

# ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) REPORT

**PROPOSED EXPLORATION OF DIMENSION STONES, BASE  
AND RARE METALS, INDUSTRIAL AND PRECIOUS METALS  
ON EPL 8519  
KARIBIB/OMARURU DISTRICT, ERONGO REGION**

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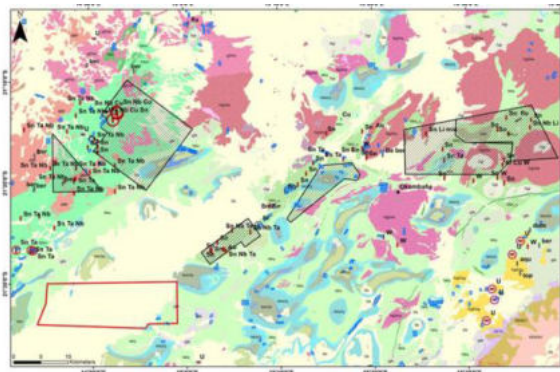
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## Document Status

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## TABLE OF CONTENTS

CHAPTER	DESCRIPTION	PAGE
	<b>EXECUTIVE SUMMARY</b>	<b>6</b>
1	<b>BACKGROUND</b>	<b>17</b>
	1.1 Introduction	11
	1.2 Perspectives on Sustainable Development	12
	1.3 Importance of EIA	12
	1.4 Aims and Objectives of EIA	13
	1.5 Limitations of EIAs	13
	1.6 Consultancy Terms of Reference	14
	1.7 The Environmental Assessment Practitioner	15
2.	<b>PROSPECTING PHASE</b>	<b>15</b>
	2.1 Procedural Overview	15
3.	<b>CONTROLLING NAMIBIAN LEGISLATIONS</b>	<b>17</b>
	3.1 Procedural Overview	17
	3.2 Roll of different Ministries	17
4.	<b>RECEIVING ENVIRONMENT / STAKEHOLDER ENGAGEMENT</b>	21
	4.1 History	21
	4.2 Historic Buildings	21
	4.3 Economy & Infrastructure	21
	4.4 Transport	21
	4.5 Politics	22
5.	<b>PUBLIC PARTICIPATION / STAKEHOLDER ENGAGEMENT</b>	25
	5.1 Steps and methods used for public participation	27
	5.2 Notice board	27
6.	<b>IMPACT ASSESSMENT</b>	<b>29</b>
	5.1 Approach & Methodology Employed for Assessment	29
	5.2 Scoping Phase	29
	5.3 Specialist Studies Phases	30
	5.4 Integration & Assessment Phase	30
	5.5 Impact Assessment Methodology	30
	5.6 Identification of Mitigation Measures	34
	5.7 Specialist Study Methodology	34
	5.8 Assumptions and Limitations	36
7.	<b>CONCLUSIONS AND RECOMMENDATIONS</b>	40
8.	<b>REFERENCES</b>	41
<b>APPENDIX A - ENVIRONMENTAL MANAGEMENT PLAN (EMP)</b>		

## LIST OF TABLES

---

<b>TABLE</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
1.1	Four Cornerstones of the Earth Summit	<b>11</b>
2.0	Namibian Legislation	<b>17</b>
4.10	Usakos Climate table	<b>26</b>
5.2	Categories of Consulted Interested & Affected Parties (I&APs)	<b>26</b>
5.3	Stakeholder Engagement / Public Participation Process Steps	<b>26</b>
5.4	Issues Raised by Interested & Affected Parties	<b>28</b>
6.1	Public Participation Tasks	<b>29</b>
6.2	Impact Identification	<b>29</b>
6.3	Impact Types and Definitions	<b>30</b>
6.4	Significance Criteria	<b>32</b>
6.5	Significance Rating Matrix	<b>33</b>
6.6	Significance Colour Scale	<b>33</b>
6.7	Significance Definitions	<b>33</b>
6.8	Archaeological, Heritage & Palaeontology Studies	<b>35</b>
6.9	Screening and Assessment of Impacts	<b>38</b>

## LIST OF ANNEXURES

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<b>ANNEXURE</b>	<b>DESCRIPTION</b>
<b>Annexure A</b>	Company Profile & Legal Documentation
<b>Annexure B</b>	Curriculum Vitae's of Project Leader
<b>Annexure C</b>	Press Notices to Interested and Affected Parties
<b>Annexure E</b>	Background Information Document and I&APs Registration Form
<b>Annexure F</b>	Interested & affected Parties Registration

## **ABBREVIATION OF TERMS USED**

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– BID	Background Information Document
– CV	Curriculum Vitae
– DEA	Department of Environmental Affairs
– EA	Environmental Assessment
– ECC	Environmental Clearance Certificate
– EIA	Environmental Impact Assessment
– EMP /S	Environmental Management Plan / Statement
– GG	Government Gazette
– GN	Government Notice
– ha	Hectare
– HIV	Human Immunodeficiency Virus
– NMT	non-motorised transport
– SMEs	Small and Medium Scale Enterprises
– AM	Artisanal and mining

## EXECUTIVE SUMMARY

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- **Introduction**

The Government of the Republic of Namibia is committed to the development of the Namibian mining industry as demonstrated in this Minerals Policy within a free market environment. Eighteen years after the attainment of independence, the introduction of the Minerals Policy was a milestone for the Ministry of Mines and Energy for the further development of the Namibian mining industry. The Government recognises the important contribution of the mining industry to the social and economic development of Namibia.

The industry has been a significant part of the economy since the turn of the century. Namibia is fortunate to host a wide range of mineral deposits, a number of which are considered to be world class such as diamonds and uranium. In addition, we are blessed with other mineral resources such as gold, base metals, industrial minerals, a wide variety of semi-precious stones and several types of dimension stones.

The mineral resource potential of the country is indeed abundant and has yet to be fully tapped for the benefit of the nation. To achieve a sustained contribution of the mining sector to the economy, the Government has created a conducive and enabling legislative, fiscal and institutional environment to attract private sector driven exploration and in which mining companies can thrive.

The Ministry of Mines and Energy has taken steps to revitalise and promote the mining industry through reviews of mining legislation and the formulation of a Minerals Policy that will further enhance Namibia as an attractive investment destination. This Minerals Policy was formulated in a spirit of wide and extensive consultations with all stakeholders in a process that was spearheaded by the Minerals Policy Committee of the Ministry of Mines and Energy. The consultations were also extended to communities where small-scale mining activities are concentrated in regions like Karibib District in Erongo Region.

- **Background**

Dimension Stones, Base and Rare Metals, Industrial and Precious Metals, stones are mostly mined in three regions of Namibia, namely Karas, Erongo and Kunene. These Minerals & stones mined in Namibia include quartz (rose, clear, strawberry and smoky), tourmaline, sodalite, topaz, varieties of beryl (aquamarine, heliodore and morganite), garnet and amethyst among others. Tourmaline remains to this day an important semiprecious commodity together with amethyst, rose quartz and smoky quartz. The production of diopside, chrysocolla and pyrophyllite is also noteworthy (MITSMED Report 2016).

Most of the Namibian precious stones and minerals are recovered from late Pan African pegmatites, while amethyst is currently produced from a deposit hosted by Damara marbles. Production in the early days was not always well controlled or reported, so the cumulative production figures may not be accurate. Moreover, minerals and precious stones mining in Namibia are considered as a large scale mining activity and its history are well documented.

In Namibia the majority of minerals and precious stone mining businesses are formal, with regulated payment of royalties. Miners often work formally with no fear of government interference and distrust of outsiders. This makes it easy to control clandestine activities, illegal migration or trading outside legal channels (Dreschler, 2001).

This Environmental and Social Impact Assessment (ESIA) Report is prepared following the assessment of the proposed mining activity, which calls for an EIA Process, and as such, the purpose of this study is to identify the direct and indirect impacts that the proposed exploration activities will have on the natural resources, eco-system, and the socio- economic dimensions of the neighbouring communities and populations.

No administrative and social dissent from local and regional citizens was encountered. It should be noted that this whole process was carried out in accordance with the Namibian Environmental Management Act (No. 7 of 2007) and its Regulations.

- **Blasting / Explosives Management**

To complement the general mining activities, a Blasting / Explosive Management Plan will be developed by the Miner / Blasting Contractors for all planned developments. All the blasting activities will be carried out in accordance with Explosives Act No. 26 of 1956 section 30 and related legislation. The mine will employ explosives as the primary means of breaking rocks, and the Plan should outline management practices to be employed at the Mine that are aimed at minimizing the safety and environmental risks of handling nitrates, which are present in blasting agents. Specifically, methods used to minimize nitrate losses to the environment will be explained. In addition, the following design and loading practices will be put in place to minimize ammonia / nitrate losses to the environment:

- **Design considerations:** blasts are designed to maximize efficiency of blasting agents.
- **Blast hole liners:** liners are used even when minimal amounts of water are present. If there is excessive water, blasters will use emulsion instead.
- **Minimize sleep time:** holes are not loaded with blasting agents until necessary in order to reduce the time elapsed between loading and detonation.
- **Waste disposal:** Disposal of blasting reagent packaging and related waste is done so in accordance with the Disposal Guidance document

Company	Core Activities
<b>The Contractor should closely work with Erongo Mining and Construction,</b>	The company that will do the mining on the Claims, and make use of well serviced / maintained Machinery (with Service History) to be used include: MAN Tipper Truck, CAT Loader, Atlas Copco Air Compressors, and Bakkies. Anfax and fuses will be used for the blasting purposes
<b>AEL Blasting Services</b>	AEL Blasting Services will be directly responsible for transporting of explosives as well as do the actual blasting. Holes will be drilled by Air Jackhammers; The CAT Backholder to be used to clean; All holes to be cleaned with Air Compressors This will help ensure that Blasting activities are conducted with minimal environmental and health/safety risk. Since both safety and environmental risks are related (risks are increased from deficient handling practices), standard operating

	<p>procedures (SOPs) should be developed which address both issues jointly.</p> <ul style="list-style-type: none"> <li>– The first means of addressing explosive reagent safety and best practices related to environmental management is awareness.</li> <li>– Blast crews and engineering staff should be aware that nitrates and ammonia are generally the compounds of greatest concern for water quality</li> </ul>
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#### • **The environmental impacts of mining in Namibia**

The Namibian mining sector is characterized by large, medium and small-scale mining sector. However, this study is based on the large-scale mining. Namibia is rich in mineral deposits including diamonds, uranium, gold, base metals, industrial minerals and different types of precious stones and dimension stones. It is against this background that mining has been the backbone of the Namibian economy. Mining plays a major role in alleviating poverty and supplements the income of those involved. The Minerals (Prospecting and Mining) Act of 1992 and the Minerals Policy (2003) make provision for the registration of different types of mineral licence and mining claims. Thus, this study was undertaken within the context of the legislative framework, the Minerals Policy in particular, as it also provides the basis for the registration of mining claims

Despite the fact that mining contributes to the economic development of Namibia, it has also contributed to environmental impacts of which the greater ones have impacted other sectors of the economy. According to Speisers (2000), environmental impacts of mining are divided into primary and secondary impacts, primary impacts being those that results from mining activities itself and secondary being those that results from the spin offs of the mining activity such as littering, and impacts on flora. Even with the provisions for the registration of mining claims in place, illegal mining operations are found.

#### • **Project Motivation**

In light of the above, the objectives of this EIA were, to: determine the environmental implications of mining project and how it can be mitigated; review the provisions of the mineral policy on mining with emphasis on environmental protection; and finally provide recommendations for effective implementation of the policy with emphasis on environmental protection during mining operations in line with the Environmental Management Act and related Regulations.

#### • **Anticipated Environmental and Social Risks**

Some of the key environmental and social impacts identified are as follows:

<b>impact</b>	<b>Description</b>
– <b>Noise and Dust Pollution</b>	Mining / blasting / explosives will increase ambient noise and slightly decrease air quality through dust. Noise and dust will lead to increased irritation especially in the directly affected communities especially pedestrians who had been temporarily using this area for some time now, which may cause social distress, reaction against the project.
– <b>Access “Restrictions” to Services and Developments</b>	The identified area is providing a variety of services such as access to socioeconomic services and facilities The Environmental (and Social) Management Plan (EMP) has included explicit details for mitigating the impacts caused by this formal restricted access.

– <b>Population Influx</b>	The creation of employment opportunities may also result in a population influx into the area in search of possible opportunities, contributing to existing ongoing population expansion in the project areas. Mining teams that are constituted from people not from the project area have potential to create social tensions and cause disruption though at a very low level.
– <b>Conflict Potential</b>	The project was assessed not to create any conflict as it was welcomed enthusiastically by all Interested and Affected Parties. Care was taken to ensure that the <b>Grievance Redress Mechanism</b> is well understood by all citizens, especially those directly affected by the implementation of the project.
– <b>Increase in Traffic and Safety Hazards</b> –	The development will positively lead to a significant increase in human traffic along designated roads and access roads. Concentrated and guided increased human traffic will lead to deterioration of these access routes and the creation of dust. Details for management of impacts of increased traffic during the operational phase of the subprojects are articulated within the ESMP
– <b>Social-Environmental Linkages</b>	During the implementation of the project, no anticipated resultant environmental degradation is likely to hit hardest any population segment.
– <b>Blasting / Explosives</b>	The mining will be complimented by blasting which directly consists of nitrates and ammonia. the first means of addressing explosive reagent safety and best practices related to Environmental management is awareness. Blast crews and engineering staff are expected to be aware that nitrates and ammonia are generally the compounds of greatest concern for water quality

Other direct negative impacts will include:

- Wind erosion especially by Westerly Winds;
- Scouring of the landscape due to mining activities;
- Dust emissions,
- noise and vibrations during blasting / mining;

#### • **Institutional Capacity for implementing agencies**

The ESIA assessed institutional capacity and found that necessary provisions have been made to ensure smooth implementation of all key issues raised in preparation of the project including taking on board environmental and social safeguards.

#### • **Access to Information for All**

There should be a policy outlining a clear process for making information publicly available and providing a right to appeal if information-seekers believe they were improperly or unreasonably denied access to information or if there is a public interest case to override an exception that restricts access to certain information.

#### • **Legal Requirements**

In terms of Section 58 of this Act , the Environmental Management Act came into force on the 6th of February 2012, as determined by the Minister of Environment and Tourism (Government Notice No. 28 of 2012).

Under Section 56 of the Environmental Management Act, 2007 (Act No.7 of 2007), the Minister has made the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012). These regulations require that all projects, plans, programmes and policies that have a detrimental effect on the environment must be accompanied by an EIA. Under Section 27 of the Environmental Management Act, 2007 (Act No. 7 of 2007), and after following the consultative process referred to in section 44 of that Act, the Minister lists in the Annexure to the above mentioned Schedule, activities that may not be undertaken without an Environmental Clearance Certificate (Government Notice No. 29 of 2012).

The most important provisions in terms of guiding this Environmental Assessment process are those contained in the Town Planning, Road and Townships and Division of Land Ordinances, the Water and the Forestry Acts, The Minerals (Prospecting and Mining) Act of 1992 and the Minerals Policy.

The proposed developments will likely have minimal impact on sensitive aspects of the receiving environment, both biophysical and socio-economic, as it is remotely concentrated.

- **Public Consultations**

Public participation was carried out in accordance with the EIA Regulations. Various I&APs at local level were identified and their input solicited. Electronic and print media were fully utilized in communicating with the communities and stakeholders. The Consultant engaged on an extensive and exhaustive Field Survey as a way of engaging, informing and educating Interested and Affected parties.

- **Impact Assessment**

The issues identified and along with those identified during the Public Consultation Process are assessed using a range of assessment criteria. The application of these criteria involves a balanced consideration of duration, extent, and intensity/magnitude, modified by probability, cumulative effects, and confidence in order to determine significance. Mitigation measures are outlined for each identified impact.

- **Conclusions and Recommendations**

It is therefore recommended that the proposed mining activities at large scale It is therefore highly recommended that an Environmental Clearance be issued by the Competent Authority, which is the Ministry of Environment and Tourism (MET) provided the recommendations included in this report and the EMP are implemented.

## 1. BACKGROUND

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### 1.1 Introduction

The mineral resource potential of the country is indeed abundant and has yet to be fully tapped for the benefit of the nation. To achieve a sustained contribution of the mining sector to the economy, the Government has created a conducive and enabling legislative, fiscal and institutional environment to attract private sector driven exploration and in which mining companies can thrive.

As per the Environmental Management Act (7 of 2007), the development cannot take place without Environmental Scoping having been completed and Environmental Clearance Certificate issued from the Directorate of Environmental Affairs (MET).

Simply defined, EIA is a systematic process to identify, predict and evaluate the environmental effects of proposed actions and projects. This process is applied prior to major decisions and commitments being made. A broad definition of environment is adopted. Whenever appropriate, social, cultural and health effects are considered as an integral part of EIA. Particular attention is given in EIA practice to preventing, mitigating and offsetting these significant adverse effects of proposed undertakings.

The purpose of EIA is to:

- provide information for decision-making on the environmental consequences of proposed actions; and
- Promote environmentally sound and **sustainable development** through the identification of appropriate enhancement and mitigation measures.

According to UNCED (2015), Sustainable development is a key concept that has gained increasing international acceptance during the last two decades. A milestone in this process was the Brundtland Report, which defined sustainable development as “development that meets the needs of today’s generation without compromising those of future generations”. Five years later, the UN Conference on Environment and Development (UNCED), the Earth Summit, established a number of international agreements, declarations and commitments (see table below). Agenda 21 of the Global Action Plan for Sustainable Development, emphasises the importance of integrated environment and development decision-making and promotes the use of EIA and other policy instruments for this purpose (UNCED, 2015; UNEP, 2016).

**Table 1.1: Four Cornerstones of the Earth Summit**

*Adapted from UNCED (2015)*

FOUR CORNERSTONES OF THE EARTH SUMMIT	
Cornerstone	Summary
a) The Rio Declaration on Environment and Development	<ul style="list-style-type: none"><li>• A set of principles which provide guidance on achieving sustainable development.</li></ul>
b) Framework Convention on Climate Change	<ul style="list-style-type: none"><li>• An international treaty to stabilise greenhouse gas concentrations in the atmosphere.</li></ul>
c) Convention on Biological Diversity	<ul style="list-style-type: none"><li>• An international convention with three objectives: the conservation of biodiversity, the sustainable use of its components, and the equitable sharing of benefits from genetic resources.</li></ul>

## d) Agenda 21

- A global programme of action for achieving sustainable development to which countries are politically committed rather than legally obligated.

### 1.2 Perspectives on Sustainable Development

Sustainable development is an evolving concept, which is continually being redefined and reinterpreted. The starting point for most people is the Brundtland definition, which also can be formally stated as twin principles of intra- and inter-generational equity. In practice, these principles mean improving the welfare of the world's poor and maintaining the development opportunities for the generations that follow (UNCED (2015)).

The challenge of sustainable development may be summarised by comparing three overriding indicators:

- **First**, human activity is estimated to currently consume or pre-empt 40 per cent of net primary productivity on land.
- **Second**, 60 per cent of the world's population live close to or under the poverty line.
- **Third**, the world's population is projected to double by mid-century (circa. year 2050).

Without major policy and technology changes, UNEP and other institutions have concluded that such trends threaten the stability of the world community and the global environment (UNCED, 2015; UNEP, 2016).

### 1.3 Importance of Environmental Impact Assessment (EIA)

Reducing the burden of environmental impacts is necessary if development is to become sustainable. These impacts are more complex, larger in scale and further reaching in their potential consequences than thirty years ago when EIA was first introduced. As a result, EIA has become of ever increasing importance as a tool for development decision-making (UNCED, 2015; World Bank, 2015 & USAID, 2016).

This role is formally recognized in Principle 17 of the Rio Declaration on Environment and Development:

*“Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority”.*

According to UNEP (2015), in practice, EIA is applied primarily to prevent or minimise the adverse effects of major development proposals, such as power stations, resource renewal, agricultural processes, waste and sewage disposal, recreation, dams and reservoirs, industrial complexes, township developments, etc. It is also used as a planning tool to promote sustainable development by integrating environmental considerations into a wide range of proposed actions. Most notably, Strategic Environmental Assessment (SEA) of policies and plans focuses on the highest levels of decision making, when better account can be taken of the environment in considering development alternatives and options. More limited forms of EIA can be used to ensure that smaller scale projects, conform to appropriate environmental standards or site and design criteria. Such projects include dredging activities, road realignment and upgrading, and housing subdivisions (UNCED, 2015; World Bank, 2015 & USAID, 2016).

## 1.4 Aims and Objectives of EIA

The aims and objectives of EIA can be divided into two categories. The immediate aim of EIA is to inform the process of decision-making by identifying the potentially significant environmental effects and risks of development proposals. The ultimate (long term) aim of EIA is to promote sustainable development by ensuring that development proposals do not undermine critical resource and ecological functions or the well-being, lifestyle and livelihood of the communities and peoples who depend on them (UNCED, 2015).

### **Immediate objectives of EIA are to:**

- improve the environmental design of the proposal;
- ensure that resources are used appropriately and efficiently;
- identify appropriate measures for mitigating the potential impacts of the proposal; and
- Facilitate informed decision making, including setting the environmental terms and conditions for implementing the proposal.

### **Long term objectives of EIA are to:**

- protect human health and safety;
- avoid irreversible changes and serious damage to the environment;
- safeguard valued resources, natural areas and ecosystem components; and
- Enhance the social aspects of the proposal.

## 1.5 Limitations of EIA

EIA is also a way of ensuring that environmental factors are considered in decision-making process along with the traditional economic and technical factors. Importantly EIA requires the scientific (technical) and value issues to be dealt with in a single assessment process. This helps in the proper consideration of all advantages and disadvantages of a proposal. Environmental considerations may, therefore, be set aside in favour of what are felt to be more important considerations. Alternatively, predicted adverse effects on the environment might lead to strict conditions being imposed to avoid these effects or remedy any adverse effects, or perhaps lead to the complete abandonment of a proposal (UNEP, 2015).

However, according to UNEP (2015) it is most important to recognise that EIA cannot be regarded as a means of introducing an environmental “veto” power into administrative decision-making processes. Decisions that are unsatisfactory from an environmental point of view can still be made, but with full knowledge of the environmental consequences. The final decision about a proposal depends upon the likely severity of the adverse effects, balanced against other expected benefits.

For Namibia, this is well stipulated under the Environmental Management Act EMA (No 7 of 2007) which requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27), details principles of which are to guide all EAs; as well as Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878) which Details requirements for public consultation within a given environmental assessment process (GN 30 S21) and the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15) (GRN MET, 2016).

In summary then:

- only a very small fraction of proposals are halted, permanently or temporarily, as a direct result of EIA at the end of the review process;
- pre-emption or early withdrawal of unsound proposals has been reported though it has proved difficult to document;

- EIA has been useful in developing support for and confirmation of positive environmentally sound proposals;
- the greening or environmental improvement of proposed activities is frequently seen; and
- Particular indirect effects of EIA are both instrumental (such as where policy or institutional adjustments are made as a result of EIA experience) and educational where participation in the EIA process leads to positive changes in environmental attitudes and behavior (UNCED, 2015; World Bank, 2015).

### **1.6 Consultancy Terms of Reference**

The Terms of Reference (TORs) for the proposed project is technically and legally based on the requirements set out by the Namibian Environmental Management Act (2007) and the accompanying EIA Regulations (2012) and Minerals (Prospecting & Mining) Act, 33 of 1992 as amended. The process covered the following steps:

- *A description of all tasks to be undertaken as part of the assessment process, including any specialist studies to be included if needed;*
- *An indication of the stages at which the Environmental Commissioner is to be consulted;*
- *A description of the proposed method of assessing the environmental issues and alternatives*
- *An identification of all legislation and guidelines that have been considered in the preparation of the scoping study;*
- *Description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity*
- *A description of environmental issues and potential impacts, including cumulative impacts that have been identified*
- *A draft Environmental Management Plan that complies with EMA and its Regulations;*
- *The nature and extent of the Public Consultation processes to be conducted during the assessment process.*

It should be noted that the ToR and scope of services required for the Scoping Assessment and production of EMP for the proposed development, and this included extensive and exhaustive public consultation process.

### **1.7 The Environmental Assessment Practitioner**

Namland Consultants is a consortium of highly skilled and experienced Associates of researchers, geo-scientists, town and regional planners, mapping and environmental specialists, engineers, geologists, hydrogeologists, chemists who work with clients to develop and implement site-specific solutions.

Namland Consultants as the EAP designate:

- Have knowledge of and experience in conducting assessments, including knowledge of the Environmental Management Act, Mineral Act, the Environmental Impact Assessment Regulations and guidelines that have relevance to this proposed activity, Stakeholder Engagement;
- Have performed the work relating to the application in an objective manner, even if this results in view and findings that are not favourable to the applicant;
- Have complied with the Environmental Management Act, the Environmental Impact Assessment Regulations, guidelines and other applicable laws, and
- Have disclosed to the proponent, competent authority / the Environmental Commissioner all material and information in its possession that reasonably has or may have the potential of influencing –

- Any decision to be taken with respect to the application in terms of the Environmental Management Act, the Environmental Impact Assessment Regulations; or
- The objectivity of any report, plan or document prepared by the EAP in terms of the Act and its regulations.

## **2 . PROSPECTING PHASE**

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Following are the phases of exploration process which are mainly: Prospecting, Exploration, and the Decommissioning of works.

### **2.1 Prospecting Phase Procedural Overview**

#### **2.1.1 Desktop Study: Secondary Data Review and Geological Mapping of the Exploration Area**

At this phase the researcher basically reviews geological maps, study of previous geological and mineral exploration work done by other prospectors around the vicinity of the EPL area and then re-evaluate and translate the results towards the conclusion of the subject study.

#### **2.1.2 Geophysical Surveys**

This is data collection from the study area on the substrate on ground, through sensors such as radar, electromagnetic sensors, to detect and establish any mineralization in the exploration area. Ground geophysical surveys are also conducted by staff members using specialized equipment, while in the case of air surveys, the sensors are mounted to an aircraft, which navigates over the target area.

#### **2.1.3 Lithology Geochemical Surveys**

Rock samples from the exploration site are collected and taken to the lab for trace and analysis to be conducted by analytical chemists to determine what minerals are present and how much of it. trenches and pits may be dug depending on the commodity being sought to investigate the mineral potential.

Soil sampling that consists of small pits dug where 1kg samples can be extracted and sieved to collect about 50g of material are done. Where necessary excavations will be opened and closed immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. At all times, the landowner and other relevant stakeholders will be engaged to obtain authorization where necessary.

### **2.2 Exploration - Drilling, Sampling and Analysis**

At this phase selection of the potential mineralization model and exploration targets are based on the local geology, trenching, drilling, and assay results of the samples collected. The planned exploration activities are aimed at delineating the mineral deposits, and to determine whether the deposits are economically feasible mining resources.

### **2.2.1 Detailed Exploration Drilling**

Once hand collected samples are analysed by an analytical laboratory and proved positive results, drilling commences and more than 200 drill samples are collected for further analysis. This will determine the depth of the potential mineralization. If necessary new access tracks to the drill sites will be created and drill pads will be cleared in which to set the rig.

Two widely used drilling options may be adopted; these are the Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which is composed of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials. A typical drilling site will consist of a drill-rig and support vehicles as well as a drill core and geological samples store. A drill equipment parking and maintenance yard may be set up (including a fuel and lubricants storage facility).

### **2.2.2 Accessibility to Site**

The project site will be accessed using the gravel road D1935, D1927 and D1930 from Usako to Uis then make a turn west ward from D1930 with an unnamed gravel road that takes you to Namwater reservoir which is 5km from the boundary of EPL 8519. The site is easily accessible by gravel road.

### **2.2.3 Material and Equipment**

The input required for the exploration program in terms of vehicles and equipment includes 4x4 vehicles, trucks, water tanks, drill rigs and drilling machines, and a power generator. Equipment and vehicles will be stored at a designated area near the accommodation site or a storage site established within the EPL.

## 3 . CONTROLLING NAMIBIAN LEGISLATION

### 3.1 Procedural Overview

The acts and policies listed below outline a fairly simple process through which a prospective developer may obtain a mining license. Legally, the decision as to whether an applicant receives a mining license rests in the sole discretion of the Minister of Mines and Energy. The prospective developer must include in his application a summary of the current environmental situation of the proposed site, an estimation of the impact that mining would have on that site, and proposed methods for mitigating the adverse effects of the mining operation. This scope of the information required, however, does not legally have to reach that of an Environmental Assessment. The difference in scope between the summary that is legally required in the application process and that of an Environmental Assessment is significant. For example, the Minerals Act of 1992 does not require the identification of alternatives or the notification of affected and interested parties, as would an Environmental Assessment.

Additionally, if the mining is to take place in a protected area, written permission from the Minister of Mines and Energy is needed in addition to a license. Presumably, if the proposed area was fully enclosed within an existing protected area, the permission to mine in that area would be granted simultaneously with the mining license. If the protected area in question is located within a game reserve or nature reserve, the prospector would also need to obtain permission from the Directorate of Parks and Wildlife Management, which is the modern day equivalent of the Executive Committee referred to in Nature Conservation Ordinance of 1975.

### 3.2 The Role of the Different Ministries in EA Process

The general framework of the process for allowing mining in a protected area is well delineated. The Minister must both grant a mining license and written permission for the prospector to use that license in the protected area. Depending on the nature of the protected area, the law also requires the signature of the Directorate of Parks and Wildlife, in order for any mining to occur. In most cases, a full Environmental Assessment is required of the applicant.

The pursuit of sustainability, with respect to any development, is guided by a sound legislative and policy framework. This section provides a review of applicable and relevant Namibian legislation, policies and guidelines. This review serves to inform the proponent of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled before the proposed project may commence. The findings of the abovementioned review are summarised below.

**Table 2: Namibian Legislation relevant to the project**

LEGISLATION/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
– <b>Namibian Constitution First Amendment Act 34 of 1998</b>	<i>“The State shall actively promote... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future” (Article 95(l)).</i>	Ecological sustainability should inform and guide this EA and the proposed development.
<b>1) The Minerals (Prospecting and</b>	any application for a mining license shall include	Ecological sustainability should inform and guide this

<b>Mining) Act of 1992, Section 91(f)</b>	(i) the condition of, and any existing damage to, the environment in the area to which the application relates; (ii) an estimate of the effect which the proposed prospecting operations and mining operations may have on the environment and the proposed steps to be taken in order to minimize or prevent such effect; and (iii) the manner in which it is intended to prevent pollution, to deal with any waste, to safeguard the mineral resources, to reclaim and rehabilitate land disturbed by way of the prospecting operations and mining operations and to minimize the effect of such operations on land adjoining the mining area.	EA and the proposed development.
<b>2) Proposed Legislation: The Parks and Wildlife Management Bill</b>	Would require attainment of, and accordance with, written authorization from the Minister of Environment and Tourism. Such authorization would not be permitted unless (a) a detailed environmental assessment, allowing for sufficient public participation, was performed; (b) the Minister is satisfied that allowing the activity would not significantly prejudice the attainment of the management objectives of the protected area; and (c) the permit was subject to enforceable terms and conditions to safeguard against the risk of adverse effects and consequences relating to the proposed activity.	Ecological sustainability should inform and guide this EA and the proposed development.
<b>3) The Environmental Assessment Policy</b>	States that “mining, mineral extraction and mineral beneficiation” are activities requiring an Environmental Assessment. The Policy for Prospecting and Mining in Protected Areas and National Monuments(passed a full 5 years after the Environmental Assessment Policy) states that a full Environmental Assessment will usually be required for mining in a Protected Area and/or National Monument. It is interesting that the requirements set out in the later policy concern lands that are of a much greater national interest, and yet the language requiring an Environmental Assessment is actually softened.	Ecological sustainability should inform and guide this EA and the proposed development
<b>4) The Nature Conservation Ordinance (No. 4 of 1975), Section 18(1(d</b>	The Nature Conservation Ordinance (No. 4 of 1975), Section 18(1(d)) states that “(N)o person shall without the written permission of the Executive Committee, will fully or negligently cause any damage to any object of geological, ethnological, archaeological, historical or other scientific	The EMA / Mines Inspectorate and its regulations should inform and guide this EA process.

	interest within a game park or a nature reserve.”	
<b>5) The Policy for Prospecting and Mining in Protected Areas and National Monuments (1999)</b>	<p>says the following about granting mining licenses in such areas:</p> <ul style="list-style-type: none"> <li>• Granting of [Exclusive Prospecting Licenses and Mining Licenses]: Is generally permitted in Protected Areas and National Monuments . . . except areas within parks and monuments, which are particularly sensitive or are of special ecological or touristic importance. Each application would be considered on a case by case basis.</li> <li>• A full EA will usually be required for any prospecting or mining in a Protected Area and/or National Monument. The EA shall be conducted according to the procedures as stated in the Environmental Management Act. Should the [Minerals (Prospecting and Mining Rights) Committee] agree to recommend approval (after reviewing the EA) an Environmental Management Plan and an Environmental Contract shall be concluded before prospecting or mining may commence.</li> </ul>	
<ul style="list-style-type: none"> <li>– <b>Forestry Act 12 of 2001</b></li> <li>– <b>Nature Conservation Ordinance 4 of 1975</b></li> </ul>	<ul style="list-style-type: none"> <li>– Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)).</li> <li>– Prohibits the removal of and transport of various protected plant species.</li> </ul>	Even though the Directorate of Forestry has no jurisdiction within Townlands, these provisions will be used as a guideline for conservation of vegetation.
<ul style="list-style-type: none"> <li>– <b>Labour Act 11 of 2007</b></li> </ul>	Details requirements regarding minimum wage and working conditions (S39-47).	The proponent should ensure that all contractors involved during the blasting / mining, operation and maintenance of the proposed project comply with the provisions of these legal instruments.
<ul style="list-style-type: none"> <li>– <b>Health and Safety Regulations GN 156/1997 (GG 1617)</b></li> </ul>	Details various requirements regarding health and safety of labourers.	
<b>Public Health Act 36 of 1919</b>	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	
<b>National Heritage Act 27 of 2004</b>	Section 48(1) states that “A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object”.	Any heritage resources (e.g. human remains etc.) discovered during mining requires a permit from the NHC for relocation.

<b>Burial Place Ordinance 27 of 1966</b>	Prohibits the desecration or disturbance of graves and regulates how bodies may be unearthed or dug up.	Regulates the exhumation of graves.
<b>Water Act 54 of 1956</b>	The Water Resources Management Act 24 of 2004 is presently without regulations; therefore the Water Act No 54 of 1956 is still in force: <ul style="list-style-type: none"> <li>– Prohibits the pollution of underground and surface water bodies (S23 (1)).</li> <li>– Liability of clean-up costs after closure/ abandonment of an activity (S23 (2)).</li> </ul>	The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon spills during operation and maintenance.
<b>Urban and Regional Planning Act 5 Of 2018</b>	Subdivision of land situated in any area to which an approved Town Planning Scheme applies must be consistent with that scheme (S31).	The proposed use of the project site must be consistent with the Town Planning Scheme of the town within the boundaries it falls.
	Details the functions of the Township Board including what they consider when receiving an application for Township Establishment (S3).	The proposed layout and land uses should be informed by environmental factors such as water supply, soil etc. as laid out in Section 3.
<b>Road Ordinance 1972 (Ordinance 17 Of 1972)</b>	<ul style="list-style-type: none"> <li>– Width of proclaimed roads and road reserve boundaries (S3.1)</li> <li>– Control of traffic on urban trunk and main roads (S27.1)</li> <li>– Rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads (S36.1)</li> <li>– Infringements and obstructions on and interference with proclaimed roads. (S37.1)</li> <li>– Distance from proclaimed roads at which fences are erected (S38)</li> </ul>	The limitations applicable on RA proclaimed roads should inform the proposed layout and zonings where applicable.

## 4. RECEIVING ENVIRONMENT – KARIBIB DISTRICT

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Usakos is a town in the Erongo Region of western Namibia. It has 3,800 inhabitants and owns 97 square kilometres (37 sq mi) of town land. It is the close urban area to the exploration site. It is situated on the Khan River, halfway between Windhoek and Swakopmund on the B2 (Trans-Kalahari Highway), the main road between the Walvis Bay and Johannesburg. The town is known for its aragonitemarble quarries.

### 4.1 History

Usako began to grow quickly when on 30 May 1900 the railway construction reached the newly founded place. 1 June 1900 marks the day of the official foundation of Usakos at the occasion of the first train arriving from Swakopmund. The railway station was built, a medical practice, storage facilities, a prison, and living quarters were erected, and the population rose to 274.

When the railway workers moved on towards Windhoek in 1902, business quieted down. In 1904 the place became again important as a railway hub for ferrying troops in the Herero and Namaqua War. Its status was upgraded to that of a county, and governance was extended to include Omaruru. At the end of the war in 1907, Usakos counted 316 white residents, and the remaining Herero land was expropriated and offered to white farmers. Usakos was declared a municipality in 1909.

### 4.2 Historic Buildings

One of Usakos's oldest buildings is the Roesemannhaus (*Roesemann's house*), erected 1900 shortly after the town was founded. Other historic structures are the Wollhaus (*Wool house*), erected in 1900 from local marble, the Railway station building (1901), the Kaiserbrunnen (*Emperor fountain*, 1906-1908), and the Christ Church (1910).

### 4.3 Economy and Infrastructure

The Navachab Gold Mine owned by QKR Namibia is located 30 km from Karibib town. The mine is the major employer of the town. In 2008, proposals surfaced for a new cement works.

### 4.4 Transport

Usakos is connected to the TransNamib railway network; Railway Station is situated downtown. The next station to the west is Kranzberg, the junction for the branch railways to Tsumeb and Grootfontein from the line to the capital Windhoek.

## 4.5 Politics

Usakos was downgraded from municipal to town status in 2010. It is now governed by a town council that has seven seats.

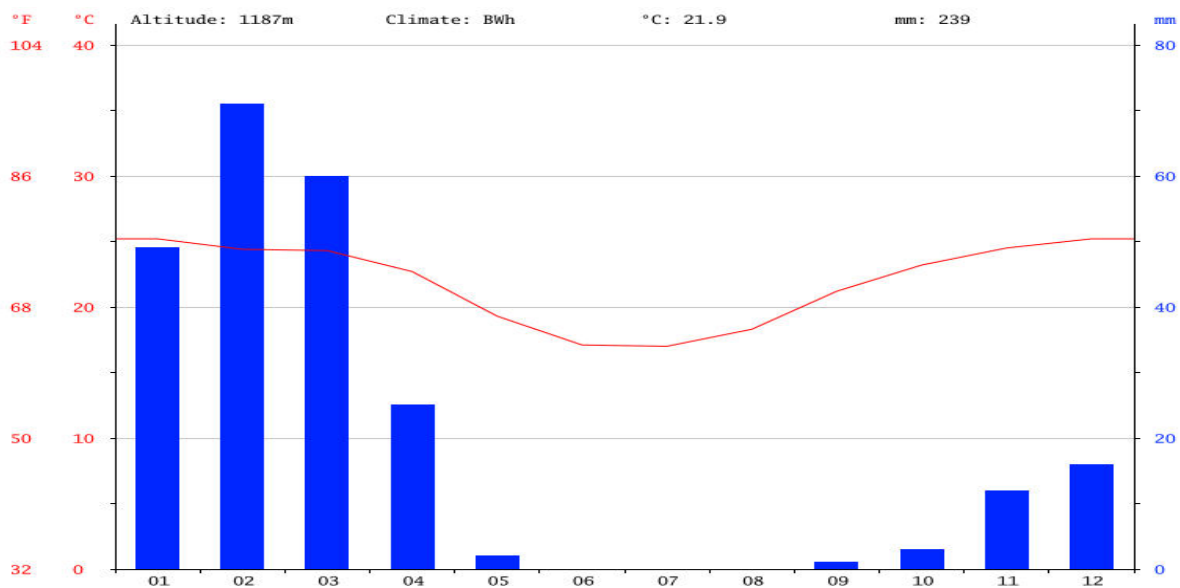
## 4.6 Education

Usakos is also home to a Junior Secondary School and Primary School, situated in the Hakaseb Location.

## 4.7 Climate

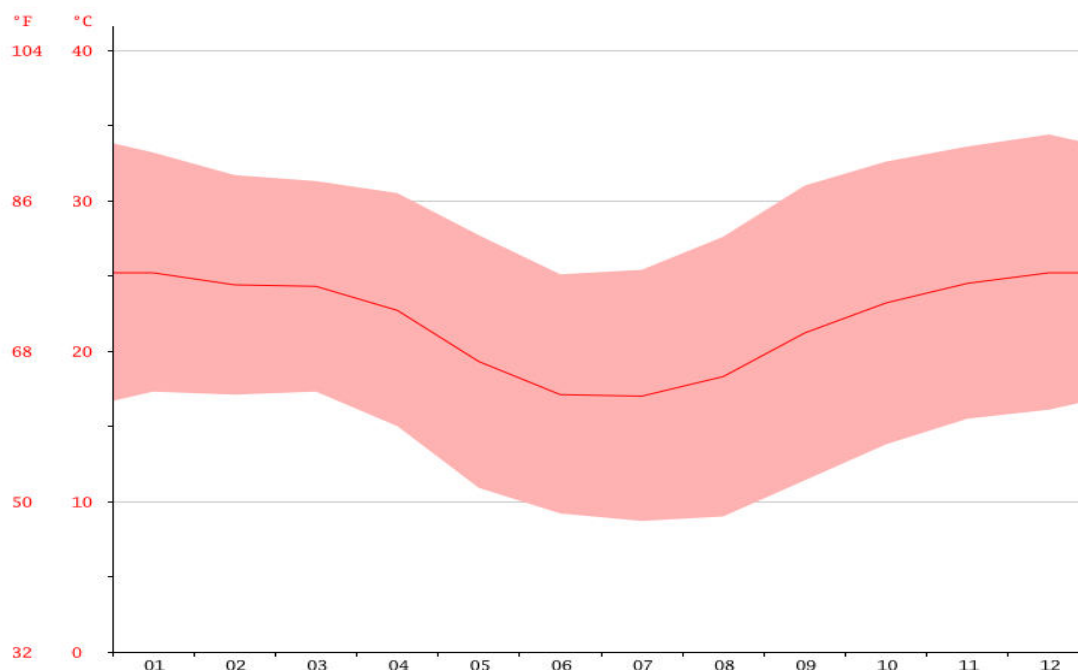
Usakos climate is a desert one. There is virtually no rainfall during the year in Usakos. According to Köppen and Geiger, this climate is classified as BWh. The average annual temperature is 21.9 °C in Usako. About 239 mm of precipitation falls annually.

## 4.8 Climatology



Precipitation is the lowest in June, with an average of 0 mm. The greatest amount of precipitation occurs in February, with an average of 71 mm.

## 4.9 Temperature Graph of Usakos/Daures



At an average temperature of 25.2 °C, January is the hottest month of the year. The lowest average temperatures in the year occur in July, when it is around 17.0 °C.

## 4.10 Usakos Climate Table / Historical Weather Data

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	25.2	24.4	24.3	22.7	19.3	17.1	17	18.3	21.2	23.2	24.5	25.2
Min. Temperature (°C)	17.3	17.1	17.3	15	10.9	9.2	8.7	9	11.4	13.8	15.5	16.1
Max. Temperature (°C)	33.2	31.7	31.3	30.5	27.7	25.1	25.4	27.6	31	32.6	33.6	34.4
Avg. Temperature (°F)	77.4	75.9	75.7	72.9	66.7	62.8	62.6	64.9	70.2	73.8	76.1	77.4
Min. Temperature (°F)	63.1	62.8	63.1	59.0	51.6	48.6	47.7	48.2	52.5	56.8	59.9	61.0
Max. Temperature (°F)	91.8	89.1	88.3	86.9	81.9	77.2	77.7	81.7	87.8	90.7	92.5	93.9
Precipitation / Rainfall (mm)	49	71	60	25	2	0	0	0	1	3	12	16

Between the driest and wettest months, the difference in precipitation is 71 mm. The variation in temperatures throughout the year is 8.2 °C.

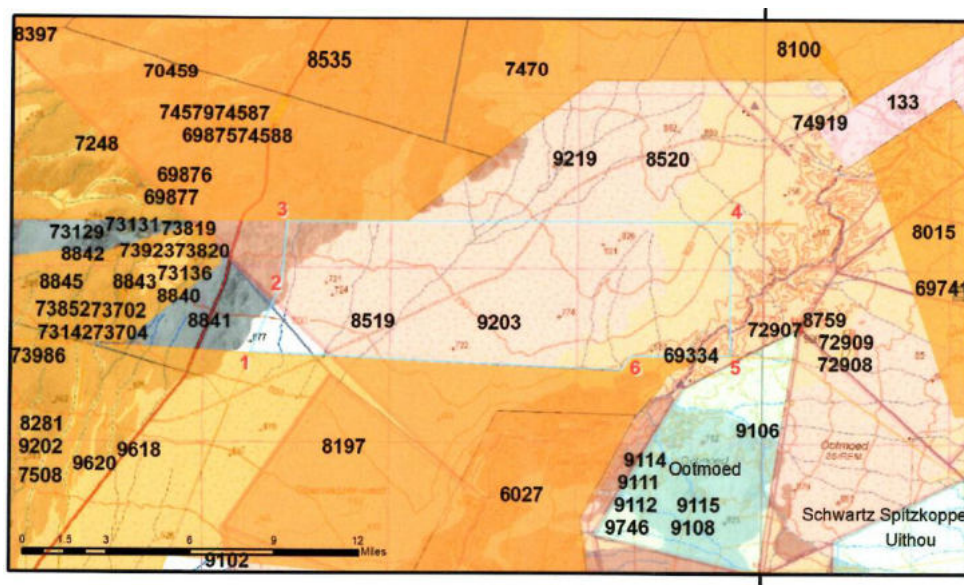
#### 4.11 Selected Pictures from the identified site



Picture 1: View of the site



Picture 2: Vegetation & Soil Composition



## 5. PUBLIC CONSULTATION / PARTICIPATION

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### 5.1 Introduction

The role of stakeholder engagement in this development was greatly explored by the consultant. explored the different elements of a Stakeholder Engagement Framework, while considering the steps, stakeholder categories, and possible options for public participation in the whole process. It is important to note that there is no single 'magic bullet' solution that exists for stakeholder engagement. Each situation requires thorough design and planning specifically tailored to the objectives sought for the relevant stage of a project or program. Depending on the unique situation and context, a range of different stakeholder engagement and public participation methods were employed.

The term participation typically refers to some aspect of local community involvement in the design, implementation and evaluation of a project or plan (Brown & Wyckoff-Baird, 1992). According to Smith (1983), public participation encompasses a range of procedures and methods designed to consult, involve, and inform the public to allow those that would be potentially affected by a decision or policy to have input into the process. The latter are also known as stakeholders, which include (IFC 2007):

*“...persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses”*

Stakeholder engagement broadly refers to a framework of policies, principles, and techniques which ensure that citizens and communities, individuals, groups, and organizations have the opportunity to be engaged in a meaningful way in the process of decision-making that will affect them, or in which they have an interest.

Thus, public participation can be recognised as a practice of stakeholder engagement. Stakeholder engagement and public participation are a means of achieving:

- Participatory democracy (e.g. community empowerment and providing the opportunity to develop knowledge for making informed choices)
- Transparency in decision-making process
- Community empowerment and support
- Reduced conflict over decisions between decision-makers and public groups, and between the groups
- Public participation may involve both individual and group input.

As such, Namland Consultants adheres to the International Association for Public Participation **five elements**, which it used for this project in increasing order of public influence (IAP2, 2007):

**Table 5.1: Public Participation Five Elements**

**Courtesy:** International Association for Public Participation (2007)

<b>Element</b>	<b>Description</b>
<b>(a) Inform</b>	Provided the general public with balanced and objective information to assist them in understanding the problem (housing shortage), alternatives, opportunities and/or solutions, which is the servicing of land.
<b>(b) Consult</b>	Obtained public feedback on analysis, alternatives and/or decisions.
<b>(c) Involve</b>	to work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered
<b>(d) Collaborate</b>	Partnered with the public in each aspect of the decision, including the development of alternatives and the identification of the preferred solution.
<b>(e) Empower</b>	Placed final decision making in the hands of the public.

Having clearly defined and communicated ideas on the level of engagement desired by the proponent, organisation is an important step in later evaluation and monitoring (Krick et al., 2005). Ideally, the Consultant identified and mapped itself somewhere along a continuum of engagement scales, and adaptive management cycles, aimed at moving along the continuum towards improving engagement practices. However, the extent to which an organisation moves along this continuum will ultimately depend on the situation and specific context of its engagement process. An important aspect that is critically linked to the consideration of types and levels of engagement relate to stakeholder categories.

The categories of stakeholders (I & APs) identified for involvement in a public participation process will directly have an influence on the method of engagement. Although the specific categories of stakeholders for a given engagement process will be largely dependent on its goals and objectives, a typical generic profile of stakeholders in this project, and Namland's assessments were categorised into the following types:

**Table 5.2: Categories of Consulted I& APs**

<b>CATEGORY</b>	<b>INSTITUTION</b>
– <b>State Owned Enterprises (SOEs) / Departments or Line Ministries</b>	Ministry of Environment & Tourism (MET); Ministry of Mines and Energy; Erongo Regional Council; Roads Authority; NamWater; TransNamib; NamPol; Ministry of Youths; Ministry of Works;
– <b>Usakos Town Council</b>	Engineering Department: Planning, Projects and Housing Offices; Community Development Services: Local Economic Development, Youths Development; Public Relations Department ; Chief Executive Officer; Mayor's Office;
– <b>Industry or sector representatives</b>	Namibia National Chamber of Commerce and Industries (NCCI); Erongo Red; Salt Company; Small Business Development Centre Network; National Housing Enterprises;
– <b>Research (e.g. scientific, technical specialists) or academic institutions</b>	Desert Research Foundation (DRF); Namibia Uranium Institute; Namibia Uranium Association; Namibia Institute of Public and Environmental Affairs;
– <b>Special interest groups</b>	Youths; SMEs;
– <b>Local Community Representatives</b>	Local Councillors; Youths Leaders; Church leaders;
– <b>Members of the General Public / Community</b>	Karibib District Residents

## 5.1 Steps and Methods used by the Consultant for Public Participation

A stakeholder engagement or public participation process typically involves the following steps (IFC, 2007).

**Table 5.3: Stakeholder Engagement or Public Participation Process Steps**

Stage	Description of activities
<b>1. Preliminary Planning and Design</b>	
	(a) Situation Analysis (b) Decision Process (c) Information Exchange (d) Stakeholder Identification and Analysis (e) Planning Team (f) Approvals
<b>2. Develop the Stakeholder Engagement Plan</b>	
	(a) Establish Objectives (b) Identify and address major issues (c) Identify and involve the key stakeholders (d) Determine public participation method (e) Prepare to provide and receive information (f) Develop critical path (g) Budget, staff, resources, logistics, roles and responsibilities (h) Prepare to give and receive feedback
<b>3. Plan Implementation</b>	
	(a) Follow the Critical Path (b) Apply Public Participation Method (c) Provide and receive information (d) Monitor the Process
<b>4. Feedback</b>	
	(a) Report to decision-makers (b) Report to participants (c) Evaluate the overall process

## 5.2 Notice Board & Newspaper Advertising

Given the dispersed nature of the identified corridors and the means of communication outlined above, it was deemed necessary to display a makeshift **Notice Board** near the identified site as well as the Usakos & Karibib Town Council Offices as laid out in the EIA Regulations (RN: MET, 2012: Reg 21(2)(a)). The Consultant advertised using the targeted approach by using both the locally and nationally read and accepted Newspapers to reach out to I & APs

The main issues arising from the comments received during the commenting period meeting have been summarized below. These comments, as well as those received during the course of the Public Consultation Process have been recorded in an **Issues and Responses Trail**. These issues as well as those identified in Chapter 4 are addressed in the following chapter.

**Table 5.4: Issued raised by IAPs**

THEME	NEGATIVE ISSUES RAISED BY IAPS	POSITIVE ISSUES
– <b>Economic</b>	– n/a	– n/a
– <b>Social</b>	<ul style="list-style-type: none"> <li>– Illicit sexual Activities</li> <li>– Drug and Alcohol Abuse</li> <li>– Muggings at night</li> <li>– Burglaries and Robberies</li> <li>– Type of mining to be done in the area</li> <li>– Illegal routes by private vehicles thereby endangering lives</li> </ul>	– Short cuts to get to services like Shops, Markets, School –
– <b>Environmental</b>	<ul style="list-style-type: none"> <li>– Blasting / explosives</li> <li>– Urination</li> <li>– Graffiti</li> <li>– Open Defecation</li> <li>– Disposal of dog wastes by residents</li> <li>– Strong Urination Stench</li> <li>– Flies causing diseases (defecation)</li> <li>– Burning of tyres (air pollution)</li> <li>– Noise</li> <li>– Dumping of used condoms, beer bottles, cigarettes, etc</li> <li>– Illegal dumping site</li> </ul>	– Aesthetic

## 6. IMPACT ASSESSMENT

### 6.1 Approach and Methodology employed for assessment

#### 6.1.1 The EIA Process

Environmental Impact Assessment (EIA) is a systematic process that identifies and evaluates the potential impacts (positive and negative) that a Project may have on the biophysical and socio-economic environment, and identifies mitigation measures that need to be implemented in order to avoid, minimise or reduce the negative impacts and also identifies measures to enhance positive impacts. The EIA is not fully a linear process, but one where several stages are carried out in parallel and where the assumptions and conclusions are revisited and modified as the project progresses. The following sections provide additional detail regarding the key stages in this EIA process. These stages are:

- 1) Scoping Phase;
- 2) Specialist Study Phase; and
- 3) Integration and Assessment Phase.

### 6.2 Scoping Phase

The first phase of the EIA process is a Scoping Study, with an emphasis on public involvement. The various tasks and consultation activities undertaken by the Consultant thus far are described and summarised below.

#### 6.2.1 Initial Site Visit and Project Initiation

As part of the project initiation, Namland carried out an initial site reconnaissance visit in May 2024. The purpose of the site visit was to familiarise the project team with the project proposal and affected project area and to begin the environmental and social screening and scoping process. Three more site visits were carried out by Namland.

**Table 6.1: Public Participation Tasks**

ACTIVITY	DESCRIPTION AND PURPOSE
– Preparation of a preliminary stakeholder database	A preliminary database has been compiled of authorities (local and provincial), Non-Governmental Organisations and other key stakeholders. This database of registered I&APs was expanded during the ongoing EIA process.
– Erection of site notices	Site notices were placed on and along the mining site
– Distribution of BIDs	Background Information Documents (BIDs) were distributed to all I&APs.
– Release of Draft Scoping Report for Public Comment	The Draft Scoping Report was released for public comment. All comments received have been included in this Final Scoping Report.
– Newspaper Advertisement	The release of the Draft Scoping Report was advertised through the Facebook Pages, NCCI website and bulk emailing
– Compilation of Comments and Responses Report	Through the public participation process a Comments and Responses Report has been compiled
– Notification of submission Final Report	Notification of the submission of the final Scoping Report to the MET was sent to register I&APs.
– Notification of issuance of	The I& APs will be notified through the normal channels on the issuance of the Environmental Clearance Certificate. Newspaper adverts will also be utilised.

<b>Environmental Clearance Certificate</b>	
– <b>Notification of Blasting</b>	The Notices will be done according to the Explosives Act 26 of 1956 Explosives Regulations; and all related blasting permits shall in terms of section 9 (1) (a) of the Act, to use blasting materials

### 6.3 Specialist Studies Phase

During the Specialist Study phase, the Consultant gathered data relevant to identifying and assessing environmental impacts that might occur as a result of the Project. They assisted the project team in assessing potential impacts according to a predefined assessment methodology included in the Scoping Report. The Consultant also suggested ways in which negative impacts could be mitigated and benefits could be enhanced.

### 6.4 Integration and Assessment Phase

The final phase of the EIA is the Integration and Assessment Phase. The assessment of impacts proceeds through an iterative process considering three key elements:

- 1) **Prediction of the significance** of impacts that are the consequence of the Project on the natural and social environment.
- 2) **Development of mitigation measures** to avoid, reduce or manage the impacts.
- 3) **Assessment of residual significant impacts** after the application of mitigation measures.

A synthesis of the studies, which addresses the key issues identified during the Scoping Phase, is documented in this ESIA. Relevant technical studies are included as appendices to this ESIA.

The Draft ESIA was made available to I&APs for a public comment period and registered and identified I&APs were notified of the release of the Draft EIA and where the report can be reviewed.

Comments received on the Draft EIA have been assimilated and the EIA project team provided appropriate responses to all comments. All registered I&APs will be notified when an Environmental Authorisation has been issued by MET.

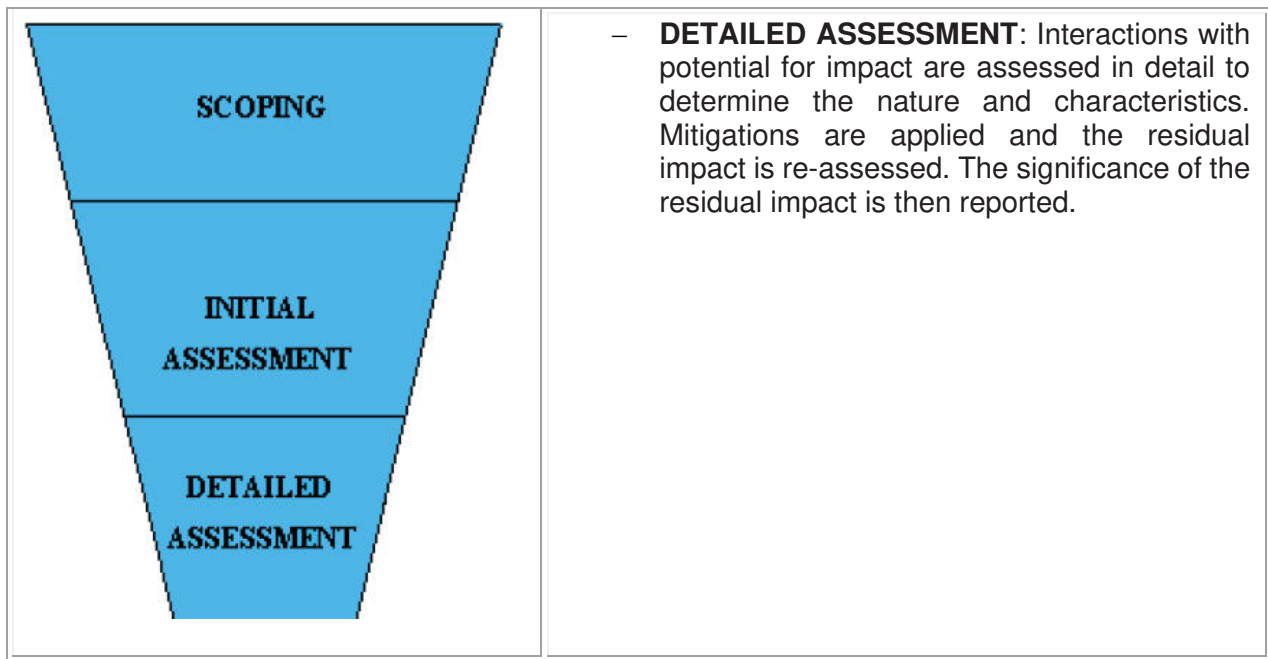
### 6.5 Impact Assessment Methodology

#### 6.5.1 Impact Assessment Process

The following diagram describes the impact identification and assessment process through scoping, screening and detailed impact assessment. The methodology for detailed impact assessment is outlined below.

**Figure 6.2: impact identification and assessment process**

	– <b>SCOPING:</b> Interactions between project activities and environmental and social receptors are identified for further assessment. Areas where interactions are not expected to occur are 'scoped out' of the assessment.
	– <b>INITIAL ASSESSMENT:</b> Potential interactions are further evaluated against site-specific conditions using information gathered through baseline studies. – Interactions are 'screened out' if the potential for impact does not exist or is negligible.



### 6.5.2 Impact Assessment Methodology

The purpose of impact assessment and mitigation is to identify and evaluate the significance of potential impacts on identified receptors and resources according to defined assessment criteria and to develop and describe measures that will be taken to avoid or minimise any potential adverse effects and to enhance potential benefits.

#### Definition of Key Terminology

- **Project** - The features and activities that are a necessary part of the Project Proponent's development, including all associated facilities without which the Project cannot proceed. The Project is also the collection of features and activities for which authorization is being sought.
- **Project Site** - The (future) primary operational area for the Project activities. Private transport corridors (i.e., those dedicated for use solely by Project operational activities) are included as part of the Project Site.
- **Project Footprint** - The area that may reasonably be expected to be physically touched by Project activities, across all phases. The Project Footprint includes land used on a temporary basis such as construction lay down areas or construction haul roads, as well as disturbed areas in transport corridors, both public and private.

**Table 6.3: Impact Types and Definitions**

Nature or Type	Definition
<b>Positive</b>	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
<b>Negative</b>	An impact that is considered to represent an adverse change from the baseline, or introduces a new undesirable factor.
<b>Direct impact</b>	Impacts that result from a direct interaction between a planned project activity and the receiving environment/receptors (e.g. between occupation of a site and the pre-existing habitats or between an effluent discharge and receiving water quality).
<b>Indirect impact</b>	Impacts that result from other activities that are encouraged to happen as a consequence of the Project (e.g. in-migration for employment placing a demand on resources).
<b>Cumulative impact</b>	Impacts that act together with other impacts (including those from concurrent or planned future third party activities) to affect the same resources and/or receptors as the Project.

An impact is any change to a resource or receptor brought about by the presence of a project component or by the execution of a project related activity. The evaluation of baseline data provides crucial information for the process of evaluating and describing how the project could affect the biophysical and socio-economic environment.

Impacts are described according to their nature or type, as summarised in *Table 5.3*.

**Table 6.4 Significance Criteria**

IMPACT MAGNITUDE	
<b>Extent</b>	<p><b>On-site</b> – impacts that are limited to the boundaries of the development site.</p> <p><b>Local</b> – impacts that affect an area in a radius of 25km around the development site.</p> <p><b>Regional</b> – impacts that affect regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries, habitat type/ecosystem.</p> <p><b>National</b> – impacts that affect nationally important environmental resources or affect an area that is nationally important/ or have macro-economic consequences.</p>
<b>Duration</b>	<p><b>Temporary</b> – impacts are predicted to be of short duration and intermittent/occasional.</p> <p><b>Short-term</b> – impacts that are predicted to last only for the duration of the construction period.</p> <p><b>Long-term</b> – impacts that will continue for the life of the Project, but ceases when the project stops operating.</p> <p><b>Permanent</b> – impacts that cause a permanent change in the affected receptor or resource (e.g. removal or destruction of ecological habitat) that endures substantially beyond the project lifetime.</p>
<b>Intensity</b>	<p><b>BIOPHYSICAL ENVIRONMENT:</b> <i>Intensity can be considered in terms of the sensitivity of the biodiversity receptor (i.e. habitats, species or communities).</i></p> <p><b>Negligible</b> – the impact on the environment is not detectable.</p> <p><b>Low</b> – the impact affects the environment in such a way that natural functions and processes are not affected.</p> <p><b>Medium</b> – where the affected environment is altered but natural functions and processes continue, albeit in a modified way.</p>

	<p><b>High</b> – where natural functions or processes are altered to the extent that they will temporarily or permanently cease.</p> <p><b>Where appropriate, national and/or international standards are to be used as a measure of the impact.</b>  <i>Specialist studies should attempt to quantify the magnitude of impacts and outline the rationale used.</i></p> <p><b>SOCIO-ECONOMIC ENVIRONMENT:</b> <i>Intensity can be considered in terms of the ability of people/communities affected by the Project to adapt to changes brought about by the Project.</i></p> <p><b>Negligible</b> – there is no perceptible change to people's livelihood.</p> <p><b>Low</b> - people/communities are able to adapt with relative ease and maintain pre-impact livelihoods.</p> <p><b>Medium</b> – people/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.</p> <p><b>High</b> - affected people/communities will not be able to adapt to changes or continue to maintain pre-impact livelihoods.</p>
<b>Likelihood - the likelihood that an impact will occur</b>	
<b>Unlikely</b>	The impact is unlikely to occur.
<b>Likely</b>	The impact is likely to occur under most conditions.
<b>Definite</b>	The impact will occur.

Once a rating is determined for magnitude and likelihood, the following matrix can be used to determine the impact significance.

**Table 6.5 Significance Rating Matrix**

SIGNIFICANCE				
MAGNITUDE		LIKELIHOOD		
		Unlikely	Likely	Definite
	Negligible	Negligible	Negligible	Minor
	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

**Table 6.6 Significance Colour Scale**

Negative ratings	Positive ratings
Negligible	Negligible
Minor	Minor
Moderate	Moderate
Major	Major

**Table 6.7 Significance Definitions**

SIGNIFICANCE DEFINITIONS	
<b>Negligible significance</b>	An impact of negligible significance (or an insignificant impact) is where a resource or receptor (including people) will not be affected in any way by a particular activity, or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
<b>Minor significance</b>	An impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.

<b>Moderate significance</b>	An impact of moderate significance is one within accepted limits and standards. The emphasis for moderate impacts is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that 'moderate' impacts have to be reduced to 'minor' impacts, but that moderate impacts are being managed effectively and efficiently.
<b>Major significance</b>	An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. A goal of the EIA process is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a development. It is then the function of regulators and stakeholders to weigh such negative factors against the positive factors such as employment, in coming to a decision on the Project.

Once the significance of the impact has been determined, it is important to qualify the degree of confidence in the assessment. Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact. Degree of confidence can be expressed as low, medium or high.

## **6.7 Mitigation Measures and Residual Impacts**

For activities with significant impacts, the EIA process is required to identify suitable and practical mitigation measures that can be implemented. The implementation of the mitigations is ensured through compliance with the regulatory Frameworks. After first assigning significance in the absence of mitigation, each impact is re-evaluated assuming the appropriate mitigation measure(s) is/are effectively applied, and this results in a significance rating for the residual impact.

## **6.8 Identification of Mitigation Measures**

For the identified significant impacts, the project team, with the input of the client, has identified suitable and practical mitigation measures that are implementable. Mitigation that can be incorporated into the project design, in order to avoid or reduce the negative impacts or enhance the positive impacts, have been defined and require final agreement with the client as these are likely to form the basis for any conditions of approval by MET.

## **6.9 Specialist Study Methodology**

### **6.9.1 Botany, Terrestrial Ecology and Avifauna**

A botany, terrestrial ecological and avifaunal specialist study was undertaken. As part of this study, a desktop study was carried out of publicly available scientific publications to investigate the ecology and biodiversity of the affected project area. A site visit was undertaken where the different biodiversity features, habitat, vegetation and landscape units present at the site were identified and mapped in the field. This included generating a fine-scale vegetation map for the site which identified and mapped the different plant communities present. Walk-through-surveys were conducted across the sites (corridors) and all plant and animal species observed were recorded. Searches for listed and protected plant species at the site were conducted and the location of all listed plant species observed was recorded. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.

**Table 6.8 Archaeology, Heritage and Palaeontology**

A paleontological, archaeological and cultural heritage study was undertaken.

STUDY	DESCRIPTION
<b>Palaeontology</b>	A desktop paleontological study was undertaken for the identified site. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.
<b>Archaeology</b>	A desktop study was carried out of publicly available scientific publications to determine the archaeological history of the affected project area. In addition, an archaeological field survey was undertaken of the affected project area. Archaeological materials and structures were inventoried, with approximate age and descriptions recorded as necessary. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.
<b>Heritage</b>	Publications of the history of the affected project areas were investigated and informed the specialist study. A heritage field survey was undertaken in order to identify existing heritage structures in the affected project area. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.

### 6.10.1 Landscape and Visual

A landscape and visual impact assessment study was undertaken. Site visits were undertaken where visual features and the landscape setting of the site were recorded. An assessment was also made as to what degree people who make use of these locations would be sensitive to change(s) in their views, brought about by the Project. These receptors were then identified, as well as Key Observation Points (KOPs) (those sensitive receptors who had views of the Project) particularly those relating to intersections of major roads, arterial and scenic routes, as well as urban areas, settlements and farmsteads.

The landscape character was then surveyed in terms of scenic quality (landscape significance) and receptor sensitivity to landscape change (of the site) in order to define the visual objective for the project site. Photomontages using panoramic photographs were used to determine the degree of visibility of the Project and change in views of the surrounding landscape. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.

### 6.10.2 Agriculture

An agriculture impact assessment study was also considered, although in this whole project it was not of much impact or relevance considering the nature of the whole project, and setting as the subject area is a semi desert, barren environment with not much agricultural activities taking place.

### 6.10.3 Socio-economic

The socio-economic study was undertaken. The study began with the compilation of a baseline description. The baseline description was derived from a range of secondary data (including but not limited to census data, existing reports, development plans and other strategic planning documents) and primary data collection. The primary data used for the baseline is based on information provided by the Client / Proponent and issues raised through the public consultation process.

The impact assessment phase incorporated the identification and assessment of socio-economic impacts (direct, indirect and cumulative) that may result from the closure of various corridors (construction and operation phases) of the project. Mitigation measures that address the local context and needs were recommended as the final phase of the study.

### **6.11 Assumptions and Limitations**

Environmental Impact Assessment is a process that aims to identify and anticipate possible impacts based on past and present baseline information. There is, inevitably, always some uncertainty about what will actually happen in reality. Impact predictions have been made based on field surveys and with the best data, methods and scientific knowledge available at this time. However, some uncertainties could not be entirely resolved. Where significant uncertainty remains in the impact assessment, this is acknowledged and the level of uncertainty is provided.

In line with best practice, this ESIA has adopted a precautionary approach to the identification and assessment of impacts. Where it has not been possible to make direct predictions of the likely level of impact, limits on the maximum likely impact have been reported and the design and implementation of the project (including the use of appropriate mitigation measures) will ensure that these are not exceeded. Where the magnitude of impacts cannot be predicted with certainty, the team of specialists have used professional experience and available scientific research from solar facilities worldwide to judge whether a significant impact is likely to occur or not. Throughout the assessment, this conservative approach has been adopted to the allocation of significance.

#### **6.11.1 Gaps and Uncertainties**

Inevitably knowledge gaps remain. For instance, there is an incomplete understanding of cumulative impacts as it is not known how the project will get consolidated onto the main town plan.

#### **Gaps in Project Description**

- Regarding the location of the site, the assessment is based on a refined layout / rezoning derived from revisions of earlier layouts, to accommodate environmental sensitivities. Although the final layout has been confirmed,
- At this stage it is unknown, although unlikely, whether a borrow pit for rock or soil material or blasting activities will be required for the closing off of the mine.

#### **Gaps in Baseline Information**

- Ecological limitations; a limitation associated with the sampling approach was the narrow temporal window of sampling. Ideally, a site should be visited several times during all the different annual seasons to ensure that the full complement of plant and animal species present are captured, as well as the temporary usage of the corridor by some school children who frequently use these corridors were on holidays, including beer hall patrons who had gone for holidays

However, this is rarely possible due to time and cost constraints and therefore, the data captured is representative of the species at the site. The vegetation at the time of the site was in a reasonable condition for sampling. This represents a sufficiently conservative and cautious approach which takes account of the study limitations.

### **Gaps in Understanding of Impacts**

- It should be noted that the closure of various corridors all at once are new to Namibia and in this case the impacts associated with them have not been scientifically researched in the context of their occurrence in this country, and therefore the specialists have used the precautionary principal where necessary in undertaking their respective impact assessments.

All impacts included in the table below fall within the scope of this project and responsibility of the client or proponent. Each of the potential impacts is screened and subjected to the criteria stipulated above. The significance of each potential impact is determined based on the criteria below.

Detailed descriptions of mitigation measures for impacts that require mitigation are contained in the EMP (**Appendix B**).

Impacts for which insufficient information is available are discussed at the end of this section.

POTENTIAL IMPACT	DESCRIPTION	EXTENT	DURATION	INTENSITY	PROBABILITY	CONFIDENCE/ SUFFICIENT INFORMATION AVAILABLE?	SIGNIFICANCE	SIGNIFICANT MITIGATION DEEMED POSSIBLE?	NEXT STEP
<b>Aesthetic issues</b>	The change in the existing landscape may be an eye sour due to blockage of open views.	Immediate area	Temporary	Low	Improbable	Yes	Low	Yes	<b>EMP</b>
<b>Blasting / explosives</b>	Blasting explosives will leave nitrate to the environment	Local	Temporary	Low	Highly probable	Yes	Low	Yes	<b>EMP</b>
<b>Employment creation</b>	The mining / blasting activities associated with the project is due to create local employment opportunities.	Local	Temporary	Medium	Definite	Yes	Low	Yes	<b>EMP</b>
<b>Noise (construction phase)</b>	Mining / blasting activities can create noise for local nearby residents.	Local	Temporary	Low	Highly probable	Yes	Low	Yes	<b>EMP</b>
<b>Dust (construction phase)</b>	The ingress and egress of mining / blasting construction vehicles can create dust.	Local	Temporary	Low	Improbable	Yes	Low	Yes	<b>EMP</b>
<b>Traffic (Operational phase)</b>	Increase in traffic in the area is expected due to mining activities	Local	Permanent	Medium	Definite	Yes	Low	Yes	<b>EMP</b>
<b>Impact on existing properties</b>	The proposed development is believed to	Local	Long-term	Low	Probable	Yes	Low	Yes	<b>EMP</b>

	impact on exiting property values in the area.								
<b>Public open space encroachment</b>	The proposed development may encroach in public areas	Local	Temporary	Low	Probable	Yes	Low	Yes	<b>EMP</b>

**Table 6.9: Screening and assessment of impacts**

## 7. CONCLUSIONS AND RECOMMENDATIONS

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The potential positive and negative impacts stemming from the proposed exploration activities on EPL No. 8159 were identified, assessed and appropriate management and mitigation measures (to negative impacts) made thereof for implementation by the Proponent, their contractors and project related employees.

The pre identified issues and concerns form the basis for this report and the Draft EMP. Mitigation measures to identified issues have been provided, thereof, to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. With effective implementation of the recommended management and mitigation measures, a reduced rating in the significance of adverse impacts is expected from Medium to Low. To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO). The monitoring of this implementation will not only be done to maintain low rating, but also to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away.

The Environmental Consultant is confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation of these measures.

It is therefore, recommended that the proposed prospecting and exploration activities may be granted an ECC, provided that:

8. All the management and mitigation measures provided herein are effectively and progressively implemented.
9. All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensuring compliance with these specific legal requirements.
10. The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.

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