ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED MINERAL EXPLORATION OF MINERAL ON EXCLUSIVE PROSPECTING LICENCE (EPL) 7228 IN OMARURU, ERONGO REGION

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Title	**ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED MINERAL EXPLORATION OF MINERAL ON EXCLUSIVE PROSPECTING LICENCE (EPL) 7228 IN OMARURU DISTRICT, ERONGO REGION**		
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EXECUTIVE SUMMARY

Xinfeng Investments (Pty) Ltd hereinafter referred to as the Proponent intends to carry out mineral prospecting activities on exclusive prospecting licence (EPL) 7228. Mineral rights valid under this EPL are Base & Rare metals, Industrial Minerals and Precious Metals. The EPL is located about 45 km west-northwest (WNW) of the Town of Omaruru and covers an area of about 27,879.4 Ha. The area falls under the Omaruru Constituency jurisdiction and covers the farms Kohero 113, Goedehoop 157, Gross Okombahe 193, Okombahe 112, Ehuiro 120, Okarundu Nord West 118, Kawab 117 and Okarundu North 121. Xinfeng Investments (Pty) Ltd appointed Chem Papers CC to conduct the necessary assessments including public participation.

The Environmental Regulations procedure (GN 30 of 2012) stipulates that no exploration activities may be undertaken without an environmental clearance certificate. As such, an environmental clearance certificate must be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperative that the environmental proponent must conduct a public consultation process in accordance with regulation 21 of the 2012 environmental procedure, produce an environmental assessment report and submit an Environmental Management Plan for the proposed exploration activities.

The site of the proposed exploration activities has its surrounding area other authorized mineral exploration activities; therefore the natural setting of the area is accustomed to similar operations and that potential negative impact of the proposed project on the natural environment of the surrounding area will be negligible. The proposed project will strictly employ locals from nearby towns and settlements.

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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	**Definition**
EPL	Exclusive Prospecting License
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
MEFT	Ministry of Environment, Forestry and Tourism
MEFT: DEA	Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs
MME	Ministry of Mines and Energy
Target area	The area of the EPL intended for exploration activities

1. Introduction

1.1. Project background

Xinfeng Investments (Pty) Ltd is a Namibian registered company. It is the holder of Exclusive Prospecting License (EPL 7228) located in Omaruru District, Erongo Region. The EPL has been valid since 29 March 2019 and is due for renewal before 28 March 2022. The exploration programme is aimed at unveiling the mineral economic potential of the area under question. The issuance of an Environmental Clearance Certificate by Ministry of Environment, Forestry and Tourism (MEFT) will pave way for the envisaged exploration activities.

1.1.1 Project Description

The exclusive prospecting license area (EPL 7228) is 27,879.4 Ha. The exclusive prospecting licence area has been found to host minerals of economic value such as lithium, tin, tantalum, tungsten and REE. The mineralization in the area is known to be associated with late to post tectonic pegmatites of Ordovician age. The exploration process will involve geophysical surveys, stream sediment sampling, soil sampling and analysis, trenching, RC and diamond drilling. The focus of the exploration to search for mineralization of economic value and the exploration strategy to be employed will revolve around the mineralization model.

1.1.2 Environmental Consultant

Chem Papers Investments (Reg. No. CC/2010/4075) is a wholly Namibian owned close corporation. company, established in 2010 to provide consulting services to various public and private sectors in areas such as Strategic Environmental Assessments (SEA), Environmental Impact Assessments (EIA) and development of Environmental Management Systems. The Environmental Assessment Practitioner (EAP) for this study was Ms. C Kanyama. Her main area of expertise includes Mineral exploration, Environmental Management and Groundwater resource

management. She holds a Master's Degree in Applied geology majoring in Hydrogeology and Environmental Management (University of Namibia), B. Science Degree in Geology (University of Namibia). CV is attached for further information on her educational qualifications and experience.

1.2 Project location

The project area is located in western central Namibia in Erongo Region (Fig. 1), 45 KM WNW of Omaruru (Fig. 2) and covers the farms Kohero 113, Goedehoop 157, Gross Okombahe 193, Okombahe 112, Ehuiro 120, Okarundu Nord West 118, Kawab 117 and Okarundu North 121. (Fig. 3).

Fig. 1. Locality of EPL 7228 in western central Namibia.

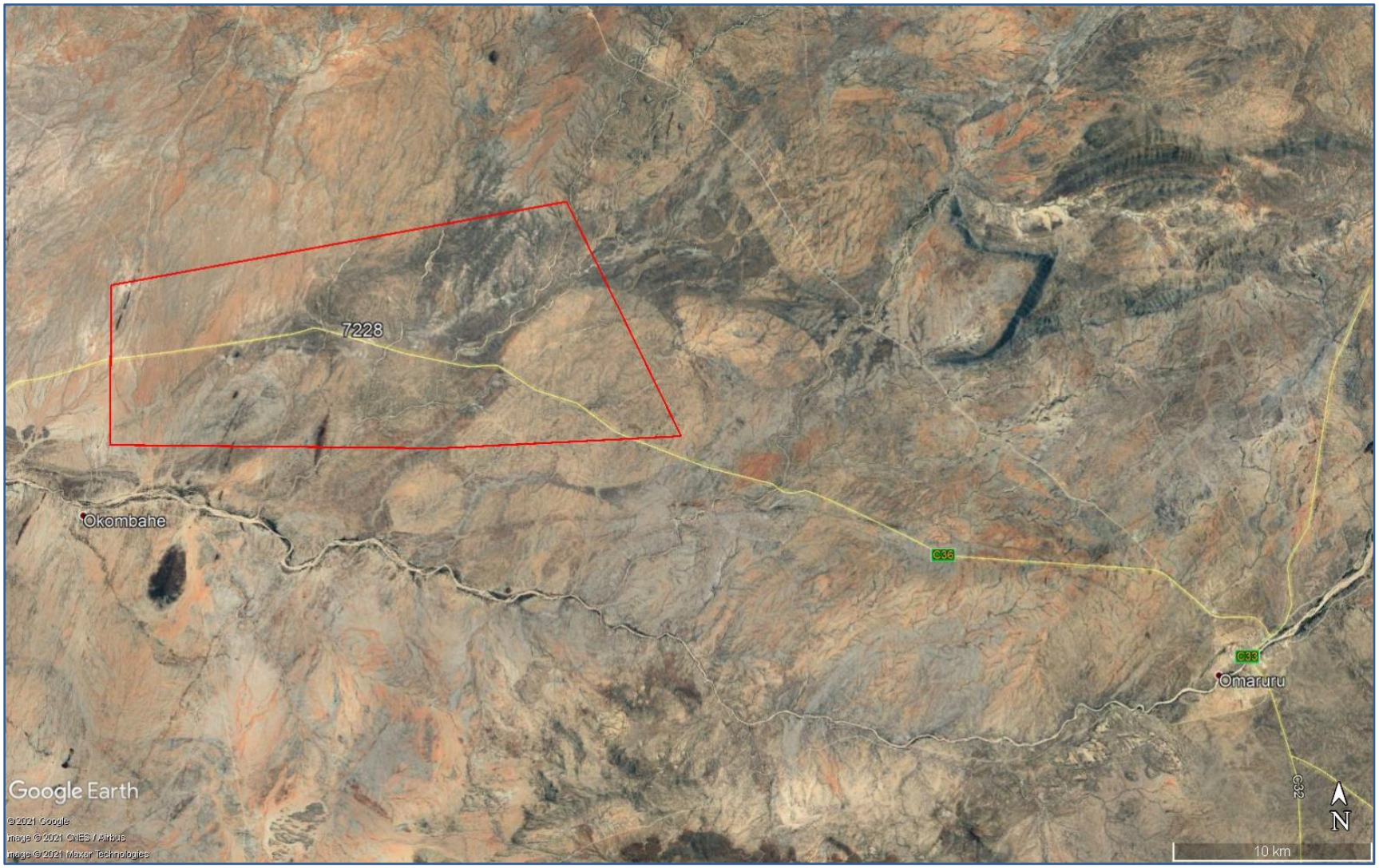

Fig. 2. Google maps showing the location EPL 7228 45km WNW of Omaruru and can be accessed via C36 gravel road. EPL boundary demarcated by the red polygon.

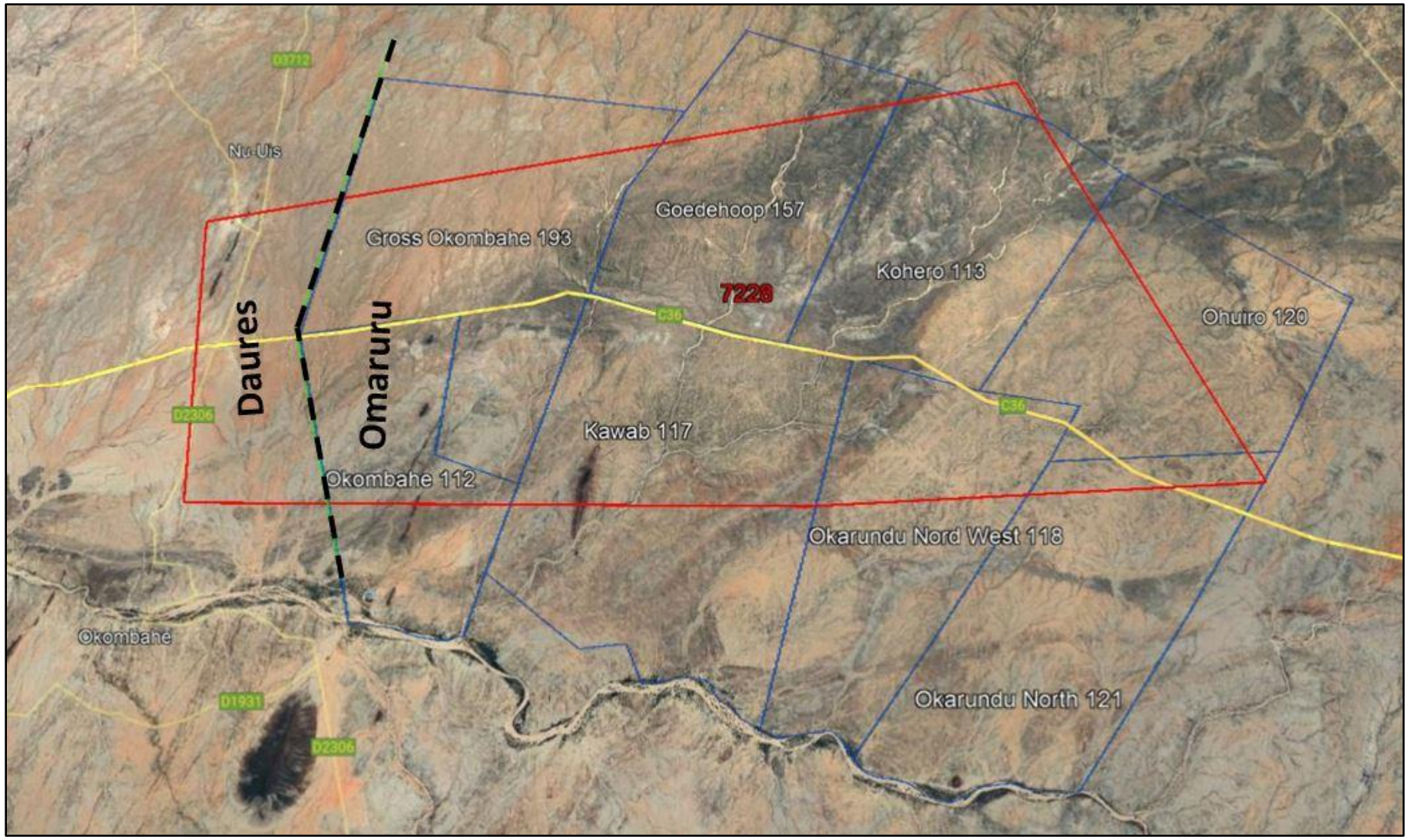

Fig. 3. Google image showing farms that are covered by EPL 7228. Also shown in the map is boundary between Daures and Omaruru constituencies.

1.3. Project Motivation

The Ministry of Mines and Energy (MME), through the department of Mines undertakes to exploit the country's mineral resources through issuance of mineral rights and it is through this process that EPL 7228 was issued to Xinfeng Investments (Pty) Ltd. Should the resource prove to economically feasible, the subsequent exploitation would provide social and economic development within the region and the country at large.

1.4. Activities relating to the exploration programme

Activities will include:

- Geological mapping - Involves visual assessment of outcropping rocks: No environmental impact, no activity footprint left behind.

Fig. 4. Geological mapping exercise underway (an environmentally non-invasive activity)

- Ground geophysical surveys – Handheld geophysical equipment are used to collect data from subsurface rocks. This is achieved through traversing lithological units: this process does not leave behind any environmental impact and activity footprint.

Fig. 5. Geophysical survey being undertaken (an environmentally non-invasive activity)

- Geochemical sampling – A small hole of roughly a few centimeters deep are dug from which a sample is collected and the hole is then covered after sampling leaving no activity footprint left behind.

Fig. 6. Geochemical sampling sites

- Trenching – A trench is a ground excavation that generally deeper than its width and narrower than its length. Trenching is mainly for purposes of the orientation of the targeted lithology and mineralization as well as sampling. Impact is localized and the trenches are covered after sampling leaving to no activity foot print

Fig. 7. Trenching site and a schematic illustration of a trenching site.

- Pitting - excavation or diggings of areas are done to obtain a representative bulk sample of the mineralization as well as getting a 3D view of the minieralization. Impact is also localized and the trenches are covered after sampling leaving to no activity foot print

Fig. 8. Pitting sites

- RC and diamond drilling - Holes are drilled and drill samples collected will be used for geotechnical analysis and analysis of elements and minerals. Holes are capped after drilling and the drilling site for each hole is localized and rehabilitated after drilling.

Fig. 9. RC and diamond drilling rigs at work also shown is drill core (activities are very localized with limited footprint.

1.5. Identification of environmental aspects

The exploration activities listed above have potential impact on the environment. Environmental aspects and potential impacts were identified during the screening and assessment phases of the EIA, in consultation with authorities, Interested and Affected Parties and the environmental team. As requested from the Ministry of Environment, Forestry and Tourism, an assessment Report with assessment and Environmental Management Plan have been prepared for the exploration activities. The following issues were assessed in this process and the findings are presented in this Assessment Report:

- Air quality – dust emissions related to vehicles and drilling activities
- Biodiversity
- Socio-economic
- Land-use
- Noise
- Surface water
- Ground water
- Waste management

1.6. Assessment findings

Air quality: This assessment was conducted in terms of dust generated from drilling and vehicle entrainment on gravel and off roads, in close proximity to residents. In the unmitigated scenario there is the potential for nuisance impacts relating to people residing in the surrounding area. However, with appropriate mitigation and management the potential impacts are greatly reduced and the significance rating falls to low.

Biodiversity: The assessment for biodiversity relates to the impact that personnel performing exploration activities have on the surrounding fauna and vegetation. It specifically focuses on the impacts associated with illegal hunting, poaching and the collection of firewood. In the unmitigated scenario the severity and the probability of the impacts were found to be medium, however, with mitigation and management measures both were reduced to a rating of low.

Socio-Economic: The assessment of socio-economic impacts focuses on the inconvenience the exploration activities have on the landowners. Specifically, the need for access, leaving farm gates open/unlocked and the increased risk of criminal activities. In the unmitigated scenario the significance rating is medium, however, with appropriate mitigation and management the potential impacts are greatly reduced and the significance rating falls to low.

Land-use: The assessment for land use refers specifically to the impact the exploration activities have on professional hunting activities. In the unmitigated scenario the duration of the impact was found to be medium, as there may be period where the land cannot be used for hunting purposes. With the addition of mitigation and management measure, the duration drops to low and the significance rating drops from medium to low.

Noise: The assessment of noise impacts is with specific regard to exploration activities taking place near a residence and resulting in a nuisance impact, and the severity of the impact is rated medium. In the mitigated scenario, the severity of the impact is reduced and is rated low. Surface water/

Groundwater: The assessment relates to the impacts associated with the spillage of hydrocarbons within the exploration area, with specific regard to water resources. Given the relatively localized nature of the activities, as well as the introduction of hydrocarbon spill management measures, the significance rating for both the unmitigated and mitigated scenario remain low.

Waste management: Given the remote location and the land-use, the dumping of domestic waste within the exploration area could prove hazardous to wildlife and livestock, as well as impede agricultural production. However, given the small scale of the activities, a large amount of waste will not be generated. With mitigation and management measures in place the rating remains low. The details regarding the management and mitigation measures can be found in Section 8 and the Environmental Management Plan.

1.7. Way forward

The way forward for the EIA assessment phase is as follows:

- Distribute the Assessment Report and EMP for review by IAPs and receive comments by 01 November 2021.
- Submit the final Assessment Report (with comments) and EMP to MEFT.
- MEFT review the Assessment Report and EMP and provide record of decision.

1.8. Infrastructure and Services

1.8.1 Power supply

The various machinery and equipment required for drilling or excavations will have their own power supplies and or generators attached. Fuel will be stored in small mobile tanks/ containers. The drill rigs are re-fuelled with Jerry cans. The power requirements for the proposed exploration activity will be minimal as power will only be required for powering small machinery during the exploration process.

1.8.2 Water Supply

Water will be required for diamond core drilling and for dust suppression. Water can be supplied through existing farm boreholes or newly drilled boreholes specifically for exploration activities or trucked in from the closest water source. While it would be more efficient to utilize existing boreholes on the property, this would depend on the agreement reached with each landowner. An alternative is to source water from the town of Omaruru and transport it to site. Water containers will be brought on site and utilized whenever necessary. The water will mostly be used for general consumption and drilling.

Fig. 10. Similar containers to be used for portable water

1.8.3 Roads

The proposed exploration activity area is located 45 km WNW of the town of Omaruru and is accessible via C36 gravel road. The two gravel roads are well-maintained. Location of off-road tracks to be constructed in consultation with surface landowners.

1.8.4 Supporting infrastructure, transportation and accommodation

All the staff members will be based in Omaruru town during the exploration programme. Staff transport arrangements from Omaruru to exploration sites will be provided by the proponent. Another available option would be to camp on site with consent from the landowner or alternatively make use of available accommodation facilities on one of the farms if agreeable to the property owner.

Portable fire-extinguishers will be fitted on all vehicles as well as in the mobile containers where possible. Provision will be made for two-way radios to enable the drill rig operators and the onsite staff to communicate effectively. An alternative is for all personnel to be housed in suitable accommodation either on or off-site. Guest accommodation is available in and around the EPL areas. Some landowners might be willing to accommodate exploration teams in established housing on the farm. Camp facilities for the storage of equipment and material will be erected, along with ablution facilities for workers.

1.8.5 Employment

Qualified and registered Namibian drilling contractors will be utilized to conduct the drilling program. Overall supervision of drilling activities will be by Xinfeng Investment's appointed staff. A drilling team will consist of a drill operator and usually three to four support staff, including drivers. Supervision of drilling activities will be done by Xinfeng staff consisting of one or two geologists, geo-technicians, 3 technical assistants and 2 general workers. The employees will be

sourced from the local community. All employees will undergo a safety induction, first aid training course and wildlife awareness program. The Labour Act of 2007 will always be adhered to.

1.8.6 Waste dumps and Waste management

The following types of waste will be generated in small volumes during the exploration:

- Domestic waste (non-hazardous): Domestic waste will be stored in a manner that there can be no contamination to the environment and shall be disposed of correctly.
- Potential hydrocarbon spills from vehicles and drilling equipment might lead to soil contamination and needs to be treated as a hazardous waste if not bio-remediated.

Fig. 11. Waste bins similar to these to be made available on site.

In choosing a waste dumpsite, the following aspects will be strongly considered:

• Topography
• Land-use in the area
• The presence of any hazardous geological structures
• Groundwater considerations
• The prevailing wind direction in the area
• Visual impacts that the waste dump might have
• Presence of surface water in the vicinity of the area
• Presence of sensitive ecological areas

Since the area is located on privately-owned farms, all waste will be transported and disposed out of the area.

1.8.7 Sanitation

Existing ablution facilities will be used by personnel if available and with consent from the landowner. Should activities be conducted in remote locations, appropriate toilet facilities must be provided for use by personnel. Due to health and safety concerns, personnel may not relieve themselves in the surrounding bush.

Fig. 12. Toilet facilities similar to these to be made available on site.

1.9. Environmental Impact Assessment Requirements

The Environmental Regulations procedure (GN 30 of 2012) stipulates that no exploration activities may be undertaken without an environmental clearance certificate. As such, an environmental clearance certificate must be applied for in accordance with regulation 6 of the 2012 environmental regulations. It is imperative that the environmental proponent must conduct a public consultation process in accordance with regulation 21 of the 2012 environmental procedure, produce an environmental assessment report and submit an Environmental Management Plan for the proposed exploration activities.

1.10. Purpose of the Assessment Report

The assessment report is prepared for the Environmental Impact Assessment for Mineral exploration activities on an area which is located 45 km west-northwest (WNW) of the Town of Omaruru by gravel road on farms Kohero 113, Goedehoop 157, Gross Okombahe 193, Okombahe

112, Ehuiro 120, Okarundu Nord West 118, Kawab 117 and Okarundu North 121. The main purpose of this report is to provide information relating to the proposed exploration activities and to indicate which environmental aspects and potential impacts that have been identified during the screening and assessment phases. Environmental assessment is a critical step in the preparation of an EIA for the proposed exploration activities. The assessment process identifies the issues that are likely to be most important during the EIA and eliminates those that are of little concern. The assessment process shall be concluded with the establishment of terms of reference for the preparation of an EIA, as set out by the Ministry of Environment, Forestry and tourism. The purpose of this assessment report is to:

- Identify any important environmental issues to be considered before the commencement of the proposed exploration activities in EPL 7228.
- To identify appropriate time and space boundaries of the EIA study.
- To identify information required for decision-making.

As such, the key objectives of this assessment study are to:

- Inform the public about the proposed exploration activities.
- Identify the main stakeholders and incorporate their comments and concerns.
- Define reasonable and practical alternatives to the proposal.
- To establish the terms of reference for an EIA study.

The assessment study provides a clear description of the environment that may be affected by the activity and the manner in which the activity may affect the environment. Information relating to the receiving environment and its social surroundings has been sourced through the following methods;

- Site visits to collect primary data;
- Legal and policy review;
- Gathering existing information relating to similar developments and issues;
- Discussions, meetings and site visits with authorities;
- Opinions and concerns raised by I&AP's and stakeholders; and
- Qualified opinions from professional studies.

1.11. Terms of Reference

This assessment study was carried out in accordance with the Environmental Management Act (No. 7 of 2007) and Environmental Regulations of 2012, as well as the Terms of Reference (ToR) which were provided by the proponent). It is a guiding document which indicates the description of the environment that may be affected by the activity and the manner in which the activity may affect the environment. Information relating to the receiving environment and its social surroundings has been sourced through the following methods:

- Legal and policy review; Identify all legislation and guidelines that have reference to the proposed project.
- Identify existing environmental (both bio-physical and socio-economic) conditions of the area.
- Inform Interested and Affected Parties (I&APs) and relevant authorities of the details of the proposed development and provide them with a reasonable opportunity to participate during the process.
- Consider the potential (both bio-physical and socio-economic) impacts of the development and assess the significance of the identified impacts.
- Document opinions and concerns raised by I&AP's and stakeholders.
- Outline management and mitigation measures in an Environmental Management Plan (EMP) to minimize and/or mitigate potentially negative impacts.
- Submit the final assessment report to the competent authority and the Environmental Commissioner.

This report is the Assessment Report. Taking the above mentioned into consideration, this report, together with the attached EMP, will provide sufficient information for MEFT to make an informed decision regarding the proposed exploration activities, and whether an environmental clearance certificate can certificate can be issued or not. A schematic representation of the EIA process if given in Fig. 12.

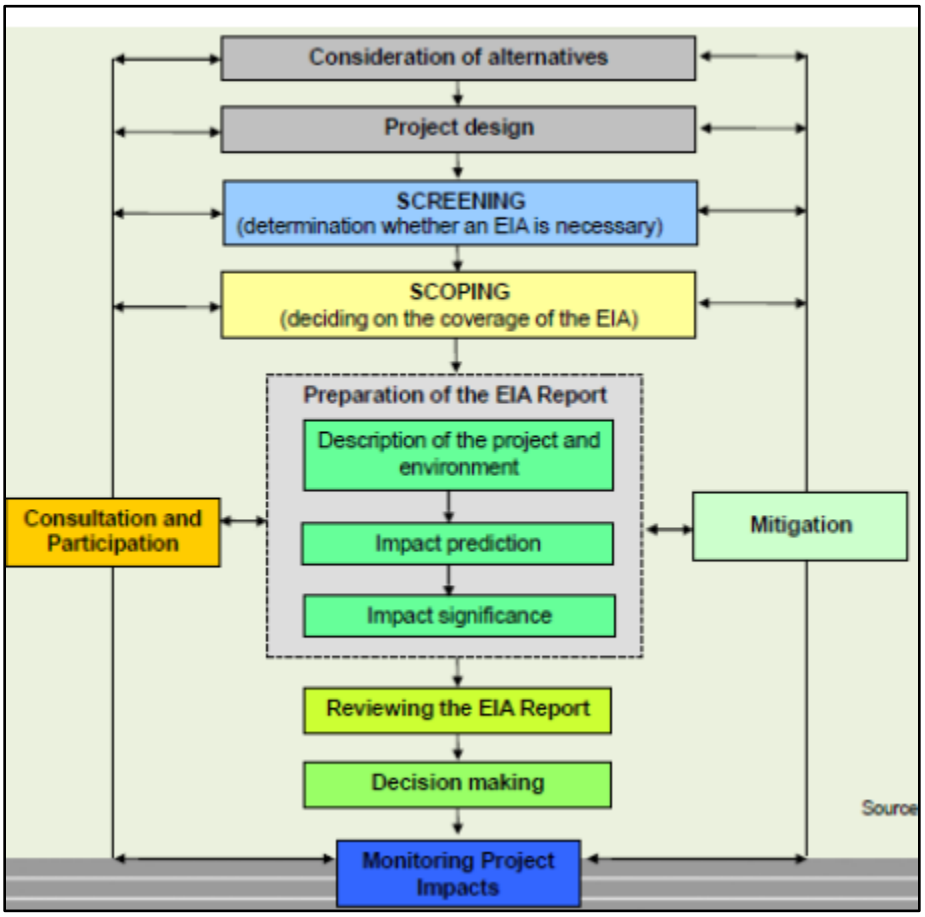

Fig. 13. General schematic presentation of the Environmental Impact Assessment process in Namibia.

1.11.1 Environmental assessment approach and methodology

Environmental assessment 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) and in line with the provisions of the Cabinet approved Environmental Assessment Policy for Sustainable Development and Environmental Conservation of 1995. This report has taken into consideration all the requirements for preparation of all the supporting documents and application for an Environmental Clearance Certificate and lodgments of such application to the Environmental Commissioner (EC), Department of Environmental Affairs (DEA) in the Ministry of Environment, Forestry and Tourism (MEFT). The purpose of the Assessment Phase was to communicate the scope of the proposed project to Interested and

Affected Parties (I&APs), to consider project alternatives, to identify the environmental (and social) aspects and potential impacts for further investigation and assessment, and to develop the terms of reference for specialist studies to be conducted in the Impact Assessment Phase if necessary. The steps undertaken during the Assessment Phase are summarized below.

1.11.1.1 Project initiation and screening

The project was registered on the online ECC portal (eia.met.gov.na) in order to provide notification of the commencement of the EIA process and to obtain clarity on the process to be followed.

1.11.1.2 Initial assessment public participation process

The objective of the public assessment process was to ensure that interested and affected parties (I&APs) were notified about the proposed project, given a reasonable opportunity to register on the project database and to provide initial comments. Steps that were undertaken during this phase are summarized below:

I&AP identification:

A project specific I&AP stakeholder database was developed. This database has been maintained and updated as and when required. A copy of the I&AP database is attached in Appendix A. the farmer's contact details were obtained during site visit, contact details of other interested and affected parties that were provided by the proponent. Furthermore, I&APs were added to the database based on responses to the advertisements and notification letters.

Notification letter and Background Information Document (BID):

BIDs were distributed via email to relevant authorities and stakeholder on the I&APs database. A notification letter was also distributed for review and comment for a period of 3 weeks after commencement of the project. The purpose of the BID was to inform I&APs about the proposed project, the assessment process being followed. Attached to the BID was a registration and

response form, which provided I&APs with an opportunity to submit their names, contact details and comments on the project. A copy of the BID is attached in Appendix D.

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Advertisements and site notice:

Advertisements announcing the proposed project, the availability of the BID, public meetings and the I&AP registration / comment period were placed in two newspapers namely: Confidénte newspaper and Windhoek Observer newspaper, for two consecutive weeks. Site notices were placed on the boundaries of farm fences, on the notice boards of the Regional Council and around Omaruru town for public viewing. All issues raised were incorporated into the assessment report. These submissions were tabled and responded to as indicated in the public participation section of the assessment report.

1.11.1.3 Compilation and Review of Draft Assessment Report (DSR)

The Draft assessment report (DSR) was prepared in compliance with Section 8 of the EIA Regulations of 2012 and incorporated with comments received during the initial Public Participation Process. The DSR will be distributed for a 14-day review and comment period.

1.11.1.4 Final Assessment Report and Completion of the Assessment Phase

The Final Assessment Report (FSR) summarises the following: the legal and policy framework; approach to the EIA and process methodology; the project's need and desirability; proposed project activities; key characteristics of the receiving environment; and key issues of concern that will be further investigated and assessed in the next phase of the EIA. The FSR complies with Section 8 of the EIA Regulations 2012. All written submissions received during the DSR review and comment period will be collated and responded to. The FSR will be submitted to the competent authority. In terms of Section 32 of the Environmental Management Act, 2007 (No. 7 of 2007), the competent authority is then required to make a recommendation on the acceptance or rejection

of the report to Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Affairs (DEA), who will make the final decision.

1.12. List of Specialist Studies Undertaken

Section 9(a) of the Environmental Regulations of 2012 requires a disclosure of all the tasks to be undertaken as part of the assessment process, including any specialist to be included if necessary. A specialist study on archaeology was undertaken by a qualified archaeologist. As part of the study, a foot survey was undertaken to identify any potential artefacts or human remains which may occur in the area. The archaeological specialist study, together with the consent letter from the Heritage Council of Namibia, is annexed to this report.

1.13. Need of the Exploration Project

Exploration forms part of the backbone of the mining industry as is the only process through which the mineral potential of a given area can be realized and it's through exploration activities that the much sought-after ore deposits of economic potential can be discovered. When favourable results are obtained from the exploration process, resulting in delineation of an orebody of economic potential, mineral extraction, the sought-after target for mining industry, which is important to the nation and the country in terms of employment, wealth creation and economic development. The mining industry contributes 10% to GDP and provides over 16,000 direct employment.

A mining project which is the end result of the proposed exploration project may assist in helping Namibia attain some of the goals set out in National Development Plans such as the Fifth National Development Plan (NDP5) and the Harambee Prosperity Plan (HPP).

This exploration project has potential for establishment and operation of the mineral exploration program which will create both direct and indirect jobs. Employment on the new project will be attractive to the local workforce by virtue of the comparatively high wages offered; this will boost economic growth in the economy of Omaruru Constituency and surrounding areas as well as the country at large.

1.14. Alternatives

Desired minerals are by nature difficult to locate as it requires extensive prospecting. The proposed exploration site has proved to host variable quantities and types of mineral. The proposed project is in an area dominated by mineral exploration activities and extensive prospecting has indicated the presence of mineralizations that may be of economic potential. Since, minerals can only be mined where identified and their quality verified, it was not practical to select any other sites. Therefore no location alternative was considered.

1.15. No-Go Alternatives

A comparative assessment of the environmental impacts of the 'no-go' alternative (a future in which the proposed EPL exploration activities do not take place) has been undertake. An assessment of the environmental impacts of a future, in which the proposed EPL exploration does not take place, may be good for the receiving environment because there be no negative environmental impacts due to the proposed exploration activities that may take place in the EPL area.

The environmental benefits will include no 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 is likely to be low and localized, the current and other future land uses such as agriculture will still have some negative impacts on the receiving environment. There are likely negative environmental impacts of other current and future land uses that may still happen in the absence of the proposed exploration activities.

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 realized if the proposed project activities do not go-ahead include loss of potential added value to the unknown mineral and metal resources that maybe found within the EPL area, socioeconomic benefits derived from current and

future mining and exploration activities, direct and indirect contracts and employment opportunities, export earnings, foreign direct investments, license rental fees, royalties and various other taxes payable to the Government.

In conclusion, no-go alternative will mean that the current land activities such as farming and important vegetation species will not be disturbed, that is, there will not be disturbance of the flora and fauna. No-go alternative will result in the non-mining of minerals and bring beneficiations to the receiving environment. However, the no-go alternative is not considered since it will lead to negative socio-economic impacts.

1.16. Potential Land Use Conflicts

Considering the current land use practices (agriculture, mining and/or exploration) it's likely that the exploration project in the general area can still co-exist with the existing and potential future land use options of the general area. However, much more detail assessment of any likely visual and other socioeconomic impacts will need to be undertaken as part of the EIA. The use of thematic mapping thereby delineating zones for specific uses such as conservation, mining or tourism etc, within the EPL area will greatly improve the multiple land use practices and promote coexistence.

2. Summary of applicable legislation

All mineral rights in Namibia are regulated by the Ministry of Mines and Energy (MME) whereas environmental regulations are regulated by the Ministry of Environment, Forestry and Tourism (MEFT). The legislation/acts that affect the implementation, operation and management of exploration activities in Namibia are shown below.

2.1. Constitution of the Republic of Namibia, 1990

The Constitution is the supreme law in Namibia, providing for the establishment of the main organs of state 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 utilization of living natural resources on a sustainable basis for all Namibians, both present and future.

2.2. Environmental Management Act of 2007

Line Ministry: Ministry of Environment, Forestry and Tourism

The regulations that accompany this act lists several activities that may not be undertaken without an environmental clearance certificate issued in terms of the Act. The act further states that any clearance certificate issued before the commencement of the act (6 February 2012) remains in force for one year. If a person wishes to continue with activities covered by the act, he or she must apply for a new certificate in terms of the Environmental Management Act.

2.3. The Minerals Prospecting and Mining Act of 1992

Line Ministry: Ministry of Mines and Energy

The Minerals Prospecting and Mining Act No.33 of 1992 approves and regulates mineral rights in relation to exploration, reconnaissance, prospecting, small scale mining, mineral exploration, large-scale mining and transfers of mineral licences.

2.4. Water Resources Management Act of 2013

Line Ministry: Ministry of Agriculture, Water and Land Reform

The act provides for the management, protection, development, usage and conservation of water resources; to provide for the regulation and monitoring of water resources and to provide for incidental matters.

2.5. Nature conservation ordinance, ordinance No. 4 of 1975

Line Ministry: Ministry of Environment, Forestry and Tourism

The Nature Ordinance 4 of 1975 covers game parks and nature reserves, the hunting and protection of wild animals (including reptiles and wild birds), problem animals, fish, and the protection of indigenous plants. It also establishes a nature conservation inland fisheries, keeping game and other wild animals in capturing. In addition, the ordinance also regulates game dealers, game skins, protected plants, birds kept in cages, trophy hunting of hunt-able game, hunting at night, export of game and game meat, sea birds, private game parks, nature reserves, regulations of wildlife associations and registers for coyote getters.

2.6. National Heritage Act, 2004 (Act No. 27 of 2004)

Line Ministry/Body: National Heritage Council

The National Heritage Act provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.

2.7. Petroleum Products and Energy Act No. 13 of 1990

Line Ministry/Body: Ministry of Mines and Energy

The act regulates the importation and usage of petroleum products. The act reads as

"To provide measures for the saving of petroleum products and an economy in the cost of the distribution thereof, and for the maintenance of a price thereof; for control of the furnishing of certain information regarding petroleum products; and for the rendering of services of a particular kind, or services of a particular standard; in connection with motor vehicles; for the establishment of the National Energy Fund and for the utilization thereof; for the establishment of the National Energy Council and the functions thereof; for the imposition of levies on fuel; and to provide for matters incidental thereof".

2.8. Forest Act, No. 12 of 2001

Line Ministry/Body: Ministry of Agriculture, Water and Land Reform

The act regulates the cutting down of trees and reads as follows "To 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 control and management of forest trees; to repeal the preservation of Bees and Honey proclamation 1923, preservation of Trees and Forests Ordinance, 1952 and the Forest Act, 1968; and to deal with incidental matters".

The constitution defines the function of the Ombudsman and commits the government to sustainable utilization of Namibia's natural resources for the benefit of all Namibians and describes the duty to investigate complaints concerning the over-utilization of living natural resources for the benefit of all Namibians and describes the duties to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and the destruction of ecosystem and failure to protect the beauty and character of Namibia. Article 95 states that "*the state 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 utilization of natural resources on a sustainable basis for the benefit of all Namibians both present and future*".

2.9. Atmospheric Pollution Prevention Ordinance 11 of 1976

Line Ministry/Body: Ministry of Health and Social Services

This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, with the exception of East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.

2.10. Hazardous Substance Ordinance, No. 14 of 1974

Line Ministry/Body: Ministry of Safety and Security

The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage and handling.

2.11. Namibian Water Corporation (Act 12 of 1997)

Line Ministry/Body: Namibian Water Corporation

The act caters for water rehabilitation of prospecting and mining areas, environmental impact assessments and for minimizing or preventing pollution.

2.12. Public and Environmental Health Act, 2015

Line Ministry/Body: Ministry of Health and Social Services provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.

2.13. Agricultural (Commercial) Land Reform Act 6 of 1995

Line Ministry/Body: Ministry of Lands and Resettlement

To provide for the acquisition of agricultural land by the State for the purposes of land reform and for the allocation of such land to Namibian citizens who do not own or otherwise have the use of

any or of adequate agricultural land, and foremost to those Namibian citizens who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices; to vest in the State a preferment 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.

3. Description of Proposed exploration Project

3.1. Introduction

The EPL covers fairly a large area of about 27879.4 hectares and overall aim of the proposed project is to systematical search mineralization of economic potential. The EPL is valid for Base & Rare Metals, Industrial Minerals and Precious Metals and the exploration strategy to be employed will take into account the already known mineralization potential and the probable potential on basis of tectonic history as well as the presence of favourable stratigraphic unit within the targeted area. Plutonic intrusions and metasedimentary rocks in the in EPL area will be targeted lithium, tantalum, tin, REE and copper mineralization. The scale of proposed exploration activities to be undertaken will determine the scope of the required field-based support and logistical activities. During exploration existing tracks, campsites or accommodation facilities in the area will be utilized. Only in the absences of existing tracks, camping/ accommodation facilities will the field teams create new of the same in line with the EMP provisions and of course with consent of the land owner/s. Exploration camps will have very limited footprints with a likelihood of expansion to accommodate test mining and mine development phases in an event of a discovery of a mineral resource with economic potential.

The initial stages of the exploration program to be implemented by the proponent as assessed in the EIA report will involve:

Desktop studies

- Evaluation of satellite, topographic, land tenure, accessibility, supporting infrastructures.

- Purchase and analysis of existing government high resolution magnetics and radiometric geophysical as well as government aerial hyperspectral data.
- Data interpretation and delineating of potential targets for field- based activities.
- Purchase and analysis of any geological, geochemical data as well as remote sensing mapping and data analysis.

Initial regional field-based activities

- Regional geochemical sampling and regional geological mapping aimed at identifying possible targeted based on the results on results of the initial desktop studies.
- Laboratory analysis of the samples collected and interpretation of the results and delineating of potential targets for further detailed site-specific exploration activities.

Localized regional field-based activities

- Local geochemical sampling with the aim of verifying the prospectivity of the targets delineated during regional field-based activities.
- Local geological mapping aimed at identifying possible targeted based on the results of the desktop studies, regional geological mapping and analysis undertaken.
- Ground geophysical survey.
- Trenching, drilling, pitting, sampling.
- Laboratory analysis of the samples collected and interpretation of the results and delineation of potential targets

Prefeasibility and feasibility Studies

Once the mineralization of economic potential has been delineated and defined prefeasibility and feasibility studies will be undertaken by the proponent as assessed in the EIA report this will involve:

- Detailed land surveys and detailed geological mapping.
- Detailed drilling and bulk sampling and testing for ore reserve calculations.
- Geotechnical studies for mine design.
- Mine planning and designs inclusive of all supporting infrastructures (water, power and access) and test mining activities.
- EIA and EMP to support the ECC for mining operations. Preparation of feasibility report and application

4. Field exploration activities

The current schedule for the duration of the exploration activities on the EPL is for two years. Activities will include geophysical surveys, drilling, geochemical sampling and pitting and trenching. Xinfeng Investments plans to implement these activities as soon as the clearance certificate has been issued.

4.1. Geophysical surveys

Geophysical surveys are by nature non-invasive to the environment and are primarily conducted to give an overview or a geological picture of the subsurface aimed at identifying underground areas that have mineralization potential in a given area. Various sensors are normally used during the surveys, that may include radar, resistivity, magnetic, electromagnetic, etc,. These surveys will be conduct in search of Base &rare Metals, Industrial Minerals and Precious metals. The following ground surveys are expected to be conducted over areas where potential is known to exist. The following sensors are likely to be utilized:

- Resistivity
- Ground magnetics are conducted using a magnetometer
- Gravity surveys are conducted with the use of a relative gravimeter
- Electro-magnetic techniques

4.2. Drilling

Exploration drilling is the process which involves collection of subsurface rock samples from drill holes in areas suspected to have potential for mineralization. There are various drilling methods available, for this project the following methods will be utilized: reverse circulation drilling for metal mineralization search and diamond-core drilling for geotechnical assessments of the mineral. The initial total number of meters to be drilled over the EPL will depend on the results of the initial exploration activities. Once sampling results are obtained, the areas of potential are narrowed down and closer spaced holes will be drilled in order to delineate ore-body. A typical drilling area will consist of a drill-rig, an area where the drill core and geological samples can be stored and a storage area for drill equipment, fuel and lubricants. This area will be cordoned off and off limits to those not partaking in the exploration program.

Reverse Circulation (RC) drilling:

The drilling mechanism is a pneumatic reciprocating piston known as a "hammer" driving a tungsten-steel drill bit. RC drilling utilizes much larger rigs and machinery and depths of up to 500m are routinely achieved. RC drilling ideally produces dry rock chips, as large air compressors dry the rock out ahead of the advancing drill bit.

Diamond-core Drilling:

Diamond core drilling uses an annular diamond-impregnated drill bit attached to the end of hollow drill rods to cut a cylindrical core of solid rock. Holes within the bit allow water to be delivered to the cutting face. This provides three essential functions — lubrication, cooling, and removal of drill cuttings from the hole. Diamond drilling is much slower than reverse circulation (RC) drilling due to the hardness of the ground being drilled. Drilling to a depth 600 meters is common and at these depths, ground is mainly hard rock.

Diamond rigs can also be part of a multi-combination rig. Multi-combination rigs are a dual setup rig capable of operating in either a reverse circulation (RC) and diamond drilling role (though not

at the same time). This is a common scenario where exploration drilling is being performed in a very isolated location. The rig is first set up to drill as an RC rig and once the desired meters are drilled, the rig is set up for diamond drilling. This way the deeper meters of the hole can be drilled without moving the rig and waiting for a diamond rig to set up on the pad.

4.3. Geochemical sampling

Geochemical sampling involves the analysis of geological samples at an analytical laboratory. Samples taken during drilling and surveying will be sent away for analysis, specifically to determine the mineral composition and the level of base metals, namely copper and iron, within the samples. Samples are taken during drilling by either the geologists or geological assistants and can be in either rock, soil or drill core form.

4.4. Pitting, trenching and excavations

Pitting and trenching involves the mechanical or manual digging of small-scale pits and trenches in order to provide a soil profile. With regard to the activities within the EPL area, pitting will only occur should results come back positive for mineralization. It is anticipated that the average pit will be 5m x 5mand 3m deep. Trenching is similar to pitting, except a trench will show a latitudinal profile across a longer horizontal access, it is designed to follow an ore body across the landscape. The expected average size of a trench is 500m x 1m and 2m deep. Excavations will involve opening up some parts of the mineral unit to get a closer look of the mineral over a wide area, which maybe 2m by 2m.

5. Description of the current environment

5.1. Introduction

This section aims to document the present state of the environment, the likely impact of changes being planned and the regular monitoring to attempt to detect changes in the environment. As such,

this area represents high fauna diversity. Namibia has four very large and arid regions which set them apart in various ways from the rest of the country; Kunene and Erongo region in the west and Karas and Erongo in the south (Mendelsohn, et al., 2002). Kunene Region occupies the northwest corner of Namibia. The Skeleton Coast Park forms its entire western boundary with the Atlantic Ocean. The Kunene River with its Epupa Falls forms an international boundary with Angola to the north. Nationally, Kunene is bordered by Omusati Region and the western boundary of Etosha National Park. In the south it forms the southern boundary of most of Etosha National Park and borders Erongo and Erongo regions. The region is home to the Skeleton Coast Park and many conservancies. Erongo is one of the central regions in Namibia with a size of 105,185 square kilometers, with vegetation ranging from open savanna around Omaruru, to lush vegetation and massive bright red sandstone cliffs. There is generally an absence of fences in most parts of the Erongo Region. This makes livestock farming easier which means that both wild and domestic animals can move widely in many places, migrating from areas of poor grazing to other places with more abundant pastures.

5.2. Current Land Uses

The general land use of the proposed EPL area is mainly dominated by agriculture (cattle and small stock farming) and mineral (mineral and granite) exploration and mining. The game farms offers visitors the opportunity to be close to nature with a variety of tailor made tourism products such game viewing, trails and hunting activities. The game farms are also important conservation areas for endemic and protected flora and are sanctuaries for endangered faunal species. The summary of other land uses activities found in the general areas includes: Omaruru town lands, tourism, conservation, prospecting and small-scale and large-scale mining and quarry operations

5.3. Climatic Conditions

The project area is relatively a dry place with a minimum average annual temperature of 23°C and a maximum average annual temperature of 32°C. The area receives little rainfall during the wet season with an average annual rainfall of about 316 mm. The average annual humidity of 33%.

5.3.1. Temperature

The project is located in an arid to semi-arid region. Approximately half of the Omaruru district where project is situated is covered by dry land grasses and the other half by dry land scrub. The coldest temperatures are typically encountered between June and August, ranging from 9.4 – 10.8°C. The highest temperatures are reported between October and February. During this time, temperatures reach up to 33°C (during October - November).

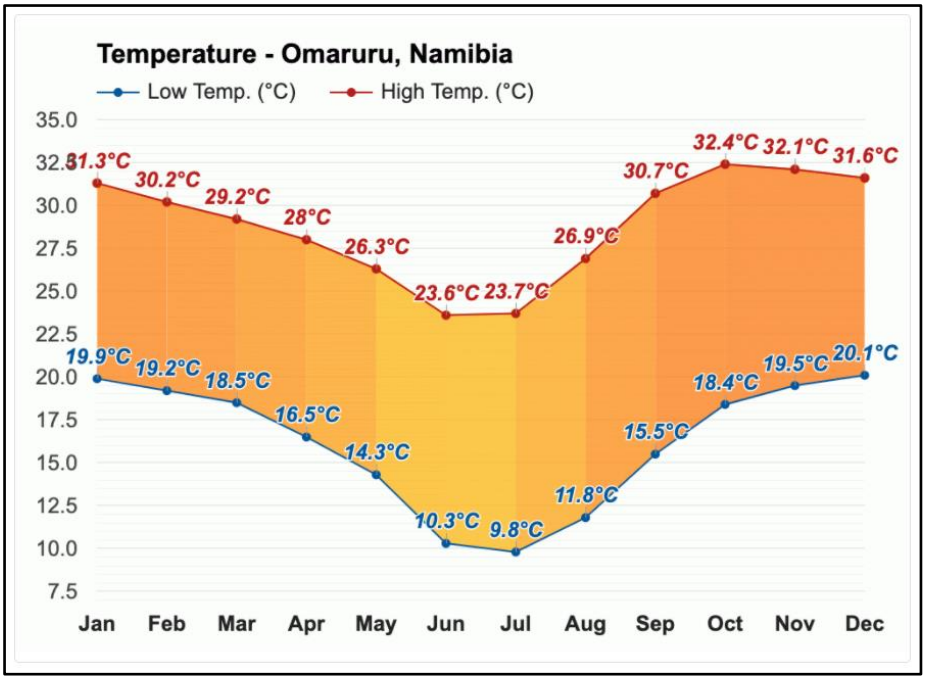

Fig. 14. Temperature graph for Omaruru (weather-atlas, 2021).

5.3.2. Precipitation

The highest precipitation in the area occurs between January to March, with highest rainfall received in February with an average 82mm. The month with the highest number of rainy days is February (16 days). The month with the least rainy days is July (0 days). The graph below shows the rainfall patterns in the proposed project area. The area experiences semi-arid climatic conditions with an average rainfall of 316 mm per annum. Annual average potential evaporation rate far exceeds average annual rainfall and net water deficit conditions prevail. The driest months (with the least rainfall) are June, July and August with 0mm.

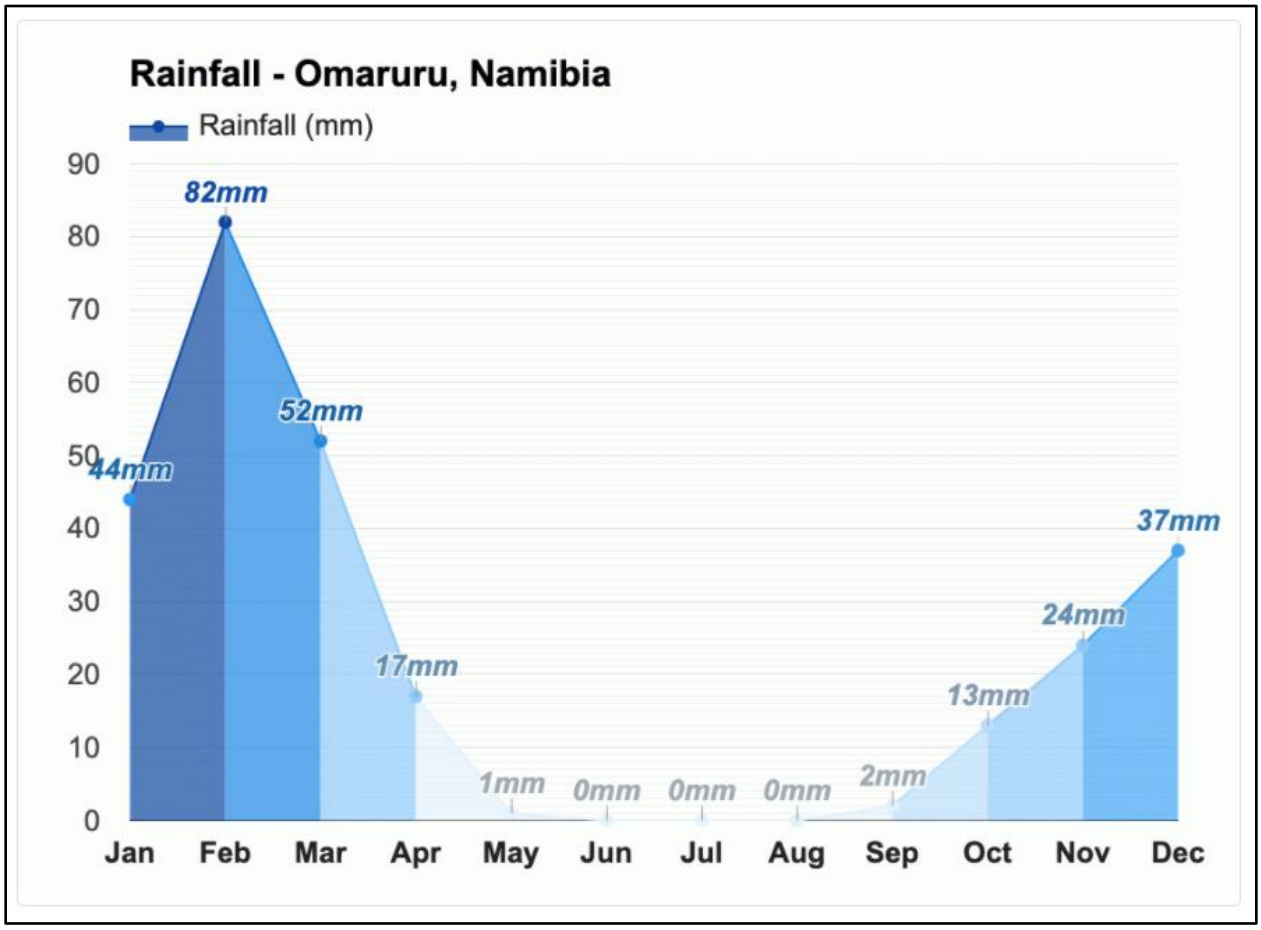

Fig. 15. Rainfall graph for Omaruru (weather-atlas, 2021).

5.3.3. Wind

The predominant average hourly wind direction varies throughout the year in Omaruru district. The wind is most often from the east for 7 months, from late February to early October, with an average peak speed of 13 km/h in July. The wind is most often from the south for 5 months, from early October to late February, with a peak percentage of 10 km/h in December and January. The lowest average wind speed is in February when it averages 9km/h.

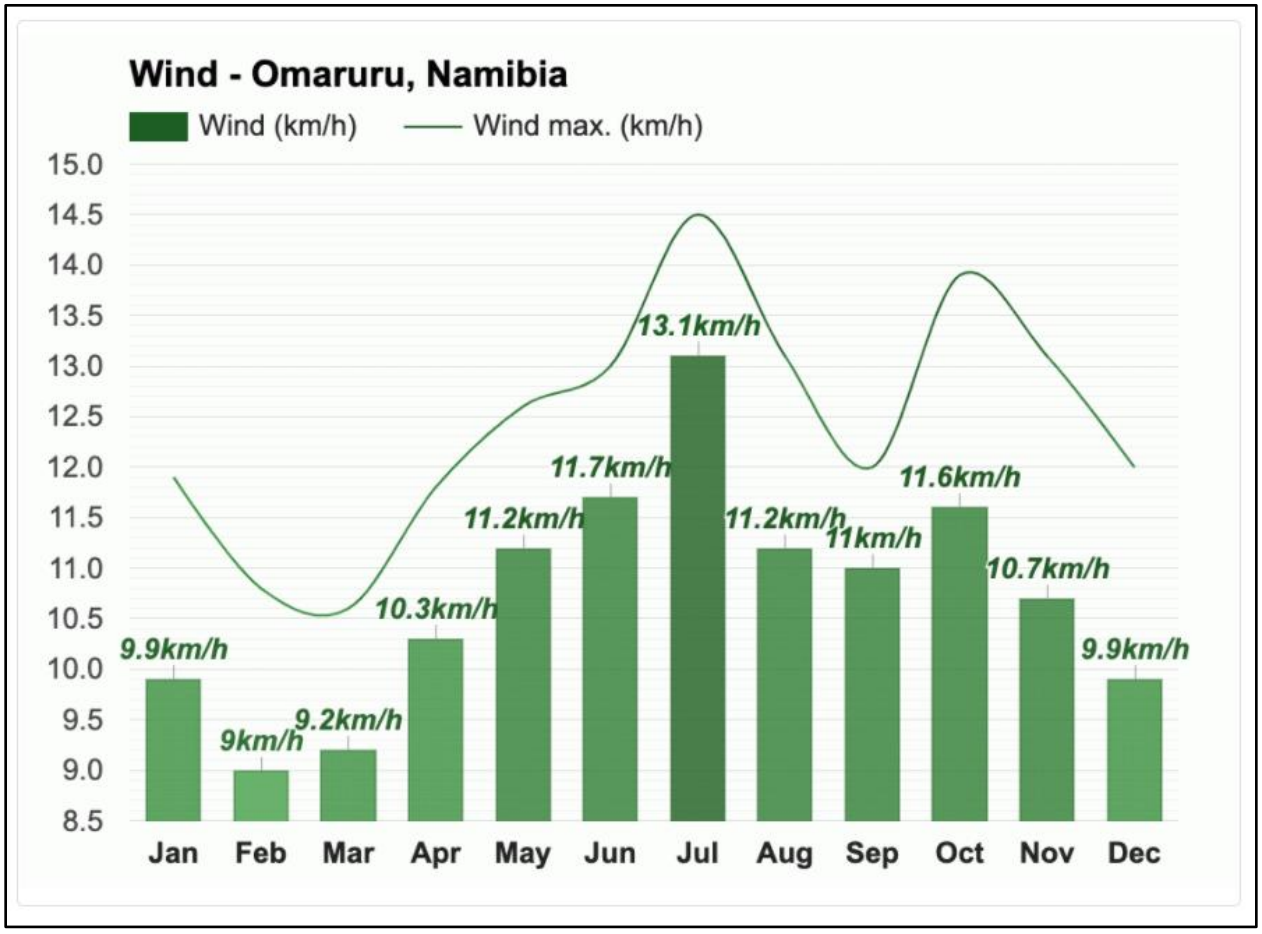

Fig. 16: Wind graph for Omaruru showing maximum and average wind (weather-atlas, 2021).

5.3.3.1 Humidity

The relative humidity during the least humid months of the year, i.e. August to October, is between 21 and 23 %. Relatively, high humidity is experienced during January to April, when it ranges between 42 and 51% with the most humid month being March with 51% humidity. Namibia has a low humidity in general, and the lack of moisture in the air has a major impact on its climate by reducing cloud cover and rain and increases the rate of evaporation.

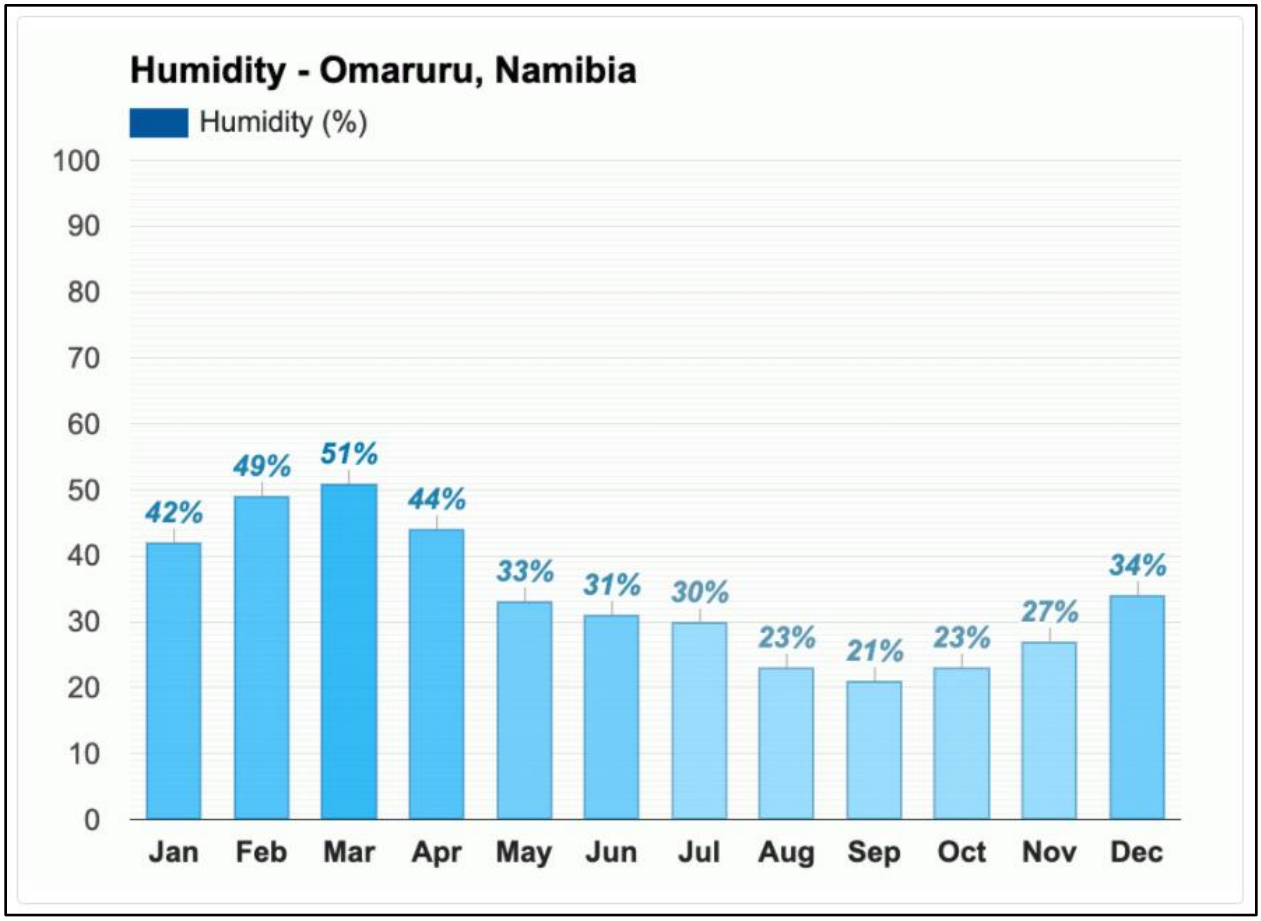

Fig. 17: Humidity graph for Omaruru showing average monthly humidity percentages (weather-atlas, 2021).

5.3.3.2. Air Quality

Data from accuweather.com shows that the air quality in the area is generally excellent with an air quality index of 16 AQI. The ground-level ozone (O3) is about 16 µg/m³ which is excellent. The fine particle matter levels (PM 2.5) are about 6 µg/m³. The particle matter (PM10) is about 4 µg/m³. The nitrogen dioxide (NO2), carbon monoxide (CO), and Sulphur dioxide (SO2) levels in the area are recorded to be 0 µg/m³. Probable sources of air pollution in the area are emissions and dust from vehicles travelling on gravel roads, dust generated by cattle grazing and wind erosion from the exposed areas.

5.4 Geology

5.4.1 Regional geology

The project area is within the Damara belt which forms part of the Pan-African collisional belts in southern Africa representing the formation of the Gondwana supercontinent (Miller, 2008). The Damara Orogen is a Neoproterozoic orogen consisting of three arms, the NNW-trending coastal arm (the Kaoko Belt) extending into Angola, the NE-trending arm (the Damara Belt) which extends through central Namibia, across Botswana to the Zambezi belt (Miller, 2008), and the Gariep Belt to the south extending into north-western South Africa. The Kaoko, Damara and Gariep Belts evolved through phases of intracontinental rifting, spreading, subduction and continental collision lasting from approximately 800 or 900 Ma to ~460 Ma. In the Damara Belt, the Kalahari Craton was subducted beneath the Congo/Angola Craton and continental collision is dated at ~542 Ma (Miller, 2008).

The project area is in the NE-trending, Damara orogenic belt which has been divided into several different zones on the basis of stratigraphy, metamorphic grade, structure, geochronology, plutonic rocks and aeromagnetic expression (Miller, 1983, 1998). The zones are separated by tectonic lineaments and these are, from north to south: the Northern Platform (NP), Northern Margin Zone (NMZ), Northern Zone (NZ), Central Zone (CZ), Southern Zone (SZ), Southern Margin Zone (SMZ) and the Southern Foreland (Fig.18). The Central Zone is divided into northern (nCZ) and southern (sCZ) zones. The Okahandja Lineament zone (OLZ) is routinely regarded as part of the SZ (Miller, 2008). EPL 7228 is located in the nCZ, approximately 45 km WNW of the town of Omaruru (Fig. 18).

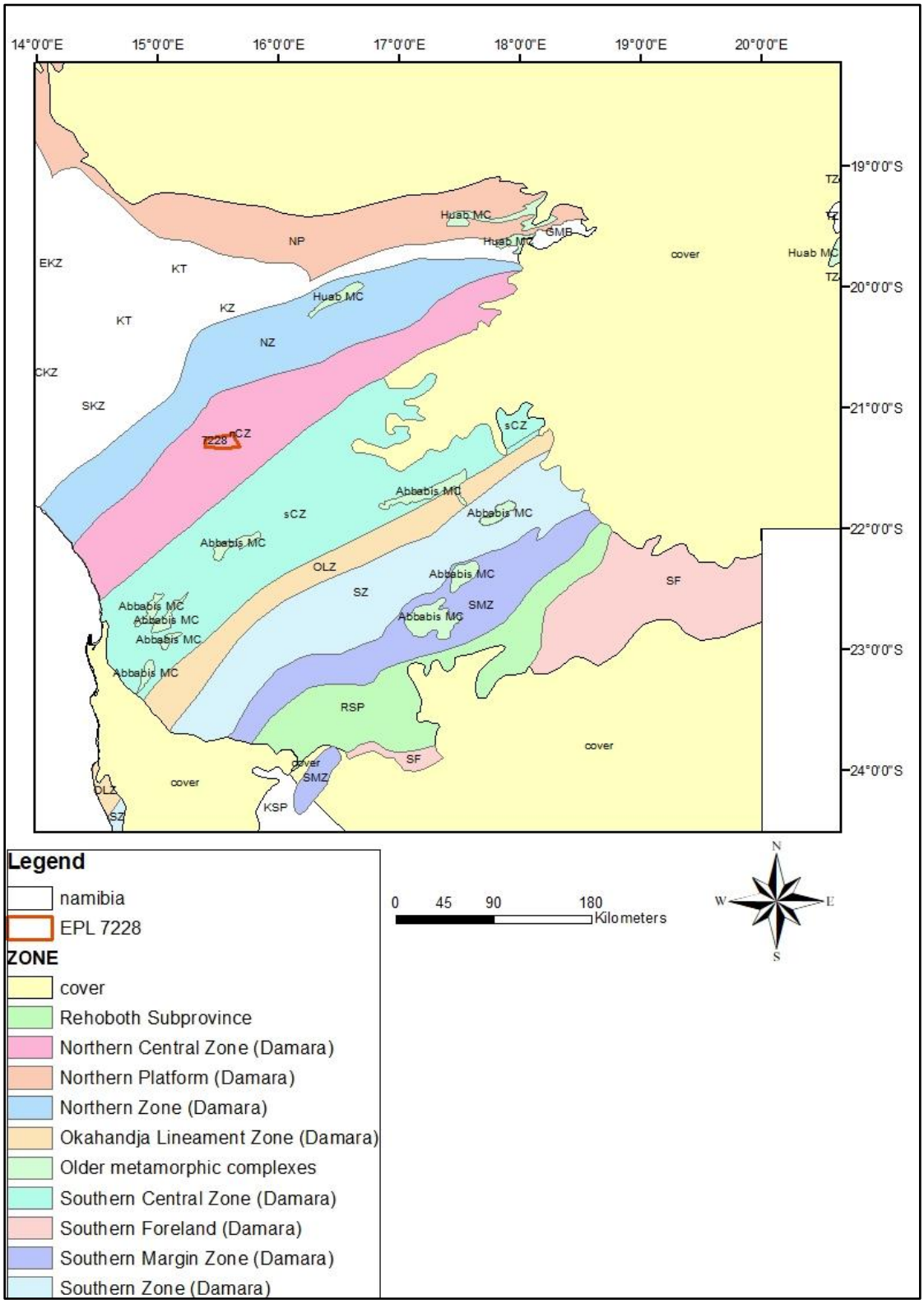

Fig. 18. Tectonic zones of the Damara orogenic belt. (Shape files are from the Geological Survey of Namibia). EPL 7228 is located in the northern central zone (nCZ) of the Damara belt.

The regional geology of the central zone of the Damara belt, where the prospect is located, is characterised by mainly mineral, schist and quartzite of the Swakop and Nosib groups of the Damara Supergroup (Fig. 19).

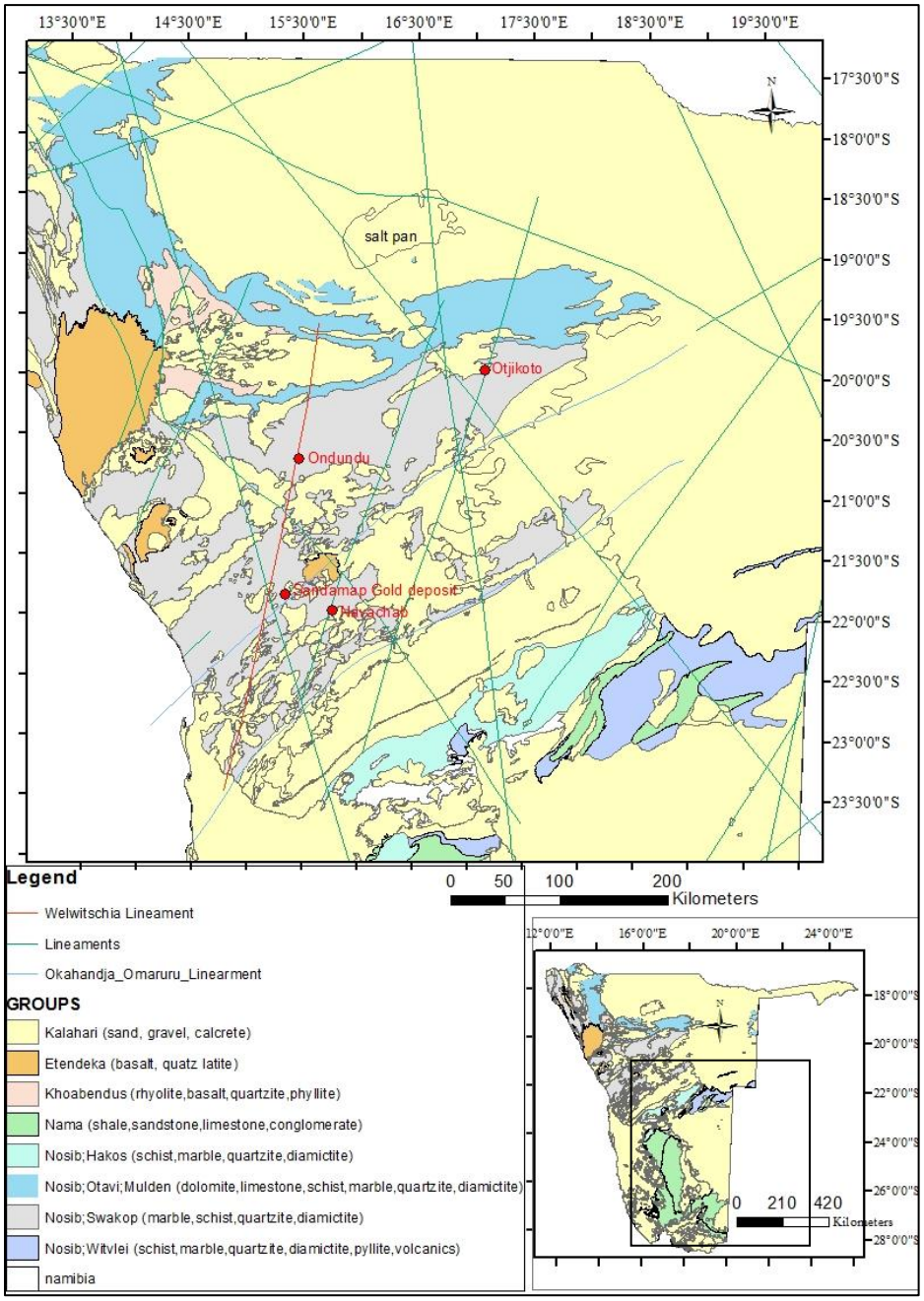

Fig. 19. Regional geology of the Damara Orogenic belt (Shape files are from the Geological Survey of Namibia).

The central zone of the Damara Belt is a high-temperature, low-pressure zone with metamorphic grade increasing from middle amphibolite facies in its eastern parts to lower granulite facies in its western parts (Miller, 2008). The northern (nCZ) and southern central (sCZ) zones are separated by the Omaruru lineament to the west and the Waterberg fault in the east. In terms of lithology, the central zone is characterized by mainly schist, mineral and quartzite of the Swakop and Nosib groups of the Damara sequence with numerous syn- to post-tectonic granitic plutons (Fig. 20). The zone is also typified by major magnetic lineaments (Welwitschia and Erongo) and minor magnetic lineaments (Abbabis and Otjikoto). Peak regional metamorphism in the central zone (CZ) is syn-D_2 and occurred at ~520 Ma (Haack *et al.*, 1980; Miller, 1983). On the other hand Miller (2008) places the peak of post-tectonic M_2 regional metamorphism throughout the Damara belt at 535 Ma.

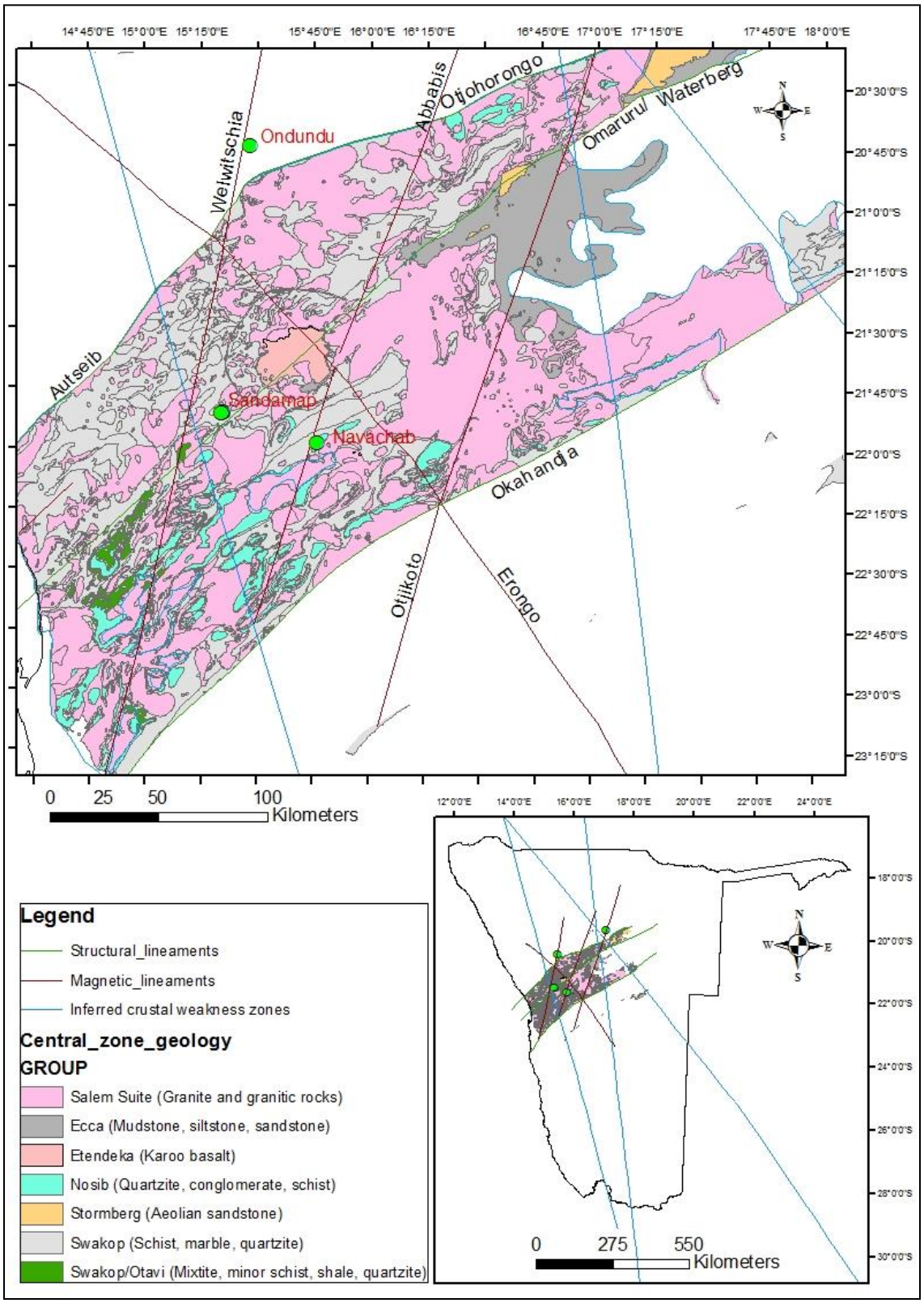

Fig. 20. Geology and structural lineaments of the central zone of the Damara orogenic belt. EPL 7228 is located in the nCZ, approximately 45 km WNW of the town of Omaruru.

5.4.2 Stratigraphy

The EPL area falls within the Central Zone of the Damara Sequence (Fig. 18 & 20). The oldest rocks within the Central Zone are the pre-Damaran basement (Nosib Group) was deposited or laid down in marginal to intracontinental rifts, consists of gneiss, quartzite, arkose, conglomerate, phyllite, calc-silicate, subordinate, limestone and evaporitic rocks. The sequence was deposited during successive phases of rifting, spreading, subduction and continental collision (Miller, 2008). Much of the basal succession is Nosib Group, the Omaruru formation which hosts the targeted mineral overlies the Arandis Formation and underlies the Kuiseb Formation (Table 1). The partial stratigraphy of the Central zone as in Miller (2008) as given is given in Table 1.

Table 1: Partial Litho stratigraphy of the Damara Sequence in Central Namibia (after Miller, 2008).

Group	Subgroup	Formation	Lithology
Swakop	Navachab	Kuiseb	Mica schist, mineral, quartzite, minor amphibolites schist, biotite schist
		Omaruru	Mineral, schist, calc-silicate, dolostone, limestone, quartzite
	Usakos	Arandis	Schist, calc-silicates
		Chuos	Diamictite, schist, minor quatzite
	Ugab	Rossing	Mineral, biotite schist, quartzite, gneis
Nosib		Khan	Gneiss, quartzite, conglomerate, schist, minor mineral, amphibole, calc-silicate
		Etusis	Quartzite, gneiss, biotite schist, conglomerate

5.4.3 Local Geology

Metasedimentary rocks within the EPL area are mica schist and phyllites of the Kuiseb Formation and marbles of the Karibib Formation (Fig. 21). Extended portions of the EPL area are covered by Damara intrusives and these are the non-foliated leucogranites of Ordovician age, non-foliated diorite of Ordovician age, foliated bitite granite of Ordovician age as well as dolerites of Cretaceous age (Fig. 21). Sand, gravel and calcrete of quaternary age extensively cover the extreme western portions of the EPL. Leucogranites are associated with pegmatites that are know to host tin, lthium, niobium and REE in the area.

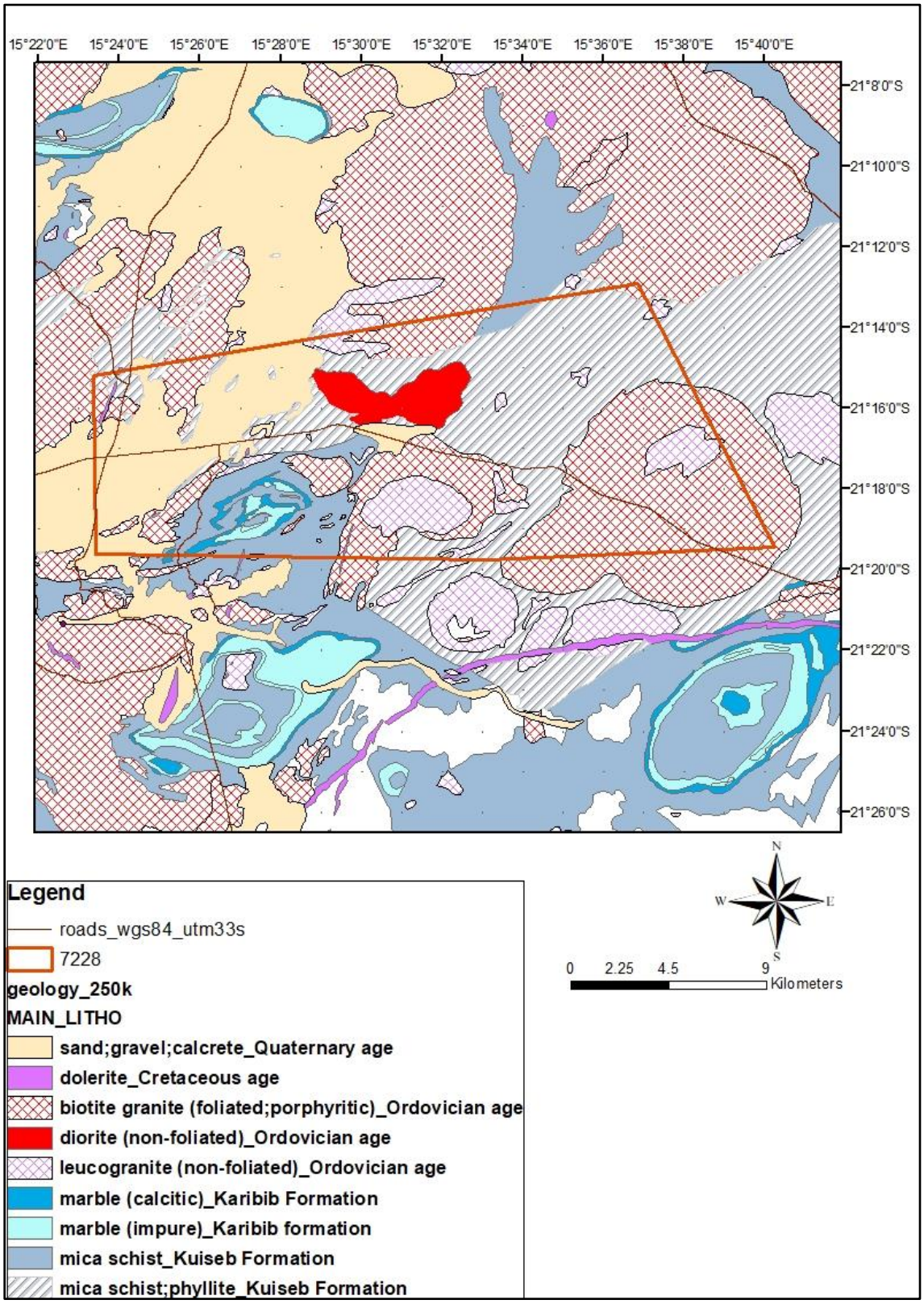

Fig. 21. Detailed local geology of the EPL area.

5.5. Hydrogeology and hydrology

The project area is in the northern parts of the Erongo ground water basin. Moreover, the area is underlain by a moderately productive but variable (porous or fractured) aquifer (Fig. 22). The EPL forms part of Omaruru river catchment area. Permission for borehole drilling, groundwater abstraction will be obtained from the Ministry of Agriculture, Water and Land Reform (MAWLR) shall the need for groundwater uses arise. Groundwater in the area is associated with the good secondary hydraulic properties of the limited surficial covers and extensive carbonate deposits.

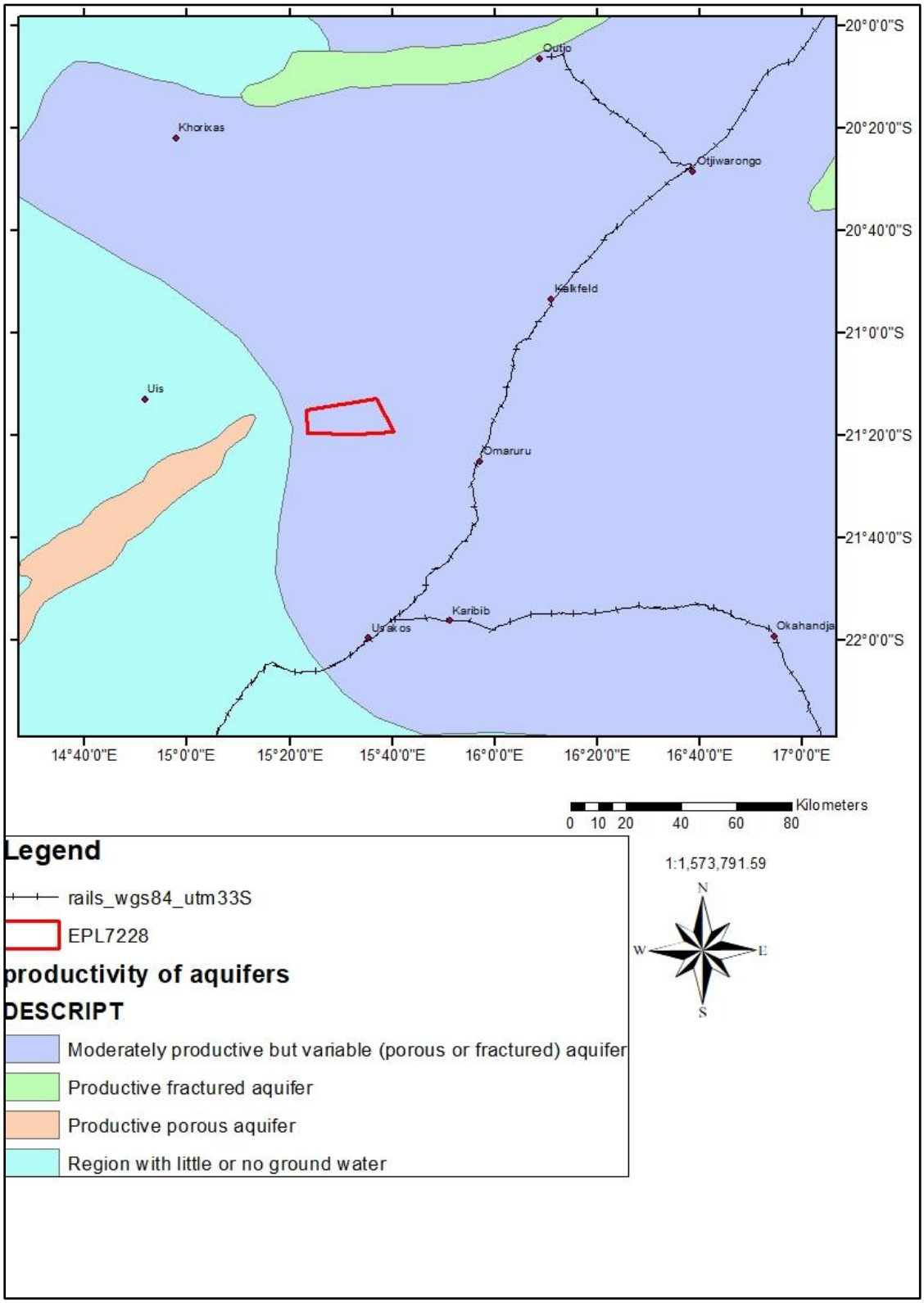

Fig. 22. Hydrogeological Map of the project area. The project area is underlain by a moderately productive aquifer.

5.6 Fauna and flora

Introduction

As with all developmental projects in pristine areas impacts on fauna and flora are inevitable as such identification of high-risk habitats prior to commencement of the proposed activities coupled with environmentally acceptable mitigations will lessen the severity of the overall impact. An impact assessment of the proposed exploration on fauna and flora was carried out during the site visits conducted in October 2021. A thorough assessment was carried out within the Exclusive Prospecting Licence area (EPL 7228) by means of field observations, recording and data collecting. Some of the information is based on a detailed literature review. The purpose of the Fauna literature review is to identify all potential amphibians, reptiles, mammals and plants expected on the project area and the surrounding farms in the vicinity of the EPL. The proposed exploration area supports numerous faunal species but there are no species that are exclusive to the study area.

Larger types of animals such as zebras, giraffes, lions and elephants are rare in this area. There are no species which are exclusively endemic to the exploration area. Based on literature review, implementation of the proposed exploration program in the area will not have a negative impact on any of the species in the project area. Further flora assessment was enhanced with the use of a species lists of plants occurring within the quarter degree squares which was extracted from the database, Botanical Research and Herbarium Management System which is found at the National Botanical Research Institute in Windhoek.

5.6.1 Flora

The EPL 7228 area falls within the Semi-desert and Savanna Transition Zone vegetation type. In form, vegetation is generally sparse, with few trees and a thin variety of grass. Plant cover varies in relation to rainfall and so the eastern parts of Erongo have more grass and trees than the Western, coastal areas (Christian, 2005). Rainfall in the Erongo Region is usually both low and extremely variable which means that years of abundant rain often followed by extreme dry conditions (Mendelsohn, et al., 2002). Omaruru area is viewed as an area of importance for local endemic

plant species with high botanical diversity. It is estimated that at least 79-110 species of larger trees and shrubs (>1m) (Coats Palgrave, 1983; Curtis & Mannheimer 2005; Mannheimer & Curtis, 2009), 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) (Curtis & Mannheimer, 2005 and Mannheimer & Curtis, 2009).

It is estimated that up to 111 grasses – 73 to 88 species – (Müller, 2007; Van Oudshoorn, 1999) 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 exploration area, nor protected species, which minimizes the overall effect on grasses.

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 minimizes the overall effect on trees/shrubs. Erongo Mountains has between 26-35 endemic species (Mendelsohn *et al.* 2002). The overall plant production is classified as medium to low in the general Omaruru area. Bush thickening /encroachment is viewed as problematic between Omaruru and Omaruru with *Acacia reficiens* being the problem species. The density of vegetation in the vicinity of the exploration site is sparse.

Based on the literature review, all the vegetation that are found within the vicinity of the area are of "medium" to "high" sensitivity against external conditions Every effort will be made to protect the existing trees and shrubs, as these are very important to the ambience and visual appeal of the exploration site. A vegetation expert will be consulted throughout the lifecycle of the exploration program. The protected plant species in the project area are shown in the table below.

Table 2: lists the different plant species which are most likely to occur within the project area. Plant species highlighted in orange are protected under the Forestry Act.

Scientific name	Local name	Status in Namibia
Acacia erioloba	Camel thorn	Protected
Acacia mellifera	Black thorn	Secure
Acacia reficiens	False umbrella thorn	Secure
Acacia haematoxylon Grey	Grey camel thorn	Protected
Acacia erubescens	Blue thorn	Secure
Acacia karroo	Sweet thorn	Secure
Acacia tortolis	Umbrella thorn	Secure
Acacia hereroensis	False hook-thorn	Secure
Commiphora tenuipetiolata	White-stem corkwood	Secure
Aloe littoralis		Protected
Ozoroa crassinervia	Namibian resin tree Near	endemic, protected
Boscia albitrunca	Shepherd's tree	Protected
Albizia anthelmintica	Worm-bark false-thorn	Protected
Ziziphus mucronata	Buffalo-thorn	Protected
Catophractes alexandri	Trumpet thorn	Secure
Combretum apiculatum	Red bush willow	Secure
Commiphoradinteri		Endemic
Commiphora glandulosa	Tall common corkwood	Secure
Commiphora glaucescens	Blue-leaved corkwood	Near endemic
Croton gratissimus	Lavender fever-berry	Secure
Cyphostemma bainesii		Endemic, protected
Dichrostachy scinerea	Sickle bush	Secure
Diospyros lycioides	Blue bush	Secure
Dombeya rotundifolia	Common wild pear	Endemic
Ehretia alba		Secure

Elephantorrhiza suffruticosa		Secure
Eucleab pseudebenus	Ebony tree	Protected
Euclea undulata	Common guarri	Secure
Euphorbia guerichiana	Western woody milk bush	Secure
Euphorbia virosa		Secure
Ficus cordata	Namaqua fig	Protected
Ficus ilicina	Laurel fig	Secure
Ficus scomorus	Common cluster fig	Protected
Grewia bicolor	White raisin	Secure
Grewia flava	Velvet raisin	Secure
Grewia flavescens	Sand paper raisin	Secure
Gymnosporia senegalensis	Red spike-thorn	Secure
Ipomoea adenioides		Secure
Lycium bosciifolium		Secure
Lycium cinereum		Secure
Lycium eenii		Secure
Lycium hirsutum		Secure
Lycium villosum		Secure
Maerua juncea		Secure
Maerua schinzii	Ringwood tree	Protected
Manuleopsis dinteri		Endemic
Melianthus comosus		Secure
Obetiacarruthersiana		Near endemic
Pechuel-Loeschea leubnitziae		Secure
Ozoroa crassinervia	Namibian resin tree	Protected
Sterculia africana	African star-chestnut	Protected
Tarchonanthus camiphoratus		Secure

Tetragonia schenckii		Secure
Vernonia cinerascens		Secure
Searsia (Rhus) ciliata		Secure
Searsia (Rhus) lancea	Karree	Protected
Searsia (Rhus) marlothii		Secure

5.6.1.1 Alien Plants

The alien plants were taken into consideration during the botanical assessment. It was found that there are no alien plants in the proposed area and its immediate surrounding area.

5.6.2 Fauna

5.6.2.1 Mammals

Vertebrate fauna species that may likely be affected by the proposed exploration will be mainly those with limited mobility such as some reptiles. According to Monadjem et al. (2010), Skinner & Chimimba (2005), Stander & 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. Based on the literature review, there are generally about 68 species of mammals expected to occur within the immediate area. There are generally 25 species which rarely occur, 2 species that occur seasonally, 4 that occur occasionally, and 33 that occur abundantly within the project area. Considering the relative size of the exploration area, the mammal fauna will not be affected by the exploration activities of the proponent. Namibia is seemingly well endowed with mammal diversity with around 250 species known to be present within the country (Griffin, 1998). There are currently 14 mammal species which are considered to be endemic to Namibia, including 11 species of rodents and small carnivores which are not well known. Griffin (1998), points out that most of these endemic mammals are associated with the Namib and Escarpment with 60% of these appearing to be rock-dwelling species. The author, Griffin (1998) further highlights that the endemic mammal fauna is best characterized by the

endemic rodent family *Petro muridae* (Dassie rat) and the rodent genera *Gerbillurus* and *Peromyscus*.

The table below shows the mammal species which are likely to occur within the study area.
A full list, of mammal species that are likely to occur within the area, is in the appendix section at the end.

Table 3: Mammal species which are likely to occur within the project area.

Scientific name	**Common name**
Acinonyx jubatus	Cheetah
Antidorcas marsupialis	Springbok
Atelerix frontalis angolae	Southern African Hedgehog
Canis mesomelas	Black-backed Jackal
Caracal caracal	Caracal
Crocuta crocuta	Spotted Hyena
Cynictis penicillata	Yellow Mongoose
Equus zebra hartmannae	Hartmann's Mountain Zebra
Felis nigripes	Black-footed Cat
Felis silvestris lybica	African Wild Cat
Galerella sanguinea	Slender Mongoose
Genetta genetta	Small Spotted Genet
Ictonyx striatus	Striped Polecat
Lepus capensis	Cape Hare Secure
Lepus saxatilis	Scrub Hare
Manis temminckii	Ground Pangolin
Mellivora capensis	Honey Badger
Oreotragus oreotragus	Klipspringer
Oryx gazella	Gemsbok
Otocyon megalotis	Bat-eared Fox
Panthera pardus	Leopard
Parahyaena (Hyaena) brunnea	Brown Hyena
Phacochoerus africanus	Common Warthog
Proteles cristatus	Aardwolf
Raphicerus campestris	Steenbok
Suricata suricatta marjoriae	Suricate
Sylvicapra grimmia	Common Duiker
Tragelaphus strepsiceros	Greater Kudu
Vulpeschama	Cape Fox

5.6.2.2 Reptiles

The literature review showed that there are approximately 60 reptile species that are expected to occur in the site area. According to the Namibia Conservation Ordinance of 1975, there are four reptile species protected, namely:

Table 4: Protected reptile species in the project area

Scientific name	Common name	Status
Psammobates Oculiferus	Kalahari Tent Tortoise	Protected
Geochelone Pardalis	Leopard Tortoise	Protected
Python Natalis	Southern African Python	Protected
Varanus Albigularis	Veld Leguaan	Protected

Griffin (1998) highlighted the presence of 261 species of reptiles which are present in Namibia. These reptiles make up 30% of the reptile species found on the continent. 55 species of Namibian Lizards are classified as endemic (Griffin, 1998). The author, Griffin (1998), describes that more than 60% of the reptiles found in Namibia are protected by the conservation Ordinance. Although exploration activities do affect reptile habitat, the project will not have any significant impact on the reptile species within the proposed exploration area. Namibia, with 129 species of lizards, has one of the continent's richest lizard Fauna. The table in the appendix shows the reptile species which are likely to occur within the vicinity of the exploration area.

5.6.2.3 Avifauna (Birds)

Simmons et al (2003) points that although Namibia's Avifauna is comparatively sparse compared to the high rainfall equatorial areas elsewhere in Africa, approximately 658species have already been recorded with a diverse unique group of arid endemics. There are approximately 650 species of birds that have been recorded in Namibia, although the country's avifauna is comparatively sparse compared to the high rainfall equatorial areas in Africa (Brown & Lawson, 1989). Brown et al (1989) mentions that14 species of birds are endemic or near endemic to Namibia with the majority of Namibian endemics occurring in the Savannah of which ten species occur in a north-south belt of dry Savannah in Central Namibia. Simmons (2003) recorded 63 species of birds within the vicinity of the project area. 650 bird species are recorded in Namibia, of which 160 species are present in area, especially after good rains fall (Christian, 2005). These birds consist of

raptors, chats, larks and karoid species. Christian (2005) recorded the presence of the following bird species in the vicinity of the area, which include:

Table 5: Bird species which are likely to occur within the site area.

Scientific name	Common name
Tockus monteiri	Monteiro's Hornbill
Agapornis roseicollis	Rosy-faced Lovebird
Eupodotis rueppellii	Rüppell's Korhaan
Lanioturdus torquatus	White-tailed Shrike
Parus carpi	Carp's Tit
Phoeniculus damarensis	Violet Wood-Hoopoe
Poicephalus rueppellii	Rüppell's Parrot
Pternistis hartlaubi	Hartlaub's Spurfowl
Tockus damarensis	Damara Hornbil

5.6.2.4 Amphibians

Based on the literature review, there are generally 14 types of amphibian species that occur in project area. Nine of these amphibian species occur abundantly, two occur rarely and six of them occur uncommonly. Griffin (1998) highlighted that amphibian species are declining throughout the world due to various factors such as climate change and habitat destruction. There are approximately 4000 species of amphibians worldwide of which over 200 species are present in Southern Africa and 57 in Namibia (Griffin, 1998). However, this low figure may be due to the lack of detailed studies carried out on amphibians. The table below shows the different amphibian species that are likely to occur within the study area.

Table 6: A list of amphibian species which may occur in the project area.

Scientific name	Common name	Status	Occurrence
Sand frogs, Bull frogs, Ridged frogs, Cacos, Puddle frogs			
Cacosternum boettgeri	Common caco	Secure	Abundant
Hildebrand tia ornata	Ornate frog	Secure	Uncommon
Phrynobatrachus mababiensis	Mababe puddle frog	Secure	Uncommon
Phrynobatrachus natalensis	Snoring puddle frog	Secure	Uncommon
Pyxicephalus adspersus	Giant bullfrog	Secure	Abundant
Tomopterna krugerensis	Knocking sand frog	Secure	Rare
Tomopternatandyi	Tandy's sand frog	Secure	Abundant
Fossorial Frogs			
Phrynomantis affinis	Spotted rubber frog	Ambiguous	Rare
Phrynomantis bifasciatus	Banded rubber frog	Secure	Abundant
Toads			
Breviceps adspersus	Bushveld rain frog	Secure	Abundant
Bufo dombensis	Dombe dwarf toad	Endemic	Abundant
Bufo poweri	Mottled toad	Secure	Abundant
Platannas			
Xenopus laevis	Common Platanna	Secure	Abundant
TREE FROGS, REED FROGS & KASSINAS			
Kassina senegalensis	Bubbling Kassina	Secure	Abundant

5.7 Archaeology and Heritage Sites

There are no declared heritage sites by the National Heritage Council of Namibia on EPL 7228. Accidental find procedure at the subject site may be required. A separate heritage impact assessment is annexed to this report

5.8 Socio-Economic Environment

5.8.1 Demographics of Omaruru

The proposed project site is located 45km WNW of Omaruru town in the Erongo Region. The town has 14,000 inhabitants and 352 square kilometers of town land. Omaruru is the district capital of the Omaruru electoral constituency. It is situated on the Omaruru River, near Erongo mountain. The town is located on a paved road between Swakopmund and Otjiwarongo. Omaruru is connected to the Trans Namib railway network. As of 2020 Omaruru constituency had 6,672 registered voters.

5.8.2 Employment within the Erongo Region and Omaruru town

Farming is the main source of income in this town, while other people operate their own businesses. Small scale mining, have created additional jobs for the inhabitants of this town. About 70% of the Erongo Region population is employed while 30% are unemployed. The inactive group, which consists of homemakers 11%, students 46% and the severely disabled, retired or old age income recipients 35% makes up of the regions' population.

5.8.3 Social Economic Impact

The project has great potential to improve livelihoods and contribute to sustainable development within the surrounding community. Once the project is developed in to a mining operation, it has potential employment of 100 people during the mine development phase, the number is expected to increase as the project moves to an advanced stage of production. Community meetings will be held from time to time by the proponent wherever possible, with the purpose of effectively communicating with the local community and to avoid any unexpected social impacts.

Table 7. Environmental aspects and Potential impacts associated with the exploration activities

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (INITIAL SCREENING) OF POTENTIAL IMPACTS
Planning			
Contact landowner to arrange site access	Socio-economic	Inconvenience to landowners	Landowners are inconvenienced through loss of time, as well as possible legal costs associated with contracts. Qualitative assessment in the next section.
Purchase and review of existing information	None	None	None
Ground Geophysical Survey	Socio-economic	Inconvenience to landowners	Landowners are inconvenienced through loss of time by having to ensure someone is present in order to allow access to exploration team. In the case of the exploration team being allowed unsupervised access, there is the potential that gates may be left open, resulting in the movement of wildlife and livestock, as well as an increased risk of criminal activities. Qualitative assessment in the next section.
	Biodiversity	Potential impact on fauna and flora. (General disturbance and clearing of vegetation)	Some clearing of vegetation may occur as vehicles may have to drive off-track to access certain areas. However, it is very small scale, involving a maximum of three vehicles. There may be some disturbance to the local fauna (i.e. game), which given the presence of game farms in the area, can be a significant impact. Qualitative assessment in the next section
	Air quality	Increase in dust levels (nuisance & health impacts)	Dust generation through the establishment of an access track. Air pollution through vehicle entrainment is expected to be negligible due to the small scale of the project. However, where vehicles travel close to farmhouses, the dust from the roads might be a nuisance to the residents. Air pollution from exhaust fumes. Air pollution through vehicle emissions is expected to be negligible due to the small scale of the project. Qualitative assessment in the next section.
	Heritage	Activities could result in possible damage to/ destruction of heritage resources.	Not applicable as no sites were found within the project area and no further assessment required. However, a separate heritage assessment will be conducted.
Delineate borehole locations in consultation with landowner, allowing for buffer zones from watercourses, residences, and heritage sites	None	None	None

Drilling site establishment			
• Access the drill site using a new access track • Set-up drilling machine with drip trays and tarpaulins • Strip vegetation and topsoil in an area of approximately 20m x 20 m and to a maximum depth of 300 mm and stripping topsoil from access tracks (approximately 150m) and drill pads • Excavate water sumps (1m x 3 m and 1m depth) • Stockpile the topsoil adjacent to the drilling site • Set-up ablution facilities • Set-up fuel and lubricants storage area • Waste management	Air quality – dust and gaseous emissions	Increase in dust levels (nuisance & health impacts)	Dust generation through the establishment of an access track. Air pollution through vehicle entrainment is expected to be negligible due to the small scale of the project. However, where vehicles travel close to farmhouses, the dust from the roads might be a nuisance to the residents. Air pollution from exhaust fumes. Air pollution through vehicle emissions is expected to be negligible due to the small scale of the project. Air pollution from exhaust fumes. Air pollution through vehicle emissions and drill rig is expected to be negligible due to the small scale of the project. Qualitative assessment in the next section.
	Noise	Noise generated by the establishment of a new access track and site clearing/ establishment activities.	Should the activities take place in close proximity to a farmhouse, the noise from these activities might be a nuisance impact.
	Biodiversity	Potential impact on fauna and flora (General disturbance and clearing of vegetation) Drilling contractors and employees that are not well managed can impact on the biodiversity through illegal collection of firewood, poaching, road kills etc.	Due to the fact that the activities are relatively small and the fact that the exploration team will not be very big, potential poaching and collection of firewood impacts can easily be managed through appropriate management and mitigation measures outlined in the EMP. Qualitative assessment in the next section.
	Land use	Loss of economic function of disturbed area during exploration activities and potential loss of land capability	Could result in possible loss of grazing land, which is significant considering the current land-use. Qualitative assessment in the next section.
	Heritage	Exploration activities could result in possible damage to/destruction of heritage resources.	Not applicable as no sites were found within the project area and no further assessment required. However, a separate heritage assessment will be conducted.
	Socio-economic and community safety (Positive and negative)	The proposed activity may have the potential to result in an increase in crime. Extension of existing employment contracts with drilling contractors. Given that access to drill sites may be gained through the use of community access roads, this could pose a threat to community safety.	Given the remote location of the EPLs and need for a close working relationship with the landowner. Qualitative assessment in the next section.
	Waste Management	The dumping of general waste within the exploration area and drilling sites	Given the remote location and the land-use, the dumping of domestic waste within the exploration area could prove hazardous to wildlife and livestock. Qualitative assessment in the next section.

Drilling			
• Drill borehole using water from the source (agreed upon in contract with landowner). • Contain all drilling water in the sump and allow to settle – use biodegradable drilling oils where possible • Log the drill core and place on core trays • Maintain ablution facilities • Pitting, trenching and excavations	Contamination of soil/ Hydrocarbon spillages	Soil pollution from use of hydrocarbon lubricants, the refueling of drill rigs and possible spills from ablution facilities	Given the land use, soil loss and contamination could have an impact on grazing animals and crops. However, the area to be disturbed is very localized and on a small-scale, and impacts can be easily mitigated. Qualitative assessment in the next section.
	Groundwater contamination	Groundwater could become polluted due to pollutants entering aquifers via surface water infiltration. Additionally, possible contaminations through the spillage of lubricants or fuel.	Given the small area to be affected, per hole, this impact is likely to be insignificant. Qualitative assessment in the next section.
	Air quality deterioration	Dust generation through using the access track. Air pollution from exhaust fumes. Dust generation through drilling activities	Air pollution through vehicle entrainment is expected to be negligible due to the small scale of the project. Air pollution through vehicle emissions and drill rig is expected to be negligible due to the small scale of the project Also, through the use of wet drilling techniques, this impact will be reduced. Qualitative assessment in the next section.
	Noise generation	Noise generated by the drill could disturb nearby residences.	Should the activities take place in close proximity to a farmhouse, the noise from these activities might be a nuisance impact. Qualitative assessment in the next section.
	Land use	Potential loss of land use and capability (very limited area) due to a combination of the above-mentioned impacts. Potential loss of wildlife and impact on legal hunting activities on farms.	Could result in possible loss of grazing land, which is significant considering the current land-use. Also potential loss of hunting opportunities for landowners. Qualitative assessment in the next section.
	Social – provision of toilet facilities	Health & Safety	If suitable toilet facilities are not provided for the exploration team, they will release themselves in the environment which could lead to potential health and safety issues to 3rd parties
Closure and rehabilitation of drill site			
• Remove water from the sump and drip trays • Remove oils and silt from drip trays and store until disposal to permitted hazardous landfill site • Backfill the sump once	Groundwater contamination	Groundwater could become polluted due to pollutants entering aquifers via surface water infiltration. Additionally, possible contaminations through the spillage of lubricants or fuel.	Given the small area to affected, per hole, this impact is likely to be insignificant. Qualitative assessment in the next section.
	Noise pollution	Noise generated by the drill rig could disturb nearby residences	Should the activities take place in close proximity to a farmhouse, the noise from these activities might be a nuisance impact. Qualitative assessment in the next section.

it has dried out (dome to allow for subsidence) and plug borehole (unless an agreement is in place with landowner for alternative uses) • Move drill core trays, ablution facilities, water bowser, stores and drill rig from the site • Dispose of any general waste to a permitted landfill site • Remove temporary fencing • Rip and plough compacted areas • Replace topsoil over disturbed area (20m x 20 m) • Rehabilitate access track by ripping and ploughing	Contamination of surface water	Surface water could become polluted due to spillages during handling and use of hydrocarbons, ablution spills and/or pollutants.	Given the small area to be impacted per hole and the lack of surface water resources, this impact is likely to be insignificant. Qualitative assessment in the next section.
	Contamination of soils	Soil pollution from use of hydrocarbon lubricants, the refueling of drill rigs and possible spills from ablution facilities.	Given the land use, soil loss and contamination could have an impact on grazing animals and crops. However, the area to be disturbed is very localized and on a small-scale, and impacts can be easily mitigated. Qualitative assessment in the next section.
	Air quality deterioration	Dust generation through using the access track. Air pollution from exhaust fumes. Dust generation through drilling activities	Air pollution through vehicle entrainment is expected to be negligible due to the small scale of the project. Air pollution through vehicle emissions and drill rig is expected to be negligible due to the small scale of the project Also, through the use of wet drilling techniques, this impact will be reduced further. Qualitative assessment in the next section.
	Soil erosion	Erosion of soils if vegetation does not re-establish	Monitoring commitments will be established in the EMP.

6.0 Identification and description of environmental aspects and associated potential impacts

The exploration activities have the potential to impact on the environment. Environmental aspects and potential impacts were identified during the screening and assessment phases, in consultation with authorities, IAPs and the environmental team. Given the relatively small scale of the proposed project and taking the existing environment into consideration, the potential impacts were also qualitatively assessed by the Environmental Practitioner. Table 7 provides a summary of the activities associated with the exploration activities and the associated environmental aspects and potential impacts on the environment. The relevance of the potential impacts are also presented in the tables below to determine if certain aspects need to be qualitatively assessed in further detail (next section of this report).

6.1. Assessment of Impacts

Introduction

With reference to preceding of this report the various environmental aspects and potential impacts associated with the exploration activities were identified and described. It was found that the impact on the environment would be insignificant; however the following issues will be qualitatively assessed in this section:

- Air quality – dust emissions related to vehicles and drilling activities
- Biodiversity
- Socio-economic
- Land-use
- Noise
- Surface water
- Groundwater
- Waste management

The impact assessment methodology used to determine the significance of impacts prior and after mitigation is presented below. The assessment process describes how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process, desktop studies of exploration in the Erongo Region by reviewing previous EIA's and EMP's. The phases covered by this assessment are Exploration phase and closure/decommissioning phase. The environmental assessment section of the assessment report and the consequent EMP shall also be compartmentalized into these phases. This assessment methodology enables the assessment of cumulative impacts, the significance of impacts, the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring and the degree to which the impacts can be mitigated. The methodology for conducting the qualitative impact assessment can be found in Table 8.

Table 8. Criteria for assessing impacts

PART A: DEFINITION AND CRITERIA		
Definition of SIGNIFICANCE		**Significance = consequence x probability**
Definition of CONSEQUENCE		**Consequence is a function of severity, spatial extent and duration**
Criteria for ranking of the SEVERITY of environmental impacts	**H**	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action. Irreplaceable loss of resources.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints. Limited loss of resources.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.
Criteria for ranking the DURATION of impacts	**L**	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
	L	Localized - Within the site boundary.

Criteria for ranking the SPATIAL SCALE of impacts	**M**	Fairly widespread – Beyond the site boundary. Local
	H	Widespread – Far beyond site boundary. Regional/ national

PART B: DETERMINING CONSEQUENCE					
SEVERITY = L					
DURATION	Long term	**H**			
	Medium term	**M**	**Low**	**Low**	
	Short term	**L**	**Low**	**Low**	

SEVERITY = M					
DURATION	Long term	**H**			
	Medium term	**M**			
	Short term	**L**	**Low**		

SEVERITY = H					
DURATION	Long term	**H**			
	Medium term	**M**			
	Short term	**L**			
			L	**M**	**H**
			Localized Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
			SPATIAL SCALE		

PART C: DETERMINING SIGNIFICANCE				
Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
Possible/ frequent	**M**	**Medium**	**High**	High
Unlikely/ seldom	**L**	**Low**	**Low**	Medium
		L	**M**	**H**
		CONSEQUENCE		

PART C: DETERMINING SIGNIFICANCE					
PROBABILITY (of exposure to impacts)	Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
	Possible/ frequent	**M**	**Medium**	**High**	High
	Unlikely/ seldom	**L**	**Low**	**Low**	Medium
			L	**M**	**H**
			CONSEQUENCE		

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	**Decision guideline**
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

Mitigation measures

Where negative impacts are identified, mitigation objectives have been set, and practical, attainable mitigation measures must be recommended that will minimize or eliminate the impacts. Where mitigation is not feasible, this has been stated and reasons given. In the case of positive impacts, enhancement measures are recommended for optimizing the benefit to be derived.

Monitoring

Monitoring requirements with quantifiable standards to assess the effectiveness of mitigation actions have been recommended where appropriate. These must indicate what actions are required, by whom, and the timing and frequency thereof. If further investigations must be undertaken and monitoring programs implemented before, during and after operations.

6.2. Qualitative impact assessment

The following is a qualitative impact assessment on the impacts associated with the exploration activities.

6.2.1 Air quality: Dust emissions related to vehicles and drilling

Due to the small-scale of the air quality impacts, what is being assessed is the nuisance impact related to the increase in dust and emissions, specifically where activities are conducted close to a settlement or farmstead.

Table 9. Qualitative assessment of air quality impacts for the movement of vehicles on un-paved roads and drilling activities

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**L**	**L**	**L**	**M**	**M**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- Dust suppression methods should be implemented on community roads for the areas near houses/settlements where dust levels increase (e.g. Water sprays).
- Vehicle speeds will be limited to 40km/h on access routes to limit dust.
- The movement of drilling related vehicles on unpaved access track will be on a small scale.
- Water sprays should be used around the lay-down area when drilling, especially when performing reverse circulation, where water is not used.

6.2.2 Biodiversity

The assessment for biodiversity relates to the impact that personnel have on the surrounding fauna and vegetation. It specifically focuses on the impacts associated with illegal hunting and poaching and the collection of firewood.

Table 10. shows the qualitative impact assessment for biodiversity related to the exploration activities and the impact of personnel on biodiversity.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**L**	**L**	**L**	**M**	**L**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- The footprint of the area to be disturbed will be minimized as far as is practically possible.
- Honour agreements set out in the site-access contracts, specifically relating to the areas utilized for professional hunting. Special consideration should be given to the sensitive hunting season.
- Xinfeng Investments (Pty) Ltd will implement a zero-tolerance policy with regards to the killing or collecting of any biodiversity. This applies to people directly employed by Xinfeng Investments (Pty) Ltd as well as any contractors working on their behalf.
- Employees and contractors will be shown the value of biodiversity and the need to conserve the species and systems that occur within the proposed project area.
- No open fires will be permitted on site.

- Appropriate ablution facilities will be provided for employees. These facilities must be maintained.

6.2.3 Land-use

The assessment for land use refers specifically to the impact the exploration activities have on future farming and professional hunting activities.

Table 11. shows the qualitative impact assessment for land use related to the exploration activities.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**H-M**	**L**	**M**	**M**	**M**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- The footprint of the area to be disturbed will be minimized as far as is practically possible.
- Areas used as laydown areas are to be raked and/or ploughed to encourage re-vegetation
- Agree on relevant compensation with landowners where land used for hunting purposes are impacted.

6.2.4 Socio-Economic

The assessment of socio-economic impacts focuses on the inconvenience the exploration activities have on the landowners. Specifically, the need for access, leaving farm gates open/unlocked, the increased risk of criminal activities and the economic effects on professional hunting activities.

Table 12. shows the qualitative impact assessment relating to the landowners and access rights

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**L**	**M**	**M**	**M**	**M**
Mitigated	**M**	**L**	**M**	**M**	**L**	**L**

Actions/Mitigation measures:

- Honour agreements set out in the site-access contracts

- Consult and provide feedback regarding activities on the individual properties
- Provide contact details to a designated person, who will serve as liaison between landowners and the exploration teams
- Ensure gates are closed after entry and exit.
- Provide appropriate toilet facilities for the exploration workers on the site or agree with landowner to use certain facilities on the farm.

6.2.5 Noise: from vehicles, drilling and other activities

The assessment of noise impacts is with specific regard to exploration activities taking place near a residence and resulting in a nuisance impact, and the severity of the impact is based on this.

Table 13. shows the qualitative assessment of noise impacts for the movement of vehicles and other drilling activities

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**L**	**L**	**L**	**M**	**M**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- Drilling will only be conducted during the day, where the drill-site is located close to a dwelling.
- Drilling at each site will be temporary
- Vehicles will travel maximum 30 km/hour near houses/settlements

6.2.6 Surface water and ground water: pollution of surface water and groundwater from hydrocarbon spillage and drilling activities

The assessment relates to the impacts associated with the spillage of hydrocarbons within the exploration area, specifically with regard to water resources.

Table 14. shows the qualitative assessment of surface water and groundwater impacts:

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**L**	**L**	**L**	**L**	**L**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- In all areas where there is storage of hazardous substances (i.e. hydrocarbons), there will be containment of spillages on impermeable floors and bund walls that can contain 110% of the volume of the hazardous substances.
- All refueling and any maintenance of vehicles will take place on impermeable surfaces.
- Pollution will be prevented through basic infrastructure design and through maintenance of equipment.
- Spill kits will be readily available on site. Employees and/or contractors will be trained to use the spill kits to enable containment and remediation of pollution incidents.
- Environmental awareness for contractor and employees to be included during inductions
- A sump will be used for collection of oils and silt contained in the drilling water
- Any spills will be contained and cleaned up immediately
- Non-toxic and biodegradable drilling lubricant will be used

6.2.7 Wastewater management

Given the remote location and the land-use, the dumping of domestic waste within the exploration area could prove hazardous to wildlife and livestock, as well as impede agricultural production, the assessment will focus on these impacts.

Table 15. shows the qualitative assessment impacts from waste management

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**L**	**L**	**L**	**L**	**L**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**

Actions/Mitigation measures:

- Waste generated will be handled in accordance with the contract signed with the landowner. This shall include: waste should be separated and recycled / re-used where possible. Where waste management procedures do not exist, a procedure should be developed.
- Suitable receptacles for waste disposal will be provided at appropriate locations on site. These receptacles will be clearly marked for different waste types.
- Employees and contractors will be shown the importance of correct waste disposal as well as waste minimization and recycling.

6.2.8. Heritage Impacts

Although no archaeological sites have been identified yet in the project area, appropriate measures will be undertaken upon discovering any new archaeological sites. All archaeological remains are protected under the National Heritage Act (2004) and will not be destroyed, disturbed, or removed. The Act also requires that any archaeological finds be reported to the Heritage Council Windhoek. A separate archaeological report to be submitted.

Table 16: Impact evaluation for heritage impact and health, safety and security (the later though not an environmental concern)

Impact	Mitigation	Severity	Duration	Spatial scale	Consequence	Probability of occurrence	Significance
Health, safety and security	Unmitigated	M	L	L	L	M	L
	Mitigated	L	L	L	L	L	L
Heritage Impacts	Unmitigated	M	H	L	M	L	M
	Mitigated	L	L	L	L	M	L

6.2.9. Health, safety and security

Exploration activities are associated with serious health and safety risks to workers on site. Occupational exposures are normally related to the dermal contact with fuels and inhalation of fuel

vapors during handling of such products. The manager is further advised to ensure that adequate emergency facilities, including first aid kits, are available on site. All Health and Safety standards specified in the Labour Act should be complied with.

7. Environmental Management Plan (EMP)

7.1 Overview

7.1.1. Purpose of this Environmental Management Plan (EMP)

Environmental management plan (EMP) serves as a tool that can ensure sustainable mineral exploration, as it contains measures aimed at protecting, rehabilitating and restoring the environment to its productive state before, during and after exploration. It serves as a risk strategy that contains logical framework, monitoring programs, mitigation measures and management control. The aim of an Environmental Management plan (EMP) is to develop procedures to implement project's mitigation measures and monitoring requirements. It is deemed as a risk strategy that contains logical framework and management control strategies to minimize potential environmental impacts to significant level. The EMP ensures the community that the environmental management of the project is acceptable. As well as stipulating the roles and responsibilities of persons involved in the project. An EMP ensures that legal and policy requirements are well known and understood by the proponent, its employees and contractors and will be strictly enforced by its management team. Issues and concerns identified in the EIA will form a set of environmental specifications that will be implemented on site.

The control measures described in this EMP have been developed following consideration of the findings of the Environmental Impact Study (EIS), which concluded that a number of environmental values would be impacted by the proposed exploration activities. The intent of the proposed control measures is to ensure that project related activities will not negatively affect the

environment or the health, welfare and amenity of people and land uses by meeting or exceeding statutory requirements.

Furthermore, overall objectives of this EMP are:

- To develop measures that will mitigate the adverse impacts of the proposed project
- Ensuring compliance with regulatory authority stipulations and guidelines
- To formulate measures to enhance the value of environmental components where possible.
- To formulate measures to protect environmental resources as well enhance the value of environmental components where possible.
- Responding to unforeseen events and providing feedback for continual improvement in environmental performance.

7.1.2. Summary of the proposed activities

The proponent has an exclusive prospecting licence (EPL 7228) over the Project site. Exploration activities and associated activities have potential impacts on the following:

- Potential land or soil disturbances,
- Soil and water resources contamination,
- Biodiversity (fauna and flora),
- Air quality/dust,
- Noise,
- Health and safety,
- Vehicular traffic safety,
- Archaeological impact.

7.1.3. Project Phases Covered in the EMP

The following phases are addressed in this EMP:

- **Exploration phase:** this is the phase where Xinfeng Investments (Pty) Ltd (proponent) will be carrying out exploration of mineral and other minerals. It is also the time when proponent has to undertake maintenance and care of the environment and machinery.
- **Environmental monitoring phase:** this is the phase when mitigation measures are implemented, and the monitoring plan put in place. This phase runs concurrently with the exploration and decommissioning.
- **Decommissioning phase:** This is the phase when exploration activities cease as a result of either poor exploration results or loss of market demand for the targeted commodity. Rehabilitation measures will have to put in place during exploration and before decommissioning.

7.1.4 Legal Implications and obligations under the EMP

The EMP will be sent to the Directorate of Environmental Affairs (DEA) of the Ministry of Environment, Forestry and Tourism (MEFT) for approval. Once the DEA is satisfied with the contents of the EMP, they will issue an Environmental Clearance Certificate (ECC) to the Proponent to commence with the exploration in the proposed area. The ECC is linked with the recommendations of the Environmental Management Plan. Once the ECC is issued, the EMP becomes a legally binding document and each role-player including contractors and sub-contractors are made responsible to implement the relevant sections of the EMP and is required to abide by the conditions stipulated in this document

7.1.5. Environmental Management Principles

The proponent will ensure that all parties involved in the project uphold the following broad aims:

1. All persons will be required to conduct all their activities in a manner that is environmentally and socially responsible. This includes all consultants, contractors, and sub-contractors, transport drivers, guests and anyone entering the exploration area in connection with the exploration project.

2. Health, Safety and Social Well Being

- Safeguard the health and safety of project personnel and the public against potential impacts of the project. This includes issues of road safety, precautions against natural dangers on site, and radiation hazards; and,
- Promote good relationships with the local authorities and their staff.

3. Biophysical Environment

- Wise use and conservation of environmental resources, giving due consideration to the use of resources by present and future generations;
- Prevent or minimize environmental impacts;
- Prevent air, water, and soil pollution, Biodiversity conservation and due respect for the purpose and sanctity of the area.

To achieve these aims, the following principles need to be upheld.

Commitment and Accountability:

The proponent's senior executives and line managers will be held responsible and accountable for: Health and safety of site personnel while on duty, including while travelling to and from site in company vehicles and environmental impacts caused by exploration activities or by personnel engaged in the exploration activities, including any recreational activities carried out by personnel in the area.

Competence

The proponent will ensure a competent work force through appropriate selection, training, and awareness in all safety, health and environmental matters.

Risk Assessment, Prevention and Control

Identify, assess and prioritize potential environmental risks. Prevent or minimize priority risks through careful planning and design, allocation of financial resources, management and workplace procedures. Intervene promptly in the event of adverse impacts arising.

Performance and Evaluation

Set appropriate objectives and performance indicators. Comply with all laws, regulations, policies and the environmental specifications. Implement regular monitoring and reporting of compliance with these requirements.

Stakeholder Consultation

Create and maintain opportunities for constructive consultations with employees, authorities, other interested or affected parties. Seek to achieve open exchange of information and mutual understanding in matters of common concern.

Continual Improvement

Through continual evaluation, feedbacks, and innovation, seek to improve performance regarding social health and well-being and environmental management throughout the lifespan of the exploration project.

Financial Provisions for exploration

In line with Namibia's environmental rehabilitation policy, the proponent will make the necessary financial provision for compliance with the EMP.

7.2. Identified impacts, monitoring and proposed mitigation measures

The EMP will the tool used by the proponent and their employees and/or their contractors during exploration to ensure that environmental impacts are either avoided or minimized.

7.2.1. Impacts on bio-physical environment

7.2.1.1. Liquid waste: oil spillage and wastewater

Mitigation Measures to be enforced:

- Ensure adequate storage and handling of liquid waste, fuel, wastewater as well as regular maintenance of plant equipment.
- Avail a spill response action plan in case of accident.
- Accessibility to spill prevention and response equipment, such equipment should be visible and accessible to all employees at any given time.
- Spills will be cleaned up immediately to the satisfaction of the site Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility.
- Designated waste collection tanks should be available on-site and away from waterways, and such isolation should be maintained at all times.
- Storage of the hazardous substances in a bounded area,
- Refuel vehicles at a designated area that has a protective surface covering/geo-membrane lining and utilize drip trays for stationary plant.

7.2.1.2 Impacts on surface water

Mitigation Measures to be enforced:

- No dumping of waste products of any kind in or in close proximity to surface water bodies.
- Heavy exploration vehicles should be kept out of any surface water bodies and the movement of vehicles should be limited where possible to the existing roads and tracks.

- Ensure that oil/ fuel spillages from vehicles transporting the stones and machinery are minimized and that where these occur, that they are appropriately dealt with.
- Drip trays must be placed underneath vehicles when not in use to contain all oil that might be leaking from these vehicles.

7.2.1.3. Solid waste

Solid waste is a challenge during the exploration phases. It can be generated from contractors, staff members and other visitors to the area. Proper solid waste management will involve full commitment by all the employees and contractors on site. Solid waste which will be generated from this project if not managed will have an effect on the environment.

Mitigation Measures to be enforced:

- The collected solid waste should be disposed of at Omaruru Town Council solid waste disposal sites.
- For human waste, during the exploration phase, the mobile toilet should be made available on-site for workers and once these facilities are full, the collected human waste should be disposed at the Town Council human waste disposal site.
- It is recommended that waste from the temporary toilets be pumped out and disposed of at the designated waste treatment site in Omaruru.
- Mandatory waste segregated right at the source of waste generation.
- Non-degradable waste will be transferred to the municipal solid waste management system.

7.2.1.4. Land and soil disturbance

Dimensions stone and other mineral exploration process involve geophysical surveys, drilling, pitting, trenching and excavations. This undertaking has the potential though very negligible of

disturbing the structural composition and biological productivity of topsoil and if not taken care of this can lead to land degradation.

Mitigation Measures to be enforced:

- The access road to exploration sites must be established in consultation with the landowner and usage of existing roads shall be enforced.
- The design, construction, and location of access to main roads will be in accordance with the requirements laid down by the controlling authority.
- Land markings, vehicle tracks, trenches and excavations shall be restored to the original landform and, visual state as much as possible.
- In the case of dual or multiple uses of access roads by other users, arrangements for multiple responsibilities must be made with the other users. If not, the maintenance of access roads will be the responsibility of the holder of the exclusive prospecting licence (EPL).

7.2.1.5. Biodiversity (fauna and flora)

Some of the activities of the proposed project i.e. vehicles, human movements, excavating pose a risk to the integrity of baseline biodiversity as well as the biological productivity of the site and the immediate proximity. Movement of vehicles in and out of the site and noise produced by moving earth-moving equipment are the major threats to fauna. The following mitigations are to be undertaken to minimize further impact on the existing biodiversity:

Mitigation Measures to be enforced: **flora**

- Disturbed areas must be kept to a minimum.
- Remove unique fauna and sensitive fauna before commencing with the development activities and relocate to a less sensitive/disturbed site if possible.

- Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species and have important ecological functions in terms of carbon sequestration from decomposing materials at the site.
- Disturbance of marginal vegetation in the mountains should be limited.
- Where it is clear that certain large species will be destroyed consideration should be given to offering to rescue the individuals involved and relocate them to nearby gardens.
- Transplant removed trees where possible, or plant new trees in lieu of those that have been removed.
- Prevent the destruction of protected tree species.

Mitigation Measures to be enforced: **fauna**

- Barriers/barricades confining driving trucks must be erected to avoid stray driving and trampling on habitat. Proper demarcation of the exploration area.
- Avoid disturbance on invertebrate on-site and along the gravel road stretch.
- Avoid the creation of multiples roads strips, which could result in the disturbance of breeding sites for various mammals.
- No workers will be allowed to collect any plant or snare, hunt or otherwise capture any wild animal.
- No domestic animals will be permitted on the exploration site by means of erecting a perimeter fence, small stock should graze at designated areas.
- A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise.
- No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.
- Care will be taken to ensure that no litter is lying around as these may end up being ingested by wild animals

Methods for monitoring:

- Regular monitoring of any unusual signs of animal habitat.
- There should be limited movement of heavy-duty machinery and exploration equipment in the area to avoid interference.
- Birds or Nest sites will not be disturbed by any employee, visitor or contractor.
- If possible encountered bird kills and nest removal should be registered in a biodiversity data-base and information should be made available to the general public

7.2.1.6. Air quality

The proposed exploration activities are the potential of fugitive sources for the dust particles as they are easily dispersed and carried away by the winds. During the operation phase dust will be generated onsite by earth moving equipment and also on the gravel road by trucks and vehicles. Continuous movements of people, vehicles and earth moving vehicles on site can thus loosen and re-suspend the deposited material again into the air

Mitigation Measures to be enforced

- Dust suppressants shall be applied to all the exploration activities as well as all off roads and gravel roads.
- The speed of exploration vehicles must be strictly controlled to reduce dust or prevent deterioration of the roads being used.
- All off roads in the project area should have a speed limit of 50km/h in order to minimize the amount of dust generated by vehicles.
- During high wind conditions the proponent must make the decision to cease works until the wind has calmed down.
- Use of personal protective equipment for proper dust control for respiratory protection and other necessary PPE (gloves, work suits, sun hats etc.).

Monitoring

- Daily inspection by the ENC of the gravel roads and exploration site on possible dust creation that requires attention.
- Daily inspection on site by the ENC to ensure that all workers are wearing their protective clothes at all time during the exploration process and the dry skin contact with gloves is prevented.

7.2.1.7. Impacts on Archaeological Sites

Potential damage to archaeological sites may be impacted through unintentional destruction or damage as a result of vehicle tracks, footprints and actions of contractors, employees and visitors of the exploration site. Currently, there is no information provided about known heritage or site of cultural values within the project site. Therefore, this impact can be rated medium to low, if there are no mitigation measures in place. At the sites, there are no known heritage areas or artifacts deemed to be impacted by the ongoing exploration and exploration activities. However, there might be unknown archaeological remains within the Exclusive prospecting licence area hence the Proponent is required to follow the chance find procedures and consult the Heritage Council immediately. The Proponent should consider having a qualified and experience archaeologist on standby during entire operational phase. This action will be to assist on the possibility of uncovering sub-surface graves or other cultural/heritage objects and advice the proponent accordingly. Identified graves or any archaeological significant objects on the site should not be disturbed but are to be reported to the project Environmental officer or National Heritage Council offices.

Mitigation Measures to be enforced

- Buffer zones will be created around the operation site.
- Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of exploration activities.

- All archaeological sites to be identified and protected before construction commences.
- Notices/information boards will be placed on sites.
- Training employees regarding the protection of these sites.
- Obtain appropriate clearance or approval from the competent authority.
- In the event of such finds, exploration must stop and the project management or contractors should notify the National Heritage Council of Namibia immediately.

Monitoring

- An archaeologist will inspect any identified archaeological sites before commencing of exploration activities.

7.2.1.8. Noise

Noise emissions on site are mainly generated by earthmoving equipment, drilling rigs, people and vehicles. The main noise sources are associated with drilling and transport of equipment or materials to or from the exploration site. Exposure to loud noises at work can cause irreversible hearing damage, workplace accidents and be a contributing factor to other health problems.

Mitigation Measures to be enforced

Continuous monitoring of noise levels should be conducted to make sure the noise levels at the exploration site does not exceed acceptable limits.

- Reduction of noise from drilling rigs by using down hole drilling.
- No activity having a potential noise impact should be allowed after 18:00 hours if possible.
- Workers working near high noise exploration machinery will be provided with ear muffs/ earplugs.

7.2.1.9. Visual negative impacts

Mitigation Measures to be enforced

- Negative visual effects can further be prevented through mitigations (i.e. keep existing trees, introduce tall indigenous trees).
- When exploration activities cease, restore the visual sense of the area to its natural state.
- Care must be taken to ensure that all rehabilitated areas are similar to the immediate environment in terms of visual character, vegetation cover and topography and any negative visual impacts will be rectified to the satisfaction of the environmental consultant.
- Overburden will be placed back into excavation as part of the rehabilitation programme

7.2.1.10 Fire and Explosion Hazard

Mitigation Measures to be enforced

- Sufficient fire extinguishers will be installed on every exploration vehicle.
- Exploration personnel will be trained on how to use fire extinguishers.

7.2.1.11. Health, safety and security

There are number of hazards associated with the movement of equipments and impact on dangerous parts of the equipment. The risk of an accident will be high if the dangerous parts are exposed and operators are poorly trained or supervised. This increases the possibility of injuries, and the responsible manager must ensure that all staff members are briefed about the potential risks of injuries on site.

Mitigation Measures to be enforced:

- All vehicular equipment operators must have valid licences for that particular vehicle class.
- Ensure that all exploration personnel are properly trained depending on the nature of their work.

- Provide for a first aid kit and a properly trained person to apply first aid when necessary.
- A wellness program should be initiated to raise awareness on health issues, especially the impact of sexually transmitted diseases as described above.
- Encourage HIV counselling and testing and facilitate access to Antiretroviral (ARV) medication
- Clearly demarcate the exploration (area of current activities e.g. drilling site) site boundaries along with signage of "no unauthorized access".
- Clearly demarcate dangerous areas and no-go areas on site.
- Staff and visitors to the exploration site must be fully aware of all health and safety measures and emergency procedures.
- The contractor must comply with all applicable occupational health and safety requirements.
- The workforce should be provided with all necessary Personal Protective Equipment where appropriate.
- Emergency medical treatment should be available on site.

7.2.2. Negative Impacts on Socio-Economic

The **nature of impact** is outlined below:

- Impact from loss of grazing for domestic livestock in "exclusive use zone"
- Impacts on cultural and spiritual values.
- Demographic factors: Attraction of additional population that cannot benefit from the project.
- Perception of Health and Safety risks associated with exploration.

Mitigation Measures to be enforced:

- The population change can be mitigated by employing people from the local community and encouraging the contractors to employ local individuals.
- The perception of risks will be mitigated by putting up safety signs wherever possible and ensuring that all employees and visitors to the site undergo a safety induction course.

Methods for monitoring:

- Public meetings will be held by the proponent whenever necessary.

7.3. Environmental Management Plan, Organization and Implementation

The environmental aspects which may be affected by the proposed project have been categorized into negative and positive impacts. As an extension of the preceding sections, this section summarizes the objectives, indicators to be observed, schedules to adhere to, and the roles and responsibilities of various stakeholders to the EMP. The following tables give the mitigation measure to be undertaken during exploration and site closure phases with the agency responsible for implementation. The following abbreviations are used to indicate who is responsible for what impact mitigation objective:

- Site Foreman SF
- Site Manager SM
- Project manager PM
- Project Proponent PP
- Project Geologist PG
- Environmental Coordinator ENC
- Contractor C
- Geological Technician GT
- Project staff PS

Table 17: Implementing of the negative impacts. All the mentioned impacts in the below table are scheduled for all the phases of the proposed project.

Objectives	**Indicators**	**Responsibility**
To avoid any form of hydrocarbon spills on and around the exploration site	No hydrocarbon spillage or/and remnants of hydrocarbon spillage shall be visible around the project site	SF, PS, ENC
To avoid any form of liter be it paper, metal, plastic and human waste on and around the exploration site	No litter or/and remnants of liter shall be visible around the project site	SF, PS, ENC
To minimize land and soil disturbance	Driving tracks and excavation shall be restricted and only be visible within the project site.	SM, SF, ENC
To protect and conserve fauna and flora within the project area	Minimum levels of habitat disturbance	SM, SF, ENC
To minimize dust generation on site and atmospheric pollution	Emissions/generation particulate content of the dust around the site and gravel roads shall not exceed maximum allowable concentration that may affect human being and animals	SM, SF, ENC
To ensure compliance with statutory requirements	Assurance measures shall be put in place and Periodic inspections aimed at corrective action undertaken, recorded and documented	EC, PP, ENC

Table 18: Summary of Environmental Management Plan during exploration and decommissioning phases.

Exploration			
Environmental Impact	**Proposed mitigation measures**	**Responsibility**	**Monitoring plan**
Air pollution	• Control speed and operation of exploration vehicles. • Regular maintenance of vehicles and equipment. • Sensitize exploration workers and contractors. • Provide dust masks to everyone on site.	C SM PM ENC	• Amount of dust produced. • Level of Landscaping executed.
Noise pollution	• All noise sources should be removed from site or kept within reasonable level. • Work should only be carried out only during daytime. • Regular maintenance of vehicles, equipment. • Regular maintenance of and heavy machinery, vehicles and equipment. • Workers should be provided with personal hearing protection if working in noisy environment.	C GT SM ENC	• Amount of noise produced
Solid waste	• Littering should be discouraged. • All domestic waste and general waste produced on a daily basis should contained should be contained until such time that they are transported to the designated disposal point. • The site should have waste receptacles or dust bins at convenient points to prevent littering during exploration. • Waste disposal systems should be implemented on site for both hazardous waste such as oil and fuel and domestic waste such as paper and plastic.	PM SM ENC PS	• Presence of dust bins, waste collection point.
Oil leaks and spills	• Vehicles and equipment should be well maintained to prevent oil leaks. • Contractor should have a designated area where maintenance is carried out and that is well sealed to prevent percolation into the ground. • All oil products should be handled carefully.	C ENC SM	• Absence of oil spills and leaks onsite

First aid	• A well-stocked first aid kit shall be maintained by qualified personnel	PM	• Contents of the first aid kit.
Visual	• Environmental considerations will always be adhered to before clearing access roads and exploration.	PM GT	• Employees to be trained on how to minimize visual impacts.
Archaeological Sites	• Buffer zones will be created around the sites. • Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of exploration activities. • All archaeological sites to be identified and protected before commencement of exploration	PM ENC PP SM	• Register of all archaeological sites identified.
Occupational Health and Safety	• Provide Personal Protective Equipment, Train workers on personal safety and how to handle equipments and machines. • A well-stocked first aid kit shall be maintained by qualified personnel. • Report any accidents / incidences and treat and compensate affected workers. • Provide sufficient and suitable sanitary conveniences which should be kept clean.	C PM PP ENC	• Workers using Protective Equipment. • Presence of Well stocked First Aid Box. • Clean sanitary facilities.
Fauna	• Some habitat areas such as trees of the riverbed and tunnels outcrops will be avoided wherever possible. • A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise. • No animals shall be killed, captured or harmed in any way. • No foodstuff will be left lying around as these will attract animals which might result in human-animal conflict.	PM ENC PP SM PS	• Regular monitoring of any unusual signs of animal habitat.
Loss of vegetation	• Environmental considerations will be adhered to at all times before clearing access roads and exploration. • The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive areas will be avoided. • The movement of vehicles will be restricted to certain tracks only. • The movement of vehicles will be restricted to certain tracks only. • Avoid placing access routes through sensitive areas if there is any and stick to existing roads/	PM ENC PP SM PS	• Warning signs onsite • Restored vegetation

	tracks. • Limit the operation to the specific site. • Care should be exercised during exploration to minimize/ avoid vegetation destruction		
HIV, Aids, STIs	• Exploration personnel should be sensibilized on HIV/AIDS and other STDs matters • Free distribution of condoms on site	ENC	• Availability of free sex educational materials
	Site closure as result of unfruitful exploration results or other unforeseen shortcomings		
Environmental/Social Impact	**Proposed mitigation n measures**	**Responsibility**	**Monitoring plan/indicator**

Disturbed Physical environment, Solid waste, Safety and health	❖ Undertake a complete environmental restoration program and introducing appropriate vegetation ❖ Site should be rehabilitated to as close as possible to its original condition. ❖ Remove all sample bags, plastic waste, survey pegs, etc. from site at completion of drill schedule. ❖ Make sure there is no contaminated soil on drill site before rehabilitation. ❖ Where drilling was done on a slope, some earthworks might be necessary to stabilize the area. ❖ Make sure all drill holes are properly plugged. ❖ Spread stockpiled topsoil back over the entire drill site. ❖ Compacted ground on a drill site should be loosened to facilitate the regrowth of topsoil vegetation.	PM C	Amount of waste on site. Absence of contaminated soils. Absence of unplugged holes

7.4. Monitoring, reporting and corrective action

7.4.1 Monitoring of EMP

Monitoring of the EMP performance for the proposed project by the Contractor emphasizes early detection, reporting, and corrective action. It is divided into three parts, namely:

- Monitoring of project activities and actions to be undertaken by the Environmental Coordinator (ENC) appointed by the Contractor.
- The Environmental Coordinator (ENC) shall report all incidents and situations which have the potential of jeopardizing compliance of statutory provisions as well as provisions of this EMP to the Project Proponent.
- The Environmental Coordinator (ENC) shall take corrective prompt measures, adequate and long-lasting in addressing non-compliance activities or behavior.

To ensure compliance of the Contractor ENC to the implementation of the EMP, it is

highly recommended that an External Environmental Expert is appointed by the proponent to ensure the implementation of the EMP.

7.4.1.1. Inspections and Audits

During the life of the project, performance against the EMP commitments will need to be monitored and corrective action taken where necessary, in order to ensure compliance with the EMP and relevant environ-legal requirements.

Internal Inspections/Audits

The following internal compliance monitoring programme will be implemented:

1. Project kick-off and close-out audits will be conducted on all contractors. This applies to all phases during exploration:
    - Before a contractor begin any work, an audit will be conducted by the applicable phase site manager to ensure that the EMP commitments are included in Contractors' standard operating procedures (SOPs) and method statements.
    - Following completion of a Contractors work, a final close-out audit of the contractor's performance against the EMP commitments will be conducted by the applicable phase site manager.
2. Monthly internal EMP performance audits will be conducted during the construction/initial and decommissioning phases.
3. Ad hoc internal inspections can be implemented by the applicable manager at his/her discretion, or in follow-up to recommendations from previous inspection/audit findings.

External Audits

- At the end of each project phase, and annually during the exploration phase, an independently conducted audit of EMP performance will be conducted.

- Specialist monitoring/auditing may be required where specialist expertise are required or in order to respond to grievances or authorities directives.
- Officials from the DEA may at any time conduct a compliance and/or performance inspection of exploration activities. The proponent will be provided with a written report of the findings of the inspection. These audits assist with the continual improvement of the exploration project and the proponent will use such feedback to help improve its overall operations.

7.4.2. Documentation

Records of all inspections/audits and monitoring reports will be kept in line with legislation. Actions will be issued on inspection/audit findings. These will be tracked and closed out.

7.4.3. Reporting

Environmental compliance reports will be submitted to the Ministry of Environment, Forestry and Tourism on a bi-annual basis.

7.4.3.1. Environmental management system framework

Environmental Management System (EMS) will be established and implemented by the proponent and their Contractors. This subchapter establishes the framework for the compilation of a project EMS. The applicable manager will maintain a paper based and/or electronic system of all environmental management documentation. These will be divided into policy and performance standards & Enviro legal documentation.

7.4.4. Policy and Performance Standards

A draft environmental policy and associated objective, goals and commitments has been included in the EMP. The project proponent may adapt these as necessary.

7.4.5. Enviro-Legal Documentation

A copy of the approved environmental assessment and EMP documentation will always be available by the proponent. Copies of the Environment Clearance Certificate and all other associated authorizations and permits will also be kept with the exploration team. In addition, a register of the legislation and regulations applicable to the project will be maintained and updated as necessary.

7.4.6. Impact aspect register

A register of all project aspects that could impact the environment, including an assessment of these impacts and relevant management measures, is to be maintained. This Draft EMP identifies the foreseeable project aspects and related potential impacts of the proposed project, and as such forms the basis for the Aspect Impact Register; with the Project Activity. It should however noted that during the life of the project additional project aspects and related impacts may arise which would need to be captured in the Aspect-Impact Register.

7.4.6.1. Procedures and Method Statements

In order to affect the commitments contained in this EMP, procedures and method statements will be drafted by the relevant responsible exploration staff and Contractors. These include, but may not be limited:

- Standard operating procedures for environmental action plan and management programme execution.
- Incident and emergency response procedures.
- Auditing, monitoring and reporting procedures, and
- Method statements for EMP compliance for ad hoc activities not directly addressed in the EMP action plans.

All procedures are to be version controlled and signed off by the applicable manager. In addition, knowledge of procedures by relevant staff responsible for the execution thereof must be demonstrable and training records maintained.

7.4.6.2. Register of roles and responsibilities

During project planning and risk assessments, relevant roles and responsibilities will be determined. These must be documented in a register of all environmental commitment roles and responsibilities. The register is to include relevant contact details and must be updated as required.

7.4.6.3. Environmental management schedule

A schedule of environmental management actions is to be maintained by the applicable phase site managers and/or relevant Contractors. A master schedule of all such activities is to be kept up to date by the manager. Scheduled environmental actions can include, but are not limited to:

- Environmental risk assessment;
- Environmental management meetings;
- Soil handling, management and rehabilitation;
- Waste collection;
- Incident and emergency response equipment evaluations and maintenance
- Environmental training;
- Stakeholder engagement;
- Environmental inspections and
- Auditing , monitoring and reporting

7.4.6.4. Change Management

The environmental management schedule must have a procedure in place for change management. In this regard, updating and revision of environmental documentation, of procedures and method

statements, actions plants etc. will be conducted as necessary in order to account for the following scenarios:

- Changes to standard operating procedures (SOPs);
- Changes in scope;
- Ad hoc actions;
- Changes in project phase; and
- Changes in responsibilities or roles

All documentation will be version controlled and require sign off by the applicable phase site managers.

7.5. **Environmental code of conduct**

The Code of Conduct outlined in this section of the EMP applies to, subcontractors, visitors, permanent and temporal workers. Therefore, anybody within the boundaries of the project site must adhere to the Environmental Code of Conduct as outlined in this section of the EMP. The Environmental Coordinator ENC will implement on-site environmental guidelines and has the authority to issue warnings as well as discipline any person who transgresses environmental rules and procedures. Persistent transgression of environmental rules will result in a disciplinary hearing and thereafter continued noncompliance behavior will result in permanent removal from the construction sites.

7.6. Site closure and rehabilitation

7.6.1 Introduction

Rehabilitation is the process of repairing the damage done by exploration activities. Rehabilitation plan has been developed with a main aim of returning disturbed environment close to its pre exploration state. It is also planned to cater for the access road, vehicle tracks around the site, removal, and restoration of areas covered by stockpile and rock piles. The closure vision for the proposed project is to establish a safe, stable and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy.

7.6.2. Site closure and rehabilitation activities

All waste (such as hazardous and domestic) waste will be transported offsite for disposal in licensed landfills in Omaruru town. Disturbed or/and contaminated areas will be cleaned up, treated where necessary and restored to its pristine state.

- Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions in consultation with landowners.
- The recovered topsoil and subsoil should be utilized to reconstruct the original soil profile.

The rehabilitation actions intended to be undertaken at the end of the life of the proposed exploration activities are described below.

7.6.2.1. Remediation of Contaminated Areas

All soil, contaminated with hydrocarbons, will be identified, excavated and disposed in accordance with nearest town council disposal requirements at appropriate sites.

- Removed soils will be managed as determined by the nature and extent of the contamination.
- All equipment in which chemicals have been stored or transported will be cleaned and disposed of in a suitable disposal facility.

7.6.2.2. Waste Management

Waste management activities will include:

- Hazardous waste will be managed handled, classified and disposed.
- Nonhazardous substances will be disposed in the nearby landfill sites.
- It may be necessary to fence temporary salvage yards for security reasons, particularly where these are located close to public roads.

8. Conclusion and recommendations

The above Environmental Management Plan, if properly implemented, will help to minimize adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. The Environmental Management Plan should be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Overall, the severity of potential environmental impacts of the proposed project activities on the receiving environment (physical, biological, socioeconomic environments and ecosystem functions) will be of low probability of occurrence, localized extent, low magnitude and temporally duration.

The EMP Consultants are confident that the potential negative impacts associated with the exploration activities on site can continue to be mitigated by effectively implementing the recommended management action measures and their monitoring. This report should be viewed as a framework for integrating mitigation measures and applicable legal tools to ensure both compliance and sustainability. It is therefore very important that the proponent provides adequate support for human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the planned exploration activities.

Therefore, it is recommended that the mineral and other mineral exploration activities on the project site be granted an Environmental Clearance Certificate, provided that: All mitigations provided in this EMP should are implemented as stipulated and where required and emphasized, improvement should be effectively put in place. The Proponent and all their workers comply with the legal requirements governing this type of project and its associated activities.

In a summary the following are to be observed/ adhered to:

- Mitigation measures to be implemented as given EMP report,

- The proponent to negotiate an Access Agreement with the land owner/s.
- The Proponent is to observe all the provisions of the EMP and all conditions of the Access Agreement to be entered between the proponent and the land owners.
- The proponent to give advance notices and obtain permission to have access to private property such as private farms from the land owners.
- In a case where portable water is discovered during boreholes drilling operations, the proponent shall support other land users in the area in terms of access to freshwater supply for both human consumption, wildlife and agricultural support as may be requested by the local community / land owners/s. Relevant underground water abstraction permit/s be obtained from the Ministry of Agriculture, Water and Land Reform (MAWLR) and abstraction and monitoring conditions thereof be observed.

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Appendix A: Registered IAP's

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Appendix B: Proof of Advertisements, Letters and Notices

Appendix C: CV of EAP

Appendix D: BID