td>
</tr>
<tr>
<td>C</td>
<td>Low likelihood (e.g. such incidents/impacts have occurred but are uncommon)</td>
</tr>
<tr>
<td>D</td>
<td>Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)</td>
</tr>
<tr>
<td>E</td>
<td>High likelihood (e.g. such incidents/impacts occur several times per year at each location where such works are undertaken)</td>
</tr>
</tbody>
</table>
5.4.4 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 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 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 sensitivity assessment of the receptors (Physical, Socioeconomic and Biological environments) with respect to the proposed exploration / prospecting activities.

<table>
<thead>
<tr>
<th>SENSITIVITY RATING</th>
<th>CRITERIA</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Negligible: The receptor or resource is resistant to change or of little environmental value.</td>
<td>Water Quality</td>
<td>Physical Infrastructure and Resources</td>
<td>Ecosystem functions, services, use values and non-use or passive use values and non-use or passive use values and non-use or passive use values</td>
</tr>
<tr>
<td>2</td>
<td>Low: The receptor or resource is tolerant of change without detriment to its character or of low environmental or social value, or of local importance.</td>
<td>Physical Infrastructure and Resources</td>
<td>Air Quality, Noise and Dust</td>
<td>Protected Areas</td>
</tr>
<tr>
<td>3</td>
<td>Medium: The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or of national importance.</td>
<td>Landscape Topography</td>
<td>Soil Quality</td>
<td>Climate Change Influences</td>
</tr>
<tr>
<td>4</td>
<td>High: The receptor or resource has moderate capacity to absorb change without significantly altering its present character; has some environmental or social value, or of district/regional importance.</td>
<td>Soil Quality</td>
<td>Climate Change Influences</td>
<td>Protected Areas</td>
</tr>
<tr>
<td>5</td>
<td>Very High: The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or of international importance.</td>
<td>Climate Change Influences</td>
<td>Protected Areas</td>
<td>Flora</td>
</tr>
</tbody>
</table>

1. Initial Desktop Exploration Activities

(i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data

(ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data

(iii) Purchase and analysis of existing Government aerial hyperspectral data

(iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets

2. Regional Reconnaissance Field-Based Activities

(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis

(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken

(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken

(iv) Limited field-based support and logistical activities 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 5.7: Cont.

<table>
<thead>
<tr>
<th>RECEPTOR SENSITIVITY</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SENSITIVITY RATING</strong></td>
<td><strong>CRITERIA</strong></td>
<td><strong>PHYSICAL</strong></td>
<td><strong>ENVIRONMENT</strong></td>
</tr>
<tr>
<td>1</td>
<td>Negligible</td>
<td>The receptor or resource is resistant to change or is of little environmental value</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Low</td>
<td>The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Medium</td>
<td>The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>High</td>
<td>The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of distinct/regional importance</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Very High</td>
<td>The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance</td>
<td>2</td>
</tr>
</tbody>
</table>

#### 3. Initial Local Field-Based Activities

(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities

(ii) Local geological mapping aimed at identifying possible targets based on the results of the regional geological and analysis undertaken

(iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)

(iv) Possible Trenching (Subject to the outcomes of i - iii above)

(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)

(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets

#### 4. Detailed Local Field-Based Activities

(i) Access preparation and related logistics to support activities

(ii) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during the initial field-based activities

(iii) Local geological mapping aimed at identifying possible targets based on the results of the regional geological and analysis undertaken

(iv) Ground geophysical survey, trenching, drilling and sampling (Subject to the positive outcomes of i and ii above)

#### 5. Prefeasibility and Feasibility Studies

(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping

(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations

(iii) Geotechnical studies for mine design

(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities

(v) EIA and EMP to support the ECC for mining operations

(vi) Preparation of feasibility report and application for Mining License
Table 5.8: Results of the scored time period (duration) over which the impact is expected to last.

<table>
<thead>
<tr>
<th>RECEPTOR SENSITIVITY</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>DESCRIPTION</td>
<td>Water Quality</td>
<td>Physical Infrastructure and Resources</td>
</tr>
<tr>
<td>T</td>
<td>Temporary</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>P</td>
<td>Permanent</td>
<td>T</td>
<td>T</td>
</tr>
</tbody>
</table>

1. Initial Desktop Exploration Activities

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

2. Regional Reconnaissance Field-Based Activities

(i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis
(ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
(iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
(iv) Limited field-based support and logistical activities 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 5.8: Cont.

<table>
<thead>
<tr>
<th>DURATION OF IMPACT</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>DESCRIPTION</td>
<td>Water Quality</td>
<td>Physical Infrastructure and Resources</td>
</tr>
<tr>
<td>T</td>
<td>Temporary</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>P</td>
<td>Permanent</td>
<td>T</td>
<td>T</td>
</tr>
</tbody>
</table>

3. **Initial Local Field-Based Activities**

1. Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities
2. Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken
3. Ground geophysical survey (Subject to the positive outcomes of i and ii above)
4. Possible Trenching (Subject to the outcomes of i - iii above)
5. Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)
6. Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets

4. **Detailed Local Field-Based Activities**

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

5. **Prefeasibility and Feasibility Studies**

1. Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping
2. Detailed drilling and bulk sampling and testing for ore reserve calculations
3. Geotechnical studies for mine design
4. Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities
5. EIA and EMP to support the ECC for mining operations
6. Preparation of feasibility report and application for Mining License
Table 5.9: Results of the scored geographical extent of the induced change.

<table>
<thead>
<tr>
<th>GEOGRAPHICAL EXTENT OF IMPACT</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>DESCRIPTION</td>
<td>Water Quality</td>
<td>Physical Infrastructure and Resources</td>
</tr>
<tr>
<td>L</td>
<td>limited impact on location</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>O</td>
<td>impact of importance for municipality</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>R</td>
<td>impact of regional character</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>N</td>
<td>impact of national character</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>M</td>
<td>impact of cross-border character</td>
<td>L</td>
<td>L</td>
</tr>
</tbody>
</table>

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

2. **Regional Reconnaissance Field-Based Activities**
   - (i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis
   - (ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
   - (iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
   - (iv) Limited field-based support and logistical activities 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>
<thead>
<tr>
<th>SCALE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>limited impact on location</td>
</tr>
<tr>
<td>O</td>
<td>impact of importance for municipality</td>
</tr>
<tr>
<td>R</td>
<td>impact of regional character</td>
</tr>
<tr>
<td>N</td>
<td>impact of national character</td>
</tr>
<tr>
<td>M</td>
<td>impact of cross-border character</td>
</tr>
</tbody>
</table>

**GEOGRAPHICAL EXTENT OF IMPACT**

<table>
<thead>
<tr>
<th>(i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken</td>
</tr>
<tr>
<td>(iii) Ground geophysical survey (Subject to the positive outcomes of (i) and (ii) above)</td>
</tr>
<tr>
<td>(iv) Possible Trenching (Subject to the outcomes of (i) - (iii) above)</td>
</tr>
<tr>
<td>(v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)</td>
</tr>
<tr>
<td>(vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>(i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Detailed drilling and bulk sampling and testing for ore reserve calculations</td>
</tr>
<tr>
<td>(iii) Geotechnical studies for mine design</td>
</tr>
<tr>
<td>(iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities</td>
</tr>
<tr>
<td>(v) EIA and EMP to support the ECC for mining operations</td>
</tr>
<tr>
<td>(vi) Preparation of feasibility report and application for Mining License</td>
</tr>
</tbody>
</table>

**Table 5.9: Cont.**

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

**PHYSICAL ENVIRONMENT**

- Water Quality
- Physical infrastructure and Resources
- Air Quality, Noise and Dust
- Landscape Topography
- Soil Quality
- Climate Change Influences
- Habitat
- Protected Areas
- Flora
- Fauna
- Ecosystem functions, services, use values and non-use values
- Cultural, biological and archaeological resources
- Local, regional and national socioeconomic settings
- Commercial Agriculture
- Community Protected Areas
- Tourism and Recreation
- Cultural, biological and archaeological resources
Table 5.10: Results of the qualitative scale of probability occurrence.

<table>
<thead>
<tr>
<th>IMPACT PROBABILITY OCCURRENCE</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>DESCRIPTION</td>
<td>PHYSICAL ENVIRONMENT</td>
<td>BIOLOGICAL ENVIRONMENT</td>
</tr>
<tr>
<td>A</td>
<td>Extremely unlikely (e.g. never heard of in the industry)</td>
<td>Water Quality</td>
<td>Protected Areas</td>
</tr>
<tr>
<td>B</td>
<td>Unlikely (e.g. heard of in the industry but considered unlikely)</td>
<td>Physical Infrastructure and Resources</td>
<td>Flora</td>
</tr>
<tr>
<td>C</td>
<td>Low likelihood (e.g. such incidents/impacts have occurred but are uncommon)</td>
<td>Air Quality, Noise and Dust</td>
<td>Fauna</td>
</tr>
<tr>
<td>D</td>
<td>Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)</td>
<td>Landscape Topography</td>
<td>Climate Change Influences</td>
</tr>
<tr>
<td>E</td>
<td>High likelihood (e.g. such incidents/impacts occurs several times per year at such location where such works are undertaken)</td>
<td>Soil Quality</td>
<td>Habitat</td>
</tr>
</tbody>
</table>

1. Initial Desktop Exploration Activities
   (i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data
   (ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data
   (iii) Purchase and analysis of existing Government aerial hyperspectral
   (iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets
   (v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets

2. Regional Reconnaissance Field-Based Activities
   (i) Regional geological, geochemical, topographical and remote sensing mapping and 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
**Table 5.1: Cont.**

<table>
<thead>
<tr>
<th>IMPACT PROBABILITY OCCURRENCE</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>DESCRIPTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Extremely unlikely (e.g. never heard of in the industry)</td>
<td>Water Quality</td>
<td>Physical infrastructure and Resources</td>
</tr>
<tr>
<td>B</td>
<td>Unlikely (e.g. heard of in the industry but considered unlikely)</td>
<td>Air Quality, Noise and Dust</td>
<td>Landscape Topography</td>
</tr>
<tr>
<td>C</td>
<td>Low likelihood (egg such incidents/impacts have occurred but are uncommon)</td>
<td>Soil Quality</td>
<td>Climate Change Influences</td>
</tr>
<tr>
<td>D</td>
<td>Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)</td>
<td>Habitat</td>
<td>Protected Areas</td>
</tr>
<tr>
<td>E</td>
<td>High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)</td>
<td>Fauna</td>
<td>Fauna</td>
</tr>
</tbody>
</table>

3. **Initial Local Field-Based Activities**

   (i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities
   
   (ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken
   
   (iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above)
   
   (iv) Possible Trenching (Subject to the outcomes of i - iii above)
   
   (v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days)
   
   (vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets

4. **Detailed Local Field-Based Activities**

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

5. **Prefeasibility and Feasibility Studies**

   (i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping
   
   (ii) Detailed drilling and bulk sampling and testing for ore reserve calculations
   
   (iii) Geotechnical studies for mine design
   
   (iv) EIA and EMP to support the ECC for mining operations
   
   (v) Preparation of feasibility report and application for Mining License

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*Broadmind Mining EPL No. 6688 - Final EIA Report for Exploration & Test Mining - July 2020*
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 5.1.

5.5.2 Significance Criteria

Significance criteria for negative/adverse impacts (i.e., relative ranking of importance) are defined in Table 5.1. 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 report have been determined on the basis of the impact assessment presented in this report.

Table 5.1: Scored impact significance criteria.

<table>
<thead>
<tr>
<th>IMPACT SEVERITY</th>
<th>RECEPTOR CHARACTERISTICS (SENSITIVITY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very High (5)</td>
</tr>
</tbody>
</table>

5.5.3 Assessment Likely Significant Impacts

The assessment of significant impacts depended upon the degree to which the proposed project activities are likely to results in unwanted consequences on the receptor covering physical and biological environments (Table 5.12). 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 minerals exploration comprised activities. Each of the main areas of impact have been identified and assessed as follows:

- Positive Impacts are classified under a single category. they are then evaluated qualitatively with a view to their enhancement, if practical.
- Negligible or Low Impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity).
- Medium or High Impacts require the adoption of management or mitigation measures.
- High Impacts always require further management or mitigation measures to limit or reduce the impact to an acceptable level.

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

---

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Table 5.1: Significant impact assessment matrix for the proposed exploration activities.

<table>
<thead>
<tr>
<th>IMPACT SEVERITY</th>
<th>RECEPTOR CHARACTERISTICS (SENSITIVITY)</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Magnitude, Duration, Extent, Probability</td>
<td>Water Quality</td>
<td>Physical Infrastructure and Resources</td>
<td>Air Quality, Noise and Dust</td>
</tr>
<tr>
<td>Medium (3)</td>
<td>Major [5/3] Moderate [4/3] Moderate [3/3] Minor [2/3] None [1/3]</td>
<td>1/1</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Low (2)</td>
<td>Moderate [5/2] Moderate [4/2] Minor [3/2] None [2/2] None [1/2]</td>
<td>1/1</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Negligible (1)</td>
<td>Minor [5/1] Minor [4/1] None [3/1] None [2/1] None [1/1]</td>
<td>1/1</td>
<td>1/1</td>
<td>1/1</td>
</tr>
</tbody>
</table>

1. Initial Desktop Exploration Activities
   (i) General evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures and socioeconomic environment data
   1/1
   (ii) Purchase and analysis of existing Government high resolution magnetics and radiometric geophysical data
   1/1
   (iii) Purchase and analysis of existing Government aerial hyperspectral
   1/1
   (iv) Data interpretation and delineating of potential targets for future reconnaissance regional field-based activities for delineated targets
   1/1

2. Regional Reconnaissance Field-Based Activities
   (i) Regional geological, geochemical, topographical and remote sensing mapping and data analysis
   1/1
   (ii) Regional geochemical sampling aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
   1/1
   (iii) Regional geological mapping aimed at identifying possible targeted based on the results of the initial exploration and regional geological, topographical and remote sensing mapping and analysis undertaken
   1/1
   (iv) Limited field-based support and logistical activities including exploration camp site lasting between one (1) to two (2) days
   1/1
   (v) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for future detailed site-specific exploration if the results are positive and supports further exploration of the delineated targets
   1/1
### Table 5.12:  Cont.

<table>
<thead>
<tr>
<th>SENSITIVITY</th>
<th>PHYSICAL ENVIRONMENT</th>
<th>BIOLOGICAL ENVIRONMENT</th>
<th>SOCIOECONOMIC, CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IMPACT SEVERITY</strong></td>
<td><strong>RECEPTOR CHARACTERISTICS (SENSITIVITY)</strong></td>
<td><strong>WATER QUALITY</strong></td>
<td><strong>PHYSICAL INFRASTRUCTURE AND RESOURCES</strong></td>
</tr>
<tr>
<td>Very High (5)</td>
<td>Major [5/5]</td>
<td>Moderate [3/5]</td>
<td>Moderate [2/5]</td>
</tr>
<tr>
<td>Low (2)</td>
<td>Moderate [4/2]</td>
<td>Moderate [4/2]</td>
<td>Minor [1/2]</td>
</tr>
<tr>
<td>Negligible (1)</td>
<td>Minor [1/1]</td>
<td>None [0/1]</td>
<td>None [0/1]</td>
</tr>
</tbody>
</table>

3. **Initial Local Field-Based Activities**

- (i) Local geochemical sampling aimed at verifying the prospectivity of the target/s delineated during regional reconnaissance field activities.
- (ii) Local geological mapping aimed at identifying possible targeted based on the results of the regional geological and analysis undertaken.
- (iii) Ground geophysical survey (Subject to the positive outcomes of i and ii above).
- (iv) Possible Trenching (Subject to the outcomes of i - iii above).
- (v) Field-based support and logistical activities will be very limited focus on a site-specific area for a very short time (maximum five (5) days).
- (vi) Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets.

4. **Detailed Local Field-Based Activities**

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

5. **Prefeasibility and Feasibility Studies**

- (i) Detailed site-specific field-based support and logistical activities, surveys, detailed geological mapping.
- (ii) Detailed drilling and bulk sampling and testing for ore reserve calculations.
- (iii) Geotechnical studies for mine design.
- (iv) Mine planning and designs including all supporting infrastructures (water, energy and access) and test mining activities.
- (v) EIA and EMP to support the EGC for mining operations.
- (vi) Preparation of feasibility report and application for Mining License.
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 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 [1/1] (Table 5.12). Except for the socioeconomic components which carries a (+), the rest of the likely impacts are negative (-).

(ii) Regional reconnaissance field-based activities: Overall likely negative impact on the receiving environment will be negligible with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible [1/1]. Some field-based activities will have localised low impacts with low probability of occurrence without mitigations and negligible with mitigations. Overall significant impacts will be negligible [1/1] (Table 5.12). 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 [2/2]. All desktop related activities and laboratory assessments will have negligible impacts with extremely unlikely probability of occurrence without mitigations. Overall significant impacts will be negligible [2/2] (Table 5.12). 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 [2/2] without mitigations and low with mitigations (Table 5.12). Except for the socioeconomic components which carries a (+), all the other likely impacts are negative (-), and.

(v) Prefeasibility and feasibility studies to be implemented on a site-specific area if the local field-based studies prove positive: Overall likely negative impact on the receiving environment will be high and localised impacts without mitigations and localised medium impacts with mitigations. Overall significant impacts will be high [3/3] 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. CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Broadmind Mining (Pty) Ltd (the Proponent) intends to undertake exploration activities in the Exclusive Prospecting Licence (EPL) No. 6688 covering base and rare metals, dimension stones, industrial minerals and precious metals. The exploration activities to be undertaken as assessed in this environmental assessment are as follows:

(i) Initial desktop exploration activities.
(ii) Regional reconnaissance field-based activities.
(iii) Initial local field-based activities including detailed mapping, sampling and drilling operations.
(iv) Detailed local field-based activities including detailed mapping, sampling and drilling operations, and
(v) Prefeasibility and feasibility studies including possible test mining.

The overall severity of potential environmental impacts of the proposed project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses) will be of low magnitude, temporally duration, localised extent and low probability of occurrence.

6.2 Recommendations

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

(i) Based on the findings of this EIA Report, the Proponent shall prepare an EMP Report with key mitigations measures.
(ii) Mitigation measures shall be implemented as detailed in the EMP report.
(iii) The Proponent shall negotiate Access Agreements with the land owner/s as may be applicable.
(iv) The Proponent shall adhere to all the provisions of the EMP and conditions of the Access Agreement to be entered between the Proponent and the land owner/s in line with all applicable national regulations.
(v) Before entering any private or protected property/ area such as a private farm, the Proponent must give advance notices and obtain permission to access the EPL area at all times, and
(vi) Where possible, and if water is found during the detailed exploration boreholes drilling operations, the Proponent shall promote access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s or as may be needed for environmental protection including wildlife management. The abstraction of the groundwater resources shall include water levels monitoring, sampling and quality testing on a bi-annual basis, and that the affected landowner/s must have access to the results of the water monitoring analyses as part of the ongoing stakeholder disclosure requirements on shared water resources as may be applicable.
6.3 Summary ToR for Test Mining and Mining Stages

In an even that economic minerals resources are discovered within the EPL 6688 area and could lead to the development of mining project, a new Environmental Clearance Certificate (ECC) for mining will be required. The ECC being supported by this EIA Report only covers the exploration phase.

A separate field-based and site-specific Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports supported by specialist studies as maybe applicable must be prepared in order to support the application for the new ECC for mining operations. The EIA and EMP studies shall form part of the prefeasibility and feasibility study with respect to the test mining or possible mining operations.

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

(i) Groundwater studies including modelling as maybe applicable.
(ii) Field-based flora and fauna diversity.
(iii) Noise and Sound modelling linked to engineering studies.
(iv) Socioeconomic assessment, and.
(v) Others as may be identified / recommended by the stakeholders/ land owners/ Environmental Commissioner or specialists.

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

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

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

1. **GENERAL REFERENCES**


2. **REFERENCES ON FAUNA AND FLORA**


Hebbard, S. n.d. A close-up view of the Namib and some of its fascinating reptiles. ST Promotions, Swakopmund, Namibia.


Komen, L. n.d. The Owls of Namibia – Identification and General Information. NARREC, Windhoek.


8. ANNEXES

1. BID / Scoping Report

2. Public Consultation Materials