






ECC-88-338-REP-31-D

ENVIRONMENTAL SCOPING REPORT PLUS IMPACT ASSESSMENT

EXPLORATION ACTIVITIES ON EPL 7974 FOR BASE AND RARE METALS, INDUSTRIAL MINERALS, PRECIOUS METALS AND SEMI-PRECIOUS STONES IN THE KUNENE REGION

PREPARED FOR VOTORANTIM METALS (PTY) LTD

JUNE 2021

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TITLE AND APPROVAL PAGE

Project Name:	Proposed exploration activities on EPL 7974 for base and rare metals, industrial minerals, precious metals and semi-precious stones in the Kunene Region.
Project Number	ECC-88-338-REP-31-D
Client Name:	Votorantim Metals Namibia (Pty) Ltd
Ministry Reference:	N/A
Status of Report:	Final for submission to the government
Date of issue:	April 2021 (Updated in June 2021)
Review Period	N/A

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EXECUTIVE SUMMARY

Votorantim Metals Namibia (Pty) Ltd (herein referred to as Votorantim or the proponent), intends to undertake exploration activities on Exclusive Prospecting Licence (EPL) 7974 for base and rare metals, industrial minerals, precious metals and semi-precious in the Kunene region.

The proposed project triggers listed activities in terms of the Environmental Management Act, No. 7 of 2007 and its Environmental Impact Assessment Regulations, No. 30 of 2012, therefore an environmental clearance certificate is required. As part of the environmental clearance certificate application, an Environmental Impact Assessment (EIA) has been undertaken to satisfy the requirements of the Environmental Management Act, No. 7 of 2007. This environmental scoping report and Environmental Management Plan (EMP) shall be submitted to the competent authority as part of the application for the environmental clearance certificate.

The proposed exploration activities on EPL 7974 include soil sampling, ground geophysical surveys (audio-magneto telluric, induced polarization and magnetic ground surveys), geological mapping, and exploration drilling. Some limited bush-clearing in bush encroached areas will be carried out, for the creation of working areas and access tracks where necessary. All sites of activity will be managed according to stringent environmental requirements that Votorantim upholds in its exploration projects. Access agreements will be entered into with all farmers / holders of private ground which may be accessed.

The exploration activities will commence as soon as an environmental clearance certificate has been granted by the Environmental Commissioner and activities are expected to be conducted over a 3-year period, which is the duration of the exploration licence. However, the period of each phase of the exploration programme may vary and will be refined as geological information becomes available.

EPL 7974 comprises a western highlands vegetation type of the Tree-and-Shrub Savanna Biome (Mendelsohn *et al*., 2002). The vegetation structure in the proposed area can be broadly classified as grasslands with scattered trees. The area supports a medium terrestrial diversity of animal and plant life, with the plant diversity in the area supporting between 150-299 species.

The impacts of exploration activities with respect to airborne dust are expected to be limited to vehicular traffic. There will be some release of exhaust fumes from machinery that will impact the immediate vicinity but will be of short duration. Additionally, there will be associated drilling and machinery noise, which could be a disturbance to immediate neighbours, but this will be of short duration.

Through further investigation, it was determined that the effects from noise are considered to be of minor significance, however with additional mitigation, the significance is reduced to low. The additional mitigation measures include:

- Residents shall be provided at least two weeks' notice of drilling operations within 1km of their property;
- Activities will be minimized to allocated daylight working hours;
- Continual engagement with residents shall be undertaken by the proponent to identify any concerns or issues, and appropriate mitigation and management measures shall be further agreed; and
- Noise suppression measures shall be applied if drilling occurs in locations that may affect residents.

EPL 7974 is located on the Kunene North basin (Figure 10). The area is underlain by an aquifer of little to no groundwater with a possible increased potential where fractures and faults occur on a local scale. The potential for contamination from the proposed activities is regarded as minimal. Protection of water quality is addressed in the EMP.

This study concluded that a potential environmental risk, which may require further investigation, is related to the cumulative impacts as a result of visual disturbance, nuisance of noise and the loss of sense of place. Receptors are local communal farmers, tourists and visitors. The visual disturbance and loss of the sense of place is considered to be of moderate significance, however with additional mitigation, the significance can be reduced to minor. These additional mitigation measures include:

- Positioning of drill equipment in such a way that it is out of sight from human receptors;
- Barriers or fences shall be used if drilling occurs in locations that may affect residents or livestock;
- Residents need to be informed at least two weeks in advance that drilling operations are within 1km of their property; and
- Continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon.

The overall potential impact of this proposed project is not considered significant as it does not widely exceed recognised levels of acceptable change, does not threaten the integrity of the receptors, and it is not material to the decision-making process. The assessment is considered to be comprehensive and sufficient to identify impacts, and it is concluded that no further assessment is required.

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DEFINITIONS AND ABBREVIATIONS

AMT	Audio-Magneto telluric
DEA	Directorate of Environmental Affairs
ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
NDP5	Fifth National Development Plan
GDP	Gross Domestic Product
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
IP	Induced Polarization
I&AP	Interested and affected parties
IFC	International Finance Cooperation
MAWLR	Ministry of Agriculture, Water and Land Reform
MET	Ministry of Environment and Tourism
MEFT	Ministry of Environment, Forestry and Tourism
MHSS	Ministry of Health and Social Services
MME	Ministry of Mines and Energy
NSA	Namibian Statistics Agency
NTS	Non-Technical Summary
RAB	Rotary Air Blast (drilling)
RC	Reverse Circulation (drilling)
TB	Tuberculosis
WHO	World Health Organization

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Votorantim Metals Namibia (Pty) Ltd propose to undertake mineral exploration activities on EPL 7974 for base and rare metals, industrial minerals and precious metals in Kunene Region (refer to Figure 1).

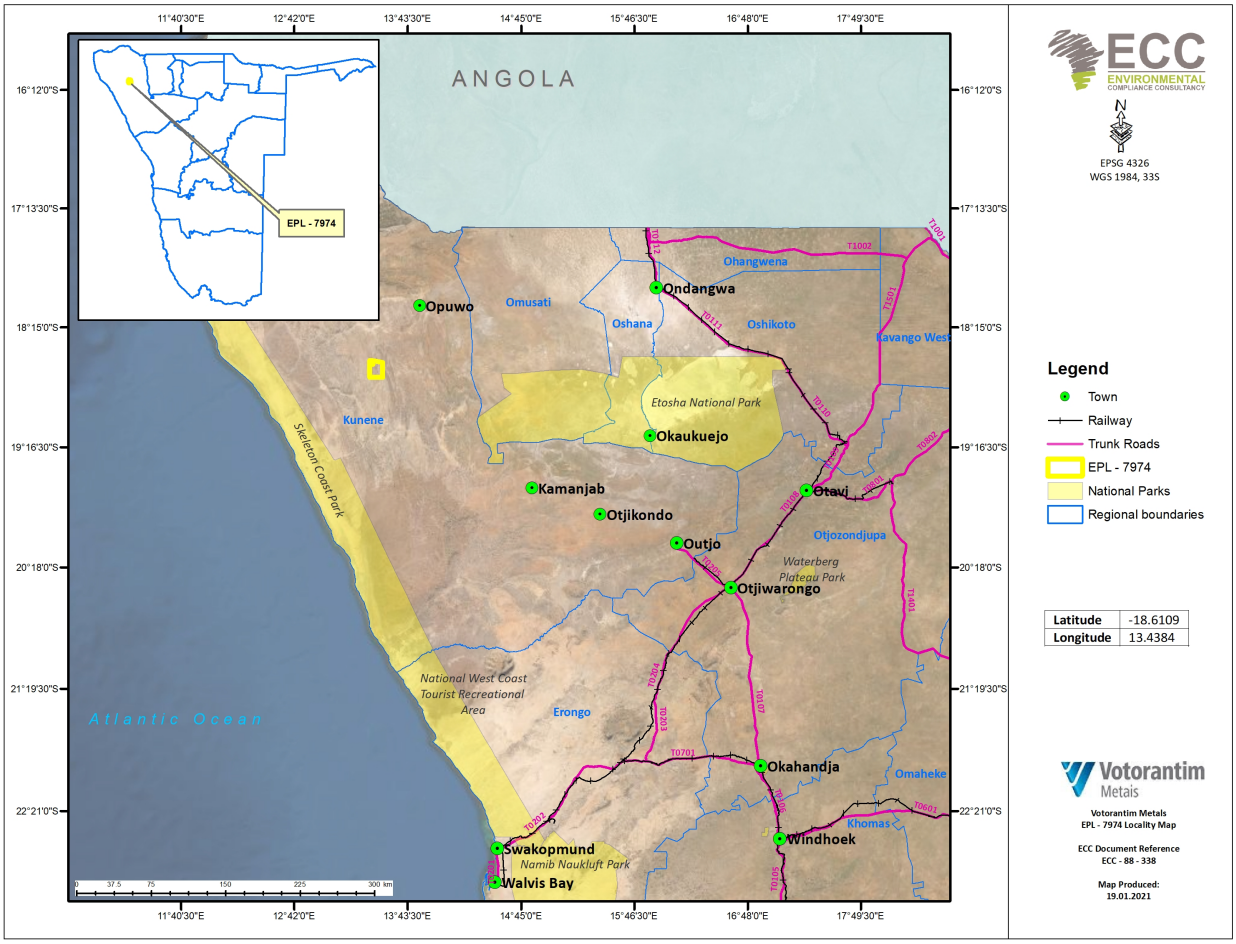


FIGURE 1 - LOCATION OF EPL 7974

Figure 2 provides more detail about the location of EPL 7974 in relation to access routes. The proposed project area lies mainly near the D3705 road, which passes east of the EPL. EPL 7974 is located approximately 45 km north of the Sesfontein village.

The D3705 road can be used to access the site (Figure 2). The Etosha National Park is located more than 100 km's east of the EPL.

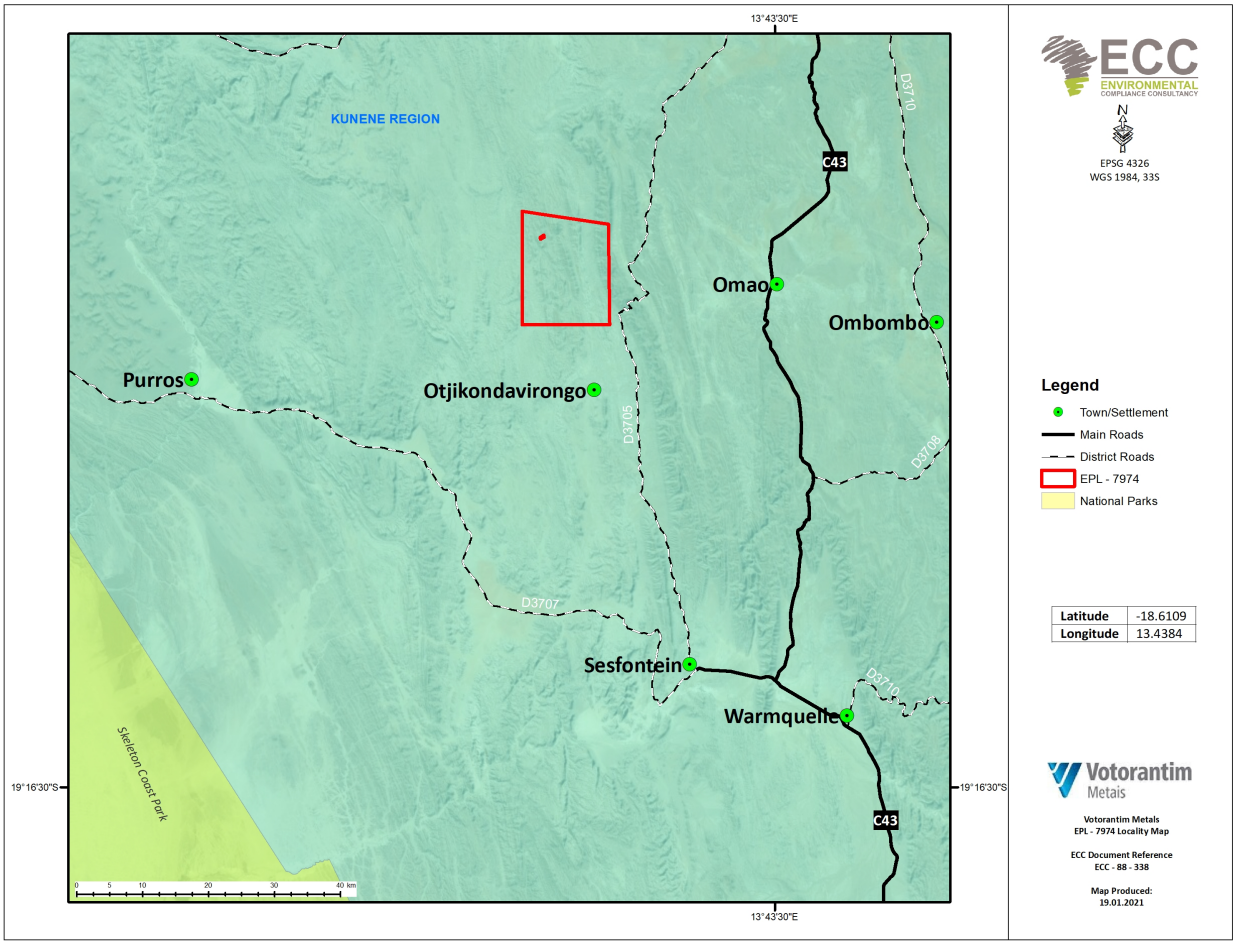


FIGURE 2 - LOCATION OF EPL 7974 IN RELATION TO ACCESS ROUTES

1.2 SCOPE OF WORK

Environmental Compliance Consultancy (ECC) has been engaged by the proponent, to undertake the ESIA and develop an Environmental Management Plan (EMP) in terms of the Environmental Management Act, 2007 and its regulations as part of the Environmental Clearance Certificate process.

The purpose of this report is to present the findings of the scoping study for the proposed project. This scoping report has been outlined in terms of the requirements of the Environmental Management Act, No. 7 of 2007 and its regulations, promulgated in 2012 (referred to herein as the EIA Regulations).

An environmental clearance application will be submitted to the relevant competent authorities; the Ministry of Mines and Energy (MME) and Ministry of Environment, Forestry and Tourism (MEFT).

ECC has prepared this report. ECC's terms of reference for the assessment is strictly to address potential effects, whether positive or negative and their relative significance, explore alternatives for technical recommendations and identify appropriate mitigation measures.

This report provides information to the public and stakeholders to aid in the decision-making process for the proposed project. The objectives are to:

- Provide a description of the proposed activity and the site on which the activity is to be undertaken, and the location of the activity on the site;
- Provide a description of the environment that may be affected by the activity;
- Identify the laws and guidelines that have been considered in the assessment and preparation of this report;
- Provide details of the public consultation process;
- Describe the need and desirability of the activity;
- Provide a high level of environmental and social impact assessment on feasible alternatives that were considered; and
- Report the assessment findings, identifying the significance of effects, including cumulative effects.

In addition to the environmental assessment, an EMP (Appendix A) is also required in terms of the Environmental Management Act, No. 7 of 2007. An EMP has been developed to provide a management framework for the planning and implementation of exploration activities. The EMP provides exploration standards and arrangements to ensure that the potential environmental and social impacts are mitigated, prevented and/or minimised as far as reasonably practicable, and that statutory requirements and other legal obligations are fulfilled.

1.3 The Proponent of the Proposed Project

The details of the proponent are set out in table 1.

TABLE 1 - PROPONENTS DETAILS

CONTACT	POSTAL ADDRESS	EMAIL ADDRESS	TELEPHONE
VOTORANTIM METALS NAMIBIA (PTY) LTD Mr Eckhart Freyer | Yvonne Hass	P O Box 97597, Windhoek, Namibia	efreyer@iway.na	+264 81 124 7342

1.4 Environmental Consultancy

ECC, a Namibian consultancy (registration number Close Corporation 2013/11401), has prepared this scoping report and impact assessment on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across southern Africa, in both the public and private sectors. ECC is independent of the proponent and has no vested or financial interest in the proposed project, except for fair remuneration for professional services rendered.

All compliance and regulatory requirements regarding this EIA report should be forwarded by email or posted to the following address:

Environmental Compliance Consultancy

PO BOX 91193
Klein Windhoek, Namibia
Tel: +264 81 669 7608
Email: info@eccenvironmental.com

1.5 Environmental Legal Requirements

The Environmental Management Act, No. 7 of 2007 stipulates that an environmental clearance certificate is required to undertake listed activities in terms of the Act and its regulations. Listed activities triggered by the proposed project in terms of the Environmental Management Act, No. 7 of 2007 and its regulations are as follows:

TABLE 2 - LISTED ACTIVITY RELEVANT TO THE ESIA

LISTED ACTIVITY	SCREENING DETAILS RELEVANT TO THE PPOJECT
MINING AND QUARRYING ACTIVITIES (with relevance here only to exploration activities)	– The construction of facilities for any process or activities which requires a licence, right or other forms of authorisation, and the renewal of a licence, right or other forms of authorisation, in terms of the Minerals (Prospecting and Mining) Act, No. 33 of 1992. ○ The proposed project operates under a licence that permits for the construction of temporal

LISTED ACTIVITY	SCREENING DETAILS RELEVANT TO THE PPOJECT
	exploration campsites, drill sites and access roads. ○ Furthermore, this listed activity infers the provisions of the Act under a different licence category as a basis upon which certain activities qualify for an EIA. The Act defines prospecting and exploration activities under the lawful ownership of an EPL. An EPL excludes any mining activities, but includes activities strictly relating to exploration work. Hence the current project strictly focuses on exploration and not mining. – Other forms of mining or extraction of any natural resources whether regulated by law or not. ○ Ground exploration activities may include soil and stream sediment geochemical sampling, geophysical surveys, geological mapping and drilling within EPL 7974. – Resource extraction, manipulation, conservation, and related activities. ○ The proposed project will explore for base and rare metals, and precious metals.
WATER RESOURCE DEVELOPMENT	– The abstraction of ground or surface water for industrial or commercial purposes. ○ Due to the exploration activities, groundwater will need to be abstracted, or sourced, particularly for the drilling phase. It is intended that water will be obtained from existing boreholes in the proposed project area, in liaison with landowners. Any additional borehole drilled for the intention of abstracting water for use on site should be permitted by the authorities in the form of an abstraction permit.
FOREST ACTIVITIES	– The clearance of forest areas, deforestation, timber harvesting or any other related activity that required authorisation in terms of the Forest Act, 2001 (Act No. 12 of 2001) or any other law. ○ The proposed project may require limited vegetation clearing in bush encroached areas for access tracks and site camps. Specially protected plant species will not be cleared without approval

LISTED ACTIVITY	SCREENING DETAILS RELEVANT TO THE PPOJECT
	from the competent authority
HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE	– The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substance Ordinance, 1974. o The storage and handling of hydrocarbons (diesel fuel) on site may trigger pollution events if done incorrectly. – Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste. o Drilling activities will emit dust into the atmosphere.

1.6 TERMINOLOGIES APPLIED IN THIS REPORT

This section provides definitions of key terms to enable the reader to form a technical understanding of the type of work associated with exploration programmes.

- **REMOTE SENSING** techniques in mineral exploration enable explorers to evaluate large areas of the earth remotely without having to undertake ground-based exploration operations. Remote sensing may be used to map the geology and structure that potentially localise the ore deposits, or may be used to identify rocks, which have been hydrothermally altered. Remote sensing involves the use of aircraft and satellite-based equipment to obtain the data to record spectral data from the surface of the earth. Remote sensing includes a number of tools and techniques including geographical information systems, radar and sonar. Typically, satellites or a high-flying aircraft are used in the data collection process. It is a useful tool when searching for minerals and can give an indication of where deposits could be located. Remote sensing aids in narrowing down the field survey area and help to identify target areas that may be considered for mapping.
- **GEOLOGICAL MAPPING** of outcrops is used to describe the primary lithology and morphology of rock bodies as well as age relationships between rock units. Mapping is a crucial part of refining subsurface targets, as it provides structural information and can be used to predict the subsurface geology. This will be conducted concurrently with the geochemical sampling.

- **GEOCHEMICAL SAMPLING** (soil and rock sampling) is a non-invasive technique to determine the existence and extent of mineralization and a potential resource. Geochemical data are used to focus on areas of higher mineral potential as the project advances and help to define drill targets. They assist the company to drill more selectively and thereby increase the chances of intersecting mineralised zones during exploration and reduce the overall footprint of exploration and environmental impact in the area. Geochemical surveys will be the first ground exploration method to be undertaken by the proponent in the licence area.
- **SAMPLING** - Selecting a fractional but representative part of the soil or rock for analysis.
- **GROUND GEOPHYSICAL SURVEYS**, including magnetic and Induced Polarization (IP) techniques, will be undertaken, as appropriate, to collect data that give an indication of essential rock properties, particularly at depth. They are also used to map the geological structures. IP surveys involve sending electrical currents into the ground, measured via electrodes along linear cutlines up to 3 km long to provide access to electrical cables. Small holes in the ground (0.2m x 0.2m x 0.3m) will be required for IP electrodes every 25 or 50m along a survey line. Copper sulphate solution will be used to improve the conduction of electrodes during the IP survey. The majority of EM techniques are completely non-invasive and operate by sending electromagnetically induced currents into the ground. EM surveys are conducted along the same linear traverse lines. A variation is the Audio-Magneto Telluric (AMT) technique, in which surveys utilize the same lines and small holes in the ground, but without the application of high voltage electrical currents.
- **RAB DRILLING** (Rotary Air Blast drilling) is an open-hole technique that injects compressed air down the drill pipe and recovers the drill-chip fragments, on the outside of the drill stem.
- **DIAMOND DRILLING** entails the use of a diamond-studded drill in order to obtain core samples of two cm or more in diameter. Bio-degradable drill additives will be used during diamond core drilling. Soil, rock and drill core samples will be temporarily stored at the site office. Exploration activities are usually undertaken in phases, with periods of no field activity between them, whilst awaiting analytical results, and the integration and interpretation of data to decide on the next phase of exploration.

2 APPROACH TO THE IMPACT ASSESSMENT

2.1 PURPOSE AND SCOPE OF THE ASSESSMENT

The aim of this assessment is to determine which impacts are likely to be significant (the main focus of the assessment); scope the available data and any gaps which need to be filled; determine the spatial and temporal scope; and identify the assessment methodology.

Scoping of the ESIA was undertaken by the ESIA team. The scope of the assessment was determined through undertaking a preliminary assessment of the proposed project against the receiving environment obtained through a desk-top review, available site-specific literature, monitoring data and site reports.

ECC's terms of reference for the assessment is strictly to address potential effects, whether positive or negative and their relative significance, explore alternatives for technical recommendations and identify appropriate mitigation measures.

2.2 THE ASSESSMENT PROCESS AND METHODOLOGY

The ESIA methodology applied here has been developed using the IFC standards and models (IFC, 2012; 2017), in particular Performance Standard 1: *'Assessment and management of environmental and social risks and impacts'* which establishes the importance of:

- Integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects;
- Effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and
- The client's management of environmental and social performance throughout the life of the project.

Furthermore, the Namibian Draft Procedures and Guidance for ESIA and EMP (GRN, 2008) as well as the international and national best practice documents to our disposal and over 25 years of combined EIA experience, were also drawn upon in the assessment process.

This impact assessment is a formal process in which the potential effects of the project on the biophysical, social and economic environments are identified, assessed and reported, so that the significance of potential impacts can be taken into account when considering whether to grant approval, consent or support for the proposed project.

The process followed through the basic assessment is illustrated in Figure 3 and detailed further in the following sections.

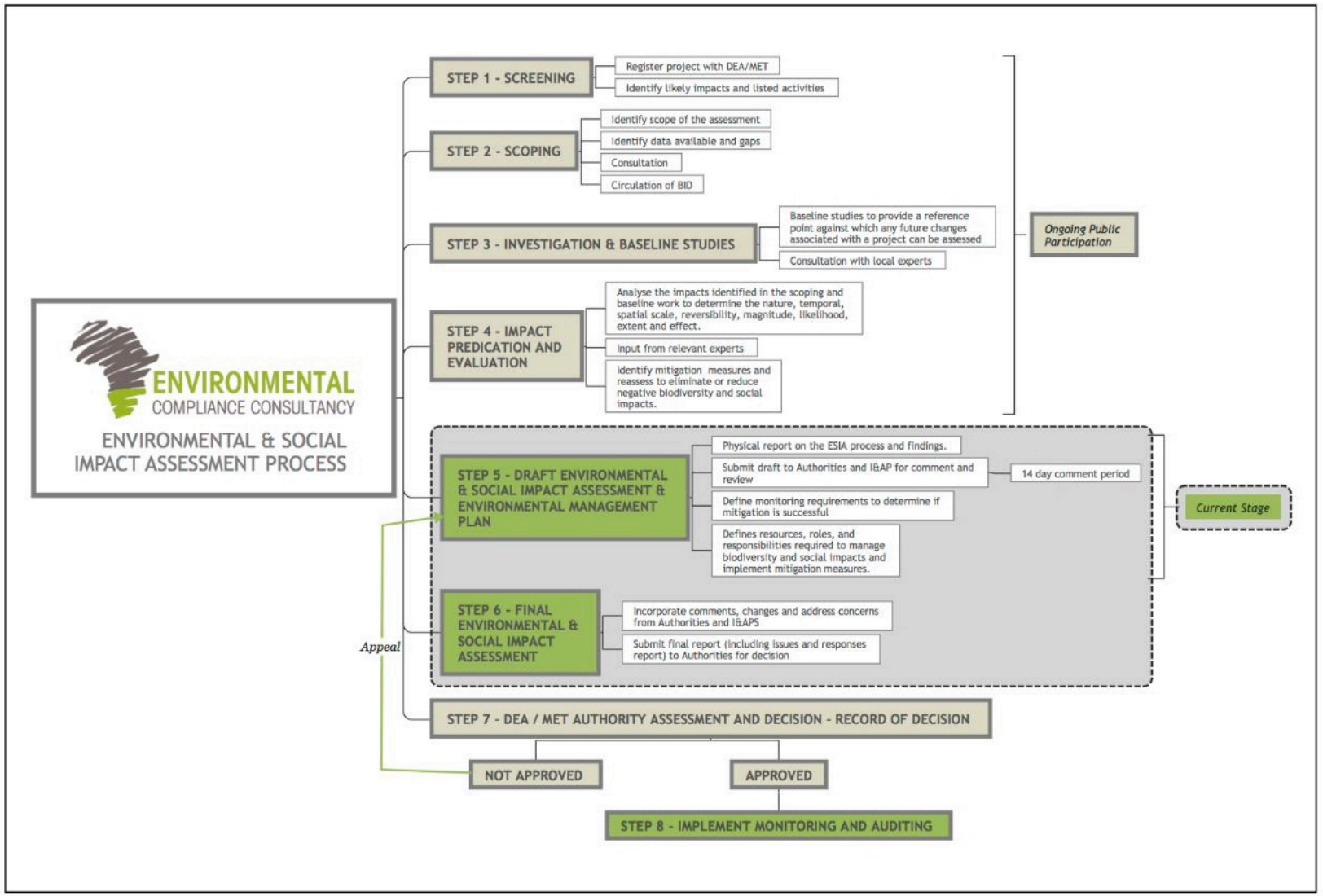


FIGURE 3 - ECC SCOPING PROCESS

2.3 SCREENING OF THE PROPOSED PROJECT

The first stages in the ESIA process are to register the project with the DEA / MEFT (completed) and undertake a screening exercise to determine whether it is considered as a listed activity under the Environmental Management Act, No. 7 of 2007 and associated regulations and if significant impacts may arise from the project. The location, scale and duration of project activities will be considered against the receiving environment.

It was concluded that an ESIA (e.g., scoping report and EMP) is required, as the proposed project is considered as a listed activity and there may be potential for significant impacts to occur.

2.4 SCOPING OF THE ENVIRONMENTAL ASSESSMENT

Where an ESIA is required, the second stage is to scope the assessment. The main aims of this stage are to determine which impacts are likely to be significant (the main focus of the assessment); scope the available data and any gaps which need to be filled; determine the spatial and temporal scope; and identify the assessment methodology.

The screening phase of the project is a preliminary analysis to determine ways in which the project may interact with the biophysical, social and economic environment. Impacts that are identified as potentially significant during the screening and scoping phases are taken forward for further assessment in the ESIA process. The details and outcome of the screening process are discussed further in sections 6 and 7.

Subsequently, scoping of the ESIA was undertaken by the ESIA team. The scope of the assessment was determined through undertaking a preliminary assessment of the proposed project against the receiving environment obtained through a high-level desktop review. Feedback from consultation with the client and stakeholders also informed this process.

The following environmental and social topics and subtopics were scoped into the assessment:

SOCIO-ECONOMIC ENVIRONMENT

- Limited goods and services procurement within the local economy.
- Limited employment opportunities for the local communities.

BIOPHYSICAL ENVIRONMENT

- Dust emissions.
- Soil and geology.
- Terrestrial ecology.
- Terrestrial biodiversity (including fauna and flora).

- Groundwater (potential cumulative impact). Water management suggestions are contained in the EMP.
- Cultural heritage.

2.5 BASELINE STUDIES

Baseline studies are undertaken as part of the scoping stage, which involves collecting all pertinent information from the current status of the receiving environment. This provides a baseline against which changes that occur as a result of the proposed project can be measured.

For the proposed project, baseline information was obtained through a desktop study, focussing on environmental receptors that could be affected by the proposed project, verified through site-specific information. The baseline information is covered in Section 5.

A robust baseline is required in order to provide a reference point against which any future changes associated with a project can be assessed, and it allows for suitable mitigation and monitoring actions to be identified.

The existing environment and social baseline for the proposed project were collected through various methods:

- Desk-top studies
- Consultation with stakeholders, and
- Engagement with Interested and Affected Parties (I&APs). See Appendix C.

2.6 IMPACT IDENTIFICIATION AND EVALUATION

Impact identification and evaluation involves predicting the possible changes to the environment as a result of the development/project. The ECC methodology was applied to determine the magnitude of an impact and whether or not the impact was considered significant and thus warrant further investigation. The impact prediction and evaluation methodology used is presented in Section 6 of this report. The findings of the assessment are presented in Section 7.

2.7 ESIA CONSULTATION

Public participation and consultation are a requirement in terms of Section 21 of the Environmental Management Act, No. 7 of 2007 and its regulations for a project that requires an environmental clearance certificate. Consultation is a compulsory and critical component in the ESIA process, aimed at achieving transparent decision-making, and can provide many benefits.

The objectives of the stakeholder engagement process are to:

- Provide information on the project to I&APs: introduce the overall concept and plan;
- Clarify responsibility and regulating authorities;
- Listen to and understand community issues, concerns and questions;
- Explain the process of the ESIA and timeframes involved; and
- Establish a platform for ongoing consultation.

2.7.1 INTERESTED AND AFFECTED PARTIES

EPL 7974 is entirely located on communal land, within the Opuwo Rural Constituency (Figure 4). The D3705 run parallel to the EPL on the east side of it in a north to south direction and links to the C35 further north on-route to Opuwo. The Opuwo Rural Constituency and traditional authority (#Aodaman) areas that overlap EPL 7974 were identified as I&APs, as well as the relevant authoritative bodies. Other I&APs were identified through invitations such as the newspaper advertisements and site notices.

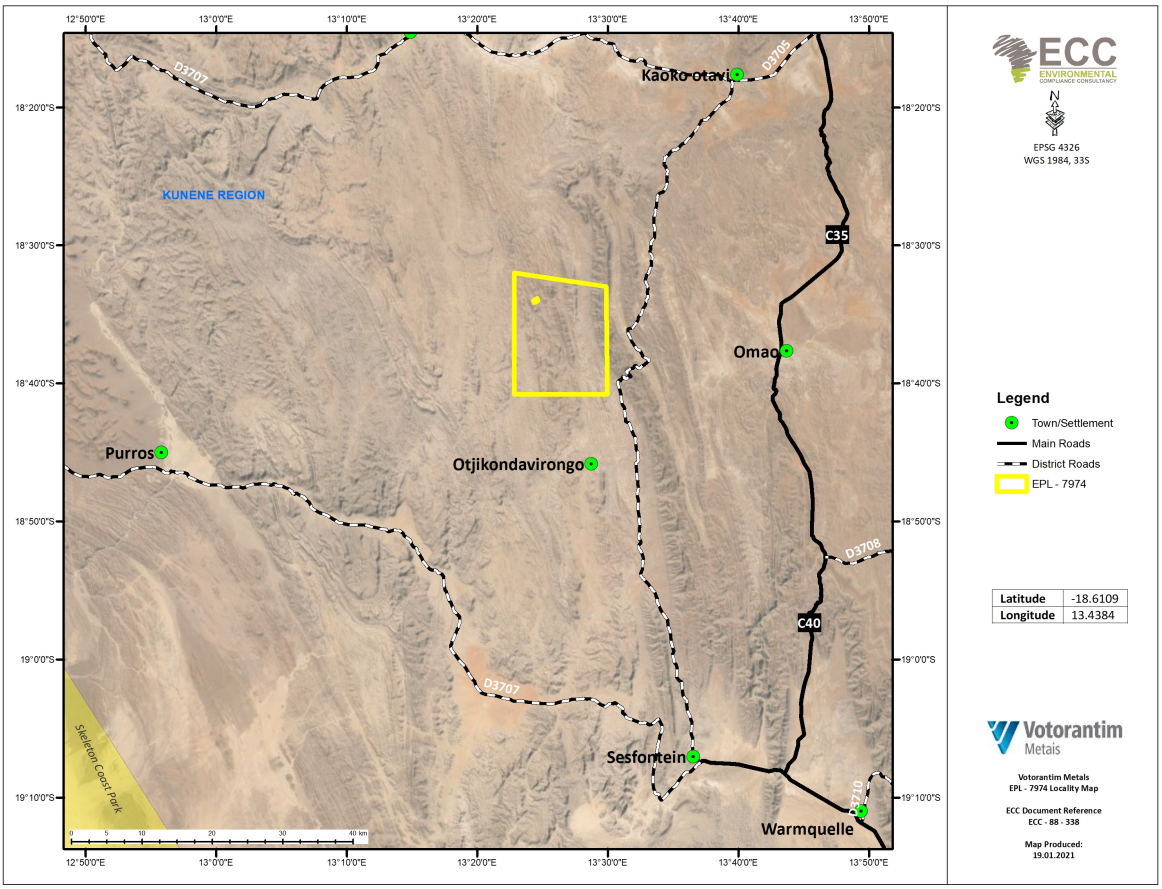


FIGURE 4 - LOCATION OF EPL 7974 WITHIN THE OPUWO RURAL CONSTITUENCY

2.7.2 NON-TECHNICAL SUMMARY

The Non-Technical Summary (NTS) presents a high-level description of the proposed project; sets out the EIA process and when and how consultation is undertaken; and provides contact details for further project-specific inquiries to all registered I&APs. The NTS was distributed to registered I&APs and the NTS can be found in Appendix B.

2.7.3 NEWSPAPER ADVERTISEMENTS

Notices regarding the proposed project and associated activities were circulated in three newspapers namely the 'Republikein, Sun, and Allgemeine Zeitung' on the 16th and 23th February 2021 (see Appendix C). The purpose of this was to commence the consultation process by informing the public about the project and enabling I&APs to register any comments and interest raised for the project.

2.7.4 SITE NOTICES

A site notice ensures neighbouring properties and stakeholders are made aware of the proposed project. The notice was set up at the boundary of the EPL as illustrated in Appendix C.

2.7.5 PUBLIC MEETING

In terms of Section 22 of the Environmental Management Act, No. 7 of 2007's regulations, for the purpose of registering I&APs, no public meeting was held during the public consultation period, as it was not deemed necessary for this project. Moreover, the public has not raised any interests or requests for a meeting to be held.

2.7.6 CONSULTATION FEEDBACK

The I&APs were encouraged to provide constructive input during the consultation periods. Matters of concern raised during the initial round of consultation are presented in Appendix C. However, no issues or concerns were raised by the I&APs during the initial consultation period.

The public review period of the scoping report and the EMP will be set between the 30th of April to the 11th of May 2021 for a period of seven days, providing the public an opportunity to send any comments on the draft reports to be included and addressed, where applicable, in the final documentation.

2.8 DRAFT ESIA AND EMP

This report and EMP for the project's environmental clearance includes an assessment of the biophysical and social environment, which satisfies the requirements of Step 5 (Figure 3).

The ESIA report documents the findings of the assessment process, provides stakeholders with the opportunity to comment and continue consultation and forms part of the environmental clearance application. The EMP provides measures to manage the environmental and social impacts of the proposed project and outlines specific roles and responsibilities to fulfil the plan.

This ESIA report focuses on the significant impacts that may arise from the proposed project as described in Step 4 (Figure 3). These impacts are discussed in Chapter 6.

The aim of this stage was to ensure all stakeholders and I&APs have the opportunity to provide final comments on the assessment process and findings and register their concerns. No concerns were registered.

2.9 Final ESIA and EMP

The final ESIA report and associated appendices will be available to all stakeholders on the ECC website www.eccenvironmental.com. All I&APs are informed via email. The ESIA report and appendices was formally submitted to the Office of the Environmental Commissioner, DEAF as part of the application for an environmental clearance certificate.

2.10 Authority Assessment and Decision Making

The Environmental Commissioner in consultation with other relevant authorities will assess if the findings of the ESIA presented in the EIA report is acceptable. If deemed acceptable, the Environmental Commissioner will revert to the proponent with a record of decision and any recommendations.

2.11 Monitoring and Auditing

In addition to the EMP being implemented by the proponent, a monitoring strategy and audit procedure will be determined by the proponent and competent authority. This will ensure key environmental receptors are monitored over time to establish any significant changes from the baseline environmental conditions caused by project activities.

3 REGULATORY FRAMEWORK

This chapter outlines the regulatory framework applicable to the proposed project. Table 3 provides a list of applicable legislation and the relevance to the project. An environmental clearance is required for any activity listed as per Government Notice No 29 of 2012 of the EMA.

3.1 NATIONAL LEGISLATION

TABLE 3 - LEGAL COMPLIANCE

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
Constitution of the Republic of Namibia of 1990	The Constitution of the Republic of Namibia, 1990 clearly defines the country's position in relation to sustainable development and environmental management. The constitution refers that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the following: *"Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present, and future …"*	The proponent is committed to engage the local community for the proposed project by providing local opportunities, as well as exploring for recourses that could be to the benefit of Namibians.
Minerals (Prospecting and Mining) Act, No. 33 of 1992	Provides for the reconnaissance, prospecting and mining for, disposal of, and the exercise of control over minerals in Namibia. Section 50 (i) requires *"an environmental impact assessment indicating the extent of any pollution of the environment before any prospecting operations or mining operations are being carried out and an estimate of any pollution, if any, likely to be caused by such prospecting operations or mining operations"* Section 50 sets out that in addition to any term and condition contained in a mineral agreement and any term and condition contained in any mineral licence, it shall be a term and condition of any mineral licence that the holder of such mineral licence shall: – Exercise any right granted to him or her in	The proposed activity is prospecting for minerals; hence it requires an EIA to be carried out as it triggers listed activities in the Environmental Management Act and its regulations. This report presents the findings of the EIA. Work shall not commence until all conditions in the Act are met, which includes an agreement with the landowners and conditions of compensation have been agreed. The project shall be compliant with Section 76. With regards to records, maps, plans and financial statements, information, reports, and returns submitted.

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	terms of the provisions of this Act reasonably and in such manner that the rights and interests of the owner of any land to which such licence relates are not adversely affected, except to the extent to which such owner is compensated. Section 52 sets out that the holder of a mineral licence shall not exercise any rights conferred upon such holder by this Act or under any terms and conditions of such mineral licence (a) In, on or under any private land until such time as such holder. (i) Has entered into an agreement in writing with the owner of such land containing terms and conditions relating to the payment of compensation, or the owner of such land has in writing waived any right to such compensation and has submitted a copy of such agreement or waiver to the Commissioner.	As the proponent will need to access privately owned land the proponent will ensure Sections 50 and 52 are complied with.
Environmental Management Act, (No. 7 of 2007) and its regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2012)	The Act aims to promote sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment. It sets the principles of environmental management as well as the functions and powers of the minister. The Act requires certain activities to obtain an environmental clearance certificate prior to project development. The Act states an EIA may be undertaken and submitted as part of the environmental clearance certificate application. The MEFT is responsible for the protection and management of Namibia's natural environment. The Department of Environmental Affairs under the MEFT is responsible for the administration of the EIA process.	This environmental scoping report (and EMP) documents the findings of the environmental assessment undertaken for the proposed project, which will form part of the environmental clearance application. The assessment and report have been undertaken in line with the requirements under the Act and associated regulations.

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
Water Act, No. 54 of 1956	Although the Water Resources Management Act, No 11 of 2013 has been billed, but not promulgated, it cannot be enacted as the regulations have not been passed – so the Water Act 54 of 1956 is still in effect. This act provides for *"the control, conservation and use of water for domestic, agricultural, urban and industrial purposes; to make provision for the control, in certain respect and for the control of certain activities on or in water in certain areas".* The Department of Water Affairs within the Ministry of Agriculture Water and Land Reform (MAWLR) is responsible for the administration of the Act. The Minister may issue a permit in terms of the regulations 5 and 9 of the government notice R1278 of 23 July 1971 as promulgated under section 30 (2) of the Water Act no. 54 of 1956, as amended.	The Act stipulates obligations to prevent pollution of water. Should wastewater be discharged, a permit is required. The EMP sets out measures to avoid polluting the water environment. Measures to minimise potential groundwater and surface water pollution are contained in the EMP. Abstraction of water from boreholes requires an abstraction permit. Abstraction rates need to be measured and reported to the authorities in accordance with the requirements of this legislation. In addition, annual reporting on the environmental impacts of water abstraction is recommendable. Should the project require drilling and abstraction of water from underground sources, an application should be submitted to the authorities.
Soil Conservation Act, No. 76 of 1969) and the Soil Conservation Amendment Act, No. 38 of 1971)	Makes provision for the prevention and control of soil erosion and the protection, improvement and the conservation, improvement and manner of use of the soil and vegetation.	This will be taken into consideration during the intention of the works to be undertaken within EPL 7974 site. Measures in the EMP set out methods to avoid soil erosion.
The Forestry Act, No. 12 of 2001 as amended by the Forest Amendment Act, No. 13 of 2005	Section 22 requires a permit for the cutting, destruction or removal of vegetation that are classified under rare and or protected species; clearing the vegetation on more than 15 hectares on any piece of land or several pieces of land situated in the same locality which has predominantly woody vegetation; or cut or	The planned project activities will include minimal vegetation clearing to support exploration activities. The necessary permit should be obtained from the MEFT, where the application should satisfy that the cutting and

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	remove more than 500 cubic metres of forest produce from any piece of land in a period of one year.	removal of vegetation will not interfere with the conservation of soil, water or forest resources.
National Heritage Act, No. 27 of 2004.	The Act provides provision of the protection and conservation of places and objects with heritage significance. Section 55 stipulates that exploration companies must report any archaeological findings to the National Heritage Council after which a heritage permit needs to be issued	There might be potential for heritage objects to be found on site, therefore the stipulations in the Act have been taken into consideration and are incorporated into the EMP. Section 55 compels exploration companies to report any archaeological findings to the National Heritage Council after which a permit needs to be issued before the find can be disturbed. In cases where heritage sites are discovered the 'chance find procedure' will be used
The Traditional Authorities Act 25 of 2000 and its Regulations of 2001	The Act makes provision for the establishment of traditional authorities (TA) over communal land in Namibia. The Act also sets out the structure of the TA with different levels of authority and the appointment of office bearers to the various positions. The Ministry of Regional & Local Government & Housing (MRLGH) pays allowances for the chief, 12 councillors and the secretary, and also provides funds for stationery and communications.	EPL 7974 falls within communal land administered by a traditional authority. All communication of environmental matters and beyond should be directed to the relevant traditional authority who administers the land. All communication with the Board of Trustees of the traditional authority should be directed via the secretary of the Board. The consultant has communicated with the Chief of the traditional authority.

3.2 National Regulatory Regime

TABLE 4 - NATIONAL POLICIES

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
Vision 2030	Vision 2030 sets out the nation's development programmes and strategies to achieve its national objectives. It sets out eight themes to realise the country's long-term vision. Vision 2030 states that the overall goal is to improve the quality of life of the Namibian people to a level in line with the developed world.	The planned project shall meet the objectives of Vision 2030 and shall contribute to the overall development of the country through continued employment opportunities.
The Fifth National Development Plan (NDP5)	NDP5 is the fifth in the series of seven five-year national development plans that outline the objectives and aspiration of Namibia's long-term vision as expressed in Vision 2030. NDP5 is structured on the pillars of economic progression, social transformation, environmental sustainability and good governance. Under the social transformation pillar is the goal of improved education.	The planned project supports meeting the objectives of NDP5 by creating specialised or skilled opportunities for employment to the nearby community and the Namibian nation.
Minerals Policy	The Minerals Policy was adopted in 2002 and sets guiding principles and direction for the development of the Namibian mining sector while communicating the values of the Namibian people. It sets out to achieve several objectives in line with the sustainable development of Namibia's natural resources. The policy strives to create an enabling environment for local and foreign investments in the mining sector and seeks to maximise the benefits for the Namibian people from the mining sector while encouraging local participation, amongst others. The objectives of the Minerals Policy are in line with the objectives of the Fifth National Development Plan that include reduction of poverty, employment creation and economic empowerment in Namibia.	The objectives of the Minerals Policy are in line with the objectives of the NDP5, e.g., reduction of poverty, employment creation, and economic empowerment in Namibia. The proposed project conforms to the policy, which has been considered through the EIA process and the production of this report.
Labour Act,	The Labour Act, No. 11 of 2007 (Regulations	The proposed project will comply

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
No. 11 of 2007	relating to the Occupational Health & Safety provisions of Employees at Work promulgated in terms of Section 101 of the Labour Act, No. 6 of 1992 - GN156, GG 1617 of 1 August 1997)	with stringent health and safety policies, including the compulsory use of specific PPE in designated areas to ensure adequate protection against health and safety risks. Proper storage and labelling of hazardous substances are required. The project will ensure employees in charge of and working with hazardous substances needs to be aware of the specific hazardous substances in order not to compromise worker and environmental safety.

3.3 PERMITS AND LICENCES

3.3.1 EXCLUSIVE PROSPECTING LICENCE

The EPL 7974 was granted on the 14th of September 2020 and expires on the 13th of September 2023. In terms of the Minerals (Prospecting and Mining) Act, No. 33 of 1992, an EPL may be renewed; however, it may only be extended twice for two-year periods if demonstrable progress is shown. Renewals beyond seven years require special approvals from the Minister MME, 2018.

Such renewals are subject to a reduction in the size of the EPL. When a company applies for renewal of an EPL, the application must be lodged 90 days prior to the expiry date of the EPL or, with good reason, no later than the expiry date (MET & MME, 2018).

If renewal is applied for, the MME must review the renewal application and make any comments and/or recommendations for consideration by the Minerals (Prospecting and Mining Rights) Committee (MPMRC). Amendments and revisions may be required for the EIA and EMP. Due consideration must be given when renewing the licence to ascertain whether there is justification to renew the licence. Once an EPL expires and a new EPL is issued, even if it is to the previous holder, the full screening process must be followed with a full EIA process, before operations may commence (MET & MME, 2018).

The permits and license that may be relevant to the proposed projects are outlined in Table 5.

TABLE 5 - PERMITS AND LICENCES REQUIREMENTS

PERMIT AND LICENCES	RELEVANT AUTHORITY	VALIDITY/DURATION
WATER ABSTRACTION PERMITS	Ministry of Agriculture, Water and Land Reform	Permit dependent
EXCLUSIVE PROSPECTING LICENCE	Ministry of Mines and Energy - Windhoek	3 years
NOTICE OF INTENTION TO DRILL	Ministry of Mines and Energy - Windhoek	To be submitted prior to drilling
CONSUMER INSTALLATION PERMIT	Ministry of Mines and Energy	Should be obtained in the event of storing 200 litres or more of fuel on site.

3.4 WORLD BANK STANDARDS

The IFC is a member of the World Bank Group and is the largest global development institution focusing on the private sector in developing countries. Its standards have become a global benchmark for environmental and social performance. They form the basis for the Equator Principles (IFC, 2013), a voluntary environmental and social risk-management framework used by 77 financial institutions worldwide. The Equator Principles are a framework and set of guidelines for evaluating social and environmental risks in project finance activities and apply to all new projects with a total capital cost of US$10 million or more, no matter what industry sectors, without geographic requirement. The Equator Principles are not applicable to this specific project.

4 PROJECT DESCRIPTION

4.1 NEED FOR THE PROPOSED PROJECT

Namibia is relatively rich in a variety of minerals, and mining has always been a critical sector of the Namibian economy. The sector contributes significantly to the country's Gross Domestic Product (GDP), through taxation, royalties, fees and equities as well as export revenues. For this reason, exploration activities are encouraged in Namibia and the vision of the Minerals Policy being to "further attract investment and enable the private sector to take the lead in exploration, mining, mineral beneficiation and marketing" supports the development.

The proposed project is in line with this vision and has the potential to create short term and limited employment and to contribute to the national income. In the event that exploration activities are successful, and a resource with commercially viable mineral concentrations can be defined, the exploration operations can potentially transcend into mining operations which can result in multiple socio-economic benefits to the region and the country at large.

4.2 EXPLORATION

It is the process of sampling / collecting fragments of the earth's layers for testing of each sample's mineral composition, grade, and spatial dispersion to acquire an informed perspective of the target area's ore potential. Deep probing is achieved through ground geophysical surveys and drilling.

4.3 EXPLORATION METHODOLOGY

Exploration work will be entirely conducted by dedicated professional geological, geophysical consultants as well as drilling consultants and companies.

The exploration activities are executed and managed from the Votorantim Exploration Office in Otavi. A temporary field office may be established in Sesfontein for the duration of exploration on EPL 7974 due to its close proximity. Field exploration activities, using techniques as discussed below, are anticipated to be carried out over the licence validity period.

Existing tracks shall be used as far as reasonably practical. In the event that new tracks are required they will be developed by hand or by use of a bulldozer, terrain dependent. Vegetation clearing will be limited to clearing for access tracks, if necessary and site camps, should additional areas be cleared for exploration activities the Forest Act, No. 12 of 2001 and its regulations will be complied with (the relevant forestry permits will be applied for if required). Any established or large trees or specially protected plant species shall not be removed, and access tracks will be routed to avoid these wherever possible and permits will

be obtained as necessary. Impacts and effects of the geochemical surveys and drilling programmes are likely to be low.

4.3.1 EXPLORATION SCHEDULE

The schedule of activities that may be undertaken for the project is presented in Table 6.

TABLE 6 - SCHEDULE OF ACTIVITIES THAT MAY BE UNDERTAKEN

PHASE	DATE	ACTIVITY DESCRIPTION
Phase 1	Exact commencement date unknown	Planning – Remote sensing studies and planning phases for the prospecting programme will require two-six months.
Phase 2	Exact commencement date unknown	Geochemical sampling will be undertaken concurrently with geological mapping for approximately two-six months.
Phase 3:	Exact commencement date unknown	Geophysical surveys will then be carried out over a period of about two (2) months after which the project will advance to reverse circulation or core drilling. Diamond drilling and possible Rotary Air Blast (RAB) drilling may occur, and the number of holes and aerial extent will be determined by the geochemical and geophysical anomalies obtained. AMT, IP and magnetic ground surveys shall be undertaken to measure chargeability, conductivity and magnetic susceptibility of the rocks. The duration of drilling programs is variable, and usually depends on the information that is gained from drilling. Applications for the environmental clearance certificate, along with all required permits will be submitted during this period should a renewal of the EPL be required.

4.3.2 EQUIPMENT AND MATERIALS

During the exploration phase double and single cab vehicles will be used to transport workers to, from and around the site. Field activities will be organized from the exploration office in Otavi. Contractor's camp infrastructure may include tents and chemical toilets, to be temporarily set up on the site. A drill rig (track-mounted) will be brought to site for core drilling, along with a water truck and supporting equipment (rods truck, water and fuel bowsers, and RC compressor) for use during drilling. Drilling equipment, diesel fuel and consumables shall be brought to the exploration site to support exploration activities as and when needed.

4.3.3 WORKERS AND ACCOMMODATION

Four to eight possible job opportunities are foreseen during the exploration phase and workers will be sourced from the nearest town, Opuwo or potentially from the village of Sesfontein in the surrounding area. The workers will be deployed at various stages of exploration including soil sampling, geological mapping, geophysical surveys and drilling operations. The proponent will provide transport. However, during the latter part of the prospecting (drilling) workers may be required to stay at the exploration site in campsites or in existing housing rented from the property owner. The proponent shall provide suitable living facilities during this period.

4.3.4 WATER DEMAND

Water will be required for various uses including human consumption during the planned exploration activities and to support any of the exploration activities such as diamond drilling. The water will most likely be sourced from an existing water source on site, after permission has been obtained from the custodian of the land (Kunene Regional Council through the relevant traditional authority), of which they will be compensated for water usage. Limited water will be needed for the first stage of exploration (e.g., soil sampling), $1m^3$per day water will be required for geophysical surveys in the second stage of exploration and approximately a volume of $30m^3$ per day of water may be required for diamond drilling in the third stage of exploration.

4.3.5 WASTE MANAGEMENT

Waste produced on site will include sewerage and solid waste such as packaging material. Wastewater (e.g., water with drill additives) used during drilling is recycled, contained in a lined sump and allowed to evaporate after use. The drill-sludge will be disposed of at the Opuwo municipal waste disposal site. In case of the provision of mobile toilets to be used on site, sewerage generated shall be managed by the toilet contractor. Wastewater that is discharged into the environment must comply with wastewater discharge specifications.

4.3.6 SITE REHABILITATION

Once exploration activities are completed the areas shall be rehabilitated to a condition as close to the original state of the site as far as possible. Rehabilitation shall be determined during the exploration programme and shall be agreed with the traditional authorities as implied by legislation (discussed in Section 3). Before and after photographs will be used to monitor rehabilitation success.

4.4 ALTERNATIVES CONSIDERED

The proposed project has been subject to a process of design evolution, informed by both consultation and an iterative environmental assessment. In terms of the Environmental

Management Act, No. 7 of 2007 and its regulations, alternatives considered should be analysed and presented in the scoping assessment and ESIA report. This requirement ensures that during the design evolution and decision-making process, potential environmental impacts, costs, and technical feasibility have been considered, which leads to the best option(s) being identified.

Exploration activities range from extremely low impact exploration such as remote sensing from satellites to more invasive methods such as extensive close-spaced drilling. The methods used shall be determined, based on the exploration programme, which is further designed once more information and data is obtained. At this stage of the project, the exploration activities are yet to be finalised and therefore a range of options remain.

Once the exploration programme is further defined the following more invasive technique is envisaged at strategic locations as informed by new data:

- Diamond core drilling.

The most suitable options and methods shall be identified to ensure the impacts on the environment and society from these activities are minimised.

4.4.1 NO-GO ALTERNATIVE

Should exploration activities within EPL 7974 not take place, the anticipated environmental impacts from exploration activities would not occur, however, the social and economic benefits associated with the project for the Kunene Region would also not be materialized.

There would not be an opportunity to define resources within the project area, this would be a missed opportunity for geological mapping and data collection that would add to regional knowledge of Namibia's mineral wealth and, if found to be viable for mining, could benefit the Namibian economy.

5 ENVIRONMENTAL AND SOCIAL BASELINE

5.1 INTRODUCTION

This section provides an overview of the existing biophysical environment through the analysis of the baseline data regarding the existing natural and socio-economic environment. Desktop studies on the national database are undertaken as part of the scoping stage to get information of the current status of the receiving environment. This provides a baseline where changes that occur as a result of the proposed project can be measured.

5.2 SITE AND SURROUNDING ENVIRONMENT

The unproclaimed settlements of Otjikondavirongo and Kaoko-Otavi are situated approximately 20km south of the project area and +/- 50 km north of the project area respectively and can be accessed from the D3705 district road (Figure 5). The C40 further east of the EPL connects to the settlement of Omao. A number of district roads crisscross the Kunene Region, while a network of tracks provide access to the EPL from the D3705 (Figure 5).

The only proclaimed village in the Kunene Region, Sesfontein (60km south of EPL 7974), is a small village in the Kunene Region, northern Namibia, and the closest proclaimed village with basic amenities to the EPL. Sesfontein is governed by the Kunene Regional Council with an administrative center situated in Otuani. Its economy relies mostly on tourism and farming based businesses. Surrounding the Sesfontein settlement there are more than 30 game/cattle farms operating as both commercial and subsistence farming operations. The Sesfontein area is known for its springs, hence the name given to the settlement.

EPL 7974 overlaps with no commercial farms (Figure 5) as it is entirely located on communal land. The tracks within the general area can be used for access and movements during the course of exploration activities. The EPL lies in a region that receives between 100-150ml annual rainfall, which allows for mainly subsistence livestock and to a lesser extent, crop production in the area.

Pro-active communication between the proponent, the Kunene Regional Council and the #Aodaman traditional authority, need to be maintained when planning to access the EPL and to keep them updated on exploration activities.

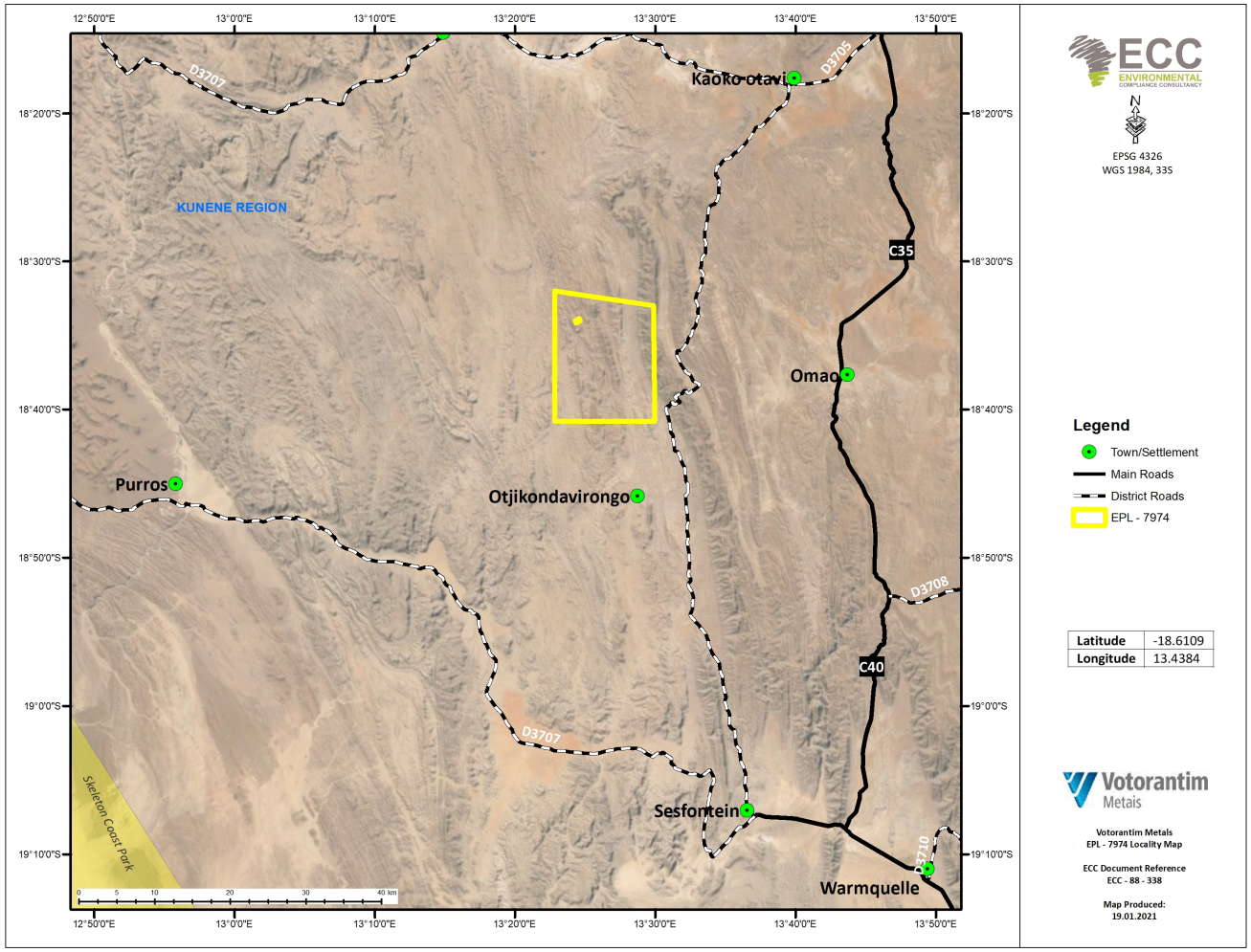


FIGURE 5 - ACCESSIBILITY MAP OF EPL 7974

5.3 CLIMATE

EPL 7974 receives between 100-150mm of rainfall per year, with a high variation coefficient of 70-80%. Rainfall events are limited to the summer months, mainly between January and March, in the form of thunderstorms often associated with heavy downpours. Potential evaporation is between 2,100 and 2,240 mm per year, meaning an average water deficit of between 2,240 and 2,380 mm per year may occur. Relative humidity is low, rarely more than 20% in winter but may reach 85% in summer before or after thunderstorm build-up. Maximum temperatures average around 30-32°C, while minimum temperatures are around 8-10°C during summer months. During winter months temperatures can range between 5-26°C. Deviations from these averages are common. Occasional frost can occur (Mendelsohn et al., 2002).

Due to the rhythm of the pressure systems, the wind patterns over the interior remain fairly predictable. Prevailing wind over EPL 7974 is expected to be from the west to southwest, with occasional airflow from north, northeast and south. Wind speed is expected to be low with more than two-thirds of the time lower than 4 m/s. The stronger air movements during the afternoons and evenings are the result of the ground being heated more in some places than others, in combination with the orographic effect of the mountains. During the winter months wind speed is slightly higher (Mendelsohn, et al., 2002).

Predominant wind direction is from the south west, with an average wind speed of 2.5 mps (meters per second), and a calm of 48% (Figure 6) (Iowa State University, 2021).

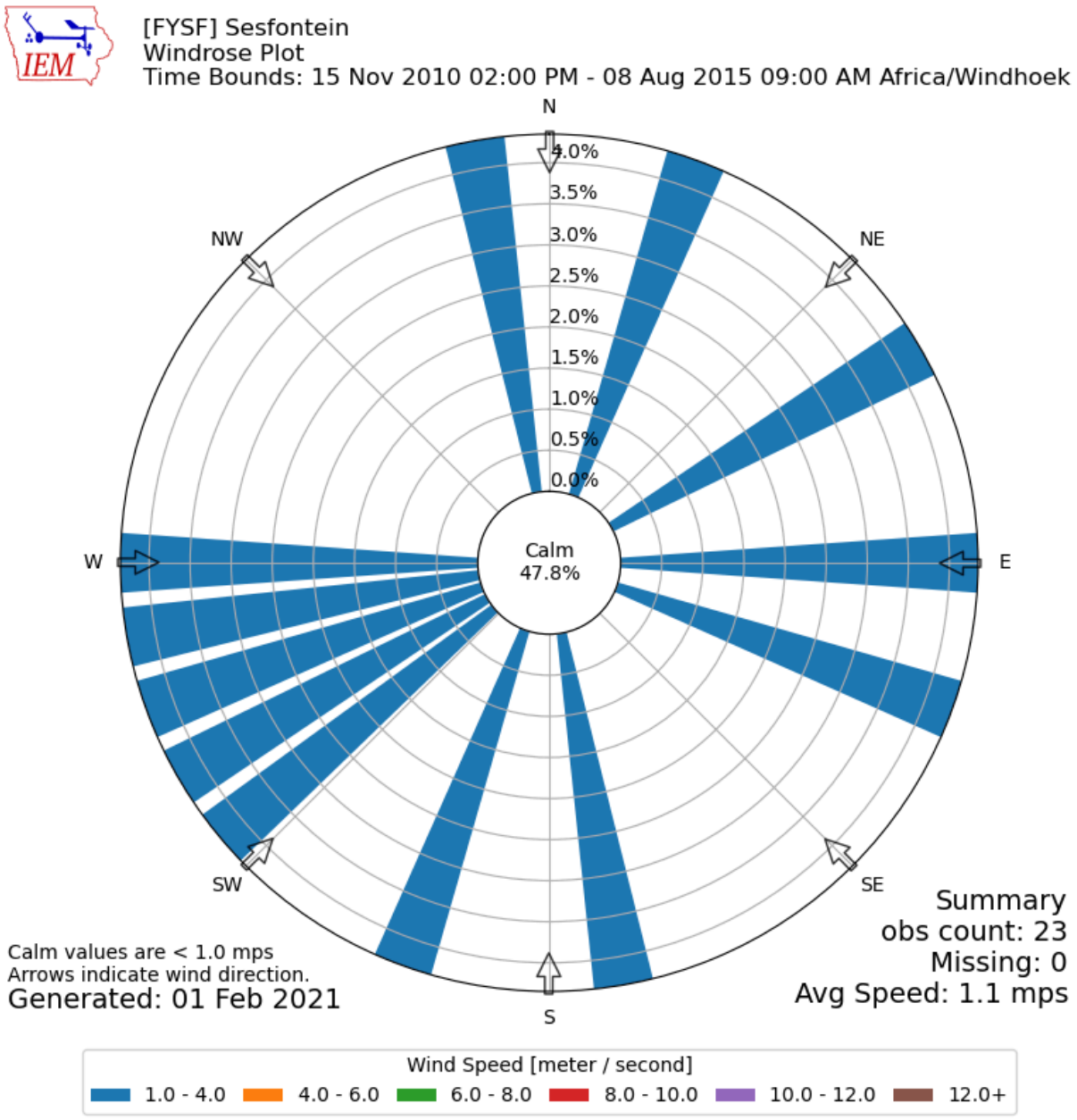


FIGURE 6 - PREVAILING WIND DIRECTION AND WIND SPEED IN THE GENERAL AREA OF THE PROPOSED PROJECT (SOURCE: IOWA STATE UNIVERSITY, 2020).

5.4 GEOLOGY AND GEOMORPHOLOGY

The local geology of EPL 7974 comprises a combination of gneiss outcrops of the Swakop group which forms part of the Damara Supergroup and the Epupa, Huab and Abbabis Metamorphic Complexes (Cx), which is the oldest lithological unit in Namibia (2 600-1 650 Ma) (Figure 7) remanded to a small section in the south of the EPL. The Damara Supergroup (850-600 Ma) covers the largest part of the northwest quarter of Namibia and is oriented in a predominantly SW-NE direction with an extension into what is known as the Otavi Mountains (Mendelsohn et

al, 2002). Undulating rocky outcrops can be observed throughout the EPL. It is within these older lithological units that base and rare metal deposits may be found.

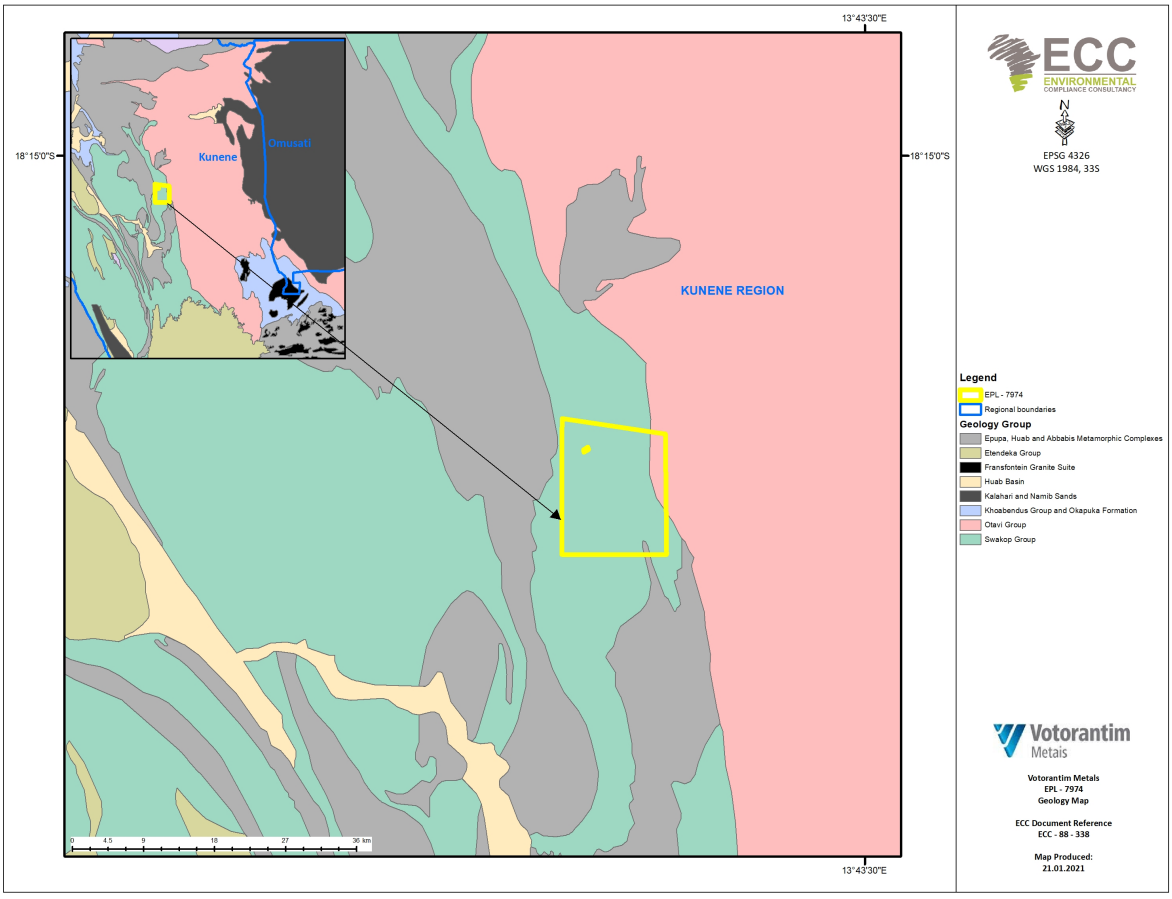


FIGURE 7 - EPL 7974 REGIONAL AND LOCAL GEOLOGY

5.5 TOPOGRAPHY AND SOIL

EPL 7974 is located on an elevation varying between 719m and 1,795m above mean sea level (Figure 8). The landscape is rugged with some sharp topographical contrasts with incised streams. Generally, there is a fall in elevation from east to west, with the highest readings to the east of the EPL.

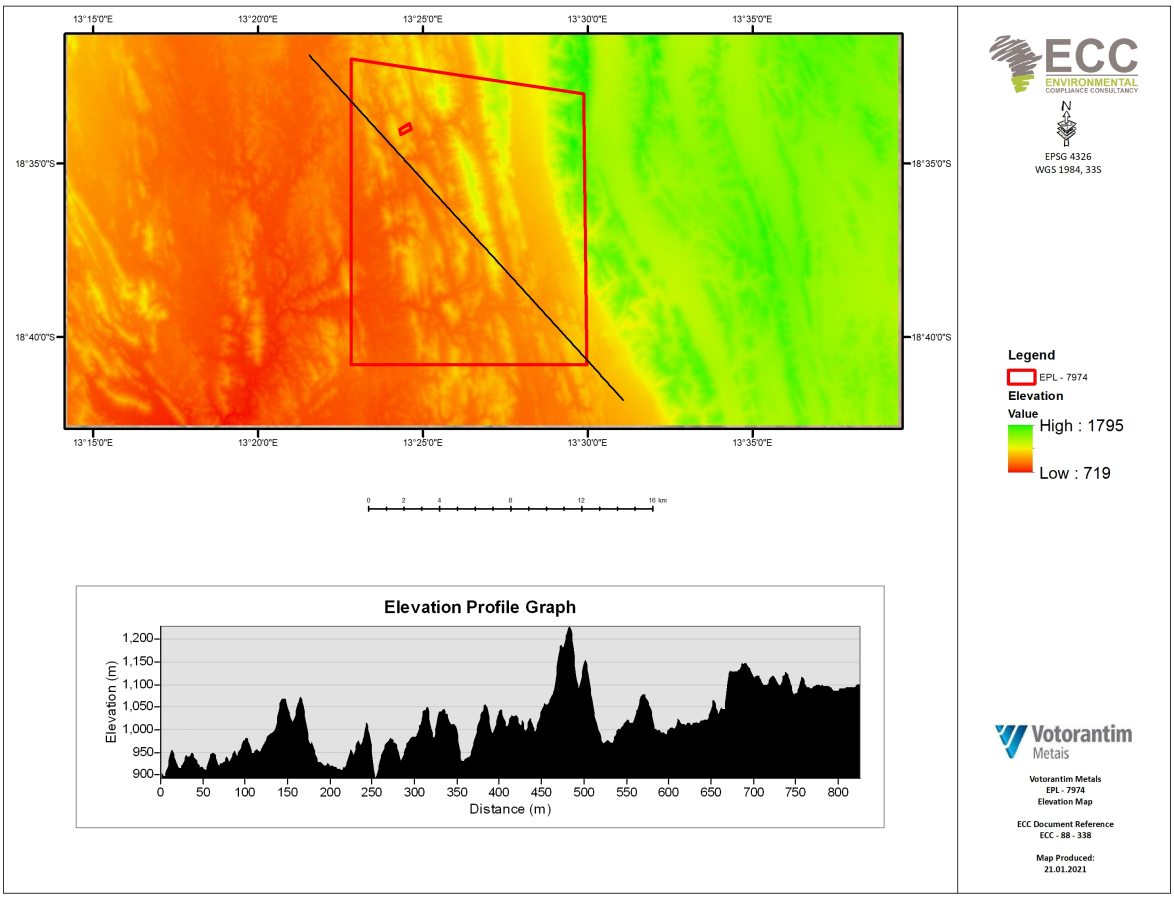


FIGURE 8 - ELEVATION PROFILE ALONG EPL 7974

Topsoil is largely absent where the surface is covered with rocky outcrops within most of the surface area of the EPL, with petric calcisols interjected on a small scale within the eastern section of the EPL (Figure 8). Petric calcisols is a combination of petrified soil which contains accumulations of calcium carbonate, often in a cemented form called calcrete (Mendelsohn et al., 2002). Although calcisols are potentially fertile, the soil within the EPL comprise a solid layer at a shallow depth that remains hard, even at depth (Mendelsohn et al., 2002).

The sources of dust associated with the proposed exploration activities are land clearing and the creation of access roads if necessary. These activities may have a minor impact on the neighboring farming community.

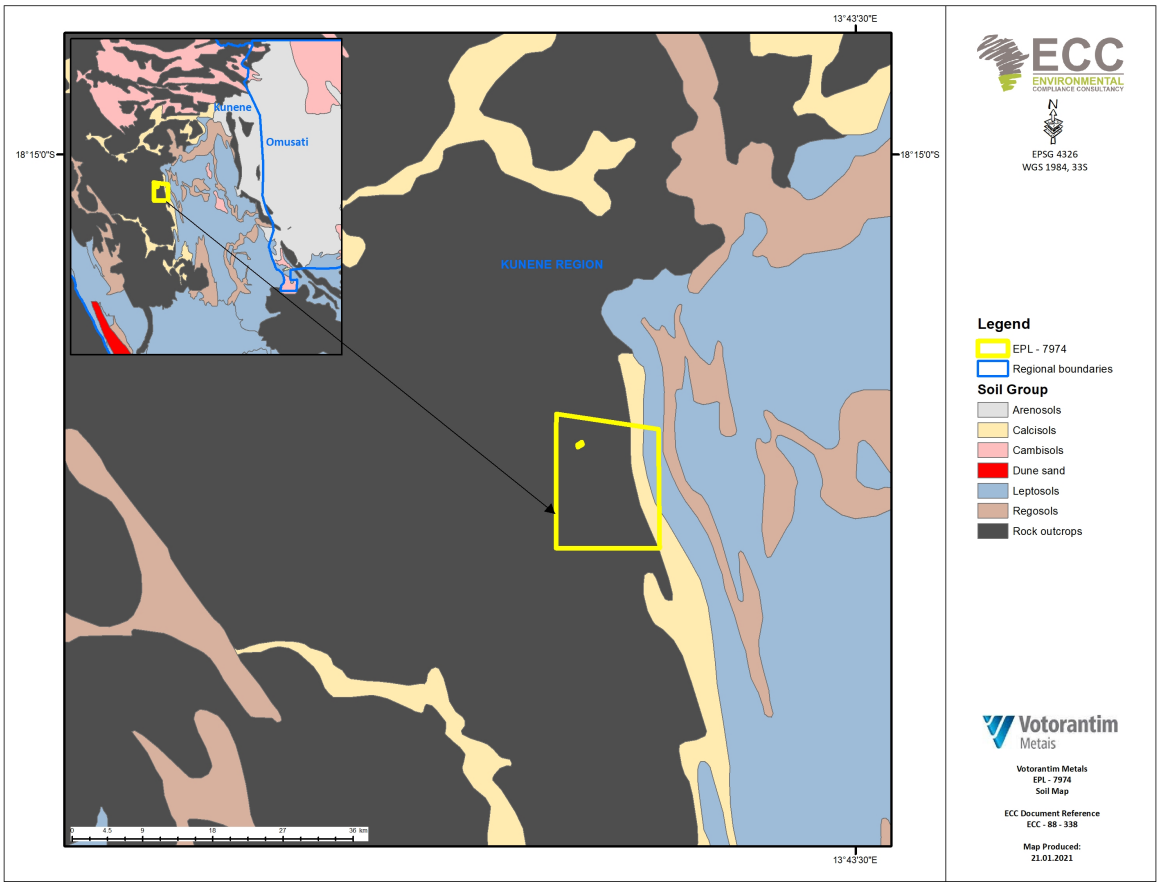


FIGURE 9 - EPL 7974 REGIONAL AND LOCAL SOIL MAP

5.6 HYDROLOGY

The surface hydrology through EPL 7974 follows a relatively dendritic pattern which develops on relatively uniform surface materials and branches off from the main Hoanib ephemeral river, which means that well-defined surface drainage systems are absent, or follow only short distances before surface water penetrates the surface. Although a drainage pattern can be identified, the flow of surface water is more defined by topographical valleys than the presence of streambeds. In addition, there are no known natural spring formations on the EPL although six springs are found within the Sesfontein settlement area further south.

5.6.1 GROUNDWATER

No borehole data exists for the area overlapping the EPL. It is assumed that water will be obtained from a groundwater source (i.e., a communal waterpoint) during the exploration activities. Considering the nature and scale of the proposed exploration, drilling is unlikely to impact groundwater. Should the project require the drilling and abstraction of water from a borehole, an application must be submitted to the MAWLR.

5.6.2 GROUNDWATER FLOW

Groundwater flow in the area takes place mainly along fractures and contact zones within hard rock formations. Groundwater in the area flows in a northeasterly direction as inferred from historical groundwater data.

EPL 7974 is located on the Kunene north basin (Figure 10). The area is underlain by an aquifer of little to no groundwater with a possible increased potential where fractures and faults occur on a local scale. (Mendelsohn et al., 2002).

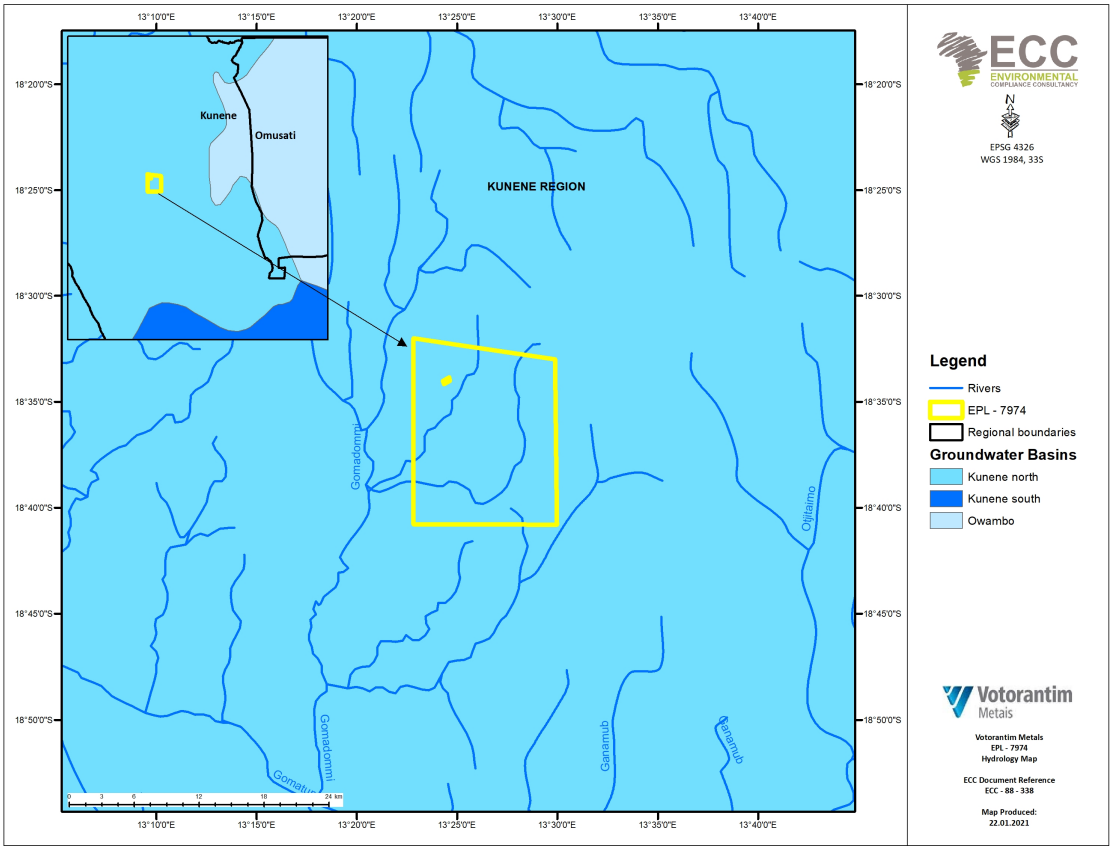


FIGURE 10 - HYDROLOGY MAP OF THE EPL 7974

5.7 BIODIVERSITY

5.7.1 VEGETATION

EPL 7974 falls within the Acacia tree-and-shrub Savanna Biome (Figure 11). It is broadly classified as having a western highlands vegetation type characterised by grasslands and scattered trees. The majority of the EPL plant growth become progressively shrubby, especially where the soils are shallower, slopes are steeper and where it is hillier and rockier (Mendelsohn et al, 2002). Thorny Acacia species dominate but a number of species are closely associated with the higher elevations only. Thornbush thickets dominate on the sandy parts

and calcrete-rocky parts. The Mopane grows scrubbier and to a moderate height in this part of the country (Mendelsohn et al., 2002)

The most important environmental variable affecting the vegetation is rain, but micro-habitat conditions and rangeland management practices determine bush density and grass composition. Grazing resources are made up of a wide variety of grass species, which vary widely in palatability and in their abundance in the project area.

Plant diversity is estimated to be between 150-299 species (Mendelsohn et al, 2002), although local differentiation because of topography and the availability of water is possible. This is an average occurrence of plant diversity in Namibia, and some endemics, near-endemics and protected species may occur. Biophysical baseline information does not accentuate the uniqueness of mountain vegetation and the diversity of plants species may converge on relatively small areas in which there are several habitats and niches offered by micro-climate, elevation, and sheltered spaces.

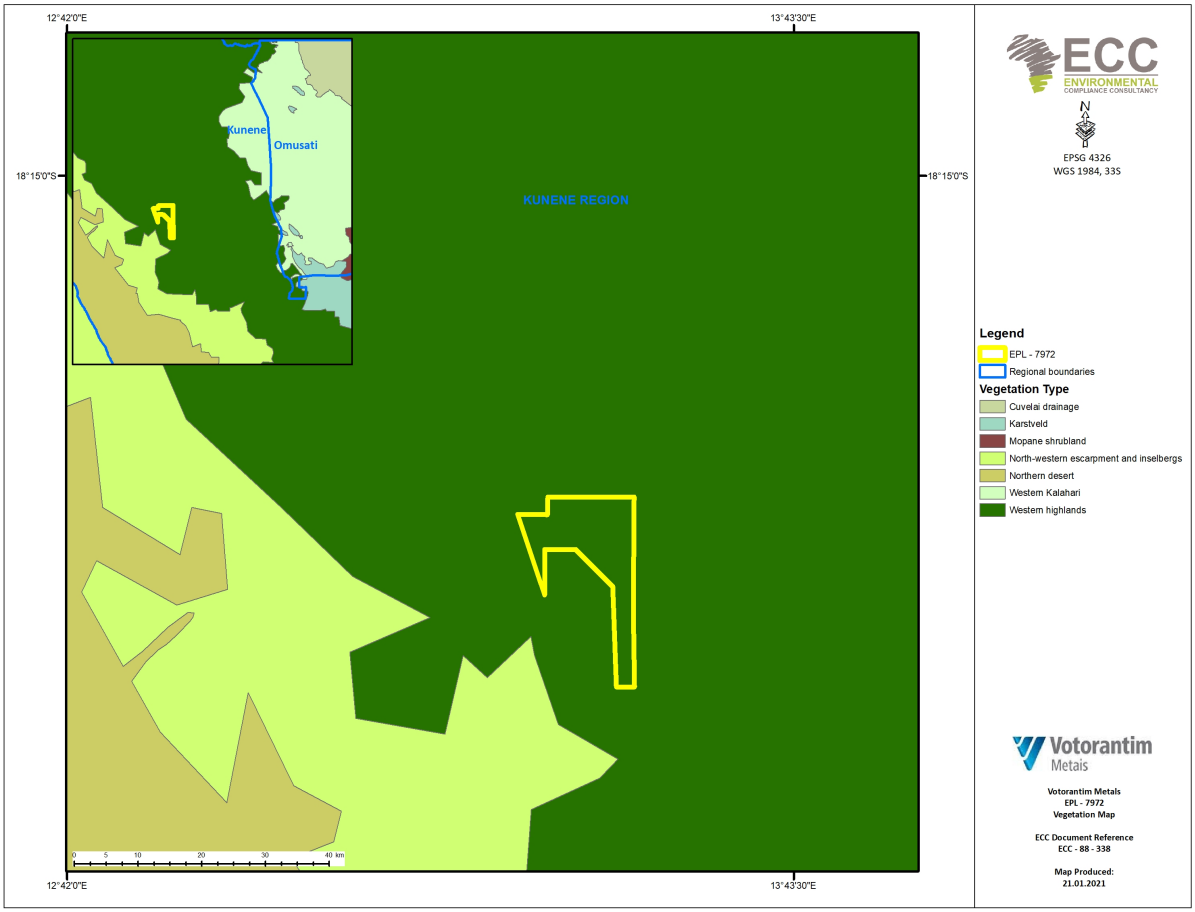


FIGURE 11 - EPL 7974 REGIONAL AND LOCAL VEGETATION MAP

5.7.2 Fauna Species

Overall terrestrial biodiversity of the EPL area falls within the medium range. The number of mammal species ranges between 76 and 90, the number of bird species is between 111 and 140 with 61 – 70 reptile species, 4 – 7 frog species and 12 – 13 scorpion species that could be expected (Mendelsohn et al, 2002). On a local scale it is expected that diversity increases with the increase in habitats, which is closely coupled to shelter, food and water availability and migration routes. The micro-climate associated with an increase in elevation plays a prominent role in this regard and is directly related to the increase in terrestrial diversity.

The dominant land use within and on the surroundings of the EPL is subsistence livestock farming, in particular large livestock farming and to a lesser degree crop production and tourism.

5.8 Socio-economic Baseline

The entire EPL is located within the Kunene Region in the north-western half of the country, bordering the Omusati - northeast, Oshana - northeast, Oshikoto - northeast, Otjozondjupa - east and the Erongo region - south. In the west the region stretches along the Atlantic Ocean coastline.

5.8.1 Demographic profile

Namibia is one of the least densely populated countries in the world (2.8 people per km^2). Vast areas of Namibia are without people, in contrast to some fairly dense concentrations, such as the central-north and along the Kavango River. The Kunene region has the least amount of people per square kilometre and home to the Himba ethnic group.

National population growth rate is estimated at less than 2%, lower than most African countries. Namibia's population is young - although 57% falls in the age group 15 – 59, 37% of the total population is younger than 15 (NSA, 2017). Since 2005 there has been a steady improvement in life expectancy, currently estimated at 65 years. In 2018 it was estimated that 50% of all Namibians are urbanized, in other words living in an urban settlement (retrieved from www.worldpopulationreview.com). The last national census was conducted in 2011 and counted 2.1 million Namibians. An inter-censal demographic survey was conducted in 2016 and estimated the total population at 2.3 million (NSA, 2017).

The population density of the Kunene Region, where the project is located, is low (0.8 persons per km^2) when compared to the national average and the current total population of the region was estimated at 97 865 in 2016 (NSA, 2017). Opuwo is the biggest town in the region, recording 27 272 residents in 2011 growing at an average of 2.7 % per annum. In 2011 the population within the Sesfontein conservancy was counted at 2500 persons.

5.8.2 GOVERNANCE

Namibia is divided in 14 regions, subdivided by 121 constituencies. The Kunene Region is divided into six constituencies. Each region has a regional council, elected during regional elections per constituency. Towns and villages are governed through local authorities, in the form of town or village councils respectively.

Opuwo is the capital and also the largest town of the Kunene Region. Many of the region's head offices are located in the town. Other towns of the region are Outjo, Fransfontein, Khorixas, Sesfontein, and Okanguati. The Sesfontein settlement is governed by the Kunene Regional Council through an administrative center in Otuani. Custodianship over the communal land in which the EPL is located rests with the Kunene Regional Council through the traditional authority structure present.

5.8.3 HEALTH

Since independence in 1990, the health status of Namibia has increased steadily with a remarkable improvement in access to primary health facilities and medical infrastructure. Despite the progress, the World Health Organization (WHO) in 2015 recommended strategic priorities for the health system in Namibia which include improved governance, an improved health information system, emergency preparedness, risk reduction and response, preventative health care and the combating of HIV/AIDS and TB (WHO, 2016).

HIV/AIDS remains a major reason for low life expectancy and is one of the leading causes of death in Namibia. There is a high HIV prevalence among the whole population, but since the peak in 2002 (15,000 new cases of HIV per year, and 10,000 yearly deaths due to AIDS) the epidemic started to stabilise (UNICEF, 2011). Although new infections as well as fatalities halved during the next decade, life expectancy for females returned to pre-independence levels but for males it did not reach pre-independence levels yet. HIV/AIDS remains the leading cause of death and premature mortality for all ages, killing up to half of all males and females aged 40 - 44 years in 2013 (IHME, 2016).

Tuberculosis (TB) is a leading killer of people infected by HIV/AIDS, and Namibia has a high burden – in 2018, 35% of people notified with TB were infected with HIV. The country is included among the top 30 high-burden TB countries in the world, with an estimated incidence rate of 423 per 100,000 people and 60 fatalities per 100,000 people in 2018 (retrieved from www.mhss.gov.na).

There are 28 recorded health facilities in the Kunene Region that provide basic health services at a minimum frequency and facility based 24-hour delivery services, with qualified staff. The basic services include outpatient curative care services for sick children and for adult STIs, temporary methods of family planning, antenatal care, child immunisation, and growth monitoring (HFC, 2009).

As of the beginning of 2020 the coronavirus disease (COVID-19), a communicable respiratory disease, has caused illness in humans at a pandemic scale and has resulted in an increasing number of deaths worldwide. The viral outbreak is adversely affecting various socio-economic activities globally, and with reports of the increasing number of people testing positive, it is anticipated that this may have significant impacts on the operations of various economic sectors in Namibia too. The disease caused many countries to enter a state of emergency and lockdown mode, with dire economic consequences.

5.8.4 EMPLOYMENT

Kunene's labour force participation rate was 67.1%, compared to the average of 71.2% for Namibia. At a constituency level, the labour force participation rate was highest in Kamanjab (77.6%) and lowest in Epupa (60.6%). Skilled agriculture/fishery is the economic sector with the most employees – about 46.5%, while 12% of those employed fell in the service workers occupational group. Wages and salaries represented the income source of 41.0% of households (NSA, 2018). As a whole the region was marked by low education levels, which affected employability and prevented many households to earn a decent income. More than 60% of the population is over 15 years of age and about one-third of the total population can be regarded as part of the labour force.

The unemployment rates in Namibia, particularly among the youth are high. According to the Namibia Labour Survey (2018), the unemployment rate of the Kunene region was 41.6%, while the unemployment rate for people between 15 and 34 years of age was 53% in 2018, slightly higher than the national average of 46.1% (Namibian Statistics Agency, 2018).

In 2018, 53.4% of all working Namibians were employed in the private sector and 21.5% by the state. State-owned enterprises employ 7.6% Namibians and private individuals 16.6%. Wages and salaries represented the main income source of 47.4% of households in Namibia. Agriculture (combined with forestry and fishing) is the economic sector with the most employees – 23% of all employed persons in Namibia work in this sector. Agriculture is also the sector that employs the most informal workers in Namibia, calculated at 87.6%. Wages of employees in the agriculture sector are lower than all other sectors except for workers in accommodation and food services and domestic work in private households (NSA, 2019).

Low education levels affect employability and prevents many households to earn a decent income. Of all people employed in Namibia, 63.5% are not higher qualified than junior secondary level (Grade 10 and lower). In total 11.8% of all people employed had no formal education. In total 29.1% of all people employed fall in the category "elementary occupation" and 15.2% in the category "skilled agriculture" (NSA, 2019).

Overall, the rate of unemployment is estimated at 33.4% for Namibia, using the broad definition of unemployment. More than 60% of the population is over 15 years of age and about one-third of the total population can be regarded as part of the labour force. The

unemployment rate in rural and urban areas is almost the same – 33.4% in urban areas and 33.5% in rural areas. The highest unemployment rates are found amongst persons with education levels lower that junior secondary. The unemployment rate of persons with no formal education is 28.6%, with primary education 34.6% and with junior secondary education 32.7% (NSA, 2019).

5.8.5 Economic activities

The Kunene Region is divided into conservancies and operates under the CBNRM (Community Based Natural Resource Management) program in Namibia in partnership with the Ministry of Environment, Tourism and Forestry, NGOs' and Traditional Authorities. The conservancies allow communities to benefit from natural resources in their areas. The Sesfontein conservancy, which was registered in 2003 overlaps EPL 7974, therefore tourism activities may occur within or surrounding the EPL. The main source of income for this conservancy is through joint-venture tourism accounting for 43% of all income generating activities, with trophy hunting in second place at 31% (Bollig, M. (2016). On both commercial and communal land, bush encroachment decreased the carrying capacity of the farms markedly over the last four decades. The invader bush is managed in several ways, one of which is the production of charcoal for export. In 2009, the

Mining plays a pivotal role in the economy of Namibia. Since independence, it has consistently been the biggest contributor to Namibia's economy in terms of revenue and accounts for 25% of the country's income. Mining is one of the main contributors to GDP, and one of the largest economic sectors of Namibia. The main commodities are uranium, gold, diamonds, copper, zinc, lead, salt and dimension stone. Also, a major employer, about 1.7% of the formal labour force of Namibia is directly employed by the mining sector.

Employees in mining receive the highest wages by industry (NSA, 2019). The multiplying effect of income from employment in the mining sector is also significant – not only is it estimated that each employed person provides for four other persons, but the mining industry contributes in various ways to the national economy by means of taxes and royalties, a strong service-support base and specialized contractors. Although the region is rich in mineralised rock formations, no tangible large scale extractive operations are present in the region. Small scale extraction, value addition and marketing of crystal rocks for the local tourism market takes place.

Since 2016, Namibia recorded slow economic growth, registering an estimated growth of only 1.1% in 2016. The primary and secondary industries contracted by 2.0 and 7.8% respectively. During 2017 the economy contracted by 1.7, 0.7 and 1.9% in the first, second and third quarters respectively (NSA, 2019). Despite the more positive expectations, the economy retracted to an average growth of not more than 1% annually since 2017.

5.8.6 CULTURAL HERITAGE

In Namibia several mountainous landscapes are closely coupled to heritage values. The Peet Alberts Rock engravings located southwest of the EPL is evidence of early habitation in this area and is registered as a national monument.

A review of the National Heritage Council database was conducted, and within EPL 7974 there are no known heritage sites. In cases where heritage sites are discovered the chance find procedure will be used.

If any historical or heritage sites(s) of importance on or around the project area are encountered during exploration activities these will be reported to the Monument's Council in Windhoek, and the site will be left untouched.

5.8.7 NOISE AND SENSE OF PLACE

EPL 7974 is located where the predominant land use is extensive subsistence farming and tourism activities with the only signs of human influence is in the form of agricultural infrastructure, e.g., water installations, fences, tracks, and buildings. Sensitive receptors associated with the EPL area may include farm owners and farm workers, neighbours, visitors, and tourists.

The naturalness of the area can be disrupted by the combined and amplified effects of exploration activities – in the form of noise, dust, movements of heavy machinery, landscape scars and visual obtrusions. This may alter and affect the lifestyle of receptors, although the exploration activities are short-term and reversible.

EPL 7974 lies in communal land, and it is likely that noise will become a nuisance to communal residents of the area. The proponent will continue to communicate with the farmers, should this be a pertaining issue, and further mitigation measures will be applied.

Additionally, work will be planned in advance and an agreement will be met with the farm owners on the most suitable timing of work and amelioration noise during drilling activities.

6 IDENTIFICATION AND EVALUATION OF IMPACTS

6.1 INTRODUCTION

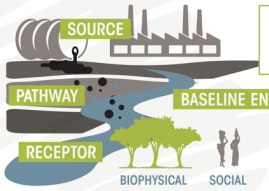
This chapters outlines ECCs method to identify and evaluate impacts arising from the proposed project. The findings of the assessment are presented in Chapter 7.

The evaluation and identification of the environmental and social impacts require the assessment of the project characteristics against the baseline characteristics, ensuring all potentially significant impacts are identified and assessed. The significance of an impact is determined by taking into consideration the combination of the sensitivity and importance or value of environmental and social receptors that may be affected by the proposed project, the nature and characteristics of the impact, and the magnitude of potential change. The magnitude of change (the impact) is the identifiable changes to the existing environment which may be negligible, low, minor, moderate, high, or very high; temporary or short term, long-term or permanent; and either beneficial or adverse.

This chapter provides the following:

- Details on the assessment guidance used to assess impacts;
- Lists the limitations, uncertainties and assumptions with regards to the assessment methodology;
- Details how impacts were identified and evaluated, and how the level of significance was derived; and
- Details how mitigation was applied in the assessment and how additional mitigation was identified.

IMPACT PREDICATION AND EVALUATION



ECC ESIA METHOD

- Predication and evaluation of impacts is a key step in the EIA process.
- The methods ECC follows to identify and evaluate the impacts arising from projects is outline in this diagram.

THE FOLLOWING PRINCIPLES ARE USED BY ECC FOR ASSESSMENTS

- International Finance Corporation standards and models, in particular Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017). (International Finance Corporation, 2012);
- International Finance Corporation CIA and Management Good Practice Handbook (International Finance Corporation, 2013) and,
- Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008).

DETERMINE THE SIGNIFICANCE OF AN IMPACT

SENSITIVITY AND VALUE OF A RECEPTOR
The sensitivity and value of a receptor is determined by identifying how sensitive and vulnerable a receptor is to change, and the importance of a receptor (internationally, nationally, locally)

NATURE AND CHARACTERISTICS OF THE IMPACT
The nature and characteristics of the impact is determined through consideration of the frequency, duration, reversibility and probability of the impact occurring.

MAGNITUDE OF CHANGE
The magnitude of change measures the scale or extent of the change from the baseline condition, irrespective of the value. The magnitude of change may alter over time, therefore temporal variation is considered (short-term, medium-term, long-term, reversible, reversible enivornmental assessment methodology.

ECC – NATURE OF IMPACT

BENEFICIAL (POSITIVE)
An impact that is considered to represent an improvement on the baseline or introduces a positive change.

ADVERSE (NEGATIVE)
An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.

ECC – TYPE OF IMPACT

DIRECT
Impacts causing an impact through direct interaction between a planned project activity and the receiving environment/ receptors.

INDIRECT
Impacts that result from other activities that are encouraged to happen as a result / consequence of the Project. Associated with the project and may occur at a later time or wider area

CUMULATIVE
Impacts that arise as a result of an impact and effect from the project interacting with those from another activity to create an additional impact and effect

REVERSIBILITY

REVERSIBLE
Impacts are reversible and recoverable in the future

PARTLY REVERSIBLE
Some parts of the impact can be reversed while others remain

IRREVERSIBLE
Impacts which are not reversible and are permanent

DURATION

TEMPORARY
Transient; a period of less than 1 year

SHORT TERM
Impacts that are likely to last for the duration of the activity causing the impact and are recoverable (1-5 years)

MEDIUM TERM
Impacts that are likely to continue after the activity causing the impact and are recoverable (5-15 years)

LONG TERM
Impacts that are likely to last far beyond the end of the activity causing the damage (greater than 15 years with impact ceasing after decommissioning of the project)

PERMANENT

MAGNITUDE OF CHANGE

VERY HIGH / UNKNOWN	Loss of resource, significantly affecting the long term quality and integrity of a resource; irreparable damage or loss of key characteristics, features or elements; or the magnitude is too great to quantify as it is unknown.
HIGH / MAJOR	Loss of resource, and quality and integrity of resource; severe damage to key characteristics, features or elements; or Large scale or major improvement of resources quality; extensive restoration or enhancement; major improvement of attribute quality.
MODERATE	Loss of resource, but not adversely affecting its integrity; partial loss of/damage to key characteristics, features or elements; or Benefit to, or addition of, key characteristics, features or elements; improvements of attribute quality.
LOW / MINOR	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element; or Minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element; some beneficial effect on attribute quality or a reduced risk of a negative effect occurring.
NONE / NEGLIGIBLE	Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or Very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element.

SCALE OF CHANGE - EXTENT / GEOGRAPHIC SCALE

ON-SITE
Impacts that are limited to the boundaries of the proposed project site

LOCAL
Impacts that occur in the local area of influence, including around the proposed site and within the wider community

REGIONAL
Impacts that affect a receptor that is regionally important by virtue of scale, designation, quality or rarity.

NATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.

INTERNATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.

PROBABILITY

IMPROBABLY (RARE)
The event may occur in exceptional circumstances yet, rarely occurs in the industry. The event could occur once every 100 years

LOW PROBABILITY (UNLIKELY)
The event has happened elsewhere yet, is unlikely to occur. The event could occur once every 10 years

MEDIUM PROBABILITY (POSSIBLE)
The event could occur under some circumstances. The event could occur once every 5 years.

HIGH PROBABILITY (LIKELY)
The event is expected to occur. The event could occur twice per year

DEFINITE (ALMOST CERTAIN)
The event will occur. The event could occur once per month

- To ensure the beneficial impacts are brought out in the assessment, green has been applied to ensure the different type of impact is clear.
- The significance of impacts has been derived at by applying the identified thresholds for receptor sensitivity and magnitude of change, as well as the definition of significance. Moderate and major adverse impacts are considered as significant.
- The following thresholds were therefore used to double check the assessment of significance had been applied appropriately; a significant impact would meet at least one of the following criteria:
- It exceeds widely recognized levels of acceptable change;
- It threatens or enhances the viability or integrity of a receptor or receptor group of concern; and
- It is likely to be material to the ultimate decision about whether or not the environmental clearance certificate is granted.

			SIGNIFICANCE OF IMPACT			
		Significance of Impact	Impacts are considered to be loca factors that are unlikely to be critical to decision-making	Impacts are considered to be important factors but are unlikely to be key decision-making factors. The impact will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value. Impacts are considered to be short-term, reversible and/or localized in extent.	Impacts are considered within acceptable limits and standards. Impacts are long-term, but reversible and/ or have regional significance. These are generally (but not exclusively) associated with sites and features of national importance and resources/ features that are unique and which, if lost, cannot be replaced or relocated.	Impacts are considered to be key factors in the decision-making process that may have an impact of major significance, or large magnitude impacts occur to highly valued/sensitive resource/receptors. Impacts are expected to be permanent and non-reversible on a national scale and/ or have international significance or result in a legislative non-compliance.
	Biophysical	Social		Low	Minor (2)	Moderate (3)	Major (4)
SENSITIVITY	A biophysical receptor that is protected under legislation or internation convention (CITIES) listed as rare, threatened or endangered IUCN specidies. Highly valued/ sensitive resource/ receptors.	Those affected people/ communities will not be able to adapt to changes or continue to maintain pre-impact livelihoods.	High (3)	Minor (3)	Moderate (6)	Major (9)	Major (12)
	Of value, importance/ rarity on a regional scale, and with limited potential for substitution; and/or not protected or listed (globally) but may be a rare or threatened species in the country; with little reslisence to ecosystem changes, important to ecosystem functions, or one under threat or population decline.	Able to adapt with some difficulty and maintain pre-impact status but only with a degree of support	Medium (2)	Low (2)	Minor (4)	Moderate (6)	Major (8)
	Not protected or listed as common/abundant; or not cirtical to other ecosystems functions.	Those affected are able to adapt with relative ease and maintain pre-impact status. There is no preceptible chnage to people's livelihood.	Low (1)	Low (1)	Low (2)	Minor (3)	Moderate (4)

SENSITIVITY AND VALUE

Low
Of value, importance or rarity on a local scale; and/or not particularly sensitive to change or has considerable capacity to accommodate a change.

Medium
Of value, importance or rarity on a regional scale, and with limited potential for substitution; and/or moderate sensitivity to change, or moderate capacity to accommodate a change.

High
Of value, importance or rarity on an international and national scale, and with very limited potential for substitution; and/or very sensitive to change or has little capacity to accommodate a change.

MITIGATION

Mitigation comprises a hierarchy of measures ranging from preventative environmental impacts by avoidance, to measures that provide opportunities for environmental enhancement. The mitigation hierarchy is avoidance; reduction at source; reduction at receptor level; repairing and correcting; compensation; remediation; and enhancement.

Mitigation measures can be split into three distinct categories, broadly defined as:

Standard practices and other best practice measures for avoiding and minimizing environmental impacts. These are considered as good practice measures.

Actions undertaken by the EIA process that influence the design process, through implementing design measures that would entirely avoid or eliminate an impact or modifying the design through the inclusion of environmental features to reduce the magnitude of change. These are considered as embedded mitigation.

Specified additional measures or follow-up action to be implemented to further reduce adverse impacts that remain after the incorporation of embedded mitigation. These are considered as additional mitigation.

The EIA is an iterative process whereby the outcomes of the environmental and social assessments inform the project.

The EMP provides the good practice mitigation measures and specified additional measures or follow-up action ECC has recommended for the project.

LOW – MAJOR (BENEFICIAL)

Impacts are considered to be beneficial to the environment and society:

Low (negative) 0 - 25
Impacts are considered to be local factors that are unlikely to be critical to decision-making.

Minor (negative) 25 - 50
Impacts are considered to be important factors but are unlikely to be key decision-making factors. The impact will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value. Impacts are considered to be short-term, reversible and/or localized in extent.

Moderate (negative) 50 - 75
Impacts are considered within acceptable limits and standards. Impacts are long-term, but reversible and/ or have regional significance. These are generally (but not exclusively) associated with sites and features of national importance and resources/ features that are unique and which, if lost, cannot be replaced or relocated.

Major (negative) 75 - 100
Impacts are considered to be key factors in the decision-making process that may have an impact of major significance, or large magnitude impacts occur to highly valued/sensitive resource/receptors. Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.

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6.2 Assessment Guidance

The principal documents used to inform the assessment method are:

- International Finance Corporation standards and models, in particular Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017) (International Finance Corporation, 2012);
- International Finance Corporation CIA and Management Good Practice Handbook (International Finance Corporation, 2013); and,
- Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008).

6.3 Limitations, Uncertainties and Assumptions

The following limitations and uncertainties associated with the assessment methodology were observed:

- Topic-specific assessment guidance has not been developed in Namibia. A generic assessment methodology was applied to all topics using IFC guidance and professional judgement.

A number of limitations and uncertainties were acknowledged during the ESIA process. In line with ESIA best practice, assumptions have been made based on realistic worst-case scenarios, thereby ensuring that the worst-case potential environmental impacts are identified and assessed. Table 6 contains the assumptions and uncertainties identified during the assessment process.

Where uncertainties exist, a cautious approach has been applied, allowing the worst-case scenario for potential impacts to be identified. Where limitation and uncertainties exist, assumptions have been made and applied during the assessment process. These have been clearly described in the baseline section.

TABLE 7 - LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS

LIMITATION / UNCERTAINTY	ASSUMPTION
Number of access roads and temporary drill campsites	The making of new tracks or access roads will be avoided, and existing tracks and routes will be used as far as possible. While every effort will be made to minimize environmental damage, in some cases it will be necessary to clear some bush to create small roads, which may be required for equipment to reach the site and for temporary campsites. If needed, cut lines have to be created by clearing of vegetation to have access to some parts of the EPL.
The program of exploration works is not confirmed	It is assumed that exploration work shall take a couple of months with two-to-three-week sampling projects at different times on different sites and with follow-up exploration drilling projects

LIMITATION / UNCERTAINTY	ASSUMPTION
	possible. Activities involve drilling; aerial or remote sensing; geophysical surveys; and mineral sampling. Pitting and trenching are unlikely and generally not favoured. If commercially viable concentrations can be defined by preliminary drilling, a next phase of advanced resource drilling operations is possible.
Number of workers, area they will come from and accommodation	It is planned that approximately four to eight people will be contracted for the proposed project. Most of the employees will stay in either Sesfontein or Opuwo; contractors may camp on exploration sites / farms, depending on approval from farm owners.
Structures	No permanent infrastructure development will take place in the greenfield phase of operations which will span the 3-year award period. Depending on results, the proponent will set up temporary field camps required to house field staff for the purpose of sample collection, ground surveys and drilling. The camps will be such that their locations can be fully rehabilitated post completion of the field work.

7 IMPACT ASSESSMENT FINDINGS AND PROPOSED MITIGATION MEASURES

This chapter presents the findings of the ESIA for the proposed project as per the ESIA process, scope and methodology set out in Chapter 2 and Chapter 6. A range of potential impacts have been identified that may arise as a result of the proposed project. The aim of this ESIA report is to focus on the significant impacts that may arise as a result of the proposed project. This chapter therefore only considers the significant impacts and or those that may have specific interest to the community and stakeholders. A summary of impacts that are considered significant is discussed in this section.

When undertaking the assessment exercise, the design of the proposed project and best practice measures were considered to ensure the likely significant effects and any required additional mitigation measures were identified. A summary of the potential impacts and mitigation and or control measures are discussed below.

The following topics were considered during the scoping phase:

- Water (surface - and groundwater);
- Soil;
- Landscape (visual impacts, sense of place);
- Socio-economics (employment, demographics, and land-use);
- Noise;
- Ecology (fauna and flora);
- Air quality (emissions, pollutants and dust); and
- Heritage (including culture, history, archaeology and palaeontology).

Table 7 sets out the findings of the scoping assessment phase. Activities that could be the source of an impact have been listed, followed by receptors that could be affected. The pathway between the source and the receptor has been identified where both are present. Where an activity and or receptor has not been identified, an impact is unlikely, thus no further assessment or justification is provided. Where the activity, receptor and pathway have been identified, a justification has been provided documenting if further assessment is required or not required.

Due to the nature and localised scale of the exploration activities, and the environmental context of the EPL, the potential environmental and social effects are limited and unlikely to be significant. Aspects that prompted uncertainty relate to the potential increase in movements and the presence of people, which may cause the introduction of illegal and covert activities such as poaching, stock theft and the collection of organisms. Similarly, the potential of

accidental veld fires may increase. In both cases the terrestrial ecology and biodiversity of Namibia is the receptor, although local landowners and their neighbours may experience these adversities firsthand. The recommended mitigation measures are contained in Table 7.

Cumulative impacts because of physical disturbance, the nuisance of noise and dust and the loss of sense of place may be experienced as well; in this case the receptors are the landowners, neighbours, visitors, and tourists. Noise may influence some organisms as well, though. Mitigation measures are recommended and contained in Table 8.

All precautions must be taken to prevent damage to heritage sites when a site with archaeological remains is discovered because of the exploration activities. The chance find procedure will be implemented in such a case. With the necessary mitigation measures in place (Table 8), the significance of the impact reduces from moderate to minor.

TABLE 8- SCOPING ASSESSMENT FINDINGS AND PROPOSED MITIGATION MEASURES

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
Site operations such as maintenance activities, loss of containment, accidental fuel / hydraulic fluid leaks and spills, or similar sources.	**Groundwater quality**	Hydrocarbon leaks and spills could enter the aquifer causing contamination.	Adverse Direct Partly Reversible Moderate Short term Regional Possible	Medium	Minor	Minor (4)	- Good housekeeping - Training through toolbox talks and induction - All stationary vehicles and machinery must have drip trays to collect leakages of lubricants and oil - Spill kits and absorption material available during fuel delivery, storage or use - Accidental spills and leaks (including absorption material) to be cleaned as soon as possible - Major spills to be reported, also to the authorities	Low (2)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							- Maintenance and service schedules on equipment is in place - Store bulk fuel in adequate containment areas (non-porous surface, bunded) - No damaged containers in use - Preventative measures will be in place when service and maintenance activities are done (drip trays, non-porous surfaces, funnels, non-damaged containers) - Refuelling will be done in areas with adequate preventative	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							measures in place	
Potential spillages of drill fluid, lubrication, etc. or drilling that penetrate the groundwater table.	**Groundwater quality**	Hydrocarbon leaks and spills could enter the aquifer causing contamination.	Adverse Indirect Partly Reversible Minor Short term Local Possible	Low	Minor	Low (2)	- Ensure spill kits and preventative measures (e.g., drill pads) are in place at exploration sites - Consider alternative sites when water table is too high - Drill system should be dug to direct any accidental spills into sumps - Extraction volumes of water shall be minimal during exploration and where possible, water from existing water sources shall be used	Low (1)
Discharge and infiltration of non-	**Water**	Wastewater can contaminate surface and	Adverse Direct Partly	Low	Minor	Low (2)	- Wastewater discharges will be contained	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
contained wastewater		groundwater	Reversible Minor Short term Regional Unlikely				- Workers will be made aware about the importance of wastewater management - Good housekeeping - Ensure prompt clean-up of spills	
Inadequate management of solid waste	**Water**	Waste items and litter can pollute drainage channels	Adverse Cumulative Reversible Minor Temporary On-site Unlikely	Low	Low	Low (1)	- Good housekeeping - Training and awareness through toolbox-talks and induction - Implement a Standard Operational Procedure (SOP) on waste management, for all kinds of waste possible on-site (e.g., domestic, mineral, hydrocarbons, hazardous)	Low (1)
Inadequate management of hazardous and hydrocarbon waste	**Soil**	Pollution of soil	Adverse Direct Reversible Minor Short term	Low	Minor	Low (2)		Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
			On-site Possible				- Avoid hazardous waste on site - Implement a culture of correct waste collection, waste segregation and waste disposal	
Vegetation clearing for access routes, drill pads and temporary contractors camp	**Terrestrial ecology and biodiversity**	Loss / alteration of terrestrial habitats and loss of species	Adverse Direct Reversible Minor Short term On-site Possible	Low	Minor	Low (2)	- Use existing roads for access to avoid new tracks and cut lines - Minimise clearance areas through proper planning of the exploration activities - Where necessary, rescue and relocate plants of significance - Promote revegetation of cleared areas upon completion of	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							exploration activities	
Ambient noise as a result of machinery and equipment-use and movement (e.g., drill rigs, generators, vehicles) and movement (also through the use of airborne equipment)	**Terrestrial ecology and biodiversity**	Residing, slow-moving and nesting organisms can be disturbed	Adverse Direct Reversible Minor Short term On-site Likely	Low	Minor	Low (2)	- Restrict excessive noise to areas of activities only - Restrict excessive noise to daytime hours (7 am to 5 pm weekdays and 7 am until 1 pm on Saturday) - No activities between dusk and dawn - Drill equipment shall be suitably positioned to ensure that noisy equipment is away from receptors - All equipment to be shut down or throttled back between periods of	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							use, - Respect civic aviation regulations about the use of a drone	
Increased movement of vehicles, machinery and equipment	**Terrestrial ecology and biodiversity**	Residing and nesting organisms such as reptiles can be disturbed, injured or killed	Adverse Direct Partly reversible Moderate Short term On-site Possible	Low	Minor	Low (2)	- Restrict movements to areas of activities only - Use existing tracks and routes only - Identify rare, endangered, threatened and protected species in advance - Route new tracks around protected species and sensitive areas - Restrict movements to daytime hours - Make workers aware and notify them on avoiding	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							some areas - No driving off designated access routes (into the bush) / off-road driving - No animals or birds may be collected, caught, consumed or removed from site	
Increased disturbance of areas with natural vegetation	**Terrestrial ecology and biodiversity**	Alien species and weeds can be introduced to the area	Adverse Direct Reversible Minor Short term On-site Possible	Low	Minor	Low (2)	- All project equipment arriving on site from an area outside of the project or coming from an area of known weed infestations (not present on the project site) should have an internal weed and seed inspection	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							completed prior to equipment being used - Monitor areas of activity for weed and alien species - Eradicate weeds and alien species as soon as they appear - Make workers aware about alien species and weeds	
Vegetation clearing	**Soil**	Increased exposure due to possible vegetation clearance can cause soil erosion	Adverse Direct Reversible Moderate Short term On-site Possible	Low	Minor	Low (2)	- Ensure erosion control and prevention measures are in place when vegetation clearance is required - Where necessary, plan access routes, drill pads and camps outside of existing	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							drainage lines - Where necessary, install diversions to curb possible erosion - Restore drainage lines when disturbed	
Drilling and the use of drilling equipment	**Soil**	Loss of soil quality due to mixing of earth matter, trampling and compaction	Adverse Direct Reversible Moderate Short term On-site Possible	Low	Minor	Low (2)	- Limit the possibility of compaction and creating of a hard subsurface - Limit the possibility of trampling - Topsoil should be stockpiled separately, and re-spread during rehabilitation - During drilling oil absorbent matting should be placed under and around the rig	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							- Equipment must be in a good condition to ensure that accidental oil spills do not occur and contaminate soil - In the event of spills and leaks, polluted soils must be collected and disposed of at an approved site - Limit the possibility to mix mineral waste with topsoil	
Terrestrial ecology and biodiversity	Accidental and uncontrolled fire	Destroys grazing and kill living organisms	Adverse Direct Reversible Moderate Temporary Local Possible	High	Minor	Moderate (6)	- Restrict movements of people to areas of activities only - Train people and raise awareness about veld fires and firefighting - No open fire outside designated areas	Minor (3)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							- Ensure proper cooking facilities at fly camps - No cigarette buds are discarded but contained and disposed of at an appropriate facility - Proper fire hazard identification signage to be placed in areas that store flammable material (e.g., hydrocarbons and gas bottles) - Control and reduce the potential risk of fire by segregating and safe storage of materials - Avoid potential sources of ignition by prohibiting smoking in and around facilities	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							- Firefighting equipment and fire breaks should always be at designated areas and should be maintained regularly	
Community and livestock	Airborne surveying over the EPL, possible low flying	Perceived impact from surveying activities on livestock and humans	Adverse indirect Reversible Minor Temporary Local Unlikely	Low	Minor	Low (2)	- Prior to conducting aerial surveying, both directly and indirectly affected parties should be informed in writing of exploration activities at least 2 weeks prior to conducting the aerial surveys. The following information is to be included in the written communication sent - Company name,	**Low (1)**

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							- Survey dates, time and duration, - Purpose of the survey, - Flight altitude, - Survey location, Map of survey area and flight lines, and - Contact details for enquiries. Compliance with all applicable laws and agreements Maintain continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon Ensure appropriate supervision of all	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							activities - Restrict surveying activities to daytime hours (7 am to 5 pm weekdays and 7 am until 1 pm on Saturday)	
Drilling activities, movement of machinery and vehicles	**Heritage**	Potential damage to cultural heritage sites	Adverse Direct Partly Reversible High Permanent On-site Possible	High	Minor	Moderate (6)	- Implement a Chance Find Procedure - Raise awareness about possible heritage finds - Report all finds that could be of heritage importance - In case archaeological remains to be uncovered, cease activities and the site manager has to assess and demarcate the area - Project manager to visit the site and determine whether work can proceed	Minor (4)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							without damage to findings, mark exclusions boundary and inform ECC with GPS position - If needed, further investigation has to be requested for a professional assessment and the necessary protocols of the Chance Find Procedure have to be followed, - Archaeologist will evaluate the significance of the remains and identify appropriate action, (record and remove; relocate or leave premises, depending on the nature and value of the remains), - Inform the police if the remains are human, - Obtain appropriate	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							clearance or approval from the competent authority, if required, and recover and remove the remains to the National Museum or National Forensic Laboratory as directed.	
Drilling activities, resulting into dust emissions …… Windblown dust from exposed/cleared land during exploration activities	**Community**	Visual disturbance and loss of Sense of Place	Adverse Direct Reversible Moderate Temporary Local Likely	High	Minor	Moderate (6)	– Position drill equipment in such a way that it is out of sight from human receptors – Apply dust suppression where possible – Restrict speed of vehicles (<30km/h) – Specific activities that may generate dust and impact on residents shall be avoided during high	Minor (4)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							wind events – All vehicles and machinery / equipment to be shut down or throttled back between periods of use – Barriers or fences shall be used if drilling occurs in locations that may affect residents or livestock – Residents need to be informed at least two weeks in advance that drilling operations are within 1km of their property – Maintain good housekeeping – Continuous engagement with	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon	
Movement of vehicles, exploration activities	**Community**	Create conflict with farmers about access, leaving gates open, suspicious movements, loss of farming area, etc.	Adverse Indirect Reversible Minor Short term On-site Likely	Low	Minor	Low (2)	– Ensure documented permission to enter the site – Farmers should have access to all farm areas at all times – Residents shall be provided at least two weeks' notice of drilling operations within 1 km of their property – Existing water points and feeding area need to be left	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							unaffected – Use existing roads for access, avoid new tracks / cut lines, – Compliance with all applicable laws and agreements – Continuous engagement with residents to identify any concerns or issues, and mitigation and management measures agreed upon	
Movement of vehicles, exploration activities	**Community**	Presence of exploration team can be blamed for stock theft and poaching	Adverse Cumulative Reversible Minor Temporary	Low	Low	Low (1)	– Develop and implement an operation manual or procedures to work on communal land and implement monitoring	Low (1)

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
			Local Unlikely				programmes thereafter – Maintain continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon – Ensure appropriate supervision of all activities – Raise awareness and sensitize employees about contentious issues such as stock theft and poaching – Accidents and incidents need to be reported to project	

DESCRIPTION OF ACTIVITY	RECEPTOR	DESCRIPTION OF IMPACT	DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							manager and recorded in incident register	
Exploration activities	**Community**	Triggers job creation, skills development and opportunities for the local economy	Beneficial Direct Reversible Minor Short term Local Possible	Medium	Low	Low (2)	– Maximize local employment – As far as possible promote local procurement – Enhance development of local skills where possible	Low beneficial

7.1.1 Further Consideration: Groundwater impacts

Generally, exploration activities are not substantial users of water, nevertheless if operations are proposed to take place in areas where the baseline groundwater potential fluctuates between low and no groundwater, as in the current project area, it is vital that accurate estimations of aquifer characteristics be obtained first from pump tests conducted on existing boreholes in an area.

Through the application of the EIA methodology presented in Section 2, the conclusion of the assessment is that without detailed further information on the characteristics of the aquifer, the risk remains high for local groundwater abstraction to take place.

TABLE 9: SUMMARY OF EFFECTS

ACTIVITY	RECEPTOR	IMPACT	NATURE OF IMPACT	VALUE & SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT
Abstraction of groundwater for exploration work (i.e., drilling)	Groundwater	Additional abstraction may cause a reduction in groundwater capacity and yield on an already stressed	Adverse Direct Partly Reversible High/Major Medium term Local Possible	Medium	Moderate	**Moderate**

7.1.2 Further Consideration: Noise and Visual impacts

Exploration and mining activities have the potential to disrupt the sense of place, a collective term to describe the special and uniqueness of an area, mostly through the amplifying effects of noise, dust, machinery movements, and visual intrusion. Collectively, the activities have a negative impact on the naturalness of the landscape with the result to temporarily alter and affect the lifestyles of receptors (locals and tourists). Such disturbances brought about by exploration activities are often-short term and reversible. For the duration of the proposed project, communication with the affected parties and key stakeholders shall be maintained. In the event where the drill site is located in proximity to the receptors, measures will be taken to reduce the visual impacts.

Through the application of the ESIA methodology presented in Section 2 the conclusion of the assessment is that with additional mitigation, the significance of effect is expected to be minor. No additional studies are considered necessary to further assess this impact.

TABLE 10 - SUMMARY OF EFFECTS

ACTIVITY	RECEPTOR	IMPACT	NATURE OF IMPACT	VALUE & SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT

ACTIVITY	RECEPTOR	IMPACT	NATURE OF IMPACT	VALUE & SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT
Placement and operations of heavy machinery and drill rigs, equipment and the creation of laydown areas on site	Neighbours / farmers / tourists	Visual impacts (obscure views, create visual contrast, dust, intrusive objects), movement of heavy machinery, nuisance (noise), loss of naturalness	Adverse Direct Reversible Local / on-site Short term Certain	Medium	Minor	Minor Adverse

The following additional mitigation measures have been identified in addition to those presented in the EMP and shall be communicated to the proponent to ensure environmental effects are minimised as reasonably practicable:

- Interested and affected parties will be communicated to prior to the commence of the exploration activities
- Reasonable time frames for duty will be place e.g., no drilling when it is dark
- A site notice of project will be available at the site during the course of the proposed project
- Adequate procedures for drilling activities will be encouraged e.g., no hammering of drill rods with steel hammers
- Drill equipment shall be suitably positioned to ensure that noisy equipment is as far away from human receptors as possible
- Noise suppression measures shall be applied by all drilling staff (e.g., earmuffs are mandatory) and if drilling occurs in locations that may affect residents
- Residents shall be provided at least two weeks' notice of drilling operations within 1km of their property, and
- The proponent shall undertake continual engagement with residents.

The potential impact therefore is not considered significant as it does not widely exceed recognised levels of acceptable change; does not threaten the integrity of the receptors, nor is it material to the decision-making.

8 ENVIRONMENTAL MANAGEMENT PLAN

The EMP for the proposed project is presented in Appendix A. It provides management options to ensure the impacts of the proposed project are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary.

The management measures should be adhered to during all stages of the exploration activities. All persons involved and partaking in the proposed activities should be made aware of the measures outlined in the EMP to ensure activities are conducted in an environmentally responsible manner.

The objectives of the EMP are:

- To include all components of the development and operations of the project;
- To prescribe the best practicable control methods to lessen the environmental impacts associated with the project;
- To monitor and audit the performance of operational personnel in applying such controls; and
- To ensure that appropriate environmental training is provided to responsible operational personnel.

9 CONCLUSION

ECC's ESIA methodology was used to undertake the environmental assessment for the proposed exploration activities on EPL 7974, to identify if there is potential for significant effects to occur as a result of the proposed project.

Through the scoping process, the only risk to the environment is related to the cumulative impacts as a result of physical disturbance, nuisance of noise and dust and the loss of sense of place, thereby impacting human receptors in the area. Impacts with respect to airborne dust are expected to be limited to vehicular traffic and drilling activities. There will be some release of exhaust fumes from machinery that will impact the immediate vicinity but will be of short duration. Additionally, there will be associated drilling and machinery noise, which could be a disturbance to immediate neighbours, but this will be of short duration as well. Through further analysis and identification of mitigation and management methods, the assessment concludes that the likely significance of effects on humans from the cumulative impacts of physical disturbance, noise, dust and emissions will be a temporary qualitative reduction in the sense of place and expected to be minor. Prior awareness and communication about the project shall be encouraged.

Due to the increased movements and presence of people, there is a potential that illegal and covert activities such as poaching, stock theft and the collection of organisms can be introduced to the area. Similarly, the potential of accidental veld fires may increase. In both cases the terrestrial ecology and biodiversity of Namibia is the receptor, although the locals may experience these adversities firsthand. Through this investigation the significance of both impacts is indicated as moderate. In both cases numerous mitigation measures, with proven national success, exist and were also applied to reduce the significance to minor.

All precautions will be taken to prevent damage to heritage sites, as a result of the exploration activities. The chance find procedure will be implemented in such a case. With the necessary mitigation in place, the significance reduces from moderate to minor.

All other social and environmental receptors were scoped out as significant effects were unlikely and therefore no further assessment was deemed necessary. Various best practice and mitigation measures have been identified to avoid and reduce effects as far as reasonably practical, as well as ensure the environment is protected and unforeseen effect and environmental disturbances are avoided.

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APPENDIX A- EMP








ECC-88-338-REP-31-D

ENVIRONMENTAL MANAGEMENT PLAN

EXPLORATION ACTIVITIES ON EPL 7974

FOR BASE AND RARE METALS, INDUSTRIAL MINERALS, PRECIOUS METALS AND SEMI-PRECIOUS STONES, KUNENE REGION

PREPARED FOR VOTORANTIM METALS NAMIBIA (PTY) LTD

JUNE 2021

TITLE AND APPROVAL PAGE

Project Name:	Environmental Management Plan for Exploration activities on EPL 7974 for Base and Rare Metals, Industrial Minerals, Precious Metals and Semi-precious stones, Kunene Region.
Project Number:	ECC-88-338-REP-31-D
Client Name:	Votorantim Metals Namibia (Pty) Ltd
Ministry Reference:	N/A
Status of Report:	Final for submission to the government
Date of issue:	April 2021 (Updated in June 2021)
Review Period	N/A

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DEFINITIONS AND ABBREVIATIONS

ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
MEFT	Ministry of Environment, Forestry and Tourism

1 INTRODUCTION

1.1 BACKGROUND TO THE PROPOSED PROJECT

Environmental Compliance Consultancy (ECC) has been engaged by the proponent (Votorantim Metals Namibia (Pty) Ltd) to undertake an Environmental and Social Impact Assessment (ESIA) and an Environmental Management Plan (EMP) in terms of the Environmental Management Act, No. 7 of 2007 and its regulations of 2012. An application for an environmental clearance will be submitted to the relevant competent authorities, the Ministry of Mines and Energy (MME) and the Ministry of Environment, Forestry and Tourism (MEFT).

Votorantim is a large international group who undertakes mineral exploration activities in Namibia. The proposed low impact exploration activities will be undertaken on EPL 7974 for base and rare metals, industrial minerals, precious metals and semi-precious stones. The proposed projects area lies mainly in the Kunene Region. The proposed project area lies mainly near the D3705 road, which passes east of the EPL. EPL 7974 is located approximately 45 km north of the Sesfontein village. The D3705 road can be used to access the site. The Etosha National Park is located more than 100km east of the EPL.

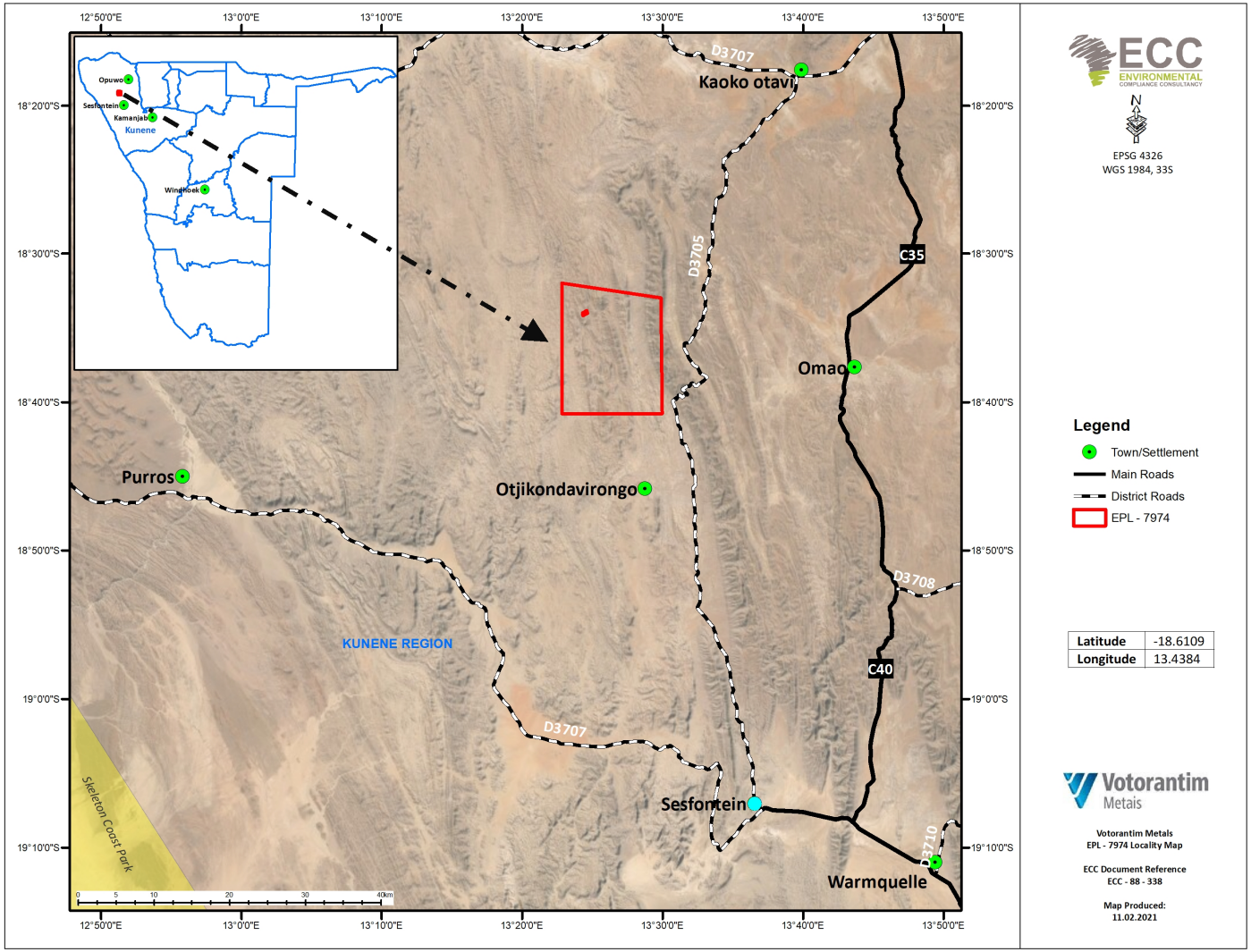


FIGURE 1 – LOCATION OF EPL 7974

1.2 Environmental Regulatory Requirements

The proposed project is considered as a listed activity as stipulated in the Environmental Management Act, No. 7 of 2007 and the Environmental Impact Assessment Regulation, No. 30 of 2012. As a listed activity an application for an environmental clearance certificate is required. An Environmental Scoping Report and EMP are required as part of the environmental clearance certificate application, as well as to support the decision-making process. This report presents the EMP and has been undertaken in accordance with the requirements of the Environmental Management Act, No. 7 of 2007 and its regulations.

1.3 Purpose and Scope of this Report

This EMP provides a logical framework, proposed mitigation measures and management strategies for the exploration activities associated with the proposed project, in this way ensuring that the potential environmental and social impacts are mitigated and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined in the EMP are the protocols, procedures and roles and responsibilities to ensure the management arrangements are effectively and appropriately implemented.

This EMP forms an appendix to the environmental scoping report and has been based on the findings of the assessment; therefore, the environmental scoping report should be referred to for further information on the proposed project, assessment methodology, applicable legislation, and assessment findings.

This EMP is a live document and shall be reviewed at predetermined intervals, and / or updated when the scope of works alters, or when further data / information can be added. All personnel working on the project will be legally required to comply with the standards set out in this EMP.

The scope of this EMP includes all activities carried out during the exploration stage in search of base and rare metals, industrial minerals, precious metals and semi-precious stones on EPL 7974.

1.4 Management of this EMP

The proponent, Votorantim Metals Namibia (Pty) Ltd, will hold the environmental clearance certificate for the proposed project and shall be responsible for the implementation and management of this EMP. Prior to the exploration activities, this EMP shall be reviewed, amended as required and approved for implementation. The implementation and management of this EMP and thus the monitoring of compliance shall be undertaken through daily duties and activities as well as monthly inspections.

This EMP shall be circulated to all contractors and made available on ECC's website.

1.5 Limitations, Uncertainties and Assumptions of this EMP

This EMP does not include measures for compliance with statutory occupational health and safety requirements. This will be provided in the safety management plan to be developed by the proponent.

Where there is any conflict between the provisions of this EMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, project approval conditions, permits, standards, guidelines and relevant laws), the contract and statutory requirements are to take precedence.

The information contained in this EMP has been based on the project description as provided in the environmental scoping report. Where the design or exploration methods alter, this EMP may require updating and potential further assessment undertaken.

1.6 Environmental Consultancy

Environmental Compliance Consultancy, a Namibian consultancy registration number CC/2013/11401, has prepared this document on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa in the public and private sector. ECC is independent of the proponent and has no vested or financial interested in the proposed project expect for fair remuneration of professional services rendered.

All compliance and regulatory requirements regarding this document should be forwarded by email or post to the following address:

Environmental Compliance Consultancy
PO BOX 91193
Klein Windhoek, Namibia
Tel: +264 81 669 7608
Email: info@eccenvironmental.com

2 PROJECT MANAGEMENT PERSONNEL

The proponent shall provide a project team to oversee and undertake the preparation and exploration activities, which shall be composed of the proponent's personnel and contractors. A nominated role shall be identified to ensure the management and implementation of this EMP throughout the duration of the project, which shall be supported by the proponent.

2.1 Organisational Structure, Roles and Responsibilities

The proponent shall be responsible for:

- Ensuring all members of the project team, including contractors, comply with the procedures set out in this EMP;
- Ensuring that all personnel are provided with sufficient training, supervision, and instruction to fulfil this requirement; and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this EMP, and meet the responsibilities listed above. The key personnel and environmental responsibilities of each role through the project life are presented in Table 1.

TABLE 1 - ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITIES & DUTIES
Proponent	– Overall responsibility for the implementation and management of this EMP; – Ensure the environmental policy is communicated to all personnel throughout the proposed project and ensure that employees, contractors and visitors understand and adhere to the EMP; – Responsible for providing the required resources (including financial and technical) to complete the required tasks; – Appoint supervisors such as an exploration (project) manager and a site manager; – Ensure that all employees, contractors and visitors are inducted on safety measures.
Exploration Manager	– Responsible for ensuring compliance with this EMP including overseeing all day to day activities during the duration of the project, including routine and non-routine maintenance works, as well as the decommissioning of the project; – Ensure adequate resources are made available for implementation of this EMP; – Responsible for the management, maintenance and revisions of this EMP; – Ensure all personnel are aware of the commitments made in this EMP and any other relevant regulatory requirements applicable to the project; – Ensure all employees and contractors participate in a site induction process prior to commencing work on the project;

	– Maintain the community issues and concern register, and keep records of complaints; – Ensure that best environmental practice is undertaken throughout the duration of the project; and – Report any non-compliance or accidents to the regulatory authority.
Site Manager (or nominated supervisor)	– Ensure that all employees, contractors and visitors to the site are conversant with the requirements of this EMP, relevant to their roles on site and adhere to this EMP at all times; – Provide environmental awareness / management training and site inductions for all employees, contractors and visitors; – Monitor daily operations and ensure adherence by personnel to the EMP; – Receive, respond to and record complaints; and – Report any non-compliance or accidents to the explorations (project) manager.
Employees (and contractors and visitors where applicable)	– Responsible for being compliant with this EMP throughout the project; – Adhere to this EMP at all times; – Ensure attendance of site inductions; – Ensure appropriate briefings for certain activities have been provided and are fully understood; and – Report any operations and conditions that deviate from the EMP or any non-compliant issues or accidents to the site manager and exploration manager.

2.2 CONTRACTORS

Any contractors hired during the exploration activities or for any accessory works for the project, or contractors appointed for maintenance activities, shall be compliant with this EMP, and shall be responsible for the following:

- Undertaking activities in accordance with this EMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements;
- Implementing appropriate environmental management measures;
- Reporting of environmental issues, including actual or potential environmental incidents and hazards, to the Exploration Manager; and
- Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported.

2.3 EMPLOYMENT

The proponent (and all contractors) shall comply with the requirements of the Regulations for Labour, Health and Safety and any amendments to these regulations. The following shall be complied with:

- In liaison with local government, community, stakeholders and relevant authorities the proponent shall ensure that local people have access to information about job

opportunities and are considered first for construction / maintenance contract employment positions;

- The number of job opportunities shall be made known together with the associated skills and qualifications;
- The maximum length of time the job is likely to last for shall be clearly indicated;
- Foreign workers with no proof of permanent legal residence shall not be hired; and
- Every effort shall be made to recruit from the pool of unemployed workers living in the local area.

3 COMMUNICATION AND TRAINING

In order to ensure potential risks and impacts are minimised, it is vital that personnel are appropriately informed and trained on operational procedures that include the above mitigation measures. It is also important that regular communications are maintained with all the stakeholders and made aware of potential impacts and how to minimise or avoid them. This section sets out the framework for communication and training in relation to the EMP.

3.1 COMMUNICATIONS

During exploration, the exploration manager and / or site manager shall communicate any environmental issues to the project team through the following means (as and when required):

- Site induction;
- Audits and site inspections;
- Toolbox talks, including instruction on incident response procedures; and
- Briefings on key project-specific environmental issues.

This EMP shall be distributed to the exploration team including any contractors and personnel working on the exploration site to ensure that the environmental requirements are adequately communicated. Key activities and environmentally sensitive operations shall be briefed to workers and contractors.

During the exploration activities, communications between the management team shall include discussing any complaints received and actions to resolve them, any inspections, audits or non-conformance with this EMP, and any objectives or target achievements.

3.2 ENVIRONMENTAL EMERGENCY AND RESPONSE

Table 2 contains a list of numbers to be contacted in case of an emergency. All personnel will be made aware of these numbers.

TABLE 2 – EMERGENCY CONTACT DETAILS

TOWN	AMBULANCE	POLICE	FIRE BRIGADE
Opuwo	+264 (65) 27-0326	+264 (65) 27-3041	-

3.3 COMPLAINTS HANDLING AND RECORDING

Any complaints received verbally by any personnel on the project site shall be recorded by the site manager or the receiver, including the name and contact details of the complainant, date and time of the complaint, and the nature of the complaint. The information shall be given to the exploration manager who is overall responsible for the management of complaints and will provide a written response to the complainant. The site manager shall inform the exploration manager of issues, concerns or complaints. It is the duty of the both the site manager and

exploration manager to maintain a complaint register that details the name of the complainant, date and time of the complaint and action taken to resolve the issues.

The workforce shall be informed about the complaints register, its location and the person responsible, in order to refer residents or the general public who wish to lodge a complaint. The complainant shall be informed in writing of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are to be recorded in the register.

The complaints register shall be kept for the duration of the project and will be available for government or public review upon request.

3.4 Training and Awareness

All personnel working on the project shall be competent to perform tasks that have the potential to cause an environmental impact. Competence is defined in terms of appropriate education, training, and experience.

3.4.1 Site induction

All personnel involved in the project shall be inducted to the site with a specific environment and social awareness training component. The environment and social awareness training shall ensure that personnel is familiar with the principles of this EMP, the environment and social aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The exploration manager shall ensure a register of completed training is maintained.

The site induction should include, but not limited to the following:

- A general site-specific induction that outlines:
    - What is meant by “environment” and “social”
    - Why the environment needs to be protected and conserved
    - How exploration activities can impact on the environment
    - What can be done to mitigate against such impacts
- The inductee’s role and responsibilities with respect to implementing the EMP;
- The sites environmental rules;
- Details of how to deal with, and who to contact if environmental problems should they occur;
- Basic vegetation clearing principals and species ID sheets;
- Noise control measures for drilling in proximity to residents;
- Focal themes such as compliance, reporting of accidents and incidents, good housekeeping and standard procedures for waste management;
- The potential consequences of non-compliance with this EMP and relevant statutory requirements; and

- The role of responsible people for the project.

4 REPORTING, COMPLIANCE AND ENFORCEMENT

4.1 Environmental Inspections and Compliance Monitoring

4.1.1 Daily compliance monitoring

A copy of this EMP shall be on site throughout the project and shall be available upon request. It is the responsibility of the exploration manager to ensure this EMP is complied with through their daily roles. Daily, weekly and monthly inspections will be undertaken. Any environmental problems or risks identified shall be notified to the exploration manager and actioned as soon as is reasonably practicable.

4.1.2 Monthly compliance monitoring

Monthly inspections shall be undertaken by the exploration manager to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. Any non-conformance shall be recorded, including the following details: a brief description of non-conformance, the reason for the non-conformance, the responsible party, the result (consequence), and the corrective action taken and any necessary follow up measures required.

4.1.3 Reporting

There shall be a requirement to ensure that any incident or non-compliance, including any environmental issue, failure of equipment or accident, is reported to the exploration manager.

4.2 Environmental Permits

Whilst the Water Resources Management Act, No. 11 of 2013 is not enforced, it is best practice to adhere to its stipulations while ensuring compliance with the Water Act, No. 54 of 1956, which is maintained still. A licence to abstract and use water may be required if boreholes are to be created, although this is unlikely. If required, the proponent will apply for relevant permits and shall operate in accordance with any conditions of the licence.

Some vegetation will be cleared on the EPL to allow exploration activities to commence. It is unlikely that an area greater than 15ha will be cleared, therefore a permit under the Forest Act, No. 12 of 2001 as amended by the Forest Amendment Act, No. 13 of 2005 and its regulations of 2015 is not required.

4.3 Non-compliance

4.3.1 Non-compliance event

Where it has been identified that works are not compliant with this EMP, the exploration manager shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of the EMP are not upheld, a non-conformance and corrective action notice shall be produced. The notice shall be generated during the inspections and the exploration manager shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming.

A non-compliance event / situation, for example, is considered if:

- There is evidence of a contravention of this EMP and associated indicators or objectives;
- The exploration manager and / or contractor have failed to comply with corrective or other instructions issued by the exploration manager or qualified authority; or
- The exploration manager and / or contractor fail to respond to complaints from the public.

Activities shall be stopped in the event of a non-compliance until corrective action(s) has been completed.

4.4 INCIDENT REPORTING

The exploration manager must ensure that an accident and incident (including minor or near-miss) reporting system is maintained so that all applicable statutory requirements are covered. For any serious incident involving a fatality, or permanent disability, the incident scene must be left untouched until witnessed by a representative of the police. This requirement does not preclude immediate first aid being administered and the location being made safe.

The exploration manager must investigate the cause of all work accidents and significant incidents and must provide the results of the investigation and recommendations on how to prevent a recurrence of such incidents. A formal root-cause investigation process should be followed.

4.4.1 DISCIPLINARY ACTION

This EMP is a legally binding document and non-compliance with it shall result in disciplinary action being taken against the perpetrator(s). Such action may take the form of (but is not limited to):

- Fines / penalties;
- Legal action;
- Monetary penalties imposed by the proponent on the contractor;
- Withdrawal of licence(s); and
- Suspension of work.

The disciplinary action shall be determined according to the nature and extent of the transgression / non-compliance, and penalties are to be weighed against the severity of the incident.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1 Environmental Performance Measurement

This chapter provides a register of environmental risks and issues, which identifies mitigation and monitoring measures, as well as roles responsible. This register will be subject to regular review by the exploration manager and updated when necessary.

The exploration manager and / or site manager (if applicable) will use this register to undertake monthly inspections (see next section) to ensure the project is compliant with this EMP.

5.2 Objectives and Targets

Environmental objectives for the project are as follows:

- Zero pollution incidents;
- Minimal vegetation clearing and earthworks;
- Protect local flora and fauna;
- Minimise the generation of waste; and
- Minimal interruption to farm activities.

5.3 Register of Environmental Risks and Issues

An environmental review of the proposed project has been completed to identify all the commitments and agreements made within the environmental scoping report. From this, a schedule of environmental commitments and risks has been produced (Table 3), which details deliverables including measures identified for the prevention of pollution or damage to the environment during exploration.

Table 3 provides a register of environmental risks and issues, which identifies mitigation and monitoring measures, as well as the responsible person. This register will be subject to regular review by the exploration manager and updated when necessary. The exploration manager will use this register to undertake monthly inspections to ensure the project is compliant with this EMP.

TABLE 3 - ENVIRONMENTAL RISKS AND ISSUES, AND MITIGATION AND MONITORING MEASURES

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
Access and site preparation	– Limiting access to the farms, – Disruption of farm operations (leaving gates open, loss of farming area, interference at waterpoints) – Potential conflict with farm owners and neighbours (suspicious movement, poaching, stock theft, field fires, etc.)	– Ensure documented permission to enter farms, – Farmers should have access to all farm areas at all times, – Existing water points and feeding area need to be left, unaffected, – Use existing roads for access to avoid new tracks and cut lines, – Compliance with all applicable laws and agreements	Daily	Exploration manager and / or site manager (or nominated site supervisor
	Potential damage to cultural heritage sites	– Implement a Chance Find Procedure – Raise awareness about possible heritage finds – Report all finds that could be of heritage importance – In case archaeological remains to be uncovered, cease activities and the exploration manager has to assess and demarcate the area – exploration manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary and inform ECC with GPS position – If needed, further investigation have to be requested for a professional assessment and the necessary protocols of the Chance Find Procedure have to be followed, – Archaeologist will evaluate the significance of the remains and identify appropriate action, for example, record and remove; relocate or leave premises (depending on the nature and value of the remains), – Inform the police if the remains are human, – Obtain appropriate clearance or approval from the competent authority, if required, and recover and remove the remains to the National Museum or	Monthly	

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		National Forensic Laboratory as directed.		
General exploration activities	– Potential grievances and complaints, – Social discomfort and anxiety	– Develop and implement an operations manual or procedures to work on private farms and implement monitoring programmes thereafter, – Maintain continuous communication with I&APs to identify concerns and mitigation measures, – Compliance with all applicable laws and agreements – Training and raise awareness to sensitize employees about contentious issues such as stock theft and poaching – Ensure appropriate supervision of all activities – Accidents and incidents need to be reported to exploration manager and recorded in incident register	Weekly, monthly	
	Residing and nesting organisms can be disturbed, injured or killed by movement of vehicles and equipment	– Restrict movements to areas of activities only – Use existing tracks and routes only – Identify rare, endangered, threatened and protected species in advance – Route new tracks around protected species and sensitive areas – Restrict movements to daytime hours – Training and raise awareness to sensitize employees and notify them on avoiding some areas – No driving off designated access routes (into the bush) / off-road driving – No animals or birds may be collected, caught, consumed or removed from site	Weekly	Site manager (or nominated site supervisor
	– Residing and nesting organisms can be disturbed as a result of ambient noise from operations and	– Restrict excessive noise to areas of activities only, – Restrict excessive noise to daytime hours (7 am to 5 pm weekdays and 7 am until 1 pm on Saturday),	Daily	

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
	movements of vehicles and equipment – Conflict with farmers and neighbours about ambient noise	– No activities between dusk and dawn, – Drill equipment shall be suitably positioned to ensure that noisy equipment is away from receptors, – Residents shall be provided at least two weeks' notice of drilling operations within 1 km of their property, – All equipment to be shut down or throttled back between periods of use, – Respect civic aviation regulations about the use of a drone		
	– Visual disturbances – Loss of Sense of Place	– Position drill equipment in such a way that it is out of sight from human receptors, – Barriers or fences shall be used if drilling occurs in, locations that may affect residents or livestock, – Residents need to be informed at least two weeks in advance that drilling operations are within 1km of their property, – Maintain good housekeeping, – Apply dust suppression where possible, – Maintain continuous communication with I&APs to identify concerns and mitigation measures	Daily, weekly	
	– Dust and emissions	– All vehicles and machinery / equipment to be shut down or throttled back between periods of use, – Use existing access roads and tracks where possible, – Apply dust suppression where possible, – Restrict speed of vehicles (<30km/h), – Specific activities that may generate dust and impact on residents shall be avoided during high wind events.	Daily	
	– Loss of soil quality due to mixing of earth matter, trampling, compaction and pollution, – Enhanced soil erosion	– Where possible, plan access routes, drill pads and camps outside of existing drainage lines – Where necessary, install diversions to curb possible erosion	Weekly	

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		– Restore drainage lines when disturbed – Topsoil should be stockpiled separately, and re-spread during rehabilitation – Limit the possibility of compaction and creating of a hard subsurface – Limit the possibility of trampling – During drilling oil absorbent matting should be placed under and around the rig – Equipment must be in a good condition to ensure that accidental oil spills do not occur and contaminate soil – In the event of spills and leaks, polluted soils must be collected and disposed of at an approved site, – Limit the possibility to mix mineral waste with topsoil		
	Groundwater contamination	– Ensure drill pads and spill kits are in place, – Consider alternative sites when the water table is too high, – Drill system should be dug to direct any accidental spills into sumps, – Waste water shall be contained, – Where possible, water from existing water sources shall be used	Weekly	
	Groundwater abstraction	– The proponent should first determine the yield capacity of the groundwater source in this arid environment before abstraction can commence from an existing borehole, and – Should a new borehole be required the necessary abstraction permit should be obtained from the MAWLR.	Monthly	
Vegetation clearance for access routes,	– Loss of plant species – Loss of habitat – Create landscape scars	– Use existing roads for access to avoid new tracks and cut lines – Minimise clearance areas through proper planning	Daily	– Employees, contractors – Site manager

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
drill pads and temporary contractor camps	– Loss of Sense of Place	of the exploration activities – Route new tracks around established and protected trees, and clumps of vegetation – Identify rare, endangered, threatened and protected species. – During toolbox talks and induction, highlight to workers so that the removal of significant plants are avoided – Where possible rescue and relocate plants of significance – Promote revegetation of cleared areas upon completion of exploration activities		(or nominated site supervisor
	– Alien plants and weeds can accidentally be introduced	– All project equipment arriving on site from an area outside of the project or coming from an area of known weed infestations (not present on the project site) should have an internal weed and seed inspection completed prior to equipment being used – Ensure the potential introduction and spread of alien plants is prevented, and – Ensure the correct removal of alien invasive vegetation and prevent the establishment and spread of alien invasive plants. – Eradicate weeds and alien species as soon as they appear – Make workers aware about alien species and weeds	Monthly	Site manager (or nominated site supervisor

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
Fuel handling and storage, maintenance on equipment, machinery and vehicles	– Soil contamination – Water contamination	– Good housekeeping – Training through toolbox talks and induction – All stationary vehicles and machinery must have drip trays to collect leakages of lubricants and oil – Spill kits and absorption material available during fuel delivery, storage or use – Accidental spills and leaks to be cleaned soonest – Spills to be reported to the exploration manager – Fuel spills of greater than 200L to be reported to the authorities – Plant and equipment to be well maintained and serviced regularly (maintenance and service schedules in place), – In the field, use of hydrocarbons under 200L can be used for mobile refuelling or servicing – Bulk fuel will be stored in adequate containment areas (on a non-porous floor, in a bunded area, capable to contain 110% of the volume stored) – Preventative measures will be in place when service and maintenance activities are done (drip trays, non-porous surfaces, funnels, non-damaged containers) – Refuelling and de-fuelling in designated areas (with adequate preventative measures in place) only	Daily	– Employees, contractors – Site manager (or nominated site supervisor
Generation of waste	– Soil contamination – Water contamination – Nuisance (visual impacts, litter) – Ecological risks	– Good housekeeping – Training and awareness through toolbox talks and induction – Implement a Standard Operational Procedure on waste management, from cradle to grave for all kinds of waste possible on-site (e.g. hydrocarbons, domestic, waste water) – Implement a culture of correct waste collection, waste segregation and waste disposal,	– Daily and weekly	– Employees, contractors – Site manager (or nominated site supervisor

ACTIVITY	POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		complimentary to the waste hierarchy – avoid, re-use, recycle – Avoid hazardous waste on site – Wastewater discharges will be contained – no disposal of waste water		
Job creation, skills development and business opportunities	Beneficial socio-economic impacts on a local and regional scale	– Maximise local employment and local business opportunities – Enhance the use of local labour and local skills as far as reasonably possible – Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	– Monthly	Exploration manager

6 IMPLEMENTATION OF THE EMP

Exploration work will be carried out in compliance with the relevant requirements of the Minerals (Prospecting and Mining) Act, 1992. No significant impacts are anticipated for the activities that have been identified and management and mitigation measures are in place for potential risks.

This EMP:

A. Has been prepared pursuant to a contract with the proponent;

B. Has been prepared on the basis of information provided to ECC up to February 2021;

C. Is for the sole use of the proponent, for the sole purpose of an EMP;

D. Must not be used (1) by any person other than the proponent or (2) for a purpose other than an EMP; and

E. Must not be copied without the prior written permission of ECC.

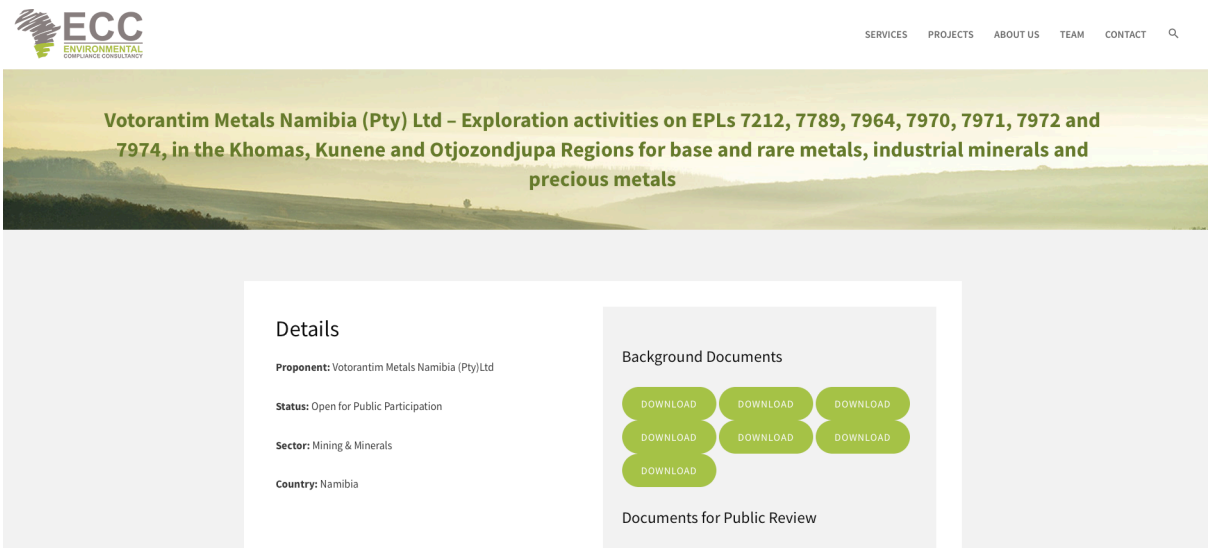
ECC has prepared the EMP on the basis of information provided by the proponent, specialist reports and the environmental scoping report.

APPENDIX B - NON-TECHNICAL SUMMARY

Please refer to the website below.

Environmental Compliance Consultancy website:

www.eccenvironmental.com



APPENDIX C- EVIDENCE OF PUBLIC CONSULTATION

The following was advertised in the 'Republikein, Sun, and Allgemeine Zeitung' newspapers on the 16th February 2021.

Nigeria creates US$2.6 bn infrastructure company

Nigerian President Muhammadu Buhari's government has approved the creation of a company to fast-track development of critical infrastructure, with around US$2.6 billion in initial financing.
Africa's most populous country slipped into recession in its third quarter for the second time in four years, hit by the coronavirus pandemic and a fall in oil prices, and faces a huge infrastructure deficit.
"It is envisaged that, over time, the entity will grow to naira 15 trillion (US$39.3 billion), in assets and capital," a spokesman for Vice President Yemi Osinbajo said in a statement on Friday.

> ***It is envisaged that, over time, the entity will grow to naira 15 trillion (US$39.3 billion), in assets and capital***
>
> **Spokesman for Vice President Yemi Osinbajo**

The company, Infra-Co, will be one of the top infrastructure finance entities in Africa and will be wholly dedicated to Nigeria's infrastructure development, the statement said.
Infra-Co will operate as a public-private partnership and will be initially funded by the Central Bank of Nigeria, the Nigerian Sovereign Investment Authority and the Africa Finance Corporation.
It will focus on developing public assets and reconstruction as well as new roads, rail, power and other key infrastructure sector projects.
The IMF expects Nigeria's economy to contract by at least 3 percent this year, a situation many fears will further deepen the country's infrastructure crisis and worsen an economy already struggling with the impact of the pandemic.
Nigeria's senate last year approved nearly US$23 billion (18.9 billion euros) in foreign loan requests by Buhari to support a series of large-scale projects, which the government hopes will revamp the country's crumbling infrastructure.
Buhari early this week also launched a US$1.96 billion rail project linking to neighbouring Niger as the country looks to boost its growth.

- Nampa/AFP



Nigerian President Muhammadu Buhari. PHOTO NAMPA/AFP



Setting realistic goals

Vision 2030 to undergo review

Agriculture was contributing between 12 to 15 percent of GDP. It is now reduced to less than 4 percent. PHOTO NAMPA

The agriculture sector is at the heart of Namibia's development agenda going forward.

With nine years to go before the expiration of Namibia's grand development plan, Vision 2030, the government is reviewing the plan with a view to replacing it with one that speaks to the realities of the day.
This was announced by National Planning Commission (NPC) director, Obeth Kandjoze, at a recent media conference meant to inform the nation about the government's decision to liquidate the cash-strapped Air Namibia.
At this event, Kandjoze said: "We must actually craft a grand-visioning statement that will replace Vision 2030. We must review NDP 5 to be able to fit into the economy post-Covid-19."
Vision 2030 stipulates that Namibia plans to be a prosperous and industrialised nation, developed by her human resources, enjoying peace, harmony, and political stability by 2030. "We have assembled a team of experts led by the National Planning Commission, assisted by the Ministry of Finance and Bank of Namibia.
We have solicited the efforts and advice of Harvard University Growth Lab experts led by Professor Ricardo Hausmann, a very well renowned professional in the business of helping countries identify pitfalls in their setups from an economic structural point of view," Kandjoze said.
The growth lab works to understand the dynamics of growth and to translate those insights into more effective policymaking in developing countries.

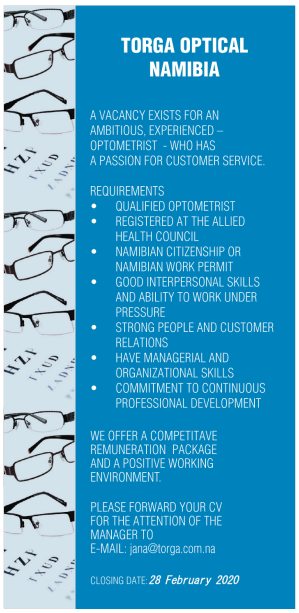


National Planning Commission (NPC) director, Obeth Kandjoze. PHOTO NAMPA

Agriculture

Kandjoze also said Namibia must position itself strategically to benefit from the African Continental Free Trade Area Agreement (AfCFTA).
The former mines minister added: "We must have a stake in that vision. Going forward the economy is actually put at a display as to "what is agriculture achieving?"
"Agriculture was contributing between 12 to 15 percent of GDP. Today agriculture is reduced to less than 4 percent. What are the structural policy changes that should come in to begin to help the sector," he questioned? Additionally, he said agriculture is at the heart of Namibia's development agenda going forward.Other sectors such as mining are also under review.
"The idea is to understand where the impediments are in our economic structural set-up so we can do away with those impediments, review the policies, understand the future of the particular sort of market in agriculture, mining and so forth so that we can position the economy post-Covid-19," he noted.

- Nampa



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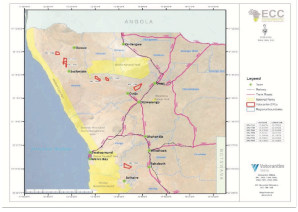
PLEASE FORWARD YOUR CV FOR THE ATTENTION OF THE MANAGER TO E-MAIL: jana@torga.com.na

CLOSING DATE *28 February 2020*

NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR EXPLORATION ACTIVITIES ON EPLs 7212, 7789, 7964, 7970, 7971, 7972 AND 7974 KUNENE, OTJOZONDJUPA AND KHOMAS REGIONS, NAMIBIA

Environmental Compliance Consultancy CC (ECC) hereby gives notice to the public that an application for an environmental clearance certificate in terms of the Environmental Management Act, No. 7 of 2007 will be made as per the following:

Applicant: Votorantim Metals Namibia (Pty) Ltd
Environmental Assessment Practitioner (EAP): Environmental Compliance Consultancy
Location: Kunene, Otjozondjupa and Khomas regions, Namibia



Proposed Project Overview: The proponent proposes to carry out exploration activities for base and rare metals, industrial minerals, and precious metals on EPLs 7212, 7789, 7964, 7970, 7971, 7972 and 7974. The EPLs are located within three regions, the Kunene, Otjozondjupa and Khomas regions. Exploration methods may include geochemical survey (soil and rock sampling), geophysical survey (electromagnetic surveys), drilling and drill-core sampling.

I&AP Registration: The purpose of the review and registration period is to introduce the proposed project and to afford interested and Affected Parties (I&APs) an opportunity to register and comment on the Non-Technical Summary (NTS), to ensure that potential issues and concerns are brought forward, so that they can be considered and assessed during the impact assessment process.

The registration period is effective from **15 February to 01 March 2021**.
I&APs and stakeholders are required to register for the project at: https://eccenvironmental.com/projects/

The team at ECC will then maintain contact with all registered I&APs to keep them informed and engaged as the ESIA process develops, ECC will also provide registered I&APs relevant documents to review during the assessment process.

Environmental Compliance Consultancy
Registration Number: CC/2013/11404
Members: Mr JS Bezuidenhout or Mrs J Mooney
PO Box 91193, Klein Windhoek
Tel: +264 81 669 7608
E-mail: info@eccenvironmental.com
Project ID: ECC-88-338-ADT-22-A
Website: http://www.eccenvironmental.com

Votorantim Metais

The following was advertised in the 'Republikein, Sun, and Allgemeine Zeitung' newspapers on the 23th February 2021.

2 Republikein Sun Allgemeine Zeitung Market Watch TUESDAY 23 FEBRUARY 2021

More tax revenue, minimised social welfare

SA's economic rebound to trim budget deficits



South Africa has a population of about 58.6 million. PHOTO NAMPA/AFP



South African President, Cyril Ramaphosa. PHOTO NAMPA/REUTERS

There are speculations that the national treasury could raise taxes more aggressively this year.

South Africa's consolidated fiscal deficit is expected to narrow this year because of an economic rebound, although the long-term trend of higher debt remains unchanged due to Covid-19 and pre-existing spending, a Reuters poll forecast on Friday.

In a poll taken this week, 2021 economic growth was expected to rebound to 3.5% after an estimated 7.4% contraction last year, probably bolstering revenue collections and narrowing deficits for the next financial year to 9.7% of gross domestic product, to 8.5% for 2022/23 and 7.5% in 2023/24.

As in other countries, Covid-19 spending doubled the South African budget last year. The 2020/21 deficit was estimated at 13.95% of GDP in the poll with only about six weeks left.

In October, the National Treasury's consolidated budget estimated a 15.7% deficit of GDP in the year ending March, 10.1% for next year, and 8.6% and 7.3% for the following years respectively.

Nedbank economists wrote that the 2020/21 budget was expected to be much better than presented in the medium-term budget statement in October from the National Treasury.

"Revenue collections have been better than estimated on the back of a stronger-than-expected economic rebound, while expenditure will be slightly lower than estimated, resulting in a narrower budget deficit," wrote Isaac Matshego at Nedbank.

"The budget deficit, however, will be relatively sticky in the medium term as actual expenditure cuts are unlikely to be achieved over the period."

A similar poll in October suggested South Africa's consolidated fiscal deficit would widen further than projected, three months before in an emergency Covid-19 budget, as a third-quarter rebound would not generate enough tax revenues.

Tax

Still, economists have noted speculation the national treasury could raise taxes more aggressively this year in various ways, including a wealth tax or temporary "solidarity" tax to fund things like Covid-19 vaccine procurement, alongside the usual nudges to sin and personal taxes.

However, the "treasury recognises the country's perceived onerous tax burden, not to mention the sharp knock to company profits that has continued to eat into corporate tax receipts in recent years," said Jeffrey Schultz at BNP Paribas.

Consumer inflation was expected to average 3.9% this year and 4.3% next year, still below the midpoint of the Reserve Bank's 3% to 6% comfort level.

"As a result, the main tax measures announced will be in the form of the usual above-CPI increases for excise duties and fuel levies, rather than anything that could risk damaging an already fragile and concentrated tax base," Schultz added.

Gross national debt was projected by the government to stabilise at 95.3% of GDP by 2025/26, more or less in line with the poll's median which expected it at 92.7% in 2023/24.

Growth was expected slow to 2.2% next calendar year and 1.7% the following year.

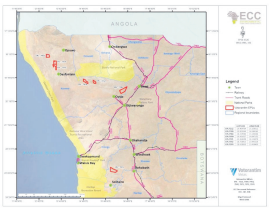
Interest rates were expected to remain unchanged at 3.5% this year, but the Reserve Bank was expected to raise them to 4.0% next year and to 4.75% in 2023. - Nampa/Reuters

ECC ENVIRONMENTAL COMPLIANCE CONSULTANCY

NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR EXPLORATION ACTIVITIES ON EPLs 7212, 7789, 7964, 7970, 7971, 7972 AND 7974 KUNENE, OTJOZONDJUPA AND KHOMAS REGIONS, NAMIBIA

Environmental Compliance Consultancy CC (ECC) hereby gives notice to the public that an application for an environmental clearance certificate in terms of the Environmental Management Act, No. 7 of 2007 will be made as per the following:

Applicant: Votorantim Metals Namibia (Pty) Ltd
Environmental Assessment Practitioner (EAP): Environmental Compliance Consultancy
Location: Kunene, Otjozondjupa and Khomas regions, Namibia



Proposed Project Overview: The proponent proposes to carry out exploration activities for base and rare metals, industrial minerals, and precious metals on EPLs 7212, 7789, 7964, 7970, 7971, 7972 and 7974. The EPLs are located within three regions, the Kunene, Otjozondjupa and Khomas regions. Exploration methods may include geochemical survey (soil and rock sampling), geophysical survey (electromagnetic surveys), drilling and drill-core sampling.

I&AP Registration: The purpose of the review and registration period is to introduce the proposed project and to afford Interested and Affected Parties (I&APs) an opportunity to register and comment on the Non-Technical Summary (NTS), to ensure that potential issues and concerns are brought forward, so that they can be considered and assessed during the impact assessment process.

The registration period is effective from **15 February to 01 March 2021.**
I&APs and stakeholders are required to register for the project at: https://eccenvironmental.com/projects/

The team at ECC will then maintain contact with all registered I&APs to keep them informed and engaged as the ESIA process develops, ECC will also provide registered I&APs relevant documents to review during the assessment process.

Environmental Compliance Consultancy
Registration Number: CC/2013/11404
Members: Mr JS Bezuidenhout or Mrs J Mooney
PO Box 91193, Klein Windhoek
Tel: +264 81 669 7608
E-mail: info@eccenvironmental.com
Project ID: ECC-88-338-ADT-22-A
Website: http://www.eccenvironmental.com

Votorantim Metais

Paratus welcomes Demshi in subsea cable project



The Paratus landing station will host the Equiano undersea cable system transmission equipment. PHOTO CONTRIBUTED

STAFF REPORTER

The Cable Landing Station (CLS) houses the mission critical transmission equipment that will, in layman's terms, convert the seabed equipment to land-based equipment.

A typical undersea cable has repeater stations every 80kms along the route, that requires power to be provided.

Every CLS established along the route of the cable is capable of delivering enough power to carry the entire cable route, to mitigate potential risks where power might fail in a specific region.

Approximately 5000 watts, enough to power a typical 3-bedroom house.

The CLS further houses backup power equipment, such as A/B generator feeds.

The Paratus landing station will host the Equiano undersea cable system transmission equipment, which includes the Power Feeding Equipment (PFE) as well as the Submarine Line Terminal Equipment (SLTE). The Paratus landing station will also host cabinets where operators will be able to host their equipment, accessing the Equiano capacity purchased from within the landing station.

This will be an open-access network station, with no restrictions as to who can gain access to the capacity, as long as they are registered and licensed operators with the regulatory authority (CRAN).

SITE NOTICE

NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR EXPLORATION ACTIVITIES ON EPL 7974

KUNENE REGION, NAMIBIA

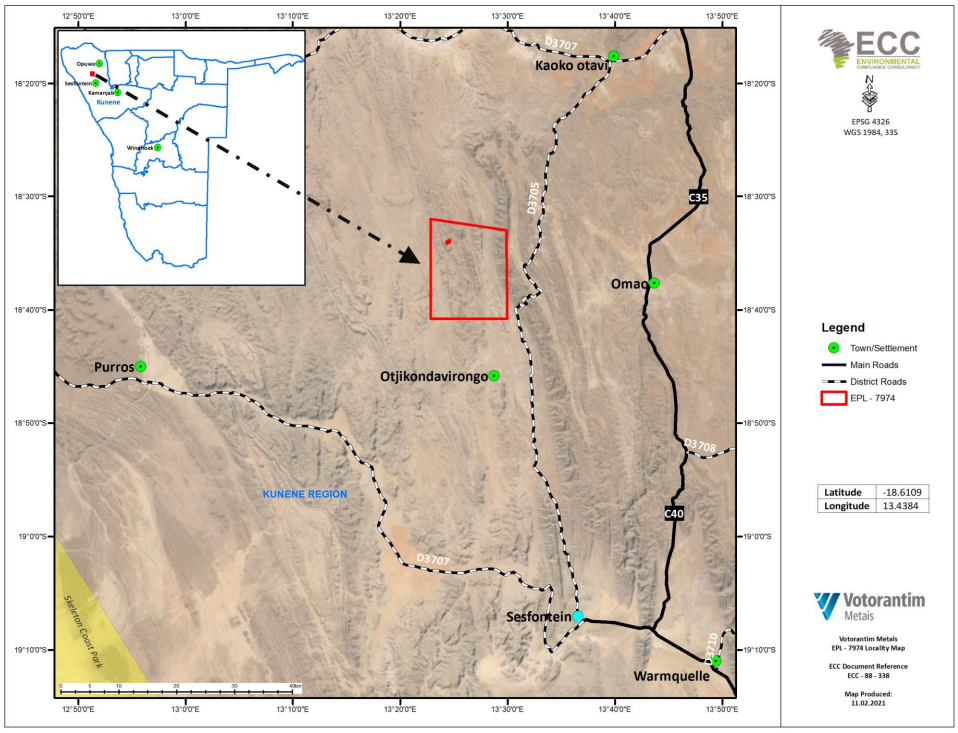
Environmental Compliance Consultancy cc (ECC) hereby gives notice to the public that an application for an environmental clearance certificate in accordance with the Environmental Management Act, No. 7 of 2007 will be made as per the following:

Applicant:	**Votorantim Metals Namibia (Pty) Ltd**
Environmental Assessment Practitioner (EAP):	**Environmental Compliance Consultancy**
Project ID:	**ECC-88-338**

Project: Exploration activities on EPL 7974 for base and rare metals, industrial minerals, and precious metals in the Kunene Region, Namibia.

Proposed activity: The proponent proposes to carry out exploration activities for base and rare metals, industrial minerals, and precious metals on EPL 7974. The EPL lies approximately 50km north of Sesfontein on communal land and can be accessed via the D3705 road. The EPL is located within the Kunene Region. Exploration methods may include geochemical surveys (soil and rock sampling), geophysical surveys (electromagnetic surveys), drilling and drill-core sampling.

Location of EPL 7974:

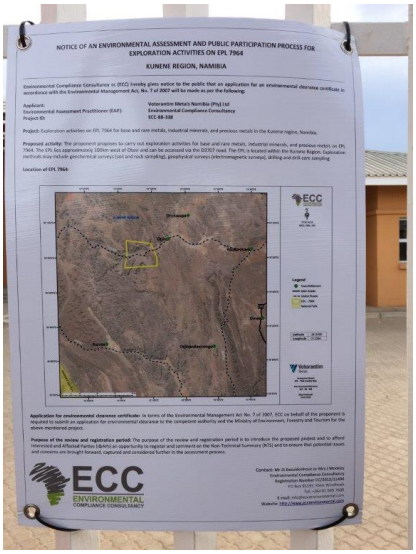


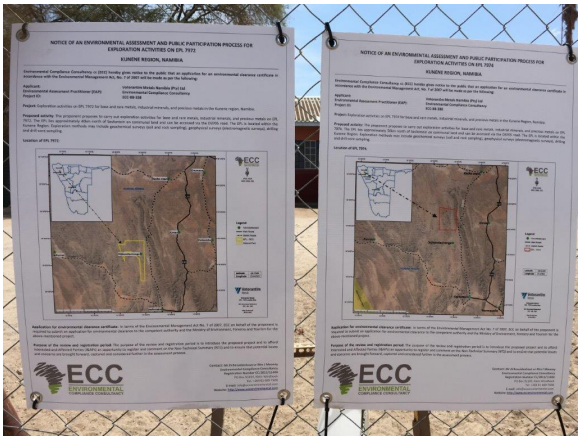
Application for environmental clearance certificate: In terms of the Environmental Management Act No. 7 of 2007, ECC on behalf of the proponent is required to submit an application for environmental clearance to the competent authority and the Ministry of Environment, Forestry and Tourism for the above-mentioned project.

Purpose of the review and registration period: The purpose of the review and registration period is to introduce the proposed project and to afford Interested and Affected Parties (I&APs) an opportunity to register and comment on the Non-Technical Summary (NTS) and to ensure that potential issues and concerns are brought forward, captured and considered further in the assessment process.

Contact: Mr JS Bezuidenhout or Mrs J Mooney
Environmental Compliance Consultancy
Registration Number CC/2013/11404
PO Box 91193, Klein Windhoek
Tel: +264 81 669 7608
E-mail: info@eccenvironmental.com
Website: http://www.eccenvironmental.com


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NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR
EXPLORATION ACTIVITIES ON EPL 7964
KUNENE REGION, NAMIBIA
ECC
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COMPLIANCE CONSULTANCY


NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR
EXPLORATION ACTIVITIES ON EPL 7972
KUNENE REGION, NAMIBIA
NOTICE OF AN ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS FOR
EXPLORATION ACTIVITIES ON EPL 7974
KUNENE REGION, NAMIBIA
ECC
ENVIRONMENTAL
COMPLIANCE CONSULTANCY



APPENDIX D - ECC CVS

APPENDIX E: HERITAGE ASSESSMENT REPORT

2nd March 2021

ECC Environmental
Windhoek
Namibia

For attention: Jessica Bezuidenhout

ARCHAEOLOGICAL ASSESSMENT OF SEVEN EPLs IN THE KUNENE, OTJOZONDJUPA AND KHOMAS REGIONS, NAMIBIA

John Kinahan, Archaeologist
P.O. Box 22407
Windhoek
Namibia

DECLARATION

I hereby declare that I do:

(a) have knowledge of and experience in conducting assessments, including knowledge of Namibian legislation, specifically the National Heritage Act (27 of 2004), as well as regulations and guidelines that have relevance to the proposed activity;

(b) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

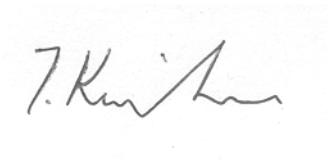
(c) comply with the aforementioned Act, relevant regulations, guidelines and other applicable laws.

I also declare that I have no interests or involvement in:

(i) the financial or other affairs of either the applicant or his consultant

(ii) the decision-making structures of the National Heritage Council of Namibia.

PLEASE NOTE: The purpose of this report is to assist the client in gaining consent under the National Heritage Act (27 of 2004) to proceed with mining activities at specific locations as defined herein. The report and its contents, specifically maps and other illustrations, may not be abstracted, distributed or used for any other purpose by the client, the National Heritage Council of Namibia or any other party and remain the copyright of the author.



John Kinahan, Archaeologist

EXECUTIVE SUMMARY

An archaeological desk assessment was carried out for Environmental Compliance Consultancy (ECC), focussing on leases granted to Votorantim Metals Namibia (Pty) Ltd, namely EPLs 7212, 7789, 7964, 7979, 7972 and 7974 located in the Kunene Region, with slight overlap into the Otjozondjupa Region, and EPL 7971 located in the Khomas Region of Namibia. Archaeological records from previous studies in the areas surrounding these leases were reviewed as a basis of inference regarding the archaeological significance of the leases and their likely sensitivity to disturbance and destruction in the course of exploration activities. The assessment recommends that exploration be permitted to proceed but that the proponent should be compelled to commission direct field surveys of exploration targets where mechanically assisted or otherwise intrusive methods are to be used. It is further recommended that the project proponent adopt the attached Chance Finds Procedure devised for mining projects.

TABLE OF CONTENTS

1. Introduction
2. Legal requirements
3. Environmental and archaeological setting
4. Assessment
5. Recommendations

Appendix 1 Chance finds procedure

1. INTRODUCTION

1.1 Background

Votorantim Metals Namibia (Pty) Ltd has been granted exclusive prospecting leases on EPLs 7212, 7789, 7964, 7979, 7972 and 7974 located in the Kunene Region, with slight overlap into the Otjozondjupa Region, and EPL 7971 located in the Khomas Region of Namibia. The proponent proposes to carry out low impact, non-intrusive exploration activities for base, rare and precious metals and industrial minerals. Exploration methods may include aerial or remote sensing, electromagnetic surveys, drilling and mineral sampling. In addition, soil sampling will be carried out at 400m x 100m spaced intervals, and there will be limited vegetation clearing for the creation of access tracks, and possible clearance of cut-lines for geophysical surveys.

These activities require that the proponent obtains an Environmental Clearance Certificate to be issued in terms of the Environmental Management Act (2007). Environmental Compliance Consultancy (ECC) has been appointed by the proponent to carry out an environmental assessment (EA). Archaeological remains in Namibia are protected under the National Heritage Act (2004) and National Heritage Regulations (Government Notice 106 of 2005). Projects of the magnitude intended by Votorantim Metals Namibia (Pty) Ltd are also subject to archaeological assessment and ECC has accordingly appointed the undersigned, J. Kinahan, archaeologist, to carry out this assessment.

1.2 Terms of Reference

The desk assessment reported here is intended to identify from existing field survey data sensitive archaeological sites that could be affected by proposed exploration activities on EPLs 7212, 7789, 7964, 7979, 7972, 7974 and 7971. Archaeological assessment forms the basis of recommended management actions to avoid or reduce negative impacts, as part of the environmental assessment. The study is intended to satisfy the requirements of the relevant legislation and regulations, in which the process of review and clearance may require further, or different mitigation measures to be adopted.

Specifically, the archaeological assessment addresses the following issues:

1. The identification and assessment of potential impacts on archaeological/heritage resources arising from the proposed exploration activities.
2. The identification and demarcation of sensitive archaeological/heritage sites requiring special mitigation measures to eliminate, avoid or compensate for possible destructive impacts.

3. Formulation and motivation of specific mitigation measures for the project to be considered by the authorities for the issuance of clearance certificates.
4. Specification of permit requirements as related to the removal and/or destruction of heritage resources.

1.3 Assumptions & Limitations

Archaeological desk assessment is based on existing data from surveys and excavations carried out in the course of previous work in the same general area as the proposed project. Where detailed information is available these data are used as a basis of inference pending further field survey should the authorities deem it necessary. On the basis of cumulative field records it is possible to predict the likely occurrence of further archaeological sites with varying accuracy, and to present a general statement (see 3. Environmental & Archaeological Setting, below) of the local archaeological site distribution and its likely sensitivity. However, it is necessary to caution the proponent that hidden, or buried archaeological or palaeontological remains might be exposed as the project proceeds. It is for this reason that the proponent is advised to adopt the Chance Finds Procedure set out in Appendix 1.

The following assessment is based on cumulative archaeological data abstracted from the accessions register of the National Museum of Namibia, on the records of the Namib Desert Archaeological Survey, and on the results of various site investigations carried out by the undersigned to assist mining, infrastructure and other projects to comply with the environmental and heritage conservation laws of Namibia. The assessment is also based on data from the following Background Information Documents BIDs prepared by ECC:

Table 1: List of Votorantim Metals Namibia (Pty) Ltd EPLs and BIDs

Lease	Region	BID
EPL7212	Kunene	ECC-88-338-NTS-15-A
EPL 7789	Kunene & Otjozondjupa	ECC-88-338-NTS-16-A
EPL 7964	Kunene	ECC-88-338-NTS-17-A
EPL 7970	Kunene	ECC-88-338-NTS-18-A
EPL 7971	Khomas	ECC-88-338-NTS-19-A
EPL 7972	Kunene	ECC-88-338-NTS-20-A
EPL 7974	Kunene	ECC-88-338-NTS-21-A

2. LEGAL REQUIREMENTS

The principal instrument of legal protection for archaeological/heritage resources in Namibia is the National Heritage Act (27 of 2004). Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains. Section 48 *ff* 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. Section 51 (3) sets out the requirements for impact assessment. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Heritage sites or remains are defined in Part 1, Definitions 1, as "any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface".

It is important to be aware that no specific regulations or operating guidelines have been formulated for the implementation of the National Heritage Act in respect of archaeological assessment. However, archaeological impact assessment of large projects has become accepted practice in Namibia during the last 25 years, especially where project proponents need also to consider international guidelines. In such cases the appropriate international guidelines are those of the World Bank OP/ BP 4.11 in respect of "Physical Cultural Resources" (R2006-0049, revised April 2013). Of these guidelines, those relating to project screening, baseline survey and mitigation are the most relevant.

Archaeological impact assessment in Namibia may also take place under the rubric of the Environmental Management Act (7 of 2007) which specifically includes anthropogenic elements in its definition of environment. The List of activities that may not be undertaken without Environmental Clearance Certificate: Environmental Management Act, 2007 (Govt Notice 29 of 2012), and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Govt Notice 30 of 2012) both apply to the management of impacts on archaeological sites and remains whether these are considered in detail by the environmental assessment or not.

3. ENVIRONMENTAL & ARCHAEOLOGICAL SETTING

The seven exploration leases held by Votorantim Metals Namibia (Pty) Ltd lie in a range of different environmental and archaeological settings. For ease of discussion the leases are divided here among four general locations, A-D; these are shown in Figure 1 in relation to the known distribution of archaeological sites in Namibia.

The Votorantim Metals Namibia (Pty) Ltd leases indicated as **A** in Figure 1 include EPLs 7964, 7972 and 7974. These leases lie on the northern escarpment zone overlooking the north-western highlands of Namibia, a dissected terrain underlain by metamorphic Palaeozoic rocks outcropping as prominent ridges with savanna vegetation characterized by *Acacia reficiens* and various Commiphora species, and receiving between 150 and 250mm precipitation per annum, resulting in occasional episodic flow of drainage lines. The leases indicated as **B** in Figure 1 include EPLs 7212 and 7970. These lie within the great arc of karstveld terrain to the south of the Etosha basin, characterized by *Colophospermum mopane* woodland with *Terminalia prunoides* and a variety of Commiphora species. Although receiving between 350 and 450mm precipitation per annum, this area has little permanent water. The area indicated as **C** in Figure 1 contains only EPL 7789 which also lies within a karstveld landscape with *Colophospermum mopane* woodland, although at this more easterly point there are numerous sinkholes and dolines which sometimes have water throughout the year and precipitation sometimes exceeds 550mm per annum. The area indicated as **D** in Figure 1 and containing EPL 7971 lies further south, on the western edge of the Khomas Hochland plateau, within the complex, well developed drainage of the upper !Khuiseb basin. This hilly terrain is characterized by dwarf shrub savanna vegetation dominated by *Acacia hereroensis* and *Combretum apiculatum*.

Having little surface water, area **A** is thinly populated today and mainly occupied by small homestead settlements of Ovaherero subsistence stock farmers. Larger and more permanent settlements are found to the east and northeast where optimal grazing conditions are associated with woodland dominated by *Colophospermum mopane*, known locally as *omuṭati*. Although no archaeological investigations have been carried out within or immediately adjacent to area **A** (see Figure 2), low resolution survey data[1] show that there is evidence from this part of Kunene Region for human occupation over at least the last one million years. The earliest evidence, dating from the mid-Pleistocene, is primarily in the form of crude stone implements found as surface scatters in the vicinity of major drainage lines. Later Pleistocene remains include well fashioned bifacial stone hand-axes (see Figure 3) which in the last 200 000 years were superseded by a complex toolkit of smaller artefacts

[1] Primarily gleaned from the accessions register of the National Museum of Namibia and the records of the Namib Desert Archaeological Survey.

that could be attached to wooden spear shafts and scraper tool handles, using vegetable resin mountant[2].

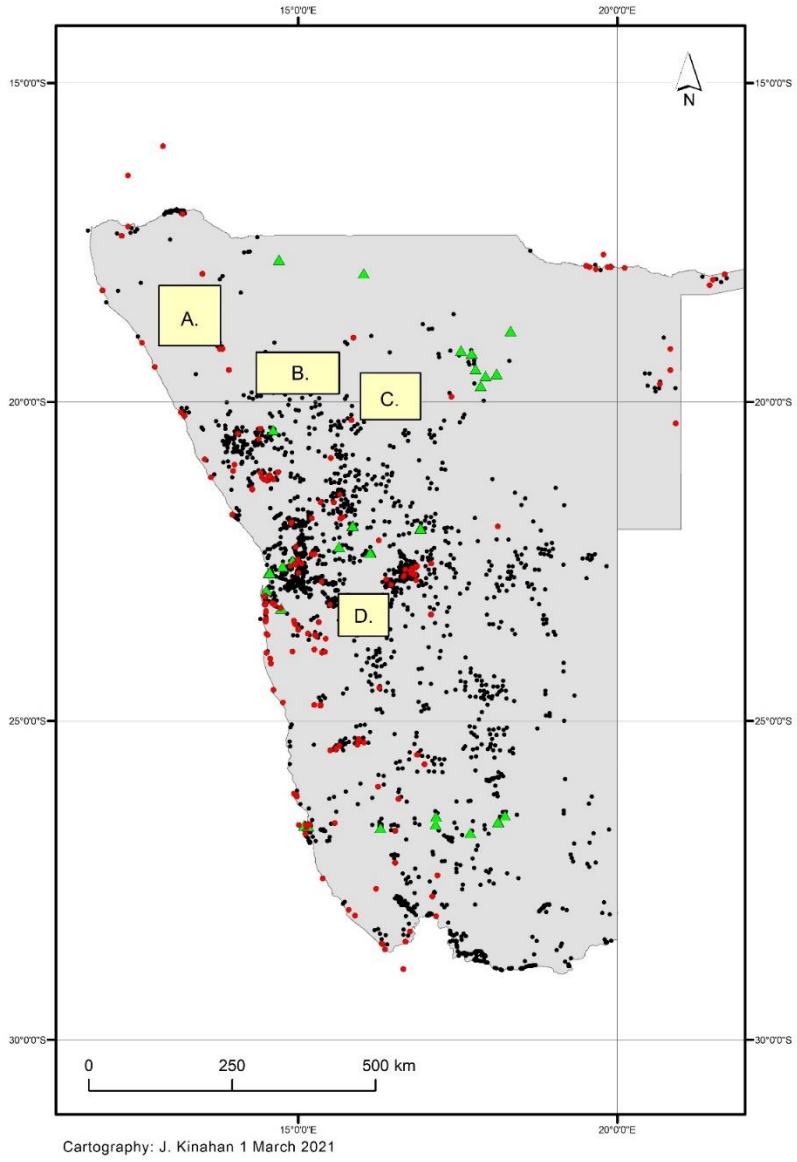


Figure 1: The exploration leases of Votorantim Metals Namibia (Pty) Ltd shown as four general locations, A-D, in relation to the known distribution of archaeological sites (black dots), radiocarbon dated sites (red) and proclaimed National Monument sites (green triangles).

[2] Mitchell, P. 2002. *The archaeology of southern Africa.* Cambridge: Cambridge University Press; Barham, L. 2013. *From Hand to Handle: the first Industrial Revolution*. Oxford: Oxford University Press; Barham, L. & Mitchell, P. 2008. *The first Africans: African archaeology from the earliest toolmakers to most recent foragers.* Cambridge: Cambridge University Press; Deacon, H. & Wurz, S. 2001. Middle Pleistocene populations of southern Africa and the emergence of modern behavior. In Barham, L. & Robson-Brown, K. eds *Human roots: Africa and Asia in the Middle Pleistocene.* Bristol: Western Academic and Specialist Press, pp. 55–63.

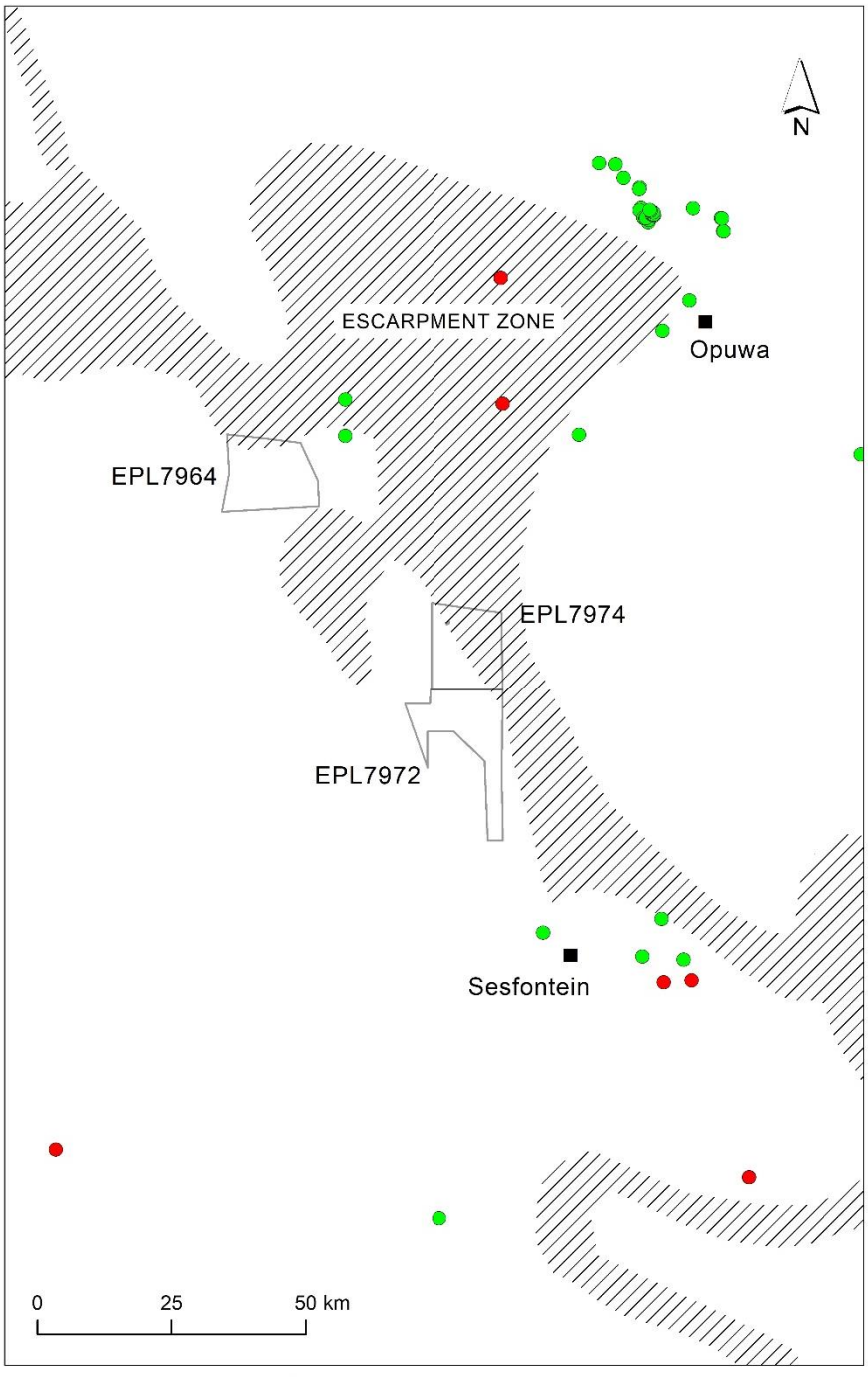


Figure 2: The location of EPLs 7964, 7972 and 7974 within area **A** as indicated in Figure 1, with archaeological site records (green dots) and radiocarbon dated sites (red). Opuwa and Sesfontein are shown for orientation.

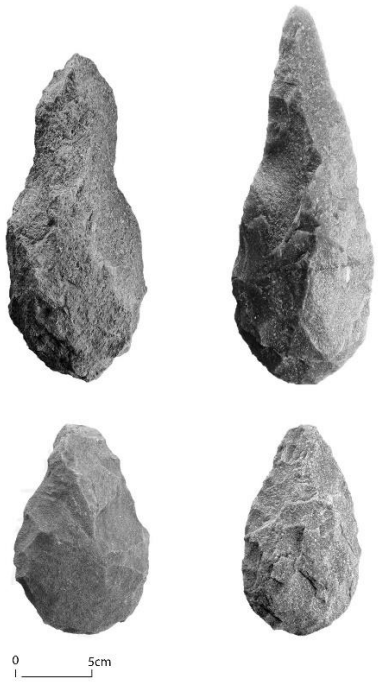


Figure 3: Typical Mode 2 bifacial hand-axes from the central escarpment area of Kunene Region.

The late Pleistocene culminating in the Last Glacial Maximum[3] brought important environmental changes to this region, including the establishment of the mid-Kunene drainage as it exists today[4]. Hydrological changes in major drainage basins had fundamental effects on the viability of human settlement, such that while the region immediately to the south was abandoned under conditions of extreme aridity, the northern Kunene Region sustained almost continuous occupation over the last 12 000 years. The archaeological record of human occupation in the early to mid-Holocene shows an emphasis on rock shelter sites along the escarpment, used as hunting camps (see Figure 4)[5].

[3] Deacon, J. & Lancaster, N. 1988. *Late Quaternary palaeoenvironments of southern Africa.* Oxford: Oxford University Press.

[4] Schneider, G. 2004. *The roadside geology of Namibia.* Sammlung Geologischer Führer, Berlin: Gebr. Borntraeger; Buch, M.W. 1996. Geochrono-Geomorphostratigraphie der Etosha Region, Nord-Namibia. *Die Erde* 127: 1–22.

[5] Jacobs, Z., Roberts, R.G., Galbraith, R.F., Deacon, H.J., Grün, R., Mackay, A., Mitchell, P., Vogelsang, R. & Wadley, L. 2008. Ages for the Middle Stone Age of southern Africa: Implications for human behaviour and dispersal. *Science* 322: 733–35.



Figure 4: View of Omangunda rock shelter, 35km northwest of Opuwa, a site of intermittent occupation over the last 15 000 years[6].

The last 2 000 years brought the introduction of livestock, ceramics, metallurgy and domestic crops to northern Namibia. Climatic instability, generally arid conditions and the lack of arable soils made Kunene Region a relatively marginal environment in which semi-nomadic pastoralism was the dominant way of life. When conditions deteriorated still further between 1300 and 1800 AD a large part of the Ovaherero people moved into the central parts of Namibia in search of better grazing and it was here that they fell victim to the genocidal campaign waged against them by the German colonial regime. In response to this, Ovaherero including many who were Christianized, moved back to the northern Kunene Region, where Ovaherero live side-by-side with Ovahimba pastoralists who chose to remain in that area. The historical site of Kaoko Otavi associated with the northward migration of the *Dorslandtrekker* community lies a short distance to the west of Opuwa[7].

[6] Vogelsang, R. & Eichhorn, B. 2011. *Under the mopane tree: Holocene settlement in northern Namibia.* Köln: Afrika Praehistorica 24.

[7] The *Dorslandtrekker* site at Kaoko Otavi is a proclaimed National Monument (9/51), see also Vogt, A. 2004. *National Monuments in Namibia.* Windhoek, Macmillan, p193.

Area **B** indicated in Figure 1 has been the focus of several archaeological investigations although none of these covered EPLs 7212 and 7970. Despite this, it is possible to infer the likely presence in particular of Holocene rock art (mainly engravings) and evidence of pastoral (probably Ovaherero) settlement during the last one thousand years. The well-known rock engraving site of Peet Alberts Kopje[8] which is located in the near vicinity of the leases is but one of many rock art sites documented in this general area (see Figure 5). The distribution of known sites indicated in Figure 6 shows that archaeological (including rock art) sites are mainly located in the rocky terrain to the south of Kamanjab and within the Huab River drainage, as opposed to the area of unconsolidated Quaternary and Tertiary sediments to the north. On this basis it is highly likely that EPLs 7212 and 7970 will contain rock art sites as well as associated archaeological evidence.



Figure 5: Typical rock engravings found within the upper Huab drainage near Kamanjab.

[8] The site of Peet Alberts Kopje is a proclaimed National Monument (36/67), see also Vogt, A. 2004. *National Monuments in Namibia.* Windhoek, Macmillan, p41.

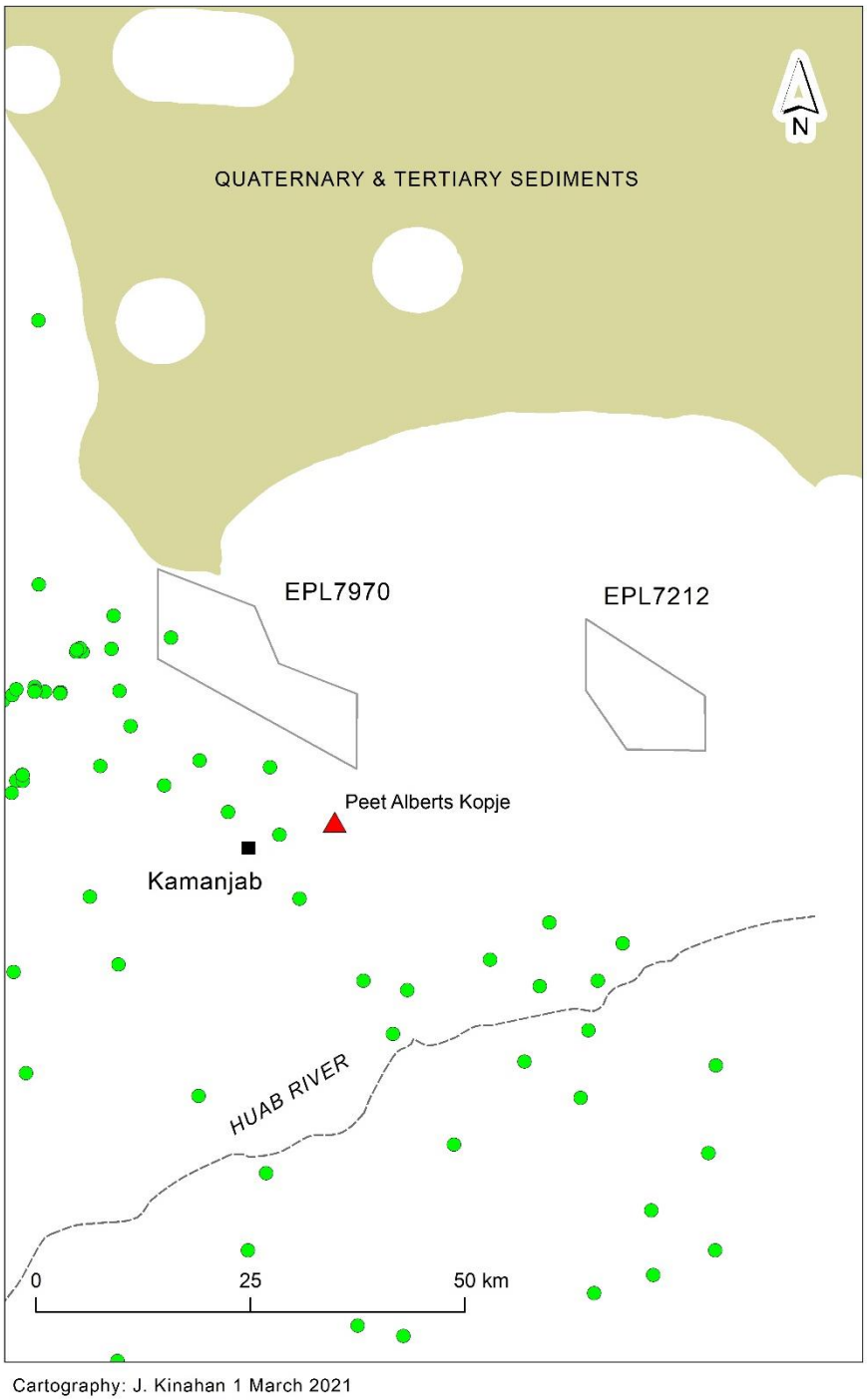


Figure 6: The location of EPLs 7212 and 7970 within area B as indicated in Figure 1, with archaeological site records (green dots) and the location of Peet Alberts Kopje (red triangle). Kamanjab is shown for orientation.

Area **B** is located on an important route of movement used throughout the precolonial period and reliable waterpoints on such routes have long histories of occupation within a highly flexible pattern of land-use governed by the availability of water and pasture. Burial sites, particularly those of important individuals, form permanent fixed and highly visible points in an otherwise changeable settlement system. The burial sites of important figures also serve in Ovahimba and more generally in Ovaherero tradition as places where it is possible to consult the ancestors about issues affecting the community. Graves are frequently visited, and while lineal descendants live in the same area they are carefully maintained. However, changes in land tenure systems during the colonial era have resulted in many graves falling within freehold farmland where they are inaccessible. These graves remain important and sensitive sites. They are fortunately easy to recognize in the field and it is usually possible to take precautions against damaging the sites (see Figure 7).



Figure 7: Typical precolonial grave site north of Kamanjab.

Area **C** indicated in Figure 1 has been the focus of several archaeological surveys although none of these covered EPL 7789 itself. In addition, most of these were linear surveys for utility corridors which are generally less productive archaeologically than large area surveys such as of mineral exploration leases. Area **C** is therefore not well known archaeologically (see Figure 9) although it was the setting for a number of important events during the colonial era that may have left some archaeological indications. The most relevant of these is the Ovaherero anticolonial uprising that ended in 1904 after a series of battles in the area to the southeast of Otjiwarongo. These include Okanjande (16/1/04), Osondache (17/4/05) and Otjahewita (5/7/04). The various engagements at Waterberg between 6 and 12/8/04 and Klein Waterberg on 19/9/04 took place well outside the area of EPL 7789. Other, more recent historical events include the migration of the *Dorslandtrekkers*, who on their repatriation to Namibia were assembled in the Otjiwarongo area before being distributed among farmers there.



Figure 8: Grave site of *Dorslandtrekker* child buried on the farm Otjikoto in 1939[9].

[9] The remains of Jannie Venter were exhumed in 2013 and re-interred in the children's cemetery at Otavi (Kinahan, J. 2013. Recent grave site on Farm Otjikoto 573, Otjozondjupa Region, Report to B2 Gold, Namibia).

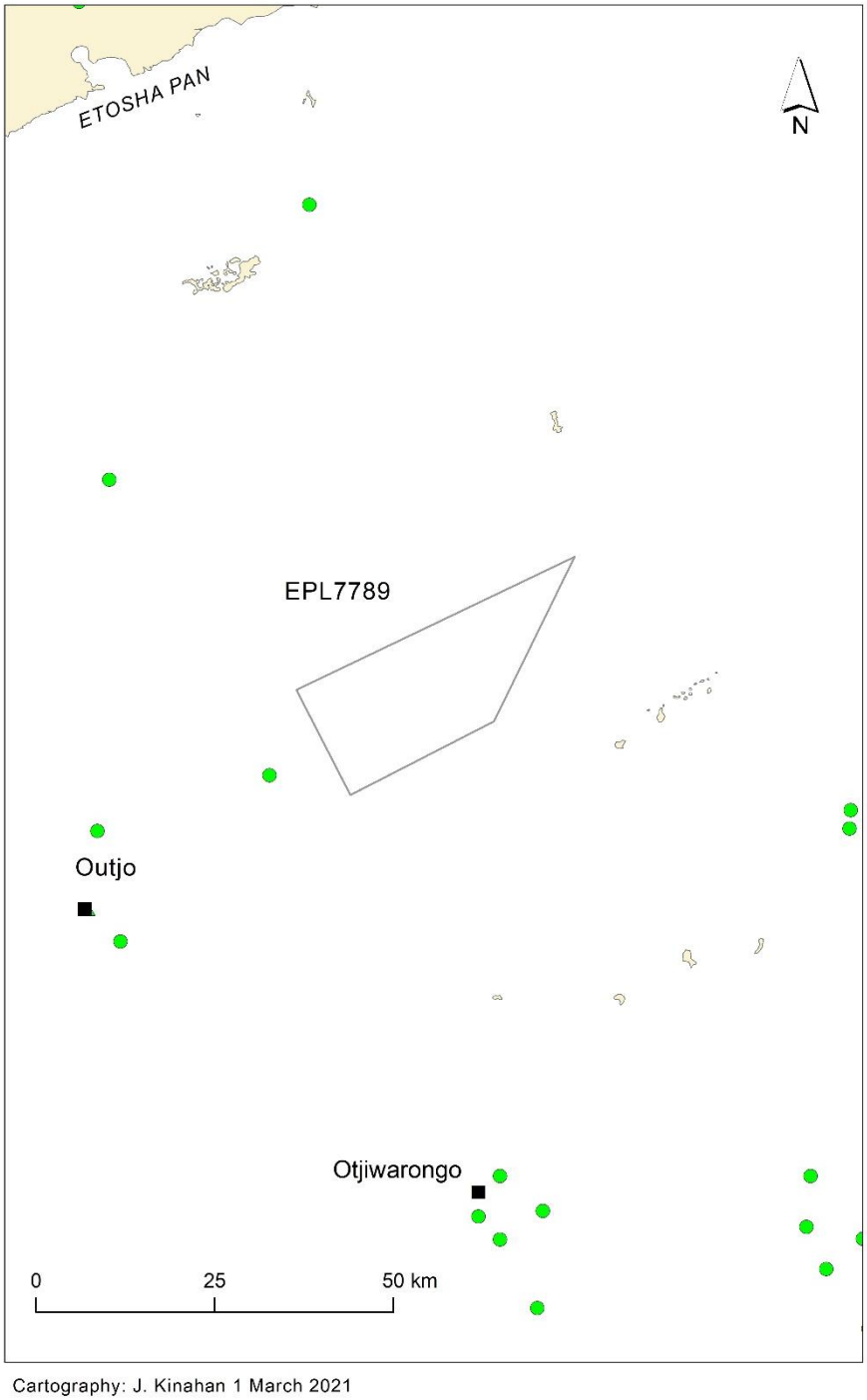


Figure 9: The location of EPL 7789 within area **C** as indicated in Figure 1, with archaeological site records (green dots). Outjo and Otjiwarongo are shown for orientation.

On the basis of the little that is known archaeologically of area **C**, there is a likelihood of archaeological remains relating to settlement of Ovaherero in that area in the last few centuries before colonial rule, and of events relating to the anticolonial war of 1904. The most enduring archaeological features of Ovaherero settlement are likely to be graves and wells, although many of the latter were taken over and modified by colonial settler farmers and would no longer be recognizeable. Together with the remains of indigenous settlement there are likely to be some historically important relics of early colonial settlement. These might include dwellings and other infrastructure on farms, many of which have formal family grave plots. These remains would all fall under the general protection of the National Heritage Act (27 of 2004).

Area **D** indicated in Figure 1 has been the focus of several intensive archaeological surveys relating to recent pre-colonial copper mining and smelting activity along the Matchless amphibolite belt. These sites consist mainly of small, secluded settlements associated with the remains of ore processing, furnaces and copper fabrication work. Many of the sites have rock art including engraved *mankala* game boards which formed an important ritual component of the copper production process (see Figure 10).

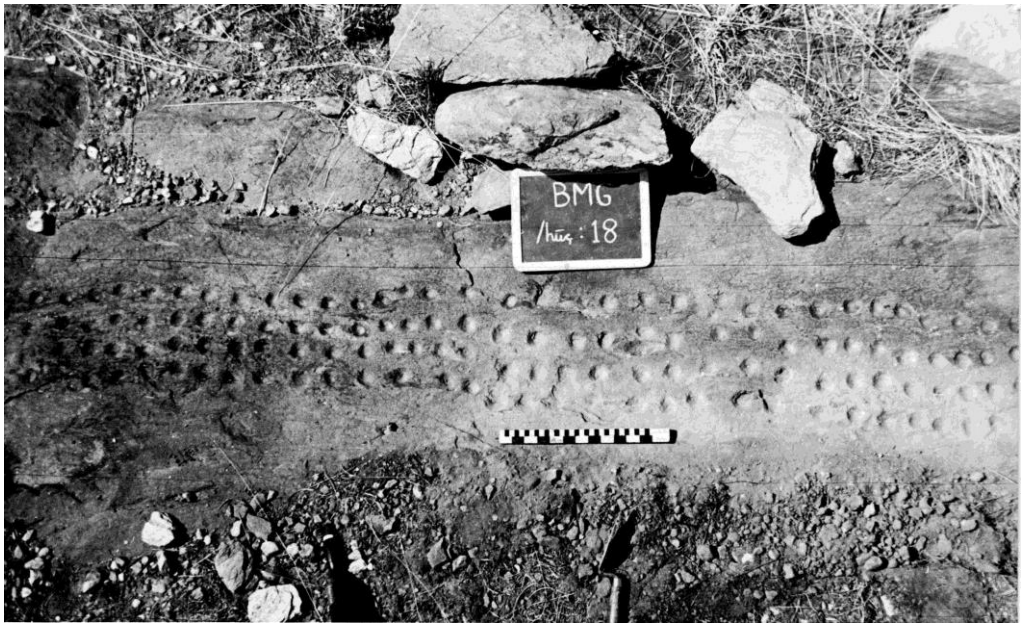


Figure 10: An engraved *manakala* board excavated on the farm Baumgartbrunn in the upper !Khuiseb

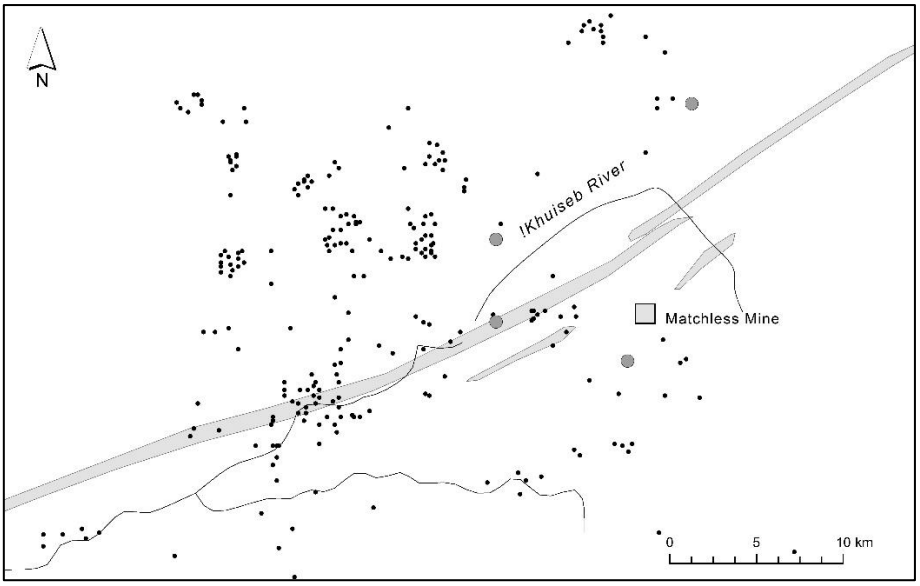


Figure 11: The distribution of archaeological sites associated with pre-colonial copper production along the Matchless amphibolite belt. Radiocarbon dated sites are indicated as grey circles.

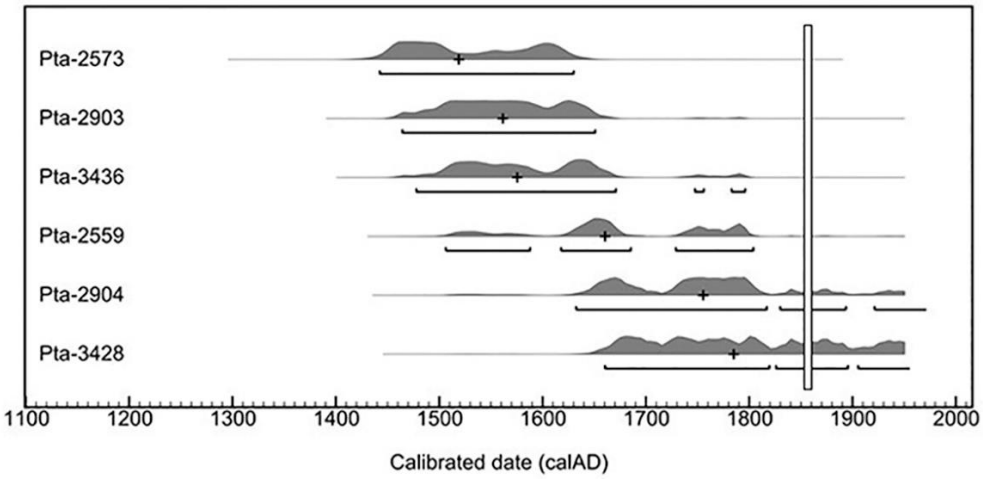


Figure 12: six calibrated radiocarbon dates for copper smelting sites shown in Figure 11. The vertical bar at approximate 1860AD indicates the period of early colonial mining at Matchless Mine[10]

[10] Adamson, R.G. & Teichmann, R.F.H. 1986. The Matchless cupreous pyrite deposit, South West Africa/Namibia. *Mineral Deposits of Southern Africa* 2: 1755–60; Kinahan, J. & Vogel, J.C. 1982. Recent copper-working sites in the !Khuiseb drainage, Namibia. *South African Archaeological Bulletin* 37: 44–5; Miller, D.E. & Kinahan, J. 1992. The metallurgical analysis of copper beads and ore from archaeological sites in central Namibia. *Communications of the Geological Survey of Namibia* 8: 67–79.

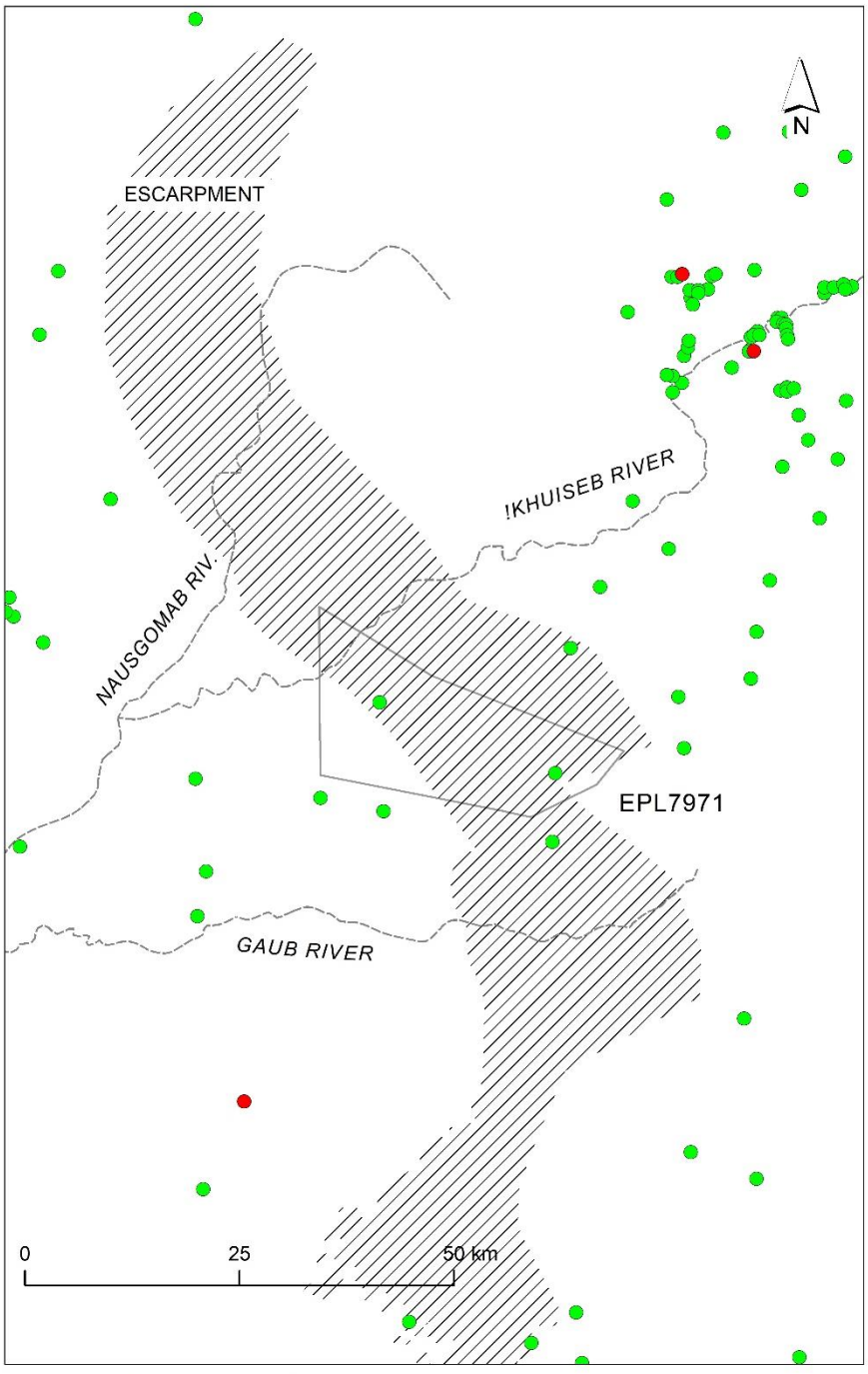


Figure 13: The location of EPL 7971 within area **D** as indicated in Figure 1, with archaeological site records (green dots) and radiocarbon dated sites (red).

The archaeological sites shown within EPL 7971 in Figure 13 are isolated artefact finds and of no significance. The dense concentration of sites in the north-eastern part of area **D** defines the known extent of archaeological sites associated with copper production. Although the archaeology of EPL 7971 is not known there is a high likelihood that the escarpment zone (indicated in Figure 13) would contain some rock shelter sites with sealed occupation deposits. Such sites would be located either on the escarpment itself or concentrated near waterholes in valleys and ravines descending to the western drainage of the Khomas highlands.

In summary, the archaeology of the seven exploration leases reviewed here would represent the known human occupation sequence for north-western, north central and central Namibia as follows:

a. **Early to mid-Pleistocene (ca. 2my to 0.128my; OIS[11] 6, 7, 19 &c):** represented by surface scatters of stone tools and artefact debris, usually transported from original context by fluvial action, and seldom occurring in sealed stratigraphic context.
b. **Mid- to upper Pleistocene (ca. 0.128my to 0.040my; OIS 3, 4 & 5a-e):** represented by dense surface scatters and rare occupation evidence in sealed stratigraphic context, with occasional associated evidence of food remains.
c. **Late Pleistocene to late Holocene (ca. 0.040my to recent; OIS 1 & 2):** represented by increasingly dense and highly diverse evidence of settlement, subsistence practices and ritual art, as well as grave sites and other remains. This period also saw the introduction of livestock, metallurgy and crop plants.
d. **Historical (the last ca. 250 years):** represented by remains of crude buildings, livestock enclosures, wagon routes and watering points as well as abandoned mines and quarries. Historical settlements are often well documented[12].

4. ASSESSMENT

The most likely impact on sites and materials protected under the National Heritage Act (27 of 2004) would be damage through encroachment, disturbance and possible destruction in the course of mechanical exploration activities such as drilling and trenching. A secondary impact would be inadvertent encroachment and disturbance due to inappropriate siting of exploration camps,

[11] Deacon, H. & Wurz, S. 2001. Middle Pleistocene populations of southern Africa and the emergence of modern behavior. In Barham, L. & Robson-Brown, K. eds *Human roots: Africa and Asia in the Middle Pleistocene.* Bristol: Western Academic and Specialist Press, pp. 55–63.

[12] See Wallace, M. & Kinahan, J. 2011. *A history of Namibia: From the beginning to 1990.* London: Hurst & Co.

equipment and supply laydowns and routes of access. These impacts would seriously compromise the cultural heritage of the area and due to the fact that damage to archaeological sites is essentially irreparable. The consequences of such impacts must be considered as permanent.

While it is usually possible to enlist the assistance of local residents to point out burial sites and other places of cultural importance the general experience is that most local residents, including landowners on freehold properties, are unaware of archaeological sites and specialized survey is therefore required to locate these. In view of the fact that this assessment is based entirely on inference from existing records it cannot be taken as a reliable basis of assessment for the granting of clearance under the Heritage Act for purposes of mechanically assisted or invasive exploration such as involving close pattern drilling, trenching and bulk sampling. For the purposes of a cautious assessment of likely impacts that could arise from exploration, such activities are similar in the effects to small-scale mining. The evidence available from all of the areas reviewed here strongly suggests that detailed field surveys should in every instance be carried out before a Mining Licence is granted.

5. RECOMMENDATIONS

On the basis of this desk assessment it is concluded that the area covered by the leases granted to Votorantim Metals Namibia (Pty) Ltd, namely EPLs 7212, 7789, 7964, 7979, 7972 and 7974 located in the Kunene Region, with slight overlap into the Otjozondjupa Region, and EPL 7971 located in the Khomas Region of Namibia are of potential archaeological significance. It is recommended that clearance is granted for exploration that is not mechanically assisted or intrusive, and a decision should be taken by the National Heritage Council that further assessment should be carried out pending the identification of specific exploration targets. If mechanically assisted or intrusive exploration methods are required, the proponent should be compelled to commission an archaeological assessment of the potential target areas. For interim purposes, it is recommended that the project proponent should adopt the Chance Finds Procedure set out in Appendix 1, so that in the event that buried archaeological remains which are not visible to surface survey may be handled in accordance with the provisions of Part V Section 46 of the National Heritage Act (27 of 2004).

Appendix 1: Chance Finds procedure

Areas of proposed development activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found in the course of development work. The procedure set out here covers the reporting and management of such finds.

Scope: The "chance finds" procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): *" a person who discovers any archaeological …. object ……must as soon as practicable report the discovery to the Council".* The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Responsibility:

Operator	To exercise due caution if archaeological remains are found
Foreman	To secure site and advise management timeously
Superintendent	To determine safe working boundary and request inspection
Archaeologist	To inspect, identify, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material

a) If operating machinery or equipment stop work

b) Identify the site with flag tape

c) Determine GPS position if possible

d) Report findings to foreman

Action by foreman

a) Report findings, site location and actions taken to superintendent

b) Cease any works in immediate vicinity

Action by superintendent

a) Visit site and determine whether work can proceed without damage to findings

b) Determine and mark exclusion boundary

c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by archaeologist

a) Inspect site and confirm addition to project GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.