



ENVIRONMENTAL SCOPING ASSESSMENT REPORT

MR. GERHARD BOETIE NDALA

PROPOSED EXPLORATION ACTIVITIES ON EPL 8520, LOCATED APPROXIMATELY 30  
KM SOUTHEAST OF UIS SETTLEMENT, ERONGO REGION, NAMIBIA

JANUARY 2023

<b>REPORT TITLE</b>	EIA FOR THE PROPOSED EXPLORATION ACTIVITIES ON EPL 8520, LOCATED APPROXIMATELY 30 KM SOUTHWEST OF UIS SETTLEMENT, ERONO REGION.
<b>PROJECT NO.</b>	EDI01
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<b>CLIENT</b>	MR. GERHARD BOETIE NDALA
<b>DATE</b>	JANUARY 2023
<b>CURRENT REVISION</b>	FINAL REPORT
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### **CONSULTANT'S EXPERTISE**

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Mr. Gerhard Boetie Ndala to undertake the environmental impact assessment process.

Immanuel N. Katali, the EIA Lead Practitioner holds a B.Arts (Honors) in Geography, Environmental Studies and Sociology and has over seven years of relevant experience in conducting/managing Environmental Impact Assessments (EIAs), Socio-Economic Impact Assessments (SIA) and compiling Environmental Management Plans (EMPs) in Namibia. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

### **DECLARATION OF INDEPENDENCE AND DISCLAIMER**

The consultant herewith declare that this report represents an independent, objective assessment of the environmental impacts associated with the activities of the proposed exploration activities on the request of Mr. Gerhard Boetie Ndala.

I.N.K has prepared this report based on an agreed scope of work and acts in all professional matters as an independent environmental consultant to Mr. Ndala and exercises all reasonable skill and care in the provision of its professional services in a manner consistent with the level of care and expertise exercised by members of the environmental profession.

The information, statements and commentary contained in this Report have been prepared by I.N.K from information provided by Mr. Ndala and from discussions held with stakeholders. I.N.K does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the party that provided the information or any conclusions reached. I.N.K has based this Report on information received or obtained, on the basis that such information is accurate and, where it is represented to I.N.K as such, complete.

I.N.K is not responsible and will not be liable to any other person or organisation for or in relation to any matter dealt within this report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in this report (including without limitation matters arising from any negligent act or omission of I.N.K or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in this report). This report must not be altered or added to without the prior written consent of I.N.K.

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# 1 INTRODUCTION

## 1.1 Background

Mr. Gerhard Boetie Ndala has successfully obtained Exclusive Prospecting Licence (EPL) 8520, located approximately 30 km south-east of Uis Settlement, within the Karibib, Omaruru Districts, Erongo Region. EPL 8520 is approximately 15297 Hectares (ha) in size.

Mr. Ndala is planning exploration activities on the EPL. Preliminary activities such as geophysics, mapping, scouting exercises, soil sampling, as well as future drilling activities are planned for the area.

Prior to the implementation of the project, environmental clearance is required from the Ministry of Environment, Forestry and Tourism (MEFT): Department Environmental Affairs (DEA) on the basis of an approved EIA process, in terms of the Environmental Management Act, 2007 (No. 7 of 2007).

I.N.K Enviro Consultants cc, an independent firm of environmental consultants based in Namibia, has been appointed by Mr. Ndala to undertake and manage the EIA process.

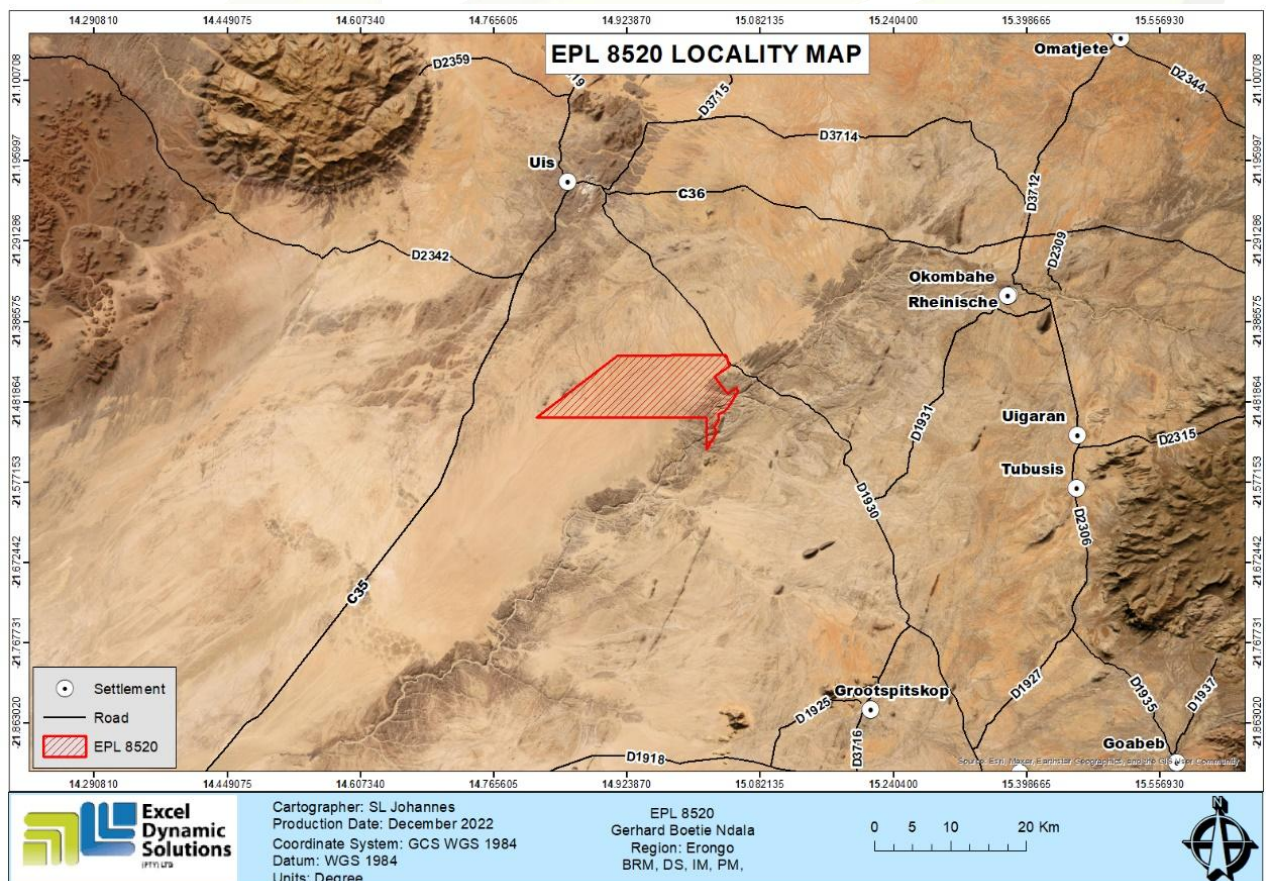


Figure 1: Locality Map

## 1.2 Motivation (Need and Desirability)

The Ministry of Mines and Energy (MME), Directorate of Mines undertakes to exploit the country's mineral resources in a manner which integrates mining into the various economic sectors for socio-economic development of the country. In order to achieving this mandate MME partners with various

companies who place a leading role in the implementation of the mining activities. MME has therefore partnered with Mr. Ndala represented to conduct exploration activities on EPL 8520.

### 1.3 Introduction to the Environmental Impact Assessment

Environmental Impact Assessments are regulated by the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and enacted on 6 February 2012. The Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

Prior to the commencement of the proposed exploration, an environmental clearance is required from the Ministry of Environment, Forestry and Tourism (MEFT): Department Environmental Affairs (DEA) on the basis of an approved EIA process.

This EIA process is conducted in terms of the Environmental Management Act, 7 of 2007 and the above mentioned EIA regulations. This process includes: a screening phase and a scoping phase, which will include an impact assessment and an Environmental Management Plan (EMP) for EPL 8520.

This report is the Scoping Report, with assessment included. The main purpose of this report is to provide information relating to the proposed activities and to indicate which environmental aspects and potential impacts have been identified during the Screening and Scoping phases. This report consists of information obtained from site observations, and the results of stakeholder consultation. The potential impacts of the proposed activities (and associated ancillary infrastructure) could therefore be assessed, and the assessment is also included in this report.

It is thought that this Scoping Report (including an assessment of impacts), together with the attached revised EMP, will provide sufficient information for the MEFT to make an informed decision regarding the proposed project, and whether an environmental clearance certificate can be issued or not.

### 1.4 EIA Process

The EIA Scoping process and corresponding activities are outlined in Table 1

**Table 1: EIA Process**

Objectives	Corresponding activities
<b>Project initiation and Screening phase</b>	
<ul style="list-style-type: none"> <li>Initiate the screening process</li> <li>Initiate the environmental impact assessment process.</li> </ul>	<ul style="list-style-type: none"> <li>Site Visit</li> <li>Identify Key Stakeholders</li> <li>Early identification of environmental aspects and potential impacts associated with the proposed project.</li> </ul>
<b>EIA Phase with combined Scoping and Assessment</b>	
<ul style="list-style-type: none"> <li>Notify the decision-making authority of the proposed project</li> <li>Identify interested and/or affected parties (I&amp;APs) and involve them in the scoping process through</li> </ul>	<ul style="list-style-type: none"> <li>Notify government authorities and I&amp;APs of the project and EIA process (telephone calls, e-mails, faxes, newspaper advertisements and site notices).</li> <li>Conduct Public Participation Process</li> <li>Investigations by technical project team.</li> </ul>



<p>information sharing.</p> <ul style="list-style-type: none"> <li>• Identify potential environmental issues associated with the proposed project.</li> <li>• Consider alternatives.</li> <li>• Identify any fatal flaws.</li> <li>• Determine the terms of reference for additional assessment work.</li> <li>• Provide a detailed description of the potentially affected environment.</li> <li>• Assessment of potential environmental impacts.</li> <li>• Design requirements and management and mitigation measures.</li> <li>• Receive feedback on application.</li> </ul>	<ul style="list-style-type: none"> <li>• Compilation of draft scoping (combined assessment) and EMP reports.</li> <li>• Distribute draft scoping (combined assessment) and EMP reports to authorities and I&amp;APs for review.</li> <li>• Forward the final scoping (combined assessment) and EMP reports and I&amp;APs comments to MEFT for review.</li> <li>• MEFT review and Record of Decision.</li> </ul>
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### 1.5 EIA Team

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Mr. Ndala to undertake the environmental impact assessment and related processes.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a B.Arts (Honours) Degree in Geography, Environmental Studies and Sociology and has over seven years of relevant experience in conducting/managing EIAs, compiling EMPs and Socio-Economic Studies. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).



## 2 SCOPING METHODOLOGY

### 2.1 Information collection

I.NK used various information sources to identify and assess the issues associated with the proposed project. These include:

- Site visits by I.N.K;
- Consultation with Project Technical Team and relevant information shared by Mr. Ndala;
- Consultation with MEFT via online application system;
- Consultation with I&APs, the immediate Farmers;
- Google Earth; and
- Internet sources.

### 2.2 Scoping Report

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the proposed project might have an impact on the environment, to assess them and to provide management and mitigation measures to avoid or minimise these impacts.

Table 2 outlines the Scoping Report requirements as set out in Section 8 of the Environmental Impact Assessment Regulations that were promulgated in February 2012 in terms of the Environmental Management Act, 7 of 2007.

**Table 2: Scoping report Requirements stipulated in the EIA regulations**

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(a) the curriculum vitae of the EAPs who prepared the report;	Section 1.4.2 and
(b) a description of the proposed activity;	Section 4
(c) a description of the site on which the activity is to be undertaken and the location of the activity on the site;	Sections 4 & 6
(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 6, 7
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 3
(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	Sections 2.3, 2.4, 2.5

<p>registered in terms of regulation 22 as interested and affected parties in relation to the application; and</p> <p>(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;</p>	
<p>(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;</p>	Sections 1.3 and 5
<p>(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;</p>	Sections 7
<p>(i) terms of reference for the detailed assessment; and</p>	Section 7
<p>(j) a management plan, which includes -</p> <p>(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;</p> <p>(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</p> <p>(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.</p>	Separate Document

### 2.3 Public participation process

The public participation process for the proposed project is conducted to ensure that all persons and/or organisations that may be affected by, or interested in the proposed project, were informed of the project and could register their views and concerns. By consulting with relevant authorities and I&APs, the range of environmental issues to be considered in this Scoping Report (including the assessment of impacts) has been given specific context and focus.

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

## 2.4 EPL 8520 I&APs

The following table (Table 3) provides a list of persons, group of persons or organisations that were informed about the project and were requested to register as I&APs should they be interested and/or affected.

**Table 3: Stakeholders**

IAP Grouping	Organisation
Government Ministries	<ul style="list-style-type: none"> <li>▪ Ministry of Environment and Tourism (MET);               <ul style="list-style-type: none"> <li>• Department of Environmental Affairs (DEA);</li> </ul> </li> </ul>
Local Governance	Uis Village Council
Residents	Neighbouring Farmers
Media	Newspaper adverts: Die Republikein and The Namibian Sun
Other interested and affected parties	Any other people with an interest in the proposed project or who may be affected by the proposed project.

## 2.5 Steps in the consultation process

Table 4 sets out the steps that were followed as part of the consultation process:

**Table 4: Consultation process with I&APs and Authorities**

TASK	DESCRIPTION
<b>Notification - regulatory authorities and IAPs</b>	
Notification to MET	I.N.K submitted the Application Form (online system) to MEFT.
IAP identification	A stakeholder database was developed for the proposed project and EIA process. Additional I&APs will be updated during the EIA process as required.
Distribution of background information document (BID)	<p>BIDs were made available to all I&amp;APs on the project's stakeholder database and were available at the scoping meetings. Copies of the BID were available on request to I.N.K.</p> <p>The purpose of the BID was to inform I&amp;APs and authorities about the proposed project, the EIA process, possible environmental impacts and means of providing input into the EIA process. Attached to the BID was a registration and response form, which provided I&amp;APs with an opportunity to submit their names, contact details and comments on the project.</p>
Newspaper Advertisements	Block advertisements were placed as follows:

TASK	DESCRIPTION
	<ul style="list-style-type: none"> <li>▪ Die Republikein (16 and 21 November 2022)</li> <li>▪ The Namibian Sun (16 and 21 November 2022)</li> </ul>
<b>Public meeting and Focus Group meetings and submission of comments</b>	
Scoping Meetings	<p>Several consultations were made with I&amp;APs.</p> <p>Consultations were held with key stakeholders and affected parties as follows:</p> <ul style="list-style-type: none"> <li>▪ The residents near proposed project.</li> <li>▪ The Uis village council</li> <li>▪ The Uis residents</li> </ul>
<b>Review of draft Scoping Report</b>	
IAPs and authorities (excluding MEFT:DEA) review of Scoping Report and EMP	<p>The Scoping Report (Main Report excluding Appendices) were sent via email to all parties who registered or showed an interest in this EIA process. Electronic copies of the full report (including appendices) were made available on request to I.N.K.</p> <p>Authorities and IAPs were given 14-working days to review the Scoping Report and submit comments in writing to I.N.K.</p>
MEFT review of Scoping Report and EMP	<p>A copy of the final Scoping Report, including authority and I&amp;AP review comments, was submitted to MEFT on completion of the public review process via the online application system.</p>

## 2.6 Summary of issues raised

All issues that have been raised to date by authorities and I&APs have been recorded as part of the Scoping Report. Below is a summary of the key issues raised:

- Job Opportunities

The potential impacts are assessed further in section 8 of this report.

### **3 ENVIRONMENTAL LAWS AND POLICIES**

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.

Relevant policies currently in force include:

- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).
- The National Climate Change Policy of Namibia (September 2010).
- Minerals Policy of Namibia (2004).
- Policy for the Conservation of Biotic Diversity and Habitat Protection (1994).
- Policy for Prospecting and Mining in Protected Areas and National Monuments (1999).

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.

The management and regulation of mining activities falls within the jurisdiction of the Ministry of Mines and Energy (MME), with environmental regulations guided and implemented by the Department of Environmental Affairs (DEA) within the Ministry of Environment, Forestry and Tourism (MEFT).

The section below summarised the various applicable laws and policies, international treaties and protocols.

#### **3.1 Applicable Laws and Policies**

In the context of the exploration activities, there are several laws and policies currently applicable. They are reflected in Table 5.

**Table 5: relevant legislation and policies**

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous)	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Vibrations	Impact on Land use	Impact on biodiversity	Impact on Archeology	Emergency situations	Socio-economic	Safety & Health	Other
1990	The Constitution of the Republic of Namibia of 1990	X	X	X	X	X	X	X	X	X	X	X	X	X	
1997	Namibian Water Corporation Act, 12 of 1997	X											X		
1992	The Minerals (Prospecting and Mining) Act 33 of 1992	X	X	X	X					X					
2001	The Forestry Act 12 of 2001	X							X	X					
2013	Water Resources Management Act 11 of 2013	X			X								X		
2004	National Heritage Act 27 of 2004										X			X	
2007	Environmental Management, Act 7 of 2007	X	X	X	X	X	X	X	X	X	X		X	X	
2012	Regulations promulgated in terms of the Environmental Management, Act 7 of 2007	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1975	Nature Conservation Ordinance 14 of 1975	X			X					X	X				
1976	Atmospheric Pollution Prevention Ordinance 11 of 1976		X												
1995	Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	X	X	X	X	X	X	X	X	X	X	X		X	
2004	Pollution Control and Waste Management Bill (3rd Draft September 2003)		X	X	X	X									
1990	Petroleum Products and Energy Act, No. 13 of 1990		X	X	X					X				X	X

## **4 DESCRIPTION OF THE PROPOSED EXPLORATION ACTIVITIES**

Mr. Ndala proposes to undertake exploration activities on EPL 8520 for dimension stone and industrial mineral.

The proposed activities will entail the detailed exploration activities and delineating the mineral deposits to determine whether the deposits for targeted commodities are economically feasible. It should be noted that, this project is about prospecting and exploration of Base and Rare Metals, therefore construction will involve activities such as land clearance, making access roads, bringing in machineries for exploration works, setting up accommodation structures for workers etc.

### **4.1 Exploration Activities**

The proposed exploration activities will include:

- Geological Mapping: Review of geological maps of the area and on-site ground traverses and observations. Small samples of rock may be collected for further analysis.
- Ground and Airborne Geophysical Surveys: The collection of information of the substrata, by air or ground, through sensors such as radar, magnetic and electromagnetic to detect any mineralisation in the area.
- Drilling and Excavation: Certain areas will be drilled and excavated to collect sample blocks for analysis. A small area of land will be cleared on which to set up the excavation.

### **4.2 Machinery/Vehicles**

The following machinery/vehicles will be utilized in the drilling program per site area:

- (2) excavators.
- Diamond wire saw
- Support Trucks (Front and Wheel Loaders)
- Drill rig
- 4x4 Vehicles

### **4.3 Employment**

It is anticipated that the following personnel will be employed to carry out the above-mentioned activities:

- Geologist
- GeoTechnisian
- Drill/Excavation Crew
- Semi-skilled/un-skilled workers

### **4.4 Site Clearance**

Small land parcels will be cleared for the establishment of base or field camps and staging areas. Field camps are for the safe keeping of exploration equipment and vehicles before use.



#### **4.5 Access Routes**

Existing access routes/roads will be used during the exploration activities, as far as possible. However, there may be a need for the creation of new routes to specific exploration sites, in liaison with farm owners.

In addition, The EPL is accessible via the D1930 road from Uis that cuts on the edge of the EPL going to Usakos. Therefore, project related vehicles will be using these existing roads to access the EPL. It is also anticipated that, if necessary, onsite new tracks to the different targeted exploration sites within the EPL will be created. The Proponent may need to do some upgrade on the site access road to ensure that it is fit to accommodate project related vehicles, such as heavy trucks.

#### **4.6 Staff/Employment and Accommodation**

The exploration team will undertake initial site visits to identify appropriate sites and possible locations for the establishment of compound construction and field camps upon reaching an agreement and a consent is signed between the Proponent and the respective custodian (authority). However, the exploration team will be accommodated within Uis Settlement. Exploration.

Construction of camps will largely depend on the outcome initial site visits to identify appropriate places. The workforce will include skilled, semi and unskilled workers, as necessary to complete the works. Around 10 people will be employed on site during the exploration phase. The workforce will include both skilled, semi and unskilled people, as necessary to complete the work. The exploration workforce will be accommodated in Uis Settlement, upon reaching an agreement and consent is signed between the Proponent and the respective landowner or custodian (authority) prior to setting up accommodation structures (camps).

#### **4.7 Timeline**

The exploration period of the proposed EPL is anticipated to take approximately 6 months.

### **5 PROJECT ALTERNATIVES**

Due to the nature and the scale of the proposed project, limited alternative options exist as described below.

#### **6 THE “NO-GO” OPTION**

Even though the proposed exploration may result in potential (additional) negative environmental and social impacts which are discussed in detail in Sections 7 & 8 of this report, it can be concluded that proceeding with this proposed exploration will have benefits at the local, regional and national scale, which will result in significant positive social and economic impacts such as employment, investment and procurement of goods and services.

## 7 IDENTIFICATION AND DESCRIPTION OF POTENTIAL ENVIRONMENTAL IMPACTS

### 7.1 Aspect and Impact identification

Table 6 provides a summary of all the operational activities/facilities and the potential impacts associated with the exploration activities on EPL 8520.

The relevance of the potential impacts (“screening”) are also presented in the tables below to determine if certain aspects need to be assessed in further detail (Section 8 of this report). Because of the existing baseline information obtained from the various studies conducted in the past; the detailed history of Environmental Applications; potential impacts of a similar nature has been assessed as part of this EIA process. Also, the relevant management and mitigation measures, to minimise or prevent the potential impacts, will be provided in Section 8 of this report.



**Table 6: environmental aspects and Potential impacts**

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
Exploration Activities	Clearing of vegetation and soil stripping (earthmoving equipment)	Potential impact on biodiversity (physical impacts and general disturbance) <ul style="list-style-type: none"> <li>• Loss of fertile soil</li> <li>• Loss of habitat</li> <li>• Loss of biodiversity</li> </ul>	The potential impacts relating to the physical destruction and disturbance of biodiversity is assessed as having a high significance (without mitigation) reducing to high-medium (with mitigation).  Taking the above into consideration, the potential physical impacts on biodiversity have been assessed (refer to Section 8). The related management and mitigation measures are stipulated in the EMP.	<b>R01</b>
		Potential impact on archaeological sites <ul style="list-style-type: none"> <li>• Destruction and loss of archaeological material</li> </ul>	Generally, the area of interest might undergo some new changes as far as the proposed project is concerned, the possibilities of new access roads, establishing of camping sites, sitting of equipment's, laying down of infrastructures that may obliterate surface indicators of heritage resources if any ever occurred in the study area. All the identified archaeological and sensitive areas such as the community cemetery and old grave sites are to be preserved in-situ and protected from any exploration or mining activities. However, with mitigation recommended in this report, and the Chance Find Procedure the overall impact is expected to be low. Therefore, this project can commence but subject to the condition that the following recommendations (Section 17.2) are implemented as part of the EMP and based on approval from National Heritage Council of Namibia	<b>R02</b>
	Exploration and drilling/excavation	Impact on groundwater water	The proposed pit poses the risk of contamination of water resources, mainly through accidental spills of hydrocarbons etc. However, due to the scale of the	<b>R03</b>

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
		quality	<p>project, there is a low risk of big hydrocarbon spillages. The potential impacts relating to groundwater contamination were assessed as having a low significance both with and without mitigation.</p> <p>The potential impacts on groundwater have been assessed as part of this EIA. Refer to Section 8 for the assessment of the potential impacts relating to surface water and groundwater.</p> <p>The related management and mitigation measures as presented in the EMP.</p>	Ref
	Drilling, blasting, loading and vehicle movement causing dust	Increase in dust levels/health impacts <ul style="list-style-type: none"> <li>• Nuisance / Air pollution</li> <li>• Increased risk of respiratory diseases</li> </ul>	Even though the anticipated air quality impacts are expected to be less significant during the exploration project, the potential impacts of dust generation have been assessed as part of this EIA. Refer to Section 8 for the assessment of the potential impacts relating to air quality. The related management and mitigation measures are stipulated in the updated EMP.	<b>R04</b>
	Drilling, blasting, and other mining activities causing noise	Increase in disturbing noise levels (nuisance) <ul style="list-style-type: none"> <li>• Noise pollution</li> <li>• Increased risk of damage to property</li> </ul>	Even though the anticipated noise related impacts are expected to be less significant during the exploration project, the potential impacts of noise generation have been assessed as part of this EIA. Refer to Section 8 for the assessment of the potential impacts relating to noise. The related management and mitigation measures are stipulated in the updated EMP.	<b>R05</b>

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
	Blasting hazards	<p>Increase in ground vibrations and fly rock have the potential to damage structures and property.</p> <ul style="list-style-type: none"> <li>• Risk of damage to surrounding structures</li> <li>• fly rock can be released over a distance and can be harmful to people and animals/risk of accidents</li> </ul>	Given the significantly small scope and scale of the exploration project, this issue will not be further assessed in this report.	<b>R06</b>
	Dust and other air emissions	Increase in dust levels (nuisance & health impacts)	Refer to reference R05 (similar comments apply).	<b>R07</b>
	Movement of haul trucks on roads	<p>3<sup>rd</sup> party safety</p> <ul style="list-style-type: none"> <li>• Increased risk of accidents</li> </ul>	Given the significantly small scope and scale of the exploration, this issue will not be further assessed in this report.	<b>R08</b>
	Oil and diesel spillages from earth moving	<ul style="list-style-type: none"> <li>• Contamination of surface water and groundwater</li> </ul>	The potential for hydrocarbon spillages from earthmoving equipment (also during the refuelling of machinery and equipment) is always a possibility. Hydrocarbon spillages have the potential to cause an impact on soil and even	<b>R09</b>

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
	equipment	resources <ul style="list-style-type: none"> <li>Soil pollution</li> </ul>	groundwater. Even though the proposed “mini mining” project is small in scale and in scope (with assumed lower impacts), the potential pollution related impacts on soil, surface water and groundwater have been assessed as part of this EIA. Refer to Section 8 for the assessment of these potential impacts. The related management and mitigation measures are stipulated in the updated EMP	
Processing (heap leaching)	Clearing of bush and soil stripping (earthmoving equipment)	Potential impact on biodiversity (physical impacts and general disturbance)	Refer to reference R01 (similar comments apply).	<b>R10</b>
		Potential impact on archaeological sites	Refer to reference R02 (similar comments apply).	<b>R11</b>
	Noise	Increase in disturbing noise levels (nuisance)	Refer to reference R05 (similar comments apply).	<b>R12</b>
	Surface Water	Contamination of surface water resources	Refer to reference R03 (similar comments apply).	<b>R13</b>
	Groundwater	Contamination of groundwater resources (via contaminated soils/surface water).	Refer to reference R03 (similar comments apply).	<b>R14</b>
		Reduction of groundwater levels	Given the nature of the exploration project, the potential impacts of dewatering have been re-assessed as part of this EIA. Refer to Section 8 for the	<b>R15</b>

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
		due to borehole abstraction	assessment of the potential impacts relating to groundwater levels. The related management and mitigation measures are stipulated in the updated EMP.	
	Visual	Increased visual impact <ul style="list-style-type: none"> <li>Loss of aesthetics</li> </ul>	Given that the proposed exploration project is smaller in scale and in scope (with assumed lower visual impacts), the potential visual impacts have been assessed as part of this EIA. Refer to Section 8 for the assessment of these potential impacts. The related management and mitigation measures are stipulated in the updated EMP.	<b>R16</b>
	Soils	General disturbance and pollution of soils	Refer to reference R10 (similar comments apply).	<b>R17</b>
	Biodiversity	General disturbance of biodiversity	Refer to reference R01 (similar comments apply).	<b>R18</b>
		Destruction of biodiversity		
Transport, storage and handling of hydrocarbons, exploration material, mineralised waste etc.	Increase in vehicular movement	Increased traffic impacts on the roads	Refer to reference R08 (similar comments apply).	<b>R19</b>
	Potential spillage/leakage of hydrocarbons etc.	Pollution of surface water resources, groundwater resources and soil contamination	Refer to reference R04 (similar comments apply).	<b>R20</b>
General activities, offices and buildings, ablution facilities, domestic	Waste disposal	Emissions to land, impact on biodiversity, environmental	Due to the scope and scale of the proposed exploration project, the type and volumes of non-mineralised waste will be minimal. The operational workforce at the mine will be approximately 20 people and therefore overall waste generation is expected to be limited. The recyclable portion of general waste	<b>R21</b>



ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
waste generation		degradation and nuisance impacts	<p>(including scrap metal, wood, paper, plastic, glass and cans) will likely be separated at source and will be removed from site to appropriate recycling facilities. Endeavours will be made to return e-waste and chemical containers to the suppliers. Waste bins will be removed from the offices and accommodation camp by tractor and the contents dumped in the small landfill. The waste will be periodically covered to prevent windblown litter and scavengers. Putrescible waste from the canteen may be land-farmed together with sewage sludge, to produce compost for mulching and rehabilitation purposes.</p> <p>This issue will therefore not be further assessed .</p>	
General operations, employment and resource management	<p>Economic impacts</p> <p>In-migration and community health /safety and security</p>	<p>Impacts on local economy, informal settlements,</p> <ul style="list-style-type: none"> <li>• Increased employment opportunities</li> <li>• Opportunity for skills transfers</li> <li>• Improvement in the business environment</li> <li>• increasing pressure on government services,</li> <li>• increased</li> </ul>	<p>The significance of the socio-economic impacts is assessed. Even though the proposed exploration project is small in scale and in scope (with assumed low impacts), the potential socio-economic impacts (positive and negative) have been assessed as part of this EIA. Refer to Section 8 for the assessment of these potential impacts. The related management and mitigation measures are stipulated in the updated EMP</p>	<b>R22</b>

ACTIVITY/FACILITY RELATING TO OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Ref
		demand for basic infrastructure, <ul style="list-style-type: none"> <li>• increased social ills, e.g family breakdowns, teenage pregnancies etc.</li> </ul>		
	Impacts on neighbouring communities	Noise, air emissions, community health/safety and security etc.		

With reference to Table 6 above, the following issues were identified as requiring assessment.

- Physical impacts on biodiversity due to bush clearing activities;
- Third party (and animals) safety;
- Noise and Air quality impacts (dust).
- Socio-Economic
- Archaeological/Heritage

Refer to Section 8 of this Scoping Report for an assessment of the above mentioned issues.



## 8 DESCRIPTION OF THE CURRENT ENVIRONMENT

This section was compiled utilising the following sources of information:

- ◆ Information shared by Mr. Ndala.
- ◆ Visual observations during a site visit by I.N.K.
- ◆ Specialist investigations (Heritage/Archaeology)
- ◆ Google Earth.
- ◆ Atlas of Namibia.
- ◆ Internet sources.

### 8.1 Climatic Conditions

#### 8.1.1 Temperature

The climate condition within the vicinity of the proposed project is considered to be a local steppe climate. In the proposed development area, The average temperature is at 22°C, with the mean maximum temperature exceeding 34°C per year (refer to Figure 6). December is the warmest month with an average temperature of 30-33°C at noon. July is the coldest month with an average temperature of 8-10°C at night. Uis, which is in the vicinity of the project area, has distinct temperature seasons, the temperature varies during the year.

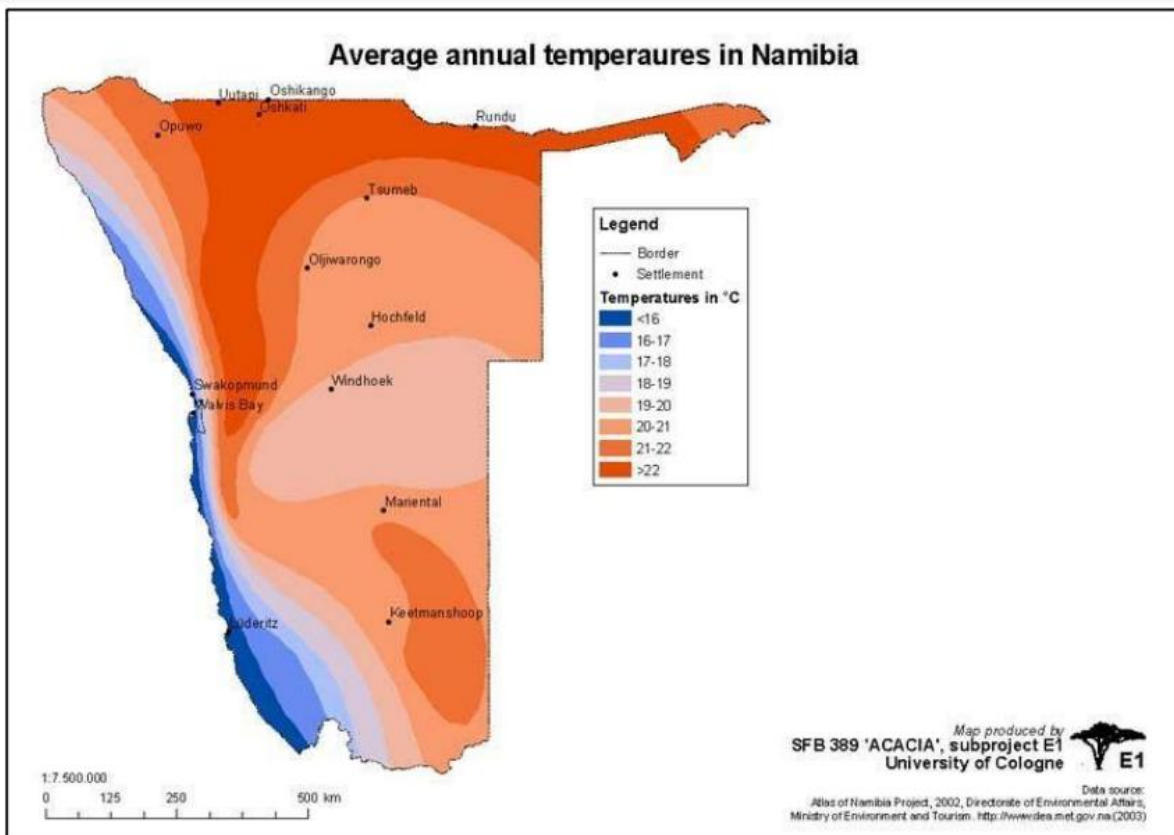
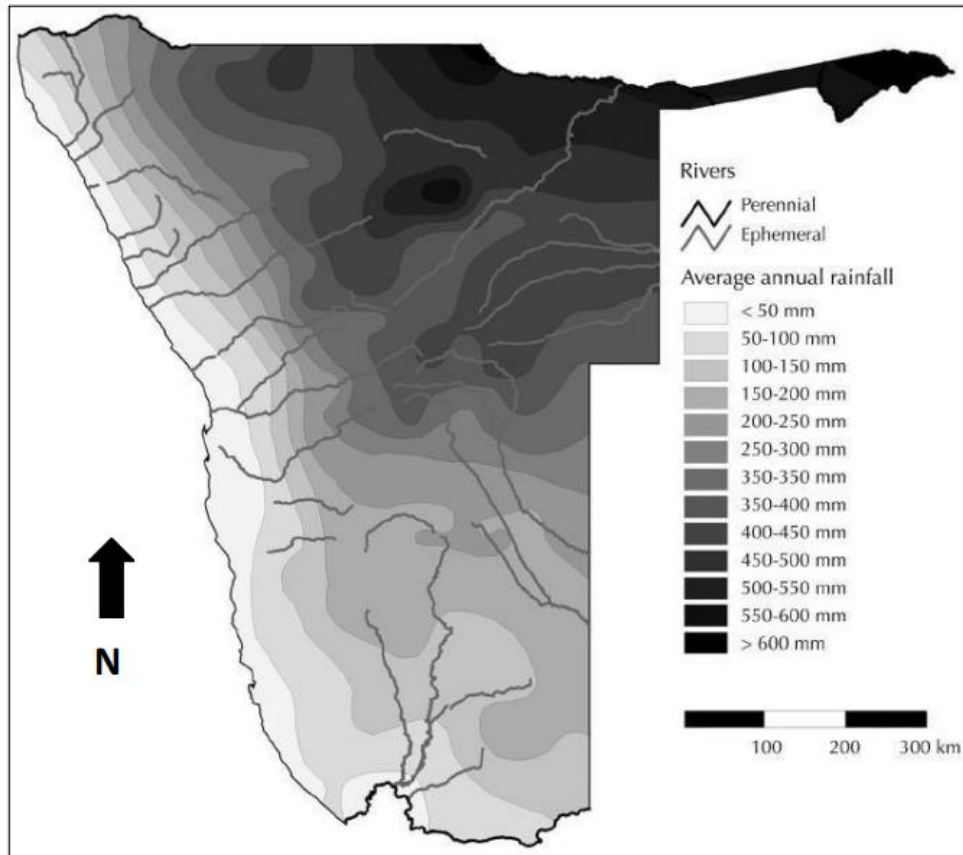


Figure 2: Average Annual Temperature for Namibia (sourced from Atlas of Namibia, 2002).

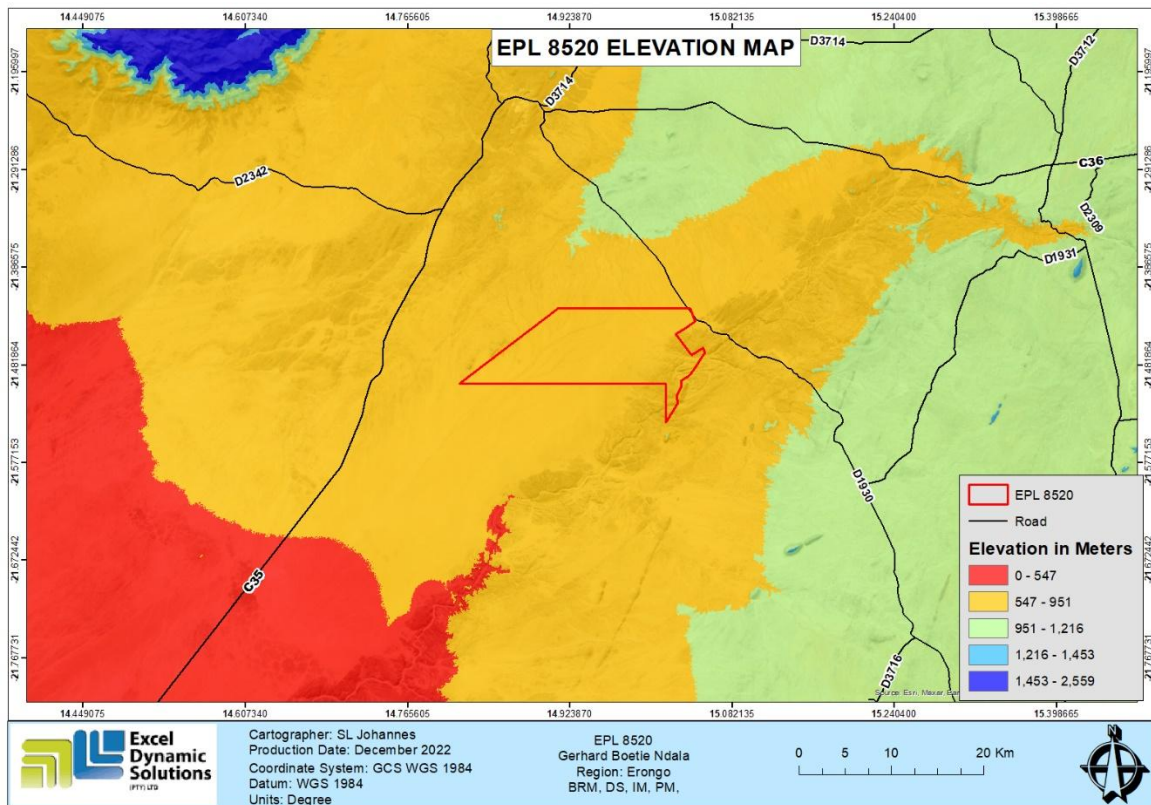
### 8.1.2 Precipitation

The annual rainfall in this area is less than 50 mm. Over the years, it has been observed that most of the rain falls as thundershowers in the summer months, for example between October to March. However, there is great variation between years, with unpredictable rainfall. Wind in the vicinity is relatively higher in the afternoon and evening between April and June – with the dominant wind from the east and southwest.



**Figure 3: Contoured average annual rainfall rates, showing that arid to hyper-arid conditions prevail**

Topographically the EPL mainly lies in the central-western landscape which is characterized by dissection and erosional cutbacks. The EPL lies at an elevation that ranges from 547 – 951 m. (Figure 4) shows the topography map for the project area.



**Figure 4: A Topographical map of the location of the EPL 8520.**

## 8.2 Geology

Geologically, the EPL is located within the Southern Central Zone of the Neoproterozoic Damaran Supergroup, which is largely comprised of calcrete, gravel which grade northwards into turbiditic clastic sequences (schist, quartzite and marble) representing a continental shelf and basin margin.



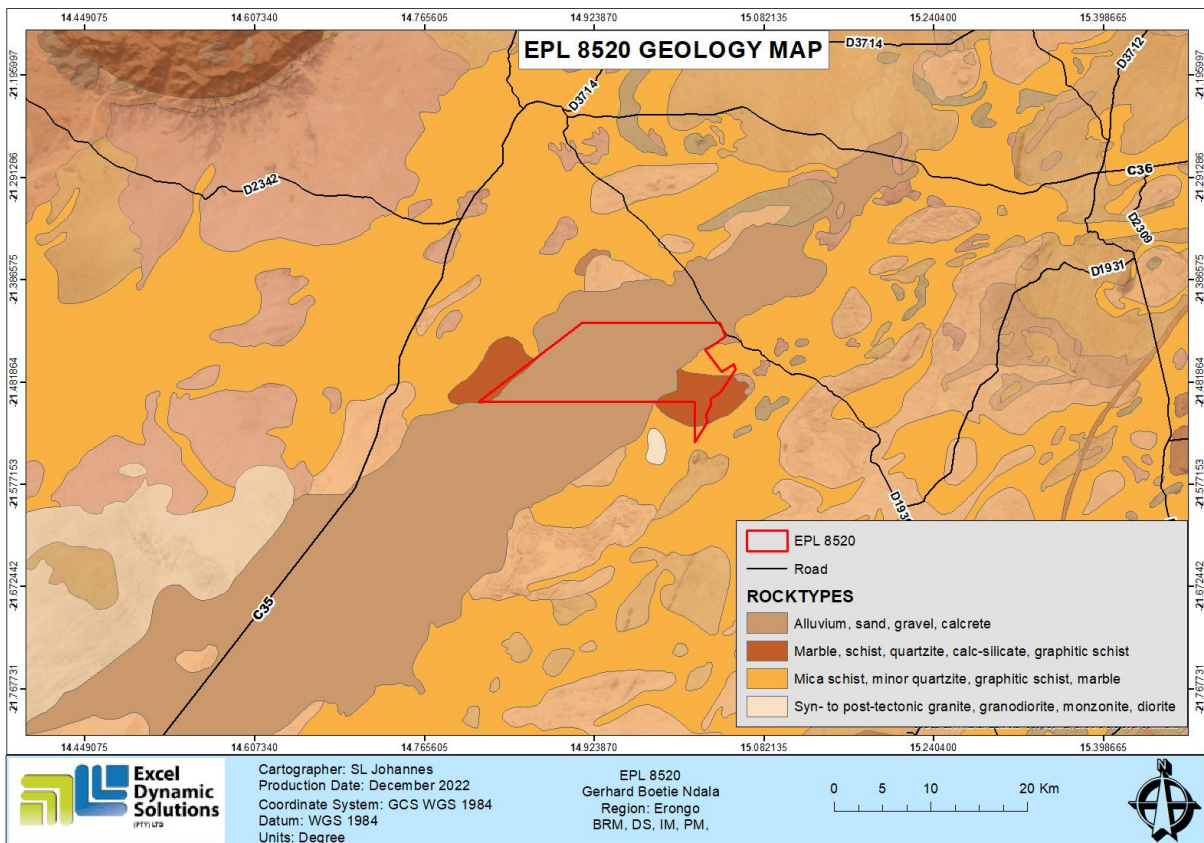


Figure 5: Geological map of the location of EPL 8520.

### 8.2.1 Background and general Heritage Context of the area

#### Regional Archaeological and Heritage Context

Uis is a settlement located in the Erongo Region, Namibia. It belongs to the Dâures electoral constituency. The area is known for the local mineral wealth. The settlement was established in 1958 as workers' settlement to exploit local tin deposit. Uis is located at the foot of the Brandberg, Namibia's highest mountain. The Brandberg is home to the world famous 'The White Lady' rock painting, said to be over 20,000 years old.

The available archaeological records indicate that evidence of early humans in Namibia dates back from the Early Stone Age period, more than one million years ago as evidenced by hominin fossils records (Kinahan, 2017). The geospatial data on the distribution of archaeological sites shows that sites are concentrated mainly in the central highlands, escarpment and Namib Desert (Figure 6-8).



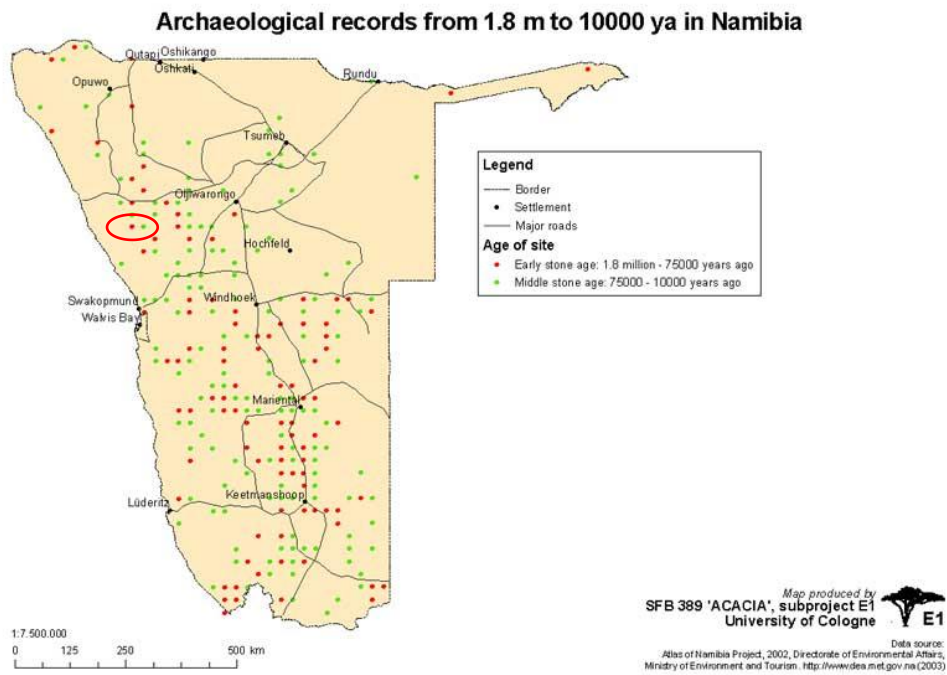


Figure 6: A map showing archaeological sites distribution of ESA and MSA in Namibia. (Credit: Digital Atlas of Namibia)

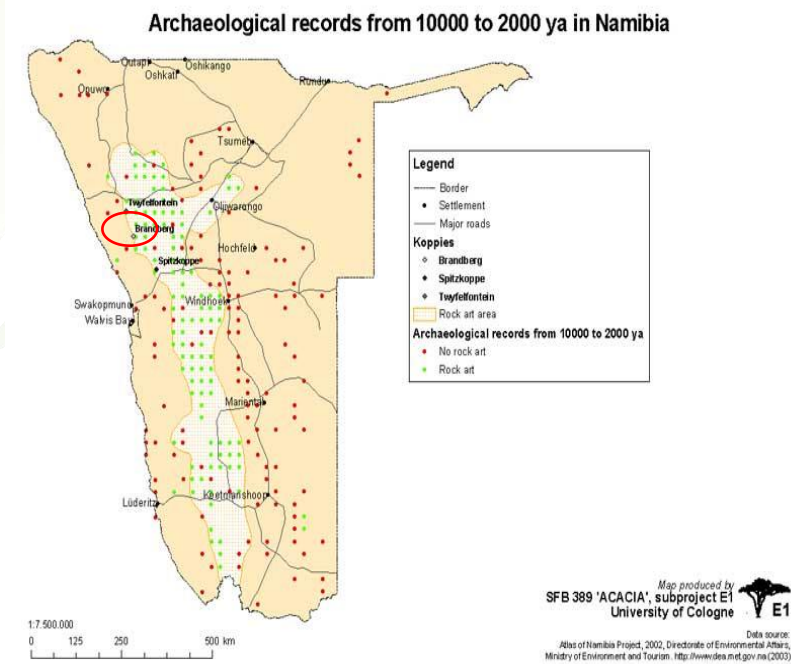
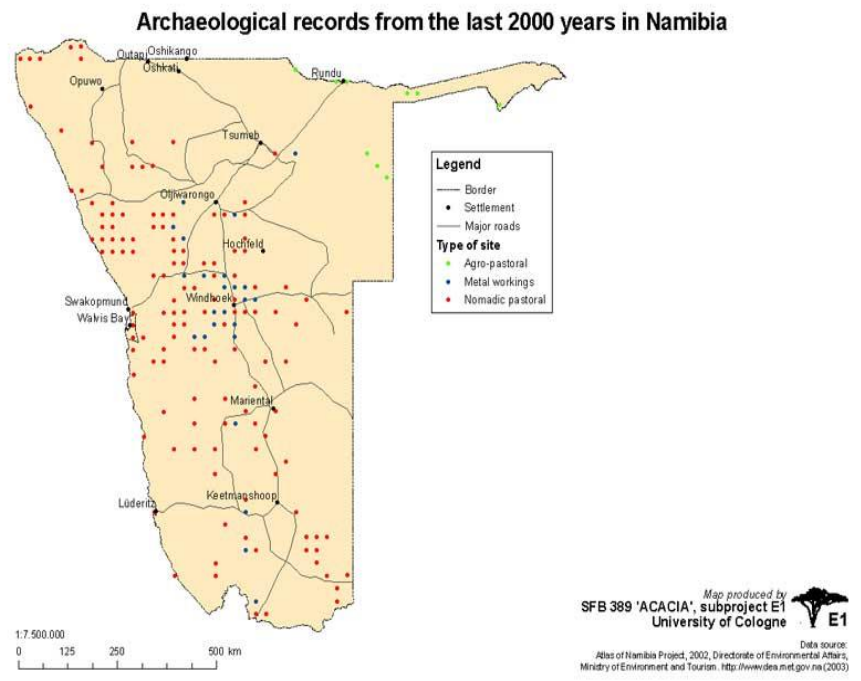


Figure 7: A map showing archaeological sites distribution of ESA and MSA in Namibia. (Credit: Digital Atlas of Namibia)



**Figure 8: A map showing archaeological sites distribution of ESA and MSA in Namibia. (Credit: Digital Atlas of Namibia)**

According to the National Heritage Council of Namibia (Declared Sites/Lists of National Heritage), there are about 37 sites recorded in the Erongo Region which are listed as national monuments<sup>1</sup>. The map above shows the distribution of archaeological sites in Namibia.

### 8.3 Hydrogeology

The aquifers in the Ugab-Huab Basin can be sub-divided into two main groups, namely the primary (porous) aquifers and secondary (fractured) aquifers. The alluvial aquifers in the basin are directly related to the underlying geology and the nature of the tributaries. These aquifers are very efficient at storing water and reduces the effect of evaporation in comparison to surface water bodies such as rivers and dams. The Alluvial aquifers are located within the ephemeral rivers and their tributaries e.g the Ugab River that is located up north of the project sites.

The alluvial deposits that form within the alluvium may include flood plains that result in larger storage volumes. These channels are mainly recharged through infiltration of surface flow along channels that are active. Ephemeral rivers are highly localised with rainfall input that is variable and groundwater input does not contribute significantly to the surface water to maintain the flow. Furthermore, overland flow is dominant during rainfall in the catchment and is characterised with initiation of run-off that decline downstream because of infiltration. This is different from rivers in regions that are humid where run-off increases downstream. It is only during exceptional rainfall seasons when the rivers in the basin discharge to the ocean (Lohe et al., 2021).

The alluvial aquifers storage capacity depends on the nature of the sediments and their thickness. Larger rivers such as the Omaruru River and the Ugab River, located south and north of the proposed Green Hydrogen Pilot Plant sites respectively, have sediment thickness that is larger in their productive sections. Yet, small rivers have small sediment thickness and therefore, do not form viable aquifers but rather act as

temporary storage to recharge under laying aquifers. Vertical flow below the channel to the under-laying aquifers, results when infiltration occurs during ephemeral flow conditions

#### **8.4 Air Quality and Noise**

The only source of dust and noise in the area is generated by the vehicles on the D1930 gravel road and further noise from natural sounds and birds. The D1930 gravel road is prone to dust generation from 4x4 tourist vehicles. The immediate surroundings of the project site has no communities inhabited in the area, therefore the impact of air pollution on communities is not identified.

#### **8.5 Traffic**

The current traffic numbers on the D1930 road fluctuates, and only high during tourist peak seasons. This is due to the road frequently being used by tourists visiting the Heritage and Archaeological sites in the area.

#### **8.6 Socio-Economic Environment**

The closest settlements to the development project is Uis. Uis is a settlement located in Erongo Region, Namibia. It belongs to the Dâures electoral constituency. Located in the former Damara-land, it is known for the local mineral wealth. The settlement has approximately 3,600 inhabitants and, before being downgraded from "village" to "settlement" in 2010, owned 10 square kilometers.

Uis is located at the foot of the Brandberg, Namibia's highest mountain. The Brandberg is home to the world famous The White Lady rock painting, said by some to be over 20,000 years old. Being also situated on the C36, the main road between the coast and the Damaraland interior there is reasonable amount of traffic, by far the main source of economic activity in Uis. The settlement holds a small supermarket, guesthouses, a bakery and a petrol station, together with a few other small shops. Uis is home to the Brandberg Primary School and Petrus !Ganeb Secondary School, both with about 300 learners. Petrus Ganeb SS was built before Namibian independence; its facilities are old and dilapidated. Once a small mining town, it is now one of the stops when travelling to the Brandberg and Twyfelfontein or en route between the Namib Coast or the Erongo Region and Damaraland. The town is excellently located for early morning visits to the Brandberg. If not staying at or near Uis, travellers use it as an opportunity to refuel and make minor purchases, including geological samples and Brandberg quartz crystals.

Although a few people and animals might be negatively affected by dust and noise from vehicles, the proponent will ensure that these aspects are properly mitigated. With the potential employment of local people, this means that families will benefit from the project during the on-going phase. The project has great potential to improve livelihoods and make a contribution to sustainable development within the surrounding community. Community meetings will be held from time to time by the proponent wherever possible, with the purpose of effectively communicating with the local community and to avoid any unexpected social impacts.

## 9 ENVIRONMENTAL IMPACT ASSESSMENT

Table 7 shows the methodology used to conduct the qualitative assessment. Both the criteria used to assess the impacts and the method of determining the significance of the impacts is outlined. This method complies with the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) EIA regulations. Part A provides the approach for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D. Both mitigated and unmitigated scenarios are considered for each impact.

**Table 7: Assessment Methodology and Criteria**

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. Within 20 km of the site boundary.			
	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

	<b>L</b>	<b>M</b>	<b>H</b>
	<b>CONSEQUENCE</b>		
<b>PART D: INTERPRETATION OF SIGNIFICANCE</b>			
<b>Significance</b>	<b>Decision guideline</b>		
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.		



## 9.1 Biodiversity

The section assesses the physical impacts on biodiversity associated with the proposed exploration.

### *Issue: physical impacts on biodiversity*

#### *Introduction*

The bush clearing activities associated with the proposed exploration has the potential to impact on biodiversity in the broadest sense. In this regard, the discussion relates to the physical destruction of specific biodiversity areas, of linkages between biodiversity areas and of related species which are considered to be significant because of their status, and/or the role that they play in the ecosystem.

#### *Assessment of impact*

##### *Severity*

In the unmitigated scenario, the clearing of the bush as well as other project related activities will result in the following impacts:

- Loss of habitats;
- Loss of shelter for smaller vertebrates, especially reptiles;
- Direct impacts to birds through removal of nest sites in plants and on the ground;
- Destruction of plants, including some of conservation concern;
- Animal mortality resulting from vehicles and machinery strikes as well as through clearing of land (i.e. slow moving animals and dormant invertebrates);
- Vehicle tracks damage the soil and inhibit root growth.
- Impacts on topsoil (i.e. damage / loss of topsoil).

In the unmitigated scenario, the severity is expected to be medium. With the implementation of mitigation measures, the severity can be reduced to low.

##### *Duration*

In the unmitigated scenario the loss of biodiversity and related functionality and subsequent colonisation of alien/invasive species is long term and will continue after the life of the operation. This is a high duration. In the mitigated scenario, the duration reduces to medium.

##### *Spatial scale*

Biodiversity processes are not confined to the project area. Due to ecosystem linkages and movement of animals, the loss of biodiversity has a medium rating.

##### *Consequence*

In the unmitigated scenario, the consequence is high. With mitigation, the consequence is low.

### **Probability**

In the unmitigated scenario, the probability of the impact occurring is high. With the implementation of mitigation measures, the probability reduces to low.

### **Significance**

The significance of this potential impact is medium in the unmitigated scenario and low in the mitigated scenario.

Tabulated summary of the assessed impact – physical destruction of biodiversity

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

### **Conceptual design of mitigation measures**

A conceptual discussion of the mitigation measures is provided below. Detailed mitigation measures are included in the updated EMP.

#### **Objective**

The objective of the mitigation measures is to prevent, as far as is possible, the unacceptable loss of biodiversity and related functionality through physical disturbance.

#### **Management and Mitigation measures**

The following actions are relevant:

- Keep footprint of project as small as possible and enforce the operational boundaries through highly visible signs and regulatory mechanisms such as fines or similar;
- Raise awareness through awareness campaigns and training of key staff;
- Once exploration is completed, replace topsoil on affected areas according to a comprehensive restoration plan;
- Compile and implement an alien invasive management plan to prevent colonisation of disturbed areas by invader species;

## **9.2 Third Parties' (and animals) safety**

### **ISSUE: Dangerous excavations**

#### **Introduction**

Dangerous excavations and infrastructure include all structures into or off which third parties and animals can fall and be harmed.

#### **Assessment of impact**



### **Severity**

In the unmitigated scenario, dangerous excavations include the exploration activities. This infrastructure presents a potential risk of injury and/or death to both animals and third parties. This is a potential high severity. In the mitigated scenario the severity reduces to low as access control will be implemented at the exploration sites to prevent and/or mitigate impacts.

### **Duration**

In the context of this assessment, death or permanent injury is considered a long term, permanent impact. This is a high duration.

### **Spatial scale**

Direct impacts associated with dangerous excavations will be located within the site boundary, with or without mitigation. The potential indirect impacts could extend beyond the site boundary to the families/communities to which the injured people and/or animals belong. This is a medium spatial scale.

### **Consequence**

The consequence is high in both the unmitigated and mitigated scenarios.

### **Probability**

In the unmitigated scenario, without management interventions, the probability of the impact occurring is expected to be medium due to the remoteness of the site. The mitigation measures focus on limiting access to third parties and animals which reduces the probability of the impact occurring to low.

### **Significance**

In the unmitigated scenario, the significance of this potential impact is high. With the implementation of mitigation measures, the significance of this potential impact is medium because the probability of the potential impact occurring is reduced.

Tabulated summary of the assessed impact – dangerous excavations

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

### **Conceptual design of mitigation measures**

A conceptual discussion of the mitigation measures is provided below. Detailed mitigation measures are included in the EMP.

### **Objective**

The objective of the mitigation measures is to prevent physical harm to third parties and animals from potentially dangerous excavations. This can be achieved by implementing access control to the operational areas.

### ***Management and Mitigation measures***

The following actions are relevant:

- The operational area will be fenced along the perimeter in order to control access by third parties and wildlife. The entrance gate will be staffed while mining activities are underway. During times when mining is not taking place, the entrance gate will be locked.

### **9.3 Air Pollution**

#### ***ISSUE: Air pollution***

#### ***Introduction***

The activities associated with the exploration have the potential to cause additional dust related impacts, particularly the access / haul road associated with the proposed exploration where receptors reside within the zone of impact.

#### ***Assessment of impact***

#### ***Severity***

The main source of nuisance dust associated with the proposed expansion is the access / haul road for the materials.

In the unmitigated scenario, where the residents of the homestead and cattle post remain in their current lodgings; and the (original) “proposed route” is followed for hauling of the limestone, the severity of this impact is high.

In the mitigated scenario the severity reduces to low as an alternative route further away from the households (more than 1 km) will be followed (or third parties are relocated) and additional dust mitigation measures will be applied.

#### ***Duration***

In both the unmitigated and mitigated scenarios, if human health impacts occur, these are potentially medium to long term in nature. This is a medium to high duration. Dust fallout impacts are of medium (nuisance) duration.

#### ***Spatial scale***

Cumulative air quality impacts are expected to be limited to the site boundary (i.e. the proposed ML area). This is a low spatial scale.

#### ***Consequence***

In the unmitigated scenario, the consequence is medium to high. With the implementation of mitigation measures, the consequence reduces to low as the severity is reduced.

#### ***Probability***

The health and nuisance impact probability is linked to the probability of ambient concentrations exceeding acceptable limits at third party receptors. Given that acceptable limits relating to specifically nuisance impacts will most likely be exceeded in the unmitigated scenario, the probability is high. Given the small scale and limited duration of the exploration activities, the likelihood of health related impacts are possible in the unmitigated scenario. With mitigation the probability reduces to low.

### **Significance**

In the unmitigated scenario, the significance of the potential impact is medium high. In the mitigated scenario, the significance reduces to low.

Tabulated summary of the assessed air quality impacts – dust fallout

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	<b>H</b>	<b>M-H</b>	<b>L</b>	<b>M-H</b>	<b>H</b>	<b>M-H</b>
Mitigated	<b>L</b>	<b>M</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>

### **Conceptual description of mitigation measures**

The conceptual discussion of the mitigation measures is provided below. Detailed mitigation measures are included in the EMP.

### **Objective**

The objective is to limit the exploration activities’ contribution to air pollution impacts.

### **Management and Mitigation measures**

1. The following mitigation measures are recommended:
  - Dust suppression on haul roads through the spraying of water.
  - Monitoring the fallout dust at the closest sensitive receptor (i.e. above mentioned farm house) during the (and after) the mining activities to determine if there is an increase in ambient fallout dust levels.

## **9.4 Socio-economic environment**

### **Socio-Economic Benefits**

#### **Introduction**

The project has the potential to create socio-economic benefits through employment creation and economic contributions. The benefits include employment opportunities, skills and development training and indirect capital injection into businesses in Uis and overall Erongo Region.

The project has potential to create employment, particularly for unskilled and semi-skilled labour.

Due to the fact that social impacts cannot be assessed in isolation, the assessments presented below are cumulative.

### ***Severity***

The proposed project will contribute to the economy in the following positive ways:

Direct benefits include the sales of services provided by the operations; direct number of persons employed and their wages and salaries, taxes paid, and profits earned.

The provision of products and services to the project in order to produce, as well as the inputs purchased by the upstream supply chain will provide indirect economic benefits.

The spending of salaries and wages of construction workers and farm employees/contractors and of input providers on consumer goods will provide induced benefits. If these products and services are produced locally there will be greater economic impact, hence “Buy Namibian”. The economic spin-offs from the project’s construction and operations will provide income to the employees, their immediate household members and to others living elsewhere in Namibia who depends on cash remittances.

### ***Impact on Government revenue***

The project will be responsible for corporate tax, sales tax and import duties. Some additional revenue will be gathered from the personal income tax of direct employees, their municipal rates, and VAT on goods and services they purchase, similarly for other employees in the supply chain of goods and services.

### ***Duration***

In the normal course, the direct positive economic impacts associated with the project will occur for the life of operations. After decommissioning and closure there will be limited opportunities through aftercare and monitoring activities. The project would have contributed to the establishment of a critical economic mass and hence the benefits of wealth creation and a better skilled workforce are expected to continue beyond the life of operations.

Quantitatively assessing the post closure impacts is not possible at this stage as there are a number of important unknown factors such as the general state of the future economy (local, national and world-wide) and the future state of the energy and other industrial sectors.

Skills development of local people would be for the long-term, and therefore, the duration of the positive impacts is **high**.

### ***Scale***

In both the unmitigated and mitigated scenarios, the impact will be experienced both in the region and throughout Namibia. The spatial scale is widespread beyond the project site and is therefore classified as high.

The severity and scale would therefore be **high**.

### **Consequence**

The consequence of these potential positive impacts is **high**.

### **Probability**

The probability of the positive impacts is considered **high**.

### **Significance**

The significance of the positive impacts is **high**, particularly if local people are employed.

Summary of cumulative Positive Impacts on Socio-Economic Environment

MITIGATION	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY OF OCCURRENCE	SIGNIFICANCE
Unmitigated	H	H	H	H	H	H+
Mitigated	H	H	H	H	H	H+

### **Mitigation Measures**

The following key measures for increasing the potential positive impacts should be implemented:

- Local people be preferentially selected to encourage social growth and development in the region, town and Namibia as a country; and
- Management is urged to begin local selection and provide technical training as soon as possible to enable local people to compete for the lower skilled jobs and upskill themselves in anticipation of the proposed project.

### **Issue: Negative Impacts on the Socio-economic Environment**

#### **Introduction**

Although the project may benefit the socio-economic environment, the project may also draw people to the town (in-migration), which may place pressure on existing services and opportunities and may create health and safety issues, such as housing, health, sanitation and educational facilities. The influx of people may also result in an increase in negative social behaviours including an increase in the crime rate. It may also lead to increase in the spread of diseases.

#### **Severity**

The project is likely to stimulate a considerable influx of job-seekers. In-migration usually leads to an increased incidence of social ills including alcoholism, drug abuse, prostitution, gambling and criminality. Alcohol abuse is part of the accepted social norm in Namibia and is often stimulated by cash earnings which increase the likelihood of domestic violence (usually against women and children), unprotected sex and the spread of HIV. The influx of job seekers may increase over-crowding which increases the spread of TB.

Most of the seasonal workforce is unlikely to bring their families for a short-term contract. Management must therefore encourage local employment. There will be an increased demand on existing government infrastructure, in particular housing and medical facilities as a result of the project.

In the unmitigated scenario, the inward migration issue is predicted to have a cumulative **medium** severity. In the mitigated scenario, the inward migration severity may reduce to **low**.

**Duration**

In the normal course, these social impacts associated with the project will occur for the life of the operations. However, issues associated with inward migration can become self-feeding and are likely to extend for a much longer period.

The negative impacts, if not kept in check and mitigated, will be **medium**. If mitigated in conjunction with the Uis Town Council, the impacts could be reduced to **low**.

**Scale**

In both the unmitigated and mitigated scenarios, the impacts of inward migration and pressure on Government services will be felt mainly in the region. The spatial scale is therefore **medium** but can be reduced to **low** through mitigation.

**Consequence**

The consequence of the negative impacts will be **medium** but if mitigated, then **low**.

**Probability**

The probability of the negative impacts is considered **medium** if unmitigated, and **medium to low** if mitigated.

**Significance**

The probability of the negative impacts is considered **medium** but if mitigated, the impacts are considered to be **medium to low**.

Summary of cumulative negative Impacts on Socio-Economic Environment

MITIGATION	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY OF OCCURRENCE	SIGNIFICANCE
Unmitigated	M	M	M	M	M	M
Mitigated	L	L	L	L	M-L	M-L

**Mitigation Measures**

The following key mitigation measures are recommended:

- Local people be preferentially selected to encourage social growth and development in the region and Namibia as a country;

- Management should work closely with the Uis Village to manage in-migration, and the effects thereof;
- Management is urged to begin local selection and provide technical training as soon as possible to enable local people to compete for the lower skilled jobs and allow potential candidates to upskill themselves.

## 9.5 Archaeology/Heritage

A different assessment and significance rating was used for the Archaeological and Heritage, as a detailed and Specialist assessment was required for this environmental aspect:

**Table 8: Cultural sites: Grave and Burial sites/Stone cairns**

<b>Activity:</b> During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, heritage and cultural material or objects.		
	<b>With Mitigation</b>	<b>Without Mitigation</b>
Extent	Local	Local
Duration	Short-term	Long-term
Magnitude	Low	Medium to High
Significance	2	4
Vulnerability	2	4
Reversibility	Not reversible	Not reversible
Can impacts be mitigated?	Yes	
Mitigation:	There were no visible graves recorded within EPL 8520. Also, the proper way of handling any which occurrence of the previous unknown or invisible graves is 'Chance Find Procedures' i.e. to stop everything if something has been found and follow the steps recommended.	
Cumulative impacts:	Cultural Heritage sites are non-renewable and any impact on any archaeological context or cultural material will be permanent and destructive. In terms of the cumulative impact of this proposed project and other developmental projects in EPL 8520, the impact on the heritage landscape and sites of low/medium heritage significance might be increased as these sites area can be accidentally destroyed through development.	
Residual Impacts:	With implementation of mitigation measures mentioned herein this report, the significance level of the impacts identified will be reduced to either minor low or negligible.	



**Table 9: Historical and Heritage sites**

<b>Activity:</b> During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, heritage and cultural material or objects.		
	<b>With Mitigation</b>	<b>Without Mitigation</b>
Extent	Local	Local
Duration	Short-term	Long-term
Magnitude	Low	Low to Medium
Significance	2	3
Vulnerability	2	3
Reversibility	Not reversible	Not reversible
Can impacts be mitigated?	Yes	
Mitigation:	The areas surveyed are of archaeologically and ecologically significant, the facts that these EPL fall within the conservation areas and ecologically sensitive makes the approach to the subject areas to be of important and cautious as far as the recommended mitigation measures listed in this report.	
Cumulative impacts:	Heritage sites are non-renewable and any impact on any archaeological context or cultural material will be permanent and destructive. In terms of the cumulative impact of this proposed project and other developmental projects in EPL 8520, the impact on the heritage landscape and sites of low/medium heritage significance might be increased as these sites area can be accidentally destroyed through development. However, no national heritage site observed in the surveyed area.	
Residual Impacts:	With implementation of mitigation measures mentioned herein, the significance level of the impacts identified will be reduced to either minor adverse/low or negligible.	

**Table 10: Built Environment of the Subject Area**

<b>Activity:</b> During the prospecting and exploration phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological, historical, heritage and cultural material or objects.		
	<b>With Mitigation</b>	<b>Without Mitigation</b>
Extent	Local	Local

Duration	Short-term	Long-term
Magnitude	Low	Low to Medium
Significance	2	3
Vulnerability	2	3
Reversibility	Not reversible	Not reversible
Can impacts be mitigated?	Yes	
Mitigation:	There will be no work done close to all known structure and infrastructures.	
Cumulative impacts:	n/a	
Residual Impacts:	With implementation of mitigation measures mentioned herein, the significance level of the impacts identified will be reduced to either low or negligible.	

This site survey involved direct observation (site surface or field walking), with archaeological and cultural significant areas positions determined in the field by hand-held Garmin *etrex* 30x GPS. The sites themselves are documented according to conventional criteria of type, physical setting and spatial extent. In the field, all identified archaeological, cultural and historical sites are assessed as to their significance, grading them accordingly and vulnerability, using two independent parallel scales devised for archaeological assessment in Namibia. The archaeological and cultural places within this EPL 8520 can be assumed to be of cultural significance at a local level, and thus vulnerability rating can be classified as having probable threat from in-advertent disturbance due to proximity of development. The criteria used here for vulnerability is just to show how the extent of vulnerability can be recorded but it should be noted that the threats are going to be minimized/reduced or eliminated with the mitigation measures that are recommended in this report.

**Table 11: Heritage Resources and Vulnerability Description**

Archaeological, Cultural and Heritage Resource	Scale	Vulnerability Description
Burial site	4	High likelihood of partial disturbance or destruction due to close proximity of development.
Historical and Heritage sites	4	High likelihood of partial disturbance or destruction due to close proximity of development
Existing buildings and structures (still standing and in-use)	3	Probable threat from inadvertent

		disturbance due to proximity of development. However, the existing buildings are within the EPL which is the 'No-Go-Zone' for this particular project
Stone artifacts	2	low or indirect threat from possible consequences of development (e.g. soil erosion)

**9.5.1 Summary of the expected Impacts**

Direct impacts or risks of impact on archaeological sites located near the proposed project can be reduced to acceptable levels by the adoption of appropriate recommended mitigation measures including integration of the archaeological heritage record and Chance Finds procedure in the project EMP. Special effort should be made to reduce and avoid impacts on any discovered site or artefacts.

**9.5.2 Identification of Key Impacts**

The key impacts of the proposed project on the archaeological and heritage resources (*if any*) will be the physical disturbance or destruction of sites or remains within or close to the designated footprint of the proposed development and its associated surface works, and disruption of the landscape setting or physical context of the archaeological sites or remains. Such impacts will be both local, in the sense of the specific site, and at the landscape level.

**9.5.3 Cumulative Impacts**

This section considers the cumulative impacts that would result from the combination of the proposed project. According to the European Union Guidelines, cumulative impacts as: *“Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”*. Similarly, the assessment of cumulative impacts for the proposed project on this particular EPL 8520 is considered the total impact associated with the proposed development when combined with other past, present, and reasonably foreseeable future developments projects. The total impact arising from the proposed project (under the control of the Project Proponent), other activities (that may be under the control of others, including other developers, local communities, government) and other background pressures and trends which may be unregulated.

The project's impact is therefore one part of the total cumulative impact on the environment. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation. The impacts of the proposed development were assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation, this provides a good method of assessing a project's impact. However, in this case there are several infrastructure developments, including farms and mining activities where baselines have already been affected, the proposed development will continue to add to the impacts in the region.

As far as the proposed site is concerned, there are existing infrastructure developments, farms and mining activities within and outside the proposed development site. As such increased development in the project area will have several cumulative impacts on heritage resource whether known or covered in the ground. For example, during the construction phase there will be an increase in human activity and movement of heavy construction equipment and vehicles that could change, alter or destroy heritage resources within and outside the development sites, given that archaeological remains occur on the surface. Cumulative impacts that could result from a combination of the proposed development and other actual or proposed future developments in the broader study area include site clearance and the removal of topsoil could result in damage to or the destruction of heritage resources that have not previously been recorded for example abandoned and unmarked graves.

Archaeological and heritage resources often occur beneath the surface and are accidentally exposed during infrastructure developments. In addition, increased human activity during the construction phase allows increased access to heritage resources that may be located in the vicinity of the project site. Construction works associated with the provision of material assets such as gravel, in particular surface and sub-surface works have the potential to interact with archaeology and cultural heritage.

Additionally, Cumulative impacts refer to additional impacts, which even if acceptable if considered in isolation, would together with the existing impacts, exceed the threshold of acceptability and cause harm to the cultural landscape.

For the proposed project, cumulative impacts that need attention are related to the impacts of access routes and impacts to buried heritage resources. Allowing the impact of the proposed development to go beyond the surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to construction vehicles during clearance, laying down of infrastructures and excavation within the development sites.

Movement of heavy construction vehicles must be monitored and controlled to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if construction vehicles or movement of people are not monitored to avoid driving through undetected heritage resources.

#### **9.5.4 Identification of alternatives**

There are no location alternatives for the proposed project at the moment, however the layout will be designed accordingly to avoid any damage to the already known and located archaeological/heritage sites. This is to indicate that if the site is located already, the project has to find an alternative location to either avoid the site completely, mitigate it or rescue it before any damage could be done, and to do this a permit from NHC will be required.

#### **9.5.5 Anticipated Impacts on Visual/Landscape**

All known significant archaeological and heritage resources will be/should be avoided by the proposed project (aside from the landscape where the proposed project will take place) i.e. the landscapes cannot be mitigated in the conventional archaeological sense, and impacts to them are contextual (visual impact affecting the sense of a place) mitigation usually involves avoidance, careful placement of the proposed project infrastructures and other development, or the creation of appropriate buffer zones and screens to minimize visual intrusion.

## 10 CONCLUSION AND WAY FORWARD

It is I.N.K's opinion that the environmental aspects and potential impacts relating to the proposed exploration activities have been successfully identified.

The assessment found that the proposed project present the potential for minimal additional risks and related impacts in the mitigated scenario. With regards to air quality; and third parties safety, without mitigation in place, the impacts related to people is likely to result in unacceptable impacts. With mitigation measures in place, the impacts reduce significantly.



## 11 REFERENCES

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