ENVIRONMENTAL IMPACT ASSESSMENT

FOR PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES ON EPL 10453, LOCATED IN THE FRANSFONTEIN–KHORIXAS AREA, KUNENE REGION, NAMIBIA

ENVIRONMENTAL SCOPING REPORT

FINAL VERSION

ECC APPLICATION: 006298U6

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EXECUTIVE SUMMARY

Junior Baiano Industrial Consultants (JBIC) cc was appointed by Desert Spring Mining (Pty) Ltd to undertake the Environmental Impact Assessment (EIA), prepare an Environmental Management Plan (EMP), and facilitate the application for an Environmental Clearance Certificate (ECC) for the proposed mineral prospecting and exploration activities on EPL 10453, located west of Fransfontein and north-east of Khorixas in the Kunene Region of Namibia.

Exploration and associated ground-disturbing activities are listed under the Environmental Management Act (EMA) No. 7 of 2007 and the EIA Regulations (GN 30 of 2012), and therefore require an ECC prior to commencement. To ensure full compliance with national environmental legislation, the proponent appointed JBIC as an independent environmental consultant to conduct the required assessment, identify potential impacts, and recommend appropriate mitigation and management measures.

Project Activities Triggering Environmental Assessment

In accordance with the EIA Regulations, the proposed exploration programme triggers an ECC application due to the following anticipated activities and potential interactions with the environment:

- Localised land and soil disturbance from track access, sampling points and drilling.
- Vegetation clearing and temporary habitat disturbance affecting fauna and flora.
- Generation of dust, noise, and vibration during drilling or vehicle movement.
- Possible surface and groundwater contamination risks from fuel, oils, and drilling fluids.
- Production of general and hazardous waste requiring responsible management.
- Heritage sensitivities, including chance-finds of archaeological or cultural resources.
- Health and safety risks to workers and nearby land users.
- Potential temporary disruption to grazing areas and farm activities.

- Minor social nuisances such as access, security concerns, or vehicle movement.

These impacts are generally small-scale, localised, temporary, and manageable when compared to more intensive exploration or mining operations.

Public Participation Process

The public consultation process was undertaken in line with Regulation 21 of the EIA Regulations. Interested and Affected Parties (I&APs) were notified through:

- Publication of newspaper notices in the Confidante and Windhoek Observer.
- Distribution of a Background Information Document (BID) to stakeholders.
- Placement of site notices in Fransfontein, Khorixas and surrounding access points.
- Direct notifications to key stakeholders including local authorities, regional offices, and nearby landowners.

A formal public meeting was held in Fransfontein; however, no community members attended despite proper notification. Additional consultations were undertaken through telephonic communication, email submissions and stakeholder registrations. Details of the process are provided in Chapter 3 of this report, with supporting documentation the Appendices.

Overall Findings and Impact Significance

The EIA concludes that the majority of potential impacts associated with the proposed exploration are low to moderate in significance and can be effectively managed through adherence to the Environmental Management Plan (EMP). Key sensitivities identified include:

- Ephemeral drainage lines, rocky ridges, and localised biodiversity-rich areas.
- Heritage chance-find potentials, particularly around historic farms and ridgelines.
- Livestock farming activities on surrounding commercial farms.

With proper mitigation—including restricted access, responsible waste management, protection of drainage features, and strict implementation of the heritage chance-find

procedure—the exploration activities are unlikely to result in irreversible or significant environmental harm.

Recommendation

Based on the findings of the Environmental Assessment, it is recommended that the proposed prospecting and exploration activities on EPL 10453 be granted an Environmental Clearance Certificate (ECC), *subject to*:

1. Full implementation of the Environmental Management Plan (EMP).
2. Ongoing compliance with the Environmental Management Act (2007) and associated Regulations.
3. Adherence to all heritage, safety, and landowner engagement requirements.
4. Regular environmental monitoring and reporting to ensure continuous improvement.

If these measures are followed, the project can proceed with impacts reduced to acceptable and manageable levels that do not compromise the ecological or socio-economic integrity of the area.

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ACRONYMS

TERMS	DEFINITION
BID	Background Information Document
CA	Competent Authorities
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
PPE	Personal Protective Equipment

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Desert Spring Mining (Pty) Ltd intends to undertake prospecting and exploration activities for Base and Rare Metals, Industrial Minerals and Precious Metals on Exclusive Prospecting Licence (EPL) 10453, located within the Khorixas District of the Kunene Region, Namibia. The EPL covers a total surface area of approximately 19 997 hectares and overlaps several commercial farms situated south-east of Khorixas. The proposed activities include non-intrusive reconnaissance work, geological mapping, geochemical sampling, geophysical surveys, and limited drilling to determine the mineral potential of the licence area.

In accordance with the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), exploration activities listed under the Schedule require an Environmental Impact Assessment (EIA) and an Environmental Clearance Certificate (ECC) before any exploration may commence. The EIA ensures that the potential biophysical, socio-economic and cumulative impacts associated with the project are identified, assessed, and appropriately mitigated.

Undertaking the EIA also ensures legal compliance, reduces operational and liability risks, promotes responsible resource development, and supports national goals for sustainable mining sector growth. The assessment evaluates project alternatives, potential environmental risks, and opportunities for enhancing positive impacts such as local employment and business linkages.

Desert Spring Mining (Pty) Ltd has appointed JBIC Environmental Consultants as the independent Environmental Assessment Practitioner (EAP) to conduct the EIA process and prepare the Environmental Management Plan (EMP). This document forms part of the formal application to the Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Affairs (DEA) for the issuance of an Environmental Clearance Certificate for the proposed exploration activities on EPL 10453.

1.2. PROJECT LOCATION

The proposed exploration activities will take place within Exclusive Prospecting Licence (EPL) 10453, located in the Fransfontein–Khorixas area of the Khorixas Constituency, Erongo Region, north-western Namibia. The EPL lies within a semi-arid to arid landscape characterised by rugged topography, ephemeral drainage systems and mixed woodland–savanna vegetation.

The licence area covers approximately 29 148 ha and is situated between Huab Conservancy, /Khaodi //Hoas Conservancy, and Doro !Nawas Conservancy, with portions bordering existing communal conservancy land and wildlife movement zones.

The EPL boundary is georeferenced using the WGS 84 (EPSG:4326) coordinate system. The map below provides the official spatial footprint and key reference points. Two primary geographic reference coordinates extracted from the locality map include:

- Coordinate 1:
    - Latitude: -20.428443°
    - Longitude: 14.812326°
- Coordinate 2:
    - Latitude: -21.212838°
    - Longitude: 16.484717°

These points frame the wider spatial extent of the EPL and provide accurate geolocation for regulatory documentation.

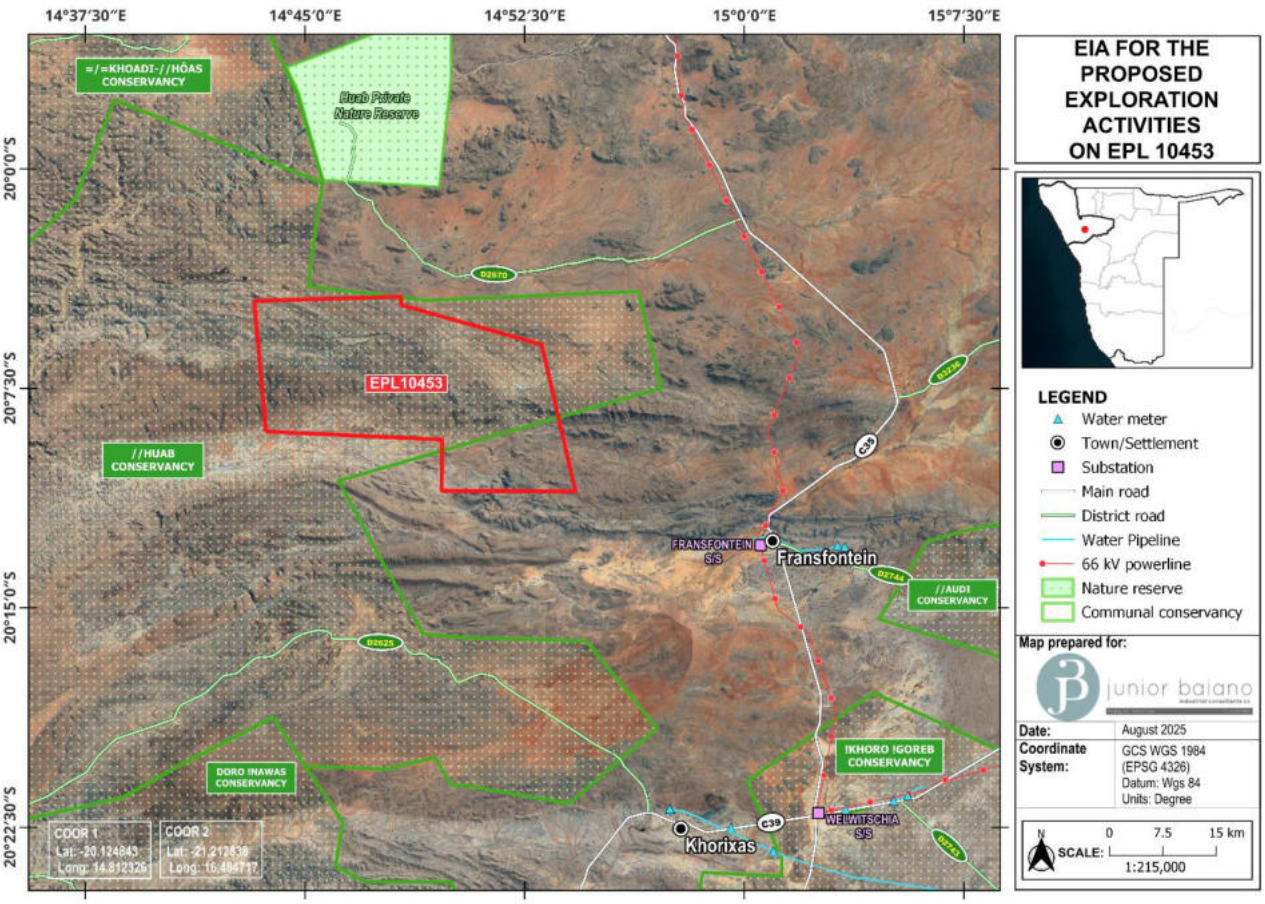

Figure Error! No text of specified style in document.**-1:** Locality Map showing EPL 10453

The EPL is accessed primarily via the C39 main road, branching off through district roads D2625 and D2670. Nearby settlements include Fransfontein (north-east of the EPL) and Khorixas (south-east), which serve as the closest service hubs for supplies, communication, and logistical support.

1.3. PROJECT OVERVIEW

1.3.1. PRE-DEVELOPMENT PHASE (PROSPECTING)

The pre-development phase focuses on early-stage prospecting to determine the potential for Nuclear Fuel Minerals within EPL 9275. This phase relies on both desktop assessments and initial field verification.

1.3.1.1 Desktop Studies

The process begins with the review of:

- Existing geological survey reports;

- Stratigraphic, structural and lithological maps covering the Otjiwarongo–Okahandja–Omaruru corridor;
- Historical exploration datasets (if available);
- Regional geophysical and geochemical anomalies recorded by past national campaigns.

These studies help identify favourable lithostratigraphic packages, structural traps and radiometric signatures typically associated with uranium-bearing formations in the Damara Belt.

1.3.1.2 Field Verification Work

Following the desktop review, reconnaissance fieldwork is carried out to:

- Conduct lithological (soil/rock) mapping;
- Verify surface radiometric signatures;
- Collect preliminary soil and rock geochemical samples;
- Confirm the presence of prospective host lithologies.

This phase may require creating minor temporary access tracks where no existing access is available, in accordance with the EMP.

1.3.1.3 Advanced Prospecting Activities

If the initial findings justify further investigation, the Proponent will undertake advanced prospecting, including:

- Detailed geological mapping;
- High-resolution ground geophysical surveys (radiometric, magnetic, transient electromagnetic/TEM depending on mineral model);
- Localised geochemical grid sampling;
- Target delineation for trenching, test pitting and drilling.

The exploration work commences only after the Environmental Clearance Certificate (ECC) is issued, as required by the Environmental Management Act (No. 7 of 2007).

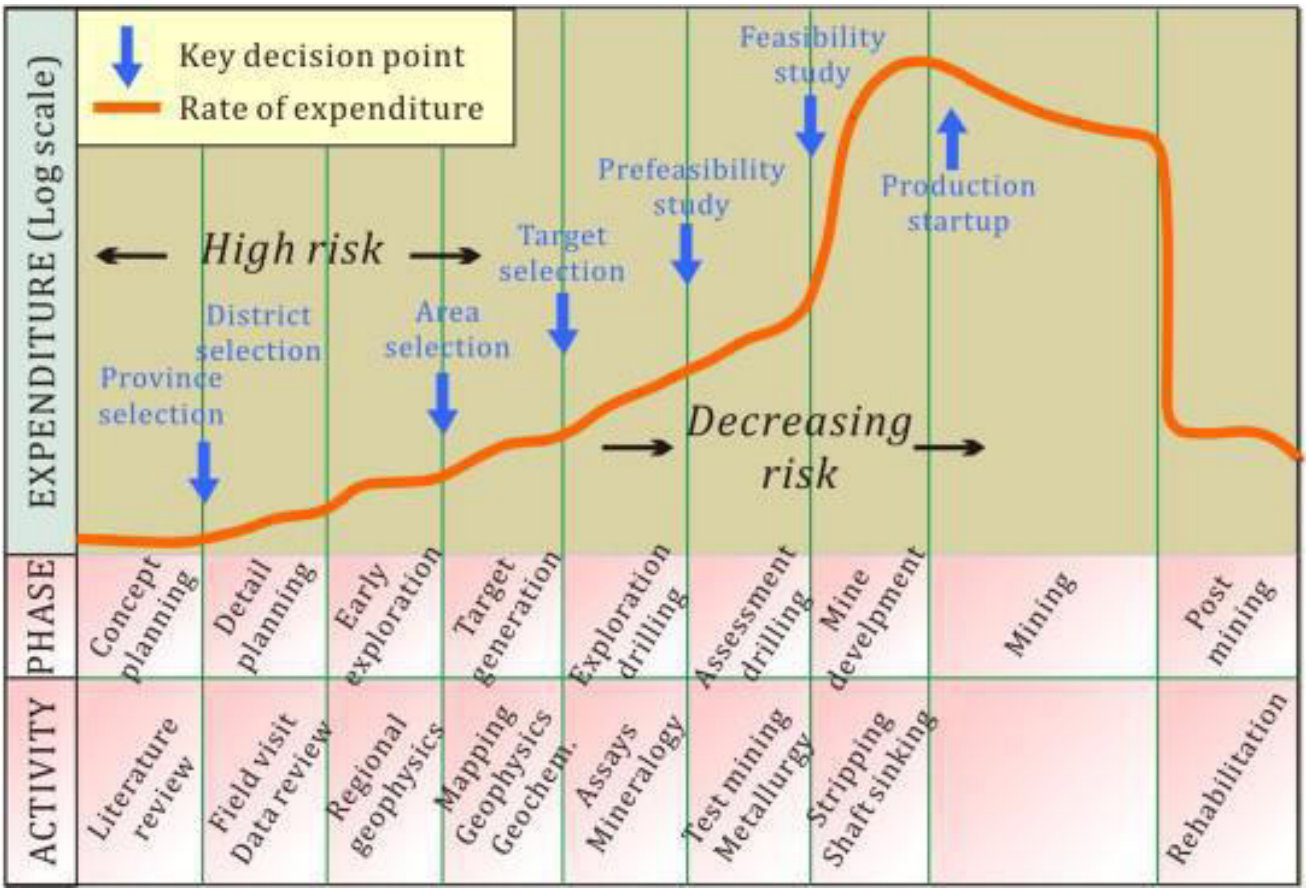

Figure Error! No text of specified style in document.**-2:** Exploration Project Phases

Figure 1-2 provides a visual summary of how exploration progresses from broad-scale regional assessments to focused drilling. It clearly shows the sequencing of tasks — starting with desktop review, followed by reconnaissance fieldwork, geophysical/geochemical surveys, and culminating in drilling and sampling.

Including this figure helps stakeholders understand that exploration is phased, systematic and dependent on preceding results, and that most environmental disturbance occurs only in the later stages after initial non-invasive techniques have been completed.

1.3.2. EXPLORATION PHASE (DRILLING, SAMPLING AND ANALYSIS)

The exploration phase focuses on confirming the presence, continuity and grade of uranium-bearing or related nuclear fuel mineralisation.

Activities during this phase include:

1.3.2.1 Drilling and Sampling

- Shallow or deep Reverse Circulation (RC) or Diamond Core drilling;

- Controlled sample collection and logging;
- Submission of samples to accredited laboratories;
- Structural and stratigraphic interpretation of subsurface information.

No explosives will be used during the exploration phase.

1.3.2.2 Specialist Contractor Support

All drilling, sampling and analysis activities will be undertaken by qualified consultants to ensure compliance with Namibian legislation and international exploration standards.

1.3.2.3 Purpose of the Exploration Programme

The programme aims to:

- Delineate potential zones of nuclear fuel mineralisation;
- Develop a geological model for the mineral system;
- Determine whether resources are of sufficient size and grade to advance toward prefeasibility study phases.

1.3.3. SUMMARY OF EXPLORATION TECHNIQUES (CONTEXTUALISED FOR EPL 9275)

1.3.3.1 Desktop & Remote Sensing Techniques

- Satellite imagery interpretation
- GIS-based geological modelling

1.3.3.2 Regional & Local Field-Based Techniques

- Geochemical sampling (soil, calcrete, rock chips, stream sediment)
- Radiometric surveys
- Magnetic surveys
- TEM/EM profiling

1.3.3.3 Detailed Site-Specific Techniques

- Stratigraphic drilling
- Trenching/test pitting

1.3.3.4 Operational Support Requirements

Depending on the level of exploration, the project may require:

- Use of existing farm tracks
- Construction of short temporary access tracks
- Temporary exploration camps
- Mobile sanitation units
- Temporary sample storage areas

All will comply with EMP requirements.

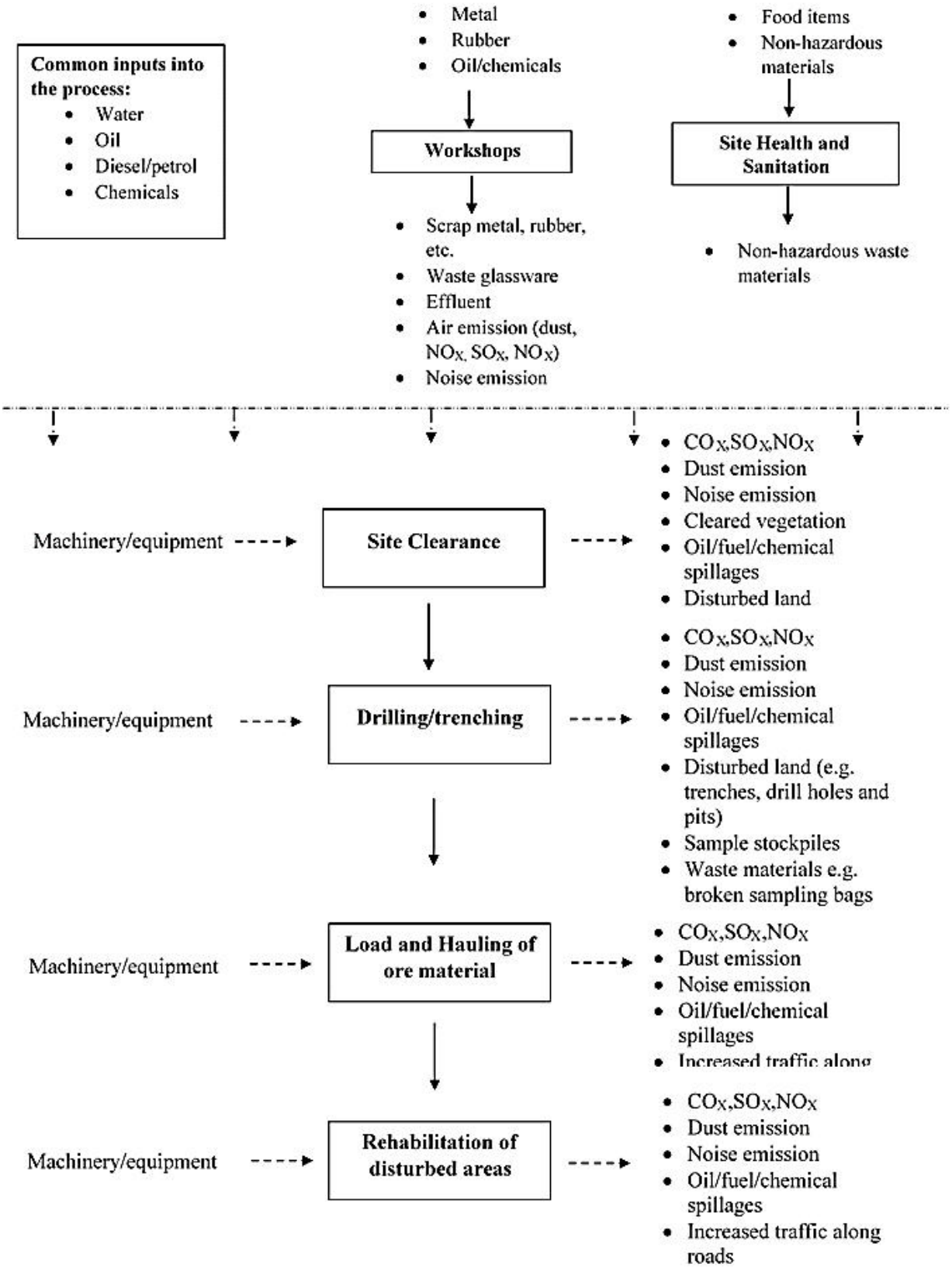

Figure Error! No text of specified style in document.**-3:** Environmental Management Flow Chart for Exploration Activities

Figure 1-3 illustrates the environmental workflow for the exploration programme, showing how each project activity generates specific environmental risks and how these are managed throughout the project. The diagram links operational inputs (fuel, water, chemicals), workshop activities, site clearance, drilling, hauling and rehabilitation to their associated impacts such as dust, emissions, vegetation loss, soil disturbance and potential hydrocarbon spillages.

The workflow highlights the continuous cycle of:

- Planning: identifying sensitive areas and preparing access routes.
- Implementation: applying mitigation measures during site clearance, drilling and hauling.
- Monitoring: ECO inspections to verify compliance and detect incidents early.
- Reporting: submitting records of waste management, emissions, and non-compliance to MEFT.
- Adaptive Management: adjusting methods if new environmental risks or sensitive areas emerge.

Overall, Figure 1-3 demonstrates that environmental management is embedded in every operational stage, ensuring coordinated responsibility between the Proponent, JBIC, the Environmental Control Officer (ECO), and MEFT throughout the exploration process.

1.4. ACCESSIBILITY

The EPL 10453 area is readily accessible via existing district and main gravel roads within the Fransfontein–Khorixas landscape of the Kunene Region. Access to the licence area is primarily gained from:

- C35 Main Road (Khorixas–Fransfontein route)
- D2625 and D2670 district roads, which intersect near or adjacent to the EPL boundary
- Several existing farm tracks and conservancy routes already in use by farmers and tourism operators

No new major access roads are required for the proposed exploration. Only minor temporary tracks may be created for drilling points where no vehicle-accessible paths exist. Any new tracks will be:

- limited to the minimal width required for safe vehicle passage,
- aligned along existing disturbed surfaces where possible, and
- rehabilitated after use, in accordance with the EMP.

1.5. INFRASTRUCTURE AND SERVICES

Although EPL 10453 is located in a rural semi-arid area, the broader landscape has adequate infrastructure to support small-scale exploration activities:

1.5.1. ROAD NETWORK

- The EPL is serviced by district roads (D2625/D2670) linking to Fransfontein, Khorixas and surrounding settlements.
- These routes already support movement of conservancy vehicles, farmers, and tourism operators, reducing the need for new infrastructure.

1.5.2. WATER SUPPLY

- The area is dependent on borehole and groundwater abstraction, which is typical for rural Kunene.

- For exploration purposes, small quantities of water will be required for drilling and camp use.
- Water will be sourced from:
    - Existing local boreholes, subject to agreements with landowners; or
    - Truck delivery from Khorixas, depending on availability and sensitivity of local supply.

1.5.3. POWER SUPPLY

- The EPL area has no direct connection to the national grid, but limited power infrastructure exists along the C35.
- Exploration activities will rely on portable diesel/solar hybrid generators as per standard practice.

1.5.4. SANITATION AND WASTE MANAGEMENT

- During exploration, mobile chemical toilets will be provided on-site and serviced by a licensed contractor.
- All domestic refuse will be:
    - collected daily,
    - stored in secure containers, and
    - transported to the Khorixas / Fransfontein waste disposal site.

1.5.5. COMMUNICATION NETWORKS

- Mobile network coverage is moderate, enabling operational communication and emergency response.
- Satellite communication may be utilised in coverage-poor zones.

1.5.6. ACCOMMODATION

- Exploration teams will either:
    - utilise existing farmstead accommodation (subject to agreements),

- make use of lodges or campsites in the Fransfontein/Khorixas area, or
- establish a small temporary exploration camp, compliant with EMP requirements.

1.6. NEED AND DESIRABILITY

The proposed exploration activities on EPL 10453 are aligned with Namibia's national economic priorities and long-term development strategies. Mining remains a central pillar of the Namibian economy, contributing approximately 20% to GDP and supporting more than 19,000 direct jobs and over 100,000 livelihoods indirectly. As demand for critical minerals—including uranium and other nuclear fuel minerals—continues to rise globally in response to clean-energy transitions, Namibia is strategically positioned to expand its role as a secure supplier of low-carbon energy minerals (BDO, 2018).

National policy frameworks such as Vision 2030, NDP5, the Harambee Prosperity Plan, and the National Minerals Policy emphasise mineral exploration as a prerequisite for responsible economic growth, industrialisation, and employment creation. Exploration is therefore necessary to identify future economic deposits, guide long-term land-use planning, and stimulate downstream investment. The proposed project directly supports these objectives by generating geological data, employment, local procurement opportunities, and strengthened investor confidence.

The project is also desirable in terms of location and timing. EPL 10453 lies within the mineral-prospective Damara Belt, a region known for world-class uranium and base-metal occurrences. The area is accessible through existing district roads and farm tracks, reducing disturbance and enabling cost-effective exploration. The farms underlying the EPL consist of commercial agricultural land with moderate environmental sensitivity, meaning exploration can be undertaken with minimal impact when guided by the EMP.

Furthermore, the project aligns with the government's commitment to green-economy development and global energy transition priorities. Namibia's growing recognition as an emerging supplier of critical minerals makes the timely execution of exploration programmes essential for strengthening national competitiveness and attracting future investment.

To summarise the justification for the project, Table 1-1 presents the consolidated Need vs Desirability Matrix, demonstrating the alignment of the project with national development imperatives, regional socio-economic needs, and environmental suitability.

Table 1-1: Need vs Desirability Matrix

Criterion	Need	Desirability
National Economic Priorities	Sustains mineral-driven GDP, exports and employment; exploration is essential for future mining investment.	EPL located in a known mineral-prospective zone supporting national economic diversification targets.
Critical Minerals Demand	Global demand for uranium and nuclear fuel minerals is increasing under the clean-energy transition.	EPL sits within a favourable geological domain (Damara Belt), increasing chances of viable discoveries.
Energy Transition & Green Growth	Uranium is key to global low-carbon power generation; Namibia aims to expand critical-mineral supply.	Supports Namibia's strategic role in international green-energy value chains.
Regional Socio-Economic Needs	Need for rural economic activity, employment and local service demand.	Exploration stimulates jobs, procurement and spending in nearby towns and farms.
Scientific & Geological Knowledge	New data required to refine Namibia's mineral-resource base and inform planning.	EPL represents an underexplored area with potential to enhance national geological understanding.
Environmental Suitability	Exploration must occur under regulated conditions to limit environmental risks.	Commercial farmland with moderate sensitivity allows low-impact operations following the EMP.
Infrastructure Availability	Access, logistics and service requirements needed for safe exploration.	EPL accessible via existing roads and tracks, reducing disturbance and costs.

Criterion	Need	Desirability
Policy Alignment	Directly aligns with Vision 2030, NDP5/6, HPP II and National Minerals Policy.	Timing supports national economic recovery and industrialisation efforts.

1.7. PROJECT ALTERNATIVES

The assessment of alternatives is a key requirement of the Environmental Management Act (Act No. 7 of 2007) and its 2012 EIA Regulations. For exploration projects, feasible alternatives are limited due to the fixed nature of prospecting rights, but reasonable options must still be assessed. The sections below present the principal alternatives considered: the No-Go alternative, the Project (Go) alternative, and operational alternatives available to the Proponent.

1.7.1. "NO-GO" ALTERNATIVE

Under the No-Go option, the proposed exploration activities on EPL 9275 would not proceed. The consequences include:

- Environmental and Land-Use Implications
- The project area would retain its current land uses—primarily commercial livestock farming and conservation-compatible activities.
- No additional pressure would be placed on water resources, soils, vegetation or biodiversity.
- No risk of localised disturbance associated with access tracks, drilling or sampling.
- Socio-Economic Implications
- No new direct or indirect employment opportunities would be created for communities in the Otjiwarongo–Okahandja–Omaruru area.
- No local procurement, contractor opportunities or service-sector stimulation would occur.
- Namibia would lose an opportunity to expand its strategic geological knowledge base for nuclear fuel minerals—knowledge that informs national mineral investment decisions.

Given Namibia's national development priorities (Vision 2030; Harambee Prosperity Plan II; NDP5/6) and the country's strategic positioning in the global uranium and clean-energy supply chain, the No-Go option does **not** support broader economic or policy objectives.

However, it remains the default option if authorisation is refused or critical environmental sensitivities are identified.

1.7.2. PROJECT (GO) ALTERNATIVE

If implemented, the project offers several national and regional benefits:

1.7.2.1 Economic and Strategic Benefits

- Contributes to Namibia's positioning as a secure producer of nuclear fuel minerals, supporting global clean-energy markets.
- Generates income streams through local procurement, logistics, fuel, catering, security and related services.
- Enables employment for local residents, including unskilled labour recruited through traditional authorities and local leadership structures.
- Enhances Namibia's geological information base, which is critical for future investment decisions and mineral-sector planning.

1.7.2.2 Environmental Justification

- Exploration activities are low impact, temporary and highly reversible, especially under strict EMP compliance.
- No explosives are used, and all drilling sites are rehabilitated post-sampling.
- The scale of disturbance is limited relative to mining activities.

Given manageable environmental risks and strong developmental relevance, the Go option is environmentally acceptable and socio-economically desirable, provided the EMP is fully implemented.

1.7.3. OPERATIONAL ALTERNATIVES CONSIDERED

Although site location cannot change (the EPL boundary is legally fixed), several operational alternatives were evaluated to optimise environmental and social performance.

Table 1-2: Operational Alternatives Assessment

Alternative Component	Options Considered	Preferred Option & Rationale
Site Location	• Current EPL 9275 area • Alternative site (not possible)	Current EPL only — mineral rights legally confined to EPL 9275; no other site is permissible.
Transportation	• Road Rail • Water (Walvis Bay)	Road transport — most practical, cost-effective and closest to the exploration area. Existing farm tracks will be prioritised to minimise disturbance.
Solid Waste Management	• On-site waste disposal • Disposal at authorised off-site facilities	Off-site disposal at authorised facilities — ensures legal compliance and reduces localised impacts. On-site temporary storage allowed under EMP control.
Water Supply & Sanitation	• Borehole abstraction • Septic systems • Mobile chemical toilets	Mobile toilets + licensed water sourcing — lowest disturbance option; avoids unnecessary groundwater abstraction until needed and approved.
Energy Sources	• Diesel generators • Solar • Electricity (grid) • Gas / wood fuel	Hybrid: Solar + limited diesel — solar reduces emissions and operational costs; diesel used only where required for drilling equipment.
Camp Setup	• Farmstead accommodation • Temporary mobile camp	Temporary mobile camp (with consent) — flexible, low-impact, and fully demountable after exploration.

1.7.4. CONCLUSION ON ALTERNATIVES

Based on the analysis, the Project (Go) alternative is environmentally acceptable and socio-economically favourable. The No-Go alternative protects the status quo but fails to support national mineral development, clean-energy objectives, and regional economic growth.

With robust implementation of the EMP, the exploration programme on EPL 9275 represents a sustainable and low-impact land-use option, and the No-Go alternative can reasonably be eliminated.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

This Environmental Impact Assessment (EIA) Report for the proposed exploration activities on EPL 10453 has been compiled in accordance with the Namibian legal framework that governs environmental protection, land use, natural resource management and occupational health and safety. The legislation referenced herein applies to all phases of the project—prospecting, exploration, access development, sampling, camp establishment and rehabilitation.

Namibia's environmental legislation serves several essential functions, including:

- Regulating pollution control and waste management, particularly for activities involving hydrocarbons, dust, noise and hazardous substances;
- Ensuring conservation and sustainable utilisation of natural resources, including soil, vegetation, fauna, surface and groundwater;
- Guiding sustainable land-use planning and responsible development, especially on agricultural farms where EPL 10453 is situated;
- Safeguarding occupational health and safety for exploration personnel, contractors and surrounding communities;
- Clarifying the rights, duties and responsibilities of the Proponent, regulatory authorities and other stakeholders involved in exploration activities.

This section provides a consolidated overview of national legislation, policies, and international obligations that are relevant to the proposed project. It offers a concise summary of key provisions applicable to exploration activities, without attempting to list every legal requirement in full.

The legal instruments presented here guide:

- the EIA process;
- the development of mitigation measures;
- the content of the Environmental Management Plan (EMP); and
- compliance obligations for Desert Spring Mining throughout the lifespan of EPL 10453.

2.2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project.

Table 2-1: Legal Compliance

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
Constitution	Namibian Constitution (1998)	• Article 95(l) requires the State to maintain ecosystems, essential ecological processes and biological diversity. • Property rights and economic participation rights protected under Article 16.	• Exploration must uphold sustainable resource use and avoid biodiversity loss. • The project enables lawful economic activity while ensuring environmental protection via the EMP.
National Development Planning	Vision 2030 & NDP5	• Promotes economic growth, employment, and responsible resource utilisation.	• Exploration aligns with national goals for economic diversification and critical mineral development. • Creates short-term local employment and long-term mineral sector growth potential.

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
Archaeology & Heritage	National Heritage Act 27 of 2004	• No disturbance of heritage sites without NHC approval. • Chance-find procedures required.	• EPL 10453 is not known to contain registered heritage sites; however, unmarked graves, artefact scatters, or stone features may occur, requiring chance-find measures.
	National Monuments Act 28 of 1969	• Protects fossils, archaeological objects, rock engravings, and graves older than 1900.	• If any heritage/archaeological materials are discovered during track creation or drilling, work must stop and NHC notified.
Environmental Protection	Environmental Management Act 7 of 2007	• All listed activities require an EIA and Environmental Clearance Certificate (ECC). • Requires waste control, pollution prevention, and public participation.	• This legislation forms the foundation for the EIA and EMP for EPL 10453. • Proponent must comply with ECC conditions, reporting and mitigation requirements.
	EIA Regulations (GN 30 of 2012)	• Specifies EIA steps, public consultation, contents of reports, and notification processes.	• Guides the structure of this EIA, including BID distribution, newspaper

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
			adverts, public meeting(s), and stakeholder registration.
Pollution & Waste	Pollution and Waste Management Bill (Draft)	• Regulates pollution control and sustainable waste handling.	• Exploration produces domestic waste, minor hydrocarbon waste, and drilling by-products – all must follow best-practice waste minimisation & safe disposal.
Soils	Soil Conservation Act 76 of 1969	• Prevention of soil erosion and contamination.	• Track creation, drilling pads, and temporary camps must minimise soil disturbance and erosion.
Biodiversity	NBSAP2 (2013–2022)	• Promotes protection of biodiversity, sustainable use of natural resources.	• EPL area is predominantly semi-arid savannah; exploration footprint must avoid unnecessary clearing and protect sensitive species if encountered.
Hazardous Substances	Hazardous Substances	• Regulates handling, storage and disposal of hazardous materials.	• Diesel, lubricants, drilling fluids and greases must be stored in labelled containers with spill kits and bunds.

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
	Ordinance 14 of 1974		
Air Quality	Atmospheric Pollution Prevention Ordinance 11 of 1976	• Controls dust, emissions from vehicles and machinery.	• Dust from driving and drilling must be managed. Vehicles must be well-maintained to minimise emissions.
Wildlife Protection	Parks and Wildlife Management Bill (2006)	• Protects wildlife and plants, regulates interactions with protected species.	• EPL 10453 occurs in commercial farmland; however, fauna (antelope, small mammals, raptors) must be protected. No hunting/collection is permitted.
Forestry	Forest Act 12 of 2001	• Permit required for removal of protected trees or any vegetation within 100 m of watercourses.	• EPL 10453 has no permanent rivers, but protected trees may occur (e.g., *Acacia erioloba*, *Boscia albitrunca*) – removal requires a permit if unavoidable.

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
Water	Water Act 54 of 1956 (still applicable)	• Prohibits pollution of surface and groundwater. • Requires permits for wastewater discharge.	• Exploration uses minimal water; sanitation waste from mobile toilets must be handled by licensed contractors.
	Water Resources Management Act 11 of 2013	• Requires permits for borehole drilling and abstraction.	• Any dedicated exploration water boreholes must be registered and licensed with MAWLR.
Health & Safety	Labour Act 11 of 2007 + Regulations	• Ensures safety, PPE, hazard mitigation, fire-safety measures.	• All contractors must comply with OHS, provide PPE, training, first-aid, and emergency procedures.
Public Health	Public Health & Environmental Act 2015	• Prohibits nuisances and unhealthy conditions.	• Noise, dust, waste, sanitation must not create a public health risk.
Mining Compliance	Minerals (Prospecting and Mining) Act 33 of 1992	• Governs exploration licences, environmental duties and reporting.	• EPL 10453 activities must comply with licence conditions (no explosives unless authorised; reporting to MME).

Aspect	Legislation	Relevant Provisions	Relevance to EPL 10453 Exploration Project
Land Use Planning	Township and Regional Planning Act 5 of 1996	• Ensures activities are compatible with regional land-use zoning.	• EPL is on commercial farmland; exploration must avoid interference with farming operations and obtain farm-owner consent.
Fuel Storage	Petroleum Products & Energy Act 1990	• Requires licences for >200 L fuel storage; bunding and safety measures.	• If fuel is stored for drilling/compressor units, storage volumes must comply with licensing thresholds.
Climate Policy	National Climate Change Policy (2011)	• Encourages reduced emissions and resilience to climate risks.	• The project promotes best-practice fuel efficiency and use of solar systems for camps where feasible.

N.B: All identified crucial pieces of legislations will have to be adhered to by the proponent using different provisions and vehicles of compliance as indicated in their respective pieces of legislations. Where there is need to engage private consultants to facilitate compliance, the proponent is encouraged to consult qualified and certified personnel. Legal compliance auditing is to be done as part of all bi-annual reports to be conducted by the Environmental consultant.

Permits and licenses that are required, as part of compliance and authorization will have to be in place before operations commences. The most crucial license to be required before operations are as follows;

- Removal, destruction of indigenous trees, bushes or plants within 100 yards of stream or watercourse.
- Water abstraction permit, Effluent disposal permit
- Hazardous waste Storage/disposal /transportation permit
- Mineral Prospecting License

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. SOCIO-ECONOMIC ENVIRONMENT

EPL 10453 is located on Farm Outjo-Gerus No. 12 in the Khorixas District of Kunene Region, north-western Namibia. The area forms part of a predominantly rural landscape characterised by low population density, extensive livestock farming, wildlife-based tourism and scattered settlements linked to small service centres such as Khorixas town. Figure 2-1 shows the location of EPL 10453 within Kunene Region and its proximity to existing district roads and settlements.

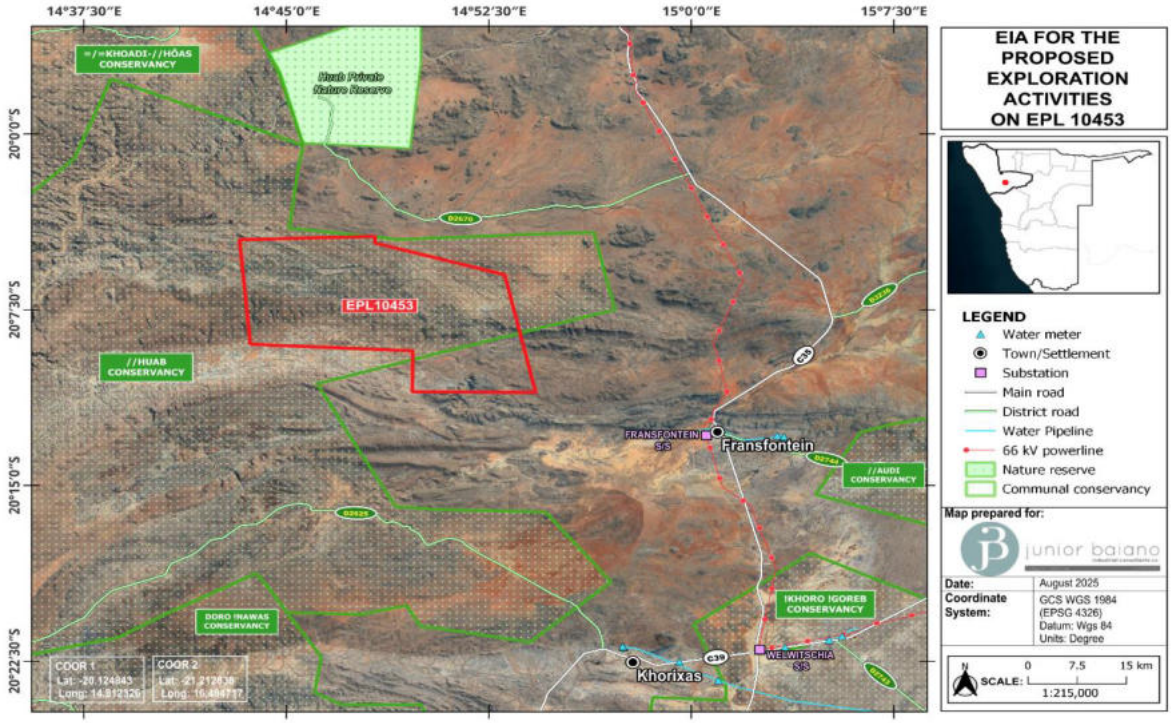

Figure 3-4: Locality Map of EPL 10453 within Kunene Region

The socio-economic context is important for understanding how exploration access, employment, land use and potential disturbance may interact with local communities and existing livelihood systems.

3.1.1. REGIONAL CONTEXT – KUNENE REGION

Kunene Region has an estimated population of about 120,762 people (NSA, 2023). The region remains one of Namibia's most sparsely populated areas, with a predominantly rural population (±77%) and extensive rangelands used for cattle, goats and small-stock farming. Land tenure is a mix of communal areas (predominantly north and west) and freehold commercial farms in the central and south-eastern parts of the region, including the Khorixas/Outjo-Gerus area.

Key regional features relevant to the project include:

- Livelihoods and income - Livelihoods are strongly agro-pastoral, complemented by small businesses, social grants and employment in the tourism and public sectors. According to the 2023 Census, the main source of household income in Kunene is farming (about one-third of households), followed by wages/salaries, small business and pensions (NSA, 2023). This underscores the importance of protecting rangeland resources and water points used by livestock and wildlife.
- Demographic profile - Kunene has a young population, with a high share of residents under 15 years of age and a relatively small elderly population. This age structure places pressure on education, health and employment opportunities, and highlights the potential value of even short-term exploration jobs and service contracts.
- Services and infrastructure - Access to safe water and sanitation remains below the national average, with a significant proportion of households still relying on boreholes, open wells and communal points, and many households without formal toilets (NSA, 2023). Electricity access is limited in rural areas; households mainly use wood/charcoal for cooking, which has implications for vegetation harvesting and bush resources. Road access is via gravel district roads connecting farms and settlements to Khorixas and Outjo.

In this context, exploration activities must be planned to avoid disruption of boreholes, grazing routes and access roads that support rural livelihoods.

3.1.2. Local Context – Khorixas District and Farm Outjo-Gerus

Within Kunene, EPL 10453 falls in the Khorixas administrative district, in an area dominated by commercial and semi-commercial livestock farming, game ranching and nature-based tourism. The nearest service centre is Khorixas town, which provides:

- Basic public and private services (schools, clinics, retail outlets, fuel, small workshops);
- Limited accommodation and catering facilities; and
- A local labour pool for semi-skilled and unskilled work.

The immediate project area (Farm Outjo-Gerus and surrounding farms) can be summarised as:

- Low settlement density – farmsteads are widely spaced and most workers live on farms or commute from Khorixas.
- Land use – cattle and small-stock farming, game farming, and opportunistic tourism based on wildlife viewing and scenic landscapes.

- Water supply – mainly borehole water (drilled and maintained by landowners), with some farm dams and earth pans used for livestock.
- Access – via existing farm tracks that link to the district road network.

From a socio-economic perspective, the key sensitivities for exploration include grazing land, farm infrastructure (fences, gates, water points), and visual/traffic disturbances experienced by farmers, staff and visitors.

3.1.3. KEY SOCIO-ECONOMIC INDICATORS – KUNENE REGION

Table 3-1 provides a regional-level snapshot of demographic and socio-economic conditions in Kunene Region, compared with the national profile, using the 2023 Population and Housing Census (NSA, 2023). The values are indicative and serve to frame the receiving environment for EPL 10453.

Table 3-1: Selected Socio-Economic Indicators – Namibia vs Kunene Region (2023)

Indicator	Namibia (2023)*	Kunene Region (2023)
Population size	~3.02 million	120,762
– Males	–	58,646
– Females	–	62,116
Sex ratio (males per 100 females)	~96	~94
Age composition (% of population)		
– Under 5 years	~13%	≈19%
– 5–14 years	~23%	≈28%
– 15–59 years	~57%	≈48%
– 60+ years	~7%	≈5%
Literacy rate (15+ years)	~91%	≈65%
Economic activity (15+ years)		
– In labour force	~58%	≈45%
– Employed (of labour force)	~78%	≈56%
– Unemployed (of labour force)	~22%	≈44%
Main source of household income		
– Wages & salaries	~57%	≈41%
– Farming	~14%	≈32%
– Business (non-farming)	~8%	≈8%

Indicator	Namibia (2023)*	Kunene Region (2023)
– Old-age pension	~12%	≈11%
Housing & services		
– Households with safe water access	~87%	≈63%
– Households with no toilet facility	~36%	≈71%
– Households using wood/charcoal for cooking	~46%	≈77%

*National values shown for context only; Kunene figures are from the NSA 2023 Population and Housing Census.

These indicators emphasise that Kunene Region – and by extension the Khorixas/Outjo-Gerus area – is characterised by:

- High dependence on farming and natural resources;
- Lower education and literacy levels than the national average;
- Limited access to water, sanitation and modern energy; and
- A high share of youth, which increases the importance of local employment and skills opportunities created by the project.

In designing and implementing exploration activities on EPL 10453, Desert Spring Mining should therefore prioritise:

- Local employment and procurement (especially for unskilled and semi-skilled roles);
- Protection of boreholes, grazing land and farm infrastructure; and
- Clear communication with farmers, workers and local authorities about access routes, timing of activities, noise, dust and traffic.

3.1.4. Land Use and Livelihoods Across the EPL Area

Land use within and around EPL 10453 is dominated by commercial livestock farming, mainly cattle and small-stock production across extensive rangelands. Several farms in the wider Khorixas–Outjo corridor also practice game ranching and nature-based tourism, taking advantage of the region's wildlife, scenic landscapes, and proximity to tourist routes leading toward Etosha and Twyfelfontein.

In some areas, charcoal production occurs as part of rangeland management, particularly where bush thickening affects grazing conditions. These diversified activities—livestock, tourism, charcoal, and farm-based employment—create an economy heavily dependent on:

- Grazing land availability,

- Reliable borehole water,
- Functioning farm infrastructure (fences, troughs, gates, access tracks), and
- Safe movement through farm routes shared by workers, livestock, wildlife, and tourism vehicles.

Because livelihoods depend so directly on natural resources and farm infrastructure, exploration activities must be coordinated closely with farm owners to avoid disruption to:

- Water points and boreholes,
- Grazing camps and rotational grazing schedules,
- Wildlife/tourism viewing routes, and
- Farm security protocols.

This dependence makes the EPL area socio-economically sensitive, even though settlement density is low.

3.1.5. ACCESS TO SERVICES

The EPL area lies within a semi-remote section of Kunene Region, where basic services are available but often located some distance away. The primary service and supply centre relevant to the project is:

- Khorixas Town

Provides access to:

- Health facilities (clinic and district hospital),
- Fuel stations,
- Mechanics and light engineering services,
- Retail shops and small markets,
- Police and administrative services,
- Telecommunications (MTC coverage is generally good but drops in valleys and low-lying terrain).

3.1.5.1 Transport & Access

Road access is primarily through:

- District gravel roads branching from the C39/C35 corridors,
- Farm access tracks controlled by landowners,
- No major national highways run through the project area.

Movement on farm roads must be negotiated with each landowner due to gates, livestock crossings, and tourism activities.

- Water & Energy

- Water supply is almost entirely borehole-based, pumped via diesel or solar systems.
- Any exploration water must comply with Water Resources Management Act (2013) permit requirements and landowner agreements.
- Rural electricity is predominantly off-grid solar, supported by generators during high-demand operations.
- Sanitation at exploration camps will rely on mobile chemical toilets managed by approved contractors.

Overall, services are adequate for exploration logistics but require careful planning, especially regarding water sourcing, refuelling and safe navigation of farm roads.

3.1.6. SOCIO-ECONOMIC RELEVANCE TO THE PROJECT

The proposed exploration activities under EPL 10453 have several socio-economic implications for the surrounding farming community and Khorixas town:

- Potential Positive Contributions
- Short-term employment for local farmworkers, drivers, cooks, security personnel and support staff.
- Procurement of goods and services from Khorixas, such as fuel, accommodation, small supplies, and vehicle repairs.
- Diversification of local income streams, especially for farms hosting exploration access routes or temporary camps through negotiated land-use compensation agreements.
- Key Sensitivities

Because the EPL is located exclusively on commercial farm units, the most significant socio-economic considerations relate to:

- Protection of boreholes, which are vital for livestock and sometimes wildlife.
- Minimising disturbance to grazing schedules and rotational grazing systems.
- Ensuring farm gates, fences and security measures remain intact during exploration.
- Avoiding interference with nature-based tourism operations, including sensitive wildlife areas or viewing routes.
- Preventing dust, noise and traffic impacts that may affect farm households, livestock, and tourism visitors.
- Overall Sensitivity Rating

The socio-economic sensitivity of the area is low to moderate, primarily because:

- Settlement density is low,
- Activities are temporary and reversible, and

- Most impacts can be mitigated through access agreements, communication, and EMP compliance.

When well-managed, the exploration programme poses manageable socio-economic risks and localised benefits without long-term displacement of existing land uses.

3.2. Climate

3.2.1. Overview of Climatic Setting

The project area within EPL 10453 is located in Namibia's semi-arid north-western interior, falling within the transition zone between the central escarpment and the hyper-arid Namib Desert. This region is characterised by extremely low and erratic rainfall, high interannual climatic variability, intense summer temperatures, and evaporation rates that far exceed annual precipitation. Seasonal climatic extremes play a central role in shaping ecological functioning, affecting vegetation productivity, livestock grazing conditions, the availability of surface and groundwater, and the operational timing of exploration work. These climatic features also influence access during field operations, dust generation, and the feasibility of water-dependent activities, all of which must be considered when planning exploration programmes in the Khorixas–Fransfontein landscape.

3.2.2. Rainfall Patterns

Rainfall across the EPL 10453 landscape ranges between approximately 150 and 250 mm per year, consistent with the wider Kunene Region's semi-arid conditions. Rainfall is confined almost entirely to the austral summer months between December and March, typically occurring as short, isolated convective thunderstorms. These rainfall events are highly unpredictable in both space and time, often separated by long dry periods that contribute to persistent aridity. The spatial distribution of rainfall across Namibia is illustrated in Figure 3.2, which shows the project area lying within a low-rainfall band on the eastern edge of the Namib Desert. The strong year-to-year variability in rainfall is further highlighted in Figure 3.3, which demonstrates the high temporal unpredictability characteristic of north-western Namibia. For exploration activities, this variability affects access routes, road conditions, the availability of water for drilling, and the risk of occasional flash flooding in ephemeral drainage lines such as those feeding into the Huab system.

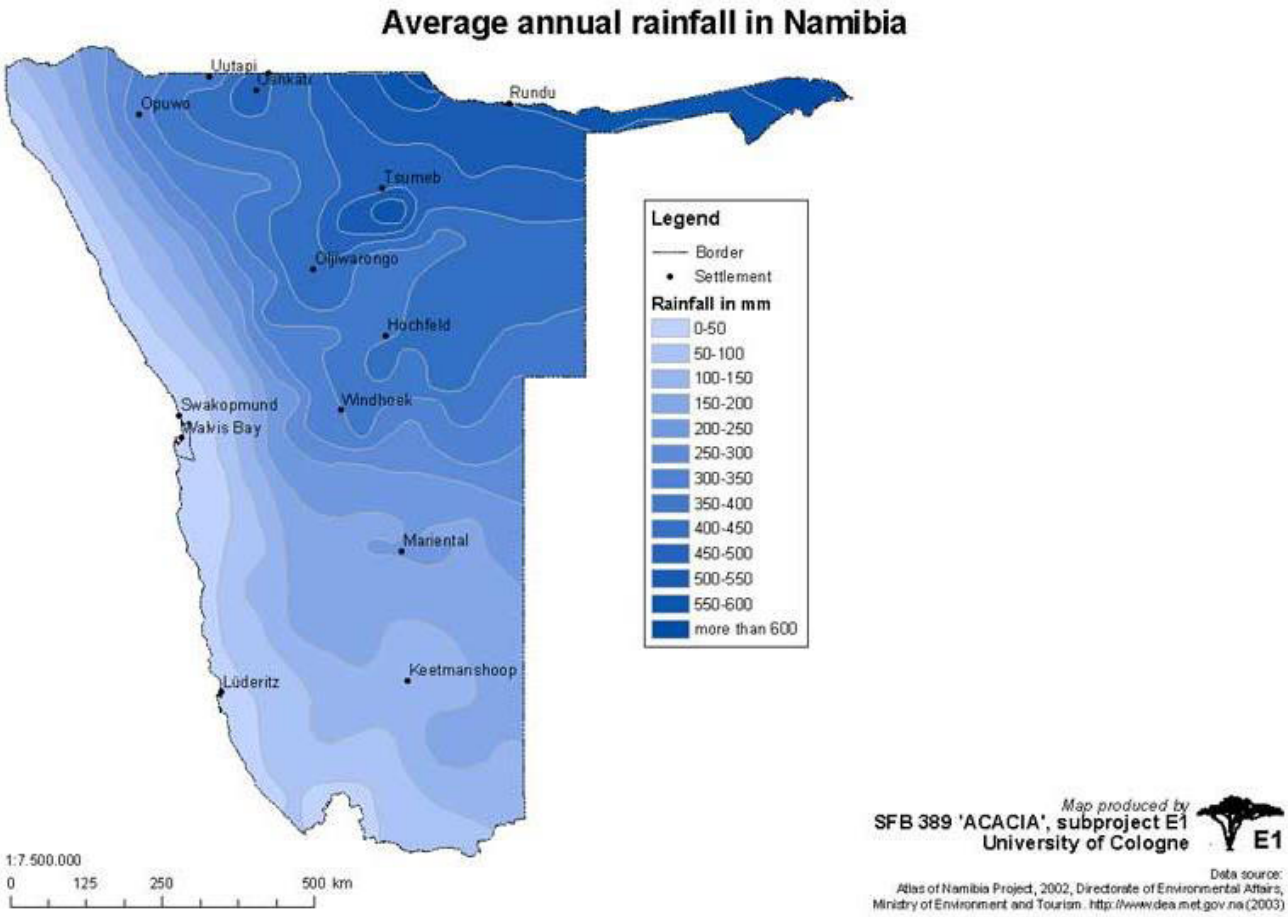

Figure 3-5: Average Annual Rainfall in Namibia

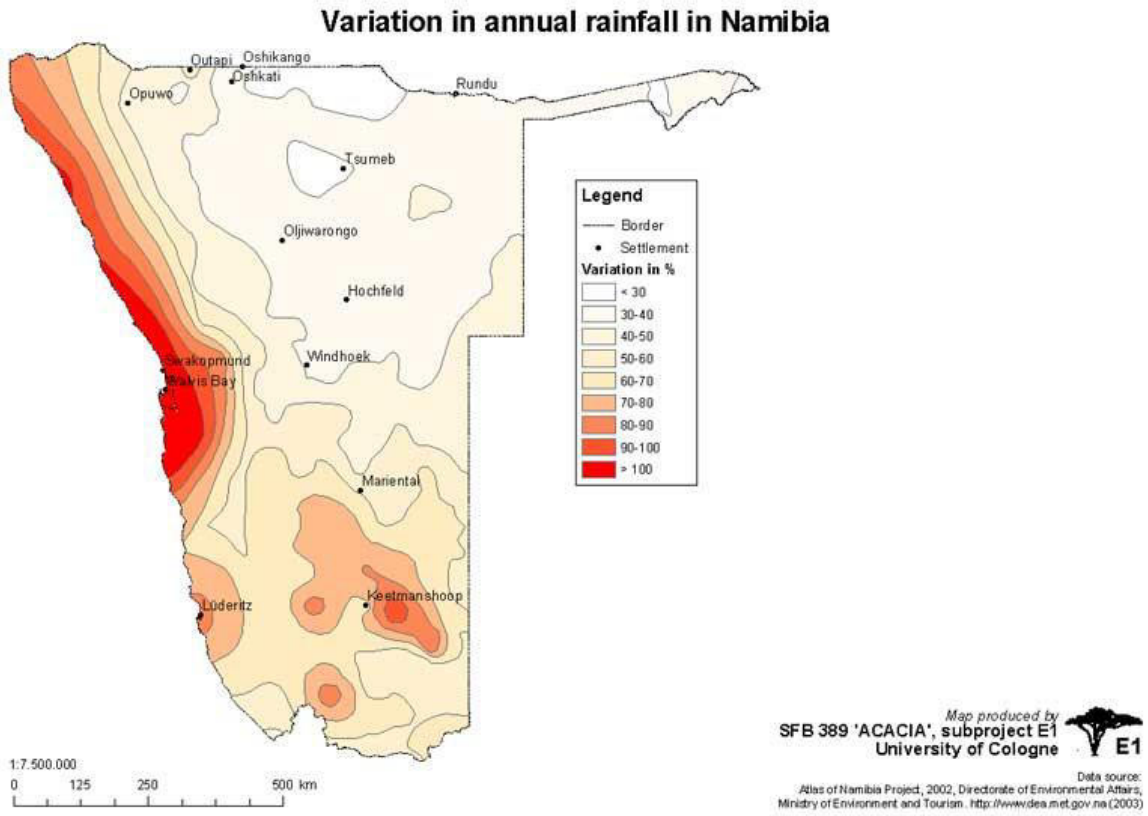

Figure 3-6: Variation in Annual Rainfall in Namibia

3.2.3. CLIMATE VARIABILITY AND EXTREMES

The Kunene Region experiences some of the most pronounced climate variability in Namibia, with rainfall fluctuations frequently exceeding 50 percent between successive years. Multi-year droughts occur regularly, often lasting several seasons, while isolated high-intensity rainfall events may occasionally cause rapid runoff and temporary channel flow in ephemeral rivers. These extremes influence the predictability of fieldwork conditions and require flexible scheduling of exploration activities. Prolonged drought periods limit vegetation cover, increasing dust generation, while extreme rainfall events may briefly limit vehicle access or create unsafe working conditions. The variability illustrated in Figure 2.3 underscores the need for adaptive planning and careful seasonal timing of all field-based operations.

3.2.4. TEMPERATURE REGIMES

Temperatures in the project area reflect the hot semi-arid climatic zone typical of the Khorixas and Fransfontein surroundings. Mean annual temperatures generally range between 20°C and 22°C, but summer maxima frequently exceed 34°C, especially from October to February. Winter conditions are milder during the day but can drop to 2–6°C at

night, particularly in elevated open plains and rocky escarpment areas. These temperature extremes have direct implications for field safety, equipment performance, and the risk of heat stress among personnel. Figure 3.4, which illustrates Namibia's spatial temperature distribution, shows that EPL 10453 lies within one of the warmest inland temperature belts. Such thermal conditions also influence drilling efficiency, as extremely dry and compact soils during peak summer may require greater mechanical effort, while isolated post-rainfall periods may temporarily soften surface materials.

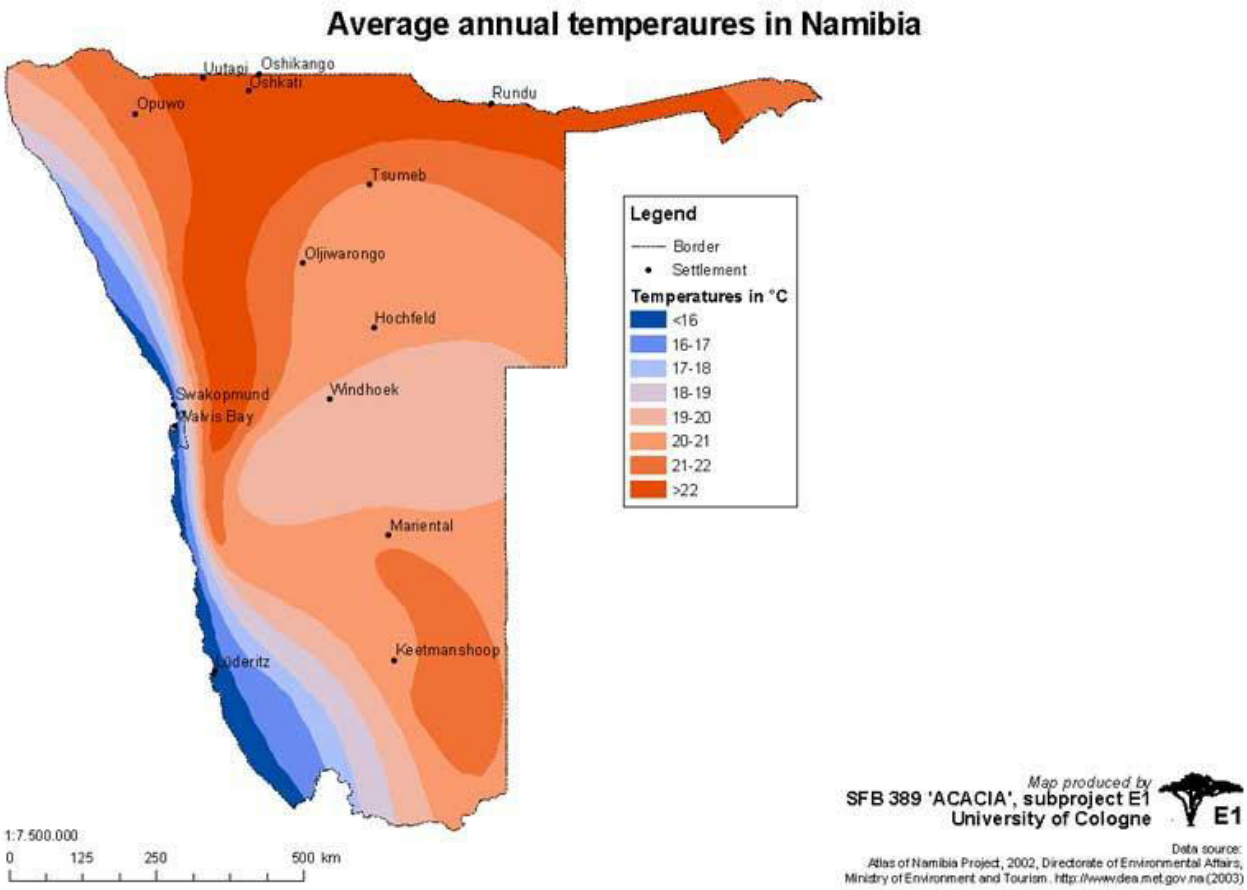

Figure 3-7: Average Annual Temperatures in Namibia

3.2.5. EVAPORATION AND WATER BALANCE

Evaporation rates across EPL 10453 are exceptionally high, typically ranging between 3000 and 3400 mm per year. These values significantly exceed annual rainfall totals, resulting in a strongly negative water balance. High evaporation contributes to rapid moisture loss from soils, elevated dust levels, and the near-absence of surface water except immediately after rainfall events. Figure 3.5 illustrates national evaporation patterns, highlighting that the Kunene Region falls within one of the highest evaporation zones in Namibia. The water deficit, reflected in Figure 3.6, reinforces the scarcity of surface water resources in the project area and underscores the importance of regulated groundwater abstraction under

the Water Resources Management Act. These conditions necessitate efficient water budgeting for exploration, careful siting of temporary water storage facilities, and strict adherence to abstraction permits.

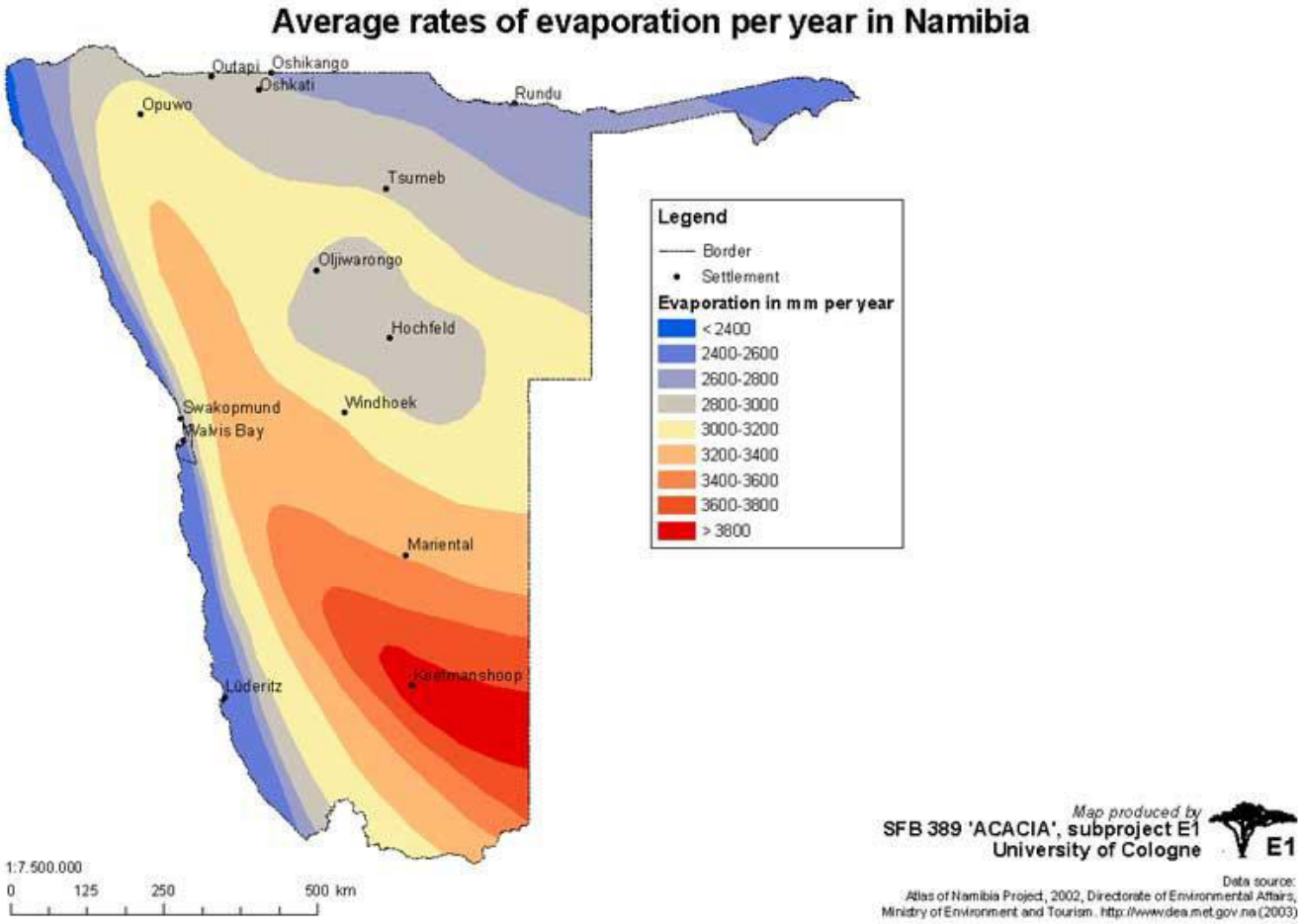

Figure 3-8: Average Evaporation Rates in Namibia

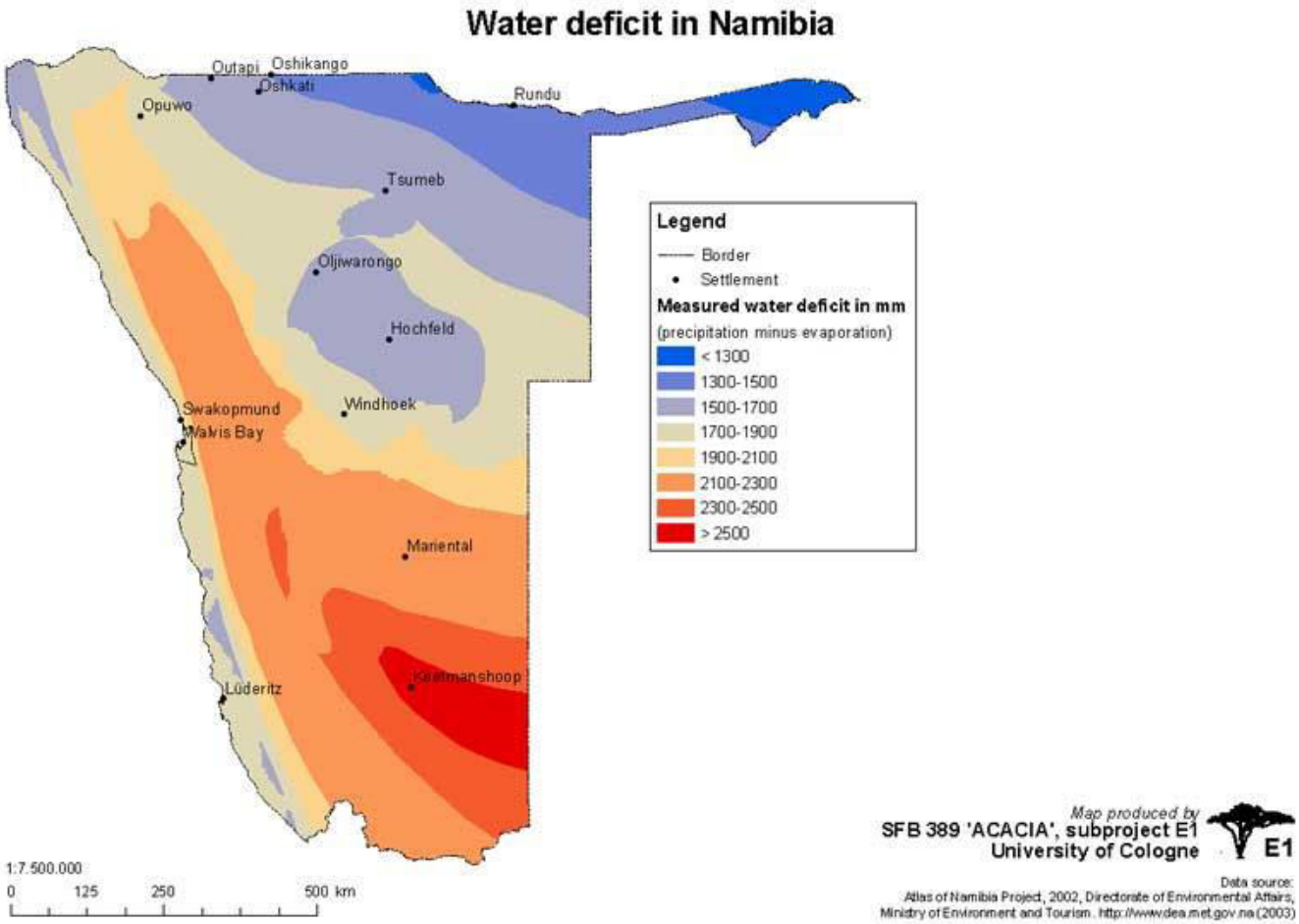

Figure 3-9: Water Deficit Map for Namibia

3.2.6. HUMIDITY AND ATMOSPHERIC MOISTURE

Relative humidity in the EPL 10453 landscape is generally low throughout the year, often falling below 20 percent during the driest months between July and September. Such low humidity promotes rapid evaporation, increases dust mobilisation, and heightens dehydration risks for field personnel. Figure 3.7 illustrates national humidity patterns and confirms that the Khorixas–Fransfontein area falls within one of Namibia's driest atmospheric zones. For exploration operations, low humidity influences dust suppression requirements, PPE specifications, and worker hydration protocols.

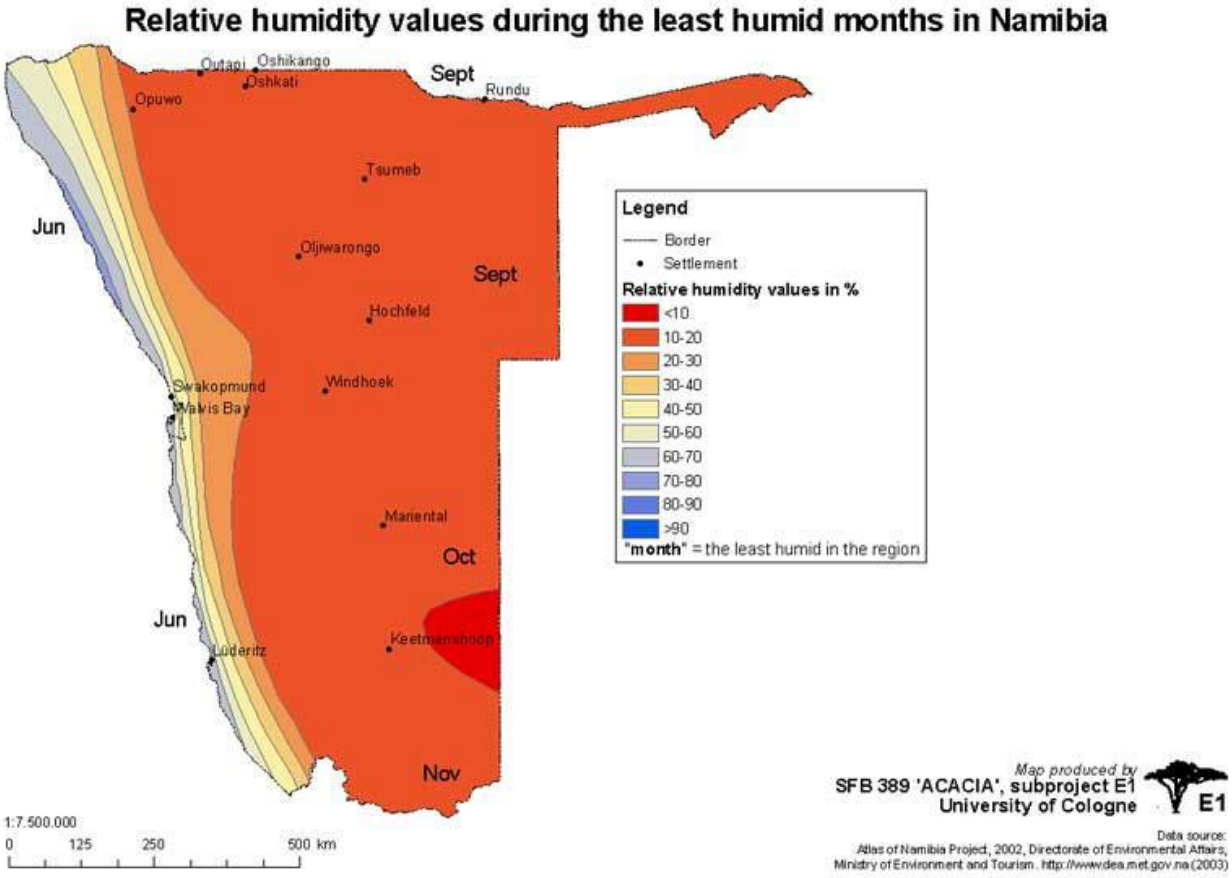

Figure 3-10: Relative Humidity Map for Namibia

3.2.7. WIND PATTERNS

Although a dedicated wind map is not included, the project area is influenced by prevailing easterly to south-easterly winds, with stronger gusts occurring during late winter and early spring. Berg winds—hot, dry, offshore winds descending from the central plateau—may also occur periodically, significantly increasing temperatures and elevating the risk of veld fires. Wind conditions have important implications for dust dispersion, the safe positioning of drilling rigs, and the location of temporary camps to reduce exposure to airborne dust. Fuel storage areas and waste-handling points must also be positioned considering dominant wind directions to ensure safe and compliant operation.

3.2.8. SOLAR RADIATION

Solar radiation levels in north-western Namibia are among the highest in the country, typically ranging between 5.8 and 6.2 kWh/m² per day. The project area falls squarely within this high radiation zone, as illustrated in Figure 3.8, making solar power a practical and sustainable option for supporting off-grid field operations. These conditions strengthen the case for solar-driven lighting, communication systems, and small-scale power requirements,

reducing dependence on diesel generators and supporting alignment with Namibia's broader climate-change and renewable-energy objectives.

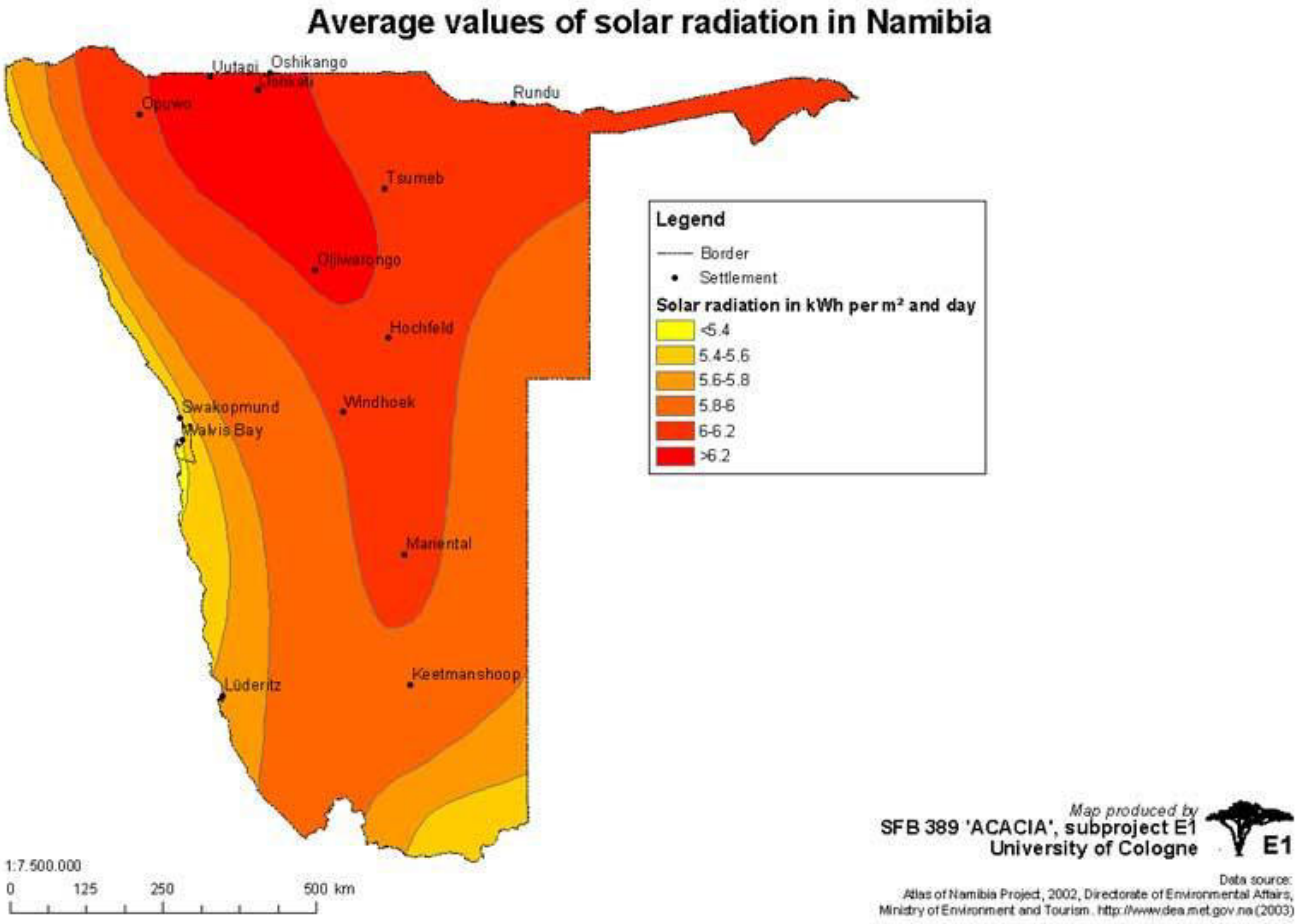

Figure 3-11: Solar Radiation Map for Namibia

3.2.9. IMPLICATIONS OF CLIMATE FOR EXPLORATION ACTIVITIES

The climatic characteristics of EPL 10453 have direct operational implications for exploration planning and environmental management. The most favourable period for fieldwork occurs between May and September, when temperatures are moderate, humidity is low, and rainfall is minimal. High evaporation rates and limited annual rainfall necessitate careful water-use planning, including regulated abstraction and strict implementation of the Environmental Management Plan. Dust generation during dry and windy periods requires vehicle speed control, appropriate PPE, and the use of dust-suppression methods where necessary. Extreme summer temperatures demand heat-stress monitoring, adequate hydration, and restricted working hours during peak heat periods. Occasional heavy rainfall events, although rare, may temporarily affect access along farm tracks or result in flash flooding in ephemeral channels. Overall, the climatic conditions of the Kunene Region present

manageable risks, provided exploration activities are planned seasonally and executed in accordance with the EMP's environmental and safety guidelines.

3.3. Topography, Relief and Landscapes

EPL 10453 is located within the rugged north-western interior of Namibia, positioned south of Khorixas and extending across the lower Huab landscape. The area forms part of the western Central Plateau transition zone, where the interior highlands gradually descend toward the Skeleton Coast. Elevations within and around the EPL generally range between 850 m and 1,300 m above sea level, with the terrain characterised by rocky ridges, dissected valleys, shallow plains and low-lying ephemeral drainage lines. These features reflect the influence of ancient tectonics associated with the Damara Orogen and long-term erosion processes typical of north-western Namibia.

Figure 3.9 (Elevations and Relief in Namibia) illustrates that EPL 10453 lies within a moderately elevated zone, distinguished by undulating plains broken by isolated inselbergs and plateau remnants. The surrounding topography becomes increasingly rugged toward the south-west, transitioning into the broken escarpment-like terrain surrounding Twyfelfontein, //Huab Conservancy and the Doro !Nawas areas. This landscape pattern has direct implications for exploration logistics, influencing access routes, drill pad placement and erosion control measures during intrusive activities.

The broader altitudinal transitions across Namibia, shown in Figure 3.10, highlight the contrast between the low-lying coastal zone and the inland plateau. EPL 10453 falls within the mid-range altitudinal belt where slopes are moderate and local relief is shaped predominantly by ephemeral river incision. These variations must be factored into exploration planning to prevent soil disturbance on steeper slopes and to identify stable ground for vehicle movement and equipment deployment.

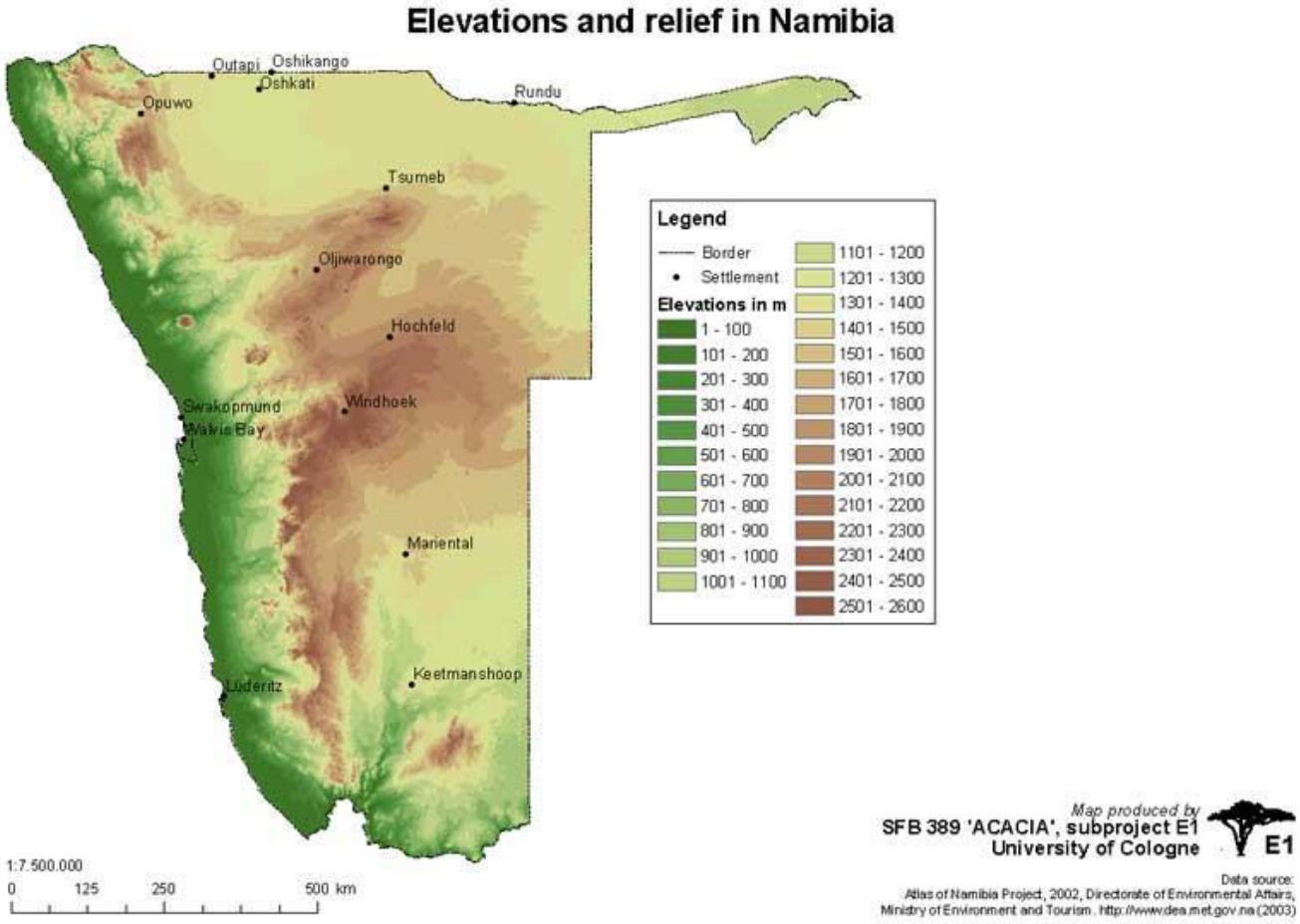

Figure 3-12: Elevations and Relief in Namibia

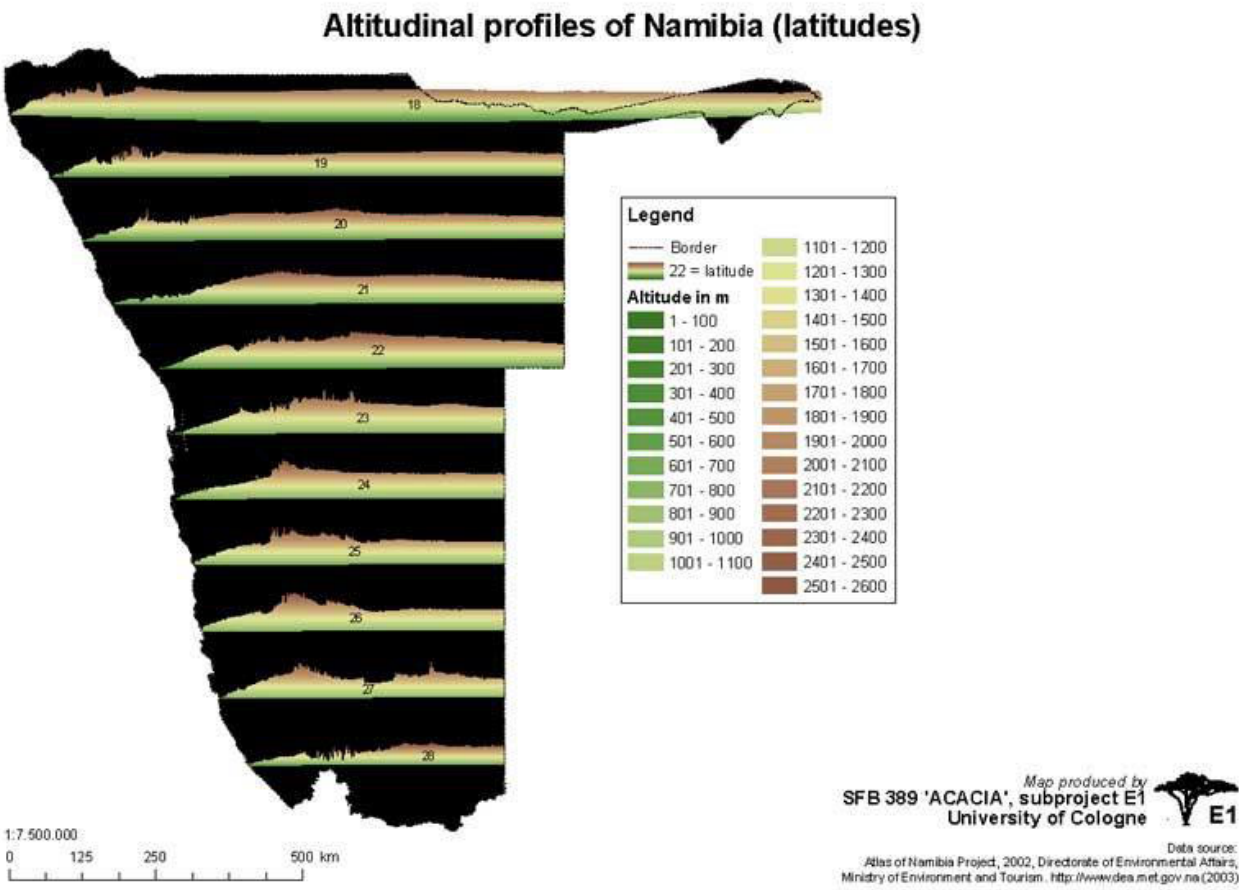

Figure 3-13: Altitudinal Profiles of Namibia

3.4. SOILS

The soils across EPL 10453 are typical of the semi-arid north-western plateau and conservancy lands, dominated by Regosols, Arenosols, Calcisols and scattered rock outcrops. These soils are generally shallow, coarse-textured and weakly developed due to low rainfall, slow weathering rates and strong wind erosion influences. As highlighted in Figure 3.11 (Dominant Soils of Namibia), the EPL area is characterised mainly by Haplic Calcisols, Eutric Regosols and Cambic/Chromic Arenosols, with extensive rocky surfaces occurring along ridges and hill slopes.

Soil depths are typically less than 30–50 cm, particularly in areas underlain by schist or quartzite. These shallow soils exhibit limited agricultural potential and are highly prone to compaction during vehicular movement. Their loose structure also increases susceptibility to wind-driven erosion, especially during the dry season when vegetation cover is sparse.

For exploration, the nature of these soils influences several operational considerations, including the placement of drill pads, the design of sediment control measures, the rehabilitation potential of disturbed sites and the need to avoid sensitive calcrete-rich areas that show slow natural recovery. The presence of sandy Arenosols in valley bottoms further reinforces the need for controlled access and minimal disturbance to prevent rutting and channel incision.

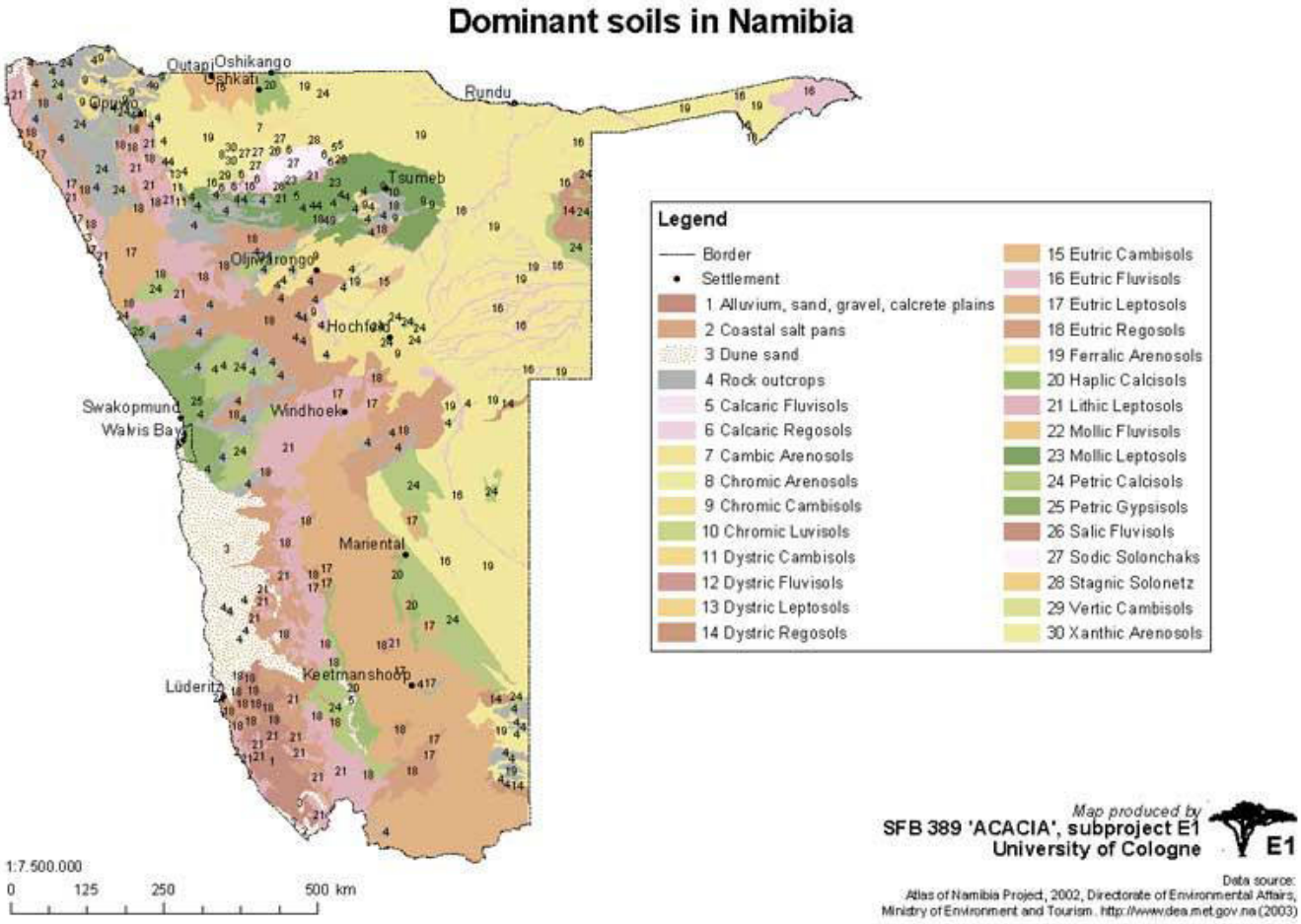

Figure 3-14: Dominant Soils in Namibia

3.5. GEOLOGY

EPL 10453 lies within the Damara Orogenic Belt, one of Namibia's most geologically significant mineral provinces. The licence area is predominantly underlain by schists, quartzites, granitic intrusions and calcrete deposits, reflecting the structural complexity associated with the Southern Central Zone of the Damara Sequence. These rocks form part of the metamorphosed successions that were deformed during the Neoproterozoic collision events, providing favourable conditions for various forms of mineralisation.

The regional geology shown in Figure 3.12 indicates that the EPL intersects zones dominated by schistose units, minor granitic bodies, and localized calcareous deposits. These formations are important exploration targets due to their potential to host uranium, base metals, rare earth elements and associated mineral assemblages. The structural trends, including folds, foliations and fracture systems, are particularly relevant for guiding drilling and geophysical interpretation.

The area also overlies fractured-rock aquifer systems, meaning that exploration must pay close attention to groundwater protection. The permeability of fractured schist and quartzite zones increases the potential for contaminants to migrate if spills occur, making hydrogeological sensitivity a key environmental concern.

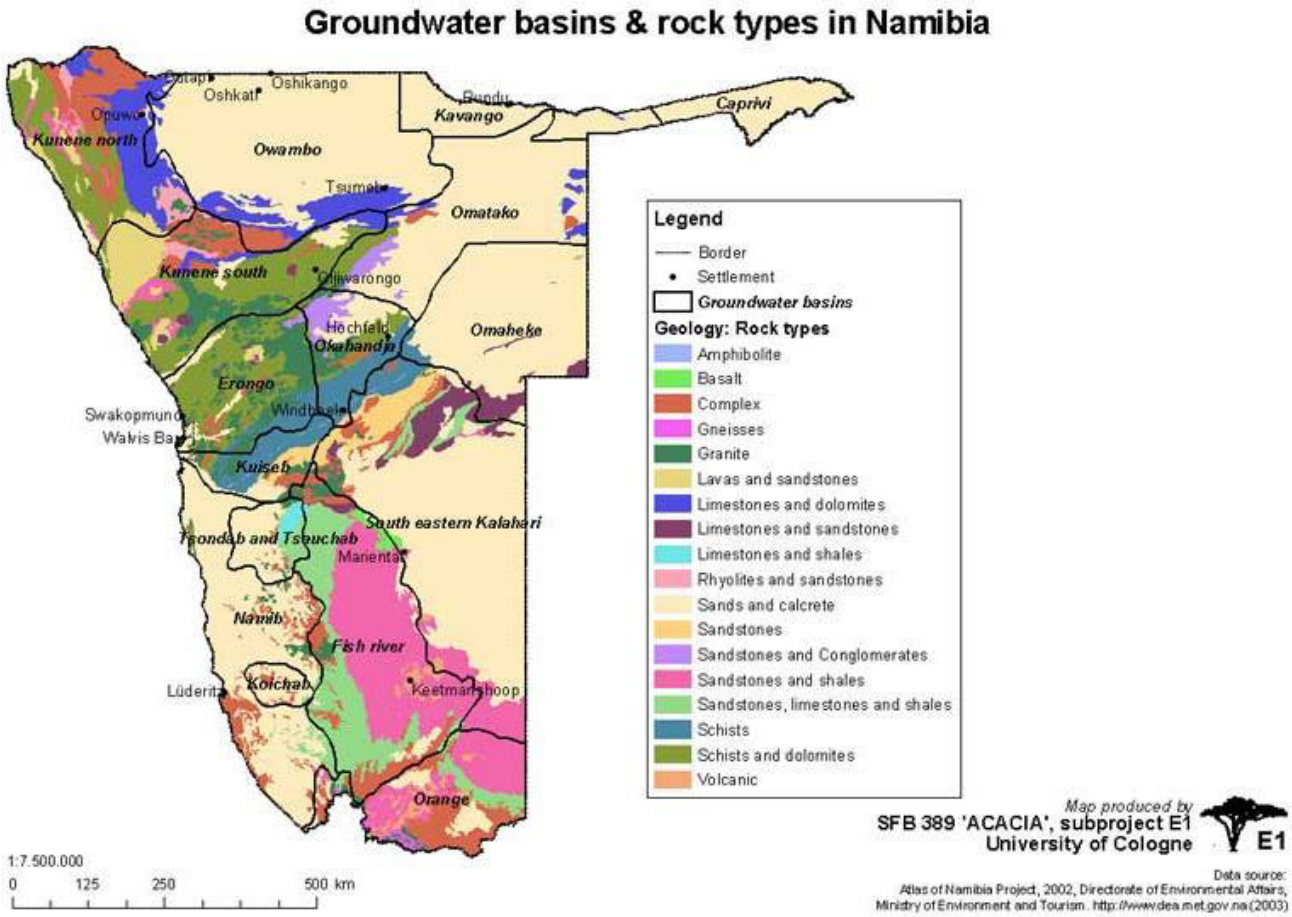

Figure 3-15: Groundwater Basins and Rock Types in Namibia

3.6. HYDROLOGY

EPL 10453 falls within a semi-arid hydrological environment dominated by ephemeral river systems, including the broader Huab River and its tributary drainage lines that extend across the conservancy areas. These rivers only flow during intense rainfall events, making surface water largely unavailable for operational use. The Hydrography Map (Figure 3.13) confirms

that the region is characterised by an extensive network of ephemeral channels, pans and small catchments, with no perennial rivers present in or near the EPL.

Because the area receives less than 200–300 mm of rainfall annually and has extremely high evaporation rates, surface-water storage is minimal and highly unreliable. Exploration water requirements must therefore rely on existing boreholes, licensed abstraction and strict water-use efficiency. The hydrological setting also plays an essential role in erosion risks: flash floods may occur in deeply incised drainage lines, requiring careful positioning of access tracks and equipment to avoid damage during sudden storm events.

Groundwater conditions are closely tied to the geology, as fractured-rock aquifers dominate much of the licence area. These aquifers are sensitive to contamination from drilling fluids, hydrocarbon spills, and improper waste-handling practices. As a result, the Environmental Management Plan requires robust spill-prevention measures, the containment of all hazardous materials, and hydrogeological oversight when installing temporary exploration boreholes.

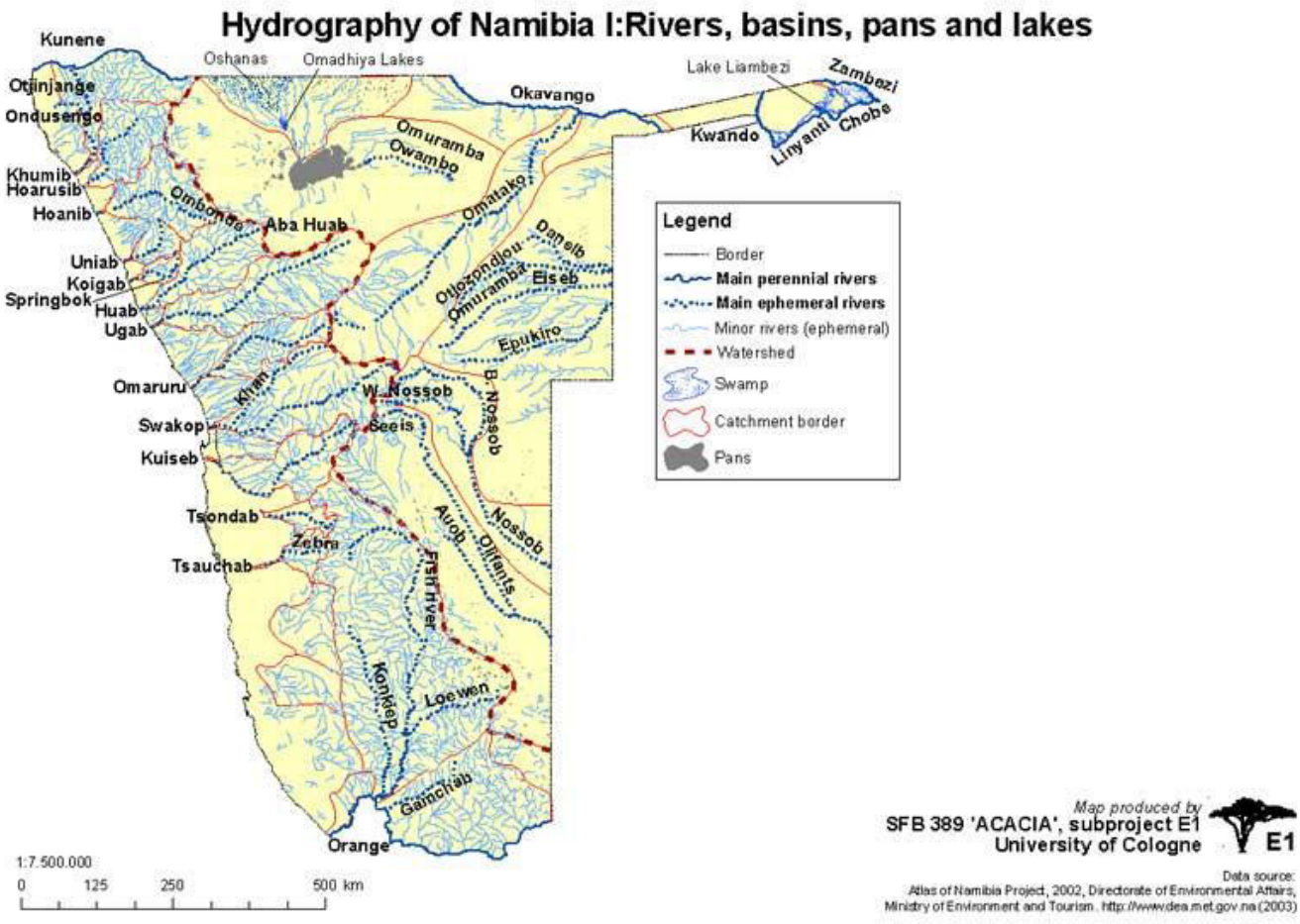

Figure 3-16: Hydrography of Namibia – Rivers, Basins, Pans and Lakes

3.7. Flora, Vegetation Structure and Biodiversity

Namibia is internationally recognised for its exceptional botanical diversity, which is driven by sharp climatic gradients, varied geology and topographic contrasts across the country (Mendelsohn et al., 2002). EPL 10453 is situated in the Kunene Region, southwest of Fransfontein, within an ecological setting that transitions from the arid Namib Desert zones in the west to the Tree-and-Shrub Savanna Biome dominant across north-central Namibia. This area supports a structurally diverse savanna vegetation type characterised by mosaic shrublands, Acacia-dominated stands, ephemeral riverine woodland, and patches of sparse grassland depending on soil type, slope position and moisture availability.

The broader Kunene ecological landscape is shaped by rugged relief, ephemeral drainage systems, shallow stony soils, and variable rainfall distribution. These factors collectively influence species richness, vegetation structure and the presence of several species of ecological and cultural importance. The following sections present a refined understanding of vegetation and flora relevant to EPL 10453.

3.7.1. Vegetation Structure

Vegetation surrounding EPL 10453 is dominated by *dense shrubland*, *sparse shrubland*, and *shrubland–woodland mosaics*, which are typical of the Kunene escarpment and interior transition zone (Atlas of Namibia Project, 2002). Shrubland-woodland mosaics occur mainly along drainage lines and footslopes, where deeper soils and slightly higher moisture availability allow for taller woody vegetation. Uplands and rocky plains support sparse to moderately dense shrubland dominated by *Vachellia*, *Senegalia*, *Commiphora*, and other drought-adapted woody species. These communities align with the vegetation classes mapped in Figure 3.14.

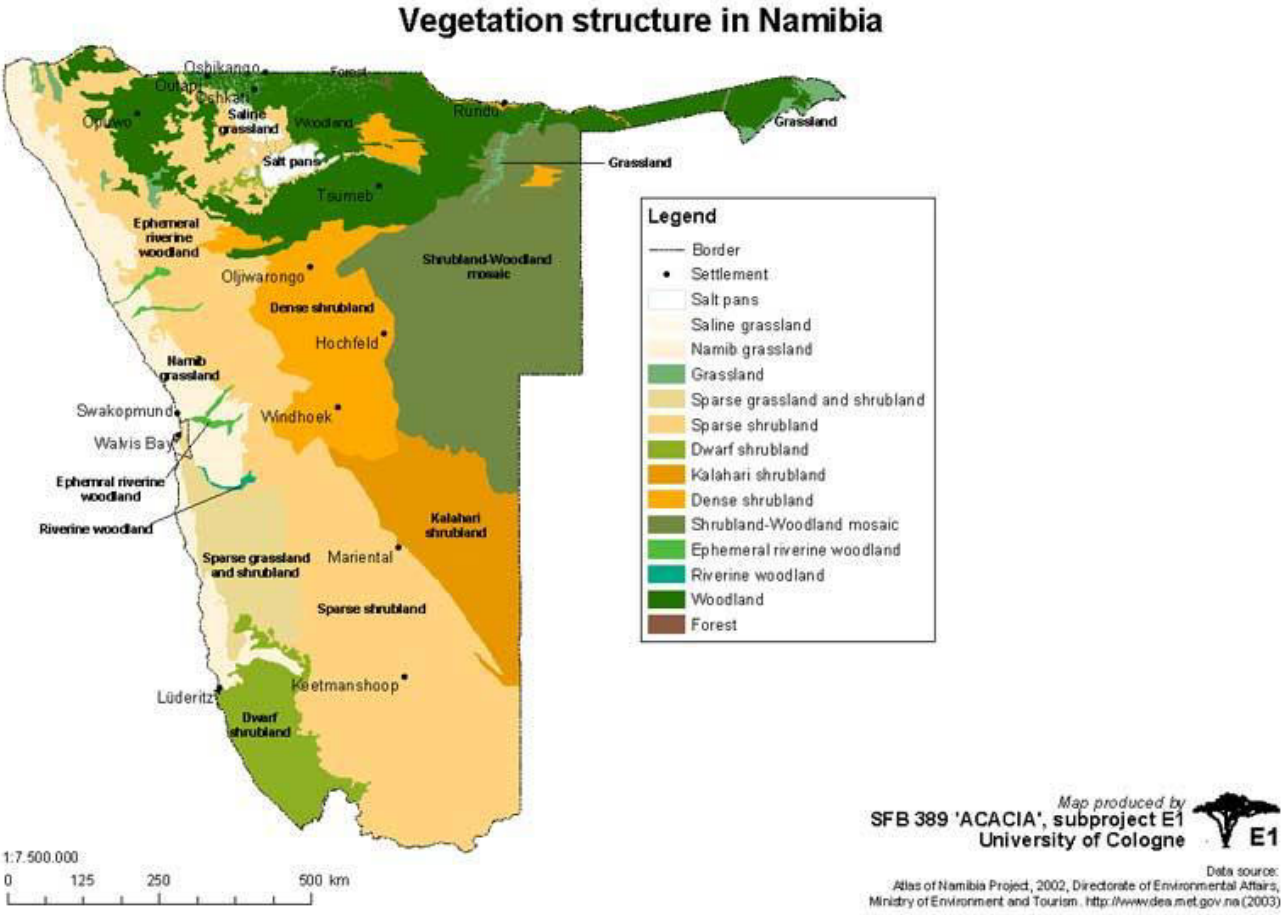

Figure 3-17: Vegetation Structure in Namibia

Local variation in vegetation structure is strongly controlled by underlying geology (schists and sandstones), shallow soils and sporadic rainfall events. In areas closer to the Huab and Aba-Huab drainage systems, ephemeral riverine vegetation—particularly *Faidherbia albida*, *Euclea pseudebenus* and *Combretum imberbe*—may occur where groundwater is more accessible. Although not extensive inside the EPL boundary, these systems influence broader ecological dynamics and are relevant for access planning.

3.7.2. FLORAL DIVERSITY

The Kunene Region hosts moderate to high levels of plant species richness relative to Namibia's arid western belt. According to the Plant Diversity Map (Figure 3.15), the broader EPL zone generally falls within the 150–300 species band, with pockets approaching 300–400 species in areas with deeper soils or along ephemeral drainage systems. This reflects a mix of arid-adapted shrubs, succulents, woody savanna species, perennial grasses and geoxylic suffrutices typical of the northern savanna belt.

Floral diversity in the EPL area is influenced by:

- altitudinal variation from surrounding escarpment features,

- transitions between savanna and desert-influenced vegetation,
- presence of rocky outcrops, which provide microhabitats for specialised species, and
- episodic rainfall that supports seasonal herb and grass flushes.

Although species diversity is not as high as the far-northern or north-eastern regions, the area still contains ecologically significant plant communities.

3.7.3. IMPORTANT PLANT SPECIES

The broader Kunene landscape, including areas surrounding EPL 10453, supports several plant species of ecological, cultural and economic significance. While not all occur densely within the EPL, the following species are relevant based on regional distribution (Figure 3.15):

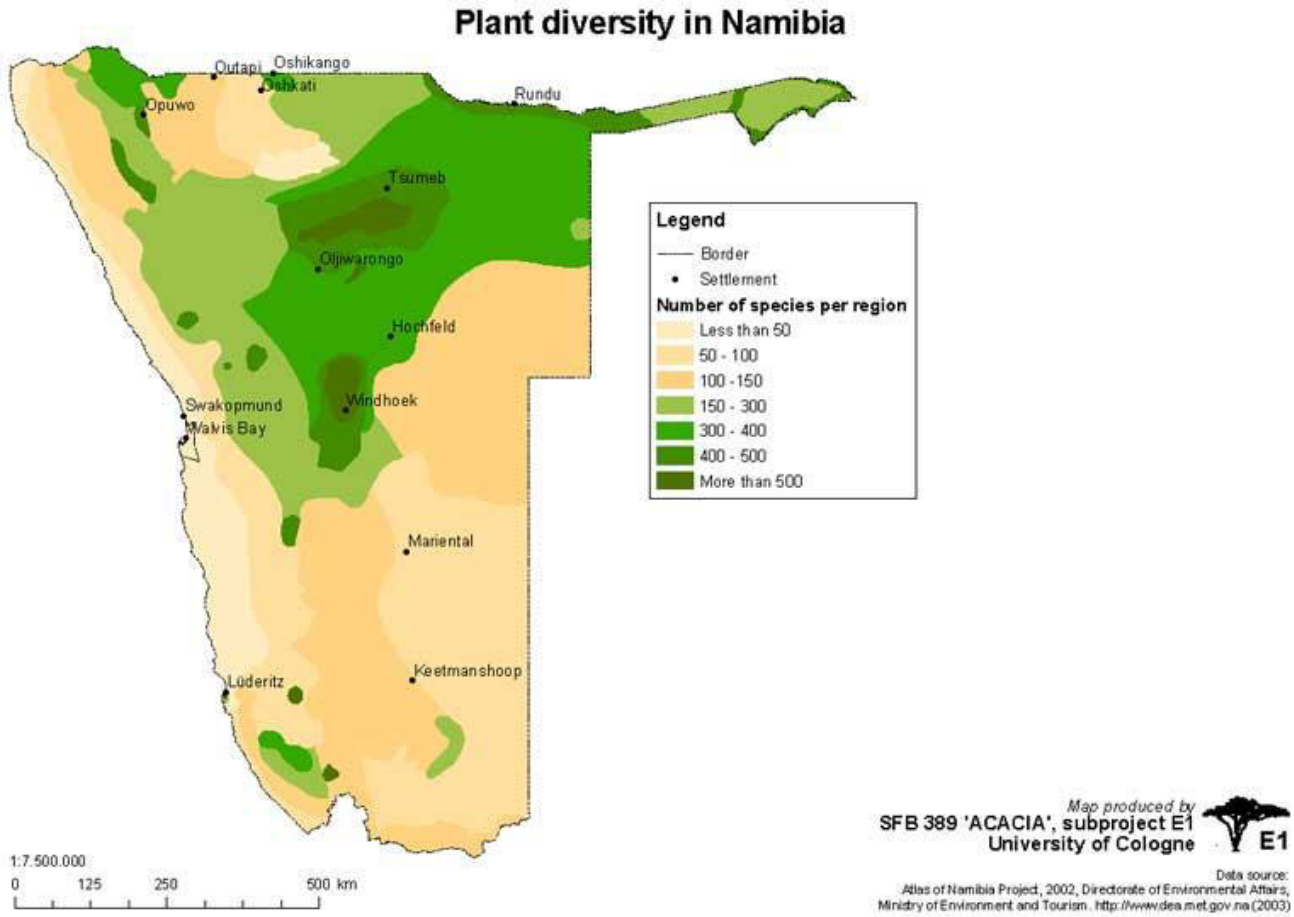

Figure 3-18: Plant Diversity in Namibia

- **Welwitschia (*Welwitschia mirabilis*)** – Found primarily to the west and southwest of Fransfontein; although distribution is patchy, it remains an iconic endemic and legally protected species.
- **Mopane (*Colophospermum mopane*)** – Common east of the EPL and in lower-lying areas; important for browsing, fuelwood and rural livelihoods.

- **Devil's Claw (*Harpagophytum procumbens* / *H. zeyheri*)** – Occurs in parts of Kunene under suitable sandy soils; harvesting is regulated under Access and Benefit Sharing regulations.
- **Kiaat (*Pterocarpus angolensis*)** – More common in north-central Namibia but may occur sporadically; considered a valuable hardwood species.
- **Quiver Tree (*Aloidendron dichotomum*)** – Present further south and southwest; scattered individuals may occur in rocky landscapes.

Because Devil's Claw and Welwitschia carry elevated conservation or regulatory importance, exploration teams must visually identify and avoid these species during micro-siting and clearing.

3.7.4. GRASS COVER AND GROUND LAYER

Grass cover in the EPL 10453 area ranges from sparse to moderate (Figure 3.16), reflecting the semi-arid climate and dominance of shrubs. Grass cover generally increases eastwards and declines toward the more arid western areas.

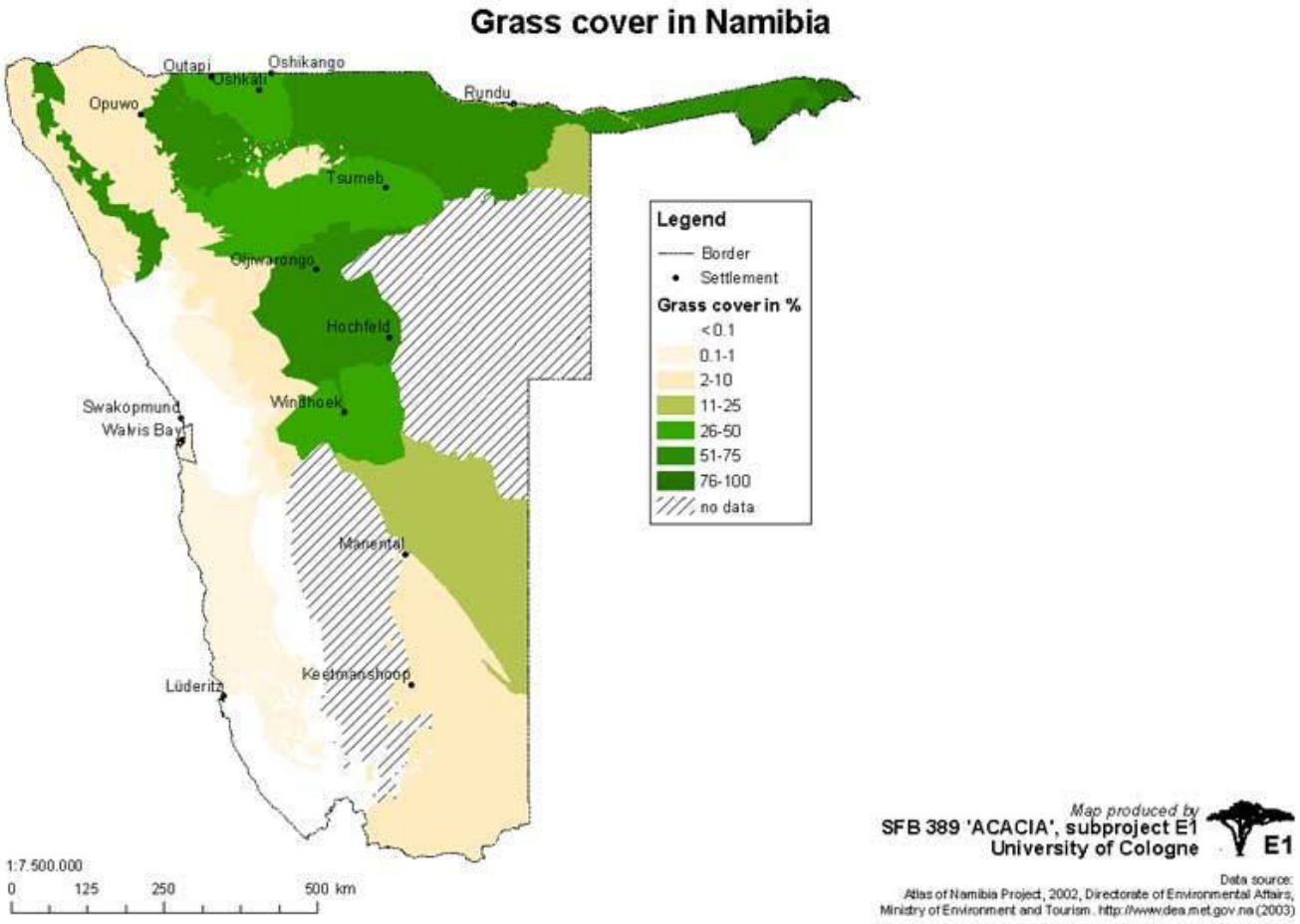

Figure 3-19: Grass Cover in Namibia

The grassy layer—although patchy—plays a vital ecological role by supporting herbivores, stabilising soils and influencing fire regimes. During years of higher rainfall, ephemeral annual grasses become more prominent, improving forage availability but also increasing short-term fire risk.

Ground-layer conditions are particularly important for:

- evaluating erosion risk around drill sites,
- planning access routes,
- determining rehabilitation potential, and
- ensuring that compaction impacts are minimised on sensitive sandy substrates.

3.7.5. BIOME CONTEXT AND CONSERVATION IMPORTANCE

EPL 10453 falls within the Tree-and-Shrub Savanna Biome, one of Namibia's most extensive biomes, with strong influence from the Namib Desert and Escarpment Transition Zone to the west (Figure 3.17).

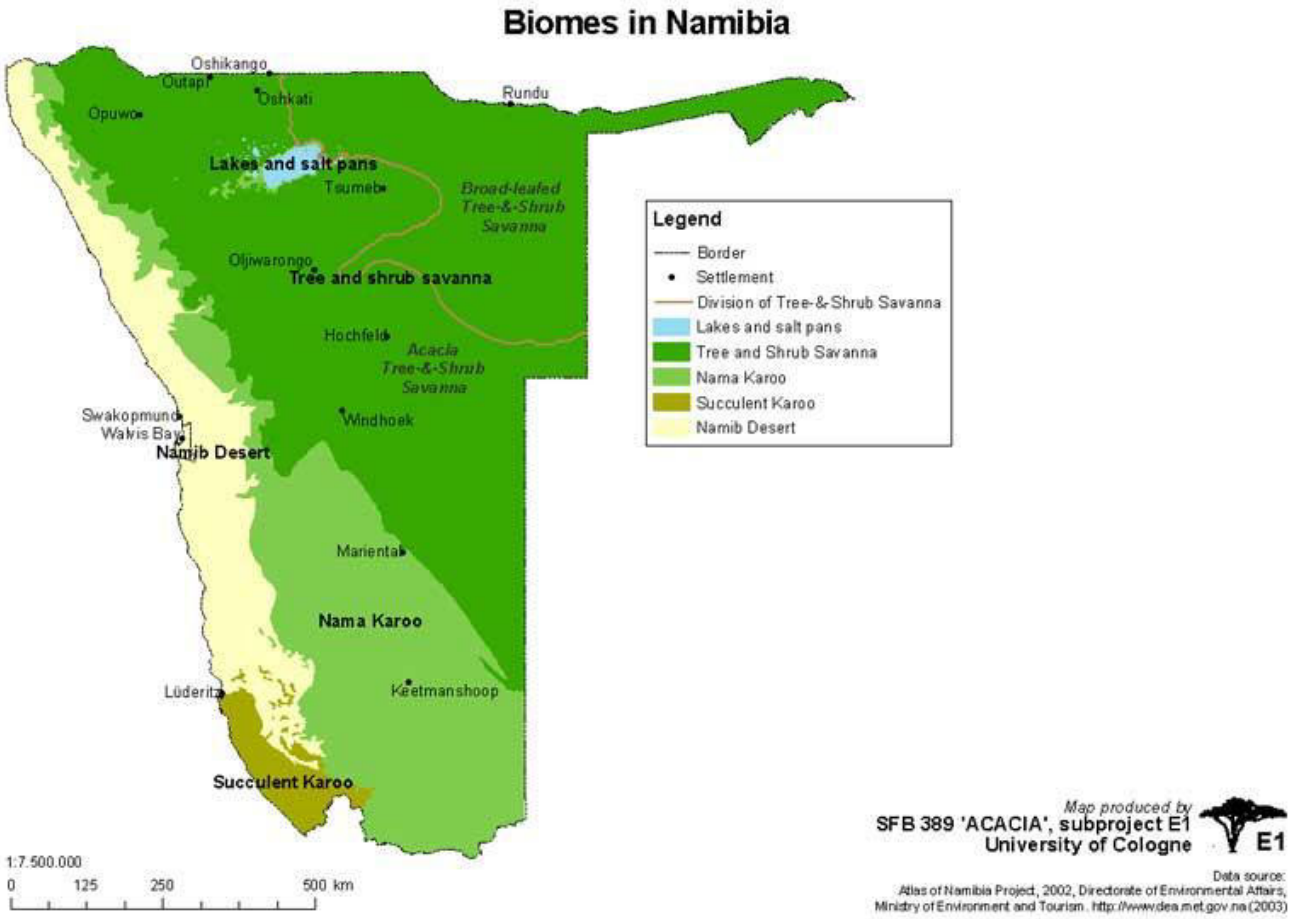

Figure 3-20: Biomes of Namibia

This biome is a national conservation priority due to:

- a high diversity of woody species and shrubs,

- support for wildlife movement between Etosha, Kunene conservancies and the Erongo mountains,
- presence of several endemic and near-endemic plant species, and
- sensitivity to climate variability.

In the Kunene Region, *bush thickening* is less severe than in the Otjozondjupa or central regions, but localised encroachment by *Vachellia reficiens*, *V. mellifera* and *Senegalia erubescens* may occur in deeper-soiled valleys. Parts of the EPL fall close to the //Huab Conservancy and other community conservation areas that support wildlife-based land uses, further elevating the ecological relevance of the vegetation system.

3.7.6. RELEVANCE TO THE EIA

The proposed exploration activities—though limited in footprint—will interact with vegetation through clearing of drill pads, creation of temporary access tracks, storage of equipment and vehicle movement. Given the ecological sensitivity of the savanna system, the presence of protected or valuable plant species, and the patchy but important grass layer, the EIA must ensure:

- Avoidance of protected species such as Devil's Claw and Welwitschia.
- Micro-siting of drill pads to avoid dense shrubland or drainage-line woodland.
- Minimal clearing, favouring manual cutting over grading where possible.
- Strict compliance with the Forestry Act (2001), Nature Conservation Ordinance, and ABS Regulations.
- Rehabilitation of disturbed ground, particularly where soil crusts or grass cover are easily damaged.
- Seasonal planning to avoid operations immediately after rainfall when soils are soft and susceptible to compaction.

3.8. FAUNA

The fauna of the EPL 10453 area reflects the ecological conditions of the Central-Western Highlands, an area characterised by rugged terrain, woodland–shrubland mosaics and low but reliable seasonal rainfall pulses. National biodiversity assessments consistently show that faunal richness in Namibia increases from the arid southwest towards the more mesic north and northeast. EPL 10453 falls in a moderate-diversity zone, with species typical of highland savanna and escarpment environments, especially around Khorixas, Fransfontein and the Huab Basin. Although the area is not recognised as a national hotspot, it supports

wide-ranging mammals, birds, reptiles and invertebrates that move across farms, conservancies and unfenced rangelands.

3.8.1. MAMMALS

Namibia supports approximately 217 mammal species, with the highest richness occurring around Kavango–Zambezi and the lowest in the Namib Sand Sea. The Khorixas–Fransfontein–Huab landscape, where EPL 10453 is situated, supports 61–75 mammal species (Figure 3.18). Mammal communities comprise a mixture of medium- to large-bodied savanna herbivores (e.g., kudu, springbok, Hartmann's mountain zebra, giraffe) and widespread carnivores such as leopard, cheetah, caracal, brown hyena and black-backed jackal.

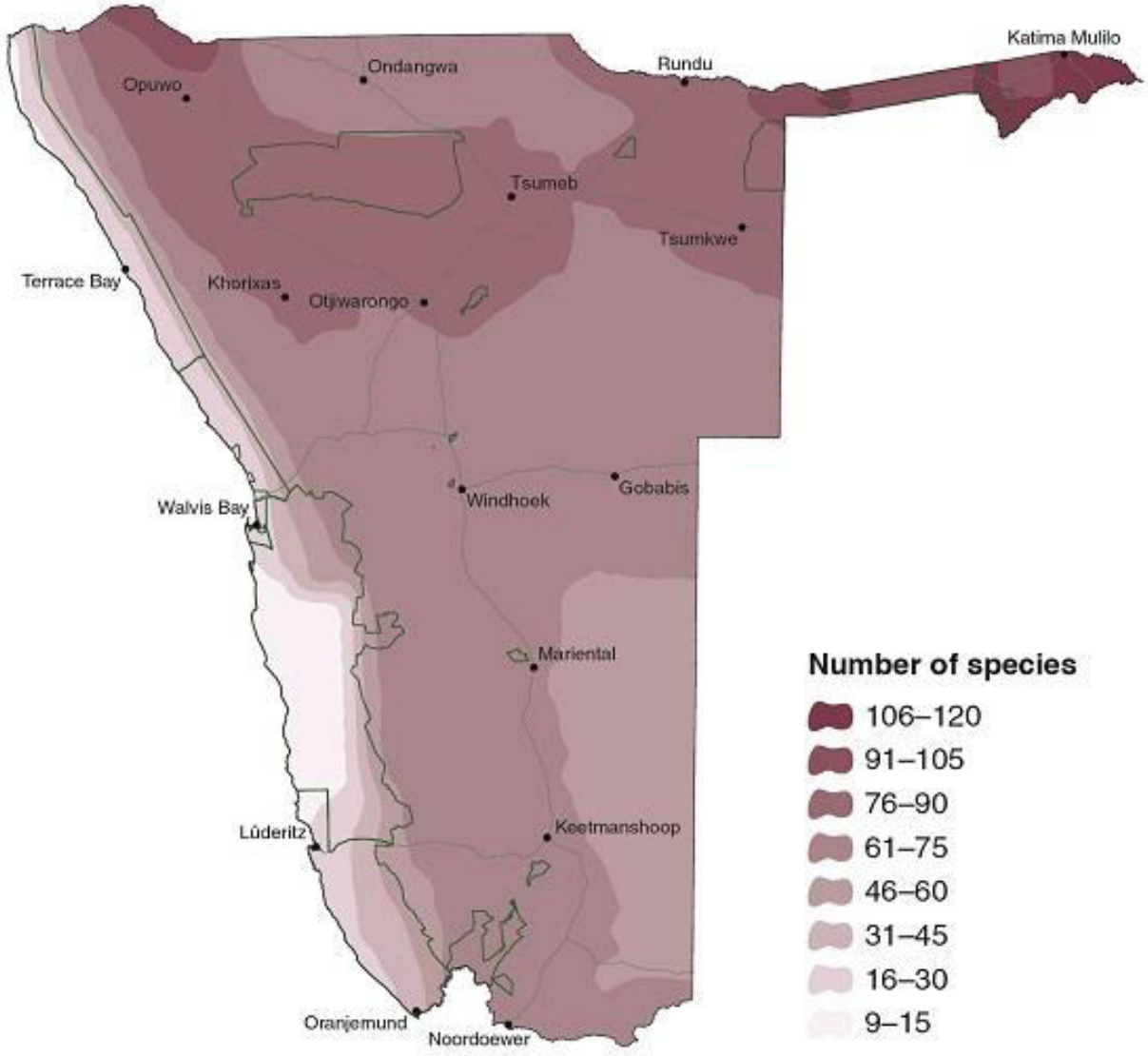

Figure 3-21: Mammal species richness in Namibia.

Although the EPL does not host range-restricted mammal species, it forms part of a movement corridor linking Etosha National Park, the Ugab–Huab Drainage and the western

escarpment conservancies. Occasional movement of large carnivores and elephants is therefore possible, particularly in dry seasons when animals travel between river systems.

3.8.2. BIRDS

Bird diversity in Namibia is exceptionally high (676 species recorded). The mountainous and escarpment areas around Fransfontein and Khorixas support 111–170 bird species (Figure 3.19), reflecting habitat heterogeneity, seasonal pans, ephemeral drainage lines and wooded slopes.

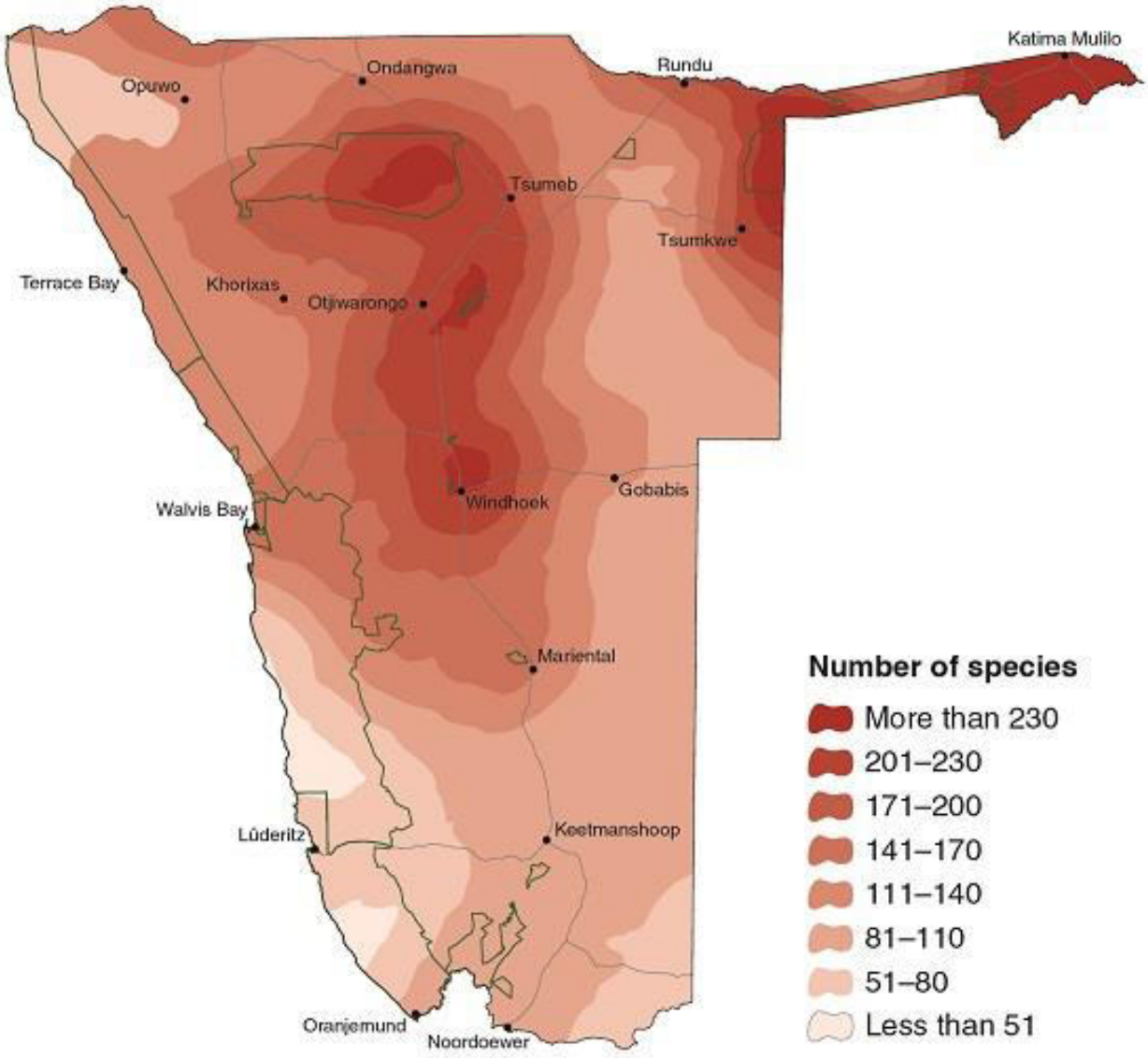

Figure 3-22: Bird species richness in Namibia

Typical species include raptors (Martial Eagle, Verreaux's Eagle, Lappet-faced Vulture), hornbills, rollers, bustards and various seed-eating savanna birds. Although EPL 10453 is not located inside an Important Bird Area (IBA), wide-ranging raptors and scavengers may intermittently utilise the area for foraging.

3.8.3. REPTILES

Reptile diversity is strongly associated with rocky habitats, escarpment gradients and warm savanna climates. EPL 10453 lies within a zone supporting 41–70 reptile species (Figure 3-20), dominated by geckos, skinks, agamas and snakes such as puff adders, mole snakes and colubrids.

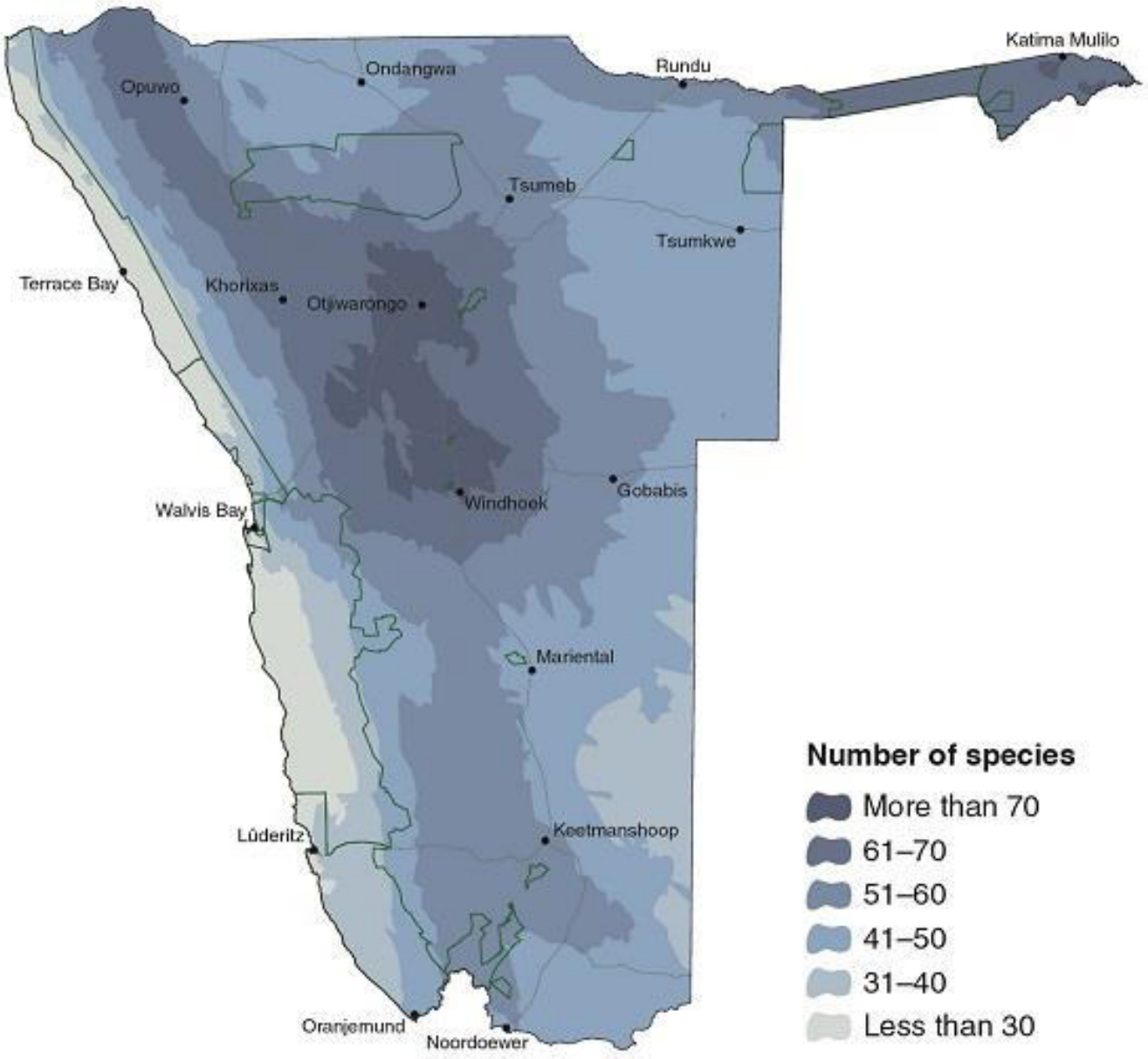

Figure 3-23: Reptile species richness in Namibia

The rocky outcrops and inselbergs surrounding the licence area provide suitable shelter for rupicolous (rock-dwelling) reptiles. No rare or highly endemic reptiles are expected, but habitat disturbance can easily affect microhabitat-specialist species.

3.8.4. AMPHIBIANS

Amphibian richness mirrors rainfall patterns. The central-western regions, including EPL 10453, support 9–15 amphibian species (Figure 3-21), mainly toads, sand frogs and rain frogs.

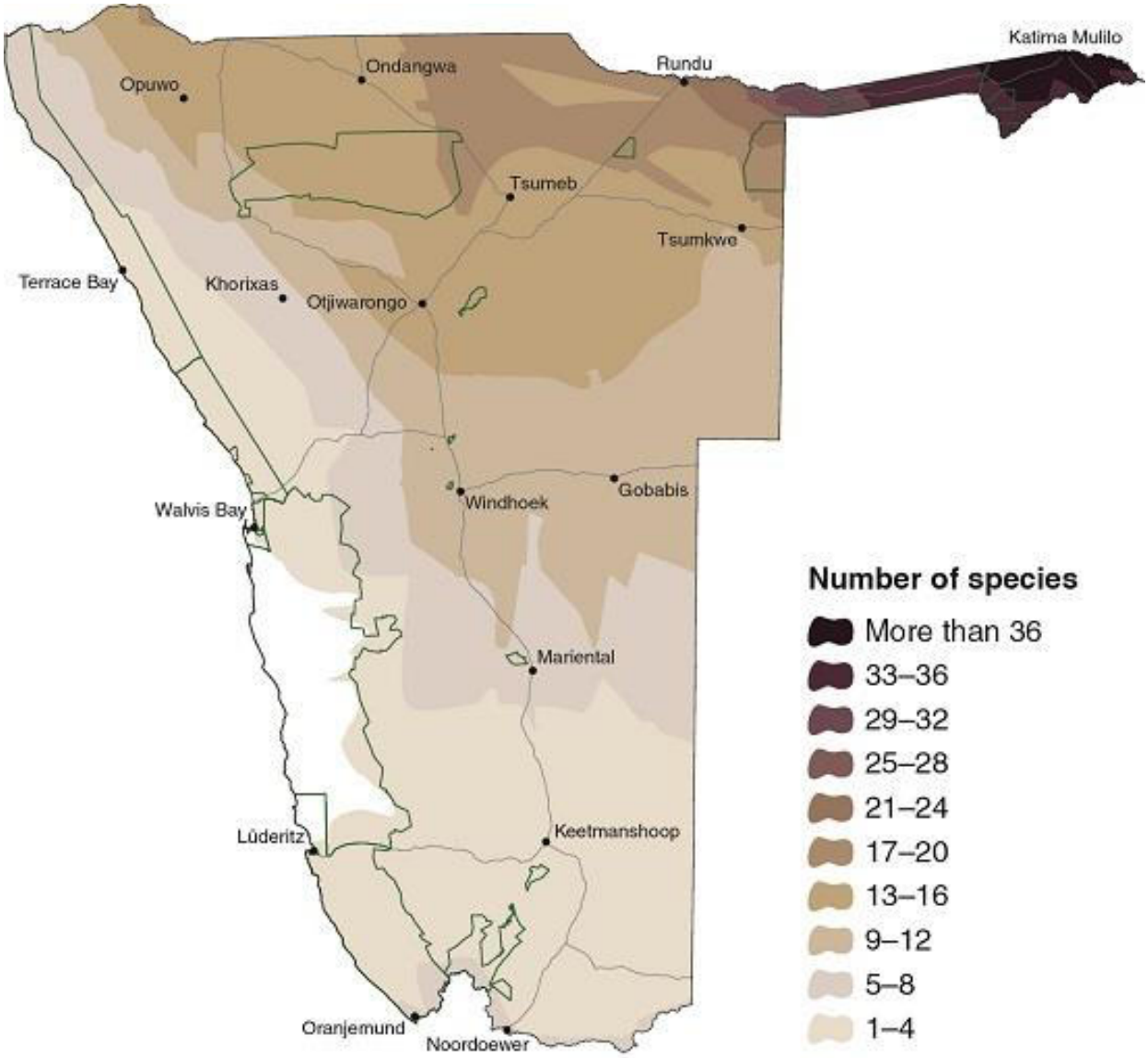

Figure 3-24: Amphibian species richness in Namibia

Given the semi-arid nature and absence of perennial waterbodies, amphibians are expected to occur seasonally and in low abundance.

3.8.5. FRESHWATER FISH

Ephemeral rivers such as the Huab, Aba Huab and Ugab rarely hold water long enough to support stable fish populations. As a result, the central Namibian interior typically contains only 1–4 opportunistic fish species, introduced during episodic flooding events.

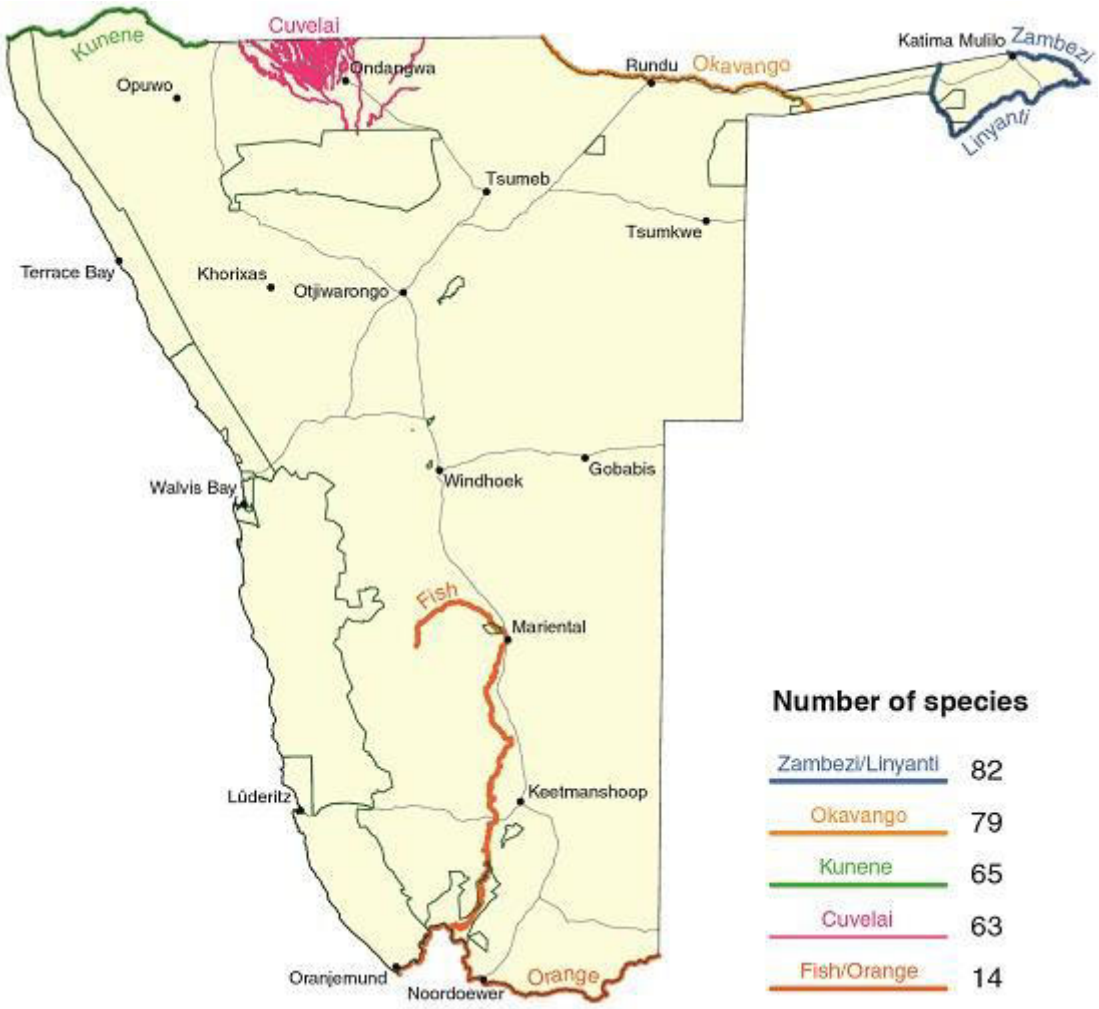

Figure 3-25: Fish species occurrence by catchment

No permanent aquatic habitats occur on EPL 10453; therefore, the probability of encountering resident fish populations is extremely low.

3.8.6. INVERTEBRATES

Invertebrates comprise Namibia's largest faunal group, with more than 12,000 species documented. The central highlands support especially high numbers of:

- tenebrionid beetles (Toktokkies),
- termites and harvester ants,
- solifuges (sun spiders),
- scorpions, and
- pollinating insects.

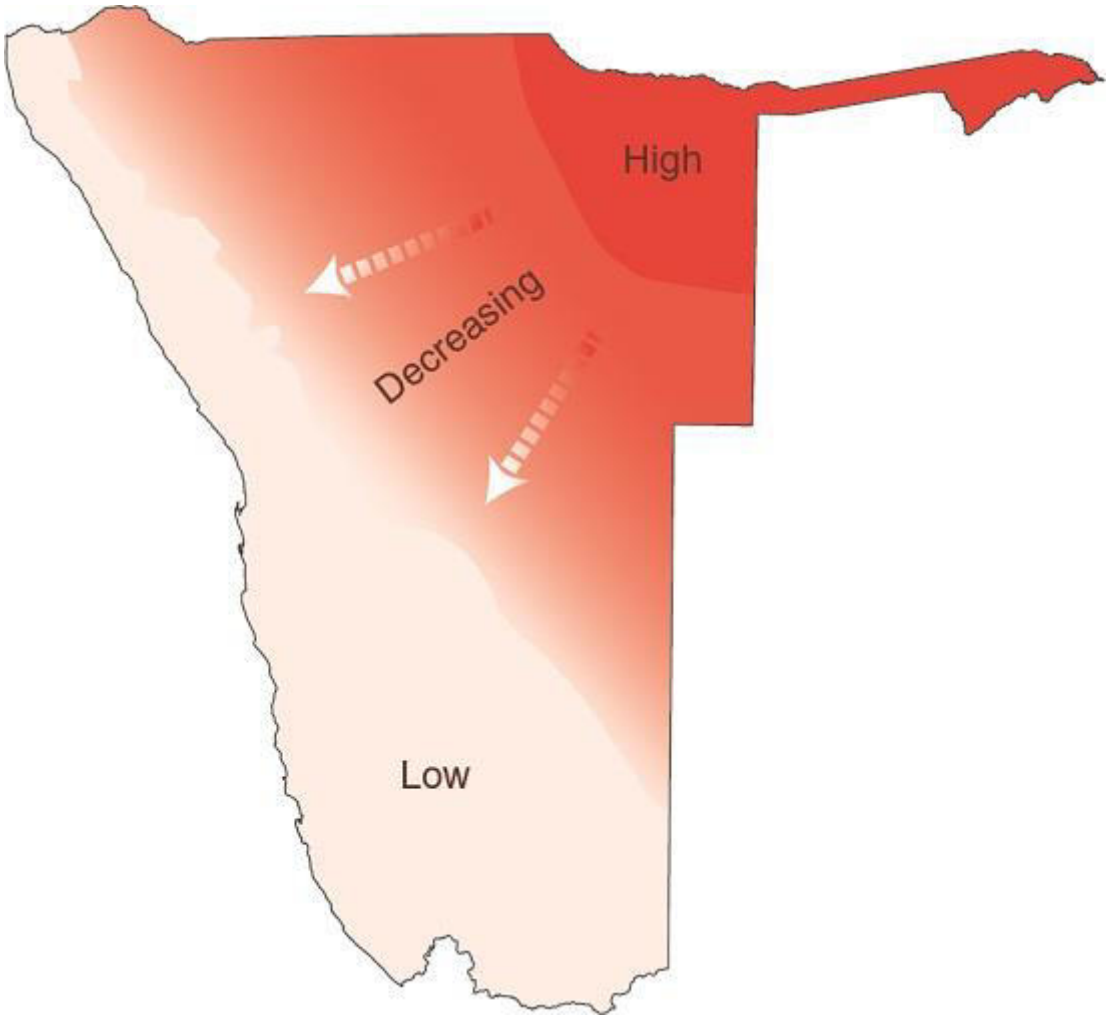

Figure 3-26: Invertebrate richness gradient map

Figure 3.23 illustrates the national invertebrate richness gradient, showing moderate richness in the EPL vicinity, influenced by microhabitats such as rocky slopes, shrubland patches and seasonal grasslands.

While most invertebrates pose no conservation concern, they play crucial ecological roles in nutrient cycling, soil turnover and decomposition.

3.8.7. FAUNAL SENSITIVITY SUMMARY

Overall, EPL 10453 supports moderate faunal diversity typical of the Central Highlands and Western Escarpment transition zone. No species of extreme conservation sensitivity are expected within the licence area. However:

- The landscape forms part of regional wildlife movement corridors.
- Several bird and mammal species are wide-ranging and may traverse the area.
- Habitat disturbance, noise, lighting and traffic pose a greater risk than species loss.

Sensitivity is therefore linked primarily to:

- Disturbance to seasonal wildlife movement,

- Impacts on rocky microhabitats,
- Avoidance of wooded drainage lines,
- Careful management of vehicle access and waste.

With appropriate mitigation under the EMP, fauna-related impacts are expected to be low to moderate and fully reversible at exploration scale.

3.9. Heritage and Archaeological Resources

The proposed exploration area (EPL 10453) is located in the Khorixas District of the Kunene Region, a landscape known for its rich archaeological and cultural heritage, including world-renowned sites such as Twyfelfontein (UNESCO World Heritage Site), the Ugab–Huab sandstone engravings, and pastoralist heritage linked to Damara and Himba communities. Although none of these major declared heritage sites fall *within* EPL 10453, the broader Huab landscape is considered a high-potential heritage zone, particularly for rock engravings, ephemeral archaeological scatters and unmarked graves (NHC, 2017).

Given that EPL 10453 sits between //Huab Conservancy, Khoadi-//Hôas Conservancy and Doro !Nawas Conservancy, cultural heritage may be present in the form of old pastoralist routes, cattle posts, spiritual sites and temporary use areas that are often not formally mapped. While the BID and locality map confirm no known heritage sites inside the EPL, the region’s archaeological reputation requires precaution and strict chance-find compliance.

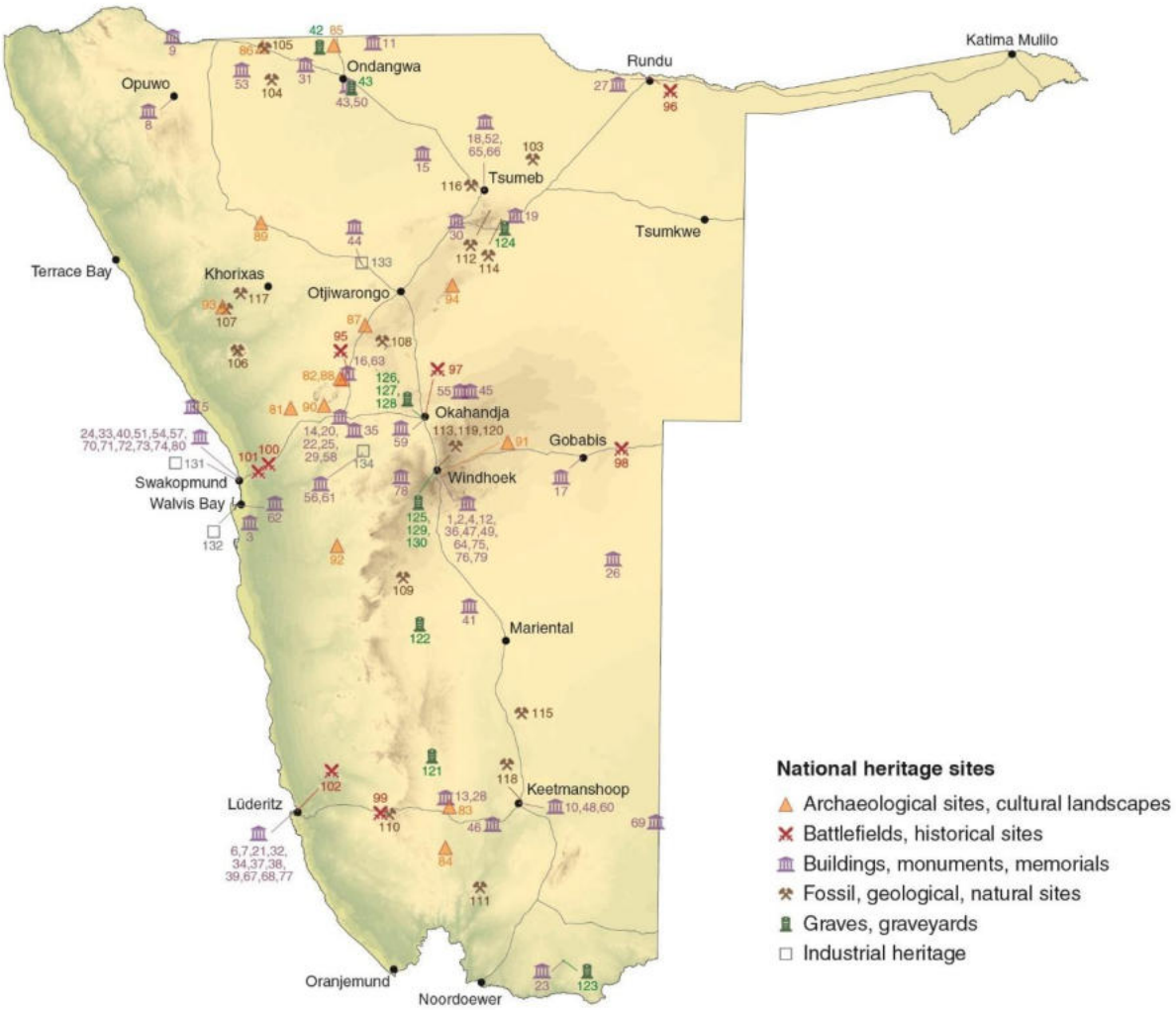

Figure 3-27: National Heritage Sites of Namibia

3.9.1. ARCHAEOLOGICAL CONTEXT OF THE KUNENE–HUAB LANDSCAPE

The Kunene Region is archaeologically one of Namibia's richest terrains. The wider Huab–Ugab system contains:

- Stone Age Record
- Early to Late Stone Age artefacts, especially along rocky ridges, terraces and drainage lines.
- Quartz, jasper and chert artefact scatters are common on gravel plains, especially near the Huab River system.
- Rock Engravings
- Nearby Twyfelfontein contains over 2,500 engravings, and similar engravings have been recorded on dolerite and sandstone outcrops across the region.
- Although density decreases moving eastward, isolated engravings are still possible around inselbergs and ridgelines within EPL 10453.

- Pastoralist and Pre-colonial Features
- Remains of old cattle posts, stone kraals, temporary shelters and hearths associated with Damara and Himba pastoralism.
- Historic livestock routes linking Fransfontein to Doro !Nawas and Khoadi-//Hôas areas.
- Colonial & Farm-Era Heritage
- Former police tracks, outpost remains, early farms, and unmarked graves from German and South African administration periods.
- Small family cemeteries on farms are common in the central-southern Kunene belt.

3.9.1.1 Conclusion

Even though the EPL does not host any *declared* heritage site, the probability of undocumented heritage is moderate to high, particularly near ridges, pans, and historic movement routes.

3.9.2. PALAEONTOLOGICAL SENSITIVITY

EPL 10453 sits within a geological context dominated by Damara Supergroup formations and Karoo-age sediments, which generally hold low palaeontological sensitivity. Fossils, if present, are usually limited to:

- microbial structures (stromatolitic textures),
- trace fossils or impressions in dolomitic horizons,
- minor fossilised root structures.

No nationally significant palaeontological hotspots occur near Fransfontein or Khorixas, and no large fossils are expected.

3.9.3. CULTURAL AND LIVING HERITAGE

The EPL is located within communal land governed by conservancies (//Huab, Khoadi-//Hôas, /Audt), where cultural landscapes are alive and dynamic, not confined to monuments.

Potential cultural features include:

- Pastoralist activity sites (temporary corrals, livestock resting points, water access points).
- Spirit sites or culturally important ridges known only to communities.
- Unmarked graves or burial mounds, often associated with former homesteads.
- Historic footpaths and movement corridors still in use by residents and wildlife.

Early engagement with conservancy leadership and Fransfontein community remains essential for correctly identifying such areas.

3.9.4. Potential Heritage Sensitivities Relevant to EPL 10453

Table 3-2: Potential Heritage Sensitivities Relevant to EPL 10453

Potential Resource	Sensitivity	Typical Location	Relevance for Exploration
Stone artefact scatters	Moderate	Ridges, gravel plains, terraces	May be exposed during track clearing
Rock engravings	High	Sandstone/dolerite outcrops	Strict avoidance; 50–100 m buffer
Unmarked graves	Very High	Near old kraals, abandoned homesteads	Absolute exclusion; triggers full NHC protocol
Historic kraals / pastoralist structures	Moderate	Near livestock routes & farms	Avoid disturbance; document and report
Fossil traces	Low	Dolomite/sandstone outcrops	Unlikely but must be reported immediately

This pattern aligns with the general Huab–Ugab cultural landscape, where rock art and pastoralist history are widespread but patchy.

3.9.5. Heritage Management Requirements

a) Chance-Find Procedure

Work must stop immediately if any of the following are encountered:

- Stone tools or artefact scatters
- Rock paintings or engravings
- Structural remains (stone circles, kraals, walls)
- Human remains or graves
- Fossils or unusual geological structures

No material may be removed or touched.

b) Reporting Protocol

- Secure the site and inform the Environmental Control Officer (ECO).
- ECO notifies the National Heritage Council (NHC).

- Only a qualified heritage specialist may assess the find.
- Work resumes only when NHC provides written clearance.

c) Buffers and Protection

- 50–100 m buffer around confirmed heritage resources.
- Graves require **full avoidance** and immediate reporting to NHC + NamPol.

d) Community Engagement

Given conservancy governance, the proponent must consult:

- Fransfontein leadership,
- //Huab, Khoadi-//Hôas, /Audt and Doro !Nawas Conservancies,
- Elders who may know about unmarked graves or cultural sites.

3.9.6. CONCLUSION

EPL 10453 is classified as a low-to-moderate heritage sensitivity zone, with localised areas of high sensitivity, particularly near outcrops and historic pastoralist movement routes. Although no declared heritage sites fall within the EPL boundary, the regional archaeological richness demands precaution. With strict implementation of chance-find procedures, landowner/community engagement and adherence to the National Heritage Act (2004), exploration activities can proceed without significant heritage impacts.

3.10. ENVIRONMENTAL SENSITIVITY ASSESSMENT (REVISED FOR EPL 10453)

The environmental sensitivity assessment identifies ecological, hydrological, and landscape features within and around EPL 10453 that may require avoidance, restricted access, or enhanced mitigation during exploration. EPL 10453 is located in the Kunene Region, west of Fransfontein and south of Khorixas, within an ecologically complex, rugged, and semi-arid environment influenced by the Huab River catchment, rocky highland systems, and communal conservancy-managed landscapes (//Huab, Khoadi-//Hôas, Doro !Nawas). Sensitivities presented here reflect regional biodiversity datasets, conservancy land-use patterns, vegetation maps, and known ecological gradients of the north-western escarpment.

3.10.1. SENSITIVE HABITATS

EPL 10453 contains a variety of habitat types typical of the Kunene escarpment–savanna transition, characterised by stony plains, rugged ridges, ephemeral drainage lines, and patches of semi-dense woodland.

Although the EPL has no perennial rivers, several ephemeral drainage systems linked to the Huab catchment run through the area. These drainage lines are of elevated sensitivity due to their ecological role in:

- seasonal vegetation growth,
- wildlife movement,
- groundwater recharge, and
- temporary wetland formation after rainfall.

Track creation, drilling platforms, and vehicle access must avoid all drainage channels and maintain natural flow paths.

Rocky ridges and inselbergs common in the southern and central portions of the EPL are also sensitive habitats. These areas host specialist reptiles, rupicolous fauna, and rare plant microhabitats that do not tolerate disturbance. Such features must be avoided when planning access routes and drill pad placement.

3.10.2. Protected Areas and Conservation Priorities

EPL 10453 is positioned within a high-value communal conservation landscape, surrounded by:

- //Huab Conservancy
- Khoadi-//Hôas Conservancy
- /Audt Conservancy
- Doro !Nawas Conservancy
- Huab Private Nature Reserve (immediately north)

Although the EPL itself is not within a national park, its proximity to formal and communal conservation areas elevates the importance of low-disturbance exploration methods.

The area forms part of the broader Kunene–Huab wildlife corridor, linking free-ranging populations of:

- desert-adapted elephant,
- giraffe,
- kudu,
- leopard,
- brown hyaena, and
- various raptor species.

No Key Biodiversity Areas (KBAs) or Important Bird Areas (IBAs) fall directly within the EPL; however, the presence of ecotourism routes, wildlife movements, and community

conservation initiatives means that exploration should minimise noise, nighttime activity and off-road driving.

3.10.3. Vulnerable Flora and Fauna

The Huab landscape supports populations of protected and conservation-sensitive species, including:

- Desert-adapted elephant (occasionally moving along the western and southern edges of the conservancy systems)
- Large carnivores such as leopard, cheetah (transient), and brown hyaena
- Raptors including Lappet-faced Vulture, White-backed Vulture, Martial Eagle
- Specialist reptiles associated with rocky outcrops
- Endemic and near-endemic plants, particularly succulents and Commiphora species

Although the likelihood of encountering these species is moderate and the exploration footprint is small, the following habitat types must be treated as moderately to highly sensitive:

- rocky outcrops with notable succulent or Commiphora assemblages
- dense woodland patches (Acacia/Colophospermum mopane)
- drainage lines providing shade, refuge, and seasonal forage

Any nests, burrows, dens or roosting sites of protected species encountered during operations must trigger a faunal chance-find procedure.

3.10.4. Hydrological and Soil Sensitivities

The EPL contains a mosaic of shallow, skeletal soils on hilltops and deeper aeolian or alluvial soils in low-lying areas. Sensitivity factors include:

a) Erosion susceptibility

Loose sandy soils and vehicle-disturbed surfaces erode rapidly under high winds or during sudden rainfall events. Off-track driving must be avoided.

b) Ephemeral flood zones

Seasonal depressions and drainage channels can carry flash floods during intense rainfall. These areas must not be used for vehicle movement, drilling, or any ground clearance.

c) Groundwater protection

Although no major boreholes are situated within the EPL footprint, nearby farms and conservancies rely on groundwater. Drilling must maintain strict casing, sealing, and waste-water containment to prevent aquifer contamination. Overall, hydrological sensitivity is low to moderate, increasing significantly along ephemeral drainage lines.

3.10.5. Cumulative Environmental Constraints

A synthesis of ecological, hydrological, heritage, and land-use data indicates that EPL 10453 has localised zones of moderate to high sensitivity, especially where different constraints overlap. These include:

- ephemeral drainage lines and flood-prone depressions
- rocky ridges and inselbergs with specialist biodiversity
- dense mopane and mixed woodland clusters
- areas proximal to old farmsteads or pastoralist sites with heritage potential
- zones with active wildlife movement (notably elephant and carnivores)

Low-sensitivity areas are mainly open, previously disturbed savanna where controlled, low-impact exploration is feasible.

3.10.6. Implications for the Project

Based on the environmental sensitivity assessment:

- Exploration should prioritise open, low-sensitivity savanna and previously disturbed areas.
- No new tracks must be created through drainage lines, rocky slopes, or dense woodland.
- Moderate-sensitivity zones may be accessed only with mitigation such as controlled routing, noise minimisation, and post-activity rehabilitation.
- High-sensitivity zones (drainage features, outcrops with specialist species, pastoralist heritage areas) must be avoided entirely.
- Faunal and heritage chance-find procedures remain compulsory for the duration of exploration.
- Engagement with conservancy leadership is essential to minimise disturbance to wildlife movements, grazing areas, and cultural-use landscapes.

With these measures in place, early-stage exploration activities are expected to have low to manageable environmental risks within EPL 10453.

4. CHAPTER FOUR: PUBLIC CONSULTATION

4.1. OVERVIEW

Public consultation is a statutory requirement of Namibia's Environmental Management Act (No. 7 of 2007) and the EIA Regulations (GN 30 of 2012). The Regulations define consultation as a structured process through which Interested and Affected Parties (I&APs) are given the opportunity to receive information, engage with the EIA team, and provide comments relevant to the proposed activities. For this project, the consultation process was undertaken in line with:

- Regulations 7, 21, and 23 of GN 30/2012
- Environmental Management Act, 2007
- Project Terms of Reference (ToR)
- Good practice principles of the World Bank ESF and IFC Performance Standard 1

The overarching purpose of the consultation was to promote transparency, facilitate informed decision-making, and integrate environmental and social concerns into the planning of the proposed exploration activities on EPL 10453. Consultation also ensures that local knowledge, expectations, and concerns are incorporated into the environmental assessment and mitigation planning.

The key goals of the consultation were to:

- Ensure stakeholder concerns are fully integrated into project planning and design.
- Increase public awareness and understanding of the proposed exploration activities.
- Build trust by providing an open and transparent platform for dialogue.
- Strengthen the legitimacy and credibility of the EIA process.
- Ensure affected people are afforded meaningful opportunities to contribute.

The communication approach prioritised accessibility, fairness and constructive dialogue throughout all stages of the EIA.

4.2. CONSULTATION METHODS AND PROCESS

A combination of statutory and supplementary engagement methods was used to reach stakeholders living within, adjacent to, or with an interest in EPL 10453 (Fransfontein–Khorixas area).

4.2.1. BACKGROUND INFORMATION DOCUMENT (BID)

A comprehensive Background Information Document (BID) was prepared and distributed to I&APs, providing:

- A description of the proposed exploration activities
- The EIA/EMP process
- Potential impacts
- The registration process for I&APs
- Contact details of the consultant

4.2.2. NEWSPAPER NOTICES

In accordance with Regulation 21, public notices were placed in national and widely circulated newspapers. The notices informed potential I&APs of:

- The commencement of the EIA process
- The nature and location of the proposed activities
- The opportunity to register and submit comments
- Details of the public meeting

The following advertisements were published:

Table 4-1: Advertisements

Newspaper	Coverage	Language	Publication Dates
The Confidante	Countrywide	English	3 & 10 August 2025
Windhoek Observer	Countrywide	English	3 & 10 August 2025

4.2.3. PUBLIC NOTICES AND ON-SITE ANNOUNCEMENTS

Site notices were erected at strategic public locations within Fransfontein, Khorixas and along access routes. These notices announced:

- The commencement of the EIA
- The project description
- Public meeting date and venue

Site notices were also placed at the Swartbooi Traditional Authority Hall, local shops, and community gathering points.

Image 4-1: Notices

4.2.4. PUBLIC MEETING

A statutory public consultation meeting was scheduled as follows:

- Date: 28 August 2025
- Time: 11h00
- Venue: Swartbooi Traditional Authority Hall, Fransfontein

Despite widespread notification, no members of the public attended the meeting, a situation commonly observed in sparsely populated rural areas or areas with low internet/newspaper access. In such cases, the Regulations require that the proponent demonstrates adequate effort, which has been fulfilled.

Image 4-2: Site Visits and Public Meetings

4.2.5. STAKEHOLDER IDENTIFICATION AND REGISTRATION

A stakeholder database was compiled based on:

- Local authorities
- Traditional authorities
- Farm owners
- Residents of Fransfontein and Khorixas
- State agencies
- Local service providers

I&AP registration was open for 14 days following publication of notices. Stakeholders were invited to submit written comments by 12 September 2025.

4.2.6. DIRECT STAKEHOLDER ENGAGEMENT

Individual interactions were held with:

- Representatives of local traditional authorities
- Local authority staff
- Nearby conservancies (where relevant)
- Affected farming units
- Community members encountered during inception site visits

These engagements focused on:

- Clarifying exploration activities
- Potential socio-economic impacts
- Land access and safety
- Employment expectations
- Heritage and environmental concerns

4.3. SUMMARY OF KEY ISSUES RAISED

All comments received through BID circulation, newspaper notices and stakeholder engagements were grouped into thematic categories. Table below summarises the main concerns.

Table 4-1: Summary of Issues Raised During Public Consultation

Theme	Issues Raised by Stakeholders
Economic	- Local employment should be prioritised (general labour and semi-skilled roles). - The company must commit to social responsibility, including

Theme	Issues Raised by Stakeholders
	support for community development. - Concerns about ensuring benefits trickle down to local residents.
Health & Safety	- Proper waste management required, including wastewater and solid waste. - Concerns about possible air, noise and water pollution during exploration. - Call for adequate worker health and safety measures.
Ecological & Environmental	- Risk of machinery oil spillages and fuel leaks contaminating soil and groundwater. - Hazardous waste must be contained and disposed of properly. - Water and air resources must not be polluted, as livestock and wildlife rely on them.
Communication & Information	- Community members requested clearer explanations of the exploration process. - Concerns about poor communication between operators, authorities and communities. - Desire for ongoing updates as the project progresses.

These issues have informed the development of the impact assessment and the Environmental Management Plan.

4.4. Conclusion on Public Consultation

The public consultation process for the EPL 10453 EIA complied with the EMA (2007) and GN 30/2012 requirements. Multiple avenues were used to inform and engage stakeholders, including formal advertisements, site notices, information dissemination, and a public meeting.

Although attendance at the public meeting was low, evidence demonstrates that all reasonable efforts were undertaken to ensure meaningful engagement. Stakeholder concerns were duly recorded and incorporated into the assessment of impacts, the formulation of mitigation measures, and the EMP.

The process succeeded in:

- Ensuring transparency
- Providing opportunities for comment
- Integrating local knowledge and concerns
- Strengthening environmental safeguards for exploration

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. OVERVIEW

This chapter presents an assessment of the potential environmental and socio-economic impacts associated with the proposed exploration activities on EPL 10453. The assessment is guided by the principles of sustainable development, the Environmental Management Act (No. 7 of 2007), the EIA Regulations (GN 30 of 2012), and relevant sectoral legislation. The proponent acknowledges the need to implement exploration activities in a manner that avoids, minimises, and mitigates negative impacts while maximising potential benefits to local communities and the wider region.

To support this commitment, an Environmental Management Plan (EMP) has been developed as an integral component of the EIA. The EMP identifies all potential impacts arising from the proposed activities, evaluates their significance, and outlines practical mitigation measures and monitoring requirements. This ensures that environmental protection and social wellbeing are embedded throughout the operational lifecycle of the project.

The EMP is designed as a living document, subject to continuous review and revision in response to:

- changes in project design or operational methods,
- site-specific environmental conditions,
- new legal or regulatory requirements, and
- feedback from affected communities and stakeholders.

Through this adaptive management approach, the proponent aims to achieve continuous improvement in environmental performance, maintain compliance with statutory requirements, and ensure responsible resource use throughout the exploration programme.

5.2. ASSESSMENT OF IMPACTS

This section outlines how the overall methodology to assessing the project is possible environmental and social impacts. Each potential impact must be assessed in order to properly evaluate its significance. The definitions and explanations for each criterion are set out below in Table 5-1.

Table 5-1: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability	
Low	<25%
Medium	25-75%
High	>75%

(***Adopted from ECC-Namibia, 2017)***

Table 5-2: Impact Significance

Class	Significance	Descriptions
1	Major Impact	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.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namibia, 2017)

Table 5-3: Environmental Impacts and Aspects Assessment

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	Topography and Landscape	Alternation of existing topography	Operation	Short term	Low	Local	Direct	Probable	Low
	Topography and Landscape	Topographic changes and Visual Impact from overburden material.	Operation	Medium term	Moderate	Local	Direct	probable	Moderate
SOILS	Soil	Loss of usable topsoil material	Operation	Long term	Low	Local	Direct	Highly probable	Moderate
	Soil	Contamination to soil from waste disposal	Operation	Long term	Moderate	Local	Direct	Improbable	Low
LAND CAPABILITY	Socio Economic Activities	Land utilisation for the benefit of the people	Operation	Long term	High	National	Indirect	Probable	Moderate
	Terrestrial ecology and biodiversity	Decreased in vegetated land (biodiversity zones) within the Exploration zones	Operation	Long term	Low	Local	Direct	probable	Low
	Groundwater quality	Groundwater source and soil may be polluted vehicular movements, mineral exploration drilling, etc.	Operation	Short term	High	Local	Direct	probable	Moderate
	Surface water quality	Increased sediment load from exposed surfaces	Operation	Short term	Low	Local	Direct	Probable	Moderate
	Surface water quality	Stormwater generation from, the large open surface area may create stormwater which may result in pollution.	Operation	Long term	High	Local	Direct	Highly Probable	Moderate

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Surface water quality	Increase in surface water run- off from a large open surface area on site because of vegetation removal	Operation	Short term	Moderate	Local	Direct	Improbable	Low
AIR QUALITY	Air Quality	Generation of dust during drilling and camp site construction.	Construction, operation	Short term	Low	Local	Direct	Probable	Moderate
	Noise Pollution	Generation of dust during drilling and camp site construction.	Construction and operation	Long term (operation)	Low	local	Direct	Probable	Low
	Topography and Landscape	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Low	Local	Direct	Probable	Moderate
	Terrestrial ecology and biodiversity	Loss of habitat, and clear or damage to vegetation	Construction and Operations	Long term	Moderate	Local	Direct	Probable	Low
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and clearing or damage to vegetation	Construction, Operation	Short Time	Moderate	Local	Direct	Highly Probable	High
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	Terrestrial ecology and biodiversity	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low

Environmental Impact	Element	Impact	Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	Terrestrial ecology and biodiversity	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species due to clearing of land for parking space.	Construction	Short Term	Moderate	Local	Direct	Highly Probable	Moderate
	Terrestrial ecology and biodiversity	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	Moderate
Socio-economic	Socio Economic Activities	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	Moderate Positive
	Socio Economic Activities	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	Moderate Positive
	Socio Economic Activities	Job creation construction workforce	Construction and operations	Long term	High	Local	Direct	Highly Probable	Moderate Positive
	Socio Economic Activities	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	Moderate Positive
	Contributing to the National economy	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	High Positive
	Contribution to Local Economy	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	Moderate Positive
Possible impact on archaeological or cultural heritage	Contributes to the economy	Employment	Construction of road and mining activities	Long Term	Monderate	Local	Direct	Probable	Moderate