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15 September 2016

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

The Managing Director
Country Wide Transport & Plant Hire cc
P. O Box 4676
Walvis Bay
Namibia

Dear Sir or Madam,

SUBJECT: ENVIRONMENTAL CLEARANCE CERTIFICATE FOR PROPOSED EXPLORATION ON THE MINING CLAIMS NO: 67406 – 67411 SITUATED IN KARIBIB DISTRICT, ERONGO REGION

The Environmental Scoping Report and Environmental Management Plan submitted are sufficient as they made provisions of the environmental management concerning the project's activities. From this perspective, regular environmental monitoring and evaluations of environmental performance should be conducted. Targets for improvements should be established and monitored from time to time.

This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project.

On the basis of the above, this letter serves as an Environmental Clearance Certificate for the project to commence. However, this clearance letter does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from this project activity. Instead, full accountability rests with Country Wide Transport & Plant Hire cc and their consultants.

This environmental clearance is valid for a period of 3 (three) years, from the date of issue (18 December 2015) unless withdrawn by this office.

Yours sincerely,

MINISTRY OF ENVIRONMENT AND TOURISM
P/Bag 13306
Windhoek, Namibia
2016 -09- 22
Office of the Environmental Commissioner

Teofilus Nghitila
ENVIRONMENTAL COMMISSIONER

"Stop the poaching of our rhinos"

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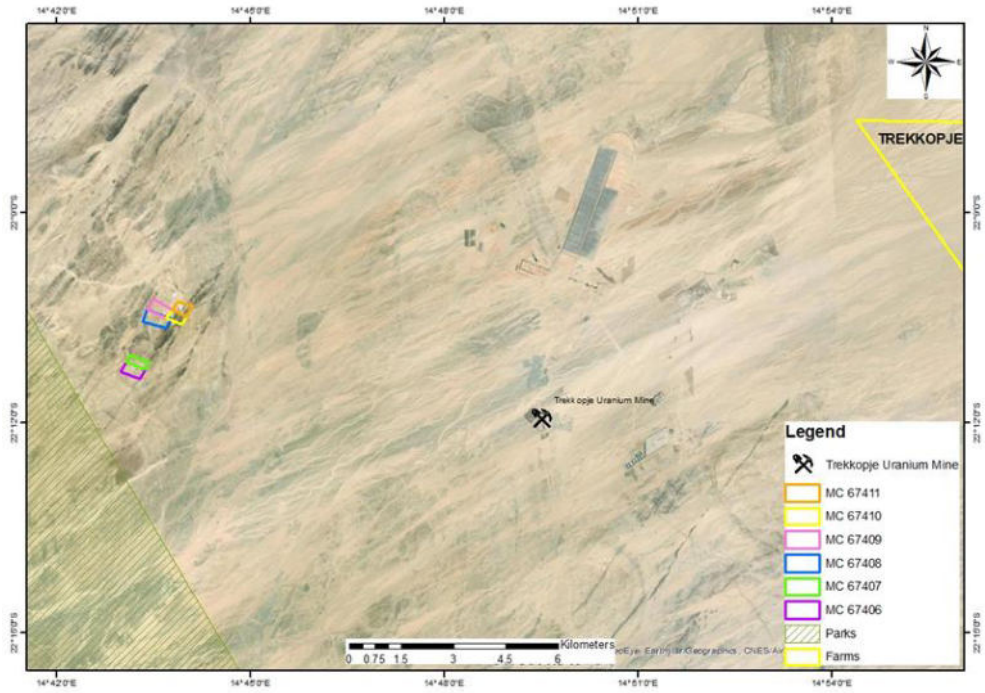

Environmental Scoping Assessment (ESA) Report for the:

Proposed Exploration and Mining of Dimension Stone on Mining Claims (MCs) 67406-67411 in the Arandis Constituency, Erongo Region – Namibia

MEFT APPLICATION NO.:	**APP-005018**
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PREPARED FOR:	Country Wide Transport & Plant Hire CC Registration number: CC/2004/2891 P.O Box 4676 Walvis Bay Namibia
DATE SUBMITTED:	March 2025
DOCUMENT VERSION:	**FINAL for MEFT Evaluation**
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Disclaimer:	*The data and information contained in this report is based on information provided by the project Proponent and is deemed to be correct. OMAVI shall not be held liable for any incorrect information/ data provided by the project Proponent.*

EXECUTIVE SUMMARY

Country Wide Transport & Plant Hire CC (hereinafter referred to as the Proponent), the sole holder of The Mining Claims (MC) 67406, 67407, 67408, 67409, 67410 and 67411 (herein referred to as the Mining Claims 67406-67411 or the Mining Claims) intends to undertake prospecting and small to medium-scale quarrying for dimension stones on the mining claim and eventually mine the economically confirmed portions of the site. The Mining Claims 67406-67411 are located in the Arandis Constituency, about 40km northwest of Arandis, 60km northeast of Swakopmund, about 40km south east of Henties Bay and within 10km west of the Trekkopje Mine.

The proposed exploration and mining works are among the listed activities in the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulations that may not be undertaken without getting the environmental clearance certificate (ECC). Consequently, Country Wide Transport & Plant Hire CC appointed OMAVI Geotechnical & Geo-Environmental Consultants CC (hereinafter referred to as OMAVI) to undertake the required Environmental Scoping Assessment process and apply for the ECC for the proposed project activities.

It is for this reason, that this Environmental Scoping Assessment (ESA) Report was compiled. The Report contains all the information that was gathered from the environmental assessment process. This includes description of the proposed project activities and alternatives, legal requirements, the pre-project environmental conditions, public consultation means, identified potential impacts (both by the Consultants and registered interested and affected parties), their assessment and provision of the necessary practical measures to manage avoid and or minimize each impact' significance.

Public consultation, Key issues Raised and Identified Potential Impacts

The public consultation process took place from initially between the 5th December 2024 to 22nd of January 2025. The public was informed of the ESA process and consulted through the following means:

- Newspaper adverts (on 5th and 12th December 2024 through *Die Republikein, Namibian Sun and Allgemeine Zeitung* newspapers)
- Email notifications sent to all pre-identified Interested & Affected Parties (I&APs) on 5th December 2024.
- Site notices placed at the regional council office in Swakopmund, the Usakos and Karibib Constituency Offices, Spitzkoppe, farm fences and farm gates near and within the respective mining claim areas, and entrances to popular publicly accessible supermarkets in Usakos, Arandis and Karibib.

Issues and concerns to the proposed project: Public (I&APs) Feedback

No written correspondences or official communications were received by OMAVI during or after this stakeholder engagement process in regards to the proposed brown field and/ or quarrying activities on any of the mining claims concerned.

The proposed project has the potential to improve the sustainability of existing dimension stone factories and to provide employment opportunities to the local people, which in turn contributes to the region's economy. Additionally, the exploration and mining programmes will allow acquisition of skills through on-the-job training. However, the project also has the potential to negatively impact the receiving environment. Impacts identified were assessed by considering the potential risk areas associated with the receiving biophysical and social environment in combination with issues raised during the public consultation process. The key impacts considered are as follows:

- **Impact on local biodiversity (fauna and flora):** the removal of vegetation and land clearing for minor access roads and temporary camps can potentially lead to disturbance of soils or land which can cause loss of vegetation. Removal of site rocks in the process may lead to loss of habitats for small animal species like reptiles that live under these rocks. Movement of heavy project vehicles may disturb the local livestock and wildlife around the project site. Loss of wild life to poaching due to presence of exploration workforce.
- **Visual impact** – this potential impact is anticipated during feasibility stage where blocks of rock will be cut from selected areas (limited spatial extend) for testing (test quarrying). These scars in many cases contrasts with the surrounding landscape and thus may potentially become a visual nuisance. Progressive rehabilitation and restoration will lower the significance of this impact.
- **Impact on air quality** - The possible source of air pollution would be the dust and fumes generated by project vehicles and trucks, diesel powered machinery, as well as dust from drilling and cutting.
- **Noise impact**: The drilling and quarrying activities as well as movements of heavy equipment and vehicles associated with the project may lead to elevated noise levels, which can be a nuisance to the hosting community and immediate neighbours. This impact can also be a health risk to workers operating directly in noisy areas.
- **Impact on vehicular traffic:** heavy vehicles associated with the project will obtain access to the site from the B2 national road via the D1918 that connects the mining claim to the service providers (water carting, exploration machinery, equipment, and others). Other vehicles that may impact traffic safety include trucks transporting mined blocks from site to the factories in Karibib and /or Walvis Bay for testing and processing.

- **Impacts the health and safety of workers** – from the handling of equipment and use of machinery as well as potentially contracting diseases.
- **Impact on surface and groundwater resources** – it was established that there is no surface water in the area as it seldom receives rainfall, and communities rely on groundwater. Therefore, a borehole will be drilled to supply water for the proposed operations. However, to avoid putting pressure on the local aquifer, the project will source water offsite and transport it in water tankers or pipe it to site. Another concern when it comes to groundwater is potential pollution can be spills of hydrocarbon spills from vehicles (bakkies), water trucks, the drill rig as well as the trailer mounted diesel tank for fuel storage.
- **Impact on archaeology -** Destruction of archaeological sites might occur during invasive exploration and mining techniques such as drilling, excavation and cutting. However, the likelihood or probability of this happening is minimal as there are no known archaeological sites or sites of heritage importance known in the project area considered in this assessment.

The significance of these impacts has been assessed in terms of the scale, duration, intensity or magnitude as well as probability of occurrence. All impacts were assessed in Section 6.3, and were found to be of manageable significance. Mitigation measures were recommended in the scoping report so that the significance of impacts that cannot be avoided is reduced from medium to low rating. The mitigation measures are outlined in the EMP for implementation by respective parties to manage these impacts.

Conclusions and recommendations

Based on this assessment and the information provided in this report, OMAVI is confident that the identified risks associated with the project can be reduced to acceptable levels, if the measures recommended in the EMP are implemented. However, to maintain a low significance rating, monitoring of the potential impacts by the Proponent (an Environmental Control Officer (ECO)) is highly recommended. **Monitoring will not only be carried out to maintain the low rating of impacts' significance but also to ensure that new potential impacts that might arise during project implementation are well identified in time, properly addressed and that suitable mitigation measures are provided and implemented.**

It is therefore recommended that an Environmental Clearance Certificate be issued for the proposed exploration on MC 68745, provided that the EMP be implemented and subject to the following recommendations:

- All required permits, licenses and approvals for the proposed activities should be obtained as required (please refer to the Permitting and Licensing Table in the Environmental Management Plan (**Appendix C**). These include permits and licenses for land/farm access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent complies with the legal requirements governing this type of project and its associated activities.
- All mitigations provided in this ESA Report and the management action plans in the EMP should be implemented and monitoring conducted as recommended.
- All the necessary environmental and social (occupational health and safety) precautions provided should be adhered to.
- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.
- The monitoring of the implementation of mitigation measures should be conducted, applicable impact's actions taken, reporting done and recorded as recommended in the Draft EMP.

In conclusion, it is unlikely that the proposed project activities will have a high significant of negative impact on the biophysical and social environments in the project area. Therefore, it is vital for the Proponent and their contractors (if any) to effectively implement and monitor the recommended management measures to protect the environment and promote environmental sustainability.

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ABBREVIATIONS

DEA	Department of Environmental Affairs
DTH	Down-The-Hole drilling
DWA	Department of Water Affairs
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ECC	Environmental Clearance Certificate
EMP	Environmental Management Plan
EMA	Environmental Management Act
EPL	Exclusive Prospecting Licence
ESA	Environmental Scoping Assessment
I&APs	Interested and Affected Parties
MEAC	Ministry of Education, Arts and Culture
MC	Mining Claim
MEFT	Ministry of Environment, Forestry and Tourism
MLIEC	Ministry of Labour, Industrial Relations and Employment Creation
MME	Ministry of Mines and Energy
MoHSS	Ministry of Health and Social Services
MURD	Ministry of Urban and Rural Development
NHC	National Heritage Council of Namibia
NBG	National Botanical Gardens

1 INTRODUCTION

1.1 Project background

The Mining Claims (MC) 67406, 67407, 67408, 67409, 67410 and 67411 (herein referred to as the Mining Claims 67406-67411 or the Mining Claims) are owned by Country Wide Transport & Plant Hire CC (also referred to as the proponent), who intends to undertake prospecting and eventual mining or quarrying of dimension stones (dolerites, red granites and marbles) on a small to medium scale. The Mining Claims 67406-67411 are located in the Arandis Constituency, about 40km northwest of Arandis, 60km northeast of Swakopmund, about 40km south east of Henties Bay and within 10km west of the Trekkopje Mine **(Figure 1-1**). They are located on communal land, on the eastern edge of the Arandis Constituency. The approximate coordinates of the mining claims are shown in **Table 1-1**.

Table 1-1: Approximate corner GPS coordinates of the Mining Claims 67406-67411

Mining Claim	Latitude	Longitude
MC 67406	22° 11' 16"	14° 42' 59"
	22° 11' 08"	14° 43' 04"
	22° 11' 14"	14° 43' 22"
	22° 11' 22"	14° 43' 17"
MC 67407	22° 22' 08"	14° 43' 04"
	22° 11' 01"	14° 43' 08"
	22° 11' 08"	14° 43' 25"
	22° 11' 14"	14° 43' 22"
MC 67408	22° 10' 33"	14° 43' 20"
	22° 10' 23"	14° 43' 23"
	22° 10' 31"	14° 43' 45"
	22° 10' 39"	14° 43' 41"
MC 67409	22° 10' 23"	14° 43' 23"
	22° 10' 14"	14° 43' 30"
	22° 10' 23"	14° 43' 47"
	22° 10' 30"	14° 43' 42"
MC 67410	22° 10' 30"	14° 43' 42"
	22° 10' 23"	14° 43' 47"
	22° 10' 28"	14° 44' 00"
	22° 10' 35"	14° 43' 56"
MC 67411	22° 10' 23"	14° 43' 47"
	22° 10' 16"	14° 43' 52"
	22° 10' 20"	14° 44' 06"
	22° 10' 28"	14° 44' 00"

The mining claims are on the part of the Arandis constituency which has no human occupation. The closest community is in Marenica, located about 20 km to the east, and the Farms Trekkopje, Marenica and Hakskeen all in excess of 20 km as seen in in **Figure 1-2**.

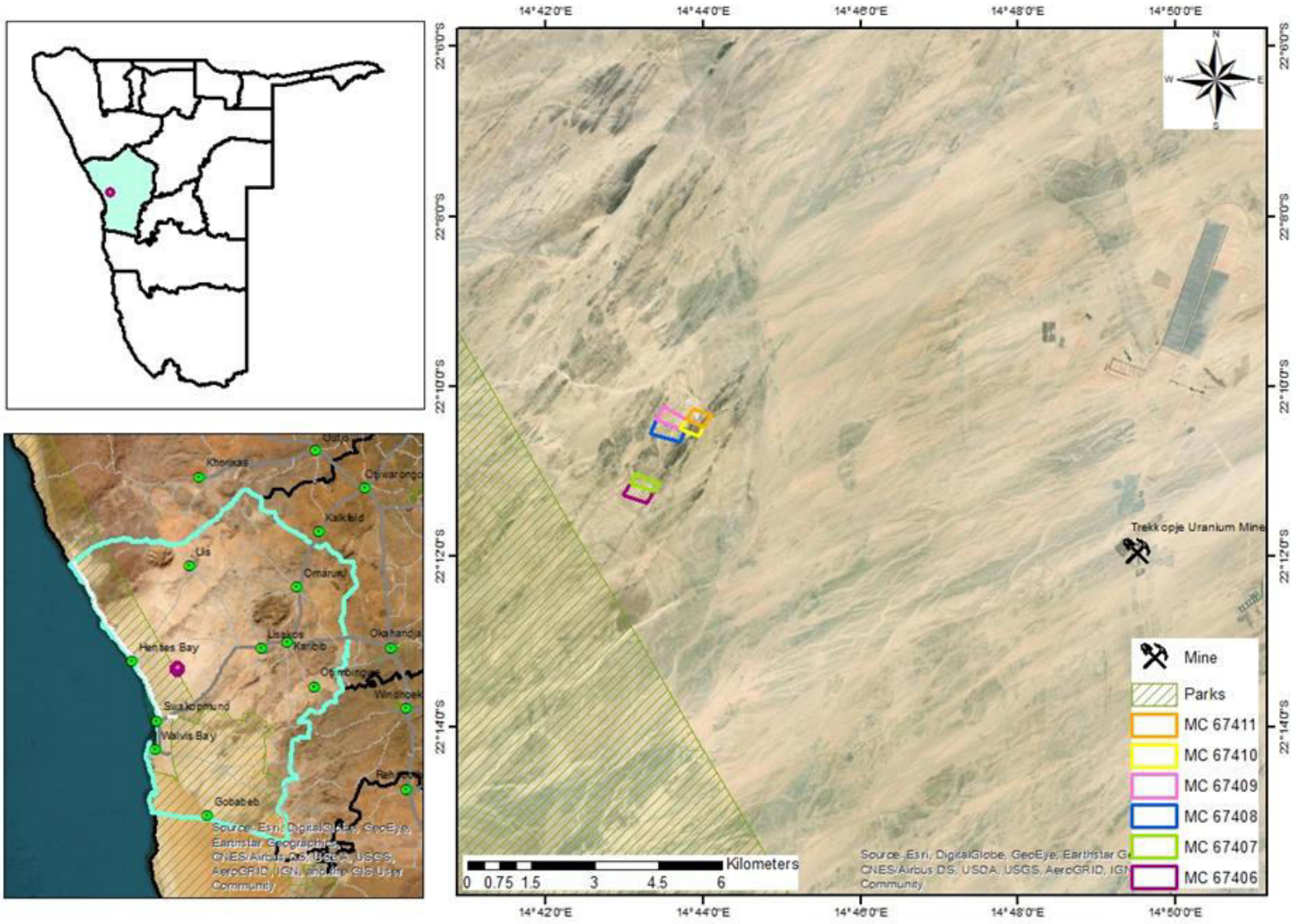

Figure 1-1: The location of Mining Claims 67406-67411, relative to neighbouring major towns of Swakopmund and Henties Bay in the Erongo Region, and their proximity to the Trekkopje Mine.

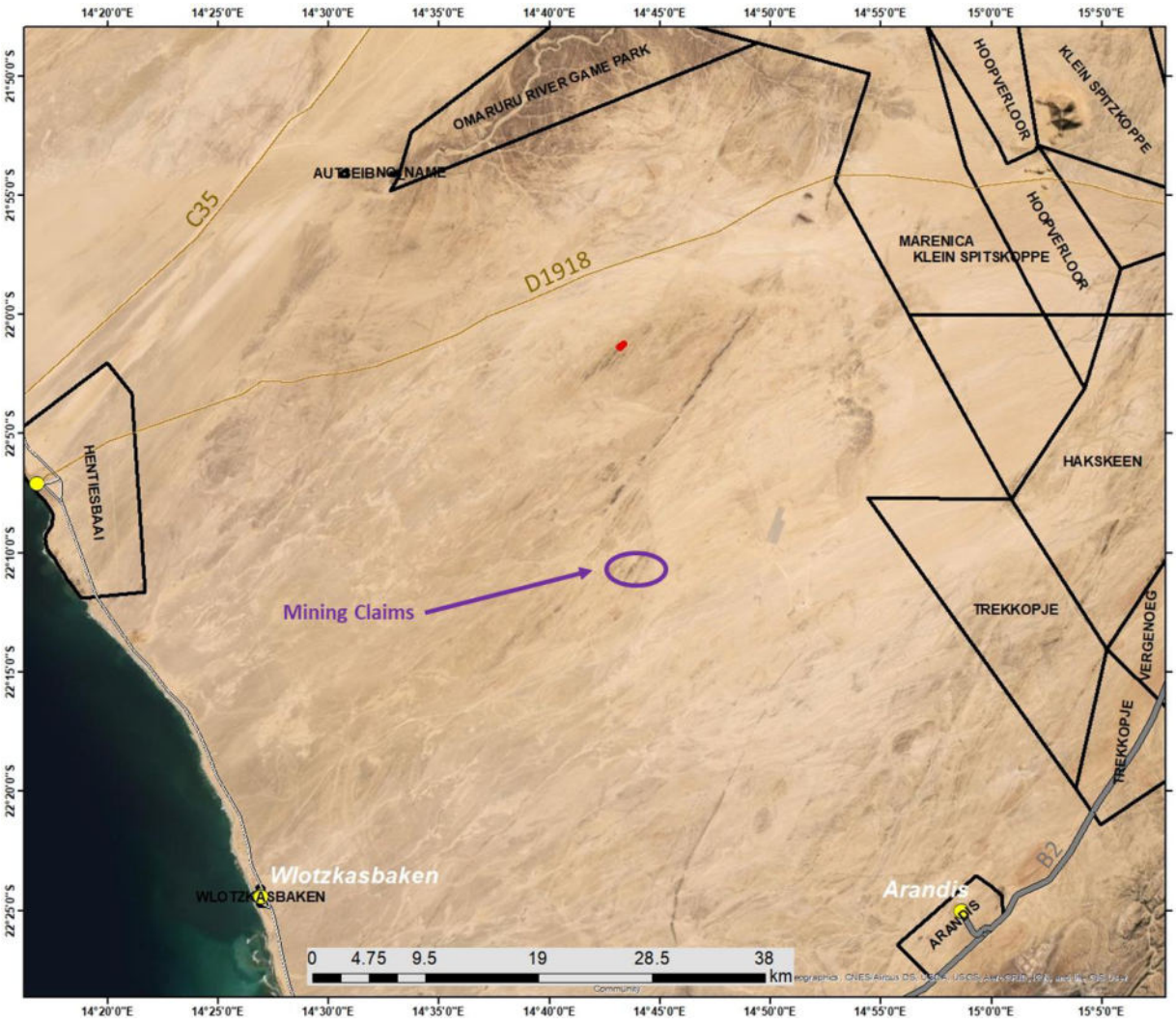

Figure 1-2: The approximate location of Mining Claims 67406-67411 on communal land, about 20 km west of the Trekkopje Solar Farm.

1.2 Ownership of Mining Claims

The Mining Claims 67406-67411 on which the exploration and quarrying activities are proposed to be undertaken are solely owned by Country Wide Transport & Plant Hire CC, who holds several other prospecting and mining rights and has vast experience in the prospecting and quarrying of dimension stone. The Mining Claims 67406-67411 were granted by the Ministry of Mines and Energy (MME) for the exploration of dimension stones in 2005, and they are therefore due for renewal, which is subject to the issuance of an environmental clearance certificate (ECC) by the Ministry of Environment, Forestry and Tourism (MEFT), hence the present environmental scoping assessment.

The status of the Mining Claim 67406 is shown in **Figure 1-3** for illustration purposes. The status of the rest of the Mining Claims can be accessed upon searching their number on the Namibia Mining Cadastral Portal *https://portals.landfolio.com/namibia/* . The Mining Claims 67406 and 67407 fall within the Uranium Namibia Mining licence -

Trekkopje Mine (in purple), while Mining Claims 67408 – 67411 are falling within Exclusive Prospecting Licence (EPL) 8290 belonging to Uranium Namibia (in yellow) in **Figure 1-3**.

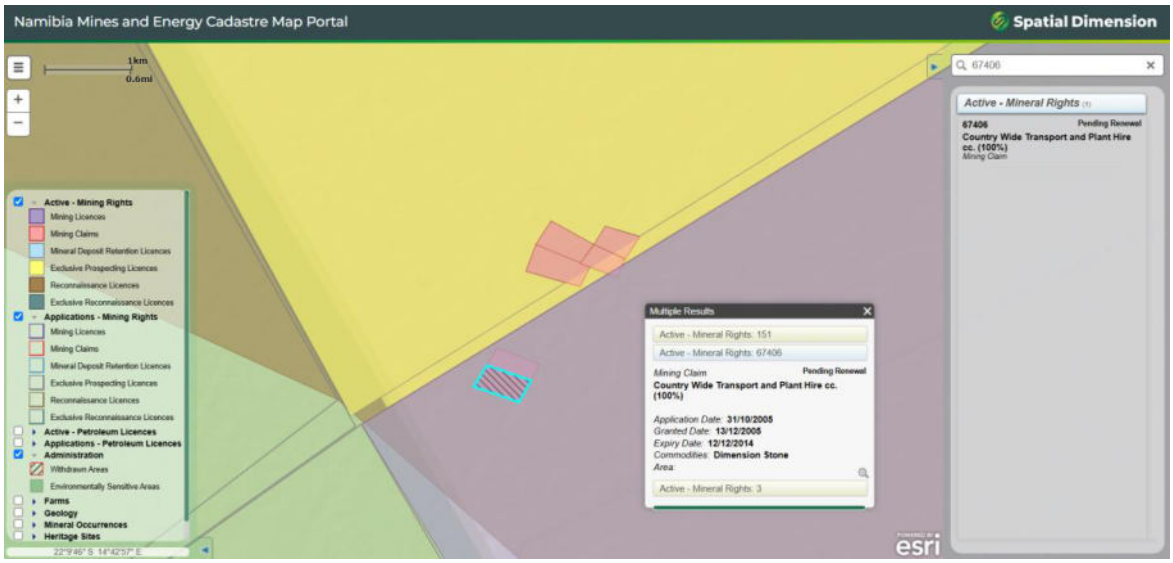

Figure 1-3: Details of Mining Claim (MC) 67406 is as displayed on the Namibia Mining Portal (As accessed on 17 February 2025 via: *https://portals.landfolio.com/namibia/*).

1.3 Project justification

According to the 2020 Dimension Stone Mining Global Market Report, the demand for dimension stones is rising at a significantly higher rate than most mineral products, with a projected compound annual growth rate of approximately 0.8% in 2020 and an estimated global market value of nearly US$5.22 billion by 2022. This growth is primarily driven by increasing demand for high-value natural stones in the construction and real estate sectors, particularly in China, India, and Eastern Europe.

To meet both local and international market demands, continued exploration and mining of dimension stones in Namibia is essential. This will help supplement existing dimension stone quarries, whose resources are gradually depleting, while also supporting the sustainability of local processing factories. It is partly on this basis that Country Wide Transport & Plant Hire CC has chosen to pursue the proposed project.

This exploration project will equip the local communities with technical skills as well as create job opportunities, which in turn can improve the socio-economic standing of the region. Additionally, where this exploration program yields positive results, subsequent medium-scale quarrying for dimension stones will commence, which can potentially advance to mining works in Erongo Region, and contribute to the Namibian economy.

1.4 The need for Environmental Scoping Assessment

The Environmental Management Act (Act No. 7 of 2007) (EMA) and its 2012 EIA Regulations lists activities that must not be undertaken without an Environmental Clearance Certificate (ECC). The following sections are relevant to the proposed exploration works:

- *''3.1 The construction of facilities for any process or activities which requires a license, right of other forms of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act, 1992).*
- *3.2 other forms of mining or extraction of any natural resources whether regulated by law or not.*
- *3.3 Resource extraction, manipulation, conservation, and related activities.''*

To satisfy these conditions and to inform the ECC decision, an Environmental Scoping, or Impact Assessment (ESA/EIA) must be conducted, as per the requirements of the EMA (Act No. 7 of 2007) and its 2012 EIA Regulations. It was in line with these requirements that Country Wide Transport & Plant Hire CC, appointed an Environmental Assessment Practitioner (EAP) to carry out this assessment.

1.5 Appointed Environmental Assessment Practitioner

Country Wide Transport & Plant Hire CC (*the proponent*) appointed OMAVI Geotechnical & Geo-environmental Consultants CC (*OMAVI hereafter*) as an independent environmental consultant, to investigate the potential biophysical and socio-economic environmental impacts that would arise from the planned exploration and quarrying activities. The findings of the scoping assessment are aimed at providing the Ministry of Environment, Forestry and Tourism's (MEFT) Department of Environmental Affairs and Forestry (DEAF) with sufficient information to make an informed decision on the granting of an ECC for the proposed activities.

OMAVI Geotechnical & Geo-environmental Consultants is a specialist environmental management consulting entity, with considerable experience in biophysical and socio-economic impact assessments, best practice environmental assessment and management reporting, Waste Management Planning, drafting of project-specific Environmental Management and Rehabilitation Plans (EMRPs), stakeholder engagement and participation coordination, and the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) process including the sourcing of competent specialists. OMAVI has been active in the above-mentioned fields, and in so doing has made a positive contribution towards the achievement of environmental management and sustainable development objectives in Namibia. Mr.

Etuna Kanime of OMAVI facilitated the public consultation process and compiled the ESA Report and EMP, and his CV is attached hereto in Appendix A.

1.6 The Environmental Scoping Assessment Process

The environmental scoping assessment process followed by the current project is summarised below:

1. Project screening process.
2. Preparation of the Background Information Document (BID) and ECC Application and their submission to the Office of the Executive Director in the Ministry of Mines and Energy (MME) (Competent Authorities on the 28th of November 2024) for notification and recommendations. The date stamped copy of the ECC Application from the MME was uploaded to the MEFT's EIA online portal for registration (**Application APP- 005018**) and notification of the commencement of the ESA. The copy of the ECC application is attached as **Appendix B**.
3. Invitation to stakeholders (I&APs) and the public to participate in environmental scoping assessment process. This invitation was extended in the form of advertisements in local newspaper, notices on selected sites as well as via direct emails communications to key authoritative institutions such as Line Ministries, Regional and Local Governments (authorities), farm/landowners or occupiers of land.
4. A site walk-over and undertaking of an Archaeological specialist study on the 17-18th of December 2024.
5. Compilation of the Draft environmental scoping assessment (ESA) Report (consolidating all findings in terms of impacts identified as well as comments and concerns raised from the I&APs/public consultation), and a draft Environmental Management Plan (EMP) (which outlines impact mitigation measures).
6. Finalization of the ESA and draft EMP and further inclusion of comments from the second round of engagements.
7. Submission of the final ESA report (and EMP including all appendices to the report) to the Department of Environmental Affairs and Forestry in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project.

A summary of the process followed is provided in **Figure 1-4** below.

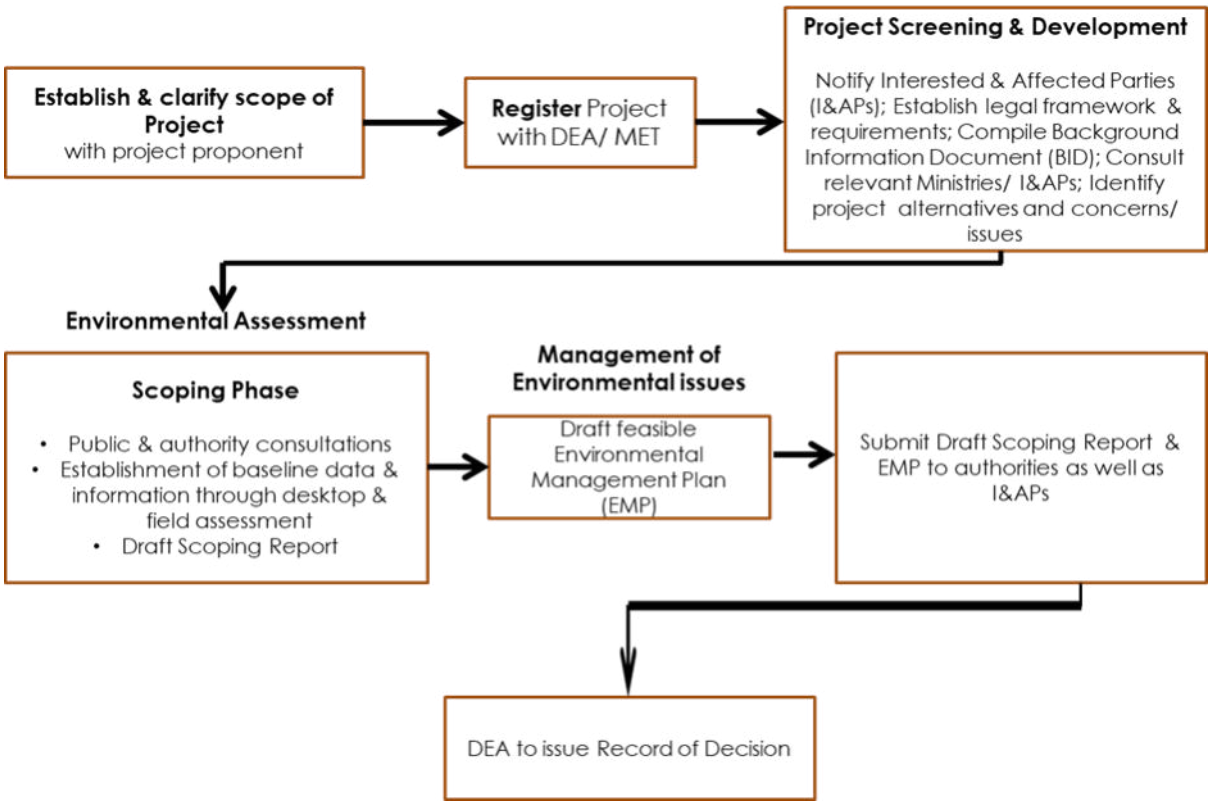

Figure 1-4: Schematic process flow of Namibia's Environmental Assessment Procedure

During the scoping phase, potential impacts were identified and assessed for the entire life cycle of the project, inclusive of the different stages, namely: the exploration phase, the developmental phase, the mining or extraction phase and decommissioning or closure phase.

1.7 Limitations of the Study

The following assumptions apply to this scoping assessment and its report (this document):

- This report has been compiled on a scoping level with only the Archaeological Assessment Study that has been undertaken for it, i.e., no other specialist studies were done as part of this scoping assessment.
- The project specific information used in this document is as provided by the Proponent, site observations, OMAVI Consultants experience and relevant literature reviewed/research as well as the project specialist (the Archaeologist).
- OMAVI assumes that all the project technical information and data that is relevant to the scope of the environmental scoping assessment process provided by the Proponent is correct and accurate, and that all necessary information has been disclosed.

- It is also assumed that the relevant information obtained from different literature consulted is accurate; and
- This environmental scoping report has been compiled on an assumption that there will be no significant changes to the proposed project activities or the affected biophysical and social environment between the time of compiling this report and implementation of the proposed project that could substantially influence findings of this document. **New potential impacts that may arise during the project life cycle would need to be addressed as soon as they are identified, and mitigation measures thereof provided (hence the emphasis on monitoring in the Draft EMP** – **Appendix C** of this document).

2 PROJECT DESCRIPTION

The exploration activities on Mining Claims 67406–67411 will follow a systematic prospecting approach in search for dimension stones, particularly marbles, dolerites, and red granites. This section outlines the planned activities for both the exploration and mining phases, along with the associated infrastructure. It is important to note that all these activities will only commence once the Environmental Clearance Certificate (ECC) has been granted by the Environmental Commissioner.

2.1 Planned Activities: Proposed Exploration Methods

The exploration techniques to be applied can be classified as invasive or non-invasive depending on the impact they can have on the environment. Exploration works will be undertaken as per the following phases:

2.1.1 Desktop Study

The exploration program will commence with a review of geological maps as well as historical drilling and / or quarrying data for the area. This is a non-invasive technique aimed at establishing an environmental baseline.

2.1.2 Field evaluation

Field evaluation will be carried out by a competent and qualified geologist, aimed at locating suitable outcrops in the field and subsequently delineating units of interest, which will be ranked in order of priority for follow up exploration based on various factors such as:

- Lateral extent of the marble outcrop and general soundness of the rock,
- Appearance - patterns and colour of the marble, and
- Presence of joints and other discontinuities and their spacing.

At this stage, small hand samples (of about 30 cm^3 in dimension) will be taken for cutting and polishing to provide insight on hardness of the stone and whether the stone can be polished to an acceptable finish. As a product, a geological map of the area will be

produced to assist in target generation for subsequent detailed exploration such as drilling and possibly test quarrying.

2.1.3 Detailed exploration

At this stage, down the hole (DTH) drilling will be undertaken in predetermined areas to establish the following:

- Vertical extent of the marble formation.
- Color and texture.
- Joint spacing or
- Possible defects at depth.

This will aid delineation of major geological structures such as fault and shear zones, the extent of veins, frequencies of fracture/ discontinuity, thereby refining the produced geological map. The refined map will then be used to define targets for feasibility or test quarrying. It is anticipated that drilling activities will require a small (6m wide) tracked access roads to gain access to the actual drilling sites for the air compressor and water truck.

2.1.4 Feasibility study: Test Quarrying

Where drilling yields positive results, test quarrying by means of butterfly cutting will be conducted to fully evaluate the recovery of saleable blocks, and better optimize the extraction methods, production rates and operational costs. This test quarrying will only be carried out in selected areas and shall be performed on as small an area as possible to minimize environmental impacts. Topsoil will be stripped and stockpiled in designated fenced off areas for future restoration works.

It is important to note that the test quarrying referred to above is a component of exploration activities, to be done at a small-scale level on targeted sites within the Mining Claims. This will enable the Proponent to get sufficient and reliable data about the rocks. Areas found to comprise good quality rocks in economical volumes will then be delineated, and the proponent will prepare for mining, guided by the Environmental Management Plan (EMP). If no viable resource is found at exploration stage, works will proceed to rehabilitation and decommissioning phase discussed in Section 2.3 to reinstate disturbed sites.

2.2 Planned activities: Test Quarrying Technologies

Ashmole and Motloung (2008) note that dimension stone mining methods typically have minimal impact on the surrounding environment, as they require the careful extraction of large blocks or slabs without causing damage to the stone. Additionally, recent advancements in mining technology have further contributed to reducing environmental impacts.

2.2.1 Quarry development

It is envisaged that quarrying will be conducted using a combination of best practice non-explosive technologies encompassing Down-the-Hole (DTH) rotary air blast drilling, diamond wire-saw cutting and most likely plugs and feathers splitting. This generally will entail loosening of large volumes of the bedrock by means of primary cutting, and subsequent stepwise division into smaller pieces until blocks of a commercial size are obtained, stockpiling waste rock as the process is performed.

The quarry will be developed with a low point, to create a gradient for water flow, so that water can pond at this low point to allow recycling and re-using of this precious resource.

2.2.2 Block mining and handling

For block recovery, diamond wire saw cutting will be employed. It involves drilling of two intersecting holes, and subsequent passing of the diamond wire through these holes. The diamond wire through the two holes is then joined to form a continuous loop, which is placed over the flywheel of the saw that rotates, driving the diamond wire through the stone. The saw moves backwards along a track to maintain sufficient tension in the wire. This cutting technology has the advantage that it is associated with low noise and dust generation (Chatterjee et al. 2005).

The mined blocks will be transported by flat deck interlink trucks to natural stone processing facilities either in Karibib or Walvis Bay for value addition. Therefore, no processing of the dimension stone blocks will be done onsite.

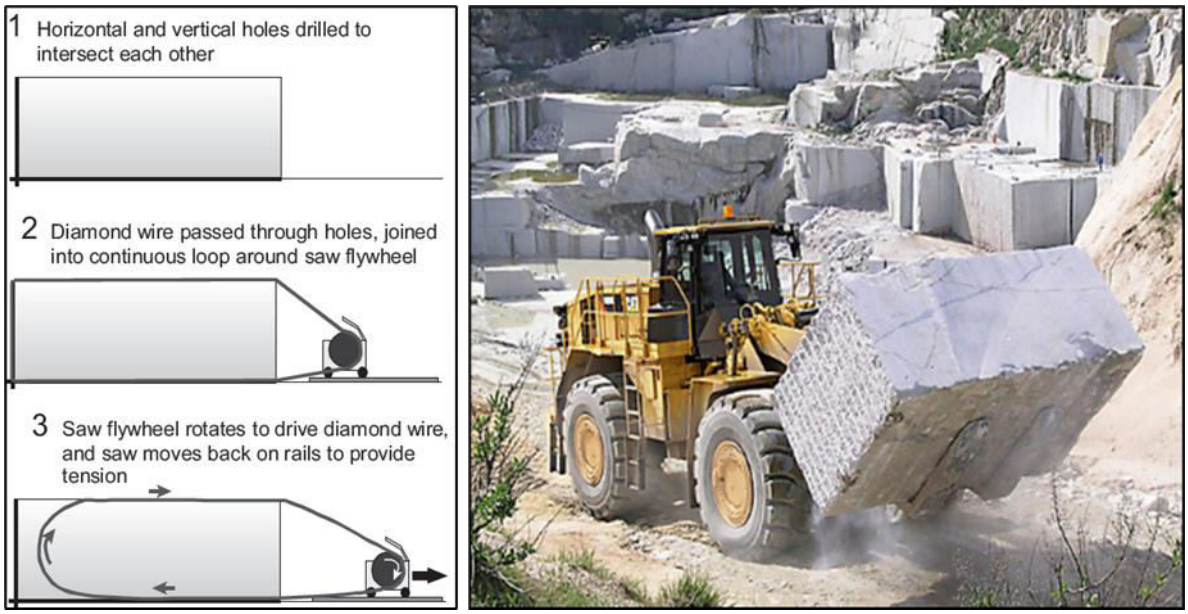

Figure 2-1: Typical mining and quarrying by diamond wire technology (Ashmole and Motloung, 2008).and an example of a front-end block loader.

The annual production figures cannot be established at this stage, only after exploration and deposit evaluation. However, once this information (deposit reserves, annual

production planned for mining and ESA/EMP updates) becomes available, it will be communicated to all the registered interested and affected parties of this project. **It must also be noted that once the reserves have been confirmed, a review and update will be done on the current ESA Report and EMP.**

2.3 Rehabilitation of Explored Sites and Decommissioning

The impact on the physical environment can be lessened by implementation of progressive / ongoing rehabilitation to be carried out by the Proponent. This will entail for instance rock shading, and partial backfilling with stockpiled topsoil, to ensure that the disturbed sites are reinstated and restored to their pre-exploration state.

Once mining is completed, following the depletion of the quality marbles, dolerite and granite deposit, the activities will be decommissioned, and the sites will be rehabilitated to their pre-mining activities as much as possible. This will also entail the dismantling and removal of campsites, and associated structures from the project sites and area.

2.4 Project inputs and Associated Infrastructure

2.4.1 Temporary shelter / accommodation

The exploration team will comprise about ten (10) people, including skilled, semi-skilled and unskilled, personnel, and this number is expected to increase in the mining phase to about twenty (20) people. Priority for employment will be given to the locals and only specialized skills will be imported.

At both exploration and mining, temporary camps will be set up to accommodate the team onsite. It will primarily be an erection of tented facilities or prefabricated structures, with an option to transport workers from nearest towns daily. Other temporary structures would be for office and storage space. All this will take place subject to approval by the farmer or landowners.

2.4.2 Vehicles, Machinery and Equipment

Exploration and mining: These will include 4 x 4 bakkies, front-end loader pickup and dump trucks, Down-The-Hole (DTH) drill rig, air compressor machine, butterfly cutter, trucks, diamond wire-saw cutter and coring, excavator / front-end loader to scoop up sandy overburden, dozers (to clear land along planned drilling and mining site access roads).

Supporting equipment: Water tanker to cart water to site for exploration and mining works, diesel bowser / tank (bunded) of about 30 000 litres, diesel generator, camping tents, prefabricated office structures, shade structure for near working areas, two-way radios (for communication).

All equipment, machinery and vehicles will be stored at a designated area near the temporary accommodation on site.

2.4.3 Power Requirements (for vehicles, machinery and domestic use)

Power for domestic use will be supported by solar power and gas, while the actual exploration activities such as drilling will use hydrocarbons (i.e. diesel). It is anticipated that onsite machinery will be diesel powered. Therefore, a trailer mounted diesel tank of about 30 000 litres will be kept onsite, designed and constructed according to the South African Bureau of Standards (SABS). This fuel/diesel will mainly be used in powering the compressors for surface cleaning, drilling and for cutting machinery as well as vehicles. A diesel bowser truck will be filling the onsite tank, as and when required

2.4.4 Water supply

At exploration stage, about 20 000 to 40 000 litres per week will be required, and this amount is anticipated to increase to about 40 000 to 60 000 litres per week at mining stage. This water will mainly be used support the exploration and mining processes such as down-the-hole drilling, butterfly cutting during exploration, diamond wire saw, cleaning and cooling off exploration and mining equipment. For exploration and mining, water will be recycled and re-used as an attempt to conserve water. This approach might see a reduction in the amount of water requirements, which will mean lesser amounts to be abstracted or carted.

It was observed during the site visit that there were no boreholes in the area, probably because the land is unoccupied. The proponent envisages to pipe water to site or to cart water from Arandis or Henties Bay on a weekly basis in water bowsers.

2.4.5 Roads

The project area (Mining Claims 67406-67411) can be accessed from the B2 highway onto C34 and via the D1918 gravel road up to the Trekkopje Mine and thereafter by several small access roads. The project will utilize existing roads and where necessary, temporary informal access routes will be created to gain access to the actual targeted sites. The Proponent may need to do some upgrade on the access roads to ensure that it is fit to accommodate project related vehicles, such as heavy trucks and erect temporary road signs for the duration of the project.

2.4.6 Waste production and sanitation

Waste: Different waste containers will be provided onsite for waste sorting and safe disposal of waste generated onsite. These will be collected on a weekly basis and sent to nearest approved waste management facility in the area.

Sanitation: Movable ablution facilities with septic tanks will be put up for sanitation purposes for the exploration and mining teams and will be emptied in good time according to manufacturers' instructions.

2.4.7 Personnel and site safety

All workers will be equipped with adequate and appropriate personal protective equipment (PPE), that will be replaced or repaired to ensure that workers' occupational health and safety is not compromised. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

For safety and security reasons, the localized high-risk working sites will be demarcated and temporarily fenced off. Project vehicles will also be equipped with fire extinguisher as well as at the working sites in case of fire outbreaks.

2.5 Project Alternatives

Project alternatives can be defined as a possible course of action, in place of another, that would meet the same purpose and need. The role of alternatives is to find the most effective way of meeting the need and purpose of the proposed project, either through enhancing the environmental benefits of the proposed activity, and/ or through reducing or avoiding potentially significant negative impacts. The concept of considering alternatives thus ensures that the environmental assessment is not reduced to the defense of a single project proposal that is the desire of the proponent, and therefore, provides an opportunity for unbiased considerations of options, to determine the most optimal course of action.

The alternatives weighed and considered for this project are with regards to:

- Project location,
- Exploration and mining methods (techniques),
- Supporting infrastructure during different stages of the project, and
- The "No-go" alternative option

2.5.1 Project location alternative

The allocation of a mineral licence is determined by the mineral potential of the area, and by the preference of the applicant (individual or company). In this case the proponent is in search for dimension stones, and although these rocks are found elsewhere in Namibia; the pursuit of such a resource is subject to licencing. Which means the applicant may only prospect for desired minerals within the confines of his/her licence. For this reason, alternative localities of dimension stones have not been considered. Information pertaining to Mining Claims 67406-67411 is available on the Namibia Mining Cadastral Map (*https://portals.landfolio.com/namibia/*).

2.5.2 Alternative Exploration and Mining methods (techniques)

Roads clearing technique: For the creation of simple and narrow access roads shallow excavation with the front-end loader bucket is deemed to be most economically and environmentally feasible option. Where the ground is flat this method would basically entail dragging the front-end loader's bucket across the envisaged footprint of the road, thus creating a pathway that can be used by small and large vehicles. Unlike in conventional road construction where the subgrade is ripped and re-compacted, this method ensures less modification of the soil's structure.

Roads for accessing the marble hill which involve dozing of surficial rubble into gently sloping access ramps, placing borrowed sandy material on top of such rubble, and ultimately, compacting the sandy material on those access ramps. The sand material will be borrowed along trenches at the toe of these hills particularly targeting patches that are free of vegetation.

Once the surficial overburden rubble has been removed, the underlying rock surfaces shall be exposed using air compressors. From an efficiency and effectiveness point of view air compressor technology is deemed to be most suitable compared to other traditional methods such as sweeping.

Drilling methods: Down-the-hole rotary air blast drilling was selected as the preferred method for both block splitting and creation of holes for the diamond wire sawing cutting process. This is because in comparison to other drilling methods such as percussion drilling and diamond core drilling it is quick and relatively inexpensive, and therefore works well for block splitting purposes which typically require high drilling densities. Although the method typically produces debris and dust the rig to be used is fitted with a cyclone that prevents most dust from escaping.

Mining techniques: For test quarrying, butterfly and diamond saw wire cutting techniques were selected as the most favourable extraction methods for separating, cutting, and splitting blocks due to the following reasons:

- Diamond wire sawing permits efficient cutting through the hardest of materials, and is thus deemed suitable for this project because the targeted host rock is hard
- Both butterfly and diamond wire saw cutting are associated with low noise levels and low dust generation compared to other block splitting technologies such as controlled blasting.
- Cutting is more accurate thereby enhancing recovery and minimizing generation of waste rock.

2.5.3 Alternative supporting infrastructure

Alternatives were considered for the different envisaged supporting infrastructures, to ensure that the most feasible options were selected. Due consideration was given to technological, economic, and environmental limitations in selecting the most feasible option (Table 2-1).

Table 2-1: A summary of the alternative infrastructure considered for the project.

Category of Infrastructure	Alternatives Considered	Justification for selected option
Ablution facilities	Install fixed facility with septic tank	To avoid long-term visual impacts & minimize rehabilitation costs, portable facilities were selected as the best option.
	Portable facilities with septic tank	
Water supply	Use existing farm boreholes	The viable option under consideration is transporting water to site from nearby operations or towns. This will be done either by pipe or by carting water to site.
	Drill own new borehole	
	Bring water from elsewhere	
Diesel storage	Install fixed above-ground diesel tank on site	The use of a trailer mounted diesel tank for fuel storage was chosen due to great mobility requirements during exploration.
	Trailer mounted diesel tank	
Power supply	Diesel generator set	All three energy sources will be used for different purpose: Diesel for powering machinery, vehicles and equipment. Gas - Most practical & economically viable for heating and cooking. The solar energy for powering electrical and electronic devices.
	Gas stove	
	Install photovoltaic panels	
	Electricity	An expensive power alternative that will not be considered in this temporary project.
Offices space and accommodation	Erect dis-mountable tented structures	Favoured during field exploration phase due to ease of installation, low cost and ease of dismantling & moving.
	Erect Permanent buildings	Least favoured & unlikely as the project is rather temporary
	No structures on site – Lease from existing farm infrastructure	This is the second favourable option, that workers are accommodated in existing farm infrastructure or could live in nearby towns and commute daily. This will minimize risk of visual impact from such structures, security risk, & minimize number of people on site.

2.5.4 No-go alternative

The "No-Go" alternative is the option of not proceeding with the proposed activity, which typically implies a continuation of the status quo. Should the proposed project be discontinued, none of the potential impacts identified in **Chapter 6** will occur. On the other hand, if the project is to be discontinued, the potential economic benefits of the project will not come to fruition. These include:

- Loss of foreign direct investment
- Jobs for community members will not be realized
- Loss of potential income to local and national government through land lease fees, license fees and various tax structures

- Loss of support to local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Compromise towards ensuring sustainability of dimension stone processing factories in Karibib and Walvis Bay
- Socio-economic benefits such as skills acquisition to local community members in the Arandis Constituencies.

Considering the above losses, the 'no-go' option was not considered a preferred alternative.

The project activities described above are governed by certain legislations, which should be complied with throughout the project life cycle. The applicable/relevant legislations, policies and guidelines are presented under the next chapter.

3 APPLICABLE REGULATORY FRAMEWORK (LEGAL REQUIREMENTS)

In Namibia all mineral rights, related to small to medium-scale mining, are vested in the state and are regulated by the Ministry of Mines and Energy (MME), with the Minerals Prospecting and Mining Act (Act no. 33) of 1992 as the principal act governing exploration and mining of mineral resources in the Republic of Namibia. From an environmental management standpoint this Act stipulates the undertaking of an environmental impact assessment during prospecting or mining operations, coupled with the development of a thorough and implementable environmental plan (EMP) where any pollution is anticipated. The Ministry of Mines and Energy is the custodian agency for the administration of the mining act.

Meanwhile, the Ministry of Environment, Forestry and Tourism (MEFT) regulates sustainable exploitation of natural resources and management of the environment and use is regulated by the under the Environmental Management Act (EMA) of 2007 and its Environmental Impact Assessment (EIA) Regulations of 2012. This administration and enforcement is specifically entrusted with the Department of Environmental Affairs within MEFT. This Act stipulates that possession of an Environmental Clearance Certificate (ECC) is a pre-requisite for issuing any license or permit by any authority for any activities related to the ones listed under the Environmental Impact Assessment Regulations of 2012. The Act further sets out under Section 58 and in the Government Notice No. 29 of 2012 a detailed framework and schedule for conducting Environmental Impact Assessments for mining companies.

In addition to these two governing acts, relevant and applicable legislation, policies and guidelines are given in this chapter, with consideration of local (national) and where necessary international legislation. These were considered when undertaking this

ESA process, however they serve to inform the project Proponent, Interested and Affected Parties and the decision makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled for them to carry out the proposed exploration activities. for are host of legal and policy documents and guidelines to mining projects as indicated .

Table 3-1.

Table 3-1: Summary of relevant Acts and their applicability to the proposed project.

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations Government Notice 28-30 (Government Gazette 4878	MEFT: DEAF	Part 2 of the Act sets out 12 principles of environmental management, summarized as follows: The Proponent has the responsibility to ensure that the proposed impact management measures are implemented, conform to the principles of this Act. In developing this report, OMAVI has been cognizant of these requirements, and accordingly the process that was adopted has been undertaken in conformance with this Act and the EIA Regulations (2012). Several listed activities in terms of the Act, are triggered by the proposed activities as set out above.
Mineral Prospecting & Mining Act (Act no. 33 of 1992)	MME	Sections 50, 52, 54, 57 and 130 of this Act sets out provisions for environmental management for activities arising from mineral exploration, quarrying/ mining and beneficiation OMAVI has considered the provisions made under this sections of the ACT in undertaking this Environmental Assessment.
Charter for Sustainable and Broad-Based Economic and Social Transformation in the Namibian Mining Sector 2014 – 2020 (The Namibian Mining charter)	The Namibian Chamber of Mines of Namibia	This charter aims to facilitate meaningful participation of historically deprived Namibians in the mineral exploration, mining and mineral beneficiation industry. It has effectively been developed as an instrument to effect transformation and sets specific targets for mineral license holders and Operators of mineral processing facilities active in Namibia. This has relevance to this project as the license Holder is a previously disadvantaged individual and will undertake the proposed activities jointly with their partners
The Minerals Policy of Namibia, 2003	Ministry of Mines and Energy: Mining Directorate	This policy sets out guiding principles and directions while communicating the values of the Namibian people in pursuit of the development of the mining and mineral resources beneficiation sector.
Pollution Control & Waste Management Bill	MEFT and others	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill repeals the Atmospheric Pollution Prevention Ordinance (11 of 1976). In terms of water pollution, it will be illegal to discharge of, or dispose of, pollutants into any watercourse without a Water Pollution Licence (apart from certain accepted discharges). Similarly, an Air Quality Licence will be required for any pollution discharged to air above a certain threshold. The Bill also provides for noise, dust or

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		odour control that may be considered a nuisance. The Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management. The proposed prospecting activities would not entail the discharge of large quantities of gaseous pollutants into air but may result in increased noise levels, dust generation, destruction of in situ soil structure during such operations.
Water Act (No. 54 of 1956)	MAWLR: Department of Water Affairs	Makes provision for several functions pertaining to the management, control and use of water resources, water supply and the protection of water resources. **The Proponent shall prevent any potential pollution of groundwater and surface water.**
Water Resources Management Act (Act No. 11 of 2013)		This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Should the proponent wish to undertake activities involving water abstraction and/or effluent (e.g., drilling fluids) discharge, the relevant permits will have to be applied for from the Department of Water Affairs. Furthermore, any watercourse on/or within the license area and surroundings, including associated ecosystems, should be protected in alignment with the principles above.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	MME: Petroleum Affairs Division	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area. **This law is applicable to this project because new diesel in excess of 600L will be stored on the site in a self-contained diesel storage tank to support all mobile plant such as drill rigs and trucks.**
National Heritage Act (Act No. 27 of 2004)	MEAC	The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment. Should any objects of heritage/ archaeological significance be identified during project activities, the work must cease immediately in the affected sites and the necessary steps taken to seek authorization from the Council.
Public Health Act (Act No. 36 of 1919)	MoHSS: Occupational Health	The Act serves to protect the public from nuisance and 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.

LEGISLATION CONSIDERED	CUSTODIAN ORGAN OF STATE	ASPECT OF PROJECT
Relevant Acts		
		The Proponent must ensure that all operations are operated in a way that is safe and healthy to both the employees and the public. Noise and dust emissions which could be considered a nuisance and/ or a health risk ought to be kept to acceptable levels.
Labour Act, 2007	MLIEC	Sections 3, 4, 5, 11, 16, 23-27, 44 and 135 are relevant to this project and therefore the project proponent is expected to comply with provisions in the Labour Act of 2007
Relevant Guidelines, Policies and Regulations		
Mine Health & Safety Regulations (under section 138A of the Mining Act, 1992)	MME: Mine Safety & Services Division MoHSS: Occupational Health Division	These set of regulations are aimed at ensuring that mineral prospecting projects as well as operational mines are operated in a safe manner to prevent and/ or minimize injuries, lost time, fatalities, or long-term health hazards. This has relevance to this project.
National Solid Waste Management Strategy of Namibia	MEFT and Local Municipalities	The Vision of this Strategy is for Namibia to become the leading country in Africa in terms of standards of solid waste management by 2028. The **Specific Objectives** of the Strategy are: 1. To strengthen the institutional, organisational and legal framework for solid waste management, including capacity development. 2. To install a widespread culture of waste minimisation and to expand recycling systems. 3. To implement formalised solid waste collection and management systems in all populated areas, including under the administration of Regional Councils. 4. To enforce improvements in municipal waste disposal standards. 5. To plan and implement feasible options for hazardous waste management including healthcare waste management It is envisaged that a significant amount of solid waste will be produced in the form of litter, sewage, disposable samples bags, soil/ sediment samples, waste food, etc.

The proposed project and its activities will be undertaken in a specific biophysical and social environment. Therefore, to understand the baseline environment with regards to the potential impacts stemming from the proposed project, the affected environmental components and features are presented under the next chapter.

4 THE RECEIVING ENVIRONMENT

An understanding of the existing or receiving environment can inform the management of potential impacts. This chapter provides an overview of the baseline biophysical and social environmental conditions, with which the proposed project will interact. It discusses the receiving environment from literature, existing online datasets, previous reports of work done in the area. This information was also supplemented by an on the ground assessment by the environmental practitioner during a site visit which was

undertake on the 17-18th of December 2024, in combination with the Archaeological specialist site visit.

4.1 Biophysical environment

4.1.1 Climatic Conditions

The proposed project area is located in the Arandis Constituency in Central Namib, about 60 km northeast of Swakopmund, 40 km southeast of Henties Bay, approximately 40 km northwest of Arandis. The climate of central Namib is divided by Mendelsohn *et al.* (2002) into zones that run roughly parallel to the coast as seen in **Figure 4-1**. The site falls within the Middle Zone, which is characterized by extreme aridity and average fog precipitation comparable to rainfall. This zone has a desert climate, with warm daytime temperatures inland and nighttime cooling due to outgoing solar radiation under clear skies (MME, 2010). For specific weather information, reference was made to the Arandis weather information, as it is the closest town and they are within the same coastal zone. The approximate location of the Mining Claims has been added to **Figure 4-1**.

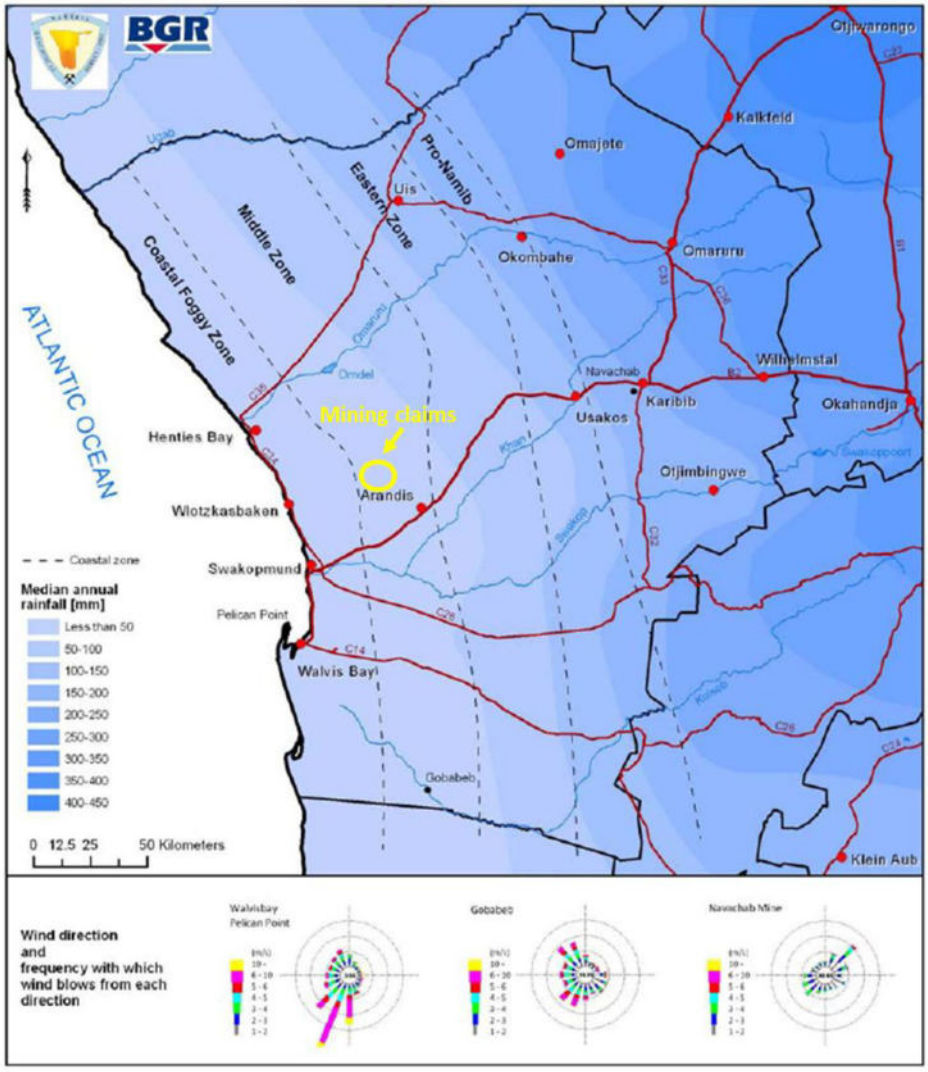

Figure 4-1: Climatic features of Erongo Region. (Modified after Mendelsohn et al. 2002, to show the approximate location of Mining Claims 67406-67411 in yellow).

The town of Arandis experiences an average annual temperature of 19°C, with maximum temperatures ranging between 17 and 27°C and minimum temperatures ranging between 12 and 21°C over the past 13 years according to World Weather online (2025) in **Figure 4-2**. These fluctuations have implications for both natural processes, such as evaporation rates and vegetation cycles, and operational factors such as equipment performance and workers' safety.

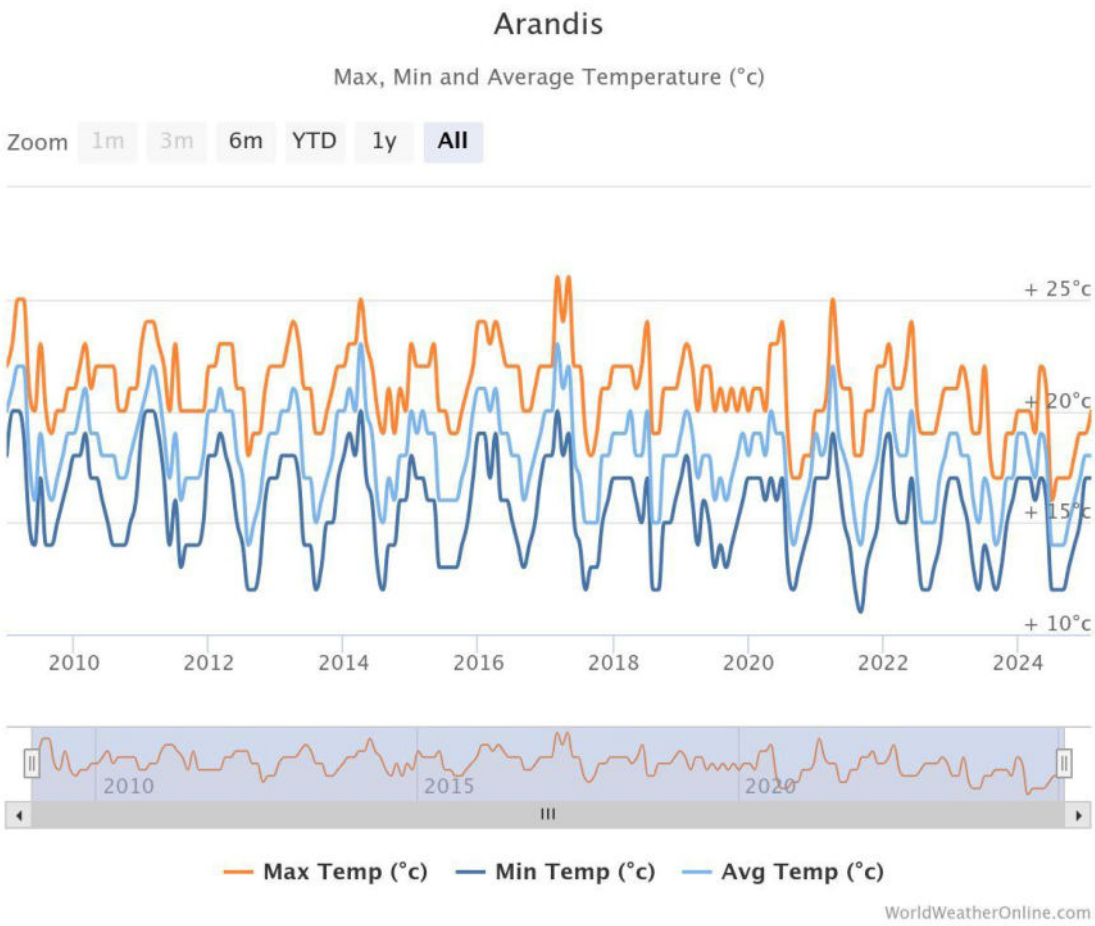

Figure 4-2: The maximum, minimum and average temperature for the Arandis area (World Weather Online, 2025).

In terms of rainfall, it is noted that annual rainfall in the Erongo Region generally increases with distance from the coast as it can also be seen in **Figure 4-1** . The project site is situated in a belt that receives average rainfalls of less than 100mm of per annum (Mendelsohn *et al.* 2002). The recorded rainfall data for Arandis indicates that rainfall events are uncommon, with the chance of rain on any given day being calculated at less than 5%, with an annual rainfall of approximately 44mm (ClimateData.org). A summary of the average annual rainfall figures is depicted in **Figure 4-3**.

Other forms of precipitation in the region include fog, which is known to extend up to 110 km inland. Therefore, the project site is within the coastal fog belt and fog events provide an important source of moisture to the functionality of the ecosystem.

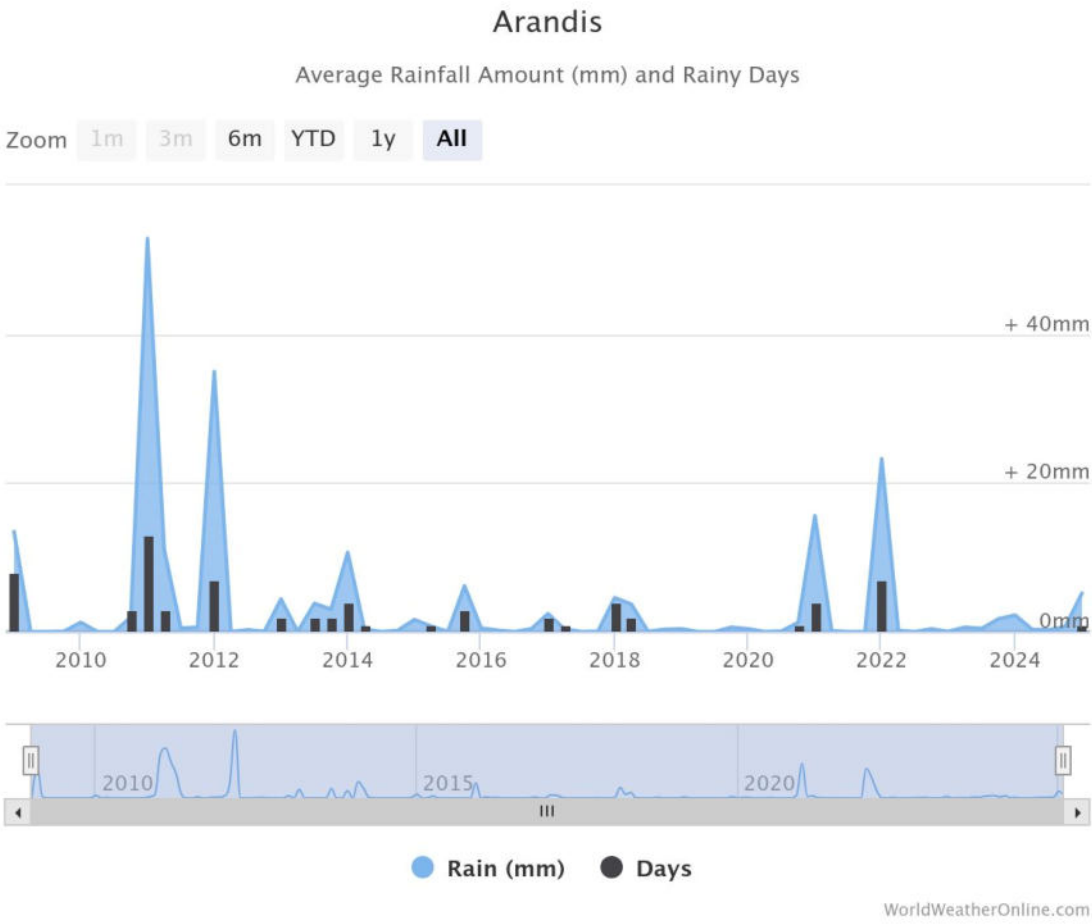

Figure 4-3: The rainfall patterns around Arandis (after World Weather Online, 2025).

The wind regime includes prominent southerly and south-westerly winds during the summer, and north-easterly winds in the winter that sometimes reach gale force and mobiles the entire desert surface (MME, 2010). The area also experiences berg wind conditions that introduce hot air to the town and sometimes associated with dust storms. According to the spatial potential evaporation distribution map of Namibia by BGR (2005), the area falls in the range of 3 200 to 3 400mm/a, which could be accredited to high desert temperatures.

4.1.2 Geology of the area

The project area is located within the southern Central Zone (sCZ) of the Neo-Proterozoic Damara Orogenic Belt. This zone is underlain by the Abbabis Metamorphic Complex (AMB) characterised by basement dome structures and antiforms with northeast elongation exposed along the Swakop and Khan Rivers. The Abbabis Metamorphic Complex is overlain unconformably by the Damara Supergroup, which comprises mainly metasedimentary rocks deposited in the period from about 900 to 700 Ma (Miller, 1983a). The lower part of the Damara Supergroup is dominated by meta-arkoses and calc-silicate rocks of the Nosib Group, while the upper portion of the sequence consists

of alternating marble, calc-silicate rock and schist (Swakop Group). The Swakop Group rocks are common in the area, represented by rocks of the Karibib (Calcitic marble, calc-silicate interlayers and schists), and Kuiseb (interbedded schist, arkosic quartzites and calc-silicate) Formations. The area was later intruded by numerous syn- to post-tectonic granitic plutons, which include minor meta-gabbro, diorite and tonalite, abundant coarse-grained granite, leucogranite and pegmatite (Miller, 2008). The site was intruded by dolerite dykes (*Kdo*) (**Figure 4-4**) of Cretaceous age, which are presently cutting through all older metasedimentary and intrusive units.

The soil occurrences in the area are predominantly unconsolidated Quaternary sediments (Qs) represented by yellow colour on the map in **Figure 4-4**These consist of elluvium, alluvium, fanglomerates, and calcretes, formed from transported materials or rock fragments and exfoliation chips from underlying rocks.

Of interest to the present project are the country rock marbles of the Karibib Formation as well as the coarse-grained granites. **Figure 4-5** shows one of the localities where the dolerite dykes are exposed in the field, intruding some the Karibib Marbles. These individual dykes are between tens of centimetres and several tens of metres wide, and often extend for many kilometres along strike. Owing to their weathering resistance the dolerite dykes tend to form prominent dark ridges with extensive scree aprons as seen in **Figure 4-5**. The dolerites falling within the Mining Claims will also be evaluated for dimension stone potential.

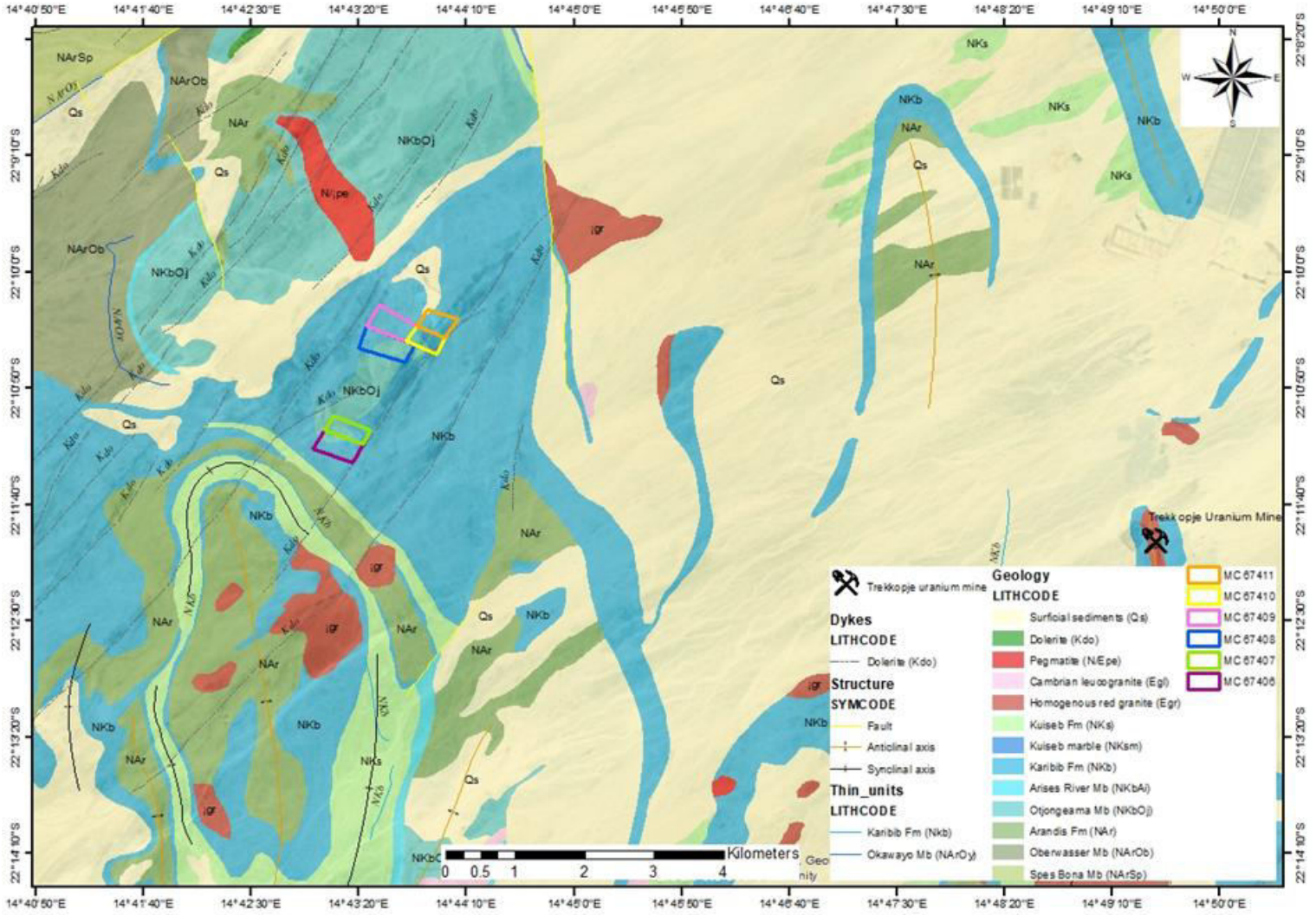

Figure 4-4: The geology of the area around the Mining Claims 67406-67411.

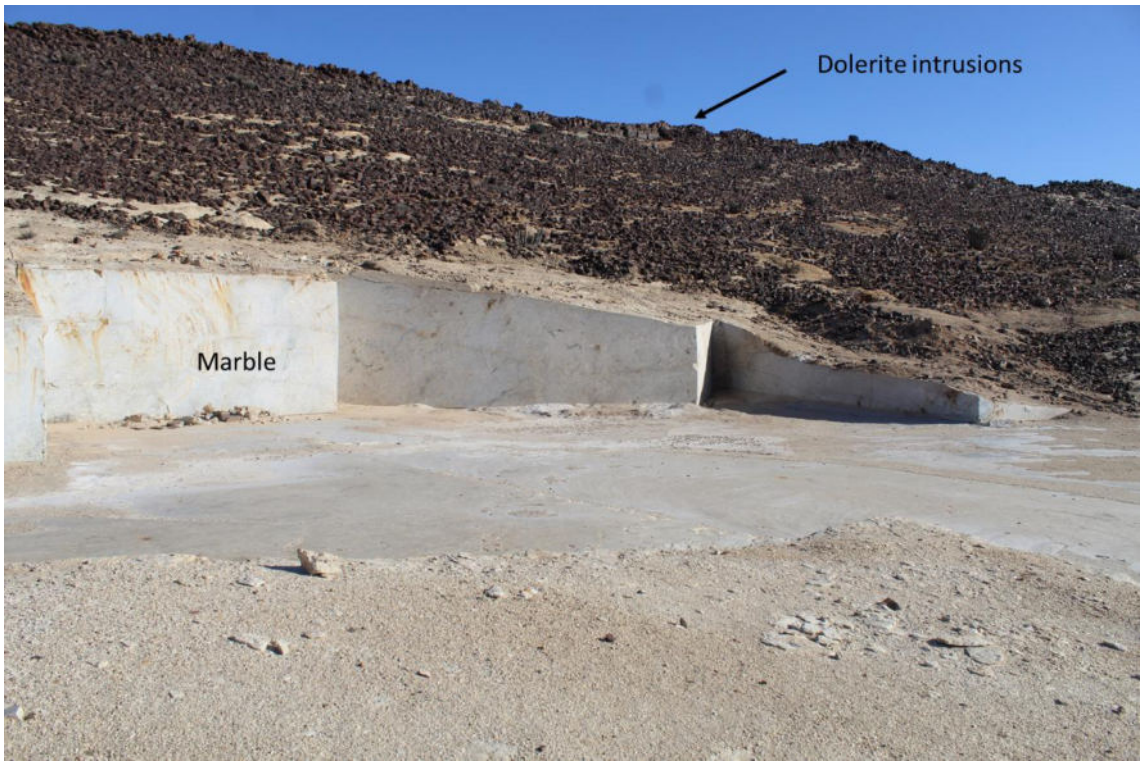

Figure 4-5: One of the locations where the targeted marbles are intruded by dolerite with scree aprons.

4.1.3 Topography and Drainage of the area

The general topography of the Erongo Region is such that there is a gradual decrease in altitude from east to west. The town of Arandis is located some 581 meters above mean sea level (amsl). The Namib Desert land surface is mostly flat to undulating gravel plains, punctuated with occasional ridges and isolated 'inselberg' hills and mountains (Southern African Institute for Environmental Assessment (SAIEA), 2011).

The proposed site has a relatively flat topography, characterized by undulating terrain and occasional hills locally termed "*koppies*" as seen in **Figure 4-6.** The area has elevations of about 500m amsl with occasional dolerite ridges at different elevations.

Figure 4-6: The general terrain around Mining Claims 67406-67411, with undulating plains and occasional "*koppies*" and dolerite hills.

The surface water flow or hydrology of the area is governed by the topography and terrain. For this reason, the surface water in the area has an overall westward flow direction, from highlands to the Atlantic in the west. The Namib plain is incised by four main ephemeral rivers namely the Omaruru, Swakop (including its main tributary the Khan), Kuiseb and Ugab Rivers, which run seawards from wetter parts of their catchments further inland (MME, 2010). All these rivers represent linear oases through the desert and support a multitude of life forms.

Of these rivers, the closest one to the project site is the Omaruru River, which lies about 30 km north and northwest of the project area. The Omaruru River is known to only flow after every two years (reaching Omaruru River Delta (Omdel) Dam), and has mean annual runoffs of about 40 million cubic metres per annum (MME, 2010).

Given that minor tributaries of major rivers are passing through some Mining Claims (refer to drainage in **Figure 4-7**), it will be important to be careful so as to avoid significant impact on natural surface water bodies.

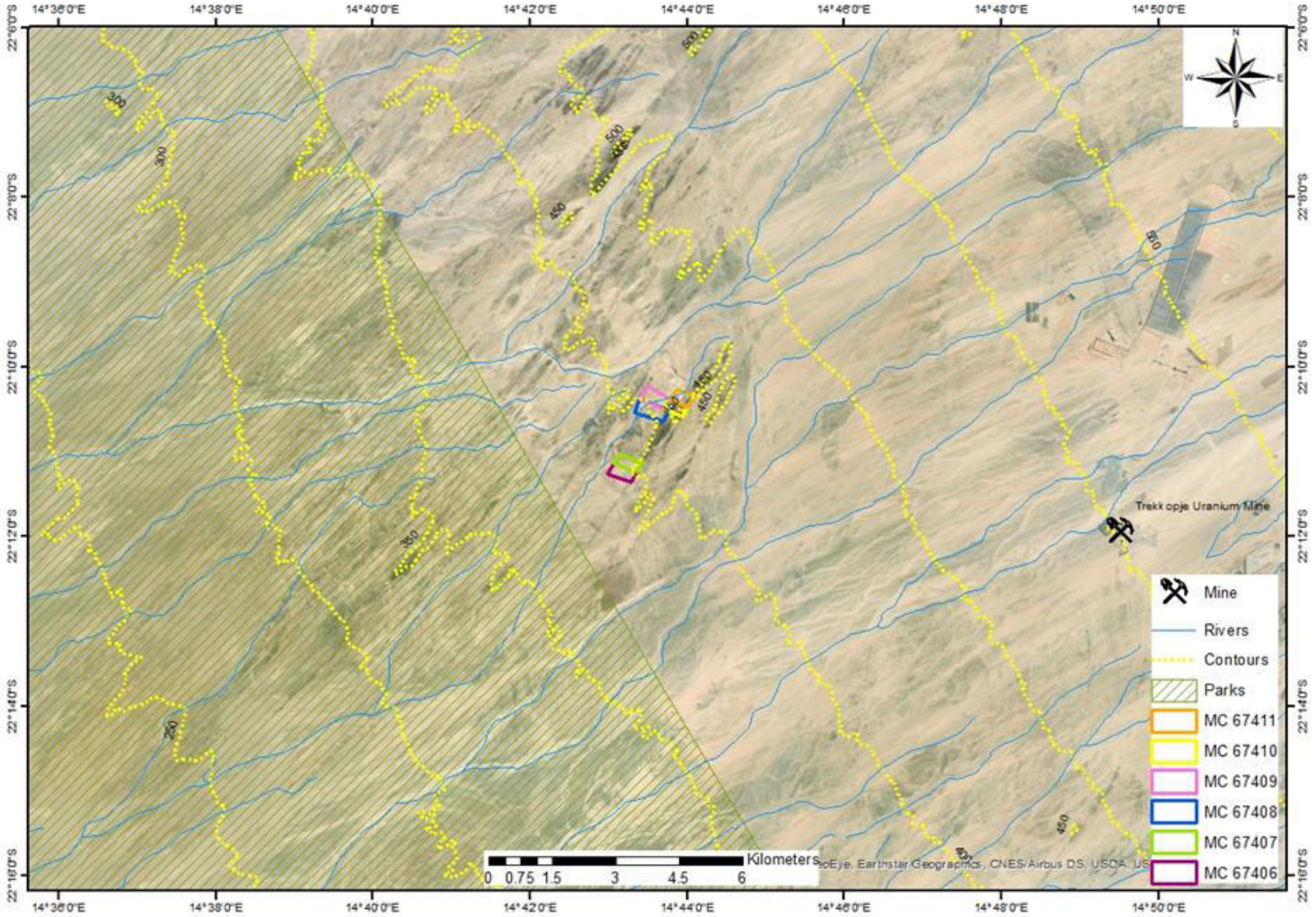

Figure 4-7: The location of the Mining Claims 67406-67411, relative to topography and drainage, showing some minor tributaries going through the Mining Claims..

4.1.4 Groundwater Resources

4.1.4.1 Water potential

The project area falls within the Central Namib-Windhoek Groundwater Basin which generally has low and limited groundwater potential. This is partly due to the low rainfalls in the area, which means lack of recharge, coupled with the generally unfavourable aquifer properties of Damara Sequence rocks (Christelis and Struckmeier, 2011). The Damara Supergroup rocks have poor primary porosity, therefore secondary porosity developed by faulting and karstification are usually the main sources of groundwater. This is especially the case for intact granites, quartzites, schists, calcsilicate as well as gneisses and other metamorphic rocks. However, the carbonates (dolomite, limestones, and marbles) are said to have moderate potential and at properly selected targets like fracture zones and karsitifed contact zones, high yields can be found depending on the amount of rainfall and associated weathering and recharge.

As established, the surface water flows in the area are seldom and often short-lived. Therefore, the real value of the rivers lies in their alluvial aquifers (Heyns & van Vuuren, 2009). Groundwater reserves in the region are limited to the Kuiseb, Swakop, and Omaruru alluvial bed aquifers of the Erongo groundwater basin, which supply Henties Bay, Swakopmund and Walvis Bay as well as Arandis, and historically Rössing Uranium and Langer Heinrich Mines (Aurecon Environment and SLR Environmental Consulting, 2014). The Omaruru River system is the closest to the project site, found about 30km north of the project site.

The occasional ephemeral run-off of the Omaruru River (usually experienced after every two years) is responsible for recharging the groundwater in the Omdel Aquifer. This aquifer has palaeochannels, which are an important domestic and industrial water source for the central Namib community. Several boreholes have been drilled in this aquifer to provide portable water.

During the site visit, it was observed that there were no boreholes In the area, probably because the land is unoccupied. The known boreholes known in the area are those on Farms Trekkopje, Hakskeen and Marenica which are used by the community in the conservancy and were described to be low to moderate yielding boreholes. At the time of visit, the tank in Figure 4-8 was seen onsite, which seems to have been an old water tank used in previous operations.

Figure 4-8: An old water tank found on site, possibly used for storing water during previous operations.

4.1.4.2 Water quality and vulnerability

The project area lies in an area that generally has saline groundwater. According to Christelis and Struckmeier (2011), groundwater in fractured aquifers between the coast and 20-150 km inland is mostly saline. The salinity of groundwater in the Erongo is said to be caused by evapotranspiration and groundwater evaporation. Matengu (2020) also noted that an increase in drawdown as a result of abstraction usually causes salinization in coastal aquifers.

In terms of ground water vulnerability, it can be seen from **Figure 4-9** that the potential for pollution is rather low (indicated by the olive colour). The area where the Mining Claims are located is dominated by metamorphic units including marble bands, which have a low permeability, therefore restricting or limiting contaminants transport. However, this vulnerability might change in areas where such rocks are fractured, allowing secondary permeability.

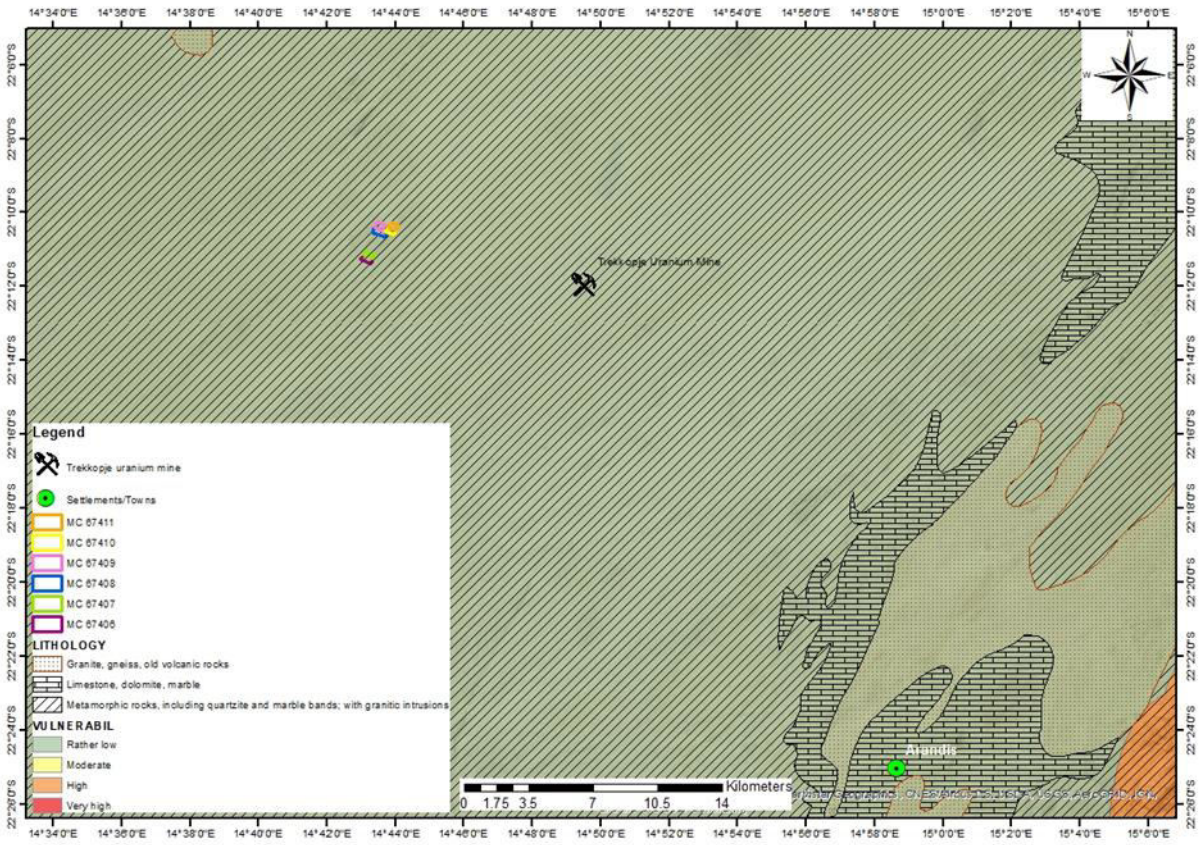

Figure 4-9: The groundwater vulnerability of the area.

4.1.5 Biodiversity Baseline Information

Biodiversity refers to the relative abundance of the different types of life forms in an area. It is influenced by climatic factors such as precipitation and temperature as well as substrate / soil and topography.

The biodiversity of the region is generally well understood, with the Strategic Environmental Impact Assessment (SEIA) for the Central Namib Uranium Rush (2010) classifying the region into biodiversity 'red' and 'yellow' flag areas in terms of certain biodiversity, tourism and heritage hotspots. "Red Flag" status means that the area is by default unavailable for mining and prospecting unless an extraordinary mineral deposit of national importance occurs in the area. Yellow Flag' status means mineral licence applications in these areas will be considered only after careful assessment. The map in **Figure 4-10** shows the different biodiversity zones, proposed based on the following guiding principles:

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

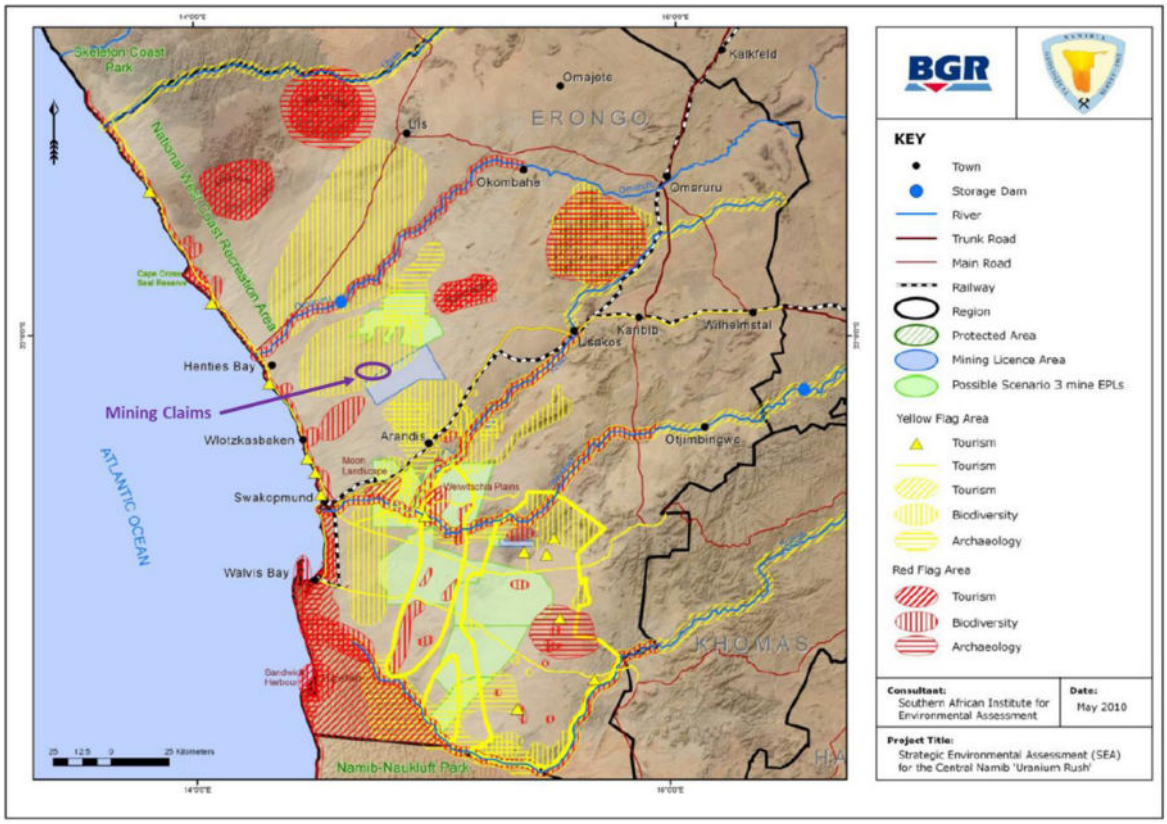

Figure 4-10: Areas of high biodiversity value in the central Namib in the context of the uranium rush (edited after MME, 2010 to show approximate location of Mining Claims 67406-67411).

From **Figure 4-10** above, the project area (indicated with purple) is falling within a yellow flagged area in terms of biodiversity. This area is called Plains North of Trekkopje, which according to MME (2010), is made sensitive by the fact that it has relatively undisturbed gravel plains and wildlife concentrations (springbok, ostrich). Therefore, care must be taken to preserve this environment as much as possible during the different phases of this project. The different fauna and flora found in the area are described in the subsequent section.

4.1.5.1 Flora

The presence of vegetation in Namibia is largely influenced by rainfall, resulting in sparse and short vegetation in the arid west and southern parts of the country, in contrast to the tall and lush plants in the northeast. The project site falls within the transition between Namib Desert and Nama Karoo biomes (Giess,1981). The area is characterized by low rainfall with extreme temperatures and unique climatic factors influencing the natural environment and biodiversity. The vegetation in this area is also supported by the frequent coastal fog which is a significant source of moisture and supports a unique terrestrial ecology.

A biodiversity assessment was conducted during a site walkover of the Mining Claims on 17–18 December 2024. The area is largely barren, with sparse vegetation and low plant diversity, identifying no more than 50 species. Common species identified include along the dolerite ridges, Euphorbia virosa, Pencil Bush (*Arthraerua leubnitziae*) and lichens. The dolerite outcrops of various heights and extent exist in the area, and they provide a habitat for vegetation. The soils derived from weathering of the dolerite are relatively more fertile and tent to support various plant life, which provide forage for the close to non-existent livestock and wildlife. Burke (2008) reports that this vegetation zone has high sensitivity and a low recovery potential. The common plant species observed in the area are presented in **Table 4-1**.

Table 4-1: A summary of observed vegetation.

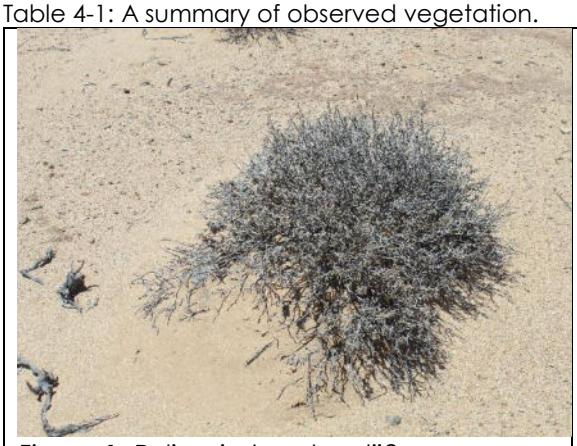

Figure 1: Pulicaria burchardii?

Figure 2: Salsola kali?

Figure 3: Arthraerua leubnitziae

Figure 4: Salsola tuberculata

Figure 5: Zygophyllum stapfii

Figure 6: Commiphora kua?

Figure 7: Lichen

Figure 8: Jamesbrittenia maxii

Figure 9: Euphorbia millotii?

Figure 10: Fabien Anthelme?

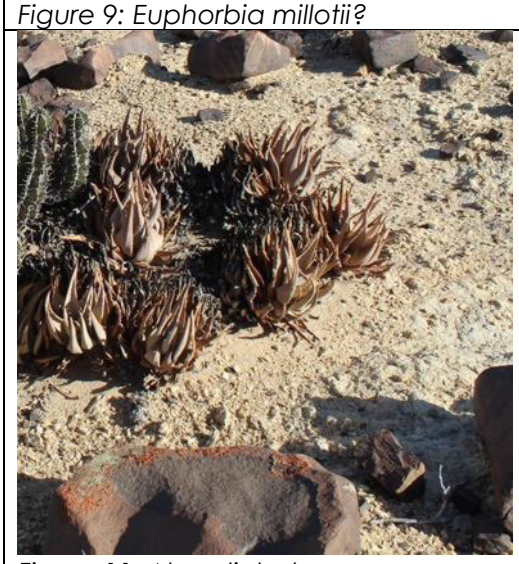

Figure 11: Aloe dichotomy

Figure 12: Euphorbia virosa

Figure 13: Lichen

Figure 14: Pencil Bush

4.1.5.2 Fauna

In terms of fauna, the determinants of diversity include favourable habitats and breeding sites, migratory routes as well as availability of food and water, grazing site to wild animals. No animals were seen during the site visit, however, this does not mean they do not exist in the area.

4.1.5.2.1 Mammals

At least 43 species of mammals are known/expected to occur in the general central Namib around the Rössing and Arandis areas (Pallett et al, 2008). This reflects medium diversity, which is typical of the Central Namib. Large mammals that are conspicuous and quickly recognized by lay people occur in the area - herbivores such as kudus and baboons and large carnivores such as leopards. The mammals list includes 6 hoofed mammals, 9 carnivores, 11 bat species and 16 small terrestrial mammals including rodents and one each of shrew, sengi (elephant shrew), hare, dassie and hedgehog.

Many of these, particularly the carnivores, are naturally uncommon to rare, while a few others, such as hedgehog and fruitbats, are likely to occur only very rarely as vagrants linked to the Khan River linear oasis.

No mammals were seen during the site visit, however, evidence of presence of animals in the area was observed onsite, including burrows, tracks and droppings (**Figure 4-11**). **The long dry seasons (lack of drinking water) coupled with farm resettlements might have contributed to the drastic reduction in the number of these mammals**.

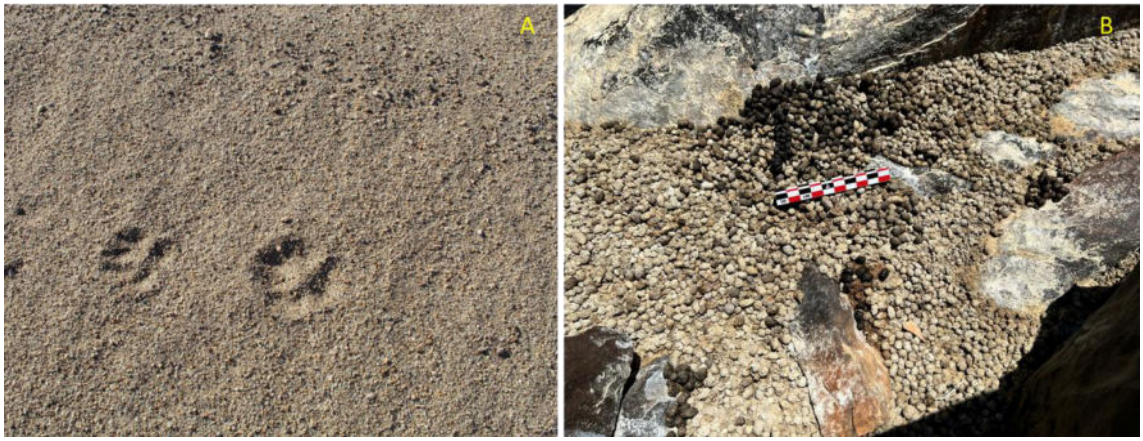

Figure 4-11: Evidence of presence of animals in the area (A) Some prints of paws of large mammals and (B) Droppings of mammals.

4.1.5.2.2 Reptiles and Amphibians

Reptile diversity is high in the Namib Desert. Generally there is a high percentage of endemic reptile species (45%) associated with the rocky escarpment region of central western Namibia, which underscores the importance of this area without formal state protection. The most important species expected to occur in the general area are viewed as tortoises *Stigmochelys pardalis* and *Psammobates oculiferus; pythons – P. anchietae* and *P. natalensi)*.

Most amphibians prefer water to breed and are therefore associated with the permanent water bodies, mainly in northeast Namibia. No amphibians were observed during the site visit, especially given that there are no open permanent surface water bodies on the Mining Claims. Although limited, occurrence is expected in the moister areas such as the Omaruru River and its tributaries. Therefore, care must be taken when operating in areas with minor tributaries on the Mining Claims.

4.1.5.2.3 Birds: avifauna

Arandis is not considered an Important Birding Area (IBA) in Namibia (Simmons, 1998a), however the closest such sites are located to the west at the coast – i.e. Walvis Bay, Sandwich and Mile 4 Saltworks – while the closest inland IBA's are Brandberg and Naukluft. However, generally for the region, species of concern are those classified as endangered (violet wood-hoopoe, Ludwig's bustard, white-backed vulture, black harrier, tawny eagle, booted eagle, martial eagle, black stork), vulnerable (lappet-faced vulture, secretary bird) and near threatened (Ruppel's parrot, kori bustard, Verreaux's eagle, peregrine falcon, and marabou stork) (Risk-Based Solutions, 2020).

During the site visit, some birds could be seen flying over the site area, however these could not be identified nor confirmed to what category of above-listed species they could belong.

4.2 The socio-economic environment

4.2.1 Population Density and Socio-economic Profile

The proposed project area is in the Arandis Constituency in Erongo Region. The region has a total population of 240 206 and an annual growth rate of 3.9% (National Population and Housing Census, 2023). The region has a mixed population with diverse languages including Oshiwambo, Afrikaans, Nama/Damara, Otjiherero, English, San, Setswana and Asian languages. The region's economic growth has been largely due to mining, habour operation and fishing industry, as well as tourism, giving the region the second highest per capita income after Khomas (MME, 2010). The main sources of income for households in Erongo are from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%) (Namibia Statistics Agency, 2011a). In terms of mining, Erongo Region accommodates the mining of commodities such as gold, marble, granite, salt, and semi-precious stones (Erongo Regional Council, 2015).

The Aranids Constituency has approximately 13 542 inhabitants (Namibia Statistics Agency, 2024). Majority of this population is dependent on communal subsistence farming for their livelihood. Some have moved to nearby major towns in search for

employment opportunities and provision of basic services such as schools, clinics, etc. Other affected communities include Swakopmund and Karibib where the water will be sourced from and where the testing factories are located, as well as Arandis and Henties Bay which are targeted as potential towns for housing project staff.

4.2.2 Current Land Use of the area

4.2.2.1 Farming and conservancies

Majority of Erongo Region forms part of the desert, most of which is state owned as protected areas under conservation management (MME, 2010). This includes the Namib-Naukluft Park, the Dorob National Park, National Coast Tourist Recreational Area, etc. managed by MEFT. Further inland is communal land, which is also under conservation management by conservancies such as ≠Gaingu (centred around Spitzkoppe); Tsiseb (focused on Brandberg), Otjimboyo and Ohungu. Most of the population currently residing within the conservancies or on communal land is dependent on small stock farming and small-scale mining. East of the communal land are commercial farms which are privately owned and practice mostly large stock farming (cattle, horses), small stock farming (sheep and goats), game ranching (hunting farms) and ecotourism (particularly desert excursions). The arid nature of the landscape means that very little of the area has agricultural potential and according to Van der Merwe (1983) sheep farming takes up about 70-80% of stock farmed with, and the remaining 20-30% is goats and cattle.

The Mining Claims 67406-67411 lies on communal land, but far from settlements, with the nearest inhabited area being Arandis.

4.2.2.2 Mining

There are several mining and mineral exploration activities happening in the region. Some large projects include: three operating uranium mines, Rössing, Swakop Uranium / Husab, and Langer Heinrich. Other mining activities in the region include salt mining at the Walvis Bay Salt Works, Swakopmund and Cape Cross, as well as mining of semi-precious stones by small scale miners in the Spitzkopje and surrounding. Other mining activities inland include the gold mining at Navachab Mine and several dimension stones quarries such as Okatji Marble Mine. **Figure 4-12** shows the approximate location of the Mining Claims relative to the other mineral licensed areas around.

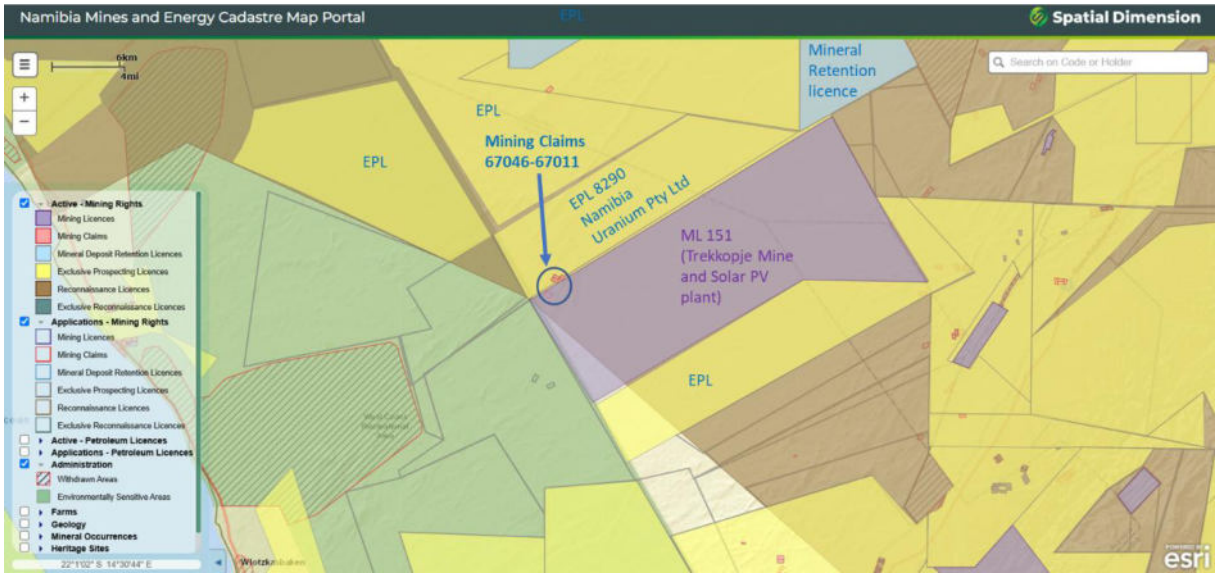

Figure 4-12: The location of some mineral licensed areas relative to the approximate location of Mining Claims 67406-67411 obtained from the mining cadastre https://portals.landfolio.com/namibia/ accessed: 17 February 2025.

The site is not pristine, as there have been previous mining activities as seen in **Figure 4-13**. Some quarries and mined out marble blocks were found onsite. The disturbed sites cover a footprint of about 1km by 500m following the dolerite ridge. Overburden has been stripped, stockpiled, and occasionally used for ramp construction. The open pits have a 45-degree cut, with vertical faces reaching up to 3 meters in height.

Figure 4-13: A photo captured on one of the Mining Claims (MC 67411), showing multiple quarries and mined out marble blocks.

4.2.3 Existing infrastructure

Transport infrastructure: The project site (Mining Claims 67406-67411) is connected to the neighbouring urban centres by the B2 road which links it to Swakopmund and Walvis Bay going west and to Karibib, Windhoek going south. It can be accessed from the B2 highway via the D1918 gravel road up to the Trekkopje Mine and thereafter by several small local access roads can be used. Additionally, the Trans-Namib Railway runs parallel to the B2 to major towns. No transport infrastructure are going through the mining claim.

Power infrastructure: The town of Arandis is connected to the national power grid, with powerlines running parallel to the main road. Power distributors include NamPower and ErongoRed. The Trekkopje mine site has a PV solar plant. There were no power sources observed onsite. **Domestic activities pertaining to the current exploration project will be supported by solar power and gas, while the actual exploration activities such as drilling will use hydrocarbons (i.e. diesel) to power the machinery.**

Water: The Erongo Regional bulk water supply is done by NamWater supplied in bulk to industries, municipalities by (the bulk water supplier). NamWater abstracts water from the large Kuiseb River and Omaruru delta (Omdel) aquifers, which is then pumped to several reservoirs that provide water to towns in the Region such as Walvis Bay, Swakopmund, Henties Bay, Arandis, Karibib and the mining industry. The desalination plant built and owned by AREVA as well as the Swakopoort Dam which is located about 80km southeast of Karibib also supplement this supply. Water in areas outside the urban centres is either supplied by the Directorate of Rural Water Supply or sourced from privately owned boreholes on farms.

It was observed during the site visit that there were no boreholes in the area, probably because the land is unoccupied. The proponent envisages to pipe water to site or to cart water from Arandis or Henties Bay on a weekly basis in water bowsers.

Waste: There is provision for waste disposal sites in the nearby towns of Arandis and Henties Bay. No waste disposal containers were seen onsite, however different kinds of waste was seen during the site visit. Some of this waste was photographed randomly scattered around the site as seen in **Figure 4-14**.

Figure 4-14: Different waste material observed on site within the Mining Claims.

Health and Educational Facilities: there is one state health facility (clinic) and one private clinic in Arandis. Schools in the town include Arandis Primary School, Kolin Foundation, Urbanus B Dax Senior Primary School, the Rössing Foundation and the Namibian Institute of Mining and Technology (NIMT) which offers vocational training.

4.2.4 Air quality and Noise levels

The overall quality of air in the Erongo Region is influenced by its climatic conditions as well as the activities in the region. In terms of climate, the region experiences episodic or even sporadic dust storms, which are mostly more pronounced during Winter when strong easterly winds are prevalent (Liebenberg-Ensli et al. 2006). The high wind speeds coupled with mining operations and unpaved roads were seen to contribute to dust emission in the region. Fugitive dust sources associated with mining activities include drilling and blasting operations, materials handling activities, vehicle-entrainment by haul vehicles and wind-blown dust from tailings impoundments and stockpiles. In addition to dust, gaseous and particulate emissions contributed by vehicles and ore processing activities also impact air quality.

Contributors to noise levels in the region include vehicle movement on the public road network, rail transport activities with potential receptors of noise including the residents and tourists that frequently visit the various attractions in the surrounding area, as well as fauna.

4.2.5 Archaeology and Heritage Resources

Sites of heritage and archeological importance are common in Erongo and are important as an independent material record of past events. The remains of indigenous settlements, wells, burial grounds and other sites are valuable material evidence of indigenous land ownership and can provide crucial support for land claims. These sites range from large and easily recognizable ones such as, natural rock shelters with evidence of occupation, including rock art, and stone features such as hut circles, hunting blinds and larger grave cairns, to smaller rock paintings and stone artefacts. All this evidence, including its landscape setting, is accorded protection under the National Heritage Act (No. 27 of 2004).

For their preservation, the National Heritage Council of Namibia (NHC) made Archaeological Assessment a mandatory requirement for all environmental assessments of exploration and mining projects, with works subject to issuance of a Consent Letter by the NHC. This letter is one of the required documents when submitting environmental assessment report to the Ministry of Environment, Forestry and Tourism for evaluation and consideration of the ECC. **For this reason, an archaeological survey was conducted OTAH Consultancy CC on the 17th-18th December 2024 on Mining Claims 67406-67411, and a summary of the findings are presented below.** The detailed **Archaeological Assessment Report** has been submitted to NHC for evaluation and has been appended to this report together with proof of submission in **Appendix D**.

4.2.5.1 Archaeological findings

A reconnaissance survey was conducted to identify and assess cultural heritage resources, including archaeological sites, rock art, and historical structures within Mining Claims. The survey aimed to locate significant archaeological features that could be impacted by mining and propose mitigation measures for their protection.

According to OTAH Consultancy CC (2024), the field survey on Mining Claims 67406-67411 did not yield archaeological or heritage significant sites, the building ruins recorded (**Figure 4-15)** are dilapidated and has no heritage significant However, given that the mining claims are located in the Erongo region, an archaeologically sensitive area recognized as a cultural landscape, there is a significant likelihood that subsurface remains might be uncovered during site preparation and the mining phase.

Therefore it is recommended that the proponent ensures that all project staff are trained in the Chance Finds Procedure outlined in Appendix 1 of the Heritage Report minimize potential harm to archaeological and heritage resources.

Figure 4-15:. Building structures/ ruins within MC 67406 & 67407 (Source: OTAH Consultancy CC (2024).

5 THE PUBLIC PARTICIPATION PROCESS

The public participation process (PPP) forms an important part of this scoping report, as it provides all persons or organizations (interested and affected parties (I&APs) an opportunity to comment on the proposed activity and register their views and concerns. This was done in accordance with both the EMA and its 2012 EIA Regulations.

5.1 Stakeholders and Interested & Affected Parties (I&APs)

At the beginning of the environmental assessment process, a preliminary list of stakeholders who needed to be informed about the proposed project was drawn up. As the public participation process evolved, this list of identified and potential Interested and Affected Parties (I&APs) was continuously updated. A complete list of the I&APs identified and registered for the project can be found in **Appendix E**. The pre-identified I&APs were first engaged and informed about the ESA process via an advertisement in three (3) of the local newspapers on the 5th of December 2024 which marked the official commencement of the ESA's stakeholder engagement process.

The stakeholder engagement process was allowed to run until 31st December 2024 but was later extended to 22nd January 2025 because of the December festive holidays. As such the latter date marked the official end of the stakeholder engagement period during which any concerns/ objections/ inputs/ suggestions by I&APs could be submitted for further consideration in the ESA and/ or EMP reports. By the end of the stakeholder engagement process, no official concerns/ objections/ inputs/ suggestions were received or registered by the OMAVI office.

Amongst key stakeholders identified and registered for the EA process were:

- **Central or national government:** Ministry of Environment, Forestry & Tourism; Ministry of Mines & Energy; Ministry of Agriculture & Land Reform; Ministry of Urban &Rural Development; National Heritage Council of Namibia (under the Ministry of Education, Ats & Culture)
- **Regional government:** Erongo Regional Council (head office, constituency & district level offices)
- **Local authority**: Arandis Constituency Office, Daures Constituency Office; Karibib Constituency Office; Usakos Town Council; !Oe#Gan Traditional Authority; Gaingu Communal Conservancy;
- **Government Parastatals**: Namwater, Roads Authority (Legal & Road Network Planning Section), Nampower, Erongo Red, National Heritage Council, Namibian Chamber of Mines, National Botanical Research Institute, Epangelo Mining, Transnamib
- **Members of the public including land/farm residents, concerned lobby groups:** As attached in **Appendix E**

5.2 First Round of Public Consultation: Summary of Activities Undertaken

To ensure that the I&APs were adequately consulted and remained involved in the ESA process, the following activities were undertaken:

- A Background Information Document (BID) containing descriptive information about the proposed exploration activities was compiled in the initial stages of the environmental scoping assessment (ESA) process and sent out to all pre-identified stakeholders via email. Printed copies of this document were also couriered to stakeholders who were not reachable via email. Proof of sharing this document is included in **Appendix F**.
- A list of pre-identified I&APs was initially compiled. This initial list of I&APs included representatives from central, regional and local government institutions (ministries, regional and local authorities) as well as representatives from relevant government parastatals, non-governmental organisations (NGOs) such as the

Botanical Institute of Namibia, the concerned communal conservancies, and some residents from the affected communities.

- Formal public notices announcing the commencement of the EA process and an invitation to register as I&APs were published in *Die Republikein, The Sun Newspaper* and *Allgemeine Zeitung* newspapers (dated 5th and 12th December 2024, please refer to **Appendix G,** attached).
- Thereafter, and owing to the prevailing festive holidays which coincided with this stakeholder engagement period, a further notification email was circulated to all identified and registered I&APs on the 13th of January 2025 announcing the extension of the stakeholder engagement process to the 22nd of January 2025. This email also extended a formal invitation for the general public to register as I&APs. Included in this email was the Background Information Document (BID) and a comments register which provided a high-level and non-technical description of the proposed quarrying activities and the whole procedure to be followed for the Environmental Assessment. A copy of this email trail is attached in **Appendix F** together with the BID.
- Printed formal site notices were placed at strategic locations to help inform and sensitize the general public about the project. Places where such site notices were placed included the regional council office in Swakopmund, the Usakos and Karibib Constituency Offices, Spitzkoppe, farm fences and farm gates near and within the respective mining claim areas, and entrances to popular publicly accessible supermarkets in Usakos, Arandis and Karibib. Please refer to **Appendix H** for a record of these notices**.**
- Provision was further made to circulate the BID on request via email to I&APs throughout the scoping process.

Public Site Notices

As part of efforts to ensure public awareness of the projects concerned, printed site notices informing the general public as well as affected land owners about the Environmental Assessment process, and providing contact details of the appointed Environmental Assessment Practitioner were placed at the following strategic locations including at the entrance to Mining Claims 67406-67411 and the Arandis Police Station as seen in **Figure 5-1**). Other sites where site notices were placed are listed below and photos are included in **Appendix H**.

- Sites within the respective mining claim areas
- Arandis Police Station
- Karibib Police Station
- Karibib Town Council Office

- Spitzkoppe Clinic
- Spitzkoppe T-junction Market (small-scale miner's market)
- Usakos District Hospital and
- Usakos Town Council and

Figure 5-1: Site notices placed at (A) the entrance to Mining Claims 67406-67411 and at (B) the Arandis Police Station.

5.3 Consultation Feedback: Issues, Concerns & Suggestions Raised

No written correspondences or official communications were received by OMAVI during or after this stakeholder engagement process in regards to the proposed brown field and/ or quarrying activities on any of the mining claims concerned.

However, the proposed exploration activities have the potential to impact the immediate and surrounding socio-economic and biophysical environment, and understanding these impacts, especially the negative ones and their significance will aid the provision of suitable mitigation measures. The recommended measures can then be implemented to minimize the impacts' significance, and where possible, avoid these impacts all together. Some impacts might be insignificant while others might need special attention or even further investigation.

The subsequent chapter presents the positive and negative impacts that are anticipated from the project activities, their description, assessment, and mitigations thereof.

6 IMPACT IDENTIFICATION AND ASSESSMENT

The proposed project activities are associated with different environmental impacts, whether positive or negative. The general aim of an environmental assessment is to assess these impacts, mainly the negative ones as they are likely to cause more damage to the environment if measures are not properly implemented. This is done to ensure that the potential negative impacts are adequately addressed, so that impact significance is brought under control, while maximizing the positive impacts.

The potential positive and negative impacts that have been identified from the proposed exploration activities are as follows:

Potential positive impacts:

- Socio-economic development through employment creation and skills transfer.
- Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Contribution towards national economy through the payment of taxes and royalties to the Government (through the Ministry of Mines and Energy).
- Improved geological understanding of the site area regarding dimension stones.

Potential negative impacts:

- **Impact on local biodiversity (fauna and flora):** the removal of vegetation that may be found within the project footprints (for both exploration and test mining). The moving of some site rocks may lead to loss of habitats for small animal species like reptiles that live under these rocks. Movement of heavy project vehicles may disturb the local livestock and wildlife around the project site.
- **Visual / aesthetic impact**: the mined-out areas on the project sites may pose as an eyesore to travellers passing through the site (including tourists).
- **Archaeological or cultural heritage** impact through unintentional uncovering of unknown archaeological objects or sites by certain project activities.
- **Noise:** potential increase in noise levels from project vehicles and machinery may be a nuisance to locals.
- **Pollution and litering** through different types of waste generated on the site due to improper management and disposal.
- **Air quality issue**: potential dust generated from surface excavation, drilling, diamond wire sawing and mining could compromise the surrounding air quality.
- **Impact on service infrastructure such as local roads:** the temporary potential increase in vehicular traffic during exploration may exert additional pressure on

the local roads, especially by heavy vehicles such as trucks carrying project materials, equipment (drilling rig) and mined blocks.

- **Soil and water resources pollution:** the potential risk of hydrocarbon spillages and wastewater in the working areas and workshops if not properly managed may contaminate the site soils and eventually reach groundwater systems.
- **Health and safety hazards** to personnel associated with the movement / operating of machinery. Not only to project personnel but also residents (locals) in the affected area.
- **General social nuisance to landowners:** The project personnel might invade private areas such as houses. Poor communication between the Proponent and the occupier of land with regards to the project activities could result in long-terms unresolved conflicts.

6.1 Impact Assessment Methodology

The methodology used to assess and determine the significance of the above-listed potential project impacts on the biophysical and social environmental components is as explained below.

6.1.1 Impact Assessment Screening

The potential impacts identified by Interested and Affected Parties (I&APs), presented as issues during public consultation period and by OMAVI Consultants based on professional experience was screened according to a set of questions (**Figure 6-1**). This resulted in highlighting the key impacts requiring further detailed assessment of each impact in the respective sections of this chapter.

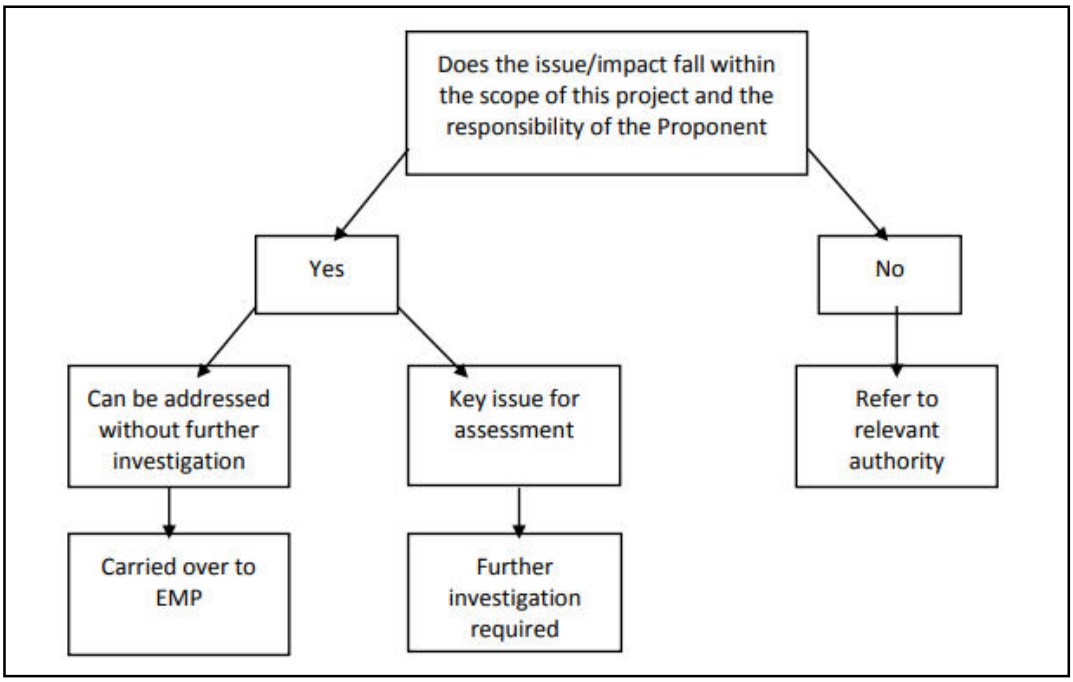

Figure 6-1: Screening process for determining key impacts (source: Resilient Environmental Solutions, 2019)

6.1.2 Impact Assessment Criteria

The methodology employed for this assessment was adopted from other environmental assessment reports based on research and analysis of other consultants' reports (GCS Water & Environmental Consultants, 2017a) on the suitable project impacts' assessment methodology.

The proposed exploration activities will likely to some scale/extent (spatial scale), magnitude (severity) and duration (temporal scale) have impacts on certain biophysical and social components. The potential impacts were assessed as per criteria presented in Table 6-1. To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable.

It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact.
- Assessment of the pre-mitigation significance of the impact; and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment.

Table 6-1: Impact Assessment Criteria employed to assess the potential negative impacts

Nature	Description	Rating
Extent (Spatial scale)	An indication of the physical and spatial scale of the impact.	**Low (1):** Impact is localized within the site boundary: Site only. **Low/Medium (2):** Impact is beyond the site boundary: Local. **Medium (3):** Impacts felt within adjacent biophysical and social environments: Regional. **Medium/High (4):** Impact widespread far beyond site boundary: Regional **High (5):** Impact extend National or over international boundaries.

Nature	Description	Rating
Duration	The timeframe, over which the impact is expected to occur, measured in relation to the lifetime of the project.	**Low (1):** Immediate mitigating measures, immediate progress **Low/Medium (2):** Impact is quickly reversible, short-term impacts (0-5 years) **Medium (3):** Reversible over time; medium term (5-15 years). **Medium/High (4):** Impact is long-term. **High (5):** Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources
Intensity, Magnitude / Severity (Qualitative criteria)	The degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative	**Medium/low (4):** Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers. **Low (2):** Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
Probability of occurrence	Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment	**Low (1):** Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards. **Medium/low (2):** Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards. **Medium (3):** Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards. **Medium/High (4):** Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards. **High (5):** Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

6.1.3 Impact Significance

This is determined through a synthesis of the above impact characteristics (in Table 6-1 above). The significance of the impact "without mitigation" is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this

chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (Table 6-1) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SP = (magnitude + duration + scale) x probability

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate, or low significance, based on the following significance rating scale (Table 6-2).

Table 6-2: Impact significance rating scale

Significance	***Environmental Significance Points***	***Colour Code***
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	>-60	H

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the project impacts is done for both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are effectively implemented). The potential impacts listed under section 6.1 above are described and assessed under the subsequent sections.

6.2 Positive Impacts: Description and Assessment

6.2.1 Socio-economic development (Employment and Social Responsibilities)

The exploration activities will create some temporary job opportunities for the locals (both skilled, semi and unskilled), resulting in socio-economic development through employment creation and skills transfer. If an economical resource is found, the project will go into mining phase, and the number employees and skill transfers will increase. The skills transferred to these workers (exploration and mining teams) will ensure improved employability for those workers in the industry or at other similar project operations in future. The income earned by the employed locals (workers) will positively impact their lives, individually and that of their households (families). This impact is assessed as follows.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation					
Post mitigation	Local to regional	Short term for exploration but potentially long term	To bring noticeable changes	Definite employment if project is approved.	
Mitigation measures • Namibian citizens and permanent residents from the area should be employed for the unskilled labour preferentially to out-of-area people (outsiders) where possible. Out-of-area employment should be justified, for example by the unavailability of local skills only. • - Equal opportunities should be provided for both men and women, the youth and people living with disability when and where possible.					

6.2.2 Socio-economic development (Value Added Taxes and Royalty)

Once proved to be economical in the exploration phase, the mining and sale of the processed dimension stone (off site) will result in the payment of national taxes and royalties to the responsible institutions of the Government of the Republic of Namibia. This will contribution towards national economy from the mining sector. The impact assessment is as follows:

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation					
Post mitigation	National	Short term for exploration but potentially long term	To bring noticeable changes	Definite contributions if project is approved and client is compliant.	
Mitigation measures • The Proponent to ensure compliance with their project's requirements of annual levies by the Ministry of Mines and Energy.					

6.2.3 Improved geological understanding of the site

The geological information reviewed and gathered during the exploration phase and eventual mining will be made available to the Ministry of Mines and Energy. The Ministry would then consolidate the information as a public institution for archiving and future use a baseline for projects or educational research. This impact is assessed as follows:

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation					
Post mitigation	Regional to national	Long term knowledge	Valuable improvement of exploration in the area.	Definite knowledge if project is approved.	
Mitigation measures • The Proponent to ensure quarterly reporting for availability and accessibility of exploration findings to the Ministry of Mines and Energy (Mines Department) and possibly Geological Survey of Namibia for archiving.					

6.3 Negative Impacts: Description and Assessment

The potential negative impacts have been described and assessed. The mitigation measures have also been provided under each assessed impact. These measures are then ''translated'' into management plan actions in the project's Environmental Management Plan (EMP).

6.3.1 Impact on Biodiversity (Fauna and Flora)

The proposed activities have the potential to impact both surrounding fauna (animals) and flora (vegetation) and these are described below.

6.3.1.1 Fauna

The project site is on communal land with no nearby community. The nearest communal farmers are well away from the project site (more than 20 km to the northeast). Their domesticated animals do not graze too far from their homesteads, therefore they may not make it to the proposed project site. Thus, the impact of movement of heavy project vehicles on the livestock and their local grazing areas is minimal.

Project personnel and vehicles may also scare away the wild animals such as springboks, gemsboks and kudus. However, it has been established that there is very little left of this wildlife in the area due to lack of water, with only few animals coming around after the rainy season. This coupled with the constant movement of personnel from other mining and prospecting projects in the area which might drive away the animals. For this reason, the impact on wildlife is expected to be low.

Another potential impact of the project activities is the faunal habitat loss especially for reptiles and small mammals that live under the targeted rock units on the Mining Claims. Although this impact may not be entirely avoidable, the workers will need to be educated on the importance of conserving faunal biodiversity by not killing any of the small mammals or reptiles encountered while performing their tasks. These animals may be trying to migrate from the targeted and disturbed rock outcrops to seek shelter and habitat elsewhere, therefore, the workers (project personnel) will be sensitized to not harm them in any way.

6.3.1.2 Flora

This impact is anticipated through the clearing of land to create access roads for movement of vehicles and machinery and to clear the site for exploration and mining activities. This will require removal of vegetation that may be found within the project footprints (target site areas). The moving and displacement of some site rocks may lead to loss of habitats for vegetation. The movement of project vehicles may also destroy the vegetation within project site tracks, especially small shrubs, if care is not taken.

All these actions will potentially lead to the destruction of animal and plant species within the targeted exploration and mining sites within the mining claim. Thus, resulting in the loss of such species and eventual loss of biodiversity in the area. **However, the project site area is already poorly vegetated, covered primarily by occasional dwarf shrubs and succulents, thus minimizing the need to remove vegetation**.

Consequently, the impact on flora would be of slightly medium significance with no mitigation measures in place for implementation to protect the existing vegetation. This conclusion would also apply to the existing fauna (both farm livestock and site rock animal species). Therefore, to reduce the pre-mitigation impact significance from medium to low, the recommended measures in Table 6-3 below will need to be effectively implemented.

Table 6-3: Impact assessment of project activities on biodiversity.

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 4	L/M - 4	M - 3	M - 33
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigation measures

Flora

- The Proponent should avoid unnecessary removal of vegetation, thus promoting a balance between biodiversity and their operations.
- Vegetation found on the site, but not in the targeted mining areas should not be removed but left to preserve biodiversity on the site.
- The proponent must explore the possibility of transplanting or relocating vegetation found on the targeted rock units.
- The movement of vehicles and machinery should be restricted to existing roads and if necessary, newly established tracks only to prevent unnecessary damage to the site vegetation.
- No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller.
- Even if a certain shrub or tree is found along exploration and mining sites, this does not mean that it should be removed. Therefore, care should be taken when exploring and mining without destroying the site vegetation.

Fauna

- Workers should refrain from killing species (big or small and all types) that may be found on and around the site.

- Workers should refrain from disturbing, killing or stealing locals' animals and killing small soil and rock outcrops' species found on sites. This prohibition also applies to future re-appearance of wild animals in the area during good rain seasons.
- Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

6.3.2 Impact on Groundwater Quantity (Over-abstraction)

The planned exploration works will require about 20 000 to 30 000 litres per week, bound to increase to 30 000 to 50 000 litres per week at test mining stage. It is proposed that this water be transported either by cart or by pipe and stored on site for daily use. For this reason, the impact on groundwater due to abstraction will be negligible. Additionally, water will be recycled and re-used as an attempt to conserve water. This approach might see a reduction in the amount of water requirements, which will mean lesser amounts to be transported.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the Table 6-4 below.

Table 6-4: Assessment of the project impact on water resources abstraction (quantity)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M – 36
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

Mitigation measures

- Water reuse/recycling methods should be implemented as far as practicable such that the water used to cool off exploration equipment should be captured and used for the cleaning of project equipment, where possible.
- Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.

6.3.3 Soils and Water Resources Pollution

The anticipated potential source of soil and groundwater pollution are project activities such as hydrocarbons fuels from project vehicles, machinery, and equipment as well as potential wastewater/effluent from exploration and mining works. The spills from these machinery, vehicles and equipment (depending on volumes spilled on the soils) could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time could travel to reach further groundwater systems in the area. This will only occur if there is improper storage and handling of hydrocarbons (fuel) which could result in spills, or wet waste such as effluents on project sites. And as highlighted in the previous section, groundwater quality can also arise from low and prolonged periods of no recharge, which results in increased concentrations of chemical constituents (increased TDS, salinity, etc). However, this will not be an impact for this project, as no water will be abstracted from local boreholes for operations.

The Groundwater Resources Vulnerability Map of Namibia shows that the vulnerability of groundwater to pollution in the project area is moderate. The main concern regarding groundwater pollution would be on areas that are underlain by fractured/faulted rock units that could act as conduits to potentially contaminate the nearby OMDEL aquifer. However, given the intact nature of underlying rocks, this impact is anticipated to be low. Additionally, the low rainfalls in the area and consequent lack of recharge could mean prolonged periods of no flow, hence immobile contaminants will be localized.

From the above description of the impact, it can be concluded that without implementing any measures to avoid or minimize the impact, the impact significance will be moderate and once the recommended mitigation measures have been implemented, the significance will be reduced to low. The assessment also presented in Table 6-5 below.

Table 6-5: Assessment of the project impact on soils and water resources (quality)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigation measures

- Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching groundwater bodies. Some of the soil control preventive measures are:
  - V Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.
  - V Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
  - V The oil storage and use locations should be visually inspected for container or tank condition and spills.

- Maintain a fully provisioned, easily accessed spill kit. Spill kits should be located throughout the active project sites contain the floor dry absorbent material and absorbent booms, pads, mats. These would be suitable for ground surface areas that are covered mainly by hard rocks.
- All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.

- Exploration site areas where hydrocarbons will be utilized, the surface should be covered with an impermeable plastic liner (e.g., an HDPE liner), carefully placed to minimize risk of puncturing, to prevent any spillages from getting into direct contact with the soils and prevent eventual infiltration into the ground.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.
- All wastewater and hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites in accordance with MAWLR's Water Environment Division standards on waste discharge into the environment. This is to ensure that these hazardous substances do not infiltrate into the ground and affect the local groundwater quality.
- In cases of accidental fuel or oil spills on the soils from site vehicles, machinery and equipment, the polluted soil should be removed immediately and put in a designate waste type container for later disposal as per the preceding bullet point. The removed polluted soil should either be completely disposed of or cleaned and returned to where it was taken from on site or can be replaced with a cleaner soil. This is to ensure that the pollutants contained into the soil does not infiltrate into the site soils and eventually reach to groundwater.
- Although fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened).
- Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- Toilet water should be treated using one of the following methods:
  - Discharged into chemical toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.
  - A type of pit latrine (where excreta in the pit is treated to prevent the waste from being a water pollution risk).

6.3.4 Visual impact

Surface mining of dimension stones usually leaves scars on the local landscape, depending on the site characteristics, exploration method and intensity of such activities. If the worked sites are located close to or along roads or frequently used areas, these scars in many cases contrasts with the surrounding landscape and thus may potentially become a visual nuisance.

The rocks of interest in this case are marbles, but there are also red granites and dolerites, whose colours are dark and may not leave such a huge contrast between the environment and the explored/mined-out areas. Progressive backfilling during and after exploration and mining activities may further reduce the significance of visual impact.

Without any mitigation measures, the impact will be of slightly medium significant, but after implementing the measures, the significance will be low as assessed in Table 6-6.

Table 6-6: Visual impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M - 6	M - 3	M – 39
Post mitigation	L - 1	L /M- 2	L /M- 3	L/M - 2	L - 12

Mitigation measures

- The Proponent should consider the implementation of continuous rehabilitation programme, by using overburden waste rocks from exploration works.
- The Proponent to utilize waste rubble to rock blind exposed rock faces and stockpiled topsoil to partially back fill site areas used for test quarrying.
- The Proponent should carry out progressive working and restoration/rehabilitation over the shortest timescale possible, to avoid excessive areas of disturbance.
- Consider a phased exploration and direct placement of overburden (topsoil and waste rocks) and other site-derived materials to allow progressive restoration around the margins of the explored-out site areas.

6.3.5 Impact on Surrounding Air Pollution (Dust)

The project activities and vehicles may potentially generate dust and gas emissions from vehicles (due to unpaved access roads, including the D1918). Dust emanating from unpaved roads when transporting project equipment and supply (water) to and from site (time-to-time) and excavation/drilling works may compromise the air quality in the area. This can be worsened by the dry conditions of the project area, the berg winds and the fact that the site has little to no vegetation cover.

The dust produced might also settle on nearby vegetation and may affect rates of photosynthesis and transpiration. The settled dust on plant leaves may not only affect the vegetation's functionality but animals that feed on the vegetation (i.e., browsing) too (Resilient Environmental Solutions, 2019).

Given the scale (i.e. on a small area) and nature of the activities (i.e. use of water in drilling and cutting), the impact of dust can be minimized. The impact can be rated as medium (significance) if no mitigation measures are implemented. However, once this is done, the impact significance can be reduced to low - please refer to the assessment below (Table 6-7).

Table 6-7: Air quality impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M - 6	M - 3	M – 39
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8
Mitigation measures • Drill and excavating equipment should be regularly maintained to ensure drilling and excavation efficiency and reduce dust generation. • The Proponent should ensure that the project activities schedules are limited to the given number of days of the week, but not every day. This will keep the vehicle-related dust level minimal in the area. • In extremely windy days, a reasonable amount of water should be used to supress the dust that may be emanating from certain exploration areas at the sites. In other words, Dry dust suppression methods such as reasonable amount of water should be employed to minimise onsite dust generation. • The transportation of exploration materials, equipment and machinery should be limited to certain days of the week only as so to reduce dust generated by heavy vehicles in the area.					

6.3.6 Noise generation

The drilling and quarrying activities as well as movements of heavy equipment and vehicles associated with the project may lead to elevated noise levels, which can be a nuisance to immediate neighbours and animals. High levels of noise may also pose a health risk to workers that are working within proximity to noisy equipment and machinery.

Therefore noise generating activities of the project will be limited to working hours of the day only and five days in a week, which limits noise exposure, making the impact minimal. **Additionally, the nearest receptors of noise to the Mining Claims are the people who reside in the communal land, with the closest household found in excess of 20 km**. With regards to project workers working with or operating noisy machines, they will be provided with appropriate personal protective equipment (PPE) during working hours and while onsite.

Without any mitigation measures being implemented, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures have been provided for this. The impact is assessed in Table 6-8 below.

Table 6-8: Noise impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

Mitigation measures

- The transportation of exploration and mining materials, equipment and machinery should be limited to once or twice a week only, but not every day to limit exposure to noise.
- Noise from project vehicles and equipment on site should be reduced to acceptable levels.
- The exploration and mining times should be set such that, no such activities are carried out during the night or very early in the mornings (to be limited between 8am and 5pm on weekdays).
- Project hours (exploration and mining) should be restricted to between 8am and 5pm to avoid noise generated by project equipment and the movement of vehicles before or after hours.
- When operating the blasting and drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure.
- Target exploration sites that may be found to be within less than 1 km from the residence should be avoided at all costs. This is done to preserve some tranquillity for the residents.
- If the Proponent does not already have a blasting expert or the experience, an experienced blasting contractor for test quarrying should be hired to carry out exploration activities in a professional manner such that noise is kept at minimum due to very good ''know-how'' with the utilized blasting machinery and equipment.

6.3.7 Health and Safety

Project personnel (workers) involved in the exploration and mining activities may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., involving heavy machinery or vehicles) accidents. The site safety of all personnel will be the Proponent's responsibility and should be adhered to as per the requirements of the Labour Act (No 11 of 2007) and the Public Health Act (No. 36 of 1919).

The use of heavy equipment, especially during excavation, drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel, equipment, and vehicles too, especially considering that the area is covered in grass, which can speed up the spread of fire.

If machinery and equipment are not properly stored and packed, the safety risk may not only be a concern for project workers but residents too, especially children, given their curiosity and that they may try to access the active project sites and play with dangerous materials and equipment.

Another potential health risk stemming from the proposed project activities is the handling of project hazardous waste on site in relation to the local community. The impact is likely because some of the unsuspecting and uniformed local people may be wandering around and if they see improperly stored or kept empty hazardous containers on site, they may be tempted to take these containers without the site workers or Proponent's knowledge. The locals may then use the containers for domestic use like water and/or food storage without proper container treatment or cleaning. The storage of and eventual consumption of water and/or food from such containers may lead to serious health risks to the locals.

The dust generated from operating the geological drill rigs and mining equipment could result in the production of respirable dust (particulate matter smaller than 50 µm or even 10 µm in size). This could lead to respiratory diseases such as pneumoconiosis (which includes silicosis, asbestosis, and coal miner's pneumoconiosis), and cancer (including bronchogenic carcinoma and malignant mesothelioma) in the workers.

The impact can be rated as medium to slightly high to medium significant if no mitigation measures are implemented, but upon implementation, the impact will be of low significance (as per Table 6-9 below).

Table 6-9: Health and Safety impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M/H - 8	M/H - 4	M – 56
Post mitigation	L/M - 2	M - 3	L - 2	L/M - 3	L - 21

Mitigation measures

- The Labour Act's Health and Safety Regulations should be complied with.
- As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.
- When working on site, employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.
- Drilled holes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes, drill cuttings are put back into the hole and the holes filled and levelled.
- An emergency preparedness plan should be compiled, and all personnel appropriately trained.
- Workers should not be allowed to drink alcohol prior to and during working hours as this may lead to mishandling of equipment which results into injuries and other health and safety risks.
- Workers should not be allowed on site if under the influence of alcohol.

- The site to be equipped with "danger" or "cautionary" signs for any potential danger or risk area identified on site.
- Temporary enclosed boundaries should be erected around high-risk area sites for the duration of project activities at that specific site area. This is done to control access to the site, in such a way that the public, especially children do not access the site and play with equipment and machinery on days when no work is done.
- A security guard or guards should be part of the team so that they can look after the project equipment and vehicles that would be left on site in weekends or public holidays (when no work is done) to ensure that no unauthorized person enters the area.
- To discourage the unsuspecting and uniformed local community from eyeing the empty hazardous containers, the site workers should, if possible, drill holes in these containers while kept on site (before transporting the containers to the waste site).
- All employees and contractors (personnel) to be trained on environmental awareness, the Proponent's internal Environmental Health and Safety Policy, Environmental Management Plan, and engagement with key stakeholders, specifically the key government ministries and farmers.
- With regards to accidental fire outbreaks, the following should be implemented:
    - Portable fire extinguishers should be provided on sites (per vehicle and working site).
    - No open fires should be created by exploration personnel.
    - Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage.

6.3.8 Vehicular Traffic

The main road B2 is the main transportation route for all vehicular movement that links Arandis to Karibib and Walvis Bay (and the towns and settlements in between). Project associated heavy vehicles will obtain access to the site from the B2 road via the D1918 that connect the Mining Claims to the service providers (water carting, exploration machinery, equipment, and others).

At exploration stage, water trucks will be frequenting the area once or twice weekly to cart water to the site. At mining stage, additional traffic for carrying mining equipment and for transportation of mined dimension stones to processing facilities in Karibib and Walvis will be required. These activities will potentially increase slow moving heavy vehicular traffic along the B2 and D1918, and this would add additional pressure on the roads.

However, only so many times a week or even monthly that the exploration related heavy trucks will be transporting materials and equipment from and to site for the period of 12 months. And the same goes for transporting mined blocks, especially given the size of the mining claim (resource). Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance.

Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in Table 6-10 below.

Table 6-10: Vehicular traffic impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M–2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigation measures

- The transportation of exploration materials, equipment and machinery should be limited to once or twice a week only, but not every day.
- The heavy truck loads should comply with the maximum allowed limit while transporting materials and equipment/machinery on the public and access roads.
- The carted water into the area (from other source of water supply) should be done once or twice a week in container that can supply and store water for most of the week, thus reducing the number of trucks on the road daily.
- Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses.
- Vehicle drivers should adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less), and on the lookout for livestock and wildlife.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs condition to cater for vehicles travelling to and from site throughout the project's life cycle
- Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents because of mechanical faults of vehicles.
- Vehicle drivers should only make use of designated site access roads provided.
- Vehicles drivers should not be allowed to operate vehicles while under the influence of alcohol.
- Sufficient parking area for all project vehicles should be provided for and clearly demarcated son sites.
- The Proponent should make provision for safe materials and equipment offloading and loading areas on sites.
- No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose.
- Truck movements, frequency, times, and routes should be carefully planned and scheduled – please refer to the next point.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm.
- The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles and access permits obtained from the Roads Authority.
- The site access road(s) should be provided for in such ways that they do not interfere with other traffic movement and/or compromise traffic safety on the host farms.

6.3.9 Archaeological impact

According to OTAH Consultancy CC (2024), the field survey on Mining Claims 67406-67411 did not yield archaeological or heritage significant sites. The building ruins recorded on Mining Claims 67406-67407 are dilapidated and without heritage significance. However, given that the mining claims are located in the Erongo region, an archaeologically sensitive area recognized as a cultural landscape, there is a significant likelihood that subsurface remains might be uncovered during site preparation and the mining phase (OTAH Consultancy CC, 2024). Subsurface remains may be exposed during explorations and/or mining within the confines of Mining Claims 67406-67411 and it is therefore recommended that the proponent adheres to the Chance Find Procedure Guidelines.

With that said, the potential impact significance is slightly medium if no mitigation measures, are implemented. However, after the implementation of the measures provided below, this impact significance will be low. The assessment of the impact is shown in Table 6-11 below.

Table 6-11: Archaeological impact assessment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M - 3	M – 36
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

General Mitigation measures

- The proponent should ensure that all project staff are trained in the Chance Finds Procedure outlined in Appendix 1. This procedure provides guidelines for halting work and notifying appropriate authorities if archaeological remains are discovered during mining activities.
- The foot print impact of the proposed mining activities should be kept to minimal, to limit the possibility of encountering chance finds within servitude.
- If significant archaeological remains are encountered, a professional archaeologist should document and, if necessary, recover the material for further analysis and preservation.
-
- The proponents should make use of existing vehicle tracks within the boundaries of the two mining claims, new vehicle tracks should be avoided by all means.
- The proponent should show overall commitment and compliance by adopting a zero-damage approach towards any archaeological and heritage resources within and around the boundaries of the mining claims.
- The proponent should maintain communication with the National Heritage Council or other relevant authorities to ensure compliance with the National Heritage Act (Act No. 27 of 2004). Prompt reporting of discoveries will allow for expert guidance on handling any finds.

6.3.10 Waste Generation

Exploration activities are associated with generation of waste of all kinds (domestic, hazardous, and general). Improper handling, storage and disposal of wastes may lead to environmental degradation/pollution. If not handled, store and disposed of properly, the waste may scatter around the project site and pollute the immediate project area.

Without any mitigation measures, the impact significance is rated as medium, but implementation of the recommended measures, the significance will be reduced to low. This assessment is presented below (Table 6-12).

Table 6-12: Impact assessment of waste generation on the environment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M- 2	L/M - 4	L/M -2	L - 16

Mitigation measures

- Project workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, there should not be waste left scattered on site, but rather be disposed of in allocated site waste containers.
- No waste may be buried or burned on site or anywhere else throughout the project lifecycle.
- All domestic and general waste produced daily should be contained until such that time it will be transported to designated waste sites on a weekly basis.
- The sites should be equipped with separate waste bins for hazardous and general waste/domestic.
- Hazardous waste, including emptied chemical containers should be safely stored on site where they cannot be accessed and used by uniformed locals for personal use. These containers can then be transported to the nearby approved hazardous waste sites for safe disposal. No waste should be improperly disposed of on site or in the surroundings, i.e., unapproved waste sites.
- As an emphasis on the preceding point, empty hazardous substance containers should not be disposed of anywhere on the project site or its surrounding, but instead they should be kept at a designated storing place on site until such time that they can be safely taken to the nearest approved hazardous waste sites.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.

6.3.11 Social Nuisance: Job seeking and Differing Norms, Culture and Values

Like any new development tor project in an area, the proposed project activities may attract a potential influx of people from outside the project area in search of job opportunities. Such influxes may lead to social annoyance and conflicts. This is generally considered a concern given the current unemployment rate of youth in Namibia, that people from other areas in different regions may hear about the project intentions (especially from the ESA newspaper adverts) and be forced to go look for work opportunities in the project area. Different people may come with different ways of living to the area, which could interfere with the local norms, culture, and values. This could potentially lead to social crashes between the locals and outsiders.

The influx of people into the project area may also lead to sexual relations between these out-of-area workers and the locals. This would lead to the spreading of sexual transmitted diseases (i.e., HIV/AIDS) when engaging in unprotected sexual intercourse.

Pre-implementation of mitigation measures, the impact is rated as of slightly high to medium significance. However, upon mitigation (post-mitigation) – see mitigation measures below, the significance will change from medium to low rating. The impact is assessed in Table 6-13 below.

Table 6-13: Social impact assessment of outsiders' influx into the area (job seeking)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M/H - 8	M/H - 4	M – 56
Post mitigation	L/M - 2	L/M - 2	M - 6	L/M - 2	L - 20

Mitigation measures

- The Proponent should prioritize the employment of local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area.
- The locals to be employed during the project phases should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees.
- The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections.
- Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live-in harmony with the local communities during the duration of their employment on site.

6.4 Cumulative Impacts

According to the International Finance Corporation (2013), cumulative impacts are defined as "those that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred to in this document as "developments") when added to other existing, planned, and/or reasonably anticipated future ones".

The cumulative impacts to which the project would contributes are listed below:.

- **Fauna**: There are several mining and prospecting projects in the area. Therefore this might have caused behavioral impact on wild animals, which might have been driven away by presence of vehicles and people in the area. Therefore, the exploration and mining vehicles and other equipment movement may also contribute to animals fearing for their lives.
- **Road infrastructure** (vehicular traffic): The proposed exploration activities eventual mining will contribute cumulatively to various activities such as commuting, farming activities, and travelling associated with tourism and existing mining activities in the Erongo Region. The B2 national road is already under pressure as a connecting route for transporting various products for business and service delivery to different destinations in the regions.

These activities relying on the B2 road infrastructure by other users and for different operations will be beyond the Proponent's control. Therefore, to ensure that the Proponent do their part to reduce this impact with regards to their project operations (heavy vehicle loads and frequency on the roads), they will implement the provided management (mitigation) measures and comply with the legal obligations and requirements as set out by the Roads Authority.

- **Visual:** There are currently visual concerns of active mining sites and the abandoned mines in the Erongo Region. Although minimally (given the natural colour of the targeted site mountains/hills and the dolerite), the proposed project activities will contribute to this overall impact for the region. For this reason, the Proponent will be required to do their part (not to worsen the visual impact) by implementing the provided mitigation measures.

The potential (positive and negative) impacts stemming from the proposed exploration activities were identified. The two impact types were described, assessed and mitigation measures where provide. Therefore, conclusions and recommendations are given as per the findings of this assessment.

7 CONCLUSIONS AND RECOMMENDATIONS

The aim of this environmental scoping assessment was to identify the potential impacts associated with the proposed exploration and test mining activities on the Mining Claims 67406-67411, assess and recommend practical mitigation measures. The public was first engaged and informed about the ESA process via an advertisement in three (3) of the local newspapers on the 5th of December 2024 which marked the official commencement of the ESA's stakeholder engagement process. The stakeholder engagement process was allowed to run until 31st December 2024 but was later extended to 22nd January 2025 because of the December festive holidays. Therefore formal public notices announcing the commencement of the EA process and an invitation to register as I&APs were published the newspapers (*Die Republikein, The Sun Newspaper and Allgemeine Zeitung* newspaper *(*dated 5th and 12th December 2024).

No written correspondences or official communications were received by OMAVI during or after this stakeholder engagement process in regards to the proposed brown field and/ or quarrying activities on any of the mining claims concerned. The conclusions reached and recommendations provided are presented below.

These impacts were found to be of medium significance. The effective implementation of the recommended management actions (mitigation measures) will see the significance reduction in impacts (that cannot be avoided) from medium to low rating. However, to maintain a low significance rating, monitoring of the potential impacts by the Proponent (an Environmental Control Officer (ECO)) is highly recommended. **Monitoring will not only be carried out to maintain the low rating of impacts' significance but to also ensure that new potential impacts that might arise during project implementation are well identified in time, properly addressed and that suitable mitigation measures are provided and implemented.**

Based on the findings of this environmental assessment, it is therefore recommended that an Environmental Clearance Certificate (ECC) be issued for the proposed exploration of Dimension Stones on the Mining Claims 67406-67411 subject to the following conditions:

- All required permits, licenses and approvals for the proposed activities should be obtained as required (please refer to the Permitting and Licensing Table in the Environmental Management Plan (Appendix C). These include permits and licenses for land/farm access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent complies with the legal requirements governing this type of project and its associated activities.
- All mitigations provided in this ESA Report and the management action plans in the EMP should be implemented and monitoring conducted as recommended.
- All the necessary environmental and social (occupational health and safety) precautions provided should be adhered to.
- Site areas where exploration activities have ceased should be rehabilitated, as far as practicable, to their original state.
- The monitoring of the implementation of mitigation measures should be conducted, applicable impact's actions taken, reporting done and recorded as recommended in the Draft EMP.

In conclusion, it is unlikely that the proposed project activities will have a high significant of negative impact on the biophysical and social environments in the project area. Therefore, it is vital for the Proponent and their contractors (if any) to effectively implement and monitor the recommended management measures to protect the environment and promote environmental sustainability.

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APPENDIX A –CV OF EAP

APPENDIX B — ECC APPLICATION (PROJECT REGISTRATION WITH MEFT)

APPENDIX C – ENVIRONMENTAL MANAGEMENT PLAN (EMP)

APPENDIX D – ARCHAEOLOGICAL REPORT AND PROOF OF SUBMISSION

APPENDIX E – STAKEHOLDERS LIST (INTERESTED AND AFFECTED PARTY DATABASE)

APPENDIX F – PROOF OF COMMUICATION

APPENDIX G – NEWSPAPER ADVERTISEMENTS

APPENDIX H – PUBLIC MEETING INVITATION

APPENDIX I – PUBLIC MEETING MINUTES AND ATTENDANCE REGISTER

APPENDIX J – RESPONSES TRAIL BY OMAVI

APPENDIX K – WRITTEN CORRESPONDENCE AS RECEIVED (PROOF OF EMAIL COMMUNICATION)