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SCOPING REPORT AND MANAGEMENT PLAN FOR E-TECH KALAPUSE MINING (PTY) LTD EXPLORATION ACTIVITIES ON EPL 6762

JUNE 2018

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ACRONYMS

ASEC	A. Speiser Environmental Consultants
BID	Background Information Document
CV	Curriculum Vitae
E-TECH	E-Tech Kalapuse Mining (Pty) Ltd.
EAP	Environmental Assessment Practitioner
EAPAN	Environmental Assessment Professionals Association of Namibia
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
IAPS	Interested and Affected Parties
MET	Ministry Of Environment and Tourism
MME	Ministry of Mines and Energy
SCZ	Southern Central Zone

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1 INTRODUCTION

The EPL 6762 (EPL) was granted by the Ministry of Mines and Energy (MME) to E-Tech Kalapuse Mining (Pty) Ltd (E-Tech). The EPL licence from MME is attached in **Appendix A**. The EPL was granted for three years and will expiry on 11 February 2021.

The EPL is located on Eureka Farm 99, and Sukses Farm 90, which is located approximately 30km west from Usakos north of the B2 (see **Figure 1**).

E-Tech has commissioned A. Speiser Environmental Consultants cc (ASEC) to undertake the Environmental Impact Assessment (EIA) process and to compile an Environmental Scoping Report and Management Plan for their proposed exploration activities on Exclusive Prospective License (EPL) 6762.

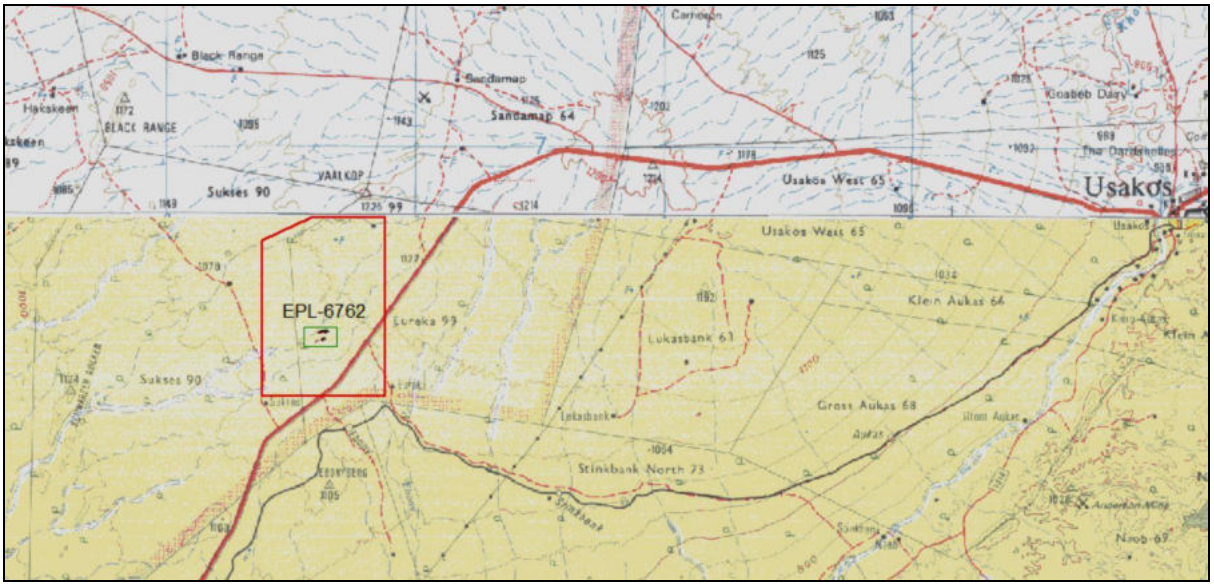


Figure 1: Location of the EPL 6762. The green area shows the main area of interest.

The EPL was granted to explore base and rare metals, industrial minerals, nuclear fuel minerals and precious metals. This project has the potential to contribute to Namibia's economy and **Table 1** lists the direct and indirect benefits that will arise should the exploration activities be given environmental clearance and commence shortly thereafter.

Table 1: Direct and indirect benefits arising from the exploration project.

Project Phase	Direct Benefits	Indirect Benefits
Exploration Project	• Continued employment opportunities • Direct capital investment in order to determine and define mineral resources in Namibia • Stimulation of economic development (e.g. ongoing supply of materials and services to the exploration and drilling industry) • Continuing skills development	• Expansion of exploration and drilling industry in the region and country • Inducement of additional investments • Maintenance of new long-term employment opportunities in sectors relying on exploration and drilling activities

2 INTRODUCTION TO THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED EXPLORATION ACTIVITIES

Environmental Impact Assessments are regulated by the Ministry of Environment and Tourism (MET) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966). The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

Below the activities as listed in the Environmental Regulations from 2012, which are relevant to the exploration activities:

Mining and Quarrying Activities

3.1 The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.

3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not.

3.3 Resource extraction, manipulation, conservation and related activities.

2.1 EIA process for the proposed exploration activities on EPL 6762

The main purpose of this report is to provide information relating to E-Tech's proposed exploration activities and to list the environmental aspects and impacts that are identified during scoping process.

This Scoping Report was developed using existing Scoping Reports and specialist reports from adjacent areas and consultation with relevant stakeholders.

2.2 EIA Scoping process

The EIA Scoping process and corresponding activities are outlined in **Table 2** below.

Table 2: EIA Scoping process.

Objectives	Corresponding activities
Scoping phase (including assessment of impacts) (17 April 2018 – 18 June 2018)	
• Identify interested and/or affected parties (IAPs) (specifically relevant landowners) and involve them in the scoping process through information sharing. • List environmental issues associated with the project. • Provide a description of the affected environment. • Assessment of environmental impacts associated with the proposed project. • Compile an Environmental Management Plan (EMP) and mitigation measures.	• Identify government authorities and IAPs and notify them of the project and EIA process. • IAP registration and initial comments period. • Compilation of Scoping Report and EMP and mitigation measures to the existing EMP. • Distribute Scoping Report and EMP to relevant authorities and IAPs for review. • Submission of Application form No. 1 to MET. • Forward finalised Scoping Report and EMP with IAPs comments to MET for decision making.

2.3 Environmental Assessment Practitioner Team

Alexandra Speiser has seventeen years of relevant experience in conducting / managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems.

Alexandra Speiser is certified as a lead environmental practitioner and reviewer under the Environmental Assessment Professionals Association of Namibia (EAPAN). **Appendix B** provides the CV of the practitioner.

3 SCOPING METHODOLOGY

3.1 Information collection

Various sources to identify the environmental issues associated with the exploration activities were used. The main sources of information for the preparation of this Scoping Report include:

- Project information and exploration activities were provided by E-Tech
- Consultation with Interested and Affected Parties (IAPs)
- Sourcing of the project environment from existing EIA reports and specialist reports of adjacent areas
- Site visit on 17 April of A. Speiser and Ed Loye (E-Tech)

3.2 Scoping Report

The main purpose of this Scoping Report is to state which environmental aspects relating to the exploration activities might have an impact on the environment, to assess them and to set out management and mitigation measures to avoid or reduce these impacts. **Table 3** outlines the Scoping Report requirements contained in Section 8 of the Environmental Impact Assessment Regulations promulgated in February 2012 under the Environmental Management Act, 7 of 2007. The table includes reference to the relevant sections in the report.

Table 3: Scoping report requirements stipulated in the EIA regulation.

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(a) the curriculum vitae of the EAP who prepared the report;	Appendix B
(b) a description of the exploration activity;	Sections 5
(c) a description of the site on which the activity is undertaken and the location of the activity on the site	Section 7
(d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Sections 7 & Section 8
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 4
(f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	Section 3, Appendices C & D

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	Sections 1 & 6
(h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Section 8
(i) terms of reference for the detailed assessment; and	
(j) a draft management plan, which includes - (i) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure; (ii) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and (iii) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.	Appendix E

3.3 Public participation process

The public participation process for the exploration activities aimed to ensure that all persons (i.e. relevant landowners) and/or organisations that have been affected by, or interested in, the ongoing activities were informed of the project and could register their views and concerns. By consulting with IAPs the range of environmental issues to be considered in the Scoping Report (including the assessment of impacts) has been given specific context and focus.

Included below is a summary of the people consulted, the process that was followed, and the issues that were identified.

3.4 Stakeholders

The following table (**Table 4**) provides a broad list of stakeholders that are relevant to the proposed project. They were informed about the exploration activities and the public consultation process.

Table 4: Stakeholders

Stakeholder Grouping	Organization
Government Ministries and Parastatals	• Ministry of Environment and Tourism (MET) ○ Department of Environmental Affairs • Ministry of Mines and Energy
Affected landowners	Eureke Farm 99 and Sukses Farm 90

Stakeholder Grouping	Organization
Other interested and affected parties	Any other people with an interest in, or who may be affected by, the proposed project.

3.5 Steps in the consultation process

Table 5 sets out the steps in the consultation process that were conducted during the EIA Scoping process:

Table 5: Consultation process with IAPs

TASK	DESCRIPTION	DATE
Notification - regulatory authorities and IAPs		
IAP identification	See **Table 4**	17 April 2018
Newspaper Advertisements	Block advertisements were placed as follows: • The Namibian (25 April & 02 May 2018) • Republikein (25 April & 02 May 2018) Copies of the advertisements are attached in **Appendix C**.	25 April & 02 May 2018
Distribution of background information document (BID)	BIDs were emailed to I&APs from the 09 May 2018 The purpose of the BID was to inform IAPs about the exploration activities, the EIA (Scoping) process being followed, environmental impacts and means of providing input to the EIA (Scoping) process. Attached to the BID was a registration and response form, which provided IAPs with an opportunity to submit their names, contact details and comments on the project. A copy of the BID is attached in **Appendix D**.	09 May 2018
Site notices	No site notice was placed	
Focus Group Meeting	A meeting with the farm owner Mr. Klein was held on 17 April 2018	17 April 2018
Public Meetings	No public meeting was held, as the EPL and especially the main area of interest lies solely on Eureka Farm 99	
Comments		
Comments and Responses	One comment was received by Environmental Compliance Consultancy and one request to get the BID emailed to adjacent farm owner (please see section 3.6).	17 April 2018 – 15 June 2018
Review of draft Scoping Report		

TASK	DESCRIPTION	DATE
IAPs and authorities (excluding MET) review of Scoping Report and EMP	The Scoping Report has been distributed to all IAPs that are registered on the IAP database via e-mail. Authorities and IAPs have 15 working days to review the Scoping Report and submit comments in writing to A. Speiser. The closing date for comments was 15 June 2018.	15 June 2018
MET review of Scoping Report and EMP	A copy of the final Scoping Report, including authority and IAP review comments, will be delivered to MET on completion of the public review process, for their review and decision.	End June 2018

3.6 Summary of issues raised

Table 6 below summaries the comments received and the answers. As only two comments were received no separate Issue and Response document has been compiled.

Table 6: Issue and comments received.

Concern	Response
Environmental Compliance Consultancy (email 11 May 2018): 1. Will cumulative impacts be considered? 2. What is the duration for the proposed project?	1. No, cumulative impacts have not been considered, as the project is only in its exploration phase. Should it go-ahead, a separate EIA will be conducted to cover the mining licence application. 2. The EPL is valid for 3 years and will expire on 11 February 2021. The current drilling programme will start in September 2018.
Mr. Breitenbach (Farm Ebony) requested the BID telephonically.	The BID was emailed to him and the draft EIA and EMP report will as well emailed to him.

4 LEGAL AND POLICY REQUIREMENTS

The Republic of Namibia has five tiers of law and a number of policies relevant to environmental assessment and protection, which includes:

- The Constitution.
- Statutory law.
- Common law.
- Customary law.
- International law.

Key policies currently in force include:

- Environmental Impact Assessments are regulated by the Ministry of Environment and Tourism (MET) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966). The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.
- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

4.1 Applicable laws and policies

In the context of the proposed exploration activities, there are several laws and policies currently applicable. They are reflected in **Table 7**.

Table 7: List of laws applicable to the EIA.

LAW/ORDINANCE	APPLICABILITY
The constitution of Namibia (1990) Article 95 (1)	Preservation of Namibia's Ecosystems, essential ecological process and biological diversity Sustainable use of Natural Resources
Environmental Assessment Policy of 1995	Prescribes Environmental Impact Assessments for any developments with potential negative impacts on the Environment
Environmental Management Act 7 of 2007 with Regulations of 2012	Establishes Principles for EA Ensures that significant effects of activities are considered timorously and carefully Allows for opportunities for participation by I & APs throughout the assessment process
Water Resource Management Act 11 of 2013	Effluent discharge permit required under section 70 Water related pollution and abstraction
Nature Conservation Ordinance 4 of 1975 with amendments and special regulations	Protection of various species

LAW/ORDINANCE	APPLICABILITY
Convention of Biological Diversity	Protection of various species
Atmospheric Pollution Prevention Ordinance No.11 of 1976 with amendments as well as the associated proclamations of controlled areas	Pollution prevention
Hazardous Substance Ordinance 14 of 1974, and amendments	Pollution prevention
Petroleum Products and Energy amendment Act of 2000	Disposal of used oil
Draft Pollution and Waste Management Bill (1999)	Protection for particular species, resources or components of the environment
National Monuments Act	Disturbance of shipwrecks, archaeological and cultural sites
United Nations Law of the Sea Convention of 1982	Marine pollution from seabed activities and land-based sources
Convention on Desertification of 1994	Combating desertification and mitigation of the effects of drought
Minerals (Prospecting and Mining) Act 33 of 1992 and special regulations	Exploration and exploitation of mineral resources

4.2 International treaties and protocols

The following International treaties and protocols have been ratified by the Namibian Government:

- Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES) (1973)
- Vienna Convention for the Protection of the Ozone Layer (1985)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal (1989)
- Convention on Biological Diversity (1992)
- United Nations Framework Convention on Climate Change (1992)
- Kyoto Protocol on the Framework Convention on Climate Change (1998)
- World Heritage Convention (1972)
- Convention to Combat Desertification (1994)

- Stockholm Convention on Persistent Organic Pollutants (2001)

4.3 Permits

As stipulated in the Environmental Impact Assessment Regulations, No.30 of 2012, the Environmental Clearance Certificate needs to be obtained from the Ministry of Environment and Tourism (MET) before the commencement of the Project.

5. PROPOSED EXPLORATION ACTIVITIES

5.1 Previous exploration activities on the target area

Between end of 2016 and 2017 E-Tech had a Joint Venture agreement with the holder of EPL 5469, of which the area of the current EPL 6762 was part of. Initial fieldwork included:

- Geological mapping and sampling;
- Ground magnetic and radiometric survey;
- 19 RC holes were sunk to maximum of 60m;
- Downhole gamma logging for all holes in conjunction with an Optical Televiewer survey to create a detailed visual and geophysical map of each drill hole;
- Preliminary gravity survey.

5.2 Proposed exploration activities on EPL 6762

The mineralisation of interest comprises a series of REE-rich dolomite carbonatite dykes striking approximately E -W and dipping at approximately 60 - 80°. Carbonatites intrude country-rock comprising Damaran quartzites and calc-silicate. Much of the geology is covered by recent sands and gravels, with local formation of calcrete.

The main targets of interest are carbonatite dykes of approximately 2 - 7 m thick. Three dykes are currently known, with continuous lateral extension of up to 200 m and to at least 20 m depth. The three target areas of the proposed exploration activities are shown in **Figure 2**. Both the lateral extent and depth of the dykes is currently unconstrained.

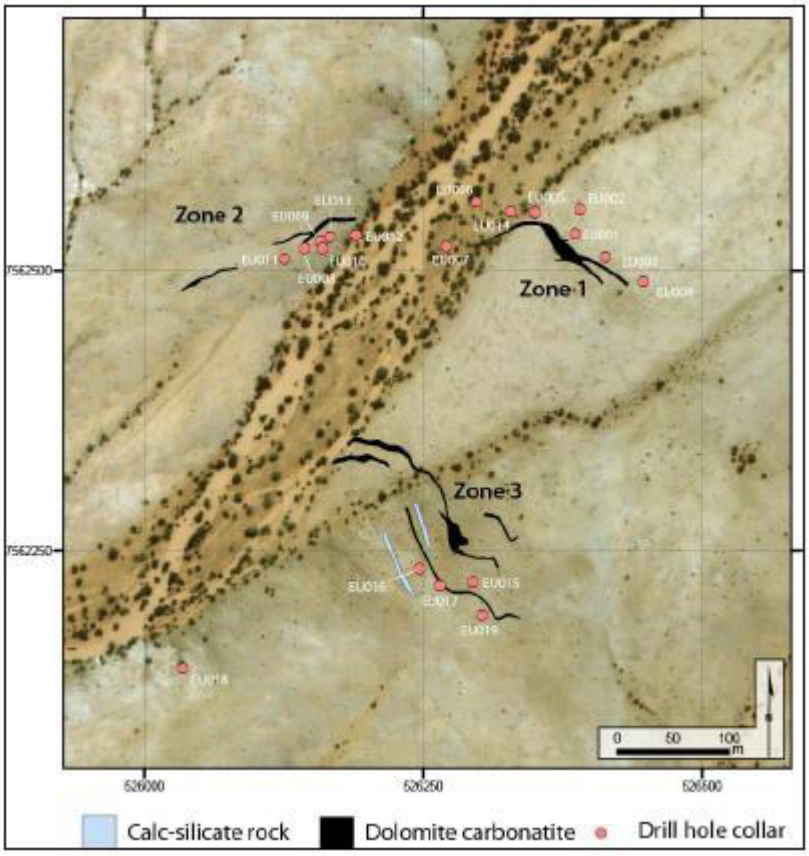


Figure 2: Three main target areas showing the location dolomite carbonatite and calc-silicate rock dykes.

The EPL licence is for base and rare metals, industrial minerals, nuclear fuel minerals and precious metals. The exploration activities will include:

- Mapping;
- Sampling of soils and rocks;
- Accessing the drill sites;
- Drilling and collecting of samples;
- Trenching;

Geological targets are drilled using reverse circulation (RC) and diamond drilling methods. The drilling rigs, compressor and generators used for drilling are mounted on trucks suitable for most terrains. Water for diamond drilling will be transported to site or a water borehole will be drilled at the start of the drilling programme. The necessary water abstraction permits will be obtained from the Department of Water Affairs. Drill pads are kept to a minimum size and the working area will be clearly demarcated. Where necessary, sumps are dug into the ground or water containers will be used to hold the water and biodegradable drilling aids are added. All sumps are lined to avoid seepage of contaminated fluids, e.g. lubricants. Fuel to power the drill rigs is brought to the site in drums or in a small truck.

The percussion chip samples from the RC drilling are funneled through a cyclone into 1m x 1m plastic bags. Smaller geological samples are taken from these bags for analysis.

Diamond drilling will produce continuous solid cores. The core is stored in core trays, logged and stored on site. After expiry of the EPL licence and the decision not to proceed, the cores will be available to the Geological Survey of Namibia.

New tracks have to be established to access the identified drill sites. The position of the new tracks will be discussed between the exploration manager and the farm owner.

Contractors (geologist, geophysicists and drill crews) will either be accommodated in Usakos or on site in caravans or tents. The work crew in the field will comprise one field geologist with up to 2 assistants, the drilling crew, which usually consist of 5 – 6 people and geophysical surveying team of the drill holes, which will consist of 2 – 3 people. The maximum amount of people on site will not exceed 11 people at any time.

The affected areas will be rehabilitated on an on-going basis and rehabilitation aspects are clearly divided between the drilling company and E-Tech. The following rehabilitation activities will be carried out:

Drill chips and core cuttings will be stored on site in the container, which is already on site (**Plate 1**);

- Cleaning and removal of diesel / oil spills. The contaminated soil will be treated in-situ;
- Raking, ripping, etc. of track surface;

Plate 1: Storage container on site.

The aim is to avoid as much as possible any disturbance of the environment as rehabilitation of areas to its natural environment is always difficult.

In the advanced stage of exploration activities, larger amounts of sample material is required for the performing of processing trials and metallurgical testing programs. The ground conditions and geotechnical parameters would then be established with a view to extract the mineral from the ore reserve. A trench will be dug at one or more of the target areas. The trench will be approximately 1 m wide and 2 m deep. The area will be fenced off to avoid any harm to the livestock on the farm.

Bulk sampling for analytical processing will only be carried out if the material obtained during drilling is insufficient. Pits may be dug / excavated to a depth of 4 to 5m and approximately 5 cubic meters of sample material might to be taken. The location of the pits will depend on the drilling results.

6. DESIRABILITY AND ALTERNATIVES

Alternative land uses for the proposed project area include farming (livestock), tourism and/or mining related activities. Presently subsistence livestock farming exists on farm Eureka. Tourism could be a future option, as the Spitzkoppe is close by and the topography of the area provides scenic views of the Spitzkoppe area in the distance.

The no-go option entails that no further activities are undertaken on the EPL and upon expiry it will revert back to the Ministry of Mines and Energy. Should this happen, the economic and social growth associated with the potential resource will not reach fruition, and Namibian economy will fail to benefit from a potential mineral resource. The advantage of this option would be that no exploration activities would take place on private and/or public land and will not negatively impact on the environment and/or the landowners.

7. BIOPHYSICAL AND SOCIAL ENVIRONMENT

This section provides a brief description of the project environment. The objective is to provide background information to enhance the understanding of the potential environmental impacts addressed. Information was sourced from existing scoping reports and specialist reports from adjacent areas and consultation with relevant stakeholders. Information was mainly taken from 'Atlas of Namibia' (Mendelsohn *et al*, 2002) and partly from the "Final Environmental Scoping and Environmental Management Plan (EMP) Report" conducted by Risk Based Solutions.

7.1 Climate

Temperatures during the summer month can reach into the higher 30's degrees and during winter months temperature can be as low as 6 degrees. Rainfall is extremely variable, patchy, and unreliable. Any given location can go without rainfall for numerous years. The average rainfall lies between 50 – 100 mm. However, during the last rain season the area hardly received any rain. Evaporation lies around 2300mm per annum (Mendelsohn *et al*, 2002). Hence the area is very dry and vegetation is sparse. The area lies at the eastern end of the coastal fog extend that would bring moisture.

The wind regime includes prominent southerly and south-westerly winds during the summer, and north-easterly winds in the winter that sometimes reach gale force and mobiles the entire desert surface. Easterly wind conditions occur mainly in the winter. These "berg winds" are hot, as the air heats up while air descending from the escarpment towards the coast (Mendelsohn *et al*, 2002).

7.2 Air Quality

The major source of dust in the area is the access road to the Farms. Slightly more traffic will occur due to exploration activities, this will generate more dust emissions sources in close proximity to the EPL.

7.3 Geology

The EPL area is part of the Eureka carbonatite is located within the Southern Central Zone (SCZ) of the Neoproterozoic Damara belt (**Figure 3**). This belt represents part of a number of similar Pan-African orogens which occur in south central Africa and Brazil, and the rocks in this region range from 550 to 495 Ma, related to the closure of the Khomas Ocean. The SCZ in stratigraphic order from the oldest includes basement gneisses of the Kalahari Craton, overlain by sediments of the Nosib and Swakop Groups, and two suites of granites related to the Damara Orogenic closure. The Nosib group represents the lowest stratigraphic level of the Damaran sediments and locally comprises quartzite, gneiss, mica-schist, amphibolite, calc-silicate rocks and marble.

The sediments of the SCZ were metamorphosed to high temperature but low-pressure during the Damara Orogeny. Estimates of the timing peal metamorphism range between 534 and 508 Ma. Two suits of granites occur in the SCZ, relating to partial melting of the basement gneiss and the lower Nosib sediments. These intruded during, and after, deformation relating to the Damara Orogeny. Older (560 to 550 Ma), syn-tectonic granites are less common while younger, post-tectonic (523 to 460 Ma (Miller 2008) are more abundant. The Eureka carbonite is dated as being emplaced at a similar time to the latter granites, with an emplacement age of 521.3+/- 6.5 Ma (after Clark 2017, unpub.). Eureka appears to be one of the few known alkaline intrusions related to the Damara Orogeny.

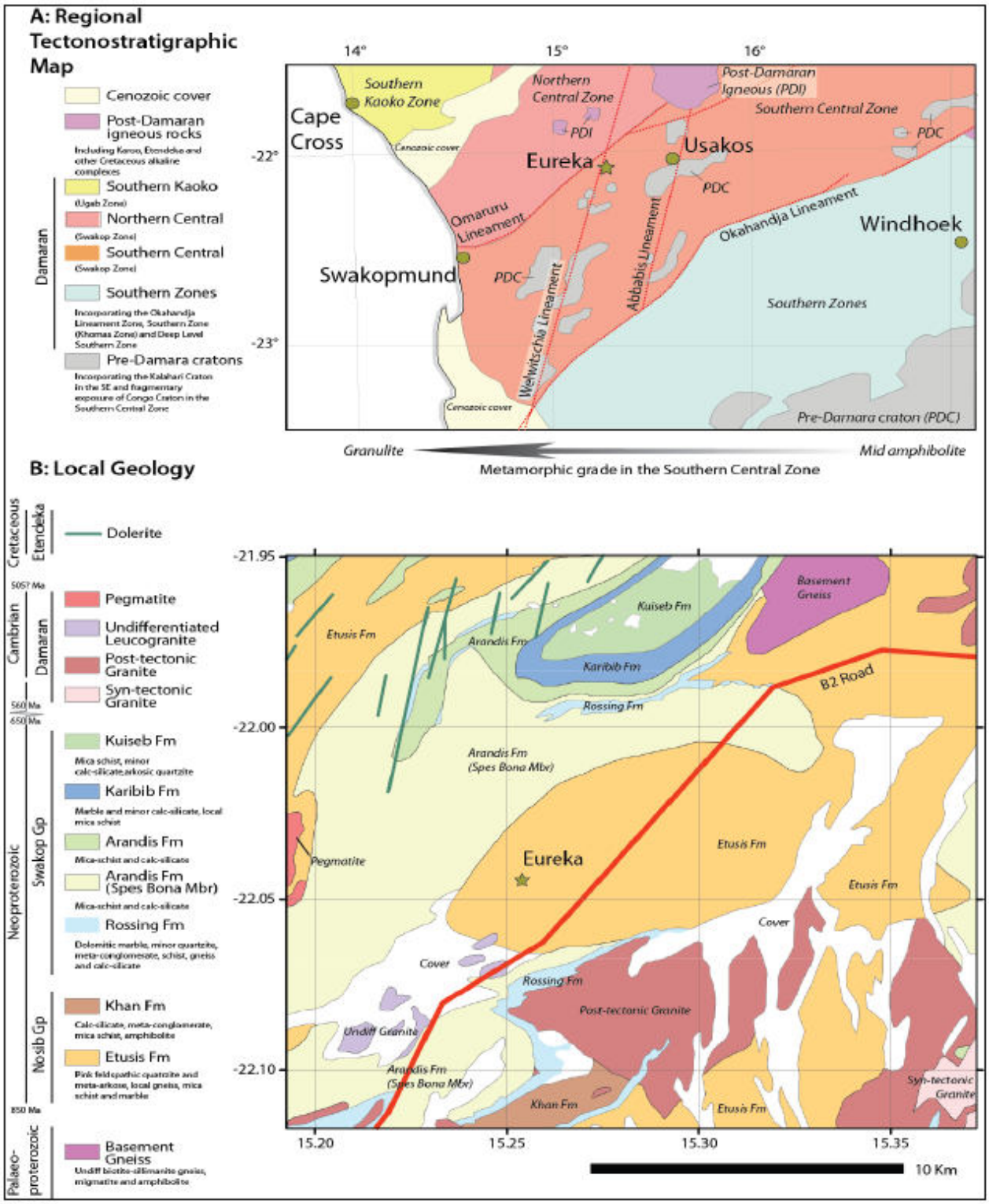


Figure 3: Geological setting pf the Eureka Carbonatite. (A) Regional tectonostratigraphic map adapted from Miller (2008) and Corner (2008), indicating the location of the Project and the relation to the regional lineament. (B) Local geology of the Eureka area showing the location within one of the Nosib dome structures which a common for the area.

7.4 Topography, Drainage and Soils

The EPL area falls at the edge of the central-western plains and the central desert. The local landscape is slightly undulating with small depressions of small runoffs into ephemeral rivers (**Plate 2** and **Plate 3**).

The soils are predominantly petric calcisoils. These soils are thin and hard. Either calcrete or a pebble crust as developed at the surface. Water does not easily penetrates this soil type.

Plate 2: Slightly undulating gravel and calcrete plain (view to the SE).

Plate 3: Ephemeral riverbed within the EPL area.

7.5 Biodiversity

Areas of relatively high biodiversity value and that are sensitive to mining and prospecting activities have been identified and mapped during the "Strategic Environmental Assessment for the central Namib Uranium Rush", which was conducted by the Southern African Institute for Environmental Assessment (SAIEA) in 2010. **Figure 4** shows the areas of high biodiversity value in the central Namib. The EPL does not fall within any of these areas.

The 'red' and 'yellow' flag areas have been proposed on the basis of the following guiding principles:

- Areas with high levels of endemicity and diversity;
- Conservation status of species;
- The extent to which habitats are threatened or vulnerable to disturbance; and
- Habitats or migration routes which are critical for species' survival.

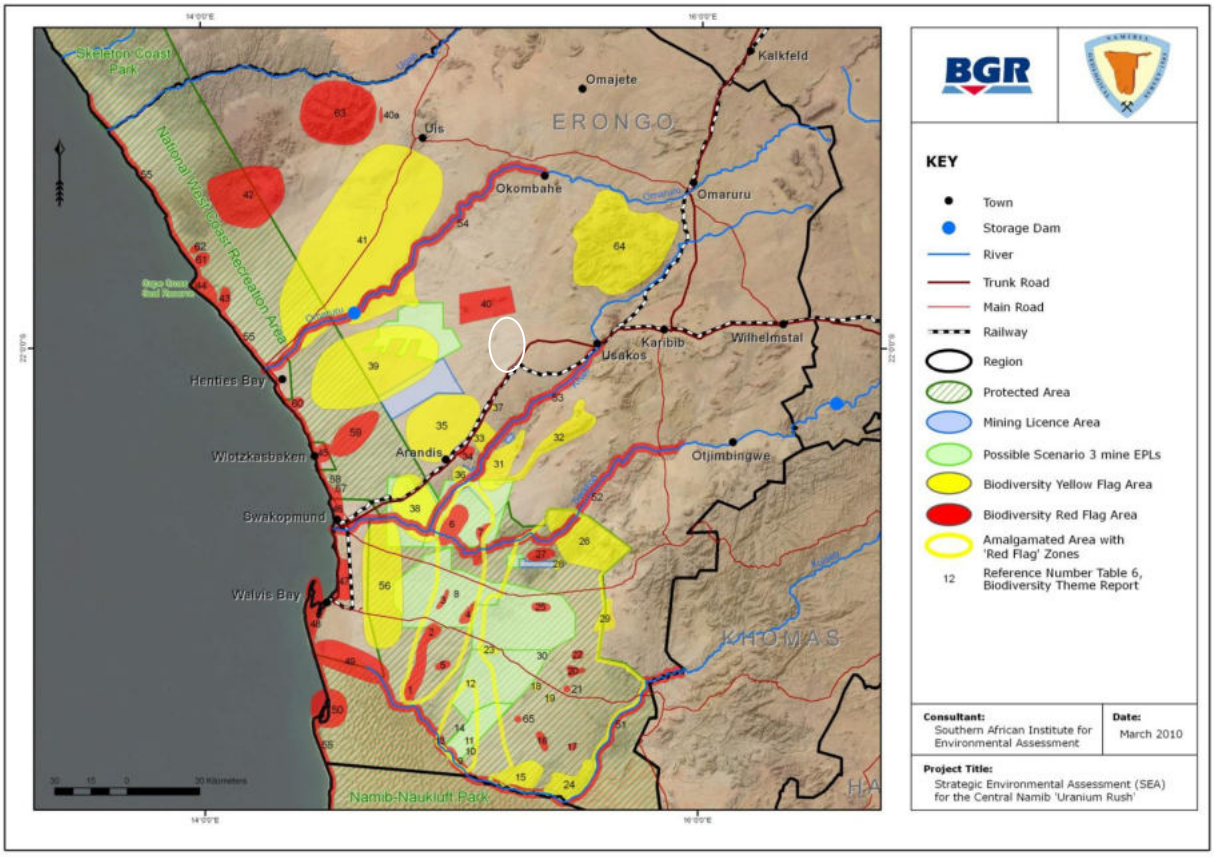


Figure 4: Areas of high biodiversity value in the central Namib, as identified during the SEIA for the 'uranium rush' (SAIEA, 2010). The white circle indicates the location of the EPL.

7.5.1 Flora

According to Mendelsohn et al. (2002) the average plant production is extremely low, the overall plant diversity (all species) in the general EPL area is low and estimated at below 50 species while the plant endemism is also viewed as "low to average" with between 2 to 15 endemics expected from the general area. The area falls at the border of the "Namib grassland" to the west and the "spares shrubland" vegetation structure (Mendelsohn et al., 2002).

As hardly any rain had fallen in this area, no grasses could be observed. On the gravel plains mainly *bosica foetida*, *calicorema capitate*, *acacia tortilis* and *acacia Senegal* occur (**Plate 4**). In the nearby ephemeral river as big trees *acacia erioloba* dominates (**Plate 5**).

Plate 4: *Calicorema capitata* and *Acacia tortilis*.

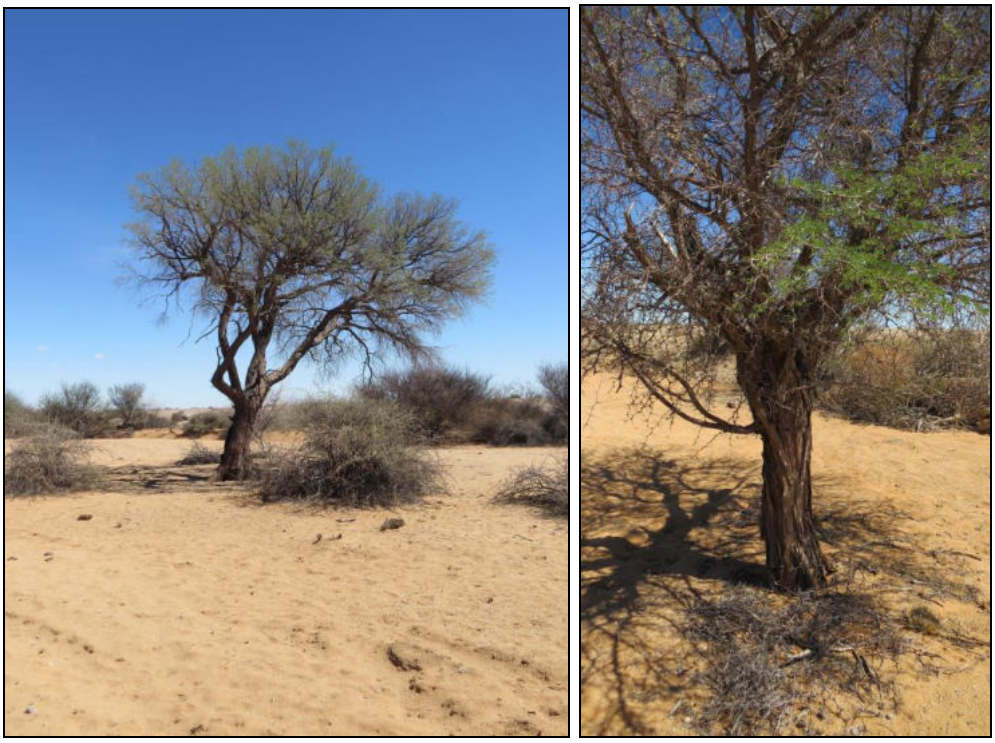


Plate 5: *Acacia erioloba*.

7.5.2 Fauna

Reptiles

The high percentage of endemic reptile species (54%) known and/or expected to occur in the general EPL area underscores the importance of this area for reptiles. Geckos, with 13 of the 15 species expected to occur in the general area being endemic, are the group of reptiles viewed as most important. The reptile species of greatest concern and expected to occur in the general area, are probably the endemic *Afroedura africana africana* (African flat gecko), *Pedioplanis husabensis* (Husab sand lizard), *Leptotyphlops occidentalis* (western thread snake) and *Lycophidion namibianum* (Namibian wolf snake).

Amphibians

Of the 5 species of amphibians expected to occur in the general EPL area, 40% (2 species) are of conservation value – i.e. *Poyntonophrynus hoeschi* and *Phrynomantis annectens*. However, with the exception of the temporary pools after rains, the general area is viewed as marginal for amphibians.

Mammals

Of the 45 species of mammals expected to occur in the general EPL area, 7 species (15.6%) are endemic and 12 species (26.7%) are classified under international conservation legislation. The most important species from the general area are the Namibian wing-gland bat (*Cistugo seabrai*) listed as endemic and rare; Littledale's whistling rat (*Protomys littledalei namibensis*) listed as endemic; brown hyena (*Hyaena brunnea*) and leopard (*Parthera pardus*) listed as near threatened (population decreasing) by the IUCN (2014).

Birds

The high proportion of endemics – 7 of the 14 endemics to Namibia (i.e. 50% of all endemics) – expected to occur in the general EPL area underscore the importance of this area. Furthermore 19% are classified as southern African endemics (or 6.3% of all the birds expected) and 81% are classified as southern African near-endemics (or 27% of all the birds expected). The most important birds known/expected to occur in the general Arandis area are all the endemics, especially Rüppels Korhaan, Gray's Lark and Herero Chat. Gray's Lark one of the species with the most restricted range in Namibia (Simmons 1998a). Other important species are the birds listed as near threatened (Cape eagle owl, white-backed vulture, Verreaux;s eagle and peregrine falcon), endangered (martial and tawny eagles) and vulnerable (lappet-faced vulture) by Simmons and Brown (In press) and the IUCN (2014) – i.e. Ludwig's bustard and white-backed vulture (endangered) and martial eagle and secretary bird (vulnerable).

7.6 Social / Economic

The EPL falls within the Karibib constituency of the Erongo Region. The demographic characteristics of the regional and local area are summarised as following:

The majority of the population in the Erongo Region (87%) live in urban areas, mostly in towns along the coast Walvis Bay and Swakopmund are the largest towns in the region and 99% of the region's population lives in and near the two towns. They are ranked 3rd and 4th in Namibia terms of size. The other towns in the Erongo Region all have less than 6,400 residents: Arandis (5,170 residents),

Henties Bay (4,720), Karibib (5,132), Omaruru (6, 300) and Usakos (3,585 residents) (NSA, 2014b; 2014c);

The Erongo Region's sex ratio may reflect the high level of male in-migration from other regions of Namibia (Caprivi/Zambezi Region Ohangwena, Omusati, Kavango and Oshikoto) as more than 40% of the region's residents were born elsewhere:

- A high proportion (64%) of the population is of working age (between 15 and 59 years);
- The main source of income are wages and salaries;
- The important industries in the region are transport, mining, fishing, agriculture and tourism.

The socioeconomic characteristics of the regional and local area are summarised as follows:

- There is a shortage of skills which hampers development projects;
- Infrastructure and facilities are available in the region, but are not sufficient;
- Educational and health facilities are available but with an influx of people, may not be able to meet the demand;
- A high level of inequality exists, especially in urban areas with around 8% of the regional population with no access to toilet facilities;
- The main health concerns in the Erongo region are HIV/Aids, tuberculosis (TB), substance abuse, other respiratory system diseases and children in need of care. Mobility and migration increases vulnerability to HIV infection;
- Alcohol use increases with the increase in income and is a contributing factor to the HIV/Aids epidemic;
- Of all the regions, Erongo Region has the lowest poverty incidence rate of 7.1%, appreciably lower than the national rate of 28.7%. However, rural areas are noticeably more impoverished than urban areas, and;
- Crime is on the increase and in rural areas poaching and stock theft is a concern and high levels of unemployment, alcohol abuse and population density contributes to higher crime rates.

The EPL area lies approximately 30 km from Usakos and only two family live in the area of interest. As mentioned in section 5.2 a maximum of 11 people will work on the EPL during exploration activities.

7.7 Noise

Major sources of noise in the area where the EPLs are located, include the following:

- Traffic on the B2
- Minor from Farm activities.

As a result of the predominance agricultural activities and tourism related activities over most parts of the EPL area, ambient noise levels are low.

7.8 Archaeology

No archaeological survey was conducted. The possibility exists discover sites during physical exploration.

8 ASSESSMENT – GENERAL ENVIRONMENTAL IMPACTS OF EXPLORATION

Exploration activities have the potential to impact negatively on the environment. Environmental aspects and potential impacts are identified prior to the exploration activities and mitigation measures are provided in the EMP. Given the relatively small scale of the proposed project and taking the existing environment into consideration, the potential impacts were also qualitatively assessed in the section below. **Table 8** shows the methodology used to conduct the qualitative assessment.

Table 8: Criteria for assessing potential 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/NATURE 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.
Criteria for ranking the SPATIAL SCALE of impacts	**L**	Localised - Within the site boundary.
	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**	**Medium**	**Medium**
	Medium term	**M**	**Low**	**Low**	**Medium**
	Short term	**L**	**Low**	**Low**	**Medium**
SEVERITY = M					
DURATION	Long term	**H**	**Medium**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Low**	**Medium**	**Medium**
SEVERITY = H					
DURATION	Long term	**H**	**High**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Medium**	**Medium**	**High**
			L	**M**	**H**
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
			SPATIAL SCALE		
PART C: DETERMINING SIGNIFICANCE					
PROBABILITY (of exposure to impacts)	Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
	Possible/ frequent	**M**	**Medium**	**Medium**	**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.

Table 9 below provides a summary of the activities associated with the exploration activities, the associated environmental aspects and potential impacts on the environment and also a qualitative assessment of these impacts (before and after mitigation). The aspect identification and impact assessment is based on the "worst case scenario". With reference to **Table 9**, it can be seen that the activities and facilities associated with the exploration programme have no high significant impacts on the environment.

Appendix E provides the Environmental Management Plan, which sets out the commitments, mitigation and rehabilitation measures.

Table 9: Environmental aspects and potential impacts associated with the exploration activities

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
Field mapping											
Field mapping and ground surveys	Flora	• Vehicles driving over plants • Soil compaction affecting plant regeneration as roots cannot penetrate the soil • Diesel spillage, which is toxic to plants	• Particularly vulnerable plant species are those that have limited distributions, or are small and not easily seen such as **lithops** species. Lithops usually grow on gravel plains and rocky outcrops. Special care needs to be given to these area before accessed by vehicles. • Existing tracks should be used, as the area show a number of tracks • New tracks should be clearly marked and all vehicles should stay on them. Ensure turning circles are created for the • Preventing plant removal from the area	With out	L	L	L	L	L	**L M**	1
				With	L	L	L	L	L	**L**	
	Fauna / Avifauna	• Slow moving animals e.g. chameleons, may be run over • Burrows of animals may be driven over, collapsing the burrow. In most cases the animals will be too deep to be harmed, as they dig deep burrows to avoid extreme surface temperatures. Vehicles are only likely to cause damage down to 20 cm, and the animal can safely dig its way out • Poaching by unscrupulous staff	• Only existing tracks should be used, as the area show a number of tracks • Avoiding driving over visible borrows • Enforcing a prohibition on firearms, and making all personnel sign a declaration with regard to environmental management, including a prohibition on shooting, trapping or otherwise harming any wildlife. The declaration states that any staff found guilty of contravening this requirement will face suspension from the project	With out	L	L	L	L	L	**L M**	2
				With	L	L	L	L	L	**L**	

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
	Air quality	Increase in dust levels (nuisance & health impacts)	Air pollution through vehicle emissions (i.e. exhaust fumes) is negligible due to the small scale of the project.	With out	L	L	L	L	L	**L**	3
				With	L	L	L	L	L	**L**	
	Heritage	Activities could result in possible damage to/destruction of heritage resources.	No archaeological survey of this area was commissioned because the planned exploration has a generally low impact. A small possibility does exist that archaeological or historical remains may be discovered, as the area could have been one of the seasonal paths to get to the Spitzkoppe area.	With out	L	H	L	M	M	**M**	4
				With	L	H	L	M	L	**L**	
Drilling											
Drill site establishment: Access the drill site using a new access track Set-up drilling	Noise	Noise generated by the establishment of access tracks and site clearing/ establishment activities.	None of the activities are close to any residence. The farm owner is aware of the activities and has given his consent.	With out	L	L	L	L	L	**L**	5
				With	L	L	L	L	L	**L**	
	Biodiversity (Flora / fauna)	Potential impact on fauna and flora. (General disturbance and clearing of	• Should a camp be established on site, ensure that its size and paths between facilities are	With out	M	M	M	H	M	**H**	6

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
machine with drip trays and groundsheets Establish temporary safety fencing around the drill site Set-up chemical toilets Set-up fuel and lubricants storage area at the drill rig Waste management		vegetation) Drilling contractors and employees that are not well managed can impact on the biodiversity through illegal collection of firewood, poaching, road kills etc. Loss of economic function of disturbed area during exploration activities and potential loss of land capability	clearly demarcated. • Avoiding drilling close to any "special" plant species • Avoiding oil and diesel spillages when transferring diesel to vehicles. Diesel stores must be adequately bunded to prevent any ground seepage • Also consult reference No. 1 and No. 2	With	M	L	M	M	L	**M**	
		Site clearance may allow for the establishment of invasive plants in the area.	Seeds might be introduced by the water with is brought in for diamond drilling, but should any growth be observed at one of the drill pads these are taken out immediately.	With out	L	M	M	M	M	**M**	7
				With	L	L	L	L	L	**L**	
	Land use	Loss off land capability due site clearance.	None	With out	L	L	L	L	L	**L**	8
				With	L	L	L	L	L	**L**	
	Heritage	Exploration activities could result in possible damage to/destruction of heritage resources.	Impact reference: 4								4
Drilling	Spillages of hydrocarbons, lubricants, or possible spills	Soil pollution	Soil loss and contamination could have an impact on grazing animals. However, the area to be disturbed is very localise and on a small-scale, and impacts can be easily mitigated.	With out	H	M	L	M	M	**M**	9
				With	L	L	L	L	L	**L**	

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
	from ablution facilities	Surface water contamination	Given the small area to be impacted per hole and the lack of surface water resources, this impact is likely to be insignificant. Additional management and mitigation measures are listed in the EMP in **Appendix E**.	With out	L	L	L	L	L	**L**	10
				With	L	L	L	L	L	**L**	
		Groundwater could become polluted due to pollutants entering aquifers via surface water infiltration.	Given the small area to be affected and the depth of the groundwater, per hole, this impact is likely to be insignificant.	With out	L	L	L	L	L	**L**	11
				With	L	L	L	L	L	**L**	
	Dust generation through using the access track. Air pollution from exhaust fumes. Dust generation through drilling activities	Air quality deterioration. Increase in dust levels (nuisance & health impacts)	Dust generation through the establishment of access tracks. Air pollution through vehicle entrainment is expected to be negligible due to the small scale of the project. Air pollution through vehicle emissions (i.e. exhaust fumes) is negligible due to the small scale of the project.	With out	L	L	L	L	L	**L**	3
				With	L	L	L	L	L	**L**	
	Noise generation	Noise generated by the drill could disturb nearby residences (nuisance).	Impact reference: 5								5
	Land use	Loss off land capability due site clearance.	Impact reference: 8								8
Trenching											

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
Establishment of trenches for bulk samples	Flora	Impact reference 1	Ensure that the trenches don't affect any established vegetation.	With out							12
				With							
	Fauna / Avifauna	Impact reference 2	All trenches need to be fenced in to avoid any animals falling into them.								13
Relevant to all activities											
All exploration activities	Socio-economic and community safety	The proposed activities may have the potential to result in an increase in poaching.	Only authorised people are allowed to enter the area.	With out	M	L	M	M	M	**M**	14
				With	M	L	M	L	L	**L**	
	Waste Management	The dumping of general waste within the exploration area and drilling sites could prove hazardous to wildlife. This could also lead to general environmental degradation.	Waste generation is likely to be limited on site and will primarily be domestic waste. This material will be removed when leaving the site and disposed of properly off-site. Through the effective implementation of the management and mitigation measures, as described in the additional management and mitigation measures to the existing EMP the potential impacts relating to waste management can be avoided/mitigated.	With out	M	L	M	M	M	**M**	15
				With	M	L	M	L	L	**L**	
	Social – provision of	Health & safety issues	If suitable toilet facilities are not provided for the exploration team, they will relieve themselves in the	With out	L	L	M	L	M	**M**	16

ACTIVITY	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	SIGNIFICANCE DISCUSSION / MANAGEMENT	MITIGATION (with & without)	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	REFERENCE
	toilet facilities		environment which could lead to potential health and safety issues to 3rd parties	With	L	L	L	L	L	**L**	
Closure and rehabilitation of drill site											
Remove all waste and equipment from site. Rip compacted areas (including access roads and paths).	Biodiversity and land use	Non adherence to the EMP	The impacted sites will be rehabilitated in accordance with the additional management and mitigation measures to the existing EMP requirements.	without	N/A						17
				with	M	H	L	M	H	M +	

9 CONCLUSION

Exploration will always have a negative effect on the environment. Fortunately the negative impacts arising from exploration activities can be minimised through careful planning and mitigated successfully if a disciplined and dedicated team takes responsibility for implementing the EMP. The underlying philosophy of environmental management is to treat the environment gently and with respect so that long-term disturbances will not occur.

The environmental aspects associated with the exploration activities have been successfully identified and assessed as part of this EIA Scoping process. Relevant mitigation measures have been provided and are included in the EMP that accompanies this scoping report.

E-Tech is aware of its legal and policy requirements in relation to exploration.

ASEC believes that a thorough assessment of the proposed project has been achieved and that an environmental clearance certificate could be issued on condition that the management and mitigation measure in the EMP be adhered to.

A. Speiser

A. Speiser Environmental Consultants cc

9 REFERENCES

Mendelsohn, J., Jarvis, A., Roberts, A. & Robertson, T. 2002. Atlas of Namibia. A portrait of the land and its people. David Philip Publishers, Cape Town, RSA.

Miller, R. McG. 2008. The geology of Namibia. Vols 1 – 3. Publication of the Geological Survey of Namibia.

Risk Based Solutions. July 2016. Final Environmental Scoping and Environmental Management Plan (EMP) Report to support the application for Environmental Clearance Certificate for the proposed exploration / prospecting programme for the Exclusive Prospecting License (EPL) No. 5469, Karibib / Omaruru Districts, West of Usakos, Erongo Region, West Central Namibia.

Southern African Institute for Environmental Assessment (SAIEA). 2010. Strategic Environmental Assessment for the central Namib Uranium Rush.

Appendix A - EPL licence

EXCLUSIVE PROSPECTING LICENCE – 6762

E-Tech Kalapuse Mining (Pty) Ltd

REPUBLIC OF NAMIBIA
MINISTRY OF MINES AND ENERGY

Exclusive Prospecting Licence
(Issued in terms of Section 70 of the Minerals (Prospecting and Mining) Act, 1992)

Exclusive Prospecting Licence No **6762** Office Reference No **14/2/4/1/6762**

Subject to the provisions of the Minerals (Prospecting and Mining) Act, 1992, this exclusive prospecting licence is hereby issued to

Full Name of Licence Holder **E-Tech Kalapuse Mining (Pty) Ltd**

Identity/Passport or Company Registration No **2015/0237**

Address (natural person) or Registered Address (company)
P. O. Box 11427, Windhoek
Namibia

Full Name of Accredited Agent (if applicable)
Address of Accredited Agent (if applicable)

for the period of **3 Years** from (date of issue) **12 February 2018** To (date of expiry) **11 February 2021**

unless abandoned or cancelled on any prior date, or extended to such later date as may be endorsed on this licence in the event that this licence is renewed.

This exclusive prospecting licence is issued in respect of

Name of Mineral(s)/Group(s) of Minerals **Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals and Precious Metals**

over a certain portion of land situate in Region(s) **Erongo**

Registration Division(s) **G** Magisterial District(s) **Karibib**

as more fully depicted in the attached diagram No **6762** signed by the Commissioner

and is further subject to the terms and conditions contained in the notice of the Minister's intention to grant the

licence dated **09 February 2018** and agreed to in writing by the applicant on **12 February 2018**

as appended hereto.

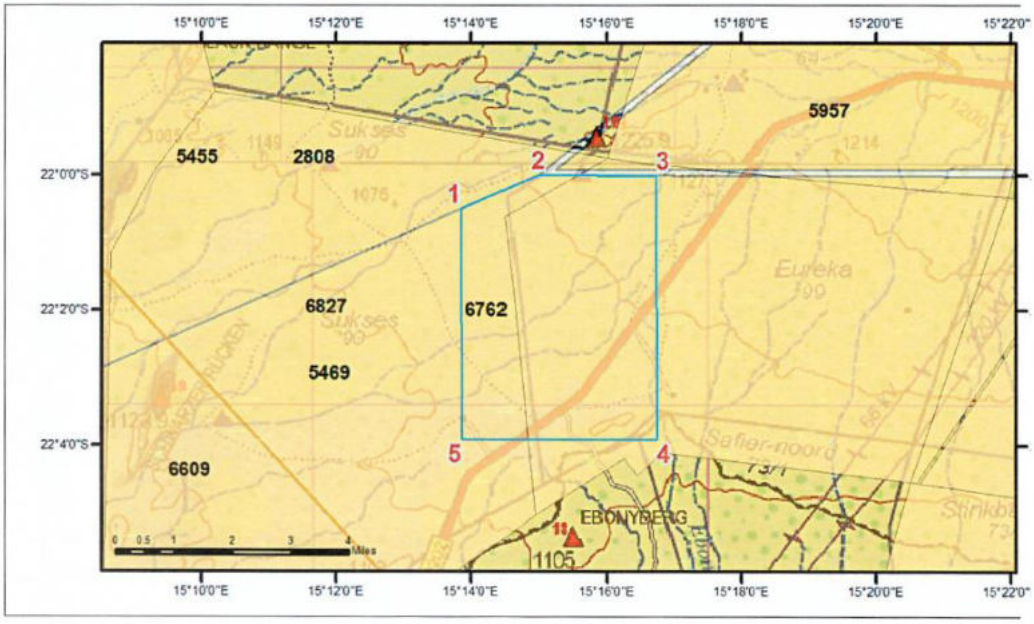
Signed at WINDHOEK this 26th day of February 2018

.....
MINISTER

MINISTRY OF MINES AND ENERGY
OFFICE OF THE MINISTER
OFFICIAL STAMP
26 FEB 2018
PRIVATE BAG 13297, WINDHOEK
OFFICIAL

DIAGRAM – EXCLUSIVE PROSPECTING LICENCE – 6762

Issued in favour of: E-Tech Kalapuse Mining (Pty) Ltd



Latitude and Longitude lines refer to the Bessel 1841 Spheroid

EPL - Application	ERL - Application	Withdrawn Area	District
EPL - Active	ERL - Active	Farms	Region
ML - Application	RL - Application	Environmentally Sensitive	Division
ML - Active	RL - Active		
MC - Application	MDRL - Application		
MC - Active	MDRL - Active		

Projection: Albers Conic Equal Area
Spheroid: Bessel 1841
Central Meridian: 17 Deg. E

AREA: **3473.6840 Hectares**
MAP(S):
LOCALITY:
*Regions(s): **Erongo**
*Magisterial District(s): **Karibib**
*Registration Division(s): **G**

Appendix B - CV of EIA consultant

A. Speiser Environmental Consultants cc
VAT Reg. No.: 3452708015 Reg. No.: cc 2003/0606
Alexandra Speiser
MSc MPhil
P.O. Box 40386 Windhoek Namibia Tel:+264 61 244 782 Cell: 081 124 5655 e-mail:amspeiser@yahoo.com

CURRICULUM VITAE

MARIE ALEXANDRA ANGELIKA SPEISER

A. PROFESSIONAL INFORMATION

First Names:	Marie Alexandra Angelika
Surname:	Speiser
Nationality:	German (Permanent Residence in Namibia 1999)
Countries worked:	Namibia, Mozambique, Angola, Botswana, Germany
Language:	German and English (fluent) Portuguese (reading, understanding: good; writing: poor) Afrikaans (fair)
Profession:	Environmental Scientists (MPhil), Geologist (MSc)
Contact details:	P.O. Box 40386 Windhoek – Namibia Tel +264 61 244782 Namibian cell 081 1245655; Portuguese mobile +351 922289857 E-mail: amspeiser@yahoo.com, aspeiser1910@gmail.com

B. EDUCATION

2000 **Master of Philosophy** in Environmental Science, University of Cape Town, South Africa.

Group Thesis Title: *Environmental Situation Analysis of the Orange and Fish River Catchments*

Individual Paper Title: *Small Scale Mining in Namibia*

1994 **Master of Science** in Geology and Paleontology, Georg-August University Göttingen/Germany.

Thesis Titles: *Fluid inclusion studies in vein quartz from the Kansanshi Mine (Zambia)* and *Geological mapping of the Kansanshi Mine and surroundings.*

C. RELEVANT COURSES

November 2004

Environmental Auditor Trainings Course, Institute of Environmental Impact Assessment (IEMA) approved, Crystal Clear Consulting & Merchants (Pty) Ltd, RSA

D. PROFESSIONAL ACTIVITIES

Professional Institutes & Membership:

- *Lead Practitioner, Environmental Assessment Professionals of Namibia (EAPAN)*
- *Institute of Environmental Management & Assessment, UK (Associated Member, AIEMA, October 2010)*
- Chamber of Mines of Namibia (member)
- Namibian Chamber of Environment (member)
- Geological Society of Namibia (member)

E. EMPLOYMENT HISTORY

2012 – to 2016 Associated Environmental Consultant to SLR Namibia

2003 - to date A. Speiser – Environmental Consultants cc, Director

Main work conducted and ongoing:

- Work packages 6 leader of the **HiTech AlkCarb Project** funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 689909 (Feb. 2016 to Feb. 2020)
- **Environmental Consultant** to Kerry McNamara Architects Inc: Combined Scoping & EIA Report & EMP for the proposed Edelweiss Development (part of Okahandja Extension 7) in Okahandja
- **Environmental Consultant** to Bannerman Resources (Namibia) (Pty) Ltd: EIA/EMP for the proposed Pilot Plant on Bannerman Resources (Namibia) (Pty) Ltd EPL 3345
- **Environmental Consultant** to RPZC (Glencore): EIA/EMP for the proposed expansion of water and power infrastructure for RPZC Mine
- **Environmental Consultant** to RPZC (Glencore): EIA/EMP for the proposed zinc concentrate Storage shed at Lüderitz harbour
- **Environmental Consultant** to Metals Namibia. EO and EMP for exploration activities
- **Environmental Consultant** for the bulk chemical store of Crest Chemical Pty Ltd at Walvis Bay harbour
- **Environmental Coordinator** for the Kassinga (Angola) North and South Iron Ore Project – Area 1 (SMP / AEMR). JV between ASEC and Environmental Resource Management
- **Environmental Coordinator** for the exploration phase at Lofdal, Namibian Rare Earth (Pty) Limited
- **Environmental Consultant** to conduct bi-annual environmental audit reports for Glencore, Bannerman Resources (Namibia) Pty Ltd, Okorusu Fluorspar Pty Ltd, Namibia Rare Earth Pty Ltd, Swakop Uranium,
- **ESIA Coordinator** (amendments to the approved ESIA & ESMP) for the proposed U-mine at Etango (Bannerman Mining Resources Namibia (Pty) Ltd)
- **External Environmental Consultant** to Rössing Uranium (Rio Tinto) – SEMP: exploration drilling in the ML area within the Namib Naukluft Park
- **Reviewer** of Swakop Uranium SEIA conducted by Metago
- **ESIA Coordinator** (scoping phase) for the proposed Cu mine at Omitiomire (Craton Mining & Exploration (Pty) Ltd)
- **Mine Closure Plan** for Okorusu Fluorspar (Okorusu Fluorspar Pty Ltd)

- **Preliminary Environmental Overview** for Omitiomire Cu-deposit (Craton Mining & Exploration (Pty) Ltd)
- **ESIA Coordinator** for the proposed U-mine at Etango (Bannerman Mining Resources Namibia (Pty) Ltd) (Scoping & final ESIA approved by Government)
- **ESIA Coordinator** for the proposed Au-mine at Otjikoto, Central Namibia (Teal Exploration & Mining Inc.)
- Environmental Consultant to Walvis Bay Bulk Terminal (Pty) Ltd (EIA to construct a bulk sulphur loading & storage facility at WB harbour
- **Environmental Consultant** providing input to set up ISO 14001 & OSHAS 18000 at Rosh Pinah Mine, Rosh Pinah Zinc Corporation (Pty) Ltd
- **EIA Coordinator** for the proposed change to bulk sulphur at Skorpion Zinc, Chemical Initiatives (Pty) Ltd
- **September 2005 – June 2006, Environmental Coordinator** for the construction phase of Langer Heinrich Uranium (Pty) Ltd
- **EIA and EMP Coordinator** for proposed exploration activities for dimension stones, relevant document to grant licence by the Ministry of Mines and Energy, Olea Investment Number One (Pty) Ltd.
- **Standard Environmental Guidelines** for exploration activities, Helio Resource Corp., Canada
- **Coordinator** to compile the **Initial EMP for construction and operation** of the Langer Heinrich Uranium Mine, Paladin Resources Ltd
- **EIA & EMP (Phase 1 & 2) Coordinator** for exploration activities in the NW Namib Naukluft Park, West Africa Gold Exploration (Namibia) Pty. Ltd
- **EMP Coordinator** for Sarusas Mine, Skeleton Coast Park, Namibia, Igneous Mining Projects (Pty) Ltd
- **EIA & EMP Coordinator** for current & proposed mariculture projects of Alexkor, Alexander Bay, RSA
- **Environmental Consultant –** updating the EA & EMS for infrastructure changes at Navachab Mine, Anglogold Namibia (Pty) Ltd.
- **Team Leader**, Environmental and social assessment for World Bank/GEF Project 'Integrated ecosystem management in Namibia through the national conservancy network'
- **Bi-annual monitoring reports** auditing environmental performance of exploration activities (RPZC, B2Gold, Swakop Uranium, Okorusu Fluorspar, Namibia Rare Earth) - **ongoing**

2000 - 2003 Environmental Scientist at eco.plan (Pty) Ltd.

During this period I conducted environmental assessments and developed environmental management plans for exploration and infrastructure projects. I further was involved in the project management, public participation processes and office administration.

1999 – 2000 University of Cape Town studying Environmental Science (MPhil degree)

1997 – 1999 Self employed, Contract Geologist Scientist

- RC drilling supervision – Apatite Project / Monapo, Mozambique, subcontracted by GeoAfrica Prospecting Services (Pty.) Ltd.
- Mapping and evaluation of possible talc deposits in Central Namibia, subcontracted by Dr. T. Smaley.
- Involvement in the preliminary fact finding phase to conduct an EIA to upgrade the Cement Factory in Otjiwarongo, Namibia.
- Several Desk Studies for Anglovaal Namibia (Pty) Ltd.
- Various investigations of diamondiferous gravels of the northern bank of the Orange River.
- Drilling Supervision in the Okavango Area for InterConsult Namibia (Pty) Ltd.
- Organization of the Public Meeting for the 'Proposed Klein Windhoek River Bridge and Upgrading of Mission Road.'

1995 to 1996 Project Assistant / Geologist at the German Technical Cooperation (GTZ)

- Participation in a six-week training course at the (GTZ) Headquarter in Eschborn/Frankfurt. Focus of the training course was on project management, rural public participation appraisal and social development workshops.
- Project Assistant to the GTZ-Adviser in the Ministry of Environment & Tourism. In cooperation with the Desert Research Foundation of Namibia (DRFN) the *Chemical Residue Analysis – Kavango Region* Project was conducted. The project assessed the environmental impacts of irrigation schemes along the Okavango River, special attention was given to the use of fertilisers and pesticides.
- Project Assistant/Geologist in the *Mineral Prospecting Promotion Project*. This project was set up in cooperation with the Geological Survey of Namibia (GSN) and the Federal Institute for Geo-science and Natural Resources (BGR). The work comprised geophysical interpretation and detailed geological/geophysical ground follow-ups.

1994 – 1995 Contract Geologist

- Supervision of construction sites and conduction of soil surveys to establish possible hydrocarbon-contamination (Germany).

F. PUBLICATIONS

Speiser A., Hein U.F. and Porada H. (1995). The Kansanshi Copper Mine (Solwezi Area, northwestern Zambia): Geology, wall rock alteration and fluid inclusions, in Pasava J. Kirbek B. and Zak K. eds., Mineral deposits: From their origin to their environmental impacts: Third Biennial Society for Geology Applied to Ore Deposits Meetings, Rotterdam, Balkema, p. 289 – 392.

Du Plessis P., Eberle D. and Speiser A. Chapter 1: Enabling Host: Southern Namibia. in Eberle D. (eds.) (1997). Promising Patterns. A new approach to the Mineral Potential of Southern Namibia.

Boonzaier A., Kuiper S. and Speiser A. (1999). Community Benefits from the Richterveld National Park: The Golden Road to the future? in IAIAsa 1999 Conference Proceedings.

Appendix C: Advertisement in the Namibian and Republikein (25 April and 02 May)

Notices • Legal •

Notices • Legal •

ASEC

ENVIRONMENTAL SCOPING REPORT AND MANAGEMENT PLAN FOR E-TECH KALAPUSE MINING (PTY) LTD EXPLORATION ACTIVITIES ON EPL 6762

E-Tech Kalapuse Mining (Pty) Ltd (E-Tech) has commissioned A. Speiser Environmental Consultants cc (ASEC) to undertake the Environmental Impact Assessment (EIA) process and to compile an Environmental Scoping Report and Management Plan for their proposed exploration activities on Exclusive Prospective License (EPL) 6762. The EPL is located on Eureka Farm 99, and Sukses Farm 90, which is located approximately 30km west from Usakos north of the B2.

An application for the Environmental Clearance Certificate (ECC) will be submitted to the Ministry of Environment and Tourism (Environmental Commissioner) in terms of Environmental Management Act, 7 of 2007 and Regulation 21 of the EIA Regulations (February 2012) for the activities associated on the EPL. EPL 6762 was granted for precious metals, base and rare metals, industrial metals and nuclear fuel minerals by the Ministry of Mines and Energy to E-Tech in February 2018.

Name of consultant to contact for further information
A. Speiser Environmental Consultants cc
Contact person: Ms Alex Speiser (ASEC) or Mr. T Smalley (E-Tech Kalapuse Mining (Pty) Ltd.)
Tel: 081 124 5655 or 081 124 6544
Fax: +264 61 233820
E-mail: **amspeiser@yahoo.com**

Registration of IAPs and availability of a background information document
To ensure that you are identified as an interested and/or affected party (IAP), please submit your name, contact details and interest in the project to the ASEC address given above. More detail regarding the proposed project is available in a background information document (BID). A copy of the BID and Scoping Report will be made available on request to ASEC.

Submission of comments
To ensure that your issues and/or comments are included in the EIA scoping report, these should be provided to SLR in writing to the address provided above by **21 May 2018**.

ASEC E-TECH KALAPUSE MINING

ENVIRONMENTAL SCOPING REPORT AND MANAGEMENT PLAN FOR E-TECH KALAPUSE MINING (PTY) LTD EXPLORATION ACTIVITIES ON EPL 6762

E-Tech Kalapuse Mining (Pty) Ltd (E-Tech) has commissioned A. Speiser Environmental Consultants cc (ASEC) to undertake the Environmental Impact Assessment (EIA) process and to compile an Environmental Scoping Report and Management Plan for their proposed exploration activities on Exclusive Prospective License (EPL) 6762. The EPL is located on Eureka Farm 99, and Sukses Farm 90, which is located approximately 30km west from Usakos north of the B2.

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Submission of comments
To ensure that your issues and/or comments are included in the EIA scoping report, these should be provided to SLR in writing to the address provided above by **21 May 2018.**

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Appendix D: Background Information Document

BACKGROUND INFORMATION DOCUMENT

SCOPING REPORT AND MANAGEMENT PLAN FOR E-TECH KALAPUSE MINING (PTY) LTD EXPLORATION ACTIVITIES ON EPL 6762

INTRODUCTION

E-Tech Kalapuse Mining (Pty) Ltd (E-Tech) has commissioned A. Speiser Environmental Consultants cc (ASEC) to undertake the Environmental Impact Assessment (EIA) process and to compile an Environmental Scoping Report and Management Plan for their proposed exploration activities on Exclusive Prospective License (EPL) 6762. The EPL is located on Eureka Farm 99, and Sukses Farm 90, which is located approximately 30km west from Usakos north of the B2.

ENVIRONMENTAL APPROVAL

In terms of the Environmental Management Act, 7 of 2007, a project of this nature requires an environmental impact assessment (EIA) process to apply for Environmental Clearance from the Ministry of Environmental and Tourism (MET).

PURPOSE OF THIS DOCUMENT

This document has been prepared to inform you:

* about the proposed exploration activities
* about the EIA process to be followed
* of possible environmental impacts
* how you can have input into the EIA process.

YOUR ROLE

Public involvement is an essential part of the EIA process.

You have been identified as an interested and affected party (IAP) who may want to know about the exploration activities and have input into the EIA process.

All comments will be recorded and

HOW TO RESPOND

Responses to this document can be submitted by means of the comment sheet or through communication with the contact person listed below.

If you would like your comments to be addressed in the scoping report please submit them by

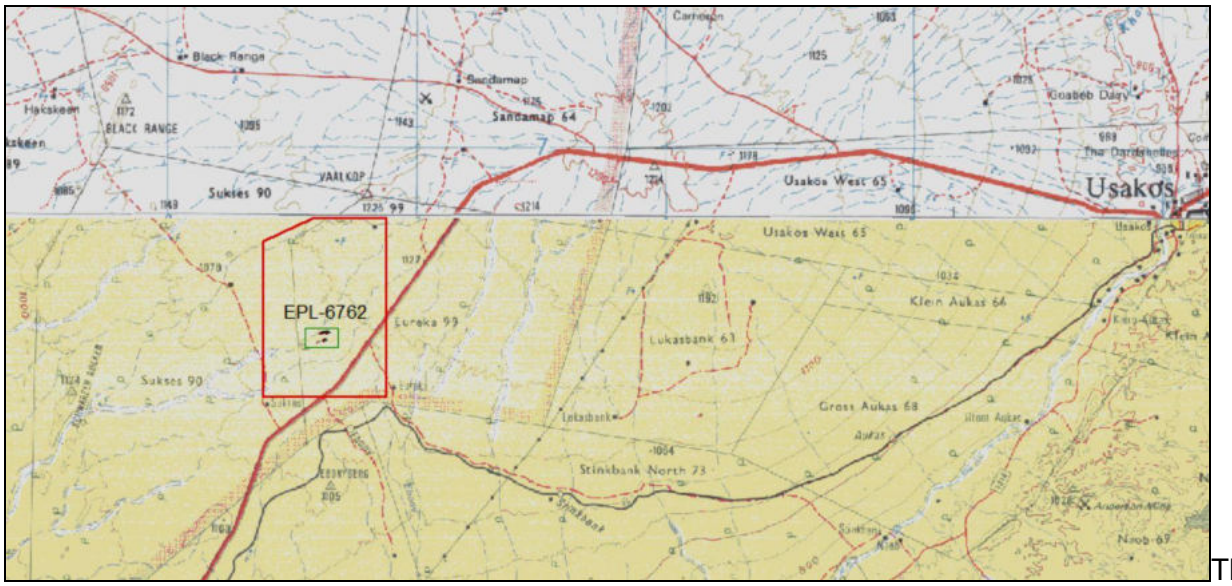
21 May 2018.

WHO TO CONTACT

Alex Speiser:
Email: amspeiser@yahoo.com
Fax: +264 61 233820

LOCATION OF THE PROJECT AREA

The EPL is located on Eureka Farm 99, and Sukses Farm 90, which is located approximately 30km west from Usakos north of the B2.



The area in green is the main target area.

In March 2017 19 RC holes were sunk to maximum of 60m depth by E-Tech Kalapuse Mining (Pty) Ltd.

The photo below shows target area No. 1.

DESCRIPTION OF THE PROPOSED EXPLORATION ACTIVITIES

The mineralisation of interest comprises a series of REE-rich dolomite carbonatite dykes striking approximately E -W and dipping at approximately 60 - 80°. Carbonatites intrude country-rock comprising Damaran quartzites and calc-silicate. Much of the geology is covered by recent sands and gravels, with local formation of calcrete.

The main targets of interest are carbonatite dykes of approximately 2 - 7 m thick. Three dykes are currently known, with continuous lateral extension of up to 200 m and to at least 20 m depth. Both the lateral extent and depth of the dykes is currently unconstrained.

The EPL licence is for base and rare metals, industrial minerals, nuclear fuel minerals and precious metals. The exploration activities will include:

- Mapping;
- Sampling of soils and rocks;
- Accessing the drill sites;
- Drilling and collecting of samples;
- Trenching;

Geological targets are drilled using reverse circulation (RC) and diamond drilling methods. The drilling rigs, compressor and generators used for drilling are mounted on trucks suitable for most terrains. Water for diamond drilling will be transported to site or a water borehole will be drilled at the start of the drilling programme. The necessary water abstraction permits will be obtained from the Department of Water Affairs. Drill pads are kept to a minimum size and the working area will be clearly demarcated. Where necessary, sumps are dug into the ground or water containers will be used to hold the water and biodegradable drilling aids are added. All sumps are lined to avoid seepage of contaminated fluids, e.g. lubricants. Fuel to power the drill rigs is brought to the site in drums or in a small truck.

The percussion chip samples from the RC drilling are funneled through a cyclone into 1m x 1m plastic bags. Smaller geological samples are taken from these bags for analysis.

Diamond drilling will produce continuous solid cores. The core is stored in core trays, logged and stored on site. After expiry of the EPL licence and the decision not to proceed, the cores will be available to the Geological Survey of Namibia.

New tracks have to be established to access the identified drill sites. The position of the new tracks will be discussed between the exploration manager and the farm owner.

Contractors (geologist, geophysicists and drill crews) will either be accommodated in Usakos or on site in caravans or tents.

The affected areas will be rehabilitated on an on-going basis and rehabilitation aspects are clearly divided between the drilling company and E-Tech. The following rehabilitation activities will be carried out:

- Drill chips and core cuttings will be stored on site in the container, which is already on site (see **Photo** below);
- Cleaning and removal of diesel / oil spills. The contaminated soil will be treated in-situ;
- Raking, ripping, etc. of track surface;

The aim is to avoid as much as possible any disturbance of the environment as rehabilitation of areas to its natural environment is always difficult.

In the advanced stage of exploration activities, larger amounts of sample material is required for the performing of processing trials and metallurgical testing programs. The ground conditions and geotechnical parameters would then be established with a view to extract the mineral from the ore reserve. A trench will be dug at one or more of the target areas. The trench will be approximately 1 m wide and 2 m deep. The area will be fenced off to avoid any harm to the livestock on the farm.

Bulk sampling for analytical processing will only be carried out if the material obtained during drilling is insufficient. Pits may be dug / excavated to a depth of 4 to 5m and approximately 5 cubic meters of sample material might to be taken. The location of the pits will depend on the drilling results.

DESCRIPTION OF THE ENVIRONMENT

The EPL area falls at the edge of the central-western plains and the central desert. The soils are predominantly petric calcisoils. These soils are thin and hard. Either calcrete or a pebble crust as developed at the surface. Water does not easily penetrates this soil type. Water runs of into small rivers within the EPL area. During summer temperatures can reach into the higher 30's degrees and during winter months temperature can be as low as 6 degrees. Average rainfall lies between 50 – 100 mm. However, during the last rain season the area hardly received any rain. Evaporation is high, around 2300 mm/annum.

Vegetation is sparse. With same small shrubs on the pebble plains. Bigger trees, such as acacias occur within the river beds.

Subsistence farming of livestock, e.g. cattle and goats, is the main income of the farmer.

The photo below show parts of the EPL area.

ENVIRONMENTAL, SOCIAL AND CULTURAL IMPACTS OF THE PROJECT

Potential impacts that can arise from the proposed exploration project include but are not limited to:

- localised dust pollution;
- localised noise impacts;
- Minimal visual impacts;
- Impact on archaeological and cultural features;
- Impacts on ground and surface water quality;
- Loss of biodiversity;
- Increased traffic volumes on public roads;
- Potential employment opportunities (temporary);

- Stimulation of local economy through service supply to drilling program;

These aspects will be dealt with in detail in the Environmental Impact Assessment.

E-TECH KALAPUSE MINING (PTY) LTD
SCOPING REPORT AND MANAGEMENT PLAN FOR E-TECH KALAPUSE MINING (PTY) LTD EXPLORATION ACTIVITIES ON EPL 6762
REGISTRATION AND RESPONSE FORM FOR INTERESTED AND AFFECTED PARTIES

DATE		**TIME**	
PARTICULARS OF THE INTERESTED AND AFFECTED PARTY			
NAME			
POSTAL ADDRESS			
		POSTAL CODE	
STREET ADDRESS			
		POSTAL CODE	
WORK/ DAY TELEPHONE NUMBER		**WORK/ DAY FAX NUMBER**	
CELL PHONE NUMBER		**E-MAIL ADDRESS**	

PLEASE IDENTIFY YOUR INTEREST IN THE PROPOSED PROJECT
PLEASE WRITE YOUR COMMENTS AND QUESTIONS HERE

Appendix E: Environmental Management Plan

A. Speiser Environmental Consultants cc
VAT Reg. No.: 3452708015 Reg. No.: cc 2003/0606
Alexandra Speiser
MSc MPhil
P.O. Box 40386 Windhoek Namibia Tel:+264 61 244 782 Cell: 081 124 5655 e-mail:amspeiser@yahoo.com

ENVIRONMENTAL MANAGEMENT PLAN FOR EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENCE (EPL) 6762

JUNE 2018

Compiled for: E-Tech Kalapuse Mining (Pty) Ltd.
PO Box 11427
Windhoek
Namibia

Compiled by: A. Speiser Environmental Consultants cc
P O Box 40 386
Windhoek

TABLE OF CONTENTS

A. Speiser Environmental Consultants cc
VAT Reg. No.: 3452708015 Reg. No.: cc 2003/0606
Alexandra Speiser
MSc MPhil
P.O. Box 40386 Windhoek Namibia Tel:+264 61 244 782 Cell: 081 124 5655 e-mail:amspeiser@yahoo.com

280/18 **June 2018**

ENVIRONMENTAL MANAGEMENT PLAN FOR EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENCE (EPL) 6762

1 INTRODUCTION AND BACKGROUND

E-Tech Kalapuse Mining (Pty) Ltd. (E-Tech) holds the mineral rights for for base and rare metals, industrial minerals, nuclear fuel minerals and precious metals on the Exclusive Prospecting Licence (EPL) 6762. The supervision of the drilling activities on EPL 6762 is carried out by E-TECH. A. Speiser Environmental Consultants cc (ASEC) was appointed by E-TECH to compile an Environmental Management Plan (EMP) for the proposed exploration activities and to audit the implementation and environmental performance of the project. ASEC conducts bi-annual monitoring audits as stipulated in the Environmental Clearance Certificate.

2 PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The scope and objectives of the EMP were discussed with Mr. E. Loye of E-TECH. The purpose of the EMP is: -

- To summarise the project activities that have the potential for adverse environmental impacts.
- To identify and outline the aspects of the environment which require management.
- To compile Project Environmental Specifications for inclusion in contract documents and enforcement on site.
- To set out the roles and responsibilities of all role-players with regard to environmental management.
- To specify rehabilitation requirements.
- To establish monitoring requirements to ensure that all workers on site comply with the Environmental Specifications. The senior geologist on site will designated by the Environmental Consultant to perform this function on a day-to-day basis.

3 ROLES AND RESPONSIBILITIES

The roles and responsibilities between E-Tech and the drilling company shall clearly be defined.

3.1 E-Tech

E-Tech will allocate a Senior Geologist who will have the following duties and responsibilities:

- Ensure that drill contractors are aware of the EMP.
- Maintain a photographic record of areas before and during exploration activities and after rehabilitation.
- Communication with the landowner. The Senior Geologist will inform E-TECH immediately about any disputes/problems to ensure that these can be addressed with the landowner immediately.
- The Senior Geologist is responsible to record any non-compliance with the EMP, and rectifying action are discussed with E-Tech and if necessary with ASEC.

3.2 A. Speiser Environmental Consultants (ASEC)

The duties of ASEC are to conduct the duties of the Environmental Officer (EO), which includes the following:

- Advise the Senior Geologist regarding implementation and management aspects of the EMP.
- Inspect the drill sites after complaints that the mitigation measures of the EMP are not obeyed or any non-compliance occurred.
- Provide input into access roads to the drill sites.
- Inspect the rehabilitation areas during and after completion of rehabilitation activities. Advise the contractors during rehabilitation.
- Maintain a photographic record of activities relevant to environmental management. This will be carried out on a day-to-day basis by the Senior Geologist.

3.3 Drilling Contractor

The duties of drilling contractor are as follows, should drilling resume:

- Be familiar with the contents of the EMP.
- Ensure that **all** staff and sub-contractors have the EMP explained to him / her to avoid any misunderstandings, e.g. induction session.
- Comply with the EMP.
- Activities not covered in the EMP which may lead to negative environmental impacts shall be discussed with the Senior Geologist prior to commencement.

3.4 Monitoring

The Senior Geologist shall be responsible for monitoring and enforcement of the EMP on a day-to-day basis. Any violation of the EMP shall be recorded and the agreed on measurements are taken, e.g. penalties. The violations are reported to E-TECH and ASEC.

Contractor's queries to avoid / mitigate negative environmental impacts not covered in the EMP will be addressed by ASEC without unreasonable delay.

Bi-annual environmental audit reports to be submitted to the Department of Environmental Affairs.

4 ENVIRONMENTAL MANAGEMENT PLAN FOR EXPLORATION ACTIVITIES

The **Table** below sets out the general aspects, which should be addressed prior to any drilling activities to ensure that all exploration team members are aware of the aims set out in the EMP.

General Aspects

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
Trenching or drilling programme initiation	To establish a strong Environmental Awareness Protocol from the beginning of the programme in order to ensure the least possible damage to the environment.	General EPL area	General behavior of exploration team in the EPL area.	• Provision in the budget is made for Environmental Awareness and training and for internal and external Environmental Monitoring costs as well as for rehabilitation costs. • Responsibilities as set out in Chapter 3 are explained and adhered to. • All individuals who work on, or visit, the sites are aware of the contents of the EMP. • The EMP should be included in all Tender Documents.
Implementation of the EMP	To define roles and responsibilities in terms of the EMP. To make all persons aware of these roles and responsibilities to ensure that exploration activities are conducted in compliance with the EMP. To implement environmental management that is	General EPL area	General behavior of exploration team in the EPL area.	• Senior exploration staff and all senior contractors are aware of, and implementing, EMP requirements. These people shall be expected to know and understand the objectives of the EMP and will, by example, encourage suitable environmentally aware behavior to be adopted on all sites. • Immediate recognition should be given to appropriate environmentally acceptable behavior. Any inappropriate behavior should be immediately corrected. An explanation as to why the behavior is unacceptable must be given, and, if necessary, the person could be disciplined, e.g. fees set out, for different non-environmental compliance.

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
	preventative and proactive. To establish the resources, skills, etc. required for effective environmental management.			
Environmental awareness briefing / training	To implement environmental awareness briefing / training for all individuals who visit, or work, on site.	General EPL area	General behavior of exploration team in the EPL area.	• Every senior/supervisory member of the team is to familiarise themselves with the contents of the EMP and to understand their roles and responsibilities in 'walking the talk' and ensuring compliance with the EMP. • Either the Environmental Consultant or the owner of the project will hold an Environmental Awareness Briefing meeting which has to be attended by all exploration and drill contractors before the start of the drilling operation. The meeting should discuss the potential dangers to the environment of the following activities: littering, off-road driving, waste disposal, poaching & plant theft etc. The need to conserve water and implement water saving measures should also be presented. • The need for soil / substrate preservation should be explained. • Individuals can be questioned on the content of the EMP and can recall contents.
Public relations	To maintain sound relationships with the landowners and communities impacted by the work			• The landowner is informed of the drilling activities and the time schedule. • If applicable, permission to utilise borehole water is obtained from the landowner. • No littering occurs. • Have landowner compensation agreement in place. .
Accommodation				• As set out in the landowner compensation agreement.
Waste management	To maintain a clean and tidy site / area.	Fauna, general	Disturbance to fauna.	• <u>The following waste management procedures shall be implemented:</u> ▪ Minimisation of waste production;

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
		environment, visual impact	Visual impact	▪ Where possible, compact waste to reduce its bulk; ▪ What is taken in has to be taken out and disposed of at an official waste site; ▪ Waste containers with suitable lids are provided on site; ▪ Illegal dumping and littering is not to be tolerated.
Development of Access Roads and Tracks	Disturbance of general environment	General environment	Disturbance of flora Visual impact	• Drill sites should be sited on existing or previously established tracks. • If new tracks have to be created these should be discussed with the landowner, or as stipulated in the landowner compensation contract. • If not otherwise agreed with the landowner, all newly created tracks shall be rehabilitated after the drill hole has been finalized, e.g. raking the middle 'berm', loosen the compacted ground by manual raking.
Management of drill sites	To undertake the respective drilling programmes in such a manner that it will be difficult to determine where these activities took place in 3 years time.	Disturbance of natural environment	Loss of indigenous vegetation Disturbance of fauna	• Impervious rubber / plastic sheeting or oil absorbent mats are to be used to prevent pollution by diesel, oil and other related sources of pollution. • All litter is placed in a container with a lid that is secured against wind. The rubbish is taken to an official waste site. • Soil contaminated by oil or diesel is removed and dumped on an approved dumpsite and the area treated to neutralize hydrocarbon contamination. • The drill sites are clearly demarcated to minimise the disturbed areas around boreholes. • Holes / site are rehabilitated before moving to the next site to minimise vehicle movement to the area. This includes capping of the borehole and ensure that no gaps between the collar and the substrate left behind. • Open water should be fenced off and preferably covered during night to avoid attraction of bees, livestock and wildlife. • Sumps are lined. • Sumps are fenced in while drying out before rehabilitation. • If drilling will commence 24 hrs. During winter fire in a 200l drum may be permitted. The drum should be placed on an open area, e.g. access road to ensure that no veld fires occur.

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
				• Smoking (when handling samples or core only after washing hands) may be permitted. An ashtray, e.g. bucket filled with sand at drill sites or small water bottles with some water should be provided to all smokers. This will minimize the littering of cigarette butts and minimize veld fires.
Management of hazardous substances	To minimise the risk of pollution through the implementation of all reasonable measures to prevent leakage, spillage or inappropriate disposal of hazardous substances. To minimise the risk of hazardous substances affecting the health of all individuals and plant and animal life. To use biodegradable products as far as is reasonably possible.	General environment		• The Senior Geologist and Contractor have identified all activities that involve the handling of potentially hazardous substances and protocols for the handling of these substances have been put in place and their implementation is supervised. Hazardous substances are handled in accordance with the manufacturer's specifications and existing legal requirements. • The Senior Geologist will encourage the use of the least polluting, most rapidly biodegradable cleaning product, solvent, etc. • The Senior Geologist and Contractor will ensure that all individuals, who could be exposed to hazardous substances, are adequately protected (PPE) and educated about the safe and proper methods for handling of these substances. • Procedures for the containment and clean up of accidental hazardous accidents are developed by the Senior Geologist in accordance to the manufacturer's specifications. • The Senior Geologist or Contractor should immediately implement actions to stop or reduce and contain any spills. • The Senior Geologist arrange and supervise the implementation of the necessary clean up procedures and proper disposal of contaminated soil, water and other materials at an approved facility. • Clean up, and dispose of contaminated soil at an official waste site. • Any hydrocarbon spills involving 200l and more are reported to the Ministry of Mines and Energy (stipulated in the Petroleum Product Regulations, 2000, Section 49(1)(4)).

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
Surface & groundwater management	To conserve water. To avoid the pollution of any water and prevent polluted water from entering stream channels or underground aquifers. To monitor the rest water levels and quality of production boreholes, if water is encountered.	General environment	Visual Groundwater / stream pollution	• Working areas, where hazardous substances are handled or stored, are designed to collect and contain hazardous substances. Impervious materials are provided, e.g. drip trays, or sumps to collect and contain liquid pollutants.
Site rehabilitation	To rehabilitate the drill sites and trenches to as close an approximation of the pristine state as is technically, financially and reasonably possible.	General environment	Visual impact Tourism activities	• The following rehabilitation actions are recommended: ▪ All litter from the site i.e. bottles, tins, piping, etc are taken to an appropriate disposal site. ▪ All debris, scrap metal, etc is removed before moving to a new drill site. ▪ All water tanks are dismantled and removed. ▪ All sumps have been dried and be filled in, if not portable water reservoirs are used. ▪ All the tracks to and at the site are rehabilitated by smoothing the 'middle mannetjie' and raking the surface. • The following should be undertaken at all disturbed areas that require further rehabilitation: ▪ If applicable the stockpiled subsoil / substrate is to be replaced (spread) and/or the site is neatly contour to establish effective drainage patterns; ▪ Re-place the stored topsoil / substrate – if applicable. • 5 years after rehabilitation the drill and trench sites are not visible from

Activity	Aspect	Affected environment	Potential impact	Mitigation measure/recommendations/explanation
				500m.
Management of the natural habitat	To avoid, or reduce, the potential negative impact on the bio-physical environment, including the scenic value thereof.	General environment	Loss of habitat	• Disturbed areas are kept to a minimum. • No incidents of poaching or illegal plant or reptile collection are reported. Offenders will be handed over to the authorities. • No permanent infrastructure will be developed at the exploration camp; • Domestic or other animals are only brought to the exploration site after obtaining the consensus of the landowner. • Any person who causes willful or malicious damage to the environment will be held responsible for repairing the damage immediately and handed over to the authorities.
Managing natural heritage sites & artifacts	To avoid disturbance of known archaeological / palaeontological sites. To record accurately any new sites found and report to the responsible authority.			• The likelihood that a new site will be found is minimal. However the following measures are to be implemented in case of any new found: • Documented consultation with an archaeologist, and/or local expertise when in doubt. • All individuals are aware of which areas are sensitive. • Every pile (not waste or ore material dumps) of stones is treated as a possible archaeological site. Do not use them, as the rocks could be a burial cairn or hunting blind. • No heritage objects are moved without a permit from the National Monuments Council and any permitted removal of heritage objects is done under the supervision of a qualified archaeologist, palaeontologist or historian. • Any archaeological sites that are found are not be disturbed, but be carefully photographed, the exact location recorded and the finding reported to the National Monuments Council.